

9 – BRIELLE BOROUGH

PLANNING TEAM AND PARTICIPATION

Name	Title	Participation
Gary Olsen	Chief of Police, Primary Point of Contact	Municipal Meeting 12/6/2024
Thomas Nolan	Borough Administrator	Review 12/30/2024
Frank Garruzzo	Mayor	Review 12/30/2024
Christopher Willms	Code Enforcement	Review 12/30/2024
Alan Hilla	Engineering	Review 12/30/2024
Christine Bell	Flood Plan Manager	Review 12/30/2024

COMMUNITY PROFILE

Overview

Located along the northern banks of the Manasquan River, the Borough of Brielle was named after the Netherlands town of Brielle due to its resemblance to the coastal towns along the North Sea and the English Channel. The 1.65-square mile borough is in the southeastern corner of Monmouth County. Brielle's seafaring industry is still found at the waterfront with over 200 commercial and charter fishing boats. Several popular eating and drinking establishments are located along the Manasquan River.

Brielle is characterized by its compact land development pattern, which is predominantly residential, but includes a large, built-out commercial area. Since Brielle is largely developed, the Borough removed the residential cluster provision in its zoning ordinance based on the recommendations in its 2006 Master Plan Reexamination Report. The Report recommended promoting future conservation of the borough's environmentally significant land by establishing an entirely new conservation and recreation zone district for Nienstedt and Sedge Islands. The Report also recommended updated land uses and development standards for the R-1 Zone District, and a re-evaluation of its parking standards to determine the appropriate number of parking spaces needed per boat slip at its marinas. Conservation efforts by the Borough include adopting regulations that address tree preservation, steep slopes, and on-site grading.

Land Use, Development, & Growth

Brielle is a primarily residential community, with most of its land being developed. As a result of the predominance of residential land use, in 2020, urban or developed land accounted for 71 percent of the Borough's total area. From 2015, the acreage covered by developed land hovered at roughly 1019 acres, while water covered nearly 331 acres, or 23 percent of the Borough's total area. Between 2015 and 2020, there was negligible change in the town's overall land use composition.

Land Use Type	Total Acres (2015)	Total Acres (2020)	Percent Change
Agriculture	-	-	-
Barren Land	5.0	6.4	28%
Forest	65.1	60.7	-7%
Urban	1015.9	1018.6	>0%
Water	330.3	330.9	>0%
Wetlands	26.1	25.7	-2%

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

Recent Major Development and Infrastructure from 2020 to Present

No recent development was brought up in the meeting.

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

The three bridges that connect Brielle and Manasquan will be rehabilitated or replaced in a \$35.5 million public infrastructure project. The Monmouth County 3 Bridges project, as it is referred to, is currently in the scoping phase of development. Funding for this project is anticipated to be provided by the federal government, funneled through the North Jersey Transportation Planning Authority.

Additionally, the development of 43 units is planned at 403 Higgins Ave, where the Whiskey Lounge is currently located. The property, which was recently sold for US\$6 Million, falls in the NJ Inland Design Flood Elevation which is FEMA's 1% annual chance floodplain + 3 feet (NJFloodMapper). Also, 73 units planned in the wooded area by Schoolhouse Rd. and Route 35 and another 20 units are planned near Higgins Ave and are not in a FEMA flood zone.

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).

Brielle Borough's total population is estimated to be 4,957. This is a 4.6% population growth since the last estimated survey period in 2013-2017. The Borough has 4.5% of its population estimated to be under age 5, and 21.4% over age 65. The borough's large share of population over age 65 indicates a potential vulnerability which should be accounted for in both pre-disaster planning and post-disaster recovery efforts. The ongoing population growth (nearly 5% over five-year survey periods) may also indicate increased development pressure in the face of hazard vulnerability.

No parts of Brielle Borough meet designation criteria for CDRZ, CEJST, or OBC identification.

Demographics Summary	
Total Population (2018-2022 ACS 5-year Estimates)	4,957
Population Change since 2017	4.6%
Percent of Population Age < 5	4.5%
Percent of Population > 65	21.4%

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

Hazard Ranking Explanation

Brielle continues to rank extreme temperatures as a medium concern. The town explained that one family had used the cooling station since the last plan update. Drought also ranks as a medium concern; during a recent drought event, houses along Union Lane did not have water. Additionally, one tower was critically low on water, and water tanks had to be deployed in the area to prepare in case of a fire.

Apart from a lightning strike that burned down one side of a house and damaged electrical appliances on Valley Rd. in the summer of 2024, there have not been any significant lightning events. As a result, the borough continues to rank lightning as a hazard of low concern. Another significant weather event was a mini twister in July 2019 that affected three streets in the borough.

The human-made hazards of cyber attacks and terrorism both rank as medium concerns; the borough recently lost US\$30,000 to a phishing attack, and two major arteries leading to Ocean County pass through the borough. Additionally, the borough has changed the ranking of power failure from low to medium.

Significant Hazard Events Since Last Plan Update

The borough is prone to flooding whenever rainfall lasts for a few days or during high tide coinciding with a rainstorm. Although the borough has not experienced extensive property damage due to flooding since the last plan update, some properties in the Glimmer Glass area, particularly those near Debbie's Creek, were affected. In 2024, the fire company had to pump water out from the basements of the affected houses. Additionally, the NJ Transit train bridge is impacted during rainstorms and flooding; NJ Transit is planning to replace the bridge by 2029. The borough is uncertain if service will be suspended during the replacement period. Three houses on Fisk Avenue, on the eastern side of the railway tracks, have been elevated. The town also noted that the area between Green Avenue and Crescent Drive is prone to recurring flooding.

Climate Change Impacts on Extent and Magnitude of Hazards

Climate change is expected to significantly impact the risks and hazards faced by Brielle Borough. As a coastal community, Brielle is particularly vulnerable to the effects of sea level rise, which can exacerbate flooding and coastal erosion. Rising sea levels will increase the frequency and severity of tidal flooding, storm surges, and inundation events, putting more properties and infrastructure at risk. The borough's existing flood mitigation measures may become less effective as sea levels continue to rise, necessitating additional investments in coastal defenses and flood management systems.

Moreover, climate change is likely to lead to more intense and frequent extreme weather events, including hurricanes, tropical storms, and nor'easters. These storms can bring heavy rainfall, strong winds, and storm surges, further increasing the risk of flooding and damage to the borough's infrastructure. The increased intensity of these storms will also heighten the risk of coastal erosion such as sinkholes and road collapses.

RISK ASSESSMENT

National Flood Insurance Program (NFIP) statistics

Brielle Borough	
Number of Policies In-Force:	197
Total Losses:	214
Total Payments:	\$11,184,477.05
Number of RL Properties:	8
Number of Mitigated RL Properties:	0
RL – Total Losses:	21
RL – Total Paid:	\$500,531.31
Number of SRL Properties:	1
Number of Mitigated SRL Properties:	0
SRL – Total Losses:	4
SRL – Total Paid:	\$245,635.37

Source: FEMA Policy and Loss Data, August 2024

Vulnerability of the Built Environment

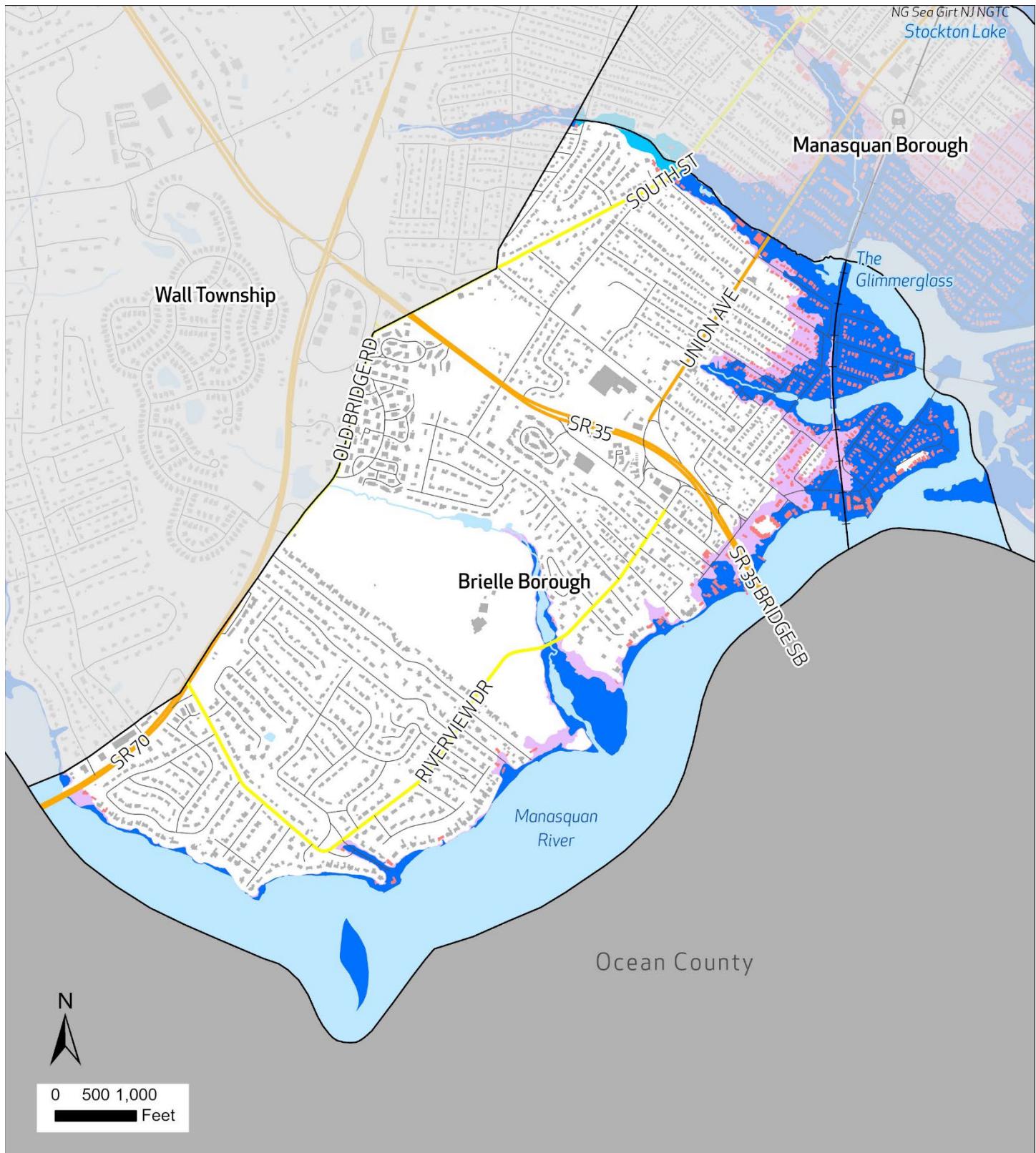
The Special Flood Hazard Area (SFHA) in the Borough of Brielle is primarily located adjacent to the waterbodies of the borough: the Manasquan River and its smaller tributaries. The low-lying portion on the eastern part of town adjacent to the Glimmerglass is especially flood prone. Approximately 13.3 percent of the total land area of Brielle lies within the 1% annual chance flood zone as defined by FEMA. An additional 3.2 percent of the area of the municipality is in the 0.2% annual chance flood zone.

About 90.3 percent of Brielle is considered developed. Of the developed parcels of the town, 18.4 percent fall within the 1% annual chance flood zone and 3.4 percent are within the 0.2% annual chance flood zone. This illustrates that development in the municipality has generally occurred in line with overall flood risk in the town.

	Percentage in the 1% Floodplain	Percentage in the 0.2% Floodplain	5 Feet of Sea Level Rise
Developed Parcels	18.4%	3.4%	16.2%
Exposed Land Area	13.3%	3.2%	8.4%

During the planning process, Brielle 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 13 total facilities. Of these facilities, four are within the floodplain. Two of these four facilities are also within the area projected to be at risk from 5 feet of sea level rise. These four facilities fall within the Water Systems lifeline category. Examples of the Water Systems lifeline include dams and pump stations.

Community Lifeline Type	Number in the 1% Floodplain	Number in the 0.2% Floodplain	Number within 5 Feet of Sea Level Rise
Water Systems	4	-	2



Flood Risk

Brielle Borough

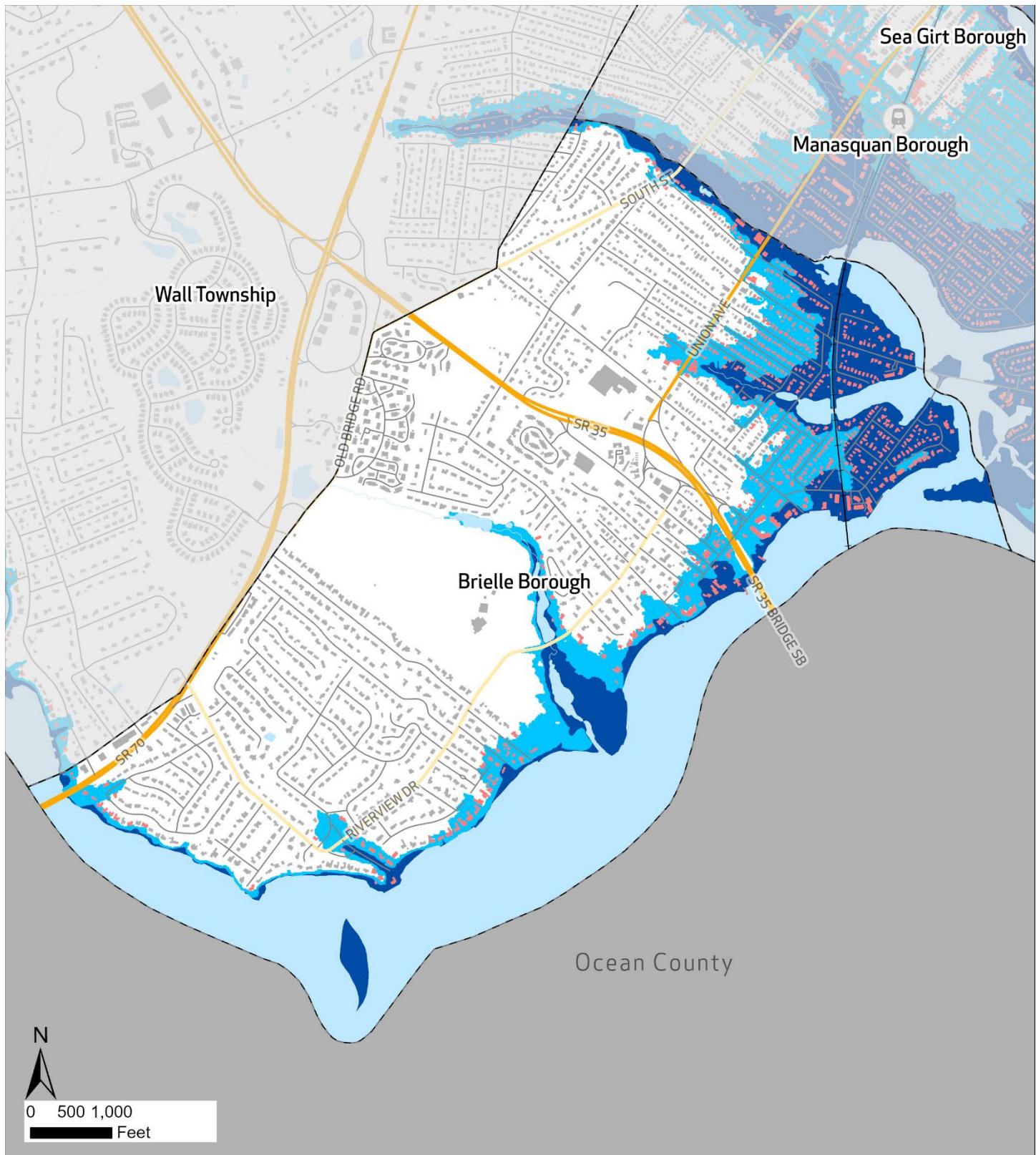
FEMA Flood Zone

- 0.2% Annual Chance
- A(1%)
- AE (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 Brielle 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
● NJ Transit Rail Station

— Municipal Boundaries
 Water
 Department of Defense Land
 Building Footprints
 Building Footprints within IDFE

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



Permanent Inundation Under Sea Level Rise (SLR) Scenarios

Brielle Borough

- Area Inundated Under 2 Feet SLR
- Area Inundated Under 3 Feet SLR
- Area Inundated Under 5 Feet SLR

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

- Municipal Boundaries
- Building Footprint
- Water

Source: NOAA, NJDEP, NJOIT, NJTransit



Wildland Urban Interface (WUI) Classification
Brielle Borough

■ Intermix	■ State Routes
■ High or Medium Density Housing	■ County Routes
■ Low or Very Low Density Housing	■ Local Roads
■ No Housing	■ Rail Lines
	■ NJTransit Rail Station

■ Municipal Boundaries
■ Building Footprint
■ Water

Source: USFS, NJDEP, NJOIT, NJTransit

CAPABILITY ASSESSMENT

Planning & Regulatory Capabilities

Barnegat Light 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		2016	
Capital Improvement Plan	X		2024	
Local Emergency Operations Plan/Continuity of Operations Plan	X		2025	
Floodplain Development Ordinance	X		Adopted in 2022	No higher freeboard standards than required by building code/FEMA. The Borough has adopted N.J. Model Ordinance.
Floodplain Management Plan	X			
Stormwater Management Ordinance	X			New Stormwater Management Ordinance adopted in 2023 and amended in 2024 to incorporated the Inland Flood Rules.
Stormwater Management Plan		X		
Watershed Management Plan		X		
Sheltering Plan	X			
Evacuation Plan				
Substantial Damage/Improved Structures Response				The community identifies substantially damaged/improved structures in the flood damage prevention ordinance.
Repetitive Loss Plan		X		
Disaster Debris Management Plan		X		
Tracking elevation certificates and/or Letter of Map Change		X		None received through SSA. Point for further discussion.
Post-Disaster Recovery Plan		X		
Current/recent redevelopment plans or studies	X			Mostly housing development. Most sites are within delicate watersheds and must focus on stormwater management and mitigation.
Community Wildfire Protection Plan		X		
Climate Adaptation Plan				
Other Plans that discusses hazard mitigation		X		
Other ordinance and regulation that mitigate the impacts of natural hazards		X		

Administrative and Technical Capabilities

Barnegat Light Borough has the following Administrative and Technical capabilities:

Position	Yes	No	Explanation
Floodplain Administrator	X		Floodplain Administrator Christine Bell is a part-time municipal employee who works as an Engineer for Avakian. There is no other Certified Floodplain Manager currently employed by the community.
Grant Writer		X	
Staff trained to support mitigation		X	There is currently no available staff trained to support mitigation. The responsible party for implementing hazard mitigation actions is undetermined.
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	

Education and Outreach Capabilities

Barnegat Light Borough has the following Education and Outreach capabilities:

Education & Outreach Capability	Yes	No	Explanation
Communicate natural and human-based hazards to the public	X		Website/Social Media/CodeRed (Emergency Communications Network)
StormReady		X	
Firewise USA		X	
Severe Weather Awareness Week		X	
Community Rating System (CRS)		X	

Financial Capabilities

Within the last five years, Barnegat Light 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:

- Sustainable Jersey Participation Status: Registered

MITIGATION STRATEGY

Overview and Progress Since Last Plan Update

Our overall mitigation strategy focuses on enhancing community resilience by addressing the most critical vulnerabilities to natural disasters. Over the next five years, we will prioritize infrastructure improvements. Additionally, we will invest in flood control measures and emergency response enhancements to ensure the safety and well-being of our community.

The Borough continues to advance its program to acquire, elevate, or relocate buildings and infrastructure in floodprone areas, repair and replace bulkheads along the Manasquan River, fortify pump stations, and ensure all potential shelters and community lifelines have backup power. Since the previous update, bulkhead restoration at Brainard is complete, but the bulkhead at Osprey Dr. collapsed. Repair has not started yet on this project, yet.

Completed or Removed Actions

There are no withdrawn actions. All activities identified in the previous plan continue to remain priorities and ongoing actions.

New and Ongoing Actions

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Timeline	Action Status
Action 9-01	Acquire, elevate, or relocate buildings and infrastructure in flood prone areas, with a focus on Repetitive Loss (RL) and Severe Repetitive Loss (SRL) properties	The Borough is proposing mitigation through house elevation or acquisition for homes within the 100-year flood zone, specifically RL/SRL properties.	Flood, Wave Action, Nor'easter, Hurricane and Tropical Storm, Storm Surge	High	Borough and residents	FEMA HMA	\$18,000,000.00	2 years	Ongoing
Action 9-02	Restore Bulkheads Along the Manasquan River	The Borough is proposing bulkhead upgrades within key right-of-way areas. Multiple Bulkhead restoration projects through the Borough with priority being Ocean Avenue to prevent the end of the roadway from collapsing, which would undermine the adjacent project	Flood, Coastal Erosion, Nor'easter, Hurricane and Tropical Storm	High	Borough - Engineer	FEMA HMA	\$750,000.00	1 year	Ongoing

Action	Name	Description	Hazards Addressed	Priority	Responsible Party	Potential Funding	Cost Estimate	Timeline	Action Status
Action 9-03	Fortify Six Pump Stations to Provide Continuity of Operations during a Storm Event	Protect four pump stations that are located along the water and in a flood zone.	Flood, Nor'easter, Hurricane and Tropical Storm, Storm Surge	High	Borough Administrator	FEMA HMA	\$5,000,000.00	2 years	Ongoing
Action 9-04	Purchase and Install New Generator for School (Shelter)	New generator for schools that serve as shelters during storms.	All Hazards	Low	Borough Administrator	FEMA HMA	\$750,000.00	1 year	Ongoing
Action 9-05	Acquire Current Flood-prone Property for a New Dock to House Police Rescue Boat	Acquire a flood-prone property along the Manasquan River and demo the existing house for open space and new dock for police rescue boat	Flood, Wave Action, Nor'easter, Hurricane and Tropical Storm	Low	Borough Administrator	Municipal budget	\$2,000,000.00	2 years	Ongoing