



9.16 BOROUGH OF KINNELON

This section presents the jurisdictional annex for the Borough of Kinnelon. The annex includes a general overview of the Borough of Kinnelon; an assessment of the Borough of Kinnelon’s risk, vulnerability, and mitigation capabilities; and a prioritized action plan to implement prior to a disaster to reduce future losses and achieve greater resilience to natural hazards.

9.16.1 Hazard Mitigation Planning Team

The following individuals are the Borough of Kinnelon’s identified HMP update primary and alternate points of contact and the Borough’s flood subject matter expert. The Borough does not participate in the NFIP.

Table 9.16-1. Hazard Mitigation Planning Team

Primary Point of Contact	Alternate Point of Contact
Name / Title: Randall I. Charles, Councilman and Coordinator Address: 130 Kinnelon Road, Kinnelon, New Jersey 07 405 Phone Number: 973-864-0815 Email: rcharles@kinnelonboro.org	Name / Title: Jeffrey Bresett, Deputy Coordinator Address: 130 Kinnelon Road, Kinnelon, New Jersey 07 405 Phone Number: 973-714-1616 Email: jbresett@gmail.com
NFIP Floodplain Administrator / Flood Subject Matter Expert	
Name / Title: Thomas Boorady, Borough Engineer, Darmofalski Engineering Address: 86 Newark Pompton Turnpike Riverdale, NJ 07457-1429 Phone Number: 973-835-8300 x112 Email: tab@darmofalski.com	

9.16.2 Jurisdiction Profile

The Borough of Kinnelon is located in the northeastern section of Morris County, New Jersey. According to the U.S. Census, the Borough has a total area of 19.186 square miles, of which 17.987 square miles is land and 1.199 square miles is water. The Pequannock River separates the Borough to the north from West Milford Township in Passaic County. From this northern point the Borough is then bordered by Butler and Riverdale Boroughs, Pequannock Township, and Lincoln Park Borough. Kinnelon is bordered to the south by Boonton and Montville Townships and Rockaway Township to the west. State Highway 23 runs along the northern border of the Borough.

Kinnelon Borough is made up of three primary sections. They are Kinnelon Proper, Fayson Lakes and Smoke Rise (a gated Community but under the jurisdiction of Kinnelon Borough). The majority of Kinnelon Borough is located within the New Jersey Highlands physiographic province, which is part of the Reading Prong of the New England physiographic province. Land use in Kinnelon Borough is dominated by a mix of forested and residential lands. According to the NJDEP 1995/1997 Land Use/Land Cover data, sixty-two percent of Kinnelon’s land area is forested. Twenty-six percent of Kinnelon is identified from aerial photography as urban, which in Kinnelon is mainly residential lands. The remainder of land in the Borough is split between surface water and wetlands.

According to the U.S. Census, the 2010 population for the Borough of Kinnelon was 10,248. The estimated 2017 population was 10,242, a 0.1% decrease from the 2010 Census. Data from the 2017 U.S. Census American Community Survey indicate that 5.7% of the population is 5 years of age or younger and 15.3% is 65 years of



age or older. Communities must deploy a support system that enables all populations to safely reach shelters or to quickly evacuate a hazard area.

9.16.3 Growth/Development Trends

Understanding how past, current, and projected development patterns have or are likely to increase or decrease risk in hazard areas is a key component to understanding a jurisdiction's overall risk to its hazards of concern. Table 9.16-2 summarizes recent and expected future development trends, including major residential/commercial development and major infrastructure development.

Table 9.16-2. Recent and Expected Future Development

Type of Development	2014	2015	2016	2017	2018
Number of Building Permits for New Construction Issued Since the Previous HMP					
Single Family	8	5	7	6	2
Multi-Family	0	0	0	0	0
Other (commercial, mixed-use, etc.)	6	5	1	4	2
Property or Development Name	Type of Development	# of Units / Structures	Location (address and/or block and lot)	Known Hazard Zone(s)*	Description / Status of Development
Recent Major Development and Infrastructure from 2015 to Present					
None - Highland's Preservation Zone					
Known or Anticipated Major Development and Infrastructure in the Next Five (5) Years					
None Identified					

9.16.4 Capability Assessment

The Borough of Kinnelon performed an inventory and analysis of existing capabilities, plans, programs, and policies that enhance its ability to implement mitigation strategies. Section 5 (Capability Assessment) describes the components included in the capability assessment and their significance for hazard mitigation planning. This section summarizes the following findings of the assessment:

- An assessment of legal and regulatory capabilities.
- Development and permitting capabilities.
- An assessment of fiscal capabilities.
- An assessment of education and outreach capabilities.
- Information on National Flood Insurance Program (NFIP) compliance.
- Classification under various community mitigation programs.
- The community's adaptive capacity for the impacts of climate change.

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, planning/policy documents were reviewed, and each jurisdiction was surveyed to obtain a better understanding of their progress in plan integration. The Borough of Kinnelon identified specific integration activities that will be incorporated into municipal procedures are included in the updated mitigation strategy.



PLANNING, LEGAL AND REGULATORY CAPABILITY

The table below summarizes the legal and regulatory tools that are available to the Borough of Kinnelon and where hazard mitigation has been integrated.

Table 9.16-3. Planning, Legal and Regulatory Capability

	Do you have this? (Yes/No)	Authority that enforces (Federal, State, Regional, County, Local)	State Mandated / Allowed	Has the HMP been integrated in the last 5 years? If yes- how?	
				If yes- how? Describe in comments	If no - can it be a mitigation action? If yes, add Mitigation Action #.
Codes, Ordinances, & Requirements					
Building Code	Yes	Local	Yes	No	-
Comment: State mandated on local level under NJAC 5:23-3.14. International Building Code – New Jersey Edition, 2018, NJAC 5:24-3.14. Administered by the Planning Board. Chapter 105 Construction Codes, Uniform.					
Zoning Code	Yes	Local	Yes	No	-
Comment: Per State of NJ Municipal Land Use Law (MLUL) L. 1975, s. 2, eff Aug 1, 1976, 40-55D-62: 49. Power to zone, requires all jurisdictions to have current zoning and other land development ordinances after the planning board has adopted the land use element and master plan. Chapter 207 Zoning. Administered by the Zoning Board. Zoning ordinance includes a chapter on environmentally sensitive areas. It is the purpose of this article to protect the health, safety and welfare of people and property within the Borough of Kinnelon from improper construction, building and development on steep slope and hillside areas in the Borough of Kinnelon and, more particularly, but without limitation, to reduce the peculiar hazards which exist in hillside areas by reason of erosion, siltation, flooding, soil slippage, surface water runoff, pollution of potable water supplies from nonpoint sources and the destruction of unique and predominant views					
Subdivisions	Yes	Local	Yes	No	-
Comment: Chapter 176 Subdivision of Land and Site Plans. Administered by the Planning Board.					
Stormwater Management	Yes	Local	Yes	No	-
Comment: Title 7 of the NJ Administrative Code (N.J.A.C. 7:8); Chapter 172 Stormwater Control, administered by the DPW.					
Post-Disaster Recovery	No	-	-	-	-
Comment:					
Real Estate Disclosure	Yes	State – Division of Consumer Affairs	Yes	Yes	-
Comment: N.J.A.C. 13:45A-29.1; Before signing a contract of sale, all purchasers must receive a New Jersey Public Offering Statement (POS) approved by the New Jersey Real Estate Commission. The POS provides information such as proximity to hospitals, schools, fire and police, as well as any hazards, risks or nuisances in or around the subdivision.					
Growth Management	No	-	Yes	-	-
Comment: State mandated at local level;					
Shoreline Development	No	-	Yes	-	-
Comment: NJ Coastal Area Facility Review Act (N.J.S.A. 13:19) or CAFRA regulates almost all development along the coast for activities including construction, relocation, and enlargement of buildings or structures, and excavation, grading, shore protection structures, and site preparation. This law is implemented through NJ's Coastal Zone Management Rules N.J.A.C. 7:7E-1 et seq.					
Site Plan Review	Yes	Local	Yes	No	-
Comment: Administered by the Planning Board.					
Environmental Protection	Yes	State and Local	Yes	No	-
Comment: The rules that are utilized by the NJDEP and other environmental agencies are codified at Title 7 of the NJ Municipal Administrative Code. Chapter 50 Open Space, Recreation, and Farmland and Historic Preservation Trust Fund, Municipal. Chapter 141 Littering and Property Maintenance. Chapter 169 Soil Disturbance. Chapter 170 Soil and Plant Fertilizers. Chapter 186 Tree Removal. Chapter 199 Water.					
Flood Damage Prevention	No	-	Yes	-	-
Comment: The Borough does not participate in the NFIP.					



	Do you have this? (Yes/No)	Authority that enforces (Federal, State, Regional, County, Local)	State Mandated / Allowed	Has the HMP been integrated in the last 5 years? If yes- how?	
				If yes- how? Describe in comments	If no - can it be a mitigation action? If yes, add Mitigation Action #.
Wellhead Protection	Yes	Local	-	-	-
Comment: Chapter 176 Subdivision of Land and Site Plans Art XIV Submission Requirements for Development within Highlands Area.					
Emergency Management	Yes	Local	-	No	-
Comment: Chapter 33, Fire Company, Volunteer; Chapter 56, Police Department					
Climate Change	No	-	-	-	-
Comment:					
Disaster Recovery Ordinance	No	-	-	-	-
Comment:					
Disaster Reconstruction Ordinance	No	-	-	-	-
Comment:					
Hazardous Material Ordinance	Yes	Local	-	-	-
Comment: Chapter 133 Hazardous Materials. This article provides for the reimbursement for or the replacement of the specialized and sometimes non-reusable equipment required by state and federal regulations to be made available in the Borough in case of fire, release or threatened release involving any hazardous material, as well as the reimbursement of all other costs for expended resources. This article entitles the Borough of Kinnelon to reimbursement for the cost of any expended resources used by the Borough or any of its agencies in extinguishing any fire, stopping or containing any release of hazardous material and generally taking any emergency action.					
Soil Erosion and Sediment Control	Yes	Local	-	-	-
Comment: Chapter 167 Soil and Sediment Control. The purpose of this chapter is to control soil erosion and sediment damages and related environmental damage by requiring adequate provisions for surface water retention and drainage and for the protection of exposed soil surfaces in order to promote the safety, public health, convenience and general welfare of the community.					
Planning Documents					
Comprehensive / Master Plan	Yes	Local	Yes	Yes	-
Comment: First master plan document was adopted in 1954. The most recent Periodic Reexamination Report of the Master Plan was adopted on June 3, 2015. The Plan includes maps for preserved lands, Highlands Conservation Priority Areas, preserved land, open space, steep slopes, environmental constraints, wellhead protection areas, prime ground water recharge areas, steep slope protection areas, and critical wildlife habitat. Administered by the Planning Board. Hazard mitigation related goals include: rebuild Fire Company #1; to encourage and provide buffer zones to separate incompatible land uses; to ensure that any prospective development and/or redevelopment is responsive to Kinnelon's environmental features and can be accommodated within the capacity of the community's infrastructure systems; to ensure that any prospective development and/or redevelopment is responsive to Kinnelon's environmental features and can be accommodated within the capacity of the community's infrastructure systems.					
Capital Improvement Plan	Yes	Local	Allowed	Yes	-
Comment: Per NJSA 40:55D-29 the governing body is authorized to direct the planning board to prepare a CIP with at least a six year planning horizon. Administered by the Administration.					
Disaster Debris Management Plan	Yes	Local	No	Yes	-
Comment: Detailed within EOP					
Floodplain or Watershed Plan	No	-	No	-	-
Comment: Floodplain/Watershed Planning is done through NJ Highlands Preservation Regulations – NJDEP Oversight.					
Stormwater Management Plan	Yes	Local and State	Yes	No	-
Comment: Per NJDEP Storm Water Management Rule (N.J.A.C. 7:8, et seq.). The Municipal Stormwater Regulation Program was developed in response to the U. S. Environmental Protection Agency's (USEPA) Phase II rules published in December 1999. The Department issued final stormwater rules on February 2, 2004 and four (4) NJPDES general permits authorizing stormwater discharges from Tier A and Tier B municipalities, as well as public complexes, and highway agencies that discharge stormwater from municipal separate storm sewers (MS4s). Code Chapter 172, #8-07.					



	Do you have this? (Yes/No)	Authority that enforces (Federal, State, Regional, County, Local)	State Mandated / Allowed	Has the HMP been integrated in the last 5 years? If yes- how?	
				If yes- how? Describe in comments	If no - can it be a mitigation action? If yes, add Mitigation Action #.
Stormwater Pollution Prevention Plan	Yes	Local	Yes	Yes	-
Comment: SPPP is required by the NJDEP MS4 Permit for Tier A Municipalities.					
Urban Water Management Plan	No	-	-	-	No
Comment: Kinnelon Borough situated within NJ Highlands Preservation Zone and is required to meet NJDEP Regulations.					
Habitat Conservation Plan	Yes	NJDEP/Highlands Preservation	Yes	Yes	-
Comment: Kinnelon Borough situated within NJ Highlands Preservation Zone and is required to meet NJDEP Regulations.					
Economic Development Plan	No	-	No	-	-
Comment: Kinnelon Borough 97.7% Situated in NJ Highlands Preservation Zone					
Shoreline Management Plan	No	-	No	-	-
Comment:					
Community Wildfire Protection Plan	Yes	Local	No	Yes	-
Comment: Wildfire protection is covered by the EOP. Mutual Aid Agreements with adjacent Municipalities and NJ Forest Service.					
Community Forest Management Plan	Yes	State	NJDEP/Highlands Preservation Regulations	Yes	-
Comment: Kinnelon Borough situated within NJ Highlands Preservation Zone and is required to meet NJDEP Regulations.					
Transportation Plan	No	-	No	-	-
Comment:					
Agriculture Plan	No	-	No	-	-
Comment:					
Climate Action Plan	No	-	No	-	-
Comment:					
Tourism Plan	No	-	No	-	-
Comment:					
Business Development Plan	No	-	No	-	-
Comment: Kinnelon Borough is located within NJ Highlands Preservation Zone. This restricts Commercial Development/No central Utilities.					
Other	No	-	No	-	-
Comment:					
Response/Recovery Planning					
Comprehensive Emergency Management Plan (CEMP) / Emergency Operations Plan (EOP)	Yes	Local	Yes	Yes	-
Comment: Per the NJ Civilian Defense and Disaster Control Act (App.A:9_43.2) Counties and municipalities must have written Emergency Operations Plans to be reviewed every 2 years. Current Emergency Operations Plan was approved in 2018.					
Threat & Hazard Identification & Risk Assessment (THIRA)	Yes	Local	-	Yes	-
Comment: As part of EOP of 2018.					
Post-Disaster Recovery Plan	No	Local	No	-	-



		Authority that enforces (Federal, State, Regional, County, Local)	State Mandated / Allowed	Has the HMP been integrated in the last 5 years? If yes- how?	
				If yes- how? Describe in comments	If no - can it be a mitigation action? If yes, add Mitigation Action #.
Comment:					
Continuity of Operations Plan	Yes	Local	No	Yes	-
Comment: As part of EOP of 2018.					
Public Health Plan	Yes	Local	Yes	Yes	-
Comment: As part of EOP of 2018. Shared services with Pequannock Township Board of Health.					
Other	No	-	-	-	-

Table 9.16-4. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits? - If no, who does? If yes, which department?	Yes; Engineering, Construction, Land Use Board
Does your jurisdiction have the ability to track permits by hazard area?	Yes
Does your jurisdiction have a buildable lands inventory? -If yes, please describe briefly. -If no, please quantitatively describe the level of buildout in the jurisdiction.	Yes, was completed during the Affordable Housing Study (2018)

ADMINISTRATIVE AND TECHNICAL CAPABILITY

The table below summarizes potential staff and personnel resources available to the Borough of Kinnelon.

Table 9.16-5. Administrative and Technical Capabilities

Staff/Personnel Resource	Available ?	Department/Agency/Position
Administrative Capability		
Planning Board	Yes	Planning Board
Mitigation Planning Committee	Yes	EMO
Environmental Board / Commission	Yes	Kinnelon Borough Environmental Commission
Open Space Board / Committee	Yes	Open Space Advisory Committee
Economic Development Commission / Committee	No	-
Warning Systems / Services (reverse 911, outdoor warning signals)	Yes	Nixle; Emailing; Outdoor Signage
Maintenance program to reduce risk	No	-
Mutual aid agreements	Yes	Fire/Police/EMS/Ambulance; Red Cross Disaster Agreements
Technical/Staffing Capability		



Staff/Personnel Resource	Available ?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Construction Official Chris Walthour, Borough Engineer
Engineers or professionals trained in building or infrastructure construction practices	Yes	Engineer Tom Boorady
Planners or engineers with an understanding of natural hazards	Yes	Construction Official Chris Walthour
Staff with training in benefit/cost analysis	Yes	Borough Engineer Tom Boorady
Staff with training in green infrastructure	Yes	Borough Engineer
Staff with education/knowledge/training in low impact development	Yes	Borough CFO, Borough Engineer
Surveyor	Yes	Borough Engineer
Stormwater engineer	Yes	Borough Engineer
Personnel skilled or trained in GIS applications	No	-
Local or state water quality professional	Yes	Borough Engineer & Crew Engineering
Scientist familiar with natural hazards in local area	Yes	Borough Engineer
Emergency manager	Yes	OEM Coordinator
Watershed planner	No	NJ DEP & Highlands Preservation Zone Regulations
Environmental specialist	No	NJ DEP & Highlands Preservation Zone Regulations
Grant writers	No	-
Resilience Officer	No	-
Other	No	-

FISCAL CAPABILITY

The table below summarizes financial resources available to the Borough of Kinnelon.

Table 9.16-6. Fiscal Capabilities

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants (CDBG, CDBG-DR)	No
Capital Improvements Project Funding	No
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	Yes
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Clean Water Act 319 Grants (Nonpoint Source Pollution)	No
Other NJ Highlands Preservation Zone – NJDEP Freshwater Act	Yes - Morris County Flood Mitigation Program (acquisition)

EDUCATION AND OUTREACH CAPABILITY

The table below summarizes the education and outreach resources available to the Borough of Kinnelon.

**Table 9.16-7. Education and Outreach Capabilities**

Criterion	Response
Do you have a public information officer or communications office?	Police Chief John Schwartz; OEM Randall I. Charles; Mayor James Freda
Do you have personnel skilled or trained in website development?	Yes, Jennifer Highers
Do you have hazard mitigation information available on your website? ▪ If yes, briefly describe.	Yes, Borough Website
Do you use social media for hazard mitigation education and outreach? ▪ If yes, briefly describe.	Yes, Borough Website/Facebook
Do you have any citizen boards or commissions that address issues related to hazard mitigation? ▪ If yes, briefly describe.	Borough Engineer, Planning Board, Kinnelon Police Dept, KVFC, Kinnelon OEM
Do you have any other programs already in place that could be used to communicate hazard-related information? ▪ If yes, briefly describe.	Nixle, Register Ready, Kinnelon Borough Website/Facebook/Social Media, 4 Electronic Message Bds, Bd of Education Website/Facebook/5 Schools Parent/Student eBlast Lists, Smoke Rise Club Website/Facebook/1,000 Resident eBlast List, Board of Health Website/Facebook
Do you have any established warning systems for hazard events? ▪ If yes, briefly describe.	Nixle, Register Ready

COMMUNITY CLASSIFICATIONS

The table below summarizes the classifications for community programs available to the Borough of Kinnelon.

Table 9.16-8. Community Classifications

Program	Participating?	Classification	Date Classified
Community Rating System	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	Yes		
Public Protection (Fire ISO Protection Class)	No	-	-
Storm Ready Certification	No	-	-
Firewise Community Classification	No	-	-
Sustainable Jersey	Yes	none	7/22/2011

ADAPTIVE CAPACITY

Adaptive capacity is defined as “the ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or respond to consequences” (IPCC 2014). In other words, it describes a jurisdiction’s current ability to adjust to, protect from, or withstand a hazard event. This term is often discussed in reference to climate change; however, adaptive capacity also includes an understanding of local capacity for adapting to current and future risks and changing conditions. The table below summarizes the adaptive capacity for each hazard and the jurisdiction’s rating.

- Does the municipality have access to resources to determine the possible impacts of climate change upon the municipality? Yes, through NJ Highlands Preservation guidelines enforced by NJDEP.
- Is the administrative supportive of integrating climate change in policies or actions? Yes
- Is climate change already being integrated into current policies/plans or actions (projects/monitoring) within the municipality? Yes, Energy Efficient/Structural Upgrades to Municipal Building, DPW Facility, Library & Recreation Facilities/Grounds – Windows, HVAC Systems, Lighting, Refillable Water Stations, Groundwater Remediation, Wastewater Recovery.



Table 9.16-9. Adaptive Capacity

Hazard	Adaptive Capacity (Capabilities) - High/Medium/Low
Dam Failure	Medium
Disease Outbreak	High
Drought	Medium
Earthquake	Medium
Extreme Temperature	Medium
Flood	Low
Geologic	Medium
Harmful Algal Bloom	Low
Hazardous Substances	High
Infestation	Medium
Severe Weather	High
Severe Winter Weather	High
Wildfire	Low

NATIONAL FLOOD INSURANCE PROGRAM

The Borough of Kinnelon does not participate in the National Flood Insurance Program.

Table 9.16-10. National Flood Insurance Program Compliance

Criterion	Response
The Borough of Kinnelon does not participate in the National Flood Insurance Program	

ADDITIONAL AREAS OF EXISTING INTEGRATION

Environmental Advisory Council: The Kinnelon Environmental Advisory Committee (the EAC) was created to act in an advisory capacity to provide information, advice and recommendations relating to environmental issues that affect, or are perceived to have a potential effect on, the Borough of Kinnelon. Further, the EAC may be called upon to make reports and recommendations on certain environmental issues such as land use and development, solid waste management, toxic materials storage, air and water pollution, noise control, open space preservation, water resources management, energy conservation and the like. The goals of the EAC are to advocate for the long-term protection of the Borough of Kinnelon's natural resources, to promote public interest in environmental issues, and to be an environmental educational resource for all citizens.

Municipal website: In addition to community news and information, the municipal website (<http://www.kinnelonboro.org/>) hosts educational information about drought, open space, solutions to stormwater pollution, the Zika virus, and more.

9.16.5 Hazard Event History Specific to the Jurisdiction

Morris County has a history of hazard events, as detailed in Section 4 (Risk Assessment) of this plan. A summary of historical events is provided in each of the hazard profiles in Section 4.4 (Hazard Profiles) and includes a chronology of events that affected Morris County and its jurisdictions. The Borough of Kinnelon's history of federally-declared (as presented by FEMA) and significant hazard events (as presented in NOAA-NCEI) is consistent with that of Morris County. Table 9.16-11 provides details regarding municipal-specific loss and damages the Borough experienced during hazard events. Information provided in the table below is based on reference material or local sources.

**Table 9.16-11. Hazard Event History**

Date(s) of Event	Event Type (disaster declaration if applicable)	Morris County Designated?	Summary of Event	Summary of Local Damages and Losses
January 21-24, 2016	Severe Winter Storm and Snowstorm (DR-4264)	Yes	Wind gusts up to 60 MPH produced blizzard conditions as visibilities dropped to one-quarter mile or less in spots. Snow began during the evening hours on the 22nd, then continued, heavy at times through the 23rd before ending early on the 24th. Snowfall totals included 30.0 inches in Long Valley, 29.0 inches in Madison, 26.0 inches in Budd Lake, 25.3 inches in Green Pond, 22.5 inches in Butler, 21.0 inches in Chatham, and 18.0 inches in Marcella	Although the County was impacted, the Borough did not report impacts.
March 6-7, 2018	Severe Winter Storm and Snowstorm (DR-4368)	Yes	12 to 24 inches was observed across large parts of Somerset, Hunterdon, Morris, and Sussex Counties. The snow contained large amounts of liquid, making it heavy and wet. This resulted in downed trees, limbs, and wires, leading to numerous power outages.	Although the County was impacted, the Borough did not report impacts.

9.16.6 Jurisdiction-Specific Vulnerabilities and Hazard ranking

The hazard profiles in Section 4 (Risk Assessment) provide detailed information regarding each plan participant's vulnerability to the identified hazards. Table 9.16-10 summarizes the Borough of Kinnelon risk assessment results and data used to determine the hazard ranking.

A gradient of certainty was developed to summarize the confidence level regarding the input used to populate the hazard ranking. A certainty factor of high, medium or low was selected and assigned to each hazard to provide a level of transparency and create increased understanding of the data used to support the resulting ranking. The following scale was used to assign a certainty factor to each hazard:

- High—Defined scenario/event to evaluate; probability calculated; evidenced-based/quantitative assessment to estimate potential impacts through hazard modeling.
- Moderate—Defined scenario/event or only a hazard area to evaluate; estimated probability; combination of quantitative (exposure analysis, no hazard modeling) and qualitative data to estimate potential impacts.
- Low—Scenario or hazard area is undefined; there is a degree of uncertainty regarding event probability; majority of potential impacts are qualitative.



Table 9.16-12. Summary of Risk Assessment Results

Hazard of Concern	Hazard/ Scenario Area Evaluated	Population		Buildings		Economy (Loss)		Certainty Factor
Dam Failure	Partial or complete failure of a dam There are 22 dams in the Borough, according to NJDEP.	Population impacted is dependent on the capacity of the dam, the extent of the dam failure inundation area and the severity of the failure.		The number of building impacted is dependent on the capacity of the dam, the extent of the dam failure inundation area and the severity of the failure.		Economic impacts include dam/building/infrastructure repairs; debris removal/disposal; utility impacts.		Low
Disease Outbreak	Disease Outbreaks which include: Mosquito-Borne Diseases, Tick-Borne Diseases, Campylobacteriosis, Influenza, Mumps, Ebola	Population impacted is dependent on the disease and severity of the outbreak; in some cases immuno-compromised persons are more vulnerable.		Structural impacts due to disease outbreak would be limited.		Economic losses can include County financial impacts to monitor/address outbreaks; lost wages or commercial interruptions; depends on the severity and type of disease outbreak. .		Low
Drought	Prolonged drought event - The County is serviced by water supplies who primarily get water from groundwater sources; some surface water sources.	Entire population exposed. Population on surface water supplies may be impacted first; water restrictions/contamination; increased wildfire risk.		Droughts are not expected to cause direct damage to buildings.		Losses include aesthetic, landscape/nursery/agricultural industry impacts.		Low
Earthquake	100, 500-, 2,500-Year Mean Return Period (MRP) Events evaluated NEHRP Soils D&E (soft soils that amplify ground shaking are present in the County)	NEHRP D&E:	189	NEHRP D&E:	76	100-year Loss:	\$0	High
		Liquefaction Class 4:	0	Liquefaction Class 4:	0	500-year Loss:	\$860,968	
						2,500-year Loss:	\$17,203,549	
Extreme Temperature	Extreme temperature event (heat or cold)	Over 65 Population:	1,571	Physical impacts due to extreme temperatures would be limited.		Loss of business function is possible due to unexpected repairs (i.e. pipes bursting) or power failures.		Low
		Population Below Poverty Level:	266					
Flood		100-year	0	100-year	0		\$0	High



Hazard of Concern	Hazard/ Scenario Area Evaluated	Population		Buildings		Economy (Loss)		Certainty Factor
	100- and 500-Year Mean Return Period Event	500-year	0	500-year	0	100-year Loss:		
Geological	High Landslide Susceptibility Areas and Areas developed over carbonate rock	Class A:	63	Class A:	27	Class A:	20831574.66	Moderate
		Class B:	3	Class B:	1	Class B:	\$1,410,001	
		Carbonate Bedrock:	0	Carbonate Bedrock:	0	Carbonate Bedrock:	\$0	
Harmful Algal Bloom	Any body of water or area adjacent that is susceptible to harmful algal bloom.	Population in contact (e.g., swimming) or drinking water from surface water impacted can result in a range of health effects		General building stock impacts due to harmful algal bloom are not anticipated. Critical facilities (i.e., water treatment plants) could lead to plant closures.		Economic impacts range from recreational closure of impacted waterbodies; cost to sample/monitor/remediate.		Low
Hazardous Substance	Release of a hazardous substance from a fixed site.	Population impacted will depend on the type of material and scale of the incident. May include population within small radii of site.		The degree of damages to a building depends on the scale of the incident.		The degree of damages depends on the scale of the incident.		Low
Infestation	Infestation including: Insects [e.g. Gypsy Moth, Mosquitoes, Spotted Lanternfly, Emerald Ash Borer], White-Tailed Deer, Rodents	Population impacted will depend on the type and severity of infestation and may cause an increased risk for disease outbreak.		Physical impacts will be limited to indirect impacts from invasive species which affect crops and vegetation.		Economic impact will depend on the type and severity of infestation and may cause an increased risk for disease outbreak.		Low
Severe Weather	Severe Weather Event	Entire population exposed; The degree of impact to the population depends on the scale of the incident.		Entire building stock is exposed; The degree of impact depends on the scale of the incident.		Annualized Loss:	\$43,544	High
						100 -Year Loss:	\$601,242	
						500-year Loss:	\$4,417,059	
Severe Winter Weather	Severe Winter Weather Event	All residents/commuters/visitors are exposed; socially-vulnerable populations may be at increased risk.		All buildings are exposed; the degree of impact depends on the scale of the incident.		The cost of snow and ice removal and repair of roads/infrastructure can impact operating budgets.		Low
Wildfire	Wildfire Fuel Hazard areas (High, Very High, Extreme)	Wildfire:	95	Wildfire:	39	Wildfire:	\$34,802,554	Moderate



REPETITIVE FLOOD LOSSES

The Borough of Kinnelon does not participate in the National Flood Insurance Program. Repetitive flood losses are not tracked.

CRITICAL FACILITIES

The table below identifies critical facilities in the community located in the 1-percent and 0.2-percent floodplain.

Table 9.16-13. Potential Flood Losses to Critical Facilities and Lifelines

Name	Type	Exposure		Status of Mitigation
		1% Event	0.2% Event	
Charlotteburg Dam/Reservoir	Dam	X	X	Dams are located in the river and therefore in the floodplain

ADDITIONAL IDENTIFIED VULNERABILITIES

The jurisdiction has identified the following vulnerabilities within their community:

- Emergency Shelter backup power is needed.
- Water Supply can be impacted by drought - lack of public water; emergency services arrive on scene with water but are limited.
- Pipelines exist along Route 23 and Kinnelon Borough.
- The Charlotteburg Reservoir Dam is located in the 100-year floodplain
- Severe storms and severe winter storms can result in downed trees and wires.

HAZARD AREA EXTENT AND LOCATION

Hazard area extent and location maps were generated for the Borough of Kinnelon that illustrate the probable areas impacted within the municipality. These maps are based on the best available data at the time of the preparation of this plan and are adequate for planning purposes. Maps have been generated only for those hazards that can be clearly identified using mapping techniques and technologies and for which the Borough of Kinnelon has significant exposure. Refer to Figures 9.16-1 and 9.16-2 which illustrate the hazard extent areas in the Borough.

HAZARD RANKING

This section includes the community specific identification of the primary hazard concerns based on identified problems, impacts and the results of the risk assessment as presented in Section 5 (Risk Assessment). The ranking process involves an assessment of the likelihood of occurrence for each hazard; its potential impacts on people, property, and the economy; community capability and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.

As discussed in Section 4.3 (Hazard Ranking), each plan participant may have differing degrees of risk exposure and vulnerability compared to Morris County as a whole. Therefore, each jurisdiction ranked the degree of risk to each hazard as it pertains to their community factoring in their capabilities to withstand impacts and rebound after the event. The table below summarizes the hazard rankings of potential natural hazards for the Borough of Kinnelon. The Borough of Kinnelon has reviewed the Morris County hazard ranking table, as well as its



individual results, to reflect the relative risk of the hazards of concern to the community. The Borough agreed with the calculated hazard rankings.

Table 9.16-14. Borough of Kinnelon Hazard Ranking Input

Dam Failure	Drought	Earthquake	Extreme Temperature	Flood	Geological Hazard
Medium	Medium	Medium	Medium	Low	Low

Harmful Algal Bloom	Severe Storm	Severe Winter Storm	Wildfire	Hazardous Substances	Disease Outbreak	Infestation
Low	High	High	Low	High	High	Medium

9.16.7 Mitigation Strategy and Prioritization

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

PAST MITIGATION INITIATIVE STATUS

The following table summarizes the jurisdiction's progress on their mitigation strategy identified in the 2015 HMP. 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 can also be found under 'Capability Assessment' presented previously in this annex.

Table 9.16-15. Status of Previous HMP Mitigation Actions

2015 Action Number Action Description	Responsible Party	Status (In Progress, No Progress, Ongoing Capability, or Completed)	Include in the 2020 HMP Update?	
			Check if Yes	Enter 2020 HMP Action #
K – 1: Shelter and warming Shelter designation	OEM	Complete		
K -2: Dam Studies Assessment remedy and funding	Borough of Kinnelon	In Progress - Canty; Untermeyer, Rickabear, Fayson Lakes, Butler, Webber (gone); Lake Juliet and Lake Reality are left. Looking at funds for Lake Reality	X	2020- Borough of Kinnelon -001
K – 3: Department of Public Works Capabilities	Borough of Kinnelon Mayor & Council	Complete - New building		
K – 4: Public Education – Outreach-Information	Borough of Kinnelon Mayor & Council	Ongoing Capability		
K – 5: Improve effectiveness of Interdepartmental and Agencies Communications	OEM, Police, Fire, Ambulance	Ongoing Capability		
K – 6: Improve Command Capabilities and monitoring of events	OEM, Borough of Kinnelon	Ongoing Capability		
K – 7: Morris County Dam Silas Condict Park. County Lake Dam.	Morris County	Complete - 2018		



2015 Action Number Action Description	Responsible Party	Status (In Progress, No Progress, Ongoing Capability, or Completed)	Include in the 2020 HMP Update?	
			Check if Yes	Enter 2020 HMP Action #
K – 8: Morris County Mitigation Plan: Develop, fund and implement a plan to provide back up generator power to all gas stations in the Kinnelon, Butler, Pequannock, Pompton Plains corridor on route 23 north and south	County OEM	Discontinue - N/A anymore		
K – 9: Evaluate the need for and benefits of joining the NFIP, and join the NFIP if found to be worthwhile for the Borough and its constituents.	Engineer	Discontinue - No longer a priority		

PROPOSED HAZARD MITIGATION INITIATIVES FOR THE PLAN UPDATE

The Borough of Kinnelon participated in a risk assessment workshop in November 2019 in which detailed information was provided about assets exposed and vulnerable to the identified hazards of concern. The Borough of Kinnelon participated in a mitigation action workshop in March 2020 and was provided a Mitigation Toolbox that included a mitigation catalog developed specifically for Morris County and its hazards of concerns; challenges and opportunities identified during the capability and risk assessments; and the following FEMA publications to use as a resource as part of their comprehensive review of all possible activities and mitigation measures to address their hazards: FEMA 551 *Selecting Appropriate Mitigation Measures for Floodprone Structures* (March 2007) and FEMA *Mitigation Ideas – A Resource for Reducing Risk to Natural Hazards* (January 2013). Section 6 (Mitigation Strategy) and Appendix F (Mitigation Strategy Supplement) provide a more complete description of the Mitigation Toolbox and its resources.

Table 9.16-16 summarizes the comprehensive-range of specific mitigation initiatives the Borough of Kinnelon would like to pursue in the future to reduce the effects of hazards. Some of these initiatives might be previous actions carried forward for this HMP update. Initiatives are dependent upon available funding (grants and local match availability) and can be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6 (Mitigation Strategy), 14 criteria were used to evaluate each action, including an evaluation of the benefits and costs. For each new mitigation action, a numeric rank was assigned (-1, 0, or 1) for each of the 14 evaluation criteria. The results of this evaluation, in addition to input from the jurisdiction, were then used to prioritize the mitigation initiatives as ‘High’, ‘Medium’, or ‘Low.’ Table 9.16-17 summarizes the evaluation of each mitigation initiative and the resulting priority, listed by Action Number.



Table 9.16-16. Proposed Hazard Mitigation Initiatives and Associated Priority

Initiative Number	Mitigation Initiative Name	Description of the Problem	Description of the Solution	New or Existing Assets?	Hazard(s) to be Mitigated	Goals Met	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Cost	Timeline	Priority	Mitigation Category	CRS Category
2020-Borough of Kinnelon -001	Dam Studies Assessment	Numerous dams exist in the Borough. The Charlottesville Reservoir Dam is located in the 100 year floodplain and is considered a critical facility.	Conduct safety survey of dams and determine any improvements that must be made to increase safety. Carry out improvements.	Existing	Flood, Dam Failure	2, 3	<u>Engineering</u>	Municipal budget	Mitigation of impact of failure.	TBD by survey.	Within 5 years	High	LPR, SIP	PR, PP, SP
2020-Borough of Kinnelon -002	Develop public water system	Water Supply can be impacted by drought - lack of public water; emergency services arrive on scene with water but are limited.	Conduct engineering study to determine if development of public water system is warranted and implement selected actions.	New, Existing	Drought, Wildfire	3	<u>Administration</u>	Municipal budget	Reduction of impact of drought.	TBD by study	Within 5 years	High	SIP	PP, ES
2020-Borough of Kinnelon -003	Backup power for emergency shelter	Emergency Shelter backup power is needed	Purchase and install a backup generator at the emergency shelter.	Existing	All hazards	3	<u>OEM</u>	FEMA HMGP and PDM, USDA Community Facilities Grant Program, Emergency Management Performance Grants (EMPG) Program, Municipal Budget	Ensures continuity of operations; provides a shelter for residents	\$25,000	Within 1 year	High	SIP	PP, ES
2020-Borough of Kinnelon -004	Pipelines survey and protection	Pipelines exist along Route 23 in Kinnelon Borough.	Conduct feasibility assessment to determine vulnerable areas of pipelines and necessary protections. Implement protections.	Existing	Hazardous Materials	2, 3	<u>OEM</u>	HMGP, Municipal budget	Prevention or rupture or spill of pipelines.	TBD by feasibility assessment	Within 5 years	High	SIP	PP



Initiative Number	Mitigation Initiative Name	Description of the Problem	Description of the Solution	New or Existing Assets?	Hazard(s) to be Mitigated	Goals Met	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Cost	Timeline	Priority	Mitigation Category	CRS Category
2020-Borough of Kinnelon -005	Removal of dangerous trees	Severe storms and severe winter storms can result in downed trees and wires.	Conduct survey to identify problem trees. Remove problem trees or branches near wires and property.	New, Existing	Severe Weather, Severe Winter Storm	2, 3	<u>Public Works</u>	Municipal budget	Reduction in falling trees, power losses	\$50,000	Within 2 years	High	SIP	PP
2020-Borough of Kinnelon -007	Increased hazard outreach	The Borough has numerous high hazards of concern that could impact residents.	Increase outreach on hazards of concern for the Borough.	New, Existing	All hazards	1	<u>OEM</u>	Municipal budget	Increased public awareness	\$5,000	Within 1 year	High	EAP	PI
2020-Borough of Kinnelon -006	Install 5 Underground Water Supply Tanks for Fire Company/Emergency Services	Inadequate water supply. The majority of the Borough does not have municipal water/fire hydrants for fire company to access. Fire company apparatus carries water to fight fires. Mutual aid neighboring fire companies need to be called to provide water.	Conduct location/water tank capacity survey to determine placement of 5 underground water tanks. Carry out installation.	New	Wildfire	2, 3	<u>Borough Engineer, KOEM, KVFC, ISO</u>	FEMA HMGP and PDM, USDA Community Facilities Grant Program, Emergency Management Performance Grants (EMPG) Program, Municipal Budget	Increased water supply for fire suppression and wildfire protection	\$800,000 - \$1.2 million	Within 5 years	High	LPR, SIP	PR, PP, ES

Notes:

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

Timeline:

The time required for completion of the project upon implementation

Cost:

The estimated cost for implementation.

Benefits:

A description of the estimated benefits, either quantitative and/or qualitative.

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 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. Actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.
- **Natural Resource Protection (NR)** - Actions that minimize hazard loss and preserve or restore the functions of natural systems. 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. 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 9.16-17. Summary of Evaluation and Action Priority

Initiative Number	Mitigation Initiative Name	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
2020-Borough of Kinnelon - 001	Dam Studies Assessment	1	1	1	1	1	1	1	1	1	1	1	0	1	1	13	High
2020-Borough of Kinnelon - 002	Develop public water system	1	1	0	0	0	1	1	1	1	1	1	0	1	1	10	High
2020-Borough of Kinnelon - 003	Backup power for emergency shelter	1	1	1	1	1	1	0	1	1	1	1	1	1	1	13	High
2020-Borough of Kinnelon - 004	Pipelines survey and protection	1	1	0	0	1	0	0	1	1	1	1	0	1	1	9	High
2020-Borough of	Removal of dangerous trees	1	1	1	1	1	1	1	0	1	1	1	0	1	1	12	High



Initiative Number	Mitigation Initiative Name	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
Kinnelon - 005																	
2020-Borough of Kinnelon - 006	Increased hazard outreach	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	High
2020-Borough of Kinnelon - 006	Install 5 Underground Water Supply Tanks for Fire Company/Emergency Services	1	1	1	1	1	1	0	1	1	1	0	0	1	1	11	High

Notes: Section 6 (Mitigation Strategy) conveys guidance on prioritizing mitigation actions.



Table 9.16-18. Analysis of Mitigation Actions by Hazard and Category

Hazard	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
Dam Failure	2020-Borough of Kinnelon - 001	2020-Borough of Kinnelon - 001, 2020-Borough of Kinnelon - 003	2020-Borough of Kinnelon - 006		2020-Borough of Kinnelon - 003	2020-Borough of Kinnelon - 001		
Disease Outbreak		2020-Borough of Kinnelon - 003	2020-Borough of Kinnelon - 006		2020-Borough of Kinnelon - 003			
Drought		2020-Borough of Kinnelon - 002, 2020-Borough of Kinnelon - 003	2020-Borough of Kinnelon - 006		2020-Borough of Kinnelon - 002, 2020-Borough of Kinnelon - 003			
Earthquake		2020-Borough of Kinnelon - 003	2020-Borough of Kinnelon - 006		2020-Borough of Kinnelon - 003			
Extreme Temperature		2020-Borough of Kinnelon - 003	2020-Borough of Kinnelon - 006		2020-Borough of Kinnelon - 003			
Flood	2020-Borough of Kinnelon - 001	2020-Borough of Kinnelon - 001, 2020-Borough of Kinnelon - 003, 2020-Borough of Kinnelon - 005	2020-Borough of Kinnelon - 006		2020-Borough of Kinnelon - 003	2020-Borough of Kinnelon - 001		
Geologic		2020-Borough of Kinnelon - 003	2020-Borough of Kinnelon - 006		2020-Borough of Kinnelon - 003			
Harmful Algal Bloom		2020-Borough of Kinnelon - 003	2020-Borough of Kinnelon - 006		2020-Borough of Kinnelon - 003			
Hazardous Substances		2020-Borough of Kinnelon - 003, 2020-Borough of Kinnelon - 004	2020-Borough of Kinnelon - 006		2020-Borough of Kinnelon - 003			
Infestation		2020-Borough of Kinnelon - 003	2020-Borough of Kinnelon - 006		2020-Borough of Kinnelon - 003			
Severe Weather		2020-Borough of Kinnelon - 003, 2020-Borough of Kinnelon - 005	2020-Borough of Kinnelon - 006		2020-Borough of Kinnelon - 003			



Hazard	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
Severe Winter Weather		2020-Borough of Kinnelon - 003	2020-Borough of Kinnelon - 006		2020-Borough of Kinnelon - 003			
Wildfire	2020-Borough of Kinnelon - 006	2020-Borough of Kinnelon - 002, 2020-Borough of Kinnelon - 003, 2020-Borough of Kinnelon - 006	2020-Borough of Kinnelon - 006		2020-Borough of Kinnelon - 002, 2020-Borough of Kinnelon - 003, 2020-Borough of Kinnelon - 006			2020-Borough of Kinnelon - 006

Note: Section 6 (Mitigation Strategy) provides for an explanation of the mitigation categories.

RED = high ranked hazard

ORANGE = medium ranked hazard

YELLOW = low ranked hazard

9.16.8 Staff and Local Stakeholder Involvement in Annex Development

The Borough of Kinnelon followed the planning process described in Section 2 (Planning Process). This annex was developed over the course of several months with input from many jurisdiction representatives. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization. The following table summarizes who participated and in what capacity. Additional documentation on the municipality's planning process through Planning Partnership meetings is included in Section 2 (Planning Process) and Appendix C (Meeting Documentation).

Table 9.16-19. Contributors to the Annex

Entity	Title	Method of Participation
Randall I. Charles	Councilman and Coordinator	Primary POC, attended plan participant meetings, provided impact data, contributed to the mitigation strategy
Jeffrey Bresett	Deputy Coordinator	Secondary POC, attended plan participant meetings, provided impact data, contributed to the mitigation strategy
Thomas Boorady	Borough Engineer, Darmofalski Engineering	FPA, attended plan participant meetings, provided impact data, contributed to the mitigation strategy
Jennifer Highers	OEM Secretary	Attended plan participant meetings, provided impact data, contributed to the mitigation strategy



Figure 9.16-1. Borough of Kinnelon Hazard Area Extent and Location Map

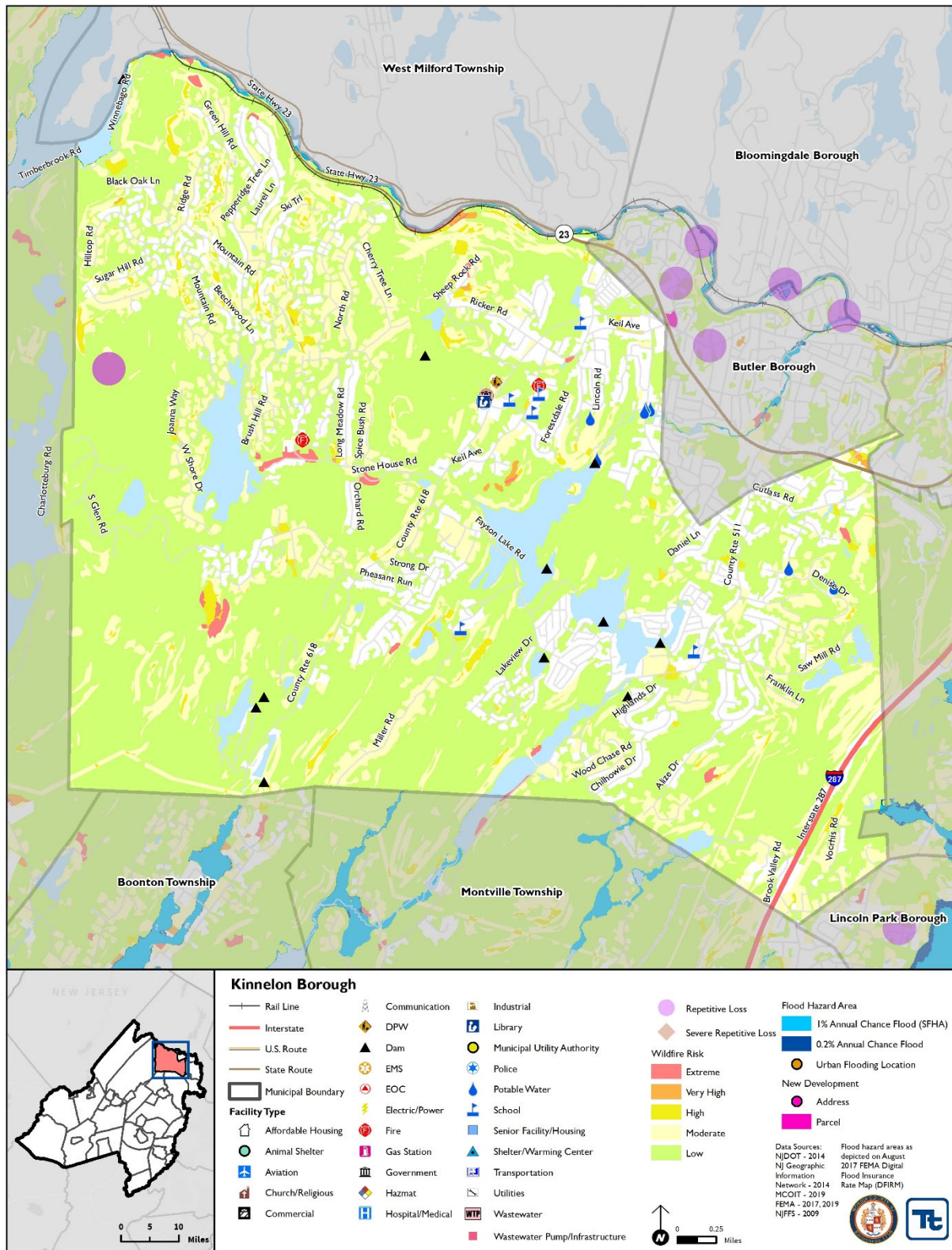
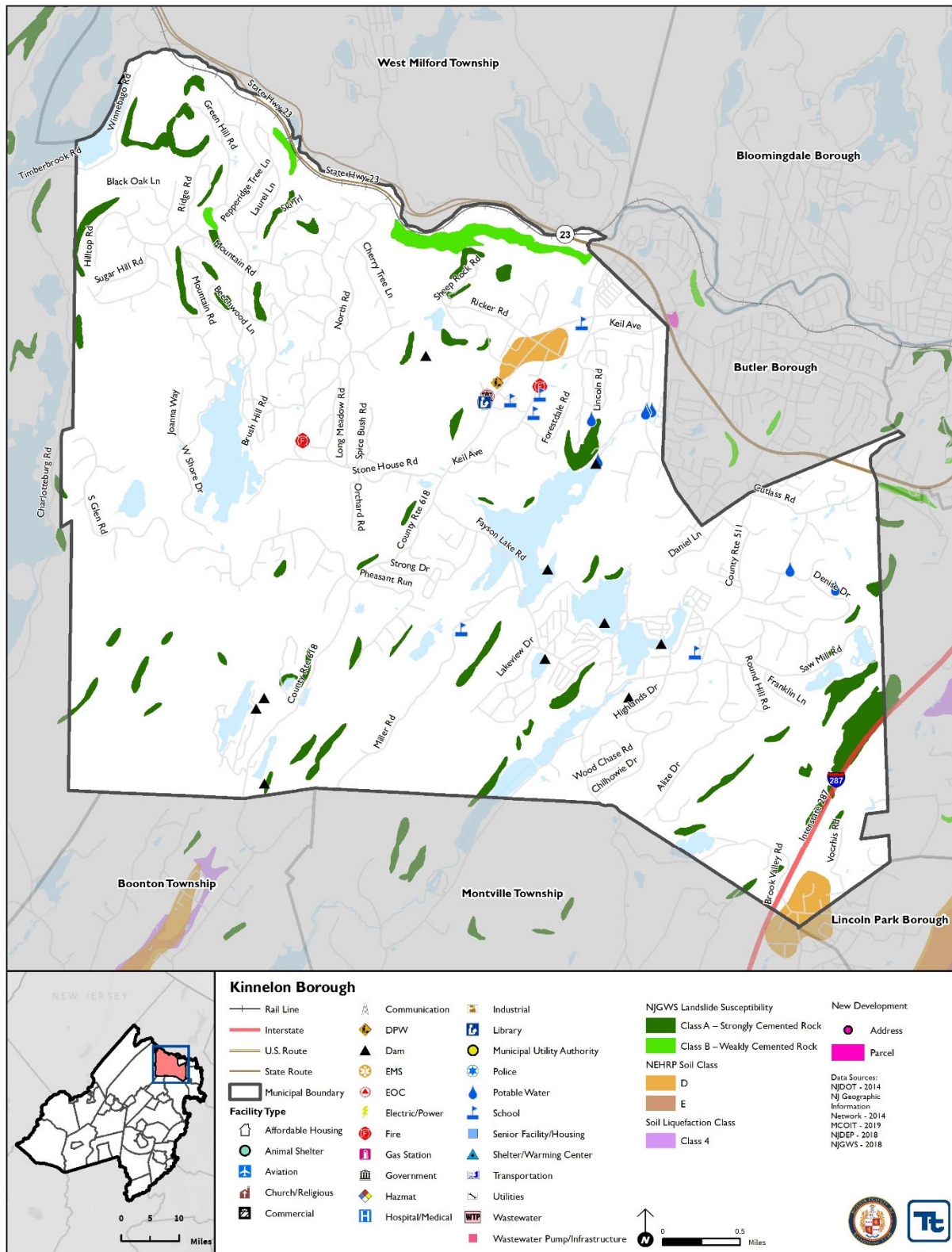




Figure 9.16-2. Borough of Kinnelon Hazard Area Extent and Location Map





Action Worksheet			
Project Name:	Backup power for emergency shelter		
Project Number:	2020- Borough of Kinnelon -003		
Risk / Vulnerability			
Hazard(s) of Concern:	All hazards		
Description of the Problem:	Currently, the Borough Emergency Shelter does not have a generator to supply power during a power outage.		
Action or Project Intended for Implementation			
Description of the Solution:	The Office of Emergency Management will research what size generator is necessary to supply backup power the Emergency Shelter. The Borough will then purchase and install a generator at the Shelter.		
Is this project related to a Critical Facility?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Level of Protection:	N/A	Estimated Benefits (losses avoided):	Ensures continuity of operations; provides a shelter for residents
Useful Life:	20 years	Goals Met:	2
Estimated Cost:	\$25,000	Mitigation Action Type:	Structure and Infrastructure Projects (SIP)
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Immediately after funding received
Estimated Time Required for Project Implementation:	1 year	Potential Funding Sources:	FEMA HMGP and PDM, USDA Community Facilities Grant Program, Emergency Management Performance Grants (EMPG) Program, Municipal Budget
Responsible Organization:	OEM	Local Planning Mechanisms to be Used in Implementation if any:	Hazard Mitigation, Emergency Management
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Problem continues.
	Install solar panels	\$100,000	Weather dependent; need large amount of space for installation; expensive if repairs needed
	Install wind turbine	\$100,000	Weather dependent; poses a threat to wildlife; expensive repairs if needed
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	Backup power for emergency shelter	
Project Number:	2020- Borough of Kinnelon -003	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Project will protect critical services of emergency shelter.
Property Protection	1	Project will protect emergency shelter from power loss.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	The Borough has the legal authority to complete the project.
Fiscal	0	Project requires funding support.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	All hazards
Timeline	1	1 year
Agency Champion	1	Office of Emergency Management
Other Community Objectives	1	
Total	13	
Priority (High/Med/Low)	High	

Action Worksheet



Project Name:	Pipelines survey and protection		
Project Number:	2020- Borough of Kinnelon -004		
Risk / Vulnerability			
Hazard(s) of Concern:	Hazardous Materials		
Description of the Problem:	Pipelines exist along Route 23 in Kinnelon Borough. Rupture or leaks from pipelines can be environmentally damaging or cause property damage. Other hazards may increase the likelihood of rupture or leaks.		
Action or Project Intended for Implementation			
Description of the Solution:	The Borough will conduct a feasibility assessment to determine vulnerable areas of pipelines and necessary protections. The Borough will then implement any identified mitigation actions.		
Is this project related to a Critical Facility or Lifeline?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Level of Protection:	TBD by identified mitigation actions	Estimated Benefits (losses avoided):	Pipeline protected from leaks
Useful Life:	TBD by identified mitigation actions	Goals Met:	3
Estimated Cost:	TBD by identified mitigation actions	Mitigation Action Type:	Structure and Infrastructure Project
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Feasibility assessment to take 2 years. Actions TBD by identified mitigation actions
Estimated Time Required for Project Implementation:	Feasibility assessment to be implemented within 5 years. Actions TBD by identified mitigation actions	Potential Funding Sources:	HMGP, municipal budget
Responsible Organization:	TRANSCO with Town of Guttenberg supporting	Local Planning Mechanisms to be Used in Implementation if any:	Hazard mitigation
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Buyout properties surrounding pipeline and move roadway	\$ Millions	Legal issues, large cost due to location of the pipeline through Town
	Bury the pipeline	\$ Millions	Would have to knock down existing buildings and destroy existing infrastructure to complete.
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	Pipelines survey and protection	
Project Number:	2020- Borough of Kinnelon -004	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Lives protected from pipeline leak and rupture
Property Protection	1	Pipeline protected from damage from hazards. Property protected from pipeline leaks.
Cost-Effectiveness	0	
Technical	0	
Political	1	
Legal	0	Project can only be conducted with partnership of pipeline owners.
Fiscal	0	Project requires funding support
Environmental	1	Protects pipeline leak and rupture
Social	1	
Administrative	1	
Multi-Hazard	1	
Timeline	0	
Agency Champion	1	Administration
Other Community Objectives	1	Homeland security
Total	9	
Priority (High/Med/Low)	High	



Action Worksheet			
Project Name:	Install 5 Underground Water Supply Tanks for Fire Company/Emergency Services		
Project Number:	2020- Borough of Kinnelon -006		
Risk / Vulnerability			
Hazard(s) of Concern:	Wildfire		
Description of the Problem:	The Borough of Kinnelon has an inadequate water supply for fire fighting.. The majority of the Borough does not have municipal water/fire hydrants for fire company to access. Currently, the fire company apparatus carries water to fight fires. Mutual aid neighboring fire companies need to be called to provide water.		
Action or Project Intended for Implementation			
Description of the Solution:	Conduct location/water tank capacity survey to determine placement of 5 underground water tanks. Carry out installation.		
Is this project related to a Critical Facility or Lifeline?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Level of Protection:	Water supply for firefighting	Estimated Benefits (losses avoided):	Increased water supply for fire suppression and wildfire protection
Useful Life:	50 years	Goals Met:	2, 3
Estimated Cost:	\$800,000 - \$1.2 million	Mitigation Action Type:	Structure and Infrastructure Project
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Within 5 years
Estimated Time Required for Project Implementation:	5 years	Potential Funding Sources:	FEMA HMGP and PDM, USDA Community Facilities Grant Program, Emergency Management Performance Grants (EMPG) Program, Municipal Budget
Responsible Organization:	Borough Engineer, KOEM, KVFC, ISO	Local Planning Mechanisms to be Used in Implementation if any:	Hazard mitigation, emergency planning
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Install Municipal water Borough wide	\$millions	costly
	Purchase additional fire fighting apparatus for water storage	\$300,000	Available water increased but volume available still limited
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	Install 5 Underground Water Supply Tanks for Fire Company/Emergency Services	
Project Number:	2020- Borough of Kinnelon -006	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Project protects life from wildfire
Property Protection	1	Project increases property protection from wildfire
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	The Borough has the legal authority to complete the project
Fiscal	0	Project requires funding support
Environmental	1	Provides increased wildfire protection
Social	1	
Administrative	1	
Multi-Hazard	0	Wildfire
Timeline	0	Within 5 years
Agency Champion	1	Borough Engineer, KOEM, KVFC, ISO
Other Community Objectives	1	
Total	11	
Priority (High/Med/Low)	High	