

37 – NEPTUNE CITY BOROUGH

PLANNING TEAM AND PARTICIPATION

Name	Title	Participation
Richard Maher	Emergency Management Coordinator, Neptune City	Point of Contact, Attended Municipal Meeting
Michael McGlennon	Monmouth County OEM	Attended Municipal Meeting
Stephanie Seymour	Monmouth County OEM	Attended Municipal Meeting
Rachel McGreevy	Mayor, Neptune City	Attended Municipal Meeting
Albert Jardine	Borough Administrator, Neptune City	Attended Municipal Meeting
Michael Vollbrecht	Police Lieutenant, Neptune City	Attended Municipal Meeting
Daniel Harker	Director of DPW, Neptune City	Attended Municipal Meeting

COMMUNITY PROFILE

Overview

Neptune City is a borough in eastern Monmouth County, surrounded on three sides by the larger Neptune Township, and on the east by Avon-By-The-Sea and Bradley Beach Boroughs. Neptune City's southern border is largely coterminous with the Shark River, which flows eastward from the Musquash Brook toward Neptune's west end. The borough has a land area of just under 1 square mile (.90 mi²), and features a variety of land uses, including single family and multi-family residential to the west, commercial properties along NJ Routes 33 and 35, and industrial uses along Sylvania Avenue.

The borough was incorporated in 1881, and at the time included what is now Avon-By-The-Sea and portions of Bradley Beach. These coastal municipalities incorporated independently by 1907. Neptune City began as a working-class community for local tourism and factory workers. During the 20th century, industrial uses grew with factories and businesses along Steiner Avenue. As factories closed, the borough's proximity to beaches, transit lines, and highways, helped its transformation into a popular residential community. Today there are an estimated 4,619 residents (as of 2018-2022 ACS estimates).

The Shark River, which makes up Neptune City's southern border, originates from Musquash Brook towards the borough's northwestern corner, running under East End Avenue. This brook and surrounding marshland empty into the Shark, which ultimately flows out of the Shark River Inlet, an estuary that feeds into the Atlantic in Avon-By-The-Sea and Belmar municipalities. This river is also described as a tidal basin or small bay—a tidal, salty body of water separated from open sea by a barrier or land formation. In addition to the Musquash Brook, other freshwater sources to the Shark (Jumping Brook, Shark River Stream, Laurel Brook) drain a sizeable watershed, but are relatively small freshwater additions in comparison to the saltwater of the Shark River itself.

Land Use, Development, & Growth

Neptune City is a predominantly residential community and most of its land is developed. From 2015 to 2020, the community underwent minimal change in its land use composition, with urban or developed land accounting for nearly 95 percent of its total area, and forested land and wetlands making up its remaining land base.

Land Use Type	Total Acres (2015)	Total Acres (2020)	Percent Change
Agriculture	-	-	-
Barren Land	0.8	1	25%
Forest	13.4	13.4	0%
Urban	1430.8	1430.6	>0%
Water	28.5	28.5	0%
Wetlands	22.9	22.9	0%

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

Recent Major Development and Infrastructure from 2020 to Present

Neptune City contains defined residential and commercial areas with scattered industry throughout the Borough. Concentrations of commercial development occur along major roadways (Route 35, 33, Memorial Drive), and industrial land use clusters around Sylvania Avenue to the south and Memorial Drive to the east. Due to the built-out density of Neptune City, development opportunities largely consist of infill uses of vacant properties or lots. A large portion of the Borough to the south falls under the FEMA 1% annual chance floodplain, NJ Inland Design Flood Elevation which is FEMA's 1% annual chance floodplain + 3 feet, and the 5 feet SLR (Sea Level Rise) Low-Lying area zone (NJFloodMapper). There is also a portion to the east that falls under the FEMA 0.2% annual chance floodplain and NJ Inland Design Flood Elevation (NJFloodMapper).

The Borough has faced challenges in formulating a district-wide approach and has adopted the Steiner Avenue Scattered Sites Redevelopment Plan (2010) and the 142 Steiner Avenue Redevelopment Plan (2017). These plans encourage mixed-use development compatible with adjacent neighborhoods and surrounding the Bradley Beach train station.

An intersection improvement project at Memorial Drive and Evergreen Avenue included widening approach lanes, and installing concrete curbs, ADA compliant ramps, drainage improvements, and a new traffic signal linked to NJ Transit to coordinate traffic flow with train schedules.

In 2018, the Borough adopted a Master Plan Reexamination Report, which discusses ongoing efforts to redevelop underutilized industrial properties and eliminate incompatibilities between adjacent residential uses.

A dredging project covering the Shark River concluded in 2017 – this project restored the navigable channel and made the waterway safer and more attractive to boaters.

In 2018, all census tracts within Neptune City were designated as an Opportunity Zone, a federal designation which offers tax benefits to investors within these boundaries.

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

An upcoming development is anticipated to be complete in Fall of 2025. This development, located at 5th Avenue and Memorial Drive along the eastern border of Neptune City, is positioned to offer 70 luxury units. This development is not in a flood zone – the lot is currently cleared for building, as of Fall 2024.

Demographics & Vulnerable Populations

This plan analyzed census-derived data on population trends and population age distributions to help illustrate potential vulnerability within the borough. 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).

Neptune City's total population is an estimated 4,619, with 5.3% of these residents estimated to be under age 5 and 13.5% aged over 65. The Borough saw a moderate population decline over two ACS survey periods (2013-2017, 2018-2022), with an estimated -2.7% loss. Though this population loss may be moderate, impacts on the built environment may be present which impact pre-hazard communication and post-disaster response.

Neptune City has two block groups which meet designation criteria as potentially vulnerable through overburden (OBC) – one block group identified for Low Income population vulnerabilities, and the other for Low Income and Minority population characteristics. There are no parts of Neptune City identified through CDRZ or CEJST criteria.

Demographics Summary	
Total Population (2018-2022 ACS 5-year Estimates)	4,619
Population Change since 2017	-2.7%
Percent of Population Age < 5	5.3%
Percent of Population > 65	13.5%

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/Nor'easter	Extreme Temperatures	Drought
Flood	Tornado	Wildfire
Sea Level Rise	Winter Storm	Earthquake
Storm Surge	Coastal Erosion	Landslide (N/A)
	Wave Action	Dam Failure (N/A)
	Lightning	
Human-made Hazards		
	Cyber Attack	Civil Unrest
	Economic Disruption	Power Failure
	Terrorism	
	Pandemic	

The Borough ranked Landslide and Dam Failure as N/A.

Hazard Ranking Explanation

The borough's primary hazard concern is flooding, especially as a cascading impact of storms, storm surges, and sea level rise. Urban flooding has caused significant impacts for residents, businesses, and travel in the borough, often with several feet of water in roadways due to an undersized stormwater system. County Route 35 experiences coastal flooding, which is another concern due to Neptune's coastal border with the Atlantic.

Some critical infrastructure in the borough has been hit by lightning, such as Neptune's hospital, which is now outfitted with lightning rods. There is also concern for other critical communications infrastructure (911 system, pump station radio systems) that are susceptible to lightning due to their locations at the highest point in the county.

Significant Hazard Events Since Last Plan Update

Neptune City's primary hazard concern in recent years has been flooding, especially as a result of nor'easter storms and heavy rains throughout the borough. Urban roadways, particularly under bridges and along Brighton Avenue in neighboring Neptune Township, have experienced significant flooding. Specifically, the East End Avenue Bridge area has seen several feet of water during flood events. Additionally, Central Avenue often faces flooding due to storm drain overflow.

A backup storm overflow system, which releases water near Route 35 and 3rd Avenue, has frequently been overwhelmed by excessive rain. Coastal flooding remains a concern for the borough due to its location along Shark River, despite having no direct frontage along the Atlantic coast. Consequently, New Jersey Route 35 has also experienced flooding, prompting planned roadway elevation projects in response.

In August 2024, the borough witnessed notable flooding caused by torrential rain, leading to street closures, particularly at the intersection of 3rd Avenue and NJ Route 35.

Climate Change Impacts on Extent and Magnitude of Hazards

Climate change is expected to significantly impact the extent and magnitude of risks and hazards in Neptune City Borough. As global temperatures rise, the frequency and intensity of extreme weather events such as hurricanes, nor'easters, and storm surges are likely to increase. This will exacerbate coastal erosion and lead to more frequent and severe flooding, particularly in low-lying areas and those within the 1% and 0.2% annual chance flood zones. The rising sea levels will further compound these issues, increasing the vulnerability of critical infrastructure and residential properties, many of which are in flood-prone areas. Additionally, the borough's location along the Shark River makes it susceptible to hazards such as rising storm surges, coastal erosion, wave action, and sea level rise.

Climate change will also heighten the risk of extreme temperatures and droughts, which can strain local resources and infrastructure. The borough's aging population, which constitutes over 13.5% of its residents, may face increased health risks during extreme heat events and have greater difficulty evacuating during emergencies. Additionally, the increased frequency of power failures, now a medium concern, could further complicate disaster response and recovery efforts.

RISK ASSESSMENT

National Flood Insurance Program (NFIP) statistics

Neptune City Borough	
Initial FIRM Date	8/11/78
Effective FIRM Date	6/15/2022
Number of Policies In-Force:	50
Total Losses:	49
Total Payments:	\$2,553,964.26
Number of RL Properties:	5
Number of Mitigated RL Properties:	0
RL – Total Losses:	10
RL – Total Paid:	\$827,507.42
Number of SRL Properties:	0
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	0
SRL – Total Paid:	0

Source: FEMA Policy and Loss Data, August 2024

Vulnerability of the Built Environment

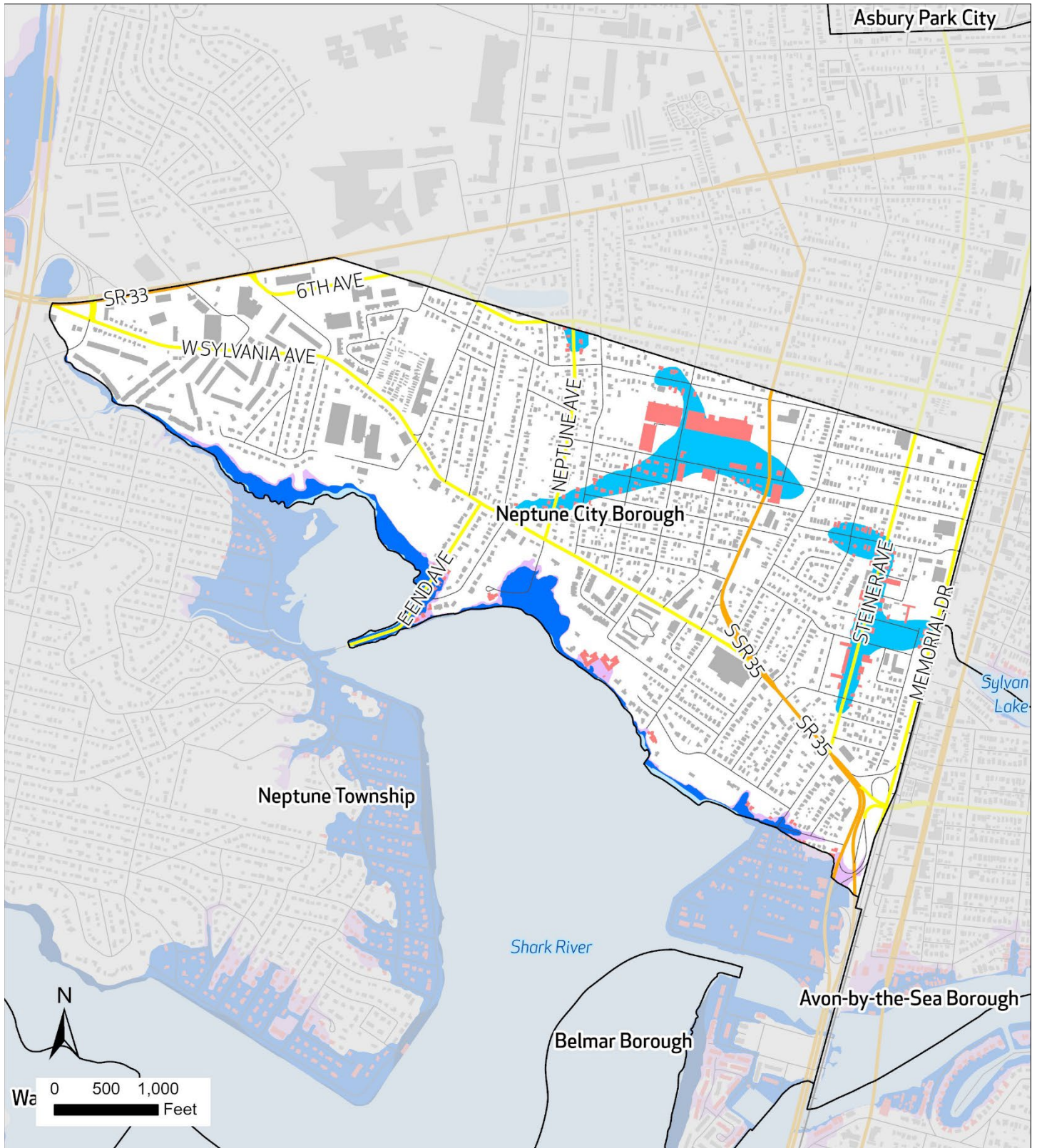
The Special Flood Hazard Area (SFHA) in the Borough of Neptune City is primarily located adjacent to the main water body of town, the Shark River, however, a portion consists of low-lying land in the center of town. 10.4 percent of the total area of Neptune City lies within the 1% annual chance flood zone as defined by FEMA. An additional 1.1 percent of the area of the municipality is in the 0.2% annual chance flood zone.

About 93.3 percent of Neptune City Borough is considered developed. Of the developed parcels of the town, 11.4 percent fall within the 1% annual chance flood zone and 0.9 percent are within the 0.2% annual chance flood zone. This illustrates that the developed area of the municipality is generally in line with overall flood risk.

	Percentage in the 1% Floodplain	Percentage in the 0.2% Floodplain	5 feet of Sea Level Rise
Developed Parcels	11.4%	0.9%	3.2%
Exposed Land Area	10.4%	1.1%	3.5%

During the planning process, Neptune City 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 7 total facilities. Of these facilities, none are within floodplain or the area projected to be inundated under 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

Neptune City Borough

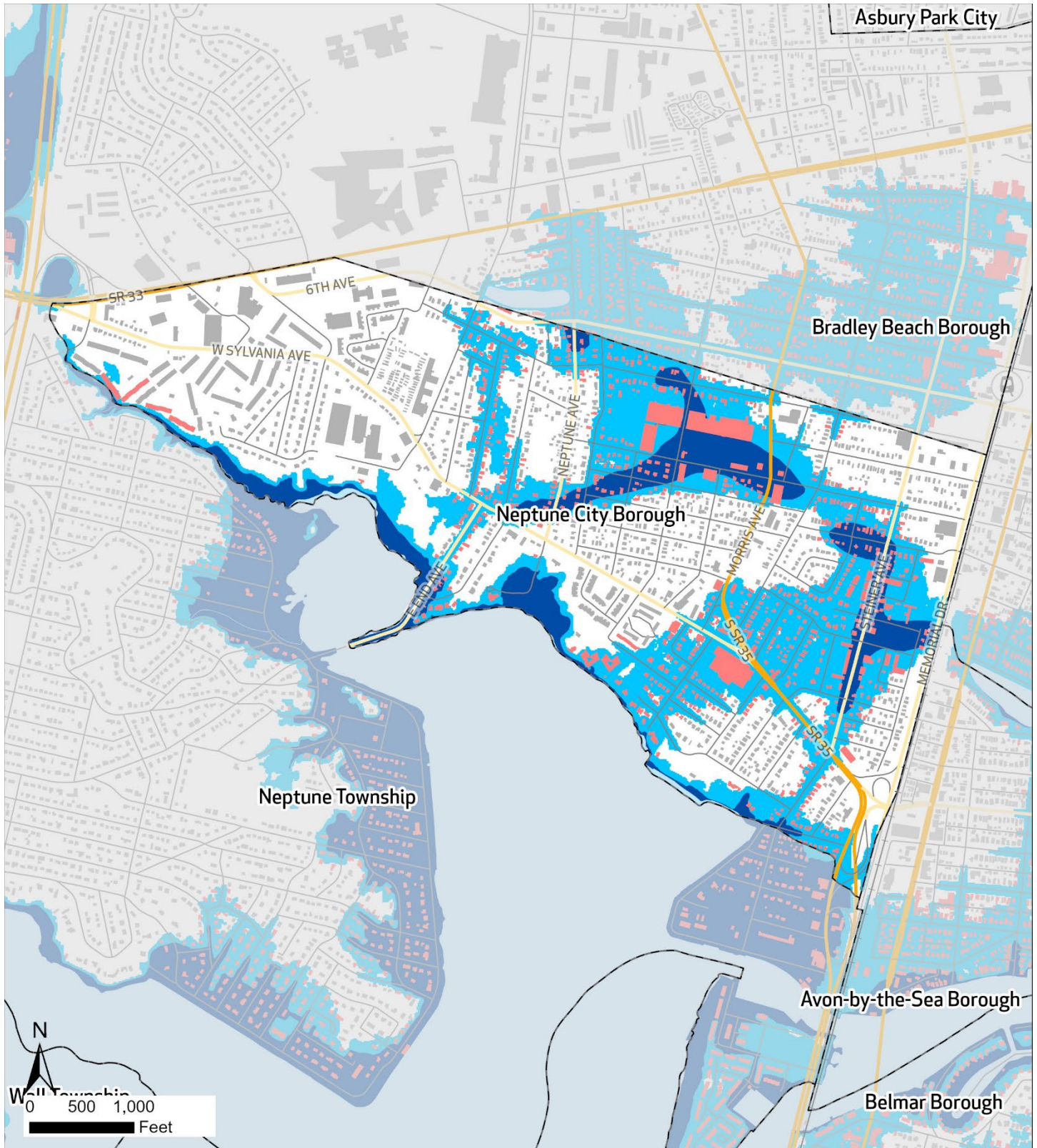
FEMA Flood Zone

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

- State Hwy
- 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 Neptune City 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

 State Hwy

 Railroad

 NJ Transit Rail Station

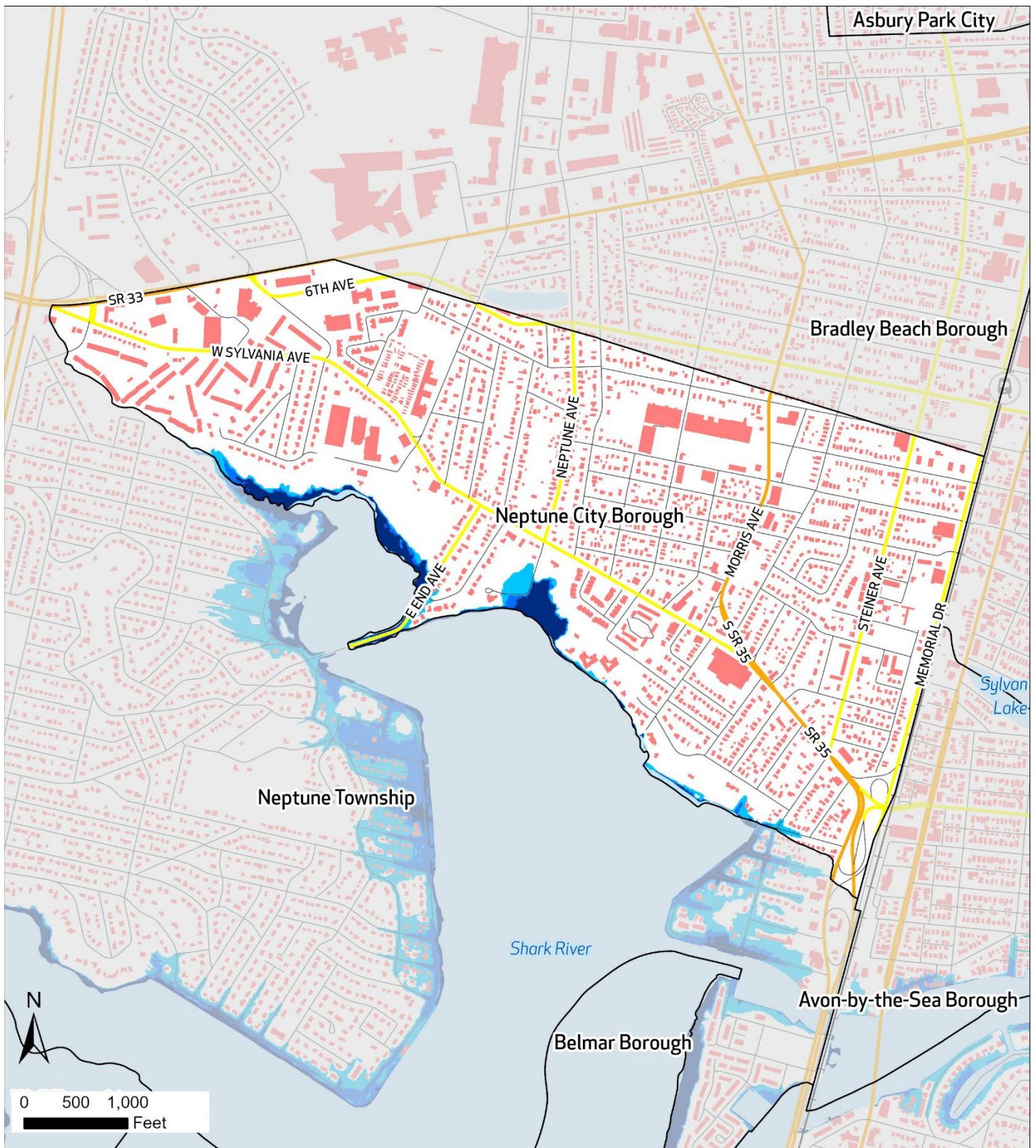
 Municipal Boundaries

 Water

 Building Footprints

 Building Footprints within IDFE

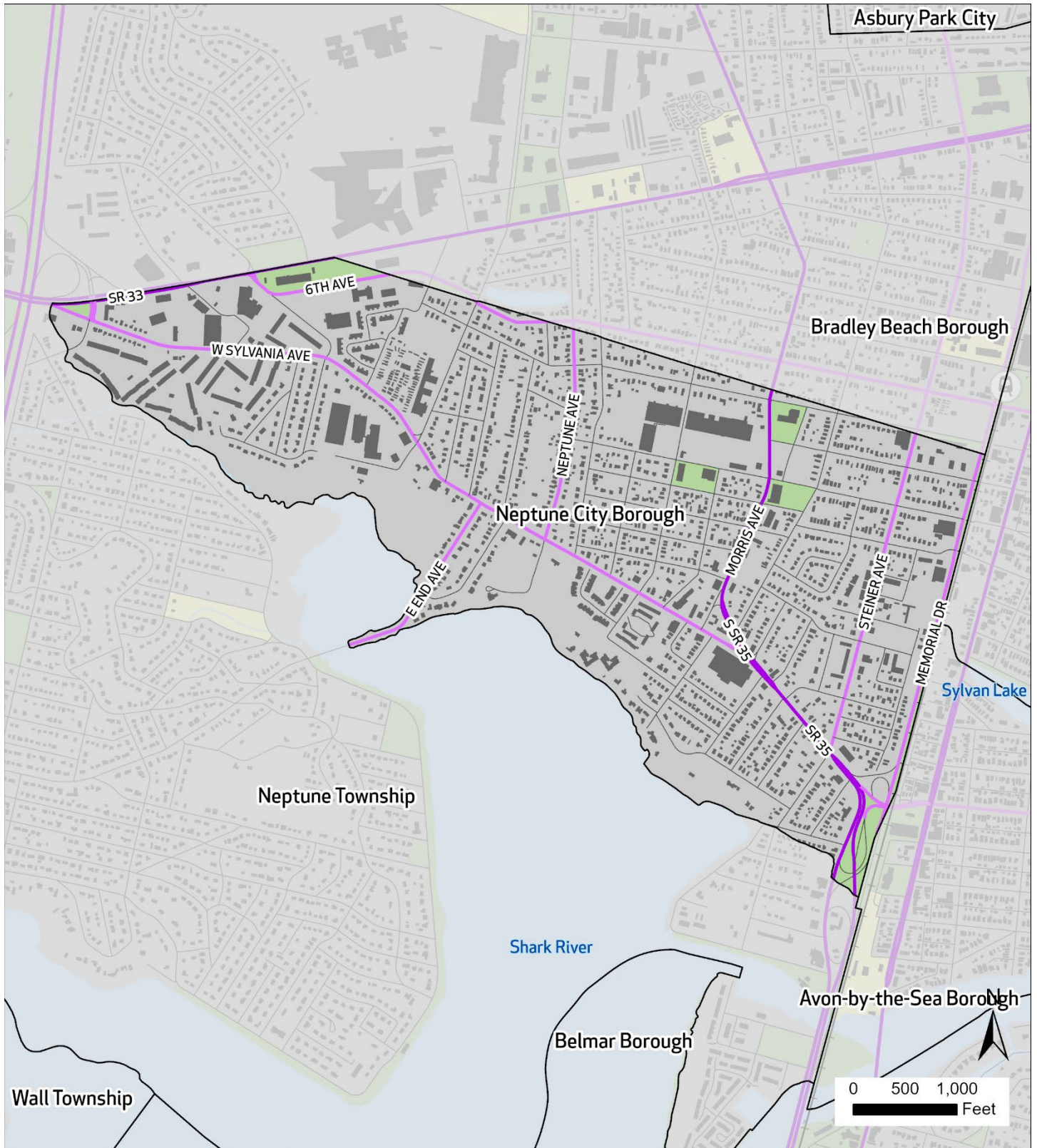
Source: FEMA, Rutgers University, NJDEP, NJOIT, NJTransit



**Permanent Inundation
Under Sea Level Rise
(SLR) Scenarios**
Neptune City 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 | |
| | <div style="position: absolute; top: 5px; left: 5px; width: 0; height: 0; border-left: 5px solid transparent; border-right: 5px solid transparent; border-bottom: 8px solid black;"></div> Rail Lines | |

Source: NOAA, NJDEP, NJOIT, NJTransit



Wildland Urban Interface (WUI) Classification

Neptune City Borough

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

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



- Municipal Boundaries
- Building Footprint
- Water

Source: USFS, NJDEP, NJOIT, NJTransit

CAPABILITY ASSESSMENT

Planning & Regulatory Capabilities

Neptune City 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		2017 Master Plan Reexamination Report	
Capital Improvement Plan	X		2025	Upgrades to infrastructure and equipment to aid in response to natural disasters and support hazard mitigation.
Local Emergency Operations Plan/Continuity of Operations Plan	X		2025	Plans and procedures set in place to mitigate natural and manmade disasters within the Borough.
Floodplain Development Ordinance	X		2022	
Floodplain Management Plan	X		2022	
Stormwater Management Ordinance	X		2024	
Stormwater Management Plan	X		2008	
Watershed Management Plan		X		
Sheltering Plan	X		2025	Allows temporary placement of residents and visitors of the Borough away from the effects of a disaster or hazardous area.
Evacuation Plan	X		2025	Allows for residents and visitors to safely and effectively evacuate the Borough or area in the event of a disaster.
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			2010 Steiner Avenue Scattered Sites Redevelopment Plan, 2017 142 Steiner Avenue Redevelopment Plan
Community Wildfire Protection Plan		X		
Climate Adaptation Plan		X		
Other Plans that discuss hazard mitigation	X		2025	The Borough is consistently evaluating plans and methods to assist with hazard mitigation; specifically flooding and is part of the Regional Flood Mitigation Group that produces flood studies and ongoing mitigation projects.
Other ordinance and regulations that mitigate the impacts of natural hazards		X		

Administrative and Technical Capabilities

Neptune City Borough has the following Administrative and Technical capabilities:

Position	Yes	No	Explanation
Floodplain Administrator	X		Part time
Grant Writer	X		Committee
Staff trained to support mitigation	X		Emergency Management Committee, DPW
Existing mutual aid or technical assistance agreements to support hazard mitigation projects	X		Neptune Township

Position	Yes	No	Explanation
Non-governmental organizations/other partners that work with the municipality on mitigation projects	X		Comprehensive Flood Study with multiple organizations involved
Organizations that work with socially vulnerable or underserved populations		X	

Education and Outreach Capabilities

Neptune City Borough has the following Education and Outreach capabilities:

Education & Outreach Capability	Yes	No	Explanation
Communicate natural and human-based hazards to the public	X		Outside Warning Siren, Nixle (reverse 911) New System, fire safety and emergency preparedness
StormReady		X	
Firewise USA		X	
Severe Weather Awareness Week		X	
Community Rating System (CRS)		X	

Financial Capabilities

Within the last five years, Neptune City 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:

MITIGATION STRATEGY

Overview and Progress Since Last Plan Update

The Borough of Neptune City is actively working on several projects with the ultimate goal of assisting with and increasing resilience against damage from natural disasters and having the ability to adapt to future climate concerns. Since 2020, the Borough has entered into a Comprehensive Drainage Study to help mitigate flooding throughout the community. Furthermore, the Borough intends to upgrade critical infrastructure to increase resiliency towards natural disasters in this coastal community.

Completed or Removed Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Timeline	Action Status	Notes
Action 37-01	Increase Piping Capacity and Reduce Sediment/Debris within Watershed	The Borough improves their stormwater system every year with their yearly roadway program. Develop mitigation steps to reduce damage and losses due to flooding through control of stormwater runoff and more efficient drainage and discharge to Shark River.	Flood, Nor'easter, Hurricane and Tropical Storm, Storm Surge	N/A	Borough Engineer		\$80,000	N/A	Completed	DPW Superintendent informs that they have replaced majority of catchment basins in the borough - this has reduced debris. However, increased volume of water is still happening in key areas (listed). Large amount of standing water remains in these areas. Several actions in plan reflect the same problem (01, 03, 06, 07).
Action 37-02	Purchase and Install Generators at Borough Hall, the Fire Station, and the School	To maintain police, fire, and medical service throughout the municipality, the Borough seeks to provide temporary power for Borough Hall, the Fire Station, and the School. The Office of Emergency Management and a Central Command is within Borough Hall.	Flood, Nor'easter, Hurricane and Tropical Storm, Storm Surge	N/A	OEM Director	FEMA HMA, Municipal Budget		N/A	Completed	Completed for Borough Hall and Fire Department (2020, 2021). Not completed for School; evacuation center switched from school to community center, so deprioritized.
Action 37-03	Elevate and Waterproof Sewer Pump Station	Elevate the sewer pumps within the building and to waterproof the building to mitigate any future damage.	Flood, Nor'easter, Hurricane and Tropical Storm, Storm Surge	N/A	Borough Engineer	FEMA HMA, Municipal Budget	\$47,000	N/A	Complete	DPW Director reported complete in 2021, for all 3 pump stations. Also completed 2 access points to Laird Avenue Pump Station, all waterproofed and completed in 2021.
Action 37-04	Create a Safe House for OEM Equipment	To maintain police, fire, and medical EMS services throughout the municipality, the Borough	Flood, Nor'easter, Hurricane and Tropical	N/A	Borough Engineer, OEM Director	Municipal Budget		N/A	Withdrawn	Withdrawn, merged with Action 37-10, Still no location to house equipment (most are outside, secured but open to the elements).

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Timeline	Action Status	Notes
		seeks to provide a centralized building "AKA Safe House" for critical OEM equipment. Currently this equipment is stored outside and subject to the daily elements.	Storm, Storm Surge							

New and Ongoing Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Timeline	Action Status	Notes
Action 37-05	Implement Improvements to Designated Shelters	Neptune City seeks to provide key sleeping and shower facilities to emergency personnel and evacuated residents during a storm event. Three key buildings within the Borough have been identified within the action plan: Borough Hall, Fire Station and the EL.	Flood, Lightning, Hurricane/Tropical Storm/Nor'easter	Low	Borough Engineer and OEM Director	Municipal budget	\$30,000	1 year	Ongoing	School was removed from this goal; incorporate community center as shelter (short term).
Action 37-06	Develop a Comprehensive Drainage Study to Mitigate Borough Flooding	The Borough would like to develop a comprehensive mitigation study to reduce damage and losses due to flooding. The study will provide the necessary data to determine the larger piping needed to provide a better overall volume/ flow throughout the system.	Flood, Nor'easter, Hurricane and Tropical Storm, Storm Surge, sea level rise	Medium	Borough Engineer	Municipal budget	\$1,500,000	1 year	Ongoing	
Action 37-07	Acquire, elevate, or relocate buildings and infrastructure in flood prone areas, with a focus on Repetitive Loss (RL) and Severe	Elevation and/or acquisition of Flood-prone residential structures, with particular focus on those in our community that are on FEMA's Repetitive Loss List and Severe Repetitive Loss list. New Jersey is committed to continuing the reduction of RL and SRL	Flood, Wave Action, Nor'easter, Hurricane and Tropical Storm, Storm Surge, Winter Storm	High	Mayor and Council	FEMA HMA	TBD	1 year	Ongoing	Ties to 37-06; new flood maps released and waiting on input from council and mayor.

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Timeline	Action Status	Notes
	Repetitive Loss (SRL) properties									
Action 37-08	Target Harden Critical Facilities by Installing Surveillance Cameras, an Access Control System, and/or an Alarm System	Improve alarm, access control and camera systems located at all Borough Facilities, Specifically DPW, Borough Hall, Fire Station, First Aid Squad, Community Center and Three sewer Pumping Stations.	Terrorism	Low	Borough	Homeland Security grants	\$300,000	2 years	Ongoing	Partially complete. Have completed access control and alarms; cameras remain. Improved alarm systems and access control to Borough Hall and Fire Station. Alarms also improved at Pump Stations. Working to explore access control systems for DPW and community center. Camera systems need to be updated throughout facilities. Police are working to secure funding from municipal budget (Cost Estimate unknown).
Action 37-09	Cross-Jurisdictional Study	Cross jurisdictional study and program: Working with Bradley Beach and Neptune Township, develop plans for a study to understand stormwater pipes and how flooding causes shared issues across municipal boundaries.	Flooding, sea level rise	High	Cross-Jurisdictional, County DPW, County Engineering	Neptune Township has secured a grant	TBD	Ongoing	New	Includes County DPW + Engineering as well as State Officials.
Action 37-10	DPW Build - Municipal Structure (Pole Barn)	Ongoing DPW capital improvement project to build municipal structure will allow proper storage of emergency management assets.	Terrorism, Flood, Hurricane and Tropical Storm	Medium	DPW	Municipal Budget	\$100,000	Ongoing	New	A structure to protect assets from the elements. This will also allow for proper storage and keep the equipment readily

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Timeline	Action Status	Notes
										accessible for emergency response.
Action 37-11	Replace Roof + Drain Systems in Critical Infrastructure	Replace roof and drain systems at Borough Hall, Fire Department, and DPW -all critical infrastructure locations.	Flooding, Hurricane/ Tropical Storm/Nor'easter	High	DPW	Municipal Budget - Secured	\$600,000	1-2 years	New	Perform upgrades and rehabilitate critical infrastructure within the borough.