

6 – AVON-BY-THE-SEA BOROUGH

PLANNING TEAM AND PARTICIPATION

Name	Title	Participation
Ken Child	OEM Coordinator	Individual Meeting, Mitigation Workshop, Point of Contact

COMMUNITY PROFILE

Overview

The Borough of Avon-by-the-Sea is a predominantly residential beachfront resort community fronting the Atlantic Ocean and Shark River. The 0.4-square mile borough is characterized by its small commercial district along Main Street and numerous single-family Victorian homes. Several quaint bed and breakfast inns are available for seasonal and year-round visitors. The allure of the borough's boardwalk and beaches make it a popular destination for day-trippers as well as those seeking a quiet vacation. One of Avon's most popular venues is The Columns, a seasonal restaurant and club in a Victorian mansion overlooking the Atlantic Ocean.

In 2016, Avon-by-the-Sea became the 12th Monmouth County municipality to join FEMA's CRS program, and did so with a rating of Class 6, which provides residents with a 20 percent reduction in flood insurance rates. In 2017, the Borough submitted a Municipal Public Access Plan to the New Jersey Department of Environmental Protection (NJDEP) that provides a vision for public access to tidal waters and the shoreline. The Borough is currently in the second phase of a living shoreline project at Sylvan Lake intended to improve its water quality.

Land Use, Development, & Growth

Avon-by-the-Sea is a predominantly residential community, with urban or developed land accounting for nearly 78 percent of its total area. Between 2015 and 2020, the community underwent minimal change in its land use composition; throughout this period, urban or developed land accounted for roughly 78 percent of its total area and the share of water and barren land hovered at approximately 16 percent and 6 percent, respectively.

Land Use Type	Total Acres (2015)	Total Acres (2020)	Percent Change
Agriculture	-	-	-
Barren Land	17.8	18.7	5%
Forest	-	-	-
Urban	246.9	246.9	>0%
Water	52.1	50.3	-3%
Wetlands	1.4	2.3	64%

Source: NJDEP Land Use/Land Cover data, 2015-2020

Recent Major Development and Infrastructure from 2020 to Present

None.

Known or Anticipated Major Development and Infrastructure in the Next Five (5) Years

The former US Coast Guard Station closed (135 Washington Ave) and the plan is to build four new homes along Washington Avenue and two more homes on the former US Coast Guard property off Washington Lane. All these properties are within FEMA's 1% annual chance floodplain (NJFloodMapper).

There are redevelopment plans for 15 townhouses at 2 Field St and five to six townhouses at 719 Route 71. These properties are not located in the Floodplain and do not experience flooding.

Demographics & Vulnerable Populations

This plan analyzed census-derived data on population trends and population age distributions to help illustrate potential vulnerability within the township. A population increase or decrease can illustrate potential hazard vulnerability through development pressures on the built environment, or through physical and social impacts of marked population loss. A community with a large share of population under age five may indicate vulnerabilities in hazard response, resource allocation, and evacuation – FEMA identifies that the pediatric population is disproportionately affected during disasters, and requires special consideration in categories of anatomy and physiology, psychological, and education vulnerabilities (FEMA, 2022, NLM, 2022). Individuals over age 65 are a growing share of the country’s population and often represent the greatest share of deaths from extreme weather events and other natural disasters. A larger share of population over 65 may indicate local vulnerabilities to hazard events both before and after a disaster occurs – these populations may have mobility needs, uneven access to resources, and limited social networks that makes pre-disaster engagement challenging (FEMA, 2023).

Avon-By-The-Sea Borough has a total estimated population of 1,792. Of this population, 1.2% are estimated to be under age 5, and 33.4% are estimated to be over age 65. With such a large population of the borough over age 65, Avon-By-The-Sea may direct hazard mitigation strategy with an aging population taken into consideration. The Borough experienced a modest population loss between the ACS periods of 2013-2017 and 2018-2022, with an estimated -1.2% fewer residents in the latter period.

No parts of the borough meet criteria for CDRZ, CEJST, or OBC identification.

Demographics Summary	
Total Population (2018-2022 ACS 5-year Estimates)	1,792
Population Change since 2017	-1.2%
Percent of Population Age < 5	1.2%
Percent of Population > 65	33.4%

Source: 2018-2022 ACS 5-Year Estimates, 2013-2017 ACS 5-Year Estimates

HAZARD IDENTIFICATION

One of the first steps in developing a risk assessment is for participating municipalities to review and prioritize the hazards that can affect them. This was done based on how often a hazard has occurred, how significant effects have been in the past, the difficulty and cost of recovering from such events. Jurisdictions ranked the list of hazards as either high, medium, low, or no concern. The following include the Borough’s hazard ranking. The full risk assessment for each hazard is located in Section 4.0.

Hazard Ranking

High	Medium	Low
Natural Hazards		
Hurricane/Tropical Storm	Extreme Temperatures	Lightning
Nor’easter	Extreme Wind	Drought
Flood	Tornado	Wildfire
Storm Surge	Winter Storm	Earthquake
	Coastal Erosion	
	Wave Action	
Human-made Hazards		
	Cyber Attack	Civil Unrest
	Economic Disruption	Power Failure
	Terrorism	
	Pandemic	

Hazard Ranking Explanation

There are no changes in hazard ranking since the previous plan in 2021. However, it is important to note that the Borough has continued to experience significant hazard events, such as the extreme wind event in March 2021, which caused minor

roof damage to homes within the Borough. Additionally, the installation of backflow preventers has mitigated flooding from Shark River, reducing the frequency of flooding in certain areas from annually to once every three years.

Significant Hazard Events Since Last Plan Update

In March 2021, there was an extreme wind event from a thunderstorm that caused minor roof damage to homes within the Borough.

When Shark River backs up, water comes up through storm drains. However, this has been mitigated by the installation of backflow preventers at 1st Avenue, 2nd Avenue, 4th Avenue, and 5th Avenue near the River. 3rd Avenue does not have a backflow preventer as it is tied into the County Road (Washington Ave), so water floods on 3rd Avenue. During heavy rain events, water from Shark River can overtop the bulkheads, and there is no way to stop it. This area of the Borough used to flood every year, but with the installation of the backflow preventers, this area only floods once every three years when water comes over the bulkheads.

Climate Change Impacts on Extent and Magnitude of Hazards

Climate change is expected to significantly impact the risks and hazards faced by Avon-by-the-Sea. One of the primary concerns is the increase in sea levels, which will exacerbate the risk of coastal flooding. The borough is already vulnerable to flooding from the Shark River and the Atlantic Ocean, with a significant portion of its area lying within the 1% annual chance flood zone. As sea levels rise, the frequency and severity of flooding events are likely to increase, posing a greater threat to homes, businesses, and critical infrastructure. This will necessitate the implementation of more robust flood mitigation measures, such as the construction of additional backflow preventers and the elevation of buildings in flood-prone areas.

Additionally, rising temperatures due to climate change will lead to more frequent and intense heatwaves. Avon-by-the-Sea, like many other coastal communities, is particularly vulnerable to the effects of extreme heat due to its urbanized environment and limited green spaces. This can have severe health implications for residents, especially the elderly population, which constitutes a significant portion of the borough's demographics. The borough will need to enhance its heat mitigation strategies, such as increasing the availability of cooling centers and promoting the use of green infrastructure to reduce the urban heat island effect. Overall, climate change will amplify the extent and magnitude of existing hazards, making it crucial for Avon-by-the-Sea to implement comprehensive adaptation and mitigation strategies.

RISK ASSESSMENT

National Flood Insurance Program (NFIP) statistics

Avon-by-the -Sea Borough	
Number of Policies In-Force:	347
Total Losses:	303
Total Payments:	\$14,693,105.95
Number of RL Properties:	10
Number of Mitigated RL Properties:	0
RL – Total Losses:	28
RL – Total Paid:	\$1,568,624.24
Number of SRL Properties:	1
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	4
SRL – Total Paid:	\$93,456.27

Source: FEMA Policy and Loss Data, August 2024

Vulnerability of the Built Environment

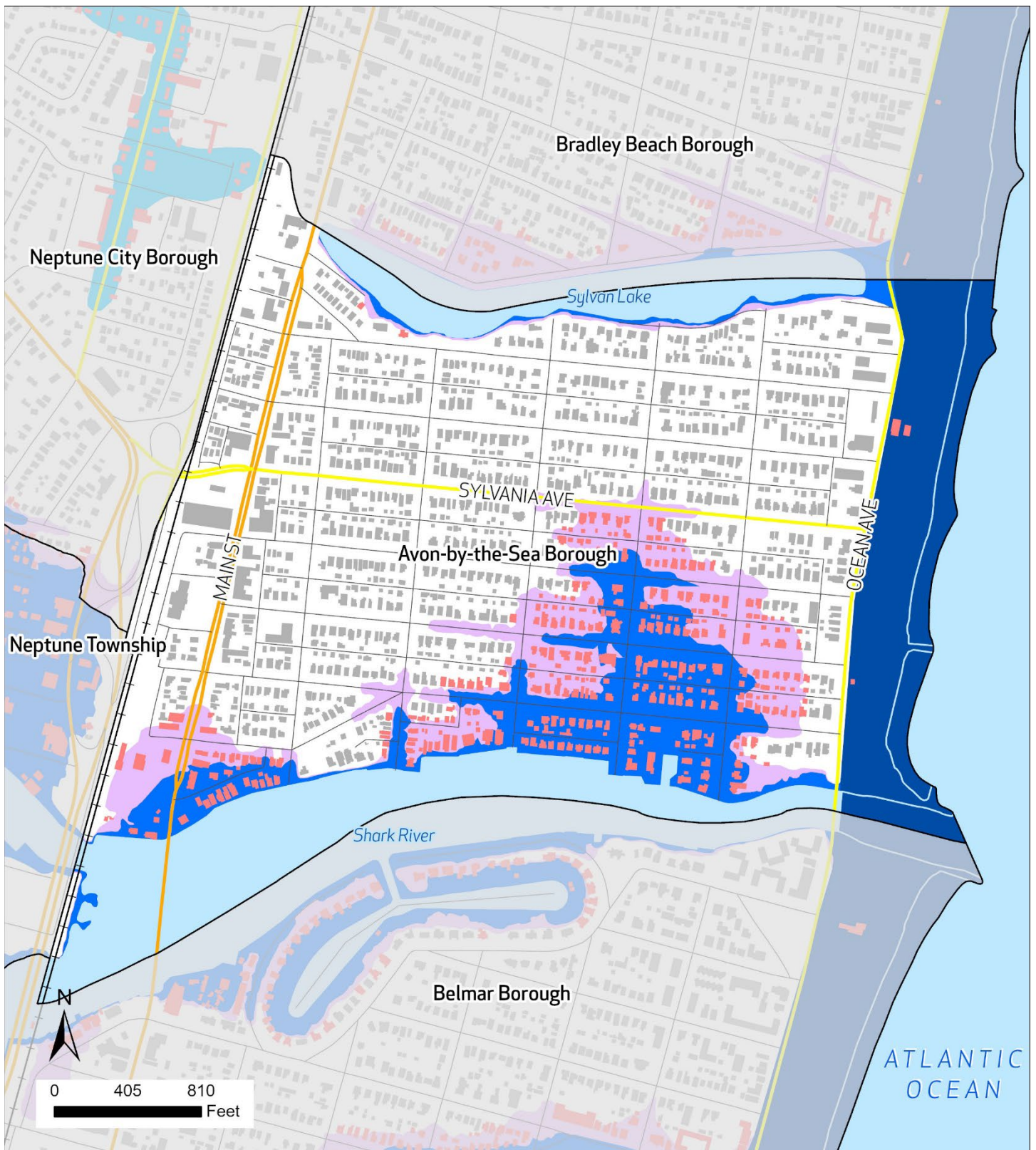
The Special Flood Hazard Area (SFHA) in the Borough of Avon-by-the-Sea is primarily located adjacent to the waterbodies of the borough: Sylvan Lake, the Shark River and the Atlantic Ocean. The low-lying area near the Shark River is especially flood prone, reaching up 2nd Ave and adjacent streets. Approximately 25.8 percent of the total land area of Avon-by-the-Sea lies within the 1% annual chance flood zone as defined by FEMA. An additional 10.2 percent of the area of the municipality is in the 0.2% annual chance flood zone.

About 81.0 percent of Avon-by-the-Sea is considered developed. Of the developed parcels of the town, 18.7 percent fall within the 1% annual chance flood zone and 12.3 percent are within the 0.2% annual chance flood zone. This illustrates that development in the municipality has generally occurred in areas that are less prone to flooding.

	Percentage in the 1% Floodplain	Percentage in the 0.2% Floodplain	5 feet of Sea Level Rise
Developed Parcels	18.7%	12.3%	24.9%
Exposed Land Area	25.8%	10.2%	23.8%

During the planning process, Avon-by-the-Sea identified critical facilities which function as community lifelines. These facilities provide the most fundamental services in the community that, when stabilized, enable all other aspects of society to function. The municipality identified seven total facilities. Of these facilities, none are within the floodplain or in areas projected to be at risk from sea level rise

	Number in the 1% Floodplain	Number in the 0.2% Floodplain	Number within 5 feet of Sea Level Rise
Community Lifelines and Critical Facilities	-	-	-



Flood Risk Avon-by-the-Sea Borough

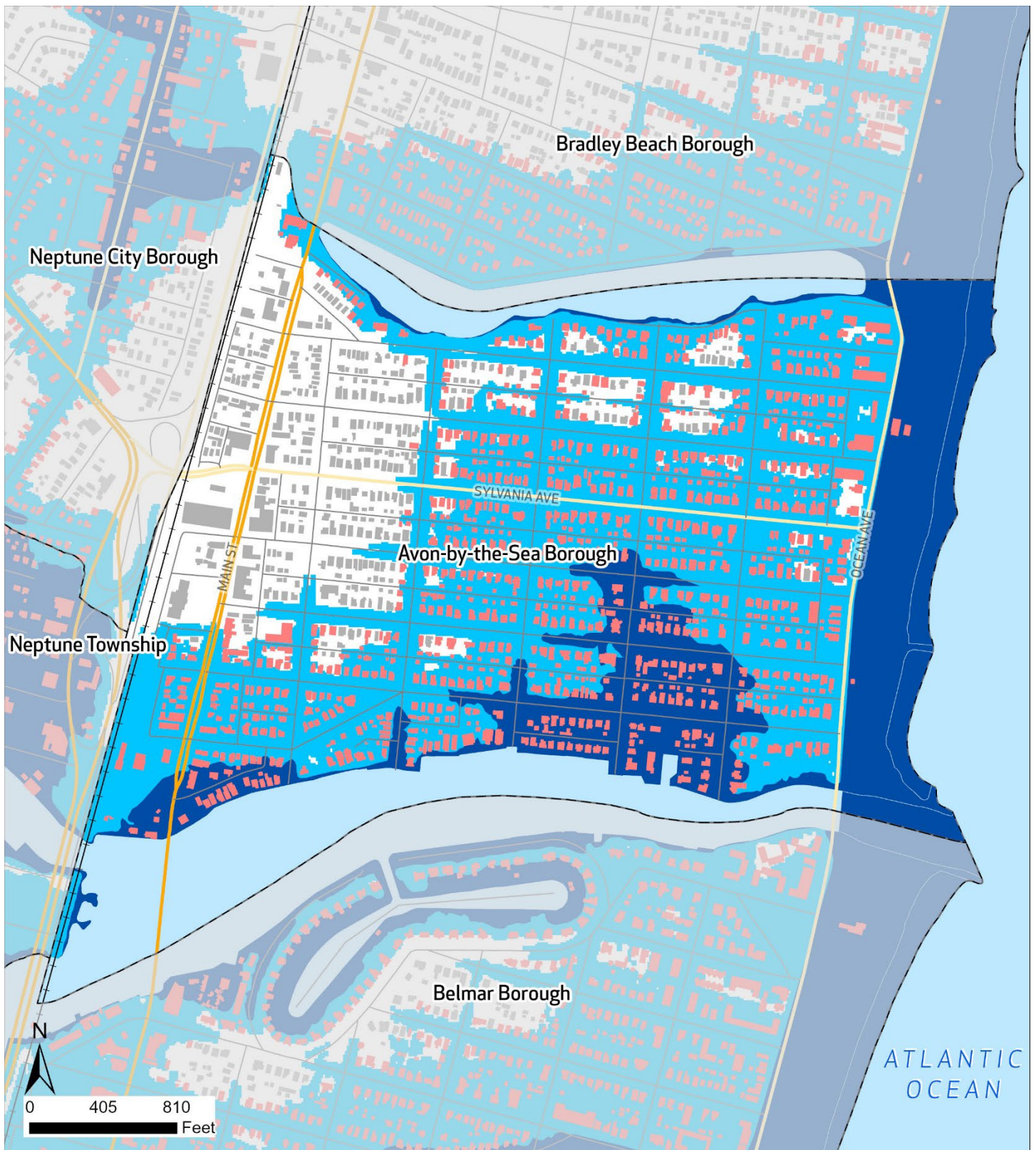
FEMA Flood Zone

- 0.2% Annual Chance
- AE (1%)
- VE (1%)

- State Routes
- County Routes
- Local Roads
- Rail Lines

- Municipal Boundaries
- Building Footprints
- Building Footprints within Floodplain
- Water

Source: FEMA NJDEP, NJOIT, NJTransit



NJ Inland Design Flood Elevation Avon-by-the-Sea Borough

FEMA Flood Zone

 Current Base Flood
Elevation (1%)

NJ Inland Design Flood Elevation

 FEMA BFE (1%) plus 3
Feet

 State Routes

 County Routes

 Local Roads

 Railroad

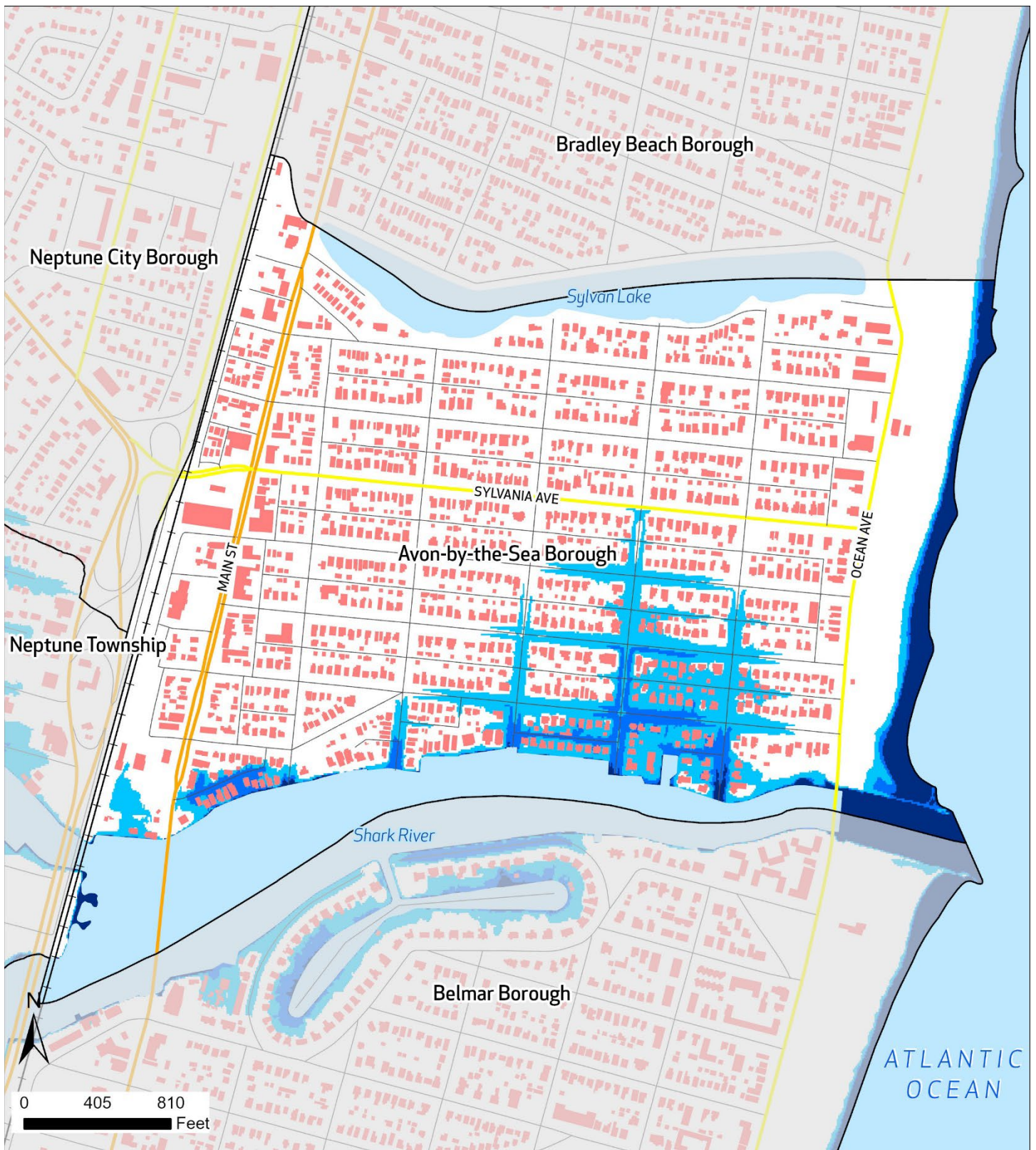
 Municipal Boundaries

 Water

 Building Footprints

 Building Footprints within
IDFE

Source: FEMA, Rutgers University, NJDEP, NJOIT, NJTransit



Permanent Inundation Under Sea Level Rise (SLR) Scenarios

Avon-by-the-Sea Borough

- | | | | | | |
|-------------------------------------------------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------|---------------------|---------------------------------------------------------------------------------------|----------------------|
|  | Area Inundated Under 2 Feet SLR |  | Interstate Highways |  | Municipal Boundaries |
|  | Area Inundated Under 3 Feet SLR |  | State Routes |  | Building Footprint |
|  | Area Inundated Under 5 Feet SLR |  | County Routes |  | Water |
| | |  | Local Roads | | |
| | |  | Rail Lines | | |

Source: NOAA, NJDEP, NJOIT, NJTransit



Wildland Urban Interface (WUI) Classification

Avon-by-the-Sea Borough

- High or Medium Density Housing
- Low or Very Low Density Housing
- No Housing

- State Routes
- County Routes
- Local Roads
- Municipal Boundaries
 - Building Footprint
 - Water

Source: USFS, NJDEP, NJOIT, NJTransit

CAPABILITY ASSESSMENT

Planning & Regulatory Capabilities

Avon-by-the-Sea Borough has the following additional Planning & Regulatory capabilities:

Plan and Regulation	Yes	No	Date of last update	How does this capability support hazard mitigation?
Master Plan	X		2004 – 2018 update	
Capital Improvement Plan		X		
Local Emergency Operations Plan/Continuity of Operations Plan		X		
Floodplain Development Ordinance		X		
Floodplain Management Plan		X		
Stormwater Management Ordinance		X		
Stormwater Management Plan		X		
Watershed Management Plan		X		
Sheltering Plan		X		
Evacuation Plan		X		
Substantial Damage/Improved Structures Response		X		
Repetitive Loss Plan		X		
Disaster Debris Management Plan		X		
Tracking elevation certificates and/or Letter of Map Change		X		
Post-Disaster Recovery Plan		X		
Current/recent redevelopment plans or studies		X		
Community Wildfire Protection Plan		X		
Climate Adaptation Plan		X		
Other Plans that discusses hazard mitigation	X			Part of the Regional Flood Mitigation Group that produces flood studies and ongoing mitigation projects.
Other ordinance and regulation that mitigate the impacts of natural hazards		X		

Administrative and Technical Capabilities

Avon-by-the-Sea Borough has the following Administrative and Technical capabilities:

Position	Yes	No	Explanation
Floodplain Administrator		X	
Grant Writer		X	
Staff trained to support mitigation		X	
Existing mutual aid or technical assistance agreements to support hazard mitigation projects		X	
Non-governmental organizations/other partners that work with the municipality on mitigation projects		X	
Organizations that work with socially vulnerable or underserved populations		X	Low socially vulnerable population in the Borough.

Education and Outreach Capabilities

Avon-by-the-Sea Borough has the following Education and Outreach capabilities:

Education & Outreach Capability	Yes	No	Explanation
Communicate natural and human-based hazards to the public		X	
StormReady		X	
Firewise USA		X	
Severe Weather Awareness Week		X	
Community Rating System (CRS)		X	

Financial Capabilities

Within the last five years, Avon-by-the-Sea Borough has used the following financial capabilities to implement hazard mitigation activities:

Financial Capability	Yes	No	Explanation
FEMA BRIC		X	
FEMA FMA		X	
FEMA Public Assistance		X	
FEMA HMGP		X	
Non-FEMA Federal Funding Programs		X	
Other FEMA resources		X	
NJ Infrastructure Bank		X	
Other state municipal assistance or grant programs		X	
Evaluation process on the prioritization of risk reduction projects against other local activities		X	
Other ongoing efforts to build additional financial capabilities		X	

Additional Capability Assessment Information:

- Avon-by-the-Sea is a Forerunner community. Forerunner has dynamic tools to better manage flood risk and increase resilience by enforcing floodplain compliance and increasing disaster response by documenting damages in the field and providing timely information to residents. Forerunner's public features give residents access to relevant property-level flood risk details that help inform key decisions and minimize the number of assistance requests. Forerunner is also designed to make CRS participation easier for the Borough.
- **Community Rating System (CRS) Classification:** 7
- **Sustainable Jersey Participation Status:** Bronze

MITIGATION STRATEGY

Overview and Progress Since Last Plan Update

Since 2021 Avon-By-The-Sea has been focused on flood mitigation with new homes being built to the new flood elevations and the remodeled homes being retrofitted as much as possible to bring them into compliance. We have also been focused on the river and lake with flood compliance as well. The Shark River has had back-flow preventers installed in three different pipes that allow outfall of water to the river to prevent water from backing up into the road surfaces adjacent to the river. These have been successful in reducing flooding along the river unless the water comes over the wall adjacent to the river.

At the Sylvan Lake we have removed a concrete wall adjacent to the lake in three larger sections and replaced the wall with a sloped area of vegetation which reduces the likelihood of flooding from coming into adjacent roadways or yards. A middle section of the lake is still under consideration for this type of work, but this area has several sections which are already down and reducing the challenges with flooding. Other than that, the town continues to educate the residents on emergency preparedness.

Completed or Removed Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Timeline	Action Status	Notes
There are no completed or withdrawn 2021 actions at this time										

New and Ongoing Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Timeline	Action Status	Notes
6-1	Dredge Sylvan Lake and Remove Sediment	Overall goal of project is to reduce sediment levels within the Sylvan Lake Drainage Basin to improve the health of the waterway and to provide additional capacity for stormwater runoff and coastal inundation during storm surge. The Borough would like to	Flood, Nor'easter, Hurricane and Tropical Storm	Low	Borough Administrator supported by OEM Duty Coordinator	NRCS grants, Municipal budget, The Nature Conservancy (TNC), USDA	\$1M	2 years	Ongoing	
6-2	Acquire, elevate, or relocate buildings and infrastructure in flood	Mitigate Flood-prone Properties, especially RL and SR Properties.	Flood, Wave Action, Nor'easter,	High	This project is managed cooperatively	FEMA HMA	\$4.6M	5 + years	Ongoing	

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Timeline	Action Status	Notes
	prone areas, with a focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) properties		Hurricane and Tropical Storm, Storm Surge		with the Construction Department, Floodplain Administrator and the Office of Emergency Management					
6-3	Construct a Tide Value for Sylvan Lake	Coordinate with Bradley Beach on constructing a Tide Value to lower the level of the lake.	Flood, Nor'easter, Hurricane and Tropical Storm, Storm Surge	High	Avon-by-the-Sea; Bradley Beach	FEMA HMA, Municipal budget	TBD	2 years	Ongoing	
6-4	Fortify Sewer Pump Station to Provide for Continuity of Operations During Storm Events	Elevate and flood-proof sewer pump station to provide for continuity of operations during storm events.	Flood, Hurricane and Tropical Storm, Storm Surge	Medium	Borough	FEMA HMA	\$100,000	1 year	Ongoing	
6-5	Construct Backflow Preventors along Shark River and Rebuild Stormwater Infrastructure	Construct backflow preventors at the end of all the streets that terminate at Shark River (1st Ave - 5th Ave) and rebuild stormwater infrastructure and manholes alongside the backflow preventor construction.	Flood, Wave Action, Nor'easter, Hurricane and Tropical Storm, Storm Surge	High	Borough	FEMA HMA	TBD	3 years	Ongoing	
6-6	Upgrade Surveillance Systems at Critical Facilities	Upgrade surveillance system and connect the school and municipal facilities feed into one combined system.	Terrorism	Low	Borough	DHS	TBD	1 year	Ongoing	