



## 9.2 Borough of Avalon

This section presents the jurisdictional annex for the Borough of Avalon.

### 9.2.1 Hazard Mitigation Plan Point of Contact

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

Primary Point of Contact	Alternate Point of Contact
R. Edward Dean, OEM Coordinator 2239 Ocean Drive, 2Fl., Avalon, NJ 08202 Phone: (609) 967-5920 Email: <a href="mailto:edean@avalonboro.org">edean@avalonboro.org</a>	Harry deButts, OEM Deputy Coordinator 3100 Dune Dr., Avalon, NJ 08202 Phone: (609) 231-7784 Email: <a href="mailto:harrydebutts@yahoo.com">harrydebutts@yahoo.com</a>

### 9.2.2 Municipal Profile

The Borough of Avalon is located along the southeastern border of Cape May County. It is bounded on the north by the Township of Dennis, north and west by the Township of Middle, on the east by the Atlantic Ocean, and on the southwest by the Borough of Stone Harbor. The Borough lies on the Seven Mile Island, a 7 ½ mile long barrier island along Cape May County’s Atlantic coastline. Peermont is an unincorporated community located within the Borough. The Borough is a part of the Ocean City Metropolitan Statistical Area. Avalon Boulevard connects the Garden State Parkway and U.S. 9 to the oceanfront.

According to the U.S. Census Bureau, the Borough has a total area of 4.9 square miles, with 4.2 square miles of it land and 0.8 square miles of it (15.7-percent) water. As of July 1, 2014 it is estimated that there were 1,297 people residing in the Borough.

### Growth/Development Trends

The following table summarizes recent residential/commercial development since 2010 to present and any known or anticipated major residential/commercial development and major infrastructure development that has been identified in the next five years within the municipality. Refer to the map in Section 9.2.8 of this annex, which illustrates the hazard areas along with the location of potential new development.

**Table 9.2-1. Growth and Development**

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Address	Block / Lot	Known Hazard Zone(s)	Description/Status of Development
<b>Recent Development from 2010 to Present</b>						
None identified at this time.						
<b>Known or Anticipated Development in the Next Five (5) Years</b>						
None identified at this time.						

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

### 9.2.3 Natural Hazard Event History Specific to the Municipality

Cape May County has a history of natural and non-natural hazard events as detailed in Volume I, Section 5.0 of this plan. A summary of historical events is provided in each of the hazard profiles and includes a chronology



of events that have affected the County and its municipalities. For the purpose of this plan update, events that have occurred in the County from 2010 to present were summarized to indicate the range and impact of hazard events in the community. Information regarding specific damages is included, if available, based on reference material or local sources. This information is presented in the table below. For details of these and additional events, refer to Volume I, Section 5.0 of this plan.

**Table 9.2-2. Hazard Event History**

Date(s) of Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
March, 1962	Coastal Storm, Flooding	DR-124	Yes	\$3,000,000 (countywide)
December, 1973	Snowstorm	Not applicable	No	\$24,000 (countywide)
November, 1977	Flood	Not applicable	No	\$2,400,000 (countywide)
March, 1984	Flood	Not applicable	No	\$500,000 (countywide)
October, 1991	Coastal Storm	Not applicable	No	\$90,000,000 (statewide) \$1,700,000-\$4,000,000 (countywide)
November, 1991	Tidal Flood	Not applicable	No	\$167,000 (countywide)
January, 1992	Severe Coastal Storm	DR-936	Yes	\$16,000 (countywide)
December, 1992	Coastal Storm, High Tides, Heavy Rain, Flooding	DR-973	Yes	\$16,800,000 (countywide)
March, 1993	Severe Winter Storm	EM-3106		\$2,600,000 (statewide)
March, 1994	Coastal Flood	Not applicable	No	\$167,000 (countywide)
January, 1996	Severe Winter Storm, Coastal Storm	DR-1088	Yes	\$3,600,000 (countywide)
January, 1998	Coastal Flood	Not applicable	No	\$3,800,000 (countywide)
February, 1998	Coastal Storm	DR-1206	Yes	\$3,600,000-\$4,200,000 (countywide)
September, 1999	Hurricane Floyd	EM-3148	Yes	\$492,000 (countywide)
February, 2003	Snowstorm	EM-3181		\$1,400,000 (countywide)
November, 2009	Severe Storm, Flooding (Tropical Storm Ida and Nor'Easter)	DR-1867	Yes	\$13,206,000 (statewide)
March 12, 2010	March 2010 Nor'Easter;	DR-1897	Yes	\$33,000,000 (statewide)



Date(s) of Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
	Coastal Flooding, Rain, Snow			
August 27, 2011	Hurricane Irene	DR-4021	Yes	Mandatory evacuation of Borough; \$275,000,000 (statewide)
October 26, 2012	Superstorm Sandy	DR-4086	Yes	Mandatory evacuation of Borough; \$33,000,000,000 (statewide)
January	Winter Storm Jonas	DR-4264	Yes	Major tidal flooding and near hurricane force winds on the coast, snow inland (statewide; approx. \$3 million local, still being assessed)

### 9.2.4 Hazard Vulnerabilities and Ranking

The hazard profiles in Section 5.0 of this plan have detailed information regarding each plan participant’s vulnerability to the identified hazards. The risk ranking methodology is presented in Section 5.3. However, each municipality had the opportunity to adjust the final ranking based on municipal feedback. The following summarizes the hazard vulnerabilities and their ranking in the Borough of Avalon. For additional vulnerability information relevant to this jurisdiction, refer to Section 5.0.

#### Hazard Risk/Vulnerability Risk Ranking

The table below summarizes the hazard risk/vulnerability rankings of potential hazards for the Borough of Avalon.

**Table 9.2-3. Hazard Risk/Vulnerability Risk Ranking**

Hazard type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard <sup>a, c</sup>	Probability of Occurrence	Risk Ranking Score (Probability x Impact)	Hazard Ranking <sup>b</sup>
Climate Change & Sea Level Rise	RCV in +3 feet: \$718,727,845	Frequent	33	High
Coastal Erosion	RCV in CEHA: \$17,299,066	Frequent	18	Medium
Flood	1% Annual Chance: \$3,795,925,827	Frequent	54	High
Hurricanes & Tropical Storms	Category 1 SLOSH: \$3,893,304,385 Category 2 SLOSH: \$4,133,181,294 Category 3 SLOSH: \$4,209,288,573 Category 4 SLOSH: \$4,212,615,443	Frequent	54	High
Nor'Easter	Damage estimate not available	Frequent	48	High
Severe Weather	100-Year MRP: \$21,632,755 500-year MRP: \$170,151,641 Annualized: \$1,523,850	Frequent	48	High
Severe Winter Weather	1% GBS: \$28,515,477 5% GBS: \$142,577,385	Frequent	51	High
Tsunami	Damage estimate not available	Rare	6	Low
Wildfire	Estimated Value Exposed to Extreme, Very High and High: \$442,151	Frequent	18	Medium

Notes: GBS = General building stock; MRP = Mean return period.

a. The general building stock valuation is based on the custom inventory generated for the County utilizing improved value.





- b. High = Total hazard priority risk ranking score of 31 and above  
Medium = Total hazard priority risk ranking of 20-30+
- c. Low = Total hazard risk ranking below 20
- d. Refer to Section 5.1 for further details on the loss methodology. Loss estimates for the severe storm and severe winter storm hazards are structural values only and do not include the estimated value of contents. Loss estimates for the flood and earthquake hazards represent both structure and contents. Potential flood loss estimates were generated using Hazus-MH and the 2015 FEMA DFIRM for the 1-percent annual chance event. For the wildfire hazard, the improved value and estimated contents of buildings located within the identified hazard zones is provided.

### National Flood Insurance Program (NFIP) Summary

The following table summarizes the NFIP statistics for the Borough of Avalon.

**Table 9.2-4. NFIP Summary**

Municipality	# Policies (1)	# Claims (Losses) (1)	Total Loss Payments (2)	# Rep. Loss Prop. (1)	# Severe Rep. Loss Prop. (1)	# Policies in 1% Flood Boundary (3)
Borough of Avalon	4,167	1,715	\$24,117,661	81	28	3,827

Source: FEMA, 2015

Note (1) Policies, claims, repetitive loss and severe repetitive loss statistics provided by FEMA and are current as of July 31, 2015 and are summarized by Community Name. Please note the total number of repetitive loss properties excludes the severe repetitive loss properties. The number of claims represents claims closed by 7/31/2015.

Note (2) Total building and content losses from the claims file provided by FEMA Region 2.

Note (3) The policies inside and outside of the flood zones is based on the latitude and longitude provided by FEMA Region 2 in the policy file.

Note (4) FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility.

Note (5) A zero percentage denotes less than 1/100th percentage and not zero damages or vulnerability as may be the case.

### Critical Facilities

**Table 9.2-5. Number of Critical Facilities Located in the 1-Percent Annual Chance Flood Zone**

Municipality	Facility Types																	
	Airport	Communication	County Office	EMS	Emergency Operation Center	Ferry	Fire Station	Library	Marina	Military	Municipal Hall	Place of Interest	Police Station	School	Senior Facility	Wastewater Pump	Wastewater Treatment	Well
Avalon Borough	0	2	0	1	1	0	1	1	5	0	1	1	1	1	0	12	0	2

### Other Vulnerabilities Identified by Municipality

Please identify any vulnerable areas in your municipality:

Areas of flooding:

- ➔ All of Ocean Drive
- ➔ All of the area west of the 21<sup>st</sup> Street Bridge known as Seagate
- ➔ All of the area west of the 25<sup>th</sup> Street Bridge known as 24<sup>th</sup> Street
- ➔ Dune Drive business district (all)
- ➔ Basin area in the east blocks between 10<sup>th</sup> and 19<sup>th</sup> Streets (mostly rainwater flooding)
- ➔ Areas west of Ocean Drive from 74<sup>th</sup> to 80<sup>th</sup> Streets known as the 300 blocks and Sunset Drive



There are no steep slopes, with the exception of the high natural dunes, which are not in the flood hazard area.

The New Jersey Beach Profile Network (NJBPN) was authorized by the New Jersey Department of Environmental Protection (NJDEP) and established by the Richard Stockton College Coastal Research Center (CRC) in 1986. The NJBPN monitors (by survey sites) the shoreline conditions along New Jersey's coast. In Cape May County, there are 31 survey sites, with four of them located in the Borough of Avalon. Each year, the NJBPN completes an annual report for the counties where survey sites are located. The reports provide a summary of beach changes, a review of any major beach restoration or hard structure projects, and a discussion of issues and pending project work in the County. For details regarding the annual reports for Cape May County and its municipalities, please refer to: <http://intraweb.stockton.edu/eyos/page.cfm?siteID=149&pageID=9>

### 9.2.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Education/Outreach and Community classification
- Self-Assessment of Capability
- National Flood Insurance Program
- Integration of Mitigation Planning into Existing and Future Planning Mechanisms

#### Planning and Regulatory Capability

The table below summarizes the regulatory tools that are available to the Borough of Avalon.

**Table 9.2-6. Planning and Regulatory Tools**

Tool/Program (code, ordinance, plan)	Do you have this? (Yes/No)	Authority (local, county, state, federal)	Dept./Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
<b>Planning Capability</b>				
Master Plan	Yes	Local	Planning/Zoning , Borough Council	Ord. No. 603-2008
Capital Improvements Plan	Yes	Local	Administration	Res. 65-2015
Floodplain Management/Basin Plan	Yes	Local, state	Planning/Zoning , Borough Council	Ord. No. 682-2013; Ord. No. 688-2013
Stormwater Management Plan	Yes	Local	Construction / Planning/Zoning	Ord. No. 574-2006
Open Space Plan	Yes	Local	Planning/Zoning	Ord. No. 603-2008
Stream Corridor Management Plan	No			N/A
Watershed Management or Protection Plan	No			N/A
Economic Development Plan	No			No new business areas
Comprehensive Emergency Management Plan	Yes	Local, county, state	OEM	EOP, COOP & COG documents current as of 2015
Emergency Response Plan	Yes	Local, county, state	OEM	Approved NJ OEM April 2012



**Table 9.2-6. Planning and Regulatory Tools**

Tool/Program (code, ordinance, plan)	Do you have this? (Yes/No)	Authority (local, county, state, federal)	Dept./Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Post-Disaster Recovery Plan	Yes	Local, county	OEM	Contracts in place with disaster recovery vendors – re-issued 2015
Transportation Plan	Yes	Local	OEM	Contract with Senior Travel for bus service in event of evacuation renewed 2015
Strategic Recovery Planning Report	No	Local	OEM	
Other Plans:				
<b>Regulatory Capability</b>				
Building Code	Yes	State & Local	Construction	State Uniform Construction Code Act (N.J.S. 52:27D-119 et seq.)
Zoning Ordinance	Yes	Local	Planning/Zoning	Ord. No. 607-2009
Subdivision Ordinance	Yes	Local	Planning/Zoning	Ord. No. 607-2009
NFIP Flood Damage Prevention Ordinance	Yes	Federal, state Local	Planning/Zoning & Construction	Ord. No. 682-2013; Ord. No. 688-2013
NFIP: Cumulative Substantial Damages	Yes	Local, state, federal	OEM	Disasters dating back to 2009
NFIP: Freeboard	Yes	State, Local	Zoning/Construction	Ord. No. 682-2013; Ord. No. 688-2013
Growth Management Ordinances	Yes	Local	Planning/Zoning	Ord. No. 603-2008 § 26
Site Plan Review Requirements	Yes	Local	Planning/Zoning	Ord. No. 603-2008 § 26
Stormwater Management Ordinance	Yes	Local, state	Municipal Engineer	Ord. No. 574-2006
Municipal Separate Storm Sewer System (MS4)	Yes	Local, state	Department of Public Works	Avalon Borough Code Chapter 14 – Water and Sewer
Natural Hazard Ordinance	Yes	Local	Administration	211-2015)
Post-Disaster Recovery Ordinance	No			
Real Estate Disclosure Requirement	Yes	Federal, state		
Other [Special Purpose Ordinances (i.e., sensitive areas, steep slope)]	Yes	Local, state	Administration	Avalon Borough Code Chapter 2-20 (Environmental Commission), Wetlands: NJDEP

**Administrative and Technical Capability**

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

**Table 9.2-7. Administrative and Technical Capabilities**

Resources	Is this in place? (Yes or No)	Department/Agency/Position
<b>Administrative Capability</b>		
Planning Board	Yes	Planning/Zoning
Mitigation Planning Committee	Yes	Administration, Floodplain Administrator
Environmental Board/Commission	Yes	Avalon Environmental Commission



**Table 9.2-7. Administrative and Technical Capabilities**

Resources	Is this in place? (Yes or No)	Department/Agency/Position
Open Space Board/Committee	No	Avalon is built out, no new open space is available
Economic Development Commission/Committee	No	Avalon has no plans for new business zone development
Maintenance Programs to Reduce Risk	Yes	Department of Public Works
Mutual Aid Agreements	Yes	Numerous mutual aid agreements
<b>Technical/Staffing Capability</b>		
Planner(s) or Engineer(s) with knowledge of land development and land management practices	Yes	Joseph Maffei, Planning/Zoning Board
Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	Hatch, Mott, MacDonald – Engineers and Planners
Planners or engineers with an understanding of natural hazards	Yes	Hatch, Mott, MacDonald – Engineers and Planners
NFIP Floodplain Administrator	Yes	Construction Official
Surveyor(s)	No	
Personnel skilled or trained in GIS and/or Hazus-MH applications	Yes	Hatch, Mott, MacDonald – Engineers and Planners
Scientist familiar with natural hazards	Yes	Dr. Farrell, Department of Public Works
Emergency Manager	Yes	OEM Coordinator
Grant Writer(s)	Yes	Triad Associates
Staff with expertise or training in benefit/cost analysis	Yes	Administration, CFO
Professionals trained in conducting damage assessments	Yes	OEM & DPW staff

**Fiscal Capability**

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

**Table 9.2-8. Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use (Yes/No/Don't Know)
Community Development Block Grants (CDBG, CDBG-DR)	No
Capital Improvements Project Funding	Yes
Authority to levy taxes for specific purposes	Yes
User fees for water, sewer, gas, or electric service	Yes
Impact Fees for homebuyers or developers of new development/homes	No
Stormwater Utility Fee	No
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	No
Incur debt through private activity bonds	No
Withhold public expenditures in hazard-prone areas	No
Other Federal or State Funding Programs	Yes
Open Space Acquisition Funding Programs	Yes
Other	



### Education/Outreach and Community Classifications

The table below summarizes education/outreach programs the community participates in and the classifications for community program available to the Borough of Avalon.

Table 9.2-9. Education/Outreach and Community Classifications

Program	Do you have/participate in this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	Yes	5	2011
Building Code Effectiveness Grading Schedule (BCEGS)	No		
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	4	2015
Storm Ready	Yes	Expired	2001
Firewise	No	N/A	N/A
Disaster/Safety Programs in/for Schools	No	N/A	N/A
Organizations with Mitigation Focus (advocacy group, non-government)	No	N/A	N/A
Public Education Program/Outreach (through website, social media)	Yes	N/A	
Public-Private Partnerships	Yes	N/A	

The classifications listed above relate to the community’s ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery, and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The Community Rating System (CRS) class applies to flood insurance while the Building Code Effectiveness Grading Schedule (BCEGS) and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class 1 being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1,000 feet of a creditable fire hydrant and is within five road miles of a recognized fire station.

Criteria for classification credits are outlined in the following documents:

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

### Self-Assessment of Capability

The table below provides an approximate measure of the Borough of Avalon’s capability to work in a hazard-mitigation capacity and/or effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.







Table 9.2-10. Self-Assessment of Capability

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)	Moderate	High
Planning and Regulatory Capability			X
Administrative and Technical Capability		X	
Fiscal Capability		X	
Community Political Capability			X
Community Resiliency Capability		X	
Capability to Integrate Mitigation into Municipal Processes and Activities		X	

### National Flood Insurance Program

#### NFIP Floodplain Administrator (FPA)

John Tracy, Construction Official/Floodplain Administrator

#### Flood Vulnerability Summary

All of Avalon is in a flood plain zone that is subject to serious flooding conditions from the ocean and bay waters during hurricanes and northeasterly storms.

The Borough of Avalon maintains a list of repetitive loss properties. The list does not identify properties owners who are interested in mitigation. According to records provide by FEMA, 839 residential structures were damaged during Hurricane Sandy. The Borough makes Substantial Damage estimates. After Hurricane Sandy eight such assessments were made and two met the criteria for substantial damage. Of these properties, four are being mitigated and one is being elevated. These efforts are being funded by grants and the property owners.

#### Resources

The Flood Damage Prevention Ordinance (FDPO) identifies the Construction Official as the NFIP Floodplain Administrator. The floodplain administrator shares responsibilities for floodplain administration with the Building Official, Borough Engineer and the Certified Floodplain Manager. Administration functions and services include permit review for complainance, building inspections, damage assessments and educational outreach. Education outreach includes two public outreach projects per year and the provision of informational handouts at multiple locations.

Detailed flood maps, showing local flood hazard areas, can be obtained in the Construction Office. These maps show the major flood-ing areas and repetitive loss areas.

Barriers to floodplain management in the Borough include a general lack of interest from the residential community. The floodplain administrator is adequately trained for floodplain management responsibilities, although additional training would be welcome.

#### Compliance History

The Borough is currently in good standing with the NFIP. The most recent Community Assistance Visit was in September of 2014.





As of August 31, 2015 there are 5,185 policies in force, insuring over \$1.38 billion of property with total annual insurance premiums of \$3.5 million. Since 1978, 1,711 claims have been paid totaling \$24,114,310 (2,212 claims total have been submitted; however, 498 claims were closed without pay and 3 are still open).

### Regulatory

The Borough of Avalon's floodplain regulations exceed the minimum State and FEMA requirements as established by the local zoning ordinance. The Borough requires 3 feet of freeboard for new development in the floodplain. Since Avalon has established the design flood elevation, areas below design flood elevation may only be used for the storage of motor vehicles (garages), general storage and building entry (within the limits imposed by the 2015 International Residential Code, NJ Edition (IRC)). This limitation is two feet higher than the minimum elevation required by the IRC.

### Community Rating System

The Borough of Avalon is currently a Class 5 community in the Community Rating System (CRS) program. The floodplain administrator would be interested in attending a CRS seminar if locally offered.

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

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, each community was surveyed to obtain a better understanding of their community's progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures.

### Planning

**Land Use Planning:** The Borough has a Planning and Zoning Board which reviews all applications for development and considers natural hazard risk areas in their review.

**Dune Vegetation Management Plan:** A healthy and vigorous dune vegetation system is vital to Borough's defense against storm damage from the ocean side of the island. The Dune Vegetation Management Plan is a Borough wide plan that is two-fold. First, the plan establishes the appropriate native vegetation that should be planted in various sections of the dunes. Second, the plan establishes the Japanese Black Pine tree as invasive and encourages removal of the trees in favor of diverse, local vegetation. The Avalon dunes are actually a system of dunes including fore-dunes, secondary mid-dunes and long established high dunes. Each dune area has a system of native and non-native species of plants, shrubs and trees which are uniquely suited to the area. The root systems of the dune vegetation retain sand and encourage further dune growth.

**Repetitive Loss Reduction Plan:** The repetitive loss plan is integrated into the CRS and follows FEMA guidelines and the NJ Uniform Construction Code which places severe limitations upon renovation and alteration of buildings below base flood elevation. The Avalon Construction Department makes information available to owners on how to seek grants and low interest loans in order to make flood prone buildings more resilient and raise or replace residential structures that are below flood elevation.

### Regulatory and Enforcement (Ordinances)

The Borough has multiple chapters pertaining to the mitigation of hazards. These ordinances include the Zoning Ordinance, Flood Damage Prevention Chapter, Stormwater Management Ordinance, and an Site Plan Review requirement.



### Operational and Administration

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**Floodplain Management Committee:** The Borough of Avalon has formed a Floodplain Planning Committee to discuss various ways that the Borough can enhance and improve its flood mitigation efforts. This committee will offer guidance on the Borough’s Floodplain Management Plan.

**Environmental Commission:** The Avalon Environmental Commission meets monthly. Some activities of the commission support natural hazard mitigation efforts including providing information on drought-resistant plants and approved dune vegetation.

### Funding

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**Operating Budget:** Yes. The Borough approved budgeting for development of the Avalon Flood Plain Management Plan. The plan was completed, adopted by Borough Council in December 2015 and forwarded to ISO for comment and/or approval. The first quarterly update meeting was held on the plan in April. This is a continuing project.

**Capital Improvement Budget:** Yes.

**Grants:** In 2015 Avalon received a Hazard Mitigation Grant to replace the emergency generator at the Public Works Facility.

### Education and Outreach

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The Borough’s website posts information regarding upcoming community events and important municipal decisions on the home page. In addition, the home page includes flood-related information and resources as well as a link to sign-up for the emergency notification system.

## 9.2.6 Mitigation Strategy and Prioritization

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

### Past Mitigation Initiative Status

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The following table indicates progress on the community’s mitigation strategy identified in the 2010 Plan. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and may also be found under ‘Capability Assessment’ presented previously in this annex.



Table 9.2-11. Past Mitigation Initiative Status

<u>Initiative Number</u>	<u>2010 Mitigation Action</u>	<u>Responsible Party</u>	<u>Status</u> (In progress, No progress, Complete)	<u>Describe Status</u> 1. Please describe what was accomplished and indicate % complete. 2. If there was no progress, indicate what obstacles/delays encountered? 3. If there was progress, how is/was the action being funded (e.g, FEMA HMGP grant, local budget)?	<u>Next Step</u> (Include in 2015 HMP? or Discontinue)	<u>Describe Next Step</u> 1. If including action in the 2015 HMP, revise/reword to be more specific (as appropriate). 2. If discontinue, explain why.
BA-1a	Where appropriate, support retrofitting of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for retrofitting based on cost-effectiveness versus relocation. Where retrofitting is determined to be a viable option, consider implementation of that action based on available funding.	Borough (likely through NFIP Floodplain Administrator)	No Progress	1. 0%  2. Budget constraints have restricted this action from moving forward  3.	Discontinue	1. The Avalon Flood Mitigation Planning Committee determined that this activity was not viable due to its inapplicability and cost of implementation (respectively to its own critical facilities) and not consistent with sound government (respectively to private properties, where the retrofitting costs are the responsibility of the owner.) However, the Committee recommended supporting homeowners who desire to retrofit their own repetitive loss structures.  2.
BA-1b	Where appropriate, support purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for	Borough	No Progress	1. 0%  2. Budget constraints have restricted this action from moving forward  3.	Discontinue	1. The Avalon Flood Mitigation Planning Committee determined that this activity was not viable due to its high cost of implementation. However, the Committee recommended supporting homeowners who



<u>Initiative Number</u>	<u>2010 Mitigation Action</u>	<u>Responsible Party</u>	<u>Status</u> (In progress, No progress, Complete)	<u>Describe Status</u> 1. Please describe what was accomplished and indicate % complete. 2. If there was no progress, indicate what obstacles/delays encountered? 3. If there was progress, how is/was the action being funded (e.g., FEMA HMGP grant, local budget)?	<u>Next Step</u> (Include in 2015 HMP? or Discontinue)	<u>Describe Next Step</u> 1. If including action in the 2015 HMP, revise/reword to be more specific (as appropriate). 2. If discontinue, explain why.
	relocation based on cost-effectiveness versus retrofitting. Where relocation is determined to be a viable option, consider implementation of that action based on available funding.					desire to retrofit their own repetitive loss structures.  2.
BA-2	Continue active participation in CRS.	Borough	In Progress	1. ISO review is complete. We are awaiting further comment and/or new rating from ISO.  2.  3. Local budget	Include in 2015 HMP	1. This will need to be developed after Avalon receives comments or determination from ISO.  2.
BA-3	Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Section 7.0	Borough (through mitigation planning point of contacts)	In Progress	1. Changes in personnel  2.  3.	Include in 2015 HMP	1. POC – R. Edward Dean, OEM Coordinator; Alt. POC Harry deButts, OEM Deputy Coordinator  2.
BA-4	Strive to maintain compliance with, and good-standing in the National Flood Insurance program.	Municipality (likely through NFIP Floodplain Administrator)	In Progress	1. Awaiting final determination from ISO on community rating.  2.  3. Local budget	Include in 2015 HMP	1. Continue to encourage mitigation of SRL & RL properties remaining. Continue to enforce new construction requirements for freeboard above BFE and installation and maintenance of flood vents in foundations.



Initiative Number	2010 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status 1. Please describe what was accomplished and indicate % complete. 2. If there was no progress, indicate what obstacles/delays encountered? 3. If there was progress, how is/was the action being funded (e.g., FEMA HMGP grant, local budget)?	Next Step (Include in 2015 HMP? or Discontinue)	Describe Next Step 1. If including action in the 2015 HMP, revise/reword to be more specific (as appropriate). 2. If discontinue, explain why.
						2.
BA-5	Continue to develop, enhance, and implement existing emergency plans.	Municipal Emergency Manager with support from County OEM and NJOEM	In Progress	1. In last 30 days, established local committee to develop local All Hazards Mitigation Plan (currently Avalon relies on county plan). Review and revise the local Emergency Operating Plan  2.  3.	Include in 2015 HMP	1. Develop local All Hazards Mitigation Plan. Communicate progress to County OEM. Receive and integrate comments from County to develop a plan consistent with the County plan.  2.
BA-6	Create/enhance/ maintain mutual aid agreements with neighboring communities.	Borough	Complete	1. Mutual aid and mutual services agreements have been established with neighboring communities, and are reviewed on an annual basis.  2.  3.	Discontinue	1. Mutual aid agreements are in place and are reviewed annually. New agreements are developed as need arises.  2.
BA-7	Support County-wide initiatives identified in Section 9.1 of the County Annex.	Local departments (as applicable for specific initiative)	Choose an item.	1. Awaiting engineering and funding solutions  2.  3.	Include in 2015 HMP	1. Avalon will support the Countywide initiatives as appropriate.  2.
BA-8	Upgrade stormwater system on CR-619 through Stone Harbor and Avalon. Seven stormwater pump stations were installed along CR-619	County Engineering with municipalities	In Progress	1. Cape May County has verbally agreed to share with Avalon the cost of a stormwater pump station and stormwater system improvements to reduce flooding along Ocean Drive between 75 <sup>th</sup> Street	Include in 2015 HMP	1. Design and Construct a stormwater pump station to alleviate flooding in the vicinity of Ocean Drive between 75 <sup>th</sup> Street and 79 <sup>th</sup>



<u>Initiative Number</u>	<u>2010 Mitigation Action</u>	<u>Responsible Party</u>	<u>Status</u> (In progress, No progress, Complete)	<u>Describe Status</u> 1. Please describe what was accomplished and indicate % complete. 2. If there was no progress, indicate what obstacles/delays encountered? 3. If there was progress, how is/was the action being funded (e.g., FEMA HMGP grant, local budget)?	<u>Next Step</u> (Include in 2015 HMP? or Discontinue)	<u>Describe Next Step</u> 1. If including action in the 2015 HMP, revise/reword to be more specific (as appropriate). 2. If discontinue, explain why.
	from Avalon Boulevard to 19th Street (Avalon business district) to address flooding in this area. Approximately 5 additional pump stations are needed.			and 79 <sup>th</sup> Street. Project has not been initiated.  2. Avalon included design costs in 2015 budget. Municipal Engineer to submit proposal by end of 2015.  3. Project to be funded locally with anticipated cost-sharing agreement with Cape May County.		Street and tributary areas. Cost to be shared with Cape May County since Ocean Drive is a County Road. Engineer to submit a proposal for design in late 2015 and construction as early as winter/spring of 2016.  2.
BA-9	Address overflow of the seawall on Ocean Drive (CR-619) at north end approaching town's inlet bridge (e.g. and extended seawall)	County Engineering with municipal support	Complete	1. 100%  2. Delays associated with federal funding of project.  3. Federally funded project.	Discontinue	1.  2. Project complete.
BA-10 (CMC-38)	Upgrade existing revetment wall (needs to be extended to the south and existing sections upgraded) or elevate the seawall itself and provide additional road protection to CR-619 in Strathmere to Ocean City, and elevate sections of road as needed.	County Engineering with municipal support	No Progress	1. 0%  2. Cape May County completed a major road reconstruction project at this location, which significantly improved protection from flooding from overflow by directing the runoff away from the developed area of the Borough.  3.	Include in 2015 HMP	1. Avalon is considering supporting a potential USACE project to replace the revetment to provide further protection from flooding and wave impacts.  2.
BA-11	Elevate back-bay street and bulkheads	Local and property owners	In Progress	1. Multiple property owners have reconstructed their bulkheads. Avalon has authorized the design and permitting of two (2) additional street-end bulkheads	Include in 2015 HMP	1. Change Agency to property owners only since



Initiative Number	2010 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status 1. Please describe what was accomplished and indicate % complete. 2. If there was no progress, indicate what obstacles/delays encountered? 3. If there was progress, how is/was the action being funded (e.g., FEMA HMGP grant, local budget)?	Next Step (Include in 2015 HMP? or Discontinue)	Describe Next Step 1. If including action in the 2015 HMP, revise/reword to be more specific (as appropriate). 2. If discontinue, explain why.
				<ul style="list-style-type: none"> <li>– construction anticipated in spring of 2016.</li> <li>2.</li> <li>3. Street-end bulkheads being funded locally.</li> </ul>		<ul style="list-style-type: none"> <li>local bulkhead projects are covered in other activities.</li> <li>2.</li> </ul>
BA-12	Continue public outreach efforts to inform residents to install flood vents (retrofit )	Construction Office	In Progress	<ul style="list-style-type: none"> <li>1. This is an ongoing project in the Avalon Construction Office</li> <li>2.</li> <li>3.</li> </ul>	Include in 2015 HMP	<ul style="list-style-type: none"> <li>1. No changes.</li> <li>2.</li> </ul>
BA-13	Continue to monitor and survey the beaches. This provides critical information providing the basis for decisions regarding beach re-nourishment and long-term analysis of littoral processes.	Borough and Stockton College Coastal Research Center	In Progress	<ul style="list-style-type: none"> <li>1. Stockton University Coastal Research Center continues to monitor and survey the beaches, providing quarterly reports on the volume changes and impacts from storms. 100% complete, and ongoing.</li> <li>2. N/A</li> <li>3. Locally funded.</li> </ul>	Include in 2015 HMP	<ul style="list-style-type: none"> <li>1. No changes.</li> <li>2.</li> </ul>
BA-14	Continue to enforce Stormwater Management Ordinances	Construction Office	In Progress	<ul style="list-style-type: none"> <li>1. Ongoing.</li> <li>2.</li> <li>3. Local funding</li> </ul>	Include in 2015 HMP	<ul style="list-style-type: none"> <li>1. No changes.</li> <li>2.</li> </ul>





Initiative Number	2010 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status 1. Please describe what was accomplished and indicate % complete. 2. If there was no progress, indicate what obstacles/delays encountered? 3. If there was progress, how is/was the action being funded (e.g., FEMA HMGP grant, local budget)?	Next Step (Include in 2015 HMP? or Discontinue)	Describe Next Step 1. If including action in the 2015 HMP, revise/reword to be more specific (as appropriate). 2. If discontinue, explain why.
BA-15	Continue to pursue opportunities to preserve open space	Construction Office	No Progress	1. 2. Opportunities for open space acquisition are limited due to built out nature of the Borough. 3.	Include in 2015 HMP	1. No changes. 2.
BA-16	Continue to enforce building codes and re-evaluate ordinances for potential positive amendments	Construction Office	In Progress	1. Ordinances were adjusted in 2014 with new BFE data and three feet of freeboard is now required over BFE for residential construction. Building codes continue to be enforced. 2015 IBC is now in effect and includes additional language regarding floodplain construction. 2. 3. Local funding, State	Include in 2015 HMP	1. No changes. 2.
BA-17	Continue to conduct regular beach and dune maintenance activities	Construction Office	In Progress	1. Dune and beach protection ordinances continue to be enforced. 2. 3.	Include in 2015 HMP	1. No changes. 2.
BA-18	Continue to enforce the February 2008 adopted ordinance (27:7.3.u) requiring that all roof runoff from new construction be recharged to the ground through direct connection to	Construction Office	In Progress	1. Ordinance is still in place and is enforced. 2. 3.	Discontinue	1. 2. No new initiatives identified for this project.



<u>Initiative Number</u>	<u>2010 Mitigation Action</u>	<u>Responsible Party</u>	<u>Status</u> (In progress, No progress, Complete)	<u>Describe Status</u> 1. Please describe what was accomplished and indicate % complete. 2. If there was no progress, indicate what obstacles/delays encountered? 3. If there was progress, how is/was the action being funded (e.g., FEMA HMGP grant, local budget)?	<u>Next Step</u> (Include in 2015 HMP? or Discontinue)	<u>Describe Next Step</u> 1. If including action in the 2015 HMP, revise/reword to be more specific (as appropriate). 2. If discontinue, explain why.
	subsurface stone trenches to further mitigate flooding.					
BA-19	Continue outreach efforts to provide informational materials to homeowners, builders, and realtors regarding floodplain management.	Construction Office	In Progress	1. Annual mailing regarding floodplain management. Floodplain information available on Borough website. Construction Office staff appear at community events to educate public regarding floodplain management.  2.  3. Local funding	Include in 2015 HMP	1. Generate increased interest in floodplain management among homeowners and business owners.  2.
BA-20	Continue to implement the 'Repetitive Loss Reduction Plan.' Avalon has been removing about 12 properties annually from the Repetitive Loss list.	Construction Office	In Progress	1. Repetitive loss properties continue to be eliminated through building raising and demolition and reconstruction  2.  3.	Include in 2015 HMP	1. No changes.  2.
BA-21	Continue to pursue available funding opportunities to address repetitive loss properties and/or mitigate the impact of flooding (see BA-1a and BA-1b).	Construction Office	In Progress	1. Repetitive loss owners are informed of grant programs through the State which may be used to secure funding flood mitigation projects. Construction Official continues to enforce 50% rule when renovation projects are presented in buildings below BFE.  2.  3.	Include in 2015 HMP	1. No changes.  2.



Initiative Number	2010 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status 1. Please describe what was accomplished and indicate % complete. 2. If there was no progress, indicate what obstacles/delays encountered? 3. If there was progress, how is/was the action being funded (e.g., FEMA HMGP grant, local budget)?	Next Step (Include in 2015 HMP? or Discontinue)	Describe Next Step 1. If including action in the 2015 HMP, revise/reword to be more specific (as appropriate). 2. If discontinue, explain why.
BA-22	Continue to require one-foot freeboard for new construction, i.e. finished floor elevation of all new construction is required to be one foot above base flood elevation.	Construction Office	In Progress	1. Freeboard has been increased to 3 feet in Avalon. 2. 3.	Include in 2015 HMP	1. Continue to require three feet of freeboard for new construction. 2.
BA-23	Continue to utilize volunteers from local civic groups and schools and plant dune grass annually	Construction Office, DPW, and local schools and civic groups	In Progress	1. Avalon has two public supported Dune Grass plantings a year. 2. 3. Local funding	Include in 2015 HMP	1. No changes. 2.
BA-24	Continue to protect the high dunes	Planning/Zoning Office	In Progress	1. "Dune Walk" completed in 2015 in partnership with Cape May County to educate public on the importance of maintaining the natural high dune area. Dune walk identifies the different protective areas of the dune system. 2. 3. Local and County funding	Include in 2015 HMP	1. No changes. 2.
BA-25	Continue stream scouring and illicit connection programs, per the Town's Stormwater Management	Construction Office	In Progress	1. Ongoing program 2. 3. Local funding	Include in 2015 HMP	1. No changes. 2.



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BA-26	Continue to pursue preparation of pre-disaster bid documents for contract with disaster recovery contractor for debris removal.	Emergency Management, Engineering	In Progress	1. Contracts have been re-bid in 2015 and vendors are in place. 2. 3. No cost contracts	Include in 2015 HMP	1. No changes. 2.
BA-27	Continue to pursue preparation of pre-disaster contracts for providing home and family services for emergency personnel during disaster.	Emergency Management, Engineering	No Progress	1. 2. Difficulty in finding vendors to provide desired services. 3. Local funding	Include in 2015 HMP	1. No changes. 2.
BA-28	Complete the installation of tide check valves and various stormwater system improvements in the 21st Street and 25th Street island areas	Engineering and DPW	Complete	1. The project was completed in 2014. 100% complete. 2. N/A 3. Locally funded.	Discontinue	1. 2. Project was completed in 2014.
BA-29	Replace a deteriorated bulkhead at 5th Avenue immediately north of 20th Street. This project will also reduce flooding in a low-lying area prone to flooding.	Engineering and DPW	In Progress	1. Project advertised for bids in May 2016 for summer 2016 construction. 2. Delays in implementation of local project due to backlog of other projects. 3. Locally funded.	Discontinue	1. No changes. 2.
BA-30	Conduct a State-authorized study to protect the north-end beaches from storm and erosive forces [Stevens	NJDEP – Bureau of Coastal Engineering	Complete	1. 2.	Discontinue	1.



Initiative Number	2010 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status 1. Please describe what was accomplished and indicate % complete. 2. If there was no progress, indicate what obstacles/delays encountered? 3. If there was progress, how is/was the action being funded (e.g., FEMA HMGP grant, local budget)?	Next Step (Include in 2015 HMP? or Discontinue)	Describe Next Step 1. If including action in the 2015 HMP, revise/reword to be more specific (as appropriate). 2. If discontinued, explain why.
	Institute of Technology / Davidson Laboratories through the New Jersey Coastal Protection Technical Assistance Program (NJCPATAS)].	with Stevens Institute and Davidson Laboratories		3. State, Local funding		2. State discontinued study after Hurricane Sandy
BA-31	Repair, maintain and, as needed, Increase the height of bulkheads to a minimum of 7.5' per local ordinance. Currently the Borough plans to replace a deteriorated bulkhead at 5th Avenue immediately north of 20th Street. This project will also reduce flooding in a low-lying area prone to flooding. The project is scheduled to be completed in the winter of 2009/2010	Engineering with property owners	Choose an item.	1. [Redundant – see Activity BA-29.] 2. 3.	Discontinue	1. 2. Too general – specific bulkhead reconstruction covered under other activities.
BA-32	Install bulkheads throughout the Borough where needed, particularly at street ends.	Engineering and DPW	In Progress	1. Avalon authorized design and permitting for bulkheads at 32 <sup>nd</sup> Street along Ocean Drive and at Fifth Avenue along 24 <sup>th</sup> Street. Design and permitting 80% complete. 2. N/A 3. Locally funded.	Include in 2015 HMP	1. Replace a deteriorated bulkhead at 32 <sup>nd</sup> Street immediately west of Ocean Drive and at Fifth Avenue north of 24 <sup>th</sup> Street. This project will also reduce flooding in a low-lying area prone to flooding. 2.



Initiative Number	2010 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status 1. Please describe what was accomplished and indicate % complete. 2. If there was no progress, indicate what obstacles/delays encountered? 3. If there was progress, how is/was the action being funded (e.g., FEMA HMGP grant, local budget)?	Next Step (Include in 2015 HMP? or Discontinue)	Describe Next Step 1. If including action in the 2015 HMP, revise/reword to be more specific (as appropriate). 2. If discontinue, explain why.
BA-33	Install SCADA systems on stormwater pump stations to alert operators of problems (22 <sup>nd</sup> and 11 <sup>th</sup> street are high priority pump stations)	Engineering Middlesex Water Company	In Progress	1. Radio survey of all stormwater pumping stations and proposals for installation were completed in 2014. Project is awaiting Administrative approval and a funding source.  2. Funding has not been found to move forward with this project  3. Local funding, possibly grant	Include in 2015 HMP	1. 10% complete. Study is complete and proposals have been received. Awaiting funding.  2.
BA-34	Study the feasibility of providing backup power to 22 <sup>nd</sup> and 11 <sup>th</sup> Street pump stations	Engineering with New Jersey American Water Company	No Progress	1. Avalon authorized the municipal engineer to review feasibility and cost, including survey and conceptual layout. Applied for federal grants, but without success.  2. N/A  3. Too costly to be funded locally. Avalon may continue to pursue federal funding of project.	Include in 2015 HMP	1. Install emergency generator hookups at 22 <sup>nd</sup> Street and 11 <sup>th</sup> Street pump stations for connection to portable emergency generator.  2.
BA-35	Increase the capacity of stormwater system where needed	Engineering with New Jersey American Water Company	In Progress	1. Avalon continues to improve the capacity of the stormwater system, including pipe enlargement and reconfiguration of system at 37 <sup>th</sup> Street and Dune Drive. 100% complete.  2. N/A  3. Funded locally	Include in 2015 HMP	1. No changes.  2.



Initiative Number	2010 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status 1. Please describe what was accomplished and indicate % complete. 2. If there was no progress, indicate what obstacles/delays encountered? 3. If there was progress, how is/was the action being funded (e.g., FEMA HMGP grant, local budget)?	Next Step (Include in 2015 HMP? or Discontinue)	Describe Next Step 1. If including action in the 2015 HMP, revise/reword to be more specific (as appropriate). 2. If discontinue, explain why.
BA-36	Develop and institute and ID card program to control re-entry into the Town major disasters requiring evacuation	Borough	No Progress	1. 2. Current ID cards exist, the program is maintained unchanged, and cards issued Borough Workers. We are awaiting a County uniform template to move forward with this project. 3. County and local funding	Include in 2015 HMP	1. It was determined that a uniform template for ID cards would be established by the county for use by all municipalities. A template has not been forwarded to the Borough. 2.
BA-37	Replace a deteriorated bulkhead at 5th Avenue immediately north of 24th Street. This project will also reduce flooding in a low-lying area prone to flooding.	Engineering and DPW	In Progress	1. Design and permitting authorized – 80% complete. 2. Delays resulting from backlog of capital improvement projects. 3. Locally funded.	Discontinue	1. 2. Covered under BA-32.
BA-38	Replace a deteriorated bulkhead at 34 <sup>th</sup> Street immediately west of Ocean Drive. This project will also reduce flooding in a low-lying area prone to flooding.	Engineering and DPW	No Progress	1. 2. Project not initiated due to funding and priority of other deteriorated bulkheads at 32 <sup>nd</sup> Street and 24 <sup>th</sup> Street. 3.	Include in 2015 HMP	1. No changes. 2.
BA-39	Replace a deteriorated bulkhead at 72 <sup>nd</sup> Street immediately north of Ocean Drive. This project will also reduce flooding in a low-lying area prone to flooding.	Engineering and DPW	No Progress	1. 2. Project not initiated due to funding and priority of other deteriorated bulkheads at 32 <sup>nd</sup> Street and 24 <sup>th</sup> Street. 3.	Include in 2015 HMP	1. No changes. 2.



Initiative Number	2010 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status 1. Please describe what was accomplished and indicate % complete. 2. If there was no progress, indicate what obstacles/delays encountered? 3. If there was progress, how is/was the action being funded (e.g., FEMA HMGP grant, local budget)?	Next Step (Include in 2015 HMP? or Discontinue)	Describe Next Step 1. If including action in the 2015 HMP, revise/reword to be more specific (as appropriate). 2. If discontinue, explain why.
BA-40 (CMC-22, TM-24)	Support the elevation of Avalon Boulevard from Parkway into Avalon proper (~2.5 miles).	County Engineering	No Progress	1. 0% 2. 3.	Include in 2015 HMP	1. Subject to County schedule. 2.
BA-41 (CMC-60)	Install shore protection along Ocean Drive (CR619) at Townsends Inlet in Avalon	County Engineering with municipal support or United States Army Corps of Engineers.	No Progress	1. 0% 2. 3.	Include in 2015 HMP	1. County completed major road reconstruction project to address shore protection. Avalon will support potential USACE project to replace revetment along Ocean Drive. 2.
BA-42 (CMC-68)	Emergency construction to stabilize Ocean Drive (CR619) near Townsends Inlet in Avalon	County Engineering with municipal support	Complete	1. 100% 2. Delays associated with federal funding of project. 3. Federally funded project.	Discontinue	1. 2. Covered under Activity BA-9 and project complete.





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

The Borough has identified the following mitigation projects/activities that have also been completed but were not identified in the previous mitigation strategy in the 2010 Plan:

- 2011 Beachfill Project – Dredging of 450,000 cubic yards of sand from Townsends Inlet Borrow Area and placement on eroded beaches at north end. (Project led by U.S. Army Corps of Engineers, funded by U.S. Army Corps of Engineers FCCC Funding, 100 percent complete)
- 2012 Beachfill Project – Scraping of 64,000 cubic yards of sand from Borough’s southerly beaches and hauling and placement on eroded beaches at north end. (Project led by Borough of Avalon, funded locally, 100 percent complete)
- 2013 Beachfill Project – Dredging of 290,000 cubic yards of sand from Townsends Inlet Borrow Area and placement on eroded beaches at north end. (Project led by U.S. Army Corps of Engineers, funded by U.S. Army Corps of Engineers FCCC Funding, 100 percent complete)
- 2014 Beachfill Project – Scraping of 50,000 cubic yards of sand from Borough’s southerly beaches and hauling and placement on eroded beaches at north end. (Project led by Borough of Avalon, funded locally, 100 percent complete)
- 2015 Beachfill Project – Dredging of 750,000 cubic yards of sand from Townsends Inlet Borrow Area and placement on eroded beaches at north end. (Project led by Borough of Avalon, funded locally, 100 percent complete)
- 2016 Spring Beachfill Project – Scraping of 50,000 cubic yards of sand from Borough’s southerly beaches and hauling and placement on eroded beaches at north end. (Project led by Borough of Avalon, funded locally, 100 percent complete, and performed by Department of Public Works staff.)
- 2016-2017 Beachfill Project (Funded and details TBD) in fall or spring
- 39th Street Stormwater System Upgrades consisting of replacement of drainage system on 39th Street between Ocean Drive and Fourth Avenue and replacement of deteriorated outfall pipe with new outfall pipe and tide check valve. (Project led by Borough of Avalon, funded locally, 100 percent complete)
- Public Works Emergency Generator – Avalon received a Hazard Mitigation Grant for \$100,000 for the installation of a new emergency generator at the Public Works facility. The municipal engineer was authorized to proceed with design and the project is scheduled for spring 2016 construction. (Project led by Borough of Avalon, funded locally and supplemented with an HMGP grant, Design 90 percent complete)
- Avalon authorized a Shore Protection Alternative Study to evaluate structural shore protection measures at the north end. The study was completed and is scheduled to be submitted to the Borough in November 2015. (Project led by Borough of Avalon, funded locally, 100 percent complete)
- The U.S. Army Corps of Engineers completed a restoration project from the 8<sup>th</sup> Street jetty to 31<sup>st</sup> Street and from 70<sup>th</sup> Street south to the terminal groin of 123<sup>rd</sup> Street in Stone Harbor. This was completed under PL 113-2 Emergency Restoration funds for Hurricane Sandy damage.
- As part of a regional capital utility upgrade project, Atlantic City Electric Co. began work on the Peermont Substation Project (60th Street) in the spring of 2015. The project replaced the current substation at 60<sup>th</sup> Street in its entirety with a new substation. The substation has tripled in power output and management capacity over the old station. All construction is noncombustible and at or above Avalon design flood elevation, including the transformer and transformer control equipment. The new substation construction is complete with only cosmetic site work left to be completed in the fall of 2016.
- As part of a regional capital utility upgrade project, Atlantic City Electric Co. began replacement of all of the utility poles feeding into the Avalon substation at Peermont with new steel poles. The poles are hurricane wind rated structures and all electrical transmission lines are now carried on them. This project is more than 90% completed and will be completed before the end of 2016.
- The 28<sup>th</sup> Street Parking Lot is a large parking area next to the boardwalk and is at or above base flood elevation. The lot is utilized during times of flood emergency to store and stage equipment and as a base of operations. As part of the replacement project the lot has added lighting and electrical hook-ups which may be utilized during emergencies.



### Proposed Hazard Mitigation Initiatives for the Plan Update

The Borough participated in a mitigation action workshop in February 2016 and was provided 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).

The Avalon Construction Department enforces that Uniform Construction Code which requires residential structures in floodprone areas of Avalon to conform to American Society of Civil Engineers (ASCE) Standard #24. The document establishes flood resistant design criteria in flood hazard areas and is endorsed by the National Flood Insurance Program.

Table 9.25-11 summarizes the comprehensive-range of specific mitigation initiatives the Borough would like to pursue in the future to reduce the effects of hazards. Some of these initiatives may be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. 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, fourteen evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as ‘High,’ ‘Medium,’ or ‘Low.’ The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.25-12 provides a summary of the prioritization of all proposed mitigation initiatives for the Plan update.



Table 9.2-12. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
PP-6 / 7.1.2-8	Support homeowners who desire to remediate their repetitive loss properties.	Existing	Sea Level Rise, Flood, Hurricanes and Tropical Storms, Nor'Easter	1,3,4	Borough Staff	Avoidance of damage to private structures	Low	Local	Ongoing	High	SIP	PP
PP-3 / 7.1.2-5	Continue to implement the Repetitive Loss Reduction Plan.	Existing	Sea Level Rise, Flood, Hurricanes and Tropical Storms, Nor'Easter	1,2,4	Construction Office	Avoidance of damage to private structures	Low	Local Budget	Ongoing	Medium	SIP	PP
PP-4 / 7.1.2-6	Continue to pursue funding opportunities to address repetitive loss properties.	Existing	Sea Level Rise, Flood, Hurricanes and Tropical Storms, Nor'Easter	1,2,4	Borough Staff	Avoidance of damage to private structures	Low	Local Budget	Ongoing	Medium	SIP	PP
PR-1 / 7.1.1-1	Continued participation in CRS program.	New & Existing	All Hazards	1-6	Borough Staff	All	Medium	Local Budget	Ongoing	High	All	All
PR-2 / 7.1.1-2	Implement, evaluate, and revise FMP annually.	New & Existing	All Hazards	1-6	POC – R. Edward Dean, OEM Coordinator; Alt. POC Harry deButts,	All	Medium	Local Budget, possibly FEMA Mitigation Grant Funding	In Progress / Ongoing	Medium	LPR	PR



Table 9.2-12. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
					OEM Deputy Coordinator			for 5-year update				
PP-1 / 7.1.2-3	Comply with NFIP policies.	New & Existing	Flood	1, 2, 4, 5, 6	Municipality (likely through NFIP Floodplain Administrator)	Physical Damages	Low - Medium	Local Budget	Ongoing	High	LPR	PP
PP-5 / 7.1.2-7	Continue to require three-foot freeboard.	New	Coastal Storms, Severe Storms, Flooding	1, 4	Construction Office	Physical Damages	Low	Local Budget	Ongoing	High	LPR	PP
PP-7 / 7.1.2-9	Maintain verified benchmarks per CRS requirements	N/A	Coastal Storms, Severe Storms, Flooding	1,4	Borough Engineer	Physical Damages	Low	Local Budget	Sept. 30, 2016	High	SIP	PP
PP-8 / 7.1.2-10	Enforce Coastal A Zone Standards for V-Zone Construction.	New	Coastal Storms, Severe Storms, Flooding	1,4	Construction Office	Physical Damages	Low	Local Budget	Ongoing	High	LPR	PP
ES-1 / 7.1.4-1	Develop, enhance, and implement existing emergency plans.	New & Existing	All Hazards	1, 3, 4, 6	Municipal Emergency Manager with support from County OEM and NJOEM	Emergency Management	Medium	Local Budget	Ongoing	High	LPR	PR
ES-2a / 7.1.4-2	Maintain mutual aid agreements with neighboring communities.	New & Existing	All Hazards	1, 3, 4, 6	Borough	Emergency Management	Low - Medium	Local Budget	Ongoing	Medium	EM	ES



Table 9.2-12. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
PR-7, 8 / 7.1.1-7, 8	Conduct flood mitigation training of Borough staff.	N/A	Sea Level Rise, Flood, Hurricanes and Tropical Storms, Nor'Easter	1,2,4	Public Works Department (and Engineer)	Emergency Management	Low	Local Budget	May 31, 2016 (Dec. 31, 2016)	Medium	EM	PR
SP-1 / 7.1.5-1	Construct additional pump stations along County Road 619 (Ocean Drive).	N/A	Coastal Storms, Flooding	1, 3, 4	Borough Staff and Engineer	Physical Damages	High	Local and County	Dec. 31, 2016	High	SIP	PP
SP-2 / 7.1.5-3	Elevate Borough-owned back-bay bulkheads.	Existing	Coastal Storms, Flooding	1, 4	Borough Staff and Engineer	Physical Damages	High	Local Budget	June 30, 2016	High	SIP	SP
SP-3 / 7.1.5-4	Encourage back-bay fronting residents to elevate bulkheads.	N/A	Coastal Storms, Flooding	1,4	Borough Staff	Physical Damages	Low	Local Budget	Ongoing	High	SIP	SP
PI-1 / 7.1.6-1	Continue public outreach to encourage installation of FEMA-compliant flood vents.	Existing	Coastal Storms, Severe Storms, Flooding	1,2,6	Construction Office	Physical Damages	Low	Local Budget	Ongoing	High	EAP, LPR	PI



Table 9.2-12. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
PP-2 / 7.1.2-4	Continue to monitor and survey the beaches.	N/A	Coastal Storms, Coastal Erosion	1, 3, 5	Borough Engineer	Physical Damages	Medium	Local Budget	Quarterly	High	SIP	PP
PR-3 / 7.1.1-3	Continue to enforce stormwater management ordinances.	N/A	Coastal Storms, Severe Storms, Flooding	1, 3	Construction Office	Physical Damages	Low	Local Budget	Ongoing	High	SIP	PP
NR-1 / 7.1.3-1	Continue to pursue opportunities to preserve open space.	N/A	Coastal Storms, Severe Storms, Flooding	1, 5	Construction Office		Low	Town Budget	Ongoing	Medium	NSP	NR
(former BA-16)	Continue to enforce building codes and re-evaluate ordinances for potential positive amendments.  Ordinances were adjusted in 2014 with new BFE data and three feet of freeboard is now required over BFE for residential construction. Building codes continue to be enforced. 2015 IBC is now in effect and includes additional language regarding floodplain construction.	N/A	Coastal Storms, Severe Storms, Flooding	1, 2, 3, 4	Construction Office		Low	Town Budget	Ongoing	High		



Table 9.2-12. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
PR-4 / 7.1.1-4	Continue to enforce building codes.	N/A	Coastal Storms, Severe Storms, Flooding	1, 2, 3, 4	Construction Office		Low	Town Budget	Ongoing	High	LPR	PR
PR-5 / 7.1.1-5	Re-evaluate ordinances for potential positive amendments.	N/A	Coastal Storms, Severe Storms, Flooding	1, 2, 3, 4	Construction Office		Low	Town Budget	Ongoing	High	LPR	PR
SP-9 / 7.1.5-11	Continue to conduct regular beach and dune maintenance activities	N/A	Coastal Storms, Coastal Erosion	1, 3, 5	Borough Staff	Physical Damages	Medium - High	Local Budget; federal and State grants	Ongoing	High	SIP	SP
NR-2 / 7.1.3-2	Continue volunteer dune grass planting program.	N/A	Coastal Storms, Severe Storms, Flooding	2, 5, 6	Borough Staff and Volunteers	Physical Damages	Low	Local Budget	Ongoing	High	NSP	NR
NR-3 / 7.1.3-3	Continue to protect the high dunes	N/A	Coastal Storms, Severe Storms, Flooding	1, 5	Borough Staff	Physical Damages	High	Local Budget, HMA grants	Ongoing	High	NSP	NR
(former BA-19)	Continue outreach efforts to provide informational materials to homeowners, builders, and realtors regarding floodplain management.	N/A	Coastal Storms, Severe Storms, Flooding	2, 5, 6	Construction Office		Low	Town Budget	Ongoing	High		



Table 9.2-12. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
	Generate increased interest in floodplain management among homeowners and business owners.											
PI-2 / 7.1.6-2	Continue to provide information materials to homeowners, builders, and realtors regarding floodplain management.	N/A	Coastal Storms, Severe Storms, Flooding	2, 5, 6	Borough Staff	Physical Damages	Low	Town Budget	Ongoing	High	LPR	PI
NR-4 / 7.1.3-4	Continue stream scouring and illicit connection programs.	N/A	Coastal Storms, Severe Storms, Flooding	1, 3, 6	DPW and Borough Engineer	Physical Damages	Low	Town Budget	May 31, 2016	Low	NSP	NR
ES-2c / 7.1.4-2	Maintain pre-disaster contracts with disaster recovery contractor for debris removal.	N/A	Coastal Storms, Severe Storms, Severe Winter Storms, Tsunami	1, 4	Borough Staff	Emergency Management	Low	Town Budget	Ongoing	High	EM	ES
ES-2c / 7.1.4-2	Pursue pre-disaster contracts for providing home and family	N/A	Coastal Storms, Severe Storms, Severe	1, 4	Borough Staff	Emergency Management	Low	Town Budget	Ongoing	High	EM	ES





Table 9.2-12. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
	services for emergency personnel during disasters.		Winter Storms, Tsunami									
ES-2d / 7.1.4-2	Continue to maintain pre-disaster contract for disaster-recovery services of public buildings and facilities.	N/A	Coastal Storms, Severe Storms, Severe Winter Storms, Tsunami	1, 4	Borough Staff	Emergency Management	Low	Town Budget	Ongoing	High	EM	ES
ES-2e / 7.1.4-2	Maintain Contract with Cumberland County Board of Vocational Education to provide evacuation sheltering services.	N/A	Coastal Storms, Severe Storms, Severe Winter Storms, Tsunami	1, 4	Borough Staff	Emergency Management	Low	Town Budget	Ongoing	High	EM	ES
ES-2f / 7.1.4-2	Maintain contract for portable generator services for evacuation shelter.	N/A	Coastal Storms, Severe Storms, Severe Winter Storms, Tsunami	1, 4	Borough Staff	Emergency Management	Low	Town Budget	Ongoing	High	EM	ES
ES-2g / 7.1.4-2	Maintain contract with	N/A	Coastal Storms,	1, 4	Borough Staff	Emergency Management	Low	Town Budget	Ongoing	High	EM	ES



Table 9.2-12. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
	local bus company for evacuation services for shut-ins.		Severe Storms, Severe Winter Storms, Tsunami									
SP-4 / 7.1.5-5	Install SCADA systems for oceanfront pump stations.	Existing	Coastal Storms, Severe Storms, Flooding	1, 3, 4	Water System Operator and Engineer	Physical Damages	High	Local Funds and MHA	Dec. 31, 2016	High	SIP	SP
SP-5 / 7.1.5-6	Provide emergency connections for portable generator at oceanfront pump stations.	Existing	Coastal Storms, Severe Storms, Flooding	1, 3, 4	Water System Operator and Engineer	Physical Damages	High	Municipal, and HMA grants where applicable	Dec. 31, 2016	High	SIP	SP
SP-6 / 7.1.5-7	Increase the capacity of the stormwater system where deficiencies are revealed.	Existing	Coastal Storms, Severe Storms, Flooding	1, 3, 4	Borough Engineer	Physical Damages	High	Municipal, and HMA grants where applicable	Ongoing	Medium	SIP	SP
ES-3 / 7.1.4-3	Develop and institute ID card program to control re-entry into Borough after major disasters	N/A	Coastal Storms, Severe Storm, Flood, Tsunami	3, 4, 6	Borough Staff	Emergency Management	Low	Local Budget	Dec. 31, 2016	High	EM	ES



Table 9.2-12. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
	requiring evacuation.											
ES-4 / 7.1.4-4	Implement program to keep motorists off Ocean Drive during flooding events.	N/A	Coastal Storms, Severe Storm, Flood, Tsunami	3, 4, 6	Borough Staff	Emergency Management	Low	Local Budget	Dec. 31, 2016	Medium	EM	ES
ES-5 / 7.1.4-5	Research app for mobile devices to use for flood hazard notifications and emergencies.	N/A	Coastal Storms, Severe Storm, Flood, Tsunami	3, 4, 6	Borough Staff	Emergency Management	Low	Local Budget	Ongoing	High	EM	ES
ES-6 / 7.1.4-6	Expand “Code Red” system to include tourists and visitors.	N/A	Coastal Storms, Severe Storm, Flood, Tsunami	3, 4, 6	Borough Staff	Emergency Management	Low	Local Budget	Dec. 31, 2016	High	EM	ES
ES-7 / 7.1.4-7	Consider signage and/or reverse lane system for 30th Street.	N/A	Coastal Storms, Severe Storm, Flood	3, 4, 6	Borough Staff and Engineer	Emergency Management	Low	Local Budget	Dec. 31, 2016	Medium	EM	ES



Table 9.2-12. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
ES-8 / 7.1.4-8	Maintain tide reference gauges to provide residents with a means to more accurately interpret public announcements related to flooding levels and surges.	N/A	Coastal Storms, Severe Storm, Flood	1,2,4	Borough Engineer	Emergency Management	Low	Local Budget	Ongoing	High	EM	ES
ES-9a – 9d / 7.1.4-9	Continue to provide flood warnings and information on: 9a - local cable channel 9b – web site 9c – AM 1630 radio station 9d – social media	N/A	Coastal Storms, Severe Storm, Flood	1,2,4	Borough Staff	Emergency Management	Low	Local Budget	Ongoing	High	EM	ES
ES-9e / 7.1.4-9	Continue to provide flood warnings over community-wide public address system	N/A	Coastal Storms, Severe Storm, Flood	1,2,4	Borough Staff	Emergency Management	Low	Local Budget	Ongoing	High	EM	ES
ES-9f / 7.1.4-9	Continue to use Variable Message Signs along roadways to alert public of emergencies.	N/A	Coastal Storms, Severe Storm, Flood	1,2,4	Borough Staff	Emergency Management	Low	Local Budget	Ongoing	High	EM	ES



Table 9.2-12. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
ES-10 / 7.1.4-10	Maintain public records at remote location.	N/A	Coastal Storms, Severe Storm, Flood	1,2,4	Borough Staff	Emergency Management	Low	Local Budget	Ongoing	High	EM	ES
ES-11 / 7.1.4-11	Maintain operation of mobile pet shelter.	N/A	Coastal Storms, Severe Storm, Flood	1,2,4	Borough Staff	Emergency Management	Low	Local Budget	Ongoing	High	EM	ES
ES-12 / 7.1.4-12	Maintain flood response vehicle fleet.	N/A	Coastal Storms, Severe Storm, Flood	1,2,4	Department of Public Works	Emergency Management	Low	Local Budget	Ongoing	High	EM	ES
ES-13 / 7.1.4-13	Maintain Continuity of Operations / Continuity of Government Plan.	N/A	Coastal Storms, Severe Storm, Flood	1,2,4	Borough Staff	Emergency Management	Low	Local Budget	Ongoing	High	EM	ES
PR-6 / 7.1.1-6	Monitor and inspect 8th Street jetty and North End Seawall for settlement or damage.	N/A	Coastal Storms, Coastal Erosion	1	Borough Engineer	Physical Damages	Low	Local Budget	December 31, 2016	Medium	SIP	SP



Table 9.2-12. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
SP-8 / 7.1.5-10	Evaluate north end shore protection and beach stabilization alternatives from pending municipal engineer's report.	N/A	Coastal Storms, Coastal Erosion	1	Borough Engineer and Staff	Physical Damages	Low	Local Budget	March 31, 2016	High	SIP	SP
NR-5 / 7.1.3-5	Explore opportunities to restore degraded tidal marsh in back bay utilizing thin-layer placement of dredged material.	N/A	Coastal Storms, Coastal Erosion	1,3,5	Borough Engineer and Staff	Physical Damages	Low	Local Budget	Dec. 31, 2016	Medium	NSP	NR
NR-6 / 7.1.3-6	Continue to implement dune grass fertilization program.	N/A	Coastal Storm, Coastal Erosion	1,3,5	Borough Staff	Physical Damages	Low	Local Budget	Per Schedule	High	NSP	NR
NR-7 / 7.1.3-7	Maintain and enforce recently adopted sediment control ordinance for swimming pool dewatering.	N/A	Coastal Storms, Flood	3,5	Borough Staff	Physical Damages	Low	Local Budget	Ongoing	High	NSP	NR
NR-8 / 7.1.3-8	Continue to implement invasive species	N/A	Coastal Storm,	3,5	Borough Staff	Physical Damages	Medium	Local Budget	Ongoing	Medium	NSP	NR



Table 9.2-12. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
	management and mitigation.		Coastal Erosion									
PI-3 / 7.1.6-3	Develop and implement system to provide public with understanding of relationship to forecasted storm surge to actual flooding conditions.	N/A	Coastal Storm, Flood	1,2,4	Borough Staff and Engineer	Physical Damages	Medium	Local Budget	Dec. 31, 2016	High	EAP	PI
PI-4 / 7.1.6-4	Establish and publicize designated locations for parking cars during high tidal conditions.	N/A	Coastal Storms, Flood	1,2,4	Borough Staff and Engineer	Physical Damages	Low	Local Budget	Dec. 31, 2016	Medium	EAP	PI
PI-5 / 7.1.6-5	Provide flood hazard educational programs for public at library.	N/A	Coastal Storms, Flood	1,2,4	Borough Staff	Physical Damages	Low	Local Budget	Ongoing	High	EAP	PI
PI-6 / 7.1.6-6	Develop Borough-wide elevation map for brochures.	N/A	Coastal Storms, Flood	1,2,4	Borough Staff and Engineer	Physical Damages	Low	Local Budget	Ongoing	High	EAP	PI



Table 9.2-12. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category	CRS Category
PI-7 / 7.1.6-7	Continue to inform public about flood hazards through Mayor’s presentations to various community groups.	N/A	Coastal Storms, Flood	1,2,4	Mayor	Physical Damages	Low	Local Budget	Ongoing	High	EAP	PI
PI-8 / 7.1.6-8	Provide information to applicable property owners regarding the Repetitive Loss Reduction Plan.	N/A	Coastal Storms, Flood	1,2,4	Construction Office	Physical Damages	Low	Local Budget	Ongoing	High	EAP	PI
PI-9 / 7.1.6-9	Expand public education of flood hazards through all available media channels	N/A	Coastal Storms, Flood	1,2,4	Borough Staff	Physical Damages	Low	Local Budget	Dec. 31, 2016	High		

Notes:

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

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

Acronyms and Abbreviations:

- CRS Community Rating System
- DPW Department of Public Works
- FEMA Federal Emergency Management Agency
- FPA Floodplain Administrator
- HMA Hazard Mitigation Assistance
- N/A Not applicable
- NFIP National Flood Insurance Program
- NJDEP New Jersey Department of Environmental Protection







NJOEM New Jersey Office of Emergency Management  
OEM Office of Emergency Management

Potential FEMA HMA Funding Sources:

FMA Flood Mitigation Assistance Grant Program  
HMGP Hazard Mitigation Grant Program  
PDM Pre-Disaster Mitigation Grant Program  
HMA Hazard Mitigation Assistance Program

Timeline:

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

Costs:

Where actual project costs have been reasonably estimated:

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

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

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

Benefits:

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

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

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

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

Mitigation Category:

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

CRS Category:

- Preventative Measures (PR)-Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- Property Protection (PP)-These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- Public Information (PI)-Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.
- Natural Resource Protection (NR)-Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.





- *Structural Flood Control Projects (SP)-Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.*
- *Emergency Services (ES)-Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities*



Table 9.2-13. Summary of Prioritization of Actions

Mitigation Action / Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
PP-6 / 7.1.2-8	Support homeowners who desire to remediate their repetitive loss properties.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
PP-3 / 7.1.2-5	Continue to implement the Repetitive Loss Reduction Plan.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Medium
PP-4 / 7.1.2-6	Continue to pursue funding opportunities to address repetitive loss properties.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Medium
PR-1 / 7.1.1-1	Continued participation in CRS program.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
PR-2 / 7.1.1-2	Implement, evaluate, and revise FMP annually.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Medium
PP-1 / 7.1.2-3	Comply with NFIP policies.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
PP-5 / 7.1.2-7	Continue to require three-foot freeboard.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
PP-7 / 7.1.2-9	Maintain verified benchmarks per CRS requirements .	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
PP-8 / 7.1.2-10	Enforce Coastal A Zone Standards for V-Zone Construction.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
ES-1 / 7.1.4-1	Develop, enhance, and implement existing emergency plans.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
ES-2a / 7.1.4-2	Maintain mutual aid agreements with neighboring communities.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Medium
PR-7, 8 / 7.1.1-7, 8	Conduct flood mitigation training of Borough staff.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Medium
SP-1 / 7.1.5-1	Construct additional pump stations along County Road 619 (Ocean Drive).	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
SP-2 / 7.1.5-3	Elevate Borough-owned back-bay bulkheads.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
SP-3 / 7.1.5-4	Encourage back-bay fronting residents to elevate bulkheads.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
PI-1 / 7.1.6-1	Continue public outreach to encourage installation of FEMA-compliant flood vents.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
PP-2 / 7.1.2-4	Continue to monitor and survey the beaches.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High



Table 9.2-13. Summary of Prioritization of Actions

Mitigation Action / Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
PR-3 / 7.1.1-3	Continue to enforce stormwater management ordinances.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
NR-1 / 7.1.3-1	Continue to pursue opportunities to preserve open space.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Medium
(former BA-16)	Continue to enforce building codes and re-evaluate ordinances for potential positive amendments. Ordinances were adjusted in 2014 with new BFE data and three feet of freeboard is now required over BFE for residential construction. Building codes continue to be enforced. 2015 IBC is now in effect and includes additional language regarding floodplain construction.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
PR-4 / 7.1.1-4	Continue to enforce building codes.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
PR-5 / 7.1.1-5	Re-evaluate ordinances for potential positive amendments.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
SP-9 / 7.1.5-11	Continue to conduct regular beach and dune maintenance activities	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
NR-2 / 7.1.3-2	Continue volunteer dune grass planting program.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
NR-3 / 7.1.3-3	Continue to protect the high dunes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
(former BA-19)	Continue outreach efforts to provide informational materials to homeowners, builders, and realtors regarding floodplain management.  Generate increased interest in floodplain management among homeowners and business owners.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High



Table 9.2-13. Summary of Prioritization of Actions

Mitigation Action / Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
PI-2 / 7.1.6-2	Continue to provide information materials to homeowners, builders, and realtors regarding floodplain management.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
NR-4 / 7.1.3-4	Continue stream scouring and illicit connection programs.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Low
ES-2c / 7.1.4-2	Maintain pre-disaster contracts with disaster recovery contractor for debris removal.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
ES-2c / 7.1.4-2	Pursue pre-disaster contracts for providing home and family services for emergency personnel during disasters.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
ES-2d / 7.1.4-2	Continue to maintain pre-disaster contract for disaster-recovery services of public buildings and facilities.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
ES-2e / 7.1.4-2	Maintain Contract with Cumberland County Board of Vocational Education to provide evacuation sheltering services.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
ES-2f / 7.1.4-2	Maintain contract for portable generator services for evacuation shelter.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
ES-2g / 7.1.4-2	Maintain contract with local bus company for evacuation services for shut-ins.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
SP-4 / 7.1.5-5	Install SCADA systems for oceanfront pump stations.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
SP-5 / 7.1.5-6	Provide emergency connections for portable generator at oceanfront pump stations.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
SP-6 / 7.1.5-7	Increase the capacity of the stormwater system where deficiencies are revealed.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Medium
ES-3 / 7.1.4-3	Develop and institute ID card program to control re-entry into Borough after major disasters requiring evacuation.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
ES-4 / 7.1.4-4	Implement program to keep motorists off Ocean Drive during flooding events.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Medium
ES-5 / 7.1.4-5	Research app for mobile devices to use for flood hazard notifications and emergencies.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
ES-6 / 7.1.4-6	Expand "Code Red" system to include tourists and visitors.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High





Table 9.2-13. Summary of Prioritization of Actions

Mitigation Action / Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
ES-7 / 7.1.4-7	Consider signage and/or reverse lane system for 30th Street.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Medium
ES-8 / 7.1.4-8	Maintain tide reference gauges to provide residents with a means to more accurately interpret public announcements related to flooding levels and surges.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
ES-9a – 9d / 7.1.4-9	Continue to provide flood warnings and information on: 9a - local cable channel 9b – web site 9c – AM 1630 radio station 9d – social media	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
ES-9e / 7.1.4-9	Continue to provide flood warnings over community-wide public address system.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
ES-9f / 7.1.4-9	Continue to use Variable Message Signs along roadways to alert public of emergencies.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
ES-10 / 7.1.4-10	Maintain public records at remote location.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
ES-11 / 7.1.4-11	Maintain operation of mobile pet shelter.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
ES-12 / 7.1.4-12	Maintain flood response vehicle fleet.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
ES-13 / 7.1.4-13	Maintain Continuity of Operations / Continuity of Government Plan.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
PR-6 / 7.1.1-6	Monitor and inspect 8 <sup>th</sup> Street jetty and North End Seawall for settlement or damage.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Medium
SP-8 / 7.1.5-10	Evaluate north end shore protection and beach stabilization alternatives from pending municipal engineer’s report.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
NR-5 / 7.1.3-5	Explore opportunities to restore degraded tidal marsh in back bay utilizing thin-layer placement of dredged material.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Medium



Table 9.2-13. Summary of Prioritization of Actions

Mitigation Action / Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
NR-6 / 7.1.3-6	Continue to implement dune grass fertilization program.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
NR-7 / 7.1.3-7	Maintain and enforce recently adopted sediment control ordinance for swimming pool dewatering.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
NR-8 / 7.1.3-8	Continue to implement invasive species management and mitigation.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Medium
PI-3 / 7.1.6-3	Develop and implement system to provide public with understanding of relationship to forecasted storm surge to actual flooding conditions.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
PI-4 / 7.1.6-4	Establish and publicize designated locations for parking cars during high tidal conditions.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Medium
PI-5 / 7.1.6-5	Provide flood hazard educational programs for public at library	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
PI-6 / 7.1.6-6	Develop Borough-wide elevation map for brochures.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
PI-7 / 7.1.6-7	Continue to inform public about flood hazards through Mayor’s presentations to various community groups.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
PI-8 / 7.1.6-8	Provide information to applicable property owners regarding the Repetitive Loss Reduction Plan.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High
PI-9 / 7.1.6-9	Expand public education of flood hazards through all available media channels.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	High

Note: Refer to Section 6 which contains the guidance on conducting the prioritization of mitigation actions. Where the community has determined that the original priority ranking for “carry forward” initiatives remains valid, the earlier priority ranking is indicated on the prioritization table, however the 2016 criteria ratings are indicated with a null “-” marking.



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

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None at this time.

### **9.2.8 Hazard Area Extent and Location**

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Hazard area extent and location maps have been generated for the Borough of Avalon 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 considered to be adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which the Borough of Avalon has significant exposure. These maps are illustrated in the hazard profiles within Section 5.4, Volume I of this Plan.

### **9.2.9 Additional Comments**

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None at this time.





Figure 9.2-1. Borough of Avalon Hazard Area Extent and Location Map 1

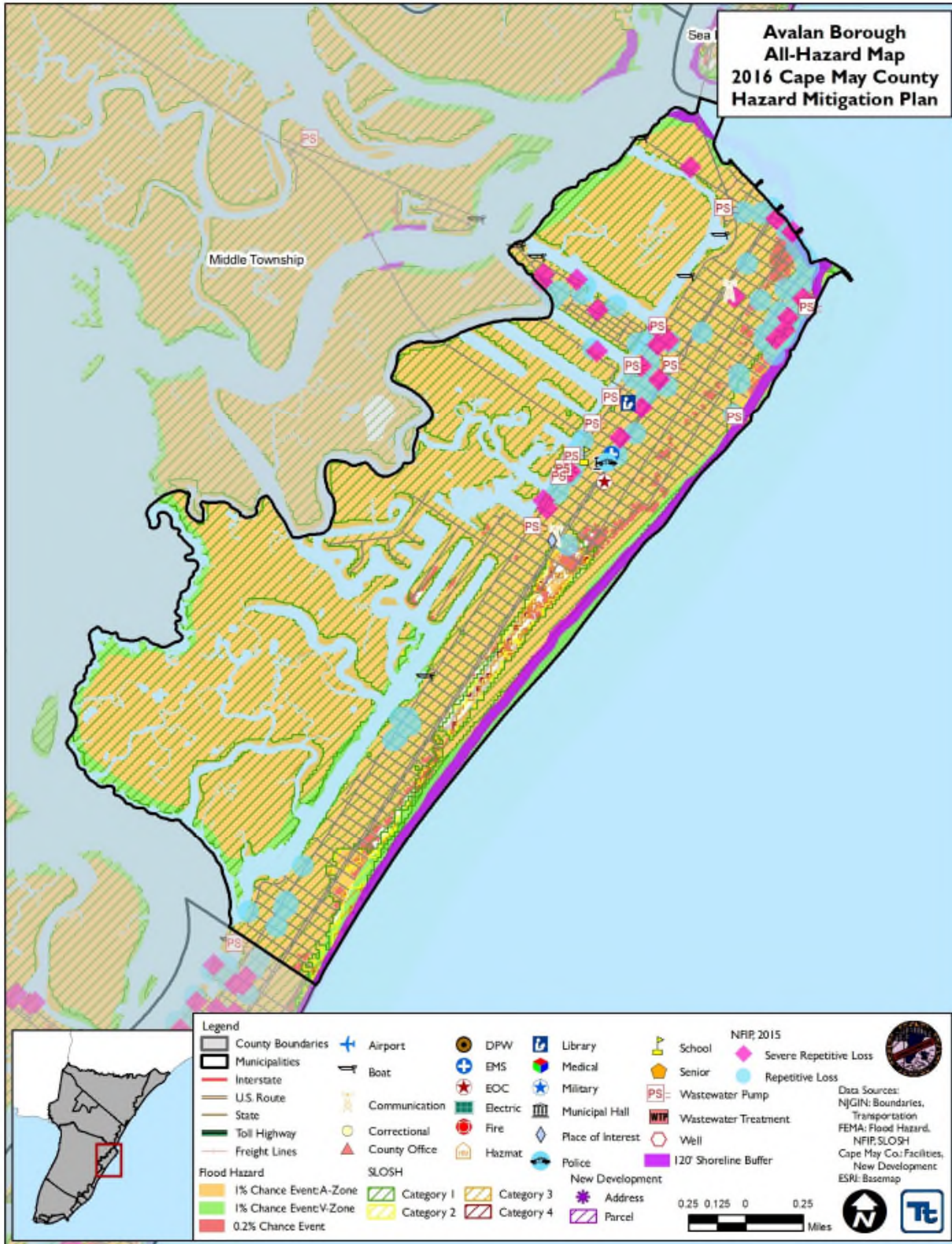




Figure 9.2-2. Borough of Avalon Hazard Area Extent and Location Map 2

