



## 9.9 TOWNSHIP OF DENVILLE

This section presents the jurisdictional annex for the Denville. The annex includes a general overview of the Township of Denville; an assessment of the Township of Denville'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.

### 9.9.1 Hazard Mitigation Planning Team

The following individuals are the Township of Denville's identified HMP update primary and alternate points of contact and NFIP Floodplain Administrator.

*Table 9.9-1. Hazard Mitigation Planning Team*

Primary Point of Contact	Alternate Point of Contact
Name / Title: Wesley Sharples, Emergency Manager Address: 1 St. Mary's Place Denville, NJ 07834 Phone Number: 973-627-4900 x368 Email: wsharples@clenvillepolice.org	Name / Title: John Ruschke, Engineer Address: 1 St. Mary's Place Denville, NJ 07834 Phone Number: 973-625-8300 Email: john.ruschke@mottmac.com
NFIP Floodplain Administrator	
Name / Title: John Ruschke, PE, CFM Address: 1 St. Mary's Place Denville, NJ 07834 Phone Number: 973-625-8300 Email: john.ruschke@mottmac.com	

### 9.9.2 Jurisdiction Profile

Denville Township is located in eastern Morris County. According to the U.S. Census, the Township has a total area of 12.64 square miles, of which 11.87 square miles is land and 0.77 square miles is water. It is bordered to the north by Rockaway Township, to the south by the Township of Parsippany-Troy Hills and Morris Township to the east by the Borough of Mountain Lakes and the Townships of Parsippany-Troy Hills and Boonton, and to the west by the Township and Borough of Rockaway and the Township of Randolph. The Rockaway River flows through the northern half of the Township. Other streams and creeks in the Township include Beaver Brook, Den Brook, Mount Tabor Brook, Watnong Brook, and North Branch Whippany River. Indian Lake, Holstein Lake, Arrowhead Lake, Cedar Lake, Cooks Pond, Rock Ridge Lake, and Cooper Lake are larger bodies of water located in the Township as well. Several unincorporated areas are located in the Township and include: Franklin and Union Hill.

The Township is governed by a seven-member Council.

According to the U.S. Census, the 2010 population for the Township of Denville was 16,635. The estimated 2017 population was 16,822, a 1.1 percent increase from the 2010 Census. Data from the 2017 U.S. Census American Community Survey indicate that 5.4 percent of the population is 5 years of age or younger and 17.9 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.



### 9.9.3 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 9.9-2 summarizes recent and expected future development trends, including major residential/commercial development and major infrastructure development. Figures 9.9-1 and 9.9-2 at the end of this annex illustrate the geographically-delineated hazard areas and the location of potential new development.

**Table 9.9-2. Recent and Expected Future Development**

Type of Development	2014	2015	2016	2017	2018
<b>Number of Building Permits for New Construction Issued Since the Previous HMP</b>					
Single Family	8	11	15	12	12
Multi-Family	15	90	0	0	0
Other (commercial, mixed-use, etc.)	0	0	0	1	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
<b>Recent Major Development and Infrastructure from 2015 to Present</b>					
Estling Village	Residential	100 Units	Block 30601, Lot 6	N/A	Complete
<b>Known or Anticipated Major Development and Infrastructure in the Next Five (5) Years</b>					
Enclave at Denville	Residential	116 Units	Block 40203, Lot 1 & Block 40001, Lot 4	N/A	Approved by Planning Board, Construction not started
Glenmount Commons ("Casterline Estates")	Residential	75 Units	Block 10002, Lot 3	N/A	Approved by Planning Board, Construction not started

\* Only location-specific hazard zones or vulnerabilities identified.

### 9.9.4 Capability Assessment

The Township of Denville 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. Areas that mitigation is currently integrated are summarized below. The Township of Denville 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 Township of Denville and where hazard mitigation has been integrated.

**Table 9.9-3. 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	Yes	-
<i>Comment: State mandated on local level under NJAC 5:23-3.14. International Building Code – New Jersey Edition, 2018, NJAC 5:24-3.14. State Uniform Construction Code Act (N.J.S. 52:27D-119 et seq.); Chapter XI of Municipal Code, 2015. Administered by the Building Code Official.</i>					
Zoning Code	Yes	Local	Yes	No	-
<i>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 XX of the Township Code. Administered by the Planning &amp; Zoning Boards. "The Township of Denville Land Use Ordinance (Chapter 19 of the municipal code) was adopted in order to:</i> <ul style="list-style-type: none"><li><i>To guide the appropriate use or development of all lands in the Township, in a manner which will promote the public health, safety, morals and general welfare.</i></li><li><i>To secure safety from fire, flood, panic and other natural and man-made disasters.</i></li><li><i>To provide adequate light, air and open space.</i></li><li><i>To ensure that the development of the Township does not conflict with the development and general welfare of neighboring municipalities, the County and the State as a whole.</i></li><li><i>To promote the establishment of appropriate population densities and concentrations that will contribute to the well-being of persons, neighborhoods, communities and regions and preservation of the environment.</i></li><li><i>To encourage the appropriate and efficient expenditure of public funds by the coordination of public development with land use policies.</i></li><li><i>To provide sufficient space in appropriate locations for a variety of agricultural, residential, recreational, commercial and industrial uses and open space, both public and private, according to their respective environmental requirements in order to meet the needs of all citizens.</i></li><li><i>To encourage the location and design of transportation routes which will promote the free flow of traffic while discouraging location of such facilities and routes which result in congestion or blight.</i></li><li><i>To promote a desirable visual environment through creative development techniques and good civic design and arrangement.</i></li><li><i>To promote the conservation of historic sites and districts, open space, energy resources and valuable natural resources and to prevent urban sprawl and degradation of the environment through improper use of land.</i></li><li><i>To encourage planned unit developments which incorporate the best features of design and relate the type, design and layout of residential, commercial, industrial and recreational development to the particular site.</i></li><li><i>To encourage senior citizen community housing construction.</i></li><li><i>To encourage coordination of the various public and private procedures and activities shaping land development with a view of lessening the cost of such development and to the more efficient use of land.</i></li><li><i>To promote utilization of renewable energy resources; and</i></li><li><i>To promote the maximum practicable recovery and recycling of recyclable materials from municipal solid waste through the use of planning practices designed to incorporate the State Recycling Plan goals and to complement municipal recycling programs."</i></li></ul>					
Subdivisions	Yes	Local	Yes	No	-
<i>Comment: Chapter XIX (Land Use) Article 4 of Township Code. Administered by the Planning &amp; Zoning Boards.</i>					
Stormwater Management	Yes	Local	Yes	No	-



	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 #.
<b>Comment:</b> Title 7 of the NJ Administrative Code (N.J.A.C. 7:8); Chapter XIX (Land Use) Article 4 of Township Code (19-4.16 STORMWATER CONTROL). Administered by the Planning and Zoning Boards.					
Post-Disaster Recovery	No	-	-	-	-
<b>Comment:</b>					
Real Estate Disclosure	Yes	State – Division of Consumer Affairs	Yes	Yes	-
<b>Comment:</b> 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	No	-
<b>Comment:</b> State mandated at local level;					
Site Plan Review	Yes	Local	Yes	No	-
<b>Comment:</b> Chapter XIX (Land Use) Article 4. Administered by the Planning & Zoning Boards.					
Environmental Protection	Yes	Local	Yes	No	
<b>Comment:</b> The rules that are utilized by the NJDEP and other environmental agencies are codified at Title 7 of the NJ Municipal Administrative Code. Chapter 29 Environmental Regulations, to control application of fertilizers. Administered by the Code Department.					
Flood Damage Prevention	Yes	Local	Yes	No	-
<b>Comment:</b> Chapter XIX (Land Use) Article 5. Administered by John Ruschke, PE, CFM.					
Wellhead Protection	No	-	-	-	-
<b>Comment:</b>					
Emergency Management	Yes	Local	-	No	-
<b>Comment:</b> Chapter 2 Administration Article X Policies and Procedures. Mutual aid agreement for police protection (Morris County Regional Emergency Deployment System).					
Climate Change	No	-	-	-	-
<b>Comment:</b>					
Disaster Recovery Ordinance	No	-	-	-	-
<b>Comment:</b>					
Disaster Reconstruction Ordinance	No	-	-	-	-
<b>Comment:</b>					
Soil and Soil Removal Ordinance	Yes	Local	No	No	-
<b>Comment:</b> The Township of Denville Soil and Soil Removal Ordinance (Chapter 17 of the municipal code) was adopted to control soil erosion and the resulting sedimentation from occurring on and in areas within the Township, by requiring proper provisions for water disposal and the protection of soil surfaces, and to control, regulate and prevent conditions which cause improper water run-off, soil disturbances, distribution or removal of ground cover or plant damage.					
Removal of Trees Ordinance	Yes	Local	No	No	-
<b>Comment:</b> The Removal of Trees Ordinance (Chapter 13 of the municipal code) was adopted to control and regulate indiscriminate and excessive removal, cutting and destruction of trees upon tracts of land, and to control, regulate and prevent conditions which cause increased surface drainage, siltation, sedimentation and soil erosion, and decreased soil fertility; create dust and mosquito breeding places; impair the stability and value of real estate; all of which conditions are, and will, in the future, be a deterrent to the public safety, health and general welfare.					
Planning Documents					
Comprehensive / Master Plan	Yes/No	Local	Yes	No	-
<b>Comment:</b> Master Plan 2000. Planning & Zoning Boards.					
Capital Improvement Plan	Yes/No	Local	Allowed	Yes	-



	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 #.
<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. Annual, Bond Ordinance for capital improvements #19-15. Administered by the Planning Board.</i>					
<b>Disaster Debris Management Plan</b>	No		No		
<i>Comment:</i>					
<b>Floodplain or Watershed Plan</b>	No	-	No	-	-
<i>Comment:</i>					
<b>Stormwater Management Plan</b>	Yes	Local and State	Yes	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). Last updated March 2005. Administered by Engineering/Administration.</i>					
<b>Stormwater Pollution Prevention Plan</b>	Yes		Yes		
<i>Comment:</i>					
<b>Urban Water Management Plan</b>	No		No		
<i>Comment:</i>					
<b>Habitat Conservation Plan</b>	No		No		
<i>Comment:</i>					
<b>Economic Development Plan</b>	No	-	No	-	-
<i>Comment:</i>					
<b>Shoreline Management Plan</b>	No		No		
<i>Comment: Not Applicable, No Shoreline</i>					
<b>Community Wildfire Protection Plan</b>	No		No		
<i>Comment:</i>					
<b>Community Forest Management Plan</b>	No		No		
<i>Comment:</i>					
<b>Transportation Plan</b>	Yes	Local	No	No	-
<i>Comment: As part of EOP 2011.</i>					
<b>Agriculture Plan</b>	No		No		
<i>Comment:</i>					
<b>Climate Action Plan</b>	No		No		
<i>Comment:</i>					
<b>Tourism Plan</b>	No		No		
<i>Comment:</i>					
<b>Business Development Plan</b>	No		No		
<i>Comment:</i>					
<b>Open Space Plan</b>	Yes	Local	Yes	No	-
<i>Comment: Part of Master Plan Re-Examination 2006.</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 #.
Response/Recovery Planning					
Comprehensive Emergency Management Plan (CEMP) / Emergency Operations Plan (EOP)	Yes	Local	Yes	No	-
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. Emergency Operations Plan of 2011. Administered by OEM.					
Threat & Hazard Identification & Risk Assessment (THIRA)	No				
Comment:					
Post-Disaster Recovery Plan	Yes	Local	No	No	-
Comment: As part of Emergency Operations Plan of 2011.					
Continuity of Operations Plan	No				
Comment:					
Public Health Plan	No				
Comment:					
Other					
Comment:					

**Table 9.9-4. Development and Permitting Capability**

Criterion	Response
Does your jurisdiction issue development permits? - If no, who does? If yes, which department?	Yes, Construction Department
Does your jurisdiction have the ability to track permits by hazard area?	Yes, the Township has access to the County GIS system
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, buildable lands were identified in the most recent COAH report.

## ADMINISTRATIVE AND TECHNICAL CAPABILITY

The table below summarizes potential staff and personnel resources available to the Township of Denville.

**Table 9.9-5. Administrative and Technical Capabilities**

Staff/Personnel Resource	Available?	Department/Agency/Position
<b>Administrative Capability</b>		
Planning Board	Yes	Township Planning Board
Mitigation Planning Committee	Yes	HMP Update Planning Committee





Staff/Personnel Resource	Available?	Department/Agency/Position
Environmental Board / Commission	Yes	Township Environmental Commission; Green Team/Sustainable NJ
Open Space Board / Committee	Yes	Open Space Committee
Economic Development Commission / Committee	No	-
Warning Systems / Services (reverse 911, outdoor warning signals)	Yes	Nixle, Everbridge (reverse 911), and flood prone area of Denville Park has a listing of contacts for properties vulnerable to flooding.
Maintenance program to reduce risk	Yes	Department of Public Works
Mutual aid agreements	Yes	Neighboring Communities
<b>Technical/Staffing Capability</b>		
Planners or engineers with knowledge of land development and land management practices	Yes	Township Engineer
Engineers or professionals trained in building or infrastructure construction practices	Yes	Township Engineer
Planners or engineers with an understanding of natural hazards	Yes	Township Engineer
Staff with training in benefit/cost analysis	Yes	Township Engineer
Staff with training in green infrastructure	Yes	Township Engineer
Staff with education/knowledge/training in low impact development	Yes	Township Engineer
Surveyor	No	-
Stormwater engineer	Yes	Township Engineer
Personnel skilled or trained in GIS applications	Yes	Township Engineer
Local or state water quality professional	Yes	Township Engineer
Scientist familiar with natural hazards in local area	No	-
Emergency manager	No	-
Grant writers	Yes	Varies
Resilience Officer	No	-
Watershed planner	Yes	Township Engineer
Environmental specialist	Yes	Township Engineer
Other	Yes	Professionals trained in conducting damage assessments

## FISCAL CAPABILITY

The table below summarizes financial resources available to the Township of Denville.

**Table 9.9-6. Fiscal Capabilities**

Financial Resource	Accessible or Eligible to Use?
Community Development Block Grants (CDBG, CDBG-DR)	Yes





Financial Resource	Accessible or Eligible to Use?
Capital Improvements Project Funding	Yes
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	No
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)	Yes
Other	Morris County Flood Mitigation Program (acquisitions)

### EDUCATION AND OUTREACH CAPABILITY

The table below summarizes the education and outreach resources available to the Township of Denville.

**Table 9.9-7. Education and Outreach Capabilities**

Criterion	Response
Do you have a public information officer or communications office?	Yes, public information officer
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? • If yes, briefly describe.	Yes, updated after 2015 HMP, HMP link available
Do you use social media for hazard mitigation education and outreach? • If yes, briefly describe.	Yes, Facebook, Twitter, Nixle, Instagram
Do you have any citizen boards or commissions that address issues related to hazard mitigation? • If yes, briefly describe.	Yes: Rivers and Streams volunteer group, Environmental Commission, Green Team, Beautification, etc.
Do you have any other programs already in place that could be used to communicate hazard-related information? • If yes, briefly describe.	Yes: Emergency management holds talks with civic organizations
Do you have any established warning systems for hazard events? • If yes, briefly describe.	Yes: Nixle, Everbridge (reverse 911), flood prone area of Denville Park has a listing of contacts for properties vulnerable to flooding.

### COMMUNITY CLASSIFICATIONS

The table below summarizes the classifications for community programs available to the Township of Denville.

**Table 9.9-8. Community Classifications**

Program	Participating?	Classification	Date Classified
Community Rating System	Yes	Class 6	2015; Recertification in process
Building Code Effectiveness Grading Schedule (BCEGS)	Yes		
Public Protection (Fire ISO Protection Class)	Yes		
Storm Ready Certification	No	-	-
Firewise Community Classification	No	-	-
Sustainable Jersey	Yes	Silver	12/12/2017







### 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? *No readily available access or staff with training.*
- 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? *No.*

**Table 9.9-9. Adaptive Capacity**

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

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 9.9-10. National Flood Insurance Program Compliance**

Criterion	Response
What local department is responsible for floodplain management?	Township Engineer
Who is your floodplain administrator? (name, department/position)	John Ruschke, PE, CFM – Township Engineer; Samantha Anello, PE, CFM - Engineering
Are any certified floodplain managers on staff in your jurisdiction?	Yes - John Ruschke, PE, CFM – Township Engineer; Samantha Anello, PE, CFM - Engineering
What is the date that your flood damage prevention ordinance was last amended?	



Criterion	Response
Does your floodplain management program meet or exceed minimum requirements? <ul style="list-style-type: none"> <li>If exceeds, in what ways?</li> </ul>	Yes – Denville Meets and exceeds the minimum requirements. Denville requires 1-foot of freeboard and no net fill in floodplains
When was the most recent Community Assistance Visit or Community Assistance Contact?	March 31, 2011
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? <ul style="list-style-type: none"> <li>If so, state what they are.</li> </ul>	No
Are any RiskMAP projects currently underway in your jurisdiction? <ul style="list-style-type: none"> <li>If so, state what they are.</li> </ul>	Preliminary DFIRM
Do your flood hazard maps adequately address the flood risk within your jurisdiction? <ul style="list-style-type: none"> <li>If no, state why.</li> </ul>	The currently adopted Flood Maps are from 1985 and are outdated, however remain mostly adequate. The preliminary FEMA maps pending adoption will adequately address the flood risks and supersede the 2985 maps.
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?	N/A
Does your jurisdiction participate in the Community Rating System (CRS)? <ul style="list-style-type: none"> <li>If yes, is your jurisdiction interested in improving its CRS Classification?</li> <li>If no, is your jurisdiction interested in joining the CRS program?</li> </ul>	Yes, yes
How many flood insurance policies are in force in your jurisdiction?* <ul style="list-style-type: none"> <li>What is the insurance in force?</li> <li>What is the premium in force?</li> </ul>	Flood insurance policies: 347 Insurance in force: \$95,075,200 Premium in force: \$754,653
How many total loss claims have been filed in your jurisdiction?* <ul style="list-style-type: none"> <li>How many claims are still open or were closed without payment?</li> <li>What were the total payments for losses?</li> </ul>	Total loss claims: 818 Claims open or closed without payment: 96 Total payments for losses: \$17,932,583.06
Do you maintain a list of properties that have been damaged by flooding?	Yes
Do you maintain a list of property owners interested in flood mitigation?	Yes

\*According to FEMA statistics as of 9/30/2018

#### ADDITIONAL AREAS OF EXISTING INTEGRATION

- **Department of Administration:** The Business Administrator supervises the day-to-day administration of the departments established by the General Code; serves as the Township's Human Resources Officer; prepare and compile budget studies, analyses and schedules, assist in the conduct of departmental budget hearings and otherwise assist the mayor in such a manner as (s)he shall require in the preparation of the annual municipal budget. Furthermore, (s)he shall supervise the administration of the annual budget once adopted; is responsible for the comprehensive insurance administration in the Township, including property and liability insurance claims coordination; maintains a continuing review of federal and state aid programs of interest to the Township in such a manner as to assure that the Township shall receive any and all aids to which it may be legally entitled; and performs other duties detailed by the General Code of the Township.
- **Construction Department:** The Construction Department assists Township residents when they are making any construction changes to their houses. The department has jurisdiction over building, plumbing, electric and fire changes or improvements. The department's main goal is to ensure that any and all work is code compliant and that proper techniques and procedures are followed for safety.



- **Engineering Department:** The Engineering Department is responsible for many tasks including tree removal and planting, reviewing reports on Planning and Zoning Board applications, annual grants for NJDOT and NJDEP, Township infrastructure improvement projects, inspection of development projects, overseeing annual road paving and road openings, and updates to utility maps.
- **Health Department:** The Denville Health Department mission is to protect, promote and enhance the health and wellness of all who reside in, work in, or visit the Township of Denville through the provision of comprehensive and superior public health services. This involves education, providing preventative care, and advancing policies that promote health and safety.
- **Planning Board:** The Planning Board reviews and acts on applications for subdivision approval, non-residential site plan approval and conditional use approval. If the application for conditional use involves a variance, the application is referred to the Zoning Board of Adjustment. The applications are reviewed and a decision is based upon the zoning ordinances established by the Township in accordance with the goals stated in the Denville Master Plan. It is the Board's chief goal to guide the use of lands within the municipality in a manner which protects and maintains the public health, safety and general welfare of the community. The Planning Board members include the Mayor and eight members assigned by the Mayor.
- **Zoning Board of Adjustment:** The Zoning Board of Adjustment reviews applications which propose to utilize property in a manner not consistent with municipal zoning laws. They review applications for variances which are, essentially, non-permitted uses and the Board of Adjustment is empowered to grant exceptions to the zoning ordinances in cases where the literal and rigid interpretation and enforcement of the zoning laws would work hardship or injustice. These "non-permitted uses" are based upon the zoning ordinances established by the Township in accordance with the goals stated in the Denville's Master Plan. It is the Board's chief goal to set forth safety and welfare of the community with the objective of conserving the value of property and encouraging the most appropriate use of land throughout the Township. A simple definition would be the Board "adjusts zoning" for specific applications, circumstances and pieces of property. Buildings, structures and businesses of various types are limited to specific zones. These zones are regulated with respect to category, nature and extent of use, along with specific plot sizes, required building setbacks, lot coverage and other regulations. The Zoning Board of Adjustment consists of seven regular members and two alternates.
- **Office of Emergency Management:** The Denville Office of Emergency Management is responsible for Identifying hazards and assessing their potential risk to the community; determining the community's capability to mitigate against, prepare for, respond to, and recover from major emergencies; identifying and employing methods to improve the community's emergency management capability through efficient use of resources, improved coordination, and cooperation with other communities and with the State and Federal governments; establishing mitigation measures such as building codes, zoning ordinances, or land-use management programs; developing and coordinating preparedness plans; establishing warning systems; stocking emergency supplies and equipment; educating the public and training emergency personnel; assessing damage caused by the emergency.; activating response plans and rescue operations; ensuring that shelter and medical assistance are provided; and recovering from the emergency and helping citizens return to normal life as soon as possible.
- **Community Emergency Response Team (CERT):** CERT operates under the auspices of Denville OEM. RACES is a subdivision of CERT. CERT provides logistical, communicative and operational support to local responders when needed and also assists at special events such as parades, festivals, and planned events.
- **Public Works:** Public Works serves all of the residents of Denville Township by enhancing the quality of life and relationships within our community. Public Works is responsible for many tasks including maintenance of all Township roads, repairing potholes, paving; maintenance of parks and playgrounds; snow



plowing and sanding of Township roads; lines and signage along Township roads; installing and maintain storm drains; Township water and sewer systems; maintaining all Township vehicles, including police and fire; removal of downed trees on Township property; and maintaining open space and detention.

- **Green Sustainability Committee:** The Green Sustainability Committee is comprised of volunteers and appointed Township officials. It was established through an ordinance in order to both recommend environmental sustainability measures for our town and to promote awareness and education on this important topic.
- **Flood Information:**
  - The Denville website includes a flood information page. Flood maps and flood protection references are available at the Township Public Library and the Planning Department at 1 Saint Marys Place. The Planning Department staff can provide you with more information, such as ground flood elevations, past flood problems in the area and copies of elevation certificates on buildings built in the floodplain since 2010 (also posted on Township website). Furthermore, the Planning Department can provide information on flood insurance for a site, such as the FIRM zone and the base flood elevations, if shown on a FIRM.
  - The Township participates in the Morris County Flood Mitigation Program (FMP) and a Flood Acquisition Plan (FLAP) is currently in progress. The Morris County FMP is the first dedicated, county-level flood acquisition program in the State of New Jersey. The FMP allows Morris County to assist municipalities in moving people out of harm's way, lowering municipal costs due to intense flooding episodes, and create natural flood capture and storage areas which protect the remaining homes and businesses. The FMP is funded by the Morris County Open Space tax and provides grant monies for municipalities to purchase flood-prone residential properties. In addition to MATCH funding available for projects with state or federal monies, Morris County has CORE funding in which the County takes the lead grant role, providing up to 75% of the cost of acquisition. To access this CORE funding, a municipality must have a FLAP. The FLAP is a dynamic, essential tool for understanding the unique flood hazards to residential homes within each community. Working closely with the municipality, Morris County creates this detailed, comprehensive analysis of the historic and current flood risks free of charge. A wide array of data is utilized from sources such as: FEMA, National Flood Insurance Program, USACE Flood Studies, USGS stream gage data, topography and soil analysis. All land acquired with MATCH and CORE funding within the FMP is permanently deed-restricted, preserved open space, available for public use as an active or passive recreation area. The acquired land is municipal-owned and managed in perpetuity.
- **Denville Volunteer Fire Department and Rescue Squad:** The Denville Volunteer Fire Department provides fire protection and emergency medical care to the township of Denville. There are three companies that operate as one department. Each company has a fire apparatus and an ambulance. The Denville Fire Department responds to an average of 1,500 calls a year, both fire and EMS.
- **Sustainable Jersey:** The Township of Denville was certified as a silver community in the Sustainable Jersey Program. The Township earned points towards certification in the following areas related to hazard mitigation
  - **Raingardens:** The Denville DPW along with contractors and volunteers built raingardens in several purchased flood prone properties after the buildings were demolished in order to provide stormwater management and increase flood storage.



### 9.9.5 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 Township of Denville'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 9.9-11 provides details regarding municipal-specific loss and damages the Township experienced during hazard events. Information provided in the table below is based on reference material or local sources.

**Table 9.9-11. 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	An impulse from the west coast traversed the midsection of the country, then developed into a low pressure system as it tracked across the Gulf states before intensifying along the Carolina coast into a major nor'easter, producing record snowfall in parts of New Jersey on January 23rd. It then moved out to sea after passing by the mid-Atlantic coast early on January 24th. 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. At one point during the storm, up to 270,000 customers were without power.	Snow removal costs in the township totaled \$108,958.
March 6-7, 2018	Severe Winter Storm and Snowstorm (DR-4368)	Yes	Precipitation gradually overspread the region during the overnight hours of March 6th to the 7th. 12 to 24 inches was observed across large parts of Morris County. The snow contained large amounts of liquid, making it heavy and wet.	Snow removal costs in the township totaled \$37,467.



Date(s) of Event	Event Type (disaster declaration if applicable)	Morris County Designated?	Summary of Event	Summary of Local Damages and Losses
			This resulted in downed trees, limbs, and wires, leading to numerous power outages across portions of New Jersey, especially where the heaviest snow was reported. Many customers were still without power from the previous storm when this storm struck. Governor Murphy estimated about 350,000 customers state-wide lost power as a result of this second storm. Governor Phil Murphy declared a state of emergency which went into effect at 8 PM Tuesday March 6th.	
August 3, 2018	Severe Thunderstorm, Funnel Cloud	No	Flights were cancelled at all the major airports due to the storm, and Amtrak cancelled at least some Wednesday service.	The township experienced power loss and downed trees.

### 9.9.6 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 9.9-12 summarizes the Township of Denville risk assessment results and data used to determine the hazard ranking.

In an attempt to summarize the confidence level regarding the input utilized to populate the hazard ranking, a gradient of certainty was developed. A certainty factor of high, medium or low was selected and assigned to each hazard to provide a level of transparency and increased understanding of the data utilized 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 9.9-12. Summary of Risk Assessment Results

Hazard of Concern	Hazard/ Scenario Area Evaluated	Population		Buildings		Economy (Loss)		Certainty Factor
<b>Dam Failure</b>	Partial or complete failure of a dam  There are 13 dams in the Township, according to NJDEP. One dam is a high hazard dam.	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
<b>Disease Outbreak</b>	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
<b>Drought</b>	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
<b>Earthquake</b>	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:	3,234	NEHRP D&E:	1,382	100-year Loss:	\$0	High
						500-year Loss:	\$2,967,949	
		Liquefaction Class 4:	1,357	Liquefaction Class 4:	507	2,500-year Loss:	\$48,359,165	





Hazard of Concern	Hazard/ Scenario Area Evaluated	Population		Buildings		Economy (Loss)		Certainty Factor
<b>Extreme Temperature</b>	Extreme temperature event (heat or cold)	Over 65 Population:	3,005	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:	505					
<b>Flood</b>	100- and 500-Year Mean Return Period Event	100-year	1,013	100-year	503	100-year Loss:	\$282,448,772	High
		500-year	1,691	500-year	768			
<b>Geological</b>	High Landslide Susceptibility Areas and Areas developed over carbonate rock	Class A:	18	Class A:	7	Class A:	2101954.322	Moderate
		Class B:	65	Class B:	21	Class B:	\$14,975,859	
		Carbonate Bedrock:	0	Carbonate Bedrock:	0	Carbonate Bedrock:	\$0	
<b>Harmful Algal Bloom</b>	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
<b>Hazardous Substance</b>	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
<b>Infestation</b>	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
<b>Severe Weather</b>	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:	\$56,323	High
						100 -Year Loss:	\$1,209,275	
						500-year Loss:	\$6,699,314	



Hazard of Concern	Hazard/ Scenario Area Evaluated	Population		Buildings		Economy (Loss)		Certainty Factor
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:	5	Wildfire:	3	Wildfire:	\$2,733,159	Moderate



### REPETITIVE FLOOD LOSSES

The following summarizes the repetitive and severe repetitive flood losses in the Township of Denville.

- Number of repetitive loss (RL) properties: 57
- Number of severe repetitive loss (SRL) properties: 19
- Number of RL/SRL properties that have been mitigated: 13

Source: FEMA BureauNet, 2019

Note: RL and SRL as of 04/26/2019; The number of SRL properties excludes RL properties. These statistics only include properties that have been verified only (RL Indicator = V or SRL\_Indicator = V).

### CRITICAL FACILITIES

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

**Table 9.9-13. Potential Flood Losses to Critical Facilities and Lifelines**

Name	Type	Exposure		Status of Mitigation
		1% Event	0.2% Event	
Denville Fire & Rescue Dept (Valley View Co. 3)*	Fire	X	X	
St. Mary's Catholic Church*	School		X	-
Indian Lake Dam*	Dam	X	X	
Well #3 on Towpath Road, Mountain Lakes Borough*	Well	X	X	2020-Denville-017
Well #4 on Towpath Road, Mountain Lakes Borough*	Well	X	X	2020-Denville-017

\*Identified lifeline

### ADDITIONAL IDENTIFIED VULNERABILITIES

The jurisdiction has identified the following vulnerabilities within their community:

- The Township noted that vulnerabilities within the township remain the same as they were when identified in the 2015 hazard mitigation plan.
- The Township has 57 repetitive loss properties (excluding severe repetitive loss properties) and 19 severe repetitive loss properties. These statistics only include validated properties as of April 2019.
- The Township has several critical facilities located in the 100-year floodplain including Denville Fire & Rescue Dept (Valley View Co. 3), Indian Lake Dam, Well #3 on Towpath Road, Mountain Lakes Borough, and Well #4 on Towpath Road, Mountain Lakes Borough. Each facility has also been identified as a lifeline by the township.

### HAZARD AREA EXTENT AND LOCATION

Hazard area extent and location maps were generated for the Township of Denville 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 Township of Denville has significant exposure. A map of the Township of Denville hazard area extent and location is provided on the



following page. This map indicates the location of the regulatory floodplain, as well as identified critical facilities 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 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 bounce back after the event. The table below summarizes the hazard rankings of potential natural hazards for the Township of Denville. The Township of Denville 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.

**Table 9.9-14. Township of Denville Hazard Ranking Input**

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

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

### 9.9.7 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 9.9-15. 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 #
DEN-1: Backup power (generator) for Municipal Building	Engineering Department	Complete		
DEN-2: Denville Township Building Code Update: Update Denville Township Building Code to reduce flood risks.	Municipal Code Enforcement	On-going	X	2020-Denville-001
DEN-3: Bloomfield Avenue Area Pump Station : To address flooding of the parking lots between Bloomfield Avenue and Route 46 and adjacent areas, the following actions are recommended: - Provide a pump station near the storm sewer system discharge at Route 46. - Provide a tide gate at the storm sewer outlet at Route 46. - Separate the First Avenue storm sewer system from that serving Second Avenue (to prevent having Second Avenue stormwater back up in the First Avenue system). - Evaluate the need for tide gates at the storm sewer outlets for Second and Third Avenues at the Rockaway River.	Township Administrator & Engineering Department	In Progress: The US Army Corps. of Engineers has reviewed the Township's previous flood mitigation studies and have agreed to perform a more in-depth flood mitigation study for Denville. Partnering with the NJDEP, the anticipated \$1.2 million U.S. Army Corps study will be funded entirely by Federal and State sources. The study is anticipated to be completed in 2020. As a result of this study, a determination will be made as to the cost-benefit analysis of implementing this measure and securing funding from Federal and State sources.	X	2020-Denville-002
DEN-4: Evaluation of Bridges and Other River Structures: Based upon the review of conditions along the Rockaway River from the Boonton Reservoir to and through the Township of Denville, only minimal benefits may be achieved in Denville through modification of the Powerville Dam and the bridge structures along the river. However, the benefits of modifying the bridges when they are scheduled for replacement due to structural problems or other issues should not be ignored. A comprehensive master plan should be developed for appropriate sizing of the bridge openings and setting road elevations to provide maximum benefits as the bridges are eventually replaced over time. This master plan for this reach of the Rockaway River should be developed in coordination with Morris County and assistance from the USACE as may be available (see below).	Township Administrator & Engineering Department	In Progress: The US Army Corps. of Engineers has reviewed the Township's previous flood mitigation studies and have agreed to perform a more in-depth flood mitigation study for Denville. Partnering with the NJDEP, the anticipated \$1.2 million U.S. Army Corps study will be funded entirely by Federal and State sources. The study is anticipated to be completed in 2020. As a result of this study, a determination will be made as to the cost-benefit analysis of implementing this measure and securing funding from Federal and State sources.	X	2020-Denville-003
DEN-5: 25 & 50-Year Level Protection Implementations: Consideration should be given to the concept of implementing segments	Township Administrator & Engineering Department	In Progress: The US Army Corps. of Engineers has reviewed the Township's previous flood mitigation	X	2020-Denville-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 #
(e.g., levee, pump station) of the considered improvements to provide a 25-year or 50-year level of protection where the benefits are reasonable in view of the associated costs.		studies and have agreed to perform a more in-depth flood mitigation study for Denville. Partnering with the NJDEP, the anticipated \$1.2 million U.S. Army Corps study will be funded entirely by Federal and State sources. The study is anticipated to be completed in 2020. As a result of this study, a determination will be made as to the cost-benefit analysis of implementing this measure and securing funding from Federal and State sources.		
DEN-6: Acquisition of Properties: The Township is already effectively utilizing the acquisition alternative to reduce the potential for future flood damage risk. This practice should continue where appropriate. The remaining 53 identified repetitive loss properties should be evaluated and prioritized for acquisition or other appropriate action (e.g., flood proofing, elevation). Concept plans should be developed for preservation of acquired property including preservation of floodplains, excavation or regrading to provide increased flood storage volume, possible alignment of floodwalls or berms along the river, etc. For structures which will remain in the floodplain, consideration should be given to implementing flood proofing measures (both wet and dry methods as applicable). Reference should be made to FEMA literature and technical guidance, which should be made readily available to the public through links on the Township web page and copies made available in the Township library.	Township Administrator & Engineering Department	In Progress; The Township of Denville participates in the Morris County Flood Mitigation Program (FMP) and a Flood Acquisition Plan (FLAP) is currently in progress for the Township of Denville. The Morris County FMP is the first dedicated, county-level flood acquisition program in the State of New Jersey. The FMP allows Morris County to assist municipalities in moving people out of harm's way, lowering municipal costs due to intense flooding episodes, and create natural flood capture and storage areas which protect the remaining homes and businesses. The FMP is funded by the Morris County Open Space tax and provides grant monies for municipalities to purchase flood-prone residential properties. In addition to MATCH funding available for projects with state or federal monies, Morris County has CORE funding in which the County takes the lead grant role, providing up to 75% of the cost of acquisition. To access this CORE funding, a municipality must have a FLAP. The FLAP is a dynamic, essential tool for understanding the unique flood hazards to residential homes within each	X	2020-Denville-005



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 #
		community. Working closely with the municipality, Morris County creates this detailed, comprehensive analysis of the historic and current flood risks free of charge. A wide array of data is utilized from sources such as: FEMA, National Flood Insurance Program, USACE Flood Studies, USGS stream gage data, topography and soil analysis. All land acquired with MATCH and CORE funding within the FMP is permanently deed-restricted, preserved open space, available for public use as an active or passive recreation area. The acquired land is municipal-owned and managed in perpetuity. Properties targeted for acquisition should focus on the 77 remaining repetitive loss properties within the Township of Denville. Status is on-going and the FLAP for the Township of Denville should be available in late 2020, at which time further action can be evaluated.		
DEN-7: Elevation of Properties: The elevation of repetitive loss properties is another alternative to reduce the potential for future flood damage risk. The 77 identified repetitive loss properties should be evaluated and prioritized for elevation. Concept plans should be developed for preservation of acquired property including preservation of floodplains, excavation or regarding to provide increased flood storage volume, possible alignment of floodwalls or berms along the river, etc.	Township Administrator & Engineering Department	In Progress; The elevation of repetitive loss properties is an alternative to reduce the potential for future flood damage to existing properties. The 77 identified repetitive loss properties within the Township of Denville will be evaluated and prioritized for elevation. Surveys will be conducted of the first floor and garage flood of the existing repetitive and severe repetitive loss properties. The homes elevations will be map compared to the flood depths for various storms. This will allow a damage assessment to be conducted on the property. Status is on-going. Properties targeted for elevation should focus on the 77 remaining repetitive loss properties within the Township of Denville.	X	2020-Denville-006





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 #
DEN-8: Flood Warning System: The flood warning system resources available to the Township should be reviewed and utilized. FEMA, USGS and other agencies are continuing to provide additional resources, such as on line digital flood maps, weather alerts and flood depth mapping. While these specific resources are not currently available to the Township, it is anticipated that they will become available within a few years. Periodic communications with FEMA, the NJDEP and other agencies may provide information regarding the expected implementation of these resources for the Township.	Township Administrator & Engineering Department	No Progress; The Township of Denville is looking to install a flood warning system to assist with emergency management throughout the municipality. Flood warning system recourse available to the Township should be reviewed and utilized where necessary. An in-depth description of the proposed flood warning and response system implementation has been developed. Status is on-going and this item is targeted for a 2020/2021 Flood Mitigation Grant as a possible funding sources in order to move forward.	X	2020-Denville-007
DEN-9: Review & update the Denville Township Flood Hazard Area Ordinance: Review and update the Denville Township Flood Hazard Area Ordinance. It should be consistent with FEMA requirements. Also, updating will be required when FEMA issues the new digital mapping to replace the prior paper maps	Township Administrator & Engineering Department	On-Going; The Township anticipates reviewing and updating the Flood Hazard Area Ordinance upon the adoption of the new FEMA maps to replace the prior maps. Status is on-going and the adoption has not been scheduled, however the 90-day Appeal period has ended and FEMA is reviewing appeals. This will improve regulatory and enforcement capabilities to manage flood risk.	X	2020-Denville-008
DEN-10: Stream Cleaning & Maintenance: Continue to promote stream cleaning efforts for the removal of debris and targeted areas of sediment/silt buildup. Bridge openings must be maintained. Removal of debris from the channel helps reduce the risk of bridge openings becoming obstructed during a storm. For the same reason, fallen tree trunks and large branches should be removed from the floodplain adjacent to the river channel. Overbank flooding could carry these materials into the river and result in obstructions at bridges. Remove in-channel obstructions to flow, particularly any structures that may catch debris and obstruct free flow of the river. This would include the remaining piers at the former Morris Canal crossing of the river. While the	T Township Administrator, Engineering Department, Streams & Rivers Committee	Ongoing Capability; The Township of Denville maintains ongoing stream cleaning and maintenance by the Streams and Rivers Committee. This volunteer group has been active in stream cleaning and maintenance on an annual basis.	X	2020-Denville-009



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 #
piers introduce little hydraulic loss if kept free of debris, they present a hazard in the river when debris accumulates and reduces the hydraulic capacity at that location.				
DEN-11: Cooks Pond Dam: Develop and install overtopping protection for this class II dam which has the potential for significant hazard if failure or breach were to occur.	Engineering Department	In Progress; The plans and calculations for Cooks Pond Dam have been finalized and submitted for approval by the NJDEP. Approval is still pending. Upon approval by the NJDEP, the project will commence.	X	2020-Denville-010
DEN-12: Flood Mitigation Report: Perform a study of all current, past, and future flood mitigation actions. A 2014 FEMA grant application was submitted by Denville Township to receive funding for this study.	Engineering Department	Complete; The Flood Mitigation Report was completed in September 2016.		
DEN-13: DPW Generator: Provide a backup power source (generator) for the Denville Township department of public works facility.	Township Administrator & Engineering Department	Not Started; The installation of backup power by a generator at the Denville Department of Public Works (DPW) complex, would allow the facility to be used during a community-wide power outage. The DPW services are critical during major storm events, storm storms, and other hazards. The Township of Denville anticipates submitting a grant application to fund the purchase of mobile backup generators for use by the DPW.	X	2020-Denville-011
DEN-14: Sanitary Sewer Reinforcement: Perform a study to determine where sanitary sewer reinforcement is needed due to most imminent threats of failure or cracking.	Engineering Department	Not Started	X	2020-Denville-012
DEN-15: Valley View Fire House Generator: Provide a backup power source (generator) for the Valley View Fire House.	Township Administrator	Completed in 2015		
DEN-16: Develop All Hazards Public Education & Outreach program for Hazard Mitigation & Preparedness: Continue Denville Township public education and outreach programs and preparedness.	OEM Coordinator	Ongoing	X	2020-Denville-013
DEN-17: Tree Removal and Maintenance in the Vicinity of Power Lines: Tree removal and maintenance in the vicinity of power lines will help minimize power outages during severe storm events.	Township Administrator	Ongoing Capability through JCP&L	X	2020-Denville-014



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 #
DEN-18: Catch Basin & General Stormwater Facility Maintenance: The continual maintenance of catch basins and stormwater facilities is critical especially before and after large storm events.	Township DPW	Ongoing capability	X	2020-Denville-015

### PROPOSED HAZARD MITIGATION INITIATIVES FOR THE PLAN UPDATE

The Township of Denville 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 Township of Denville 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 9.9-16 summarizes the comprehensive-range of specific mitigation initiatives the Township of Denville 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 9.9-17 summarizes the evaluation of each mitigation initiative and the resulting priority, listed by Action Number.



Table 9.9-16. 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-Denville-001	Denville Township Building Code Update	<b>Problem:</b> Building Codes need to be periodically reviewed for updates to keep up with changing regulations and reduce flood risks <b>Solution:</b> Perform periodical building code reviews and make updates as required		Existing	All Hazards	1	<u>Constructi on Code Official</u>	N/A – Staff Time	Low	Low	Ongoing	High	LPR	PR/PP
2020-Denville-002	Bloomfield Avenue Area Pump Station	<b>Problem:</b> Flooding of parking lots between Bloomfield Avenue and Route 46 and adjacent areas <b>Solution:</b> - Provide a pump station near the storm sewer system discharge at Route 46. - Provide a tide gate at the storm sewer outlet at Route 46. - Separate the First Avenue storm sewer system from that serving Second Avenue (to prevent having Second Avenue stormwater back up in the First Avenue system). - Evaluate the need for tide gates at the storm sewer outlets for Second and Third Avenues at the Rockaway River.		Existing	Flood	1	<u>Township Administrator, Township Engineer</u>	Township funding, US EPA	High	High	Short	High	SIP	PP
2020-Denville-003	Evaluation of Bridges and Other River Structures	<b>Problem:</b> Based upon the review of conditions along the Rockaway River from the Boonton Reservoir to and through the Township of Denville, only minimal benefits may be achieved in Denville through modification of the Powerville Dam and the bridge structures along the river.		Existing	Flood	1	<u>Township Administrator, Township Engineer</u>	Township	High	High	Short	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
		<p><b>Solution:</b> A comprehensive master plan should be developed for appropriate sizing of the bridge openings and setting road elevations to provide maximum benefits as the bridges are eventually replaced over time. This master plan for this reach of the Rockaway River should be developed in coordination with Morris County and assistance from the USACE as may be available (see below). The following concepts and actions are recommended for further consideration and evaluation as part of the development of a long range program:</p> <ul style="list-style-type: none"> <li>- Modification of the Powerville Dam to reduce upstream backwater effects</li> <li>- Modification or replacement of the following structures:</li> <li>- Bush Road Bridge – for emergency access purposes</li> <li>- Pocono Road Bridge</li> <li>- Diamond Spring Road Bridge</li> <li>- Savage Road Bridge (not recommended for replacement)</li> <li>- The evaluation of the bridge modifications and replacements should include consideration of: hydraulic losses and potential benefits, individually and in combination; potential upstream effects during greater than the design storm that may be associated with raising the elevation of the bridges and approach roads; emergency access restrictions and needs under existing and proposed conditions.</li> </ul>												



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-Denville-004	25 & 50-Year Level Protection Implementations	Flood protections could be improved – Various Locations	Consider the concept of implementing segments (e.g., levee, pump station) of the considered improvements to provide a 25-year or 50-year level of protection where the benefits are reasonable in view of the associated costs.	Existing	Flood, Severe Storm		<u>Township Administrator</u> , Township Engineer	FEMA HMGP	High	High	Short	High	SIP	PP
	Acquisition of Properties	<b>Problem:</b> Flooding of residential properties		Existing	Flood	1, 5	<u>Township Administrator</u>	Township	High	High	Short	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-Denville-005		<b>Solution:</b> The Township will utilize acquisition as an alternative to reduce the potential for future flood damage risk where appropriate. The remaining 77 identified repetitive loss properties should be evaluated and prioritized for acquisition or other appropriate action (e.g., flood proofing, elevation). Concept plans should be developed for preservation of acquired property including preservation of floodplains, excavation or regrading to provide increased flood storage volume, possible alignment of floodwalls or berms along the river, etc. For structures which will remain in the floodplain, consideration should be given to implementing flood proofing measures (both wet and dry methods as applicable). Reference should be made to FEMA literature and technical guidance, which should be made readily available to the public through links on the Township web page and copies made available in the Township library.					ator, Township Engineer							
	Elevation of Properties	<b>Problem:</b> Flooding of repetitive loss properties		Existing	Flood	1, 5	<u>Township Administrator</u>		High	High	Short	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-Denville-006		<b>Solution:</b> The 77 identified repetitive loss properties should be evaluated and prioritized for elevation. Concept plans should be developed for preservation of acquired property including preservation of floodplains, excavation or regarding to provide increased flood storage volume, possible alignment of floodwalls or berms along the river, etc.					ator, Township Engineer	FEMA and local match						
2020-Denville-007	Flood Warning System	<b>Problem:</b> Flood warning systems need to be developed.	<b>Solution:</b> The flood warning system resources available to the Township should be reviewed and utilized. FEMA, USGS and other agencies are continuing to provide additional resources, such as online digital flood maps, weather alerts and flood depth mapping. While these specific resources are not currently available to the Township, it is anticipated that they will become available within a few years. Periodic communications with FEMA, the NJDEP and other agencies may provide information regarding the expected implementation of these resources for the Township.	Existing	Flood	1, 2, 3, 4	Township Administrator, Township Engineer	Township	High	Low	Short	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
2020-Denville-008	Review & update the Denville Township Flood Hazard Area Ordinance	The Denville Township Flood Hazard Area Ordinance should be consistent with FEMA requirements. Updating is required periodically and will be required when FEMA issues the new digital mapping to replace the prior paper maps	The Township anticipates reviewing and updating the Flood Hazard Area Ordinance upon the adoption of the new FEMA maps to replace the prior maps. Status is on-going and the adoption has not been scheduled, however the 90-day Appeal period has ended and FEMA is reviewing appeals. This will improve regulatory and enforcement capabilities to manage flood risk.	Existing	Flood	1, 3	<u>Township Administrator</u> , Township Engineer	Township	High	Low	Short	High	LPR	PR
2020-Denville-009	Stream Cleaning & Maintenance	The required removal of built-up debris and sediment/silt buildup within streams and rivers. Bridge openings must be maintained.	Removal of debris, sediment, and silt from the channel as well as bridge openings by volunteer groups and outside contractors when needed.	Existing	Flood	1, 3	<u>Township Administrator</u> , Township Engineer	Township & Capital Improvements	High	Low	Short – Annual Basis	High	NSP	PR, PP, NR, SP



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-Denville-010	Cooks Pond Dam	Dam does not have overtopping protection As a class II dam, there is the potential for significant hazard if failure or breach were to occur.	Design and construct overtopping protection	Existing	Flood, Severe Storm	1	<u>Township Administrator</u> , Township Engineer	Township & Capital Improvements	High	Medium/high	Short	High	SIP	PR, PP, SP
2020-Denville-011	DPW Generator	The DPW does not have a back-up power source	The installation of backup power by a generator at the Denville Department of Public Works (DPW) complex	Existing	All Hazards	1	<u>Township Administrator</u> , Township Engineer, DPW Supervisor	Township & Capital Improvements; FMA	High	Low	Short	High	SIP	PR, SP
2020-Denville-012	Sanitary Sewer Reinforcement	Severe Storm	Perform a study to determine where sanitary sewer reinforcement is needed due to most imminent threats of failure or cracking.	Existing	Flood	1	<u>Township Administrator</u> , Township Engineer	Township	High	Low	Short	High	SIP	PP
2020-Denville-013	Develop All Hazards Public Education & Outreach program for Hazard Mitigation & Preparedness	Need for a All Hazards Public Education & Outreach program for Hazard Mitigation & Preparedness	Create and continuously update All Hazards Public Education & Outreach program for Hazard Mitigation & Preparedness	Existing	All Hazards	1	OEM Coordinator	Township	Medium	Low	Short	Medium	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
2020-Denville-014	Tree Removal and Maintenance in the Vicinity of Power Lines	Tree's near power lines pose a risk for power outages	Remove and maintain trees in the vicinity of power lines – can be done by Power company	Existing	Severe Storm	1	<u>Township Administrator</u>	Township	High	Low	Short	High	SIP	PR
2020-Denville-015	Catch Basin & General Stormwater Facility Maintenance	Catch basins and stormwater facilities can become clogged and not function as designed	Maintain, clean, and inspect Catch Basin & Stormwater Facilities	Existing	Flood, Severe Storm	1	<u>Township Administrator</u> , DPW Supervisor	Township	High	Low	Short	High	NSP, SIP	PR, PP
2020-Denville-016	GIS Mapping of Catch Basin & General Stormwater Facilities	The location of all catch basins and stormwater facilities, both private and public, need to be identified, mapped, and located for planning and maintenance	Create a GIS mapping system of catch basins, stormwater facilities, basins, culverts, and other drainage features and structures	Existing	Flood, Severe Storm	1	<u>Township Administrator</u> , Township Engineer, DPW Supervisor	Township, PDM	High	Low	Short	High	NSP, SIP	PR, PP
2020-Denville-017	Critical Facilities Outreach	The Township has several critical facilities that are located in the 100-year floodplain. Well #3 and Well #4 on Towpath Road are owned by Mountain Lakes Borough.	The FPA will conduct outreach to the critical facility managers to discuss hazard risk and potential mitigation actions.	Existing	Flood	1, 2	<u>FPA</u>	Township	High	Low	Short	High	EAP	PI

Notes:

Acronyms and Abbreviations:

CAV Community Assistance Visit  
CRS Community Rating System  
DPW Department of Public Works

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:





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

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 9.9-17. Summary of Evaluation and Action Priorities**

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-Denville-001	Denville Township Building Code Update	0	1	1	1	0	1	0	0	0	1	1	1	1	0	8	High
2020-Denville-002	Bloomfield Avenue Area Pump Station	1	1	1	1	0	0	0	1	0	1	1	1	0	1	9	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
2020-Denville-003	Evaluation of Bridges and Other River Structures	1	1	1	1	0	0	0	1	0	1	1	1	0	1	9	High
2020-Denville-004	25 & 50-Year Level Protection Implementations	1	1	0	1	0	0	0	1	0	1	1	1	1	1	9	High
2020-Denville-005	Acquisition of Properties	1	1	0	1	0	0	0	1	0	1	0	1	0	1	7	High
2020-Denville-006	Elevation of Properties	1	1	1	1	1	1	0	1	0	0	0	0	1	1	9	High
2020-Denville-007	Flood Warning System	1	0	1	0	0	1	1	0	1	1	1	0	1	1	9	High
2020-Denville-008	Review & update the Denville Township Flood Hazard Area Ordinance	0	1	1	1	0	1	0	0	0	1	1	1	1	0	8	High
2020-Denville-009	Stream Cleaning & Maintenance	0	1	1	0	0	0	0	1	1	1	1	1	1	1	9	High
2020-Denville-010	Cooks Pond Dam	1	1	1	1	0	0	0	1	0	1	1	1	1	1	10	High
2020-Denville-011	DPW Generator	1	1	1	1	1	1	0	1	1	1	1	1	1	1	13	High
2020-Denville-012	Sanitary Sewer Reinforcement	0	1	1	1	0	0	0	0	0	1	0	1	1	1	7	High
2020-Denville-013	Develop All Hazards Public Education & Outreach program for Hazard Mitigation & Preparedness	0	0	1	1	0	0	0	0	0	1	1	1	1	0	6	Medium



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-Denville-014	Tree Removal and Maintenance in the Vicinity of Power Lines	0	1	1	0	0	0	0	1	1	1	0	1	1	1	8	High
2020-Denville-015	Catch Basin & General Stormwater Facility Maintenance	0	1	1	0	0	0	0	1	1	1	1	1	1	1	9	High
2020-Denville-016	GIS Mapping of Catch Basin & General Stormwater Facilities	0	0	1	1	0	1	0	1	1	1	1	1	1	1	10	High
2020-Denville-017	Critical Facilities Outreach	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	High

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





**Table 9.9-18. 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-Denville-001, 2020-Denville-011	2020-Denville-001	2020-Denville-013			2020-Denville-011		
Disease Outbreak	2020-Denville-001, 2020-Denville-011	2020-Denville-001	2020-Denville-013			2020-Denville-011		
Drought	2020-Denville-001, 2020-Denville-011	2020-Denville-001	2020-Denville-013			2020-Denville-011		
Earthquake	2020-Denville-001, 2020-Denville-011	2020-Denville-001	2020-Denville-013			2020-Denville-011		
Extreme Temperature	2020-Denville-001, 2020-Denville-011	2020-Denville-001	2020-Denville-013			2020-Denville-011		
Flood	2020-Denville-001, 2020-Denville-003, 2020-Denville-008, 2020-Denville-009, 2020-Denville-010, 2020-Denville-011, 2020-Denville-015	2020-Denville-001, 2020-Denville-002, 2020-Denville-004, 2020-Denville-005, 2020-Denville-006, 2020-Denville-009, 2020-Denville-010, 2020-Denville-012, 2020-Denville-015	2020-Denville-007, 2020-Denville-013, 2020-Denville-017	2020-Denville-009		2020-Denville-009, 2020-Denville-010, 2020-Denville-011		
Geological Hazards	2020-Denville-001, 2020-Denville-011	2020-Denville-001	2020-Denville-013			2020-Denville-011		
Harmful Algal Bloom	2020-Denville-001, 2020-Denville-011	2020-Denville-001	2020-Denville-013			2020-Denville-011		
Hazardous Substances	2020-Denville-001, 2020-Denville-011	2020-Denville-001	2020-Denville-013			2020-Denville-011		



Hazard	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
Infestation	2020-Denville-001, 2020-Denville-011	2020-Denville-001	2020-Denville-013			2020-Denville-011		
Severe Weather	2020-Denville-001, 2020-Denville-004, 2020-Denville-010, 2020-Denville-011, 2020-Denville-014, 2020-Denville-015	2020-Denville-001, 2020-Denville-010, 2020-Denville-015	2020-Denville-013			2020-Denville-010, 2020-Denville-011		
Severe Winter Weather	2020-Denville-001, 2020-Denville-011	2020-Denville-001	2020-Denville-013			2020-Denville-011		
Wildfire	2020-Denville-001, 2020-Denville-011	2020-Denville-001	2020-Denville-013			2020-Denville-011		

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

### 9.9.8 Staff and Local Stakeholder Involvement in Annex Development

The Township of Denville 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 9.9-19. Contributors to the Annex**

Entity	Title	Method of Participation
Wesley Sharples	Emergency Manager	Primary POC, attended meetings, contributed to the mitigation strategy, reviewed annex.
John Ruschke, PE & Samantha Anello, PE	Floodplain Managers	Contributed to the mitigation strategies, reviewed annex.
Kim Goldberg & Elisa Boralsky	Construction Office	Reviewed annex.



Figure 9.9-1. Township of Denville Hazard Area Extent and Location Map 1

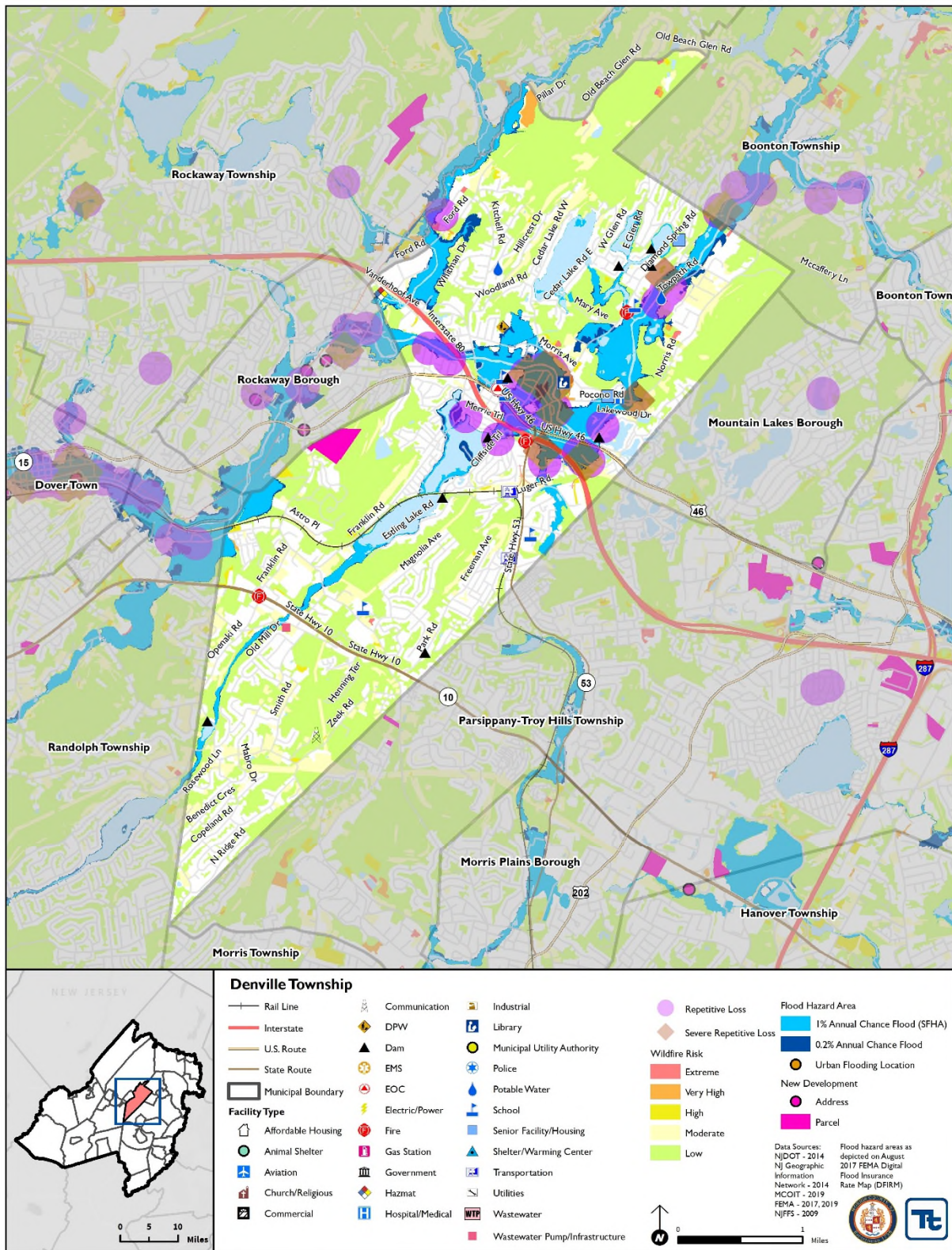
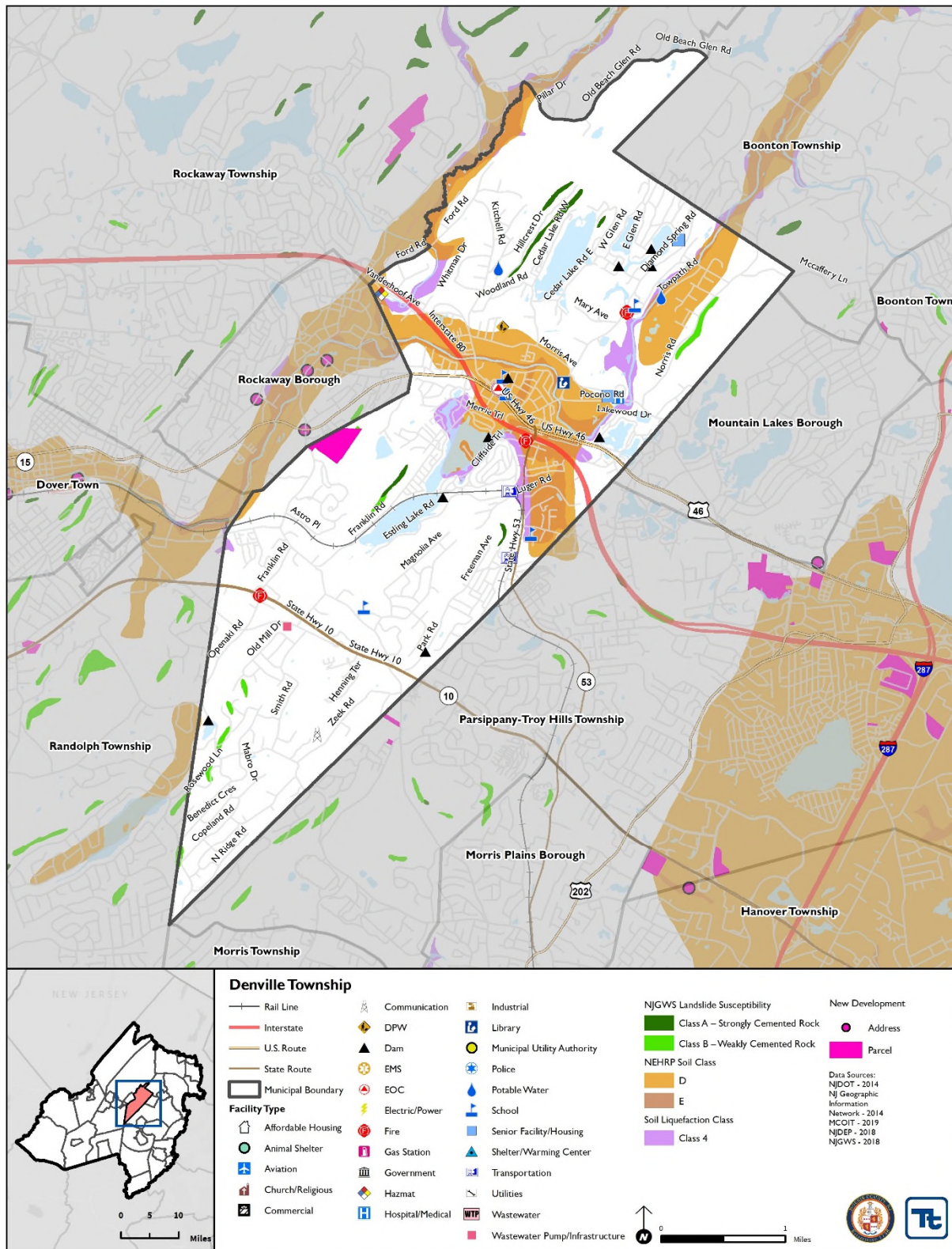






Figure 9.9-2. Township of Denville Hazard Area Extent and Location Map 2





Action Worksheet			
Project Name:	25 & 50-Year Level Protection Implementations		
Project Number:	2020-Denville-004		
Risk / Vulnerability			
Hazard(s) of Concern:	Flood, Severe Storm		
Description of the Problem:	Flood protections could be improved at various locations within the Township.		
Action or Project Intended for Implementation			
Description of the Solution:	The Township will consider the concept of implementing segments (e.g., levee, pump station) of the considered improvements to provide a 25-year or 50-year level of protection where the benefits are reasonable in view of the associated costs.		
Is this project related to a Critical Facility or Lifeline?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Level of Protection:	25/50 year levels	Estimated Benefits (losses avoided):	High
Useful Life:	50 years	Goals Met:	
Estimated Cost:	High	Mitigation Action Type:	Structure and Infrastructure Project
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Short
Estimated Time Required for Project Implementation:	Short	Potential Funding Sources:	FEMA HMGP
Responsible Organization:	Township Administrator, Township Engineer	Local Planning Mechanisms to be Used in Implementation if any:	Hazard Mitigation, Stormwater Management
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Remove flood-prone roadways	\$200,000	Negative social impacts
	Buyout properties adjacent to flood-prone roadways	\$millions	Not cost effective
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	25 & 50-Year Level Protection Implementations	
Project Number:	2020-Denville-004	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Project will protect lives from flooding
Property Protection	1	Project will protect property from flooding
Cost-Effectiveness	0	
Technical	1	The project is technically feasible
Political	0	
Legal	0	
Fiscal	0	The project requires funding support
Environmental	1	
Social	0	
Administrative	1	
Multi-Hazard	1	Flood, Severe Storm
Timeline	1	Short
Agency Champion	1	Township Administrator, Township Engineer
Other Community Objectives	1	
Total	9	
Priority (High/Med/Low)	High	



Action Worksheet			
<b>Project Name:</b>	Elevation of Properties		
<b>Project Number:</b>	2020-Denville-006		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	Flood, Severe Storm		
<b>Description of the Problem:</b>	Frequent flooding events have resulted in property damages. The impacted areas are residential, and these properties have been repetitively flooded as documented by paid NFIP claims.		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	The 77 identified repetitive loss properties should be evaluated and prioritized for elevation. Concept plans should be developed for preservation of acquired property including preservation of floodplains, excavation or regarding to provide increased flood storage volume, possible alignment of floodwalls or berms along the river, etc.		
<b>Is this project related to a Critical Facility or Lifeline?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Level of Protection:</b>	1% annual chance flood event + freeboard ( <i>in accordance with flood ordinance</i> )	<b>Estimated Benefits (losses avoided):</b>	Eliminates flood damage to homes and residents
<b>Useful Life:</b>	30 years	<b>Goals Met:</b>	1, 5
<b>Estimated Cost:</b>	\$3Million	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
Plan for Implementation			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	6-12 months
<b>Estimated Time Required for Project Implementation:</b>	Three years	<b>Potential Funding Sources:</b>	FEMA HMGP and FMA, local cost share by residents
<b>Responsible Organization:</b>	Township Administrator, Township Engineer	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation
Three Alternatives Considered (including No Action)			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Current problem continues
	Buyout homes	\$4 million	Low public support
	Elevate roads	\$500,000	Elevated roadways would not protect the homes from flood damages
Progress Report (for plan maintenance)			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			





Action Worksheet		
<b>Project Name:</b>	Elevation of Properties	
<b>Project Number:</b>	2020-Denville-006	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
<b>Life Safety</b>	1	Families moved out of high-risk flood areas.
<b>Property Protection</b>	1	Properties removed from high-risk flood areas.
<b>Cost-Effectiveness</b>	1	Cost-effective project
<b>Technical</b>	1	Technically feasible project
<b>Political</b>	1	
<b>Legal</b>	1	The Township has the legal authority to conduct the project.
<b>Fiscal</b>	0	Project will require grant funding.
<b>Environmental</b>	1	
<b>Social</b>	0	Project would remove families from the flood prone areas of the Township.
<b>Administrative</b>	0	
<b>Multi-Hazard</b>	0	Flood, Severe Storm
<b>Timeline</b>	0	
<b>Agency Champion</b>	1	NFIP Floodplain Administrator, supported by homeowners
<b>Other Community Objectives</b>	1	
<b>Total</b>	9	
<b>Priority (High/Med/Low)</b>	High	



Action Worksheet			
<b>Project Name:</b>	DPW Generator		
<b>Project Number:</b>	2020-Denville-011		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	All hazards		
<b>Description of the Problem:</b>	The DPW does not have a back-up power source. This threatens the ability of the DPW to provide essential services during a disaster event.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The Town will research what size generator is necessary to supply backup power to the DPW. The Town will then purchase and install a generator at the DPW.		
<b>Is this project related to a Critical Facility?</b>		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<b>Level of Protection:</b>	N/A	<b>Estimated Benefits (losses avoided):</b>	Ensures continuity of operations; provides a shelter for residents
<b>Useful Life:</b>	20 years	<b>Goals Met:</b>	1
<b>Estimated Cost:</b>	\$25,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Projects (SIP)
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Immediately after funding received
<b>Estimated Time Required for Project Implementation:</b>	1 year	<b>Potential Funding Sources:</b>	FEMA HMGP and PDM, USDA Community Facilities Grant Program, Emergency Management Performance Grants (EMPG) Program, Municipal Budget
<b>Responsible Organization:</b>	Township Administrator, Township Engineer, DPW Supervisor	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation, Emergency Management
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	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
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
Project Name:	DPW Generator	
Project Number:	2020-Denville-011	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Project will protect critical services of DPW
Property Protection	1	Project will protect DPW from power loss.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	The Town 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	Township Administrator, Township Engineer, DPW Supervisor
Other Community Objectives	1	
Total	13	
Priority (High/Med/Low)	High	



Action Worksheet			
<b>Project Name:</b>	GIS Mapping of Catch Basin & General Stormwater Facilities		
<b>Project Number:</b>	2020-Denville-016		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Flood, Severe Storm		
<b>Description of the Problem:</b>	The location of all catch basins and stormwater facilities, both private and public, need to be identified, mapped, and located for planning and maintenance		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The Township will create a GIS mapping system of catch basins, stormwater facilities, basins, culverts, and other drainage features and structures.		
<b>Is this project related to a Critical Facility?</b>		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<b>Level of Protection:</b>	N/A	<b>Estimated Benefits (losses avoided):</b>	High
<b>Useful Life:</b>	10 years	<b>Goals Met:</b>	1
<b>Estimated Cost:</b>	Low	<b>Mitigation Action Type:</b>	Natural Systems Protection (NSP), Structure and Infrastructure Projects (SIP)
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Immediately after funding received
<b>Estimated Time Required for Project Implementation:</b>	1 year	<b>Potential Funding Sources:</b>	Township, PDM
<b>Responsible Organization:</b>	Township Administrator, Township Engineer, DPW Supervisor	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Hire consultant to complete action	Medium	More costly
	Ask local university to complete action	Low	May not be interested or consistent
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	GIS Mapping of Catch Basin & General Stormwater Facilities	
<b>Project Number:</b>	2020-Denville-016	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	0	
Cost-Effectiveness	1	
Technical	1	
Political	0	
Legal	1	The Township has the legal authority to complete the project.
Fiscal	0	Project requires funding support.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	Flood, Severe Storm
Timeline	1	1 year
Agency Champion	1	Township Administrator, Township Engineer, DPW Supervisor
Other Community Objectives	1	
Total	10	
Priority (High/Med/Low)	High	