

## 9.26 Village of Croton-on-Hudson

This section presents the jurisdictional annex for the Village of Croton-On-Hudson.

### 9.26.1 Hazard Mitigation Plan Point of Contact

The following individuals have been identified as the hazard mitigation plan's primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
Janine King, Village Manager 1 Van Wyck Street, Croton-On-Hudson, NY 914-271-4848 <a href="mailto:jking@crotononhudson-ny.gov">jking@crotononhudson-ny.gov</a>	Paula DiSanto, Village Clerk 1 Van Wyck Street, Croton-On-Hudson, NY 914-271-2013 <a href="mailto:pdisanto@crotononhudson-ny.gov">pdisanto@crotononhudson-ny.gov</a>

### 9.26.2 Municipal Profile

#### Population

According to the U.S. Census, the 2010 population for the Village of Croton-On-Hudson was 8,070.

#### Location

The Village is located on the eastern side of the Hudson River, in the northwest corner of Westchester County, approximately 40 miles north of New York City. The western boundary of Croton-on-Hudson extends to the middle of the Hudson River, coincident with the boundary of Westchester County. The eastern boundary of the Village is also the eastern boundary of the New York state coastal zone. The 4.9 square mile village lies within the Town of Cortlandt. The Hudson River forms the Village's western boundary with Haverstraw across the River, and the Croton River serves as part of its eastern one.

#### Brief History

The Village was formally incorporated as a village in the Town of Cortlandt in 1898. In 1932, two separate communities, Mount Airy and Harmon, were incorporated into the Village. Three major public works projects in the 19<sup>th</sup> century – the railroad, the dams and the aqueduct – played a pivotal role in shaping Croton-on-Hudson's demographic development and cemented its importance in the region. The advent of the railroad had a tremendous impact on the growth of Croton-on-Hudson and served as an economic engine for northern Westchester. Like the railroad, the construction of the Croton and New Croton Dams and the New Croton Aqueduct played an important role in shaping Croton-on-Hudson's development.

#### Governing Body Format

The Village has a Council-Manager form of government. The five member elected Village Board of Trustees makes policy and functions on behalf of the citizens. The mayor acts as a member and the presiding officer of the board. Each term is two years. The Board of Trustees hires a full-time Village Manager who acts as the Chief Executive Officer of the Village. The manager handles the day to day activities in the Village and reports to the Board of Trustees.

#### Growth/Development Trends

No new development has been identified at this time for the Village of Croton-On-Hudson.

### 9.26.3 Natural Hazard Event History Specific to the Village of Croton-On-Hudson

Westchester County has a history of natural and non-natural hazard events as detailed in Volume I, Section 5.0 of this plan. A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the County and its municipalities. For the purpose of this plan update, events that have occurred in the County from 2005 to present were summarized to indicate the range and impact of hazard events in the community. Information regarding specific damages is included, if available, based on reference material or local sources. This information is presented in the table below. For details of these and additional events, refer to Volume I, Section 5.0 of this plan.

**Table 9.26-1. Hazard Event History**

Dates of Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
October 27- November 8, 2012	Hurricane Sandy	DR-4085	Yes	Power outages, tree damage, debris removal, police, fire and highway department overtime in excess of \$220,000. Damages to municipal garage, riverfront parks and train station office and meters.
August 4, 2012	Microburst	N/A	No	Tree damage, debris removal, roadways temporally blocked.
June 23, 2012	Heavy Rain Event	N/A	No	Street flooding, public park severely damaged. Parking lot and ball field destroyed.
August 26 - September 5, 2011	Hurricane Irene	DR-4020	Yes	Severe flooding of roadways and homes. One drowning death occurred. Infrastructure and facility damage to include culverts, roadways and municipal building. Police, fire and highway department overtime.

Notes:

EM Emergency Declaration (FEMA)

FEMA Federal Emergency Management Agency

DR Major Disaster Declaration (FEMA)

N/A Not applicable

### 9.26.4 Hazard Vulnerabilities and Ranking

The hazard profiles in Section 5.0 of this plan have detailed information regarding each plan participant's vulnerability to the identified hazards. The following summarizes the hazard vulnerabilities and their ranking in the Village of Croton-On-Hudson. For additional vulnerability information relevant to this jurisdiction, refer to Section 5.0.

#### Natural Hazard Risk/Vulnerability Risk Ranking

The table below summarizes the natural hazard risk/vulnerability rankings of potential hazards for the Village of Croton-On-Hudson.

**Table 9.26-2. Natural Hazard Risk/Vulnerability Risk Ranking**

Hazard type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard <sup>a, c</sup>	Probability of Occurrence	Risk Ranking Score (Probability x Impact)	Hazard Ranking <sup>b</sup>
Earthquake	100-Year GBS: \$0 500-Year GBS: \$4,309,450 2,500-Year GBS: \$69,573,963	Occasional	24	Medium
Extreme Temperature	Damage estimate not available	Frequent	30	Medium

**Table 9.26-2. Natural Hazard Risk/Vulnerability Risk Ranking**

Hazard type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard <sup>a, c</sup>	Probability of Occurrence	Risk Ranking Score (Probability x Impact)	Hazard Ranking <sup>b</sup>
Flood	1% Annual Chance: \$61,479,713	Frequent	36	High
Severe Storm	100-Year MRP: \$1,959,712 500-year MRP: \$22,105,092 Annualized: \$186,767	Frequent	48	High
Winter Storm	1% GBS: \$21,199,321 5% GBS: \$105,996,606	Frequent	51	High
Wildfire	Estimated Value in the WUI: \$2,799,349,506	Frequent	48	High

a. Building damage ratio estimates based on FEMA 386-2 (August 2001)

b. The valuation of general building stock and loss estimates was based on the custom inventory developed for Westchester County and probabilistic modeling results and exposure analysis as discussed in Section 5.

c. The earthquake and hurricane wind hazards were evaluated by Census tract. The Census tracts do not exactly align with municipal boundaries; therefore, a total is reported for each Town inclusive of the Villages.

d. Frequent = Hazard event that is likely to occur within 25 years;

Occasional = Hazard event that is likely to occur within 100 years; and

Rare = Hazard event that is not likely to occur within 100 years

e. The estimated potential losses for Severe Storm are from the HAZUS-MH probabilistic hurricane wind model results. See footnote c.

GBS = General building stock

MRP = Mean return period

### National Flood Insurance Program (NFIP) Summary

The following table summarizes the NFIP statistics for the Village of Croton-On-Hudson.

**Table 9.26-3. NFIP Summary**

Municipality	# Policies (1)	# Claims (Losses) (1)	Total Loss Payments (2)	# Rep. Loss Prop. (1)	# Severe Rep. Loss Prop. (1)	# Policies in 1% Flood Boundary (3)
Village of Croton-On-Hudson	48	9	\$68,056.98	1	0	6

Source: FEMA Region 2, 2014

(1): Policies, claims, repetitive loss and severe repetitive loss statistics provided by FEMA Region 2, and are current as of March 31, 2014. Please note the total number of repetitive loss properties excludes the severe repetitive loss properties. The number of claims represents the number of claims closed by March 31, 2014.

(2): Information regarding total building and content losses was gathered from the claims file provided by FEMA Region 2.

(3): The policies inside and outside of the flood zones is based on the latitude and longitude provided by FEMA Region 2 in the policy file. FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility.

### Critical Facilities

The table below presents HAZUS-MH estimates of the damage and loss of use to critical facilities in the community as a result of a 1-percent annual chance flood events.

**Table 9.26-4. Potential Flood Losses to Critical Facilities**

Name	Municipality	Type	Exposure		Potential Loss From 1% Event		
			1% Event	0.2% Event	% Structure Damage	% Content Damage	Days to 100-Percent
Croton Harmon	Croton-on-Hudson (V)	Rail	X	X	-	-	-
Croton Point Park	Croton-on-Hudson (V)	Wastewater Treatment Plant	X	X	20.7	-	-
Croton Sailing	Croton-on-Hudson (V)	Marina	X	X	-	-	-

Name	Municipality	Type	Exposure		Potential Loss From 1% Event		
			1% Event	0.2% Event	% Structure Damage	% Content Damage	Days to 100-Percent
School							
Croton Water Supply Dams A&B	Croton-on-Hudson (V)	Dam	X	X	-	-	-
Croton Yacht Club	Croton-on-Hudson (V)	Marina	X	X	-	-	-
Drilled Well #1	Croton-on-Hudson (V)	Well	X	X	-	-	-
Drilled Well #3	Croton-on-Hudson (V)	Well	X	X	-	-	-
Drilled Well #4	Croton-on-Hudson (V)	Well	X	X	-	-	-
Half Bay Moon Marina	Croton-on-Hudson (V)	Marina	X	X	-	-	-
Pump House	Croton-on-Hudson (V)	Potable Pump	X	X	23.6	-	-
Pump House 1	Croton-on-Hudson (V)	Potable Pump	X	X	0.0	-	-
Pump House 2	Croton-on-Hudson (V)	Potable Pump	X	X	40.0	-	-
Pump House 3	Croton-on-Hudson (V)	Potable Pump	X	X	40.0	-	-
Pump House 4	Croton-on-Hudson (V)	Potable Pump	X	X	0.0	-	-
Sky View Haven, Inc.	Croton-on-Hudson (V)	Wastewater Treatment Plant	X	X	28.6	-	-
Treatment Plant #1	Croton-on-Hudson (V)	Potable Water Facility	X	X	1.9	-	-
Treatment Plant #3	Croton-on-Hudson (V)	Potable Water Facility	X	X	26.7	-	-
Treatment Plant #4	Croton-on-Hudson (V)	Potable Water Facility	X	X	2.4	-	-

Source: Westchester County, FEMA 2014

Note: Please note it is assumed that wells have electrical equipment and openings are three-feet above grade.

- (1) HAZUS-MH 2.1 provides a general indication of the maximum restoration time for 100% operations. Clearly, a great deal of effort is needed to quickly restore essential facilities to full functionality; therefore this will be an indication of the maximum downtime (HAZUS-MH 2.1 User Manual).
- (2) In some cases, a facility may be located in the DFIRM flood hazard boundary; however HAZUS did not calculate potential loss. This may be because the depth of flooding does not amount to any damages to the structure according to the depth damage function used in HAZUS for that facility type.

### Other Vulnerabilities Identified by Village of Croton-On-Hudson

The following flood-prone areas have been identified by the Village of Croton-on-Hudson through the Westchester County Stormwater Reconnaissance Plan process (see Section 6 – Capability Assessment for a description of the program; see map at the end of this annex for location of these problem areas):

**Map Area ID:** CRO-1

**Municipality:** CROTON

**General Location:** Albany Post Road

**Nearest Watercourse or Water Body:** Brinton (or Britton) Brook, Hudson River

**Associated Study/Report:** None

**Evaluation Score (Low, Medium, High):** Low

**General Description of Flooding:** A poorly functioning, undersized culvert beneath the road restricts the flow of Brinton or Britton brook when it is swollen from significant rainfall. The resultant stormwater runoff floods the road, causing it to be temporarily closed. The flood waters also carry and then deposit debris onto the road. Flooding lasts four to six hours to depths of about one foot. The respondent states that the solution is to replace the culvert with a larger culvert. The area is not within a designated flood zone.

**Map Area ID:** CRO-2

**Municipality:** CROTON

**General Location:** Albany Post Road, approximately 500 feet south of Prickly Pear Hill Road

**Nearest Watercourse or Water Body:** Hudson River

**Associated Study/Report:** None

**Evaluation Score (Low, Medium, High):** Low

**General Description of Flooding:** A poorly functioning, undersized culvert beneath the road restricts the flow of Brinton or Britton brook when it is swollen from significant rainfall. The resultant stormwater runoff floods the road, causing it to be temporarily closed. The flood waters also carry and then deposit debris onto the road. Flooding lasts four to six hours to depths of about one foot. The respondent states that the solution is to replace the culvert with a larger culvert. The area is not within a designated flood zone.

**Map Area ID:** CRO-3

**Municipality:** CROTON

**General Location:** Brook Street from Old Post Road north to watercourse channel below 60 Brook Street

**Nearest Watercourse or Water Body:** Direct Tributary to Hudson River, Hudson River

**Associated Study/Report:** None

**Evaluation Score (Low, Medium, High):** Medium

**General Description of Flooding:** A section of a small tributary to the Hudson River was enclosed in a pipe in the 1920s. According to the respondent, the pipe is too small to accommodate the watercourse during significant storms. The watercourse originates at Hudson National Golf Course and flows directly into the Hudson River. Flooding lasts four to six hours to depths of about one foot, forcing closure of road and impacting residential yards, driveways and garages and flooding the basement of a small equipment repair shop. The flooding impacts approximately three residential units and three commercial properties. The area is not within a designated flood zone.

**Map Area ID:** CRO-4

**Municipality:** CROTON

**General Location:** Old Post Road from High Street to Prospect Street

**Nearest Watercourse or Water Body:** Hudson River

**Associated Study/Report:** None

**Evaluation Score (Low, Medium, High):** Low

**General Description of Flooding:** According to the respondent, stormwater “drainage infrastructure” (no further details of what type of infrastructure is suggested) along the stream channel is undersized or non-existent in certain locations. Flooding has damaged two residential properties and/or buildings in the past, the respondent said. Flooding has occurred about nine to ten times over the past decade. Flooding lasts four to six hours to depths of about one foot. The area is not within a designated flood zone.

**Map Area ID:** CRO-5

**Municipality:** CROTON

**General Location:** Hunter Place, Palmer Avenue and Farrington Road

**Nearest Watercourse or Water Body:** Hudson River

**Associated Study/Report:** None

**Evaluation Score (Low, Medium, High):** Low

**General Description of Flooding:** The respondent said, “These old streets have no storm drainage infrastructure. During large storm events, various properties along the street are impacted by flood waters.” The source of the flooding is excessive stormwater runoff during significant storms. Flooding lasts two to four hours to depths of about six inches. It impacts two to four residential properties. The area is not within a designated flood zone.

**Map Area ID:** CRO-6

**Municipality:** CROTON

**General Location:** Brook Street to Riverside Avenue

**Nearest Watercourse or Water Body:** Hudson River

**Associated Study/Report:** None

**Evaluation Score (Low, Medium, High):** Low

**General Description of Flooding:** According to the respondent, during significant storms water in a watercourse channel overwhelms existing drainage infrastructure resulting in flooding of properties and roads. The respondent said buildings have been constructed over the watercourse channel. Also, at the lower end of Brook Street, tidal flooding from the Hudson River inundates streets and floods some buildings. About three residential properties have been damaged by the flooding, which reaches depths of 18 inches to 24 inches and lasts four to six hours. Most of the area is not within a designated flood zone; however, the lower end of Brook Street is within a 500-year flood zone.

**Map Area ID:** CRO-7

**Municipality:** CROTON

**General Location:** West End of Van Wyck Street and Burton Place

**Nearest Watercourse or Water Body:** Hudson River

**Associated Study/Report:** None

**Evaluation Score (Low, Medium, High):** Low

**General Description of Flooding:** Limited storm drainage infrastructure in this neighborhood causes erosive stormwater runoff during significant storms. Two residential properties have been damaged by the runoff, according to the respondent. Flooding lasts two to four hours and reaches depths of about six inches. The area is not within a designated flood zone.

**Map Area ID:** CRO-8

**Municipality:** CROTON

**General Location:** Elliott Way and Hudson Line of Metro-North Commuter Railroad

**Nearest Watercourse or Water Body:** Hudson River

**Associated Study/Report:** None

**Evaluation Score (Low, Medium, High):** Medium

**General Description of Flooding:** The Croton waterfront along the Hudson River is within 100 and 500-year flood zones. It floods during significant coastal storms. It was especially impacted during Hurricane Sandy in October 2012. About four commercial properties are impacted as well as a sewage pump station, local park and tracks of Metro-North Commuter Railroad. Flooding reaches depths of three to four feet lasting two to four hours.

**Map Area ID:** CRO-9

**Municipality:** CROTON

**General Location:** Grand Street at Intersection of Old Post Road South

**Nearest Watercourse or Water Body:** Hudson River

**Associated Study/Report:** None



**Evaluation Score (Low, Medium, High):** Low

**General Description of Flooding:** The respondent said street flooding and some basement flooding occurs during significant storms (producing four to five inches or more of rainfall over a 24-hour period or two inches of rainfall within an hour). The flooding is largely due to a lack of stormwater drainage infrastructure in the area. The number of impacted residential and commercial properties is unknown, though about 20 residential units and six commercial properties are in the area, which is not within a designated flood zone.

**Map Area ID:** CRO-10

**Municipality:** CROTON

**General Location:** Half Moon Bay Condominiums

**Nearest Watercourse or Water Body:** Hudson River

**Associated Study/Report:** None

**Evaluation Score (Low, Medium, High):** Medium

**General Description of Flooding:** According to the respondent, the row of condominium buildings closest to the Hudson River experienced flooding once over the past decade from Hurricane Sandy in October 2012. According to the respondent, the basements and, in some cases, first floors of buildings experienced flooding, resulting in substantial personal property damages, but structural damage to the buildings was relatively modest. Flooding lasts about two hours and reaches depths of about 12 inches to 24 inches. A band of the 100-year flood zone runs along the Hudson River in this area between the river and buildings.

**Map Area ID:** CRO-11

**Municipality:** CROTON

**General Location:** Veterans Plaza, Croton Station of Hudson Line of Metro-North Commuter Railroad

**Nearest Watercourse or Water Body:** Hudson River

**Associated Study/Report:** None

**Evaluation Score (Low, Medium, High):** Medium

**General Description of Flooding:** The entire area is within the 100-year flood zone next to the Croton River at its confluence with the Hudson River. The large parking lot for the train station, municipal public works garage and road (Veterans Plaza) experienced flooding to depths of up to three feet lasting up to three hours during Hurricane Sandy in October 2012. Other storms have caused lesser flooding. The parking lot elevation was raised in 2009, but flooding from stormwater runoff persists, according to the respondent.

**Map Area ID:** CRO-12

**Municipality:** CROTON

**General Location:** Young Avenue at Intersection with Benedict Boulevard

**Nearest Watercourse or Water Body:** Hudson River

**Associated Study/Report:** None

**Evaluation Score (Low, Medium, High):** Low

**General Description of Flooding:** The respondent said the flat character of this neighborhood combined with inadequate stormwater drainage infrastructure has, during significant storms and from stormwater runoff, caused flooding of roads and the yards, driveways and basements of two residential units. Flood waters reach depths of about six inches to twelve inches lasting four to six hours. The area is not within a designated flood zone.

**Map Area ID:** CRO-13

**Municipality:** CROTON

**General Location:** Sunset Drive and Lexington Avenue

**Nearest Watercourse or Water Body:** Hudson River

**Associated Study/Report:** None

**Evaluation Score (Low, Medium, High):** Low

**General Description of Flooding:** The respondent said the flat character of this neighborhood combined with inadequate stormwater drainage infrastructure has, during significant storms and from stormwater runoff, caused flooding of roads and yards and driveways of an unknown number of residential properties. Flood waters reach depths of about six inches lasting two to four hours. The area is not within a designated flood zone.

**Map Area ID:** CRO-14

**Municipality:** CROTON

**General Location:** Dead End Roads West of Radnor Avenue from Old Post Road South to Albany Post Road

**Nearest Watercourse or Water Body:** Hudson River

**Associated Study/Report:** None

**Evaluation Score (Low, Medium, High):** Low

**General Description of Flooding:** According to the respondent, a stream that had run in a southwesterly direction from the vicinity of Old Post Road South to the existing Duck Pond immediately east of Albany Post Road and then to the Hudson River was enclosed in a pipe during construction of the development of the dead end roads west of Radnor Avenue. The respondent said, however, that the pipe is too small to accommodate excessive stormwater runoff during significant storms causing surcharges into the neighborhoods that have been built over the pipe. Flood waters reach a depth of about one foot that lasts for about an hour. An unknown number of residential units are impacted by the flooding. The area is not within a designated flood zone.

**Map Area ID:** CRO-15

**Municipality:** CROTON

**General Location:** Between Maple Street and Cleveland Drive

**Nearest Watercourse or Water Body:** Hudson River

**Associated Study/Report:** None

**Evaluation Score (Low, Medium, High):** Low

**General Description of Flooding:** The lower end of the Croton library parking lot causes excessive stormwater runoff during significant storms, prompting erosive runoff to flow down gradient into a multi-family housing complex. Erosion is occurring next to a retaining wall, sidewalk and parking lot at the complex. Flood waters reach depths of three to four inches lasting about an hour. No reported flooding occurs to the residential units within the complex. The area is not within a designated flood zone.

**Map Area ID:** CRO-16

**Municipality:** CROTON

**General Location:** Harrison Street and Grand Street

**Nearest Watercourse or Water Body:** Hudson River

**Associated Study/Report:** None

**Evaluation Score (Low, Medium, High):** Low

**General Description of Flooding:** In the low-lying area between Harrison Avenue and Grand Street, inadequate drainage lines surcharge during significant storms. This results in backyard flooding of the residential properties lining the two roads. Flooding reaches depths of up to two feet during the most significant storms and lasts up to two hours. The area is not within a designated flood zone.

**Map Area ID:** CRO-1

**Municipality:** CROTON

**General Location:** Quaker Bridge Road between Grand Street and Niles Road

**Nearest Watercourse or Water Body:** Croton River

**Associated Study/Report:** None



**Evaluation Score (Low, Medium, High):** Low

**General Description of Flooding:** The respondent said a small watercourse or drainage way running parallel to Quaker Bridge Road between Grand Street and Niles Road has experienced bank erosion and the high-velocity of water in its channel during extraordinary storms, usually those producing at least three to four inches of rainfall, has damaged the road. No other property damage was reported. The area is not within a designated flood zone.

**Map Area ID:** CRO-2

**Municipality:** CROTON

**General Location:** Batten Road at Eklof Court

**Nearest Watercourse or Water Body:** Croton River

**Associated Study/Report:** None

**Evaluation Score (Low, Medium, High):** Low

**General Description of Flooding:** The respondent said a small watercourse is carried in a culvert under Batten Road but it is too small to handle a 100-year storm. Consequently, a portion of the road, driveways, yards and one residential unit basement are flooded. The respondent said at least four inches of rainfall are needed to cause this flooding. No other property damage was reported. The area is not within a designated flood zone.

**Map Area ID:** CRO-3

**Municipality:** CROTON

**General Location:** Park Trail

**Nearest Watercourse or Water Body:** Croton River

**Associated Study/Report:** None

**Evaluation Score (Low, Medium, High):** Low

**General Description of Flooding:** The respondent said an existing stormwater management basin and culverts are too small to handle a 100-year storm. Stormwater from such a storm overtops the basin and road and causes down-gradient flooding over privately owned yards and driveways and partially erodes the berm creating the pond. Flooding occurs with two inches or more of rainfall. Flooding reaches depths of approximately six inches lasting four to six hours. No other property damage was reported. The area is not within a designated flood zone.

**Map Area ID:** CRO-4

**Municipality:** CROTON

**General Location:** Dailey Drive at Route 129

**Nearest Watercourse or Water Body:** Croton River

**Associated Study/Report:** None

**Evaluation Score (Low, Medium, High):** Low

**General Description of Flooding:** The respondent said a “stream on private property at 2 Dailey Drive flows into a private drainage pipe. The pipe surcharges and overflows onto private property at 2 Dailey Drive and flows onto Dailey Drive and Route 129.” The respondent said flooding occurs after at least two inches of rainfall and flooding reaches depths of approximately one foot lasting four to five hours. One residential unit was reported to have been damaged by flooding. The area is partially within a 500-year flood zone.

**Map Area ID:** CRO-5

**Municipality:** CROTON

**General Location:** Pump House Road off Grand Street (Route 129)

**Nearest Watercourse or Water Body:** Croton River

**Associated Study/Report:** None

**Evaluation Score (Low, Medium, High):** Low

**General Description of Flooding:** The respondent said “the area...floods frequently. The area includes the village’s well fields and passive recreational park. [Hurricane] Irene caused severe damage to the well fields property and offices. The well fields' area was inundated with rushing water as a result of the Croton River overflowing its banks. The access road was damaged.” The depth of flooding is approximately three to four feet lasting up to two days. The area is within a designated 100-year flood zone adjacent to the Croton River.

**Map Area ID:** CRO-6

**Municipality:** CROTON

**General Location:** Silver Lake Park off Truesdale Drive

**Nearest Watercourse or Water Body:** Croton River

**Associated Study/Report:** None

**Evaluation Score (Low, Medium, High):** Low

**General Description of Flooding:** The respondent said “water from the Croton River rises and rushes during intense rainfall causing damage to the Silver Lake Park beach.” The beach erodes and sand is carried downstream. Beach erosion has occurred five or six times over the past decade and flooding reaches depths of up to approximately four feet lasting three or four days. No other property damage was reported. The area is within a designated 100-year flood zone adjacent to the Croton River.

### 9.26.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of Mitigation Planning into Existing and Future Planning Mechanisms

### Planning and Regulatory Capability

The table below summarizes the regulatory tools that are available to the Village of Croton-On-Hudson.

**Table 9.26-5. Planning and Regulatory Tools**

Tool / Program (code, ordinance, plan)	Do you have this? (Y/N)	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, date of adoption, name of plan, explanation of authority, etc.)
Building Code	Y	State and Local	Engineering Department	Chapter 86
Zoning Ordinance	Y	Local	Engineering/Building Department	Chapter 230
Subdivision Ordinance	Y	Local	Planning Board	Chapter 230 Article 12
NFIP Flood Damage Protection Ordinance	Y	Federal, State, Local	Engineering Department	Chapter 129
NFIP - Freeboard	Y	Federal, State, Local	Engineering Department	Chapter 129
NFIP - Cumulative Substantial Damages	Y	Local	Engineering Department	Chapter 129
Special Purpose Ordinances (e.g.	Y	Local	Engineering and Building Department	Chapter 227, 120

Table 9.26-5. Planning and Regulatory Tools

Tool / Program (code, ordinance, plan)	Do you have this? (Y/N)	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, date of adoption, name of plan, explanation of authority, etc.)
wetlands, critical or sensitive areas)				
Growth Management	Y	Local	Planning Board	Chapter 40
Floodplain Management / Basin Plan	Y	Local	Engineering Department	Chapter 120
Stormwater Management Plan/Ordinance	Y	Local	Engineering Department	Chapter 196
Comprehensive Plan / Master Plan	Y	Local	Village Board	Adopted 2003
Capital Improvements Plan	Y	Local	Village Board	Approved every year as part of Village budget
Site Plan Review Requirements	Y	Local	Planning Board	Zoning, Chapter 230
Habitat Conservation Plan	N			
Economic Development Plan	N			
Emergency Response Plan	Y	Local	Village Manager Emergency Manager	Reviewed annually by Manager and Emergency Management Coordinator
Post Disaster Recovery Plan	N			
Post Disaster Recovery Ordinance	N			
Real Estate Disclosure req.	Y	State	State	NYS mandate Article 14
Other (e.g. steep slope ordinance, local waterfront revitalization plan)	Y	Local	Planning Board and Village Board	Steep Slope Chapter 195 and LWRP Chapter 225
Coastal Erosion Control Districts	N			
Shoreline Management Plan	N			

(1) NYS Subdivision laws provide a general framework, but allow room for local ordinances and interpretation.

### Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to the Village of Croton-On-Hudson.

Table 9.26-6. Administrative and Technical Capabilities

Staff/ Personnel Resources	Available (Y or N)	Department/ Agency/Position
Planner(s) or Engineer(s) with knowledge of land development and land management practices	Y	Village Engineer
Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Village Engineer

Staff/ Personnel Resources	Available (Y or N)	Department/ Agency/Position
Planners or engineers with an understanding of natural hazards	Y	Engineering and Building Department
NFIP Floodplain Administrator	Y	Village Engineer, Daniel O'Connor
Surveyor(s)	N	
Personnel skilled or trained in "GIS" applications	Y	Village Engineer
Scientist familiar with natural hazards in the County.	N	
Emergency Manager	Y	Director of Emergency Management, Abraham Zambrano
Grant Writer(s)	Y	Assistant Village Manager
Staff with expertise or training in benefit/cost analysis	Y	Village Manager
Professionals trained in conducting damage assessments	Y	Village Engineer

### Fiscal Capability

The table below summarizes financial resources available to the Village of Croton-On-Hudson.

**Table 9.26-7. Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use (Yes/No/Don't Know)
Community Development Block Grants (CDBG)	Y
Capital Improvements Project Funding	Y
Authority to Levy Taxes for specific purposes	Y
User fees for water, sewer, gas or electric service	Y
Impact Fees for homebuyers or developers of new development/homes	Y
Incur debt through general obligation bonds	Y
Incur debt through special tax bonds	N
Incur debt through private activity bonds	N
Withhold public expenditures in hazard-prone areas	N
Mitigation grant programs	Y
Other	

### Community Classifications

The table below summarizes classifications for community program available to the Village of Croton-On-Hudson.

**Table 9.26-8. Community Classifications**

Program	Classification	Date Classified
Community Rating System (CRS)	NP	
Building Code Effectiveness Grading Schedule (BCEGS)	TBD	
Public Protection	TBD	
Storm Ready	NP	
Firewise	NP	

N/A = Not applicable. NP = Not participating. - = Unavailable. TBD = To be determined.

The classifications listed above relate to the community's ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community's capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class 1 being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized Fire Station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule
- The ISO Mitigation online ISO's Public Protection website at <http://www.isomitigation.com/ppc/0000/ppc0001.html>
- The National Weather Service Storm Ready website at <http://www.weather.gov/stormready/howto.htm>
- The National Firewise Communities website at <http://firewise.org/>

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### **National Flood Insurance Program**

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The following section provides details on the National Flood Insurance Program (NFIP) as implemented within the Village of Croton-On-Hudson:

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#### **NFIP Floodplain Administrator:**

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Daniel O'Connor, Township Engineer, Department of Public Works is the Floodplain Administrator

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#### **Flood Vulnerability Summary**

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The Village does not maintain lists/inventories of properties that have been damaged by floods. Substantial damage estimates were not made by the Floodplain Administrator during Hurricane Sandy or other events. Currently, there are no residents interested in mitigation (elevation or acquisition) in the Village.

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#### **Resources**

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The Floodplain Administrator is the sole person assuming responsibilities of floodplain administration and they feel that they are adequately supported and trained to fulfill their responsibilities. The Floodplain Administrator would consider attending continuing education and/or certification training on floodplain management.

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#### **Compliance History**

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The Floodplain Administrator did not provide information regarding compliance history.

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#### **Regulatory**

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The Village floodplain management regulations/ordinances do not exceed the FEMA and State minimum requirements. There are local ordinances, plans and programs that support floodplain management and meet the NFIP requirements. The community has not considered joining the CRS program.

## Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

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It is the intention of this village to incorporate hazard mitigation planning and natural hazard risk reduction as an integral component of ongoing municipal operations. The following textual summary and table identify relevant planning mechanisms and programs that have been/will be incorporated into municipal procedures, which may include former mitigation initiatives that have become continuous/on-going programs and may be considered mitigation “capabilities”:

### Planning

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**Local Waterfront Revitalization Plan (LWRP):** The Village has developed and adopted a LWRP to manage waterfront development. This plan includes consideration of natural hazard risk, particularly with respect to flooding.

### Regulatory and Enforcement

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**Higher Regulatory Standards:** The Village has adopted a Steep Slope ordinance to better manage development in areas of higher landslide/land failure risk.

**Code Enforcement:** As part of an ongoing mitigation effort, the Village continues to collaborate (Code Enforcement, Police and Fire) to inventory buildings that do not meet current NYS building code requirements.

### Fiscal

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**Capital Improvements Plans:** The Village includes a capital improvements plan as part of the annual budget process, which may include projects that support hazard mitigation.

### Education and Outreach

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The Village continues to use available public outreach and education resources to inform their residents about natural hazard risk. Specifically, as part of an ongoing initiative, the Village shall be identifying local dam failure inundation areas.



### 9.26.6 Mitigation Strategy and Prioritization

This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and prioritization.

#### Past Mitigation Initiative Status

The following table indicates progress on the community's mitigation strategy identified in the expired 2007 Plan. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and may also be found under 'Capability Assessment' presented previously in this annex.

**Table 9.26-9. Past Mitigation Initiative Status**

Description	Status	Review Comments
Monitor system for storage and movement of hazardous materials (Medium)	Discontinued	The Village no longer wishes to pursue this initiative due to financial constraints and authority issues.
Identify sensitive facilities within the hazardous materials corridors and near known hazardous material sites (High)	Discontinued	The Village no longer wishes to pursue this initiative due to financial constraints and authority issues.
Conduct inspections of sites with hazardous materials (Low)	Discontinued	The Village no longer wishes to pursue this initiative due to financial constraints and authority issues.
Increase traffic enforcement in higher risk regions (Low)	Complete	
Consider retrofitting of existing critical facilities to withstand impacts associate with hazardous materials into adjacent waterways (Medium)	Discontinued	This initiative will be discontinued due to lack of funding, resources and personnel.
Prevent the conveyance of spilled hazardous materials into adjacent waterways (Medium)	Discontinued	This initiative will be discontinued due to lack of funding, resources and personnel.
Confirm ability of Croton Pump Station to provide continuous operation during event (High)	Complete	This initiative was confirmed with Water Department
Link from Police and Fire Department's web pages to county, state and federal emergency response sites for hazardous materials (High)	Complete	This initiative was complete and is part of the County Emergency Response entity
Install additional phone jacks in the Manager's office to enable use of the office as the EOC (High)	Complete	
Provide emergency service teams and others unable to relocate during hazardous materials events with necessary protective equipment (High)	Discontinued	This initiative will be discontinued due to lack of funding, resources and personnel.
Educate residents and businesses regarding hazardous materials (High)	Complete	Newsletter and email blasts are provided to residents and businesses throughout the year.
Ensure that hazardous material sites have in place proper spill mitigation and containment measures (High)	Complete	
Training emergency service providers (Moderate)	Complete	This initiative is complete. All emergency service providers are annually trained as required
Renovate village Police Headquarters (Low)	Discontinued	While the Village intends to renovate Police Headquarters, this action is being discontinued from the updated mitigation strategy as it lacks natural hazard mitigation benefits.
Identify types of hazardous materials traveling on major transportation routes (Low)	Discontinued	This initiative will be discontinued due to lack of funding, resources and personnel.
Remove the Department of Public Works Garage from flood and dam failure zone (High)	No progress	No progress has been made with this initiative due to lack of funding. The Village wishes to continue to pursue this initiative

Table 9.26-9. Past Mitigation Initiative Status

Description	Status	Review Comments
Encourage residents to react to severe weather in a safe and responsible way (High)	Complete	This initiative is complete and information can be found on website, email blasts and newsletters throughout the year.
Continue with Storm Water Drainage projects in high problem areas (High)	In progress, 25% complete	This initiative is being removed from the updated mitigation strategy in lieu of specific stormwater drainage projects.
Evaluate ways to minimize or decrease the number of structures susceptible to flooding either through floodplain development regulations, zoning, open space preservation or coastal zone management regulations (High)	Complete	Engineering studies and evaluation of properties are completed
Provide information to residents and businesses regarding the risk of severe storms and flooding (Medium)	Complete	Information is provided on Village Website
Develop links off of Police and Fire Departments' web pages to county, state and federal emergency response sites regarding flooding, Nor'Easter, Hurricane and other storms (Medium)	Complete	Information is provided on Village Website
Obtain materials and equipment for mitigating impact of hazard event and minimizing the discomfort of the public (Medium)	Discontinued	The Village will rely on federal, state and county equipment and resources.
Consider methods of maintaining electricity in designated locations (Medium)	Complete	Generators have been secured
Use resources provided by County level emergency response team (Low)	Complete	The Village is aware of resources provided by County Emergency Response Teams. A communication link is established.
Identify or provide advanced warning to residents if a storm presents particular risks (Low)	Complete	Reverse 9-11 system
Enhance training of Fire Department personnel (High)	Complete	Funds are provided annually to Fire Department for training
Enhance fire safety awareness information (High)	Complete	Fire Department website and public outreach is conducted annually
Evaluate roads for emergency vehicle access (Medium)	Complete	Public Works and Fire Department have consulted and completed this initiative
Conduct inventory of buildings not meeting current NYS Building code requirements (Medium)	In progress, 50%	Engineering Department, Building Inspector and Fire Department have collaborated and are in the process of completing this initiative
Consider incentives to encourage the retrofitting of existing buildings within the village Fire Limits to meet current NYS Building Code requirements (Medium)	Discontinued	The Village continues to explore ways to provide incentives. This initiative is considered an administrative function and will be discontinued for this plan.
Consider requiring higher standards for fire preventing in new residences (Medium)	Discontinued	The Village continues to discuss this initiative with Fire Department, Engineer and Village Manager. This initiative will be deleted from the plan update as it is an administrative function.
Enhance building and fire inspections to ensure compliance with applicable building code and fire safety laws (Low)	Discontinued	This initiative will be discontinued due to lack of funding, resources and personnel.
Conduct inventory of sites or facilities that may be prone or vulnerable to explosions (Low)	Discontinued	This initiative will be discontinued due to lack of funding, resources and personnel.
Work with Red Cross to set up evacuation shelter (High)	Complete	Village coordinated with American Red Cross and High School to complete this initiative.
Consider investing in Reverse 911 to facilitate rapid notification of at risk residents (High)	Complete	Reverse 9-11 system in place and active
Work with State and County officials and the New York City Water Supply (High)	Discontinued	The Village continues its relationship with NY City and County officials. This initiative is an administrative function that will continue but not included in this plan.

Table 9.26-9. Past Mitigation Initiative Status

Description	Status	Review Comments
Inventory buildings in dam risk area (Medium)	Complete	This initiative was completed in the Village Dam Plan
Hiring a consulting firm to determine accuracy of dam plan (Medium)	Discontinued	This initiative will be discontinued due to lack of funding and resources
Consider developing an evacuation plan to remove residents from the area (Medium)	Discontinued	The Croton Gorge Dam, located in the Town of Cortlandt, is owned by the NYCDEP, and managed under an Emergency Action Plan (EAP) that includes an evacuation plan.
Consider initial notification of homes at risk from dam with tax bill (Medium)	Discontinued	See above. The applicable NYCEP EAP should include public education and outreach to inform of risk and emergency procedures.
Inform residents of dam risk factor based on location of property (Low)	Ongoing	This effort is being included as part of the Villages enhanced public outreach initiative.
Inform residents of risks to extreme temperatures (High)	Complete	Information on extreme temperatures is provided to residents via Village Website
Include links on the village web site to weather and health watch web sites and to the county and State's pages on health (Medium)	Complete	
Consider structural risk in village, especially in steep slope regions (High)	Complete	Steep Slope ordinance was updated and is online for public review
Strictly enforce steep slopes laws and codes (High)	Complete	Village Manager and Building inspector have collaborated on this initiative.
Include information about landslides and how to minimize risk on the village web page (Medium)	Discontinued	This initiative will be discontinued due to lack of funding, resources and personnel
Conduct discrete inventory of potential terrorist targets within and near the village and appropriate security measures (High)	Complete	Police Department and Village Manager collaborated on this initiative.
Improve security measures at emergency response facilities and other sensitive facilities (Medium)	Complete	Updated security measures were taken
Post information on the internet and make informational pamphlets available regarding hail, ice storm, severe winter weather (High)	Complete	Department of Public Works and Police Department have collaborated on this initiative.
Plan access to public works garage, police station, fire houses and EOC for disaster management (High)	Complete	
Remove trees that threaten utilities and communication lines (Medium)	Discontinued	The Village and Con Edison continue to collaborate on this initiative. It is considered an administrative function and will be discontinued in this plan.
Update code (Low)	Discontinued	The Village code provides for emergency measures to be enacted. This initiative will be discontinued.
Make free pamphlets on drought and extreme temperatures available at the village office (High)	Complete	
Enhance training and equipment of emergency service personnel (High)	Discontinued	This initiative will be discontinued as all emergency service providers are annually trained as required. Enhanced training and equipment will be provided when financially available.
Identify vulnerabilities in water supply system leaks, and continue with regular improvements (High)	Complete	All vulnerabilities have been identified in a water model report
Ensure that critical facilities in the village have appropriate backup generation capabilities (High)	In progress, 80%	This initiative is being removed from the updated mitigation strategy in lieu of specific energy resiliency projects.
Improve coordination with local and regional power service providers (Medium)	Complete	The Village and Con Edison have improved coordination and relationships
Consider amending local legislation to encourage	Discontinued	The Village code provides for emergency

Table 9.26-9. Past Mitigation Initiative Status

Description	Status	Review Comments
greater water conservation practices in non and drought emergency times (Medium)		measures to be enacted. This initiative will be discontinued.
Provide information to residents and businesses regarding water conservation practices (Low)	Complete	The annual Water Quality Report is mailed annually to each resident.

### Completed Mitigation Initiatives not Identified in the Previous Mitigation Strategy

The Village of Croton-on-Hudson has identified the following as mitigation projects/activities that have been completed, are planned, or on-going within the municipality:

- Croton-Harmon Train Station Flood Mitigation Project***  
 The Croton-Harmon Train Station parking lot had been subject to frequent flooding due to adverse effects of tidal, runoff and storm surge high water levels from the Croton Bay and Hudson River. Cars parked at the train station during flood events were severely damaged. The Village worked with Dvirka & Bartilucci to design a project that would raise the level of the sections that were subject to flooding. The key features of the project included scarification of the existing surface, installation of a geo-textile fabric, placement of variable depth of select compacted fill, a 12 inch granular compacted sub-base and 3 inch bituminous concrete pavement. The project raised the surface elevation of approximately 5.3 acres of the parking field approximately 5 feet. This project was completed in 2009.
- Replacement of the Bulkhead at the Croton Yacht Club***  
 The existing steel sheet pile bulkhead located at the Croton Yacht Club was approximately 50 years old and had deteriorated to such an extent that the bulkhead was at risk for total failure, there was continual erosion and the property was at risk. The project consisted of the oversheeting of approximately 433 linear feet of existing steel sheet pile bulkhead with new steel sheet pile bulkhead with ground anchors. The new bulkhead was installed within 18 inches of the existing bulkhead.
- Installed catch basin and culvert pipe at Old Post Road North***

### Proposed Hazard Mitigation Initiatives for the Plan Update

The Village of Croton-on-Hudson identified mitigation initiatives they would like to pursue in the future. Some of these initiatives may be previous actions carried forward for this plan update. These initiatives 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 municipal priorities. Table 9.26-10 identifies the municipality's updated local mitigation strategy.

As discussed in Section 6, 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing actions as 'High', 'Medium', or 'Low.' Table 9.26-11 below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.26-10. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
CRO-1	Brook Street Drainage Culvert: Abandon existing culvert and construct and relocate new culvert within right of way. This proposed action is currently being studied by an engineering consulting firm.	Both	Flood, Severe Storm, Dam Failure	G-1, G-2	Department of Public Works	High – reduced damage to culvert and adjacent private property	High	FEMA grant with local share	Short- 3 years after funding commitment	High – Tier I	SIP	SP
CRO-2	Grand Street/Harrison Street Drainage Improvements: Replace existing storm drain system with larger volume capacity system which can handle the base flow and heavy storm volumes.	Both	Flood (stormwater)	G-1, G-2	Department of Public Works	High – reduced damage to adjacent private property	High	FEMA grant with local share	Short- 3 years after funding commitment	High – Tier I	SIP	SP
CRO-3	Georgia Lane Storm Water Management Basin: Increase diameter of existing culvert, construction of new outlet structure, add trash rack to outlet pipe, and modify existing spillway.	Existing	Flood (stormwater)	G-1, G-2	Department of Public Works	High – Reduced damage to structure and adjacent private properties	High	FEMA grant with local share	Short- 3 years after funding commitment	High – Tier I	SIP	SP
CRO-4	Radnor Avenue Drainage Basin: Replace existing storm drain system with larger volume capacity system which can handle the base flow and heavy storm volumes.	Both	Flood (stormwater)	G-1, G-2	Department of Public Works	High – Reduced damage to adjacent properties	High	FEMA grant with local share	Short- 3 years after funding commitment	Medium – Tier II	SIP	SP
CRO-5 (old)	Public Works Garage Relocation: Remove (relocate) the Department of Public Works Garage from flood and dam failure zone.	Existing	Flood	G-1, G-2	Department of Public Works	High – Reduced vulnerability of critical facility and operations	High	FEMA grant with local share	Short- 3 years after funding commitment	High	SIP	SP
CRO-6	Water Department Office and Control Facility: Relocate water department office and control facility to location which is not prone to flooding.	Existing	Flooding- riverine, flash, dam failure	G-1, G-2	Department of Public Works	High – Reduced property damaged and loss of service	High	FEMA grant with local share	Short- 3 years after funding commitment	High – Tier I	SIP	SP

Table 9.26-10. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
CRO-7	Road Salt Storage Shed Relocation: Relocate Road Salt Storage Shed facility to location which is not prone to flooding.	Existing	Flooding-riverine, flash, dam failure	G-1, G-2	Department of Public Works	High – Reduced property damaged and loss of service	High	FEMA grant with local share	Short- 3 years after funding commitment	High – Tier I	SIP	SP
CRO-8 (old)	Complete inventory of buildings not meeting current NYS Building code requirements	Existing	All Hazards	G-1, G-2	Collaborative with Engineering Department, Building Inspector and Fire Department	Medium – Improved understanding of structural vulnerabilities and resulting code enforcement	Medium	Local Budget	Ongoing – 50% complete	Medium	EAP	PR
CRO-9	Washington Engine Fire House - Generator Installation	Existing	All hazards related to potential power outages	G-1, G-2	Croton Hudson Fire Department	High – Maintain critical facility operation during power outages	Medium	FEMA grant with local share	Short- 3 years after funding commitment	High – Tier I	SIP	SP
CRO-10	Develop and implement an enhanced all-hazards, public outreach / education / mitigation information program on natural hazard risks and what citizens can do in the way of mitigation and preparedness, including flood insurance. This program will include: <ul style="list-style-type: none"> <li>• Providing general natural hazard risk, preparedness and mitigation, and related NFIP information in regular newsletter and mailings.</li> <li>• Including natural hazard risk and risk reduction information through social media channels and email blast systems.</li> <li>• Identifying dam failure inundation hazard risk zones, as identified by dam owners (e.g. NYCDEP).</li> <li>• Posting of flyers and other readily available NFIP informational materials at Village Hall or distributing at regular civic meetings.</li> <li>• Preparation, distribution and analysis of public surveys.</li> <li>• Developing/maintaining a natural hazard risk management webpage on the municipal website where information and mapping can be posted.</li> <li>• Enhance public outreach to residents in NFIP floodplain areas to inform of annual grant opportunities, etc. which may include periodic articles and handouts.</li> </ul>											
	See above	N/A	All	G-1, G-2, G-3	Village Manager	High	Low	Village Budget, HMA Programs	Short	High	EAP	PE
CRO-11	Promote and support non-structural flood hazard mitigation alternatives for at risk properties within the floodplain, including those that have been identified as Repetitive Loss (RL – 1 within Village) and Severe Repetitive Loss (SRL – none currently within Village), such as acquisition/relocation or elevation depending on feasibility. The parameters for this initiative would be: funding, benefits versus cost, and willing participation of property owners. Specifically identified are properties in the following locations: <ul style="list-style-type: none"> <li>• Grand Street (non-residential)</li> </ul>											



Table 9.26-10. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
	See above.	Existing	Flooding, Severe Storm	G-1, G-2, G-3	Village NFIP FPA; support from NYSOEM and FEMA	High - Reduced or eliminated risk to property damage from flooding	High	FEMA or other mitigation grant funding, NFIP flood insurance and ICC; property owner for local match.	Long-term DOF	High	SIP, EAP	SP, PE

Notes:

Not all acronyms and abbreviations defined below are included in the table.

\*Does this mitigation initiative reduce the effects of hazards on new and/or existing buildings and/or infrastructure? Not applicable (N/A) is inserted if this does not apply.

Acronyms and Abbreviations:

CAV	Community Assistance Visit
CRS	Community Rating System
DPW	Department of Public Works
FEMA	Federal Emergency Management Agency
FPA	Floodplain Administrator
HMA	Hazard Mitigation Assistance
N/A	Not applicable
NFIP	National Flood Insurance Program
OEM	Office of Emergency Management

Potential FEMA HMA Funding Sources:

FMA	Flood Mitigation Assistance Grant Program
HMGP	Hazard Mitigation Grant Program
PDM	Pre-Disaster Mitigation Grant Program
RFC	Repetitive Flood Claims Grant Program (discontinued in 2015)
SRL	Severe Repetitive Loss Grant Program (discontinued in 2015)

Timeline:

Short	1 to 5 years
Long Term	5 years or greater
OG	On-going program
DOF	Depending on funding

Costs:

Where actual project costs have been reasonably estimated:

Low	< \$10,000
Medium	\$10,000 to \$100,000
High	> \$100,000

Where actual project costs cannot reasonably be established at this time:

Low	Possible to fund under existing budget. Project is part of, or can be part of an existing on-going program.
Medium	Could budget for under existing work plan, but would require a reapportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
High	Would require an increase in revenue via an alternative source (i.e., bonds, grants, fee increases) to implement. Existing funding levels are not adequate

Benefits:

Where possible, an estimate of project benefits (per FEMA's benefit calculation methodology) has been evaluated against the project costs, and is presented as:

Low=	< \$10,000
Medium	\$10,000 to \$100,000
High	> \$100,000

Where numerical project benefits cannot reasonably be established at this time:

Low	Long-term benefits of the project are difficult to quantify in the short term.
Medium	Project will have a long-term impact on the reduction of risk exposure to life and property, or project will provide an immediate reduction in the risk exposure to property.
High	Project will have an immediate impact on the reduction of risk exposure to life and property.

Costs:

*to cover the costs of the proposed project.*

Benefits:

Mitigation Category:

- *Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.*
- *Structure and Infrastructure Project (SIP)- These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.*
- *Natural Systems Protection (NSP) – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.*
- *Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities*

CRS Category:

- *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 also 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 9.26-11. Summary of Prioritization of Actions

Mitigation Action/Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
CRO-1	Brook Street Drainage Culvert	1	1	1	1	1	1	-1	1	0	1	1	1	1	1	11	High (Tier I)
CRO-2	Grand Street/Harrison Street Drainage Improvements	1	1	1	1	1	1	-1	1	0	1	1	1	1	1	11	High (Tier I)
CRO-3	Georgia Lane Storm Water Management Basin	1	1	1	1	1	1	-1	1	0	1	1	1	1	1	11	High – Tier I
CRO-4	Radnor Avenue Drainage Basin	1	1	1	1	1	1	-1	1	0	1	1	1	1	1	11	Medium – Tier II
CRO-5	Public Works Garage Relocation	1	1	1	1	1	1	-1	1	0	1	1	1	1	1	11	High (Tier I)
CRO-6	Water Department Office and Control Facility	1	1	1	1	1	1	-1	1	0	1	1	1	1	1	10	High
CRO-7	Road Salt Storage Shed Relocation	1	1	1	1	1	1	0	0	0	1	1	1	1	1	11	High
CRO-8	Sub-Code Building Inventory	0	1	1	1	1	0	0	1	0	1	1	0	1	1	9	Medium
CRO-9	Washington Engine Fire House - Generator Installation	1	1	1	1	1	1	-1	0	0	1	1	1	1	1	10	High
CRO-10	Enhanced Public Outreach / Education Program	1	1	1	0	1	1	0	1	1	1	1	0	1	1	11	High
CRO-11	Support mitigation of flood vulnerable private property	1	1	0	0	1	1	0	1	1	1	1	0	1	1	10	High

Note: Refer to Section 6 which contains the guidance on conducting the prioritization of mitigation actions.

### **9.26.7 Future Needs To Better Understand Risk/Vulnerability**

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None at this time.

### **9.26.8 Hazard Area Extent and Location**

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Hazard area extent and location maps have been generated for the Village of Croton-On-Hudson that illustrate the probable areas impacted within the Village. These maps are based on the best available data at the time of the preparation of this plan, and are considered to be adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which the Village of Croton-On-Hudson has significant exposure. These maps are illustrated in the hazard profiles within Section 5.4, Volume I of this Plan.

### **9.26.9 Additional Comments**

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None at this time.

Figure 9.26-1. Village of Croton-On-Hudson Hazard Area Extent and Location Map

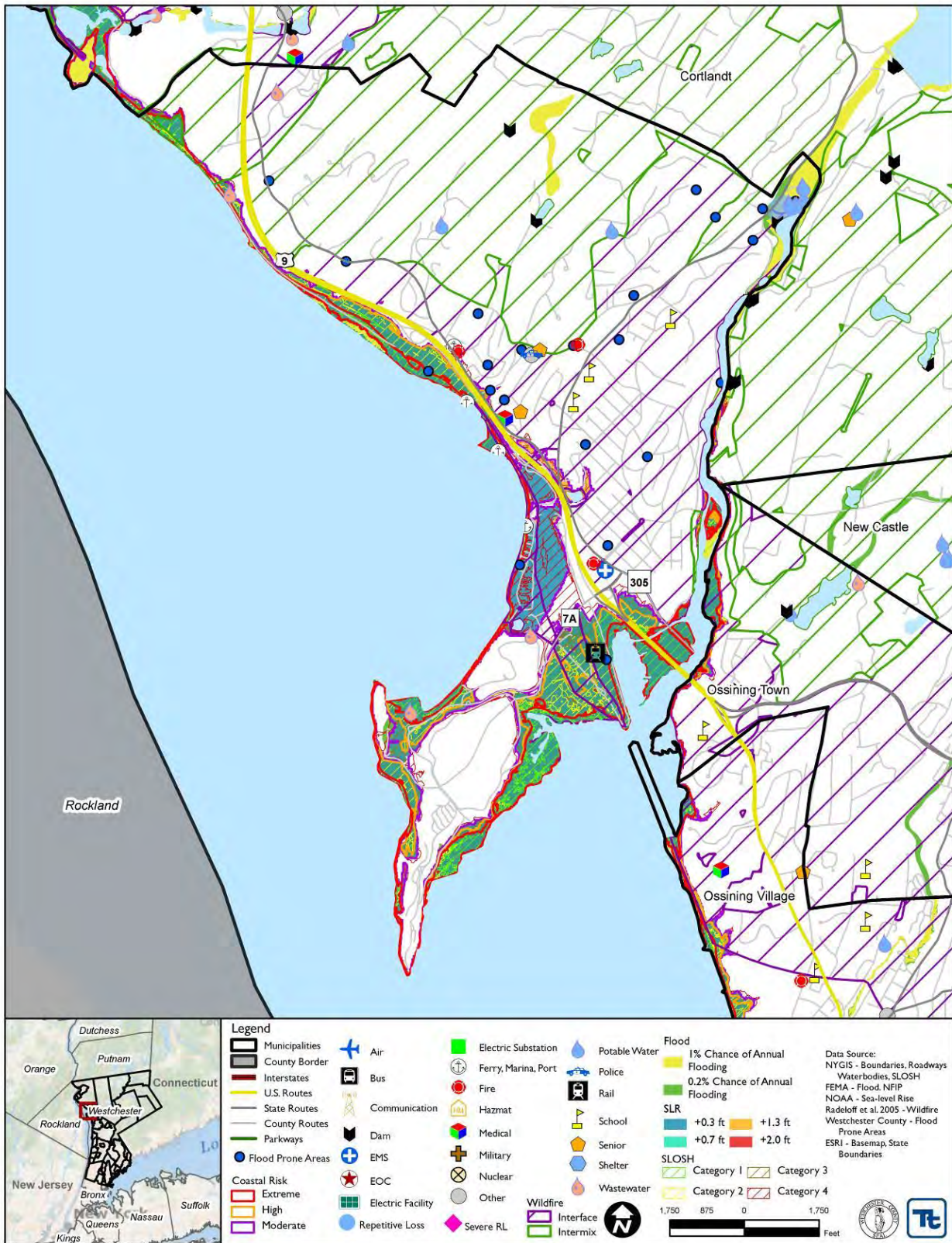




Figure 9.26-2. Village of Croton-On-Hudson Hazard Area Extent and Location Map





**Name of Jurisdiction:** Village of Croton on Hudson  
**Action Number:** CRO-1  
**Action Name:** Brook Street Drainage Culvert

Assessing the Risk	
<b>Hazard(s) addressed:</b>	Flood, Severe Storm, Dam Failure
<b>Specific problem being mitigated:</b>	Stormwater undermines the road causing flooding to residential areas and businesses along the street. Existing arched stone and brick culvert constructed in the 1920's is undersized and in disrepair. Base flow is from natural stream. Culvert cannot handle heavy storm volumes of storm water. Numerous sink holes have developed over the past 15 years in the roadway, and on private properties. The current drainage system crosses North Riverside Avenue, Metro North Railroad tracks, Route 9, and discharges into the Hudson River at the Croton Yacht Club on Elliott Way.
Evaluation of Potential Actions/Projects	
<b>Actions/Projects Considered (name of project and reason for not selecting):</b>	1. Repair and reconstruct portions of culvert- This action will not increase size of culvert to handle additional volumes during storms. 2. Increase the size of culvert- This action would be cost prohibitive given that portions of the culvert travel under private property and existing buildings on those properties. 3. Do nothing – current problem continues
Action/Project Intended for Implementation	
<b>Description of Selected Action/Project</b>	Abandon existing culvert and construct and relocate new culvert within right of way. This proposed action is currently being studied by an engineering consulting firm.
<b>Mitigation Action/Project Type</b>	SIP- Relocate and replace culvert
<b>Goals and/or Objectives Met</b>	Goal 1- Protect Public Health and Safety Goal 2- Preserve Public Property, and Critical Facility- Prevent future damage to adjacent properties along path of culvert.
<b>Applies to existing structures/infrastructure, future, or not applicable</b>	Applies to existing and future structure.
<b>Benefits (losses avoided)</b>	Recent Damages: Damage to culvert and adjacent private properties during tropical storm Irene in 2011, and other moderate to heavy storms.
<b>Estimated Cost</b>	High > More than \$100,000
<b>Priority*</b>	High
Plan for Implementation	
<b>Responsible Organization</b>	Department of Public Works
<b>Local Planning Mechanism</b>	Capital Budget, Local Waterfront Revitalization Program
<b>Potential Funding Sources</b>	FEMA grant with local share
<b>Timeline for Completion</b>	Short- 3 years after funding commitment
Reporting on Progress	
<b>Date of Status Report/ Report of Progress</b>	Date: Progress on Action/Project:

\* Refer to results of Prioritization (page 2)

Action Number:

CRO-1

Action Name:

Brook Street Drainage Culvert

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Protect residents in this area from future flooding events
Property Protection	1	Protect surrounding properties from flood damages
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	
Fiscal	-1	Need to obtain grant funding for this project
Environmental	1	
Social	0	
Administrative	1	
Multi-Hazard	1	
Timeline	1	
Agency Champion	1	
Other Community Objectives	1	
<b>Total</b>	11	
<b>Priority (High/Med/Low)</b>	High	

**Name of Jurisdiction:** Village of Croton on Hudson  
**Action Number:** CRO-2  
**Action Name:** Grand Street/Harrison Street Drainage Improvements

Assessing the Risk	
<b>Hazard(s) addressed:</b>	Flood (stormwater)
<b>Specific problem being mitigated:</b>	Stormwater overflows existing drainage system during heavy storms. Base flow is from natural stream. Existing pipe cannot handle heavy storm volumes of storm water. Numerous flooding events have occurred over the past 20 years, including Tropical Storm Irene in 2011. Irene caused significant damage to private properties adjacent to existing system.
Evaluation of Potential Actions/Projects	
<b>Actions/Projects Considered (name of project and reason for not selecting):</b>	1. Reroute flow of base stream, and additional flow from heavy storms- The topography of the area, and the density will not allow for rerouting.
	2. Do nothing – current problem continues
	3.
Action/Project Intended for Implementation	
<b>Description of Selected Action/Project</b>	Replace existing storm drain system with larger volume capacity system which can handle the base flow and heavy storm volumes.
<b>Mitigation Action/Project Type</b>	SIP- Replace existing storm drain system.
<b>Goals and/or Objectives Met</b>	Goal 1- Protect Public Health and Safety Goal 2- Preserve Property including Public and Private, and Critical Facility- Prevent future damage to adjacent private properties along path of drainage system.
<b>Applies to existing structures/infrastructure, future, or not applicable</b>	Applies to existing and future drainage system.
<b>Benefits (losses avoided)</b>	Recent Damages: Damage to adjacent private properties during tropical storm Irene in 2011, and other moderate to heavy storms.
<b>Estimated Cost</b>	High > More than \$100,000
<b>Priority*</b>	High
Plan for Implementation	
<b>Responsible Organization</b>	Department of Public Works
<b>Local Planning Mechanism</b>	Capital Budget, Local Waterfront Revitalization Program
<b>Potential Funding Sources</b>	FEMA grant with local share
<b>Timeline for Completion</b>	Short- 3 years after funding commitment
Reporting on Progress	
<b>Date of Status Report/ Report of Progress</b>	Date: Progress on Action/Project:

\* Refer to results of Prioritization (page 2)

Action Number:

CRO-2

Action Name:

Grand Street/Harrison Street Drainage Improvements

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Protect residents in this area from future flooding events
Property Protection	1	Protect surrounding properties from flood damages
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	
Fiscal	-1	Need to obtain grant funding for this project
Environmental	1	
Social	0	
Administrative	1	
Multi-Hazard	1	
Timeline	1	
Agency Champion	1	
Other Community Objectives	1	
<b>Total</b>	11	
<b>Priority (High/Med/Low)</b>	High	

**Name of Jurisdiction:** Village of Croton on Hudson  
**Action Number:** CRO-3  
**Action Name:** Georgia Lane Storm Water Management Basin

Assessing the Risk	
<b>Hazard(s) addressed:</b>	Flood (stormwater)
<b>Specific problem being mitigated:</b>	Basin overtops during heavy rain events.
Evaluation of Potential Actions/Projects	
<b>Actions/Projects Considered (name of project and reason for not selecting):</b>	1. Increase volume of basin- Lack of existing area near the basin would not make this an option. 2. Bypass of existing base flows- This will increase flows to areas downstream. 3. Do nothing – current problem continues
Action/Project Intended for Implementation	
<b>Description of Selected Action/Project</b>	Increase diameter of existing culvert, construction of new outlet structure, add trash rack to outlet pipe, and modify existing spillway.
<b>Mitigation Action/Project Type</b>	SIP- Modification of existing structure
<b>Goals and/or Objectives Met</b>	Goal 1- Protect Public Health and Safety Goal 2- Preserve Property both public and private, and Critical Facility- Prevent future damage to adjacent private properties downstream from basin.
<b>Applies to existing structures/infrastructure, future, or not applicable</b>	Applies to existing structure.
<b>Benefits (losses avoided)</b>	Recent Damages: Damage to structure and adjacent private properties during tropical storm Irene in 2011.
<b>Estimated Cost</b>	High > More than \$100,000.00
<b>Priority*</b>	High
Plan for Implementation	
<b>Responsible Organization</b>	Department of Public Works
<b>Local Planning Mechanism</b>	Capital Budget, Local Waterfront Revitalization Program
<b>Potential Funding Sources</b>	FEMA grant with local share
<b>Timeline for Completion</b>	Short- 3 years after funding commitment
Reporting on Progress	
<b>Date of Status Report/ Report of Progress</b>	Date: Progress on Action/Project:

\* Refer to results of Prioritization (page 2)

Action Number:

CRO-3

Action Name:

Georgia Lane Storm Water Management Basin

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Protect residents in this area from future flooding events
Property Protection	1	Protect surrounding properties from flood damages
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	
Fiscal	-1	Need to obtain grant funding for this project
Environmental	1	
Social	0	
Administrative	1	
Multi-Hazard	1	
Timeline	1	
Agency Champion	1	
Other Community Objectives	1	
<b>Total</b>	11	
<b>Priority (High/Med/Low)</b>	High	



**Name of Jurisdiction:** Village of Croton on Hudson  
**Action Number:** CRO-4  
**Action Name:** Radnor Avenue Drainage Basin

Assessing the Risk	
<b>Hazard(s) addressed:</b>	Flood (stormwater)
<b>Specific problem being mitigated:</b>	Streets which intersect Radnor Avenue dead end at adjacent to the High School property. Topography is such that the surface drainage from the streets collects at the end of the streets adjacent to the school. The original stream at the low point was piped when the subdivision was completed and the homes were constructed. The pipe is undersized and cannot handle heavy storms. Tropical Storm Irene in 2011 caused significant damage to private properties in the low lying area where the drain is located.
Evaluation of Potential Actions/Projects	
<b>Actions/Projects Considered (name of project and reason for not selecting):</b>	1. Reroute flow of base stream, and additional flow from heavy storms- The topography of the area, and the density will not allow for rerouting. 2. Do nothing – current problem continues 3.
Action/Project Intended for Implementation	
<b>Description of Selected Action/Project</b>	Replace existing storm drain system with larger volume capacity system which can handle the base flow and heavy storm volumes.
<b>Mitigation Action/Project Type</b>	SIP- Replace existing storm drain system.
<b>Goals and/or Objectives Met</b>	Goal 1- Protect Public Health and Safety Goal 2- Preserve Property including public and private, and Critical Facility- Prevent future damage to adjacent private properties along path of drainage system.
<b>Applies to existing structures/infrastructure, future, or not applicable</b>	Applies to existing and future drainage system.
<b>Benefits (losses avoided)</b>	Recent Damages: Damage to adjacent properties during tropical storm Irene in 2011, and other moderate to heavy storms.
<b>Estimated Cost</b>	High > More than \$100,000.00
<b>Priority*</b>	Medium
Plan for Implementation	
<b>Responsible Organization</b>	Department of Public Works
<b>Local Planning Mechanism</b>	Capital Budget, Local Waterfront Revitalization Program
<b>Potential Funding Sources</b>	FEMA grant with local share
<b>Timeline for Completion</b>	Long- 5 years after funding commitment
Reporting on Progress	
<b>Date of Status Report/ Report of Progress</b>	Date: Progress on Action/Project:

\* Refer to results of Prioritization (page 2)

**Action Number:** CRO-4  
**Action Name:** Radnor Avenue Drainage Basin

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Protect residents in this area from future flooding events
Property Protection	1	Protect surrounding properties from flood damages
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	
Fiscal	-1	Need to obtain grant funding for this project
Environmental	1	
Social	0	
Administrative	1	
Multi-Hazard	1	
Timeline	1	
Agency Champion	1	
Other Community Objectives	1	
<b>Total</b>	11	
<b>Priority (High/Med/Low)</b>	Medium	

**Name of Jurisdiction:** Village of Croton on Hudson  
**Action Number:** CRO-5 (old)  
**Action Name:** Public Works Garage Relocation

Assessing the Risk	
<b>Hazard(s) addressed:</b>	Flooding-riverine, coastal, flash, dam failure
<b>Specific problem being mitigated:</b>	The DPW facility is prone to flooding given its proximity to the Croton and Hudson Rivers. In 2012, Superstorm Sandy flooded the entire interior and exterior of the facility with 2 feet of water, which took the facility out of service for an extended period of time. The facility was not fully operational for four months after the storm.
Evaluation of Potential Actions/Projects	
<b>Actions/Projects Considered (name of project and reason for not selecting):</b>	<p>Raise Building Elevation- This alternative is not an option due to the financial costs involved to raise the building, equipment, and the underground fuel storage tanks at the facility. Also, the existing topography adjacent to the facility would necessitate the raising of the access road, and the loss of several hundred parking spaces at the commuter parking lot.</p> <p>1. Flood Proofing of Building- This alternative is not an option due to the costs involved to install flood doors on the building. The building has 8 large garage doors in the repair shop of the building, in addition to 2 regular door entrances.</p> <p>2. Do nothing – current problem continues</p> <p>3.</p>
Action/Project Intended for Implementation	
<b>Description of Selected Action/Project</b>	Relocate DPW facility to location which is not prone to flooding.
<b>Mitigation Action/Project Type</b>	SIP (Remove from hazard area) Construct new facility at higher elevation.
<b>Goals and/or Objectives Met</b>	<p>Goal 1- Protect Public Health and Safety- The DPW facility is a critical facility, and plays an important role in delivering emergency services to the public during times of emergencies.</p> <p>Goal 2- Preserve Public Property, and Critical Facility.</p>
<b>Applies to existing structures/infrastructure, future, or not applicable</b>	Applies to both existing and future structures.
<b>Benefits (losses avoided)</b>	Recent Damages: Property damage, loss of function.
<b>Estimated Cost</b>	High > More than \$100,000.00
<b>Priority*</b>	High
Plan for Implementation	
<b>Responsible Organization</b>	Department of Public Works
<b>Local Planning Mechanism</b>	Capital Budget, Local Waterfront Revitalization Program
<b>Potential Funding Sources</b>	FEMA grant with local share
<b>Timeline for Completion</b>	Short- 3 years after funding commitment
Reporting on Progress	

<b>Date of Status Report/ Report of Progress</b>	Date: Progress on Action/Project:
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**\* Refer to results of Prioritization (page 2)**

Action Number:

CRO-5 (old)

Action Name:

Public Works Garage Relocation

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	Protect building from flooding and damages
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	
Fiscal	-1	Need grant funding
Environmental	1	
Social	0	
Administrative	1	
Multi-Hazard	1	
Timeline	1	
Agency Champion	1	
Other Community Objectives	1	
<b>Total</b>	11	
<b>Priority (High/Med/Low)</b>	High	

**Name of Jurisdiction:** Village of Croton on Hudson  
**Action Number:** CRO-6  
**Action Name:** Water Department Office and Control Facility

Assessing the Risk	
<b>Hazard(s) addressed:</b>	Flood
<b>Specific problem being mitigated:</b>	The Water Dept. Control Facility is prone to flooding given its proximity to the Croton River. In 2011 Hurricane Irene caused extensive flooding at the Water Dept. facilities. The main office and control facility suffered significant flooding. Loss of the facility during flooding adversely affects the operation of the water facility, and the ability to provide the residents with potable water, and provide sufficient water for fire-fighting.
Evaluation of Potential Actions/Projects	
<b>Actions/Projects Considered (name of project and reason for not selecting):</b>	1. Raise Building Elevation- This alternative is not an option due to the financial costs involved to raise the building. Also building would be inaccessible during flood events
	2. Flood Proofing of Building- This alternative is not an option due to the costs involved to install flood doors on the building. Also building would be inaccessible during flood events
	3. Do nothing – current problem continues
Action/Project Intended for Implementation	
<b>Description of Selected Action/Project</b>	Relocate water dept. office and control facility to location which is not prone to flooding.
<b>Mitigation Action/Project Type</b>	SIP (Remove from hazard area) Construct new facility at higher elevation.
<b>Goals and/or Objectives Met</b>	Goal 1- Protect Public Health and Safety- The Water Dept. facility is a critical facility, and plays an important role in delivering potable water to residents, and provide water for fire-fighting.  Goal 2- Preserve Public Property, and Critical Facility.
<b>Applies to existing structures/infrastructure, future, or not applicable</b>	Applies to both existing and future structures.
<b>Benefits (losses avoided)</b>	Recent Damages: Property damage, loss of function.
<b>Estimated Cost</b>	High > More than \$100,000.00
<b>Priority*</b>	High
Plan for Implementation	
<b>Responsible Organization</b>	Public Works Department
<b>Local Planning Mechanism</b>	Capital Budget, Local Waterfront Revitalization Program
<b>Potential Funding Sources</b>	FEMA grant with local share
<b>Timeline for Completion</b>	Short- 3 years after funding commitment
Reporting on Progress	
<b>Date of Status Report/ Report of Progress</b>	Date: Progress on Action/Project:

\* Refer to results of Prioritization (page 2)

Action Number:

CRO-6

Action Name:

Water Department Office and Control Facility

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	Protect building from flooding and damages
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	
Fiscal	-1	Need grant funding
Environmental	1	
Social	0	
Administrative	1	
Multi-Hazard	1	
Timeline	1	
Agency Champion	1	
Other Community Objectives	1	
<b>Total</b>	11	
<b>Priority (High/Med/Low)</b>	High	



**Name of Jurisdiction:** Village of Croton on Hudson  
**Action Number:** CRO-7  
**Action Name:** Road Salt Storage Shed Relocation

Assessing the Risk	
<b>Hazard(s) addressed:</b>	Flooding-riverine, coastal, flash flood, dam failure
<b>Specific problem being mitigated:</b>	The Road Salt Storage Shed is prone to flooding given its proximity to the Croton River. In 2012, Superstorm Sandy flooded the entire interior and exterior of the facility with 2 feet of water. The flooding resulted in damage to the building, and partial loss of salt inside of the building.
Evaluation of Potential Actions/Projects	
<b>Actions/Projects Considered (name of project and reason for not selecting):</b>	Raise Building Elevation- This alternative is not an option due to the financial costs involved to raise the building. Also, the existing topography adjacent to the facility would necessitate the raising of the access road, and the loss of parking spaces at the commuter parking lot. 1. Flood Proofing of Building- This alternative is not an option due to the costs involved to install flood doors on the building. 2. Do nothing – current problem continues 3.
Action/Project Intended for Implementation	
<b>Description of Selected Action/Project</b>	Relocate Road Salt Storage Shed facility to location which is not prone to flooding.
<b>Mitigation Action/Project Type</b>	SIP (Remove from hazard area) Construct new facility at higher elevation.
<b>Goals and/or Objectives Met</b>	Goal 1- Protect Public Health and Safety- The DPW facility is a critical facility, and plays an important role in delivering emergency services to the public during times of snow and ice emergencies. Prevent salt from entering Croton River during flooding events. Goal 2- Preserve Public Property, and Critical Facility.
<b>Applies to existing structures/infrastructure, future, or not applicable</b>	Applies to both existing and future structures.
<b>Benefits (losses avoided)</b>	Recent Damages: Property damage, loss of function.
<b>Estimated Cost</b>	High > More than \$100,000.00
<b>Priority*</b>	Medium
Plan for Implementation	
<b>Responsible Organization</b>	Department of Public Works
<b>Local Planning Mechanism</b>	Capital Budget, Local Waterfront Revitalization Program
<b>Potential Funding Sources</b>	FEMA grant with local share
<b>Timeline for Completion</b>	Short- 3 years after funding commitment
Reporting on Progress	
<b>Date of Status Report/ Report of Progress</b>	Date: Progress on Action/Project:

\* Refer to results of Prioritization (page 2)

Action Number:

CRO-7

Action Name:

Road Salt Storage Shed

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	Protect the salt storage shed from flooding and associated damages
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	
Fiscal	-1	Need to obtain funding through grants
Environmental	1	
Social	0	
Administrative	1	
Multi-Hazard	1	Flooding, Severe Winter Storm
Timeline	1	Once funding is obtained, project will be completed in three years
Agency Champion	1	
Other Community Objectives	1	
<b>Total</b>	11	
<b>Priority (High/Med/Low)</b>	High	

**Name of Jurisdiction:** Village of Croton on Hudson  
**Action Number:** CRO-9 (LOI #2384)  
**Action Name:** Washington Engine Firehouse Emergency Generator

Assessing the Risk	
<b>Hazard(s) addressed:</b>	All hazards related to potential power outages
<b>Specific problem being mitigated:</b>	Washington Engine Firehouse currently does not have an emergency power generator in the event of a loss of power. The lack of emergency power can slow emergency response without electrical power to open the overhead doors in the fire apparatus bays. Additionally, the firehouse cannot be used as an emergency shelter, warming center or cooling center without emergency power.
Evaluation of Potential Actions/Projects	
<b>Actions/Projects Considered (name of project and reason for not selecting):</b>	<ol style="list-style-type: none"> <li>1. Manually open overhead doors when emergency response is necessary- This will significantly slow down response time for fire apparatus.</li> <li>2. Eliminate Washington Engine Firehouse as an emergency shelter during power outages- This will reduce total capacity of all shelters throughout the Village.</li> <li>3. Do nothing – current problem continues</li> </ol>
Action/Project Intended for Implementation	
<b>Description of Selected Action/Project</b>	Installation of emergency generator, and upgrade of existing electrical service at the firehouse.
<b>Mitigation Action/Project Type</b>	SIP- Upgrade of critical facility.
<b>Goals and/or Objectives Met</b>	Goal 1- Protect Public Health and Safety Goal 2- Preserve Public Property and Critical Facility
<b>Applies to existing structures/infrastructure, future, or not applicable</b>	Existing
<b>Benefits (losses avoided)</b>	Recent Damages: Decrease response time by emergency services. Add additional emergency shelter capacity.
<b>Estimated Cost</b>	Medium- \$10,000 to \$100,000
<b>Priority*</b>	High
Plan for Implementation	
<b>Responsible Organization</b>	Croton Hudson Fire Department
<b>Local Planning Mechanism</b>	Capital Budget
<b>Potential Funding Sources</b>	FEMA grant with local share
<b>Timeline for Completion</b>	Short- 3 years after funding commitment
Reporting on Progress	
<b>Date of Status Report/ Report of Progress</b>	Date: Progress on Action/Project:

\* Refer to results of Prioritization (page 2)

Action Number:

CRO-9 (LOI #2384)

Action Name:

Washington Engine Firehouse Emergency Generator

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Provide continuous emergency services to residents
Property Protection	1	Allow the firehouse to function during periods of power outages
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	
Fiscal	-1	Need to obtain grant funding to purchase generator
Environmental	0	
Social	0	
Administrative	1	
Multi-Hazard	1	All hazards related to potential power outages
Timeline	1	Once funding is obtained, project will be completed within three years
Agency Champion	1	
Other Community Objectives	1	
<b>Total</b>	10	
<b>Priority (High/Med/Low)</b>	High	