



9.7 BOROUGH OF ESSEX FELLS

This section presents the jurisdictional annex for the Borough of Essex Fells. The annex includes a general overview of the Borough of Essex Fells; an assessment of the Borough'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 hazards.

9.7.1 Hazard Mitigation Planning Team

The following individuals are the Borough of Essex Fells; identified HMP update primary and alternate points of contact and NFIP Floodplain Administrator.

Table 9.7-1. Hazard Mitigation Planning Team

Primary Point of Contact	Alternate Point of Contact
Name / Title: James Egan, E.M. Coordinator Address: 255 Roseland Avenue Essex Fells, NJ 07021 Phone Number: 973-518-3011 Email: jimegan103@gmail.com	Name / Title: Sgt. John R. Schmunk, Deputy EM Coordinator Address: 255 Roseland Avenue Essex Fells, NJ 07021 Phone Number: 201-615-2397 Email: jschmunk@essexfellsdpd.org
NFIP Floodplain Administrator	
Name / Title: Neglia Engineering Address: 34 Park Avenue Lyndhurst, NJ 07071 Phone Number: 201-939-8805 Email: nea@negliaengineering.com	

9.7.2 Jurisdiction Profile

The name Essex Fells was derived from the name of the County in which it resides and one of the founders of the Suburban Land Company, John F. Fell), who helped create the new residential community. An ordinance passed in 1928 limited commercial activity to single three-story buildings that are constructed to look like a house (The Borough of Essex Fells, New Jersey, 2014).

The Borough of Essex Fells operates under the borough form of government which consists of a Mayor and six-member Council. The Council is elected at-large every three years on a staggering basis with two seats coming up for election every year. The Mayor is elected every four years (The Borough of Essex Fells, New Jersey, 2014). According to the U.S. Census Bureau, the Borough has a total land area of 1.418 square miles, of which 1.412 square miles is land and 0.006 square miles is water.

According to the U.S. Census, the 2010 population for the Borough of Essex Fells was 2,113. The estimated 2017 population was 2,095, a 0.9 percent decrease from the 2010 Census. Data from the 2017 U.S. Census American Community Survey indicate that 4.9 percent of the population is 5 years of age or younger and 18 percent 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.

9.7.3 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 9.7-2 summarizes recent and expected future development trends, including major residential/commercial development and major infrastructure development. Figure 9.7.1 at the end of this annex illustrates the geographically-delineated hazard areas and the location of potential new development, where available.

Table 9.7-2. 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	0	0	0	0	0
Multi-Family	0	0	0	0	0
Other (commercial, mixed-use, etc.)	0	0	0	0	0
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 and Mitigation if located in Hazard Zone
Recent Major Development and Infrastructure from 2015 to Present					
None completed					
Known or Anticipated Major Development and Infrastructure in the Next Five (5) Years					
None identified					

* Only location-specific hazard zones or vulnerabilities identified.

9.7.4 Capability Assessment

The Borough of Essex Fells 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.

Areas that mitigation is currently integrated are summarized in this subsection. The Borough of Essex Fells 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 Essex Fells.

Table 9.7-3. Planning, Legal and Regulatory Capability

		Authority that enforces (Federal, State, Regional, County, Local)		Has the HMP been integrated in the last 5 years? If yes- how?	
	Do you have this? (Yes/No)		State Mandated / Allowed	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 and State	Yes	No	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. Borough of Essex Fells Building Code, Chapter 103 pg 103:1; Adopted 12/21/1976					
Zoning Code	Yes	Local and State	Yes	No	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 170 Land Development, Part 3 Zoning. Administered by the Planning Board and Zoning Board of Adjustment.					
Subdivisions	Yes	Local and State	Yes	No	No
Comment: State mandated - P.L.1975, c.291 (C.40:55D-47): 40:55D-37. Grant of power; referral of proposed ordinance; county planning board approval . Dictated by the Municipal Land Use Law. NJ Statute 40:27-6.2 The board of freeholders of any county having a county planning board shall provide for the review of all subdivisions of land within the county by said county planning board and for the approval of those subdivisions affecting county road or drainage facilities as set forth and limited hereinafter in this section. Borough of Essex Fells Subdivision Ordinance, Chapter 170 pg 170:48; Adopted 6/15/2014. Administered by the Planning Board and Zoning Board of Adjustment.					
Stormwater Management	Yes	Local	Yes	No	No
Comment: Title 7 of the NJ Administrative Code (N.J.A.C. 7:8). Borough of Essex Fells Stormwater Management Ordinance, Chapter 241 pg 241:1; Adopted 6/7/2005					
Post-Disaster Recovery	No	-	-	-	-
Comment:					
Real Estate Disclosure	Yes	State – Division of Consumer Affairs	Yes	No	No
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	Yes	Local, State	Yes	No	No
Comment: State mandated at local level. Adopted 4/16/1996, 170:50					
Shoreline Development	No	-	Yes – if coastal community	-	-
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	No
Comment: Chapter 170 Land Development, planning board					
Environmental Protection	No	-	Yes	-	-
Comment: The rules that are utilized by the NJDEP and other environmental agencies are codified at Title 7 of the NJ Municipal Administrative Code					



	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 #.
Flood Damage Prevention	Yes	Local	No	No	2020-Essex Fells-007
<i>Comment: Adopted 12/18/1979, Updated 6/5/2007, Chapter 141</i>					
Wellhead Protection	No	-	-	-	-
<i>Comment:</i>					
Emergency Management	No	-	-	-	-
<i>Comment:</i>					
Climate Change	No	-	-	-	-
<i>Comment:</i>					
Disaster Recovery Ordinance	No	-	-	-	-
<i>Comment:</i>					
Disaster Reconstruction Ordinance	No	-	-	-	-
<i>Comment:</i>					
Other	No	-	-	-	-
<i>Comment:</i>					
Planning Documents					
Comprehensive / Master Plan	Yes	Local	Yes	Yes	-
<i>Comment: Master Plan 2018: Borough of Essex Fells New Jersey. Issues affecting community: Dying and old trees being lost on public and private lands. Has a goal to replace usgar maple and dogwood trees on public lands and encourage new plantings on private lands. Master plan notes extensive tree damage and power outage from significant weather events. Trees are 80 to 130 years old. Oak Lane, Wootton Road, Fells Road, Oldchester Road, and Beechtree Lane. Goal to establish procedures to regularly address environmental issues.</i>					
Capital Improvement Plan	Yes	Local	Allowed	Yes	No
<i>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. Borough does not have a formal strategic plan, but capital budget is revised annually to account for present need.</i>					
Disaster Debris Management Plan	Yes	Local	No	No	No
<i>Comment: DPW service building - Borough trucks/outside contractors dump into a pile and grind to make mulch - DEP certified</i>					
Floodplain or Watershed Plan	No	-	No	-	-
<i>Comment:</i>					
Stormwater Management Plan	Yes	Local and State	Yes	Yes	No
<i>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). Administered by Neglia Engineering.</i>					
Stormwater Pollution Prevention Plan	No	Local and State	Yes	-	-
<i>Comment:</i>					



	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 #.
Urban Water Management Plan	No	-	No	-	-
<i>Comment:</i>					
Habitat Conservation Plan	No	-	No	-	-
<i>Comment:</i>					
Economic Development Plan	No	-	No	-	-
<i>Comment:</i>					
Shoreline Management Plan	No	-	No	-	-
<i>Comment:</i>					
Community Wildfire Protection Plan	No	-	No	-	-
<i>Comment:</i>					
Community Forest Management Plan	No	-	No	-	-
<i>Comment:</i>					
Transportation Plan	No	-	No	-	-
<i>Comment:</i>					
Agriculture Plan	No	-	No	-	-
<i>Comment:</i>					
Climate Action Plan	No	-	No	-	-
<i>Comment:</i>					
Tourism Plan	No	-	No	-	-
<i>Comment:</i>					
Business Development Plan	No	-	No	-	-
<i>Comment:</i>					
Other	Yes	Local	No	No	2020-Essex Fells-005
<i>Comment: Essex Fells Asset Management Plan documents issues with assets and actions that need to be implemented.</i>					
Response/Recovery Planning					
Comprehensive Emergency Management Plan (CEMP) / Emergency Operations Plan (EOP)	Yes	Local	Yes	Yes	No
<i>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. EOP Adopted 2018</i>					
Threat & Hazard Identification & Risk Assessment (THIRA)	No	-	-	-	-
<i>Comment:</i>					
Post-Disaster Recovery Plan	No	-	-	-	-
<i>Comment:</i>					



	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 #.
Continuity of Operations Plan	No	-	-	-	-
<i>Comment:</i>					
Public Health Plan	No	-	-	-	-
<i>Comment:</i>					
Other	No	-	-	-	-
<i>Comment:</i>					

Table 9.7-4. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits?	Yes, Planning Board
- If no, who does? If yes, which department?	
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.	No; The Borough has no capacity for substantial new development.

ADMINISTRATIVE AND TECHNICAL CAPABILITY

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

Table 9.7-5. Administrative and Technical Capabilities

Staff/Personnel Resource	Available?	Department/Agency/Position
Administrative Capability		
Planning Board	Yes	Planning Board
Mitigation Planning Committee	Yes	Mitigation Planning Committee
Environmental Board / Commission	Yes	Environmental Commission
Open Space Board / Committee	Yes	Open Space Committee
Economic Development Commission / Committee	No	-
Warning Systems / Services (reverse 911, outdoor warning signals)	Yes	Reverse 911, Nixle, General social media
Maintenance program to reduce risk	No	-
Mutual aid agreements	Yes	Varied
Technical/Staffing Capability		
Planners or engineers with knowledge of land development and land management practices	Yes	Engineering



Staff/Personnel Resource	Available?	Department/Agency/Position
Engineers or professionals trained in building or infrastructure construction practices	Yes	Engineering
Planners or engineers with an understanding of natural hazards	Yes	Engineering
Staff with training in benefit/cost analysis	No	-
Staff with training in green infrastructure	No	-
Staff with education/knowledge/training in low impact development	No	-
Surveyors	No	Outsourced as needed
Stormwater engineer	Yes	Neglia Engineering
Personnel skilled or trained in GIS applications	No	-
Scientist familiar with natural hazards in local area	No	-
Emergency manager	Yes	Office of Emergency Management; Department Heads
Grant writers	Yes	Engineering; Department Heads
Resilience Officer	No	-
Watershed planner	Yes	Engineering
Environmental specialist	Yes	Engineering
Other	No	-

FISCAL CAPABILITY

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

Table 9.7-6. Fiscal Capabilities

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants (CDBG, CDBG-DR)	Yes – Borough generally does not meet grant qualifications
Capital Improvements Project Funding	Yes – Finance
Authority to Levy Taxes for Specific Purposes	Yes – Mayor and Council
User Fees for Water, Sewer, Gas or Electric Service	Yes – Mayor and Council; Water and Sewer
Incur Debt through General Obligation Bonds	Yes – Mayor and Council
Incur Debt through Special Tax Bonds	Yes – Mayor and Council
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No
Clean Water Act 319 Grants (Nonpoint Source Pollution)	No
Other	No

EDUCATION AND OUTREACH CAPABILITY

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

Table 9.7-7. Education and Outreach Capabilities

Criterion	Response
Do you have a public information officer or communications office?	Yes – Chief of Police
Do you have personnel skilled or trained in website development?	No



Criterion	Response
Do you have hazard mitigation information available on your website? <ul style="list-style-type: none">If yes, briefly describe.	No
Do you use social media for hazard mitigation education and outreach? <ul style="list-style-type: none">If yes, briefly describe.	No
Do you have any citizen boards or commissions that address issues related to hazard mitigation? <ul style="list-style-type: none">If yes, briefly describe.	No
Do you have any other programs already in place that could be used to communicate hazard-related information? <ul style="list-style-type: none">If yes, briefly describe.	Yes – Reverse 911, Nixle, General social media
Do you have any established warning systems for hazard events? <ul style="list-style-type: none">If yes, briefly describe.	Nixle, CodeRed

COMMUNITY CLASSIFICATIONS

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

Table 9.7-8. Community Classifications

Program	Participating?	Classification	Date Classified
Community Rating System	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	No	-	-
Public Protection (Fire ISO Protection Class)	No	-	-
Storm Ready Certification	No	-	-
Firewise Community Classification	No	-	-
Sustainable Jersey	No	-	-

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 climate change and the jurisdiction’s rating.

Table 9.7-9. Adaptive Capacity of Climate Change

Hazard	Adaptive Capacity (Capabilities) - High/Medium/Low
Coastal Erosion and Sea Level Rise	Low
Coastal Storms (<i>hurricanes/tropical storms, nor'easters, coastal erosion, and storm surge</i>)	Low
Drought	Low
Earthquake	Low
Extreme Temperature	Medium
Flood (<i>riverine / flash flood, SLR</i>)	Low
Geological Hazards (<i>landslides and subsidence/sinkholes</i>)	Low



Hazard	Adaptive Capacity (Capabilities) - High/Medium/Low
Severe Weather (<i>high wind, tornado, TSTM, and hail</i>)	High
Severe Winter Weather (<i>heavy snow, blizzards, and ice storms</i>)	High
Wildfire	Medium
Civil Disorder	Low
Cyber Attack	Low
Disease Outbreak	Low
Economic Collapse	Medium
Hazardous Substances	Low
Utility Interruption	High
Terrorism	High
Transportation Failure	Low

Notes:

High = Capacity exists and is in use; Medium = Capacity may exist, but is not used or could use some improvement;

Low = Capacity does not exist or could use substantial improvement; Unsure = Not enough information is known to assign a rating.

NATIONAL FLOOD INSURANCE PROGRAM

This section provides specific information on the management and regulation of the regulatory floodplain.

Table 9.7-10. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Engineering
Who is your floodplain administrator? (name, department/position)	Neglia Engineering
Are any certified floodplain managers on staff in your jurisdiction?	Yes/No
What is the date that your flood damage prevention ordinance was last amended?	6/5/2007
Does your floodplain management program meet or exceed minimum requirements? <ul style="list-style-type: none">If exceeds, in what ways?	Meets
When was the most recent Community Assistance Visit or Community Assistance Contact?	None
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? <ul style="list-style-type: none">If so, state what they are.	No
Are any RiskMAP projects currently underway in your jurisdiction? <ul style="list-style-type: none">If so, state what they are.	No; Was included in the 2018 Hackensack-Passaic Watershed, 02030103 Flood Risk Report
Do your flood hazard maps adequately address the flood risk within your jurisdiction? <ul style="list-style-type: none">If no, state why.	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program?	No
<input type="checkbox"/> If so, what type of assistance/training is needed?	-
Does your jurisdiction participate in the Community Rating System (CRS)? <ul style="list-style-type: none">If yes, is your jurisdiction interested in improving its CRS Classification?If no, is your jurisdiction interested in joining the CRS program?	No
How many flood insurance policies are in force in your jurisdiction?*	Flood insurance policies: 9 Insurance in force: \$2,842,000



Criterion	Response
<ul style="list-style-type: none">What is the insurance in force?What is the premium in force?	Premium in force: \$3,468
How many total loss claims have been filed in your jurisdiction?*	Total loss claims: 12
<ul style="list-style-type: none">How many claims are still open or were closed without payment?What were the total payments for losses?	Claims still open or closed without payment: 2 Total payments for losses: \$100,750
Do you maintain a list of properties that have been damaged by flooding?	No
Do you maintain a list of property owners interested in flood mitigation?	No

*According to FEMA statistics as of March 31, 2019

ADDITIONAL AREAS OF EXISTING INTEGRATION

Building and Zoning Department: The Building Department serves to assist Essex Fells residents and commercial contractors wishing to initiate construction within the Borough. The responsibilities of this office include compliance with all State rules and regulations regarding construction including code enforcement for the following: UCC of New Jersey, IBC of New Jersey, IRC of New Jersey, IFC International, Fire Code NSP, National Standard Plumbing Code and the NEC National Electric Code.

West Orange Health Department: The Borough of Essex Fells shares a Health Department with West Orange. Staff is available for response at all times through central dispatch at the Police Department. The Health Department participates as a member of the Emergency Management Team and develops and updates the annexes that the department is responsible for. All divisions are utilized when indicated for natural disasters or biological/chemical events.

Public Works Department: The Public Works Department is responsible for building maintenance and repairs, snow plowing and street sweeping.

Essex Fells Water Department: The Essex Fells Water Department has 16 wells, with 3 water storage tanks, totaling 2.8 million gallons, various interconnections, booster pumping stations, and transmission and distribution facilities a treatment facility and a main pumping station. We supply drinking water not only the customers of Essex Fells, but supply the towns of Roseland, Caldwell, North Caldwell, and the Hilltop portion of Verona with drinking water. The Water Department is a 7 day a week operation with three full time employees sharing rotating shifts to maintain and operate its facilities. The Water Department every year undergoes various Capital Projects to upgrade and improve the Water system, from replacing residential meters, to replacing water mains, and wells. Duties include:

- Maintaining and repairs of well pumps
- Maintaining and repairs of water storage facilities
- Maintaining and repairs to water mains
- Maintaining and repairs to fire hydrants
- Maintaining and repair of residential water meters
- Reading of residential water meters for billing
- Water sampling in accordance with NJDEP standards

Municipal website: The Borough of Essex Fells municipal website (<http://www.essexfellsboro.com/>) includes information on stormwater and flooding.



Sustainable Essex Alliance: The Sustainable Essex Alliance (SEA) is a coalition of local municipal green teams and sustainability organizations working together to create solutions for local environments and economies. By operating as a single entity, the SEA has the opportunity to not only impact more environments, but also achieve more efficient results than we could alone. This helps to create the financial incentives needed to push sustainable actions such as reducing greenhouse gas emissions, using green energy solutions, and cutting waste while simultaneously increasing awareness and education in our communities. The Alliance is currently pursuing a renewable community energy aggregation program to provide residents of Essex County with the option of 100% green energy. The Alliance has also initiated the NJ Home Performance with ENERGYSTAR™ Program and Comfort Partners Program that offer rebates and financing for energy efficiency upgrades, insulation, and helpful assessments to reduce bills and environmental impact.

9.7.5 Hazard Event History Specific to the Jurisdiction

Essex 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 Essex County and its jurisdictions. The Borough of Essex Fells' history of federally-declared (as presented by FEMA) and significant hazard events (as presented in NOAA-NCEI) is consistent with that of Essex County. Table 9.7-11 provides details regarding municipal-specific loss and damages the Borough experienced during hazard events from 2014 to 2019; refer to Appendix E for a complete list of disaster declarations. Information provided in the table below is based on reference material or local sources.

Table 9.7-11. Hazard Event History

Date(s) of Event	Event Type (disaster declaration if applicable)	Hudson County Designated?	Summary of Event	Summary of Local Damages and Losses
March 7, 2018	Winter Storm	N/A	The storm brought heavy wet snow, strong gusty winds, and even some thundersnow across northeast New Jersey. Snowfall rates ranged from 1 to 3 inches per hour at times in the heaviest snow bands. Trained spotters and the public reported 1 to 2 feet of snow. 23.0 inches was reported in North Caldwell and 19.7 inches in Roseland. The heavy wet snow and strong winds also brought down trees and some power lines.	\$140,000 from State; Power outages, debris removal, overtime.
September 25, 2018	Flash Flooding	N/A	Rainfall amounts generally ranged from 3-5 inches, with one CoCoRaHS observer reporting 5.56 inches of rain in Palisades Park.	Flooding Forest Way, Devon Road



9.7.6 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 9.7-12 summarizes the Borough of Essex Fells risk assessment results and data used to determine the hazard ranking. The following summarizes the hazards of greatest concern and risk to the Borough of Essex Fells.

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 9.7-12. Summary of Risk Assessment Results

Hazard of Concern	Hazard/ Scenario(s) Evaluated	Population		Buildings		Economy (Loss)		Certainty Factor
Coastal Erosion and Sea Level Rise	Coastal Erosion Hazard Area (CEHA):	CEHA:	0	CEHA:	0	CEHA:	\$0	High
		SLR +1ft:	0	SLR +1ft:	0	SLR +1ft:	\$0	
	Sea Level Rise: NOAA +1ft and +3ft rise	SLR +3ft:	0	SLR +3ft:	0	SLR +3ft:	\$0	
Coastal Storm	100- and 500- MRP Hurricane Wind	Category 1:	92	Category 1:	19	100-year Wind Loss:	\$3,381,110	High
		Category 2:	951	Category 2:	197			
		Category 3:	2,229	Category 3:	462	500-year Wind Loss:	\$16,934,187	
		Category 4:	2,595	Category 4:	533			
Drought	Drought event	Majority of the County is serviced by water suppliers with surface water sources.		Droughts are not expected to cause direct damage to buildings.		Losses would be limited, due to lack of major agricultural industry.		Low
Earthquake	100, 500-, 2,500- Year Mean Return Period Event	NEHRP D&E:	2,368	NEHRP D&E:	504	100-year Loss:	\$0	High
		Liquefaction Class 4:	179	Liquefaction Class 4:	37	500-year Loss:	\$4,616,521	
						2,500-year Loss:	\$71,094,612	
Extreme Temperature	Extreme temperature event (heat or cold)	Over 65 Population:	4,600	Physical impacts due to extreme temperatures would be limited.		Loss of business function is possible due to unexpected repairs (i.e. pipes bursting) or Utility interruptions.		Low
		Population Below Poverty Level:	3,515					
Flood	100- and 500-Year Mean Return Period Event	100-year	716	100-year	152	100-year Loss:	\$269,142,437	High
		500-year	1,606	500-year	545			
Geological		Class A:	0	Class A:	0	Class A:	0	Moderate



Hazard of Concern	Hazard/ Scenario(s) Evaluated	Population		Buildings		Economy (Loss)		Certainty Factor
	High Landslide Susceptibility Areas	Class B:	5	Class B:	1	Class B:	\$359,884	
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.		Economic losses could be similar to those of the coastal storm (wind and surge) and flooding hazards.		Low
Severe Winter Weather	Severe Winter 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.		The cost of snow and ice removal and repair of roads can impact local operating budgets.		Low
Wildfire	Wildfire Fuel Hazard areas (High, Very High, Extreme)	Wildfire:	0	Wildfire:	0	Wildfire:	\$0	Moderate
Civil Disorder	Civil disorder event	Population in the immediate vicinity will be impacted.		Buildings in the immediate vicinity will be most impacted.		Economic assets in the immediate vicinity will be most impacted.		Low
Cyber Attack	Cyber-attack event	The degree of impact to the population depends on the scale of the incident.		Damages due to a cyber attack may be limited.		The degree of damages depends on the scale of the incident. Loss of utilities/communication would have widespread economic impacts.		Low
Disease Outbreak	An outbreak of one of the diseases evaluated	Entire population exposed; The degree of impact to the population depends on the scale of the incident		Disease outbreak would not have a direct impact on buildings.		Impacts to food supply and water supply; Costs of activities and programs implemented to address outbreaks and prevent spread.		Low



Hazard of Concern	Hazard/ Scenario(s) Evaluated	Population	Buildings	Economy (Loss)	Certainty Factor
Economic Collapse	Recessions, Depressions, Interruption of normal economic conditions	The degree of impact to the population depends on the scale of the incident.	Damages due to economic collapse may be limited; property owners that cannot afford to maintain the structure may become abandoned/run-down.	The degree of damages depends on the scale of the incident. Massive impacts due to loss of jobs, businesses, and tax revenue are possible.	Low
Hazardous Substances	Release of a hazardous substance whether fixed site or in-transit	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
Utility Interruption	Disruption of power or potable water caused by accident, sabotage, natural hazards, or equipment failure.	The degree of impact to the population depends on the scale of the incident.	The degree of damages to buildings depends on the scale of the incident; Physical impacts to structures may occur if utilities are keeping critical functions online (i.e. sump pumps).	The degree of damages depends on the scale of the incident.	Low
Terrorism	Terrorist Attack in the County	The degree of impact to the population depends on the scale of the incident; Population in the immediate vicinity will be impacted.	The degree of damages to buildings depends on the scale of the incident; Buildings in the immediate vicinity will be most impacted.	The degree of damages depends on the scale of the incident.	Low
Transportation Failure	One accident on any of the following: Roadway/vehicular, Aviation, Rail	The degree of impact to the population depends on the scale of the incident; Population in the immediate vicinity will be impacted.	The degree of damages to asset depends on the scale of the incident; Assets in the immediate vicinity will be most impacted.	The degree of damages depends on the scale of the incident; Assets in the immediate vicinity will be most impacted.	Low



REPETITIVE FLOOD LOSSES

The following summarizes the repetitive and severe repetitive flood losses in the Borough of Essex Fells.

- Number of repetitive loss (RL) properties: 0
- Number of severe repetitive loss (SRL) properties: 0
- Number of RL/SRL properties that have been mitigated: 0

Note: The number of SRL properties excludes RL properties.

RL and SRL as of 03/31/2019; SRL includes SRL properties that have been verified only (SRL_Indicator = V).

CRITICAL FACILITIES AND LIFELINES

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

Table 9.7-13. Potential Flood Losses to Critical Facilities and Lifelines

Name	Type	Exposure		Status of Mitigation
		1% Event	0.2% Event	
Well 6 (Essex Fells)	Potable Well		X	-

**Identified lifeline*

ADDITIONAL IDENTIFIED VULNERABILITIES

The jurisdiction has identified the following vulnerabilities within their community:

- Essex Fells provides water to five communities and the water infrastructure is considered critical as an attack or interruption would cause water shortages to five communities.
- Power lines Borough-wide are all above ground and vulnerable to damage from tree fallings and wind damage, which would cause an interruption to service.
- Widespread power outages and road closures occur during hazard events.
- Forest Way experiences flooding.
- Devon Road Flooding; area was originally a marsh.
- High Service/Low Service tanks have emergency response communications antenna on top. If these facilities lose power, emergency communications cannot function.
- The Essex Fells Asset Management Plan details issues with the Fells Road Pump. The pump is out of service and prone to leaks due to the line being active. The chamber is also not heated and vulnerable to freezing of the line that can cause service interruption.
- The Essex Fells Asset Management Plan details issues with the Fells Road /Rensselaer Crossover. The chamber is not heated and vulnerable to freezing of the line that can cause service interruption.



HAZARD AREA EXTENT AND LOCATION

Hazard area extent and location maps were generated for the Borough of Essex Fells 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 Essex Fells has significant exposure; Figures 9.7-1 and 9.7-2. These maps also display the location of the regulatory floodplain, as well as identified critical facilities, lifelines, and RL/SRL properties within the municipality.

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 4 of the plan. The ranking process involves an assessment of the likelihood of occurrence for each hazard; its potential impacts on people, property, and the economy; and 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 4.4 (Hazard Ranking), each plan participant may have differing degrees of risk exposure and vulnerability compared to Essex County as a whole. Therefore, each jurisdiction ranked the degree of risk to each hazard as it pertains to their community. During the review of the calculated hazard ranking, the Borough adjusted the calculated rankings to incorporate the perceived adaptive capacity of the community with respect to the relevant hazard and any other changes needed. The table below summarizes the hazard risk/vulnerability rankings of potential hazards for the Borough of Essex Fells. The Borough of Essex Fells has reviewed the Essex County hazard ranking table, as well as its individual results, to reflect the relative risk of the hazards of concern to the community. During the review of the hazard ranking, the Borough indicated the following:

- The Borough changed the hazard ranking for drought from medium to low.
- The Borough changed the hazard ranking for wildfire from low to medium.
- The Borough changed the hazard ranking for terrorism from low to high

Table 9.7-14. Borough of Essex Fells Hazard Ranking

Coastal Erosion and Sea Level Rise	Coastal Storm	Drought	Earthquake	Extreme Temperature	Flood
Low	Low	Low	Low	Medium	Low

Geological Hazards	Severe Storm	Winter Storm	Wildfire	Civil Disorder	Cyber Attack
Low	High	High	Medium	Low	Low

Disease Outbreak	Economic Collapse	Hazardous Substances	Utility Interruption	Terrorism	Transportation Failure
Low	Medium	Low	High	High	Low



9.7.7 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 9.7-15. 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 #
Essex Fells-1: Obtain backup power for critical facilities to ensure continuity of operations. The following has been identified as project locations at this time: 1. Essex Fells Police and Borough Hall generator 2. Essex Department of Public Works Generator 3. Essex Fells First Aid Squad generator	Borough OEM	In progress	X	2020-Essex Fells-001
Essex Fells-2: Upgrade security system for water utility	Borough OEM, Water Utility	In progress	X	2020-Essex Fells-002
Essex Fells-3: Auxiliary power for water utility to mitigate loss of potable water during power outages	Borough OEM, Water Utility	In progress	X	2020-Essex Fells-003
Essex Fells-4: Complete a flood study of the Pine Brook	Borough Engineer, FPA	Completed		
Essex Fells-5: Prioritize flood hazard mitigation alternatives for at risk properties within the floodplain, including those that have been identified as repetitive loss, such as acquisition/relocation, or elevation depending on feasibility. The parameters for feasibility for this initiative would be: funding, benefits versus costs and willing participation of property owners. Implement as funding becomes available. Specifically identified are properties in the following areas: • Oval Road • Roseland Avenue • Holly Lane	Borough Engineer, FPA	Ongoing capability		
Essex Fells-6: Develop and implement an enhanced all-hazards, public outreach / education / mitigation information program on natural hazard risks and what they can do in the way of mitigation and preparedness, including flood	Borough Supervisor's Office	In progress	X	2020-Essex Fells-004



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 #
insurance. This program will include brochures, flyers, website: <ul style="list-style-type: none"> • Providing general natural hazard risk, preparedness and mitigation, and related NFIP information in regular newsletter and mailings. • Including natural hazard risk and risk reduction information through social media channels and email blast systems. • Posting of flyers and other readily available NFIP informational materials at Town/Village hall or distributing at regular civic meetings. • Preparation, distribution and analysis of public surveys. • Developing/maintaining a natural hazard risk management webpage on the municipal website where information and mapping can be posted. • Enhance public outreach to residents in NFIP floodplain areas to inform of annual grant opportunities, etc. which may include periodic articles and handouts in the annual newsletter. 				

The Borough did not identify any other activities that were completed in addition to those in the 2015 HMP mitigation strategy.

PROPOSED HAZARD MITIGATION INITIATIVES FOR THE PLAN UPDATE

The Borough of Essex Fells participated in a risk assessment workshop in September 2019 in which detailed information was provided about assets exposed and vulnerable to the identified hazards of concern. The Borough of Essex Fells was provided a Mitigation Toolbox that included a mitigation catalog developed specifically for Essex 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 H (Mitigation Strategy Supplement) provide a more complete description of the Mitigation Toolbox and its resources.

Table 9.7-16 summarizes the comprehensive-range of specific mitigation initiatives the Borough of Essex Fells 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 (4) FEMA mitigation action categories and the six (6) 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 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 9.7-17 provides a summary of the prioritization of all proposed mitigation initiatives for this HMP update and Table 9.7-18 summarizes the actions by type across hazards of concern.

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Table 9.7-16. Proposed Hazard Mitigation Initiatives

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-Essex Fells-001	Obtain backup power for critical facilities	Critical facilities require backup power in order to maintain continuity of operations.	The Borough will work to obtain and install generators for the following: 1. Essex Fells Police and Borough Hall 2. Essex Department of Public Works 3. Essex Fells First Aid Squad 4. High Service/Low Service tanks.	Existing	Utility Interruption	6	<u>Borough OEM</u>	HMGP, PDM, municipal budget	Continuity of operations maintained at critical facilities	\$25,000 per generator	Within 5 years	High	SIP	PP, ES
2020-Essex Fells-002	Upgrade security system for water utility	Attack or interruption would cause water shortages to five communities.	The Borough will install 25 replacement doors for 16 water utility facilities	Existing	Utility Interruption, Terrorism	1, 2, 5	<u>Borough OEM</u> , Water Utility	Municipal budget, HMGP, PDM	Increase security to prevent loss of water utility.	\$75,000	Within 5 years	High	SIP	PP
2020-Essex Fells-003	Auxiliary power for water utility	Power loss results in water shortages to five communities.	Purchase and install a backup generator and necessary electrical components	Existing	Utility Interruption	6	<u>Borough OEM</u> , Water Utility	HMGP, PDM	Continuity of operations	\$25,000 per generator	Within 5 years	High	SIP	PP, ES
2020-Essex Fells-004	Work with utility companies to trim problem trees	Power lines Boroughwide are all above ground and	The Borough will keep records of public	Existing	Utility Interruption, Severe Storm,	2	<u>Borough OEM</u> , PSE&G	Municipal budget	Reduction in utility interruption	Staff time	Within 6 months.	High	LPR	PR



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
		vulnerable to damage from tree fallings and wind damage, which would cause an interruption to service.	concerns for tree locations that would be likely to have falling branches near utility lines. The Borough will relay this information to utility companies who will address the problem.		Severe Winter Storm									
2020- Essex Fells-004	Increase all-hazards education and outreach	Problem: The public needs to have knowledge on hazards to make appropriate safety and preparedness decisions.	Solution: Develop and implement an enhanced all-hazards, public outreach / education / mitigation information program on natural hazard risks and what they can do in the way of mitigation and preparedness , including flood insurance. This program will include brochures,	N/A	All hazards	3, 4	<u>Borough Supervisor's Office</u>	Municipal budget	Educated publi	Staff time, \$1,000	Within 3 years	High	EAP	PI



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
			flyers, website: •Providing general natural hazard risk, preparedness and mitigation, and related NFIP information in regular newsletter and mailings. •Including natural hazard risk and risk reduction information through social media channels and email blast systems. •Posting of flyers and other readily available NFIP informational materials at Borough hall or distributing at regular civic meetings											
2020-Essex Fells-005	Upgrade Fells Road Pump and Fells	The Essex Fells Asset Management Plan details	The Borough will repair the pump and	Existing	Utility Interruption, Extreme Temperature	1, 2, 6	Public Works	Municipal budget	Service interruption reduced.	\$75,000	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
	Road/Rensselaer Crossover	issues with the Fells Road Pump and the Fells Road/Rensselaer Crossover. The pump is out of service and prone to leaks. The Crossover chamber is not heated and vulnerable to freezing of the line that can cause service interruption.	investigate what options exist to prevent the chamber from freezing and implement the desired action.											
2020- Essex Fells-006	Mitigate flooding at Devon Road and Forest Way.	Devon Road and Forest Way are prone to flooding.	The Borough will conduct a drainage study of Devon Road and Forest Way to determine the causes of flooding and possible actions to reduce flooding. The Borough will then implement the desired actions.	Existing	Flood, Severe Storm	1, 2	<u>Engineering</u>	Municipal budget, HMGP, BRIC	Reduction in flooding on Devon Road and Forest Way	To be determined by drainage study	Within 5 years	Medium	LPR, SIP	SP
2020- Essex Fells-007	Update Flood Damage Prevention Ordinance to include freeboard	The current FDPO does not include the state's freeboard requirement.	The Borough will update the FDPO to include the state mandated	New	Flood	2	<u>FPA</u>	Municipal budget	Meet state standards, reduce future flood risk	\$100	Within 6 months	High	LPR	PR



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
			freeboard requirement.											

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 9.7-17. Summary of Prioritization of Actions

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-Essex Fells-001	Obtain backup power for critical facilities	1	1	1	1	1	1	0	1	1	1	0	0	1	1	11	High
2020-Essex Fells-002	Upgrade security system for water utility	1	1	1	1	1	1	0	1	1	1	1	0	1	1	12	High
2020-Essex Fells-003	Auxiliary power for water utility	1	1	1	1	1	1	0	1	1	1	0	0	1	1	11	High
2020-Essex Fells-004	Increase all-hazards education and outreach	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	High
2020-Essex Fells-004	Work with utility companies to trim problem trees	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	High
2020-Essex Fells-005	Upgrade Fells Road Pump and Fells Road/Rensselaer Crossover	1	1	0	1	1	1	0	1	1	1	1	0	1	1	11	High
2020-Essex Fells-006	Mitigate flooding at Devon Road and Forest Way.	0	1	0	1	1	1	0	1	0	0	1	0	1	1	8	Medium
2020-Essex Fells-007	Update Flood Damage Prevention Ordinance to include freeboard	0	1	1	1	1	1	1	1	1	1	0	1	1	1	12	High

Notes: Section 6 (Mitigation Strategy) conveys guidance on prioritizing mitigation actions.
Low (0-4), Medium (5-8), High (9-14).



Table 9.7-18. 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
Coastal Erosion and Sea Level Rise			2020-Essex Fells-004					
Coastal Storm			2020-Essex Fells-004					
Drought			2020-Essex Fells-004					
Earthquake			2020-Essex Fells-004					
Extreme Temperature		2020-Essex Fells-005	2020-Essex Fells-004					
Flood	2020-Essex Fells-007		2020-Essex Fells-004			2020-Essex Fells-006		
Geological Hazards			2020-Essex Fells-004					
Severe Weather	2020-Essex Fells-004		2020-Essex Fells-004					
Winter Storm	2020-Essex Fells-004		2020-Essex Fells-004					
Wildfire			2020-Essex Fells-004					
Civil Disorder			2020-Essex Fells-004					
Cyber Attack			2020-Essex Fells-004					
Disease Outbreak			2020-Essex Fells-004					
Economic Collapse			2020-Essex Fells-004					
Hazardous Substances			2020-Essex Fells-004					
Utility Interruption	2020-Essex Fells-004	2020-Essex Fells-001, 2020-Essex Fells-002, 2020-Essex Fells-003, 2020-Essex Fells-005	2020-Essex Fells-004		2020-Essex Fells-001, 2020-Essex Fells-003			
Terrorism			2020-Essex Fells-004					
Transportation Failure			2020-Essex Fells-004					

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

9.7.8 Staff and Local Stakeholder Involvement in Annex Development

The Borough of Essex Fells 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. In addition, several municipal representatives were asked to review and contribute to the draft annex as documented on the annex sign-



off sheets in Appendix B (Participation Documentation). 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 9.7-19. Contributors to the Annex

Entity	Title	Method of Participation
Jim Egan	Director of OEM	Primary POC, Provided impact data, Reviewed draft and provided comments.
Sgt. John R. Schmunk, Deputy EM Coordinator	Sgt. John R. Schmunk, Deputy EM Coordinator	Secondary POC, Reviewed draft and provided comments.

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Figure 9.7-1. Borough of Essex Fells Hazard Area Extent and Location Map

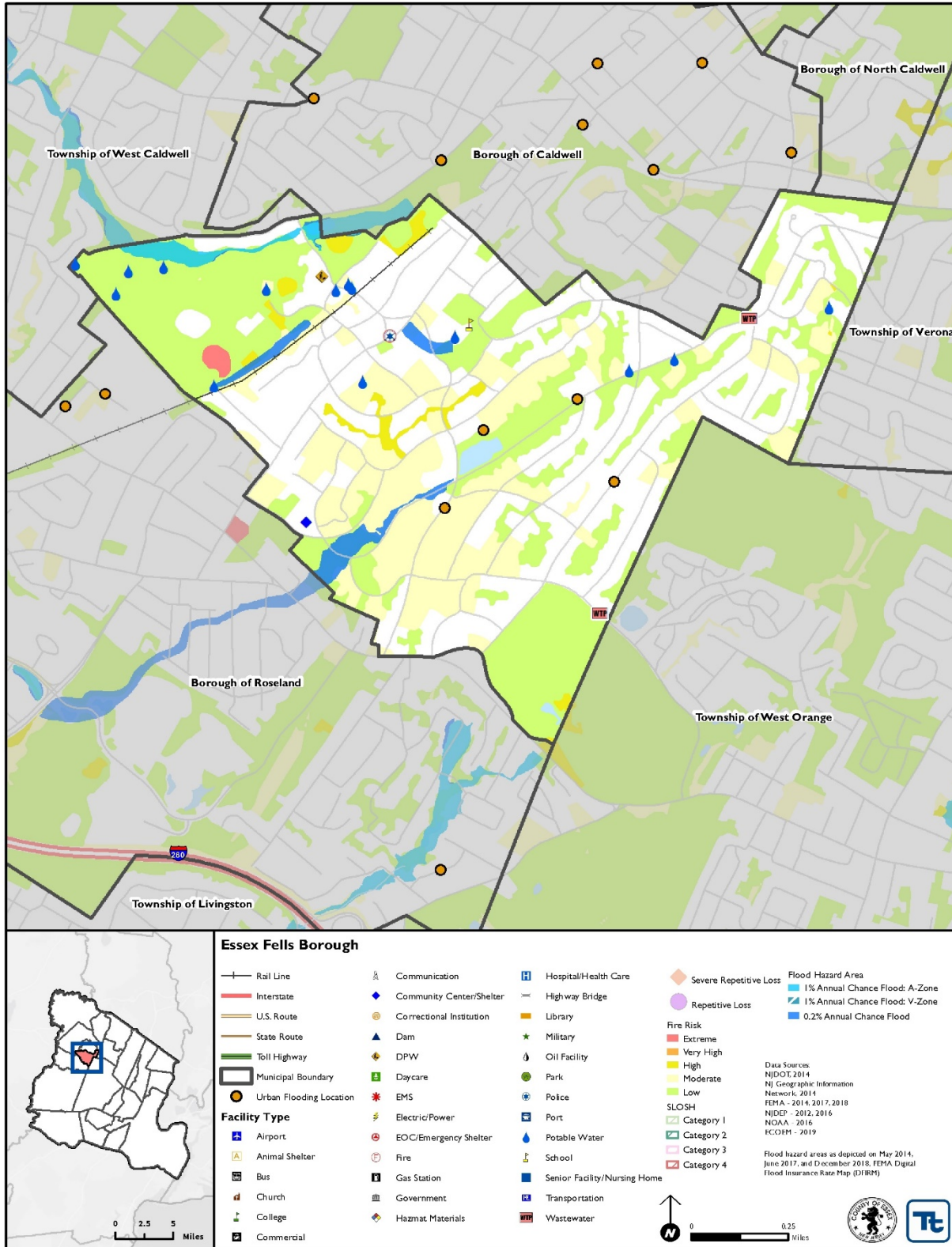
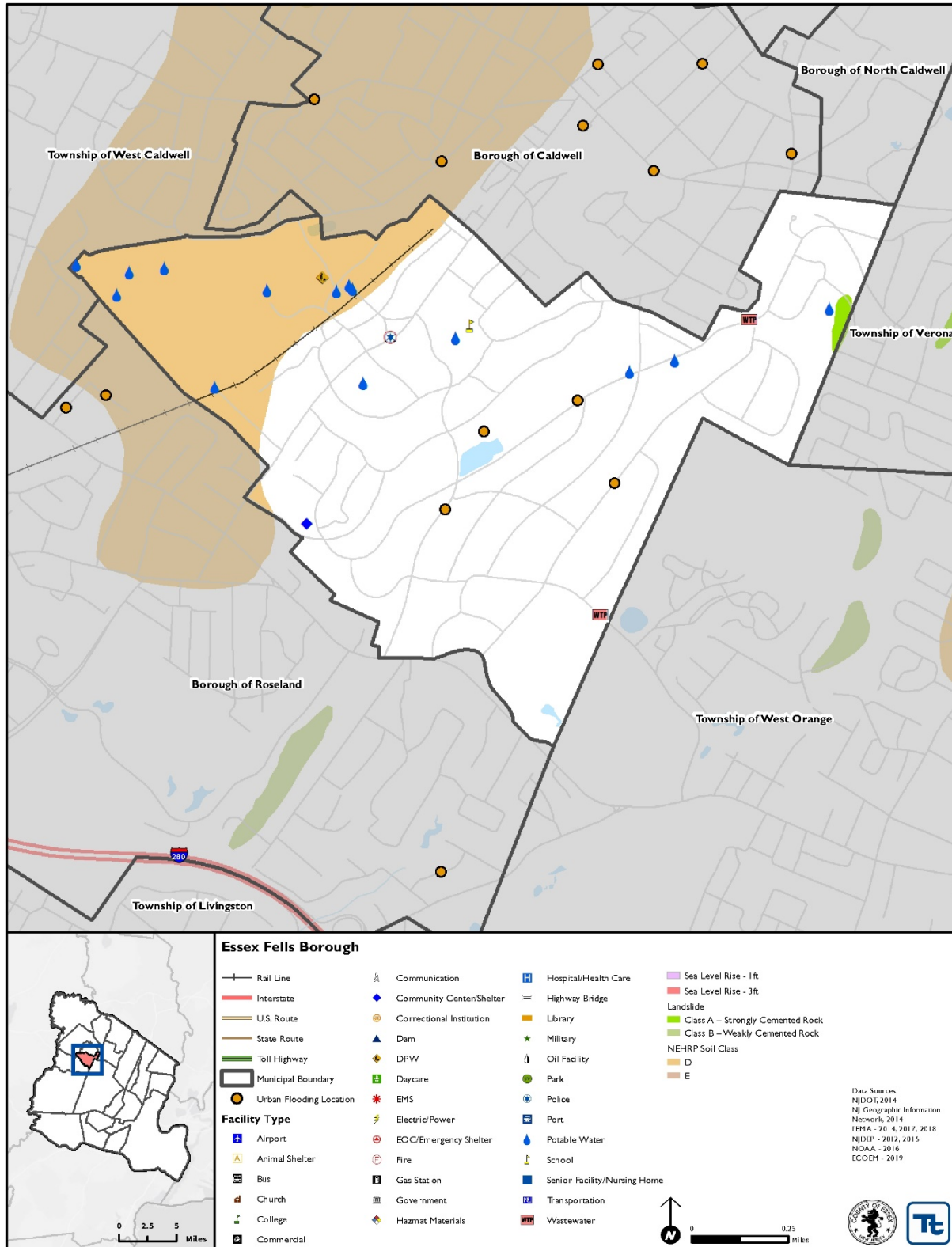




Figure 9.7-2. Borough of Essex Fells Hazard Area Extent and Location Map 2





Action Worksheet			
Project Name:	Obtain backup power for critical facilities		
Project Number:	2020-Essex Fells-001		
Risk / Vulnerability			
Hazard(s) of Concern:	Utility Interruption		
Description of the Problem:	Critical facilities require backup power in order to maintain continuity of operations. The following facilities lack backup power: 1. Essex Fells Police and Borough Hall 2. Essex Department of Public Works 3. Essex Fells First Aid Squad 4. High Service/Low Service tanks.		
Action or Project Intended for Implementation			
Description of the Solution:	The Borough will work to obtain and install generators, in addition to necessary electrical components at the identified facilities.		
Is this project related to a Critical Facility or Lifeline?	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:	6
Estimated Cost:	\$25,000 per generator	Mitigation Action Type:	Structure and Infrastructure Projects (SIP)
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Within 5 years
Estimated Time Required for Project Implementation:	1 year	Potential Funding Sources:	HMGP, PDM, municipal budget
Responsible Organization:	Borough OEM	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
	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:	Obtain backup power for critical facilities	
Project Number:	2020-Essex Fells-001	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Project will protect critical services of critical facilities.
Property Protection	1	Project will protect critical facilities 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	0	Utility replace
Timeline	0	Within 5 years
Agency Champion	1	Borough OEM
Other Community Objectives	1	
Total	11	
Priority (High/Med/Low)	High	



Action Worksheet			
Project Name:	Upgrade security system for water utility		
Project Number:	2020-Essex Fells-002		
Risk / Vulnerability			
Hazard(s) of Concern:	Utility Interruption, Terrorism		
Description of the Problem:	A terrorist attack or other interruption would cause water shortages to the five communities serviced by the water utility.		
Action or Project Intended for Implementation			
Description of the Solution:	The Borough will purchase and install 25 replacement doors for 16 water utility facilities. These facilities, the number of doors, and their cost are listed below:		
	Facility	Number of Doors	Cost
	Well 2 EFCC	2 Doors	\$6,000.00
	Well 4A West Caldwell Gray St	4 Doors	\$12,000.00
	Well 5 102 Hathaway Ln	1 Door	\$3,000.00
	Well 6 Inwood Rd	1 Door	\$3,000.00
	Well 7 Essex Fells Trotter Tract	1 Door	\$3,000.00
	Well 8 Essex Fells Trotter Tract	1 Door	\$3,000.00
	Well 9 Essex Fells Trotter Tract	1 Door	\$3,000.00
	Well 10 Eisenhower PKWY Roseland	1 Door	\$3,000.00
	Well 11 Eagle Rock Ave Roseland	2 Doors	\$6,000.00
	Well 12 Eisenhower PKWY Roseland	2 Doors	\$6,000.00
	Well 13 Dodd Rd West Caldwell	1 Door	\$3,000.00
	Well 14 Essex Fells Trotter Tract	1 Door	\$3,000.00
	Well 15 Pitcairn Dr Roseland	1 Door	\$3,000.00
	Well 16 Pitcairn Dr Roseland	1 Door	\$3,000.00
	Well 17 Harrison Ave Roseland	1 Door	\$3,000.00
	# 1 Pump House 318 Runnymede Rd Essex Fells	4 Doors	\$12,000.00
Is this project related to a Critical Facility or Lifeline?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	



Level of Protection:	Security of facilities improved.	Estimated Benefits (losses avoided):	Increase security to prevent loss of water utility.
Useful Life:	25 years	Goals Met:	1, 2, 5
Estimated Cost:	\$75,000	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 :	2 years	Potential Funding Sources:	Municipal budget, HMGP, PDM
Responsible Organization:	Borough OEM, Water Utility	Local Planning Mechanisms to be Used in Implementation if any:	Hazard Mitigation Planning
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Replace locks on doors	\$25 per lock	Easily cut, doors still weak.
	Install fencing	\$12 per linear foot	Fence can be easily cut or climbed.
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	Upgrade security system for water utility	
Project Number:	2020-Essex Fells-002	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Project protects water utility's critical service
Property Protection	1	Project protects critical facilities
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	Borough has the legal authority to complete the project
Fiscal	0	Project requires funding support
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	Terrorism, Utility Replace
Timeline	0	Within 5 years
Agency Champion	1	Borough OEM, Water Utility
Other Community Objectives	1	Protects service to neighboring facilities
Total	12	
Priority (High/Med/Low)	High	



Action Worksheet			
Project Name:	Auxiliary power for water utility		
Project Number:	2020-Essex Fells-003		
Risk / Vulnerability			
Hazard(s) of Concern:	Utility Interruption		
Description of the Problem:	Power loss at water utility facilities results in water shortages to five communities that are serviced by the water utility.		
Action or Project Intended for Implementation			
Description of the Solution:	The Borough will identify water utility facilities that require backup power. The Borough will work to obtain and install generators at those facilities, in addition to necessary electrical components at the identified facilities.		
Is this project related to a Critical Facility or Lifeline?	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:	6
Estimated Cost:	\$25,000 per generator	Mitigation Action Type:	Structure and Infrastructure Projects (SIP)
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Within 5 years
Estimated Time Required for Project Implementation:	1 year	Potential Funding Sources:	HMGP, PDM, municipal budget
Responsible Organization:	Borough OEM, Water Utility	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
	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:	Auxiliary power for water utility	
Project Number:	2020-Essex Fells-003	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Project will protect critical services of water utility.
Property Protection	1	Project will protect water utility facilities 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	0	Utility replace
Timeline	0	Within 5 years
Agency Champion	1	Borough OEM
Other Community Objectives	1	
Total	11	
Priority (High/Med/Low)	High	



Action Worksheet			
Project Name:	Mitigate flooding at Devon Road and Forest Way.		
Project Number:	2020-Essex Fells-006		
Risk / Vulnerability			
Hazard(s) of Concern:	Flood, Severe Storm		
Description of the Problem:	Devon Road and Forest Way are prone to flooding. Devon Road is currently undergoing reconstruction which may change flooding but the likely results are currently unknown.		
Action or Project Intended for Implementation			
Description of the Solution:	Conduct a drainage study to determine the cause of flooding. Implement drainage solutions, including drainage basins and increased sewer capacity to carry excess stormwater away from these locations.		
Is this project related to a Critical Facility or Lifeline?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Level of Protection:	TBD	Estimated Benefits (losses avoided):	Reduction in flood risk in selected areas
Useful Life:	TBD by drainage study	Goals Met:	1, 2
Estimated Cost:	TBD by study	Mitigation Action Type:	Local Plans and Regulations, Structure and Infrastructure Projects
Plan for Implementation			
Prioritization:	Medium	Desired Timeframe for Implementation:	Within 5 years
Estimated Time Required for Project Implementation:	5 years	Potential Funding Sources:	HMGP, BRIC, municipal budget
Responsible Organization:	Engineering	Local Planning Mechanisms to be Used in Implementation if any:	Hazard mitigation planning, stormwater planning
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Elevate roadways	\$500,000	Costly and may not solve problem
	Relocate roadways	N/A	Not possible
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			
Action Worksheet			
Project Name:	Mitigate flooding at Devon Road and Forest Way.		
Project Number:	2020-Essex Fells-006		
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate	
Life Safety	0		
Property Protection	1	Reduction in flooding risk	
Cost-Effectiveness	0		



Technical	1	Technically feasible project
Political	1	
Legal	1	The Borough has the legal authority to conduct the project.
Fiscal	0	Project will require grant funding.
Environmental	1	
Social	0	Project would reduce flooding impacts.
Administrative	0	
Multi-Hazard	1	Flood, Severe Storm
Timeline	0	
Agency Champion	1	Engineering
Other Community Objectives	1	
Total	8	
Priority (High/Med/Low)	Medium	