



9.2 BOROUGH OF AVALON

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

9.2.1 Staff and Local Stakeholder Involvement in Annex Development

The Borough of Avalon followed the planning process described in Section 3 (Planning Process). This annex was developed over the course of several months with input from many jurisdiction representatives. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization. The coronavirus pandemic resulted in a strain on local resources that limited some participation, but every effort was made to connect with staff and stakeholders and gain diverse input. Due to safety precautions, all meetings were held virtually. The following table summarizes who participated and in what capacity. Additional documentation on the municipality’s planning process through Planning Partnership meetings is included in Section 3 (Planning Process) and Appendix C (Meeting Documentation).

Table 9.2-1. Hazard Mitigation Planning Team and Contributors

Primary Point of Contact		Alternate Point of Contact
Name / Title: Richard Dean, Sr., OEM Coordinator Address: 3100 Dune Drive. Avalon, NJ 08202 Phone Number: (609) 967-5920 Email: edean@avalonboro.org		Name / Title: Paul Short, Sr., Code Enforcement Official, Dep. OEM Coordinator Address: 1401 Dune Drive Phone Number: (609) 967-5920
NFIP Floodplain Administrator		
Name / Title: Richard Dean, Sr., Construction Official Address: 3100 Dune Drive. Avalon, NJ 08202 Phone Number: (609) 967-5920 Email: edean@avalonboro.org		
Name	Title	Method of Participation
Richard Dean	OEM Coordinator, Construction Official	Author of annex, reviewed and signed off on annex
Paul Short, Sr.	Code Enforcement Official, Dep. OEM Coordinator	Completed stakeholder survey
Scott Wahl	Business Administrator	Meetings on project details and establishment of priorities, reviewed and signed off on annex
Tom Thornton	Borough Engineer	Author of Avalon Floodplain Mitigation Plan, technical expertise
James Craft	Fiscal/CFO	Reviewed and signed off on annex
Amanda Seltzer	Land Use Planner	Reviewed and signed off on annex
Stephen M. Camp	Operation Coordinator	Reviewed and signed off on annex
Jeff Christopher	Chief, Police Department	Reviewed and signed off on annex



9.2.2 Jurisdiction Profile

Avalon is a resort and residential community located on the northern portion of Seven Mile Island in Cape May County, New Jersey. The Borough is known for its spectacular beaches and natural resources. It is bordered to the north by Townsends Inlet, to the west by Great Sound and Gravens Thorofare/Intracoastal Waterway, to the east by the Atlantic Ocean, and to the south by Stone Harbor, with which Avalon shares Seven Mile Island. Much of Avalon’s land area is preserved open space inclusive of thousands of acres of saline wetlands and upland dune habitats.

According to the U.S. Census, the 2010 population for the Borough of Avalon was 1,334. The estimated 2018 population was 1,409, a 5.6 percent increase from the 2010 Census. Data from the 2018 U.S. Census American Community Survey indicate that 1.8 percent of the population is 5 years of age or younger and 51.1 percent is 65 years of age or older. With 37 percent of the population aged 70 or older, it must be assumed that as much as one-third of the population would suffer from mild to severe age-related disability. Since the Borough of Avalon is a resort community, and tourism is the primary industry, swelling the seasonal population to around 50,000 people in mid-summer. Multiple means of communication are employed in attempt to reach the resident and seasonal population during in-season emergencies. Communities must deploy a support system which may include seasonal workers, that enables all populations to safely reach shelters or to quickly evacuate a hazard area.

9.2.3 Growth/Development Trends

Understanding how past, current, and projected development patterns have or are likely to increase or decrease risk in hazard areas is a key component to understanding a jurisdiction’s overall risk to its hazards of concern. Table 9.2-2 summarizes recent and expected future development trends, including major residential/commercial development and major infrastructure development. Figure 9.2-1 at the end of this annex illustrates the geographically-delineated hazard areas and the location of potential new development.

Table 9.2-2. Recent and Expected Future Development

Type of Development	2015		2016		2017		2018		2019	
	Total	Within SFHA	Total	Within SFHA	Total	Within SFHA	Total	Within SFHA	Total	Within SFHA
Number of Building Permits for New Construction Issued Since the Previous HMP										
Single and Two-Family Units	83	83	54	54	100	100	91	91	75	75
Multi-Family	0	0	0	0	0	0	0	0	0	0
Other (commercial, mixed-use, etc.)	0	0	0	0	0	0	9	9	0	0

* Only location-specific hazard zones or vulnerabilities identified.

9.2.4 Capability Assessment

The Borough of Avalon performed an inventory and analysis of existing capabilities, plans, programs, and policies that enhance its ability to implement mitigation strategies. Section 6 (Capability Assessment) describes the components included in the capability assessment and their significance for hazard mitigation planning. This section summarizes the following findings of the assessment:



- An assessment of planning, legal and regulatory capabilities.
- Development and permitting capabilities.
- An assessment of administrative and technical capabilities.
- An assessment of fiscal capabilities.
- An assessment of education and outreach capabilities.
- Classification under various community mitigation programs.
- The community’s adaptive capacity.
- Information on National Flood Insurance Program (NFIP) compliance.

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, planning/policy documents were reviewed, and each jurisdiction was surveyed to obtain a better understanding of their progress in plan integration. Areas with current mitigation integration are summarized in Capability Assessment (Section 9.2.4). The Borough of Avalon identified specific integration activities that will be incorporated into municipal procedures are included in the updated mitigation strategy.

PLANNING, LEGAL AND REGULATORY CAPABILITY

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

Table 9.2-3. Planning, Legal and Regulatory Capability

	Do you have this? (Yes/No)	Authority that enforces (Federal, State, Regional, County, Local)	Is this State Mandated?	If yes-how?	Have aspects of hazard mitigation been integrated? If no - can it be a mitigation action? If yes, add Mitigation Action #.
Codes, Ordinances, & Requirements					
Building Code	Yes	State & Local	Yes	Yes	-
<i>Comment:</i>					
<ul style="list-style-type: none"> • State mandated on local level under NJAC 5:23-3.14. International Building Code – New Jersey Edition, 2018, NJAC 5:24-3.14 Adopted 9/3/2019, effective March 14, 2020. • Borough Building and Construction Code, Chapter 20, Adopted by the Borough Council and Amended 1-23-2019. The Construction Official shall be the chief administrator of the enforcing agency. • The Borough adopted Chapter 19 of Avalon Borough Code in 2013 entitled “Flood Damage Prevention”, with amendments adopted in 2015, 2017, and 2020 by Avalon Borough Council. • The Borough has established the position of Floodplain Coordinator, who is responsible for review of the Floodplain Development Permit. • The Borough requires a separate permit for development in the 100-year floodplain. 					
Zoning Code	Yes	Local	Yes – if municipality has a Planning Board	Yes	-
<i>Comment:</i>					
<ul style="list-style-type: none"> • State permissive on local level. Per State of NJ Municipal Land Use Law (MLUL) L. 1975, s. 2, eff Aug 1, 1976, 40-55D-62: 49. Power to zone, requires all jurisdictions to have current zoning and other land development ordinances after the planning board has adopted the land use element and master plan. • Borough Zoning Regulations, Chapter 27, Adopted by the Borough Council, 2002. Purpose is to guide and regulate the orderly growth and development of the Borough of Avalon in accordance with a duly enacted comprehensive Master Plan. • The Borough integrates mitigation into this section by encouraging elevations in the SFHA up to 3 feet above the BFE and by requiring new development to protect from flooding by maintaining the integrity of the stormwater management system. 					
Subdivisions	Yes	County & Local	Yes – if municipality has a	Yes	-





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			Planning Board		
Comment:					
<ul style="list-style-type: none"> Borough Subdivision and Site Plan Review Ordinance, Chapter 26, Adopted by Borough Council in 2008. Purpose is to promote orderly growth and development in the Borough of Avalon through the positive application of high standards of design and construction, contribute to the overall quality of the environment and to further the goals and objectives of the Borough's Master Plan and subsequent re-examinations and the purpose of the Borough's Zoning Ordinance. Aspects of this Ordinance have integrated the hazard mitigation plan as this section requires in its Design Standards; dune protection, energy conservation, limiting impacts to vegetation and other natural features, encouraging green building techniques, flood protection, soil conservation, landscaping, nonstructural stormwater controls and open space. 					
Stormwater Management	Yes	State & Local	Yes	Yes	-
Comment:					
<ul style="list-style-type: none"> See Title 7 of the NJ Administrative Code, N.J.A.C. 7:8 Borough Stormwater Regulations, Chapter 30, Adopted by Borough Council in 2006. Purpose is to establish minimum stormwater management requirements and controls for all major developments undertaken in the Borough of Avalon. In addition, it is the policy initiative of this Section for the design of Flood control, groundwater recharge, and pollutant reduction to be provided through nonstructural or low impact techniques before relying on structural Best Management Practices. Aspects of this Ordinance have been incorporated into the mitigation plan by way of substantial efforts toward the provision of environmentally sensitive, nonstructural stormwater management techniques that maximize water quality and groundwater recharge, and minimize flooding. 					
Post-Disaster Recovery	Yes	Local	No	Yes	-
Comment:					
<ul style="list-style-type: none"> Borough Administration maintains contracts with FEMA approved vendors for post disaster recovery and services. 					
Real Estate Disclosure	Yes	State, Division of Consumer Affairs	Yes	Yes	-
Comment:					
<ul style="list-style-type: none"> N.J.A.C. 13:45A-29.1 - Before signing a contract of sale, all purchasers must receive a New Jersey Public Offering Statement (POS) approved by the New Jersey Real Estate Commission. The POS provides information such as estimated completion dates for improvements, fees for services and amenities, the type of title and ownership interest being offered, its proximity to hospitals, schools, fire and police, as well as any hazards, risks or nuisances in or around the subdivision. 					
Growth Management	No	Local	Yes	Yes	-
Comment:					
<ul style="list-style-type: none"> State Mandated on a municipal level. See Zoning Ordinance; Also - Plan Endorsement Process via the State Development & Redevelopment Plan provides for the delineation of Growth Areas and Environs; Use of the endorsed plans in the implementation of state environmental regulations makes the Plan Endorsement process a growth management strategy. Plan Endorsement was required to extend CAFRA Centers and is often an incentive for grants and some permit approvals. Locally, the municipal zoning official is the point of contact, and any growth plans are remanded to the Avalon Planning-Zoning Board and Borough Council for joint approval. 					
Site Plan Review	Yes	County & Local	Yes	Yes	-
Comment:					
<ul style="list-style-type: none"> Dictated by the Municipal Land Use Law which sets forth minimum requirements for plans, etc., timeframes for development review. NJ Statute 40:27-6.2: The board of freeholders of any county having a county planning board shall provide for the review of all subdivisions of land within the county by said county planning board and for the approval of those subdivisions affecting county road or drainage facilities as set forth and limited hereinafter in this section. 40:27-6.10 In order that county planning boards shall have a complete file of the planning and zoning ordinances of all municipalities in the county, each municipal clerk shall file with the county planning board a copy of the planning and zoning ordinances of the municipality in effect on the effective date of this act and shall notify the county planning board of the introduction of any revision or amendment of such an ordinance which affects lands adjoining county roads or other county lands, or lands lying within 200 feet of a municipal boundary, or proposed facilities or public lands shown on the county master plan or official county map. Such notice shall be given to the county planning board at least 10 days prior to the public hearing thereon by personal delivery or by certified mail of a copy of the official notice of the public hearing together with a copy of the proposed ordinance. Borough Subdivision and Site Plan Review Ordinance, Chapter 26, Adopted by Borough Council in 2008. Purpose is to promote orderly growth and development in the Borough of Avalon through the positive application of high standards of design and construction, contribute to the overall quality of the environment and to further the goals and objectives of the Borough's Master Plan and subsequent re-examinations and the purpose of the Borough's Zoning Ordinance. 					



Table 9.2-3. Planning, Legal and Regulatory Capability

	Do you have this? (Yes/No)	Authority that enforces (Federal, State, Regional, County, Local)		Is this State Mandated?	Have aspects of hazard mitigation been integrated? If yes-how? If no - can it be a mitigation action? If yes, add Mitigation Action #.	
		Federal, State & Local	Local		Yes	-
<ul style="list-style-type: none"> Aspects of this Ordinance have been integrated into mitigation plan as this section requires in its Design Standards, dune protection, energy conservation, limiting impacts to vegetation and other natural features, encouraging green building techniques, flood protection, soil conservation, landscaping, nonstructural stormwater controls and open space. 						
Environmental Protection	Yes	Federal, State & Local	Local	No	Yes	-
Comment: <ul style="list-style-type: none"> Pursuant to N.J.S.A. 40:56A-1 the Borough has established the Environmental Commission. The purpose of the Commission is the protection, development or use of natural resources, including water resources, within the Borough. The Environmental Commission is empowered to conduct research in the use or possible use of open land areas of the Borough and may coordinate the activities of unofficial bodies organized for similar purposes. The Commission maintains an Environmental Resource Inventory of all open areas, publicly and privately owned, including open marshlands, swamps and other wetlands, in order to obtain information on the proper use of such areas and may from time to time recommend to the Planning Board plans and programs for inclusion in a Municipal Master Plan. The Environmental Commission may, subject to the approval of the Borough Council, acquire property. Such acquisition may be to acquire the fee or any lesser interest, development right, easement, including conservation easement, covenant, or other contractual right, including a conveyance on conditions or with limitations or reversions, as may be necessary to acquire, maintain, improve, protect, limit the future use of or otherwise conserve and properly utilize open spaces and other land and water areas in the Borough. The Environmental Commission participates, to the fullest extent possible, in review by the NJDEP of applications for development within the Beach Dune Area in accordance with N.J.A.C. 7:7-4.1 et seq. The Environmental Commission is the municipal custodian of the Avalon Dune Vegetation Management Plan, which regulates plantings and other activities in the dunes, as well as limits plantings during rehabilitation to approved native species. In accordance with Avalon Borough Code Chapter 23, Section 5, upon receipt of an application deemed complete by the Secretary of the Planning/Zoning Board in accordance with Section 23-4 above, the Planning/Zoning Board shall forward a copy of the application to the Environmental Commission of the Borough of Avalon. The Environmental Commission shall make any recommendations concerning same to the Planning/Zoning Board. The Planning/Zoning Board shall give due regard to any recommendation of the Environmental Commission. 						
Flood Damage Prevention	Yes	Federal, State & Local	Local	Yes	Yes	-
Comment: <ul style="list-style-type: none"> The NJ State Law Flood Area Control Act (N.J.S.A. 58:16A-52) and the National Flood Control Act of 1968 (NFIP) are state and federal acts to support minimization of flood losses. They do not require local adoption but as enforced by the NJDEP, the floodplain ordinances of each municipality must be reviewed for compliance with these regulations. In addition, participation in the NFIP requires a floodplain ordinance. Regulations for the Flood Control Hazards Act were adopted in 2007 and amended effective September 27, 2017. Borough Flood Damage Prevention Ordinance, Chapter 19, Adopted by Borough Council in 2013 and amended through 2020. It is the purpose of this chapter to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas by provisions designed to: <ul style="list-style-type: none"> Protect human life and health; Minimize expenditure of public money for costly flood control projects; Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public and risk to those individuals who are providing rescue efforts; Minimize prolonged business interruptions; Minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets, bridges located in areas of special flood hazard; Help maintain a stable tax base by providing for the sound use and development of areas of special flood hazard so as to minimize future flood blight areas; Ensure that potential buyers are notified that property is in an area of special flood hazard; and Ensure that those who occupy the areas of special flood hazard assume responsibility for their actions. Integrated mitigation actions in this Section include methods and provisions for: a. Restricting or prohibiting uses which are potentially dangerous to health, safety, and property due to water or erosion hazards, or which result in damaging increases in erosion or in flood heights or velocities; b. Requiring that uses vulnerable to floods including facilities which serve such uses, be protected against flood damage at the time of initial construction; c. Controlling the alteration of natural floodplains, stream channels, and natural protective barriers, which help accommodate or channel floodwaters; d. Controlling filling, grading, dredging, and other development which may increase flood damage; and, e. Preventing or regulating the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards in other areas. 						
Wellhead Protection	No	-	-	No	No	-
Comment:						
Emergency Management	Yes	Local	Local	No	No	-



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Comment:					
<ul style="list-style-type: none"> The Borough has a comprehensive Emergency Management webpage and plans for mitigation, response, and recovery from flood events. The fire department and emergency management coordinator continue to work with the water and sewer utility on the fire hydrant replacement program. This ongoing program replaces approximately 12 fire hydrants each year to upgrade the firefighting capability and remove older obsolete hydrants from service without the need for capital expenditure. 					
Climate Change	No	-	No	No	-
Comment:					
Disaster Recovery Ordinance	No	-	No	No	-
Comment:					
Disaster Reconstruction Ordinance	No	-	No	No	-
Comment:					
Other	Yes	State & Local	No	No	-
Comment:					
<ul style="list-style-type: none"> The Water and Sewer Ordinance, Chapter 14, was adopted by the Borough Council in 2000. It contains Section 14-15, Water Emergencies which could be expanded to include mitigation actions. The power of the municipality to acquire, construct, finance, operate and maintain water supply facilities and sewerage services is provided by N.J.S.A. 40A:31-1 et seq., and N.J.S.A. 40A:26A-4 et seq. The purpose of Article II, Sewers, is to provide for the maximum possible beneficial public use of the wastewater facilities through regulation of sewer construction, sewer use and wastewater discharges and provide procedures for complying with the requirements. The Code Enforcement Official is charged with ongoing municipal survey of the integrity of sewer service cleanouts adjacent to or on privately owned land, and is empowered to compel owners to maintain the sewer service openings watertight. Borough Code Section 14-23.7 provides standards for maintaining sewer cleanout openings. 					
Planning Documents					
Comprehensive / Master Plan	Yes	State & Local	Yes	Yes	-
Comment:					
<ul style="list-style-type: none"> 2018 Revised NJ Statute 40:27-2; the county planning board shall make and adopt a master plan for the physical development of the county. The master plan of a county, with the accompanying maps, plats, charts, and descriptive and explanatory matter, shall show the county planning board's recommendations for the development of the territory covered by the plan, and may include, among other things, the general location, character, and extent of streets or roads, viaducts, bridges, waterway and waterfront developments, parkways, playgrounds, forests, reservations, parks, airports, and other public ways, grounds, places and spaces; the general location and extent of forests, agricultural areas, and open-development areas for purposes of conservation, food and water supply, sanitary and drainage facilities, or the protection of urban development, and such other features as may be important to the development of the county. The county planning board shall encourage the co-operation of the local municipalities within the county in any matters whatsoever which may concern the integrity of the county master plan and to advise the board of chosen freeholders with respect to the formulation of development programs and budgets for capital expenditures. Per State of NJ Municipal Land Use Law (MLUL) L. 1975, s. 2, eff Aug 1, 1976 40:55D-28 provides the required components of a municipal Master Plan and requires that each municipality prepare a master plan and update it every 6 years. Further, all zoning ordinances must be consistent with the Master Plan or will not be benefitted from a presumption of validity. Borough Master Plan Re-examination, adopted April 11, 2017 by the combined Planning/Zoning Board. Purposes of the Master Plan include, providing protection from flooding, Promoting the use of shoreline protection measures and the use of green building with these integrating Mitigation Plan objectives; <ul style="list-style-type: none"> Implement the Borough's 2015 Flood Mitigation Plan Research additional Bay Back improvements to alleviate flooding Research additional outfall pipes and pumping systems to handle stormwater Develop a flood proofing education program for businesses Research possible State and Federal grant funding for flood protection Develop a program or zoning ordinances to assist owners in the elevation of residential structures which exist below the FEMA Base Flood Elevation (BFE) + 3' Identify and evaluate properties with repetitive flood losses Identify and evaluate streets with repetitive flooding problems Encourage the installation of additional check valves on outfall pipes Develop vegetation recommendations for living shorelines, berms and dunes Encourage the use of alternative shoreline methods Encourage LEED construction 					



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<ul style="list-style-type: none"> In 2020 the Borough passed Ordinance 810-2020 establishing the "Environmental Trust Fund of the Borough of Avalon," in accordance with N.J.S.A 40A:5-29, to establish a fund to accept bequests, legacies, and gifts, and to dedicate those, and such other funds as the Borough Council may approve, to protect or improve the ecology or environment of the Borough of Avalon. 	Yes	Local	No	Yes	2021-Avalon-001, -002, -007
Capital Improvement Plan					
Comment: <ul style="list-style-type: none"> The Borough has a 2020 Capital Improvement Program, adopted by the Borough Council on April 22, 2020 in the amount of \$2,618,000.00. The Program includes but is not limited to funding for underground utility, roadway, storm water, and bulkhead improvements. The Borough has completed projects and has projects underway that are actions that are included in the Borough's mitigation efforts. The Borough has committed funding for flood mitigation and resiliency improvements to the firehouse. The project will be funded in phases over the next 3 years with the goals of elevating equipment in the firehouse to protect from flood damage, and upgrading the firehouse to ADA compliance to improve usability by citizens during flood emergencies when the firehouse is utilized as a temporary evacuation transition center. In 2020 a \$2.1 million project was approved to install a storm drain pump system at 78th Street and Ocean Drive to help in the control of nuisance and tidal flooding in the area. In 2021 the Borough will begin funding improvements to Bay Park Marina between 53rd and 57th Streets on Ocean Drive. The project is currently in the design phase and details include elevating the parking area, replacing the bulkhead, enhancing and establishing new living shoreline, and improvements to structures on the site to current flood design standards. In 2021 the Borough will seek funding for improvements to the stormwater drainage system from 9th to 22nd Streets east of Avalon Avenue. The project will establish an additional gravity storm drain, and upgrade and improve pump capacity at the existing 1th Street storm water pump station to help alleviate nuisance flooding in the north end beach blocks basin. This project is currently in the planning and engineering phase. 					
Disaster Debris Management Plan					
Comment: <ul style="list-style-type: none"> The Borough does not have a dedicated plan for Disaster Debris Management but does have a comprehensive Solid Waste Management Ordinance, Chapter 17, adopted in 2013. The Ordinance promotes the proper collection and disposal of solid waste and recyclable materials. The Borough had also banned the use of polystyrene/plastic foam and single-use plastic. On the Borough's Emergency Management Web Page http://www.avalonemergency.org reference is made to Disaster Debris Management. It states that the Borough has planned for the removal of debris and materials that would block and clutter local streets in the community. A contract for that service with Phillips & Jordan has also been approved. This company is a world-wide expert on debris clearance and removal following a natural disaster. The company has also provided remediation following major ice storms, oil spills, and floods. The Borough OEM maintains a list of previously approved by FEMA debris collection sites for quick future deployment when the need arises. 					
Floodplain or Watershed Plan					
Comment: <ul style="list-style-type: none"> Borough Floodplain Management Plan Evaluation Report 2017 & 2015 Comprehensive Floodplain Management Plan. The plan is currently undergoing 2020 review. The Plan contains a number of Action Items and their status that have integrated the County's Hazard Mitigation Plan. Building Ecological Solutions to Coastal Community Hazards (BESCCH), dated December 14, 2016. The BESCCH Team was asked to specifically address flooding in certain sections of the Borough's business district caused by bay waters and the slow retreat of those waters. While the strategies recommended in the brief report will not prevent the flooding, they could lessen the impact by enhancing natural features along certain sections of the bay shoreline and saltmarshes. 					
Stormwater Management Plan					
Comment: <ul style="list-style-type: none"> The Stormwater Management rules (N.J.A.C. 7:8) rules were published in the February 2, 2004 NJ Register. These rules set forth the required components of regional and municipal stormwater management plans and establish the stormwater management design and performance standards for new (proposed) development. The design and performance standards for new development include groundwater recharge, runoff quantity controls, and runoff quality controls. The rules emphasize, as a primary consideration, the use of nonstructural stormwater management techniques including minimizing disturbance, minimizing impervious surfaces, minimizing the use of stormwater pipes, preserving natural drainage features, etc. The rules also set forth requirements for groundwater recharge, stormwater runoff quantity control, stormwater runoff quality control, and the prohibition of major development to be located within or to discharge runoff from the major development into a 300-foot riparian zone without prior authorization from the Department under the Flood Hazard Area Control Act Rules, N.J.A.C. 7:13. The Borough has a Stormwater Management Ordinance cited above and stormwater controls are incorporated into Site Plan and Subdivision reviews and included in the Utility Element of the Master Plan Re-Examination. The Borough does not have a separate Stormwater Management Plan that comprises the total area of the community, but they do have the Avalon Drainage Study which focuses on the north end of the Borough, it is dated May 16, 2018. The Plan sought a 					





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	Authority that enforces		Have aspects of hazard mitigation been integrated?		
	Do you have this? (Yes/No)	(Federal, State, Regional, County, Local)	Is this State Mandated?	If yes-how?	If no - can it be a mitigation action? If yes, add Mitigation Action #.
<p>solution to the north end flooding that seemed to occur during intense, short duration rain events, such as a 10-year storm. Based on the findings of the Plan, two pump stations are recommended, along with improvements to the capacity of the stormwater conveyance system.</p> <ul style="list-style-type: none"> The projects identified in the Avalon Drainage Study advance aspects of the HMP. 					
Stormwater Pollution Prevention Plan	Yes	Local	Yes	Yes	-
<p>Comment:</p> <ul style="list-style-type: none"> The Phase II New Jersey Pollutant Discharge Elimination System Stormwater Regulation Program (NJPDES) rules (N.J.A.C. 7:14A) were published in the February 2, 2004, NJ Register. These NJPDES rules are intended to address and reduce pollutants associated with existing stormwater runoff. The NJPDES rules establish a regulatory program for existing stormwater discharges as required under the Federal Clean Water Act. These NJPDES rules govern the issuance of permits to entities that own or operate small municipal separate storm sewer systems, known as MS4s. Under this program, permits must be secured by municipalities, certain public complexes such as universities and hospitals, and State, interstate and federal agencies that operate or maintain highways. The permit program establishes the Statewide Basic Requirements that must be implemented to reduce nonpoint source pollutant loads from these sources. The Statewide Basic Requirements include measures such as: the adoption of ordinances (litter control, pet waste, wildlife feeding, proper waste disposal, etc.); the development of a municipal stormwater management plan and implementing ordinance(s); requiring certain maintenance activities (such as street sweeping and catch basin cleaning); implementing solids and floatables control; locating discharge points and stenciling catch basins; and a public education component. Avalon Borough Code Section 7.3 prohibits illegal littering and dumping on both land and into the stormwater system. The water and sewer utility is required by contract to maintain stormwater inlet basins, including the requirement that basins be cleaned on an annual basis. The Avalon Department of Public Works sweeps stormwater inlets after all flooding and/or heavy rain events. 					
Urban Water Management Plan	No	-	No	-	-
<p>Comment:</p>					
Habitat Conservation Plan	Yes	Local	No	No	--
<p>Comment:</p> <ul style="list-style-type: none"> The Borough has a Dune Vegetation Management Plan, dated December 2009. The goals of the Plan are to: Maintain a healthy, diverse dune system comprised primarily of native species; Establish a science-based approach to evaluating and managing dune vegetation, in a manner to achieve the goals of the Borough; To identify problems associated with invasive plant species in the dune system and to define the nature and extent of the related issues; To develop a Dune Vegetation Management Plan that addresses control of invasive plant species; To provide management standards and techniques that allow for the improvement of the vegetative component of the dune ecosystem; and to identify and protect dune vegetation die back areas. The protection and maintenance of the dune system retains wildlife habitat, but also advances aspects of mitigation as the dune provides flood protection to the barrier island. 					
Economic Development Plan	No	-	No	-	-
<p>Comment:</p>					
Shoreline Management Plan	Yes	State & Local	Yes – if located in a coastal zone	Yes	-
<p>Comment:</p> <ul style="list-style-type: none"> NJ Coastal Area Facility Review Act (N.J.S.A. 13:19) or CAFRA regulates almost all development along the coast for activities including construction, relocation, and enlargement of buildings or structures, and excavation, grading, shore protection structures, and site preparation. This law is implemented through NJ's Coastal Zone management Rules N.J.A.C. 7:7E-1 et seq. The Borough has a Beach and Dune Protection Ordinance, Chapter 23, which was adopted in 2006 and amended in 2009. The purposes of the Ordinance include that: <ul style="list-style-type: none"> The Borough of Avalon is situated on a barrier island known as Seven Mile Beach, one (1) of eight (8) barrier islands along the coast of New Jersey. Certain portions of the beach and dunes bordering on the Atlantic Ocean consisting of the entire length of the inlet and oceanfront shorelines from the Townsends Inlet Bridge to 80th Street, inclusive, and the same being the boundary lines of the Borough of Avalon, New Jersey, have in the past suffered, and will continue to suffer, severely from damage caused by storms and wind-driven storm tides, at which times the ocean encroaches upon the land and causes serious damage to public and private property and endangers the safety and welfare of the public. The Borough Council acknowledges that this encroachment of the ocean and the causing of over-wash areas on the island is a normal and natural occurrence on a barrier island and, in fact, is the very mechanism by which a barrier island withstands the impact of a major coastal storm. The situation created along the beach and dunes by reason of such storm tides and resulting damage has been so serious that many millions of dollars of both public and private funds have been expended for the replenishment of sand 					



Table 9.2-3. Planning, Legal and Regulatory Capability

	Do you have this? (Yes/No)	Authority that enforces (Federal, State, Regional, County, Local)	Is this State Mandated?	If yes-how?	Have aspects of hazard mitigation been integrated? If no - can it be a mitigation action? If yes, add Mitigation Action #.
<p>and vegetation, and erection of bulkheads, sand fences and other supportive structures intended to prevent encroachment by the ocean and beach and dune erosion</p> <ul style="list-style-type: none"> Continuing beach erosion along the Atlantic seaboard, along with the gradual rise of the ocean level, has created an immediate and imminent danger to persons and property in the Borough of Avalon by reason of the destruction of the sand barriers which protect the Borough's oceanfront. Consequently, it has become necessary to the health and welfare of the public to maintain the integrity of the system of dune and supportive structures on both public and private property within the Borough of Avalon. The interference with or the depletion of the beach and dunes tends to more easily permit encroachment by the ocean and, in the opinion of the Council of the Borough of Avalon, the conditions recited above make it imperative that it regulate and control the disturbance, removal or redistribution of sand and/or vegetation on or from the beach and dunes. Therefore, with few exceptions, it is unlawful for any person or persons, including any natural person, corporation, partnership, association or any of their agents or employees to disturb, remove, or redistribute any sand and/or vegetation on or from privately owned property located within the Beach Dune Area. <ul style="list-style-type: none"> The Borough approved the preparation of a Beach Protection Study in April 2020. The protection of the shoreline, beach and dune system are all aspects of the actions that have been integrated into the HMP. 					
Community Wildfire Protection Plan	No	-	No	-	-
<i>Comment:</i>					
Community Forest Management Plan	Yes	State & Local	No	Yes	-
<i>Comment:</i>					
<ul style="list-style-type: none"> The Borough has a Community Forestry Management Plan. It is a 5-year Plan approved by the NJDEP. A Community Forestry Management Plan approved by the New Jersey State Forest Service is an essential guide to successfully achieving a healthy, safe, and sustainable community forest. The Plan also ensures that the Borough has taken the necessary first step toward compliance with the Shade Tree and Community Forestry Assistance Act. Compliance by the Borough of Avalon affords the community increased liability protection under the Tort Claims Act. The Plan includes aspects of the HMP as it incorporates actions to control invasive species, in addition to dune protection, erosion control and advancing Climate Change initiatives. 					
Transportation Plan	Yes	Local	No	Yes	-
<i>Comment:</i>					
<ul style="list-style-type: none"> The Borough addresses transportation planning in the Circulation Element of its Master Plan Re-examination, adopted April 11, 2017 by the Joint Planning/Zoning Board. 					
Agriculture Plan	No	-	No	-	-
<i>Comment:</i>					
Climate Action Plan	Yes	Local	No	Yes	-
<i>Comment:</i>					
<ul style="list-style-type: none"> The Borough was part of a November, 2016 Case Study, "Climate Adaptation: The State of Practice in U.S. Communities" the Plan discusses the Borough's comprehensive efforts to protect against flooding, to increase shoreline protections measures, to further public outreach and education and to seek additional state and federal funding to implement planned projects. The Plan discusses many of the Borough's accomplishments to address the increase in the severity of storm events related to Climate Change, along with ongoing and proposed actions incorporated as aspects of the HMP. The Borough of Avalon participates in the Sustainable New Jersey program and has achieved Bronze recognition for three straight years, 2017 through 2020. Among the required actions is conducting periodic vulnerability assessments and building climate change estimates into resiliency plans to mitigate damage due to ocean water rise. 					
Tourism Plan	Yes	Local	No	No	No
<i>Comment:</i>					
<ul style="list-style-type: none"> Annually, the Borough creates a Tourism-Vacation Guide, "7 Mile Beach". It features highlights on the best lodging, dining, shopping and activities throughout Avalon and Stone Harbor. The Borough has one of the few remaining high dune systems in existence has long protected the area from development. The Borough has created the Avalon Dune and Beach Trail between 48th and 44th Streets in the dunes. This interactive 1.1-mile walk provides information along the path explaining the dune ecological system from the beach front to the back of the dunes landward. It is on the annual field trip list for many southern New Jersey schools and is available to everyone free of charge year-round. 					
Business Development Plan	No	-	No	-	-
<i>Comment:</i>					



Table 9.2-3. Planning, Legal and Regulatory Capability

	Do you have this? (Yes/No)	Authority that enforces (Federal, State, Regional, County, Local)	Is this State Mandated?	Have aspects of hazard mitigation been integrated? If yes-how?	If no - can it be a mitigation action? If yes, add Mitigation Action #.
Other	No	-	No	-	-
<i>Comment:</i>					
Response/Recovery Planning					
Comprehensive Emergency Management Plan (CEMP) / Emergency Operations Plan (EOP)	Yes	Local	Yes	Yes	-
<i>Comment:</i>					
<ul style="list-style-type: none"> Each county and municipality in the State shall prepare a written Emergency Operations Plan with all appropriate annexes necessary to implement the plan. Each Emergency Operations Plan shall be adopted no later than one year after the State Emergency Planning Guidelines have been adopted by the State Office of Emergency Management and shall be evaluated at such subsequent scheduled review of the State Emergency Operations Plan. L.1989, c.222, s.19. The Borough's Emergency Support Function annexes are living documents that are reviewed frequently by the various department heads or emergency managers in charge of them to ensure that the annexes remain relevant at all times. 					
Threat & Hazard Identification & Risk Assessment (THIRA)	Yes	Local	No	Yes	-
<i>Comment:</i>					
<ul style="list-style-type: none"> The Borough of Avalon Municipal Coastal Vulnerability Assessment, dated May, 2016, while not a THIRA by name, identifies the vulnerability of the community's assets to a series of flood hazard scenarios and examines how the flood events will affect the functional capacity of critical buildings, services, infrastructure, businesses, ecological systems, and residents. The Plan includes many short- and long-term recommendations for addressing the identified vulnerabilities that are mitigation actions some of which are aspects of the HMP. The Borough just completed a study of nuisance flooding in the east blocks between 10th and 24th Streets, and the Borough is currently planning mitigation action that includes improving stormwater run-off in the area. The Borough continues to augment the gravity stormwater systems along and west of Ocean Drive by installing stormwater pumps to remove flood water from streets. Most recently Borough Council has approved the installation of a stormwater pump at 78th Street and Ocean Drive. 					
Post-Disaster Recovery Plan	Yes	Local	No	No	-
<i>Comment:</i>					
<ul style="list-style-type: none"> In 2017 the previous post-disaster recovery annex was updated and absorbed into the Emergency Operations Plan as ESF-14A. The ESF is activated by the Emergency Management Coordinator a need for recovery operation has been identified in the damage assessment. Long-term recovery is managed by the Municipal Business Administrator under the direction of the Mayor. 					
Continuity of Operations Plan	Yes	Local	No	Yes	-
<i>Comment:</i>					
Public Health Plan	No	-	No	-	-
<i>Comment:</i>					
Other	Yes	Local	No	Yes	-
<i>Comment:</i>					
<ul style="list-style-type: none"> The Borough has completed a "Getting to Resilience" Report, dated September 2015. The five topics covered by the Plan include; Risk & Vulnerability, Public Engagement, Planning Integration, Disaster Preparedness & Recovery, and Hazard Mitigation Implementation. The Borough has undertaken and completed the majority of the recommendations in the Plan, most of which are aspects of the HMP that have been integrated. 					

Table 9.2-4. Development and Permitting Capability

Criterion	Response
Does your jurisdiction issue development permits? - If no, who does? If yes, which department?	Yes
Does your jurisdiction have the ability to track permits by hazard area?	Yes
Does your jurisdiction have a buildable lands inventory? -If yes, please describe briefly. -If no, please quantitatively describe the level of buildout in the jurisdiction.	Yes. The Borough of Avalon is largely built out. Borough land is fully inventoried and dedication to open space



Criterion	Response
	or build-out is well over 99 percent of available land area.

ADMINISTRATIVE AND TECHNICAL CAPABILITY

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

Table 9.2-5. Administrative and Technical Capabilities

Staff/Personnel Resource	Available?	Department/Agency/Position
Administrative Capability		
Planning Board	Yes	Planning/Zoning
Mitigation Planning Committee	Yes	Administration, Floodplain Administrator
Environmental Board / Commission	Yes	Avalon Environmental Commission
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
Warning Systems / Services (mass notification system, outdoor warning signals)	Yes	Code Red (mass notification system); the Avalon Emergency website are dedicated to communication of hazard related information.
Maintenance program to reduce risk	Yes	Department of Public Works
Mutual aid agreements	Yes	Numerous mutual aid agreements
Technical/Staffing Capability		
Planners or engineers with knowledge of land development and land management practices	Yes	Joseph Maffei, Planning/Zoning Board
Engineers or professionals trained in building or infrastructure construction practices	Yes	Mott, MacDonald – Engineers and Planners
Planners or engineers with an understanding of natural hazards	Yes	Mott, MacDonald – Engineers and Planners
Staff with training in benefit/cost analysis	Yes	Mott, MacDonald – Engineers and Planners
Staff with training in green infrastructure	Yes	Taylor Design Group
Staff with education/knowledge/training in low impact development	Yes	Taylor Design Group
Surveyor	Yes	Mott, MacDonald – Engineers and Planners
Stormwater engineer	Yes	Mott, MacDonald – Engineers and Planners
Personnel skilled or trained in GIS applications	Yes	Mott, MacDonald – Engineers and Planners
Local or state water quality professional	No	-
Scientist familiar with natural hazards in local area	Yes	Dr. Farrell, L. Tedesco
Emergency manager	Yes	OEM Coordinator
Watershed planner	Yes	Mott, MacDonald – Engineers and Planners
Environmental specialist	Yes	Dr. Farrell, L. Tedesco
Grant writers	Yes	Triad Associates
Resilience Officer	No	-
Other	No	-

FISCAL CAPABILITY

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





Table 9.2-6. Fiscal Capabilities

Financial Resource	Accessible or Eligible to Use?
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
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
State-Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	No
Clean Water Act 319 Grants (Nonpoint Source Pollution)	No
Other	No

EDUCATION AND OUTREACH CAPABILITY

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

Table 9.2-7. Education and Outreach Capabilities

Criterion	Response
Do you have a public information officer or communications office?	Yes – Business Administrator Scott Wahl
Do you have personnel skilled or trained in website development?	Yes – Business Administrator Scott Wahl
Do you have hazard mitigation information available on your website? -If yes, briefly describe.	Yes – Flooding from storms has been identified as the primary hazard in Avalon. On the front page of the municipal website is a section titled, “Flood Information Links.” Under the title are links to the Avalon Emergency website, a web page explaining that Avalon is in a flood hazard zone and what that means, a link to the USGS real-time flood gauge at Ingram Thorofare, historical flood data, and links to helpful flood related websites.
Do you use social media for hazard mitigation education and outreach? -If yes, briefly describe.	Yes. Automated Facebook and Instagram flood hazard mitigation messages are posted weekly.
Do you have any citizen boards or commissions that address issues related to hazard mitigation? -If yes, briefly describe.	Yes. The Floodplain Management Committee and the Environmental Commission are composed of Borough officials and members of the general public from target sectors related to the work of the committees.
Do you have any other programs already in place that could be used to communicate hazard-related information? If yes, briefly describe.	Yes. Code Red (mass notification system), the Avalon Emergency website are dedicated to communication of hazard related information.

COMMUNITY CLASSIFICATIONS

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

Table 9.2-8. Community Classifications

Program	Participating?	Classification	Date Classified
Community Rating System	Yes	3	5/1/2020
Building Code Effectiveness Grading Schedule (BCEGS)	Yes	TBD	TBD
Public Protection (Fire ISO Protection Class)	Yes	3	2019





Program	Participating?	Classification	Date Classified
Storm Ready Certification	No	-	-
Firewise Community Classification	No	-	-
Sustainable Jersey	Yes	Bronze	10/4/2017

ADAPTIVE CAPACITY

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

Table 9.2-9. Adaptive Capacity

Hazard	Adaptive Capacity (Capabilities) – Strong/Moderate/Weak
Climate Change and SLR	Moderate
Coastal Erosion	Moderate
Disease Outbreak	Moderate
Drought	Moderate
Flood	Moderate
Hurricane	Moderate
Nor'Easter	Moderate
Severe Weather	Moderate
Severe Winter Weather	Strong
Tsunami	Moderate
Wildfire	Moderate

Notes:

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

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

NATIONAL FLOOD INSURANCE PROGRAM

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

Table 9.2-10. National Flood Insurance Program Compliance

Criterion	Response
What local department is responsible for floodplain management?	Construction Department
Who is your floodplain administrator? (name, department/position)	R. Edward Dean, Construction Official
Are any certified floodplain managers on staff in your jurisdiction?	Yes.
What is the date that your flood damage prevention ordinance was last amended?	July 8, 2020. Ord. No. 807-2020
Does your floodplain management program meet or exceed minimum requirements? -If exceeds, in what ways?	Exceeds. A design flood elevation of base flood elevation (NAVD88) plus 3 feet is required for new construction and substantial improvements of existing structures in the Borough. This exceeds minimum design flood elevation by 2 feet. Ordinances were adjusted in 2017 with new BFE data and 3 feet of freeboard is required over BFE for residential construction. Commercial construction and substantial improvements shall either be constructed in accordance with the DFE requirements or floodproofed in accordance with ASCE 24. Building codes





Criterion	Response
	continue to be enforced. 2018 IBC is now in effect and includes language regarding floodplain construction to incorporate the Borough DFE into the building code.
When was the most recent Community Assistance Visit or Community Assistance Contact?	October 2020
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? -If so, state what they are.	No.
Are any RiskMAP projects currently underway in your jurisdiction? If so, state what they are.	Yes. The region is currently under re-study by FEMA Region 2.
Do your flood hazard maps adequately address the flood risk within your jurisdiction? -If no, state why.	Yes.
Does your floodplain management staff need any assistance or training to support its floodplain management program? - If so, what type of assistance/training is needed?	No.
Does your jurisdiction participate in the Community Rating System (CRS)? -If yes, is your jurisdiction interested in improving its CRS Classification? -If no, is your jurisdiction interested in joining the CRS program?	Yes. The Borough is always seeking to improve its CRS classification.
How many flood insurance policies are in force in your jurisdiction?*	3,797 policies
-What is the insurance in force? -What is the premium in force?	
How many total loss claims have been filed in your jurisdiction?*	1,939 claims
-How many claims are still open or were closed without payment? -What were the total payments for losses?	\$26,664,883 in payments
Do you maintain a list of properties that have been damaged by flooding?	Yes.
Do you maintain a list of property owners interested in flood mitigation?	Yes.

*According to FEMA statistics as of October 2020

ADDITIONAL AREAS OF EXISTING INTEGRATION

- **Floodplain Management:** The Borough Staff supports homeowners who desire to remediate their repetitive loss properties and the Construction Office continues to implement the Repetitive Loss Reduction Plan. The Public Works Department and Engineer conduct flood mitigation training of Borough staff.
- **Emergency Management:** The Borough has a strong web presence with a very informative site. It includes storm and weather information, local and regional media outlets that provide continuous information, information for reacting to an emergency or an evacuation, traffic information, power outage maps, and helpful information videos and important Borough contact information. The Borough Staff maintains pre-disaster contracts with disaster recovery contractor for debris removal and pursues pre-disaster contracts for providing home and family services for emergency personnel during disasters. Additionally, the Borough continues to maintain pre-disaster contract for disaster-recovery services of public buildings and facilities, maintains contract for portable generator services for evacuation shelter, and maintains contract with local bus company for evacuation





service for shut-ins. The Water System Operator and Engineer provide emergency connections for portable generator at oceanfront pump stations.

- **Ecosystem Management:** The Borough Staff continues to conduct regular beach and dune maintenance activities. The Borough Staff and volunteers are continuing to support the volunteer dune grass planting program. The Borough Engineer and Staff are continuing to explore opportunities to restore degraded tidal marsh in back bay utilizing thin-layer placement of dredged material. The Borough Staff continues to implement the dune grass fertilization program. The Borough Staff continues to implement invasive species management and mitigation.
- **Public Outreach:** The Construction Office continues to support outreach efforts to provide informational materials to homeowners, builders, and realtors regarding floodplain management. The Office also generates increased interest in floodplain management among homeowners and business owners. interest in floodplain management among homeowners and business owners. The Borough Engineer maintains tide reference gauges to provide residents with a means to more accurately interpret public announcements related to flooding levels and surges. The Borough Staff continues to provide flood warnings and information on: 9a- local cable channel, 9b- website, 9c- AM 1630 radio station, and 9d- social media.

9.2.5 Hazard Event History Specific to the Jurisdiction

Cape May County has a history of hazard events, as detailed in Section 5 (Risk Assessment) of this plan. A summary of historical events is provided in each of the hazard profiles in Section 5.4 (Hazard Profiles) and includes a chronology of events that affected Cape May County and its jurisdictions. The Borough of Avalon’s history of federally-declared (as presented by FEMA) and significant hazard events (as presented in NOAA-NCEI) is consistent with that of Cape May County. Table 9.2-11 provides details regarding municipal-specific loss and damages the Borough experienced during hazard events. Information provided in the table below is based on reference material or local sources.

Table 9.2-11. Hazard Event History

Date(s) of Event	Event Type (disaster declaration if applicable)	Cape May County Designated?	Summary of Event	Summary of Local Damages and Losses
January 22, 2016 - January 24, 2016	DR-4264: Severe Winter Weather and Snowstorm	Yes	A major nor'easter, produced record snowfall and blizzard conditions in parts of New Jersey on January 23 rd and 24 th .	Losses in the Borough totaled \$12 million due to infrastructure/property damage, beach damage, and debris management.
September 3-6, 2016	Tropical Storm Hermine, High Surf	No	Slow moving tropical cyclone Hermine caused several days of 8 to 12 feet of surf breaking on Atlantic Ocean shorelines. Cape May County beaches experienced moderate erosion.	The Borough experienced \$200,000 in damage to its engineered beach*.
September 29, 2016	Nor'easter	*No	A stalled frontal boundary caused heavy rain and high tides throughout the region.	\$300k mostly engineered beach damage with increased beach and dune vulnerability; beach and dune system already heavily damaged from previous storms in 2015 and 2016*
July 29, 2017	Coastal Flood and Heavy Rain	No	A rare summertime Nor'easter tracked just offshore producing heavy rain, thunderstorms and wind. Coastal flooding and beach erosion also occurred.	The Borough spent \$10,000 on debris removal.



Date(s) of Event	Event Type (disaster declaration if applicable)	Cape May County Designated?	Summary of Event	Summary of Local Damages and Losses
March 4, 2018	Coastal Flood	*No	A large and very deep area of low pressure moved slowly east over the open waters of the North Atlantic Ocean through Sunday March 4th. This led to a variety of weather hazards during this time frame. Strong Northwest winds with gusts up to around 60 mph occurred on March 2nd and 3rd. This led to widespread damage to trees and power lines, causing extensive power outages across the region. Minor coastal flooding over multiple tide cycles occurred along the New Jersey coast March 2nd through 4th.	The Borough experienced \$4.63 million in damage to its beach and dunes.
October 27, 2018	Coastal Flood	No	Strong low pressure moved northward along the coasts of Delaware and New Jersey on October 27. The system brought moderate to major coastal flooding and high winds to the coastal counties of New Jersey during the morning and early afternoon hours. Moderate coastal flooding occurred along the back bays, Delaware Bay and other tidal waterways in the county. There was widespread roadway flooding with water reaching some buildings.	The Borough spent \$20,000 on debris removal.
January 20, 2020 and continuing	January 20, 2020 and continuing	Yes	A novel form of coronavirus (SARS-CoV-2) spread rapidly worldwide in late 2019-2020, with the northeastern United States being particularly hard-hit.	The Borough experienced \$30,000 in expenses from the pandemic (estimated as of 12/10/2020). As of December 22 nd , 2020, the Borough has had 53 cases and no fatalities.
July 10, 2020	Tropical Storm Fay	No	Tropical Storm Fay made landfall near the border of Ocean and Atlantic County bringing heavy rain and flash flooding.	The Borough spent \$30,000 on debris removal.
September 29, 2020	Tropical Storm Isaias	Yes	Tropical Storm Isaias	The storm cost \$150,000 in debris removal, emergency response, beach and dune damage.

Source: Borough of Avalon, 2020

Note: *Avalon beach and dune system are engineered under control of the US Army Corps. Of Engineers. Funding for beach and dune replenishment is through the Corps.

9.2.6 Jurisdiction-Specific Vulnerabilities and Hazard Ranking

The hazard profiles in Section 5 (Risk Assessment) provide detailed information regarding each plan participant’s vulnerability to the identified hazards. A gradient of certainty was developed to summarize the confidence level regarding the input used to populate the hazard ranking. Refer to Section 5.1 (Methodology) and Section 5.3 (Hazard Ranking) for a detailed summary for the Borough of Avalon risk assessment results and data used to determine the hazard ranking.

REPETITIVE FLOOD LOSSES

The table below summarizes the repetitive and severe repetitive flood losses in the Borough of Avalon.

- Number of repetitive loss (RL) properties: 146





- Number of severe repetitive loss (SRL) properties: 34
- Number of RL/SRL properties that have been mitigated: 80

Source: NFIP FEMA Region 2, 2020
 Note: The number of SRL properties excludes RL properties.

CRITICAL FACILITIES

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

Table 9.2-12. Potential Flood Losses to Critical Facilities and Lifelines

Name	Type	Exposure	
		1% Event	0.2% Event
21st. Street Bridge	Bridge	X	X
25th. Street Bridge	Bridge	X	X
Avalon Canal Bridge	Bridge	X	X
Avalon Branch Library	Library	X	X
AVALON VOLUNTEER FIRE DEPARTMENT	Fire Stations	X	X
Commodore Bay Marina	Marinas	X	X
Sunrise Marina	Marinas	X	X
Avalon Bay Park Marina	Marinas	X	X
Avalon Police Department	Police Stations	X	X
Avalon OEM	EOC	X	X
Avalon Branch Library	Library	X	X
8Th St Stormwater Pump Station	Wastewater Treatment Facilities	X	X
19Th St Stormwater Pump Station	Wastewater Treatment Facilities	X	X
23Rd St Stormwater Pump Station	Wastewater Treatment Facilities	X	X
29Th St Stormwater Pump Station	Wastewater Treatment Facilities	X	X
26Th St Stormwater Pump Station	Wastewater Treatment Facilities	X	X
32Nd St Stormwater Pump Station	Wastewater Treatment Facilities	X	X
33Rd St Stormwater Pump Station	Wastewater Treatment Facilities	X	X
34Th St Stormwater Pump Station	Wastewater Treatment Facilities	X	X
21St St Stormwater Pump Station	Wastewater Treatment Facilities	X	X
22Nd St Stormwater Pump Station	Wastewater Treatment Facilities	X	X
11Th St Stormwater Pump Station	Wastewater Treatment Facilities	X	X
COMMUNITY HALL	Polling Places		X
AVALON RESCUE	EMS	X	X
AVALON ELEMENTARY SCHOOL	Education	X	X
Avalon	Municipal Facilities	X	X
BORO OF AVALON Municipal Hall	Municipal Facilities	X	X
CAPE MAY COUNTY MUA	MUA	X	X

Source: FEMA DFIRM 2014/2017; Cape May County 2020
 Note:
 *Identified lifeline

IDENTIFIED ISSUES

The jurisdiction has identified the following vulnerabilities within their community:

- The Borough experiences Nuisance flooding of the north end beach block area. Design and cost estimates underway. The Borough intends to fund and complete the project in the north end of town in the beach blocks from 10th St. to 19th St. in 2021.
- Avalon experiences tidal flooding of Ocean Drive and surrounding residential neighborhood from Bay Park Marina.





- The Borough has a Continuity of Operations Plan (CoOP) that requires updating to address hazards and government functions.
- The National Weather Service’s StormReady Program recognizes communities that recognize natural hazard vulnerability and take steps to inform residents and prepare for those events to take place. Avalon is seeking to be recognized in this program.
- The Borough has an adopted floodplain management plan that assists with its CRS rating. The plan will be undergoing a five-year re-examination in 2021.
- Avalon has a large visitor base and second home population that do not have readily available resources or knowledge of potential flooding event. The Borough seeks to provide a locally controlled means to notify residents of impending flooding.
- Avalon’s back bay waterfront feature stretches of bulkheads that prevent erosion and protect upland properties from wave damage. Bulkheads have been replaced piecemeal and are at varying heights. Low-lying bulkheads cause water to inundate during surge events.
- Borough owned bulkheads are being replaced at 20th St. and Fifth Ave., 26th St. and Ocean Drive, and 28th Street and Ocean Drive. Other bulkhead replacements are under review to be funded in 2021 – 2022.

HAZARD AREA EXTENT AND LOCATION

Hazard area extent and location maps were 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 adequate for planning purposes. Maps have been generated only for those hazards that can be clearly identified using mapping techniques and technologies and for which the Borough of Avalon has significant exposure. A map of the Borough of Avalon hazard area extent and location is provided on the following page. This map indicates the location of the regulatory floodplain, as well as identified critical facilities within the municipality.

HAZARD RANKING

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

As discussed in Section 5.3 (Hazard Ranking), each plan participant may have differing degrees of risk exposure and vulnerability compared to Cape May County as a whole. Therefore, each jurisdiction ranked the degree of risk to each hazard as it pertains to their community factoring in their capabilities to withstand impacts and rebound after the event. The table below summarizes the hazard rankings of potential natural hazards for the Borough of Avalon. The Borough of Avalon has reviewed the Cape May County hazard ranking table and has provided input to its individual results to reflect the relative risk of the hazards of concern to the community.

During the review of the hazard ranking, Avalon assented to the proposed hazard ranking.



Table 9.2-13. Borough of Avalon Hazard Ranking Input

Climate Change and SLR	Coastal Erosion	Disease Outbreak	Drought	Flood	Hurricane
High	Medium	Medium	Medium	High	High
Nor'Easter	Severe Weather	Severe Winter Weather	Tsunami	Wildfire	
High	High	High	Medium	Medium	

9.2.7 Mitigation Strategy and Prioritization

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

PAST MITIGATION INITIATIVE STATUS

The following table summarizes the jurisdiction’s progress on their mitigation strategy identified in the 2015 HMP. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and can also be found under ‘Capability Assessment’ presented previously in this annex.

Table 9.2-14. Status of Previous HMP Mitigation Actions

2015 Action Number	Action Description	Responsible Party	Status (In Progress, No Progress, Ongoing Capability, or Completed)	Include in the 2021 HMP Update?	
				Check if Yes	Enter 2021 HMP Action #
PP-6 / 7.1.2-8	Support homeowners who desire to remediate their repetitive loss properties.	Borough Staff	Ongoing capability		
PP-3 / 7.1.2-5	Continue to implement the Repetitive Loss Reduction Plan.	Construction Office	Ongoing capability		
PP-4 / 7.1.2-6	Continue to pursue funding opportunities to address repetitive loss properties.	Borough Staff	Ongoing capability		
PR-1 / 7.1.1-1	Continued participation in CRS program.	Borough Staff	Ongoing capability		
PR-2 / 7.1.1-2	Implement, evaluate, and revise FMP annually.	POC – R. Edward Dean, OEM Coordinator; Scott Wahl OEM Deputy Coordinator	Ongoing capability		
PP-1 / 7.1.2-3	Comply with NFIP policies.	R. Edward Dean, Construction Official, Floodplain Administrator	Ongoing capability		



Table 9.2-14. Status of Previous HMP Mitigation Actions

2015 Action Number	Action Description	Responsible Party	Status (In Progress, No Progress, Ongoing Capability, or Completed)	Include in the 2021 HMP Update?	
				Check if Yes	Enter 2021 HMP Action #
PP-5 / 7.1.2-7	Continue to require three-foot freeboard.	Construction Office, Borough Flood Loss Prevention Ordinance	Ongoing capability		
PP-7 / 7.1.2-9	Maintain verified benchmarks per CRS requirements	Borough Engineer	Ongoing capability		
PP-8 / 7.1.2-10	Enforce Coastal A Zone Standards for V-Zone Construction.	Construction Office	Ongoing capability		
ES-1 / 7.1.4-1	Develop, enhance, and implement existing emergency plans.	Municipal Emergency Manager with support from County OEM and NJOEM	Ongoing capability		
ES-2a / 7.1.4-2	Maintain mutual aid agreements with neighboring communities.	Borough Administration	Ongoing capability		
PR-7, 8 / 7.1.1-7, 8	Conduct flood mitigation training of Borough staff.	Public Works Department (and Engineer)	Ongoing capability		
SP-1 / 7.1.5-1	Construct additional pump stations along County Road 619 (Ocean Drive).	Borough Staff and Engineer	Complete		
SP-2 / 7.1.5-3	Elevate Borough-owned back-bay bulkheads.	Borough Staff and Engineer	In progress	X	2021-AvalonBoro-007
SP-3 / 7.1.5-4	Encourage back-bay fronting residents to elevate bulkheads.	Borough Staff	Ongoing capability		
PI-1 / 7.1.6-1	Continue public outreach to encourage installation of FEMA-compliant flood vents.	Construction Office	Ongoing capability		
PP-2 / 7.1.2-4	Continue to monitor and survey the beaches.	Borough Engineer	Ongoing capability		
PR-3 / 7.1.1-3	Continue to enforce stormwater management ordinances.	Construction Office	Ongoing capability		
NR-1 / 7.1.3-1	Continue to pursue opportunities to preserve open space.	Construction Office	Ongoing capability		
(former BA-16)	Continue to enforce building codes and re-evaluate ordinances for	Construction Office	Ongoing capability		



Table 9.2-14. Status of Previous HMP Mitigation Actions

2015 Action Number	Action Description	Responsible Party	Status (In Progress, No Progress, Ongoing Capability, or Completed)	Include in the 2021 HMP Update?	
				Check if Yes	Enter 2021 HMP Action #
	potential positive amendments.				
PR-4 / 7.1.1-4	Continue to enforce building codes.	Construction Office	Ongoing capability		
PR-5 / 7.1.1-5	Re-evaluate ordinances for potential positive amendments.	Construction Office	Ongoing capability		
SP-9 / 7.1.5-11	Continue to conduct regular beach and dune maintenance activities	Borough Staff	Ongoing capability		
NR-2 / 7.1.3-2	Continue volunteer dune grass planting program.	Borough Staff and Volunteers	Ongoing capability		
NR-3 / 7.1.3-3	Continue to protect the high dunes	Borough Staff	Ongoing capability		
(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. interest in floodplain management among homeowners and business owners.	Construction Office	Ongoing capability		
PI-2 / 7.1.6-2	Continue to provide information materials to homeowners, builders, and realtors regarding floodplain management.	Borough Staff	Ongoing capability		
NR-4 / 7.1.3-4	Continue stream scouring and illicit connection programs.	DPW and Borough Engineer	Ongoing capability		
ES-2c / 7.1.4-2	Maintain pre-disaster contracts with disaster recovery contractor for debris removal.	Borough Staff	Ongoing capability		
ES-2c / 7.1.4-2	Pursue pre-disaster contracts for providing home and family services for emergency personnel during disasters.	Borough Staff	Ongoing capability		



Table 9.2-14. Status of Previous HMP Mitigation Actions

2015 Action Number Action Description		Responsible Party	Status (In Progress, No Progress, Ongoing Capability, or Completed)	Include in the 2021 HMP Update?	
				Check if Yes	Enter 2021 HMP Action #
ES-2d / 7.1.4-2	Continue to maintain pre-disaster contract for disaster-recovery services of public buildings and facilities.	Borough Staff	Ongoing capability		
ES-2e / 7.1.4-2	Maintain Contract with Cumberland County Board of Vocational Education to provide evacuation sheltering services.	Borough Staff	No progress		
ES-2f / 7.1.4-2	Maintain contract for portable generator services for evacuation shelter.	Borough Staff	Ongoing capability		
ES-2g / 7.1.4-2	Maintain contract with local bus company for evacuation services for shut-ins.	Borough Staff	Ongoing capability		
SP-4 / 7.1.5-5	Install SCADA systems for oceanfront pump stations.	Water System Operator and Engineer	Ongoing capability		
SP-5 / 7.1.5-6	Provide emergency connections for portable generator at oceanfront pump stations.	Water System Operator and Engineer	Ongoing capability		
SP-6 / 7.1.5-7	Increase the capacity of the stormwater system where deficiencies are revealed.	Borough Engineer	In progress	X	2020-AvalonBoro-001
ES-3 / 7.1.4-3	Maintain ID card program to control re-entry into Borough after major disasters requiring evacuation.	Borough Staff	Ongoing capability		
ES-4 / 7.1.4-4	Implement program to keep motorists off Ocean Drive during flooding events.	Borough Staff	Ongoing capability		
ES-5 / 7.1.4-5	Research app for mobile devices to use for flood hazard notifications and emergencies.	Borough Staff	No progress		
ES-6 / 7.1.4-6	Expand “Code Red” system to include tourists and visitors.	Borough Staff	Ongoing capability		
ES-7 / 7.1.4-7	Consider signage and/or reverse lane system for	Borough Staff and Engineer	No progress		



Table 9.2-14. Status of Previous HMP Mitigation Actions

2015 Action Number	Action Description	Responsible Party	Status (In Progress, No Progress, Ongoing Capability, or Completed)	Include in the 2021 HMP Update?	
				Check if Yes	Enter 2021 HMP Action #
	30th Street.				
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.	Borough Engineer	Ongoing capability		
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	Borough Staff	Ongoing capability		
ES-9e / 7.1.4-9	Continue to provide flood warnings over community-wide public address system	Borough Staff	Ongoing capability		
ES-9f / 7.1.4-9	Continue to use Variable Message Signs along roadways to alert public of emergencies.	Borough Staff	Ongoing capability		
ES-10 / 7.1.4-10	Maintain public records at remote location.	Borough Staff	Ongoing capability		
ES-11 / 7.1.4-11	Maintain operation of mobile pet shelter.	Borough Staff	Ongoing capability		
ES-12 / 7.1.4-12	Maintain flood response vehicle fleet.	Department of Public Works	Ongoing capability		
ES-13 / 7.1.4-13	Maintain Continuity of Operations / Continuity of Government Plan.	Borough Staff	Ongoing capability		
PR-6 / 7.1.1-6	Monitor and inspect 8th Street jetty and North End Seawall for settlement or damage.	Borough Engineer	Complete		
SP-8 / 7.1.5-10	Evaluate north end shore protection and beach stabilization alternatives from pending municipal	Borough Engineer and Staff	Ongoing capability		



Table 9.2-14. Status of Previous HMP Mitigation Actions

2015 Action Number	Action Description	Responsible Party	Status (In Progress, No Progress, Ongoing Capability, or Completed)	Include in the 2021 HMP Update?	
				Check if Yes	Enter 2021 HMP Action #
	engineer's report.				
NR-5 / 7.1.3-5	Explore opportunities to restore degraded tidal marsh in back bay utilizing thin-layer placement of dredged material.	Borough Engineer and Staff	Ongoing capability		
NR-6 / 7.1.3-6	Continue to implement dune grass fertilization program.	Borough Staff	Ongoing capability		
NR-7 / 7.1.3-7	Maintain and enforce adopted sediment control ordinance for swimming pool dewatering.	Borough Staff	Ongoing capability		
NR-8 / 7.1.3-8	Continue to implement invasive species management and mitigation.	Borough Staff	Ongoing capability		
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.	Borough Staff and Engineer	Ongoing capability		
PI-4 / 7.1.6-4	Establish and publicize designated locations for parking cars during high tidal conditions.	Borough Staff and Engineer	Ongoing capability		
PI-5 / 7.1.6-5	Provide flood hazard educational programs for public at library.	Borough Staff	Ongoing capability		
PI-6 / 7.1.6-6	Maintain Borough-wide elevation map for brochures.	Borough Staff and Engineer	Ongoing capability		
PI-7 / 7.1.6-7	Continue to inform public about flood hazards through Mayor's presentations to various community groups.	Mayor	Ongoing capability		
PI-8 / 7.1.6-8	Provide information to applicable property owners regarding the Repetitive Loss Reduction Plan.	Construction Office	Ongoing capability		



Table 9.2-14. Status of Previous HMP Mitigation Actions

2015 Action Number	Action Description	Responsible Party	Status (In Progress, No Progress, Ongoing Capability, or Completed)	Include in the 2021 HMP Update?	
				Check if Yes	Enter 2021 HMP Action #
PI-9 / 7.1.6-9	Expand public education of flood hazards through all available media channels	Borough Staff	Ongoing capability		

PROPOSED HAZARD MITIGATION INITIATIVES FOR THE PLAN UPDATE

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

Table 9.2-15 summarizes the comprehensive-range of specific mitigation initiatives the Borough of Avalon would like to pursue in the future to reduce the effects of hazards. Some of these initiatives might be previous actions carried forward for this HMP update. Initiatives are dependent upon available funding (grants and local match availability) and can be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the 4 FEMA mitigation action categories and the 6 CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

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

Table 9.2-16 provides a summary of the prioritization of all proposed mitigation initiatives for this HMP update.



Table 9.2-15. Proposed Hazard Mitigation Initiatives

Initiative Number	Mitigation Initiative Name	Description of the Problem and Solution	New or Existing Assets?	Hazard(s) to be Mitigated	Goals Met	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Cost	Timeline	Priority	Mitigation Category	CRS Category
2021-AVALON-001	North End Stormwater Mitigation Project	Problem: The Borough experiences Nuisance flooding of the north end beach block area. Design and cost estimates underway. The Borough intends to fund and complete the project in the north end of town in the beach blocks from 10th St. to 19th St. in 2021.	Existing	Flood; Severe Weather; Hurricane/Tropical Storm; Nor'easter; Climate Change and Sea Level Rise	1, 3, 4, 5	Borough Engineer, Middlesex Water Co., Borough Administration	Local, FMA, HMGP	Decrease in occurrence and severity of north end nuisance flooding	High	2021	High	SIP	PP
		Solution: The Borough proposes to increase stormwater drainage capacity in the area. Upgrade stormwater pump station(s). Design and cost estimates underway. The Borough intends to fund and complete the project in the north end of town in the beach blocks from 10th St. to 19th St. in 2021.											
2021-AVALON-002	Bay Park Marina Rehabilitation	Problem: Avalon experiences tidal flooding of Ocean Drive and surrounding residential neighborhood from Bay Park Marina.	Existing	Flood; Severe Weather; Hurricane/Tropical Storm; Nor'easter; Climate Change and Sea Level Rise	1, 3, 5	Borough Engineer, Taylor Design Group, Borough Administration, Avalon Recreation	Local, Cape May County Open Space, FMA, HMGP	Reduced tidal flooding impact in residential neighborhood surrounding the marina	\$4.7 million	2021 - 2022	High	SIP	PP
		Solution: The Borough proposes to regrade marina basin to control flooding of the surrounding area. Install new bulkhead to current standards. Utilize natural flood barrier and turtle nesting habitat in areas without bulkhead to control flooding. Install new boat ramp to current design standards (safety). Elevate marina administration building for resiliency.											
2021-AVALON-003	Adopt CoOP	Problem: The Borough has a Continuity of Operations Plan (CoOP) that requires updating to address hazards and government functions.	Existing – out of date	All hazards	1, 3, 4, 6	Borough Administration, Borough Office of Emergency Management	Local	Establish continuity of operations plan for both Emergency Management and	\$10 K	2021	High	LPR	ES
		Solution: The Borough proposes to Review, amend, adopt new CoOP for the Borough of Avalon											



Table 9.2-15. Proposed Hazard Mitigation Initiatives

Initiative Number	Mitigation Initiative Name	Description of the Problem and Solution	New or Existing Assets?	Hazard(s) to be Mitigated	Goals Met	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Cost	Timeline	Priority	Mitigation Category	CRS Category
2021-AVALON-004	StormReady Status	<p>Problem: The National Weather Service’s StormReady Program recognizes communities that recognize natural hazard vulnerability and take steps to inform residents and prepare for those events to take place. Avalon is seeking to be recognized in this program.</p> <p>Solution: Avalon proposes to complete requirements for Borough to be recognized as a StormReady Community</p>	New	All hazards	1, 3, 4, 6	Avalon Administration, Avalon Office of Emergency Management, DPW, Borough Engineer	Local	Recovery periods Storm Ready Community designation	\$10 K	20 21	High	LPR, EAP	ES
2021-AVALON-005	Evaluate, and revise Floodplain Mitigation Plan (FPM) – 5-year review	<p>Problem: The Borough has an adopted floodplain management plan that assists with its CRS rating. The plan will be undergoing a five-year re-examination in 2021.</p> <p>Solution: The FPM will be fully reviewed in 2021, presented to Borough Council and members of the public, and adopted in late 2021.</p>	Existing	Flood; Severe Weather; Hurricane/Tropical Storm; Nor’easter; Climate Change and Sea Level Rise	1, 3, 4, 6	Borough Engineer, Avalon OEM, Avalon Chamber of Commerce	Local	Increase awareness of flood hazard zones in resort	\$10 K	20 21	High	LPR	PI
2021-AVALON-006	Establish a local tide gauge	<p>Problem: Avalon has a large visitor base and second home population that do not have readily available resources or knowledge of potential flooding event. The Borough seeks to provide a locally controlled means to notify residents of impending flooding.</p> <p>Solution: The Borough proposes to install local tide gauge that can be coordinated with data sets to provide early warning of impending tidal flooding</p>	New	All hazards	1, 2, 3, 4, 6	Borough Administration, Borough Engineer, DPW	Local, HMGP	Early notification of impending flood events	\$50 K	20 21	High	EAP	PI
2021-AVALON-007	Bulkhead improvements	<p>Problem: Avalon’s back bay waterfront feature stretches of bulkheads that prevent erosion and protect upland properties from wave damage. Bulkheads have been replaced piecemeal and are at varying heights. Low-lying bulkheads</p>	Existing	Flood; Hurricane/Tropical Storm; Nor’easter; Climate	1, 3, 4, 6	Avalon Administration, DPW, Borough Engineer	Local, FMA, HMGP	Reduce tidal flooding impact	Unknown	20 21 & 20 22	High	SIP	PP



Table 9.2-15. Proposed Hazard Mitigation Initiatives

Initiative Number	Mitigation Initiative Name	Description of the Problem and Solution	New or Existing Assets?	Hazard(s) to be Mitigated	Goals Met	Lead and Support Agencies	Potential Funding Sources	Estimated Benefits	Estimated Cost	Timeline	Priority	Mitigation Category	CRS Category
		<p>cause water to inundate during surge events. Borough owned bulkheads are being replaced at 20th St. and Fifth Ave., 26th St. and Ocean Drive, and 28th Street and Ocean Drive. Other bulkhead replacements are under review to be funded in 2021 – 2022.</p> <p>Solution: In 2020, Avalon completed the replacement of the 21st Street bulkhead and awarded a contract for the replacement of bulkheads at 22nd Street/Sixth Avenue, 26th Street at Ocean Drive, and 80th Street. The 72nd Street bulkhead at Ocean Drive will also be replaced in 2021. In 2021, Avalon will consider replacing one or more bulkheads, including the 23rd Street, 29th Street, 33rd Street, and 34th Street bulkheads along Ocean Drive. The replacement of these bulkheads to a higher elevation will result in reduction in flooding from major tidal events.</p>		Change and Sea Level Rise									

Notes:

Acronyms and Abbreviations:

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

Potential FEMA HMA Funding Sources:

- FMA Flood Mitigation Assistance Grant Program
- HMGP Hazard Mitigation Grant Program
- BRIC Building Resilient Infrastructure and Communities Program

Timeline:

The time required for completion of the project upon implementation

Cost:

The estimated cost for implementation.

Benefits:

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

Mitigation Category:

- Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.





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

CRS Category:

- *Preventative Measures (PR) - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.*
- *Property Protection (PP) - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.*
- *Public Information (PI) - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.*
- *Natural Resource Protection (NR) - Actions that minimize hazard loss and preserve or restore the functions of natural systems. Actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.*
- *Structural Flood Control Projects (SP) - Actions that involve the construction of structures to reduce the impact of a hazard. Structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.*
- *Emergency Services (ES) - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.*



Table 9.2-16. Summary of Prioritization of Actions

Initiative Number	Mitigation Initiative Name	Life Safety	Property Protection	Cost Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
2021-AVALON-001	North End Stormwater Mitigation Project	1	1	0	1	1	1	0	1	1	1	1	1	1	0	11	High
2021-AVALON-002	Bay Park Marina Rehabilitation	1	1	1	1	1	1	-1	1	1	1	1	1	0	0	10	High
2021-AVALON-003	Adopt Continuity of Operations Plan	1	0	1	1	1	1	1	0	1	1	1	1	1	0	11	High
2021-AVALON-004	Storm Ready Community	1	1	1	1	1	0	0	0	1	1	1	1	0	0	9	High
2021-AVALON-005	Evaluate, and revise Floodplain Mitigation Plan (FPM) – 5-year review	1	1	1	1	1	0	1	1	1	1	0	1	1	1	12	high
2021-AVALON-006	Establish local tide gauge	1	1	1	1	1	0	0	1	1	1	0	1	1	1	11	High
2021-AVALON-007	Bulkhead improvements	1	1	0	1	1	1	0	1	1	1	0	1	1	1	11	High

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

This action has been identified as being of highest importance to the municipality and an action that the municipality would like to complete as soon as funding is received.



Table 9.2-17. Analysis of Mitigation Actions by Hazard and Category

Hazard	Prevention	Property Protection	Public Education and Awareness	Natural Resource Protection	Emergency Services	Structural Projects	Climate Resilient	Community Capacity Building
Climate Change and SLR	X		X			X		
Coastal Erosion	X		X					
Disease Outbreak	X		X					
Drought	X		X					
Flood	X		X			X		
Hurricane	X		X			X		
Nor'Easter	X		X			X		
Severe Weather	X		X			X		
Severe Winter Weather	X		X					
Tsunami	X		X					
Wildfire	X		X					

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

- RED** high ranked hazard
- ORANGE** medium ranked hazard
- YELLOW** low ranked hazard



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

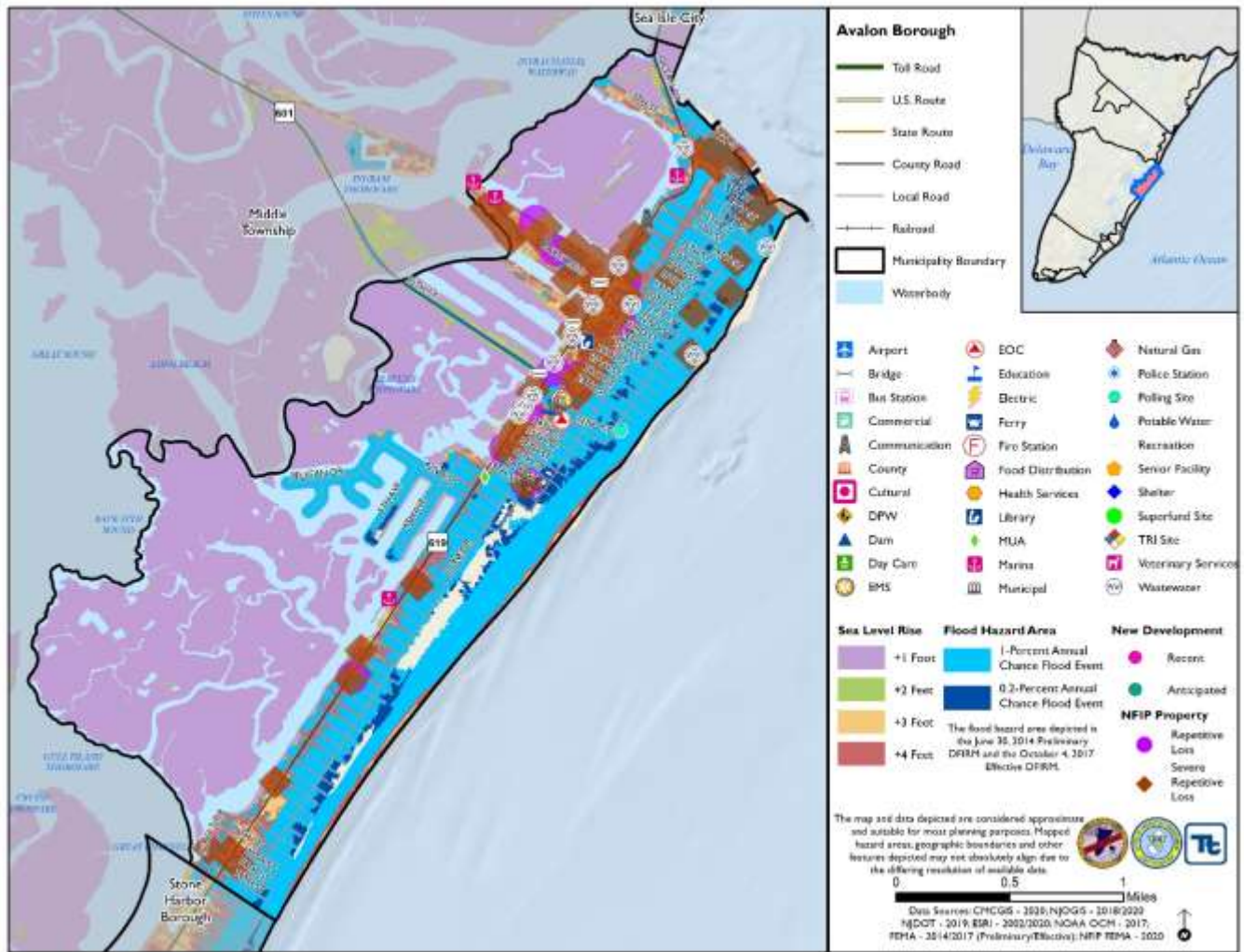




Figure 9.2-2. Borough of Avalon Hazard Area Extent and Location Map 2

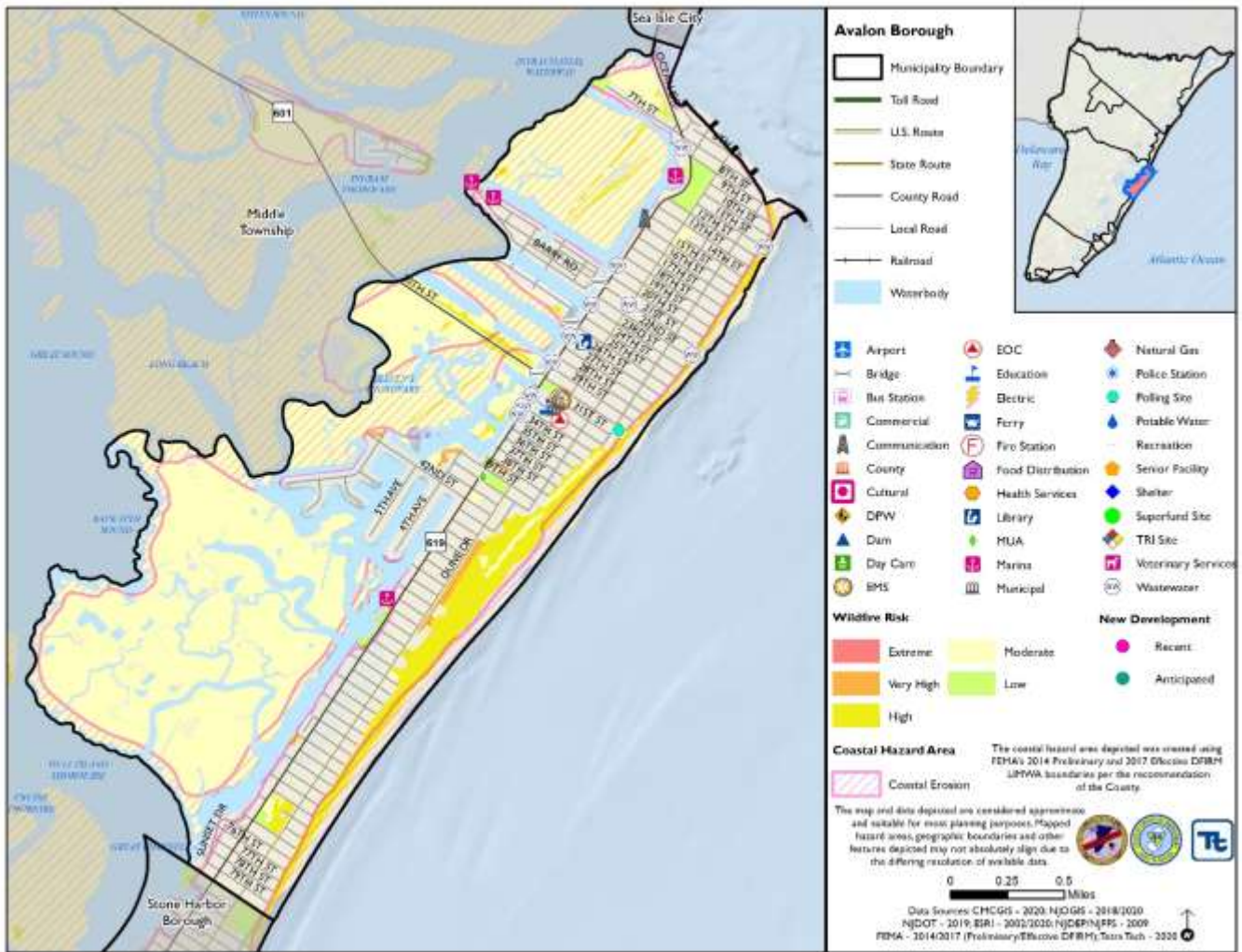
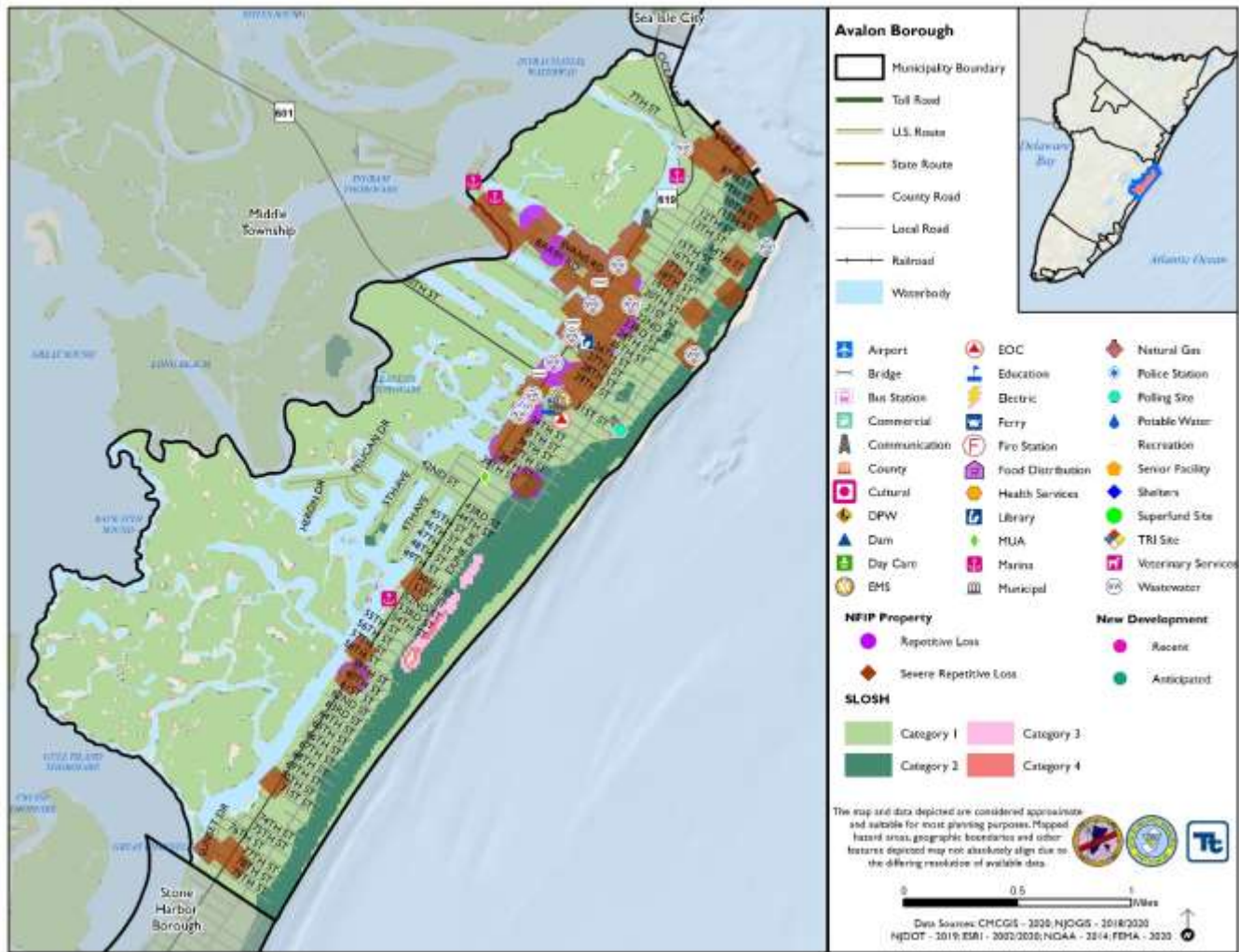




Figure 9.2-3. Borough of Avalon Hazard Area Extent and Location Map 3





Action Worksheet			
Project Name:	North End Stormwater Mitigation Project		
Project Number:	2021-AVALON-001		
Risk / Vulnerability			
Hazard(s) of Concern:	Flood; Severe Weather; Hurricane/Tropical Storm; Nor'easter; Climate Change and Sea Level Rise		
Description of the Problem:	The Borough experiences Nuisance flooding of the north end beach block area. Design and cost estimates underway. The Borough intends to fund and complete the project in the north end of town in the beach blocks from 10th St. to 19th St. in 2021.		
Action or Project Intended for Implementation			
Description of the Solution:	The Borough proposes to increase stormwater drainage capacity in the area. Upgrade stormwater pump station(s). Design and cost estimates underway. The Borough intends to fund and complete the project in the north end of town in the beach blocks from 10th St. to 19th St. in 2021.		
Is this project related to a Critical Facility or Lifeline?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Level of Protection:	N/A	Estimated Benefits (losses avoided):	Decrease in occurrence and severity of north end nuisance flooding
Useful Life:	50 years	Goals Met:	1, 3, 4, 5
Estimated Cost:	High	Mitigation Action Type:	Structure and Infrastructure Project
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Within two years
Estimated Time Required for Project Implementation:	2021	Potential Funding Sources:	Local, FMA, HMGP, BRIC
Responsible Organization:	Borough Engineer, Middlesex Water Co., Borough Administration	Local Planning Mechanisms to be Used in Implementation if any:	Capital Improvement Plan
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Road elevation	High	Cost prohibitive
	Drainage improvements	High	
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	North End Stormwater Mitigation Project	
Project Number:	2021-AVALON-001	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Maintains road/emergency access
Property Protection	1	
Cost-Effectiveness	0	
Technical	1	Project is technically feasible
Political	1	Project is supported by the Borough
Legal	1	
Fiscal	0	Project requires funding support
Environmental	1	
Social	1	Project mitigates social disruption due to lack of services
Administrative	1	
Multi-Hazard	1	Project addresses multiple types of flooding hazards
Timeline	1	
Agency Champion	1	Borough serves as project champion
Other Community Objectives	0	
Total	11	
Priority (High/Med/Low)	High	



Action Worksheet			
Project Name:	Bay Park Marina Rehabilitation		
Project Number:	2021-AVALON-002		
Risk / Vulnerability			
Hazard(s) of Concern:	Flood; Severe Weather; Hurricane/Tropical Storm; Nor'easter; Climate Change and Sea Level Rise		
Description of the Problem:	Avalon experiences tidal flooding of Ocean Drive and surrounding residential neighborhood from Bay Park Marina.		
Action or Project Intended for Implementation			
Description of the Solution:	The Borough proposes to regrade marina basin to control flooding of the surrounding area. Install new bulkhead to current standards. Utilize natural flood barrier and turtle nesting habitat in areas without bulkhead to control flooding. Install new boat ramp to current design standards (safety). Elevate marina administration building for resiliency.		
Is this project related to a Critical Facility or Lifeline?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Level of Protection:	N/A	Estimated Benefits (losses avoided):	Reduced tidal flooding impact in residential neighborhood surrounding the marina
Useful Life:	30 years	Goals Met:	1, 3, 5
Estimated Cost:	\$4.7 million	Mitigation Action Type:	Structure and Infrastructure Project
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Within 3 years
Estimated Time Required for Project Implementation:	2021-2022	Potential Funding Sources:	Local, Cape May County Open Space, FMA, HMGP
Responsible Organization:	Borough Engineer, Taylor Design Group, Borough Administration, Avalon Recreation	Local Planning Mechanisms to be Used in Implementation if any:	Capital Improvement Plan
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Shoreline hardening	High	Not ecological
	Marina Rehab	\$4.7m	
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	Bay Park Marina Rehabilitation	
Project Number:	2021-AVALON-002	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	Inhibits inundation of adjacent properties
Cost-Effectiveness	1	
Technical	1	Project is technically feasible
Political	1	Project is supported by the Borough
Legal	1	
Fiscal	0	Project requires funding support
Environmental	1	
Social	1	Project mitigates social disruption due to flooding
Administrative	1	
Multi-Hazard	1	Project addresses multiple hazards
Timeline	1	
Agency Champion	0	
Other Community Objectives	0	
Total	11	
Priority (High/Med/Low)	High	



Action Worksheet			
Project Name:	Bulkhead improvements		
Project Number:	2021-AVALON-007		
Risk / Vulnerability			
Hazard(s) of Concern:	Flood; Hurricane/Tropical Storm; Nor'easter; Climate Change and Sea Level Rise		
Description of the Problem:	<p>Avalon's back bay waterfront feature stretches of bulkheads that prevent erosion and protect upland properties from wave damage. Bulkheads have been replaced piecemeal and are at varying heights. Low-lying bulkheads cause water to inundate during surge events.</p> <p>Borough owned bulkheads are being replaced at 20th St. and Fifth Ave., 26th St. and Ocean Drive, and 28th Street and Ocean Drive. Other bulkhead replacements are under review to be funded in 2021 - 2022.</p>		
Action or Project Intended for Implementation			
Description of the Solution:	<p>In 2020, Avalon completed the replacement of the 21st Street bulkhead and awarded a contract for the replacement of bulkheads at 22nd Street/Sixth Avenue, 26th Street at Ocean Drive, and 80th Street. The 72nd Street bulkhead at Ocean Drive will also be replaced in 2021. In 2021, Avalon will consider replacing one or more bulkheads, including the 23rd Street, 29th Street, 33rd Street, and 34th Street bulkheads along Ocean Drive. The replacement of these bulkheads to a higher elevation will result in reduction in flooding from major tidal events.</p>		
Is this project related to a Critical Facility or Lifeline?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Level of Protection:	Base flood elevation	Estimated Benefits (losses avoided):	Reduce tidal flooding impact
Useful Life:	30 years	Goals Met:	1, 3, 4, 6
Estimated Cost:	Unknown-high	Mitigation Action Type:	Structure and Infrastructure Project
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	Within two years
Estimated Time Required for Project Implementation:	2021 & 2022	Potential Funding Sources:	Local, FMA, HMGP
Responsible Organization:	Avalon Administration, DPW, Borough Engineer	Local Planning Mechanisms to be Used in Implementation if any:	Drainage
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Bulkhead Removal	High	Loss of land
	Bulkhead elevation	Unknown-high	Enhanced mitigation
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	Bulkhead improvements	
Project Number:	2021-AVALON-007	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	Bulkhead improvements protect adjacent properties
Cost-Effectiveness	0	
Technical	1	Project is technically feasible
Political	1	Borough supports the project
Legal	1	
Fiscal	0	Project requires funding support
Environmental	1	
Social	1	
Administrative	1	Borough is capable of administering projects
Multi-Hazard	0	
Timeline	1	
Agency Champion	1	
Other Community Objectives	1	
Total	11	
Priority (High/Med/Low)	High	