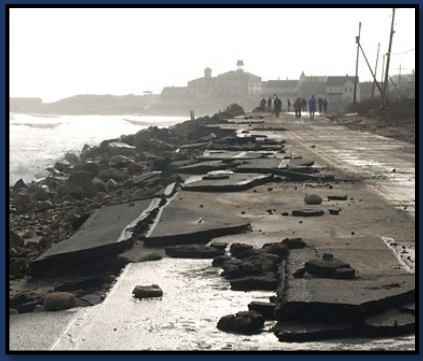
Town of New Shoreham 2025 Hazard Mitigation & Flood Management Plan





Prepared By:
Kim Jacobs, Civil Engineer & Resilience Planning Consultant

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U.S. Department of Homeland Security
FEMA Region 1
220 Binney Street
Cambridge, MA 02142

FEMA

May 29, 2025

Marc R. Pappas, Director
Rhode Island Emergency Management Agency
645 New London Avenue
Cranston, Rhode Island 02920

Director Pappas:

The U.S. Department of Homeland Security, Federal Emergency Management Agency (FEMA) Region 1 Mitigation Division has approved the *Town of New Shoreham 2025 Hazard Mitigation & Flood Management Plan* effective **May 29, 2025** through **May 28, 2030** in accordance with the planning requirements of the Robert T. Stafford Relief and Emergency Assistance Act (Stafford Act), as amended; the National Flood Insurance Act of 1968, as amended; the National Dam Safety Program Act, as amended; and Title 44 Code of Federal Regulations (CFR) Part 201.

Mitigation plans may include additional content to meet Element H: Additional State Requirements or content the local government included beyond applicable FEMA mitigation planning requirements. FEMA approval does not include the review or approval of content that exceeds these applicable FEMA mitigation planning requirements.

With this plan approval, the Town of New Shoreham, RI is eligible to apply to the Rhode Island Emergency Management Agency for mitigation grants administered by FEMA. Requests for funding will be evaluated according to the eligibility requirements identified for each of these programs. A specific mitigation activity or project identified in this community's plan may not meet eligibility requirements for FEMA funding; even eligible mitigation activities or projects are not automatically approved.

The plan must be updated and resubmitted to the FEMA Region 1 Mitigation Division for approval every five years to remain eligible for FEMA mitigation grant funding.

Thank you for your continued commitment and dedication to risk reduction demonstrated by preparing and adopting a strategy for reducing disaster losses. Should you have any questions, please contact Alexis Meehan at (202) 394-6439 or alexis.meehan@fema.dhs.gov.

Sincerely,

CHRISTOPHER J MARKESICH Digitally signed by CHRISTOPHER J MARKESICH
Date: 2025.05.30 06:36:42 -04'00'

Christopher Markesich
Floodplain Management and Insurance Branch Chief
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cc: Melinda Hopkins, Planning Branch Chief, RIEMA
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Town of New Shoreham, Rhode Island

Town of New Shoreham 2025 Hazard Mitigation & Flood Management Plan

State Acknowledgements

The Town would like to thank the Rhode Island Emergency Management Agency for their continued support and mitigation planning resources. The guidance provided by the Rhode Island State Hazard Mitigation Committee is foundational to the strategy presented in this Plan.

The Honorable Daniel McKee, RI Governor

Marc R. Pappas, Director, Rhode Island Emergency Management Agency

Rae-Anne Culp, State Hazard Mitigation Officer, Rhode Island Emergency Management Agency

Melinda Hopkins, Planning Branch Chief, Rhode Island Emergency Management Agency

Morgan Reilly, State Floodplain Coordinator, Rhode Island Emergency Management Agency

Adopted by New Shoreham Town Council

April 7, 2025

Approved by FEMA

May 29, 2025

Local Acknowledgements

This Plan was made possible through the commitment of the Town of New Shoreham Hazard Mitigation & Flood Management Plan (HM&FMP) Advisory Committee, support from numerous Town Departments, and leadership and support from the New Shoreham Town Council. Further, as much of the Plan is built upon the good work of past plans, studies, and projects, the HM&FMP Advisory Committee would like to acknowledge those efforts and thank everyone involved in those past initiatives.

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First Warden Keith Stover

Second Warden Nancy Dodge

Councilor William McCombe

Councilor Margaret O'Neill

Councilor Tristan Payne

Former (2022-2024) Second Warden Martha Ball

Former (2022-2024) Councilor Neal Murphy

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Committee Co-Chair Shirlyne Gobern: Administrative Assistant to the Town Manager/Resident

Amy Lewis Land: Interim Town Manager/Resident

Maryanne Crawford: Former Town Manager/Resident

John Breunig: Superintendent Block Island Water Company/Resident

Dylan Chase: Superintendent Wastewater Treatment Facility/Resident

William McCombe: Town Councilor/EMA Co-Director/Security Director for Interstate Navigation/Resident

Kate McConville: Harbormaster/Resident

Michael Shea: Director of Public Works/Resident

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Sharon Tavilla: Chamber of Commerce Board of Directors-Secretary/Resident

Judy Gray: Coastal Resilience Committee Chair/Resident

Corrie Heinz: Block Island Land Trust/Coastal Resilience Committee/Local Business Owner/Resident

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Kim Jacobs, Civil Engineer & Resilience Planning Consultant
was the Technical Advisor to the HM&FMP Advisory Committee and is the Author of this Plan

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Cover Page Photo Credit:

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Photo Credit: Delsa Ivanov</td><td colspan="2">View of Cow Cove with North Light in the distance
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Photo Credit: Block Island Tourism Council</td><td>Corn Neck Road Damage from Superstorm Sandy
Photo Credit: Judy Gray | CRMC</td></tr>
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EXECUTIVE SUMMARY

Subsections

ASSESSMENT

- Vulnerability Summary

MITIGATION STRATEGY

- Goal and Objectives
- Action Plan
- Plan Adoption and FEMA Approval
- Implementation and Plan Maintenance

KMJ – CE/RP

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Executive Summary

In 1995 the Federal Emergency Management Agency (FEMA) enacted a National Mitigation Strategy, which promoted the partnership of government and the private sector to effectively "build" safer communities. The strategy encourages the identification of natural hazards that may affect individuals or communities and thereupon take action to permanently reduce or eliminate the associated risk (FEMA. National). The subsequent passage of the Disaster Mitigation Act (DMA) of 2000 provided the legal basis for FEMA to require natural hazard mitigation planning at both the State and local level as a condition of mitigation grant assistance (FEMA. Disaster). Pre-disaster planning and investment in preventative measures can minimize the economic and social disruption that can result from natural hazard events, significantly reduce the cost of post-disaster clean-up and recovery, and help post-disaster operations become more efficient.

New Shoreham's first Hazard Mitigation Plan (HMP) was adopted in 2006. Since then, the Town has proactively collaborated with partners to reduce the Town's vulnerabilities while reinforcing its strengths, and serving as a model for other communities. While much progress has been made, the Town recognizes the continued need to increase hazard mitigation and adapt to a changing climate.

The Town of New Shoreham contracted with Civil Engineer & Resilience Planning Consultant, Kim Jacobs, to update the 2017 Hazard Mitigation Plan and expand the focus on flood management to effectively create a combined ***Hazard Mitigation & Flood Management Plan (HM&FMP)***. As the Town participates in FEMA's Community Rating System (CRS) program, the combined HM&FMP was developed to meet the goals, intent, and requirements of both the DMA Planning Regulations and the CRS Activity 510 Planning Process.

At the New Shoreham Town Council meeting on August 21, 2024, the Council authorized the formation of an Advisory Committee, comprised of Town staff, residents, local business and utility representatives, community lifelines, conservation organizations, and other stakeholders to provide input and help guide plan development (Town of New Shoreham RI. *Town Council*, 5, 6). The HM&FMP Advisory Committee, was Co-Chaired by Shirlyne Gobern, Administrative Assistant to the Town Manager and Alison Ring, AICP, Town Planner/GIS Manager. The Advisory Committee actively worked with the Town's Consultant throughout the planning process, with the over-riding task of identifying natural hazards considered to pose the greatest threat to New Shoreham and arriving at practical, meaningful, attainable, and cost-effective mitigation solutions to reduce both human and property losses should such hazards occur.

It was important to the HM&FMP Advisory Committee to ensure that the community, local businesses, nearby mainland municipalities, community lifelines, and other stakeholders had the opportunity to provide input and feedback throughout the planning process. An overview of the **EXTENSIVE PUBLIC OUTREACH AND ENGAGEMENT** has been included in **Section 2**. In addition to the seven (7) publicized Advisory Committee meetings being open to the public, eleven (11) other outreach activities were held (**Appendix 2-2**), and emails/letters encouraging participation in the planning process and providing an opportunity for **pre-adoption review of the *Draft Plan*** were sent to 25 local government & school district groups and 54 stakeholders from various community lifelines, businesses, agencies, and organizations outside of New Shoreham's governmental structure (**Appendix 2-3**).

Several of the community lifelines included on the coordination list provide services to socially vulnerable populations. The extensive public engagement was important to ensure the *HM&FMP* reflects community values and priorities, and builds a constituency educated in hazard mitigation and supportive of implementing activities and projects that will minimize community impacts and disruptions from natural hazards.

The integrated and community centric DMA and CRS planning process was highly successful, culminating in this document: ***Town of New Shoreham 2025 Hazard Mitigation & Flood Management Plan (HM&FMP)***.

At the end of a three week public review period, the ***Town of New Shoreham 2025 Hazard Mitigation & Flood Management Plan*** **was unanimously adopted by the New Shoreham Town Council** at the Public Hearing on April 7, 2025, with the Resolution acknowledging that during the subsequent review/approval process by RIEMA/FEMA, any required revisions would be accepted as part of this approval. The *Plan* was subsequently reviewed by the Rhode Island Emergency Management Agency (RIEMA), and approved by the Federal Emergency Management Agency (FEMA) on May 29, 2025.

Within this document, the title of the *Plan is* generally shortened to either the: ***Hazard Mitigation & Flood Management Plan* or *HM&FMP or Plan.***

ASSESSMENT

As detailed in **Section 4**, the Advisory Committee discussed all of the natural hazards identified in the Rhode Island State Hazard Mitigation Plan (RI-SHMP) for possible inclusion in this *Plan*. Recognizing that the Town has limited fiscal and staffing resources, those hazards determined to pose little threat to the Town have not been considered herein. Using a priority ranking process, this *Plan* focuses on those hazards considered as having a greater likelihood of occurring or potentially having a greater impact on the community should they occur. These include: Flood-Related Hazards; Wind-Related Hazards; Winter-Related Hazards; Infectious Disease-Related Hazards (limited to Vector-borne Diseases Transmitted by Ticks or Mosquitoes, and Contagious Respiratory Illness Caused by Influenza Viruses or Coronaviruses); and Other Hazards (Earthquake, Extreme Heat, Drought, and Brush Fire). The *Plan* also addresses how climate change will exacerbate the risks from many of these hazards.

To determine how to mitigate these threats, it was first necessary to understand New Shoreham's community profile (**Section 3**) and evaluate the Town's vulnerability to the various natural hazards (**Section 4**). A capability assessment (**Section 5**) to understand what measures the Town currently implements in terms of hazard mitigation was also undertaken. The assemblage of this information was used as a basis in determining goals and strategies to minimize long-term risks to the identified hazards (**Section 6**).

This *Plan*, which will supersede the Town's 2017 Block Island Hazard Mitigation Plan (HMP), pays tribute to and builds upon the good work that went into creating that document. Portions of the 2017 HMP have been revised, eliminated, or restructured as deemed appropriate. A number of the Town's other key planning documents, as well as a multitude of technical reports, historical data, and other resources were also used in preparing this *Plan* (**Appendix 5-1** and **References & Works Cited**).

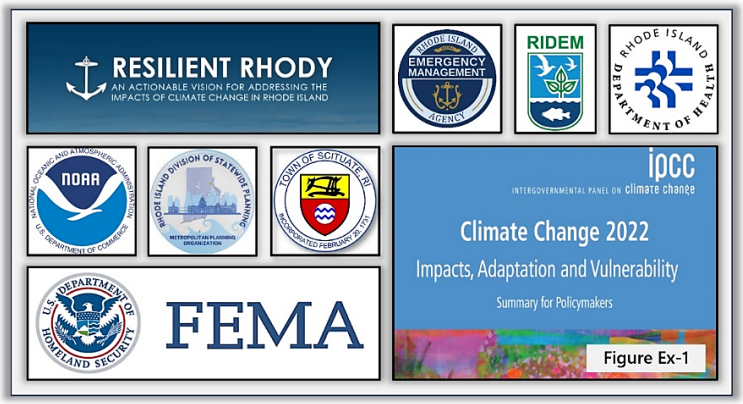


Figure Ex-1

Appreciation and gratitude are extended to all those associated with the resources used herein, including local knowledge from the Advisory Committee, community members, and other stakeholders.

Advances in the ability to predict the occurrence and effects of natural disasters, such as model simulations and GIS data/mapping capabilities, provided the Town with significant updated and improved information. As such, new information and new sections were added to this *Plan* to reflect current understanding of natural hazards that pose significant threats to New Shoreham and how the Town can better prepare for these risks.

Vulnerability Summary

New Shoreham is vulnerable to a number of natural hazards. The community's vulnerability will increase in the coming decades as climate change is expected to increase the potential for more frequent and intense weather events.

Climate Change Impacts

New Shoreham is vulnerable to the following climate change impacts:

- Continued increase in frequency and intensity of extreme precipitation events which may result in more extensive flood damage to property and infrastructure and potentially more riverine and flash flood events.
- Higher water tables resulting in subsurface issues such as wet basements.
- More lands becoming susceptible to erosion due to increased intensity and frequency of storms.
- An increase in incidence of extreme high tide levels.
- Expediated sea level rise creating expanded areas of saltwater intrusion into aquifers contaminating water supplies.
- More extreme high wind events creating greater vulnerability from wind force impacts (damage to property, structures, and infrastructure) and increased storm surge levels along the coast; coastal erosion will create conditions that allow storm surge to impact further inland.
- A net loss of coastal marshes that become inundated at a greater rate, resulting in a loss of salt marsh vegetation and an alteration of habitat types.
- Warmer air and water temperatures that are resulting in shorter winters and longer summers; since the beginning of the 20th century temperatures in Rhode Island have risen almost 4°F (NOAA|NCEI. *State*); between 1960-2010 the surface temperature of Narragansett Bay has increased 2.5-2.9°F (Climate Change RI. *Impacts on Rhode Island*).
- A decrease in the frequency of traditional snowstorms, and an increase in winter storm events characterized by mixed precipitation, including freezing rain and sleet.
- As winters become warmer and wetter, the potential for flooding will be exacerbated as the ground will already be saturated prior to heavier rainfall periods.
- Longer warm seasons may make conditions more hospitable for mosquitos and ticks, thereby increasing their life cycle and geographic spread.
- Researchers warn that the sudden weather changes associated with climate change could fuel future flu epidemics (Preidt).
- A significant increase in surface water in the form of rain and snow may impact fault stress loads and trigger earthquakes (Buis, Alan. *Can*).
- More frequent high heat days and heat waves which increase health risks especially to seniors and younger children.
- An increase in short-term (one to three month) droughts due to warmer temperatures which enhance evaporation from the soil.
- Periods of drought which may enhance conditions for brush fires and extend the normal fire season.
- Warmer temperatures can lead to increased insect infestations in forests; infested and dead trees provide additional fuel for wildfires.



Flood-Related Hazards

- Floodwater can damage personal property and structures; result in mold contamination which can lead to indoor air quality problems; increase the water table resulting in subsurface issues such as wet basements; contaminate wells; impact stormwater and on-site wastewater treatment systems (OWTS); flood roadways creating dangerous conditions for motorist; and create stagnant pools of water, which provide a breeding ground for mosquitoes. The Advisory Committee assessed flood-related events (inland flooding, coastal flooding, storm surge, and coastal erosion) as being *Highly Likely* (greater than 90% annual probability) to occur in New Shoreham. *Although **storm surge** is wind-driven it produces coastal flooding and coastal erosion and for the purpose of this Plan is therefore included under flood-related hazards.*

- Floodwater can pick up pollutants like oils and salt from roadways, fertilizers and pesticides from lawns, effluent from failing septic systems, sediment, and debris as it makes its way down gradient. If sufficient polluted floodwater flows into a waterbody or inundates well water, it can harm people and wildlife, including potentially spreading waterborne diseases such as hepatitis A and cholera.

- The Town of New Shoreham (CID 440036) has been a participant in the NFIP program since April 3, 1985 (FEMA. *Community Status*). **New Shoreham will continue to comply with NFIP requirements and has been a participant in the Community Rating System (CRS) program since May 1, 2019.**

- FEMA's high risk flood zones, denoted as the Special Flood Hazard Area (SFHA), is comprised of the V and A Zones which have a 1% annual chance of flooding. In New Shoreham, there are an estimated 69 parcels with primary buildings at risk in the SFHA. The total assessed value for properties with any portion of the building footprint intersecting the SFHA is $129,763,300 (roughly 4.7% of tax base). Critical buildings within this *Plan* include *Special Population Centers, Local & State Government Emergency Services, and Local Government and/or Community Lifelines* (**Subsection 4.4.1**). There are 9 critical buildings in the SFHA: State Highway Garage, Block Island Grocery, Block Island Historical Society, Harbormaster's Shack – in New Harbor and Old Harbor, M&C Gas Station, Fuel at Paynes Dock, Town Beach Pavilion, and Washington Trust Bank. A portion of three sites on the National Register of Historic Places (NRHP) are also in the SFHA: Block Island North Light, Great Salt Pond Archeological District, and Old Harbor Historic District. **There are no repetitive loss (RL) or severe repetitive loss (SRL) properties in New Shoreham.**

- New Shoreham has numerous inland waterbodies and waterways. As much of the associated floodplains are undeveloped, these do not represent a significant risk of riverine flooding for inland neighborhoods. An exception is in the vicinity of Sands Pond.

- Sections of **Town-owned roads** (and adjacent low-lying property) that are subject to flooding and may require stormwater management improvements either upgradient or adjacent to the roadway include (but may not be limited to): Coast Guard Road (Champlin Road) and Scotch Beach Road.

- Sections of **State-owned roads** (and adjacent low-lying property) that are subject to flooding and may require stormwater management improvements either upgradient or adjacent to the roadway include (but may not be limited to):

  - ◊ Beach Avenue - including repair/replacement of the culvert west of Ocean Avenue
  - ◊ Ocean Avenue - during full moons and storms the catch basins and culverts along Ocean Avenue between Old and New Harbor backflow into the roadway; these are a PRIORITY for repair/replacement by RIDOT
  - ◊ Corn Neck Road
  - ◊ Spring Street
  - ◊ Chapel Street - including repair/replacement of compromised catch basin
  - ◊ Old Town Road - between Dodge Street and Chapel Street, including Bridgegate Square
  - ◊ Water Street

- There are two dams in New Shoreham, both classified as Significant Hazard by RIDEM, meaning should they fail, loss of human life is not expected, but there may be major economic loss and disruption of lifeline facilities which could impact the public's health, safety, or welfare. The Advisory Committee assessed dam failure as having the *Potential* (between 1% and 49.9% annual probability) to occur in New Shoreham.

- Based on GIS, the perimeter of Block Island is just over 17 miles. Including the perimeter of the Great Salt Pond, New Shoreham's coastline is over 23 miles. The Velocity (V) Zone, which encompasses the entire shoreline, including within the Great Salt Pond, is subject to wave action. Both **regular wave action** and **storm surges** contribute to coastal erosion. Regular wave action refers to the continuous movement of waves over time, which erodes and reshapes the coast gradually. Areas that are already eroded by regular wave action are especially vulnerable during storm surges, as the coastline has already been weakened, making it more susceptible to further damage. A storm surge is a temporary rise in sea level caused by strong winds and low pressure during a storm, such as a hurricane or tropical cyclone. Unlike regular wave action, storm surges are more intense and can cause rapid, large-scale erosion during extreme weather events. Storm surge can be highly destructive, damaging natural and manmade structures, battering solid objects, and scouring sand from around foundations. As storms erode the shoreline, narrowing beaches, depleting dunes, and compromising coastal salt marshes, adjacent upland properties become more at-risk.

- Based on an overlay of hurricane inundation areas and building footprint GIS layers, an estimated 117 structures are located within Hurricane Inundation Zones.

- Hurricanes pose a significant threat to the Town, particularly due to storm surge inundation. In terms of critical buildings, there are twelve impacted by Category 1-4 hurricane surge inundation. Category 1 or stronger hurricane - Harbormaster's Shack in both New Harbor and Old Harbor, Paynes Dock Fuel, and Town Beach Pavilion; Category 2 or stronger hurricane - Block Island Grocery, M&C Gas Station, and Washington Trust Bank; Category 3 or stronger hurricane - State Highway Garage, and Block Island Historical Society; and Category 4 or stronger hurricane – Block Island Early Learning Center/ Community Center, Block Island Utility District Office, and former Coast Guard Station. A portion of four sites on the National Register of Historic Places (NRHP) are in the Category 1 hurricane surge inundation zone: Block Island North Light, Great Salt Pond Archeological District, Old Harbor Historic District, and the foot of the bluffs on the Block Island Southeast Light property.



Figure Ex-2 Rough surf during Super Storm (Hurricane) Sandy (October 2012)
Photo Credit: Alex Brady

- Future increases in relative sea level will intensify coastal flooding and coastal erosion; displace coastal populations; threaten transportation and other infrastructure including reducing the effectiveness of the Old and New Harbor breakwaters which were designed for lower water levels; contaminate water supplies through saltwater intrusion into aquifers; lead to the loss of public beach front; and have a deleterious impact on coastal wetlands, which are critical for flood control and habitat viability.

- That section of Corn Neck Road which traverses the narrow northern neck of the island could temporarily cut off access to the northern portion of New Shoreham due to the impact of coastal flooding and storm surge, and permanently in the future due to sea level rise. Based on modeled scenarios, at 5 feet of sea level rise (SLR), the Ocean Avenue Bridge, the east and west approaches to the Beach Avenue Bridge, and the section of Corn Neck Road which lies between Trim's Pond and Crescent Beach will be permanently inundated. All of these transportation assets are under RIDOT jurisdiction.

- "With no changes to infrastructure, the result of three foot SLR, and eventually five foot SLR, will be the isolation, in terms of public roadway access, of a number of areas in and around the village [Old Harbor] and New Harbor. This includes residential and commercial areas adjoining most of Ocean Avenue west of Bridge Gate Square. When the bridges are damaged or become impassable, the peninsula that separates the east portion of Trim's Pond from Harbor Pond, traversed east-west by Beach Avenue, will be cut off from both Corn Neck and New Harbor, and from the remainder of the island by flooding along Beach Avenue to the west and… along Ocean Avenue. This area includes a number of residences and some inns, but most significantly, the public safety buildings – the police station, and next door, the fire station which also houses the island's ambulance services" (Town of New Shoreham RI. *Comprehensive*, Appendix D-15).

- The Rhode Island Coastal Resources Management Council (CRMC) has adopted the NOAA sea level rise (SLR) high curve projection for use in planning and coastal permitting. Based on NOAA's 2022 "worst-case" high curve projection, Rhode Island could experience 1.6± feet of SLR by 2050, 4.2± feet of SLR by 2080, and 6.5± feet of SLR by 2100. Irrespective of the specific timeline, the potential impact from SLR on the Town cannot be understated.

- Based on Climate Central's Surging Seas Risk Finder: in New Shoreham about 11 people will be displaced by 2 feet of SLR; about 24 people will be displaced by 4 feet of SLR; about 49 people will be displaced by 6 feet of SLR; and about 58 people will be displaced by 7 feet of SLR (Climate Central. *Surging*).

Wind-Related Hazards

- High winds, can accompany various types of storms including thunderstorms, tornadoes, tropical cyclones (which include tropical depressions, tropical storms, and hurricanes), and Nor'easters. High winds can down trees and branches, and cause damage to structures, property, vehicles, and infrastructure including utility lines; cause bodily injury from flying debris or structures collapsing; may cause storm surge damage, particularly in the V flood zone (***as outlined above in Flood-Related Hazards***), and may exacerbate fire conditions by drying out ground cover, propelling fuel around the region, and increasing the ferocity of existing fires. The Advisory Committee assessed high winds as *Highly Likely* (greater than 90% annual probability) to occur in New Shoreham.

- New Shoreham is dependent on above ground utilities. Damage to power lines from high winds may lead to power loss resulting in dangerous conditions, including no phone/internet service available for storm advisories and medical emergencies; loss of sanitary facilities and potable water; spoilt refrigerated food; and lack of heat, which if occurring in conjunction with freezing temperatures, can lead to dangerous health conditions and the potential for pipes to freeze and burst. Loss of power can also interrupt daily activities and cause business and school closings. Downed wires that are live are dangerous and if arcing have the potential to spark fires.

- Thunderstorms can produce lightning and hail. In general, buildings are more likely to be struck by lightning if they are located on high ground or if they have tall protrusions, such as steeples; electrical-based utilities are also vulnerable to direct lightning strike, and resulting damage has the potential to cause power outages for businesses, residents, and critical facilities. Historically hail has caused little structural damage in New Shoreham, but depending on the growing season, could cause damage to crops & vegetation. The Advisory Committee assessed thunderstorms as *Highly Likely* (greater than 90% annual probability) to occur in New Shoreham.

- Although tornadoes are a rare occurrence in Rhode Island, a risk does exist, particularly during peak hurricane season (mid-August through October). The type, age, and standards to which a structure was constructed, play a role in its vulnerability to tornadoes. Wood-framed structures, which are common in New Shoreham, are more vulnerable to damage by tornadoes than steel framed structures. Early warning tornado alerts, such as through CodeRED, can save lives. The Advisory Committee assessed tornadoes as *Unlikely* (less than 1% annual probability) to impact New Shoreham.

- New Shoreham enforces the RI State Building Code, which currently requires new buildings in New Shoreham be designed to withstand wind speeds of 120 mph. Structures that comply with this standard should be able to resist forces generated by strong winds, including gusts and uplift pressures. This requirement is considered effective in preserving structures from less severe categories of tornadoes (EF-0, EF-1, and lower wind speeds associated with an EF-2) and hurricanes (Category 1 and 2, and lower wind speeds associated with a Category 3). However, there are some residential and commercial structures sporadically located throughout New Shoreham that are of older construction (not in compliance with current building codes) and may be more susceptible to damage from high winds; this is particularly true in the Old Harbor Historic District.

- Based on historical frequency of occurrence and climate change projections, the Advisory Committee assessed a Tropical Cyclone (Tropical Depressions, Tropical Storms, and Hurricanes) as *Highly Likely* (greater than 90% annual probability) to occur in New Shoreham. According to NOAA, due to wind intensity, 85% of all damage from hurricanes come from Category 3, 4, and 5 storms (Berardelli). While high magnitude events, such as Category 4 or Category 5 hurricanes, are less likely to occur, this may change in the future. Climate change models from National Oceanic and Atmospheric Administration (NOAA), the Intergovernmental Panel on Climate Change (IPCC), and other sources, suggest there is a high probability of hurricanes becoming more intense, with stronger winds and heavier precipitation, through the 21st century.

Winter-Related Hazards

- Severe winter storms have and are expected to impact New Shoreham in the future. The Advisory Committee assessed heavy snow/ice events as being *Highly Likely* (greater than 90% annual probability) to occur in New Shoreham. Based on the National Centers for Environmental Information (NCEI) Storm Events Data, on an annual basis, approximately two to seven winter weather events of some significance will occur in any of Rhode Island's counties, and it is probable that one of those events will be a Nor'easter (RIEMA. *2019 RI-SHMP*, 3-187).

- Heavy snow and ice accumulation can weigh down and damage utility wires or cause trees/tree limbs to come down which may damage utility wires and block roadways. Damaged utility wires may lead to power loss resulting in dangerous conditions, including no phone/internet service available for storm advisories and medical emergencies; loss of sanitary facilities and potable water; spoilt refrigerated food; and lack of heat, which if occurring in conjunction with freezing temperatures, can lead to dangerous health conditions and the potential for pipes to freeze and burst. Loss of power can also interrupt daily activities and cause business and school closings. Downed wires that are live are dangerous and if arcing have the potential to spark fires.

- While the average annual snowfall in New Shoreham is about 20 inches, compared to 40 to 55 inches in the northwestern part of the State (RIDEM. *Overview*), should a heavy or wet snowfall occur, structures with flat or low pitched roofs may be at greater risk of failure. Several critical buildings have at least some portion of their roof that is either flat or has a low pitch: Block Island School, Block Island Historical Society, and Town Beach Pavilion.

- Flooding may occur after the rapid melting of a heavy snowfall.

- Snow, ice, and freezing temperatures may create treacherous walking and driving conditions; cause transportation delays; create transportation challenges for first responders or others who may need to be on the roads, including those trying to access emergency services; impact access to homes and critical facilities; and damage vegetation and tree limbs.

- Based on historic climatic conditions and climate change predictions, the Advisory Committee assessed extreme cold as *Highly Likely* (greater than 90% annual probability) to occur in New Shoreham. Exposure to extreme cold for an extended period can lead to health concerns including frost bite and hypothermia, which is of particular concern for infants and older adults; certain medications, medical conditions, or the consumption of alcohol can also make people more susceptible to the cold. Extreme cold may also increase the potential for house fires and carbon monoxide poisoning due to increased use of supplemental heating devices.

- Prolonged snow/ice cover and exposure to extreme cold may disrupt ecosystems and negatively impact outdoor domesticated animals and wildlife.



Figure Ex-3 January 4, 2018 Blizzard (Corn Neck Road near Sachem Pond)
Photo Credit: Mike Shea

- As climate change shortens New England winters, ticks and mosquitoes will extend their life cycle and ticks will expand their habitat range. The resulting impact may be more cases of vector-borne diseases in people from mosquito and tick bites.

- New Shoreham residents living or engaging in outdoor activities in close proximity to areas more conducive to mosquito breeding (forested areas, and standing water along rivers, ponds, and wetlands) are at higher risk of being bitten. Similarly, New Shoreham residents living or engaging in outdoor activities in close proximity to wooded and grassy areas where higher populations of ticks tend to be found are at greater risk of tick bites.

- If infected, elderly residents, children, and anyone with a weakened immune system may suffer more severe illness related to mosquito- and tick-borne diseases.



Contagious Respiratory Illness Caused by Influenza Viruses or Coronaviruses

- The Advisory Committee considers it *Highly Likely* (greater than 90% annual probability) that New Shoreham will continue to experience some level of Influenza and Coronavirus cases. For both of these viruses, following the CDC and RIDOH vaccination guidelines and suggestions for minimizing the spread of the diseases should have a positive impact on reducing incident rate and severity of infections.

- The CDC identifies those highest at risk of getting serious complications from influenza (flu) as children younger than 5, but especially younger than 2 years old; adults 65 years or older; pregnant women; people with any chronic illness, especially heart, lung (including asthma), or kidney disease; and people with weak immune systems**.**

- The CDC has indicated that a number of factors increase a person's vulnerability to get severely ill from COVID-19, including age (greater risks for those over 50), weakened immune system, obesity, certain medical conditions (including chronic lung diseases, serious heart conditions, diabetes, and some neurologic conditions).

- A number of the critical buildings are considered places where sufficient people are in contact and therefore more vulnerable to the spread of Influenza or Coronavirus. Those buildings include: Block Island School, Block Island Early Learning Center/Community Center, Block Island Medical Center, Block Island State Airport, Block Island Grocery, Helping Hands Food Pantry, and the Island Free Library.



Earthquake

- The Advisory Committee assessed an earthquake as *Unlikely* (less than 1% annual probability) to impact New Shoreham.

- If a significant earthquake occurred with an epicenter relatively close to New Shoreham, all buildings may be at risk to some level of damage. However, as New Shoreham complies with State Building Codes, it is unlikely that most structures would sustain much damage from a moderate earthquake (MMI IV or less). The type, age, and standards to which a structure was constructed, play a role in its vulnerability to earthquake damage. Residential and commercial structures that are older or of poor quality construction, and/or not well-maintained, may be at higher risk of damage or collapse due to an earthquake.



Extreme Heat

- According to the CDC, extreme heat is defined as a period of abnormally high temperature (>10° F above average regional temperatures) that lasts for several weeks (CDC. *Climate Change and Extreme Heat*). The Advisory Committee assessed extreme heat as *Highly Likely* (greater than 90% annual probability) to occur in New Shoreham.

- As the annual number of high heat days (over 90°F) is expected to increase, extreme heat events present a danger, particularly to sectors of the population more at risk, including infants and young children, seniors, people with chronic medical conditions, outdoor workers, pregnant women, athletes, and low-income/fixed income residents who may not be able to afford air conditioning (AC) units or higher utility bills associated with AC usage (RIDOH. *Extreme Heat*).

- Physical effects of heat can cause major health problems, dehydration, and may lead to death. The risk from the impacts associated with extreme heat are felt to be linked, to some degree, to age. Senior populations may be significantly more susceptible, and children somewhat more susceptible, to extreme heat than other age groups. As such, facilities that service seniors and children should be aware of this link and take necessary precautions during extreme heat events.
- Extreme heat events can be dangerous for animals, especially if they don't have access to cooling mechanisms, shade, and water. Animal owners, farmers, and wildlife managers should be aware of this and take necessary precautions during extreme heat events.
- Increased energy demands, particularly related to AC usage, may cause power shortages/outages.



Drought

- The Advisory Committee assessed the probability of a drought impacting New Shoreham as *Unlikely* (less than 1% annual probability) to impact New Shoreham.
- As the entirety of New Shoreham is reliant on wells, the community's vulnerability to drought is directly related to the viability of the Town's sole source aquifer.
- Agricultural businesses, particularly those with high water demands, are vulnerable to impacts of drought.
- During droughts, dry soils may increase the number of airborne particles, such as pollen, which can irritate the airways and worsen chronic respiratory illnesses such as asthma.



Brush Fire

- Brush fire risk depends on a number of factors, including temperature, soil moisture, and the presence of potential fuel (tree, shrubs, dry grass, old growth phragmites, etc.). Brush fires tend to occur during the spring and summer months when dormant brush, dead twigs, and small branches provide a good fuel source. The Advisory Committee assessed brush fires as having the *Potential* (between 1% and 49.9% annual probability) to occur in New Shoreham.
- The decline in the health of several species of trees may lead to greater fuel in wooded/forested areas.
- Brush fires that occur in more remote, harder to access areas of Town pose a greater risk of spreading as they may go unnoticed for longer and/or take longer to access by fire protection services.
- In New Shoreham open air burning permits are required by the Fire Department and only issued when risk of brush fires is low. However, there are always those who will partake in open air burning without required permits. Permits for commercial fireworks are required by RI State Law and local Fire Departments have to sign off on the permit and provide a fire truck on-site. However, non-commercial grade fireworks do not require permits and could result in brush fires if not used responsibly.
- Brush fires can pose a risk to human life, particularly if it ignites nearby structures. Those who live near forested areas or areas with significant dry fuel sources are at higher risk.
- Smoke particles from fire can cause adverse health effects in people, particularly those with respiratory and cardiovascular conditions.

MITIGATION STRATEGY

The *Mitigation Strategy* is the culmination of the planning process. It provides the Town with the basis for action to reduce the risk to people and property from hazards and assists the Town in achieving compatible economic, environmental, and social objectives. The *Hazard Mitigation & Flood Management Plan (HM&FMP)* Advisory Committee used the assessment information to develop a broad-based mission statement, goal and objectives, and actions which are intended to guide the Town's day-to-day operations and long-term approach to reduce the impacts of hazards and improve flood management.

As a continued, but perhaps more focused community priority, it was important to the Town of New Shoreham to develop a **COMPREHENSIVE AND AGGRESSIVE *MITIGATION STRATEGY*** that will lead to a **SAFER AND MORE SUSTAINABLE COMMUNITY**. The Town has and will continue to implement and institutionalize hazard mitigation and flood management through its human, legal, and fiscal resources; effective coordination and communication with the state, nearby mainland jurisdictions, stakeholders, community members, and across Town departments; and use of knowledge and tools to analyze and cope with natural hazard risks. The *Mitigation Strategy* includes a mix of mitigation and non-mitigation actions. Non-mitigation actions include activities that are emergency response or operational preparedness in nature.

Goal and Objectives

The mitigation strategy **Goal & Objectives** are the foundation behind the development of a comprehensive range of specific attainable mitigation actions. The 2017 HMP goal and objectives were reviewed for relevancy, and updated based on the hazard profiles, vulnerability analysis, and capability assessment, as well as overall compatibility with New Shoreham's Comprehensive Community Plan.

Goal: Reduce current and future risk to people and property from natural hazards and climate change

Objectives:

- Protect the lives and property of New Shoreham residents, businesses, and visitors
- Increase municipal capacity to effectively communicate and coordinate preparedness, response, and recovery efforts to all natural hazard disasters
- Safeguard New Shoreham's critical facilities and infrastructure in order to maintain essential operations and services including transportation connections to the mainland
- Safeguard New Shoreham's historically significant structures and sites
- Protect the natural features, habitats, and wildlife of New Shoreham and ensure the Island remains ecologically healthy
- Increase resiliency of the Island to climate change including sea level rise impacts
- Implement hazard mitigation strategies and actions
- Educate the public on community resilience, including steps individuals, families, and businesses can take to better protect themselves and their property from the impacts of natural hazards, and measures that will reduce contributions to climate change, which is a threat multiplier for many natural hazards
- Incorporate hazard resilience for property development and land use into zoning ordinances and other regulatory provisions in an effort to reduce exposure to natural hazards

Action Plan

To comprehensively address the *2025 Goal and Objectives*, the Advisory Committee **REVIEWED AN EXTENSIVE ARRAY OF POSSIBLE ACTIONS** (**Appendix 6-1**). The possible actions came from various sources, including an **ALL-ENCOMPASSING PLAN INTEGRATION PROCESS** wherein numerous key local planning documents were reviewed and the actionable items identified; comments provided by community members, businesses, and other stakeholders in the **HM&FMP PUBLIC OPINION SURVEY**; relevant actions identified in other jurisdiction mitigation plans; and additional ideas identified by the Committee and other stakeholders. Through combining some of the possible actions and eliminating others, the Advisory Committee developed 14 actions to be considered for implementation by the Town.

The mitigation *Action Plan* (**Subsection 6.4**) is intentionally **AMBITIOUS** and includes a mix of physical initiatives through capital improvement projects and programming, as well as passive initiatives through regulatory and policy measures. It was deemed essential to include actions focused on public education and awareness in order to encourage residents, property owners, local businesses, and visitors to recognize measures they can take to mitigate risks from natural hazards and assist themselves and the community in becoming more resilient. **All 14 actions have been deemed feasible, reflect updated priorities including response to climate change, and address the Town's current and projected future needs.**

The *Action Plan* includes a description of the action, along with other descriptors such as the lead authority, magnitude of cost, potential funding sources, timeframe, mitigation category, hazards addressed, potential CRS crossover activities, and the priority ranking based on FEMA's STAPLEE evaluation. The full STAPLEE evaluation is provided in **Appendix 6-2** and, as shown, uses criteria across seven categories. In the Action Plan, the actions have been listed in order of STAPLEE ranking (from highest to lowest). If two or more actions received the same priority score, they have been arbitrarily listed one after the other.

The Advisory Committee recognizes that budgetary, staffing, and other constraints will impact the amount of mitigation-related work implemented by the Town over the next five-years. **However, by including a broad spectrum of actions, the Advisory Committee is providing opportunities for smaller, low-budget projects to be implemented as staff time permits, as well as leveraging opportunities to implement larger projects based on the availability of CIP and grant funding.**

The actions will be implemented through the Town's personnel, legal, and fiscal resources; intergovernmental coordination and communication; academic resources and analysis tools; grant funding; and through the involvement of the Town's residents, business owners, utility representatives, conservation organizations, and institutional leaders. The Town also recognizes the need to work collaboratively with regional, State, and Federal agencies and organizations, to effectively address actions that will improve the Town's resilience and by extension the State.

Following is a SUMMARY of the 14 Actions.
Refer to **Subsection 6.4** for more detailed information, potential programs and projects associated with the actions, and action descriptors.

Action 2025-A:

Conduct community outreach and engagement to increase awareness of and/or improve emergency preparedness/ response to impacts from all profiled natural hazards.

Action 2025-B:

Conduct community outreach and engagement to increase awareness of and promote residents, businesses, and visitors to take actions that will improve the quantity and quality of surface water and groundwater.

Action 2025-C:
Continue to enhance GIS capabilities.

Action 2025-D:
Enhance the emergency services network to further improve emergency response and recovery communication and coordination amongst community facilities and services, and members of the public.

Action 2025-E:
Expand green infrastructure stormwater management practices throughout the natural environment through monitoring, maintenance, and implementing new or retrofitting existing stormwater measures, and strengthening the Town's maintenance and management of public trees/forest floor.

Action 2025-F:
Continue to assess, monitor, maintain, and implement improvements to public roadways and associated drainage infrastructure to improve safety, mitigate flooding and erosion, and mitigate future impacts from SLR (which may require abandoning sections or raising sections of roadways); wherein feasible incorporate green infrastructure stormwater management practices and ensure resiliency in design for continued service during natural hazard events.

Action 2025-G:
Prioritize and implement shoreline stabilization and adaptation projects.

Action 2025-H:
Continue to improve the Town's capacity for pre-natural disaster preparedness and post disaster response and recovery.

Action 2025-I:
Conduct an assessment of back-up power capabilities for critical Town buildings/infrastructure to ensure power is available during hazard events. Based on the assessment, where identified as necessary, install backup generators and/or transfer switches to accommodate trailer mounted generators.

Action 2025-J:
The Town will take steps to help ensure the safety of the public from potential dam breach/failure.

Action 2025-K:
Block Island Land Trust, pursuant to its enabling legislation, will continue to coordinate with various stakeholders in the maintenance, restoration, acquisition, and protection of open space, especially wetlands, flood hazard areas, and other natural resource areas (ex. agricultural land) with the intent to improve resiliency.

Action 2025-L:
To mitigate impacts from flooding, erosion, high winds, and future SLR, assess and implement improvements and/or identify potential future relocation sites for Town-owned infrastructure (except roadways -*refer to Action F*), and discuss with/encourage private entities to do the same for their vulnerable assets.

Action 2025-M:

Review and as deemed locally practical, amend the Subdivision and Land Development Regulations and Zoning Ordinance to:

- ensure compatibility with State law and reflect updated development practices and approaches that will promote and improve resilience across New Shoreham including against the threat of SLR.
- ensure appropriate resiliency and environmental protection is incorporated in new private and public development and redevelopment, especially in vulnerable areas including special flood hazard areas (SFHA), sea level rise encroachment areas, and sensitive natural habitats.
- enhance green infrastructure approaches, including Low-Impact Development (LID) requirements (*practices that can be employed at the site-level to control stormwater and strive to replicate the pre-development hydrology of the site*), particularly in areas vulnerable to natural hazards.

Action 2025-N:

Implement policies and programs to reduce the impacts of infectious diseases, specifically tick- and mosquito-borne, influenza, and coronavirus.

Plan Adoption and FEMA Approval

After the Advisory Committee determined the key objectives of the *Plan* had been met, a *Public Review Draft* was made available to the public-at-large. The Committee established a 3-week review period culminating in a Public Hearing which was hosted by the New Shoreham Town Council on April 7, 2025. The Public Review Period and Public Hearing were well advertised through a press release and three Public Hearing Legal Notices in the local newspaper (*The Block Island Times*); a notice posted on the Secretary of State website, Town website, and Project webpage; a hard copy of the notice posted in the Town Hall; an informational item on the March 2025 meeting agendas for six local boards; and information posted at a kiosk in the public library in both English and Spanish.



Additionally, an email publicizing the *Draft Plan* and Public Hearing was sent to the groups and organizations listed in **Appendix 2-3**, which includes representatives from the New Shoreham Town Council, Town Boards and Commissions, the local business community, community lifelines, nearby mainland municipalities, and numerous other local, regional, and State stakeholders. Community members and other stakeholders were encouraged to provide written input and feedback to the Advisory Committee Co-Chairs during the Public Review Period and/or in-person at the Public Hearing. During the Public Review Period the Town received one written comment from a member of the community which, as shown in **Appendix 2-2**, resulted in two clarifications in the document. In addition, during the review period, the Town's Consultant, in consultation with the Advisory Committee Co-Chairs, made other minor clarifications in the *Plan* and provided some additional supporting documentation, such as photos.

At the Public Hearing, the Town's Consultant was available to answer questions. The public was given the opportunity to provide input and feedback on the *Plan*. No questions or comments were offered by the Town Council or members of the public.

It should be noted that the Advisory Committee made a concerted effort to **include the public throughout the planning process** such as providing the opportunity for various stakeholders to review pertinent segments of the plan during development. Additionally, the community and other stakeholders were provided the opportunity to voice their concerns regarding natural hazard impacts and potential mitigation measures through the Public Opinion Survey (Outreach Activity #5). As shown in **Appendix 2-2** a great deal of public input was received as part of the Public Opinion Survey. **All input received throughout the planning process was reviewed and considered when finalizing the *Plan*.** As shown in **Appendix 6-1** the majority of the actionable measures identified by community members or other stakeholders in the Public Opinion Survey were integrated into the Action Plan (**Subsection 6.4**).

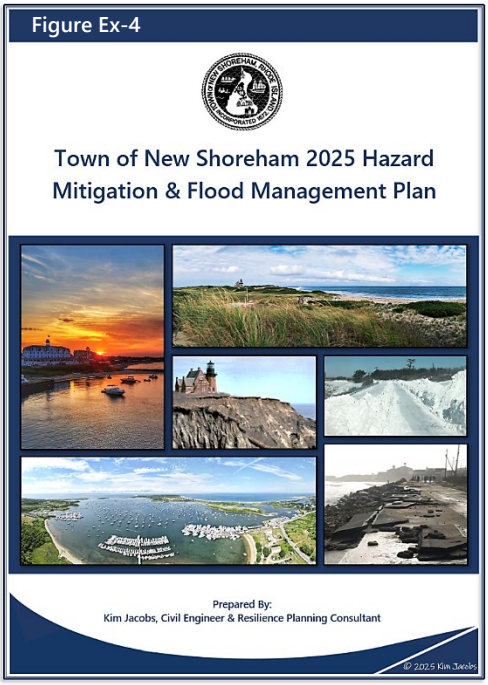
At the end of the Public Hearing (April 7, 2025), the **Town Council voted unanimously to adopt the *HM&FMP***, with the Resolution acknowledging that during the subsequent review/approval process by RIEMA/FEMA, any required revisions would be accepted by said adoption. The Town Council Resolution adopting the *HM&FMP* is included in **Appendix 7-1**. The Town worked diligently to produce a detailed plan with the intent of satisfying all DMA requirements, and therefore does not anticipate any substantial RIEMA/FEMA required revisions. However, if any significant revision is requested by RIEMA/FEMA, the Town Council may choose to re-adopt the *Plan* after said revision(s) are made.

By adopting this *Plan*, the Town Council recognizes it as guidance for Town-wide natural hazard mitigation, enabling New Shoreham to continue working toward building a safer, disaster resilient, and sustainable community through the implementation and maintenance of mitigation actions.

On May 29, 2025, the *Plan* received approval from FEMA, which confirmed that the *HM&FMP* met all requirements. The FEMA approved/Town Council adopted *HM&FMP* makes New Shoreham eligible for various FEMA grant programs.

The ***Town of New Shoreham 2025 Hazard Mitigation & Flood Management Plan*** will be maintained on the Town's website and replaces the Town's 2017 Block Island Hazard Mitigation Plan.

Figure Ex-4



Implementation and Plan Maintenance

The Town of New Shoreham is committed to implement the *Action Plan* (**Section 6**) on an ongoing basis, as well as support a process by which the local government will integrate hazard mitigation planning into other departmental measures.

NUMEROUS LOCAL PLANS, POLICIES, CODES, AND PROGRAMS THAT GUIDE DEVELOPMENT IN NEW SHOREHAM WERE CONSULTED AND INTEGRATED INTO THE *HM&FMP* (**Section 5**). The Town intends to continue plan integration, ensuring that whenever appropriate, the mitigation strategies & principles, vulnerability information, and mitigation actions outlined in the *HM&FMP,* will be incorporated into other Town planning mechanisms. Doing so will leverage activities that have co-benefits, reduce risk, and increase resilience. **Appendix 5-1** includes plan integration considerations for key existing planning documents. Further integration will occur as land use plans & regulations, mutual aid agreements, and such, are updated or developed.

With respect to the *HM&FMP*, the Town considers it a **dynamic document**. To ensure it remains effective over the 5-year implementation period, the Advisory Committee will review it, at minimum, on an annual basis (preferably on a semi-annual basis), and as readily as possible following a natural disaster. These reviews will serve as opportunities to assess the progress and effectiveness of implemented mitigation measures, and to update the *Plan* as deemed appropriate to reflect items such as changes in the community, availability of funding and staffing resources, or an improved understanding of the Town's strengths and vulnerabilities.

For the *Plan* to remain relevant, continued community involvement throughout the implementation and maintenance process will be essential. **Ongoing community engagement** is an asset to the process as it continues the hazard risks discussion and builds support for mitigation activities. Throughout the 5-year implementation period, community members will be given the opportunity to affect the content and outcomes of the *HM&FMP* through outreach, public meetings, and community forums.

In addition to the annual reviews, the *Plan* will undergo a 5-year full update. The 5-year update will be completed in accordance with Disaster Mitigation Act requirements, in order to maintain eligibility for certain FEMA mitigation grant funding. To ensure that the revised plan will be approved within the 5-year cycle, it is proposed that the Town commence the update on the fourth anniversary of this *Plan's* adoption date.



SECTION 1

Introduction

Subsections

1.1 PURPOSE AND MISSION STATEMENT

1.2 ORGANIZATION OF THE DOCUMENT

KMJ – CE/RP

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1 Introduction

The *Town of New Shoreham 2025 Hazard Mitigation & Flood Management Plan (HM&FMP)* is a critical planning document for the Town. For the purposes of this mitigation plan, a natural hazard is considered "an event or physical condition that has the potential to cause fatalities, injuries, property and infrastructure damage, agricultural loss, damage to the environment, interruption of business, or other types of harm or loss" (RIEMA. *2019 RI-SHMP*, 3-1). The potential impacts from natural hazards range from minor short-term events such as street flooding and snowstorms, to catastrophic events, such as the Hurricane of 1938. It is anticipated that risks will continue to grow in the coming decades due to the deleterious effects of climate change. By planning ahead, New Shoreham becomes pro-active rather than reactive, and can significantly reduce the damaging effects of future disasters, therein minimizing the loss of life, injuries, economic, and social disruption, and mitigating the destruction of property, infrastructure, and the environment.

1.1 PURPOSE AND MISSION STATEMENT

The objective of this *Plan* is to guide hazard mitigation efforts by identifying natural hazards with a higher likelihood of occurring or potentially having a greater impact on the community should they occur; determining the vulnerability of the community to these hazards; and establishing clear goals and strategies that mitigate the risks. The Mission Statement, adopted by the HM&FMP Advisory Committee, forms the foundation upon which the *Mitigation Strategy* is built.

Mission Statement

The purpose of the *Town of New Shoreham Hazard Mitigation & Flood Management Plan (HM&FMP)* is to reduce New Shoreham's vulnerability to the impacts of natural hazards, including safeguarding against and facilitating recovery from the increasing threats associated with climate change, including sea level rise, thereby fostering a safe, resilient community that preserves and enhances quality of life for all generations. By identifying areas and resources at risk to natural hazards and corresponding feasible, sustainable mitigation measures for government, non-profit, and private implementation, the *HM&FMP* provides the foundation for an ongoing local mitigation program to reduce the adverse impacts of natural hazards on residents and visitors, critical facilities and services, built and natural environment, historic and cultural resources, and economic vitality.

Inland flooding has historically been a problem for certain areas of the Town. As climate change models indicate flood-related hazards will continue to worsen in the future, the Advisory Committee chose to expand the FEMA required 5-year Hazard Mitigation Plan (HMP) update to include additional focus on flooding and flood management. The resulting ***Hazard Mitigation & Flood Management Plan (HM&FMP)*** was prepared pursuant to the requirements of the Federal Disaster Mitigation Act of 2000, integrates the 10-step planning process outlined in Community Rating System (CRS) Activity 510, and aligns with the State of Rhode Island's objectives for natural hazard mitigation included in the RI State Hazard Mitigation Plan (RI-SHMP).

The hazards addressed in this *Plan* include: Flood-Related Hazards; Wind-Related Hazards; Winter-Related Hazards; Infectious Disease-Related Hazards (Vector-borne Diseases Transmitted by Ticks or Mosquitoes, and Contagious Respiratory Illness Caused by Influenza Viruses or Coronaviruses); and Other Hazards (Earthquake, Extreme Heat, Drought, Brush Fire). The *Plan* also addresses how climate change, including sea level rise, poses a significant threat to the community in terms of exacerbating many of the identified hazards.

1.2 ORGANIZATION OF THE DOCUMENT

This *Hazard Mitigation & Flood Management Plan (HM&FMP)* is organized as described below. The Community rating System (CRS) Activity 510 planning process guided plan development. This process proved successful, encouraging community and stakeholder engagement, and the integration of key planning documents and other resources. The planning process led to a well-structured, community-centric plan that addresses risk and vulnerability through a variety of hazard mitigation measures.

Executive Summary: provides an overview of the planning process and collaborative effort undertaken by the Town to create this document. The Executive Summary also provides a vulnerability summary, and delineates the goals, how the *Action Plan* was developed, and how *Plan* adoption, implementation, and maintenance will help ensure the *Plan* remains relevant and will provide effective guidance as New Shoreham continues to build a safer, disaster resilient, and sustainable community.

Section 1 - Introduction: identifies the purpose and structure of the *Plan*, and provides a brief summary of the information presented in each Section.

Section 2 - Planning Process with Public Input: provides a description of the overall planning process and identifies the HM&FMP Advisory Committee members. As the Town participates in the Community Rating System (CRS) program, the CRS Activity 510 planning process was used to guide plan development. As shown in Section 2, that process aligns with the Disaster Mitigation Act (DMA) of 2000 Hazard Mitigation Plan requirements. Section 2 also provides an overview of the **extensive public outreach** that was conducted, identifying how the community, neighboring mainland jurisdictions, and other stakeholders were given the opportunity to provide input and feedback on the *Plan*. It furthers outlines the **extensive plan integration effort** undertaken as part of the planning process.

Section 3 – Community Profile: provides a glimpse of the history and character of the Town, as well as general information about the local government, geography, population, and demographics.



Figure 1-1 New Harbor/Great Salt Pond
Photo Credit: Block Island Tourism Council

Section 4 – Risk Assessment: comprises two key elements - Hazard Identification and Vulnerability Analysis. The Hazard Identification reviews and ranks the natural hazards that are likely to impact all or part of New Shoreham. Ranking is used to determine which hazards have a higher likelihood of occurring or potentially may have a greater impact on the community should they occur. The hazards addressed in this *Plan* have been grouped into the following categories: **Flood-Related Hazards** (Inland Flooding including Dam Failure, Coastal Flooding including Storm Surge, Coastal Erosion); **Wind-Related Hazards** (High Winds, Thunderstorms including Lightning and Hail, Tornadoes, Tropical Cyclones including Tropical Depressions & Storms, and Hurricanes); **Winter-Related Hazards** (Heavy Snow, Ice, Extreme Cold); **Infectious Disease-Related Hazards** (Vector-borne Diseases Transmitted by Ticks or Mosquitoes, Contagious Respiratory Illness Caused by Influenza Viruses or Coronaviruses); and **Other Hazards** (Earthquake, Extreme Heat, Drought, Brush Fire). A profile for each of these hazards is provided with the following information: description and extent (strength or magnitude of impact); location (geographic area affected); previous occurrences; climate change impacts; and probability of future events.

The Vulnerability Analysis considers how susceptible the community is to the various identified hazards. The analysis addresses what is at risk (built environment including public infrastructure, natural environment, local economy, and people) and what the impacts might be (structural and environmental damage, economic loss, inconvenience to residents, physical and emotional harm, and loss of life). The Vulnerability Analysis employed both a quantitative analysis (wherein data was available) and a qualitative analysis that relied on local knowledge and rational decision making.

Section 5 – Capability Assessment: provides an overview of what mitigation mechanisms are already in place. In other words, what policies, programs, regulations, authorities, personnel, funding, and other resources are available to the Town to accomplish mitigation and reduce long-term vulnerability. A Capability Assessment is an important step because understanding what is already in place and the effectiveness of those capabilities provides the opportunity to identify where additional measures or revisions to existing measures are needed.

Section 6 – Mitigation Strategy: is the culmination of the planning process, built upon the preceding Sections, particularly the findings from the Risk Assessment (Hazard Identification and Vulnerability Analysis), and Capability Assessment. Section 6 includes a broad-based mission statement, goals, policies, and actions which are intended to guide both the Town's day-to-day operations and long-term approach to reduce the impacts of hazards and improve flood management.

The *Action Plan*, which will serve as a roadmap for the next 5-years, was developed by reviewing and prioritizing an array of possible actions. To comprehensively address the mitigation goals, actions across a number of mitigation categories (prevention, property protection, public education & awareness, natural resource protection, structural projects, and emergency services) have been included in the *Action Plan*. As the Town has limited fiscal and staffing resources, the *Action Plan* places greater focus on mitigation measures for the higher ranked hazards.

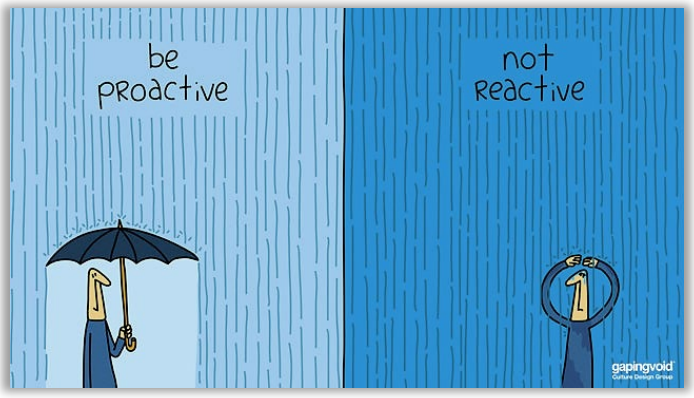


Figure 1-2 (Image Credit: gapingvoid)

Section 7 – Plan Adoption, Implementation, and Maintenance: provides the *Plan* adoption process which represents community and local government support. In addition, by adopting the *Plan* the Town is eligible for FEMA Hazard Mitigation Assistance Grants and CRS credit points.

Section 7 also identifies a process for monitoring the overall progress of mitigation strategies and completed initiatives. The *Action Plan* includes descriptors for each mitigation action, such as lead authority and timeframe, which will aid implementation by providing a clear course for how the measure is to be incorporated into departmental and committee-based work plans and budgets.

To ensure continued momentum of plan implementation, and ensure the *Plan* remains relevant, Section 7 stipulates that, at a minimum, there will be an annual review as well as a 5-year full update. Structured maintenance of the *Plan* provides a defined opportunity to evaluate the effectiveness of implemented mitigation measures, address changing conditions, identify funding mechanisms, and facilitate integration of the *HM&FMP* into other Town planning documents and strategies.

Appendices: contain supporting documents.

Appendix 2-1 CRS Credit for Activity 510
Appendix 2-2 Outreach Activities
Appendix 2-3 Coordination with Businesses, Community Lifelines, Agencies, and Organizations

Appendix 4-1 Hazard Impacts & Risk Assessment
Appendix 4-2 Maps
Appendix 4-3 Critical Facilities Vulnerability Assessment

Appendix 5-1 Planning and Regulatory Capabilities
Appendix 5-2 Administrative and Technical Capabilities
Appendix 5-3 Financial Capabilities

Appendix 6-1 Possible Actions
Appendix 6-2 STAPLEE Evaluation

Appendix 7-1 New Shoreham Town Council Resolution
Appendix 7-2 Local Mitigation Plan Review Tool

SECTION 2

Planning Process with Public Input

Subsections

2.1 ORGANIZE

2.1.1 10-Step Planning Process

2.1.2 Local Government Involvement: Advisory Committee

2.2 PUBLIC INVOLVEMENT

2.2.1 Prior to HM&FMP Planning Process

2.2.2 Throughout HM&FMP Planning Process

2.3 PLAN INTEGRATION AND COORDINATION

2.3.1 Plan Integration

2.3.1.1 CRS

2.3.1.2 2017 HMP

2.3.1.3 2016 Comprehensive Plan

2.3.1.4 2021 MRP CRB Process & Workshop Summary of Findings

2.3.2 Coordination with Businesses, Community Lifelines, Agencies, and Organizations

KMJ – CE/RP

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2 Planning Process with Public Input

Hazard Mitigation Plan: The Town of New Shoreham has successfully met the following requirements ➔
44 CFR Subsection D §201.6(b): An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:

1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;
2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia, and other private and nonprofit interests to be involved in the planning process; and
3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

44 CFR Subsection D §201.6(c)(1): The plan shall include the following:

1) Documentation of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

CRS - Flood Management Plan: The Town of New Shoreham has successfully met the following Mitigation Strategy requirements based on the 10-step planning process for CRS Activity 510 ➔
Organize to Prepare the Plan (Step 1); Involve the Public (Step 2); and Coordinate (Step 3)

2.1 ORGANIZE

The Town of New Shoreham is cognizant of the importance of updating and coordinating local planning initiatives. As the 2017 *Hazard Mitigation Plan* (HMP) was scheduled to be updated, and as a prevalent natural hazard facing New Shoreham is flooding, **the Town decided to expand the update process to effectively create a combined *Hazard Mitigation & Flood Management Plan (HM&FMP)*.**

CRS CREDIT:

Mitigation Planning Element	CRS Planning Step	Max Pts
Phase I - Planning Process	1. Organize to Prepare the Plan	15

CRS Coordinator's Manual – Activity 510: Floodplain Management Planning

As the Town participates in FEMA's Community Rating System (CRS) Program, it was determined that the *Plan* should be created using the CRS Activity 510 planning process. This process allows the Town to maximize CRS credit for this *Plan* while meeting the Disaster Mitigation Act (DMA) 2000 Hazard Mitigation Plan requirements. This coordinated approach strengthened the planning process and led to a well-structured, community-centric plan that addresses risk and vulnerability through a variety of hazard mitigation measures. The Town contracted with Civil Engineer & Resilience Planning Consultant Kim Jacobs (KMJ-CE/RP) to draft the *Plan*, provide technical assistance to the Advisory Committee, facilitate meetings and outreach efforts, and coordinated plan review with RIEMA.

> Planning is essential.
>
> *- Dwight D. Eisenhower*

2.1.1 10-Step Planning Process

By implementing the CRS Activity 510 planning process outlined in **Table 2-1**, this *HM&FMP* meets DMA requirements while maximize CRS Activity 510 credit. An overview of the estimated CRS credit achieved by this *Plan* has been included in **Appendix 2-1**.

Table 2-1 shows the alignment of the DMA planning regulations to the 10-Step planning process. It should be noted that Steps 2 and 3 were implemented throughout the entire planning process.

Table 2-1 10-Step Planning Process & DMA Planning Regulations

CRS Activity 510 Planning Process	DMA Planning Regulations (44 CFR 201.6)
Phase I – Planning Process	
Step 1. Organize to Prepare the Plan	§201.6(c)(1)
Step 2. Involve the Public	§201.6(b)(1)
Step 3. Coordinate	§201.6(b)(2) & (3)
Phase II – Risk Assessment	
Step 4. Assess the Hazard	§201.6(c)(2)(i)
Step 5. Assess the Problem	§201.6(c)(2)(ii) & (iii)
Phase III – Mitigation Strategy	
Step 6. Set Goals	§201.6(c)(3)(i)
Step 7. Review Possible Activities	§201.6(c)(3)(ii)
Step 8. Draft an Action Plan	§201.6(c)(3)(iii)
Phase IV – Plan Maintenance	
Step 9. Adopt the Plan	§201.6(c)(5)
Step 10. Implement, Evaluate, and Revise the Plan	§201.6(c)(4)

2.1.2 Local Government Involvement: Advisory Committee

The 2017 Hazard Mitigation Plan (HMP) updated New Shoreham's first mitigation plan, adopted in 2006. This HM&FMP constitutes the FEMA-required 5-year update. For this update, at their August 21, 2024 meeting, the Town Council authorized the formation of an Advisory Committee, comprised of Town staff, residents, local business and utility representatives, and other stakeholders to provide input and help guide plan development (Town of New Shoreham RI. *Town Council*, 5, 6). **The HM&FMP Advisory Committee members are listed in Table 2-2, with public representation comprising 50% of the membership. To help ensure continuity of representation at the meetings, designees were assigned to members whose schedules were less predictable. The Town's HM&FMP Consultant served on the Committee in an advisory capacity**.

The HM&FMP Advisory Committee met seven (7) times throughout the development of this *Plan*, and their input and feedback were integral to its success. The date and key agenda items for each of the Advisory Committee meetings have been provided in **Table 2-4**. **As shown, the Advisory Committee was actively engaged in all aspects of plan development**, with emphasis on reviewing the impact of hazards on people and property; considering a variety of ways to reduce and prevent damage from flooding and other hazards; recommending appropriate and feasible measures to improve community resilience through implementation of mitigation actions; ranking both the hazards and the mitigation measures; engaging the public in the plan development process, and reviewing/editing *Plan* content. The Committee meetings were open to the public and publicized on the RI Secretary of State website, the Town website (calendar of events, public meetings calendar, and HM&FMP Project webpage), and hard copies of the agenda were posted in the Town Hall.

Table 2-2 HM&FMP Advisory Committee

New Shoreham Town Staff *(and those boards having regulatory authority)*	**Members of the Public/Stakeholders**
Advisory Committee Co-Chair Alison Ring, AICP: Town Planner/GIS Manager	**Chris Crawford**: Chamber of Commerce Director/Resident - *or designee* **Sharon Tavilla**: Chamber of Commerce Board of Directors-Secretary/Resident
Committee Co-Chair Shirlyne Gobern: Administrative Assistant/Resident - *or designee* **Amy Lewis Land**: Interim Town Manager/Resident *replaced* **Maryanne Crawford:** Former Town Manager/Resident	**Judy Gray**: Coastal Resilience Committee Chair/Resident
John Breunig: Superintendent Block Island Water Company/Resident - *or designee* **Dylan Chase**: Superintendent Water Pollution Control Facility/Resident	**Corrie Heinz**: Block Island Land Trust/Coastal Resilience Committee/Local Business Owner/Resident
Kate McConville: Harbormaster/Resident	**Chris Hobe**: Fire Chief/Local Business Owner/Resident
Michael Shea: Director of Public Works/Resident - *or designee* **Tom Risom**: Facilities Manager/Resident	**Glennie LeBaron**: The Nature Conservancy BI Coastal Resilience Coordinator - *or designee* **Kimberley Gaffett**: The Nature Conservancy BI Program/ Resident
William McCombe: Town Councilor/NS Emergency Management Task Force Co-Director/Security Director for Interstate Navigation/ Resident	**Jeffery Wright**: BI Utility District President/NS Emergency Management Task Force Member - *or designee* **Tracy Fredericks**: BI Utility District Office Manager/Volunteer Rescue Member/Resident
Committee Facilitator and Technical Advisor ***Kim Jacobs, Civil Engineer & Resilience Planning Consultant***	

The Town Departments represented on the Advisory Committee are responsible for implementing the majority of the *Plan's* recommendations and, as shown in **Table 2-3**, collectively have authority over all six categories of flood mitigation activities. The Town Planner, who functions as part of the Land Use Department, served as Co-Chair of the Advisory Committee and was actively involved in all aspects of the planning process. The Land Use Department, has primary responsibility for planning and community development services, which includes land use and comprehensive planning.

Table 2-3 Town of New Shoreham Department Responsibility

Department	Land Use and Comprehensive Planning	**6 Categories of Flood Mitigation**					
		Prevention	Property Protection	Public Education & Awareness	Natural Resource Protection	Structural Projects	Emergency Services Protection
Planning/Land Use Department	x	x	x	x	x		
Town Manager's Office	x	x	x	x	x	x	x
BIWC/WPCF				x	x		
Local Emergency Management		x	x	x	x		x
Harbormaster		x		x	x		x
Public Works/ Facilities		x	x		x	x	x

2.2 PUBLIC INVOLVEMENT

Public participation is a central component of the planning process which helps to provide critical information about the local occurrence of hazards, qualify past successful mitigation measures, and identify where additional work is needed to reduce the potential damages from hazard events. Public participation also builds understanding of the concept of hazard mitigation and climate change, therein helping to create a base of support for implementing *Plan* activities.

CRS CREDIT:

Mitigation Planning Element	CRS Planning Step	Max Pts
Phase I - Planning Process	2. Involve the Public	120

CRS Coordinator's Manual – Activity 510: Floodplain Management Planning

It is important to the Town of New Shoreham that this *Plan* reflects the community's values and priorities. For that reason, the Town wanted an equal or greater representation by members of the public on the Advisory Committee. Additionally, to engage the public-at-large, the Town conducted an extensive public outreach process that included the opportunity for residents, businesses, local boards and commissions, neighboring communities, academia, private and non-profit organizations, state agencies, and other interested stakeholders to attend and participate in public meetings, provide input through an online survey, and ask questions of or provide comments to the Advisory Committee Co-Chairs about the *HM&FMP* as it was being drafted. All input received was appreciated and considered in finalizing this *Plan*.

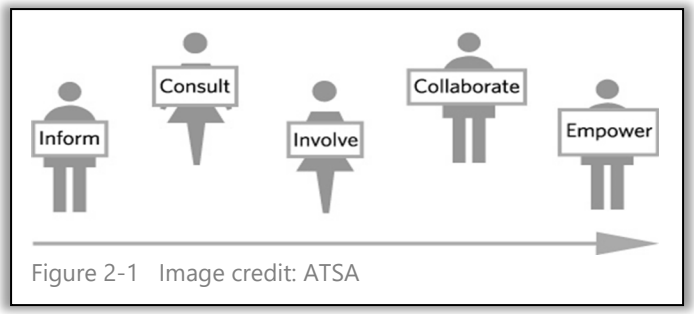


Figure 2-1 Image credit: ATSA

Following is an overview of public engagement that was essential to the development of the *Town of New Shoreham 2025 Hazard Mitigation & Flood Management Plan*.

2.2.1 Prior to HM&FMP Planning Process

It should be noted that post the adoption of the 2017 HMP and prior to initiating the planning process for this document, several initiatives with successful public engagement took place; the outcomes of which have helped to shape this *Plan*. Perhaps the most pertinent is the 2021 Community Resilience Building Workshop.

In September 2021 the Town held a Community Resilience Building (CRB) Workshop, led by the Rhode Island Infrastructure Bank (RIIB) in partnership with The Nature Conservancy (TNC). The Workshop brought together Town staff and local, regional, and state stakeholders, in an effort to identify and prioritize measures to reduce risks and improve the Town's resiliency. The Workshop provided a key opportunity to discuss and advance comprehensive community resilience planning and hazard mitigation efforts. An overview of the discussion and outcome from the Workshop is documented in the **MRP CRB Process & Workshop Summary of Findings**, which as further discussed in **Subsection 2.3**, was used extensively to inform and develop this *Plan*, including many of the action items.

2.2.2 Throughout HM&FMP Planning Process

A key element in the mitigation planning process is creating a plan that accurately reflects the community's values and priorities and promotes discussion among community members about creating a safer, more disaster-resilient community.

As previously indicated, the public was involved in the planning process from the onset, comprising 50% of the Advisory Committee membership. In addition, throughout the planning process, the public was given opportunities to be involved through outreach efforts that sought to deepen the public's understanding of hazard risks and encourage input on the development of resilient solutions. Community members and other stakeholders provided local knowledge of past hazard occurrences, described problem areas and issues of concern, helped identify community assets and mitigation alternatives, and provided ideas for continuing public involvement after *Plan* adoption. All input and feedback received was appreciated and taken into consideration in finalizing this *Plan,* including the *Action Plan*.

Successful Outreach

- Informs and educates about hazards and risks
- Invites interested parties to contribute their views and ideas for mitigation
- Identifies conflicts and incorporates different perspectives and priorities early in the process
- Provides data and information that improves overall quality and accuracy of the plan
- Ensures transparency and builds trust
- Maximizes opportunities for implementation through greater consensus and acceptance

Source: FEMA Local Mitigation Planning Handbook 2013, page 3-2

The Town engaged in a total of eleven (11) types of outreach activities. These included an informational Project Webpage (which was updated throughout the Project), several newspaper articles, social media posts on various platforms, informational posters, a public opinion survey, a stakeholder hosted public informational session, a Town Council hosted project presentation and discussion, the inclusion of the *HM&FMP* as an agenda item for six local Board/Commission meetings, a press release for the Public Review Period, a 3-week Public Review Period commencing with disseminating the *Public Review Draft*, an informational kiosk at the public library, three Public Hearing notices, and a Public Hearing.

New Shoreham has one of the highest percentages of senior residents in Rhode Island. According to the American Community Survey (ACS) five-year estimates (2019-2023), the senior population 65 or older in New Shoreham's is 35.7% of the community's population, compared to that of Washington County which is 24.2% (US Census Bureau. *New,* Population), and the State of Rhode Island at 18.3% (US Census Bureau. *Rhode,* Population). It was important to the Advisory Committee to include **SENIOR CITIZENS** in the hazard mitigation planning process, both as a population that has valuable local knowledge and life experience, as well as a population that may, from an **emergency management perspective**, be more vulnerable during disasters. Vulnerability of older adults during disasters may be attributed to factors like physical limitations, hearing or vision impairments, mobility issues, chronic health conditions, or medication needs. They may also experience social isolation, making it harder for them to receive assistance during an emergency. Including seniors in the planning process helps to create more effective, equitable, and responsive strategies. Various efforts to include seniors were implemented such as including the Chair of the Senior Advisory Committee on the coordination list, requesting hard copies of the public opinion survey be made available at the Town Hall and library, and publicizing that the library computers could be used to access the survey.

Further, as the **BUSINESS COMMUNITY** on the island is recognized as integral to the local economy, representation from the Block Island Chamber of Commerce was included both on the Advisory Committee and on the coordination list. The Block Island Chamber of Commerce was instrumental in helping to publicize the planning process to all of their members, including notifying members about the Public Opinion Survey, Public Review Period, and Public Hearing.

Figure 2-2 Block Island Chamber of Commerce Photo Credit: Block Island Chamber of Commerce



Although the **SPANISH SPEAKING COMMUNITY** in New Shoreham is relatively small, it is somewhat augmented by non-resident workers, particularly in the peak tourist season, whose first language is Spanish. In an effort to engage this community in the planning process, key outreach information was publicized in both English and Spanish, including publicizing the Project webpage, Public Opinion Survey, Informational Meeting, Public Review Period, and Public Hearing.


Nuevo Shoreham, prepárese para inundaciones y otros peligros naturales

¡Necesitamos su ayuda!

New Shoreham está trabajando para ser más resistente a las inundaciones y otros peligros naturales. Actualmente, el Municipio está actualizando nuestro Plan de Mitigación de Riesgos 2017 con un enfoque ampliado en la gestión de llanuras aluviales. Para ayudar a garantizar que el Plan de Mitigación de Riesgos y Gestión de Inundaciones (HM&FMP) de 2024 refleje las prioridades de la comunidad, pedimos a los residentes, empresas y otras personas interesadas en la resiliencia de nuestra comunidad que compartan sus opiniones a través de una encuesta en línea.

ENCUESTA ONLINE

Gracias por responder esta ENCUESTA RÁPIDA en línea para ayudarnos a comprender mejor sus preocupaciones sobre los peligros. Sus comentarios guiarán y enfocarán nuestras actividades de mitigación para ayudar a disminuir los impactos de futuros eventos de peligro para usted y su familia. La encuesta estará disponible en línea del 29 de septiembre al 24 de octubre de 2024 y debería tardar menos de 8 minutos en completarse. Puede acceder a la encuesta escaneando el código QR de la izquierda, a través de un enlace en la página web del proyecto (abajo), o escribiendo en su navegador: https://www.surveymonkey.com/r/BI-HMFMP-Survey

Las copias impresas de la encuesta están disponibles en el Ayuntamiento y en la Biblioteca Gratuita de la Isla

SITIO WEB DE LA CIUDAD – PÁGINA WEB DEL PROYECTOEl desarrollo del Plan es supervisado por un Comité Asesor compuesto por personal de la Ciudad, residentes y otras partes interesadas. Las fechas de las reuniones del Comité Asesor, las diversas oportunidades para recibir comentarios y comentarios del público, y otra información relacionada con el Plan se pueden encontrar en la página web del proyecto: https://www.newshorehamri.gov/437/Hazard-Mitigation-Flood-Management-Plan

REUNIÓN DE INFORMACIÓN PÚBLICAEl Comité Asesor está en el proceso de organizar una reunión informativa (la noche del 10 de octubre) para proporcionar al público una visión general del proyecto y la oportunidad de discutir las ocurrencias pasadas de peligros naturales locales y las posibles áreas / temas de interés futuros. Una vez confirmada, la información de la reunión se anunciará y publicará en la página web del proyecto.

AGRADECER ¡TÚ!

Figure 2-3 Informational Posters (Outreach Activity #4)

An overview of the outreach activities has been included in **Table 2-4**. Additional information for each activity, including copies of the newspaper articles, results of the survey, and examples of the posters has been provided in **Appendix 2-2**. Public involvement throughout the planning process was a priority and will remain a priority during the implementation and maintenance phases which will occur after adoption/approval of the *HM&FMP*.

Because community and stakeholder engagement is important, the Advisory Committee Meetings, Public Informational Meetings, and Public Hearing were widely publicized including information in the local newspaper, on the RI Secretary of State website, on the Town's website, and hard copies of agendas/notices were posted in the Town Hall. In addition, emails highlighting the various outreach activities were sent to the 25 local government & school district groups, including the New Shoreham Town Council and other Boards and Commissions, and 54 stakeholders from various businesses, community lifelines, agencies, and organizations outside of New Shoreham's governmental structure, as listed in **Appendix 2-3.**

Table 2-4 Summary of Advisory Committee Meetings and Public Outreach

Event	Overview	Date
Advisory Committee Meeting #1	• The Committee members and Technical Advisor (TA) introduced themselves. • The TA presented a brief overview of the Disaster Mitigation Act, Community Rating System program, and the proposed structure and planning process for the *HM&FMP*. • The proposed meeting schedule was reviewed – it was decided that future meetings would be held from 9-10:30am. • The Committee discussed the importance of engaging the public in the planning process and potential outreach activities (project webpage, newspaper articles, social media posts, informational posters, public opinion survey, and public informational meeting). • A discussion took place on what hazards are more likely to impact New Shoreham and should/should not be included in the HM&FMP. • A DRAFT Critical Facilities list was sent to the Committee prior to the meeting. As there was insufficient time to review during the meeting, members were asked to email the TA if they had suggested modifications to the list. • The importance of Plan Integration was identified but as there was insufficient time to review the proposed list of local documents to be reviewed as part of the planning process, that information was sent to the Committee after the meeting. • As there was insufficient time to review the history of declared disasters, how climate change is exacerbating natural hazard events, and the draft list of agencies & organizations that the TA will coordinate with throughout the development of the HM&FMP, that information was sent to the Committee after the meeting for their review and will be followed up at the next meeting. • Public Comment: none	Sept 12, 2024 (9-10:15am)
Outreach Activity #1	**Project Webpage:** A *HM&FMP* project webpage was created on the Town's website as a mechanism to provide the community and other stakeholders with information about the planning process and promote upcoming meetings and outreach activities. The webpage was maintained throughout the duration of the Project and updated on several occasions. At the beginning of the Public Review period, the *Public Review Draft* was posted on the project webpage.	Launched on Sept 19, 2024 (continued & updated throughout the project)
Outreach Activity #2	**Social Media Posts:** Information about the project, public outreach activities, and other opportunities for the public to provide input and feedback was posted in various formats on various platforms. • New Shoreham Town Website: News Flash, Headlines & Local Events, Calendar of Events (*as well as Project Webpage – Outreach Activity #1*) • Block Island Bulletin Board • Numerous organization's or individual's Facebook Pages, email notices, Newsletters	Beginning Sept 22, 2024 (various posts throughout the project)
Outreach Activity #3	**Newspaper Articles:** An article was published in the local newspaper, *The Block Island Times*, on September 27, 2024, informing the public about the project and encouraging participation in the planning process, including the public opinion survey and Public Informational Session. A second article highlighting the public opinion survey was included in the October 18, 2024 online and paper editions. A third informational piece was published in the March 7 online and paper editions informing the public that the *HM&FMP Public Review Draft* would be available for viewing or printing from March 17-April 7, 2025, and a hard copy would be available at the Town Clerk's Office. The press release included the purpose of the *Plan* and how to provide input and feedback to the Town or at the Public Hearing (April 7, 2025).	online & paper editions Sept 27, 2024 Oct 18, 2024 March 7, 2025

Event	Overview	Date
Outreach Activity #4	**Informational Posters:** With input from the Advisory Committee, several styles of posters were created – **both in English and in Spanish** – to publicize the project and the various ways that the public could become involved. Approximately 20 posters were put up in Town buildings and other high pedestrian traffic areas throughout New Shoreham including: BI Early Learning Center/Community Center, Island Free Library, BI School, DPW, Public Safety, Town Hall, Transfer Station, BI Medical Center, Washington Trust Bank, BI Grocery, BI Ferry landing and on the ferry, BI State Airport and diner, Post Office, and Great Salt Pond Kiosk. The posters were also emailed to Town Departments, the school community, and various other individuals and groups.	Sept 27– Oct 25, 2024
Outreach Activity #5	**Public Opinion Survey:** An integral element in hazard mitigation planning is broad public participation. Information provided by residents and stakeholders can illuminate local hazard concerns, gauge a community's awareness and preparedness for hazards, and inspire innovative solutions to reduce impacts of future hazard events. As online public opinion surveys are a highly accessible mechanism for gathering qualitative and quantitative data to inform the planning process, the Advisory Committee published an on-line survey hosted by SurveyMonkey.com. Hard copies of the survey were also available at the Town Hall and Island Free Library **(this was specifically done to ensure inclusion of the senior population or those who may not have access to computers).** The survey was promoted through the Town's website, newspaper articles, social media, and project posters (**both in English and Spanish)**. The survey was also publicized through emails sent to various groups including the 25 local government & school district groups and the 54 businesses, community lifelines, agencies, and organizations outside of New Shoreham's governmental structure listed in **Appendix 2-3**. The survey was accessible from September 29 – October 24, 2024 and had a total of **182 respondents.** Survey results including the direct input in the comment section, were used by the Advisory Committee to help guide and focus mitigation planning efforts (**Subsections 6.3.5 & 6.4** and **Appendix 6-1**) and an overview of the results has been included in **Appendix 2-2.**	Sept 29 – Oct 24, 2024
Advisory Committee Meeting #2	• The Committee reviewed the status of the following items from the previous meeting: ○ **Public Outreach Activities:** project webpage is up; a newspaper article was in the BI Times September 27, 2024 online and paper editions; information about the project, survey, and other outreach activities was posted on various social media platforms; members of the Committee put up informational posters in high pedestrian traffic areas throughout New Shoreham; the public opinion survey began on September 29 and will run through October 24, 2024; the Coastal Resilience Committee is hosting an informational session October 10, 2024 at 6pm; and the TA emailed those on the coordination list about the project and opportunities for public input and engagement. ○ **Plan Integration Documents:** The Committee was sent the list of documents for plan integration and the TA updated the list based on Committee input. ○ **History of Declared Disasters:** The Committee was sent information on declared disasters for Rhode Island; the majority of the emergency declarations and major disaster declarations were issued as the result of winter weather-related events, hurricanes, and severe storms/flooding; over the past several decades, thunderstorms, flooding, high-wind events, and winter storms have been the most prevalent disasters faced by Washington County; damages associated with flooding are the most extensive. ○ **Impact of Climate Change:** Climate change is the long-term alteration of temperature and typical weather patterns in a place; for the foreseeable future, climate change will have a significant impact locally, nationally, and globally; in the Plan, climate change is recognized as a present threat and an ongoing amplifier to some of the natural hazards.	Oct 10, 2024 (9-10:30am)

Event	Overview	Date
Advisory Committee Meeting #2 *continued*	○ **Critical Assets:** The Committee was sent the list of documents for plan integration and the TA updated the list based on Committee input. • A discussion about the Risk Assessment (Hazard Profiles & Vulnerabilities) took place. The Committee reviewed the draft hazard profiles with focus on the location and probability of future events occurring in New Shoreham. • The Committee reviewed the hazard ranking form template and discussed the scoring rubric. • Public Comment: none	
Outreach Activity #6	**Stakeholder Hosted Public Information Session:** A public informational session, hosted by the **New Shoreham Coastal Resilience Committee**, was held on October 10, 2024 to inform the public about the Plan, promote discussion about creating a safer, more resilient community, and to obtain public input on local natural hazard concerns and possible solutions for consideration and integration into the *HM&FMP*. Information publicizing the meeting was included in Outreach Activities 1-4. The meeting **initiated in the floodplain** at the southern end of Corn Neck Road across from the Beachhead. The 13± participants, led by the **Block Island Climate Resilience Coordinator for The Nature Conservancy**, viewed and discussed the flood and erosion concerns associated with this roadway. Participants also discussed other flood concerns throughout New Shoreham. The meeting moved indoors where the Town's Project Consultant directed a PowerPoint presentation followed by an open public discussion/Q&A period. Participants asked questions about the planning process and the ongoing Public Opinion Survey. Most of the discussion centered on the importance of communicating/educating residents on the need for hazard mitigation. To that end, after the meeting participants who provided their emails were sent information about the ongoing survey that they could further disseminate.	Oct 10, 2024 6-8pm
Advisory Committee Meeting #3	• The Committee reviewed the status of items from the previous meetings, which included various public outreach activities: ○ **Project Webpage:** the information on the project webpage was and will continue to be updated throughout the project; ○ **Newspaper Article:** a second newspaper article was in the *BI Times* October 18, 2024 online and paper editions; ○ **Social Media:** information about the project, survey, and other outreach activities was posted on various social media platforms; ○ **Public Opinion Survey:** the public opinion survey concluded on October 24, 2024 with **182 responses**; ○ **Informational Session**: the Coastal Resilience Committee hosted an informational session on October 10, 2024. The meeting **initiated in the floodplain** at the southern end of Corn Neck Road and then moved indoors where the Town's Project Consultant directed a PowerPoint presentation followed by an open public discussion/Q&A period. • The Committee continued to discuss and modify the Draft Risk Assessment (Hazard Profiles & Vulnerabilities). • The majority of the meeting focused on completing the *Hazard Ranking Form* in order to prioritize the hazards that may impact New Shoreham over the upcoming five-year period. The Committee completed the ranking using a scoring rubric based on *Likelihood of Occurrence, Likely Range of Impact,* and *Likely Magnitude of Impact*. • The TA provided an overview of the Capability Assessment. • The Committee discussed and documented the status of the 2017 actions. • The TA provided an overview of the Mitigation Strategy. • Public Comment: none	November 7, 2024 (9-10:30am)

Event	Overview	Date

Advisory Committee Meeting #4	• The Committee reviewed the status of the following items from the previous meeting:
	  ○ **Public Outreach Activities:** the information on the project webpage was and will continue to be updated throughout the project.
	  ○ **Final Hazard Ranking:** The Committee reviewed the overall hazard ranking and agreed that both coastal flooding/storm surge and coastal erosion are considered high risk for New Shoreham that the *Likely Magnitude of Impact* for should be increased for both of these hazards.
	  ○ **Capability Assessment:** all edits and additional information provided in writing by Committee members to the TA have been integrated into the Draft Capability Assessment.
	• The majority of the meeting focused on the **Mitigation Strategy**. The Committee discussed and was in consensus with the wording of the Draft Mission Statement. The Committee discussed slightly updating the 2017 goals or considering restructuring the goals. After a lengthy discussion it was decided to table a decision until the next meeting. The TA provided an overview of the plan integration process for identifying **POSSIBLE ACTIVITIES** for inclusion in Action Plan. The TA identified actionable items from key planning documents and the Committee determined whether to or not include the item in the 2025 Action Plan. Based on Committee input, post the meeting the TA will provide a Draft Action Plan to the Committee for review.
	• Public Comment: none
		December 5, 2024 (9-10:30am)

Advisory Committee Meeting #5	• The Committee voted to approve the meeting notes from the previous meetings #1-4 without changes. • The Committee reviewed the status of the following item: ○ **Capability Assessment:** The TA indicated that the Capability Assessment has been updated with additional information provided by Committee members. • The TA provided an overview of additional public outreach activities for Committee consideration: a possible second informational meeting; providing information regarding the HM&FMP as an agenda item for various upcoming Town Board & Commission meetings; press release in *The Block Island Times* publicizing the *Public Review Draft*; public hearing notice; disseminating the *Public Review Draft*; kiosk at library about the Project; and a Public Hearing). The potential outreach activities will be reviewed and discussed at the next meeting. • The Committee continued to develop the **Mitigation Strategy**. The majority of the meeting focused on discussing and modifying the Draft Action Plan. • The TA introduced the STAPLEE evaluation process that the Committee will use to prioritize actions. • The Committee discussed and decided to hold two more meetings. The TA will poll the members to determine what dates will work best. • Public Comment: none	January 9, 2025 (9-10:30am)
Advisory Committee Meeting #6	• The Committee voted to approve the meeting notes from the previous meeting (January 9, 2025). • The Committee reviewed and discussed the timeline for additional outreach activities including an informational meeting; providing information regarding the HM&FMP as an agenda item for various upcoming Town Board & Commission meetings; press release in *The Block Island Times* publicizing the *Public Review Draft*; public hearing notice; disseminating the *Public Review Draft*; kiosk at library about the Project; and a Public Hearing. • The Committee continued to develop the **Mitigation Strategy**, making final edits to the Mission Statement, Goals, and Objectives. The Committee further discussed and edited the Action Plan. • The Committee tentatively decided on the date of February 13 for the last meeting. • Public Comment: Mary Anderson asked if she could get a copy of the Draft Actions (Co-Chair Shirlyne Gobern will provide a copy to her)	January 30, 2025 (9-10:30am)

Event	Overview	Date
Advisory Committee Meeting #7	• The Committee voted to approve the previous meeting notes (January 30, 2025). • The Committee followed-up on outreach activities to publicize the Public Review Draft, Public Review Period, and Public Hearing, and made minor edits/additions to the Mitigation Strategy/Draft Action Plan. • The majority of the meeting focused on completing the STAPLEE Evaluation for the purpose of prioritizing the actions. A description of the STAPLEE criterion and the full STAPLEE evaluation will be provided in Appendix 6-2. • The TA reviewed the remaining plan development steps, including dissemination of the Public Review Draft, Public Hearing, modifying the document based on input and feedback from the community and stakeholders, and submitting the Final Draft to RIEMA/FEMA for review/approval. • The Committee entertained the following two motions which were unanimously approved: ○ **Motion 1: Public Review DRAFT** The HM&FMP Advisory Committee directs the Town's Project Consultant, Kim Jacobs, to finalize the Public Review DRAFT under the guidance and approval of the HM&FMP Advisory Committee Co-Chairs, Alison Ring & Shirlyne Gobern; and in conjunction with the HM&FMP Advisory Committee Co-Chairs, disseminate the Public Review DRAFT. ○ **Motion 2: Public Hearing** The HM&FMP Advisory Committee directs the Town's Project Consultant, Kim Jacobs, to assist the HM&FMP Advisory Committee Co-Chairs, Alison Ring & Shirlyne Gobern, in coordinating a Public Hearing hosted by the Town Council at the end of the public review period; and at the Public Hearing the Project Consultant will direct a Project presentation and facilitate a public comment session. • Public Comment: none	February 13, 2025 (9-10:30am)
Outreach Activity #7	**Town Council Hosted Project Presentation and Discussion** At the New Shoreham Town Council's regular meeting on March 3, 2025, the Project Consultant presented an overview of the HM&FMP and upcoming 3-week Public Review Period, after which the Town Council opened the floor to questions and comments. Town Council members asked several general questions about the *Plan* but no specific input or feedback was provided that was outside of the *Plan's* existing narrative **(i.e. no follow-up discussions regarding potential inclusion of input/comments was required).** No members of the public asked questions or made comments. Information publicizing the presentation was included in the Town Council's Agenda (posted on the Town and Secretary of State websites, and a hard copy posted at the Town Hall), and on the Project webpage.	March 3, 2025 (7:00pm)
Outreach Activity #8	**Agenda Topic for Local Boards/Commissions:** The following Boards and Commissions included information on their March 2025 meeting agendas regarding the *Draft HM&FMP* being available on the Town's website for review and comment from March 17-April 7, 2025, followed by a Public Hearing at the Town Council's April 7, 2025 Meeting. • Coastal Resilience Committee (March 4) • Conservation Commission (March 11) • Planning Board (March 12) • Senior Advisory Committee (March 18) • Historic District Commission (March 24) • Zoning Board (March 26)	March 4-26 2025
Outreach Activity #9	**Kiosk at the Public Library:** A kiosk was set up at the Island Free Library to publicize that the *PR Draft* was available to the public-at-large and encourage the community to provide input and feedback either prior to or at the Public Hearing. Information was provided in **both English and Spanish**.	March18 – April 8, 2025

Event	Overview	Date
Outreach Activity #10	**Disseminate Public Review Draft (Public Review Period):** The preliminary *HM&FMP-Administrative Draft* was developed and modified throughout the planning process with Advisory Committee, community, and stakeholder input and feedback incorporated into the document. At the Advisory Committee's February 13, 2025 meeting, members were satisfied with key elements of the *Plan* and authorized the Town's Consultant to finalize the document (under the guidance of the Committee Co-Chairs) and disseminate a *Public Review (PR) Draft*. The *PR Draft* was posted on the Town's Project webpage on March 17, 2025, initiating a three-week public review period which allowed the community and stakeholders ample time to read, evaluate, and provide input and feedback prior to or at the Public Hearing. The Public Review Period and Public Hearing were widely advertised, including a press release and three Public Hearing notices in *The Block Island Times;* information on the Town's website and at the library kiosk in **both English and Spanish**); a notice posted at the Town Hall; an announcement at the Informational Session (March 3, 2025); information on the March meeting agendas for six local Boards; and an email to the businesses, community lifelines, agencies, and organizations listed in **Appendix 2-3**. During the Public Review Period the Town received one written comment from a member of the community which, as shown in **Appendix 2-2**, resulted in two clarifications in the document.	March 17 – April 7, 2025
Outreach Activity #11	**Public Hearing Notice and Public Hearing:** As identified in Outreach Activity 10, the Public Review Period and Public Hearing were widely advertised. At the end of the three-week Public Review Period, a Public Hearing was hosted by the New Shoreham Town Council at their regularly scheduled April 7, 2025 meeting. At the Public Hearing, the Town's Consultant was available to answer questions. The public was given the opportunity to provide input and feedback on the *Plan*. No questions or comments were offered by the Town Council or members of the public. It should be noted that the Advisory Committee made a concerted effort to **include the public throughout the planning process** such as providing the opportunity for various stakeholders to review pertinent segments of the *Plan* during development. Additionally, the community and other stakeholders were provided the opportunity to voice their concerns regarding natural hazard impacts and potential mitigation measures through the Public Opinion Survey (Outreach Activity #5). As shown in **Appendix 2-2** a great deal of public input was received as part of the Public Opinion Survey. **All input received throughout the planning process was reviewed and considered when finalizing the *Plan*.** As shown in **Appendix 6-1** the majority of the actionable measures identified by community members or stakeholders in the Public Opinion Survey were integrated into the Action Plan (**Subsection 6.4**). **Town Council Adoption of HM&FMP:** At the end of the Public Hearing, the Town Council voted unanimously to adopt the *HM&FMP*, with the Resolution acknowledging that during the subsequent review/ approval process by RIEMA/FEMA, any required revisions would be accepted by said adoption.	Public Hearing Notices: March 14, March 21, and March 28 editions April 7, 2025 (7:00pm)
RIEMA Review & FEMA Approval	**Final Draft Plan Submitted to RIEMA/FEMA:** Under the guidance of the HM&FMP Co-Chairs, the Town's Consultant finalized the *Plan* and submitted it to RIEMA for review. It was then forwarded by RIEMA to FEMA for review/approval. The Town received FEMA approval on May 29, 2025.	May 29, 2025

2.3 PLAN INTEGRATION AND COORDINATION

Hazard mitigation planning involves identifying existing policies, tools, and actions that will reduce a community's risk and vulnerability to hazards. Coordination with other community planning efforts and organizations is therefore paramount to the success of the *Plan*.

CRS CREDIT:

Mitigation Planning Element	CRS Planning Step	Max Pts
Phase I - Planning Process	3. Coordinate	35

CRS Coordinator's Manual – Activity 510: Floodplain Management Planning

2.3.1 Plan Integration

For the purpose of developing a comprehensive and community-centric *HM&FMP*, numerous local plans, policies, codes, and programs that guide development in New Shoreham were consulted in order to complement and build on past planning initiatives. As demonstrated in **Appendix 5-1**, a detailed review of New Shoreham's existing studies, reports, and technical documents was undertaken to ensure that the community's needs, goals, and actions prioritized in those documents were recognized and incorporated, wherein appropriate, into the *HM&FMP*. This is specifically evidenced in **Appendix 6-1**, where actions and initiatives from many of these planning initiatives were compiled and subsequently reviewed by the HM&FMP Advisory Committee for possible inclusion in the *2025-2030 Action Plan*.

The planning documents and measures included in **Appendix 5-1 and 5-2**, supplemented by the knowledge and experiences of the HM&FMP Advisory Committee members, community, and other engaged stakeholders have successfully created a community-based hazard mitigation strategy.

A ***References & Works Cited*** section has been provided to recognize and pay tribute to the broad array of resources that were used in the development of this *Plan*. In addition to New Shoreham's key planning documents, special recognition is made to the numerous FEMA, NOAA, RIEMA, and RI Statewide Planning resources relied upon for the development of this Plan. The *2025 HM&FMP* adheres to the guidelines outlined in the Disaster Mitigation Act of 2000; and FEMA's *Local Mitigation Planning Policy Guide (April 2023), Local Mitigation Planning Handbook (May 2023)*, and *2017 CRS Coordinators Manual (and 2021 Addendum)*.

A brief overview of several of the key planning programs and documents integrated into the *HM&FMP* follows.

2.3.1.1 Community Rating System (CRS)
2.3.1.2 2017 Hazard Mitigation Plan (HMP)
2.2.1.3 2016 Comprehensive Plan (CP)
2.3.1.4 2021 MRP CRB Process & Workshop Summary of Findings (SOF)

2.3.1.1 Community Rating System (CRS)

The Community Rating System (CRS) is a voluntary incentive program designed to encourage communities to engage in various community focused activities that promote a comprehensive approach to floodplain management beyond the minimum National Flood Insurance Program (NFIP) requirements. The CRS program emphasizes three goals: the reduction of flood losses, facilitating accurate insurance rating, and promoting the awareness of flood insurance (RIEMA. *Flood*).

The Town entered into the CRS Program on May 1, 2019 and currently has a CRS Class 8 rating. As an active participant in FEMA's CRS Program, it was determined that this *Plan* should be created using the planning process outlined in CRS Activity 510. This process allows the Town to maximize CRS credit for this *Plan* while meeting the *Disaster Mitigation Act (DMA) 2000* Hazard Mitigation Plan requirements. A CRS activity credit checklist has been included in **Appendix 2-1**. It lists the 10 planning steps associated with CRS Activity 510 (Floodplain Management Planning) and references the section within this document that describes the completion of the step and the corresponding anticipated credit.

CRS uses a Class Rating System to determine flood insurance premium reductions for residents. CRS Classes are rated from 10 (lowest rating) to 1 (highest rating). **Table 2-5** shows the CRS credit points required for each Class and the corresponding premium reductions provided to those purchasing flood insurance through the National Flood Insurance Program (NFIP). As a community engages in mitigation activities, its residents become eligible for increased premium discounts (FEMA. *Community*).

Table 2-5 CRS Credit Points, Classes and Premium Discounts (FEMA. *Community*)

Credit Points	Class	Premium Reduction SFHA	Premium Reduction Non-SFHA
0 – 499	10	0	0
500 – 999	9	5%	5%
1,000 – 1,499	8	10%	5%
1,500 – 1,999	7	15%	5%
2,000 – 2,499	6	20%	10%
2,500 – 2,999	5	25%	10%
3,000 – 3,499	4	30%	10%
3,500 – 3,999	3	35%	10%
4,000 – 4,499	2	40%	10%
4,500+	1	45%	10%

Note: Premium reductions are subject to change.

New Shoreham currently has a Class 8 Rating

2.3.1.2 2017 Hazard Mitigation Plan (HMP)

New Shoreham adopted its Hazard Mitigation Plan (HMP) in July 2017 to help organize future allocations of the Town's finite resources, determine what actions are feasible and appropriate to address local vulnerabilities, and to enhance community resilience.

This *Plan* serves as the 5-year update to the Town's 2017 HMP. As the Town is a CRS participating community, and because flooding is a prevalent natural hazard facing New Shoreham, it was determined beneficial to expand the scope of the HMP update to include additional focus on floodplain management. As such, the document has been renamed the *Town of New Shoreham 2025 Hazard Mitigation & Flood Management Plan (HM&FMP).*



Figure 2-4

In developing this *Plan*, portions of the 2017 HMP were restructured, eliminated, or revised. New sections were added in order to reflect the most current understanding of natural hazards that pose significant threats to New Shoreham and how the Town has and can effectively continue to mitigate these threats. New actions or modifications to the 2017 actions were primarily the result of an extensive plan integration process (incorporating actions from the Comprehensive Plan, MRP CRB Process & Workshop Summary of Findings, and other plans) combined with HM&FMP Advisory Committee, community, and stakeholder input.

2.3.1.3 2016 Comprehensive Plan (CP)

A Comprehensive Plan (CP) is a tool to give guidance to future administrations on strategies to address increased development pressures, economic stability, public infrastructure, and open space and recreation issues. New Shoreham's Planning Board led the effort to develop the 2016 Comprehensive Plan.



Figure 2-5

New Shoreham's Land Use Department in conjunction with the Planning Board led the effort to develop the 2016 Comprehensive Plan. The CP includes a **Natural Hazards & Climate Change** element which describes critical issues, planning opportunities, and sets of goals, policies, and actions related to natural hazards, including the threat of sea level rise. This element was considered during the development of the 2017 HMP update. To ensure continued alignment, the **Natural Hazards & Climate Change** and other applicable Comprehensive Plan elements were reviewed and integrated into this *HM&FMP*. A link to the CP is available on the Town's website and the prioritized measures from Comprehensive Plan were reviewed for possible inclusion in the *2025 Action Plan* (**Appendix 6-1**).

2.2.1.4 2021 MRP CRB Process & Workshop Summary of Findings (SOF)

In July 2018 Governor Raimondo introduced the Resilient Rhody: Municipal Resilience Program (MRP), which outlined a comprehensive Climate Resilience Action Strategy for the State. Through the MRP program, the State is providing support to communities to engage in a municipal-driven process referred to as Community Resilience Building (CRB), which was developed by The Nature Conservancy (TNC). The Nature Conservancy has honed their highly successful CRB program for over a decade in an effort to respond to the need for communities and other organizations and enterprises to build resilience and adapt to the extreme weather and hazards resulting from climate change (TNC, 2).

In September 2021 the Town held a Community Resilience Building (CRB) Workshop led by the Rhode Island Infrastructure Bank (RIIB) in partnership with The Nature Conservancy (TNC). The Workshop brought together Town staff, community stakeholders, and other engaged professionals in an effort to identify and prioritize steps to reduce natural hazard risks and improve resilience within the Town.

The Workshop Objectives included:

- "Define top local natural and climate-related hazards of concern;
- Identify existing and future strengths and vulnerabilities;
- Identify and prioritized actions for the Town;
- Identify opportunities to collaboratively advance actions to increase resilience alongside residents and organizations from across the Town, and beyond" (TNC and RIIB, 2).

The 2017 HMP was used as a **KEY planning document** for the 2021 CRB Workshop. It was important to the Town that the hazard mitigation strategies and principles, vulnerability information, and mitigation actions were integrated into the discussions at the Workshop. The Town of New Shoreham appreciated the opportunity afforded to them by the Rhode Island Infrastructure Bank and The Nature Conservancy to engage in a CRB Workshop. The Workshop successfully helped to advance comprehensive community resilience planning and hazard mitigation efforts. An overview of the discussion and outcome from the Workshop was documented in the Summary of Findings (SOF); an important resource for the Town which has been integrated into the development of this *HM&FMP*. A link to the SOF is available on the Town's website and the prioritized measures from the report were reviewed for possible inclusion in the *2025 Action Plan* (**Appendix 6-1**).

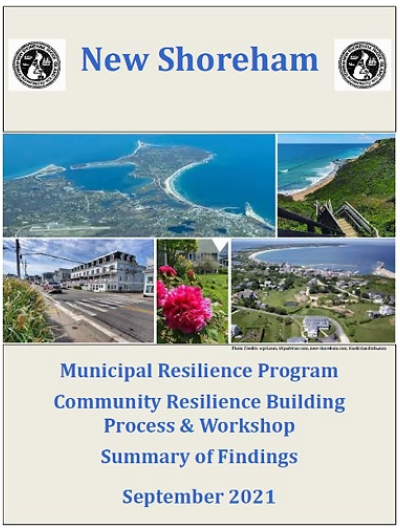


Figure 2-6

2.3.2 Coordination with Businesses, Community Lifelines, Agencies, and Organizations

The HM&FMP Advisory Committee recognized that the planning process would be greatly enhanced by inviting local, regional, state, and federal agencies and organizations, as well as local community leaders, businesses, and community lifelines to participate in the process. Coordination with these key groups was initiated at the beginning of the planning process through an email (or through the mail if an email was not available) informing them of the development of the *Plan* and welcoming them to participate in meetings, the public opinion survey, and other outreach activities, and to provide information or opinions to inform the *Plan's* content. A link to the Project webpage was provided in order for stakeholders to remain informed throughout the development process.

It was important to the Town that all of the identified stakeholder groups, including those from which information was used in the development of the *Plan*, were provided an opportunity for **pre-adoption review of the *Draft HM&FMP***. At the end of the development process, just prior to the public review period commencing, a link to the *Public Review Draft* and notification of the Public Hearing was sent to these groups by the Town's Project Consultant, encouraging them to review the *Draft Plan* and provide input and feedback.

As shown in **Appendix 2-3**, the Town coordinated with **25 local government boards & commissions**, including the Town Council, local departments and boards/commissions involved in hazard mitigation and resilience activities as well as those having authority to regulate development. The Town recognizes that collaboration among various sectors will ensure that mitigation capabilities continue to grow and build support for the implementation of a wide-range of mitigation activities. The Town also coordinated with **54 businesses, community lifelines, agencies, and organizations outside of New Shoreham's governmental structure**. This group included state legislators, and representatives from the **senior advisory committee**, conservation organizations, nearby municipalities on the mainland, various state offices, and other organizations with expertise related to hazard mitigation planning. Additionally, as it was keenly important to the Town to **engage the local business community** in the planning process, representation from the **Block Island Chamber of Commerce** was included on both the Advisory Committee and the coordination list. Further, the Town recognized the importance of including **community lifelines** in the plan development process. Representatives from key lifelines essential to enable the continuous operation of local government, businesses, and the community in general were included on the coordination list. Two such lifelines were the State Airport and the Block Island Ferry. In addition to receiving project emails, a representative of the Ferry was also on the Advisory Committee.

SECTION 3

Community Profile

Subsections

3.1 WELCOME TO NEW SHOREHAM

3.2 GOVERNMENT

3.2.1 Municipal Government

3.2.2 School Department

3.2.3 Budget

3.3 GEOGRAPHY

3.4 POPULATION AND DEMOGRAPHICS

KMJ – CE/RP

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3 Community Profile

A brief community profile has been included in this Section which is augmented by community asset information in **Section 4** and the community capability assessment in **Section 5**. The planning area addressed in this Plan includes all lands within the geographical boundaries of the Town of New Shoreham, Rhode Island which encompasses the entirety of Block Island.

3.1 WELCOME TO NEW SHOREHAM

New Shoreham, located in Washington County, Rhode Island, is coterminous (has the same boundaries) with Block Island. The island is less than ten square-miles and roughly twelve miles off the coast of Rhode Island (Town of New Shoreham RI. *Comprehensive*, 1-2). It is surrounded by the Atlantic Ocean to the south, east, and west, and Block Island Sound separates it from mainland of Rhode Island to the north. Based on the 2020 census, New Shoreham is home to just over 1,400 people, but as a tourist destination the summer population can increase tenfold. During the summer months, particularly between July and Labor Day, the number of people in New Shoreham (Block Island) can swell to 20,000 visitors per day, which includes both overnight guests and day-trippers, significantly increasing the island's population from its year-round resident count (Wargo, 6).

Until European settlers re-named it after Dutch explorer Adrian Block, the island was referred to as Manissess (the Little God's Island) by the Narragansett Indians, and was used seasonally as hunting and fishing grounds by members of the Narragansett, Wampanoag, Niantic, and Pequot peoples (URI. *Manissean*). The island came under European rule as a colony of Massachusetts, settled by sixteen families in 1661, and became a colony of Rhode Island several years later, in 1664. It was incorporated in 1672 and named for Shoreham in Sussex County, England (Town of New Shoreham RI. *Comprehensive*, 2-2).

In part due to its remote location, but perhaps more by choice, New Shoreham has remained relatively rural with, according to the Block Island Land Trust, an estimated 46.1% of the island allocated as conserved open space. Even within the settled regions of the island, the majority of the roads remain unpaved and many of the staples of commercialized life (supermarkets and big-box retail stores, franchise restaurants, and high-rise hotels) are nowhere to be found.



The most commercialized area of New Shoreham is in the vicinity around and between Old and New Harbors. This area is serviced by public water and sewer, and small retail and other businesses are intermixed with residential housing. Much of the commercialization is tourism-driven businesses, restaurants, and accommodations which cater to the seasonal influx of visitors while maintaining the island's overall charm and natural beauty.

Outside of the more built-up areas are zones dominated by single-family homes, along with some low-impact service establishments and smaller inns and B&B's. The remainder of the island is dominated by openness, interspersed by low density residential uses, and with compatible economic activities including agriculture and home occupations. Of necessity, certain public/quasi-public facilities, including the State Airport, Transfer Station, and Block Island Water Company treatment facility, are located in the more rural areas. However, by-and-far the predominant characteristic of New Shoreham's rural area is its undeveloped natural landscapes and scenic beauty.

Figure 3-2 New Shoreham (Block Island) Photo Credit: Block Island Tourism Council



Within New Shoreham lie historic homesteads, cemeteries, stone walls, and various sites of archaeological significance. The island's cultural and historic resources are treasured by residents and tourist alike. In the Old Harbor Historic District, residents and visitors can admire Victorian buildings as they stroll back in time through the late 19th century. The island's two lighthouses are, similarly, points of Town pride and attract thousands of visitors each year. There are quite a few properties and areas within the Town that have the qualities necessary for inclusion on the National Register of Historic Places. The Town boasts five historic sites and two historic districts on the National Register: Block Island North Light (Sandy Point); Block Island Southeast Light (Southeast Light Road); Hygeia House (Beach Avenue); Peleg Champlin House (Rodman Pond Lane); U.S. Weather Bureau Station (Beach Avenue); Great Salt Pond Archeological District; and Old Harbor Historic District (RIHPHC).



While the Town's inland and coastal water features are integral to the character of New Shoreham, and embraced by residents and visitors, the low-lying lands are vulnerable to flooding, coastal erosion, sea level rise, and wind damage. While risks from these hazards are not new, the intensity and frequency of occurrence due to climate change, exacerbates resiliency concerns. To ensure public health and safety and environmental resiliency, the Town needs to continue to balance development (especially in areas with higher risks to natural hazards) with the active protection of the Town's natural resources. In addition, to the extent possible the Town needs to implement natural hazard mitigation strategies, such as those identified in **Section 6**.

Figure 3-3 Damage to Corn Neck Road from Superstorm Sandy (2012)

Photo Credit: Corn Neck Road Transportation Resiliency Planning Study

3.2 GOVERNMENT

The State of Rhode Island has 39 municipalities which are grouped into 5 counties. The Town of New Shoreham is part of Washington County along with Charlestown, Exeter, Hopkinton, Narragansett, North Kingstown, Richmond, South Kingstown, and Westerly. While neighboring communities work cooperatively with one another, Rhode Island counties do not have governmental structure. Instead, local governance is provided by each of the eight cities and thirty-one towns.

3.2.1 Municipal Government

The Town of New Shoreham operates under a Home Rule Charter, ratified by the Rhode Island General Assembly on October 30, 1672. The Charter provides the overall structure of the government, including the form of government which is Town Council-Town Manager (RIDMF. *Municipal*, 47). Per State law, once a local government is established, it is in the position to create municipal code for the community's governance. Municipal code refers to the collection of local laws (also known as ordinances, bylaws, measures, regulations, etc.) that are passed by a local governing body. As long as a community's laws do not conflict with the laws of the State, they carry the full force and effect of law (Library of Congress. Intro).

New Shoreham's five member Town Council (First Warden, Second Warden and three Town Councilors) is elected for two-year terms at the regular biennial elections, with the First Warden functioning as the Chief Executive Officer. In general, the Town Council is responsible for enacting local legislation; making decisions related to the Town's property, affairs, and government; setting the budget for the municipal side; and appointing a Town Manager who functions as the Town's Chief Administrative Officer. The Town Manager is responsible for carrying out the policies of the Town Council, and with the exception of the School Department, appointing all department heads and overseeing the day-to-day operation of Town Departments and services (RIDMF. *Municipal*, 47, 48).

The Town provides a range of municipal services including public safety protection; economic and development services; maintenance and management of Town-owned buildings, roads, and other infrastructure; harbor management; recreational activities; on-site wastewater management; and other administrative services. The Town owns the solid waste transfer station, but contracts with a private company for its operation and management. The water and sewer utilities, which are limited to the vicinity in and around Old Harbor and New Harbor are quasi-municipal with each having a Commission to oversee the companies' operations and maintenance.

Figure 3-4 Town Hall Photo Credit: Town of New Shoreham



Town employees, across all departments, work hard to meet the needs of the community and to maintain a quality of life that residents have come to expect. As municipal staffing is limited, the Town relies on active volunteer boards to assist in meeting the community's current and future needs. An overview of the key Town departments and boards/commissions engaged in hazard mitigation is provided in **Appendix 5-2**. The volunteer participation on the Town's numerous boards and commissions speaks to the community's pride in its heritage and aspiration for the future. A list of current Town Boards, Commissions, and Committees is provided below. Notification of board meetings are posted on the Town Website Calendar.

Town Boards, Commissions, and Committees

- Block Island Early Learning Center Board of Directors
- Block Island Housing Board
- Block Island Land Trust
- Block Island Volunteer Fire & Rescue
- Board of Assessment Review
- Board of Assessors
- Board of Canvassers
- Coastal Resilience Committee
- Commission of Motor Vehicles for Hire
- Conservation Commission
- Emergency Management Task Force
- Harbors Committee
- Health Services Board of Directors
- Historic District Commission
- Library Board of Trustees
- New Shoreham Tourism Council
- North Light Commission
- Old Harbor Task Force
- Planning Board
- Police Advisory Commission
- Recreation Board
- School Committee
- Senior Advisory Committee
- Sewer District Committee
- Shellfish Commission
- Water District Commission
- Zoning Board of Review

3.2.2 School Department

The mission of the Block Island Public School is for their students to "graduate with the knowledge, experiences, and character for success in life and the challenges of tomorrow" (Block Island School).

The Block Island Public school, located at 15 High Street, is the only public school within New Shoreham and serves Kindergarten through twelfth grade students. The school was constructed in 1933 and replaced the five one-room schools that previously served the Town's youth. The school was expanded in 2006 to add a cafeteria, library, gym, and high school classrooms. The 2024-2025 school year has 125 students enrolled (generally less than 10 students per grade), and they enjoy a student-teacher ratio of 6:1, which is roughly half the state average of 13:1 (Public School Review).



Figure 3-5 Block Island School
Photo Credit: Block Island School Facebook

The New Shoreham School Committee is composed of five members of the community who are elected at large for staggered four-year terms at the regular biennial elections. Committee meetings are open to the public and generally take place on the third Monday of the month at 7pm. The School Committee is responsible for the overall governance of the School District. They determine and control all policies, appoint a Superintendent as the District's Chief Administrative Agent, and review and approve the annual school budget.

3.2.3 Budget

The annual Town budget runs from July 1 to June 30, and serves as the foundation for financial planning and control. Entities under the jurisdiction of the Town Council, including Town officials, departments, boards, and committees, need to submit budget requests for the ensuing fiscal year to the Town Manager prior to the first Monday in February. This information is then organized by the Town Clerk and submitted to the Town Council by the third Monday of March. Based on the submitted requests, the Town Council with assistance from the Town Manager will assemble a preliminary recommended budget, with input from the sponsor of each appropriation request. The Town Council will hold at least two Public Hearings (generally at the beginning of April) on its preliminary recommended budget. After changes (if any) to the preliminary budget based on Public Hearing input, the Town Council will finalize their recommended Operating and Capital Budget. In order for the community to be better informed at the Financial Town Meeting, the budget materials are made available on the Town's website and at Town Hall. All registered voters in Town may vote on the proposed annual budget at the Financial Town Meeting which is held the first Monday in May.

Maintaining a resilient local economy is important to enable providing high quality municipal services, including protecting against natural hazard risks. The Town's total operating budget for FY2025 (July 1, 2024-June 30, 2025) was $19,286,912, of which $13,608,007 was attributed to the municipal side and $5,678,905 to the School District (Town of New Shoreham RI. *FY2025*, 1). As part of the budget process, each year the Town adopts a 6-year Capital Improvement Program identifying projects that should be undertaken during the upcoming 6 years. This long-range planning process is essential in addressing the future development and growth of the Town. The Town strives to balance pay as you go funding with borrowing for capital requirements, using long term financing for long-lived assets with broad community value.

3.3 GEOGRAPHY

New Shoreham is an island community roughly twelve miles from the nearest mainland (Town of New Shoreham RI. *Comprehensive*, 1-2). The island is surrounded by the Atlantic Ocean to the south, east, and west, and Block Island Sound separates it from mainland Rhode Island to the north. According to the Block Island Land Trust, as of September 2024, preserved open space on Block Island totaled 2,829 acres, or 46.1% of the island's 6,076 acres. Of that, 371 acres (6%) is unprotected undevelopable open water and wetlands. "The island is approximately seven miles from the northern sandy tip to the high southern bluff wall, and three and a half miles at its widest point east to west. The island narrows to less than 1/10th of a mile at a north-south midpoint, referred to as the 'neck' with the Atlantic Ocean to the east, and the Great Salt Pond to the west" (Town of New Shoreham RI. *BI Hazard*, 6).

Access to the island is through personal or commercial boat or air services. The island's "coastal bluffs present obstacles to shoreline approach... Dock locations are limited to Old Harbor on the eastern shore and New Harbor to the west" (Town of New Shoreham RI. *BI Hazard*, 6). Ferry and air service to/from New Shoreham is recognized as a critical lifeline for the community and is available on a year round basis. Mainland ferry ports include Point Judith and Newport, RI, and seasonally from New London, CT and Montauk, NY. New England Airlines provides scheduled air transport service year-round between Block Island State Airport and Westerly State Airport, as well as charter service to and from other airports in the region.



Figure 3-6 Block Island Ferry
Photo Credit: Block Island Tourism Council

New Shoreham's character is intertwined with the island's abundance of freshwater and saltwater resources. There are numerous beautiful beaches with varying features such as calm waters, dune systems, and rugged shorelines. Along much of the shoreline are coastal wetlands and salt marshes. The western side of the island features the Great Salt Pond, a saltwater lagoon, that serves as both a harbor and a recreational area. Brooks and streams meander the landscape and feed the hundreds of freshwater ponds and wetlands scattered across the island. The freshwater resources assist in stormwater filtration and groundwater recharge. Block Island is considered a single continuous sole source aquifer which means the island's groundwater system is the primary and only practical source of potable water for the entire island. In addition to providing scenic beauty, these freshwater and saltwater resources help sustain life; control flooding, erosion, and pollution; sustain ecological systems and provide valuable fish, plant, and wildlife habitats; provide irrigation for agriculture; and offer year-round active and passive recreation.

Other natural features that define the island include numerous terrestrial areas that are ecologically significant, such as Block Island National Wildlife Refuge and Rodman's Hollow. The inland areas of Block Island are dotted with rolling hills, meadows, and wooded patches, providing a mix of open spaces and forested environments. There is also some agricultural land supporting small farms, gardens, and open fields, many of which are lined with stonewalls that contribute to the island's rural character. Along portions of the island's perimeter are rugged bluffs, including the iconic Mohegan Bluffs on the island's southern coast. The island sports an extensive trail system with those along the bluffs offering some of the island's most breathtaking panoramic views.



Figure 3-7 Scenic Views of New Shoreham

Photo Credit: Block Island Tourism Council (left & middle); USFWS - Block Island National Wildlife Refuge (right)

3.4 POPULATION AND DEMOGRAPHICS

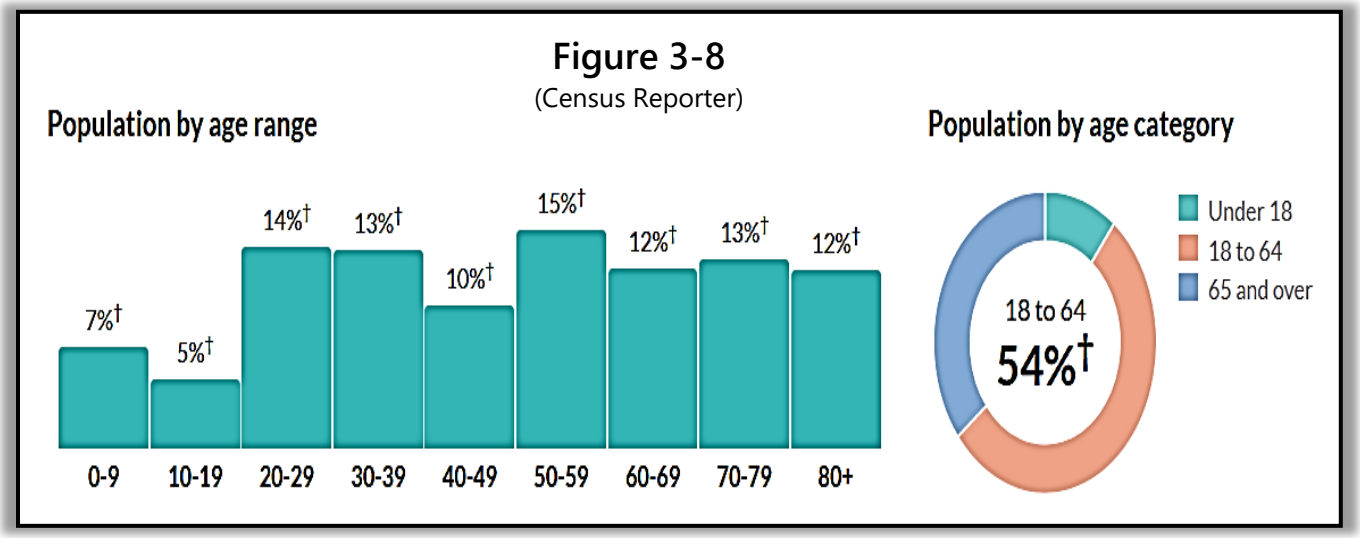
According to the U.S. Census Bureau, New Shoreham had a population of 1,051 in 2010 which grew to 1,410 in 2020 (a 34.2% increase, corresponding to 359 people). However, the Town's annual Groundhog Day's census, taken February 2, 2021 and considered more accurate by many locals, reported only 1,094 residents (Shorey).

It should be noted that for small communities, such as New Shoreham, the census data and correspondingly the 5-year American Community Survey (ACS) data has large margins of error for certain data points due to its smaller population size. The margins of error for an island community with many residents spending part of the year off-island increases the error potential. This means that while the census data presented in this section provides a general insight into the community, the data should be interpreted with caution.

The American Community Survey (ACS) five-year estimates (2019-2023) indicate that the population of New Shoreham is nearly equal between females (51.0%) and males (49.0%). The median age for New Shoreham is 51.1, with 11.6% age 19 or younger, 37.0% age 60 or older, and 35.7% age 65 or older. Comparatively, the population of those 65 or older in Washington County is 24.2% (US Census Bureau. *New,* Population), and for the State of Rhode Island is 18.3% (US Census Bureau. *Rhode,* Population).

New Shoreham has one of the highest percentages of senior residents (over the age of 65) in Rhode Island. As such, the Advisory Committee made the effort to include in the planning process various community lifelines that service the senior population and also modified several of the outreach activities to better accommodate the senior population.

Figure 3-8
(Census Reporter)



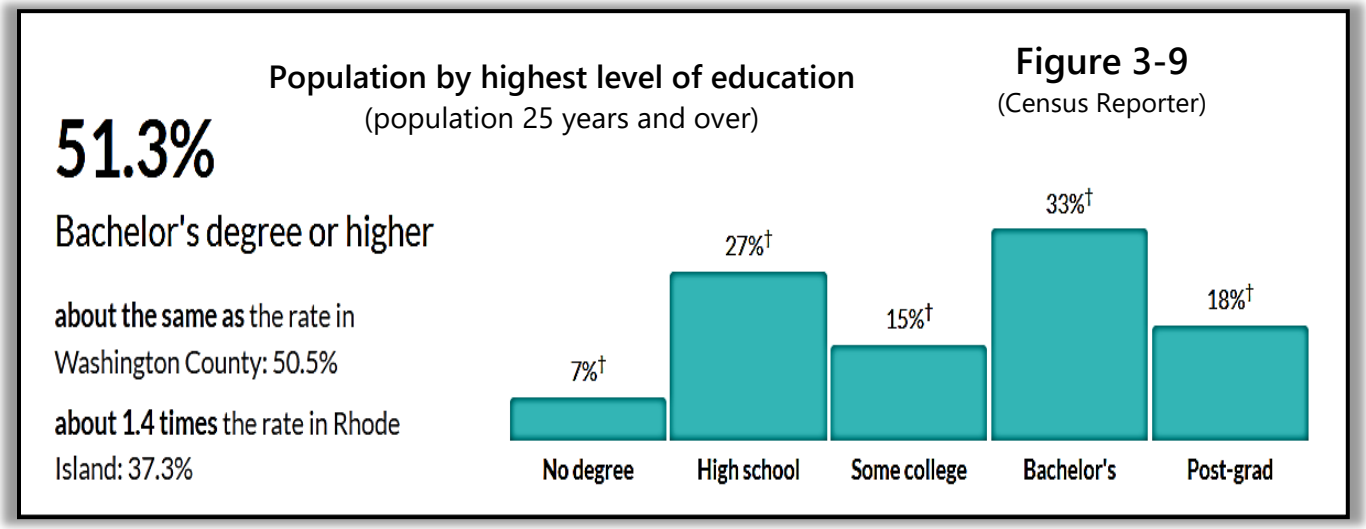
In terms of race and ethnicity, the 2020 Census for New Shoreham identifies 90.4±% of the residents as White, 3.9±% some other race, 3.6±% two or more races, 1.2±% Black or African American, 0.5±% American Indian or Alaska Native, 0.4±% Asian, and 0±% Native Hawaiian and Other Pacific Islander. Of New Shoreham's population, 4.7±% identified as Hispanic or Latino (US Census Bureau. *New,* Race and Ethnicity).

Development in New Shoreham is highly homogeneous. Based on the 2023 ACS 5-year estimates, approximately 90.9% of the 1,947 housing units in Town are single family dwellings. The remainder are a mix of 2 units (2.9±%), 3 or 4 units (1.2±%), and 5 or more units (4.9±%) (US Census Bureau. *New,* Housing). In terms of residential housing, the Old Harbor area is notably different and somewhat more diverse than the inland areas. The housing near Old Harbor is generally denser compared to the inland areas, and since Old Harbor is the central hub of the island there is more residential and commercial overlap. Many of the homes in the area of Old Harbor are vacation homes or short-term rentals due to the proximity to the ferry terminal, making it easy for tourists visiting the island. As you move away from the Old Harbor Historic District, the tendency is larger, single-family homes with bigger yards. These properties often cater more to year-round residents or seasonal retreats, with a quieter, more rural atmosphere.

Of the 1,947 housing units, the 2023 ACS only identifies 20.2±% (393 housing units) as occupied. Of the 393 occupied housing units, the majority (71.8±%) are owner occupied, with the remaining 28.2±% occupied by renters (US Census Bureau. *New,* Housing). It is important to note that most of the units characterized by the U.S. Census Bureau as vacant may be seasonal rental units or seasonal residents/vacation homes occupied by owners for specific time periods. As a seasonal destination, particularly between July and Labor Day, New Shoreham sees approximately 15,000 to 20,000 visitors per day, which includes both overnight guests and day-trippers (Wargo, 6), and seasonal laborers therein occupying many of the housing units unoccupied the rest of the year.

Almost a third (31.2±%) of New Shoreham's homes were built before 1960, with 23.5±% built before 1940 (US Census Bureau. *New,* Housing). Some of these older homes may not have been updated to meet current building codes which creates concern in terms of hazard risks, particularly for high wind and heavy snow events.

According to the 2023 ACS 5-year estimates, the median household income is estimated as $72,450 for New Shoreham, $102,478 for Washington County, and $86,372 for Rhode Island. The poverty rate is 10.1±% compared to 8.0±% for Washington County (US Census Bureau. *New,* Income and Poverty). Based on the 2023 ACS 1-year estimates, the poverty rate for the State of Rhode Island is 7.3±% (US Census Bureau. *Rhode,* Income and Poverty). The Town of New Shoreham is a well-educated community with 33.2±% of the population 25 years and over having a Bachelor's Degree or higher, and 18.1±% having a Graduate or professional degree (US Census Bureau. *New,* Education).



New Shoreham's population has not experienced, nor is expected to experience in the relative near future, significant growth. As shown in **Table 3-1**, **if the census data is correct**, from 1990 to 2020 the population continually increased, with an overall increase during those three decades of 68.7±%. During those decades Rhode Island saw an overall increase in population of 9.4±%. In 2013, Rhode Island Division of Statewide Planning (RIDSP) extrapolated mathematically from historic trends to project the future population of cities and towns through 2040. Projections for New Shoreham and the State are shown in the table. Comparing the projected 2040 population to the 2020 census population, it is estimated that New Shoreham's population will decrease by 6.4±%.

Table 3-1 Population Trend and Projections

Jurisdiction	Actual Based on U.S. Census (Wikipedia. *Block*)				Projected Based on RIDSP (RISDP. *Technical Paper 162*, 16)			
	1990	2000	2010	2020	2025	2030	2035	2040
Rhode Island	1,003,464	1,048,319	1,052,567	1,097,379	1,061,796	1,070,677	1,073,799	1,070,104
New Shoreham	836	1,010	1,051	1,410	1,189	1,239	1,283	1,319

SECTION 4

Risk Assessment

Subsections

4.1 CLIMATE CHANGE
- 4.1.1 Sea level Rise (SLR)

4.2 HAZARD IDENTIFICATION
- 4.2.1 Disaster Declaration History
- 4.2.2 Hazard Priority Ranking

4.3 HAZARD PROFILES
- 4.3.1 Flood-Related Hazards
  - 4.3.1.1 Inland Flooding (Riverine Flooding, Shallow Flooding, and Dam Failure)
  - 4.3.1.2 Coastal Flooding including Storm Surge
  - 4.3.1.3 Coastal Erosion
- 4.3.2 Wind-Related Hazards
  - 4.3.2.1 High Winds
  - 4.3.2.2 Thunderstorms including Lightning and Hail
  - 4.3.2.3 Tornadoes
  - 4.3.2.4 Tropical Cyclones (Tropical Depressions & Storms, and Hurricanes)
- 4.3.3 Winter-Related Hazards
- 4.3.4 Infectious Disease-Related Hazards
  - 4.3.4.1 Vector-borne Diseases Transmitted by Ticks or Mosquitoes
  - 4.3.4.2 Contagious Respiratory Illness Caused by Influenza Viruses or Coronaviruses
- 4.3.5 Other Hazards
  - 4.3.5.1 Earthquake
  - 4.3.5.2 Extreme Heat
  - 4.3.5.3 Drought
  - 4.3.5.4 Brush Fire

4.4 VULNERABILITY ANALYSIS
- 4.4.1 Critical Buildings
- 4.4.2 Built Environment and Infrastructure
  - 4.4.2.1 Vulnerability of Buildings
  - 4.4.2.2 Vulnerability of Transportation Network
  - 4.4.2.3 Vulnerability of Public Utilities
- 4.4.3 Natural Environment
  - 4.4.3.1 Conservation Land
  - 4.4.3.2 Freshwater and Saltwater Resources and their Floodplains
- 4.4.4 Local Economy
  - 4.4.4.1 Flood- and Wind-Related Hazards
- 4.4.5 People
- 4.4.6 Future Development Trends
  - 4.4.6.1 Development Between 2017-2024
  - 4.4.6.2 Buildout Analysis
  - 4.4.6.3 Future Land Use
  - 4.4.6.4 Future Development
  - 4.4.6.5 Town's Ability to Expand and Improve Capabilities

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4 Risk Assessment

Hazard Mitigation Plan: The Town of New Shoreham has successfully met the following requirement ➔
44 CFR Subsection D §201.6(c)(2): [The plan shall include] A risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.

CRS - Flood Management Plan: The Town of New Shoreham has successfully met the following Mitigation Strategy requirements based on the 10-step planning process for CRS Activity 510 ➔
Assess the Hazard (Step 4); and Assess the Problem (Step 5)

This *Risk Assessment* evaluates the potential impacts of hazards to the people, economy, and built and natural environments of New Shoreham, creating a basis for the Mitigation Strategy. As described in FEMA's Local Hazard Mitigation Planning Handbook and illustrated in **Figure 4-1**, the degree of risk can be measured by the overlap between hazards and community assets; the larger the overlap the greater the risk.

This Risk Assessment presented in this Section is organized as follows, with the goal of identifying this overlap:

4.1 Climate Change:
Recognizes how climate change including sea level rise (SLR) may exacerbate natural hazards

4.2 Hazard Identification:
Identifies the hazards with the highest likelihood of negatively impacting New Shoreham

4.3 Hazard Profiles:
Describes the potential threat of each identified hazard and provides an overview of previous occurrences and the likelihood of future occurrences

4.4 Vulnerability Analysis:
Identifies community assets and analyzes the potential impact the identified hazards

Figure 4-1 Degree of Risk—Risk Assessment

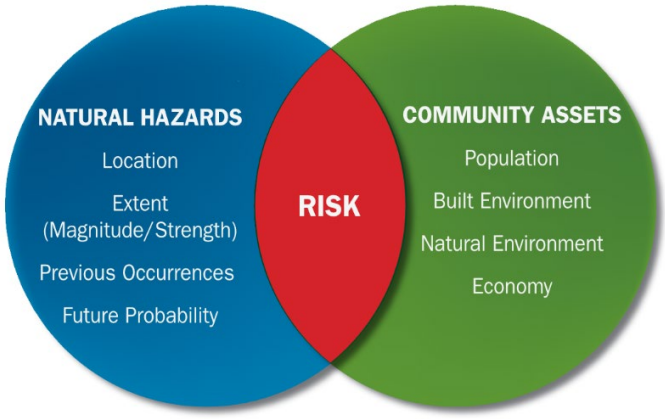


Image Credit: FEMA Local Hazard Mitigation Planning Handbook, March 2013, Page 5-1

During the Risk Assessment process, natural hazards were identified, profiled, and analyzed using best practices. In support of this process, data and documentation from numerous resources including the following were reviewed: Town of New Shoreham's 2017 Hazard Mitigation Plan, 2016 Comprehensive Plan, and 2021 MRP CRB Process & Workshop Summary of Findings; 2024 Rhode Island State Hazard Mitigation Plan (RI-SHMP); hazard mitigation plans from similar communities; information from FEMA, EPA, NASA, CDC, RIEMA, RIDSP, RIDEM, RIDOH, CRMC, URI-Coastal Institute, URI-Climate Change Collaborative, and IPPC; information from the National Oceanic and Atmospheric Administration (NOAA) including the National Climatic Data Center (NCDC) and the National Weather Service (NWS); and other relevant articles, documents, and websites on natural hazards. A complete list of the plan integration and references used in developing New Shoreham's *Hazard Mitigation & Flood Management Plan (HM&FMP)* is provided in **Appendix 5-1** and the **References and Works Cited**.

4.1 CLIMATE CHANGE

A key change reflected in this updated Plan is more comprehensively addressing climate change including sea level rise (SLR). For the foreseeable future, climate change will have a significant impact locally, nationally, and globally. In this *Hazard Mitigation & Flood Management Plan (HM&FMP)*, **climate change is recognized as a present threat and ongoing amplifier to the identified natural hazards**. As such, each hazard profile in **Subsection 4.3** addresses associated climate change impacts. That information will assist the Advisory Committee in determining an action strategy based on projected future impacts.

This Section provides a general overview of climate change including sea level rise projections.

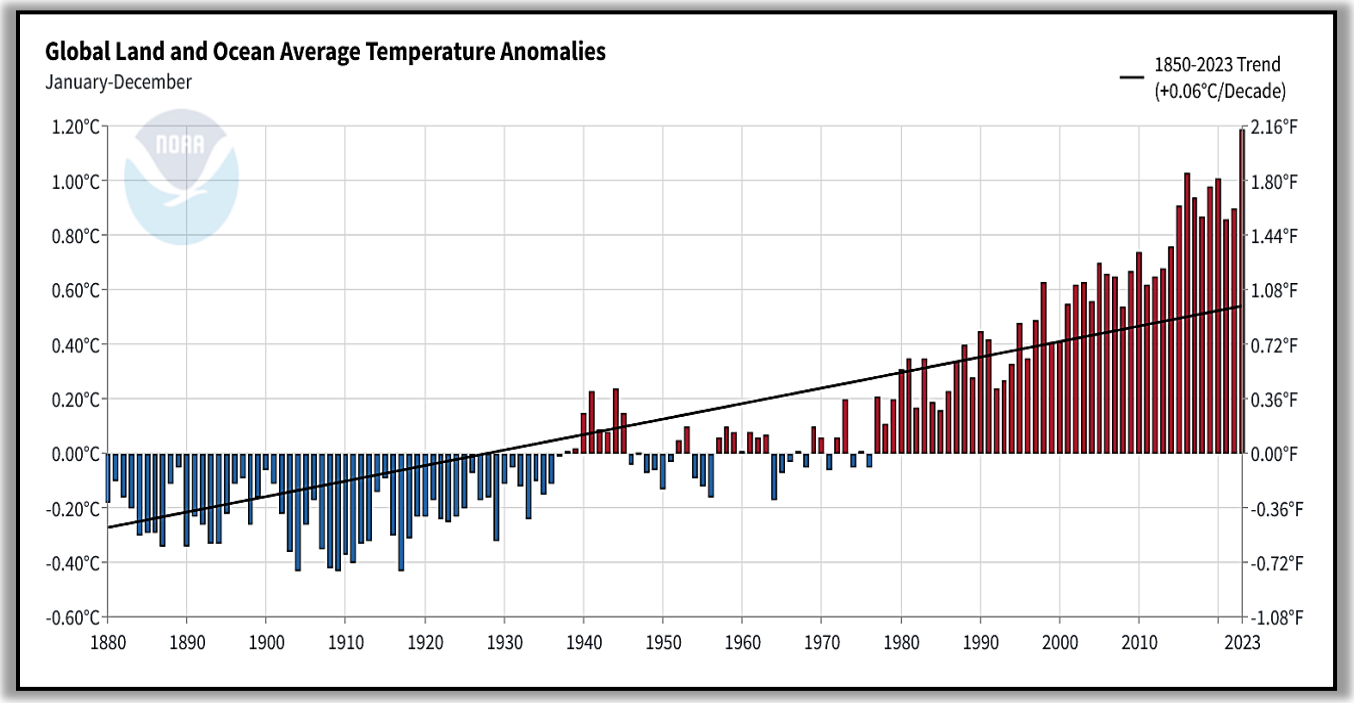
What is meant by Climate Change?

As pointed out by National Geographic, "Climate is sometimes mistaken for weather. But climate is different from weather because it is measured over a long period of time, whereas weather can change from day to day, or from year to year. The climate of an area includes seasonal temperature and rainfall averages, and wind patterns. Different places have different climates… Climate change is the long-term alteration of temperature and typical weather patterns in a place" (National Geographic. *Climate*).

Over geologic time, the earth has warmed and cooled periodically. This slow-paced change in climate may be attributed to natural internal processes or external forces such as modulations of the solar cycles, volcanic eruptions, or persistent anthropogenic changes in the composition of the atmosphere or land use (IPCC. *Annex I*).

In contrast, over the past century the rapid warming of the earth is cause for concern (**Figure 4-2**). Across every region of the Earth's climate system, scientists are observing changes. According to the 2021 Intergovernmental Panel on Climate Change (IPCC) Report, "Many of the changes observed in the climate are unprecedented in thousands, if not hundreds of thousands of years, and some of the changes already set in motion—such as continued sea level rise—are irreversible over hundreds to thousands of years" (IPCC. *Climate Change widespread*).

Figure 4-2 Global Temperatures are Rising (NOAA|NCEI)



Data gathered by NASA and NOAA indicate that the planet's average surface temperature has risen about 2.0 degrees Fahrenheit since the late 19th century, with **most of the warming happening over the past four decades**. NASA Goddard Institute for Space Studies Director, Gavin Schmidt, stated that, "Despite colder than average temperatures in any one part of the world, temperatures over the planet as a whole continue the rapid warming trend we've seen over the last 40 years" (NASA|NOAA. *Long-term warming*).

The rapid warming of the earth has been largely driven by the accumulation of human-caused pollutants in the atmosphere. These pollutants, known as greenhouse gases, include carbon dioxide, methane, nitrous oxide, water vapor, and synthetic fluorinated gases. Normally the sunlight and solar radiation that bounces off the earth's surface would escape into space, but the accumulation of these pollutants, which can last for years to centuries in the atmosphere, trap the heat inside the earth's atmosphere and cause the planet to get hotter. The impact of these heat-trapping pollutants in the atmosphere, creating global warming and influencing rapid climate change, is called the greenhouse effect (NRDC. *Global Warming*).

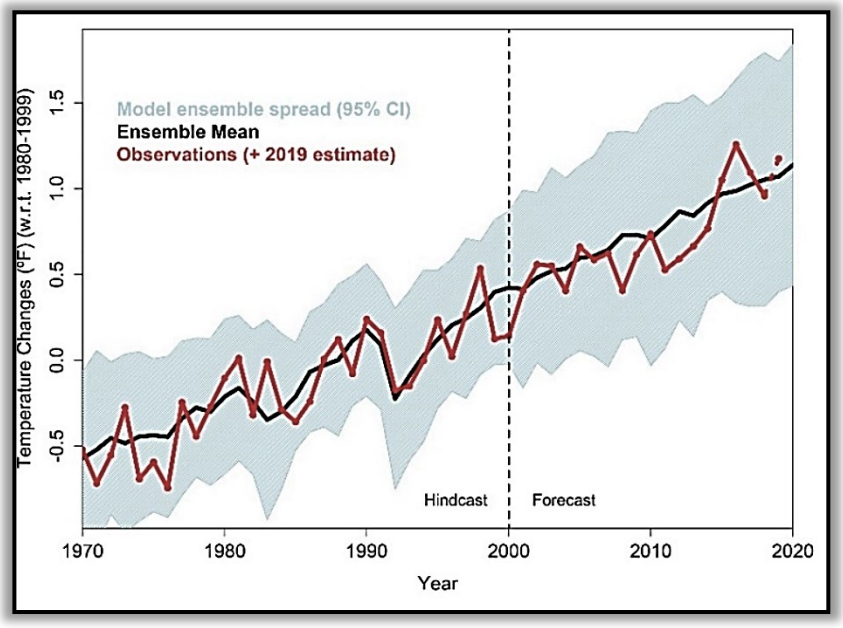
How is Climate Change predicted?

Scientists use climate models, which are complex mathematical computer simulations, to recreate the Earth's past and current climate or predict future climate trends. The foundation of the models requires an accurate representation of the Earth's atmosphere, sun, oceans, ice, and land surface. By solving the relevant mathematical equations, climate models can calculate properties such as atmospheric temperature, pressure, wind, and humidity. Because global warming has widespread effects, global temperature trends are among the most significant predictions.

As climate models are based on physics and the best understanding of the Earth's system, and are verified against real world observations, scientists are confident that climate models accurately represent our climate system. To this point, the University of California, Berkely, conducted a systematic evaluation of the performance of 17 climate models from 1970 to 2007 to determine how reliable they have been. The study looked at how accurately the models predicted temperature changes. The results, depicted in **Figure 4-3**, show that most of the past climate model projections closely matched observations. As public confidence in climate projections is critical, a recognition that even the less sophisticated climate models of 15 plus years ago produced reasonably accurate future temperature trends, should bolster public confidence in climate change predictions (Buis, Alan. *Study Confirms*).

Figure 4-3 Forecast Evaluation for Models Run in 2004 (Buis, Alan. *Study Confirms*)

Models that were used in the IPCC 4th Assessment Report can be evaluated by comparing their approximately 20-year predictions with what actually happened. In this figure, the multi-model ensemble and the average of all the models are plotted alongside the NASA Goddard Institute for Space Studies Surface Temperature Index (GISTEMP). Climate drivers were known for the 'hindcast' period (before 2000) and forecast for the period beyond. The temperatures are plotted with respect to a 1980-1999 baseline. (Credit: Gavin Schmidt)



What are some global impacts of Climate Change?

The impacts of a rapidly changing climate are already present. No longer viewed as a future possibility, the effects of climate change, including sea level rise (SLR), are scientifically recognized as exacerbating the impact of other natural hazards.

According to the 2021 IPCC Report, climate change "is not just about temperature. Climate change is bringing multiple different changes in different regions – which will all increase with further warming. These include changes to wetness and dryness, to winds, snow and ice, coastal areas, and oceans.

For example:

- Climate change is intensifying the water cycle. This brings more intense rainfall and associated flooding, as well as more intense drought in many regions.
- Climate change is affecting rainfall patterns. In high latitudes, precipitation is likely to increase, while it is projected to decrease over large parts of the subtropics. Changes to monsoon precipitation are expected, which will vary by region.
- Coastal areas will see continued sea level rise throughout the 21st century, contributing to more frequent and severe coastal flooding in low-lying areas and coastal erosion. Extreme sea level events that previously occurred once in 100 years could happen every year by the end of this century.
- Further warming will amplify permafrost thawing, and the loss of seasonal snow cover, melting of glaciers and ice sheets, and loss of summer Arctic Sea ice.
- Changes to the ocean, including warming, more frequent marine heatwaves, ocean acidification, and reduced oxygen levels have been clearly linked to human influence. These changes affect both ocean ecosystems and the people that rely on them, and they will continue throughout at least the rest of this century.
- For cities, some aspects of climate change may be amplified, including heat (since urban areas are usually warmer than their surroundings), flooding from heavy precipitation events and sea level rise in coastal cities" (IPCC. *Climate Change widespread*).

Science is still discovering the breadth and scope of climate change impacts. As recognized by NOAA, it is a complex issue wherein, "The impacts of climate change on different sectors of society are interrelated. Drought can harm food production and human health. Flooding can lead to disease spread and damages to ecosystems and infrastructure. Human health issues can increase mortality, impact food availability, and limit worker productivity… [Further] long-standing socioeconomic inequities can make underserved groups, who often have the highest exposure to hazards and the fewest resources to respond, more vulnerable" (NOAA. *Climate change impacts*).

Intergovernmental Panel on Climate Change (IPCC)

The Intergovernmental Panel on Climate Change (IPCC) is an intergovernmental body of the United Nations responsible for advancing knowledge on human-induced climate change. It was established in 1988 by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP), and later endorsed by the United Nations General Assembly. The IPCC is comprised of 195 member states; headquartered in Geneva Switzerland; and has issued 6 Climate Change Assessment Reports.

First Assessment Report (1990)

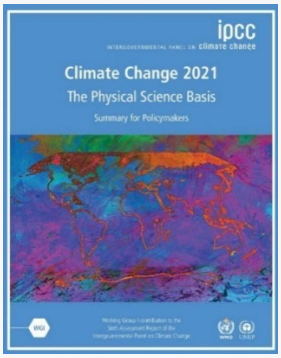
Second Assessment Report (1995)

Third Assessment Report (2001)

Fourth Assessment Report (2007)

Fifth Assessment Report (2014)

Sixth Assessment Report (2021-2023)



Wikipedia. *Intergovernmental*

What are some local impacts of Climate Change?

According to an article by the URI Climate Change Collaborative, "In New England, temperatures are expected to increase by a few degrees by the end of the century. While summers may be 3°F to 7°F warmer, winters will likely be 5°F to 8°F warmer. Likewise, we will continue to see a shift in the seasons. Summer weather potentially will persist longer and with more days over 100°F. Winters will be warmer with more rain and less snow. Wet days will be wetter but droughts will be more frequent. The average annual temperature of Narragansett Bay has warmed approximately 3.6°F (with winters even greater) since the 1960s, and the Bay is expected to continue warming throughout the century. Rates of sea level rise have been increasing as well" (URI Climate Change Collaborative. *Climate*).

According to CRMC, potential effects of climate change and sea level rise include increased vulnerability to storm surges, risk to infrastructure, higher water tables, more extreme high tides, worsening coastal erosion and net loss of coastal marshes.

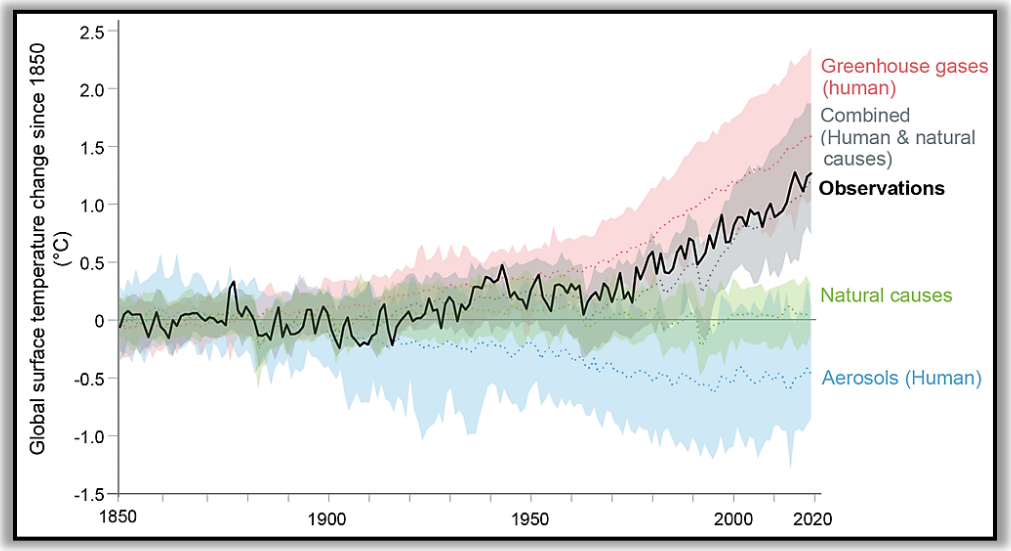
In general, Rhode Island communities may experience the following climate change impacts:

- Warmer air and water temperatures; shorter winters and longer summers; more frequent high heat days and heat waves
- Longer periods of drought creating conditions for more frequent brush fires and water availability concerns
- More extreme precipitation events causing increased extent of flood damage to property and infrastructure and the potential for more riverine and flash flood events
- More extreme high wind events creating greater vulnerability from increased storm surge levels along the coast; coastal erosion will create conditions that allow storm surge to impact further inland
- Higher water tables resulting in subsurface issues such as wet basements
- An increase in incidence of extreme high tide levels
- Expediated sea level rise creating expanded areas of saltwater intrusion into aquifers contaminating water supplies
- More coastal lands becoming susceptible to erosion due to increased intensity and frequency of storms
- A net loss of coastal marshes that become inundated at a greater rate, resulting in a loss of salt marsh vegetation and an alteration of habitat types

What can be done to slow Climate Change?

As stated on NASA's Global Climate Change website, "A consensus on climate change and its human cause exists... Multiple studies published in peer-reviewed scientific journals show that **97 percent or more** of actively publishing climate scientists agree: Climate-warming trends over the past century are extremely likely due to human activities. In addition, most of the leading scientific organizations worldwide have issued public statements endorsing this position" (NASA. *Scientific Consensus*).

Figure 4-4 How do we know humans are causing climate change? (IPCC)



As depicted in **Figure 4-4**, from IPCC's Sixth Assessment Report, rapid climate change is primarily caused by humans producing large amounts of greenhouse gas emissions (Kopp, Robert).

Scientists around the world are engaged in climate change because it is a global problem. Studies by the Union of Concerned Scientists show that, "Cumulative carbon dioxide emissions are the dominant driver of climate change. These began rising during the Industrial Revolution (especially after 1850) - which means richer countries like the United States, which made an early transition to a heavily fossil fuel-based economic system, have an outsized role in contributing to the climate impacts we see around the world today. Both in terms of cumulative emissions, and current per capita emissions, richer countries rank high" (Union of Concerned Scientist). The top CO2 emitting countries for the period 1750-2020 are shown in **Figure 4-5**.

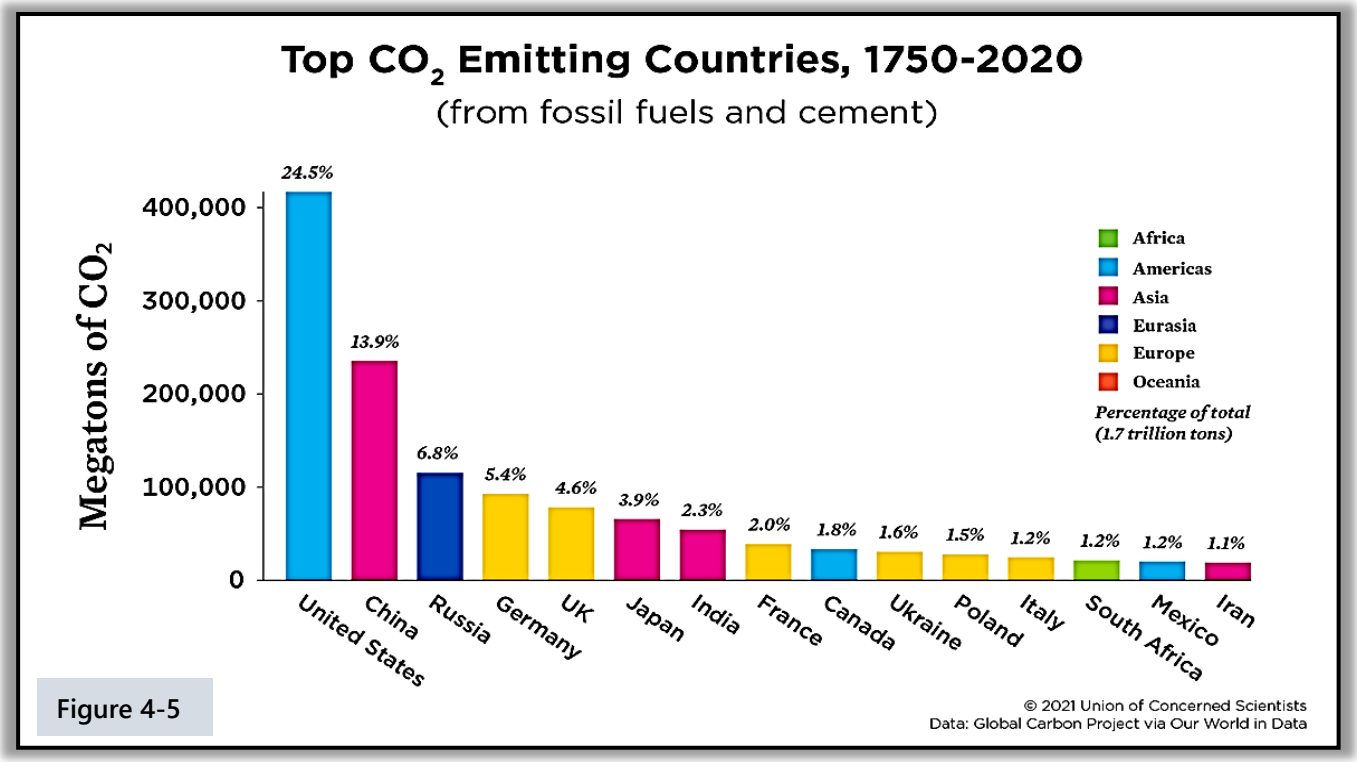


Figure 4-5

The primary human action contributing to climate change is the burning of fossil fuels, like natural gas, oil, and coal, which produce large quantities of carbon dioxide, sulfur oxides, nitrogen oxides, and fine particulates consisting primarily of soot and ash. In addition to burning fossil fuels, other actions such as deforestation and livestock farming also contribute to the greenhouse effect. With respect to the United States CO2 emissions, the EPA tracks total U.S. emissions on an annual basis. As shown in **Figure 4-6**, in 2022 the country's largest source of carbon pollution was in the transportation sector, closely followed by electric power and industry.

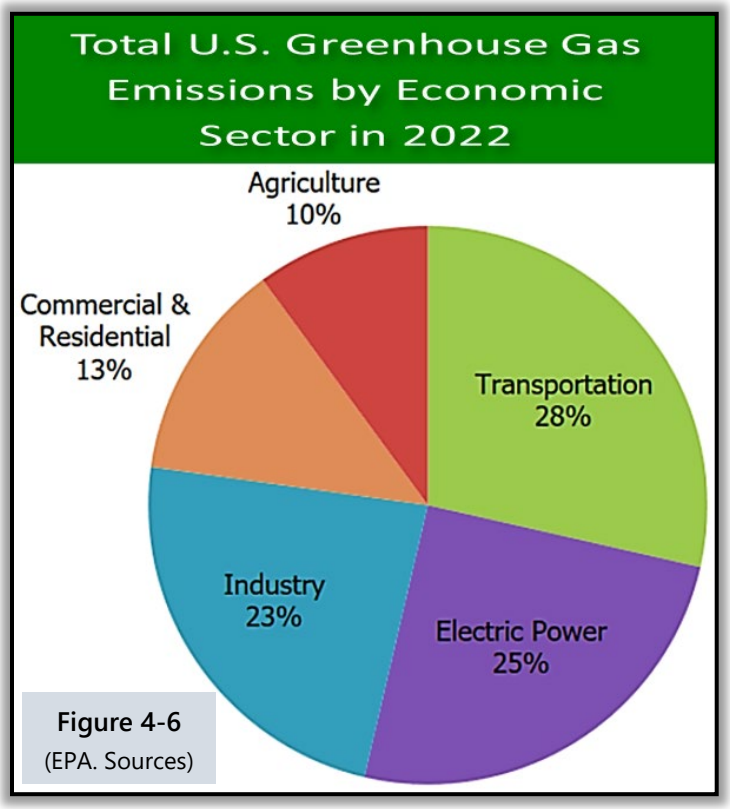


Figure 4-6
(EPA. Sources)

The EPA has provided the following overview of the primary sources of greenhouse gas emissions in the United States for 2022 (EPA. *Sources*):

- **Transportation** (28% of 2022 greenhouse gas emissions) – The transportation sector generates the largest share of greenhouse gas emissions. Greenhouse gas emissions from transportation primarily come from burning fossil fuel for our cars, trucks, ships, trains, and planes. Over 94% of the fuel used for transportation is petroleum based, which includes primarily gasoline and diesel.
- **Electricity production** (25% of 2022 greenhouse gas emissions) – Electric power generates the second largest share of greenhouse gas emissions and includes emissions from electricity production used by other end use sectors (e.g. industry). In 2022, 60% of our electricity came from burning fossil fuels, mostly coal and natural gas.
- **Industry** (23% of 2022 greenhouse gas emissions) – Greenhouse gas emissions from industry primarily come from burning fossil fuels for energy, as well as greenhouse gas emissions from certain chemical reactions necessary to produce goods from raw materials.
- **Commercial and Residential** (13% of 2022 greenhouse gas emissions) – Greenhouse gas emissions from the commercial and residential sector include fossil fuels burned for heat, lighting and the use of gases for refrigeration and cooling in businesses and homes, and non-building specific emissions such as the handling of waste.
- **Agriculture** (10% of 2022 greenhouse gas emissions) – Greenhouse gas emissions from agriculture come from livestock such as cows, agricultural soils, and rice production.

Understanding what is contributing to the greenhouse effect provides an opportunity to take proactive measures. "According to the World Economic Forum's Global Risks Report 2021, **the failure to mitigate and adapt to climate change is 'the most impactful' risk facing communities worldwide** - ahead of even weapons of mass destruction and water crises. Blame its cascading effects: As climate change transforms global ecosystems, it affects everything from the places we live to the water we drink to the air we breathe" (Denchak).

The good news is that there is a general understanding of the key steps that need to be taken to curb global climate change. Many of these steps were outlined in the 2015 Paris Agreement which is a "legally binding international treaty on climate change" (United Nations). The goal of the Agreement is to limit global warming to below 2 degrees Celsius**,** compared to pre-industrial levels (United Nations). Although announced by President Trump in June 2017, the U.S. did not formally withdraw from the Paris Agreement until November 2020 (McGrath). The withdrawal was short-lived as President Biden rejoined the Paris Agreement on his first day in office (January 20, 2021) with membership becoming official on February 19, 2021 (US Secretary).

Although there is a general global understanding of what needs to be done, as noted by the Natural Resources Defense Council (NRDC), "The not-so-good news is that we're not working fast enough. To avoid the worst impacts of climate change, scientists tell us that we need to reduce global carbon emissions by as much as 40 percent by 2030. For that to happen, the global community must take immediate, concrete steps: to decarbonize electricity generation by equitably transitioning from fossil fuel-based production to renewable energy sources like wind and solar; to electrify our cars and trucks; and to maximize energy efficiency in our buildings, appliances, and industries" (NRDC. *Global Warming*).

The State of Rhode Island and the Town of New Shoreham are committed to move toward carbon neutrality, a state of net-zero carbon dioxide emissions. On January 17, 2020 Governor Raimondo signed an Executive Order mandating the State to move toward 100% renewable energy by 2030 – which at the time was the most ambitious ten-year renewable energy target of any state in the nation (Clarcq).

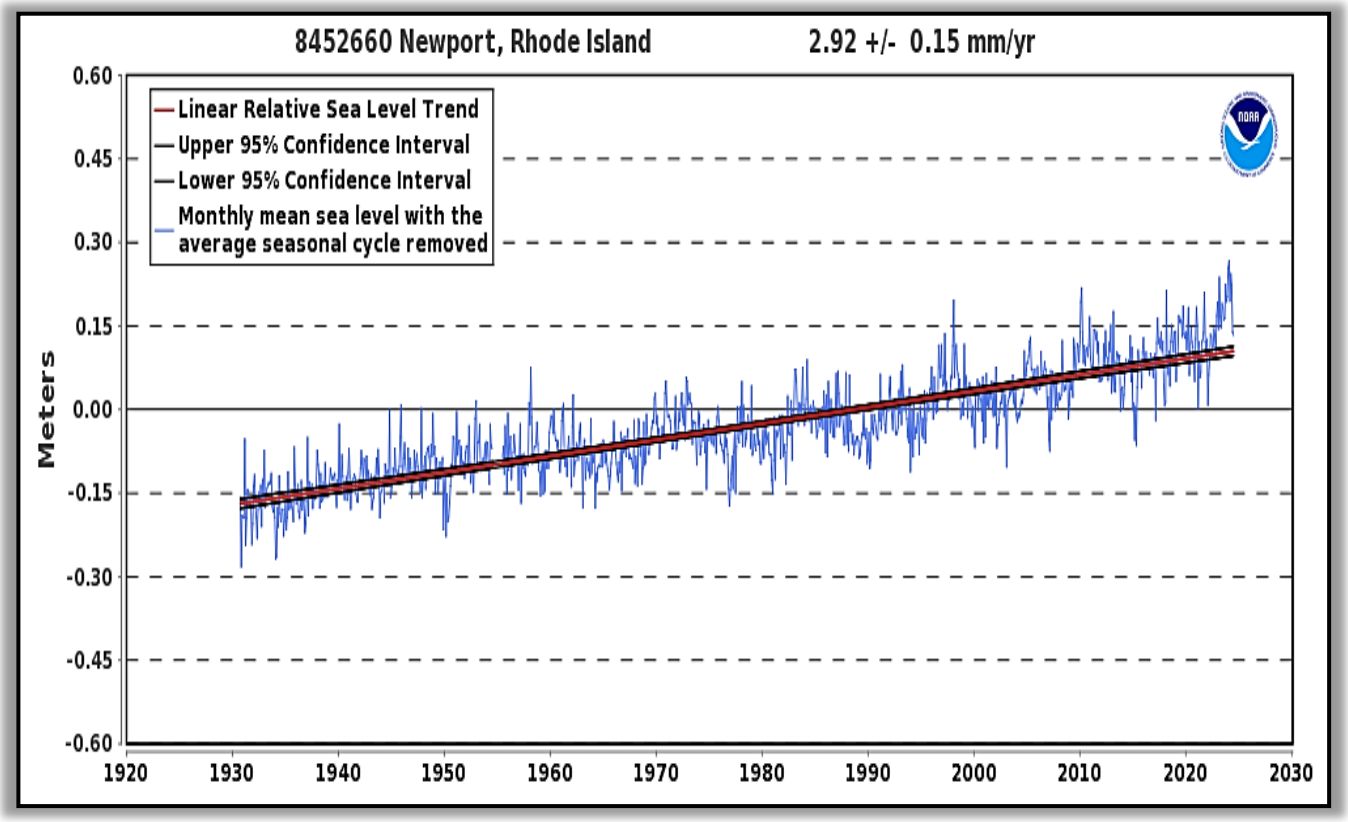
4.1.1 Sea level Rise (SLR)

Greenhouse gas emissions released to the atmosphere increase surface warming, which in turn, warms ocean waters and accelerates the melting of glacial ice. Both the melting of land ice and the expansion of warm seawater increase the overall Global Mean Sea level (GMSL). Although the rate of sea level rise is accelerating, it is not expected to be globally uniform, due to a number of factors including prevailing winds and powerful ocean currents (CRMC. *Sea level and Climate*).

As the average water level of the oceans rise, previously dry land will be permanently inundated. Findings suggest that for about 2000 years prior to the 20th century, there was little change in the global average sea level. During the 20th century the rate of change accelerated with global sea level rise averaging 0.06 inches per year from 1880 to 2013 and roughly twice as fast (0.12 to 0.14 inches per year) from 2013 onward (EPA. *Climate Change Indicators: Sea level*).

Since the 1930s, NOAA has maintained two stations in Rhode Island, one in Newport and the other in Providence, that measure sea level rise. Based on recordings from the Newport Tide Gauge (**Figure 4-7**), sea levels have risen over 10 inches since 1930 (CRMC. *Shoreline Change SAMP*, 2-3). Because greenhouse gas emissions continue to increase, it is expected that this trend will accelerate in the coming decades.

Figure 4-7 Relative Sea level Trend
8452660 Newport, Rhode Island (NOAA. *Tides*)



The relative sea level trend is 2.92 millimeters/year with a 95% confidence interval of +/- 0.15 mm/year based on monthly mean sea level data from 1930 to 2023 which is equivalent to a change of 0.96 feet in 100 years.

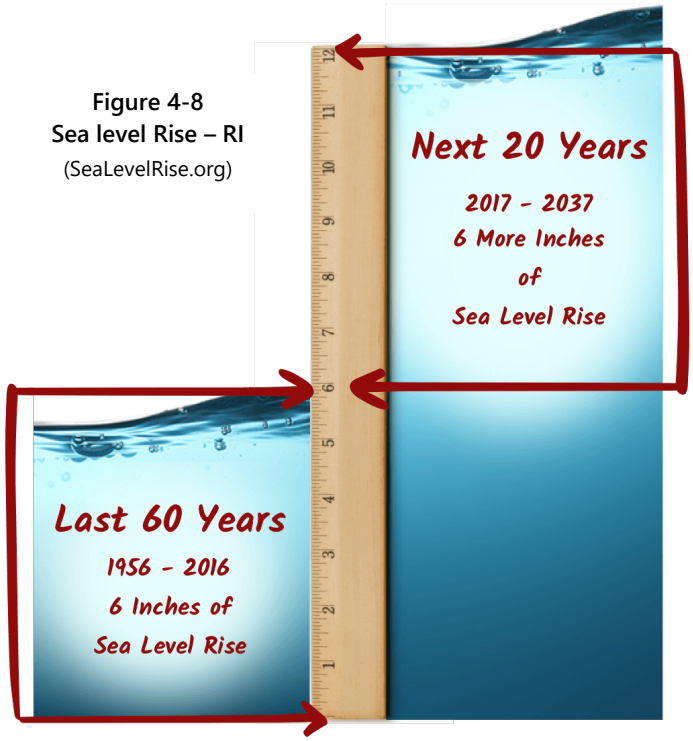


Figure 4-8
Sea level Rise – RI
(SeaLevelRise.org)

In the last decade, the speed at which the level of the sea is rising has increased. As illustrated in **Figure 4-8**, it took around 60 years for the sea level to rise approximately 6 inches. Scientists forecast that in the 20-year period from 2017-2037, the sea will rise by another 6 inches (SeaLevelRise.org. *The Future*).

According to NOAA, sea levels in the Northeast Region will rise significantly faster than the global average. The annual relative sea level since 1960 is shown in **Figure 4-9**, as well as NOAA's most recent best through worst case regional SLR projections up to 2100.

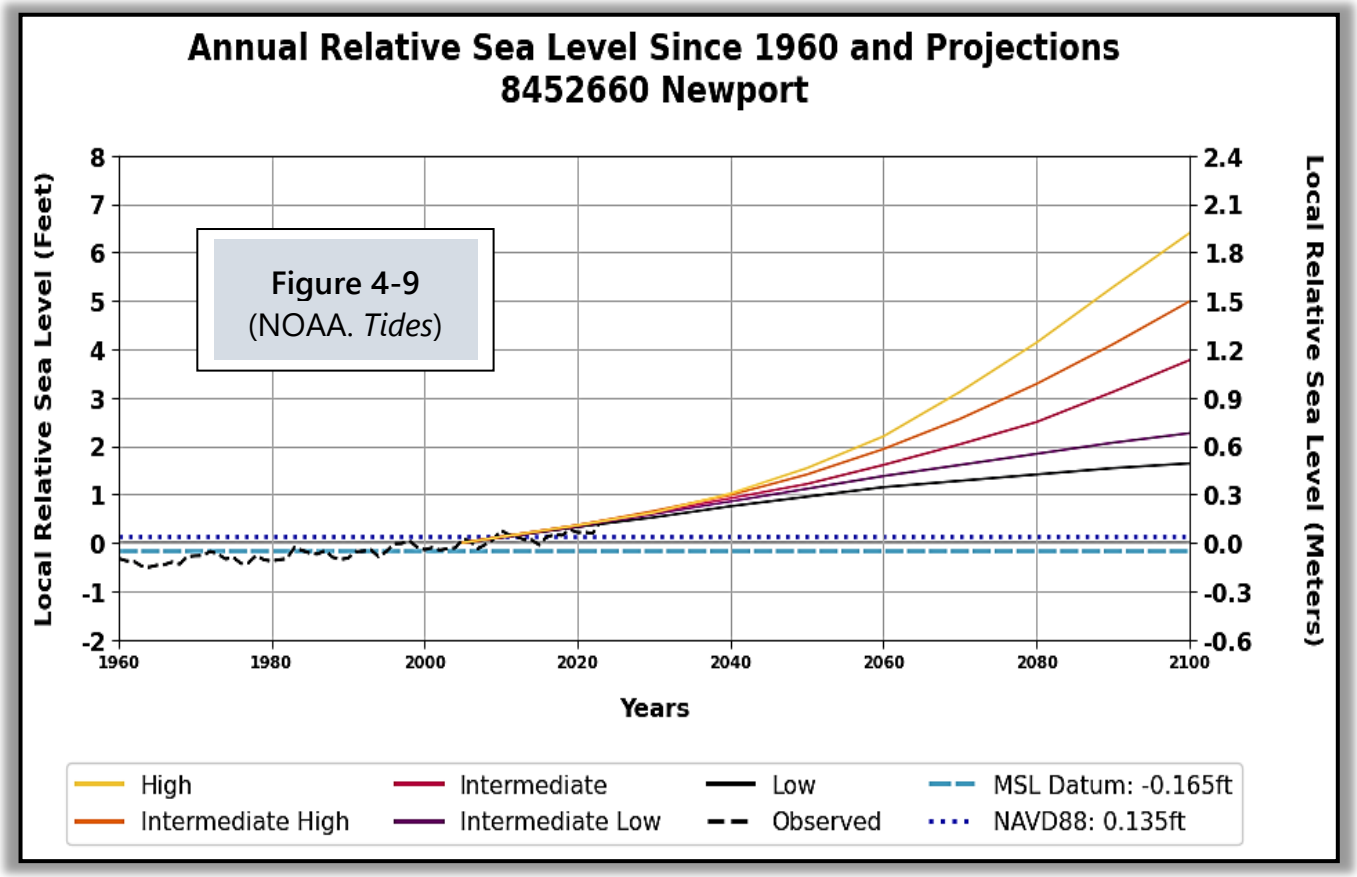


Figure 4-9
(NOAA. *Tides*)

In February 2022 NOAA released their ***Sea level Rise Technical Report*** which updates their 2017 SLR projections and provides additional information on tide, wind, and storm-driven extreme water levels affecting current and future coastal flood risk. The 2022 SLR Technical Report "provides the most up-to-date sea level rise projections for all U.S. states and territories by decade for the next 100 years and beyond, based on a combination of tide gauge and satellite observations and all the model ensembles from the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC). NOAA's 2022 SLR Technical Report projects sea levels along the coastline will rise an additional 10-12 inches by 2050 with specific amounts varying regionally, mainly due to land height changes" (NOAA. *U.S. coastline*).

The Rhode Island Coastal Resources Management Council (CRMC) adopted NOAA's "worst-case" high curve projection to guide planning in Rhode Island (CRMC. *Shoreline Change SAMP*, 2-5). As shown in **Table 4-1**, the current worst-case sea level rise projections for Rhode Island based on the 2022 NOAA high curve, are lower than projected in 2017. Although this is welcome news, the projected levels remain a threat to Rhode Island's coastline. As noted by CRMC, "While the 2022 NOAA high curve projections appear to have decreased for 2050, there is far more certainty with these future sea level rise projections based on multiple lines of evidence, and the CRMC and RI must remain vigilant in its planning for coastal adaption and resiliency" (CRMC. *Statement*).

Table 4-1 Sea level Rise Projections for Rhode Island

NOAA Worst-case projections for Rhode Island based on high curve	2030	2050	2080	2100
2022 SLR Projections	0.71 feet	1.60 feet	4.19 feet	6.47 feet
2017 SLR Projections	1.67 feet	3.25 feet	6.69 feet	9.60 feet

CRMC. *Shoreline Change SAMP*, 2-5; NASA. *Interagency*

The impacts of SLR are already being experienced through:

- increased frequency of low-level inundation
- exacerbated flood elevations during storm events
- increased rates of coastal erosion
- increased saltwater intrusion into groundwater
- a net loss of coastal marshes

The impact of sea level rise is extensive and must be considered in long-term land use, development, and critical infrastructure planning. The RI Emergency Management Agency's (RIEMA) Risk Assessment states that, "Sea level rise will result in wide scale systematic changes in the terrestrial and marine environments. **Future increases in relative sea level will displace coastal populations, threaten infrastructure, intensify coastal flooding and ultimately lead to the loss of recreation areas, public space, and coastal wetlands**. Coastal infrastructure will become increasingly susceptible to complications from rising sea levels, as the upward trend continues. Residential and commercial structures, roads, and bridges will be more prone to flooding. SLR will also reduce the effectiveness and integrity of existing seawalls and revetments, designed for historically lower water levels. Higher sea levels will result in changes in surface water and groundwater characteristics. Salt intrusion into aquifers will contaminate drinking water supplies and higher water tables will compromise wastewater treatment systems in the coastal zone" (RIEMA. *2019 RI-SHMP*, 3-174 & 3-175).

4.2 HAZARD IDENTIFICATION

In accordance with the planning guidelines outlined in Section 322 of the Disaster Mitigation Act of 2000 (DMA 2000), this *Plan* addresses only **natural hazards**, and does not consider man-made hazards (e.g., structural fires, hazardous materials, chemical spills, or weapons of mass destruction). The Rhode Island State Hazard Mitigation Plan (RI-SHMP) defines a natural hazard as "an event or physical condition that has the potential to cause fatalities, injuries, property and infrastructure damage, agricultural loss, damage to the environment, interruption of business, or other types of harm or loss" (RIEMA. *2019 RI-SHMP*, 3-1).

CRS CREDIT: NFIP/CRS

Mitigation Planning Element	CRS Planning Step	Max Pts
Phase II – Risk Assessment	4. Assess the Hazard	35

CRS Coordinator's Manual – Activity 510: Floodplain Management Planning

In an effort to determined what natural hazards should be addressed in this *Plan* the Advisory Committee reviewed the hazards included in the Town's 2017 Hazard Mitigation Plan, the 2024 Rhode Island State Hazard Mitigation Plan (RI-SHMP), plans from mainland neighboring communities, and documentation/research from various sources related to previous or anticipated hazards to impact New Shoreham. An overview of RI disaster declarations from 1954 forward, which were reviewed as part of the hazard identification process, has been included in **Table 4-2**.

The Committee also discussed the group of hazards identified by the State as not having a high risk to Rhode Island. Due to New Shoreham's topography and subsurface conditions, the Advisory Committee concurred with the State's 2019 and 2024 HMP assessments and determined that the Town's **exposure to the following hazards was unlikely**, and will therefore not be addressed in this update: *Avalanches, Expansive Soils, Land Subsidence, Landslides, Volcanoes, and Tsunamis.*

As Town resources are limited, it is important that staff time and funding be devoted to hazards with a higher likelihood of occurring or potentially having a greater impact on the community. While there is always the possibility for an unexpected natural hazard to occur, it should be recognized that the intent of this *Plan* is to understand what natural hazards have a higher probability of impacting New Shoreham over the ensuing 5-year period. **The Advisory Committee determined that in addition to the hazards addressed in the Town's 2017 HMP, the following hazards should also be considered: Vector-borne Diseases Transmitted by Ticks or Mosquitoes, and Contagious Respiratory Illness Caused by Influenza Viruses or Coronaviruses.**

Hence, the Town, having considered all natural hazards identified in the 2024 RI State Hazard Mitigation Plan (RI-SHMP), will address each hazard to the extent deemed locally applicable, or has stated why the natural hazard will not be considered within this Plan. The hazards that are addressed in this *Plan* have been grouped into the following categories:

4.3.1 Flood-Related Hazards (Inland Flooding including Dam Failure, Coastal Flooding including Storm Surge, Coastal Erosion)

4.3.2 Wind-Related Hazards (High Winds, Thunderstorms including Lightning and Hail, Tornadoes, Tropical Cyclones - Tropical Depressions, Tropical Storms, and Hurricanes)

4.3.3 Winter-Related Hazards (Heavy Snow, Ice, Extreme Cold)

4.3.4 Infectious Disease-Related Hazards (Vector-borne Diseases Transmitted by Ticks or Mosquitoes, Contagious Respiratory Illness Caused by Influenza Viruses or Coronaviruses)

4.3.5 Other Hazards (Earthquake, Extreme Heat, Drought, Brush Fire)

4.2.1 Disaster Declaration History

To assist in identifying the likelihood and potential severity of future hazards, the Advisory Committee reviewed past events that triggered a State or Federal Disaster Declaration for Rhode Island. Disaster declarations are issued when the severity of an event overwhelms and exhausts a local government's or state government's resources. A summary of Federal and State Disaster Declarations for Rhode Island is shown in **Table 4-2**. The majority of the emergency declarations and major disaster declarations were issued as the result of hurricanes and winter weather-related events. The top events (highlighted in tan) occurred post the 2017 Hazard Mitigation Plan.

Table 4-2 Disaster and Emergency Declarations in Rhode Island, 1954 – 2024

Disaster Number	Declaration Type *	Declaration Date	Description	Individual Assistance Total	Public Assistance Total	HMGP Total
4766	DR	3/20/2024	Severe Storms and Flooding	$10,990,170	Not currently available	
4765	DR	3/20/2024	Severe Storm and Flooding	$5,242,202	Not currently available	
4753	DR	1/7/2024	Severe Storms, Flooding, and Tornadoes	$3,201,947	Not currently available	
5464	FM	4/14/2023	RI Exeter Fire	Not currently available		
4653	DR	5/12/2022	Severe Winter Storm and Snowstorm	N/A	$9,362,778	N/A
3563	EM	8/21/2021	Hurricane Henri	Not currently available		
4505	DR	3/30/2020	Covid-19 Pandemic	$11,700,056	$815,320,523	$1,711,830
3440	EM	3/13/2020	Covid-19 Pandemic	Not currently available		
3515	EM	3/13/2020	Narragansett Indian Tribe Covid-19 Pandemic	Not currently available		
4212	DR	4/3/2015	Severe Winter Storm Juno and Snowstorm	N/A	$8,897,067	N/A
4107	DR	3/22/2013	Severe Winter Storm and Snowstorm	N/A	$7,929,498	N/A
4089	DR	11/3/2012	Hurricane Sandy	$421,341	$8,629,001	N/A
3355	EM	10/29/2012	Hurricane Sandy	N/A	N/A	N/A
4027	DR	9/3/2011	Tropical Storm Irene	N/A	$8,341,293	N/A
3334	EM	8/27/2011	Hurricane Irene	N/A	N/A	N/A
3311	EM	3/30/2010	Severe Storms and Flooding	N/A	N/A	N/A
1894	DR	3/29/2010	Severe Storms and Flooding	$37,157,116	$24,263,849	N/A
1704	DR	5/25/2007	Severe Storms and Inland/Coastal Flooding	N/A	$592,557	N/A
3255	EM	9/19/2005	Hurricane Katrina Evacuation	N/A	$1,110,010	N/A
3203	EM	2/17/2005	Record Snow	N/A	$6,273,609	N/A
3182	EM	3/27/2003	Snowstorm	N/A	$2,002,984	N/A
3123	EM	11/19/1996	Major Water Main Break	N/A	$1,539,100	N/A
1091	DR	1/24/1996	Blizzard	N/A	N/A	N/A
3102	EM	3/16/1993	Blizzards, High Winds, and Record Snowfall	N/A	$167,897	N/A
3094	EM	9/16/1992	Water Contamination	N/A	$1,994,343	N/A
913	DR	8/26/1991	Hurricane Bob	N/A	N/A	N/A
748	DR	10/15/1985	Hurricane Gloria	N/A	N/A	N/A
548	DR	2/16/1978	Snow, Ice	N/A	N/A	N/A
3058	DR	2/7/1978	Blizzards and Snowstorms	N/A	N/A	N/A
39	DR	8/20/1955	Hurricane, Flood	N/A	N/A	N/A
23	DR	9/2/1954	Hurricane	N/A	N/A	N/A

FEMA Declared Disaster Website

Note: DR = Major Disaster Declaration; EM = Emergency Disaster Declaration; FM = Fire Management

In support of the Risk Assessment process, **Table 4-3** was created from NOAA's National Centers for Environmental Information (NCEI) Storm Events Data for Washington County. Over the past 70 decades, flooding, high wind events, winter storms, and thunderstorms have been the most prevalent disasters faced by Washington County. While the total property damages are believed to be underrepresented due to unreported or difficult to quantify losses, it is clear that damages associated with flooding are the most extensive (NOAA. *National).*

Table 4-3 Overview of Hazard Events and Related Property Damage in Washington County, RI (1950-2023)

Hazard	Flood	Hurricane/ Tropical Storm	High-Wind	Tornado	Winter Storm	Drought	Extreme Cold	Extreme Heat	Thunder-storm (Hail/ Lightning)
Total Number of Days with Events	29	5	71	2	24	4	0	1	56
Total Reported Property Damages	**$33,435,000**	$1,075,000	$535,200	$150,000	$61,900	---	---	---	$974,250

NOAA's National Centers for Environmental Information (NCEI) Storm Events Data for Washington County, RI



Figure 4-10 Hurricane Carol Hits Rhode Island (1954)

Photo Credit: Rhode Island Historical Society

4.2.2 Hazard Priority Ranking

New Shoreham is one of Rhode Island's coastal communities. It is coterminous with Block Island; bounded on all sides by the Atlantic Ocean. Although the warmth from the ocean may reduce the severity of certain natural hazards, such as extreme winter storms, the Town's land characteristics, including low-lying property, make it subject to a range of natural hazards that have the potential to adversely affect public health and safety.

To assist the HM&FMP Advisory Committee in analyzing each hazard and then comparing and prioritizing the hazards in terms of their potential impact on the Town, a standard methodology was used. The methodology was based on three semi-quantitative factors (probability of occurrence, likely range of impact, and likely magnitude of impact). The Advisory Committee utilized a number of resources to help them assess the hazards. These included a review of the Disaster and Emergency Declarations for Rhode Island, New Shoreham's 2017 Hazard Mitigation Plan and 2016 Comprehensive Plan, updated hazard profiles, input from the community via the HM&FMP Public Opinion Survey, the 2019 and 2024 RI State Hazard Mitigation Plans, and from personal experience.

In the Committee's risk summary (**Table 4-4**) each of the three semi-quantitative factors were given equal weight when calculated to determine the overall numeric ranking. The full ranking and criteria have been provided in **Appendix 4-1**. The narrative included in **Appendix 4-1** explains the methodology of scoring the vulnerability for the profiled hazards and creating the overall ranking. This exercise assisted the Advisory Committee in determining if any hazards should be excluded from further consideration and which ones should be more heavily weighted in terms of the Town's mitigation strategy. The hazards ranked the highest by the Committee were: Tropical Cyclone (Tropical Depression, Tropical Storm, and Hurricane); Heavy Snow & Ice; Extreme Cold; Coastal Flooding including Storm Surge; Coastal Erosion; Vector-borne Diseases Transmitted by Ticks or Mosquitoes; Contagious Respiratory Illness Caused by Influenza Viruses or Coronaviruses; and Extreme Heat.

Some of the key information used in profiling the hazards came from the resources listed below. The specific documents or websites used can be found in the **References and Works Cited Section.**

FLOOD-RELATED HAZARDS

- Climate Central
- Coastal Resources Management Council (CRMC)
- Environmental Protection Agency (EPA)
- Federal Emergency Management Agency (FEMA) – including FEMA Flood Insurance Rate Maps (FIRMs), National Flood Insurance Program (NFIP), and repetitive loss/severe repetitive loss (RL/SRL) properties
- Intergovernmental Panel on Climate Change (IPCC)
- National Geographic
- National Oceanic and Atmospheric Administration (NOAA) – including NOAA|NCEI Storm Events Database
- Review of historical Federal and State Disaster Declarations
- Rhode Island Climate Change Collaborative
- Rhode Island Department of Environmental Management (RIDEM)
- Rhode Island Division of Statewide Planning (RIDSP)
- Rhode Island Emergency Management Agency (RIEMA) – RI-SHMP
- Rhode Island Geographic Information System (RIGIS) – GIS Data
- United States Army Corps of Engineers (USACE) National Inventory of Dams database

WIND-RELATED HAZARDS

- American Society of Civil Engineers (ASCE) Minimum Design Loads for Buildings and Other Structures
- Intergovernmental Panel on Climate Change (IPCC)
- National Geographic
- National Oceanic and Atmospheric Administration (NOAA) – including National Weather Service (NWS), NOAA National Hurricane Center (NHC), NOAA Sea, Lake, and Overland Surges from Hurricanes (SLOSH) model, and NOAA|NCEI Storm Events Database
- Review of historical Federal and State disaster Declarations
- Rhode Island Emergency Management Agency (RIEMA) – RI-SHMP
- Rhode Island Geographic Information System (RIGIS) – GIS Data

WINTER STORM-RELATED HAZARDS

- American Society of Civil Engineers (ASCE) Minimum Design Loads for Buildings and Other Structures
- Intergovernmental Panel on Climate Change (IPCC)
- National Oceanic and Atmospheric Administration (NOAA) – including National Weather Service (NWS) snowfall data, and NOAA|NCEI Storm Events Database
- Review of historical Federal and State disaster Declarations
- Rhode Island Emergency Management Agency (RIEMA) – RI-SHMP

INFECTIOUS DISEASE-RELATED HAZARDS

- Centers for Disease Control and Prevention (CDC)
- Environmental Protection Agency (EPA)
- Review of historical Federal and State disaster Declarations
- Rhode Island Department of Environmental Management (RIDEM)
- Rhode Island Department of Health (RIDOH)
- Rhode Island Emergency Management Agency (RIEMA) – RI-SHMP
- World Health Organization (WHO)

OTHER HAZARDS

- American Society of Civil Engineers (ASCE) Minimum Design Loads for Buildings and Other Structures
- Climate Central
- Intergovernmental Panel on Climate Change (IPCC)
- National Aeronautics and Space Administration (NASA)
- National Oceanic and Atmospheric Administration (NOAA) – including National Weather Service (NWS) average annual rainfall data (drought conditions), and NOAA|NCEI Storm Events Database
- Review of historical Federal and State disaster Declarations
- Rhode Island Department of Health (RIDOH)
- Rhode Island Emergency Management Agency (RIEMA) – RI-SHMP
- United States Department of Agriculture Natural Resources Conservation Service (USDA)
- United States Geological Survey (USGS)

Table 4-4 Risk Summary: Overview

Hazard	Overall Ranking	Risk Category
Tropical Cyclone (Tropical Depression, Tropical Storm, and Hurricane)	3.33	High
Heavy Snow & Ice	3.00	
Extreme Cold	3.00	
Coastal Flooding including Storm Surge	2.92	
Coastal Erosion	2.92	
Vector-borne Diseases Transmitted by Ticks or Mosquitoes	2.92	
Contagious Respiratory Illness Caused by Influenza Viruses or Coronaviruses	2.92	
Extreme Heat	2.92	
High Winds	2.58	Medium
Inland Flooding	2.08	
Thunderstorm including Lightning and Hail	2.00	
Brush Fire	2.00	
Tornado	1.58	Low
Drought	1.58	
Earthquake	1.50	
Dam Failure	1.33	

4.3 HAZARD PROFILES

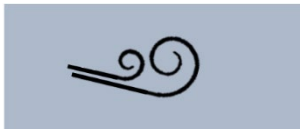
Hazard Mitigation Plan: The Town of New Shoreham has successfully met the following requirement ➔
44 CFR Subsection D §201.6(c)(2)(i): [The risk assessment shall include] A description of the type, location, and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

As indicated in **Table 4-4**, based on Committee input, the lowest ranked hazards were determined to be Tornado, Drought, Earthquake, and Dam Failure. Although these hazards are not currently considered a significant threat to New Shoreham, it was determined prudent to maintain their inclusion in this document. As our climate is rapidly changing, some of these hazards may become more significant in future years. That being said, in terms of the Town's ensuing 5-year mitigation strategy, those four hazards will have a lower standing.

The identified hazards are profiled in the following subsections:



4.3.1 Flood-Related Hazards (Inland Flooding including Dam Failure, Coastal Flooding including Storm Surge, Coastal Erosion)



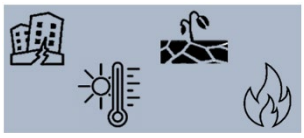
4.3.2 Wind-Related Hazards (High Winds, Thunderstorms including Lightning and Hail, Tornadoes, Tropical Cyclones - Tropical Depressions, Tropical Storms, and Hurricanes)



4.3.3 Winter-Related Hazards (Heavy Snow, Ice, Extreme Cold)



4.3.4 Infectious Disease-Related Hazards (Vector-borne Diseases Transmitted by Ticks or Mosquitoes, Contagious Respiratory Illness Caused by Influenza Viruses or Coronaviruses)



4.3.5 Other Hazards (Earthquake, Extreme Heat, Drought, Brush Fire)

Each profile includes a description and extent (strength or magnitude of impact); is locally defined (geographic areas affected); identifies previous occurrences; addresses climate change impacts; and discusses the probability of future events. With respect to probability of future events, this Plan will adopt the probability rating assessment used in the State of Rhode Island Hazard Mitigation Plan (RI-SAMP):

Highly Likely: Greater than 90% annual probability

Likely: Between 50% and 89.9% annual probability

Potential: Between 1% and 49.9% annual probability

Unlikely: Less than 1% annual probability

FLOOD-RELATED HAZARDS

4.3.1 Flood-Related Hazards

Flooding, the accumulation of a substantial amount of water in areas that are typically dry, generally results from heavy rainfall, storm surges, and melting snow. FEMA defines a flood as:

- "A general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties from: overflow of inland or tidal waters; unusual and rapid accumulation or runoff of surface waters from any source; or a mudflow; or

- The collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood as defined above" (FEMA. *Glossary*).

The RI Geographic Information System (RIGIS) has made available FEMA's Digital Flood Insurance Rate Map (D-FIRM) database for the State, which the Town has used in developing this *Plan*. The Flood Insurance Rate Maps show FEMA designated flood zones according to varying levels of flood risk. The base floodplain, also called the **Special Flood Hazard Area (SFHA)** is considered the highest risk area and is comprised of the A and V zones. **Zone A**, or the 100-year floodplain, identifies areas with a one percent or greater chance of flooding in any given year. **Zone V**, the Velocity Zone, identifies coastal areas with a one percent or greater chance of flooding in any given year plus the additional hazard of storm-induced waves, or velocity action. Both the A and V Zones have a 26% chance of flooding over the life of a 30-year mortgage (FEMA. *Unit 3,* 3-4 & 3-5).

As an island community with numerous inland water bodies, New Shoreham is vulnerable to coastal and inland flooding as well as erosion from storm events and storm surge. **The most recent flood maps, which were adopted by the Town on October 7, 2013, were used for the Flood Zone mapping and analysis herein.** There are 11 flood insurance rate maps (FIRMs or D-FIRMs for the digital version) that encompass New Shoreham, all of which have an effective date of October 16, 2013. Links for the FIRM panels has been included in **Appendix 5-1**.

As indicated, the **high risk flood area** (V and A flood zones) is commonly referred to as the 100-year floodplain or the Special Flood Hazard Area (SFHA). There are different designations for the V and A zones based on the data collected. In New Shoreham the designations include Zones VE and AE. The first letter (V or A) represents the flood zone, and when denoted, a second letter identifies additional flood data. An E denotes that base flood elevations have been provided in that area. The **Base Flood Elevation (BFE)** is the computed elevation to which floodwater is anticipated to rise during a 100-year flood.

In New Shoreham the **moderate risk flood zone** is designated as the X shaded or 500-year floodplain or 0.2% annual chance flood zone. Although often referred to as the 500-year floodplain, it actually encompasses the area from the limits of the 100-year (1% annual chance) floodplain up to and including the 500-year floodplain (0.2% annual chance) (FEMA. *Unit 3,* 3-29).

The flood hazard mapping depicted in **Figure 4-11,** serves as the basis for NFIP regulations and flood insurance requirements. **Figure 4-11** is also included at a larger scale in **Appendix 4-2**.

The location of flood events generally varies based on the type of flooding. In this section, flood-hazards will be discussed in terms of the following three categories:

4.3.1.1 Inland Flooding (Riverine Flooding, Shallow Flooding, and Dam Failure)

4.3.1.2 Coastal Flooding including Storm Surge

4.3.1.3 Coastal Erosion

Flooding

According to FEMA, between 2010 and 2018 the annual cost of flood damage in the United States was approximately $17 billion and was four times more than was recorded in the 1980s (FEMA. Testimony, 5)

FEMA Flood Insurance Rate Map Zone Definitions

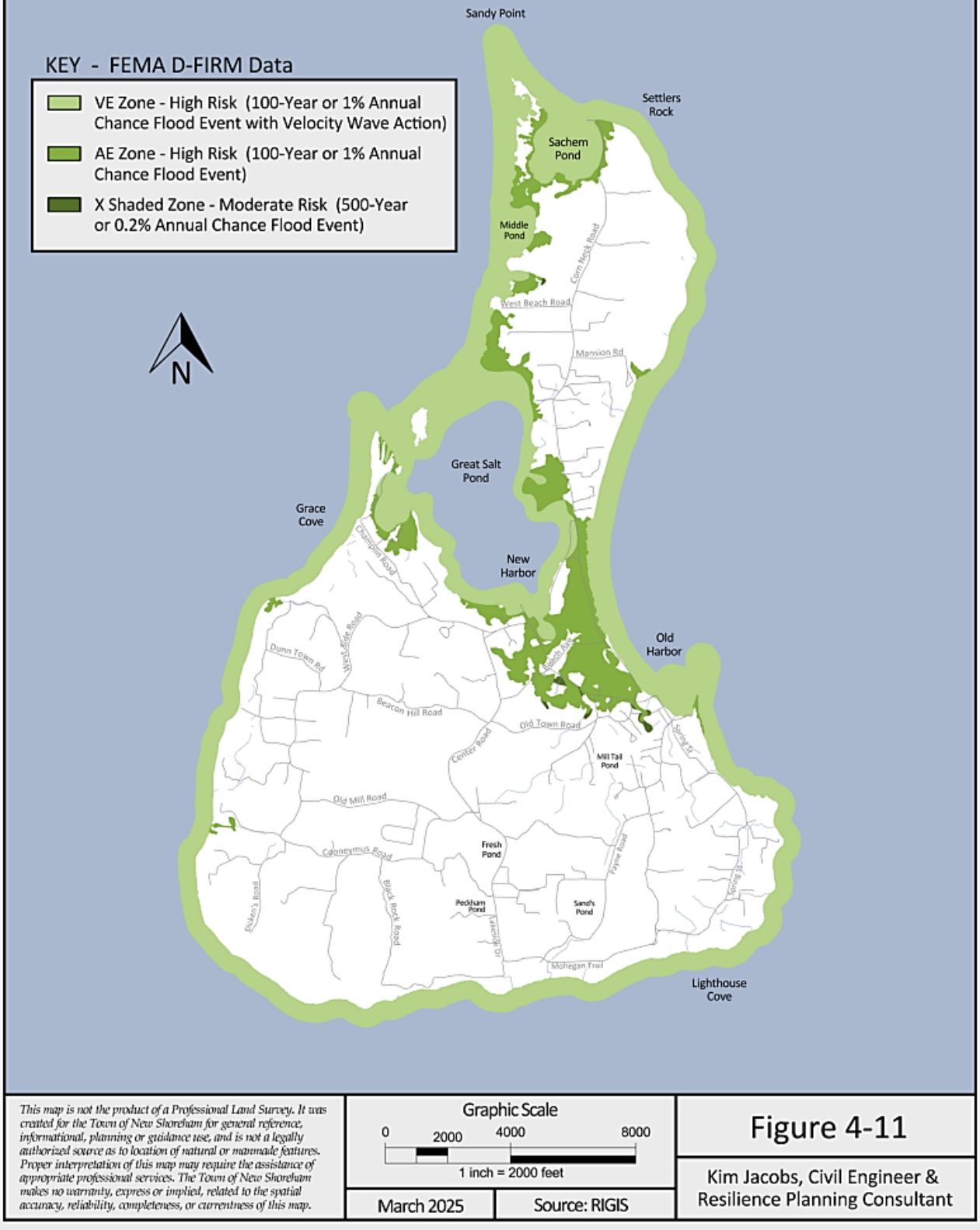
High Risk: Zone V (1% annual chance): Zone V is the flood insurance rate zone that corresponds to the 100-year coastal floodplain that has additional hazards associated with storm waves. Mandatory flood insurance purchase requirements apply. For areas within the V Zone where detailed hydraulic analyses has been performed and Base Flood Elevations (BFEs) identified, it is classified as VE replacing the old format V1-V30. The 100-year floodplain is calculated to have a 26% chance of flooding over the life of a 30-year mortgage.

High Risk: Zone A (1% annual chance): Zone A is the flood insurance rate zone that corresponds to the 100-year floodplain that is determined in the Flood Insurance Study (FIS) by approximate methods. Mandatory flood insurance purchase requirements apply. For areas within the A Zone where detailed hydraulic analyses has been performed and Base Flood Elevations (BFEs) identified, it is classified as AE replacing the old format A1-30. There are four additional A zone designations: AH indicating shallow flooding with BFEs identified; AO indicating sheet flow, ponding, or shallow flooding with base flood depths (feet above ground) provided; A99 indicating an area to be protected from base flood by levees or Federal Flood Protection Systems under construction; and AR indicating a base floodplain that resulted from the decertification of a previously accredited flood protection system that is in the process of being restored to provide a 100-year or greater level of flood protection. The 100-year floodplain is calculated to have a 26% chance of flooding over the life of a 30-year mortgage.

Moderate Risk: Zone X (shaded) (from less than 1% to 0.2% annual chance)**:** Zone X (shaded) is the flood insurance rate zone that is considered moderate risk. Flood Zone X (shaded) indicates the area from the limits of the 100-year floodplain up to and including the 500-year floodplain (0.2% annual chance). As this zone encompasses up to the 0.2% annual chance, it is generally referred to as the 500-year floodplain. The Zone X (shaded) is determined in the Flood Insurance Study (FIS) by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no BFEs (base flood elevations) or depths are shown within this zone.

Low Risk: Zone X (unshaded) (less than 0.2% annual chance): Zone X (unshaded) is the flood insurance rate zone that is considered low risk. Flood Zone X (unshaded) is the area outside of (higher in elevation than) the 500-year flood level.

FEMA Flood Zones





4.3.1.1 Inland Flooding (Riverine Flooding, Shallow Flooding, and Dam Failure)

Description and Extent

"Inland flooding can occur when the volume of water on land exceeds the capacity of natural and built drainage systems" (mass.gov). Significant inland flooding can cause extensive damage to structures and personal property; disrupt potable water, stormwater, and sewer system operations; and flooded roadways can cause dangerous conditions for motorist. Additionally, floodwater can carry debris, toxic material, or contaminants which can negatively impact ecosystems. Inundated structures that aren't addressed quickly, may also provide an opportunity for mold contamination. Further, standing water following a flooding event can provide a favorable environment for breeding mosquitos.

The types of flooding that present a risk within inland (non-coastal) areas in New Shoreham include:
riverine flooding, shallow flooding, and dam failure.

❖ ***Riverine Flooding (overbank flooding, flash floods)***

Riverine flooding is defined as flooding that occurs along a channel. It is a function of precipitation levels and water runoff volumes within the stream or river.

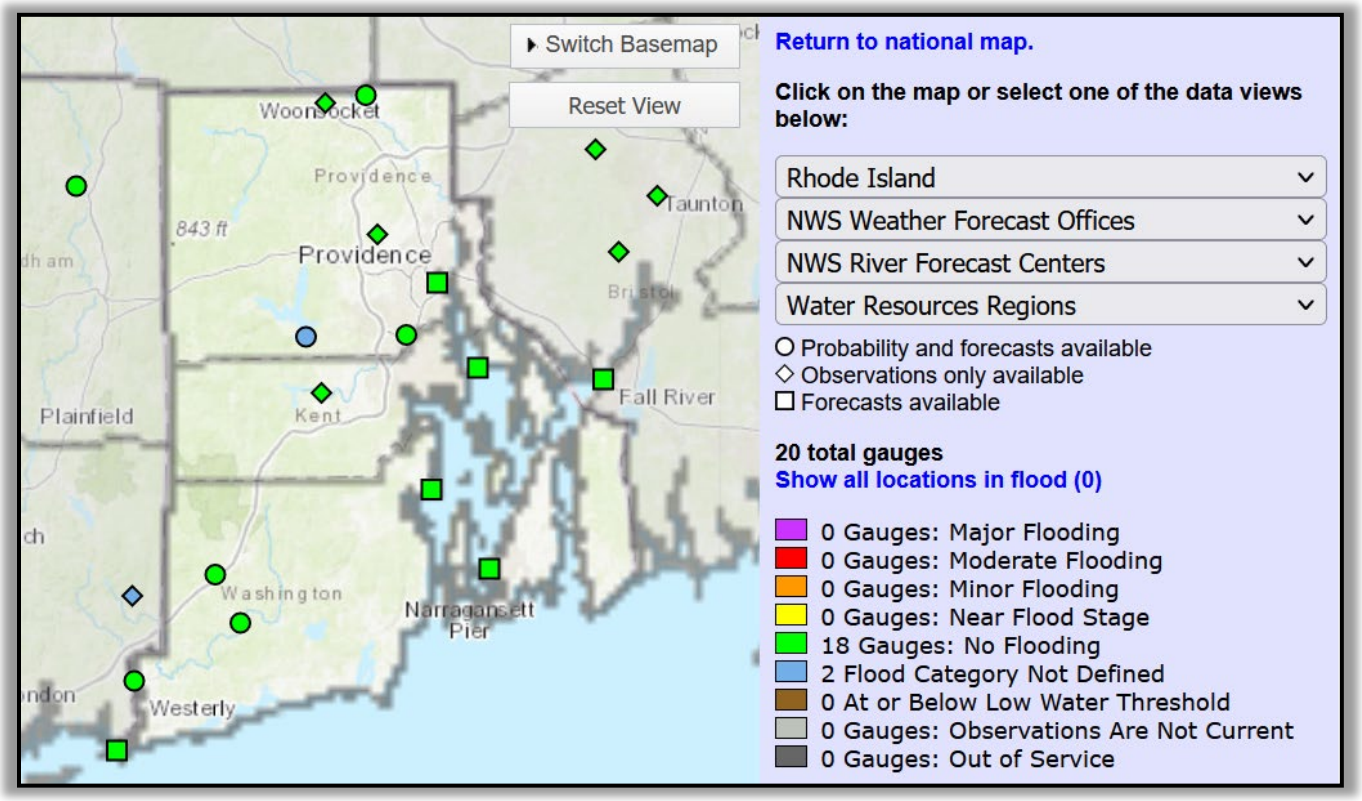
Riverine flooding occurs periodically and is typically a by-product of coastal storms, but can also occur during late winter and early spring due to melting snow and ice, or seasonal precipitation. If an increase in the volume of water within a channel flows over the river or stream bank (also referred to as **overbank flooding**) it will result in partial or complete inundation of the adjacent floodplain. Floodplains are low-lying lands adjacent to rivers, lakes, and oceans that are periodically flooded. The connections between a waterway and its floodplain becomes more apparent after major flood events (RIEMA. *2019 RI-SHMP*, 3-112). Maintaining floodplains helps to provide natural flood and erosion control. In addition, floodplains support a variety of natural resources and function as a natural filtering system for groundwater recharge (FEMA. *Unit 1,* 1-7).

Increased construction within floodplains, will destroy these natural protective systems resulting in greater risks from flooding. "Alterations to river channels, including channelization and dam construction, can influence the flow of water. Modifications may lead to changes in river behavior, affecting the potential for both upstream and downstream flooding" (RIEMA. *2024 RI-SHMP*, 118). In addition, flood conditions can be exacerbated if channels are constricted due to large amounts of debris, such as fallen trees, or ice.

Flash floods occur with little warning, move quickly, and can carry a huge amount of debris. They have the power to tear out trees, and destroy buildings and bridges. Flash floods are primarily caused by severe storms that drop significant rainfall over a short period of time. Steep slopes and narrow stream valleys increase a community's vulnerability to flash floods and resultant damage, as do areas with poor drainage. The construction of impervious surfaces such as asphalt roads, parking lots, driveways, sidewalks, and expansive roofs, accelerates the potential for flash flooding because these surfaces do not allow natural absorption by open ground. During high precipitation events, storm drains are often overwhelmed, and water rushes to low spots such as basements and underpasses. Flash floods can also be caused by a dam or levee failure or the release of ice-jam flooding (FEMA. *Unit 1,* 1-8). If large amounts of ice or debris pile up behind low-lying bridge decks or narrow bridge spans it may cause a full or partial bridge collapse. The bridge failure could result in a flood surge, laden with debris, that may impact downstream infrastructure including subsequent bridges, dams, and culverts.

While there is no universally accepted scale for measuring flooding, some inland flooding may be measured by stream/river gauges, installed in bodies of water located near populated areas, designed to determine the risk of flooding. The most commonly used stream gauge is the Automated Local Evaluation in Real-Time (ALERT) which continuously sends water level data through a satellite or phone telemetry. Both the USGS (United States Geological Survey) and NWS (National Weather Service) install, operate, and collects data from thousands of sites around the country. The NWS river gauges are primarily used for flood forecasting and warning. The USGS river gauges can also serve that purpose but are primarily used to measure streamflow and river levels for a variety of scientific and management purposes, including hydrological studies, water resource management, environmental monitoring, and providing real-time data for activities like water conservation and quality monitoring. There are no listed USGS or NWS river gauges in New Shoreham. **Figure 4-12** shows the location of National Weather Service (NWS) flood gauges in and near Rhode Island.

Figure 4-12 Rhode Island: NWS Observed Gauge Map (NOAA|NWS)



❖ *Shallow Flooding (sheet flow, ponding)*

"Shallow flooding occurs in flat areas where a lack of channels means water cannot drain away easily" (FEMA. *Unit 1,* 1-11). Urbanization (increases in roads, buildings, etc.), exacerbates the accumulation of floodwater due to increased impervious surfaces, and is of particular concern in areas that have a high groundwater table, where development has occurred within floodplains, or with marginal urban drainage systems. Often urban drainage systems, which include swales, ditches, manholes, storm sewers, retention ponds, and other measures that are constructed to store or carry runoff to a receiving waterbody, cannot accommodate heavy rainfall due to being undersized or due to blockages resulting from lack of maintenance. "Poorly planned infrastructure, inadequate stormwater management, and the lack of effective drainage systems in urban areas can contribute to localized flooding" (RIEMA. *2024 RI-SHMP*, 118). Other land use changes, such as deforestation, which alter natural drainage patterns, may increase runoff and reduce the ability of the land to absorb water.

Two categories of shallow flooding are:

- ◊ **Sheet flow** – A lack or insufficiency of defined channels creates conditions where floodwater spreads over a large area at a roughly uniform depth.
- ◊ **Ponding** – This condition occurs when stormwater runoff collects in depressions and cannot drain out; the water remains until it infiltrates into the soil, evaporates, or is pumped out (FEMA. *Unit 1,* 1-11 & 1-12). (This does not include stormwater retention ponds specifically designed to collect stormwater and retain the water until it infiltrates into the soil; typically, within a matter of hours).

❖ *Dam Failure (Special Flood Hazard)*

"Dams have been an important part of Rhode Island's water infrastructure for centuries. In addition to the historic economic benefits provided by dams, they are used for flood control, water supply, power generation, recreation, and for mitigating the impact of increased runoff typically caused by land use changes associated with property development" (RIEMA. *2019 RI-SHMP*, 3-48).

NOAA defines a dam as "any artificial barrier that diverts or impounds water" and dam failure as a "catastrophic event characterized by the sudden, rapid, and uncontrolled release of impounded water" (NWS. *National Weather Service Glossary*). The Rhode Island State Hazard Mitigation Plan (RI-SHMP) indicates that the most common cause of dam failure is overtopping which can occur due to prolonged periods of rainfall and flooding. "Overtopping occurs when a dam's spillway capacity is exceeded and portions of the dam that are not designed to convey flow begin to pass water, erode away, and ultimately fail. Other causes of dam failure include design flaws, foundation failure, internal soil erosion, inadequate maintenance, or mis-operation. Complete failure occurs if internal erosion or overtopping results in a complete structural breach, releasing a high-velocity wall of debris-laden water that rushes downstream, damaging or destroying everything in its path" (RIEMA. *2019 RI-SHMP*, 3-46).

Weather conditions will impact extent. During high precipitation and flooding events, the potential for overtopping or breaches has a higher probability and may exacerbate the impact. A dam breach unrelated to a precipitation event may have an overall lesser impact; however the population will likely receive less warning which could create more life threatening situations. Dam failures can create the most damaging flash flood events because generally there is little or no warning time, limiting the opportunity to prepare and evacuate (RIEMA. *2019 RI-SHMP*, 3-46, 3-48).

Inventoried dams in Rhode Island are classified by size and hazard rating by the Rhode Island Department of Environmental Management (RIDEM). "The size classification provides a relative description of small, medium, or large dams, based on the storage capacity and height of the impounded water. The hazard classification relates to the probable consequences of failure or mis-operation of the dam; however, it does not relate to the current condition or the likelihood of failure of the dam" (RIEMA. *2019 RI-SHMP*, 3-46).

The dam hazard classifications defined by RIDEM are as follows:

- **High Hazard:** Failure or mis-operation will result in a probable loss of human life
- **Significant Hazard:** Failure or mis-operation will likely not result in loss of human life, but will cause major economic loss, disruption of lifeline facilities, or impact other concerns detrimental to the public's health, safety, or welfare
- **Low Hazard:** Failure or mis-operation will not likely result in loss of human life or cause major economic loss (RIDEM. *2022 Annual Report*, 4)

"According to the Federal Guidelines for Dam Safety, two (2) factors influence the severity of a dam failure: the amount of water impounded and the density, type, and value of development and infrastructure located downstream. The magnitude and severity of dam failures may also be assessed in terms of damage, including loss of life and injury, damage to infrastructure, loss of services or utilities, debris, and economic damage" (RIEMA. *2019 RI-SHMP*, 3-48).

Location

❖ ***Riverine Flooding (overbank flooding, flash floods)***

New Shoreham has several notable freshwater ponds as well as numerous small creeks, brooks, and streams. As the smaller tributaries often have less flood storage capacity, flood events may occur without sufficient warning. Streams and other watercourses are also susceptible to flooding from more localized weather systems that may cause intense rainfall over only a small area. Further, riverine flooding is more likely to result from an event with a slower speed of onset that causes stream and creek banks to overtop. In New Shoreham this is generally the result of tropical storms, but it can also occur during late winter due to melting snow, ice, and persistent spring rain. Areas bordering waterways may also be affected by large discharges caused by heavy rainfall over upstream areas (FEMA. *Unit 1,* 1-7).

Under the right conditions, most of the communities 365 freshwater ponds can swell over their banks and create flooding problems for nearby properties. Those properties and roadways most at risk are those adjacent to ponds in the low-lying areas as depicted in **Figure 4-11**. **The majority of island roadways, both Town-owned and privately owned, are either dirt or gravel.** Low elevation roads constructed of dirt or gravel are continually at risk of erosion and washouts.

It is important for storm drainage systems, including culverts, to be regularly maintained to help minimize flooding. **There are numerous culverts in Town along State roadways that are not effective and are in need of repair or replacement.** The Town has brought this to the attention of the RIDOT. Of particular concern are several culverts under Beach Avenue.

During flood events, low-lying bridge decks or narrow bridge spans may contribute to a greater degree of ice or debris piling up against the bridge abutments. Sufficient accumulation of debris could adversely affect the structural integrity of a bridge. There are two bridges in New Shoreham, one along Beach Avenue over Harbor Pond and the other along Ocean Avenue over Trim's Pond. Neither of these bridges are reported to have had incidents of ice or debris impacting the bridge abutments.

❖ ***Shallow Flooding (sheet flow, ponding)***

New or substantially improved homes/developments are subject to the State and Town's stormwater regulations, requiring that stormwater runoff from a property must not negatively affect neighboring properties. The goal is to manage runoff on-site so it does not cause erosion, flooding, or water quality issues for neighboring properties or public infrastructure. However, many homes/developments in New Shoreham predate such requirements.

During high precipitation events, sheet flow can result in flooding/ponding along the low-lying sections of roads and properties, particularly those in the FEMA flood zones depicted in **Figure 4-11**. Improved stormwater mitigation upgradient and/or along sections of the following roadways may help to mitigate flooding: Town-owned - Coast Guard Road (Champlin Road) and Scotch Beach Road; State-owned - Beach Avenue, Chapel Street, Corn Neck Road, Ocean Avenue, Old Town Road, Spring Street, and Water Street. **Note: flooding on several of these roads is often caused by a combination of factors which may include stormwater runoff, pond overflow, and coastal flooding/storm surge as further described in Subsection 4.3.1.2.**



Figure 4-13 Flooding along Ocean Avenue (Dec 23, 2022)
Photo Credit: Michael Shea

❖ ***Dam Failure (Special Flood Hazard)***

"As set forth in Rhode Island General Laws, Chapters 46-18 and 46-19, a dam owner has the responsibility for the safe operation of their dam, and is liable for the consequences of accidents or failures of the dam. In general, a dam owner is required to use 'reasonable care' in the operation and maintenance of a dam. This responsibility includes the proper operation, maintenance, repair, and rehabilitation of a dam, which are essential elements in preventing a dam failure" (RIEMA. *2024 RI-SHMP*, 280). As the condition of a dam is evolutionary in nature, dams should be regularly inspected and monitored including during and immediately after high precipitation or seismic events. Dam inspections should include structural, hydraulic, and seepage evaluations.

"The Rhode Island Department of Environmental Management (RIDEM) is responsible for causing dams to be inspected to determine their condition, reviewing and approving plans for construction or substantial alteration of a dam, and ordering repairs or other action to address unsafe conditions. To meet that mandate, RIDEM established the **Dam Safety Program**, which is housed in the Bureau of Environmental Protection within the Office of Compliance and Inspection" (RIEMA. *2024 RI-SHMP*, 59). Under the Dam Safety Program, RIDEM is required to conduct a visual inspection every two years for **High Hazard Dams** and every five-years for **Significant Hazard Dams** (RIEMA. *2024 RI-SHMP*, 60).

Emergency Action Plans (EAPs) should be on file with RIDEM and regularly maintained for all High and Significant Hazard Dams. EAPs are designed to notify the appropriate public officials of possible, impending, or actual failure of a dam in time to take remedial action to safeguard people and property. The Town is responsible for maintaining EAPs for the two Significant classified dam's in New Shoreham.

"According to the Federal Guidelines for Dam Safety, two factors influence the severity of a dam failure, the amount of water impounded by the dam and the density, type, and value of development and infrastructure located downstream. Most dam failures are described by their potential for area inundation. The magnitude and severity of dam failures may be assessed in terms of damage, including loss of life and injury, damage to infrastructure, loss of services or utilities, debris, and economic damage" (RIEMA. *2024 RI-SHMP*, 62).

The *2023 Annual Report to the Governor on the Activities of the Dam Safety Program* identifies two dams in New Shoreham, both classified as Significant Hazard (RIDEM. *2023 Annual Report,* Attachment-14). **Table 4-5** was compiled based on information from the 2023 Annual Report supplemented by various technical references, and by Advisory Committee, stakeholder, and public input.

Table 4-5 New Shoreham Dams Classified as Significant (RIDEM. *2023 Annual Report*; Advisory Committee/public input)

Hazard Class	State ID	Dam Name	River/ Stream	Owner	Technical References from RIDEM Dam Safety Program ArcGIS Map
Significant Failure or mis-operation will likely not result in loss of human life, but will cause major economic loss, disruption of lifeline facilities, or impact other concerns detrimental to the public's health, safety, or welfare.	424	Block Island Rod & Gun Club Pond *(a.k.a. Mill Tail Pond Dam)*	Mill Tail Brook	Privately owned	Block Island Rod & Gun Club Pond Dam – Visual Inspection/Evaluation Report 424 Mill Tail Pond Dam (aka Block Island Rod & Gun Club Pond Dam)
	765	Mill Pond	Mill Tail Brook	Town of New Shoreham	Mill Pond Dam – Visual Inspection/Evaluation Report 765 Mill Pond Dam

While a low probability, flooding due to overtopping or failure of the two Significant Hazard dams in New Shoreham would cause some downstream destruction as detailed below.

Block Island Rod & Gun Club Pond Dam - #424 (Significant Hazard)

The Block Island Rod & Gun Club Pond Dam (a.k.a. Mill Tail Pond Dam) was built in 1950 presumably for the purpose of recreation. It is located on private property (accessible via Old Town Road). The dam consists of an earthen embankment that impounds water along Mill Tail Brook to form the Mill Tail Pond. The embankment structure is 90± feet long with a maximum height of 14± feet (Pare Corporation. Block, 2). The normal pool (spillway) elevation is 36± feet above MSL and the top of the dam is 41± feet above MSL (GZA. *424*, 2).

"The downstream channel flows from the dam through a deep valley that is overgrown with vines and brush. Beyond the upper slopes of the valley on the right side and about 60 feet downstream of the dam is the Town Hall. About 350 feet downstream of the dam the valley flattens out and the river flows into Mill Pond, then flows past the Mill Pond Dam (#765) and under Old Town Road (550 feet downstream), followed by a wooded area with residential structures greater than about 60 feet away from the stream channel, followed by Ocean Avenue (1,300 feet downstream), followed by Harbor Pond, Trim's Pond, Great Salt Pond, and the ocean" (Pare Corporation. Block, 6).

In 2007, to assist in evaluating the extent of flooding due to a theoretical dam failure, GZA performed a limited hydraulic analysis using the National Weather Service (NWS) Simplified Dam Break (SMPDBK) model. Based on the modeled scenario, a potential dam failure would likely not result in loss of human life, but may result in significant economic losses and disruption of local roadways. The analysis indicates that a peak flood depth of about nine feet would occur near the toe of the dam, with peak depths varying from 4-6± feet for the entire distance traveled by the flood wave. It is probable the flood wave would flood and potentially overtop Mill Pond Dam essentially causing it to fail and subsequently wash out sections of Old Town Road and Ocean Avenue. The developed areas along the discharge channel, including the Town Hall, may experience shallow flooding and property damage (GZA. *424*, 3, 4). The failure inundation area has been depicted in **Figure 4-14**.

In 2012 Pare Corporation conducted an assessment of the dam based on available data and visual inspections. "In general, Block Island Rod & Gun Club Pond Dam was found to have a heavily overgrown embankment, an irregular crest alignment, an unprotected upstream slope, an irregular downstream slope, an eroded left abutment, a primary spillway with an overgrown approach area, a deteriorated trash rack, an unprotected and overgrown downstream channel, and other dam safety deficiencies" (Pare Corporation. Block, 4). The specific concerns were outlined in greater detail in the Report, as were recommendations for additional studies, maintenance, and repairs.

In 2014 RIDEM issued a Notice of Violation to the owner for unsafe conditions. The property was sold in 2017 and the new owner subsequently met with RIDEM. To address the unsafe conditions, in 2019 the new owner of Dam #424 submitted a proposal to RIDEM to raise the height of the dam. The repair application was approved by RIDEM in January 2021 and the work to address the unsafe conditions was completed (RIDEM. *2021*, 21).

Mill Pond Dam - #765 (Significant Hazard)

The Mill Pond Dam was built in 1950 presumably for the purpose of recreation. The dam is owned by the Town of New Shoreham (GZA. *765,* Attachment 1-1). The dam consists of an earthen embankment that impounds water along Mill Tail Brook to form the Mill Pond. Trees and brush line the perimeter of the impoundment with the Town Hall beyond the southeastern edge The embankment structure is 135± feet long with a maximum height of 10± feet (Pare Corporation. Mill, 2, 5). The normal pool (spillway) elevation is 17± feet above MSL and the top of the dam is 20± feet above MSL (GZA. *765,* 1).

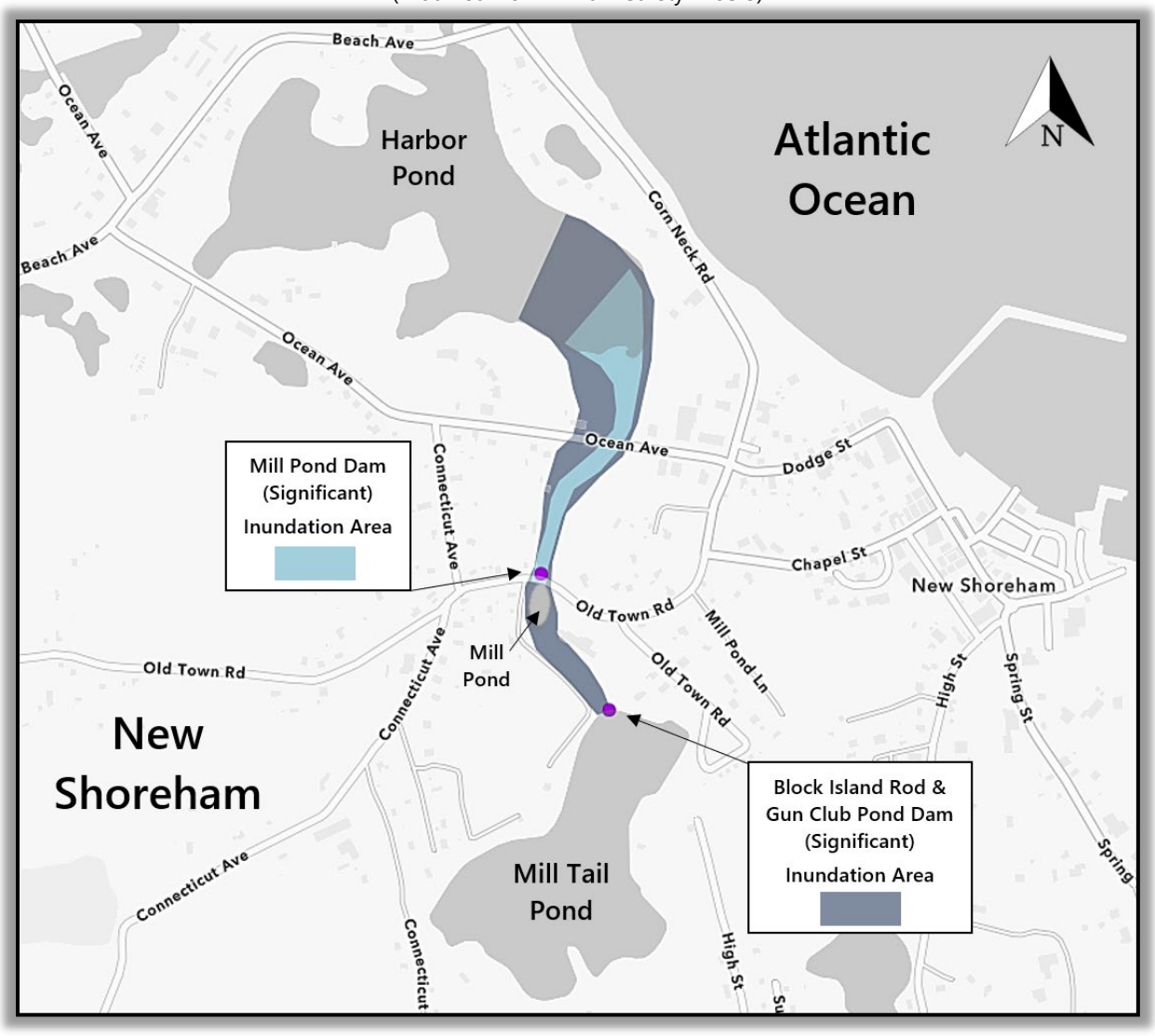
"The downstream channel flows through a wooded area with residential structures greater than about 60 feet away from the stream channel, followed by Ocean Avenue (800 feet downstream), followed by Harbor Pond, Trim's Pond, Great Salt Pond, and the ocean" (Pare Corporation. Mill, 5).

In 2007, to assist in evaluating the extent of flooding due to a theoretical dam failure, GZA performed a limited hydraulic analysis using the National Weather Service (NWS) Simplified Dam Break (SMPDBK) model. The dam failure analysis indicates that Old Town Road, which traverses the top of the dam, would be significantly damaged. A peak flood depth of about four feet would occur near the toe of the dam, with peak flows and depths attenuating as the flood wave travels downstream. It is probable the flood wave would overtop Ocean Avenue due to the limited capacity of the 18-inch culvert that conveys flow beneath the roadway. The developed areas along the discharge channel near Ocean Avenue may experience shallow flooding and property damage. The failure flood wave would dissipate within Harbor Pond (GZA. *765,* 1-4). The failure inundation area has been depicted in **Figure 4-14**.

In 2012 Pare Corporation conducted an assessment of the dam based on available data and visual inspections. "In general, Mill Pond Dam was found to have an eroded, unprotected, and steep upstream slope; an overgrown and steep downstream slope; a primary spillway with a deteriorated intake structure; an inaccessible discharge structure; an overgrown discharge channel, and other dam safety deficiencies. In general, most areas of the dam could not be accessed due to heavy overgrowth and steep slope conditions" (Pare Corporation. Mill, 3). The specific concerns were outlined in greater detail in the Report, as were recommendations for additional studies, maintenance, and repairs.

Figure 4-14 Location & Failure Inundation Areas: Block Island Rod & Gun Club Pond Dam and Mill Pond Dam

(Modified from RI Dam Safety ArcGIS)



Previous Occurrences

❖ ***Riverine and Shallow Flooding (overbank flooding, flash floods, sheet flow, ponding)***

Due to the island's geography, the Town's vulnerability to flooding is more often related to coastal events rather than inland flooding. However, inland flooding does occur and also contributes to more extensive flooding in coastal areas. **Tables 4-6 and 4-7** provide an overview of key precipitation events resulting in inland flooding in Washington County.

Table 4-6 Flood Events – Washington County 2000-2024 (NOAA|NCEI. *Storm Events Database*)

Event Type	Number of Days with Events	Deaths & Injuries	Property Damage Estimate *(generally underreported)*
Flood Events	20	0	$25,153,000 (associated with 9 events)
Flash Flood Events	4	0	$27,000 (associated with 3 events)
Heavy Rain Events	4	0	None reported

Recent history has shown that it may not be one storm that causes streams to overflow, but rather successive rain events that saturate the watershed. This was the case in the spring of 2010 resulting in the worst flooding in Rhode Islands recorded history on a number of the State's largest rivers. During a five-week period from late February through March 2010, a series of moderate to heavy rainfall events saturated soils and kept rivers and streams at or near flood stage. From March 29 -31, six to ten inches of rain fell over Rhode Island resulting in record levels of river flooding across the State (RIEMA. *2024 RI-SHMP*, 116). The damage from the 2010 flooding across Rhode Island resulted in a Presidential Major Disaster Declaration for the State (DR-1894-RI) and over $24M in public assistance and over $37M in individual assistance state-wide (RIEMA. *2024 RI-SHMP*, 52). New Shoreham was not as severely impacted by the March 2010 flooding compared to mainland Rhode Island. However, the island experienced some effects from the storms, including coastal erosion and localized flooding in low-lying areas. In addition, the March 2010 successive rain events caused Sands Ponds to overtop its banks, damaging the Block Island Water Company's backwash holding tanks and electrical boxes that service the reservoir pumps. The overbanking of Sands Pond due to floodwater also posed a threat to the water treatment equipment and roughly a dozen residential properties surrounding the pond (Town of New Shoreham RI. *BI Hazard*, 36).

Although the NOAA|NCEI database does not have any reported **flash flood events** for New Shoreham, based on local input, urbanized flooding resulting in minor flash floods has occurred in the Old Harbor Historic District along Chapel Street (**Figure 4-16**). Old Harbor is the most built-up area on the island and has significant hardscape. As such it relies on a robust storm drainage system to minimize flood issues. The low point in the Old Harbor Historic District is on Chapel Street, which is under RIDOT jurisdiction. Currently one of the two catch basins along Chapel Street is compromised and drains slowly.

When stormwater infrastructure is not designed or maintained properly, it can become overwhelmed during heavy rainfall. If it is unable to carry the water away fast enough, flooding – and possibly flash floods - may occur. This is especially problematic in areas which have a greater degree of impervious surface. If precipitation events increase in the future as predicted, more flooding/flash floods may occur in New Shoreham.

Table 4-7 Flood & Flash Flood Events – Washington County 2014-2024 (NOAA|NCEI. *Storm Events Database*)

Begin Date	Key Event Information (no deaths or injuries reported for any of these events)	Property Damage
08/26/2024	**Event:** Flash Flood **General Description:** A cold pool aloft and surface front caused a round of strong to severe storms over all of southern New England. Hail from 1 to 2 inches fell in MA, RI, and CT while localized flash flooding was observed in southern RI and MA. In Charlestown, roads were closed due to flooding.	-----
05/16/2024	**Event:** Flood **General Description:** Low pressure south of southern New England brought widespread moderate to heavy rain to the region during the morning. The heaviest was centered in eastern CT, northern and central RI into south coastal MA where a nearly stationary band of rain produced hourly rain rates of about a half-inch per hour. Some of the highest totals were 5.09 inches of rain in Westport, MA, 6.54 inches in South Kingstown, RI.	-----
01/10/2024	**Event:** Flood **General Description:** This inland runner brought warm air so that all precipitation fell as rain, along with strong winds. There was a good deal of tree damage from the winds and widespread river flooding with many rivers going into major flood stage. Much of Rhode Island received 2 to 5 inches of rain, which combined with melting snow, led to significant flooding of rivers, streams, urban areas, and some homes and businesses. The strongest winds, gusting as high as 66 mph, were reported near the lower end of Narragansett Bay, but wind damage was limited. Minor coastal flooding was observed along Narragansett Bay and the south-facing coastline during the early morning high tide on January 10. Of greater concern was the amount of beach erosion on the south coast including Misquamicut, where sand and debris closed Atlantic Avenue and produced significant erosion.	-----
09/13/2022	**Event:** Flood **General Description:** A warm front moved through southern New England during the morning bringing flooding to portions of Rhode Island. In New Shoreham, 6 to 12 inches of street flooding was reported on Corn Neck Rd.	3.3K
08/17/2019	**Event:** Flood **General Description:** Typical summer weather prevailed with some widely scattered showers and thunderstorms, a few of which produced locally heavy rain.	-----
07/22/2019	**Event:** Flood **General Description:** Low pressure tracked along a frontal boundary that was draped across CT, RI and southeast MA at night. It was accompanied by scattered strong thunderstorms with heavy downpours and isolated wind damage. In Westerly, there were multiple cars stuck in flooding on Route 1 near the Haversham Tavern. The road was temporarily closed.	-----
07/13/2017	**Event:** Flash Flood **General Description:** An east-west aligned cold front slowly moved south through Southern New England. This along with an extremely humid air mass brought heavy afternoon downpours to Connecticut and Rhode Island.	2K
07/28/2015	**Event:** Flood **General Description:** A strong upper level disturbance sparked showers and thunderstorms across much of southern New England. A few of these storms became severe, producing damaging winds. Others produced heavy rain that resulted in flooding.	20K
07/15/2015	**Event:** Flood **General Description:** Showers and thunderstorms developed across the area as a result of an upper level disturbance and a cold front. A couple of these slow moving storms resulted in flooding or flash flooding.	-----
03/30/2014	**Event:** Flash Flood/Flood **General Description:** This system was anomalously moist with precipitable waters two to three standard deviations above normal for late March. Four to five inches of rain fell across portions of Washington County. This resulted in flash flooding in Westerly. Canal Street was flooded. Spring Brook overflowed its banks in the White Rock section of Westerly. Water overflowed four to five yards nearing the foundations of those houses. The Pawcatuck River also overflowed its banks in the White Rock section of town.	5K

❖ ***Dam Failure (Special Flood Hazard)***

Since 1889, Rhode Island has experienced 109 dam incidents (causes include lack of maintenance, embankment erosion, vegetative growth, inflow flood, piping failure, inoperable gates, and settlement). Most incidents were minor. However there have been a few events that resulted in the uncontrolled release of the reservoir, one of which, in 1889, resulted in the loss of three lives (RIEMA. *2024 RI-SHMP*, 62).

The historic spring flooding in 2010 caused five Rhode Island dams to overtop their embankments, and dams in Hopkinton, Exeter, and South Kingstown did breach (Benson). Fortunately, no injuries or fatalities were reported. More recently, a small earthen dam in Richmond, Rhode Island failed during the December 19, 2023 storm. The dam, located on The Nature Conservancy's property at the Beaver River Preserve was built in the 1800s and likely powered a downstream grist mill. The estimated 2 million gallons of water broke through part of the dam inundating the riverbed and flooding two roads downstream of Beaver River. Fortunately the failure caused minimal damage (Cronin).

There are no records of dam failure having occurred in the Town of New Shoreham.

Climate Change Impacts

In their 2017 Climate Science Special Report, the U.S. Global Change Research Program states that, "Changes in the characteristics of extreme events are particularly important for human safety, infrastructure, agriculture, water quality and quantity, and natural ecosystems. Heavy rainfall is increasing in intensity and frequency across the United States and globally and is expected to continue to increase. The largest observed changes in the United States have occurred in the Northeast" (USGCRP, Executive Summary).

As reported by Climate Central, "More than 70% of the planet's surface is water, and as the world warms, more water evaporates from oceans, lakes, and soils. Every 1°F rise also allows the atmosphere to hold 4% more water vapor" (Climate Central. *POURING*). Climate warming, predicted to increase the intensity and frequency of storm events, translates to increases in flooding. The problem will be exacerbated as winters become wetter saturating the ground prior to heavier rainfall periods. Increased construction within floodplains, destroying these natural protective systems, will also yield greater risks from flooding. Curbing humanity's greenhouse gas emissions would limit the increase in downpours. Scenarios modeled in the 2017 Climate Science Special Report suggest that, "If greenhouse emissions continue unchecked, the frequency of a once-in-five-years rain event could increase two-to-threefold by late century" (Climate Central. *POURING*).

In addition to the increased frequency and intensity of precipitation events, climate change impacts also include global warming-driven sea level rise. The combination of these effects exacerbates the risk to low lying coastal flood zones, discussed in the next subsection.

Figure 4-15 "Shows the percent increases in the amount of precipitation falling in daily events that exceed the 99th percentile of all non-zero precipitation days (top 1 percent of all daily precipitation events) from 1958 to 2016 for each region of the United States. The number in each black circle is the percent change over the entire period (1958–2016)" (US Climate Resilience Toolkit).

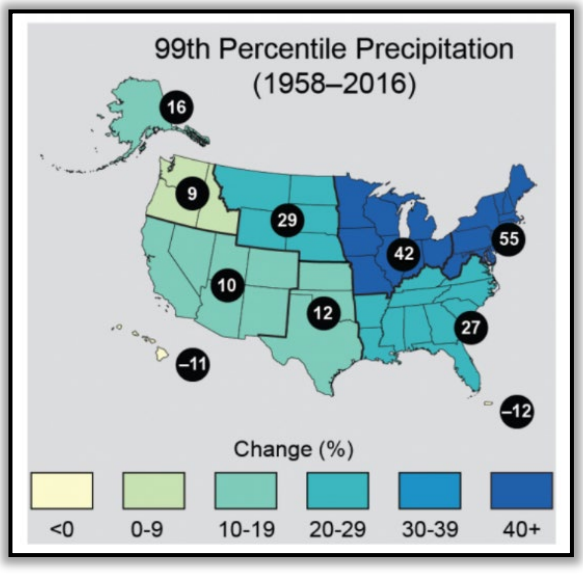


Figure 4-15 Observed Change in Heavy Precipitation
(US Climate Resilience Toolkit)

Probability of Future Events

Per the State of Rhode Island Climate Change website, Rhode Island will experience more extreme and intense precipitation events which will result in increased flooding.

❖ *Riverine and Shallow Flooding (overbank flooding, flash floods, sheet flow, ponding)*

Based on previous occurrences and climate change projections, the RI-SHMP has assessed flood-related events as **Highly Likely** (greater than 90% annual probability) to occur in Washington County (RIEMA. *2019 RI-SHMP*, 3-122). The Advisory Committee concurs with this assessment for New Shoreham.



Figure 4-16
Flash Flooding on Chapel Street (August 2024)
Photo Credit: Jeffrey Wright | eweather

❖ *Dam Failure (Special Flood Hazard)*

Historical there has been an infrequent occurrence of dam failure resulting in an uncontrolled release of reservoir water. However, an increase in extreme precipitation events may lead to more severe floods and a greater risk of dam failure. Extreme heat and drought conditions may "result in ground cracking, a reduction of soil strength, erosion, and subsidence in earthen dams" (RIEMA. *2024 RI-SHMP*, 63). Potential dam failure is also related to proper operating procedures, and ongoing maintenance and repair to ensure structural integrity.

There are two dams in New Shoreham, both classified by RIDEM as Significant Hazard. Although RIDEM's Dam Safety Program conducts routine inspections of High and Significant Hazard dams, a comprehensive engineering inspection for each dam would need to be completed and technically reviewed to fully determine the probability of a future event. That is beyond the scope of this *Plan*.

The RI-SHMP, has assessed dam failure for Washington County as being **Likely** to occur (*between 50% and 89.9% annual probability)* (RIEMA. *2019 RI-SHMP*, 3-52). The Advisory Committee has modified the probability of dam failure to **Potential** (between 1% and 49.9% annual probability), and has included in the *Action Plan* to continue to work with RIDEM to ensure that the State is inspecting the dams per State requirements and are enforcing dam owners to make necessary repairs.



4.3.1.2 Coastal Flooding including Storm Surge

Description and Extent

Coastal flooding occurs when surges of waves inundate the shores of bays, tidally influenced rivers, streams, and inlets. These conditions are produced by tropical cyclones (tropical storms and hurricanes) during the summer and fall as well as Nor'easters during the fall, winter, and spring (RIEMA. *2019 RI-SHMP*, 3-313). **Storm surge is being addressed in this and the following subsections due to the resultant hazard of coastal flooding and coastal erosion. Additional information about the winds associated with Tropical Cyclones and Nor'easters that cause storm surge, will be addressed in Subsection 4.3.2.**

Storm Surge:

According to the National Hurricane Center, storm surge is an abnormal rise of coastal water generated by a storm, over and above the predicted astronomical tides. The rise in water level occurs primarily due to winds pushing water toward the shore (NOAA|NHC. *Storm Surge*). More specifically, "Winds blowing over a water surface generate horizontal surface currents flowing in the general direction of the wind. These surface currents in turn create subsurface currents that, depending on the intensity and forward speed of the hurricane or Nor'easter, may extend from one (1) to several hundred feet below the surface. If these currents are in the onshore direction, water begins to pile up as it is impeded by the shoaling (shallow) continental shelf causing the water surface to rise. This dome of water will increase shoreward until it reaches a maximum height at the shoreline or at some distance inland" (RIEMA. *2019 RI-SHMP*, 3-219).

The magnitude of storm surge within a coastal basin is governed by the meteorological parameters of the storm event and the physical characteristics of the basin. Rather than characterize the extent of storm surge itself, it is more functional to characterize the extent of the event causing the surge. As outlined in the RI-SHMP (RIEMA. *2019 RI-SHMP*, 3-219), the meteorological aspects of storm surge include:

- Hurricane size – measured by the radius of the maximum winds (measured from the center of the hurricane to the location of the highest wind speeds within the storm; this radius may vary from as little as 4 miles to as much as 50 miles)
- Hurricane intensity – measured by sea level pressure and maximum surface wind speeds at the storm center
- Hurricane path, or forward track of the storm
- Hurricane forward speed

Storm surge may push sea water up coastal rivers and inlets, blocking the downstream flow of inland runoff; inundate large swaths of developed and forested land with saltwater or freshwater; damage coastal habitats; damage natural and manmade structures; erode beach material; carry debris out to sea; strand residents in flooded areas and hamper rescue efforts by cutting off escape routes; and pose a serious threat of death by drowning (RIEMA. *2019 RI-SHMP*, 3-113). When storm surge coincides with normal high tide or higher king tides, coastal flooding can be exacerbated. In the future, as sea levels continue to rise, the inundation area subject to coastal flooding and storm surge will continue to move inland.

NOAA tidal gauges (**Figure 4-17**) play a critical role in predicting coastal flooding by providing real-time data on tidal conditions, water levels, and changes in the environment that help forecasters and emergency management teams anticipate flooding events. At one point there were two NOAA Tidal Stations on Block Island: Block Island (Old Harbor) Tide Station (Station ID: 8459338) established in 1987 and removed from service in 1989; and Southwest Point Block Island Tide Station (Station ID 8459681 located at the west end of Cooneymus Road) established in 1998 and removed from service in 2004.

However, there are a number of nearby NOAA gauges that can provide useful information for the Town. Some of NOAAs nearby Tide Stations (including Newport, Providence, and Montauk NY) that continuously measure water levels to track the height of the tides also track sea level rise trends. Based on google maps, as the crow flies, the Newport tide gauge located near Coasters Harbor Island is approximately 26 miles northeast of New Shoreham's Old Harbor. It is important to note that as the Newport tide gauge is located well within the harbor on the mainland, the dynamics of storm surge combined with astronomical tides (which are affected by local geography) will be different from the dynamics observed on Block Island.

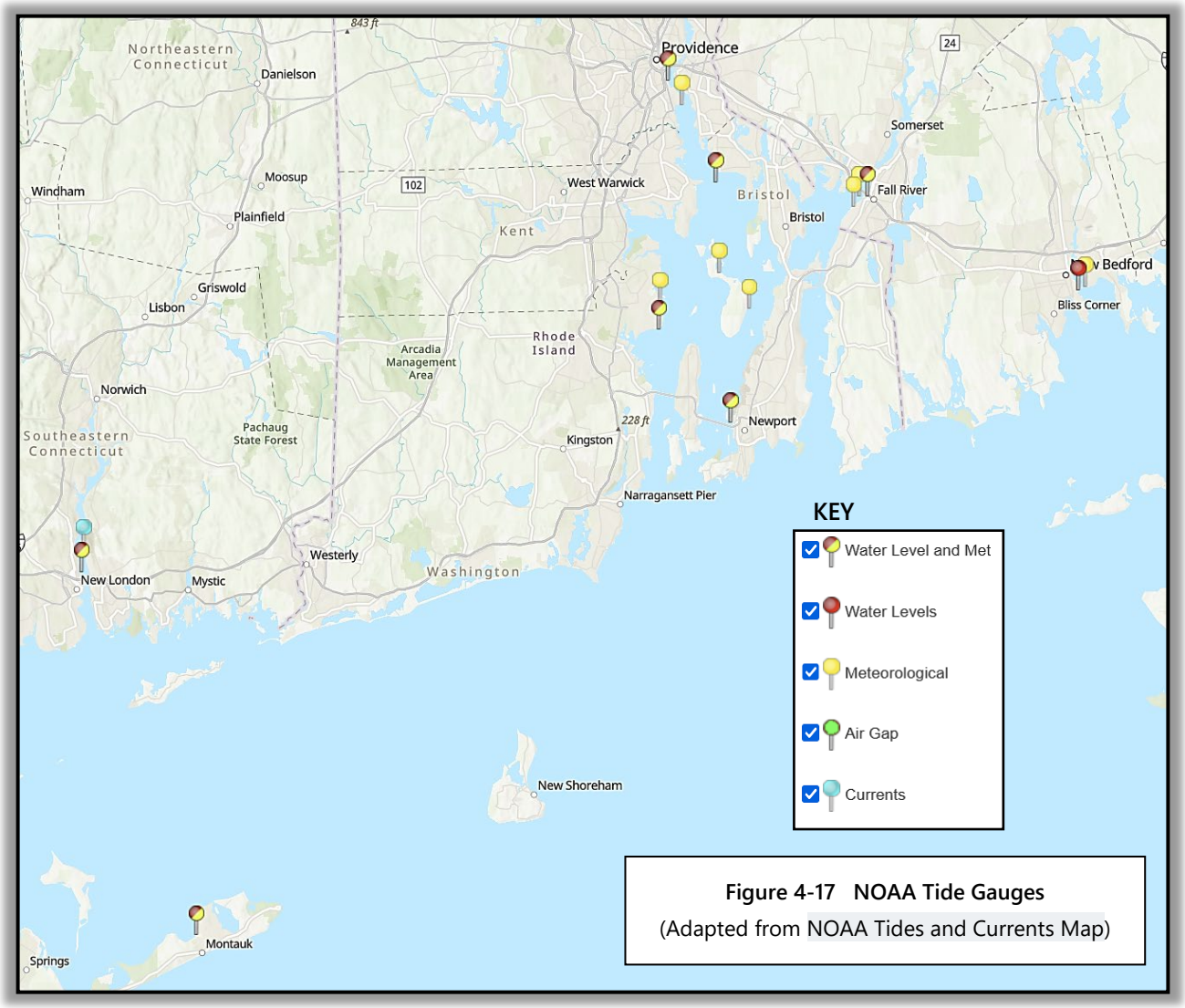


Figure 4-17 NOAA Tide Gauges
(Adapted from NOAA Tides and Currents Map)

Local residents concerned with coastal flooding, coastal erosion, and sea level rise have been working together (Tide Gauge Group) and with URI to identify, quantify, and qualify the impacts to New Shoreham's coast and coastal properties. In 2022 submerged pressure gauges (HOBO) were installed at 4 sites around the island: Old Harbor, Block Island Club, Trim's Pond and Harbor Pond (**Figure 4-18**). Post August 2024 the Old Harbor gauge became buried by sediment and stopped functioning. Through the Tide Gauge Group and Coastal Resilience Committee advocacy, the Town has become part of the Northeastern Regional Association of Coastal Ocean Observing Systems (NERACOOS). NERACOOS provided the Town with a Green Stream Senix ToughSonic 30 ultrasonic sensor which was installed in March 2025 on the bulkhead of the Old Harbor dock and monitors water level in real time. Data collected from the 4 tide gauges is being monitored by the Tide Gauge Group and can assist the Town in strategizing coastal resilience.

Figure 4-18 Block Island Tide Gauges Image Credit: Nigel Grindley



High Tide Flooding:

High tides may cause *nuisance* coastal flooding. "Tides are long-period waves that roll around the planet as the ocean is 'pulled' back and forth by the gravitational pull of the moon and the sun as these bodies interact with the Earth in their monthly and yearly orbits" (NOAA. *What*). "Unlike a 24-hour solar day, a lunar day lasts 24 hours and 50 minutes. This occurs because the moon revolves around the Earth in the same direction that the Earth is rotating on its axis. Therefore, it takes the Earth an extra 50 minutes to 'catch up' to the moon. Since the Earth rotates through two tidal 'bulges' every lunar day, we experience two high and two low tides every 24 hours and 50 minutes. High tides occur 12 hours and 25 minutes apart, taking six hours and 12.5 minutes for the water at the shore to go from high to low, and then from low to high" (NOAA. *Tides and Water*).

According to Bryan Oakley, professor of environmental geoscience at Eastern Connecticut State University, sea level isn't the same every day, with spring tides a foot or two above an average high tide, and king tides even higher (Sherman). "King tides occur during a perigean (when Moon is closest to Earth) spring tide (full and new moon); in other words, a full or new moon must co-occur when the Moon is closest to Earth in its elliptical orbit. Due to their astronomical nature, king tides are regular and predictable events, reoccurring multiple times a year" (North Carolina).

"During extremely high tides, the sea literally spills onto land in some locations, inundating low-lying areas with seawater until high tide has passed. Because this flooding causes public inconveniences such as road closures and overwhelmed storm drains, the events were initially called nuisance flooding. To help people understand the cause of these events, they are now referred to as high-tide floods. Over longer periods, chronic flooding can strain city budgets and compromise infrastructure. As global sea level rises, so will the frequency and depth of high-tide flooding" (US Climate Resilience Toolkit. *High-Tide*).

Location

As an island community, coastal flooding is of particular concern to New Shoreham. During high precipitation and/or high wind events (creating storm surge), low-lying coastal roadways and property (including natural features such as dunes and bluffs) are exposed to the threat of coastal flooding.

During high precipitation events, flooding occurs along a number of low-lying roadways due to inadequate stormwater management. Many of the roadways which have flood issues are either private or under State jurisdiction. **As the Town does not have authority over these roads, comprehensive stormwater management at the local level is a challenge.** Improved stormwater mitigation upgradient and/or along the following roadways may help to lessen the impacts of coastal flooding: Town-owned - Coast Guard Road (Champlin Road) and Scotch Beach Road; State-owned - Beach Avenue, Chapel Street, Corn Neck Road, Ocean Avenue, Old Town Road, Spring Street, and Water Street. **Note: coastal flooding on these roads is often exacerbated by stormwater runoff and pond overflow as described in Subsection 4.3.1.1.**

The areas most susceptible to **wave action and storm surge** are those in the Velocity Flood Zone (**Figure 4-11**) and/or in the Category 1-4 Hurricane Storm Surge Inundation Areas (**Figure 4-20**). Both of these figures have been included at a larger scale in **Appendix 4-2**.

Hurricane surge values for Category 1 through 4 hurricanes were developed by the National Hurricane Center using the SLOSH (Sea Lake and Overland Surge from Hurricanes) Model. **Data is not available to map Category 5 hurricane inundation in Rhode Island.**

New Shoreham is a unique coastal community as it is coterminous with the island of Block Island, and therefore surrounded by Block Island Sound/Atlantic Ocean. As such, Block Island is somewhat less vulnerable to hurricane storm surge than along the mainland coastal areas of Rhode Island. The wave action that impacts most of Block Island will generally be spread out more evenly rather than be channeled into coastal features such as bays, rivers, and inlets. Those type of coastal features allow the water to effectively pile up, magnifying the storm surge. "Narrow bays and inlets can funnel water and increase surge height, while broad, shallow areas may reduce its impact. If a storm surge coincides with high tide, the resulting water level can be significantly higher, leading to more severe flooding" (Case).

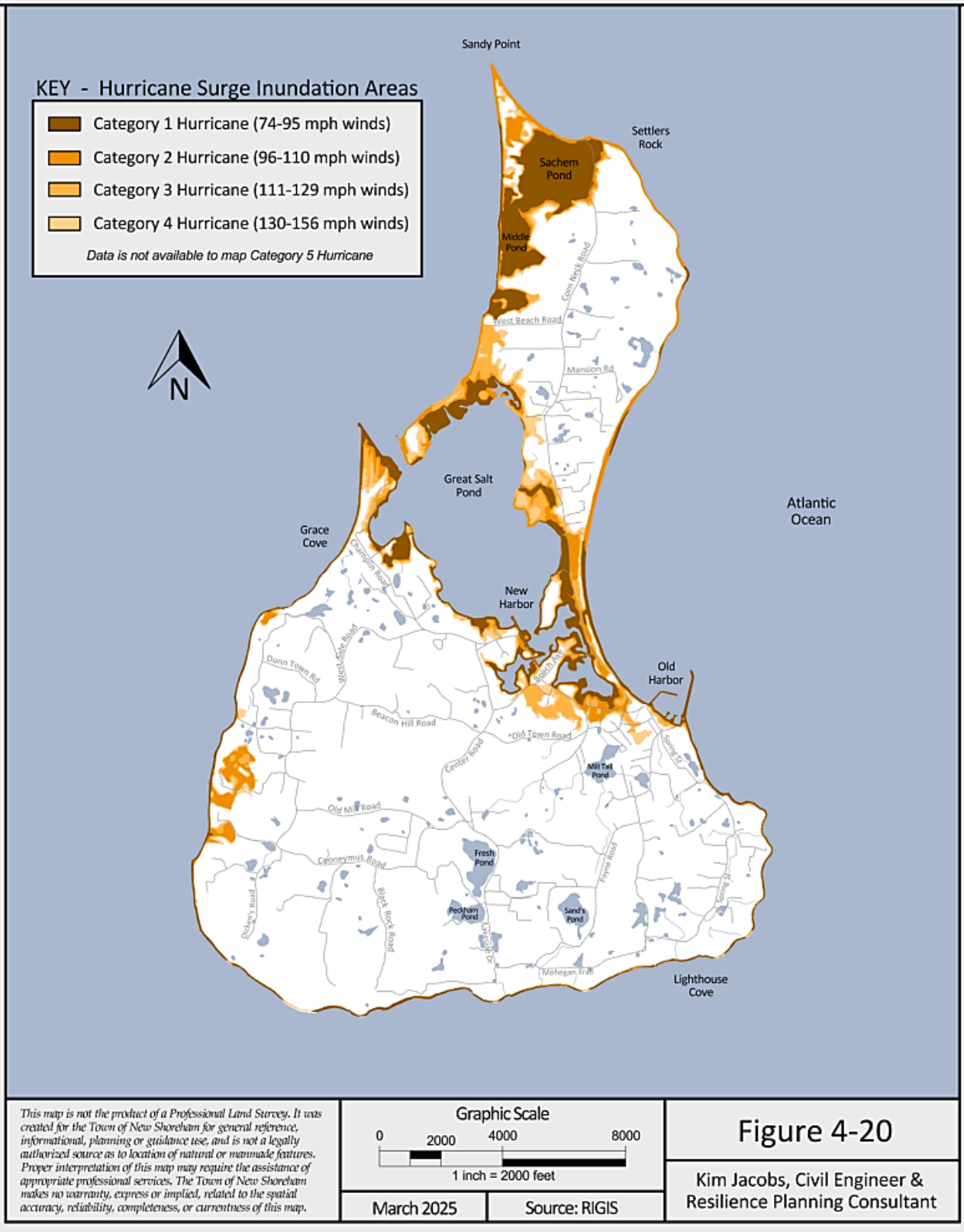
As depicted on **Figure 4-20**, although hurricane storm surge inundation will impact the entire New Shoreham coastline to some extent, the primary impact will be the lower-lying areas from the northern tip of the island down the western coastline to and including the properties along the Great Salt Pond/New Harbor. The inlet to the Great Salt Pond is one of the key coastal features on the island which can influence storm surge behavior. The inlet, which connects the pond to the ocean, can act as a natural funnel during storm surges, concentrating water in the pond and potentially elevating the water levels in the surrounding areas, thereby exacerbating coastal flooding.

As further shown in **Figure 4-20**, the low-lying land along the south western coastline between Dorry's Cove Road and just south of Cooneymus Road will experience storm surge inundation. Along the eastern coastline, the section from Scotch Beach to Ballard's Beach Resort (which includes Old Harbor) will be impacted by surge inundation even from a Category 1 hurricane. The southeastern shoreline, where the **Mohegan Bluffs** and **Southeast Lighthouse** are located, is less protected by natural barriers and may experience high storm surge impacts. Coastal erosion and overtopping waves could significantly affect this portion of the island.



Figure 4-19 Coastal Flooding Near Water Street (October 11, 2019)
Photo Credit: Kim Gaffett | MyCoast

Hurricane Surge Inundation Areas



Previous Occurrences

As shown in **Table 4-8**, which was created from the NOAA|NCEI Storm Events Database, over the past 25-years Washington County has experienced numerous coastal flooding events. One storm that was highly impactful to New Shoreham's coastal areas was Superstorm Sandy in October 2012. Superstorm Sandy was a hybrid storm with both tropical and extra-tropical characteristics. The storm brought heavy rains, strong winds, and a large storm surge that caused coastal flooding and significant erosion. In New Shoreham a number of roads and structures sustained damage and there was significant erosion to the beach and dune system. The eastern side of the island was hardest hit, particularly in the vicinity of Old Harbor and Cresent Beach. Some roads were blanketed with a thick layer of sand that washed inland. Two of the roads most affected were Corn Neck Road which connects the Old Harbor area to the north part of the island, and Spring Street. Both roads, which are under State jurisdiction, sustained major damage rendering them impassible. Superstorm Sandy also caused structural damage to the Town Beach pavilion, bait dock in Old Harbor, Ballard's Beach Resort, and the Spring House Hotel. Additional information on the impact of Superstorm Sandy is provided in **Subsection 4.3.2.4**.

The impacts associated with coastal flooding and storm surge are further identified in **Table 4-13**, which lists tropical depressions/storms and hurricanes that have impacted the region. New Shoreham experiences the greatest extent of coastal flooding from storm surge associated with high wind and hurricane events. The two hurricanes with the largest storm surge in Rhode Island were the Hurricane of 1938 and Hurricane Carol of 1954. Both of these resulted in damage to New Shoreham's built and natural environment.

Coastal flooding and storm surge can also occur as a result of significant winter storms including Nor'easters, such as those identified in **Table 4-16**. Although Nor'easters typically produce smaller storm surges than hurricanes, they tend to have a longer duration lasting from 12-72 hours, whereas hurricane conditions have a shorter duration of generally 6-12 hours (RIEMA. *2019 RI-SHMP*, 3-223).

Figure 4-21 Coastal Flooding and Storm Surge Damage to Corn Neck Road from Superstorm Sandy (Oct 2012)







Photo Credit

Top Left:
Judy Gray | CRMC

Tope Right & Bottom:
Judy Gray | ecoRI News

Table 4-8 Coastal Flooding Events – Washington County 1996-May 31, 2024
(NOAA|NCEI. *Storm Events Database*)

Begin Date	Key Event Information (no deaths or injuries reported for any of these events)	Property Damage Estimate
01/13/2024	**Event:** Coastal Flood **General Description:** Strong SE winds and warm air created rain rather than snow and lead to widespread river flooding and coastal flooding. The heaviest rain fell over eastern CT, RI, and eastern MA with totals of 1 to 3 inches which added to already saturated ground from previous storms. Along the coast, a storm surge of 2 to 3 feet led to minor to moderate coastal flooding and additional beach erosion in the same areas that were impacted from the previous storm.	-----
12/18/2023	**Event:** Coastal Flood **General Description:** A strong storm system moved up the Atlantic coast bringing strong southerly winds and coastal flooding to southern New England. This was a very impactful storm flooding roads, closing schools, knocking out power to 300,000 across MA, cancelling flights, and killing one man in southern New England.	-----
12/23/2022	**Event:** Coastal Flood **General Description:** The storm produced damaging southeast to south winds across much of southern New England and minor to moderate coastal flooding the east and south coasts. Two to 3.5 inches of rain fell across much of RI and interior MA. At 6:55 AM, two feet of water was observed over Coast Guard Road on Block Island.	5K
02/09/2016	**Event:** Coastal Flood **General Description:** A very powerful low pressure system tracked up the east coast, bringing heavy snow and gusty winds.	-----
10/29/2012	**Event:** Coastal Flood **General Description:** Superstorm Sandy, a hybrid storm with both tropical and extra-tropical characteristics, brought high winds and coastal flooding to southern New England. In Southern New England, Rhode Island was hardest hit. A peak wind gust of 86 mph occurred in Westerly, and nearly the entire Rhode Island shoreline experienced moderate to major coastal flooding. Numerous power outages occurred with winds gusting to 60 mph over the interior and to 80+ mph along the south coast. Major coastal flooding struck the Rhode Island ocean exposed south coast during the Monday evening high tide. This storm tide, especially destructive across shorelines in Westerly, Charlestown, South Kingston, Narragansett, and Block Island, rivaled the impact from Hurricane Bob in 1991. Along the Rhode Island south coast, the damaging coastal flooding was fueled by a storm surge around 5 feet and waves of 30+ feet that propagated on a long fetch into Block Island and Rhode Island Sounds. A survey of impact along Misquamicut Beach revealed an inundation extent consistent with the upper boundary of a category 1 Hurricane and very severe erosion. It should also be noted that the previous high tide during Monday morning produced minor to moderate impacts along the Rhode Island coast and likely weakened dunes and other coastal structures in advance of the more destructive Monday evening high tide. As Sandy moved northward up the eastern seaboard, it built strength, and as it turned to the west, eventually making landfall in New Jersey, **these high seas (measured at 31 feet on the Block Island buoy) hit the Rhode Island coast over multiple tide cycles**. The Rhode Island coastline in Washington County, stretching from Westerly to Narragansett was devastated by coastal flooding. Much of mainland Rhode Island's coastline is composed of barrier beaches. This continuous battering of high seas, washed beaches inland exposing bedrock and other sand dune anchors, and damaged structures and infrastructure. On the mainland the four beaches/areas that were significantly impacted included Roy Carpenter's Beach and Green Hill Beach in South Kingstown, Charlestown Breachway in Charlestown, and Misquamicut Beach in Westerly. **In New Shoreham** several roads sustained major damage, rendering them impassible, due to high surf pounding the shore. Corn Neck Road and Spring Street were the hardest hit. Other roads were blanketed with sand that washed inland. The Old Harbor Dock was damaged. Ballard's Beach Resort and the Spring House Hotel both sustained damage.	7.8M

Begin Date	Key Event Information (no deaths or injuries reported for any of these events)	Property Damage Estimate
08/22/2009	**Event:** Coastal Flood **General Description:** Although well offshore, Hurricane Bill resulted in heavy rainfall, high surf, and coastal flooding along portions of the Southern New England shoreline.	-----
03/08/2008	**Event:** Coastal Flood **General Description:** Heavy rain coinciding with spring snowmelt contributed to river flooding, especially along the Connecticut River. In addition, rainfall totals of two to three inches resulted in areal flooding across much of the region. In coastal areas, high astronomical tides combined with rough seas and storm surge to produce minor coastal flooding.	-----
04/15/2007	**Event:** Coastal Flood (*also Flood*) **General Description:** An unusually strong and slow moving coastal storm for mid-April. This storm brought a variety of impacts, including damaging winds in excess of 60 mph, widespread river and stream flooding, and significant coastal flooding through several high tide cycles. East to northeast winds gusted as high as 60 mph. There were widespread reports of downed trees, large branches, and power lines, especially in southern Rhode Island and as far inland as Providence. Rainfall totals of 3 to 5 inches, combined with wet antecedent conditions, resulted in widespread river and stream flooding, as well as significant flooding of urban areas. Many small streams throughout Rhode Island also rose out of their banks and flooded nearby areas, including roadways. Along the South Coast, the worst coastal flooding occurred with the morning high tide on the 16th, where floodwaters and debris closed several shore roads. Large boulders that washed ashore had to be removed with snow plows, according to media reports.	48K
10/28/2006	**Event:** Coastal Flood (*also Flood*) **General Description:** This system brought damaging winds to much of central and southern Rhode Island, where trained spotters and amateur radio operators reported many downed trees and power lines. Wind gusts were estimated near 60 mph on Block Island. About 10,200 customers were left without power throughout the state, as reported by the media. Rainfall totals of 2 to 4 inches produced significant urban flooding from greater Providence to South Kingstown. Significant coastal flooding occurred as a result of the storm.	2K
01/10/1997	**Event:** Coastal Flood **General Description:** A combination of a new-moon high tide and southeast winds that became southwest and gusted to 40 to 50 mph resulted in a storm tidal surge which reached 2 to 4 feet on Narragansett and Mount Hope Bays. There is the possibility that a "gravity wave" (which results in rapid changes in wind and atmospheric pressure fields) may have played a part in this sudden and unexpected flooding event. Overall, the flooding was considered minor and there was no structural damage or road washouts**.**	-----

High Tide Flooding along New Shoreham's Coastline:

As an island community, New Shoreham has significant low-lying coastal areas which regularly experience high-tide flooding. During king tides coastal water has been known to backflow through the storm drainage system and flood sections of Beach Avenue and Ocean Avenue.

Repetitive Loss:

As of March 9, 2024, the National Flood Insurance Program (NFIP) does not list any Repetitive Loss (RL) or Severe Repetitive Loss (SRL) properties in New Shoreham. This suggests the Town has successfully implemented a pragmatic construction strategy within higher flood risk areas. A Repetitive Loss (RL) property is any insurable building for which two or more claims of more than $1,000 were paid by the National Flood Insurance Program (NFIP) within any rolling ten-year period, since 1978. A RL property may or may not be currently insured by the NFIP. Additional information on FEMA Flood Zones, Repetitive and Severe Repetitive Loss Properties, and the National Flood Insurance Program is provided in **Subsection 4.4.2.1**.

Climate Change Impacts

As discussed in **Subsection 4.1.1**, the level of the sea is rising. Rising sea levels elevate the baseline water levels along coastlines by permanently inundating low-lying coastal areas. As the baseline or starting point for high tides becomes higher, tidal flooding in areas that were previously not affected by regular tidal movements will be impacted. Storm surge will similarly impact farther inland.

The Newport Tide Gauge has documented that the relative local sea level has risen over 10 inches since 1930 (CRMC. *Shoreline Change SAMP*, 2-3). Because greenhouse gas emissions continue to increase, it is expected that this trend will accelerate in the coming decades. In **Figure 4-22**, Climate Central highlights the increasing trend of coastal flooding being driven by climate-linked sea level rise.

The EPA recognizes that, "Climate change threatens coastal areas, which are already stressed by human activity, pollution, invasive species, and storms" (EPA. *Climate Impacts*). Sea level rise will impact development along the coast and could erode and inundate coastal ecosystems and eliminate wetlands. As the sea level rises, high tide flooding will become more destructive. "Coastal areas are also vulnerable to increases in the intensity of storm surge and heavy precipitation. Storm surges flood low-lying areas, damage property, disrupt transportation systems, destroy habitat, and threaten human health and safety" (EPA. *Climate Impacts on Coastal Areas*). Additional general information associated with the impacts of sea level rise (SLR) is provided in **Subsection 4.1.1**.

"According to the National Climate Assessment, coastal flooding in the northeast has increased due to a rise in sea level of around one foot since 1900. And in the future, if we continue to emit greenhouse gases, **global sea levels** are expected to rise one to four feet by 2100. Specifically in the coastal Northeast, due to the natural sinking of land, sea levels are likely to rise even ***higher*** than the global average. A sea level rise of two feet would more than triple the frequency of coastal flooding across the Northeast, without any change in storms" (Di Liberto).

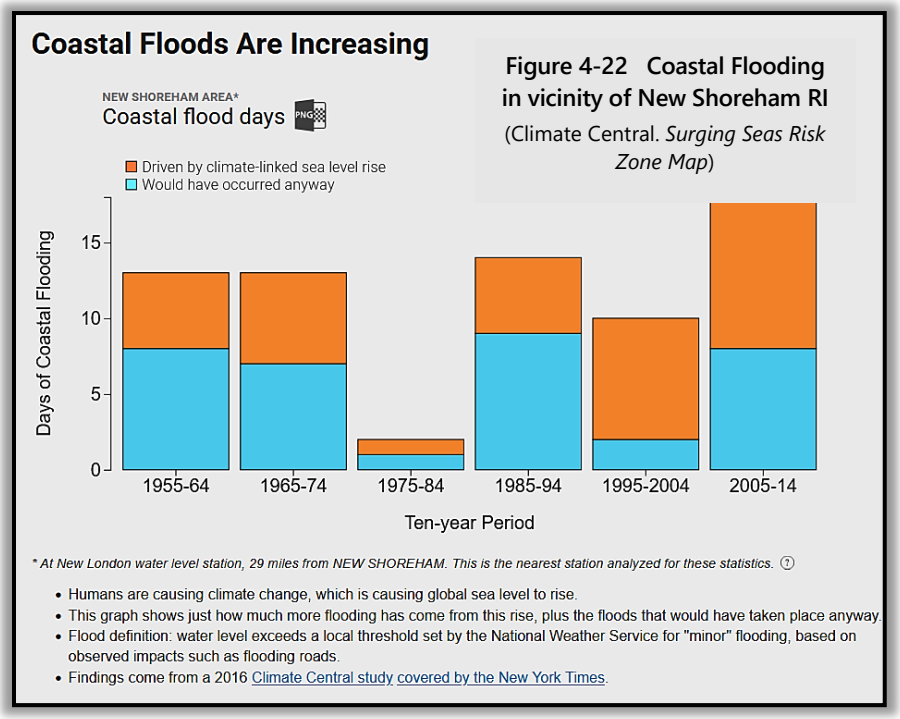


Figure 4-22 Coastal Flooding in vicinity of New Shoreham RI
(Climate Central. *Surging Seas Risk Zone Map*)

Probability of Future Events

Flooding is the most prevalent and frequent natural hazard that impacts Rhode Island. As an island community, coastal flooding is highly probable and may have serious consequences for the Town. The RI-SHMP has assessed coastal flooding as **Highly Likely** (greater than 90% annual probability) to occur in Washington County (RIEMA. *2019 RI-SHMP*, 3-122) and the Advisory Committee concurs with this assessment for New Shoreham.

Climate change and sea level rise will further exacerbate the impacts from flooding. Long term, even in the absence of a storm event, the projected rise in sea level alone will have a dramatic impact on the base flood elevations for low-lying areas of New Shoreham. As sea levels continue to rise, the inundation area subject to coastal flooding and storm surge will continue to move inland. If currently undeveloped coastal land, including wetlands, along the shoreline remain undeveloped, it will help minimize the effects of localized flooding until SLR engulfs the land.



4.3.1.3 Coastal Erosion

Description and Extent

"Coastal erosion is the process by which local sea level rise, strong wave action, and coastal flooding wear down or carry away rocks, soils, and/or sands along the coast. All coastlines are affected by storms and other natural events that cause erosion; the combination of storm surge at high tide with additional effects from strong waves - conditions commonly associated with landfalling tropical storms - creates the most damaging conditions. The extent and severity of the problem is worsening with global sea level rise, but it differs in different parts of the country, so there is no one-size-fits-all solution" (US Climate Resilience Toolkit. *Coastal*). In addition to the natural processes that cause coastal erosion, human influences, such as development or manmade structures along the shoreline, may impede the natural dynamic coastal system and increases erosion.

Coastal erosion is measured and monitored using a combination of field surveys, remote sensing technology, aerial photography, and data modeling. These methods help assess the rate of erosion and the impact on shorelines over time. While measurable coastal erosion may occur during a storm event, for planning purposes the extent is assessed over extended periods of time. Comparing aerial photographs provides insight into coastal erosion trends. According to the State Coastal Council, the average coastal erosion rate is 1.9 feet per year in Rhode Island (CRMC. *Shoreline Change SAMP Volume I*, 2-14). Extreme high tides, or king tides, occur several times a year, inundating low-lying shoreline areas and threaten to worsen erosion if coupled with wave energy produced by storms.

In 2018 the State adopted the RI Shoreline Change Special Area Management Plan (Beach SAMP) which is an outstanding tool to plan for climate change, including coastal erosion, increased storm events, and flooding from sea level rise. In addition to STORMTOOLS, an online mapping tool that shows storm surge and sea level rise scenarios for the entire Rhode Island coastline, the SAMP also provides Shoreline Change Maps showing the extent of coastal erosion over time. New Shoreham has several barrier beaches which tend to be dynamic, losing sand at times and then regaining it through natural processes. The links to access the Shoreline Change Maps for New Shoreham have been included in this subsection under ***Previous Occurrences***.

In addition to providing habitat for marine and terrestrial organisms and supporting recreation and tourism, a wide, healthy sand beach provides protection against the effects of storm surge, coastal flooding, and high surf impacts. A report prepared for FEMA by the Heinz Center in 2000, stated that "Over the next 60 years, erosion may claim one out of four houses within 500 feet of the U.S. shoreline" (Heinz Center, 150). Sea walls, dunes, coastal bluffs, and other natural features that dissipate/absorb wave energy and provide protection for the structures behind them are increasingly being impacted by coastal erosion. If these protective coastal features fail, the property damage from storms and rising seas may significantly increase.

Location

All of New Shoreham's shoreline, is susceptible to the impacts of coastal erosion due to the island's exposure to the forces of the Atlantic Ocean/Block Island Sound, storms, and rising sea levels. Most of the damage will occur in the low-lying coastal velocity flood zone as shown in **Figure 4-11**, particularly impacting critical roadways and infrastructure in the vicinity of Old Harbor and New Harbor, and along Corn Neck Road.

Key shoreline features that are subject to coastal erosion in New Shoreham include beaches & dunes, coastal salt marshes, and bluffs.

Beaches & Dunes: Coastlines are dynamic systems, changing daily from energy created by water and wind. Severe weather can move sands away from beaches and dunes and kill dune vegetation critical for dune building and stabilization. Dunes serve as natural buffers helping to protect inland areas against storms, flooding, and high waves. Coastal storms, can diminish this protective habitat thus increasing the risk of coastal flooding. While much of New Shoreham's beach and dune systems are currently healthy, as climate change causes sea levels to rise and increases the intensity and frequency of storms, the impact to coastlines will be exacerbated. Coastal habitats of specific concern for New Shoreham are: Cresent Beach, particularly the southern end; West Beach; and Cormorant Cove along Champlin Road.

Salt Marshes: Salt Marshes are transitional habitats between the upland and water. Salt marshes function as buffers to upland habitats as well as, carbon sinks, pollution filters, and home to multiple species. When conditions allow, salt marshes have the ability to migrate and expand. As the coast moves inland, due to erosion and sea level rise, coastal salt marshes that have nowhere to migrate will be lost. Several key salt marshes in New Shoreham border the Great Salt Pond, Harbor Pond, and Trim's Pond.

Bluffs: New Shoreham has miles of spectacular coastal bluffs that are key features of the island's rugged shoreline including the iconic Mohegan Bluffs, Clay Head, bluffs along the rugged eastern beaches from Southeast Light to Old Harbor, and bluffs along the western beaches from Southwest Point to New Harbor. The island's bluffs are important natural features vital to the local economic/tourism industry for their scenic beauty and views. Bluffs, like beaches, dunes, and salt marshes are dynamic. The bluff front is vulnerable to weather, wave action, freshwater seepage, and human impacts. Bluff tops are stabilized by vegetation with roots from grasses and shrubs holding soils in place. Climate change in the form of increased storms, has accelerated erosion of the bluffs compromising the structural integrity of this natural landscape, leading to more landslides or slumping. Bluff erosion causing loss of land poses a risk to residences perched atop bluffs and the island's lighthouses. While bluff erosion can destabilize the cliff face, it is also a primary source of sand replenishing the adjacent beaches.

Previous Occurrences

The constant movement of water during each tidal cycle contributes to long-term, gradual erosion which transports sediment along the shoreline slowly reshaping the coast. Natural hazards, such as storm events – especially hurricanes and Nor'easters – cause rapid and more severe erosion. Storm events characterized by strong winds, low pressure, and heavy rainfall create surges that are destructive and can dramatically reshape the coastline in a short time. As the level of the sea rises, the erosive impact of storms on the coastline will accelerate.

In May 2021, EcoRI news highlighted how coastal erosion is shrinking Rhode Island's shoreline, drowning essential ecosystems and putting vital infrastructure at risk. "Surge from these large storms, and from smaller but more frequent and intense weather events, washes away dunes and damages salt marshes. This wave energy, steadily growing stronger by warming waters and a warming atmosphere, pound a coastline saturated and weakened by more frequent heavy rains, which have, according to CRMC, increased by 71 percent in New England since 1958" (Carini).

In New Shoreham, coastal erosion has narrowed beaches; flattened dunes, compromised coastal salt marshes; destabilized bluffs; and undermined road beds, public infrastructure, and coastal homes. The CRMC has documented shoreline change and average erosion rates for coastal areas throughout Rhode Island. Although coastal erosion does not occur linearly over time, the maps depict an average annual historic rate of change. This rate of change is recognized solely as a planning tool and used to guide CRMC regulatory decisions related to coastal activities, including setbacks from coastal features.

The CRMC Shoreline Change Maps documenting erosion from 1952 to 2016 in nine areas along New Shoreham's coast, are provided below:

- Block Island, ClayHead-SandyPoint
- Block Island, GracePoint-NewHarborInlet
- Block Island, Mohegan-GreatPoint-LewisPoint
- Block Island, Mohegan-OldHarbor
- Block Island, NewHarborInlet-Logwood
- Block Island, OldHarbor-ScotchBeach
- Block Island, ScotchBeach-ClayHead
- Block Island, SWPoint-GracePoint
- Block Island, SWPoint-LewisPoint

"Studies of shoreline change in Rhode Island have documented an average annualized rate of shoreline change of 0.57 meters/year (1.9 feet/year)" (CRMC. *Shoreline Change SAMP Volume I*, 2-14). Based on CRMC's Shoreline Change Maps, most of New Shoreham's coastline has experienced some, and in many areas significant, erosion during the documented period from 1952 to 2016. Some of these areas include along the eastern coast near Crescent Beach and Old Harbor, the northwestern coast near the Transfer Station and Great Island inlet channel, and the southeastern coast in the vicinity of Mohegan Bluffs. A number of areas along Block Island's shoreline exceed Rhode Island's average annualized rate of shoreline change. Based on CRMC's maps, the three highest erosion rates were identified in the following areas:

- ◊ Eastern coast immediately north of the northern breakwater (with an average erosion rate of roughly 3.6 feet/year during the 64-year data period or a total loss of 228.6 feet).
- ◊ Western coast just north of West Beach Road (with an average erosion rate of roughly 3.2 feet/year during the 64-year data period or a total loss of 205.8 feet).
- ◊ Western coast north of the Great Salt Pond inlet (with an average erosion rate of roughly 3.0 feet/year during the 64-year data period or a total loss of 193.0 feet).

Over the past decade, since the publishing of the CRMC Shoreline Change Maps, coastal erosion along New Shoreham's coast has continued if not accelerated, driven by a combination of climate change including sea-level rise, more frequent and intense storms, and human impacts. These factors have particularly affected areas in the vicinity of West Beach, Mohegan Bluffs, and Crescent Beach/North Shore/Clayhead Trail.

West Beach (northwestern portion of the island)

Some of the highest rates of erosion are found on **West Beach** in the northwestern part of the island. The **Transfer Station** property (4 W Beach Road) is located in this vicinity and houses a **former landfill** (capped in 2019) that is bounded on the west by the ocean. Erosion resulting from a powerful nor'easter on December 26, 2010 unearthed vehicles that had been buried in the landfill for decades and brought attention to the risks posed by the proximity of the landfill to the eroding shoreline. The strong winds, heavy rainfall, and high waves of another nor'easter, on November 8, 2011, contributed to further erosion of the bluffs that bordered the landfill, leading to the exposure of waste materials along the shoreline. On October 29, 2012, strong winds, heavy rainfall, and storm surge from Superstorm Sandy further exposed long-buried debris at the Old Landfill. The exposed debris which included plastics, metals, and other waste materials were washed onto the beach and into the ocean posing a threat to the local environment, including marine life and coastal ecosystems. After Superstorm Sandy, there were efforts to clean up the debris and mitigate the environmental impact. The exposed landfill area was recapped and the area along the ocean side of the landfill (West Beach) was terraced and a new rip-rap slope with large boulders was constructed. Fill was brought in and the area was plugged with beach grass. The establishment of beach grass and the overall stability of the revetment has been successful. However, due to the nature of wave action eroding the lower slope area, maintenance of the revetment will be an ongoing issue.

Mohegan Bluffs (southeastern portion of the island)
The Mohegan Bluffs, which rise nearly 200 feet above the Atlantic Ocean on the island's southern shore, are a striking feature of the landscape and offer breathtaking views. These bluffs have been significantly impacted by coastal erosion over the years, and this process continues to threaten the bluffs' stability. The November 8, 2011 nor'easter coupled with Superstorm Sandy on October 29, 2012 caused significant damage to the bluffs, resulting in further erosion and exposing more of the bluff face. As the bluffs erode, valuable land and natural habitats along the coastline are being lost.

Over the years, the Mohegan Bluffs have eroded approximately 250 feet. In 1993, the historic Southeast Lighthouse was lifted and moved 300 feet back from the eroding bluff edge (BI-HMP, page 44). Having been relocated, the Lighthouse at the top of the bluff is currently not at risk. However, the Mohegan Bluffs Trail and other infrastructure close to the bluff edge remain at risk from ongoing erosion. The iconic wooden **Mohegan Bluffs Stairs** which descend from the top of the Mohegan Bluffs down to the beach below have required reconstruction several times due to the impacts of coastal erosion, particularly at the base of the bluffs, where the stairs meet the shore. There have been various efforts aimed at erosion control and conservation to address the continued erosion at Mohegan Bluffs. However, due to the natural forces accelerated by climate change, it is an ongoing effort.

Private properties along the bluffs are at risk as well. In April 2001 a residential property near the Mohegan Bluffs lost roughly a third of an acre due to coastal erosion undermining the bluffs and the land succumbing to gravity.

Crescent Beach/North Shore/Clayhead Trail (northeastern portion of the island)
These areas, particularly the north shore, have experienced significant beach erosion due to storm events and high wave energy. The combination of rising sea levels, wave action, and storms has made these beaches more vulnerable to rapid erosion. The Clayhead Trail, one of several Nature Conservancy properties on Block Island, runs along the island's rugged northeastern coastline. Portions of the trail run along the edge of bluffs, which are subject to constant erosion from wave action, storms, and rising sea levels. Over time, the erosion of these bluffs has caused land loss that has impacted sections of the trail. In response to the impacts of coastal erosion, efforts have been made to rehabilitate and reroute parts of the Clayhead Trail.

Additional documentation of coastal erosion:

The Block Island Bluff Image Project
Superstorm Sandy (October 2012) caused extensive erosion to areas along New Shoreham's coast. In an effort to document the bluff erosion caused by the storm, beginning in June 2013, Bryan Oakley, PhD, Professor Of Environmental Geoscience, Eastern Connecticut University, with the assistance of students, took roughly 400 photos (**Figure 4-23**) to inventory and create photomosaics (**Figure 4-24**) of the island's coastline. A technical report and database of the images representing shoreline change was produced (Rouleau). Professor Oakley has continued his research on coastal geology and erosion along New Shoreham's coast. In the summer of 2024, he assisted Professor Drew Hyatt and several students in a photogrammetry project (creating 3D models) to track erosion. The project used drones and helicopters to photograph the shoreline (Inside). In addition to his students, four islanders who are retired scientists (Judy Gray, Jules Craynock, Nigel Grindley, and Catherine Joyce) have also been assisting Dr. Oakley. Since 2013 they have been taking measurements of various beaches to create beach profiles (Kelly). The information, images, and models developed through these projects will help the community and other stakeholders better understand coastal erosion and mitigation/adaptation steps that should be taken.



Figure 4-23 Photo Locations
Image Credit: Bryan Oakley
Green placemarks represent photo stations which are hyperlinked to photograph(s) that can be viewed in Google Earth.

Figure 4-24 Bluff on South Side of New Shoreham's Coast Image Credit: Bryan Oakley

Photomosaic of station 208 (41.14968,_71.56468; view west) along the south side of Block Island. Note the 1 m scale bar mounted on field assistant's backpack (red arrow).

A photomosaic is a picture made up of many smaller photos that fit together like tiles.



Climate Change Impacts

Climate change is expected to continue intensifying storms and produce rising sea levels. "Coastal erosion is expected to increase due to the increase in storm intensity and associated flooding. The IPCC (2017) found that coastal and low-lying areas have been experiencing increased erosion, and will continue to do so, due to sea level rise, in North America and throughout the world. Erosion has been noted to be of particular concern in the northeastern U.S. In their study of climate change impacts in the Northeastern U.S., Horton et al. (2014) noted that increased rates of coastal erosion are likely to compromise aging coastal infrastructure, including transportation, communications, and energy infrastructure" (CRMC. *Shoreline Change SAMP*, 2-13 & 2-14).

To assist communities to predict the potential impact to Rhode Island shorelines, CRMC, in partnership with the University of Rhode Island, developed the Shoreline Change Special Area Management Plan (Beach SAMP). As recognized in the SAMP, "In Rhode Island, coastal erosion is of particular concern because it is characterized by a storm-driven coastline… Studies of shoreline change in Rhode Island have documented an average annualized rate of shoreline change of 0.57 meters/year (1.9 feet/year), though these annualized rates should be used with caution because coastal erosion is not a gradual process, but rather the result of abrupt changes due to storms" (CRMC. *Shoreline Change SAMP*, 2-14). CRMC further indicates that, "Scientists' understanding of coastal erosion and other coastal processes is rapidly evolving, particularly with regard to how processes are changing due to changing climate trends and what may happen in the future" (CRMC. *Shoreline Change SAMP Volume I*, 2-14).

Probability of Future Events

The probability of coastal erosion is considered **Highly Likely** (greater than 90% annual probability) and will be accelerated with sea level rise and more frequent and intense storm events.

It should be noted that FEMA's post hazard event management practices indicate that reconstruction or repair funding for coastal protection structures will only be made available where the damage can be directly attributed to the storm event. Therefore, in order to receive this funding, the Town must maintain records of maintenance and repair activities that demonstrate the status of each structure. The Town's aerial imagery will be beneficial in qualifying future storm damage claims.

WIND-RELATED HAZARDS

4.3.2 Wind-Related Hazards

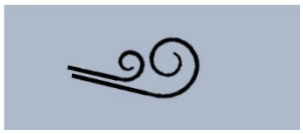
Wind is the natural movement of air caused by a difference in pressure from one place to another. Local wind systems are created by the immediate geographic features in a given area, such as mountains, valleys, or large bodies of water. Wind effects can include blowing debris, interruptions in elevated power and communications utilities, and intensification of the effects of other hazards related to winter weather and severe storms (RIEMA. *2019 RI-SHMP*, 3-134). In this Section, wind-related hazards will be discussed in terms of the following four categories:

4.3.2.1 High Winds

4.3.2.2 Thunderstorms including Lightning and Hail

4.3.2.3 Tornadoes

4.3.2.4 Tropical Cyclones (Tropical Depressions, Tropical Storms, and Hurricanes)



4.3.2.1 High Winds

Description and Extent

The wind is air moving from an area of high pressure to an area of low pressure. As identified below, there are several types of damaging winds, and high winds can accompany various types of storms including thunderstorms, tropical cyclones (which includes tropical depressions, tropical storms, and hurricanes), and Nor'easters. Thunderstorms and tropical cyclones are discussed in **Subsections 4.3.2.2 and 4.3.2.4**, respectively, and Nor'easters are addressed in **Subsection 4.3.3 Winter-Related Hazards**.

Types of Damaging Winds (NOAA|NSSL. *Severe Weather 101 - Damaging Winds*)

- **Straight-line wind:** is a term used to define any thunderstorm wind that is not associated with rotation, and is used mainly to differentiate from tornadic winds.
- **Downdraft:** is a small-scale column of air that rapidly sinks toward the ground.
- **Macroburst:** is an outward burst of strong winds at or near the surface with horizontal dimensions larger than 4 km (2.5 mi) and occurs when a strong downdraft reaches the surface. To visualize this process, imagine the way water comes out of a faucet and hits the bottom of a sink. The column of water is the downdraft and the outward spray at the bottom of the sink is the macroburst. Macroburst winds may begin over a smaller area and then spread out over a wider area, sometimes producing damage similar to a tornado. Although usually associated with thunderstorms, macrobursts can occur with showers too weak to produce thunder.

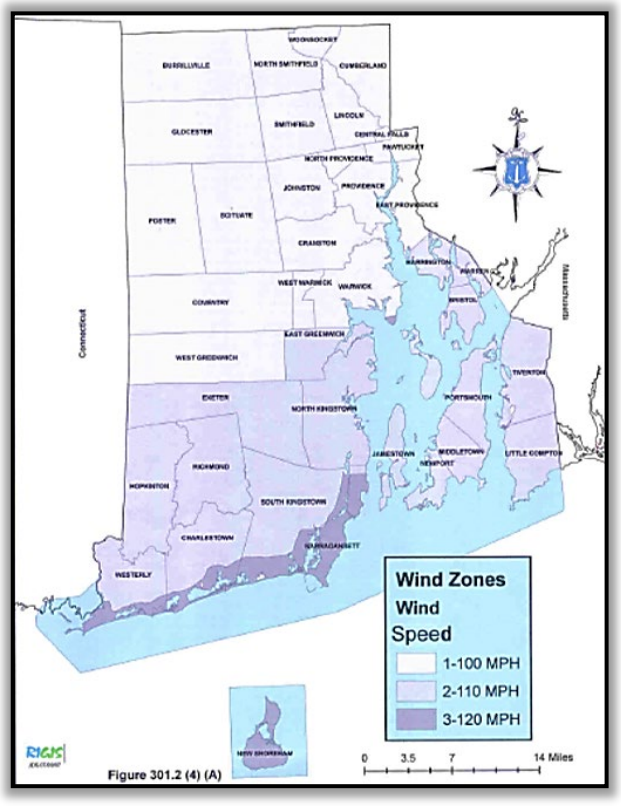
- **Microburst:** is a small concentrated downburst that produces an outward burst of strong winds at or near the surface. Microbursts are small - less than 4 km across - and short-lived, lasting only 5 to 10 minutes, with maximum windspeeds sometimes exceeding 100 mph. There are two kinds of microbursts: wet and dry. A wet microburst is accompanied by heavy precipitation at the surface. Dry microbursts, common in places like the high plains and the intermountain west, occur with little or no precipitation reaching the ground.

Table 4-9 Beaufort Wind Scale (NOAA)

Beaufort Number	Wind Speed (mph)	Description
0	< 1	Calm
1	1-3	Light Air
2	4-7	Light Breeze
3	8-12	Gentle Breeze
4	13-18	Moderate Breeze
5	19-24	Fresh Breeze
6	25-31	Strong Breeze
7	32-38	Moderate Gale
8	39-46	Fresh Gale
9	47-54	Strong Gale
10	55-63	Whole Gale
11	64-72	Storm
12	> 73	Hurricane Force

Although anemometers, which measure wind speed and wind pressure, can be found at almost all weather stations, the Beaufort Wind Scale (**Table 4-9**), created in 1805, is still used today as a standardized scale for characterizing observed wind conditions.

Figure 4-25 Wind Zone Map (RIBCC, Chapter 2)



Building Codes are laws that set forth **minimum requirements** for the design and construction of structural and other systems. The RI State Building Codes are based on the International Code Council's (ICC) building codes but are adapted to reflect Rhode Island's geographic location and threats of natural disasters to the State. Building codes, such as those associated with wind, can vary within a state. As shown in (**Figure 4-25**) the Wind Zone Map adopted by the RI Building Commission has three zones, identifying the **minimum** wind speed that structures in that zone need to be built to withstand.

As shown on the map, New Shoreham is located in Wind Zone 3 (120 mph), to account for stronger winds, particularly those associated with hurricanes. Construction requirements are adjusted based on the wind zone. The coastal areas in Wind Zone 3 have the most stringent building codes, requiring structures to be built with greater wind resistance compared to inland areas.

High winds can cause damage to structures, property, vehicles, utility lines, vegetation, and the shoreline, as well as bodily injury from flying debris or structures collapsing. Loss of power and internet/telephone cable can disrupt daily routines and businesses, spoil refrigerated food, and result in lack of heat, which can lead to dangerous health conditions and the potential for pipes to freeze and burst if occurring in conjunction with freezing temperatures. Additionally, high winds may exacerbate fire conditions by drying out the ground cover, propelling fuel around the region, and increasing the ferocity of existing fires.

Location

All of Rhode Island is at risk from high speed winds, however, "Washington and Newport counties, near the Narragansett Bay, are within the highest wind speed area due to the direct proximity to the coast" (RIEMA. *2019 RI-SHMP*, 3-134).

New Shoreham enforces the RI State Building Code, which currently requires new buildings or those substantially renovated in New Shoreham (RIBCC - Wind Zone 3) be designed to withstand a minimum wind speed of 120 mph. Structures that comply with building codes should be able to resist forces generated by strong winds, including gusts and uplift pressures. This requirement is considered effective in preserving structures from less severe categories of tornadoes (EF-0, EF-1, and lower wind speeds associated with an EF-2) and hurricanes (Category 1 and 2, and lower wind speeds associated with a Category 3). However, there are some residential and commercial structures sporadically located throughout New Shoreham that are of older construction (not in compliance with current building codes) and may be more susceptible to damage from high winds; this is particularly true in the Old Harbor Historic District. Most of New Shoreham's development is comprised of single family dwellings no more than 30 feet in height. Shorter structures tend to be better able to withstand high winds compared to taller buildings because they experience less wind force due to their lower profile and are less susceptible to wind-induced sway, making them more resistant to wind damage.

In general, the east side of the island is more susceptible to wind damage. While there is limited forested areas on the island, strong winds can easily snap branches. Downed trees and limbs near roadways may cause damage to electric wires and/or create concerns for ingress/egress. High winds can also interrupt recreational and commercial fishing as well as ferry and air service to and from the island. High-wind events occurring during tourist season could negatively impact the tourist industry.

Previous Occurrence

As shown in **Table 4-10**, Washington County has experienced a number of High and Strong Wind Events as defined by NOAA's Storm Events Database. One such storm occurred on April 12, 2024 which forced the cancellation of Block Island ferry service. Most of the damaging wind events that occur in New Shoreham are associated with one of the following wind-related hazard categories discussed in following subsections: tornadoes, tropical storms, hurricanes, or Nor'easters. Due to its island location, New Shoreham often endures higher winds and heavier rains than along the coast.



Figure 4-26
December 18, 2023 – Waves Coming Over Breakwater near Ballard's in Old Harbor

Photo Credit:
Steve Miller | BI Times

Table 4-10 High and Strong Wind Events – Washington County 2000-2024
(NOAA|NCEI. *Storm Events Database*)

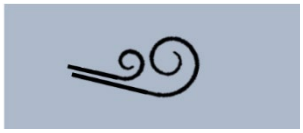
Type	Number of Days with Events	Deaths & Injuries	Property Damage Estimate (*generally under-reported*)
High Wind	66	1 injury	$550,200 (associated with 26 events)
Strong Wind	35	0	$87,600 (associated with 26 events)

Climate Change Impacts

In November 2019, *Scientific American* published an article titled *The World's Winds Are Speeding Up*. It discussed the recent findings from a study published in the *Nature Climate Change* journal. For several decades, starting in the 1970s, global winds had been decreasing. The study found that, "winds across much of North America, Europe and Asia have been growing faster since about 2010. In less than a decade, the global average wind speed has increased from about 7 mph to about 7.4 mph. Using models to investigate the factors that influence the behavior of global winds, the researchers found that big climate patterns - which affect temperatures in certain parts of the world - have a major influence on wind speeds" (Harvey). While it is widely agreed that temperatures all over the Earth are steadily rising as a result of human-caused climate change, the study speculates that within that larger, long-term warming pattern, there will be natural cycles - which could last decades at a time - that osculate between warmer and cooler periods. The shifting between these cycles may trigger shifts from slower to faster wind speeds. Continued research is needed to determine how the overall warming trend from climate change will impact long-term wind speeds (Harvey).

Probability of Future Events

The RI-SHMP has assessed high winds as **Highly Likely** (greater than 90% annual probability) to occur in Washington County (RIEMA. *2019 RI-SHMP*, 3-140), and the Advisory Committee concurs with this assessment for New Shoreham.



4.3.2.2 Thunderstorms including Lightning and Hail

Description and Extent

"Thunderstorms typically develop in the warmer months of spring, summer, and fall, but they can occur at any time of the year over most of the United States. There are three basic ingredients needed for thunderstorm development: moisture, an unstable atmosphere, and some way to start the atmosphere moving" (NOAA|NWS. *Understanding*). Thunderstorms "have the potential to produce lightning, hail, tornadoes, powerful straight-line winds, and heavy rains that produce flash flooding" (RIEMA. *2019 RI-SHMP*, 3-199).

A warning is issued if a thunderstorm is classified as severe - having destructive winds exceeding 58 mph, hail at least one (1) inch in diameter, or a tornado. However, as thunderstorms can form within 30 minutes, the opportunity for warnings to be issued and heeded is limited. As illustrated in **Figure 4-27**, between 1993 and 2018 the annual mean thunderstorm days were in the 18-27 category for Rhode Island. According to NOAA, only about 10% of thunderstorm events are categorized as severe (NOAA|NWS. *Introduction to Thunderstorms)*.

Hail

"Hail is formed in towering cumulonimbus clouds (thunderheads) when strong updrafts carry water droplets to a height at which they freeze. Eventually, these ice particles become too heavy for the updraft to hold up, and they fall to the ground at speeds of up to 120 mph. Hail falls along paths called swaths, which can vary from a few square acres to up to 10 miles wide and 100 miles long" (RIEMA. *2019 RI-SHMP*, 3-199). Hail primarily occurs during the summer months in Rhode Island and has the potential to damage cars and buildings, as well as devastate farm fields during the growing season. The National Weather Service (NWS) classifies hail by diameter size (5 mm diameter or greater) and relates it to everyday objects as shown in **Figure 4-28**.

Figure 4-27 Annual Mean Thunderstorm Days 1993-2018 (NOAA|NWS. *Thunderstorms*)

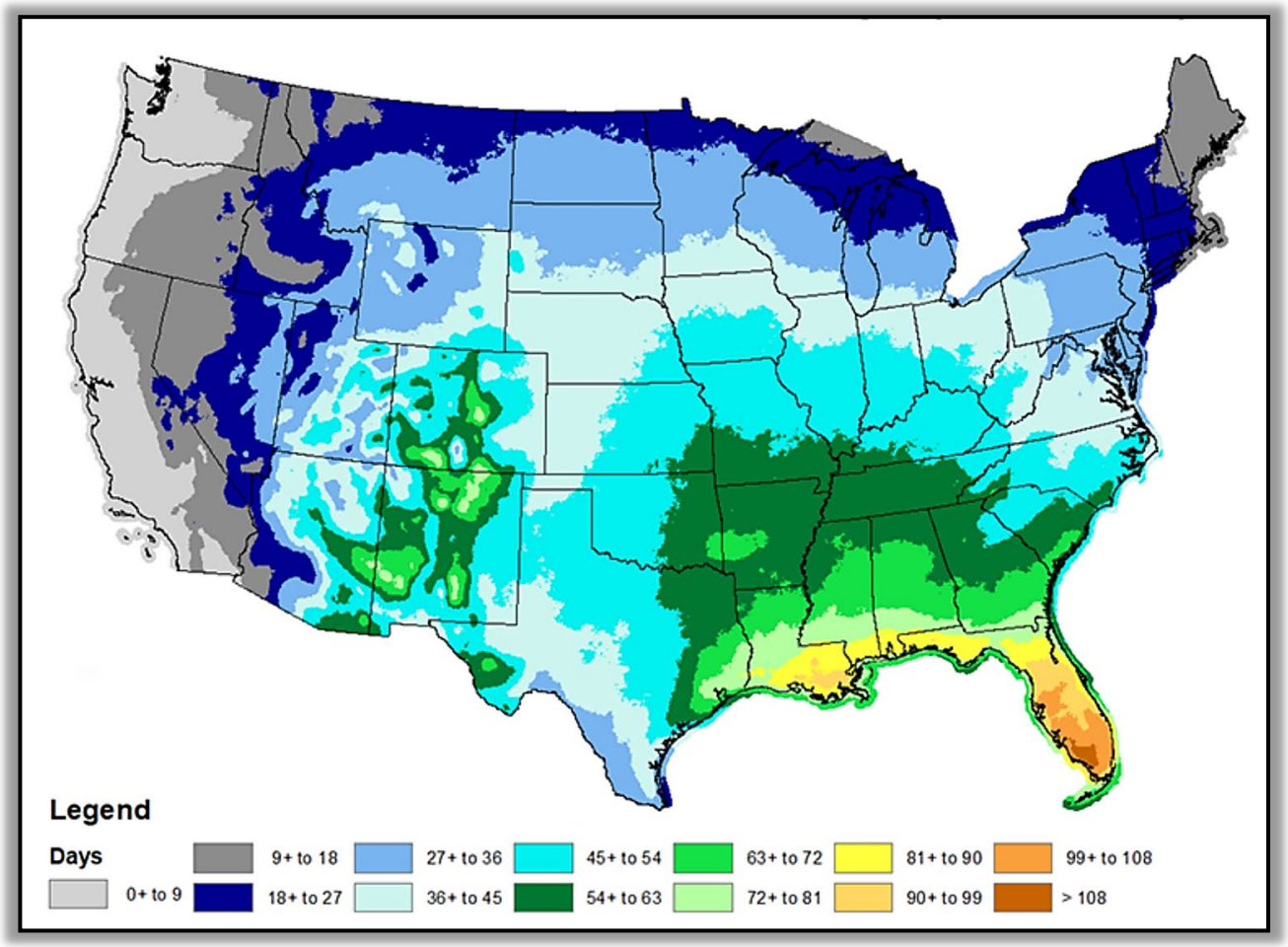
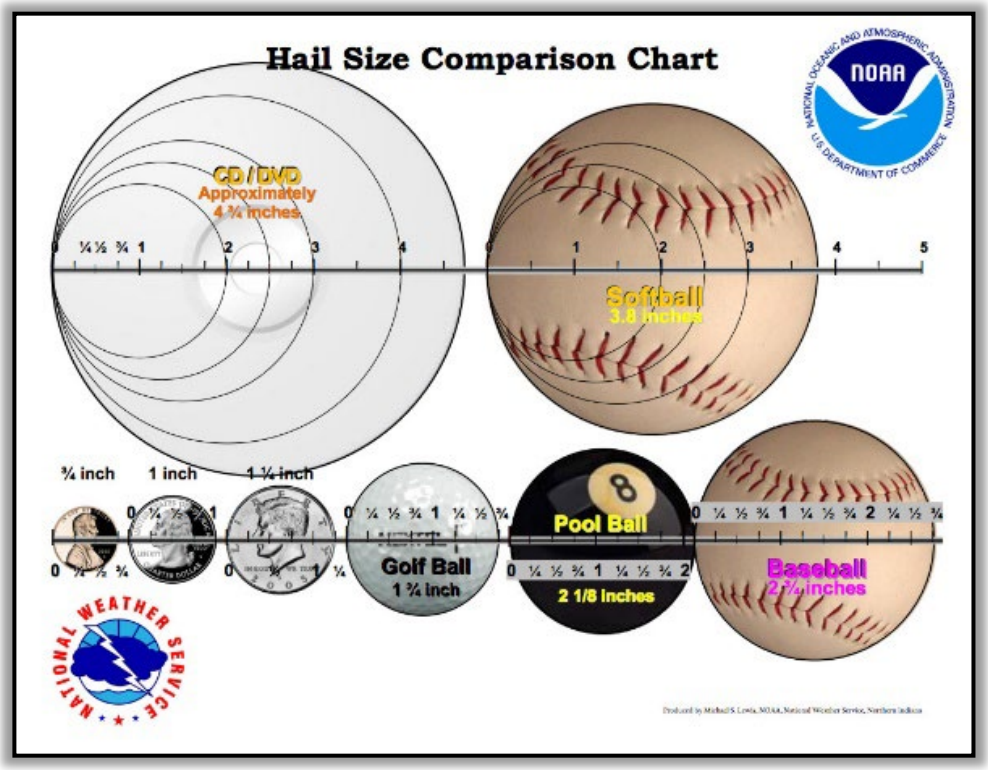


Figure 4-28 Hail Size Comparison Chart (NOAA|NWS)



Lightning

All thunderstorms produce lightning, which causes the thunderous noise. Lightning can strike from any part of the storm, as far as 10 miles away from the rainfall area, or strike after the storm has passed. "Lightning is a giant spark of electricity in the atmosphere between clouds, the air, or the ground. In the early stages of development, air acts as an insulator between the positive and negative charges in the cloud and between the cloud and the ground. When the opposite charges build up enough, this insulating capacity of the air breaks down and there is a rapid discharge of electricity that we know as lightning. The flash of lightning temporarily equalizes the charged regions in the atmosphere until the opposite charges build up again. Lightning can occur between opposite charges within the thunderstorm cloud (intra-cloud lightning) or between opposite charges in the cloud and on the ground (cloud-to-ground lightning)" (NOAA|NSSL. *Severe Weather 101 – Lightning*). Higher lightning flash density indicates a more severe lightning hazard event. **Figure 4-29** shows the average annual lightning events per square kilometer per year for Rhode Island. As depicted, Washington and Newport Counties generally have less events than the rest of the State.

Lightning events are difficult to assess in terms of extent as there is no universally accepted standard for measuring the strength or magnitude. Rather, lightning events are generally measured by the damage they produce. Lightning injures hundreds of people in the U.S. annually, with strike victims often suffering from long-term weakness and fatigue, muscle spasms, chronic pain, sleep disorders, memory loss, and depression. Lightning strikes can also ignite urban and wildland fires (RIEMA. *2019 RI-SHMP*, 3-199).



Figure 4-29
Average Annual Lightning Events per Square Kilometer per Year, 2016 - 2022
(Vaisala)

Location

Although Rhode Island has a low incidence of lightning-related fatalities and damages, all areas of New Shoreham are vulnerable to severe thunderstorms. Over the past decade the Advisory Committee recalls three residential house fires caused by lightning strikes. In addition to strikes resulting in fires, over the past several decades a number of facilities have been struck by lightning causing some or minimal damage: the Police Station was struck twice, the communication (cell) tower behind the Police Station was struck three times, the Water Pollution Control Facility was struck twice, the former West Side Church (now residential) was struck twice, and the scales at the Transfer Station were also struck by lightning.

Previous Occurrences

As depicted in **Figure 4-27**, based on data between 1993-2018, Rhode Island experiences in the range of 18-27 thunderstorms a year. According to NOAA, only about 10% of thunderstorms that occur are categorized as severe (NOAA|NWS. *Introduction to Thunderstorms)*. Two Presidentially Declared Disasters, one in March 2010 (**DR-1894-RI**) and one in May 2007 (**DR-1704-RI**) included severe thunderstorms. In addition, severe thunderstorm events for Washington County from 2000-2024 have been included in **Table 4-11** (NOAA|NCEI. *Storm Events Database)*.

Table 4-11 Severe Thunderstorm Events – Washington County 2000-2024
(NOAA|NCEI. *Storm Events Database*)

Type	Number of Days with Events	Deaths & Injuries	Property Damage Estimate (***generally under-reported***)
Hail	16	0	None reported
Lightning	8	2 (1 death; 1 injury)	$52,000 (associated with 7 events)
Thunderstorm Winds	26	0	$172,000 (associated with 20 events)

Climate Change Impacts

According to an article in *Inside Climate News*, "Climate change is making the air warmer, which allows it to hold more moisture, and both of those factors can boost the chance of thunderstorms. One major study from 2014 estimated that, if warming continues at its current pace, the number of lightning strikes in the U.S. could increase by as much as 50 percent by the end of the century, with each additional 1 degree Celsius of warming generating about 12 percent more strikes" (Tigue). In addition to increasing the potential for lightning, global warming also exacerbates drought conditions. This combined result could lead to an increase in lightning strikes igniting wildland/brush fires (Tigue).

Climate change is creating dynamic shifts in weather. A study published in *Geophysical Research Letters* in June 2022 assessed how increasing greenhouse gas concentrations may modify regional climates and influence regional thunderstorm activity. The study concluded that by the end of the century Southern Plains states will be getting fewer intense storms, with the East and Northeast getting more. Climate models are increasingly more accurate and being down-scaled to take into consideration regional data. One simulation from this study projects that the Northeast could see more than two weeks of thunderstorm-rich days, with the east coast states getting three to nine more days of storms. This potential shifting thunderstorm trend has ramifications for the eastern states, but is perhaps more dire for the Plains states. The mid-west relies on frequent thunderstorms as a vital water source for crops, many of which are staples for the country (Borunda).

Further, "Changes in atmospheric circulation patterns associated with climate change can lead to stronger winds within thunderstorms. This can result in more powerful wind gusts, increasing the risk of wind damage and downed trees and power lines. Climate change can influence the conditions necessary for hail formation within thunderstorms. Warmer temperatures at the surface and greater instability in the atmosphere can contribute to larger and more damaging hailstones" (RIEMA. *2024 RI-SHMP*, 154).

Probability of Future Events

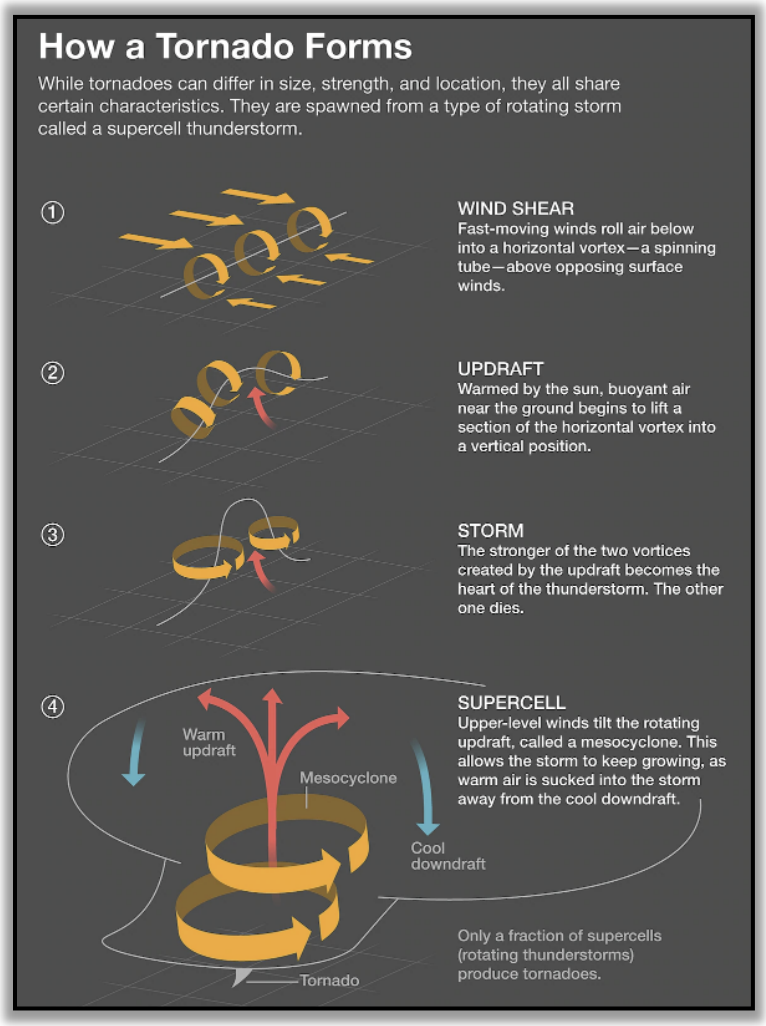
Based on the RI-SHMP, in a given year Rhode Island is **Highly Likely** (greater than 90% annual probability) to experience a severe thunderstorm event (RIEMA. *2019 RI-SHMP*, 3-205). The Advisory Committee concurs with this assessment for New Shoreham.

4.3.2.3 Tornadoes

Description and Extent

According to NOAA, "Exactly how and why tornadoes form is not completely understood" (NOAA. *Tornadoes*). However, as illustrated in **Figure 4-30**, scientist do know that tornadoes develop from thunderstorms when cold air overrides a layer of warm air, causing the warm air to rise rapidly. They are vertical funnels of violently rotating air extending between a cloud and the surface of the earth. Wind speeds can reach up to 250 mph and create damage paths in excess of one mile wide and 50 miles long. Most tornadoes move southwest to northeast, but tornadoes have been known to move in any direction (National Geographic. *Tornadoes*).

Figure 4-30 How a Tornado Forms (National Geographic)



NOAA has observed that the tornado season nationally lasts from March to August, with peak tornado activity normally occurring in April, May, and June. Historically, the highest concentrations of tornadoes have been in the Central U.S. and portions of the Gulf Coast states (NOAA|NSSL. *Severe Weather 101 – Tornadoes*).

"Tornadoes can appear as a traditional funnel shape, or in a slender rope-like form. Some have a churning, smoky look to them, while others contain 'multiple vortices' - small, individual tornadoes rotating around a common center. Others may be nearly invisible, with swirling dust or debris at ground level as the only indication of the tornado's presence" (RIEMA. *2019 RI-SHMP*, 3-209).

NOAA|NWS Storm Prediction Center issues tornado and severe thunderstorm watches. A tornado watch does not indicate an imminent tornado; rather, a tornado watch is an advisory for citizens to be alert and prepared to go to safe shelter should a tornado develop or if a tornado warning is issued.

Local National Weather Service offices are responsible for issuing tornado warnings. Tornado warnings indicate that a tornado has been spotted, or that Doppler radar detects a thunderstorm circulation capable of spawning a tornado (NOAA. *Severe Weather Definitions*).

The Fujita scale is used to characterize tornadoes based on the damage they produce and relating that damage to the fastest quarter-mile wind at the height of a damaged structure. The 2007 Enhanced Fujita Scale, shown in **Table 4-12,** improves upon the original scale by including more damage indicators, taking into account construction quality and variability, and providing a more definitive correlation between damage and wind speed (RIEMA. *2019 RI-SHMP*, 3-210).

Table 4-12 Fujita Scale and Enhanced Fujita Scale (RI-SHMP)

Fujita Scale			Enhanced Fujita Scale	
F Number	Fastest ¼ mile (mph)	3 Second Gust (mph)	EF Number	3 Second Gust (mph)
0	40-72	45-78	0	65-85
1	73-112	79-117	1	86-110
2	113-157	118-161	2	111-135
3	158-207	162-209	3	136-165
4	208-260	210-261	4	166-200
5	261-318	262-317	5	Over 200

Tornadoes can be devastatingly destructive to everything in their path, including homes, property, and infrastructure, particularly overhead electrical utilities and communications. In addition to lost revenues, downed power lines present a threat to personal safety. Further, downed wires and lightning strikes have been known to spark fires. A structure's tornado vulnerability is based in large part on building construction and standards. In general, mobile homes and wood-framed structures are more vulnerable to damage from a tornado than steel framed structures. Other factors, such as location and condition/maintenance of trees, also play a significant role in determining vulnerability.

Location

The area of the U.S. with the highest tornado activity is in the central part of the states between Texas and North Dakota, informally known as Tornado Alley. Though Rhode Island is not an area that is highly susceptible to tornadoes, it is possible for one to occur anywhere in the region. All areas of New Shoreham are considered equally exposed to a tornado.

New Shoreham enforces the RI State Building Code, which currently requires new buildings in New Shoreham be designed to withstand wind speeds of 120 mph. This requirement is considered effective in preserving structures from less severe categories of tornadoes (EF-0, EF-1, and lower wind speeds associated with an EF-2), but not for higher rated tornadoes with significantly faster winds. The type, age, and standards to which a structure was constructed, play a role in its vulnerability to tornadoes; in general, concrete, brick and steel-framed structures tend to fare better in tornadoes than wood-framed structures, which are common in New Shoreham.

Previous Occurrences

New England does not frequently suffer destruction from tornadoes. The most serious tornado event occurring in the New England region touched down in Worcester Massachusetts on July 9, 1953. In that event, 90 people were killed and 1,300 injured. A tornado is reported in southern New England, on average, once every two to three years (NASA - Earth).

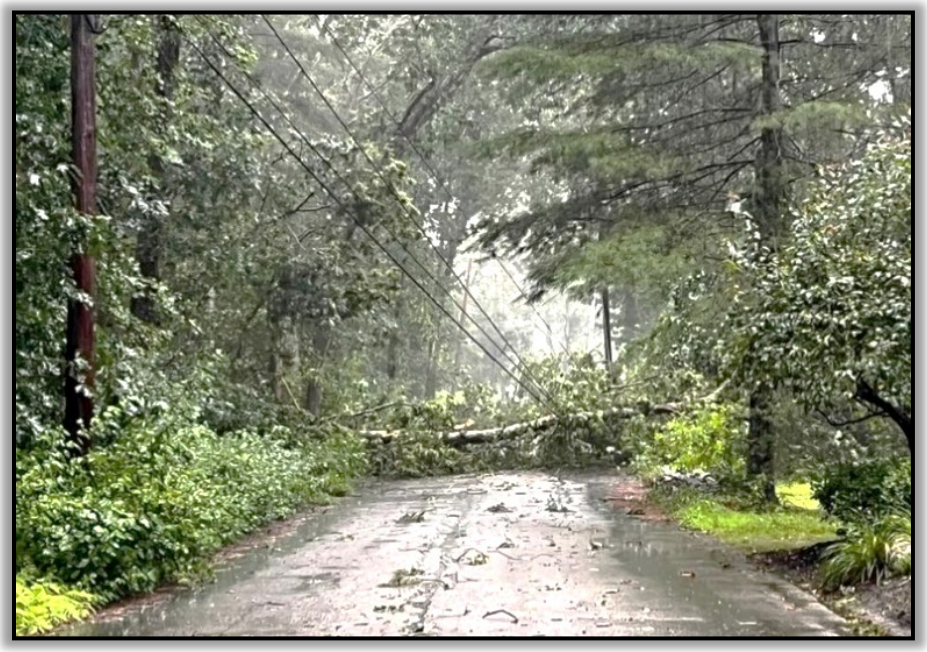
Despite the infrequency, tornadoes can strike anywhere in Rhode Island with the greatest risk for touchdowns running from the northwest to the northeast of the state (RIEMA. *2024 RI-SHMP*, 179). Based on NOAA|NCEI Storm Events Database, between 1984 and 2024, fifteen tornadoes have impacted Rhode Island; three events resulted in 24 people being reported as injured; and twelve events resulted in property damages totaling $5,025,000. Of the fifteen tornado events, three were in Washington County, with one impacting New Shoreham (NOAA|NCEI. *Storm Events Database*). The tornado event (EF0) that impacted New Shoreham occurred on August 10, 2012 and caused $50,000 of property damage. According to the NOAA|NCEI Storm Events Database, "A tornadic waterspout over the waters south of Block Island moved northward onto land as a tornado over the southern portion of the island a little before 4pm. On Lakeside Drive, it downed several trees, deck furniture was thrown 100 yards away, and screens were blown off a house. An anemometer at a house on Sand's Pond Road was damaged. Fifty trees were blown down on a farm. Several trees in New Shoreham were downed and there was lawn damage occurred on Chapel Street. Farther to the northeast, there were eyewitness reports of a rotating column that moved steadily across a narrow region just to the west of Jerry's Point. A path of flattened brush 50 feet wide was reported there" (NOAA|NCEI. *Storm Events Database*). Based on a Public Information Statement by the National Weather Service, the EF0 tornado was the first recorded touchdown of a tornado on the record books for New Shoreham (NECN.com).

The tornado event that caused the most damage in Rhode Island occurred on August 7, 1986, when a rare outbreak of seven tornadoes occurred in New England, with an F2 tornado impacting Cranston and Providence. In Rhode Island the tornado event caused twenty injuries and roughly 2.5 million in damages (NOAA|NCEI. *Storm Events Database*).

More recently, on August 18, 2023, parts of Rhode Island experienced a severe storm and an EF2 tornado touched down in Scituate and continued on through Johnston, and North Providence. This is the strongest tornado to impact Rhode Island since 1986. As shown in **Figure 4-31**, the tornado caused significant damage along its path, including uprooting and snapping off large trees at their bases and downing power lines. No fatalities were reported, but along 295 in Johnson, a motorist suffered minor injuries when his vehicle was lifted into the air and dropped it back onto the highway (Bouras).

Figure 4-31 Damage In Scituate RI from Severe Storm and EF2 Tornado (August 18, 2023)

Photo Credit: Corey Welch | WPRI-TV



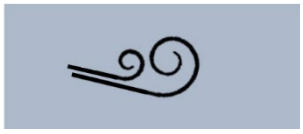
Climate Change Impacts

According to the Center for Climate and Energy Solutions (C2ES), "The link between tornadoes and climate change is currently unclear. Current data on tornadoes is inconsistent because measuring the presence of tornadoes relies on eyewitness accounts and aftermath damage assessments rather than quantifiable data. Additionally, it is difficult to identify long-term trends in tornado records, which only date back to the 1950s in the U.S" (C2ES. *Tornadoes*). Additionally, tornadoes are considered too geographically small to be accurately modeled. That being said, multiple studies do suggest that, "the conditions that produce the most severe thunderstorms from which tornadoes may form are more likely as the world warms" (C2ES. *Tornadoes*).

Probability of Future Events

Although tornadoes are a rare occurrence in Rhode Island, a risk does exist, particularly during peak hurricane season (mid-August through October). Based on historical frequency of occurrence, the RI-SHMP assesses all of Rhode Island as **Unlikely** (Less than 1% annual probability) to experience a tornado (RIEMA. *2019 RI-SHMP*, 3-214). The Advisory Committee concurs with this assessment for New Shoreham.

NOAA's Storm Prediction Center constantly monitors changing weather conditions and is able to provide short-term tornado predictions, but unfortunately, there is no long-term forecasting system that can accurately predict the likelihood of a tornado event. Because of predictive limitations, and because Rhode Island residents do not expect severe tornadoes and may be ill-prepared to respond to such an event, it is important for the community to be signed up for CodeRED Emergency notifications, which are administered by the Town of New Shoreham. Broadcasting tornado warnings through an extensive communication network is currently the best means for mitigating tornado hazards.



4.3.2.4 Tropical Cyclones (Tropical Depressions & Storms, and Hurricanes)

Description and Extent

"Tropical cyclones, a general term for tropical storms and hurricanes, are low pressure systems that usually form over the tropics. These storms are referred to as 'cyclones' due to their rotation. Tropical cyclones rotate counterclockwise and are among the most powerful and destructive meteorological systems on earth. Their destructive features include very high winds, heavy rain, lightning, tornadoes, and storm surge. As tropical storms move inland, they can cause severe flooding, downed trees and power lines, and structural damage" (RIEMA. *2019 RI-SHMP*, 3-218).

"There are three (3) categories of tropical cyclones:

- **Tropical Depression:** maximum sustained surface wind speed is less than 39 mph
- **Tropical Storm:** maximum sustained surface wind speed from 39-73 mph
- **Hurricane:** maximum sustained surface wind speed exceeds 73 mph

Most Atlantic tropical cyclones begin as atmospheric easterly waves that propagate off the coast of Africa and cross the tropical North Atlantic Ocean and Caribbean Sea. When a storm starts to move toward the north, it leaves the area where the easterly trade winds prevail and enters the temperate latitudes where the westerly winds dominate. This produces the eastward curving pattern of most tropical cyclones that pass through the Mid-Atlantic region. When the westerly steering winds are strong, it is easier to predict where a hurricane will go. When the steering winds become weak, the storm follows an erratic path that makes forecasting very difficult" RIEMA. *2019 RI-SHMP*, 3-218).

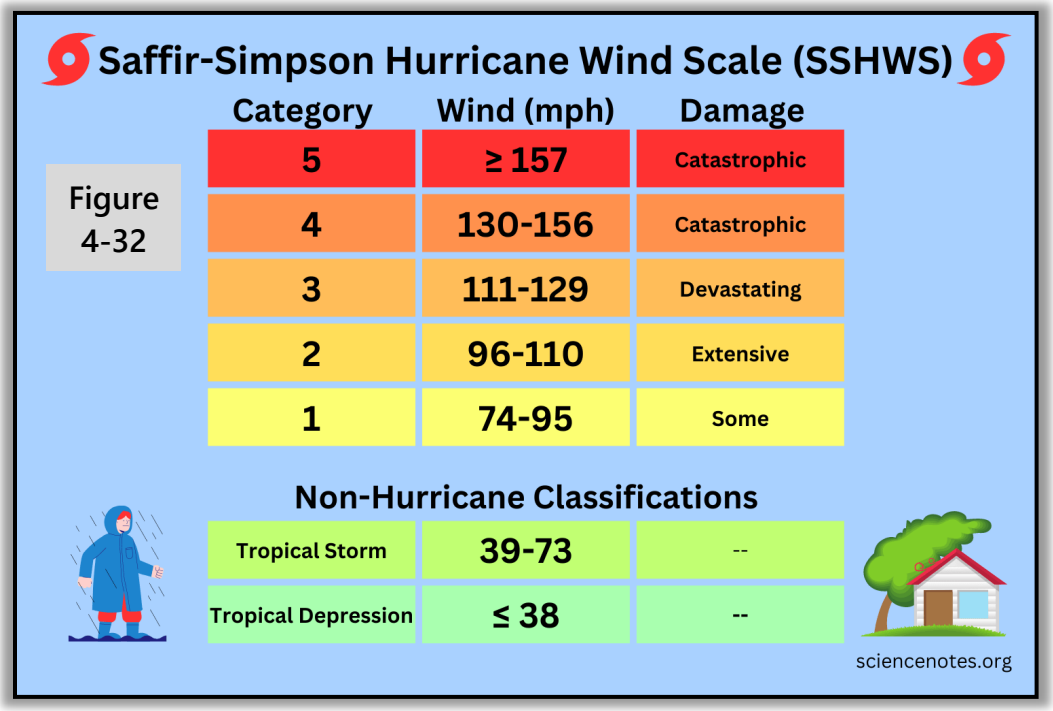
Although the trend is for hurricanes to lose some of their core strength after passing the Outer Banks of Cape Hatteras, North Carolina, they also tend to pick up forward speed. The increased forward speed can lead to a faster-moving storm surge, which intensifies the risk of coastal flooding. Additionally, this increased movement can stir up higher waves and lead to stronger winds. Hence although the hurricane may be downgraded in terms of its classification, the impacts on the coastal environment of New England may still be severe (Town of Little Compton RI. *Local*, 23). This phenomenon underscores the complexity of hurricane impacts, where intensity alone doesn't necessarily dictate the level of damage to a given area.

According to NOAA, the **Atlantic hurricane season runs from June 1 to November 30**, with the peak between mid-August and late October (NOAA|NHC. *Tropical*). Hurricanes are categorized according to the Saffir-Simpson Scale depicted in **Figure 4-32**, with ratings determined by wind speed and central barometric pressure. Hurricane categories reflect damage potential, which helps to provide public officials and the public-at-large with an understanding of the potential flooding and wind damages an impending storm may inflict. The categories range from one (1) through five (5), with Category 5 being the strongest (winds greater than 157 mph) (NOAA|NHC. *Saffir-Simpson*).

A hurricane watch is issued when hurricane conditions could occur within the next 48 hours. A hurricane warning indicates that sustained winds of at least 74 mph are expected within 36 hours or less. The reliability of predicting the path of hurricanes and wind speed has helped allow communities to better prepare for these storms, which lessens the amount of damage to people and property (NOAA|NHC. *NHC Issuance*).

Although the Saffir-Simpson Scale is widely accepted, because storm surge is a complex interaction between storm meteorology, storm track, and the topography of the impacted shoreline, "there is no statistical relationship between the Saffir-Simpson classification of a tropical storm and the resulting storm surge (Young). This is an important distinction because (as previously indicated) the increased forward speed of some lower category hurricanes may end up causing an unexpected level of destruction due to associated storm surge, as was the case in 2018 when Hurricane Florence was downgraded from a Category 4 to a Category 1 hurricane. Meteorologists warned that the flood and surge potential were still major threats, but many Carolinians chose not to evacuate after Florence was downgraded, resulting in trapping and stranding tens of thousands of people (Young).

Figure 4-32



Hurricanes can damage structures, property, and infrastructure, as well as disrupt transportation routes and pose threats to public safety. While strong winds from hurricanes can pose a threat to life and property, the greatest threat posed by hurricanes in Rhode Island is generally heavy rainfall and flooding caused by storm surge. As discussed in **Subsection 4.3.1.2**, wind and pressure forces of a tropical storm, hurricane, or Nor'easter moving across water can create an abnormal rise in water level known as storm surge. With respect to hurricane related storm surge, the magnitude of the storm surge within a coastal basin "is governed by both the meteorological parameters of the hurricane and the physical characteristics of the basin" (RIEMA. *2019 RI-SHMP*, 3-219).

The meteorological aspects include:

- **Hurricane size** measured by the radius of maximum winds (Measured from the center of the hurricane to the location of the highest wind speeds within the storm. This radius may vary from as little as 4 miles to as much as 50 miles)
- **Hurricane intensity** measured by sea level pressure and maximum surface wind speeds at the storm center
- **Hurricane path** or forward track of the storm
- **Hurricane forward speed**

When coupled with normal tides, storm surge can raise the mean water level 15 feet or more and cause substantial property damage and risk of injury and death. Hurricanes also have the potential to cause coastal erosion. As storms erode the shoreline, they put adjacent properties at greater risk. A home constructed in the V-zone may be destroyed as the beach erodes and the barrier or headland is washed over by high water in a storm.

Location

The RI-SHMP indicates that Rhode Island is particularly vulnerable to tropical cyclones (tropical depressions, tropical storms, and hurricanes) due to its geographic location and features (RIEMA. *2019 RI-SHMP*, 3-219). As New Shoreham is a coastal (island) community, in addition to wind damage from tropical cyclones, New Shoreham also contends with flooding and erosion associated with storm surge.

Additional information on storm surge is presented in Subsections 4.3.1.2 (Coastal Flooding) and 4.3.1.3 (Coastal Erosion).

In general, the east side of the island is more susceptible to wind damage. While there is limited forested areas on the island, high winds can cause tree limbs to come down which may damage power lines. High winds can also interrupt the fishery industry as well as ferry and air service to and from the island.

Most of New Shoreham's development is comprised of single family dwellings no more than 30 feet in height. Shorter structures tend to be better able to withstand high winds compared to taller buildings because they experience less wind force due to their lower profile and are less susceptible to wind-induced sway, making them more resistant to wind damage. New Shoreham enforces the RI State Building Code, which currently requires new buildings or those substantially renovated in New Shoreham (Wind Zone 3) be designed to withstand a minimum wind speed of 120 mph. This requirement is considered effective in preserving structures from a Category 1, 2 and generally 3 hurricane, but not for higher rated hurricanes with significantly faster winds. There are some residential and commercial structures sporadically located throughout New Shoreham that are of older construction (not in compliance with current building codes) and may be more susceptible to wind damage even from lower category hurricanes; this is particularly true in the Old Harbor Historic District.

Previous Occurrences

"Rhode Island has experienced tropical depressions, tropical storms, and hurricanes ranging from Category 1 to Category 3. Hurricanes can have potentially devastating effects on Rhode Island. Hurricane wind damage can be costly, but storm surge is by far the most destructive force acting on the Rhode Island coast" (RIEMA. *2019 RI-SHMP*, 3-223).

As shown in **Table 4-13,** since 1938 there are have been a numerous tropical cyclones (tropical storms, tropical depressions, and hurricanes) that have significantly impacted Rhode Island, some of which have caused damage to New Shoreham.

Figure 4-33 depicts the paths of three significant New England Category 3 hurricanes. The hurricanes of 1938, 1954, and 1991 directly impacted Rhode Island, causing millions of dollars in damage and hundreds of deaths. The two hurricanes that resulted in the largest loss of life in the State were The Great New England Hurricane of 1938 and Hurricane Carol in 1954.

A more recent tropical cyclone that caused significant damage to Rhode Island communities, including New Shoreham, was Super Storm Sandy in October 2012.

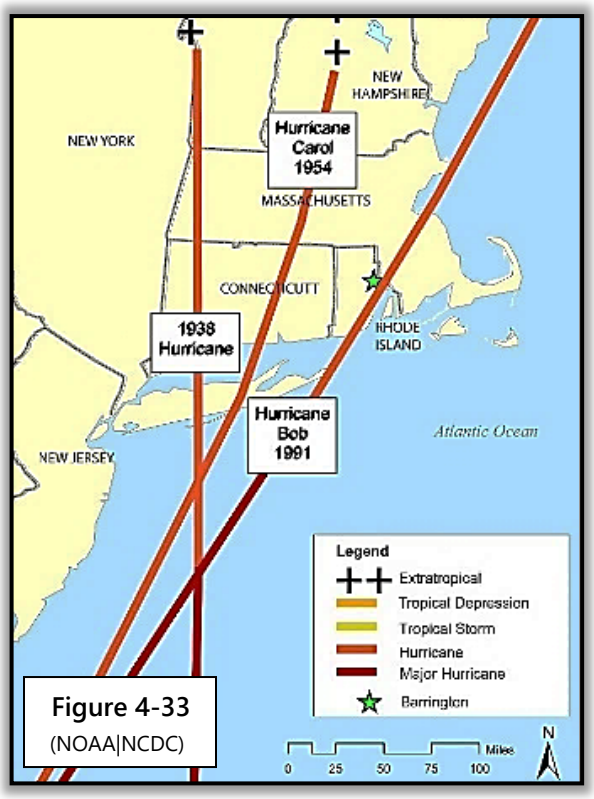


Figure 4-33
(NOAA|NCDC)

Hurricane/Super Storm Sandy – October 2012

Hurricane Sandy was a destructive storm that affected the entire eastern seaboard. Although Sandy had been downgraded to a Tropical Storm by the time it reached Rhode Island, many parts of the State still experienced considerable damage and approximately 122,000 people in Rhode Island were without power, some for as long as five days. The majority of the damage in Rhode Island was along the south coast where fifteen to thirty foot seas pounded the coast over two days, destroying dunes and causing significant flooding and property damage. The storm event lasted through multiple tide cycles; storm surges of four to five feet on top of high tide resulted in a storm tide high of over eight feet above mean low tide, as recorded in Newport (Town of New Shoreham RI. *BI Hazard*, 33). Rhode Island sought and received a federal emergency declaration which provided $39.4 million in support from federal disaster relief programs.

"On Block Island, the storm pummeled the eastern side of the island, including Old Harbor and Crescent Beach. Corn Neck Road, which parallels the beach and connects the harbor and village area to the north part of the island, was significantly damaged for a length of 1,800 feet, isolating one business, restricting access to a number of residences, and requiring travelers along the remainder of Corn Neck Road to use an alternate route (Ocean and Beach Avenues). A shorter section of Spring Street, leading out of town south of Old Harbor, and also paralleling close to the shore, was damaged" (Town of New Shoreham RI. *BI Hazard*, 33). Using $3.1 million in emergency repair funding through USDOT, both of these roads were subsequently rebuilt in 2013.

The storm caused considerable beach erosion and damage to the dune system along the shoreline, particularly in the area of Crescent Beach. The Block Island Conservation Commission and Block Island Residents Association held three community work days in late March and early June 2013 to install snow fencing along several beach access paths in an effort to capture the sand over time, allowing the dunes to rebuild in a cost-effective and sustainable manner. Over a hundred and fifty volunteers installed the fencing, which had been purchased through donations (Town of New Shoreham RI. *BI Hazard*, 33).

Other storm damage included the Town Beach pavilion which was repaired in 2013 at a cost of $160,000. The bait dock in Old Harbor on the east side of the Inner Basin was destroyed and rebuilt in 2013 at a cost of $200,000. Ballard's Beach Resort located between Old Harbor and the beach also sustained significant damage. A private residence lost approximately 50 feet of ocean frontage, requiring their septic system be relocated further inland. In New Harbor, in preparation for the storm, the harbormaster had nearly emptied the harbor of recreational boats and the marinas took precautions to secure their facilities. The remaining boats in New Harbor were thoroughly secured in locations favorable for the wind direction and weathered the storm without damage (Town of New Shoreham RI. *BI Hazard*, 33).

Table 4-13 Significant Tropical Cyclones Affecting Rhode Island Since 1938

Name/Date	Category	Wind Speed (mph)	Damage to RI
Henri (August 22, 2021)	Tropical Storm	60-70 gusts on Block Island	Tropical Storm Henri made landfall in southwest RI and then moved slowly northwestward across CT where it weakened; the worst flash flooding occurred in northeast CT, and Henri spawned three tornadoes and a waterspout in MA; there was significant damage and widespread power outages; property damages across Rhode Island was estimated at $1.82 million. Two mesonet sites in New Shoreham recorded peak gusts of 67 mph and 69 mph.
Isaias (August 4, 2020)	Tropical Storm	Gusts to 58	Tropical Storm Isaias caused widespread wind damage from Virginia through parts of New England; statewide property damages were estimated at $32.1K. At 356 PM EDT, the ASOS at the Block Island Airport (KBID) recorded a wind gust to 59 mph.
Jose (September 20, 2017)	Tropical Storm	Gusts to 61	Jose brought strong wind gusts to Rhode Island, primarily to the islands and south coast. At 2:16 AM on Sept 22 the Cooperative Observer at Block Island recorded a wind gust to 61 mph. No property damage was reported.
Hermine (September 5, 2016)	Tropical Storm/ Depression	Sustained 39-44	Hermine was a hurricane as she made landfall in Florida, then weakened to a tropical storm and finally a tropical depression as she moved off the coast of NC and meandered along southern New England; Hermine had minimal impact in most of RI, but because trees were still fully leaved, the higher gusts did down some branches and trees. The WeatherFlow site at Block Island Jetty recorded sustained wind speeds of 41 knots. No damage was reported.
DR-4089-RI EM-3355-RI Sandy (October 29, 2012)	Super Storm Sandy	60-80+ gusts	Although Sandy had been downgraded to a Tropical Storm by the time it reached Rhode Island, many parts of the State still experienced considerable damage from strong winds and approximately 122,000 people in Rhode Island were without power, some for as long as five days. Significant damage from coastal flooding and erosion occurred all along the coast; beaches along Westerly, including Misquamicut, were devastated. Storm surge along the south coast was 4 to 6 feet and seas from 30 to a little over 35 feet were observed in the outer coastal waters. Washington and Newport Counties suffered the most damage. Rhode Island sought and received a federal emergency declaration which provided $39.4 million in support from federal disaster relief programs. There were no disaster-related deaths in Rhode Island, but nationwide at least 182 people lost their lives.
DR-4027-RI Irene (August 27, 2011)	Tropical Storm	Sustained to 44, gusts up to 71	In late August 2011, this destructive and costly tropical storm caused widespread wind damage, knocking down trees and power lines, leaving up to half of Rhode Island residents without power (particularly Aquidneck Island). Narragansett Bay experienced storm surge of 2-4 feet. Block Island was spared power outage and only lost ferry service for a day. High winds did cause some tree damage and large waves rolled in from the south sweeping over the east section of the breakwater in Old Harbor. There was no permanent damage to any roads or structures, nor to any vessels due to early preparation by the Harbors Department. However, significant erosion occurred in several locations around the island, particularly on the west side of the island and to the beach and dune system along Crescent Beach.

Name/Date	Category	Wind Speed (mph)	Damage to RI
DR-913-RI Bob (August 19, 1991)	Hurricane: 2	Sustained to 100, gusts >105	Storm surge of 5 to 8 feet; extensive beach erosion; wind damage to trees and utility poles; 60% of Southeastern New England residents lost power; and Southern New England experienced $1.5 billion in damages and 18 fatalities.
DR-748-RI Gloria (Sept 27, 1985)	Hurricane: 2	Sustained to 81, gusts 100	Minor coastal flooding and erosion; scattered power outages; and New England experienced $19.8 million in damages and 2 fatalities.
Esther (Sept 20-21, and 25, 1961)	Hurricane: 3	Strong gales 35-50	Heavy shore damage at Sakonnet Point in Little Compton and Misquamicut in Westerly.
Donna (Sept 12, 1960)	Hurricane: 2	Sustained to 95, gusts 130	Moderate storm surge; extensive beach erosion; and wind damage to trees and utility poles causing major power outages.
DR-39-RI Diane (August 17-20, 1955)	Tropical Storm	Gusty winds 25-45	Damage to power lines was high, and at one point 82% of Rhode Island's homes were without electricity; ample warning permitted people to return home from school and work early, and as a result, only two (2) lives were lost; and property damage amounted to $170 million, most resulting from torrential rains, which caused serious river flooding.
Edna (Sept 11, 1954)	Hurricane: 3	Sustained to 95, gusts 110	Inland flooding; rivers rose several feet above flood stage; and electrical power was knocked out in several areas.
DR-23-RI Carol (August 31, 1954)	Hurricane: 3	Sustained to 100, gusts to >125	Hurricane Carol pummeled the southern Rhode Island coast at the astronomical high tide. Coastal communities were hit hard. Storm surges of 14 feet in upper bay caused coastal flooding and erosion. Dring the hurricane the Newport tide gauge recorded storm surge of 6.76 feet above MHHW, and the Providence tide gauge recorded 9.96 feet above MHHW. Sections of downtown Providence reported 13 feet of flooding and wind speeds of 90 mph and gusts up to 115 mph were recorded. Most of Rhode Island was without power; some customers did not regain power for 7 days. New England experienced $200 million in damages and 19 fatalities.
Great Atlantic Hurricane - 1944 (Sept 14-15, 1944)	Hurricane: 3	Sustained to 49, gusts to 90	Affected Rhode Island and southeastern Massachusetts; $2 million in property damage with 701 homes and businesses destroyed and over 12,000 damaged; fortunately no fatalities reported.
Great New England Hurricane - 1938 (Sept 21, 1938)	Hurricane: 3	Sustained to 91, gusts to 121	PBS's American Experience described the impact of *The Great New England Hurricane of 1938* on RI as follows: RI saw the greatest destruction, as wind and tide proved deadly. Along Fort Road in Watch Hill, the beach was swept clean of any signs of habitation. That area of beach has never been rebuilt. Death and destruction occurred along the Rhode Island shore as the storm surge swept across coastal beaches and bays, but the highest water was to be recorded in downtown Providence. Keen observers noted that the morning tide had not fallen since there was a rising southerly gale driving seawater constantly up Narragansett Bay. At about 5 pm the anemometer was blown away at the Providence Weather Bureau office after recording winds to 87 mph. But it was the storm surge, rising as it was funneled up the ever narrowing bay, which was to prove deadly. Just as workers were leaving their offices, the surge hit the downtown business district. In Exchange Place, water which had been just a few inches deep was waist deep within minutes. It rose to a remarkable 13 feet 8-1/2 inches, exceeding the level marked on the Old Market Building after the Hurricane of 1815. Bedsheets were cast out from the second story of the Biltmore Hotel to catch people being swept around the streets in the strong currents.

Name/Date	Category	Wind Speed (mph)	Damage to RI
Great New England Hurricane - 1938 *continued*			The next day the Providence Journal headlined 90 deaths across the state, but the destruction was next so devastating that it took many days before the true number of deaths -- over 390 -- were fully accounted for. The Rhode Island coastline experienced widespread damage estimated at $100 million and 262 people lost their lives; at the USGS gauge in Westerly the tide was recorded as 15 feet above mean sea level; the Newport tide gauge recorded storm surge of 9.45 feet above MHHW; the Providence tide gauge recorded storm surge of 12.66 feet above MHHW; and virtually all of the state was without power – with 10% of electric customers without power for 12 days.

Resources: RIEMA. *2019 RI-SHMP*, 3-224 - 3-226; NOAA|NCEI. *Storm Events Database*; NOAA. *Tides & Currents*; Vallee, David; and PBS American Experience

Climate Change Impacts

"'There is a strong consensus in the tropical cyclone climate community that the incidence of high-category events will increase, and that storms will precipitate more'" (Berardelli). An increase in the rainfall rates and destructive potential of future tropical cyclones is consistent with NOAA's findings. According to NOAA, due to wind intensity, 85% of all damage from hurricanes come from Category 3, 4, and 5 storms (Berardelli). The Intergovernmental Panel on Climate Change (IPCC) long-term global climate models indicate the probability of hurricanes becoming more intense, with stronger winds and heavier precipitation, through the 21st century. The increased intensity is caused by warmer sea surface temperatures which provides more energy to the systems. Higher wind speeds and more rainfall increase the risk of wind damage and flooding.

Coupled with rising sea levels, these more intense hurricanes will amplify impacts to coastal communities (Knutson). "Higher sea levels mean that storm surges can penetrate further inland, causing more extensive coastal flooding and coastal erosion" (RIEMA. *2024 RI-SHMP*, 196).

Probability of Future Events

Based on historical frequency of occurrence, the RI-SHMP assesses all of Rhode Island as **Likely** (between 50% and 89.9% annual probability), of experiencing a hurricane (RIEMA. *2019 RI-SHMP*, 3-228). The Advisory Committee increased the assessment for New Shoreham to **Highly Likely** (greater than 90% annual probability).

While high magnitude events, such as Category 4 or Category 5 hurricanes, are less likely to occur, this may change in the future. Climate change models from NOAA, the IPCC, and other sources, suggest there is a high probability of hurricanes becoming more intense, with stronger winds and heavier precipitation, through the 21st century.

4.3.3 Winter-Related Hazards

The winter-related hazards of heavy snow, ice, and extreme cold, detailed in this Section, can occur in combination or independently. The term winter storm generally refers to hazardous winter weather event with multiple effects such as heavy or prolonged snow, sleet, ice, strong winds, and extreme temperatures. A winter weather event typically occurs during the climatological winter season between October 15 and April 15.

Description and Extent

❖ ***Heavy Snow***

The term heavy snow "generally means snowfall accumulating to 4" or more in depth in 12 hours or less; or snowfall accumulating to 6" or more in depth in 24 hours or less (RIEMA. *2024 RI-SHMP*, 163). "Heavy snow can bring a community to a standstill by inhibiting transportation, knocking down trees and utility lines, and causing structural collapse in buildings and infrastructure not designed to withstand the weight of the snow. Repair and snow removal costs can be significant and surpass annual municipal salt and snow removal budgets, often before the end of the season" (RIEMA. *2019 RI-SHMP*, 3-183).

According to the National Severe Storms Laboratory (NOAA|NSSL. *Severe Weather 101 – Winter Weather*) key winter weather alerts include:

- **Blizzard Warning:** Issued when winds of 35 mph or greater are combined with blowing and drifting snow with visibilities of 1/4 mile or less. Seek indoor shelter immediately and stay indoors until the severe conditions end.
- **Winter Storm Warning:** Issued when a combination of hazardous winter weather in the form of heavy snow, heavy freezing rain, or heavy sleet is imminent or occurring. Winter Storm Warnings are usually issued 12 to 24 hours before the event is expected to begin.
- **Winter Storm Watch:** Issued 12-48 hours in advance of the onset of severe winter conditions. The watch may or may not be upgraded to a winter storm warning, depending on how the weather system moves or how it is developing.

In the northeastern United States, the term Nor'easter is used to describe storm events that have northeasterly winds that blow in from the ocean. A Nor'easter, is an extratropical cyclone, meaning that it no longer has tropical characteristics. Nor'easters exhibit a counter-clockwise wind circulation around a low-pressure center and pick up strength from cold air in the atmosphere. Nor'easters are a common winter occurrence in New England and often result in flooding, and wave/erosion-induced damage to structures and natural resources. The erosion of coastal features (such as beaches, dunes, and coastal bluffs) commonly results in greater potential for future storm damage to shoreline development. The amount of coastal erosion caused by Nor'easters depends on the intensity and the duration of the storm, the tidal phase at the time of the storm, the path of the storm, and the time interval between storms (RIEMA. *2019 RI-SHMP*, 3-218).

The storm radius of a Nor'easter, traveling up the eastern United States coast, is often as large as 1,000 miles, and the horizontal storm speed is generally around 25 miles per hour (mph). Sustained wind speeds of 10-40 mph are common during a Nor'easter, with short term wind speeds gusting up to 70 mph. Unlike hurricanes and tropical storms, Nor'easters can sit off shore, wreaking damage for days (RIEMA. *2019 RI-SHMP*, 3-218). Although these storms occur between October and April, they are most severe in the winter when the difference in temperature between the converging cold polar air and warmer air over the Atlantic Ocean is the greatest (NOAA|NHS. *What is*).

While the winds from Nor'easters are not as powerful as hurricane winds, their wind gusts can approach hurricane force, with the potential to produce significant storm surges. As Nor'easters are often prolonged events, storm surges may occur through multiple high tides. Nor'easters winds also have the potential to tear off roofs and topple structures. If a Nor'easter hits the coast as a blizzard, the ensuing snowfall can collapse weak roofs.

Other than characterizing a winter storm as an ice storm, snow squall, or blizzard, there is no universally accepted scale to measure them. However, the Northeast Snowfall Impact Scale (NESIS), developed by the National Weather Service (NWS), is commonly used to characterize and rank significant Northeast snowstorms with 10 inches or greater accumulation. The NESIS index is unique in that in addition to meteorological measurements, it uses population information that provides a framework for the storm's societal impacts, particularly in terms of transportation and economic impact. **Table 4-14** provides the NESIS values which are a function of the area affected, the amount of snow, and the number of people living in the path of the storm, as well as a descriptive adjective related to hazard impact (NOAA|NCDC. *The Northeast*).

Table 4-14 NESIS Index (NOAA|NCDC)

Category	NESIS Value	Description
1	1—2.49	Notable
2	2.5—3.99	Significant
3	4—5.99	Major
4	6—9.99	Crippling
5	10+	Extreme

❖ *Ice Storm*

The term ice storm is used to describe the weather phenomena involving rain or snow being converted to ice with accumulations that create hazardous conditions on the ground. Ice storm warnings are issued for one-half inch or greater accretion of freezing rain (RIEMA. *2019 RI-SHMP*, 3-183). Even small accumulations of ice can create hazards for motorists and pedestrians. Heavy accumulations of ice can bring down trees and utility poles resulting in disruptions to electrical power and internet communication. The Sperry–Piltz Ice Accumulation (SPIA) Index is a scale for rating ice storm intensity, based on the expected storm size, anticipated ice accumulation, and expected damage to structures, especially exposed overhead utility systems. As shown in **Figure 4-34**, the SPIA Index uses NWS forecast data to rate an upcoming ice storm's impact from 0 (little impact) to 5 (catastrophic damage to exposed utility systems) (Wikipedia, *Sperry*).

The Sperry-Piltz Ice Accumulation Index, or "SPIA Index" – Copyright, February, 2009

ICE DAMAGE INDEX	AVERAGE NWS ICE AMOUNT (inches) *Revised October 2011	WIND (mph)	DAMAGE AND IMPACT DESCRIPTIONS
0	<0.25	<15	Minimal risk of damage to exposed utility systems; no alerts or advisories needed for crews, few outages.
1	0.10–0.25	15–25	Some isolated or localized utility interruptions are possible, typically lasting only a few hours. Roads and bridges may become slick and hazardous.
	0.25–0.50	>15	
2	0.10–0.25	25–35	Scattered utility interruptions expected, typically lasting 12 to 24 hours. Roads and travel conditions may be extremely hazardous due to ice accumulation.
	0.25–0.50	15–25	
	0.50–0.75	<15	
3	0.10–0.25	≥ 35	Numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasting 1 to 5 days.
	0.25–0.50	25–35	
	0.50–0.75	15–25	
	0.75–1.00	<15	
4	0.25–0.50	≥35	Prolonged and widespread utility interruptions with extensive damage to main distribution feeder lines and some high voltage transmission lines/structures. Outages lasting 5 to 10 days.
	0.50–0.75	25–35	
	0.75–1.00	15–25	
	1.00–1.50	<15	
5	0.50–0.75	≥ 35	Catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed.
	0.75–1.00	≥ 25	
	1.00–1.50	≥ 15	
	> 1.50	Any	

(Categories of damage are based upon combinations of precipitation totals, temperature and wind speed/directions.)

Figure 4-34
SPIA Index
(NWS-WFO/ Sid Sperry/Steven Piltz)

❖ ***Extreme Cold***

What is considered an excessively cold temperature varies according to the normal climate of a region. Extreme cold for Rhode Island is characterized by temperatures well below zero degrees Fahrenheit for an extended period of time. This event may coincide with winter storms, occur after a storm, or occur without storm activity at all (RIEMA. *2019 RI-SHMP,* 3-88). Extreme cold can lead to hypothermia and frostbite, which are both serious medical conditions. Infants and seniors are more susceptible to extreme cold. If extreme cold conditions are combined with low/no snow cover, the cold can better penetrate downward through the ground and potentially create problems for underground infrastructure as well. When utilities are affected and heaters do not work, water and septic system pipes can freeze and even rupture (RIEMA. *2019 RI-SHMP,* 3-92).

Rather than simply the outside temperature, extreme cold is typically measured in terms of the NWS Wind Chill Temperature (WCT) index shown in **Figure 4-35**. The index attempts to quantify the cooling effect of wind with the actual outside air temperature to provide a more realistic representation of how cold people and animals feel, based on the rate of heat loss from exposed skin (RIEMA. *2019 RI-SHMP,* 3-88).

"A wind chill index of -5°F indicates that the effects of wind and temperature on exposed flesh are the same as if the air temperature alone were five (5) degrees below zero (0), even though the actual temperature may be much higher. The NWS issues a wind chill advisory when wind chill temperatures are potentially hazardous and a wind chill warning when the situation can be life-threatening" (RIEMA. *2024 RI-SHMP*, 3-88).

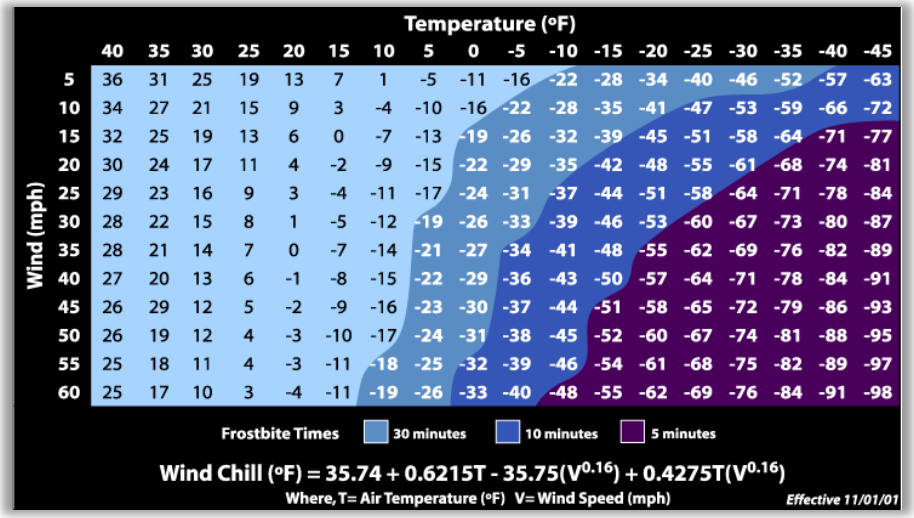


Figure 4-35 Wind Chill Index Chart (NOAA|NWS)

Location

Winter storms generally impact a large geographic region and regularly occur throughout Rhode Island. Based on data from NOAA and the NWS, the average annual snowfall for Rhode Island is between 25 – 75 inches per year. "The average annual snowfall in Rhode Island increases from about 20 inches on Block Island and along the southeast shores of Narragansett Bay to 40 to 55 inches in the western third of the State. Areas near the western and northern shores of the Bay, including greater Providence, have an average range from 25 to 30 inches of snow per year. During mild winters these snowfall totals can be significantly less" (RIEMA. *2024 RI-SHMP*, 163).

New Shoreham's southerly coastal location makes it somewhat less prone to heavy snowfall than inland communities, but virtually any area of Town could be impacted by a severe winter storm. All areas of New Shoreham are considered exposed to winter-related hazards, with the shoreline areas more vulnerable to Nor'easter wind gusts and associated flooding. Depending on the severity of the storm, ferry service to and from the islandcan be interrupted for several days.

Power lines and trees throughout New Shoreham are susceptible to damage from ice storms and heavy/wet snow. On December 23, 2022, a high wind/precipitation event impacted New Shoreham with ice damaging a section of power lines and causing outages at the Sewer Treatment Plant and several pumping stations. Ice storms as well as freezing runoff can also cause dangerous of driving conditions. The following roads are known to have icing issues: sections of West Beach Road, West Side Road, Beacon Hill Road, and Old Town Road.

Although there have been no roof collapses over at least the past decade, there are some residential and commercial structures located throughout New Shoreham that are of older construction and may be more susceptible to roof collapse due to heavy snow loads; this is particularly true in the Old Harbor Historic District.

Previous Occurrences

Winter weather events are a regular occurrence in New Shoreham, with snowfall ranging from a few inches to blizzard conditions, including sustained winds or frequent gusts of 35 mph or greater. These storms can create hazardous and disruptive conditions due to broken tree limbs, loss of power, school closings, business/civic service interruption, dangerous driving conditions with reduced visibility to less than a quarter mile, coastal erosion, and flooding conditions when the snow melts.

As shown in **Table 4-15**, over the past several decades there have been numerous winter weather events in Washington County. Based on information obtained from NOAA|NCEI Storm Events Database, between 2000 and 2024 there have been 53 events categorized as either blizzard, heavy snow, ice storm, or winter storm. Only five of the events caused property damage, with a cumulative total of approximately $102,900. It is worth noting that damage estimates indicated by the National Centers for Environmental Information (NCEI) are often artificially low. "Additionally, deaths and injuries may be underreported as they may be a result of a concurrent event, such as a person driving unsafely during heavy rain and passing away" (RIEMA. *2024 RI-SHMP*, 166). Further, property damage estimates are separate from the cost municipalities incurred in response to the winter weather events.

Table 4-15 Winter Storm Events – Washington County 2000-2024 (NOAA|NCEI. *Storm Events Database*)

Event Type	Number of Days with Event	Deaths & Injuries	Property Damage Estimate (***generally under-reported***)
Blizzard	4	0	None reported
Extreme Cold/Wind Chill	0	0	None reported
Heavy Snow	28	0	$41,000 (associated with 2 events)
Ice Storm	0	0	None reported
Winter Storm	21	0	$61,900 (associated with 3 events)

Due to the island's location off the coast of mainland Rhode Island, New Shoreham experiences a relatively mild climate with less extreme temperature fluctuations compared to areas further inland. "The coldest month of the year in New Shoreham is January, with an average low of 28°F and high of 39°F" (Weather Spark). Although periodically the island does experience cold winter temperatures, NOAA's Storm Events Database does not have any records associated with Extreme Cold/Wind Chill for Washington County. Based on local knowledge, in some of the more severe winter storms or cold spells, the Town has experienced temperatures (°F) in the single digits or low teens. For example, in the winter of 2017-2018 as part of a wider cold snap across New England, New Shoreham experienced temperatures in the single digits.

Over the past 100 years, the most significant Nor'easter to impact Rhode Island was the Blizzard of 1978 which resulted in parts of the State receiving up to 4 feet of snow. The lowest accumulation was about 10 inches on Block Island. Wind speeds exceeded 60 mph and downed power lines across the State. The heavy snow stranded more than 10,000 people on roadways throughout Rhode Island. Regrettably, 232 injuries and 26 deaths resulted from the storm, and damages totaled more than $15 million (Strauss).

Other significant events that have impacted Washington County during the past decade, have been detailed in **Table 4-16**.

Table 4-16 Significant Winter Storms for Washington County 2013-2024
(NOAA|NCEI. *Storm Events Database*; FEMA Declared Disaster Website; RIEMA. *2024 RI-SHMP*, 165, 166)

Begin Date	Category	Description (statewide snow totals unless specified otherwise)	Property Damages/ Public Assistance
2/13/2024	Heavy Snow	Generally 3 to 9 inches of snow fell	
2/27/2023	Heavy Snow	5-8 inches in Washington County	
12/23/2022	** High Wind/ Precipitation Event with Ice damage in New Shoreham	2-3.5 inches of rain fell across much of RI; the low temperature on Block Island was 28°F which created ice conditions and contributed to the damage of power lines and the power outages that followed.	
1/28/2022	**DR-4653-RI** Severe Winter Storm Kenan and Snowstorm	Rhode Island experiencing the most single-day snowfall in recent memory; blizzard conditions were reached at several locations throughout RI; Warren saw the highest snow accumulation in the state (24.6 inches), Tiverton was not far behind (22 inches); everywhere in the state saw at least a foot of snowfall; wind gusts reaching up to hurricane force in some areas; FEMA provided more than $2.6M to reimburse RIDOT for some of the costs of plowing and treating roads	Public Assistance 9.4M
1/7/2022	Heavy Snow	4-6 inches in Washington County; dangerous driving conditions	
2/7/2021	Heavy Snow	5-8 inches in Washington County	
2/1/2021	Winter Storm	7-12 inches in Washington County; wind gusts 40-45mph; some downed trees and wires	Property Damages $1.9K
12/16/2020	Heavy Snow	5-12 inches in Washington County; wind gusts 45-50mph	
3/3/2019	Blizzard	4-8 inches in Washington County	
3/12/2018	Winter Storm	A powerful nor'easter struck the eastern United States, affecting Rhode Island; heavy snowfall, coastal flooding, and strong winds; 64 mph wind gust occurred in Newport; coastal areas experienced inundation and erosion; most of the State received at least 12 inches of snow as blizzard conditions occurred; Scituate recorded the highest snowfall total in RI, with 22 inches; Washington County saw between 7-15 inches with Block Island receiving 7-8 inches of snow accumulation	
1/29/2018	Winter Storm	6-9 inches in Washington County	
1/4/2018	Blizzard	11-14 inches in Washington County; wind gusts up to 56mph at Westerly Airport	
3/10/2017	Winter Storm	5-6 inches along south coast; a COOP observer on Block Island measured 6 inches of snow accumulation	
2/9/2017	Winter Storm	6-13 inches in Washington County; 5-7 inches on Block Island	
1/7/2017	Winter Storm	11-16 inches in Washington County; on Block Island 14-16 inches fell during the day and evening. Conditions briefly approached blizzard criteria between 3:56 PM and 4:21 PM.	
2/8/2016	Heavy Snow	5-8 inches in Washington County; 5-6 inches on Block Island	

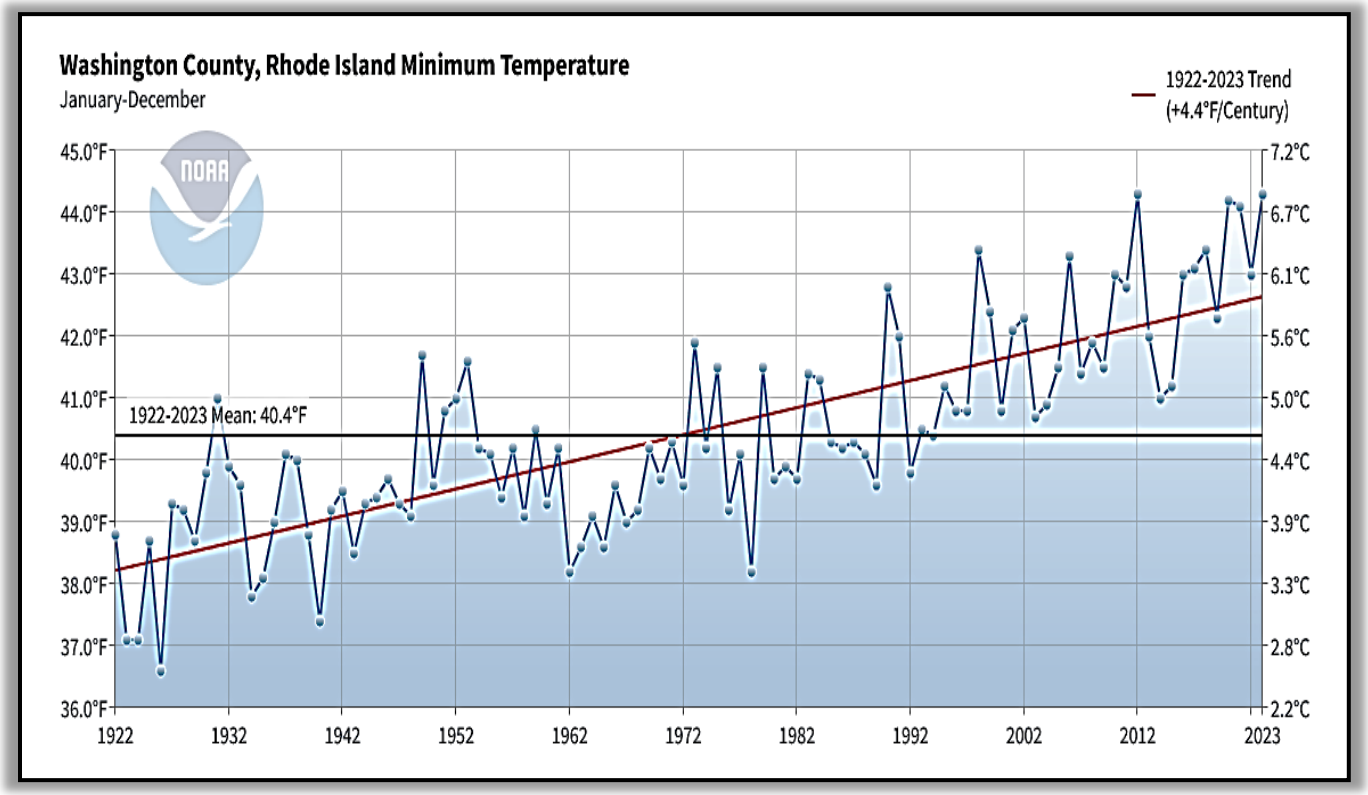
Begin Date	Category	Description (statewide snow totals unless specified otherwise)	Property Damages/ Public Assistance
2/5/2016	Heavy Snow	4-8 inches in Washington County; heavy wet snow; downed tree limbs; 5-6 inches on Block Island	
1/23/2016	Heavy Snow	High winds; 5-12 inches in Washington County; approximately 13 inches of snow fell on Block Island – but difficult to measure due to strong, gusty winds occurring simultaneously resulting in blowing and drifting of snow. Winds gusted as high as 76 mph at the Automated Weather Observation System at Block Island State Airport prior to the sensors failing. Utility poles were downed across the island, knocking power out to most, if not all, the island.	Property Damages $40K (Block Island)
3/5/2015	Heavy Snow	8-12 inches in Washington County; heavier totals along coast	
3/1/2015	Heavy Snow	4-8 inches in Washington County	
2/14/2015	Heavy Snow	Near blizzard conditions; 5-9 inches in Washington County; coastal flooding	
1/26/2015	**DR-4212-RI** Severe Winter Storm Juno and Snowstorm Blizzard	Blizzard conditions; strong winds with gusts of 50 to 65 mph; limited visibility; 12-21 inches in Washington County; one foot of snow on Block Island; the Governor requested federal assistance funds for snow assistance, emergency work, and the repair or replacement of damaged facilities in all counties; the Governor declared a statewide travel ban beginning at midnight on January 27 and continuing through 8 pm on January 28, 2015; President Obama issued a federal disaster declaration; RI Governor declared a statewide travel ban; school and commercial closings; flights cancelled; several fatalities occurred	Public Assistance 8.9M
2/15/2014	Heavy Snow	Strong winds; 6-9 inches in Washington County	
1/21/2014	Heavy Snow	strong winds; 3-10 inches in Washington County	
1/2/2014	Heavy Snow	Bitter temperatures; strong winds; 7-8 inches in Washington County	
2/8/2013	DR-4107-RI Severe Winter Storm Nemo and Snowstorm Blizzard	Blizzard of 2013 – Winter Storm Nemo; most locations received 24 to 30 inches of snow; 19-20 inches in Washington County; isolated thunderstorms were common; wind gust observed was 54 mph at Providence Harbor; downed trees and power lines; PPL Energy estimated more than 180,000 customers lost power; 170 people reported to have sought treatment for storm-related heart attacks, falls, and other injuries; the Governor declared a state of emergency and enacted a statewide travel ban that lasted nearly 24 hours	Public Assistance 7.9M

Climate Change Impacts

The number and strength of storms during colder months have increased in the Northern Hemisphere since 1950; however, the total amount of snowfall averaged across the Northern Hemisphere is in decline due to global warming. Some studies suggest that although the total amount of snowfall may be decreasing, the overall precipitation rate is increasing (Di Liberto). As average temperatures rise due to climate change, Rhode Island may experience milder winters. This may result in a decrease in the frequency of traditional snowstorms, and an increase in winter storm events characterized by mixed precipitation, including freezing rain and sleet (RIEMA. *2024 RI-SHMP*, 167).

As illustrated in **Figure 4-36** (NOAA|NCEI. *Climate at a Glance*), temperatures in Washington County have been steadily climbing over the past century. Data shows that temperatures in Rhode Island have risen 4° F since the beginning of the early 1900s (RIEMA. *2024 RI-SHMP*, 167). A decrease in extreme cold days has been documented and is expected to continue. For example, prior to 1980, Rhode Island experienced at least 120 days a year with temperatures at or below freezing. This has not occurred since 2000 (Vallee and Giuliano). Due to continued carbon emission rates, research suggests that by the middle of the century freeze-free periods may lengthen by two to three weeks RIEMA. *2024 RI-SHMP*, 168).

Figure 4-36 Washington County Annual Minimum Temperature 1922-2023 (NOAA|NCEI)



Probability of Future Events

Winter weather events for the Town, as in most of the northeast, can be described as unpredictable. Days with below freezing temperatures may be followed by days with mild temperatures in the 40s or 50s. Based on history and climatic conditions, the RI-SHMP states that it is **Likely** (between 50% and 89.9% annual probability) of extreme cold affecting Rhode Island. However, it is likely that the extreme cold temperatures will only occur for short periods of time (RIEMA. *2019 RI-SHMP*, 3-89, 3-90). The Advisory Committee increased the assessment for New Shoreham to **Highly Likely** (greater than 90% annual probability).

As shown in **Tables 4-15 and 4-16**, winter storms regularly occur in Rhode Island. Based on the NCEI data, on an annual basis, approximately two to seven winter weather events of some significance will occur in any of Rhode Island's counties. It is probable that one of these events will be a Nor'easter. As such, the RI-SHMP assesses it as **Highly Likely** (greater than 90% annual probability) that a winter weather event will occur in Washington County (RIEMA. *2019 RI-SHMP*, 3-189) and the Advisory Committee concurs with this assessment for New Shoreham.

INFECTIOUS DISEASE-RELATED HAZARDS

4.3.4 Infectious Disease-Related Hazards

Profiles for the following natural hazards have been included in this Section.

4.3.4.1 Vector-borne Diseases Transmitted by Ticks or Mosquitoes

4.3.4.2 Contagious Respiratory Illness Caused by Influenza Viruses or Coronaviruses



4.3.4.1 Vector-Borne Diseases Transmitted by Ticks or Mosquitoes

Description and Extent

Vector-borne diseases are infections transmitted to humans and other animals by blood-feeding arthropods, such as mosquitoes and ticks.

❖ ***Mosquitoes***

Mosquitoes are carriers (vectors) for many diseases. There are 46 mosquito species in Rhode Island, including the species that carry West Nile Virus (WNV) and Eastern Equine Encephalitis (EEE) (RIDEM. *About Mosquitoes*). Female mosquitoes have a mouthpart made to pierce skin and siphon off blood, which is required to complete their egg production cycle. As the mosquito fills itself with blood, it injects saliva into the host's skin. If disease-causing organisms are present in the blood from one of the mosquito's victims, those organisms could then be injected into other victims' bloodstreams when the mosquito feeds again. Mosquitoes can spread disease from animal to animal, animal to man, and from person to person in this manner (Mayo Clinic. *Mosquito Bites*).

➢ **West Nile Virus (WNV)**

West Nile virus (WNV) is the leading cause of mosquito-borne disease in the continental United States, with 970 known human infections in 2022. Only one human case was reported in Rhode Island in 2022 (CDC. *West Nile Virus*). "It is most commonly spread to people by the bite of an infected mosquito. Cases of WNV occur during mosquito season, which starts in the summer and continues through fall. There are no vaccines to prevent or medications to treat WNV in people. Fortunately, most people infected with WNV do not feel sick. About 1 in 5 people who are infected develop a fever and other symptoms. About 1 out of 150 infected people develop a serious, sometimes fatal, illness. You can reduce your risk of WNV by using insect repellent and wearing long-sleeved shirts and long pants to prevent mosquito bites" (CDC. *West Nile Virus*).

➢ **Eastern Equine Encephalitis (EEE) Virus**

The EEE virus is rare, but the impacts of infection can be deadly. Nearly 30 percent of the people that contract the disease die. EEE can cause brain infections including meningitis and encephalitis, and many survivors have ongoing neurologic problems. The CDC indicates that there are no preventative vaccines or medical treatments for EEE. Between 2011 and 2020 there were a total of 110 reported cases in the U.S., with a higher than average mortality rate of 43 percent. Three of the cases occurred in Rhode Island - all in 2019 (CDC. *Eastern Equine Encephalitis*).

❖ *Ticks*

Another type of blood-feeding arthropod, the tick, is also common in North America, and can spread disease in the same manner. According to RIDOH, "Ticks feed on small wild rodents, deer, pets, and humans. When a tick becomes infected and continues to feed on various hosts, the bacteria, virus, or parasite can be transmitted. Ticks that are located in the brush and on tall grasses come into contact with humans as we pass through these environments" (RIDOH. *Tick*). Not every tick is a carrier, but if you are bitten by an infected tick, the disease may be transmitted to you.

"Lyme disease, Anaplasmosis, and Babesiosis are the most frequently reported tick-borne diseases in Rhode Island" (RIDOH. *Tick*). In 2016, Rhode Island had their first case of Powassan virus, which is currently not treatable. Although the risk of being bitten is greater in the spring and summer when the nymphs are feeding, you may find ticks any time the temperature is above freezing (RIDOH. *Tick*). "**If you have become infected, symptoms can present themselves between a few days and a few months later, or may not appear at all.** The type and severity of symptoms vary with the specific disease, but there are some common symptoms, which include tiredness, body/muscle aches, joint pain, fever, rash, stiff neck, and facial paralysis. Early diagnosis is helpful in successfully treating tick-borne diseases, so it is important to contact your healthcare provider if you are experiencing symptoms" (RIDOH. *Tick*).

- **Lyme Disease**

  In 2022, Rhode Island had the highest rate of Lyme Disease in the country, and **Washington County** had the highest rate within Rhode Island (RIDOH. *Mosquitoes)*. The CDC has determined that, generally, for the Lyme disease bacterium to be transmitted, the tick (most often a nymph, or immature tick) must be attached for 36 to 48 hours. Of those infected, about 70 percent develop a rash at the bite site, which sometimes resembles a "bull's eye." If left untreated, other symptoms may occur involving the skin, eyes, heart, nervous system, brain, or joints, some of which may be permanent. Early detection is important in the treatment of Lyme disease (CDC. *Lyme Disease*).

- **Anaplasmosis**

  Anaplasmosis is caused by the bacterium *Anaplasma phagocytophilum* and spread to people primarily from the blacklegged tick and western blacklegged tick. Symptoms include fever, headache, chills, and muscle aches (CDC. *Anaplasmosis*).

- **Babesiosis**

  Most people won't experience symptoms if infected with babesiosis (red blood cell parasite), but some may have fatigue, fever, malaise, jaundice, and anemia. A more severe and prolonged illness or possibly death may occur for those elderly or immunocompromised (RIDOH. *Babesiosis*).

Monitoring Mosquitoes and Ticks

Both the Rhode Island Department of Health (RIDOH) and the University of Rhode Island (URI) have programs that monitor the extent of mosquito and tick populations and/or disease incidents. From June through October, RIDOH's Arboviral Surveillance program monitors the epidemiology, incidence, and geographic distribution of West Nile Virus, Eastern Equine Encephalitis Virus, and other arboviruses in Rhode Island for early detection and prevention of any human transmission (RIDOH. *Arboviral Surveillance*).

The State requires health care providers to report positive tick-borne laboratory results to RIDOH. The Department of Health then monitors and analyzes the tick-borne disease data to detect potential increases in disease and to identify opportunities for outreach (RIDOH. *Tick*). The University of Rhode Island Tick Encounter Resource Center has set up a program called *TickSpotter* to help keep track of tick activity across North America. The program has an app that allows participants to take a photo of the tick they found, use the *Tick Identification Guide* to correctly identify the tick, and then submit the information. The submissions help to monitor tick population trends and tickborne disease risk (URI. *Tick Encounter*).

Location

Mosquitoes breed in standing water which can be found along the river, creek, and pond areas as well as in swimming pools, birdbaths, ditches, and just about any outdoor vessels that can hold even a small amount of water. As such, conditions conducive for breeding can be found throughout New Shoreham. That being said, higher concentrations of mosquitoes will be found in forested, shrubland, and wetland areas. "Block Island has some of the best and most extensive shrublands along the Atlantic coast" Town of New Shoreham RI. *Comprehensive*, 3-2). The predominate native coastal shrubland species include arrowwood, shadbush, bayberry, chokeberry, and winterberry. The Town's coastal wetlands include salt marshes and freshwater or brackish wetlands contiguous to salt marshes. Two of the most well-known and visited salt marshes are Andy's Way and Mosquito Beach (also called Dinghy Beach) located around the Great Salt Pond. The inland freshwater and wetland system is also extensive. Residents joke that there is a pond for every day of the year, as 365 fresh water ponds are scattered throughout the island. Residents and visitors flock to the iconic and picturesque freshwater resources of Spring House Pond, Sachem Pond, Franklin Swamp, Champlin Farm Pond, and Seneca Swamp.

Although ticks can be found in urban areas and along coastlines, higher populations tend to be found in forested, shrubland, and grassy areas where the creatures they feed on live and roam, including deer, rabbits, birds, lizards, squirrels, mice, and other rodents. Typically, ticks climb to the top of a grass blade or the tips of a bush or branch and wait for potential prey to pass by. They latch onto the fur, hair, or clothing of their prey by extending their hooked front legs. Once on their host they tend to climb upward before attaching and feeding (IGeneX).

Within New Shoreham's vast conservation areas, there are numerous scenic hiking trails and picnic areas that provide outdoor enjoyment to residents and visitors. Many of these are in areas that may have high populations of ticks and/or mosquitoes. In general, the Advisory Committee noted that over the past decade they have observed an increase in ticks and mosquitoes not only in conservation areas but also at residential properties throughout the island. It is therefore important that residents and visitors are educated on how to minimize the risks of mosquito and tick bites.

Previous Occurrences

According to the CDC, in 2019 the United States saw a large increase in the total number of **Eastern Equine Encephalitis (EEE)** cases (38) and deaths (19). Three cases were found in Rhode Island, two in Kent County and one in Washington County, but none of those resulted in death. The 2019 case in Washington County is the only one documented by the CDC between 2003-2023 (CDC. *Eastern Equine Encephalitis,* historical data). The CDC reports a relatively low incidence of **West Nile Virus** in Rhode Island over the past several decades. Statewide between 1999 to 2023 there have been 26 cases reported, with most of them (16) occurring in Providence County. During that timeframe only three were reported in Washington County (CDC. *West Nile Virus,* historical data).

As illustrated in **Figure 4-37**, the incidence of **Lyme disease** in the United States has significantly increased over the past two decades. Cases documented by the CDC have nearly doubled between 1991 and 2018 and recent estimates suggest that approximately 300,000 people may get Lyme disease each year in the United States (EPA. *Climate Change Indicators*).

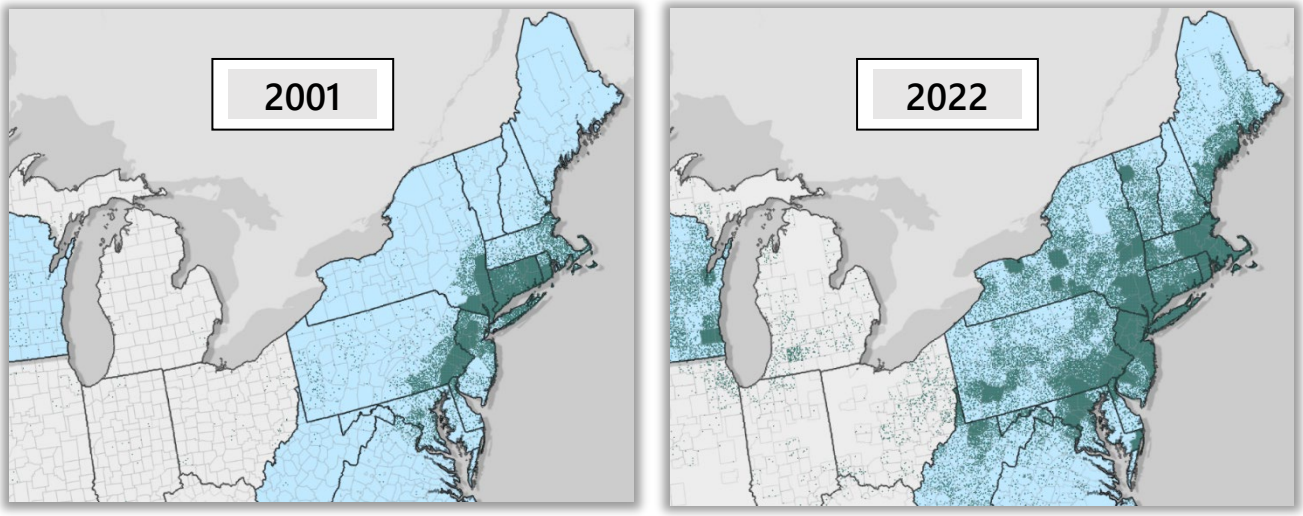
According to RIDOH, the "Most Lyme disease cases are reported during the summer months, with a peak observed during July. Reported cases of Lyme remained stable from 2018-2021, however reported cases increased in 2022 as a result of the Council of State and Territorial Epidemiologists (CSTE) case definition change for Lyme disease. The 5-year mean rate for Lyme disease for 2017-2021, reporting years before the CSTE case definition change, was 92 per 100,000 people" (RIDOH. *Tickborne Disease Data*). As shown in **Table 4-17**, in 2023, Rhode Island had 2,852 cases of Lyme disease, with an incidence rate of 260 cases per 100,000 people. According to RIDOH, Washington County consistently has the highest rate of Lyme disease in Rhode Island, with a rate of 734 cases per 100,000 people in 2023. Due to New Shoreham's fluctuation in residents during the summer season, RIDOH did not report an incident rate, but the Town had 13 cases of Lyme reported in 2023. (RIDOH. *Tickborne Disease Data*).

As deer are prevalent throughout the island, New Shoreham has been grappling for years with how to control the deer population which impacts the incidence of Lyme disease. To assist with overpopulation, the Town has lengthened the deer hunting season and the permitting process has been somewhat streamlined.

Table 4-17 Reported Cases of Lyme Disease in 2023 (RIDOH. *Tickborne Disease Data*)

Area	Case count	Rate per 100,000 Residents
Rhode Island	2,852	260
Washington County	954	734.76
New Shoreham	13	Data Not Provided
Little Compton	83	2,267.70 (highest incident rate in the State)

Figure 4-37 Reported Lyme Disease Cases in 2001 and 2022 (adapted from CDC. *Lyme Disease Interactive Map*)



Data are aggregated by county. Dots are displayed randomly throughout a county based on the number of cases in that county. Cases are reported from the infected person's county of residence (where known), not necessarily the place where they were infected. Maps do not include data if county of residence was not reported. People travel between counties and states, and the place of residence is sometimes different from the place where the patient became infected.

Climate Change Impacts

Climate change is expected to cause heavier precipitation, longer warm seasons, and warmer winters. These changing temperature and precipitation patterns could make conditions more hospitable for mosquitos and ticks, thereby increasing life cycle and geographic spread, which may increase disease transmission rates (RIDOH. *Mosquitoes*).

"Both the infectious agent (protozoa, bacteria, viruses, etc.) and the associated vector organism (mosquito or tick) are very small and devoid of thermostatic mechanisms. Their temperature and fluid levels are therefore determined directly by the local climate. Hence, there is a limited range of climatic conditions - the climate envelope - within which each infective or vector species can survive and reproduce. It is particularly notable that the incubation time of a vector-borne infective agent within its vector organism is typically very sensitive to changes in temperature, usually displaying an exponential relationship. Other climatic sensitivities for the agent, vector, and host include level of precipitation, sea level elevation, wind and duration of sunlight" (Patz, 104).

Probability of Future Events

Although mosquitoes will continue to be prevalent and the population may increase, based on past occurrences the Advisory Committee assesses the risks of Eastern Equine Encephalitis and/or West Nile Virus occurring in New Shoreham as **Potential** (between 1-49.9% annual probability).

With respect to risks associated with ticks, specifically Lyme disease, the Advisory Committee assesses the risk as **Highly Likely** (greater than 90% annual probability) that a number of New Shoreham residents or visitors will be infected by Lyme disease. Due to the vast open space in Town ideal for tick habitat, and climate warming trend, the Advisory Committee notes that the risks of tick-borne diseases will continue to escalate.



4.3.4.2 Contagious Respiratory Illness Caused by Influenza Viruses or Coronaviruses

Description and Extent

The terms epidemic and pandemic are used to describe the degree at which a disease is spreading. An epidemic is an outbreak of a disease that occurs in a community, geographical area, or several countries which spreads quickly and affects many people at the same time. An epidemic becomes a pandemic when it spreads over several countries or continents, usually affecting a large percent of the population in a country or around the world. A pandemic often creates social disruption and economic loss with a lengthy response and recovery period. Many diseases throughout the history of the world have been pandemic (Rochester Regional).

Global, federal, state, and local agencies closely monitor diseases that have the potential to cause outbreaks and work to develop strategies to contain their spread, including medical countermeasures such as antibiotics and antiviral medications (RIEMA. *2019 RI-SHMP*, 3-157).

❖ ***Influenza (Flu)***

According to the RIDOH, "Flu is a contagious respiratory illness caused by viruses. People get sick from seasonal flu viruses every year. Flu can cause illness ranging from mild to severe. In some cases, flu can lead to hospitalization and even death. Most people who get the flu will have a fever and cough or sore throat. They may also have a runny or stuffy nose, body aches, a headache, chills, fatigue, vomiting, or diarrhea" (RIDOH. *Flu*). Epidemics of influenza typically occur during the winter months. The CDC estimates that annually in the United States, between 2010 and 2020, the flu resulted in between 9-41 million illnesses, 140,000-710,000 hospitalizations, and 12,000-52,000 deaths (CDC. *Disease Burden*). Although rates of infection are highest among children, rates of serious illness and death are highest among persons aged 65 and over and those with serious underlying health conditions (Harper, Scott).

A 2018 Centers for Disease Control and Prevention (CDC) study suggests, "that on average, **about 8% of the U.S. population gets sick from flu each season, with a range of between 3% and 11%, depending on the season**" (CDC. *Seasonal Influenza*). To prevent contracting seasonal flu people can take precautions such as regularly washing their hands and avoiding people who are sick, but the best way to prevent the flu is to get vaccinated every year. The effectiveness of a vaccine to protect a person from the flu depends on several factors including the match between the flu virus strain in the community and the vaccine strain, and the characteristics of the person being vaccinated (such as their age and health) and their body's ability to use the vaccine to fend off the virus (CDC. *Seasonal Influenza*).

An influenza pandemic is a global outbreak of a new strain of the *Influenza A Virus* that has been transmitted to humans from another animal species. Species that are thought to be important in the emergence of new human strains are pigs, chickens, and ducks. Because the virus strain is new to humans, very few people will have immunity and an effective vaccine might not be widely available. The new strain can therefore spread rapidly infecting a large number of people (CDC. *Seasonal Influenza*).

❖ ***Coronavirus Disease 2019 (COVID-19)***

According to the RIDOH, "Coronavirus Disease 2019 (COVID-19) is a virus strain that has only spread in people since December 2019" (RIDOH. *Covid-19 Information*). On March 11, 2020 the Coronavirus Disease was declared a pandemic by the World Health Organization (WHO) and on March 13, 2020 the United States declared the outbreak a national emergency (CDC. *New ICD*).

Symptoms of COVID-19 range in severity and may include fever or chills, cough, shortness of breath or difficulty breathing, muscle or body aches, sore throat, headache, nausea or vomiting, diarrhea, runny or stuffy nose, fatigue, and loss of taste or smell. RIDOH recommends that anyone with COVID-19 symptoms, or exposed to someone with symptoms or who tested positive, should be tested. Prior to receiving test results, individuals should try to isolate from those who are not sick. Anyone diagnosed with COVID-19 should isolate until they are well and test negative (RIDOH. *Covid-19 Information*). To prevent infection with COVID-19, the CDC recommends frequent handwashing with soap and warm water; coughing and sneezing into your elbow or a tissue; avoid touching mouth, nose, and eyes; and if you are sick, stay at home.

The CDC established a National Notifiable Diseases Surveillance System that enables states and other jurisdictions to share infectious and non-infectious disease-related data. Data for both Influenzas and Coronaviruses are collected through this system. Reporting is mandated by state laws and should follow uniform reporting criteria. The CDC has a Pandemic Severity Index (PSI) to assess the potential magnitude of the impact and resulting Community Mitigation Strategies to help guide the states and jurisdictions (CDC. *Pandemic Influenza*).

As outlined in the RI-SHMP (RIEMA. *2019 RI-SHMP*, 3-157, 3-158) the extent of an infectious disease's impact depends on a number of factors including:

- The disease's virulence, transmissibility, and pathogenesis
- Individuals' vulnerability factors, such as underlying medical conditions, malnutrition, behavior, and pregnancy
- Immunization prevalence
- Quality and availability of healthcare services
- Availability and accessibility of medical countermeasures that protect against and treat the disease
- Modes of transmission
- Environmental conditions, including temperature and rainfall

Figure 4-38, "created at the Centers for Disease Control and Prevention (CDC), reveals ultrastructural morphology exhibited by coronaviruses. Note the spikes that adorn the outer surface of the virus, which impart the look of a corona surrounding the virion, when viewed electron microscopically. In this view, the protein particles E, S, and M, also located on the outer surface of the particle, have all been labeled as well. A novel coronavirus, named Severe Acute Respiratory Syndrome coronavirus 2 (SARS-CoV-2), was identified as the cause of an outbreak of respiratory illness first detected in Wuhan, China in 2019. The illness caused by this virus has been named coronavirus disease 2019 (COVID-19).

Figure 4-38 Coronavirus (CDC. *Photo ID #23313)*

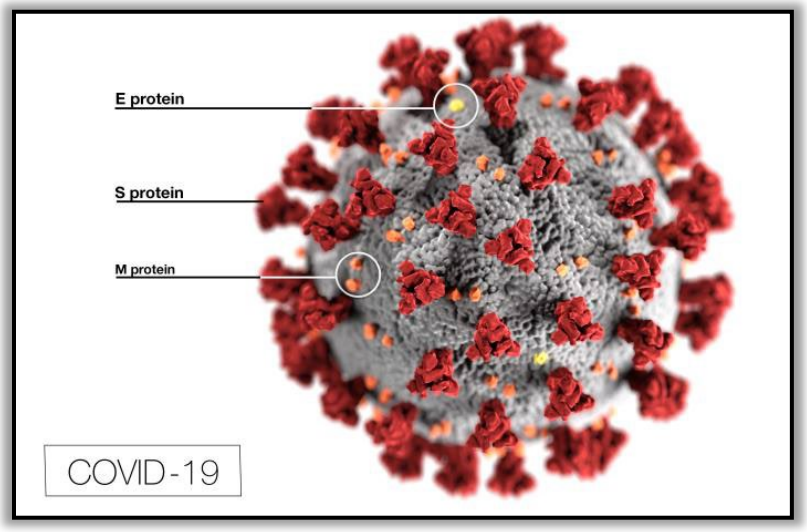


Photo Credit: Alissa Eckert, MSMI; Dan Higgins, MAMS

Location

Factors like high population density, where people are in routine close contact with one another, can aid transmission of infectious diseases (RIEMA. *2019 RI-SHMP*, 3-157). Areas of potentially higher risk in Town include the school, Early Learning Center, Community Center, library, Town Hall, places of worship, grocery stores, bars, restaurants, ferries, and other places where people are in close contact and/or where people more vulnerable to communicable diseases may congregate. However, as COVID-19 is a highly contagious communicable disease, the entire Town is considered at risk.

Based on the 2020 Census, New Shoreham has a year round population of 1,410, which is the lowest jurisdictional population in Rhode Island (US Census Bureau. *New)*. For the non-summer months, this low population density is favorable in terms of minimizing the spread of communicable diseases. During the summer months, particularly between July and Labor Day, the population significantly increases as New Shoreham (Block Island) is a summer tourist destination. According to the Block Island Tourism Council, during the summer months, Block Island sees approximately **15,000 to 20,000 visitors per day**, which includes both overnight guests and day-trippers (Block Island Tourism). Increases in population density can play a significant role in the spread of communicable diseases.

Previous Occurrences

❖ *Influenza (Flu)*

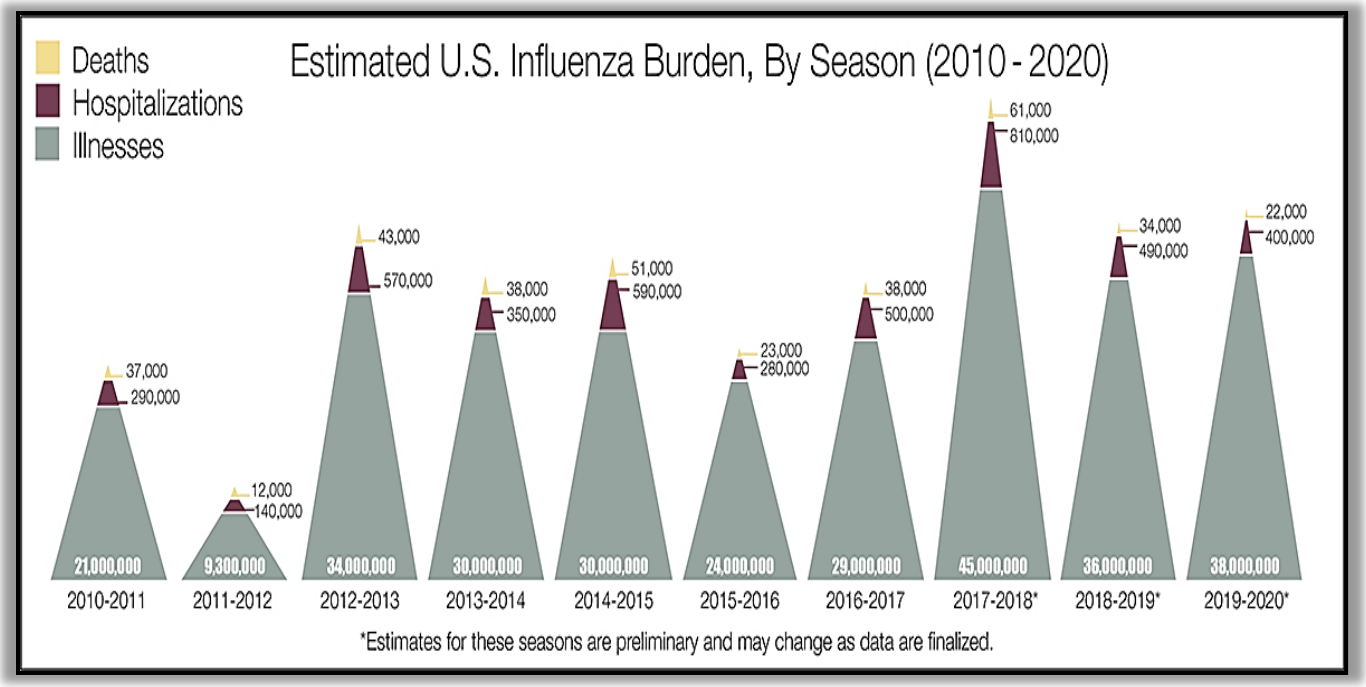
Due to public awareness, vaccines, and past immunity, it is rare that the flu season becomes epidemic or pandemic. There have however been four influenza pandemics in the 20th century (CDC. *Pandemic Influenza*):

- Spanish flu - H1N1 virus (1918-1920)
- Asian flu - H2N2 virus (1957-1958)
- Hong Kong flu - H3N2 virus (1968-1969)
- 2009 flu pandemic - H1N1pdm09 virus (2009-2010)

Cases of influenza are common every year in Rhode Island and across the United States. Generally mid-September through mid-May is considered the flu season, peaking between December and February. As illustrated in **Figure 4-39**, over the past decade, the worst flu season was 2017-2018, when 61,000 people nationwide died from the flu. During the 2018-2019 flu season, the CDC estimates the U.S. experienced approximately 34,000 deaths and during the 2019-2020 flu season, approximately 22,000 deaths (CDC. *Seasonal Influenza*).

Interestingly, during the 2020-2021 flu season, which coincided with the COVID-19 pandemic, the U.S. experienced extremely low flu numbers. According to Scientific American, "the drop-off in flu numbers following COVID's arrival was swift and global. Since then, cases have stayed remarkably low. 'There's just no flu circulating,' says Greg Poland, who has studied the disease at the Mayo Clinic for decades. The U.S. saw about 700 deaths from influenza during the 2020–2021 season" (Peek).

Figure 4-39 (CDC. *Seasonal Influenza*)

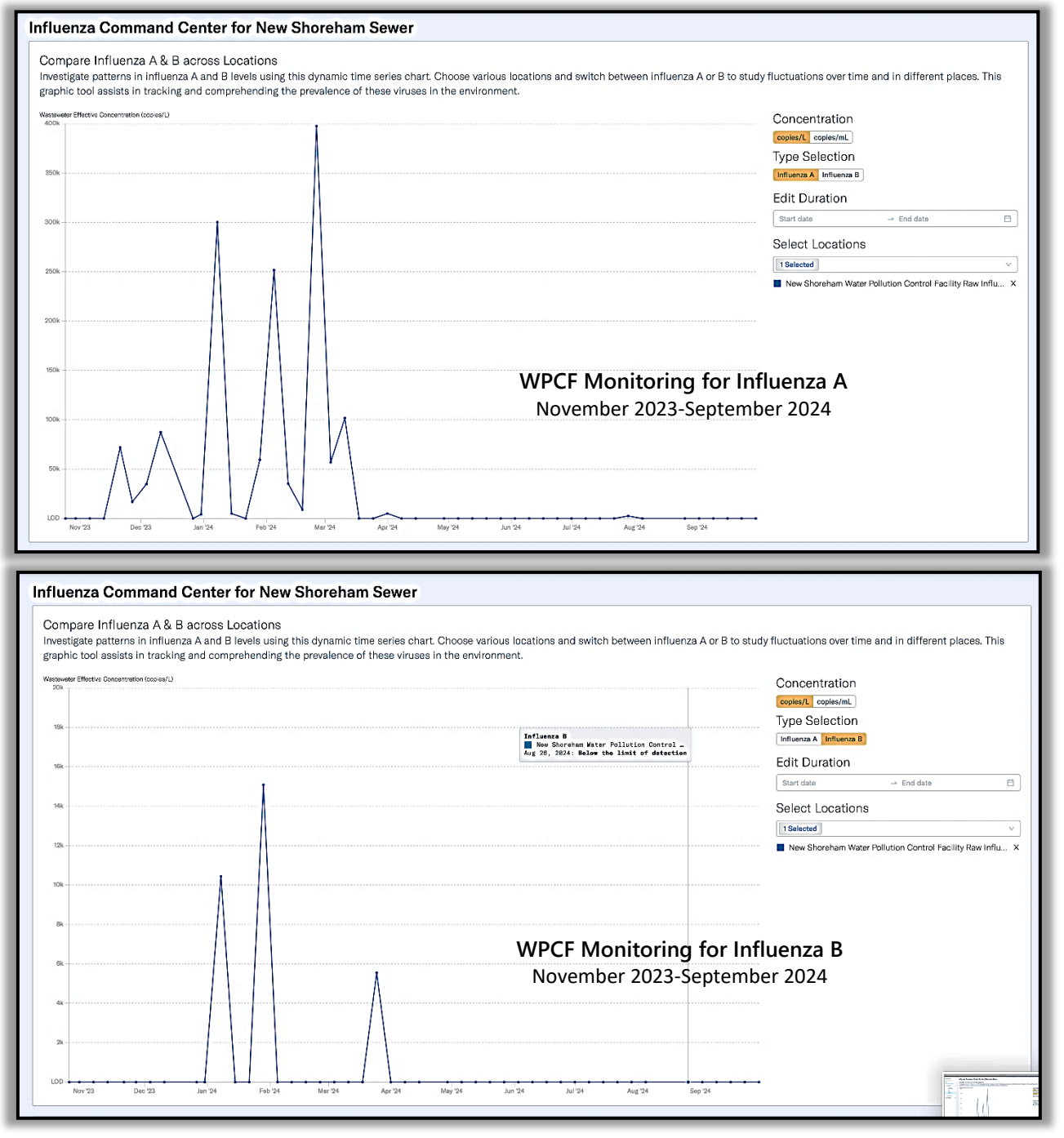


With respect to Rhode Island, the 2019-2020 Flu Season (October 6, 2019 - May, 22, 2020) was a moderately severe season with 948 hospitalizations for influenza, resulting in 20 deaths. This was lower than during the 2018-2019 season which reported a total of 1,032 hospitalizations and 39 deaths. According to RIDOH's Influenza Surveillance Report for the 2020-2021 Flu Season (September 27, 2020 - May 22, 2021), Rhode Island paralleled the national trend with unprecedented low levels of influenza. Of the 12 positive influenza tests, only 2 were hospitalized, and there were no deaths. These numbers may be skewed however, because there is so much overlap in the symptoms of COVID-19 and influenza, that people may have assumed they were experiencing COVID-19 and did not get tested for influenza. Conversely, the extensive mask wearing and heightened hand hygiene practices to protect against COVID-19 may have also protected against influenza (RIDOH. *Influenza Surveillance*).

RIDOH data indicates that the 2021-2022 Flu Season was mild, with 301 influenza-associated hospitalizations and 3 influenza-associated deaths between October 3, 2021 and May 28, 2022 (RIDOH. *Surveillance,* 2). The CDC has indicated that in some areas of the country, the seasonal influenza viruses have continued to circulate into June 2022, creating a remarkably prolonged influenza season (Austin). As of the end of November 2022, Rhode Island topped the list as the state with the highest flu vaccine rate (66.1%); 14.7% points higher than the national rate (Stacker).

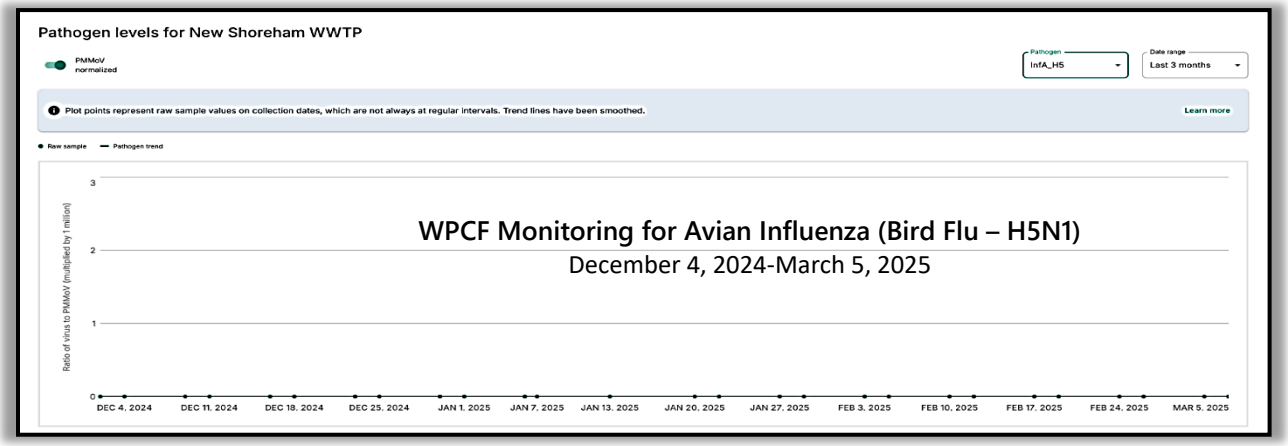
The New Shoreham Water Pollution Control Facility (WPCF), which provides sanitary sewer service to roughly 30% of the year round population and 50% of the summer population, monitors for Influenza A & B, as well as the presence of other pathogens. Wastewater monitoring helps track the presence and spread of viruses and other pathogens in the community. The wastewater analysis can detect viral RNA before individuals show symptoms or seek medical care, essentially providing an early-warning system for outbreaks. This kind of monitoring can help public health authorities better prepare for flu season, adjust vaccination efforts, and allocate resources where they are needed most. **Figure 4-40** was provided by the WPCF and graphically represents Influenza A & B indicators in the wastewater between November 2023-September 2024, with the highest levels occurring from January through March. As flu season generally occurs from October-April, the influx of summer tourist do not have an appreciable impact in the spread of the influenza virus.

Figure 4-40 New Shoreham WPCF Monitoring for Influenza A & B



Avian Influenza (Bird Flu) is widespread in wild birds worldwide and while the primary transmission is from bird to bird, other animals, including mammals, can contract the virus through exposure with infected birds or their droppings, nasal secretions, or saliva. The outbreak of Avian Influenza in the U.S. began in late March 2024 with the detection of H5N1 in dairy cows. Between April 2024 and February 2025, the CDC has confirmed 70 human cases (none in Rhode Island), with one death. Most cases were associated with exposure to infected poultry or dairy cattle. While the current public health risk is low (CDC. *Avian*), the WPCF has added monitoring for Avian Influenza. As depicted by the flat line in **Figure 4-41**, provided by the WPCF, between December 4, 2024-March 5, 2025, no level of Influenza A virus subtype H5N1 (Bird Flu) was detected.

Figure 4-41 New Shoreham WPCF Monitoring for Avian Influenza (Bird Flu - Influenza A virus subtype H5N1)



❖ ***Coronavirus Disease 2019 (COVID-19)***

In 2007, WHO reported that since 1970 over 40 infectious diseases had been discovered (RIEMA. *2019 RI-SHMP*, 3-160). Hence, it is not surprising that at some point a new infectious disease will create an epidemic or pandemic. This is what appears to have happened with the 2019 Coronavirus Disease (COVID-19), which according to RIDOH, "is a virus strain that has only spread in people since December 2019" (RIDOH. *Covid-19 Information*). As depicted in **Figure 4-42**, the Coronavirus spread rapidly, creating a worldwide pandemic (WHO. *COVID-19 dashboard*).

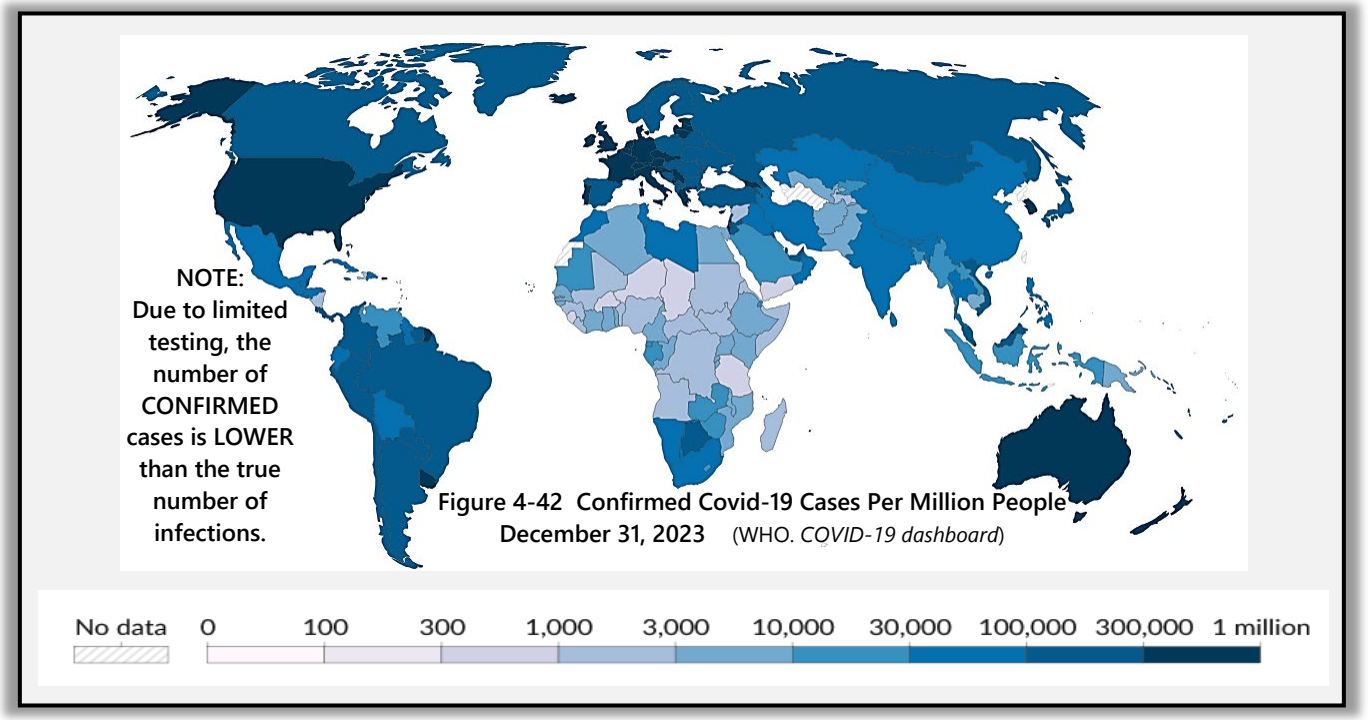


Figure 4-42 Confirmed Covid-19 Cases Per Million People
December 31, 2023 (WHO. *COVID-19 dashboard*)

Worldwide:
Globally, as of December 24, 2023, there have been 773,119,173 COVID-19 cases, including 6,990,067 deaths, reported to WHO. The first COVID-19 vaccine product was introduced on July 22, 2020. As of November 26, 2023, approximately sixty-seven percent (67%) of the world's total population had been vaccinated with a complete primary series of a COVID-19 vaccine (WHO. *COVID-19 dashboard*).

"The World Health Organization ended the global emergency status for COVID-19 on Friday [May 5, 2023], more than three years after its original declaration, and said countries should now manage the virus that killed more than 6.9 million people along with other infectious diseases… The COVID death rate has slowed from a peak of more than 100,000 people per week in January 2021 to just over 3,500 in the week to April 24, 2023, according to WHO data, reflecting widespread vaccination, availability of better treatments and a level of population immunity from prior infections" (Rigby).

United States:
The first confirmed case in the United States is documented as January 20, 2020. On March 13, 2020 a Covid-19 Pandemic Emergency Disaster Declaration was declared (EM-3440 and EM-3515 for the Narragansett Indian Tribe) and subsequently on March 30, 2020 a Covid-19 Pandemic Major Disaster Declaration was declared (DR-4505).

In United States, between January 20, 2020 (first confirmed case in U.S.) and December 24, 2023 there have been 103,436,829 COVID-19 cases, including 1,144,877 deaths, reported to WHO. Between the U.S. vaccination start date of December 14, 2020 and November 26, 2023, approximately seventy percent of the total population (70% or 230,637,348 people) in the U.S. were vaccinated with a complete primary series of a COVID-19 vaccine (WHO. *COVID-19 dashboard*).

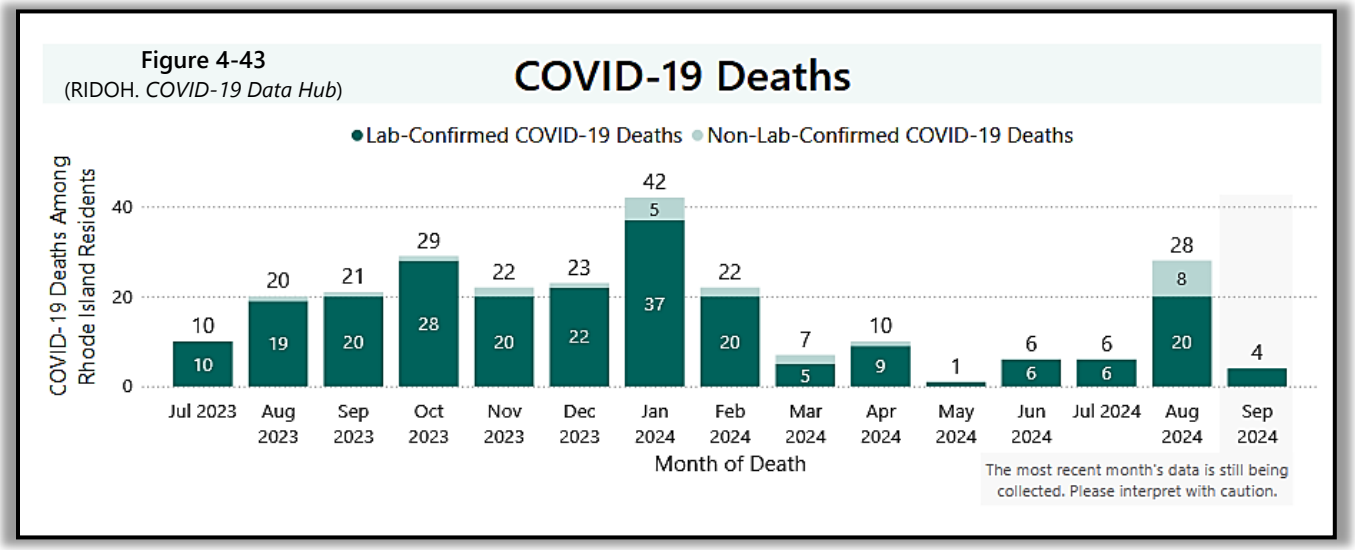
Based on current COVID-19 trends, the U.S. Department of Health and Human Services (HHS) ended the federal Public Health Emergency for COVID-19 as of May 11, 2023. The CDC stated, "The United States has mobilized and sustained a historic response to the COVID-19 pandemic. As a nation, we now find ourselves at a different point in the pandemic – with more tools and resources than ever before to better protect ourselves and our communities" (CDC. *End*). As of May 11, 2023 the CDC stopped collecting certain types of Covid-19 related data (CDC. *End*).

Rhode Island:
On July 1, 2021, just over eighteen months after the first confirmed case in U.S. (January 20, 2020), Rhode Island became the fifth state to reach 70% of adults fully vaccinated against COVID-19 (Taylor). As of August 10, 2023, RIDOH stopped updating some statewide Covid-19 data. Although the federal Public Health Emergency has ended, the "likelihood of COVID-19 disappearing any time soon is very low. In fact, scientists expect that the virus will eventually become endemic—causing seasonal illnesses each year" (URMC). As demonstrated in **Figure 4-43**, as deaths from Coronavirus continue, there remains the need to protect public health in the form of vaccines and other health measures.

It is normal and expected for variants of viruses to occur, and there are currently a number of variants of the virus SARS-CoV-2 that causes the COVID-19 disease (RIDOH. *COVID-19 Variants*). According to RIDOH, as of **August 2022**, "nearly all COVID-19 cases in Rhode Island are caused by the Omicron variant. Omicron is highly contagious and spreads more easily than the original virus that causes COVID-19 and the Delta variant" (RIDOH. *COVID-19 Variants*).

In **November 2022** the CDC reported that the Omicron variant (BQ.1) and a new subvariant (BQ.1.1) constituted nearly half of cases nationwide. The subvariant may pose a greater threat to immunocompromised people, but for the majority of fully vaccinated people, it should not be a serious health threat. In **September 2023**, Yale Medicine reported that "Omicron and its subvariants have ranked as the predominant SARS-CoV-2 strains in the U.S. for almost two years now. While the original Omicron strain (BA.1) is no longer circulating, Omicron subvariants are now driving most of the country's SARS-CoV-2 infections. In 2023, a new Omicron strain called EG.5 (nicknamed "Eris") is the dominant strain in the U.S., and experts are monitoring another new strain called BA.2.86 (nicknamed "Pirola")" (Katella). "As of **September 17, 2024**, the SARS-CoV-2 Omicron variants KP.2, KP.2.3, KP.3 and KP.3.1.1, as well as LB.1, have high prevalence in the United States. CDC Nowcast projections estimate KP.3.1.1 to account for approximately 53% of new COVID-19 illnesses in the US" (IDSA).

Figure 4-43
(RIDOH. *COVID-19 Data Hub*)

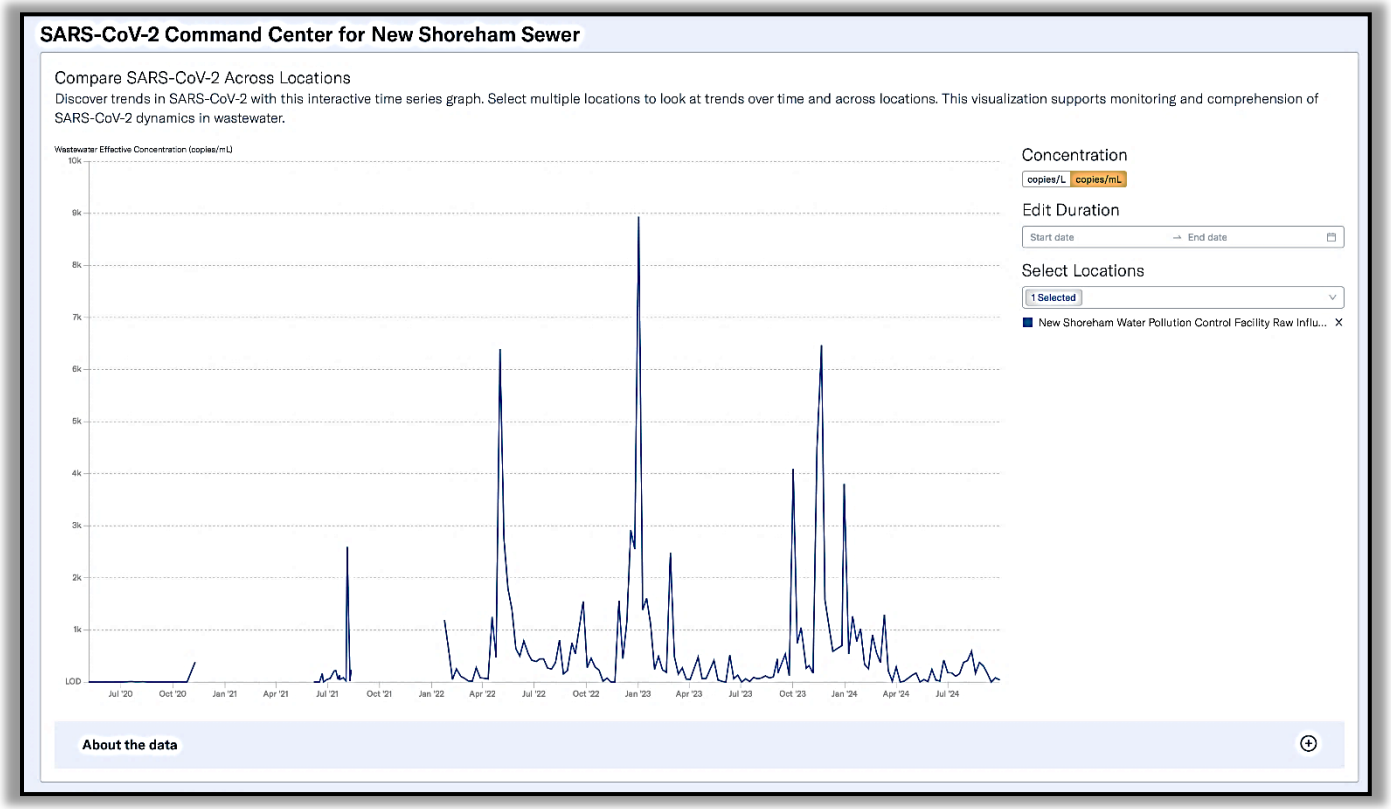


"Numerous variants of the virus that causes COVID-19 are being tracked in the United States and globally. CDC is working with public health officials to monitor the spread of all variants and provide an estimate of how common they are in the nation and at the regional level " (CDC. *COVID-19 Variants*).

A great number of studies are being conducted to determine how well antibodies fare against emerging variants. While the outcomes vary, some findings suggest antibody immunity against new variants are lower than scientists prefer. This suggests that to minimize breakthrough cases, vaccine companies will need to continue to modify vaccines to better combat emerging variants. According to Dr. Dan Barouch, director of the Center for Virology and Vaccine Research at Beth Israel Deaconess Medical Center (Cross), "The current vaccines are likely not going to provide substantial and sustained protection against infection, even with boosters… but these vaccines will likely still provide substantial protection against severe disease, and that is the most important goal of vaccines" (Cross).

The New Shoreham Water Pollution Control Facility (WPCF), which provides sanitary sewer service to roughly 30% of the year round population and 50% of the summer population, monitors for Coronavirus, as well as the presence of other pathogens. Wastewater monitoring helps track the presence and spread of viruses and other pathogens in the community. The wastewater analysis can detect viral RNA before individuals show symptoms or seek medical care, essentially providing an early-warning system for outbreaks. This kind of monitoring can help public health authorities better prepare for an increase in COVID-19 cases, adjust vaccination efforts, and allocate resources where they are needed most. **Figure 4-44** was provided by the WPCF and graphically represents the presence of SARS-CoV-2 RNA (COVID-19 indicator) in the wastewater between July 2020-July 2024, with the highest levels occurring in May 2022, January 2023, and mid-December 2023. As shown the SARS-CoV2 virus is somewhat present during the summer months, with the exception of the summer of 2020 when tourism to the island was significantly restricted. This suggests that the influx of summer tourist do have some impact on the spread of the SARS-CoV2 virus.

Figure 4-44 New Shoreham WPCF Monitoring for SARS-CoV-2 (COVID-19)



Climate Change Impacts

Researchers warn that the sudden weather changes associated with climate change, could fuel future flu epidemics (Preidt). Zhaohua Wu, from Florida State University's Department of Earth, Ocean and Atmospheric Science, explains, "The historical flu data from different parts of the world showed that the spread of flu epidemic has been more closely tied to rapid weather variability, implying that the lapsed human immune system in winter caused by rapidly changing weather makes a person more susceptible to flu virus" (Preidt).

Probability of Future Events

The Advisory Committee considers it **Highly Likely** (greater than 90% annual probability) that New Shoreham will continue to experience some level of influenza and Coronavirus cases. For both of these viruses, following the CDC and RIDOH vaccination guidelines and suggestions for minimizing the spread of the diseases should have a positive impact on reducing incident rate and severity of infections.

4.3.5 Other Hazards

Profiles for the following natural hazards have been included in this Section.

4.3.5.1 Earthquake

4.3.5.2 Extreme Heat

4.3.5.3 Drought

4.3.5.4 Brush Fire

4.3.5.1 Earthquake

Description and Extent

According to the U.S. Geological Society (USGS), an earthquake is the vibration (rapid shaking of the earth's surface in both horizontal and vertical directions) of the ground, produced by the sudden release of slowly accumulated energy. This energy can be generated by a sudden dislocation of segments of the crust, volcanic eruptions, or manmade explosions. The sudden dislocation of segments of the crust generally produces the most destructive quakes. Earthquakes tend to occur along faults which are fractures between two blocks of rock, known as tectonic plates. More specifically, tectonic plates are massive, irregularly shaped slabs of rock within the lithosphere, the rigid outermost shell of a planet, and are continually slowly moving because of convection in the mantle. When plates come in contact, the force of their movement against one another will cause deformation or strain on the rocks, building up potential energy. If the stress becomes too great, the weaker segments of rocks may suddenly snap, releasing large amounts of energy. This energy, in the form of seismic waves travels outwardly, in all directions, from its origin, commonly referred to as the focus or hypocenter. The location on the Earth's surface directly above the focus is called the epicenter and usually sustains the greatest damage in an earthquake event (Shedlock).

The depth to the center of the earth's core is approximately 3,960 miles. Earthquakes originate in relatively shallow parts of the earth's interior, generally the crust and upper mantle. Shallow earthquakes have focal depths from the surface to about 43.5 miles; intermediate earthquakes range from greater than 43.5 to about 186 miles; and deep earthquakes range from greater than 186 miles and may reach depths of more than 435 miles below the earth's surface RIEMA. *2019 RI-SHMP*, 3-72).

As discussed in the RI-SHMP, the severity of an earthquake can be expressed in terms of magnitude and intensity. Magnitude is a measure of earthquake size based on the amount of seismic energy released at the hypocenter of the earthquake which is recorded on uniformly calibrated seismographs. It is represented by a single, instrumentally determined Richter Magnitude Scale value. The magnitude of an earthquake is not used to express damage and therefore remains unchanged with distance from the earthquake RIEMA. *2019 RI-SHMP*, 3-74). Earthquakes with a magnitude of 2.0 or less on the Richter Scale are generally not felt by people, only recognized by local seismographs, and considered micro earthquakes. Around the world, hundreds of these events occur daily. Earthquakes with a magnitude of at least 4.5 are strong enough to be recorded by sensitive seismographs worldwide. Great earthquakes which have a magnitude of at least 8.0 occur about once a year. The largest earthquake ever recorded was in Chile in 1960 with a magnitude of 9.5 (IRIS).

The intensity of an earthquake is based on observation of the damage impact of an earthquake and therefore changes based on location; generally decreasing with distance from the epicenter. The intensity considers the effects of the ground shaking on people, manmade structures, and natural features. "Although numerous intensity scales have been developed over the last several hundred years to evaluate the effects of earthquakes, the one currently used in the United States is the MMI Scale (Modified Mercalli Scale). This scale, composed of 12 increasing levels of intensity that range from imperceptible shaking to catastrophic destruction, is designated by Roman numerals. It does not have a mathematical basis; instead it is an arbitrary ranking based on observed effects" (RIEMA. *2019 RI-SHMP*, 3-74).

Table 4-18 relates the Modified Mercalli Intensity (MMI) scale to the Richter Scale. The MMI scale is used to evaluate the observed effects of earthquakes. The level of intensity ranges from imperceptible shaking (I) to catastrophic destruction (XII).

Table 4-18 Intensity and Effects of Earthquakes defined by the Richter and Modified Mercalli Intensity (MMI) Scales (adapted from USGS)

Richter Magnitude Scale	MMI Rating	MMI Description
1.0 - 2.9	I Instrumental	Not felt except by a very few under especially favorable conditions.
3.0 - 3.9	II Weak	Felt only by a few persons at rest, especially on upper floors of buildings.
	III Slight	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck.
4.0 - 4.9	IV Moderate	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors, disturbed; walls make cracking sound. Sensation like truck striking building. Standing vehicles rocked noticeably.
	V Rather Strong	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
5.0 - 5.9	VI Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
	VII Very Strong	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
6.0 - 6.9	VIII Destructive	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
	IX Violent	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
7.0 and higher	X Intense	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.
	XI Extreme	Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly.
	XII Catastrophic	Damage total. Lines of sight and level are distorted. Objects thrown into the air.

Earthquakes can affect large areas, cause extensive damage to property, result in loss of life and injury to many people, and disrupt the social and economic functioning of the affected area. Most property damage and earthquake-related deaths are caused by the failure and collapse of buildings, bridges, and other structures due to the amplitude and duration of the ground vibrations. Ground movement can also cause flooding, dam failure, failure in above ground utilities, and rupture underground utilities which can result in various secondary hazards including flash floods, fires, and landslides. A shallow marine earthquake event that displaces the seafloor has the potential to trigger a tsunami (immense sea waves) which provides an additional risk to coastal areas.

Location

Rhode Island is on the North Atlantic tectonic plate and there are no significant geologic fault lines in Rhode Island or New England. The USGS Earthquake Hazards Program identifies the State of Rhode Island as a low seismic risk area. This is illustrated in the USGS 2014 Seismic Hazard Map (**Figure 4-45**) showing New Shoreham in an area on the lower end of the scale for potential peak acceleration (i.e. how hard the earth shakes at a given geographic point) of a potential earthquake. "The underlying geology of the State is largely composed of unsorted rock of varying size that is considered geologically stable and not prone to seismic amplification. However, areas surrounding Narragansett Bay have been identified as having Outwash Deposits, which can be prone to seismic amplification, increasing the intensity of the seismic event" (RIEMA. *2024 RI-SHMP,* 85).

Earthquakes occur infrequently in Rhode Island and surrounding New England, but historically earthquakes originating in other states have been felt in various parts of Rhode Island. "For example, the area off Cape Ann, Massachusetts, has had several Modified Mercalli Intensity (MMI) VIII or greater events within the past 300 years. An earthquake of that location and intensity has the possibility to cause damage to structures in Rhode Island not designed to withstand seismic loadings" (RIEMA. *2019 RI-SHMP*, 3-73).

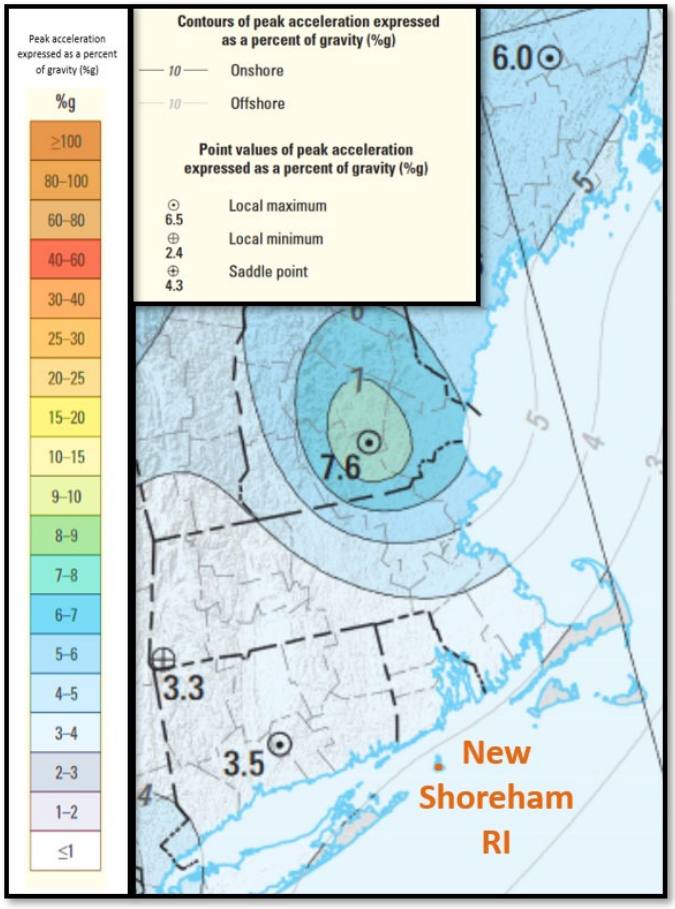


Figure 4-45
Seismic-Hazard Map:
Peak Horizontal Acceleration with 10% Probability of Exceedance in 50 Years
(adapted from USGS)

Because the impact from an earthquake can be experienced hundreds of miles from the epicenter, all areas of Town are considered vulnerable to some degree. Should an earthquake strike or its effects be felt in New Shoreham, people may experience shaking. Damage in structures that are up to current building codes is expected to be minimal. However, old masonry structures that do not meet current earthquake codes could potentially be at higher risk of damage or collapse. There are some residential and commercial structures located throughout New Shoreham that are of older construction and may be more susceptible to damage from earthquakes; this is particularly true in the Old Harbor Historic District.

Previous Occurrences

Between 1678 and 2016, the New England region experienced 2,030 felt earthquakes. During that time, 34 were centered in Rhode Island, with the first occurring on August 25, 1776 (NESEC. *Rhode*). "Of these felt earthquakes, only one caused some slight damage. That event took place at 12:20 pm on June 10, 1951 and had a magnitude of 4.6. The earthquake was centered a few miles south of Westerly, RI, and it was felt across Connecticut, Rhode Island and the south coast of Massachusetts to Cape Cod. Some dishes were knocked from shelves and plaster was reported cracked in a few buildings in Newport, RI. Many people in Westerly, RI were so frightened by the shaking that they ran from their homes. Residents jammed the telephones lines following the earthquake in their attempts to find out what had happened" (NESEC. *Rhode*).

Over the years a number of earthquakes with epicenters in other states have caused minor impacts in Rhode Island. On August 23, 2011 a 5.8 magnitude earthquake struck Virginia and was felt up and down the Eastern seaboard, including Rhode Island (NPR). On January 12, 2015 a 3.3 magnitude quake occurred with an epicenter in Wauregan, Connecticut (a village in the northwestern corner of Plainville). Effects of the quake were predominately felt along the border in the Plainfield CT and Foster RI area. In November 2020 there was a small 3.6 magnitude earthquake felt by many in Southern New England. The epicenter was in Buzzards Bay, MA (MVTimes). More recently, on May 14 & 15, 2022, three small earthquakes hit off of the coast of Rhode Island along the fault line near the Narragansett Pier. The first had a magnitude of 2.2, followed about 17 hours later by a 2.5 magnitude aftershock and then a 2.2 magnitude aftershock roughly 4 and a half hours later (Boston.com).

Climate Change Impacts

According to an article from NASA's Jet Propulsion Laboratory, "most earthquakes occur far beneath Earth's surface, well beyond the influence of surface temperatures and conditions" (Buis, Alan. *Can*). That being said, scientist have determined some relationships between climate change and earthquakes. The amount of stress on a fault can trigger or inhibit earthquakes. "The largest climate variable that could change fault stress loads is surface water in the form of rain and snow" (Buis, Alan. *Can*). Scientist have found a correlation between surface water and microseismicity (small earth tremors with magnitudes less than zero – which humans can't feel), but as yet have not been able to apply it to a quake of any size that people can feel (Buis, Alan. *Can*).

Research has shown that "changes in stress loads on Earth's crust from periods of drought can, in fact, be significant. Similarly, pumping of groundwater from underground aquifers by humans, which is exacerbated during times of drought, has also been shown to impact patterns of stress loads by 'unweighting' Earth's crust" (Buis, Alan. *Can*). While such stresses on a fault may be small compared to the normal buildup of stress from tectonic processes, it could potentially hasten the onset of an earthquake (Buis, Alan. *Can*).

"Another climate-related phenomenon that's believed to have connections to tectonic processes is glaciation. The retreat of a glacier can reduce stress loads on Earth's crust underneath, impacting the movement of subsurface magma. The rapid movement of glaciers has also been shown to cause what are known as glacial earthquakes. Glacial earthquakes in Greenland peak in frequency in the summer months and have been steadily increasing over time, possibly in response to global warming" (Buis, Alan. *Can*).

Probability of Future Events

The RI-SHMP indicates that it is **Unlikely** (less than 1% annual probability) for an earthquake to occur in Washington County, and should one occur the probable impact to structures, facilities, and people would be negligible (RIEMA. *2019 RI-SHMP,* 3-81). The Advisory Committee concurs with this assessment for New Shoreham.

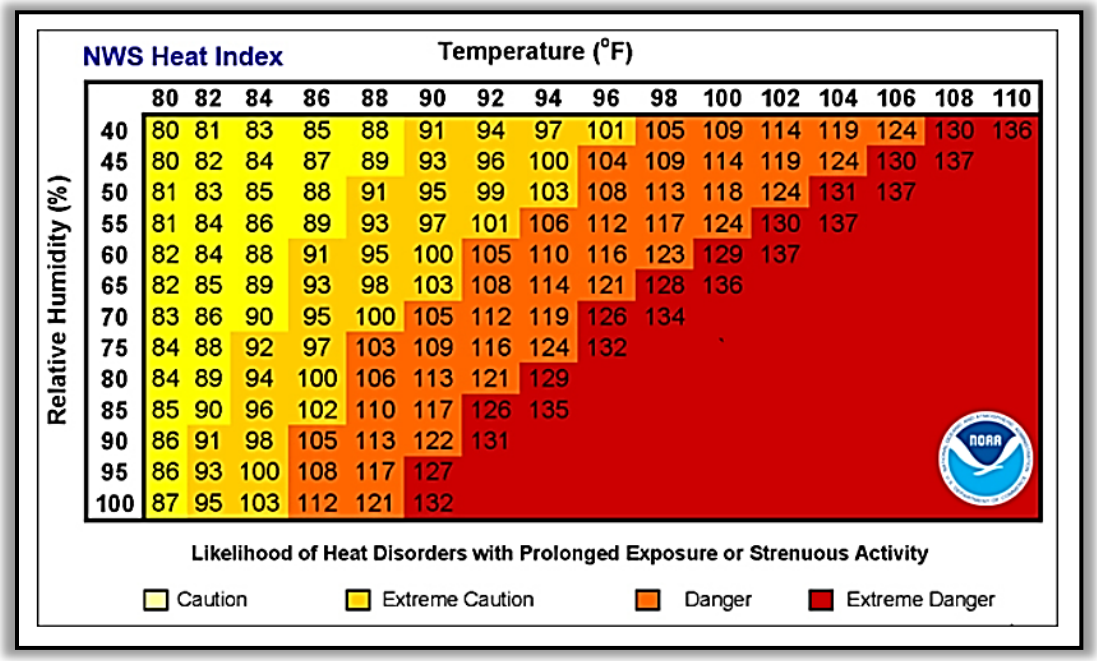
4.3.5.2 Extreme Heat

Description and Extent

According to the CDC, extreme heat is defined as a period of abnormally high temperature (>10° F above average regional temperatures) that lasts for several weeks. Humid or muggy conditions occur when a "dome" of high pressure, humid air remains near the ground. The increased water vapor in the air traps solar radiation near the surface of the earth, which raises temperatures. Humidity prevents the evaporation of sweat and the associated cooling effects on the human body (CDC. *Climate Change and Extreme Heat*).

The RI-SHMP identifies a heat wave occurring if the outside temperature goes above 90 degrees Fahrenheit for three or more consecutive days. The NOAA|NWS Heat Index Program is used to alert the public of hazardous heat/humidity conditions. The Heat Index (HI), shown in **Figure 4-46**, is a measure of how hot it actually feels from the combined effect of humidity and temperature (RIEMA. *2019 RI-SHMP***,** 3-94). In Rhode Island, a heat advisory is issued when the heat index value is expected to reach 100 to 104 degrees for any amount of time, or between 95 to 99 degrees for 2 consecutive days (NOAA|NWS. *National Weather Service is Lowering*).

Figure 4-46 Heat Index (NOAA|NWS. *Heat Forecast Tools*)



Extreme heat events "are the leading cause of extreme weather-related deaths in the United States" (RIDOH. *Extreme Heat*). According to the CDC, "Despite the fact that all heat-related deaths and illnesses are preventable, each year an average of about 658 people succumb to extreme heat" (CDC. *Heat-Related, 1*).

Heat-related illness (hyperthermia) results from exposure to extreme heat over a period of time, taxing the human body beyond its ability to properly cool. Body heat is normally removed through the evaporation of sweat. However, if the humidity is high, sweat does not evaporate as quickly. If the body is unable to shed heat, the temperature of the body's inner core begins to rise and heat-related illness may develop. Exposure to excessive heat can exacerbate many preexisting conditions, including heart and respiratory disease (CDC. *Heat-Related, 1*).

Negative effects of extreme heat include but are not limited to:

- Heat-related illnesses such as sunburn, fatigue, heat cramps, heat exhaustion, and heat stroke
- Health concerns created by stagnant atmospheric conditions trapping pollutants
- Excessively dry and hot conditions can provoke dust storms resulting in low visibility and respiratory problems
- Power shortages/outages caused by increased energy demands
- Increased demand on health care facilities by individuals suffering from various heat related health effects
- Disruption of commerce as a result of increased energy demand
- Disruption of municipal services as a result of decreased human productivity or increased energy demand
- Damage to structures and infrastructure (such as asphalt) due to softening

Urban Heat Island Effect

An urban heat island effect occurs when natural land cover is replaced by dense concentrations of buildings and pavement that absorb and retain heat, and radiate it back into the surrounding air. In July, 2020, an urban heat watch study was conducted by CAPA Strategies, to evaluate the effect of heat islands in Providence, East Providence, Pawtucket, and Central Falls, Rhode Island. The study found that temperatures in developed areas with lots of buildings, concrete, and asphalt "can be 13 degrees higher than in neighborhoods with more vegetation and fewer buildings. What's more, paved roads and parking lots slowly release that trapped heat overnight, so the evening hours aren't as cool as they otherwise would be" (Kuffner, Alex. *How hot is it?*).

Location

All areas of Rhode Island are considered susceptible to extreme heat, with the coastal communities generally being cooler than inland areas. As New Shoreham is a rural island community, there does not exist an area with a dense concentration of impervious surface (buildings and pavement) that might produce an urban heat island effect.

Previous Occurrences

"Temperatures in Rhode Island have risen almost 4°F since the beginning of the 20th century**.** The number of hot days has been above the long-term average since the 1990s with the greatest number occurring during the most recent 6-year period of 2015–2020. The greatest number of warm nights also occurred during the 2015–2020 period" (NOAA|NCEI. *State*). As depicted **in Figure 4-47**, the number of extreme heat days has risen in Rhode Island over the last several decades from 52.6 to 71. A study by Brown University linked temperature rises above 80 degrees to Rhode Islanders being more likely to end up in the hospital or die (News from Brown). The overall warming trend in Washington County Rhode Island is further illustrated in **Figure 4-48**. The highest recorded temperature in Rhode Island was 104° F in 1975 (RIEMA. *2024 RI-SHMP,* 97).

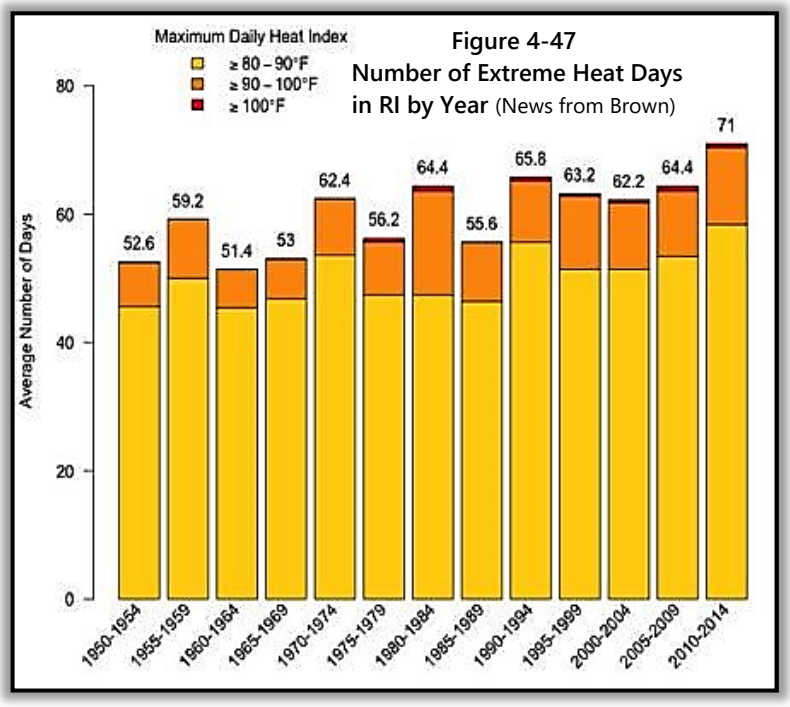
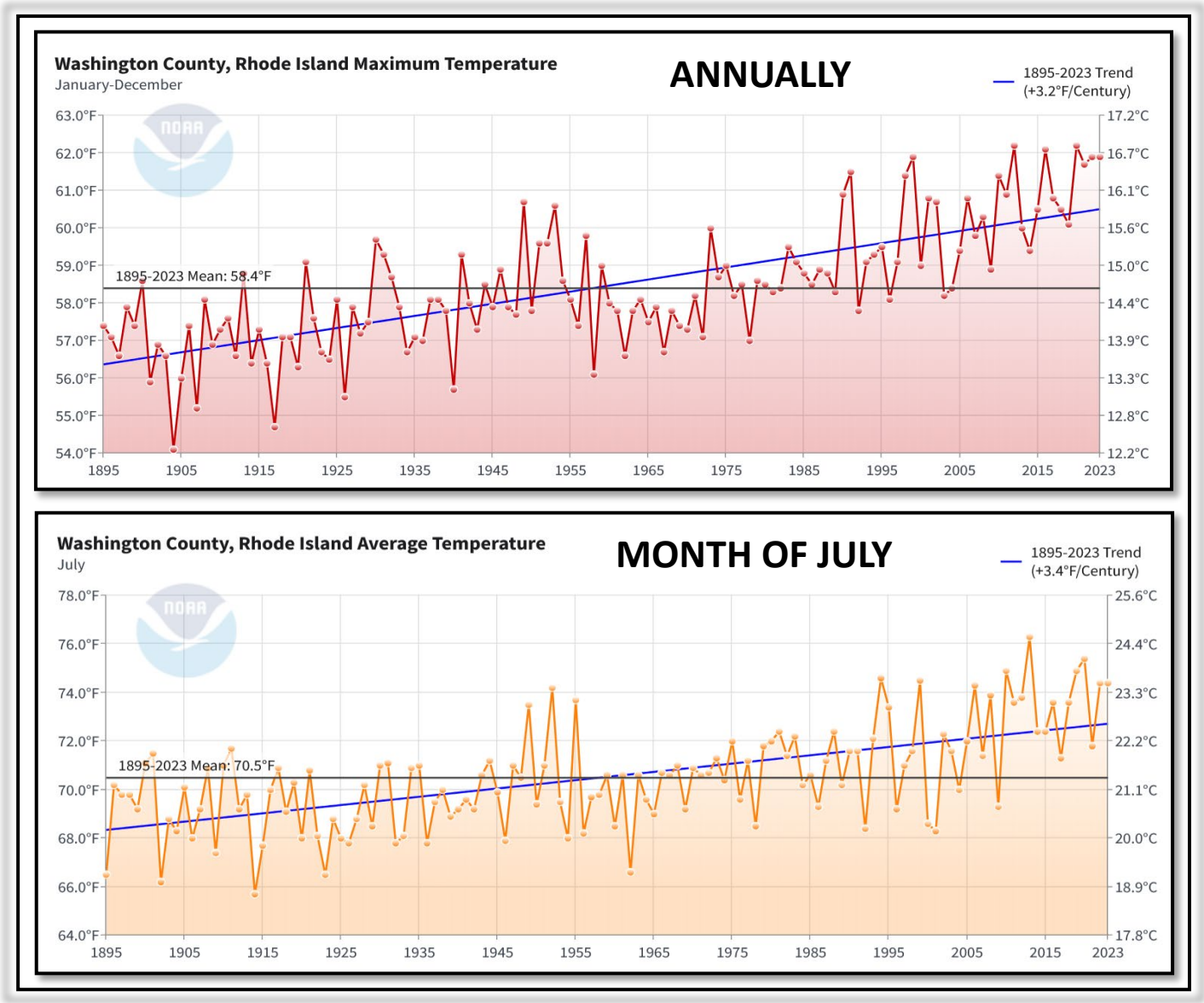


Figure 4-47
Number of Extreme Heat Days in RI by Year (News from Brown)

Figure 4-48 Temperature Trends from 1895-2023 in Washington County Rhode Island
(NOAA|NCEI. *Climate at a Glance*)



Climate Change Impacts

"Temperatures in Rhode Island have risen almost 4°F since the beginning of the 20th century" (NOAA|NCEI. *State*). NOAA's 2022 State Climate Summary for Rhode Island further states, "The number of hot days has been above average since the mid-1990s. The highest number of such days occurred in the most recent 6-year period (2015–2020), with an average of 14 hot days occurring each year" (NOAA|NCEI. *State*). RIDOH predicts that over the ensuing 80 years, the number of days over 90°F is expected to increase significantly due to climate change (RIDOH. *Extreme Heat*).

According to Climate Change RI (Climate Change RI. *Impacts on Rhode Island*):

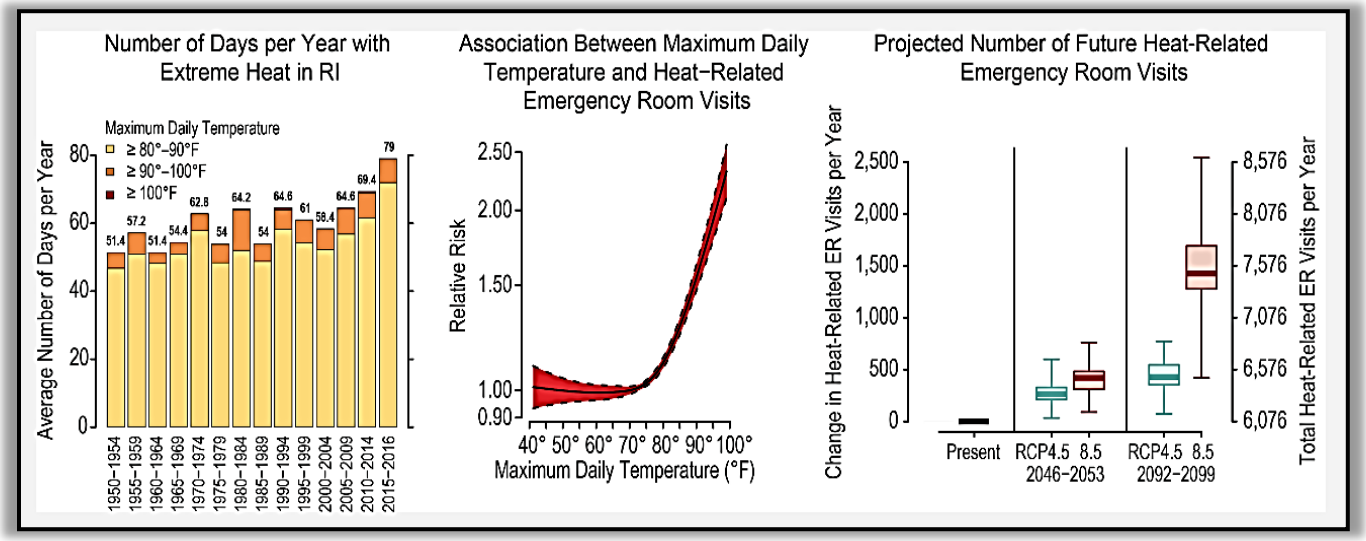
- The long-term warming trend continued in 2019 with the Earth having its second warmest year on record; making the 2010s the hottest decade on record.
- The water in Narragansett Bay is getting warmer. The surface temperature of the Bay has increased 2.5-2.9°F (from 1960-2010). Wintertime water temperatures are warming most rapidly.

As recognized by the U.S. Global Change Research Program *Climate Science Special Report*, climate-related weather extremes are expected to continue over climate timescales. "This assessment concludes, based on extensive evidence, that it is extremely likely that human activities, especially emissions of greenhouse gases, are the dominant cause of the observed warming since the mid-20th century. For the warming over the last century, there is no convincing alternative explanation supported by the extent of the observational evidence" (Wuebbles, Executive Summary).

According to the Fourth National Climate Assessment, "Moderate and extreme heat events already pose a health risk today, and climate change could increase this risk" (US Global Change Research Program. *Fourth National Climate Assessment – Chapter 18-Section 4*). **Figure 4-49** shows the maximum daily temperature in Rhode Island, which has been increasing over the last 60 summers, resulting in three more weeks of health-threatening hot weather compared to the 1950s (left); incidence rate of heat-related ER visits which rose sharply as maximum daily temperatures climbed above 80°F (middle); and the observed and projected impacts of excess heat on emergency room visits in Rhode Island, based on climate change predictions (right). Under the higher modeled climate change scenario, the study projects that Rhode Islanders could experience an additional 400 (6.8% more) heat-related ER visits each year by 2050 (US Global Change Research Program. *Fourth National Climate Assessment – Chapter 18-Figure 18.11*).

Figure 4-49 Observed and Projected Impacts of Excess Heat on Emergency Room Visits in Rhode Island

(US Global Change Research Program. *Fourth National Climate Assessment – Chapter 18-Figure 18.11*)



Probability of Future Events

"Regardless of any trends indicating heat related deaths are declining, extreme heat events remain a danger. Specific high-risk groups of the population typically experience a disproportionate number of health impacts from extreme heat conditions" (RIEMA. *2019 RI-SHMP,* 3-97). Metropolitan areas and portions of Northern Rhode Island can expect 8 to 10 days of temperatures of 90° F or higher, with coastal areas experiencing fewer hot days (RIEMA. *2024 RI-SHMP,* 97).

According to the CDC, extreme heat is defined as a period of abnormally high temperature (>10° F above average regional temperatures) that lasts for several weeks (CDC. *Climate Change and Extreme Heat*). In the near future, the RI-SHMP assesses it as **Highly Likely** (greater than 90% annual probability) that **extreme heat** will occur in Washington County (RIEMA. *2019 RI-SHM*P, 3-99). The Advisory Committee concurs with this assessment for New Shoreham.



4.3.5.3 Drought

Description and Extent

Drought is a natural climatic condition which occurs in virtually all climates, the consequence of a natural reduction in the amount of precipitation experienced over a period of time. According to NOAA, lack of precipitation for a few weeks or months can create a short-term drought. Long-term droughts occur when the atmospheric circulation pattern creates a precipitation deficit for several months to several years. High temperatures, prolonged winds, and low relative humidity can exacerbate the severity of drought (NOAA|NIDIS).

The National Drought Mitigation Center classifies droughts as follows (NDMC):

- Agricultural drought: related to agricultural impacts from lack of precipitation, reduced ground water levels, and dry soils
- Hydrological drought: related to the effects of periods of precipitation (including snowfall) shortfalls on surface or subsurface water supply (stream flow, reservoir and lake levels, ground water)
- Meteorological drought: refers to a reduction in the normal rainfall for a given geographic area; it is area-specific, as the average rainfall can vary greatly in different areas
- Socioeconomic drought: measures the impact that the statements above have on people/businesses

Table 4-19 Palmer Drought Severity Index (NDMC)

Severity	Index Value
Extreme Drought	-4 or less
Severe Drought	-3.0 to -3.99
Moderate Drought	-2.0 to -2.99
Mild Drought	-1.0 to -1.99
Incipient Dry Spell	-0.5 to -0.99

NOAA's National Climate Data Center (NCDC) recognizes that, "The wide variety of disciplines affected by drought, its diverse geographical and temporal distribution, and the many scales drought operates on make it difficult to develop both a definition to describe drought and an index to measure it" (NOAA|NCEI. *Measuring Drought*). Of the various quantitative measures of drought, the Palmer Z index is widely used to measure short-term (monthly) drought, and the Palmer Drought Severity Index (PDSI) (shown in **Table 4-19**) is used to measure the duration and intensity of long-term drought. Long-term drought is cumulative and the PDSI uses temperature and precipitation levels to determine dryness as compared to normal rainfall patterns for a particular locale (NOAA|NCEI. *Measuring Drought*).

"Data from the RIDEM indicates that annual precipitation averages 42 to 46 inches over most of the State, with a tendency for decreasing amounts from west to east. While there are no pronounced wet and dry months as in other climates, the months of May, June and July are relatively dry. The average total precipitation for each of these months is 2.5 to three inches. October and February have an average of slightly more than three inches over most of the State. The remaining months each yield from 3.5 to four inches" (RIEMA. *2024 RI-SHMP*, 75, 76). This amount of precipitation generally ensures a plentiful water supply for New Shoreham's daily requirements, which are dominated by potable water and agricultural needs. However, long-term drought conditions, may threaten groundwater availability.

"Groundwater level data is monitored by the United State Geological Survey (USGS) from 27 observation wells [in Rhode Island]. A drought phase determination is based on the number of months groundwater levels are below normal. Local water suppliers also monitor public wells to make seasonal water availability comparisons. Stream flow conditions are monitored by the USGS from 16 near-real-time stations with 30 or more years of record and seven near real-time stations with 10 years or more of record. A drought phase determination is based on the number of months that stream flow levels are below normal compared to historical trend data. Surface water

reservoir levels data is typically reported by water suppliers, relative to normal conditions. A drought phase determination considers historic monthly averages of small, medium, and large index reservoirs. Based on these criteria, *Normal, Advisory*, and *Watch* drought levels are issued statewide, and *Warning* and *Emergency* drought levels are issued on a regional basis" (RIEMA. *2024 RI-SHMP,* 76).

Since 2000, drought conditions in Rhode Island and across the U.S. are tracked by the U.S. Drought Monitor, a partnership between the University of Nebraska-Lincoln and various federal and state agencies and other experts. "Graphic and text summaries of current and projected drought conditions are updated on a weekly basis and are available through the Drought Monitor website" (RIEMA. *2019 RI-SHMP,* 3-63). The **RI Drought Steering Committee**, a subcommittee of the **Rhode Island Water Resources Board (RIWRB)**, monitors water and drought conditions. The Drought Steering Committee assigns drought levels based on six indices: Palmer Drought Index(PDI), Crop Moisture Index, precipitation data, stream flow, groundwater levels, and reservoir levels (RIEMA. *2024 RI-SHMP,* 74). Based on this information, the RIWRB issues notices to the State regarding drought conditions.

"The Secretary of Agriculture is authorized to designate counties as disaster areas to make emergency loans available to producers suffering losses in those counties and in counties that are contiguous to a designated county. USDA Secretarial disaster designations must be requested of the Secretary of Agriculture by a governor or the governor's authorized representative, and there is an expedited process for drought" (RIEMA. *2024 RI-SHMP,* 77).

Location

All of New Shoreham is susceptible to drought conditions, particularly long-term drought. As further discussed in **Subsection 4.4.3.2**, the entirety of Block Island is considered a single continuous sole source aquifer, with the Atlantic Ocean forming the lateral boundaries. This means that the island's groundwater system is the primary and only practical source of potable water for the entire island. **The whole community (100%) currently relies on groundwater for its primary drinking water supply.** More than 90 percent of island residents rely on private wells and the rest are supplied by the Block Island Water Company's well water (RIDOH. *Protect*, 1). As such, groundwater is the Town of New Shoreham's most important resource in terms of the health, safety, and welfare of all residents.

As **groundwater recharge** on Block Island depends on precipitation, prolonged drought conditions, minimizing available groundwater, could create health issues, especially for those who have shallow wells. It is thought that most wells installed across the island were drilled to a depth that should assure continued adequate supply even during severe droughts conditions. However, there are a number of homes and businesses throughout the community that receive potable water from shallow wells. Shallow wells may be more vulnerable to both drought and contamination than deeper wells.

As a precautionary measure to help mitigate potential impacts from drought, the Block Island Water Company encourages ongoing water conservation regardless of drought conditions, and has contingencies for emergencies, including drought. Due both to the influx of summer tourists and the recognition of groundwater as a limited resource, during the summer months the Water Company restricts the use of water for irrigation purposes.

Previous Occurrences

Rhode Island, including New Shoreham on occasion, does experience extended periods of dry weather generally in the late spring and the first half of summer, during which crops and lawns may require irrigation. However, long-term droughts are not frequent in Rhode Island, but do occur. No long-term droughts have been recorded for New Shoreham. "Though short-term droughts may not have a significant impact on the state's public water systems, no water system will be immune to periods of long-term drought" (RIEMA. *2019 RI-SHMP*, 3-65).

According to the *RI Water 2030* plan, there have been just six historical drought events since 1929. The last long-term drought in the state was in the early to mid-1960s. This drought lasted for three summers (1965-1967) and included long periods of below normal precipitation during the winter, spring, and summer months. Historically, Rhode Island's driest year on record is 1965, with less than 26 inches of rainfall (RIDSP. *RI Water 2030*).

A meteorological drought was documented in the spring of 2012 due to low precipitation (roughly half of normal) from January 2012 through April 2012. Rhode Island did not issue a drought declaration as reservoirs were at normal levels, due to above normal precipitation during August 2011 and November 2011 (CDR, 37).

There have only been a few Secretarial Disaster Declarations in Rhode Island over the past decade: 2016, 2020, and 2022 (RIEMA. *2024 RI-SHMP,* 77). Since 2000 when the Drought Monitor was started, the 36-week declaration for drought, that began on May 19, 2015 and ended January 19, 2016, is the **longest duration** on record for Rhode Island. According to the Drought Monitor, the most **intense period of drought** that has occurred since 2000, was the week of September 29, 2020, where an Extreme Drought (D3) affected 99% of land in Rhode Island (Perry).

In August of 2022, according to Ken Ayars, Chief of the Division of Agriculture and Forest Environment at RIDEM, a "'sharp, relatively short but extremely significant drought'" (Ashfaq) disrupted food production in Rhode Island prompting the U.S. Secretary of Agriculture to declare all of Rhode Island a natural disaster area. A key contributing factor was low precipitation in the proceeding months. According to data from the National Weather Service (NWS), only 0.43 inches of rain fell in Rhode Island in July 2022, compared to the average of 2.5 inches (Borg). Mr. Ayars indicated that the primary impact of the drought was on farmers, such as the one shown in **Figure 50**, who generally rely on shallow water systems for crop production, making them particularly vulnerable to dry periods. The disaster declaration allowed eligible farms to be considered for low-interest, emergency loans and other assistance from the department's Farm Service Agency. RIDEM officials were responsible for coordinating state and federal relief efforts to support to affected farms (Ashfaq).

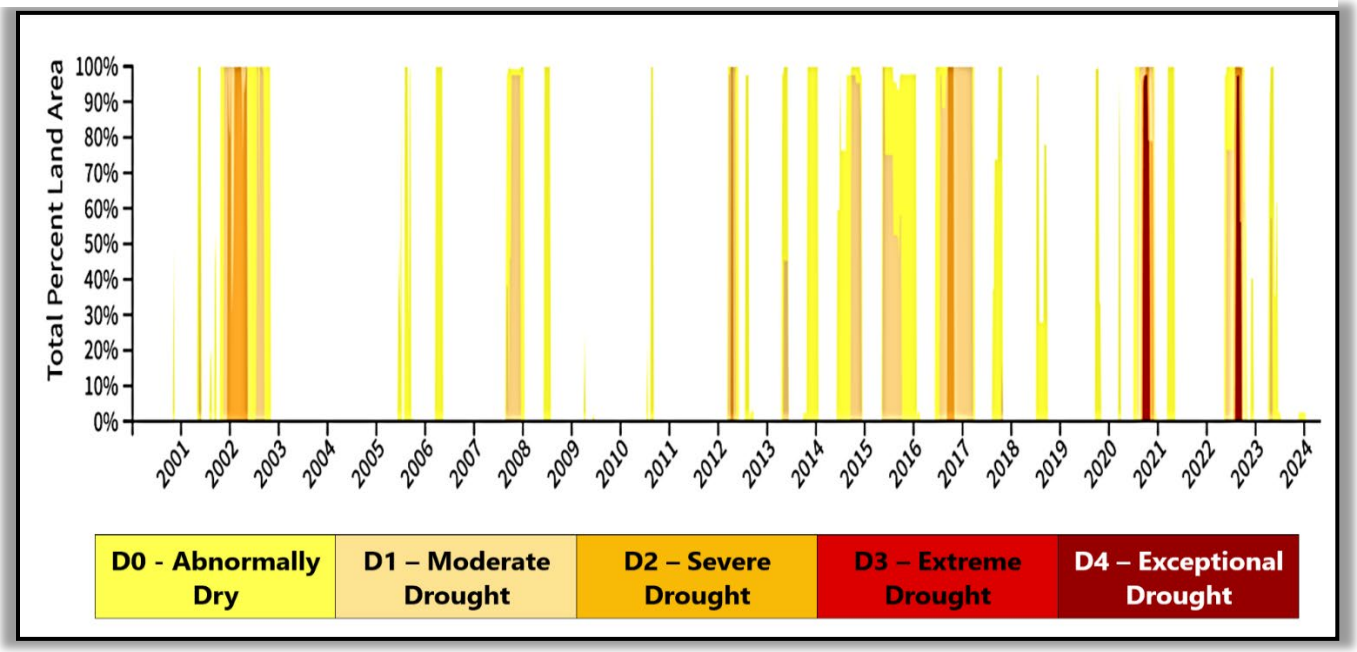
Figure 4-50 Dry soil in a recently plowed field in Exeter, RI (August 9, 2022)

Photo Credit: Steven Senne | Associated Press



The National Integrated Drought Information System provides historical, current, and near future anticipated drought conditions for counties throughout the United States. **Figure 4-51** depicts the intensity of drought in Washington County from 2000 to April 2023. The graph is a product of NOAA, USDA, and the National Drought Mitigation Center based on the best available data and input from local observers (NOAA|NIDIS. National).

Figure 4-51 Historical Drought Conditions (2000-April 2023) for Washington County, RI (NOAA|NIDIS)



Climate Change Impacts

There are a number of ways climate change may contribute to worsening drought conditions. For example, the Center for Climate and Energy Solutions indicates that "Warmer temperatures can enhance evaporation from soil, making periods with low precipitation drier than they would be in cooler conditions" (C2ES. *Drought*).

Although most precipitation models predict an increasing trend in overall precipitation for Rhode Island, they further suggest that simultaneous warming trends (which will increase evaporation rates) and less frequent but more intense precipitation events favor an increase in short-term (one to three month) drought intensity (RIEMA. *2019 RI-SHMP,* 3-62, 3-63).

The 2022 drought "raised broader concerns over the impact of climate change on future farming in Rhode Island" (Ashfaq). Kenneth Kunkel, NOAA affiliate and research professor at North Carolina State University stated "'We expect global warming to continue and temperatures in the Northeast to increase over time… With higher temperatures, soils dry out faster. The Northeast has moved into an era of much more frequent very warm summers. The effects of dry periods will likely become more severe faster" (Ashfaq).

In response to climate change impacts on food production, in 2021 the United States Department of Agriculture (USDA) updated their "Action Plan for Climate Adaptation and Resilience that describes how USDA will integrate climate adaptation into its mission, programs, and operations" (USDA|FSA). In 2022, the Farm Service Agency (FSA) created a Climate Change Adaptation Plan "that identifies and prioritizes climate vulnerabilities and actions to integrate climate change into its programs, operations and decision-making" (USDA|FSA).

Probability of Future Events

The last major drought in Rhode Island was more than 50 years ago, and based on future precipitation projections, the RI-SHMP assesses a long-term drought in Rhode Island as **Unlikely** (Less than 1% annual probability) (RIEMA. *2019 RI-SHMP,* 3-68). The Advisory Committee concurs with this assessment for New Shoreham.

4.3.5.4 Brush Fire

Description and Extent

The U.S. Forest Service has established the National Fire Danger Rating System (NFDRS) to determine the daily risk to fire experienced by different regions of the country. The system uses mathematical formulas including wind speed and fuel type to determine a fire index. As shown in **Table 4-20**, the updated 2016 version (NFDRS 2016) is simpler than previous versions and has a 5 color-coded system to help the public understand fire potential (USFS|USFS. *Understanding*).

Rhode Island Department of Environmental Management (RIDEM) Division of Forest Management is responsible for predicting the risk of fires igniting in the State. Forewarning of dangerous fire conditions aids firefighters and can result in reducing the severity of a fire thereby mitigating risks to life and property (RIEMA. *2019 RI-SHMP,* 3-105). In 2020, RIDEM updated their ***Forest Action Plan*** (**Figure 4-52**) which provides communities key information on how to prepare, respond, educate, and fund fire-related protection programs.

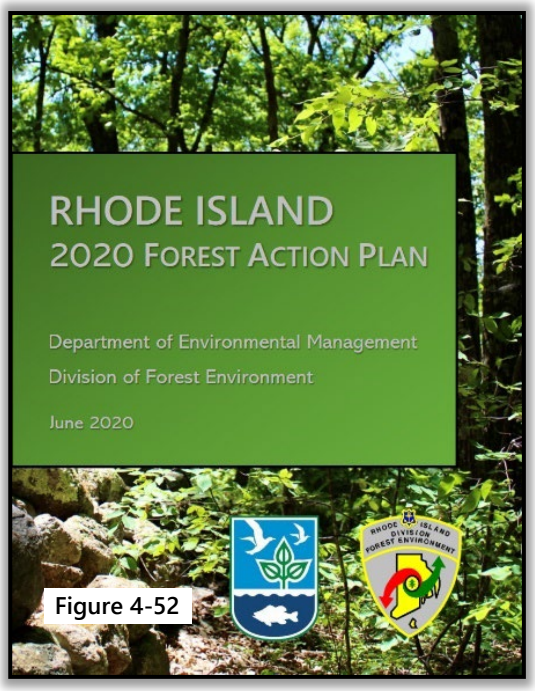


Figure 4-52

Brush Fire versus Wildland Fire

The USDA Forest Service defines a brush fire as a fire burning in vegetation that is predominantly shrubs, brush, and scrub growth. Wildland fires or wildfires are generally associated with thousands of acres of trees burning, whereas brush fires tend to be smaller, more manageable, and generally confined to the understory (National Park Service). Rhode Island does not typically experience wildfires, but brushfires are not uncommon. Naturally caused fires are most commonly triggered by lightning strikes. Brush and wildfires can also be caused from human actions including smoking, campfires, outdoor equipment malfunctions, and arson.

Weather conditions and topography impact fires fueled by natural cover, including native and non-native species of trees, brush and grasses, and crops. Fuel quantity and quality impact the extent of a brush or wildland fire. Climatic and meteorological conditions that influence the moisture content of wood and leaf litter, thereby impacting brush or wildland fires, include solar insulation, atmospheric humidity, and precipitation. Dry spells, heat, wind, and low humidity increase vegetative susceptibility to fire. Favorable fire conditions arise from extended periods of hot, dry weather and accumulated vegetation. Peak fire season in Rhode Island is typically between mid-March and mid-May when dry windy weather can occur increasing the potential for fires (RIEMA. *2019 RI-SHMP,* 3-102, 3-105).

While most brushfires are quickly contained and cause minimal damage, larger brush fires and wildland fires can disrupt and endanger wildlife and ecosystems, destroy crops and timber resources, impact above ground utility lines affecting power, internet, and phone service, and if they reach the built environment can damage structures and other property and pose a threat to human safety.

Table 4-20 National Fire Danger Rating System (NFDRS 2016)

Color Code	Rating	Description
	LOW	Fuels do not ignite readily from small firebrands although a more intense heat source, such as lightning, may start fires in duff or punky wood. Fires in open cured grasslands may bum freely a few hours after rain, but woods fires spread slowly by creeping or smoldering, and burn in irregular fingers. There is little danger of spotting.
	MODERATE	Fires can start from most accidental causes, but with the exception of lightning fires in some areas, the number of starts is generally low. Fires in open cured grasslands will burn briskly and spread rapidly on windy days. Timber fires spread slowly to moderately fast. The average fire is of moderate intensity, although heavy concentrations of fuel, especially draped fuel, may burn hot. Short-distance spotting may occur, but is not persistent. Fires are not likely to become serious and control is relatively easy.
	HIGH	All fine dead fuels ignite readily and fires start easily from most causes. Unattended brush and campfires are likely to escape. Fires spread rapidly and short-distance spotting is common. High-intensity burning may develop on slopes or in concentrations of fine fuels. Fires may become serious and their control difficult unless they are attacked successfully while small.
	VERY HIGH	Fires start easily from all causes and, immediately after ignition, spread rapidly and increase quickly in intensity. Spot fires are a constant danger. Fires burning in light fuels may quickly develop high intensity characteristics such as long-distance spotting and fire whirlwinds when they burn into heavier fuels.
	EXTREME	Fires start quickly, spread furiously, and burn intensely. All fires are potentially serious. Development into high intensity burning will usually be faster and occur from smaller fires than in the very high fire danger class. Direct attack is rarely possible and may be dangerous except immediately after ignition. Fires that develop headway in heavy slash or in conifer stands may be unmanageable while the extreme burning condition lasts. Under these conditions the only effective and safe control action is on the flanks until the weather changes or the fuel supply lessens.

Location

Under the right conditions, including during extended periods of dry weather or drought, a brush fire may occur anywhere across New Shoreham. Based on information provided by the Block Island Land Trust, as of September 2024, preserved open space on Block Island totaled 2,829 acres, or 46.1% of the island's 6,076 acres. Much of the conservation lands are open fields and shrubland with patches of forested areas. The forests and shrublands can create a fair amount of fuel potential, such as leaves, branches, dead trees, dry grass, and old growth phragmites. During dry periods the spent vegetation becomes more flammable and can be consumed faster by a fire.

The west side of the island has been identified as being more at risk to brush fires due to its denser vegetation cover and lower development density pattern. Brush fires that occur in more remote, harder to access, areas of Town pose a greater risk of spreading as they may go unnoticed for longer, take longer to access by fire protection services, and may lack easily-accessible surface water to draw for fire suppression. With the exception of a limited area on the eastern side of the island in the general vicinity of Old Harbor, where there are hydrants on the municipal water system (**Figure 4-67 in Subsection 4.4.2.3**), the Fire Department relies on ponds, privately owned pools, and the ocean for fire suppression. The Town currently has one dry hydrant located in the pond adjacent to the State Highway Garage (13 Ocean Avenue) and intends to install three additional dry hydrants - two in Continental Pond (High Street) and one in Sachem Pond (near the northern tip of Corn Neck Road). Two of the fire trucks have drop tanks (1000 gallon and 3000 gallon) which are essentially portable pools. This enables fire fighters to dump the water in the trucks into a drop tank near the fire location and then refill the tanker truck.

A wildland/urban interface (WUI) creates an environment in which a fire can readily spread from a vegetation fuel source to structures, resulting in massive fires and potentially widespread evacuations. Due to the rural nature of New Shoreham and overall low development density, there is minimal wildland/urban interface (WUI). Some areas that could be considered wildland/urban interface zones include neighborhoods along West Side Road and Corn Neck Road where they border natural areas, residential development to the north and east of the Block Island National Wildlife Refuge, and areas within Rodman's Hollow.

Previous Occurrences

Brush fires are a frequent occurrence in Rhode Island but are generally small and quickly contained. However, larger brush fires are becoming more common due to environmental changes attribute to climate change. Large wildfires are not common in Rhode Island, but there have been a few significant ones. The most devastating was the Coventry Fire in April 1942, which consumed over 24,000 acres of forest and injured approximately 180 people. Another substantial wildfire occurred in the Wood River Valley area near West Greenwich and Exeter in 1951, which consumed roughly 7,400 acres and caused one fatality (RIEMA. *2024 RI-SHMP,* 211).

As previously indicated, brush fires tend to occur during the spring and summer months when dormant brush, dead twigs, and small branches provide a good fuel source. Early spring 2021 saw a number of days where the fire danger was high. By March 15, 2021, twenty-six brush fires had occurred (albeit mostly small) across the State (Vallee, Jason).

"Rhode Island experienced a busy wildfire season in 2023, with DEM recording 78 wildfires encompassing 582 acres. This total includes [two fires that occurred back-to-back in April] the Congdon Mill fire in West Greenwich that covered nearly 196 acres and the worst-in-decades Queen's River fire in Exeter that burnt 286 acres" (RIDEM. *DEM*). The Exeter Fire (**Figure 4-53**) on April 12, 2023 resulted in the only fire management declaration for the State of Rhode Island (FM-5464-RI). The declaration stated that "A brush fire scorched between 575-600 acres in the Queen River Nature Preserve. The fire forced the temporary evacuation of nearby residences, and more than 200 firefighters from departments as far as Central Connecticut worked for hours to get the fire under control. The Rhode Island National Guard's Black Hawk team was also called in to air drop water onto the flames. The brush fire is the largest the state has seen since 1942, but no deaths, injuries, or property damage were recorded" (RIEMA. *2024 RI-SHMP,* 211, 212).

Figure 4-53 April 2023 Queen's River fire in Exeter (Cornell)



Photo Credit: Nicholas Clavette | NBC 10 WJAR



Photo Credit: Coventry Courier

Table 4-21 shows the total number of brush fires and wildfires across the State and in Washington County between 2019 and 2023. "There is no official recorded history of major brush fires on Block Island. Oral history suggests that decades ago brush fires were a regular occurrence on Block Island as residents more regularly burned brush in the fields along stonewalls. In 1973, there was a large brush fire on the west side of the island and many residents volunteered to put out the fire" (Town of New Shoreham RI. *BI Hazard*, 62).

According to the Fire Department, although occasional brush fires occur, they are generally the result of permitted or illicit open air burning that were not managed correctly or fireworks. Fireworks, both authorized and unauthorized, have started fires in the beach dunes and one incident on private property. Fires ignited by a natural cause (e.g. lightning) are infrequent and could occur. The brushfires that have occurred have been low to the ground and extinguished quickly with no significant impacts. There is concern that the decline in the health of several species of trees will lead to greater fuel in forested areas.

Table 4-21 Rhode Island Wildfires/Brushfires 2019-2023 (RIEMA. *2024 RI-SHMP,* 211, 212)

Jurisdiction	Number of Events	Acres Burned	Structures Burned	Injuries	Fatalities
Rhode Island State	407	929.1	27	13	0
Washington County	118	81.4	13	6	0

Climate Change Impacts

Brush and wildland fire risk depends on a number of factors, including temperature, soil moisture, and the presence of potential fuel (tree, shrubs, etc.). These factors have direct or indirect ties to climate variability and climate change.

"Climate change may impact the frequency and magnitude of wildfires in the following ways:

Increased Frequency: Warmer temperatures and prolonged periods of drought associated with climate change create conditions that favor more frequent wildfires. Extended fire seasons are becoming the new norm in many regions.

Greater Intensity: Higher temperatures and drier conditions can lead to more intense wildfires. These fires burn hotter and spread more rapidly, making them more challenging to control and extinguish.

Longer Fire Seasons: Climate change is extending the length of fire seasons, leading to earlier starts and later endings. This puts additional stress on firefighting resources and increases the risk of wildfires overlapping with other disasters.

Altered Precipitation Patterns: Changes in precipitation patterns, including more intense rainfall events followed by extended dry periods, can promote the growth of vegetation, which can then become fuel for wildfires during subsequent dry periods.

Drought Conditions: Prolonged droughts associated with climate change reduce soil moisture levels and the availability of water sources. Dry conditions increase the susceptibility of vegetation to ignition.

Vegetation Changes: Climate change can alter the distribution and composition of vegetation, such as the expansion of drought-tolerant species. This can change fuel availability and make ecosystems more fire prone.

Insect Infestations: Warmer temperatures can lead to increased insect infestations in forests. Infested and dead trees provide additional fuel for wildfires.

Wildfire Behavior: Climate change can lead to changes in wildfire behavior, including more extreme fire events and increased spotting (the spread of embers ahead of the main fire)" (RIEMA. *2024 RI-SHMP*, 212, 213).

Because brush fires and wildfires are expected to become more frequent due to climate change, RIDEM is "responding by increasing the use of low-severity prescribed burns to reduce the build-up of combustible materials on forest floors and grasslands and by offering specialized wildfire training classes to build staff and volunteer capacity. By increasing its use of prescribed fire, Rhode Island is better aligning its land management policies and practices with neighboring states. Among other benefits, common ecological restoration goals with other states help to strengthen climate change resilience across southern New England" (RIDEM. *DEM*). Being an island community, New Shoreham is removed from the physical ramifications of neighboring municipal land management policies and practices, however the community can benefit from the lessons learned and RIDEM's fire management training programs.

Probability of Future Events

In general New Shoreham's overall humid climate does not favor brush fires. Relative humidity affects fire conditions by either dampening or drying out potential fuel. When the humidity is high, fuel such as dead vegetation and downed branches take moisture from the air.

The probability of future events is further diminished as open air burning permits are required from New Shoreham's Volunteer Fire Department and only issued when risk of wildfires is low; permits for fireworks require fire detail supervision; there have been changes in island vegetation, increased development on the island, and a cultural shift in attitudes towards burning brush. However, the potential remains, especially on the west side of the island which has denser vegetation cover, lower development density pattern, and more difficult to access remote areas.

The RI-SHMP assesses the occurrence of a natural fire hazard in Washington County to be **Likely** (between 50% and 89.9% annual probability) (RIEMA. *2019 RI-SHMP,* 3-108). The Advisory Committee assesses the probability for New Shoreham to be **Potential** (between 1-49.9% annual probability).

Although brush and wildland fires occur infrequently, it is important that the community not become indifferent to the risks from fire hazards. It is therefore important to continue to educate the community about fire risks, in particular those who live in heavily forested areas of New Shoreham.

4.4 VULNERABILITY ANALYSIS

Hazard Mitigation Plan: The Town of New Shoreham has successfully met the following requirement ➔
44 CFR Subsection D §201.6(c)(2)(ii): [The risk assessment shall include] a description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community. All plans approved after October 1, 2008 must also address NFIP insured structures that have been repetitively damaged by floods. The plan should describe vulnerability in terms of:

(A) The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas;

(B) An estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate; and

(C) Provide a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

With New Shoreham's hazards identified and profiled (**Subsections 4.1-4.3**), the Advisory Committee conducted a *Vulnerability Analysis* to describe the impact that each identified hazard might have on New Shoreham. The term vulnerability indicates what is likely to be damaged by a particular hazard and how severe that damage could be. The *Vulnerability Analysis*, in conjunction with the *Capability Assessment* (**Section 5**), was used in developing the *Mitigation Strategy* and *Action Plan* (**Section 6**).

CRS CREDIT:

Mitigation Planning Element	CRS Planning Step	Max Pts
Phase II – Risk Assessment	5. Assess the Problem	52

CRS Coordinator's Manual – Activity 510: Floodplain Management Planning

The *Vulnerability Analysis* used the process described in the FEMA publication *Understanding Your Risks - Identifying Hazards and Estimating Losses* as a guideline for the analysis. In assessing New Shoreham's vulnerability to the identified hazards, the Advisory Committee considered what community assets are at risk (built environment including public infrastructure, natural environment, local economy, and people) and what the impacts might be (structural and environmental damage, economic loss, inconvenience to residents, physical and emotional harm, and loss of life). The Advisory Committee also identified a list of critical assets to be assessed. The *Vulnerability Analysis* presented in this Section is organized as follows:

4.4.1 Critical Buildings

4.4.2 Built Environment and Infrastructure

4.4.3 Natural Environment

4.4.4 Local Economy

4.4.5 People

4.4.6 Future Development Trends

Two distinct methodologies were used in the *Vulnerability Analysis*. The first consists of a quantitative analysis that relies upon best available data and technology, while the second approach consists of a somewhat qualitative analysis that relies on local knowledge and rational decision making. For hazards that do not have the data to support quantitative analysis, vulnerability is discussed in more general qualitative terms.

CRITICAL BUILDINGS

4.4.1 Critical Buildings

Although the Town as a whole is considered in the overall *Vulnerability Analysis*, it is important to identify critical facilities that, if adversely affected by a hazard event, may result in more severe consequences to public health and safety or interrupt essential services and operations for the community. New Shoreham's Critical Buildings have been classified into three categories:

- Special Population Centers
- Local & State Government Emergency Services
- Local Government and/or Community Lifelines

A *Vulnerability Analysis* was conducted to determine the potential susceptibility of each critical building to the profiled hazards. A summary of the analysis in tabular format has been provided in **Appendix 4-3**, and discussed in the narrative of **Subsections 4.4.2**.

A list of the critical buildings is included in **Table 4-22**, and their locations depicted in **Figure 4-56** (a larger scale of this map is included in **Appendix 4-2**).



Figure 4-54 Police Department and Volunteer Fire & Rescue
Photo Credit: Renee Meyer | Block Island Times



Figure 4-55 Block Island North Light
Photo Credit: Rob Gilpin | New England Lighthouses

In addition, as New Shoreham highly values it's historical resources, a *Vulnerability Analysis* was conducted to determine the potential susceptibility of the Town's five (5) historic sites and two (2) historic districts on the National Register of Historic Places: Block Island North Light (Sandy Point); Block Island Southeast Light (Southeast Light Road); Hygeia House (Beach Avenue); Peleg Champlin House (Rodman Pond Lane); U.S. Weather Bureau Station (Beach Avenue); Great Salt Pond Archeological District; and the Old Harbor Historic District (RIHPHC). These historic sites are a record of the community's history and culture, and preserve the stories of the people who built, lived, and worked in New Shoreham. Due to their historical significance these sites are integral to New Shoreham's tourism-based economy and economic survival. A summary of the analysis in tabular format has been provided in **Appendix 4-3**, and discussed in the narrative of **Subsections 4.4.2 and 4.4.4**.

Table 4-22 Critical Buildings with Map Number Identification

Special Population Centers	Local Government and/or Community Lifelines
1 Block Island School (public-Town; primary shelter) 15 High Street	1 Block Island Grocery (private) 242 Ocean Avenue
2 Community Center; Block Island Early Learning Center (private) 91 Chapel Street	2 Block Island Historical Society (non-profit 501c3) 18 Old Town Road
	3 Block Island State Airport (public-State) 4 Center Road
	4 Block Island Utility District (BIUD) Office (non-profit member-owned utility district) 100 Ocean Avenue
	5 Block Island Water Company (BIWC) (quasi-public) 426 Sands Pond Lane
Local & State Government Emergency Services	6 Coast Guard Station (former) (Public-Town) 121 Champlin Road (Coast Guard Road)
1 Block Island Medical Center (public building-Town; privately operated; secondary shelter) 6 Payne Road	7 Harbormaster's Shack - New Harbor (Public-Town) 83 West Side Road
2 Public Safety: Police Department (public); Volunteer Fire & Rescue (non-profit 501c3) 10 Beach Avenue	8 Harbormaster's Shack - Old Harbor (Public-Town) 60 Water Street
3 Town Hall (public-Town) 16 Old Town Road	9 Helping Hands of Block Island, Inc.- Food Pantry (non-profit 501c3) 21 Water Street (lower level Harbor Church)
4 State Highway Garage (public building-State; Town facilitated) 13 Ocean Avenue	10 Fuel: Champlin's Marina (private/summer season only) 82 West Side Road
5 Transfer Station (public-Town) 4 West Beach Road	11 Fuel: M&C Gas Station (private) 596 Corn Neck Road
	12 Fuel: Paynes Dock (private/summer season only) 133 Ocean Avenue
	13 Island Free Library (public-Town) 9 Dodge Street
	14 Town Beach Pavilion (public-Town) 7 Corn Neck Road
	15 Washington Trust (private) 123 Ocean Avenue
	16 Water Pollution Control Facility (WPCF) (quasi-public) 252 Spring Street
	17 United States Post Office (public-Federal) 32T Water Street

Critical Buildings

KEY - Critical Facilities

Special Population Centers

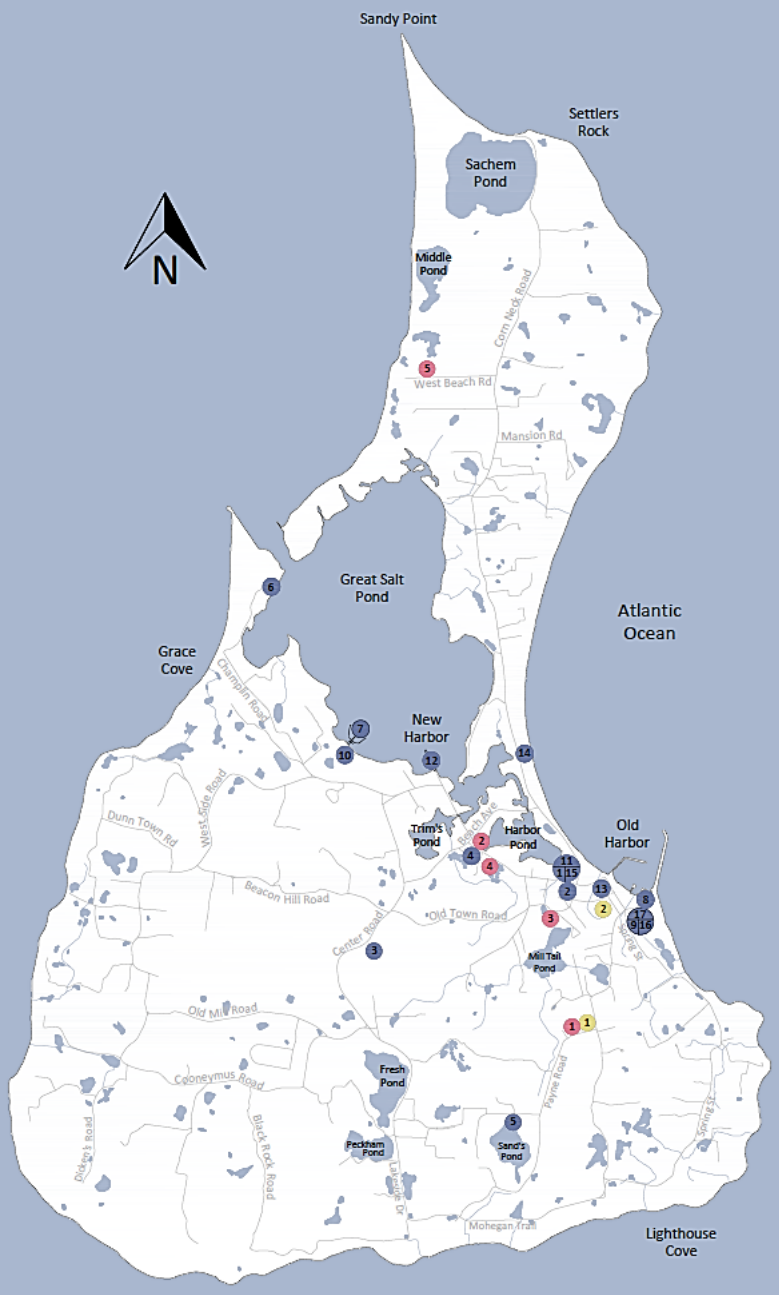
1. Block Island School (public-Town; primary shelter) 15 High Street
2. Community Center; Block Island Early Learning Center (private) 91 Chapel Street

Local & State Government Emergency Services

1. Block Island Medical Center (public building-Town; privately operated; secondary shelter) 6 Payne Road
2. Public Safety: Police Department (public); Volunteer Fire & Rescue (non-profit 501c3) 10 Beach Avenue
3. Town Hall (public-Town) 16 Old Town Road
4. State Highway Garage (public building-State; Town facilitated) 13 Ocean Avenue
5. Transfer Station (public–Town) 4 West Beach Road

Local Government and/or Community Lifelines

1. Block Island Grocery (private) 242 Ocean Avenue
2. Block Island Historical Society (non-profit 501c3) 18 Old Town Road
3. Block Island State Airport (public-State) 4 Center Road
4. Block Island Utility District (BIUD) Office (non-profit member-owned utility district) 100 Ocean Avenue
5. Block Island Water Company (BIWC) (quasi-public) 426 Sands Pond Lane
6. Coast Guard Station (former) (Public-Town) 121 Champlin Road (Coast Guard Road)
7. Harbormaster's Shack - New Harbor (Public-Town) 83 West Side Road
8. Harbormaster's Shack - Old Harbor (Public-Town) 60 Water Street
9. Helping Hands of Block Island, Inc.- Food Pantry (non-profit 501c3) 21 Water Street (lower level Harbor Church)
10. Fuel: Champlin's Marina (private/summer season only) 82 West Side Road
11. Fuel: M&C Gas Station (private) 596 Corn Neck Road
12. Fuel: Paynes Dock (private/summer season only) 133 Ocean Avenue
13. Island Free Library (public-Town) 9 Dodge Street
14. Town Beach Pavilion (public-Town) 7 Corn Neck Road
15. Washington Trust (private) 123 Ocean Avenue
16. Water Pollution Control Facility (WPCF) (quasi-public) 252 Spring Street
17. United States Post Office (public-Federal) 32T Water Street



This map is not the product of a Professional Land Survey. It was created for the Town of New Shoreham for general reference, informational, planning or guidance use, and is not a legally authorized source as to location of natural or manmade features. Proper interpretation of this map may require the assistance of appropriate professional services. The Town of New Shoreham makes no warranty, express or implied, related to the spatial accuracy, reliability, completeness, or currentness of this map.

Graphic Scale

0 2000 4000 8000

1 inch = 2000 feet

March 2025

Source: RIGIS

Figure 4-56

Kim Jacobs, Civil Engineer & Resilience Planning Consultant

BUILT ENVIRONMENT AND INFRASTRUCTURE

4.4.2 Built Environment and Infrastructure

New Shoreham's built environment, including public infrastructure, is an important resource. As an island community the natural hazards that may have the most severe impact on the built environment are flood, wind, and winter related. These hazards will be exacerbated by climate change. Current building codes and standards, modern building materials, and quality construction help to mitigate the impacts of natural hazards on buildings and infrastructure. In New Shoreham, as is true in most communities, structures throughout the Town are of varying ages and construction quality. These factors will influence a structure's resilience. While the Town is in a position to help mitigate the impacts on public property, for privately owned buildings and infrastructure it is up to the owner to implement renovations that will help better withstand the impacts from natural hazards.

An overview of the built environment's vulnerability to each of the profiled natural hazards is included in **Table 4-23**. Additional information about New Shoreham's built environment has been provided in the following Subsections: **4.4.2.1 Vulnerability of Buildings; 4.4.2.2 Vulnerability of Transportation Network; and 4.4.2.3 Vulnerability of Public Utilities.**

Table 4-23 Built Environment and Infrastructure Vulnerability

Hazard Group	Vulnerability *(What is at Risk)*
 **Flood-Related Hazards** (Inland Flooding/Dam Failure; Coastal Flooding/Storm Surge; Coastal Erosion)	• Significant flooding can lead to extensive damage to structures and personal property; disrupt potable water, stormwater, and sewer system operations; flood roadways creating dangerous conditions for motorists; damage the transportation network; and increase the water table resulting in subsurface issues such as wet basements. Standing water can lead to basal failures in live as well as dead trees, which in turn leads to falling limbs and downed trees which may cause damage to structures and infrastructure, including utility lines. Downed wires that are live have the potential to spark fires; damaged utility wires may lead to power loss which could disrupt critical infrastructure, technology, and communications, as well as create public safety issues such as loss of household heat which could then cause water and sewer pipes to freeze and even rupture. • **SFHA:** Structures, and infrastructure in the SFHA (VE and AE Flood Zones) are at highest risk to the impacts from flooding. Including the perimeter of the Great Salt Pond, New Shoreham's coastline is over 23 miles. The Velocity (VE) Zone, encompassing the entirety of the shoreline, is subject to wave action. The AE Zone is concentrated around Sachem Pond, Middle Pond, Great Salt Pond, Trim's Pond, and Harbor Pond. Additional information on the vulnerability of structures in the SFHA is provided in **Subsection 4.4.2.1**. • **Critical Buildings in SFHA**: There are 9 critical buildings in the SFHA - State Highway Garage, Block Island Grocery, Block Island Historical Society, Harbormaster's Shack in New Harbor and Old Harbor, M&C Gas Station, Fuel at Paynes Dock, Town Beach Pavilion, and Washington Trust Bank.

Hazard Group	Vulnerability *(What is at Risk)*
 **Flood-Related Hazards** *continued*	• **Storm Surge Inundation:** Based on hurricane storm surge inundation modeling for category 1-4 hurricanes (*category 5 modeling not available for Rhode Island*), New Shoreham's entire coastline is subject to storm surge inundation to varying degrees. Storm surge is considered the most disruptive force acting on the island's coastline. A storm surge is a temporary rise in sea level caused by strong winds and low pressure during a storm, such as a hurricane or tropical cyclone. Unlike regular wave action, storm surges are more intense and can cause rapid, large-scale erosion during extreme weather events. Storm surge can be highly destructive, damaging structures, battering solid objects, and scouring sand from around foundations. As storms erode shoreline barrier features, adjacent upland properties become more at-risk. The greatest impact of storm surge to the built environment is in the vicinity of and between Old Harbor and New Harbor, including along that section of Corn Neck Road which traverses the narrow northern neck of the island. • Based on an overlay of hurricane inundation areas and building footprint GIS layers, an estimated 117 structures are located within Hurricane Inundation Zones. • **Critical Buildings in Hurricane Inundations Zones**: There are twelve critical buildings impacted by **Category 1-4 hurricane surge inundation**. Category 1 or stronger hurricane - Harbormaster's Shack in both New Harbor and Old Harbor, Paynes Dock Fuel, and Town Beach Pavilion; Category 2 or stronger hurricane - Block Island Grocery, M&C Gas Station, and Washington Trust Bank; Category 3 or stronger hurricane - State Highway Garage, and Block Island Historical Society; and Category 4 or stronger hurricane – Block Island Early Learning Center/Community Center, Block Island Utility District Office, and former Coast Guard Station. • Future increases in relative sea level will: intensify coastal flooding and may inundate structures therein displacing coastal populations; threaten roadways, revetments, breakwaters, and other infrastructure designed for historically lower water levels; and contaminate water supplies through saltwater intrusion into aquifers. • **Refer to Subsections 4.4.2.1 - 4.4.2.3 for additional flood-related vulnerabilities.**
 **Wind-Related Hazards** (High Winds – Thunderstorms/ Lightning/Hail; Tornadoes; Tropical Cyclones)	• High winds, including those associated with tropical cyclones (tropical depressions, tropical storms, and hurricanes), tornadoes, and thunderstorms can cause damage to structures and infrastructure including utility lines. • **NOTE: The impacts from wind-driven storm surge, (hurricane storm surge inundation zones) has been addressed above in the Flood-Related Hazards section.** • The type, age, and standards to which a structure was constructed, play a role in its vulnerability to high wind events. New Shoreham enforces RI State Building Code, which currently requires new or substantially renovated residential and commercial structures in New Shoreham be designed for a minimum wind speed of 120 mph. Residential and commercial structures that are older or of poor quality construction, and/or not well-maintained, may be more susceptible to damage from high winds. Wood-framed structures may also be more vulnerable to wind damage. • **Lightning:** In general, buildings are more likely to be struck by lightning if they are located on high ground or have tall protrusions, such as church steeples. Electrical-based utilities, including the cell towers at the Police/Fire Station and BIUD property, may be vulnerable to direct lightning strikes. Damage to power lines may cause outages for businesses, residents, and critical facilities. The Town-owned communication (cell) tower, located behind the Police and Fire Station has been struck three times over the past two decades but the grounding system has minimized damage by providing a safe path for the lightning current to flow to the ground.

Hazard Group	Vulnerability *(What is at Risk)*
Wind-Related Hazards *continued*	• **Hail:** Structure vulnerability to hail is determined mainly by construction and exposure; metal siding and roofing is better able to stand up to the damages of a hailstorm; exposed windows are susceptible to damage. • **Tornadoes:** The type, age, and standards to which a structure was constructed, play a role in its vulnerability to tornadoes; in general, concrete, brick and steel-framed structures tend to fare better in tornadoes than wood-framed structures, which are common in New Shoreham. Mobile homes are more susceptible to tornado damage, but are prohibited in New Shoreham based on zoning regulations. • **Tree Damage:** Although heavily treed areas are minimal in New Shoreham, trees along roadways can be damaged by high wind events. Limbs or downed trees may damage structures and infrastructure including utility lines. Over the past several years, a number of factors have created weakening tree health including a warmer and damper climate trend which is conducive to some fungal and bacterial diseases and two significant droughts about two years apart. These and other factors have led to more die back along road shoulders and private property. As rot sets in at cankers and unions it creates weak spots that after saturation lose rigidity and potentially fail. Significant wind events can cause failure at these weak spots. • **Utility Lines:** Downed wires that are live have the potential to spark fires which could damage nearby structures and infrastructure. • **Refer to Subsections 4.4.2.1 - 4.4.2.3 for additional wind-related vulnerabilities.**
Winter-Related Hazards (Heavy Snow; Ice; Extreme Cold)	• The geographical location of New Shoreham to the ocean helps to reduce the impact of most of winter related hazards. However, over the years, severe winter storms have impacted the Town. • Snow and ice can impact access to homes and critical facilities such as the Medical Center, school, and supermarket. • **Flooding:** A quick thaw after a heavy snow can cause substantial flooding, especially along small streams and in developed areas. • **Roadways:** Snow, ice, and freezing temperatures may create treacherous driving conditions, cause transportation delays, and create transportation challenges for first responders or others who may need to be on the roads. • **Air and Ferry Transportation:** If a snow or ice storm is severe and causes poor visibility, ferry and/or air service may be delayed or cancelled. • **Underground Infrastructure:** If extreme cold conditions are combined with low/no snow cover, the cold can better penetrate downward through the ground and potentially create problems for underground infrastructure. • **Tree Damage:** Heavy snow and ice accumulation can weigh down and damage trees. This may result in falling limbs and downed trees which may cause damage to nearby structures and infrastructure including utility lines. As the health of many trees in New Shoreham has been compromised due to several factors, trees with weak unions may more easily succumb to the weight of snow and ice accumulation. • **Utility Lines:** Heavy snow and ice accumulation can weigh down and damage utility wires; downed wires that are live have the potential to spark fires; damaged utility wires may lead to power loss which could disrupt critical infrastructure, technology, and communications, as well as create public safety issues such as loss of household heat which could then cause water and sewer pipes to freeze and even rupture.

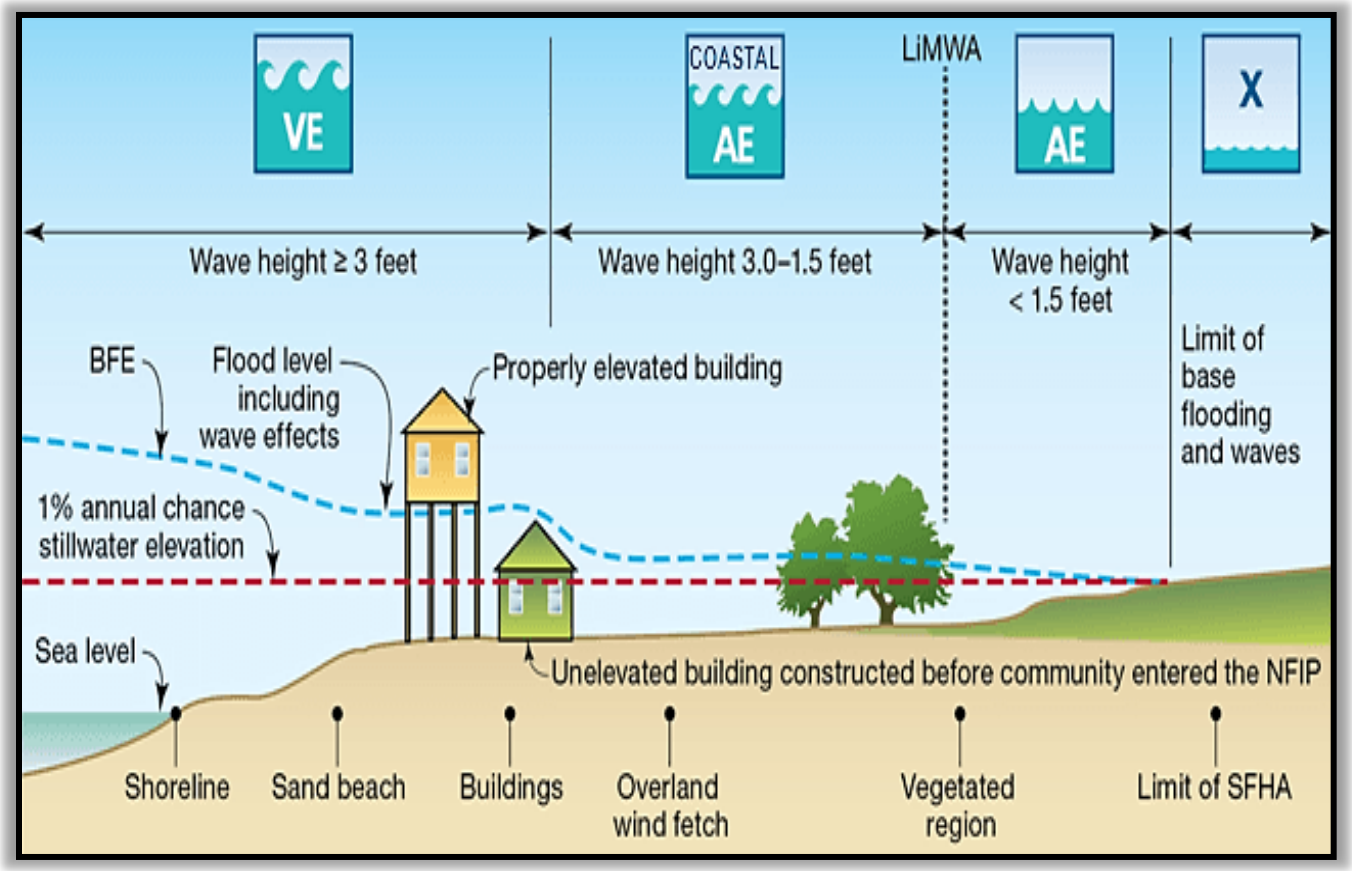
Hazard Group	Vulnerability *(What is at Risk)*
 **Winter-Related Hazards** *continued*	• **Nor'easters:** Nor'easters cause varying amounts of coastal erosion depending on the intensity and the duration of the storm, tidal phase at the time of the storm, and frequency of storms. The erosion of coastal features commonly results in greater potential for damage to adjacent built environment. • **Roofs:** While the average annual snowfall in New Shoreham is about 20 inches, compared to 40 to 55 inches in the northwestern part of the State (RIDEM. *Overview*), should a heavy or wet snowfall occur, structures with flat or low pitched roofs may be at greater risk of failure. The following **Critical Buildings** have at least some portion of their roof that is either flat or has a low pitch: Block Island School, Block Island Historical Society, and Town Beach Pavilion.
 **Infectious Disease-Related Hazards**	**Mosquitoes & Ticks** • The tick and mosquito populations are not expected to have an impact on New Shoreham's built environment & infrastructure. **Influenza Viruses or Coronaviruses** • The influenza viruses or coronaviruses are not expected to have an impact on New Shoreham's built environment & infrastructure.
 **Other Hazards** (Earthquake; Extreme Heat; Drought; Brush Fire)	**Earthquakes** • If a significant earthquake occurred with an epicenter relatively close to New Shoreham, all buildings may be at risk to some level of damage. • As New Shoreham complies with State Building Codes, it is unlikely that most structures would sustain much damage from a moderate earthquake (MMI IV or less) occurring in Rhode Island. However, the type, age, and standards to which a structure was constructed, play a role in its vulnerability to earthquake damage. Residential and commercial structures that are older or of poor quality construction, and/or not well-maintained, may be at higher risk of damage or collapse due to an earthquake. • **Critical Buildings:** Although a very strong earthquake (MMI VII or greater) is considered a low probability, should one occur, depending on the magnitude and epicenter, all critical buildings are vulnerable to some level of damage. **Extreme Heat** • Although extreme heat can cause pavement to soften and expand (creating rutting and potholes), as heat waves in the near future are expected to be of short duration, the impact to New Shoreham's infrastructure is expected to be minimal. • Increased energy demands, particularly related to air conditioning usage, may cause power shortages/outages. **Drought** • Droughts are not expected to have an impact on New Shoreham's built environment & infrastructure. **Brush Fires** • In general, brush fires are not expected to have an appreciable impact on New Shoreham's built environment & infrastructure. Some structures in Town may be more vulnerable as they have wood shake roofs which tend to ignite relatively easy. • **Critical Buildings**: The Transfer Station and the Water Pollution Control Facility are located near areas with more fuel potential for brush fires.

4.4.2.1 Vulnerability of Buildings

FEMA's Federal Insurance and Mitigation Administration (FIMA) manages, among other things, the National Flood Insurance Program (NFIP). In addition to providing flood insurance and reducing flood damages through floodplain management regulations, the NFIP identifies and maps the Nation's floodplains. Mapping flood hazards creates broad-based awareness of this issue and provides the data needed for floodplain management programs and to actuarially rate new construction for flood insurance. The Flood Insurance Rate Maps (FIRM) are the legal document for determining flood zone location and may be viewed at the New Shoreham's Town Hall, on the Town's website, or through the links provided in **Appendix 5-1**.

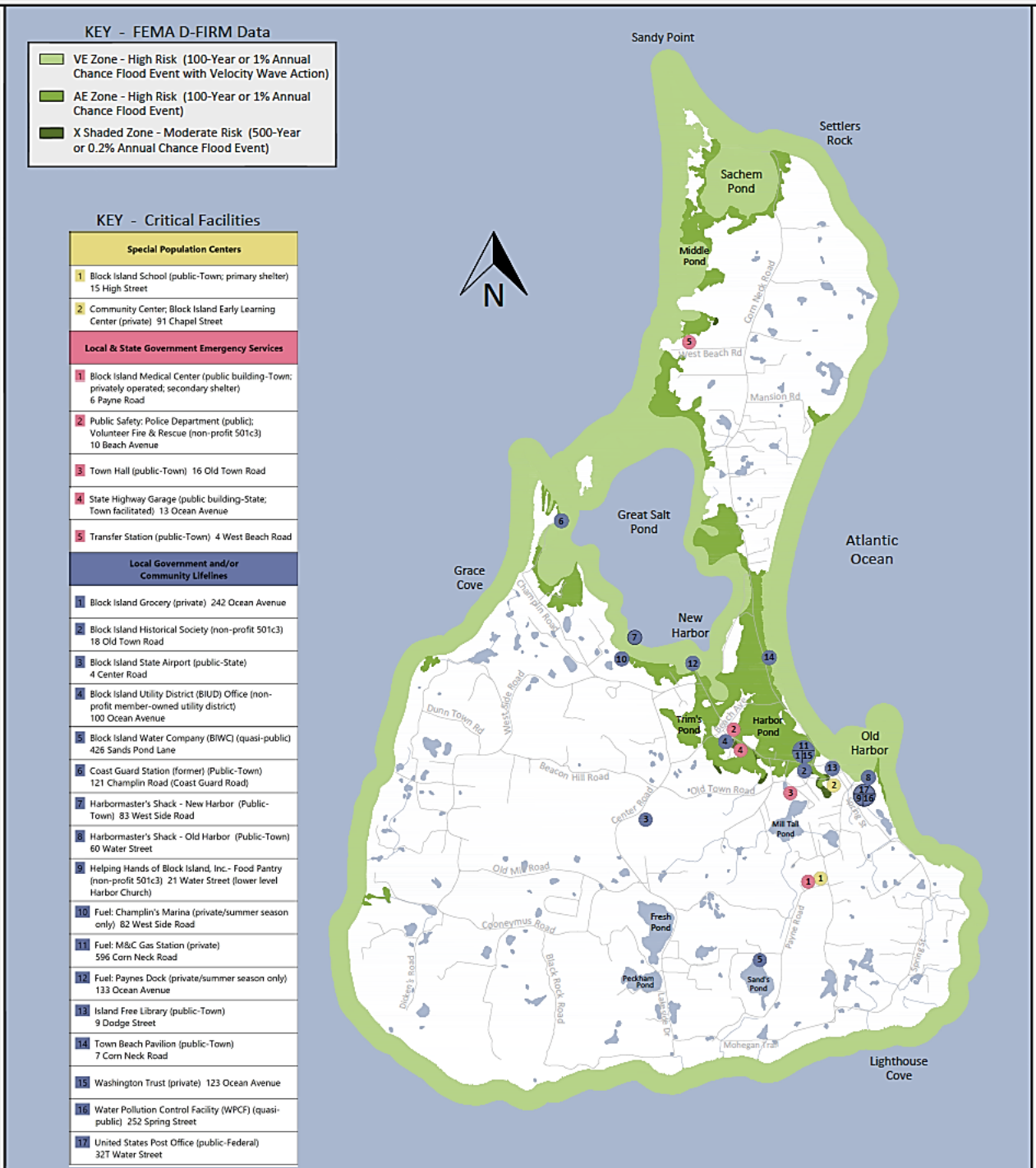
Figure 4-57 depicts FEMA's coastal flood hazard mapping, which "is the process where the overland wave modeling results are assimilated with the topography data to delineate the boundary of the Special Flood Hazard Area (SFHA) for the 1% annual chance stillwater elevation (100-year conditions), along with mapping the location and extent of Zones VE, AE, and X" (FEMA Region III). The stillwater elevation indicates how high floodwaters could rise during a flood event due to storm surge, tides, wave setup, or other factors. The higher the stillwater elevation, the farther inland the impacts of flooding will be felt (FEMA. *Coastal*, 2).

Figure 4-57 Typical Shoreline - Coastal Flood Hazard Mapping (FEMA Region III)



A map of the Town showing FEMA's Special Flood Hazard Area (SFHA) and location of critical facilities is provided as **Figure 4-58** (a larger scale of this map is included in **Appendix 4-2**). Properties in the SFHA are at high risk to the impacts of flooding. Climate change will continue to exacerbate the threat of flooding, making buildings in the SFHA more vulnerable. The following analysis was conducted to determine the total assessed value for the primary buildings and land within the SFHA.

FEMA Flood Zones with Critical Buildings Overlay



This map is not the product of a Professional Land Survey. It was created for the Town of New Shoreham for general reference, informational, planning or guidance use, and is not a legally authorized source as to location of natural or manmade features. Proper interpretation of this map may require the assistance of appropriate professional services. The Town of New Shoreham makes no warranty, express or implied, related to the spatial accuracy, reliability, completeness, or currentness of this map.

Graphic Scale

0 2000 4000 8000

1 inch = 2000 feet

March 2025

Source: RIGIS

Figure 4-58

Kim Jacobs, Civil Engineer & Resilience Planning Consultant

❖ *Flood Zone Assessment*

A flood zone analysis was conducted to provide a basic understanding of the tax base within the **Special Flood Hazard Area (SFHA)** that may be at risk from flooding. As New Shoreham is a coastal community, the SFHA includes both the **V and A Zones** (both of these zones are part of the 100-year floodplain or have a 1% annual chance of flooding). The V Zone (Velocity Zone) also has additional hazards associated with storm waves. In New Shoreham's SFHA, detailed hydraulic analyses has been performed and Base Flood Elevations (BFEs) are provided. **As such the suffix of E is given after the zone designation: VE and AE**.

Flood Zone Analysis Methodology: The analysis considered the spatial intersection of the FEMA Digital FIRM GIS layers and the building footprint(s) within a parcel. If any portion of the primary building footprint was located within the SFHA (VE or AE Flood Zone) the property was considered at risk and the assessed value tabulated in **Table 4-24**. ***Analysis Limitations****:* include that the neither the building footprints or parcel boundary data are precise (they are not the product of a professional land surveyor); some properties may have had more than one primary building; and for some properties it was difficult to discern the primary building versus outbuildings. **The outcome of the analysis should therefore be used ONLY for general planning and guidance purposes. The analysis is meant to provide a basic understanding of the current tax base that may be at risk from flooding.**

In New Shoreham, there is an estimated15 parcels in VE Zone and 54 parcels in AE Zone whose primary building is at high risk of flood inundation. As summarized in **Table 4-24**, the analysis determined that the total assessed value for properties with any portion of the primary building footprint intersecting the VE or AE Flood Zone is $129,763,300 **(roughly 4.7% of tax base).**

Critical Buildings with the VE Zone: Harbormaster's Shack – in New Harbor and Old Harbor, Fuel at Paynes Dock, and Town Beach Pavilion; on the National Register of Historic Places (NRHP) the Block Island North Light is in the VE Flood Zone as is portions of the Great Salt Pond Archeological District and Old Harbor Historic District

Critical Buildings with the AE Zone: State Highway Garage, Block Island Grocery, Block Island Historical Society, M&C Gas Station, and Washington Trust Bank

Table 4-24 Primary Building Vulnerability Within SFHA

HIGH RISK: Velocity Flood Zone (VE) – 1% Annual Chance with additional hazards associated with wave action				
Land Use		Assessed Value ($)		
		Primary Building(s)	Land	Total
RESIDENTIAL	Single-Family Residential	$1,084,700	$679,900	$1,764,600
	Multi-Family Residential	$1,541,900	$1,575,200	$3,117,100
COMMERCIAL	Business	$12,367,600	$13,469,700	$25,837,300
OTHER	Municipal	$8,175,200	$1,772,000	$9,947,200
Subtotal: Velocity Flood Zone (VE)		**$23,169,400**	**$17,496,800**	**$40,666,200**

HIGH RISK: 100-Year Flood Zone (AE) – 1% Annual Chance				
Land Use		Assessed Value ($)		
		Primary Building(s)	Land	Total
RESIDENTIAL	Single-Family Residential	$4,510,000	$4,866,300	$9,376,300
	Multi-Family Residential	$12,718,700	$9,409,700	$22,128,400
	Single-Family Residential-Water Front	$15,894,000	$10,106,200	$26,000,200
	Condo	$782,800	$584,500	$1,367,300
	Seasonal	$1,438,100	$586,100	$2,024,200
COMMERCIAL	Combination (residential/commercial)	$6,072,500	$7,172,000	$13,244,500
	Business	$8,973,700	$3,965,400	$12,939,100
OTHER	State	$1,210,300	$806,800	$2,017,100
Subtotal: 100-Year Zone (AE)		**$51,600,100**	**$37,497,000**	**$89,097,100**

Sources: *GIS map layers for this analysis were obtained from the Town's GIS Manager; the assessed values associated with the GIS parcel layer is based on March 2025 data provided by the Town's Tax Assessor's Office.*



Figure 4-59 Coastal Flooding Near Water Street (October 11, 2019)
Photo Credit: Kim Gaffett | MyCoast

❖ *Flood Insurance Assessment*

FEMA's Mitigation Division manages the National Flood Insurance Program (NFIP) which was established by the *National Flood Insurance Act of 1968*, with the intent of reducing the need for post-disaster federal aid by offering flood insurance and providing mitigation incentives to properties that have significant flood risks. Legislation associated with the NFIP has undergone a number of changes over the years including that set forth in the *Flood Insurance Protection Act of 1973*, *Flood Insurance Reform Act of 2004*, *Biggert-Waters Flood Insurance Reform Act of 2012*, and *Homeowner Flood Insurance Affordability Act of 2014* (FEMA. *50 Years*).

Flood insurance through the NFIP is available to residents in communities that elect to comply with the minimum NFIP floodplain management requirements for reducing flood damage. All of Rhode Island's 39 municipalities currently participate in the NFIP. Participating NFIP communities must:

- **Adopt and Enforce Floodplain Management Regulations** - Communities must adopt the most current Flood Insurance Rate Maps (FIRMS) and Flood Insurance Study (FIS) for the community, and adopt/enforce a FEMA compliant floodplain management ordinance that regulates activity in the community's floodplains, thereby ensuring that new construction and substantial improvements in high-risk areas comply with elevation, floodproofing, and setback standards.
- **Maintain FEMA Flood Maps and Records** - Communities must use FEMA's Flood Insurance Rate Maps (FIRMs) to regulate development and keep records of elevation certificates, permits, and floodplain-related decisions.
- **Reduce Flood Risk through Planning** - Communities must take proactive steps to mitigate flood risk, such as zoning restrictions, drainage improvements, and public education on flood preparedness.
- **Permit and Inspect Floodplain Development** - Any new construction or substantial improvement in a floodplain must be properly permitted, inspected, and compliant with NFIP regulations.
- **Participate in Floodplain Management Activities** - Local officials should engage in training, flood risk assessments, and community outreach to improve resilience.

The Town of New Shoreham (CID 440036) has been a participant in the NFIP program since April 3, 1985 (FEMA. *Community Status*). As outlined in **Appendix 5-1**, New Shoreham adopted updated flood insurance rate maps (FIRMs) with an effective date of October 16, 2013. Per Town Ordinance Chapter 11 Natural Resource Protection (ARTICLE I - Flood Ordinance), the Town will continue to comply with NFIP requirements. Additional information on the Flood Ordinance is provided in **Appendix 5-1**.

New Shoreham's participation in NFIP, through the adoption and enforcement of floodplain management ordinances, provides New Shoreham residences and businesses the opportunity to obtain their flood insurance through the NFIP program. As discussed in **Subsection 2.3.1.1**, communities that participate in NFIP currently can elect to participate in the Community Rating System (CRS) program. New Shoreham has been a CRS community since May 1 2019. The CRS program issues credit points to participating communities based on flood management activities the community participates in (and documents) beyond the minimum NFIP requirements. The credits translate to insurance premium discounts (from 5-45%) for NFIP insurance policy holders in the community.

> By participating in the NFIP and CRS Program, and through the implementation of comprehensive floodplain management strategies, New Shoreham demonstrates a strong commitment to reducing flood risks and enhancing community resilience.

Most homeowners' insurance policies do not cover flooding. As a condition of a mortgage from a lender that is federally regulated, flood insurance is required (either through NFIP or a private insurer) for buildings located in the Special Flood Hazard Area (comprised of the V and A Flood Zones). The minimum purchase requirement is for flood insurance in the amount of the federally backed mortgage (as opposed to the entire value of the structure). Coverage of contents is not required. Should there be interest, those without federally backed mortgages or outside of the SFHA are able to purchase flood insurance through the NFIP (or private insurers) to protect their home and/or content from physical losses caused by a flood. Policyholders pay premiums that are based on the level of flood risk at an identified location in the community. To accurately identify the risk, FEMA produces Flood Insurance Rate Maps (FIRMs) that show areas subject to flooding. The flood risk information presented on the FIRMs is based on historic, hydrologic, and hydraulic data, as well as on open-space conditions, flood-control works, and development.

The 100-year flood is a regulatory standard used by federal agencies, states, and NFIP-participating communities to administer and enforce floodplain management programs and is also used nationwide by the NFIP as the basis for insurance requirements. The precipitation from a 100-year flood is expected to inundate the area designated as the 100-year floodplain or the Special Flood Hazard Area (SFHA). Statistically, there is a 1 percent chance of a 100-year flood occurring in any given year – which translates to a 26 percent chance over a 30-year mortgage period.

The NFIP maintains flood insurance data for active policies and past claims. This data is a valuable resource for analyzing the impact of flood hazards. As shown in **Table 4-25 & 4-26**, according to FEMA, as of February 10, 2025, New Shoreham had 96 active policies with a total coverage of over $33M. Of the active policies, 78 are residential, 18 are non-residential, and 10 are in the SFHA (4 in the VE zone, and 6 in the AE Zone). **The Town does not have access to data related to those who purchase flood insurance through the private sector.** Hence, the total number of properties with flood insurance in New Shoreham may be higher.

In terms of flood insurance claims through the NFIP, as shown in **Table 4-27**, from February 1978 through March 2024, there have been 18 claims, of which 15 were paid with a net total payment of $365,031. As this information only represents claims associated with flood damage for those insured through the NFIP, and does not take into consideration losses caused by flooding for those privately insured or those uninsured, the actual flood damage that has occurred to buildings and contents in New Shoreham over the past 46± years is expected to be higher.

The Town of New Shoreham has three buildings located in the SFHA: Town Beach Pavilion; and both of the Harbormaster's Shacks (at Old Harbor and New Harbor). All of these buildings have flood insurance.

Table 4-25 New Shoreham Properties with NFIP Flood Insurance Per Flood Zone (FEMA Data: 2/10/2025)

Community	VE-Zone	AE-Zone	X-Zone/Other	Number of Policies in Force	Total Premiums	Coverage Total $
New Shoreham	7	38	51	96	$122,185	$33,084,000

Table 4-26 New Shoreham NFIP Insurance Summary by Occupation Type (FEMA Data: 2/10/2025)

Occupancy Type	Policies in Force	Annual Premium Total	Total Coverage in Force
Residential	78	$99,275	$26,880,750
Non-Residential	18	$22,909	$6,203,250
Total	**96**	**$122,184**	**$33,084,000**

Table 4-27 New Shoreham NFIP Claim Overview (FEMA Data: from 2/6/1978 to 3/9/2024)

Flood Zone	VE-Zone	AE-Zone	X-Zone	Other	All
Claims CWP	3	5	4	3	15
Open Claims	0	0	0	0	0
Claims CWOP	1	1	0	1	3
Number of Records	**4**	**6**	**4**	**4**	**18**
Net Building Payments	$143,021	$90,382	$38,105	$47,942	$319,450
Net Contents Payments	$9,487	$10,500	$1,796	$23,798	$45,581
Net Total Payments	**$152,508**	**$100,882**	**$39,901**	**$71,740**	**$365,031**
Average Net Payment (Open & CWP)	$98,733	$41,774	$21,108	$23,914	$185,529

Note: CWP = Closed With Payment; CWOP = Closed Without Payment

Repetitive Loss Properties

Based on FEMA data there are **NO repetitive loss (RL) or severe repetitive loss (SRL) properties in New Shoreham**, Rhode Island. As such, a map showing the general locations of repetitive loss areas has **not** been provided.

For reference, the National Flood Insurance Program defines properties that have had more than one flood insurance claim as follows:

- **Repetitive Loss**: Any insurable building for which two or more claims of more than $1,000 were paid by the NFIP within any rolling 10-year period, since 1978 (claims made within 10 days of each other are counted as one claim). A repetitive loss property may or may not be currently insured by the NFIP (FEMA. Repetitive Loss Structure).
- **Severe Repetitive Loss**: Any NFIP-insured single-family or multi-family residential building that has incurred flood-related damage for which four or more separate claims payments have been made, with the amount of each claim (including building and contents payments) exceeding $5,000; or for which at least two separate claim payments (building payments only) have been made, with the cumulative amount exceeding the market value of the building. In both instances, at least two of the claims must be within any rolling 10-year period, since 1978, and claims made within 10 days of each other are counted as one claim (FEMA. *Appendix I: Severe*).

Coastal Barrier Resources Act

The **Coastal Barrier Resources Act** (CBRA) is a U.S. law enacted in 1982 to establish the John H. Chafee Coastal Barrier Resources System (CBRS). The CBRS is comprised of shorelines areas along the Atlantic (including the Gulf of Mexico and the Caribbean Sea) and the Great Lakes. The areas included are designated as CBRS units, mapped out by the U.S. Fish and Wildlife Service. The primary goal of the Act is to protect coastal and marine ecosystems while reducing the federal government's exposure to the financial risks associated with development in environmentally sensitive coastal areas prone to flooding, erosion, and other natural hazards. Although private development is allowed in CBRS units, federal expenditures and federal financial assistance for developments are prohibited. **This means, among other restrictions, a structure built in a CBRS unit is ineligible for flood insurance and disaster assistance from FEMA (USFWS)**. A map identifying the Coastal Barrier Resources System Units in the Town of New Shoreham is available through the following link: CBRS – Block Island Unit D09/D09P – Map 44-011A (11-25-2024)

❖ *Critical Buildings Vulnerable to Hurricane Storm Surge Inundation*

New Shoreham, located on Block Island, is roughly twelve miles off the coast of Rhode Island (Town of New Shoreham RI. *Comprehensive*, 1-2), and bordered by the Atlantic Ocean to the south, east, and west, and Block Island Sound separates it from mainland of Rhode Island to the north. During high wind events, water is pushed toward the shore creating storm surge which is considered the most disruptive force acting on the island's coastline. **Figure 4-60** depicts the areas subject to hurricane storm surge inundation. As shown, the most vulnerable areas are those along the Town's northwestern coastline, the perimeter of the Great Salt Pond, the southwestern coast in the vicinity of Cooneymus Road, and the Cresent Beach/Old Harbor area along the eastern coastline.

A detailed list of New Shoreham's critical buildings vulnerable to various hazards, including storm surge inundation, has been included as **Appendix 4.3**. Following is a list of the critical buildings vulnerable to hurricane surge inundation. These properties are also identified in **Figure 4-60** (a larger scale of this map is included in **Appendix 4-2**). *Please note that GIS data to map the storm surge impact from a category 5 hurricane is not available for Rhode Island.*

Critical Buildings at risk from a Category 1 (or higher) Hurricane: Harbormaster's Shack in both New Harbor and Old Harbor; Paynes Dock Fuel; and Town Beach Pavilion; on the National Register of Historic Places (NRHP) the Block Island North Light property is in the Category 1 hurricane surge inundation zone as are portions of the Great Salt Pond Archeological District and Old Harbor Historic District, as well as the foot of the bluffs on the Block Island Southeast Light property

Critical Buildings at risk from a Category 2 (or higher) Hurricane: Block Island Grocery; M&C Gas Station; and Washington Trust Bank

Critical Buildings at risk from a Category 3 (or higher) Hurricane: State Highway Garage; and Block Island Historical Society

Critical Buildings at risk from a Category 4 (or higher) Hurricane: Block Island Early Learning Center/ Community Center; Block Island Utility District Office; and former Coast Guard Station

❖ *Critical Buildings Vulnerable to Sea Level Rise*

If, as projected by climate scientists, the frequency and intensity of storms continue to increase in the near future, buildings and infrastructure in New Shoreham's low-lying areas along Block Island Sound and the Atlantic Ocean, may be subjected to greater risk of flood and wind damage.

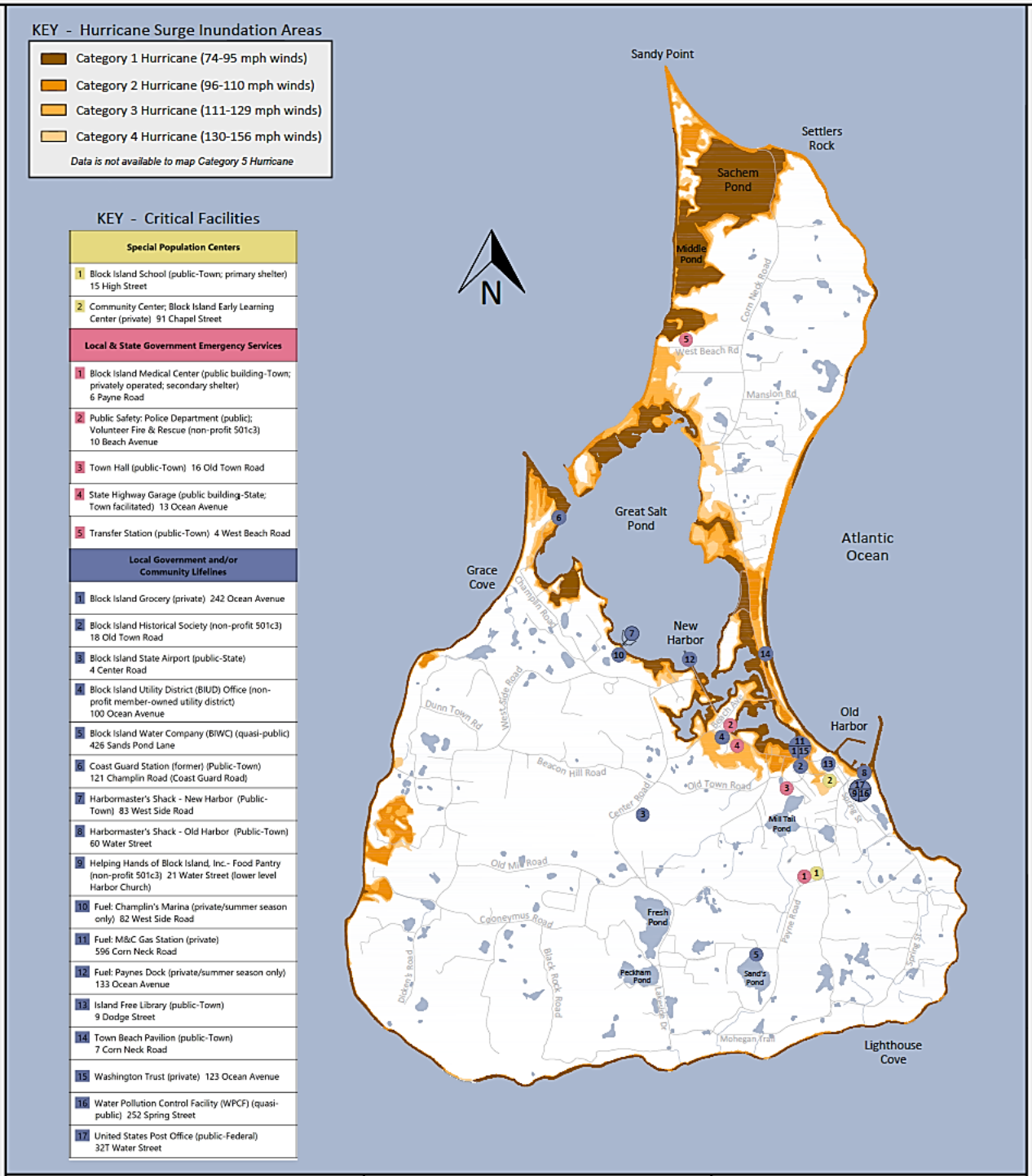
A key consequence of climate change is sea level rise (SLR). As an island community, SLR will expand the higher risk flood zones inland, thereby impacting more of New Shoreham's properties, and amplifying the effects of storm surge. Coastal erosion and encroachment resulting from rising seas increase New Shoreham's exposure to cascading damages.

The CRMC warns that the threat of sea level rise will grow significantly in the coming decades and has adopted NOAA's "worst-case" high curve projection to guide planning in Rhode Island (**Table 4-28**). **Figure 4-61** shows the locations of critical facilities overlaid with the current Mean Higher High-Water level and projected 1, 3, and 5-foot SLR scenarios (a larger scale of this map is included in **Appendix 4-2**).

Table 4-28 Sea level Rise Projections for Rhode Island (NASA. *Interagency*)

NOAA 2022 SLR Scenarios	2030	2050	2080	2100
Worst-case projections based on high curve	0.71 feet	1.60 feet	4.19 feet	6.47 feet

Hurricane Surge Inundation Areas with Critical Buildings Overlay



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Graphic Scale

0 2000 4000 8000

1 inch = 2000 feet

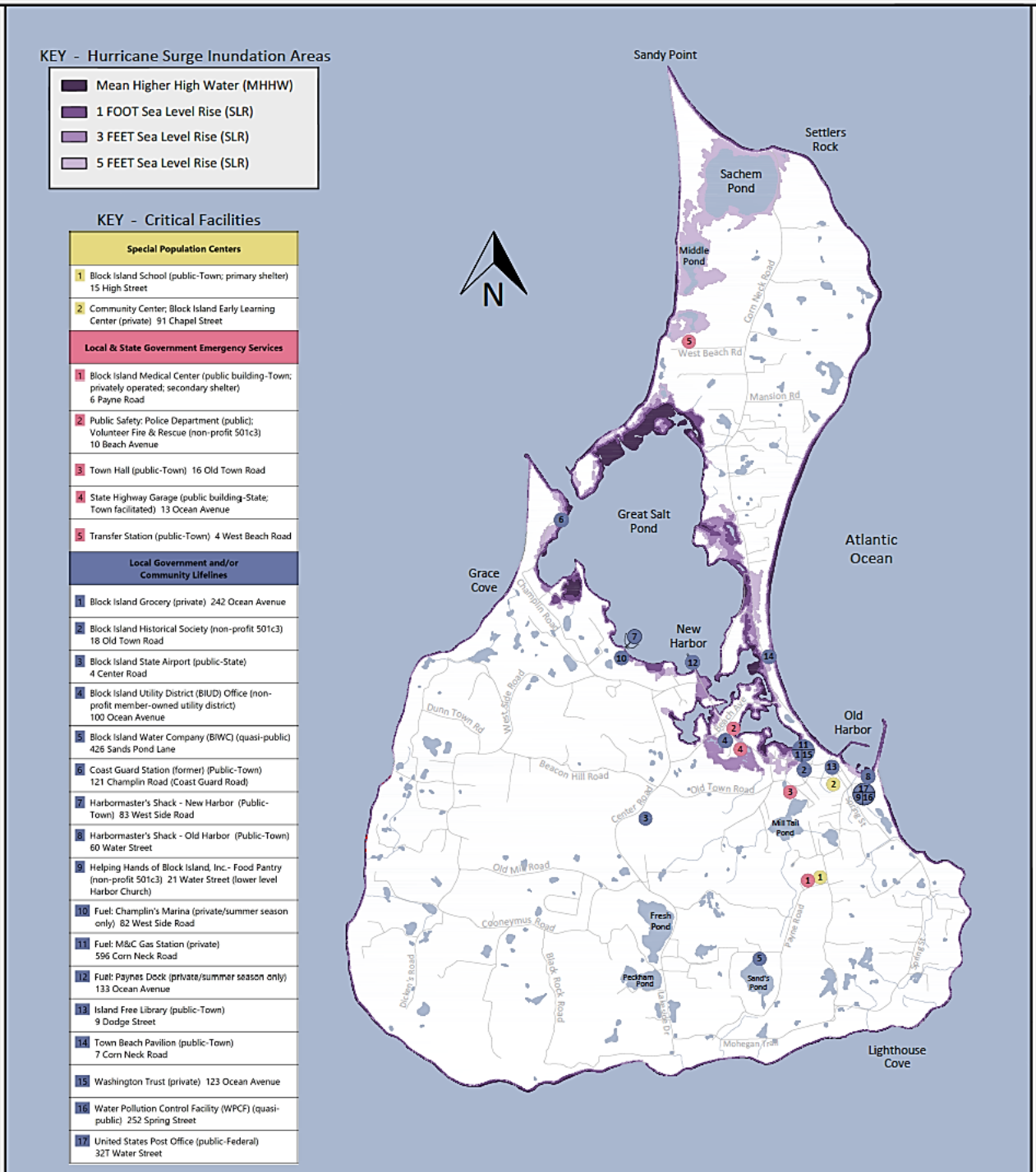
March 2025

Source: RIGIS

Figure 4-60

Kim Jacobs, Civil Engineer & Resilience Planning Consultant

Sea Level Rise Inundation Areas with Critical Buildings Overlay



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Graphic Scale

0 2000 4000 8000

1 inch = 2000 feet

March 2025

Source: RIGIS

Figure 4-61

Kim Jacobs, Civil Engineer & Resilience Planning Consultant

4.4.2.2 Vulnerability of Transportation Network

New Shoreham, encompassing Block Island, relies on a multi-modal transportation network comprised of a road network (including sidewalks and bridges), boat services (including ferries, harbors, and docks), and air service. These transportation assets are susceptible to various natural hazards, including flooding, storm surge, erosion, high-wind events, and severe winter weather. Damage to New Shoreham's transportation network could have serious consequences for residents, businesses, and visitors. As such, it is critical to identify transportation network vulnerabilities to natural hazards and sea level rise in an effort to provide the Town and other stakeholders the opportunity to strengthen the Town's transportation resilience.

Damage to the island's transportation network could result in some of the following impacts:

Health and Safety Risks

- ◊ **Emergency Response Delays:** Block Island's emergency services depend on functional roads and harbors. Storm damage, flooding, or debris on roads can slow response times for fire, EMS, and police.
- ◊ **Medical Emergencies:** The Medical Center is not equipped to handle all medical emergencies. If transportation is disrupted, critical care access could be delayed for those requiring emergency medical transport off island via ferry and air services.
- ◊ **Food and Supply Shortages:** The island depends on daily freight deliveries for essentials like groceries, fuel, and medical supplies. Transportation disruptions could lead to shortages, affecting public health and safety.
- ◊ **Evacuation Challenges:** While residents on the island generally shelter in place, in the event of a major storm or hurricane, New Shoreham's Emergency Management Task Force encourages tourists to vacate the island. Damage to ferry terminals, roads, and the airport could prevent timely evacuations.

Economic Impact

- ◊ **Tourism Losses:** Tourism is the backbone of New Shoreham's economy, with visitors relying on ferries, flights, and rental vehicles. Damage to transportation infrastructure could reduce access to the island, leading to a major drop in visitor spending.
- ◊ **Business Disruptions:** Hotels, restaurants, and shops rely on regular shipments of goods. If ferry services are interrupted, businesses may face supply shortages, leading to revenue losses.
- ◊ **Fishing and Maritime Industry Impacts:** Damage to harbors or docks could prevent commercial fishing boats from operating, affecting the local seafood industry and associated businesses.
- ◊ **Property Value Decline:** Long-term transportation disruptions could make island living less appealing, affecting real estate values and investment.

Long-Term Resilience and Infrastructure Costs

- ◊ **Increased Repair and Maintenance Costs:** Frequent damage to roads, ferry docks, and the airport from storms or flooding may require costly repairs. Depending on infrastructure ownership, this could impact the Town's budget as well as the State RIDOT budget for island roads under their jurisdiction.
- ◊ **Climate Change Adaptation Costs:** In the long-term, the Town may need to invest in resilient infrastructure, such as elevating roads, reinforcing ferry terminals, or expanding emergency air services.

ROADS AND BRIDGES

New Shoreham's road network is comprised of State, local (Town-owned), and private roads, some of which include bridges and sidewalks. The Town is largely dependent on the use of private vehicles as the community is not served by the Rhode Island Public Transit Authority or any other public transit system. Although bicycling is a popular mode of traversing the island, especially in the summer, there are **no designated bicycle lanes/paths**. If roadways without accommodations for bicyclists and pedestrians are compromised due to natural hazard impacts, then those walking or cycling are at greater risk. As the Town makes improvements to the transportation network, consideration of further integrating pedestrian and bicycle modes of transportation – wherein feasible – should be encouraged.

❖ *Local Roads Vulnerable to Flooding*

The Department of Public Works (DPW) is responsible for the general maintenance of Town-owned roadways. Contracts for major improvements to Town-owned roads is administered by the DPW Director and Town Manager. There are approximately 9.4 miles of Town-owned roads, of which 7.5 miles are dirt roads. Sections of **Town-owned roads** that are subject to repetitive flooding and require stormwater management improvements either upgradient or adjacent to the roadway include (but may not be limited to):

- ◊ Coast Guard Road (Champlin Road)
- ◊ Scotch Beach Road

❖ *State Roads Vulnerable to Flooding*

In addition to Town-owned roads, the Department of Public Works (DPW) is responsible for the general maintenance of State-owned roadways through a cooperative reimbursement agreement with RIDOT. There are approximately 5.6 miles of State-owned roads in New Shoreham, all of which are paved. As RIDOT is an MS4 entity, stormwater management (discussed in **Subsection 4.4.2.3**) on State roadways in Town is regulated under that program.

Contracts for major improvements to State-owned roads is through the State Transportation Improvement Program (STIP). The FFY 2022-2031 STIP only identifies **two sidewalk projects** for New Shoreham to begin in 2027: Sidewalks along Corn Neck Road from Ocean Avenue to Beach Avenue, and along Chapel Street from Old Town Road to Water Street. For high congested areas such as these during the summer months, sidewalks are essential for the safe movement of pedestrians.

However, in terms of hazard mitigation vulnerability, Town should coordinate with the State such that when any **State-owned roads** that are subject to repetitive flooding, which include (but may not be limited to) the following, the State addresses stormwater management concerns:

- ◊ Beach Avenue
- ◊ Chapel Street
- ◊ Corn Neck Road
- ◊ Ocean Avenue
- ◊ Old Town Road
- ◊ Spring Street
- ◊ Water Street

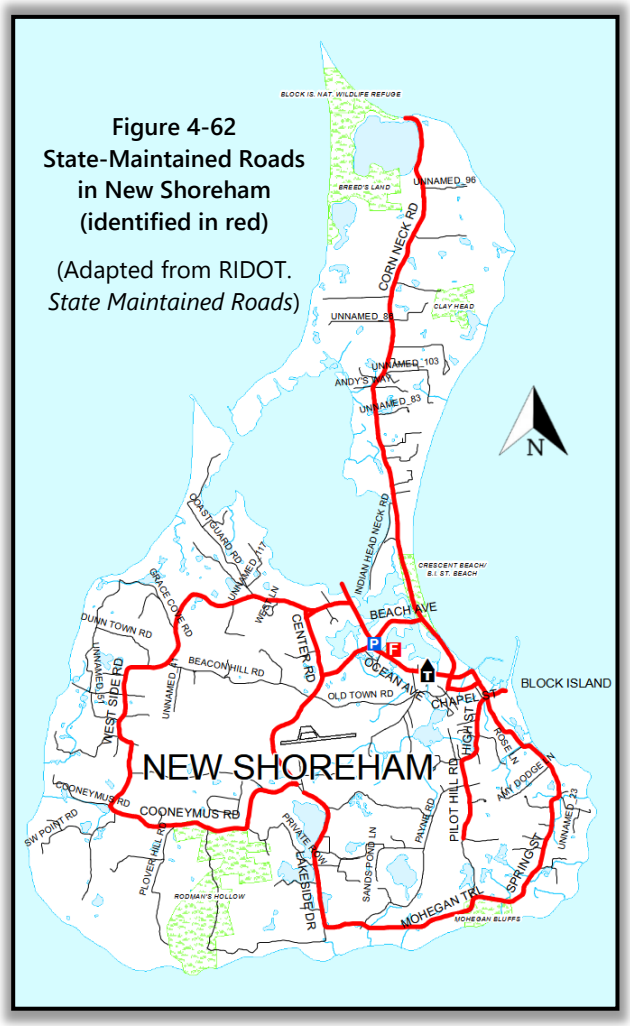


Figure 4-62
State-Maintained Roads in New Shoreham (identified in red)

(Adapted from RIDOT. *State Maintained Roads*)

❖ *Roadway Vulnerability to Sea Level Rise & Storm Surge*

Maintaining roadway viability is critical to New Shoreham. Rhode Island Statewide Planning reports that, "Sea level rise presents a major challenge to Rhode Island's transportation infrastructure, both via daily tidal flooding of coastal assets and making storm surge events more severe" (RIDSP. *Technical Paper 167*, 4). Unlike storm surge or flooding from precipitation events, sea level rise is a long-term, permanent trend with implications for coastal transportation infrastructure. To assist municipalities in their local planning efforts, Statewide Planning utilized STORMTOOLS, developed by the Coastal Resources Management Council (CRMC) in collaboration with the University of Rhode Island (URI), to identify the transportation assets at risk of damage/disruption from both sea level rise (SLR) and storm surge. Although there are some inherent limitations in the modeled scenarios (compounding impacts from erosion, riverine flooding, and such), the findings provide municipalities valuable information regarding the effects SLR and storm surge will have on their local transportation infrastructure. **This analysis illuminates the need to design with respect to future climate change impacts based on the life expectancy of the transportation asset (road- 30 years, bridge-50 years)** (RIDSP. *New Shoreham*, 1).

Based on Statewide Planning's analysis, the top ten road assets in New Shoreham susceptible to SLR are shown in **Table 4-29**. Corn Neck Road and Ocean Avenue, both under RIDOT jurisdiction, are the most vulnerable. Based on the analysis, with 7 feet of SLR, New Shoreham can expect approximately 3.4 miles of roadway to be permanently inundated (RIDSP. *New Shoreham*, 2).

Table 4-29 Top 10 Road Assets in New Shoreham Vulnerable to Sea level Rise (SLR)
(adapted from RIDSP. New Shoreham, 2)

Town Rank	Road Name (jurisdiction)	Length of Roadway Impact from SLR (LF)					Evacuation Route	Functional Classification
		1 Ft SLR	3 Ft SLR	5 Ft SLR	7 Ft SLR	Total Impact		
1	Corn Neck Road (RIDOT)	0	0	2,046	5,212	7,258	No	Major Collector
2	Ocean Avenue (RIDOT)	0	1,155	2,240	1,194	4,589	No	Minor Collector
3	Coast Guard Road (Champlin Road) (Town-owned)	0	890	367	345	1,602	No	Local
4	Indian Head Neck Road (private)	539	326	337	187	1,389	No	Local
5	Unnamed 114 (private)	0	138	587	201	927	No	Local
6	Chapel Street (RIDOT)	0	0	0	289	289	No	Minor Arterial
7	Old Town Road (RIDOT)	0	0	0	184	184	No	Minor Arterial
8	Beach Avenue (RIDOT)	3	7	500	785	1,295	No	Major Collector
9	West Side Road (RIDOT)	0	98	56	36	190	No	Major Collector
10	Water Street (RIDOT)	0	46	121	146	313	No	Minor Collector
	Total	**542**	**2,660**	**6,254**	**8,579**	**18,036 (3.4 mi)**		

As sea level rises, the geography of the area connecting the harbors will be dramatically impacted. Currently that section of Corn Neck Road which traverses the narrow northern neck of the island could **temporarily** cut off access to the northern portion of New Shoreham due to flooding and/or the impacts of storm surge. However, in the future sea level rise will **permanently** inundate this and other areas rendering the existing roadways inaccessible. Concerned with the impact of Sea Level Rise (SLR), in 2013, the Town conducted a Sea Level Rise Adaptation Study (which is included as Appendix D to the Town's 2016 Comprehensive Plan). The Study found that "With no changes to infrastructure, the result of three foot SLR, and eventually five foot SLR, will be the isolation, in terms of public roadway access, of a number of areas in and around the village [Old Harbor] and New Harbor. This includes residential and commercial areas adjoining most of Ocean Avenue west of Bridge Gate Square. When the bridges are damaged or become impassable, the peninsula that separates the east portion of Trim's Pond from Harbor Pond, traversed east-west by Beach Avenue, will be cut off from both Corn Neck and New Harbor, and from the remainder of the island by flooding along Beach Avenue to the west and… along Ocean Avenue. This area includes a number of residences and some inns, but most significantly, the public safety buildings – the police station, and next door, the fire station which also houses the island's ambulance services" (Town of New Shoreham RI. *Comprehensive*, Appendix D-15).

Rhode Island Statewide Planning is also concerned with the impact of storm surge. They conducted an analysis to determine the impact of **100-year storm surge events on roadways**. As shown in **Table 4-30**, the analysis considered the impact of 100-year storm surge with no SLR through 7 feet of SLR. According to Statewide Planning's analysis, New Shoreham can currently expect roughly 3.9 miles of roadway to be inundated from a 100-year storm event. In the future, a 100-year storm event coupled with 7 feet of SLR is estimated to impact roughly 4.9 miles of roadway (RIDSP. *New Shoreham*, 4).

Table 4-30 Top 10 Road Assets in New Shoreham Vulnerable to 100-Year Storm Surge Events
(adapted from RIDSP. New Shoreham, 4)

Town Rank	Road Name	Length of Roadway Impact from SLR (LF)						Evacuation Route	Functional Classification
		No SLR	1 Ft SLR	3 Ft SLR	5 Ft SLR	7 Ft SLR	Total Impact		
1	Ocean Avenue (RIDOT)	4,910	38	59	68	60	5,135	No	Minor Collector
2	Chapel Street (RIDOT)	484	277	286	48	0	1,095	No	Minor Arterial
3	Corn Neck Road (RIDOT)	9,256	633	964	599	683	12,134	No	Major Collector
4	Beach Avenue (RIDOT)	1,710	129	245	193	157	2,435	No	Major Collector
5	Unnamed 126 (private)	611	0	0	0	0	611	No	Local
6	Unnamed 128 (private)	217	0	0	0	0	217	No	Local
7	Unnamed 114 (private)	1,029	11	20	14	12	1,087	No	Local
8	Andy's Way (Town-owned)	556	34	25	23	0	638	No	Local
9	Indian Head Neck Road (private)	1,569	19	63	70	85	1,806	No	Local
10	Old Town Road (RIDOT)	289	36	73	63	57	518	No	Major Collector
	Total	**20,631 (3.9 mi)**	**1177**	**1735**	**1078**	**1054**	**25,676 (4.9 mi)**		

❖ *Evacuation Routes & Zones*

Hurricanes and other high wind events are a threat to New Shoreham due to the island's coastal location, low elevation, and reliance on critical infrastructure that is vulnerable to storm surge and extreme weather. While residents on the island generally **shelter in place**, in the event of a major storm or hurricane, New Shoreham's Emergency Management Task Force notifies tourists/visitors of the impending threat and advises them to vacate the island prior to the suspension of ferry/air service.

In order to assist communities, in 2013 the U. S. Army Corps of Engineers (USACE) provided **Hurricane Evacuation Route Maps** to Rhode Island's 21 coastal communities. As New Shoreham is an island community, the USACE mapping did not provide evacuation routes, which is why on the RIDSP's analysis in **Tables 4-29 through 4-31**, no evacuation routes are listed as compromised. The USACE maps do identify evacuation zones.

Evacuation zones are the areas recommended to be evacuated during potential worst-case hurricane surge inundation. In New Shoreham the two evacuation zones encompass the low-lying coastal area around the perimeter of the island as well as the perimeter of Great Salt Pond. "**Zone A** includes those housed on the entire shoreline perimeter of the island, and especially those on 'the Neck' of the island and on Coast Guard Road (Champlin Road), who could be isolated from the rest of the island due to storm surge and flooded roads. **Zone B** includes residents in the Old Harbor area of town, and those located just south of Dorry's Cove Road on the island's west side. For [Hurricane] Category 1, 2 or above, residents in Zone A are advised to move inland and stay with inland residents or move to the island's shelters. For Category 3 or above, residents in Zone B are also advised to move inland and seek shelter. For lesser storms, the town has a mobile emergency unit that is put in place to cover 'the Neck' portion of the island" (Town of New Shoreham RI. *BI Hazard*, 63).

❖ *Bridge Vulnerability to Storm Surge & Sea Level Rise*

Depending on the location, an inaccessible or collapsed bridge can have major implications. In New Shoreham there are only two bridges and the looped road network essentially mitigates key concerns associated with bridge closures. From an emergency management perspective it may however take more travel time to get to a destination, which is not optimal. Based on modeled scenarios, at 5 feet of sea level rise (SLR), the Ocean Avenue Bridge, and the east and west approaches to the Beach Avenue Bridge will be permanently inundated (Town of New Shoreham RI. *Comprehensive*, Appendix D-15). As shown in **Table 4-31,** Statewide Planning assessed the vulnerability of the two bridges to 7 feet SLR without/with storm surge and found negative freeboard (i.e. bridges would both be submerged). Both of New Shoreham's bridges are under RIDOT jurisdiction.



Figure 4-63 New Shoreham Bridge Assets (Adapted from RIDOT. *Rhode Island Bridge Map*)

Table 4-31 New Shoreham Bridge Assets Vulnerable to 7-Foot Sea Level Rise without/with the addition of 100-year Storm Surge Event

Town Rank	Bridge Name/ Inventory ID	Facility Carried	Feature intersected	Condition	Inches of Freeboard Relative to 7 Ft SLR	Terrain Crossed	Landing Access	Evacuation Route	AADT
1	New Harbor Road (013901)	Ocean Avenue	Trim's Pond	Fair (last inspected 3/21/2023)	-14 (-134 when coupled with 100-year storm surge event)	MHHW	Problem	No	2,085
2	New Shoreham (014001)	Beach Avenue	Harbor Pond	Fair (last inspected 3/21/2023)	-11 (-119 when coupled with 100-year storm surge event)	MHHW	Problem	No	1,905

Adapted from: RIDSP. *New Shoreham*, 3, 5; and RIDOT. *Rhode Island Bridge Map*

Definitions:

AADT – average 24hour traffic volume at a given location calculated over a 365 day period

Freeboard (bridge clearance) – the space between the bottom of a bridge's structure and the surface of the water underneath the bridge

Landing Access – where the bridge connects to the land

MHHW (Mean Higher High Water) – There are two high tides in each day, and one of those two is always higher than the other. The higher of the two high tide lines is called "Higher High Water." The National Oceanic Observatory Administration defines the MHHW as the average of the Higher High Water readings in a location over a 19 year period.

BOAT SERVICES INCLUDING HARBOR AND DOCK INFRASTRUCTURE

The island's boat services, including harbor and dock infrastructure, is critical for connectivity, commerce, emergency response, and tourism. Many of these assets are vulnerable to coastal hazards such as extreme weather events and sea level rise. Currently, storm surge caused by extreme wind events such as hurricanes, is the most destructive force impacting New Shoreham's coastline. Strong winds moving cyclonically around a storm pushes water to the shore creating storm surge which can damage both the built and natural environment. For example, in 2012, Superstorm Sandy's strong winds produced high storm surges which caused significant damage to Old Harbor's breakwater requiring substantial reconstruction.

❖ *Old and New Harbor*

New Shoreham's harbors are two of the Town's most defining assets. However, as the island's configuration did not include a natural harbor, both harbors are man-made. Numerous failed attempts to build a harbor by both government and private ventures date back to the late1600s. Without a harbor, boats had to anchor offshore, making unloading cargo and passengers dangerous in rough seas. Through the U.S. River and Harbor Act, a successful harbor at what was then known as Sands Landing and is now called **Old Harbor**, was built by the U.S. Army Corps of Engineers (USACE) between 1870 and 1878. Key project features included: an 1,875 feet long stone breakwater which extends northeast from the shoreline; a harbor basin deep enough to anchor larger vessels and shielded from the Atlantic Ocean by the breakwater; and docking and wharf infrastructure (Town of New Shoreham RI. Harbor, 10, 11).

Not many years after the success of Old Harbor, USACE constructed **New Harbor** (1895) a 673± acre tidal harbor. On the northwestern side of the island, the Army Corps dug a channel through the barrier beach to connect the historically enclosed Great Salt Pond to Block Island Sound. Other key features of the project included: stone jetties to stabilize the new inlet; breakwaters to protect the harbor from strong ocean waves and storm surge; and dredging the pond to provide a deeper basin (Town of New Shoreham RI. Harbor, 7, 8).

Over the years, both harbors have required ongoing maintenance, dredging, and infrastructure upgrades. Many of the improvements have helped to mitigate the impacts from natural hazards, including reducing flood risks from storm surges and sea-level rise, and reducing beach erosion and sediment buildup. As the frequency and intensity of storms are anticipated to increase, and the level of the seas are projected to rise, there remains concern over maintaining the functionality of the harbors faced with the future impacts of sea level rise coupled with wave action/storm surge.

❖ *Boat Services*

Ferry service to/from New Shoreham is recognized as a critical lifeline for the community and is available on a year round basis. The **Old Harbor** terminal supports both hi-speed passenger-only ferries and traditional ferries which accommodate vehicles and freight. Mainland ports include Point Judith and Newport, RI, and seasonally from New London, CT and Montauk, NY. Ferries are heavily affected by rough seas, high winds, and storm surge. Large waves and heavy swells can make docking dangerous and can cause ferry service to be suspended. In addition to the ferries, Old Harbor supports a private marina, and limited dockage, mooring, and anchorage for personal watercraft. These vessels are also impacted by extreme weather.

The vast majority of private vessels (boats, cruise ships, fishing vessels, and some commercial transport) anchor in **New Harbor** (Great Salt Pond) or dock at one of New Harbor's private marinas. According to the Harbormaster, dockage and mooring space in New Harbor can accommodate approximately 2,000 vessels. In addition to anchorage and mooring areas, New Harbor also accommodates recreational use.

❖ *Dock Infrastructure*

There are a total of eleven private marinas/docks/boat ramps in New Shoreham and two Town-owned docks/boat ramps one at each of the harbors (Old Harbor Dock and New Harbor Boat Ramp). The 2013 Sea Level Rise Adaptation Study sought to identify, qualify, and provide potential strategies to prepare for and mitigate future impacts of sea level rise, particularly on the harbors which are critical lifelines for New Shoreham.

Findings from the study include:

Old Harbor and Marine Facilities: SLR Assessment: At 3-feet SLR sections of the breakwater are expected to be fully submerged and by 5-feet SLR the structure will be significantly compromised. As seas rise the effectiveness of the breakwater to protect the harbor from high-wind storm surge waves will diminish (Town of New Shoreham RI. *Comprehensive*, Appendix D 13).

North and West Sections of Old Harbor Breakwater: SLR Assessment: At 3-feet SLR some marine facilities (Town dock) and landside sections of Old Harbor (Harbormaster's building) will be permanently inundated. At 5-feet SLR most of the landing area will be permanently inundated (Town of New Shoreham RI. *Comprehensive*, Appendix D 13).



Figure 4-64
Old Harbor Marine and Ferry Support Facilities
(Town of New Shoreham RI. *Comprehensive*, Appendix D 3)

New Harbor: "In New Harbor, all the marine facilities will eventually sustain impacts to some degree. The shoreline areas alongside the three dock structures will eventually succumb to higher sea levels, requiring adjustments… the dock at Champlin's, and more significantly, Payne's Dock, show inundation as sea level rise reaches three feet… as sea level rises, the impacts of storm surges will become more significant and as it reaches five feet, the Boat Basin complex will be cut off from West Side Road. Long-term impacts of sea level rise may require the relocation of the town's boat ramp at New Harbor" (Town of New Shoreham RI. *Comprehensive*, Appendix D 15).



Figure 4-65 New Harbor Marine Facilities
(Town of New Shoreham RI. *Comprehensive*, Appendix D 4)

AIR SERVICES

Both the island's water and air assets are critical for connectivity, commerce, emergency response, and tourism. The Block Island State Airport (BID), located at 4 Center Road near the center of the island, is owned by the Rhode Island Department of Transportation (RIDOT) and managed by the Rhode Island Airport Corporation (RIAC). It is a small airport serving commercial, emergency, and general aviation air access. New England Airlines provides scheduled air transport service year-round to and from Westerly State Airport (flight time 15± minutes), as well as charter service to and from other airports in the region. Other charter services and private aircraft also use the airport. For critical emergency services, medivac companies with staffed medevac helicopters are generally used (Town of New Shoreham RI. *Comprehensive*, 8-3, 8-4).

The airport is not in the SFHA nor impacted by storm surge inundation. Weather conditions that can make flying impossible or unsafe include high winds and gusts, icing conditions, severe thunderstorms, and low visibility caused by fog, heavy rain, or snow. Compared to ferry travel, air travel is quicker and often more resilient to certain weather conditions, like moderate rain, snow, or even wind. Planes can take off and land safely in conditions that would halt a ferry from operating. In support of the RI Airport System Plan, New Shoreham intends to "adopt an **airport hazard overlay zone** to meet the requirements of the State, protect the operations of the Block Island Airport, and [protect] the health and safety of the community" (Town of New Shoreham RI. *Comprehensive*, 8-4).



Figure 4-66 Block Island State Airport Photo Credit: Timothy J. Quill | Wikipedia

4.4.2.3 Vulnerability of Public Utilities

Public utilities are crucial community lifelines providing essential services that contribute to public health and safety, economic development, and overall quality of life. In short, public utilities keep communities running effectively. Following is an overview of the public utilities that service the Town of New Shoreham and their vulnerability to natural hazards.

❖ ***Communication Network***

New Shoreham continues to explore opportunities to improve essential services and critical facilities. Periodic review of backup procedures and redundant equipment occurs to ensure adequate communications coverage during any disaster event. The Town owns a communication (cell) tower located on the Police Department/Volunteer Fire & Rescue property (10 Beach Avenue). It has been struck by lightning three times over the past two decades but the grounding system has minimized damage by providing a safe path for the lightning current to flow to the ground.

Another communication network asset is the fiber-optic cables that brings high speed internet to the island. This upgrade was integrated into the off-shore wind farm project in 2017, wherein the wind farm's transmission system was equipped with fiber-optic cables. Fiber optic cables have improved island's connectivity and the high-speed internet is an asset for managing natural hazards and emergencies because it **enables fast, reliable communication** between emergency responders, government agencies, and the public.

The main dispatch center, which handles emergency dispatch services for the island, is located at the New Shoreham Police Department (10 Beach Avenue). This center coordinates police, fire, and emergency medical services (EMS) and plays a key role in coordinating responses to natural hazards. During significant natural hazard events, emergency operations are coordinated through the New Shoreham Emergency Management Task Force, which may activate the Town's Emergency Operations Center (EOC) to oversee disaster response efforts. The primary EOC is located at the Police Station (10 Beach Avenue) with the backup EOC at the Town Hall (16 Old Town Road). Depending on the hazard event, the Emergency Management Task Force will coordinate with various Town Departments, the Rhode Island Emergency Management Agency (RIEMA)/Federal Emergency Management Agency (FEMA), and the National Weather Service (NWS).

❖ ***Stormwater Management***

New Shoreham has a limited amount of stormwater infrastructure. Most of the stormwater management along roadways is associated with the 15.6± miles of State-owned roads. For logistical reasons, the State contracts with the municipality for general maintenance of their roads. While the Town is not regulated under the RIDEM RIPDES Municipal Separate Storm Sewer Systems (MS4) General Permit, roads under State jurisdiction are required to meet MS4 stormwater management requirements. Culverts are part of a stormwater management program and function to channel water under roadways such that property, infrastructure, and environmentally sensitive areas are not inundated and negatively impacted. Properly functioning culverts also help protect water quality by controlling flow, reducing pollutants, and maintaining a healthy environment for both aquatic life and surrounding ecosystems. **It is estimated that more than 30 culverts under State roads in New Shoreham are in need of repair or replacement**; work which is not included in RIDOT's cooperative reimbursement agreement with New Shoreham. As culverts are integral to flood mitigation and influence water quality, it is critical the State take action to repair or replace/upgrade their failing culverts on the island.

As further discussed in **Appendix 5-1**, the Town enforces various stormwater management regulations, including curtailing stormwater runoff from new developments impacting other properties. These regulations seek to prevent problems that arise when undeveloped land is replaced with impervious surfaces like roads, parking lots, and buildings.

❖ *Potable (Drinking) Water*

In New Shoreham, the entire community (100%) currently relies on groundwater (wells) for its primary drinking water supply. As detailed in **Subsection 4.4.2 (Natural Environment)**, because of the reliance on well water, contamination from floodwater, salt water intrusion, and failing onsite wastewater treatment systems (OWTS) is a concern. Shallow wells are particularly susceptible to floodwater contamination and may have low water yields during drought conditions.

More than 90 percent of island residents rely on private (non-municipal) wells (RIDOH. *Protect*, 1), either on their own property or through one of the small private public water purveyors on the island. As shown in **Figure 4-67**, the Old Harbor and New Harbor commercial districts and residential dwellings therein, are served by the municipal water distribution system, operated by the **Block Island Water Company (BIWC)**. Once a private company, the BIWC was acquired by the Town of New Shoreham in 1984. The BIWC is a quasi-public entity which means that while it provides a public service (water distribution) to the community, it operates in a more flexible, semi-private manner. A publicly elected Water District Commission is responsible for overseeing BIWC operations including decisions about water policies, rates, and overall management of the utility. Although funding for the BIWC is predominately from user fees, some Town funding may be used to offset capital projects.

Based on information from the BIWC Superintendent, the current capacity of the municipal system is 0.187± MGD (million gallons per day). BIWC's primary source is from a well field north of Sands Pond consisting of three main production wells. Despite serving a relatively small number of properties, BIWC provides roughly 50 percent of the island's water volume during peak summer months (RIDOH. *Protect*, 1). The Water District has undertaken an infrastructure project to expand the raw water, treatment, and storage capacity. The decision to make the improvements was based on the Water District's demand being close to its capacity during the busy summer tourist season, and a growing demand to supply existing buildings and new development within the Water District. The improvement project, expected to be completed in the spring of 2026, includes two new public water supply wells, additional treatment capacity of about 90,000 GPD, and a new 250,000 gallon water storage tank. The project is being funded through USDA's rural water and wastewater grant/loan program.

Due to the size of the system, BIWC is not required to have a State approved Water Supply Systems Management Plan (WSSMP). That being said, the BIWC is committed to ensuring the long-term resilience of their system and providing high-quality water to the island's residents, businesses, and visitors. In terms of **infrastructure vulnerability**, during the March 2010 heavy precipitation events, Sands Pond, adjacent to the BIWC facility, overbanked resulting in damage to the reservoir pump electrical boxes and other equipment. The Action Plan (**Subsection 6.4**) includes an action to re-establish Sand Ponds natural drainage to the south to mitigate future flood issues.

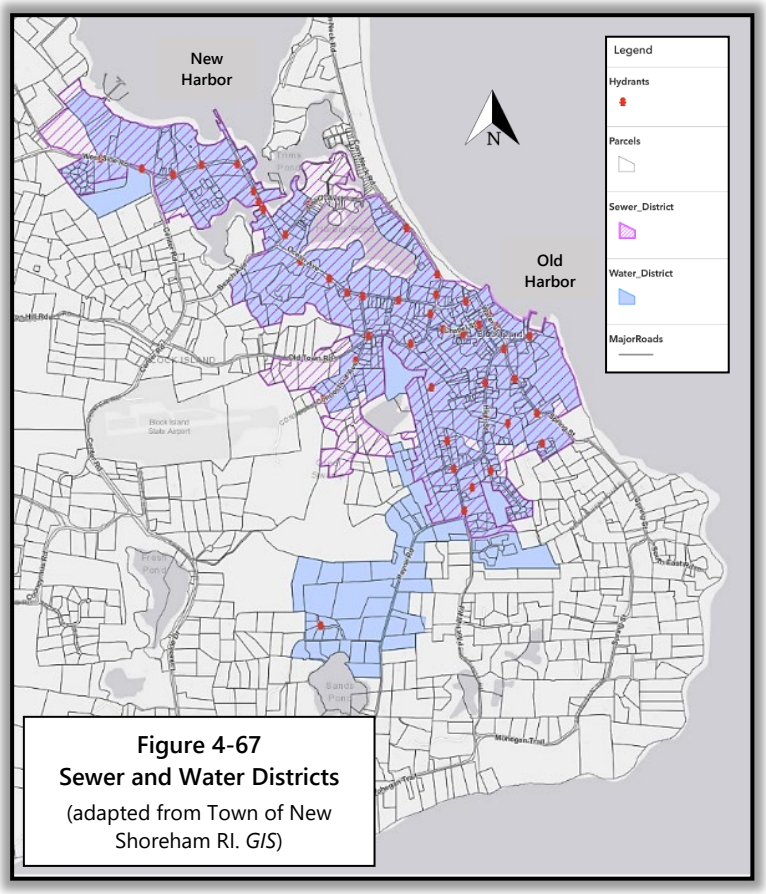


Figure 4-67
Sewer and Water Districts
(adapted from Town of New Shoreham RI. *GIS*)

❖ ***Wastewater Management***

Due to the fragile nature of and community's reliance on groundwater, New Shoreham is aggressive in their wastewater management. New Shoreham's **Water Pollution Control Facility (WPCF)**, located south of Old Harbor on Spring Street, has been providing primary and secondary treatment for wastewater since 1978. The WPCF is a quasi-public entity which means that while it provides a public service (collection and treatment of wastewater and sewage) to the community, it operates in a more flexible, semi-private manner. A Commission, appointed by the Town Council, oversees the operations and management of WPCF including decisions about wastewater policies, facility operations, and ensuring that the island meets environmental standards related to water pollution control. Although funding for the WPCF is predominately from user fees, some Town funding may be used to offset capital projects.

The collection system currently consists of over 3.5 miles of lateral and intercepting sewer pipeline, and five pump stations (Block Island Boat Basin Pump Station – West Side Road Plat 5 Lot 62-2, Champlin's Marina Pump Station – West Side Road Plat 19 Lot 5, Ocean Avenue Pump Station No. 1 – Plat 6 Lot 4, Ocean Avenue Pump Station No. 2 – Plat 5 Lot 97, and Old Harbor Pump Station – 19 Water Street). As shown in **Figure 4-67**, the sewer district essentially encompasses all of the commercial area along the eastern side of the island and no further expansion is anticipated. The WPCF intends to continue accepting and processing wastewater from OWTS septic tanks and boats pumped by contractors. While the treatment facility is not considered vulnerable to natural hazards, measure to improve the resilience of some of the pump stations (backup generators and raising the electronic controls) and sewer mains (cured-in-place pipe lining), has been included in the *Action Plan* (**Subsection 6.4**).

Most of the community is serviced by individual **Onsite Wastewater Treatment Systems (OWTS)**, formerly referred to as Individual Sewage Disposal System (ISDS). Systems that are old or not properly maintained create a potential health and environmental threat, including contaminating surface and groundwater. As further discussed in **Appendix 5-1**, to help mitigate these threats the Town established a Wastewater Management Ordinance that required inspection and maintenance of all onsite systems and amended their Zoning Ordinance to establish treatment standards and phase-out for all cesspools. There are approximately 1000 conventional and over 500 advanced treatment onsite systems currently in operation on the island. Advanced systems (due to the potential failure of their mechanical parts) and systems located within critical resource areas are inspected annually by the Town's Wastewater Inspector, whereas conventional systems are inspected on a three year cycle.

Because New Shoreham has a RIDEM approved Onsite Wastewater Treatment Plan (OWTP), the Town is able to participate in the **Community Septic System Loan Program (CSSLP)** facilitated by the RIIB. CSSLP is a lending program that provides low-cost, long-term financing to residential property owners for the repair or replacement of substandard or failing septic systems or to replace cesspools when the homeowner wishes to upgrade to a septic system.

Sea Level Rise presents an over-reaching concern for the lower elevation areas on the island. To effectively treat septic tank effluent before it reaches groundwater, OWTS drainfields require a minimum of 4 feet separation distance between the infiltrative surface and the groundwater table. As sea levels rise, it may become increasingly more difficult to achieve adequate separation distance in new systems. Systems not functioning optimally may contribute to the degradation of coastal aquifers and estuaries through nutrient and pathogen loading (Cox, 1-4). The *Action Plan* (**Subsection 6.4**) includes revisiting and updating as deemed appropriate the OWTS Zoning Ordinance to help mitigate current and future concerns.

❖ ***Solid Waste Management***

New Shoreham owns a solid waste **Transfer Station** (14 West Beach Road) which they contract with a private company, currently Block Island Recycling Management, to operate and dispose the solid waste off-island (including construction and demolition debris, sludge from the sewage treatment plant, recyclables and yard waste).

The Transfer Station functions as a "pay as you throw" program. Residents, businesses, and private haulers pay a disposal fee for solid waste based on weight. The only exception is that residential customers do not pay a fee for recyclables or waste oil. To reduce financial and environmental costs, the Town would like to further promote and expand on-island recycling and leaf, yard, and food waste composting.

From the early 1900's to the late 1980's the Town disposed most of the community's waste in an 8-acre landfill adjacent to the Transfer Station. Since that time, all solid waste is transported off island and with the exception of scrap metal, is disposed of or processed at the State-owned Central Landfill (RIRRC) in Johnston, Rhode Island.

Over the past several decades, more frequent and intense storms have eroded the bluffs adjacent to the former landfill exposing debris. Mitigating erosion in this area was a 2017 HMP action item. In 2019 this action was completed in conjunction with RIDEM and CRMC. The project constructed a 2,600 ton stone revetment capped with a vegetative cover to protect and stabilize the slopes from wave action and erosion (RIDEM|McKenzie, 1, 3). The *Action Plan* (**Subsection 6.4**). includes measures for ongoing concerns regarding coastal erosion and SLR of the capped landfill adjacent to the Transfer Station.

❖ *Electricity*

In 2016 New Shoreham voters approved the debt necessary to purchase a controlling interest in the Block Island Power Company (BIPCO) which had been providing electricity to the island since 1925, and restructure it as a non-profit, member-owned utility district. In 2018 the Rhode Island General Assembly passed the **Block Island Utility District (BIUD) Act** allowing the acquisition of BIPCO's assets. The Town's primary goal in facilitating the utility district was to ensure long-term energy stability, affordability, and local control over electricity for island residents and businesses. On March 25, 2019 the BIUD purchased the assets of the electric company from the Town which concluded any direct Town involvement in the utility. A publicly elected Commission is responsible for overseeing BIUD operations including decisions about electricity policies, rates, and overall management of the utility.

The timing of the Town's purchase of the power company and conversion to a non-profit, member-owned utility district was influenced by the 30 megawatt offshore wind turbine project. The Block Island Wind Farm, developed by Deepwater Wind (now Ørsted US Offshore Wind), was the first offshore wind farm in North America. The wind farm consists of 5 wind turbines each with a capacity of 6 megawatts (MW) which are connected via an undersea submarine cables to New Shoreham at Cresent Beach and from Crescent Beach to the mainland at Scarborough State Beach in Narragansett, RI. Excess power is sent to the mainland via the 21 mile cable, known as the Block Island Transmission System, which is connected to the National Grid substation in Narragansett. The wind farm began supplying the island (and mainland) with clean renewable energy on May 1, 2017, effectively replacing New Shoreham's previous reliance on diesel generators.

The Block Island Transmission System was also equipped with fiber-optic cables to bring high speed internet to the island. Reliable internet service is crucial for effective emergency management, enabling real-time communication, information sharing, coordination of relief efforts, and access to essential services, ultimately saving lives and improving response and recovery efforts.

The vast majority of electric power demand on the island is serviced by the Block Island Utility District (BIUD). There are a few properties that use solar panels (including three Town-owned buildings: Town Hall; Block Island School; and Rescue building), wind energy conversion systems, or generators to meet or supplement their power needs.

4.4.3 Natural Environment

"The Nature Conservancy has identified Block Island [New Shoreham] as *'the most ecologically significant place in Rhode Island and one of the most ecologically important places in North America.'* With its dramatic bluffs, sandy beaches, and coastal ponds, Block Island's natural resources are the reason it is a major tourism destination. These significant natural resources are part of what makes Block Island a special place and serve as the foundation for the quality of life of residents. The island's natural resources provide scenic beauty, leisure and recreational opportunities, and also serve as the major driver of the local economy" (Town of New Shoreham RI. *Comprehensive,* 3-1). New Shoreham's "terrestrial and wetland habitats which include farmlands, open fields and grasslands, freshwater wetlands, coastal shrublands, beach and dune complexes, coastal ponds, rocky shorelines, freshwater ponds, vernal ponds, and salt marsh… support a rich variety of plant and animal species, including about 40 rare and endangered species" (Town of New Shoreham RI. *Comprehensive,* 3-1).

The natural environment also plays an important role in reducing natural hazard impacts and increasing the community's resilience to climate change. For example:

- *Vegetated land cover:* intercepts and absorbs water, replenishing groundwater resources and guarding against drought while also reducing flooding; reduces erosion and its subsequent impacts; mitigates the effects of heat-related hazards by shading areas and reducing surface temperatures; sequesters carbon, helping mitigate the greenhouse effect and combat climate change
- *Undeveloped property in floodplains:* preserves the ability for that land to act as flood storage, effectively buffering upland development; helps filter pollutants and nutrients before floodwaters reach streams, rivers, and other waterbodies
- *Freshwater wetlands:* provide flood storage capacity and water quality treatment; sequesters carbon, helping mitigate the greenhouse effect and combat climate change
- *Coastal wetlands:* provide flood storage capacity; offer shoreline protection and help reduce the impacts of storms, including erosion, by acting as a physical barrier and reducing wind and wave energy
- *Coastal dunes and barrier beaches:* reduce erosion and the effects of storm surge on coastal areas further inland (EPA. *EnviroAtlas*).

While the natural environment can be instrumental in reducing natural hazard impacts, it is also vulnerable to natural hazards. Due to its coastal location and areas of low-lying land, the primary hazards that will impact the natural environment are flooding and coastal erosion from rain and snow events, and storm surge from hurricanes and other high wind events. Both flood- and wind-related events are expected to worsen in the future due to climate change. In addition to the vulnerabilities identified in **Table 4-32**, vulnerabilities and resilience measures associated with other natural features will be explored in subsections **4.4.3.1 Conservation Land** and **4.4.3.2 Freshwater & Saltwater Resources and their Floodplains.**



Figure 4-68 With help, the dunes between Scotch and Town Beaches have made a slow but steady recovery after impact from Superstorm Sandy Photo Credit: Renee Meyer | Block Island Times

Table 4-32 Natural Environment Vulnerability

Hazard Group	Vulnerability *(What is at Risk)*
 **Flood-Related Hazards** (Inland Flooding including Dam Failure; Coastal Flooding including Storm Surge; Coastal Erosion)	• The natural environment within New Shoreham's low-lying land areas is vulnerable to flood-related hazards. • Floodwater may carry with it pollutants like oils and salt from roadways, fertilizers and pesticides from lawns and agricultural lands, effluent from failing septic systems (OWTS), industrial chemicals, sediment, debris, and other pollutants as it makes its way down gradient. If sufficient polluted floodwater flows into a waterbody or inundates well water, it can contaminate drinking water sources and/or harm wildlife/ecosystems. • Flooding in areas with onsite wastewater treatment systems (OWTS) may cause septic tanks to fill with water by leakage through the lid or by rising ground water entering around the inlet or outlet, and leach fields may become saturated and unable to drain. • Standing water following a flooding event can provide a conducive environment for breeding mosquitos. • **SFHA**: Based on GIS, the perimeter of Block Island is just over 17 miles. Including the perimeter of the Great Salt Pond, New Shoreham's coastline is over 23 miles. The Velocity (V) Zone, which encompasses the entire shoreline, including within the Great Salt Pond, is subject to wave action. The AE Zone is concentrated around Sachem Pond, Middle Pond, Great Salt Pond, Trim's Pond, and Harbor Pond. Natural resources within the SFHA are more vulnerable to the impacts of flood-related hazards. • **Coastal Erosion:** Both **regular wave action** and **storm surges** contribute to coastal erosion. Regular wave action refers to the continuous movement of waves over time, which erodes and reshapes the coast gradually. Areas that are already eroded by regular wave action are especially vulnerable during storm surges, as the coastline has already been weakened, making it more susceptible to further damage. A **storm surge** is a temporary rise in sea level caused by strong winds and low pressure during a storm, such as a hurricane or tropical cyclone. Unlike regular wave action, storm surges are more intense and can cause rapid, large-scale erosion during extreme weather events. Storm surge can be highly destructive, damaging natural and manmade structures, battering solid objects, and scouring sand from around foundations. As storms erode the shoreline, narrowing beaches, depleting dunes, and compromising coastal salt marshes, adjacent upland properties become more at-risk. Hurricanes and other high wind events that produce **storm surge** can transport sand and debris from the oceanside of barrier beaches and dunes into nearby wetlands and ponds impacting those ecosystems. Storm surge can also damage or uproot coastal vegetation and disrupt or destroy habitats. **Figure 4-60** shows the areas near the coastline subject to hurricane storm surge. Storm surge associated with nor'easters tend to have more of an impact on the eastern side of the island which directly faces the Atlantic Ocean. Lower elevations along the eastern coastline are in the vicinity of Cresent Beach and Old Harbor. The western side of the island faces Long Island Sound, offering some natural protection from direct wave impact and storm surges due to the presence of Block Island Sound acting as a buffer. The bluff formations which are most prominent on the western and southern shorelines provide natural elevation, reducing the risk of inland flooding compared to the flatter eastern areas. However, storm surge has and will continue to undercut the base of the bluffs, creating overhangs that will eventually collapse due to gravity. Additional information on the impact of coastal erosion on New Shoreham's beaches, dunes, salt marshes, and bluffs is provided in **Subsection 4.3.1.3.**

Hazard Group	Vulnerability *(What is at Risk)*
 **Flood-Related Hazards** *continued*	• Due to increased intensity and frequency of storms, more coastal lands will be susceptible to erosion; eroded beach material and debris may be carried out to sea. Future increases in relative sea level will lead to changes in surface water and groundwater characteristics; salt intrusion into aquifers may contaminate well water supplies; coastal wetlands, which are critical for flood control and habitat viability, may become inundated causing a loss of salt marsh vegetation and an alteration of habitat types; wide-scale systematic changes in the terrestrial and marine environments may result; and some recreation areas and public space may be lost (RIEMA. *2019 RI-SHMP*, 3-175). • **Refer to Subsection 4.4.3.2 for additional flood-related vulnerabilities.**
 **Wind-Related Hazards** (High Winds; Thunderstorms including Lightning & Hail; Tornadoes; Tropical Cyclones) *continued*	• **As discussed above under flood hazards**, the most significant wind-related impact to New Shoreham's natural environment is from **storm surge**. • Winds can cause soil erosion, especially in areas with little vegetation. The force of wind can blow away topsoil, which is essential for plant growth, leading to degraded land and loss of fertility. This in turn may create opportunities for invasive species to spread more rapidly. • Wind (and hail) may damage vegetation; strong winds can uproot or break trees/plants disrupting wildlife habitats. Tree damage may also compromise the health and longevity of a tree. • Strong winds may exacerbate fire conditions by drying out the ground cover, propelling fuel around the region, and increasing the ferocity of exiting fires; lightning associated with thunderstorms have been known to spark fires. • Tornadoes can kill or disrupt wildlife if their habitat is impacted. • Winds can stir up dust, sand, or other pollutants, reducing air quality and potentially affecting both wildlife and human health.
 **Winter-Related Hazards** (Heavy Snow; Ice; Extreme Cold)	• Heavy snow and/or ice accumulation can weigh down and damage vegetation and tree limbs. • Prolonged snow/ice cover and exposure to extreme cold may disrupt the normal functioning of ecosystems and negatively impact outdoor domesticated animals and wildlife. • In lakes, rivers, and other water bodies, extreme cold can lower oxygen levels, especially if ice covers the water for long periods. This can lead to fish kills and other negative effects on aquatic ecosystems. • Flooding may occur after the rapid melting of a heavy snowfall.


Infectious Disease-Related Hazards
(Vector-borne Diseases Transmitted by Ticks or Mosquitoes)
	Mosquitoes or Ticks
	• As climate change shortens Rhode Island winters, ticks and mosquitoes will extend their life cycle and ticks will expand their habitat range.
	  ○ In the short term, the tick and mosquito population are not expected to have an appreciable impact on New Shoreham's natural environment.
	  ○ In the long-term, mosquitoes and ticks can harm the natural environment, particularly when their populations grow unchecked or when they introduce diseases into ecosystems.

Hazard Group	Vulnerability *(What is at Risk)*
 **Infectious Disease-Related Hazards** (Contagious Respiratory Illness Caused by Influenza Viruses or Coronaviruses)	**Influenza Viruses or Coronaviruses** • The influenza viruses or coronaviruses are not expected to have an impact on New Shoreham's natural environment.
 **Other Hazards** (Earthquakes; Extreme Heat; Drought; Brush Fires)	**Earthquake** • If an earthquake occurred in the region, it is expected to be low-magnitude (usually below 3.0) and therefore not expected to have an appreciable impact on New Shoreham's natural environment. **Extreme Heat** • Over the long term, extreme heat trends may alter the life cycle of plants and animals and could create a cascading effect to the surrounding environment (Columbia). • Sporadic periods of extreme heat may deplete food and water resources for local wildlife, and may stress or damage plants including agricultural crops. • Extreme heat and drought can increase water temperature, particularly in shallow streams, rivers, and ponds. "Warmer water holds less oxygen, so temperature is critical to stream life. In freshwater streams and rivers, temperature can be a pollutant that diminishes the quality of habitat, making the survival of the stream's life more uncertain" (Merrill). "Warmer temperatures prevent water from mixing, allowing algae to grow thicker and faster" (EPA. *Climate Change and Harmful*). Increased algae blooms, which absorb sunlight, may further increase the water temperature (EPA. *Climate Change and Harmful*). These factors may contribute to fish kills. • Periods of extreme heat can increase the likelihood and intensity of brush/wildfires, which have the potential of destroying large swaths of habitat, killing animals, and releasing large amounts of carbon into the atmosphere. **Drought** • Sporadic periods of short-term drought may stress plants and deplete food and water resources for local wildlife; lands in agricultural use are more at risk to droughts. • Long-term drought conditions are associated with insect infestations, plant disease, loss of biodiversity, wind erosion of soil, degrading water quality, and decrease in levels of water produced by natural aquifers (NOAA|NIDIS. *Drought*); however as climate change models predict more precipitation for the Northeast, the probability of a long-term drought in the near future is considered low for New Shoreham. • Extreme heat and drought can increase water temperature, particularly in in shallow streams, rivers, and ponds, leading to fish kills, rise in bacteria levels, and disease.

Hazard Group	Vulnerability *(What is at Risk)*
 **Other Hazards** *continued*	**Brush Fire** • Brushfires have the potential of destroying large swaths of habitat, killing animals, and releasing large amounts of carbon into the atmosphere. • When vegetation is burned, the protective cover over the soil is lost, making it more susceptible to erosion. After a fire, the soil can become compacted and less able to absorb water. This can lead to runoff, which can wash away the nutrient-rich topsoil, further degrading the land and making it harder for plants to regrow.

4.4.3.1 Conservation Land

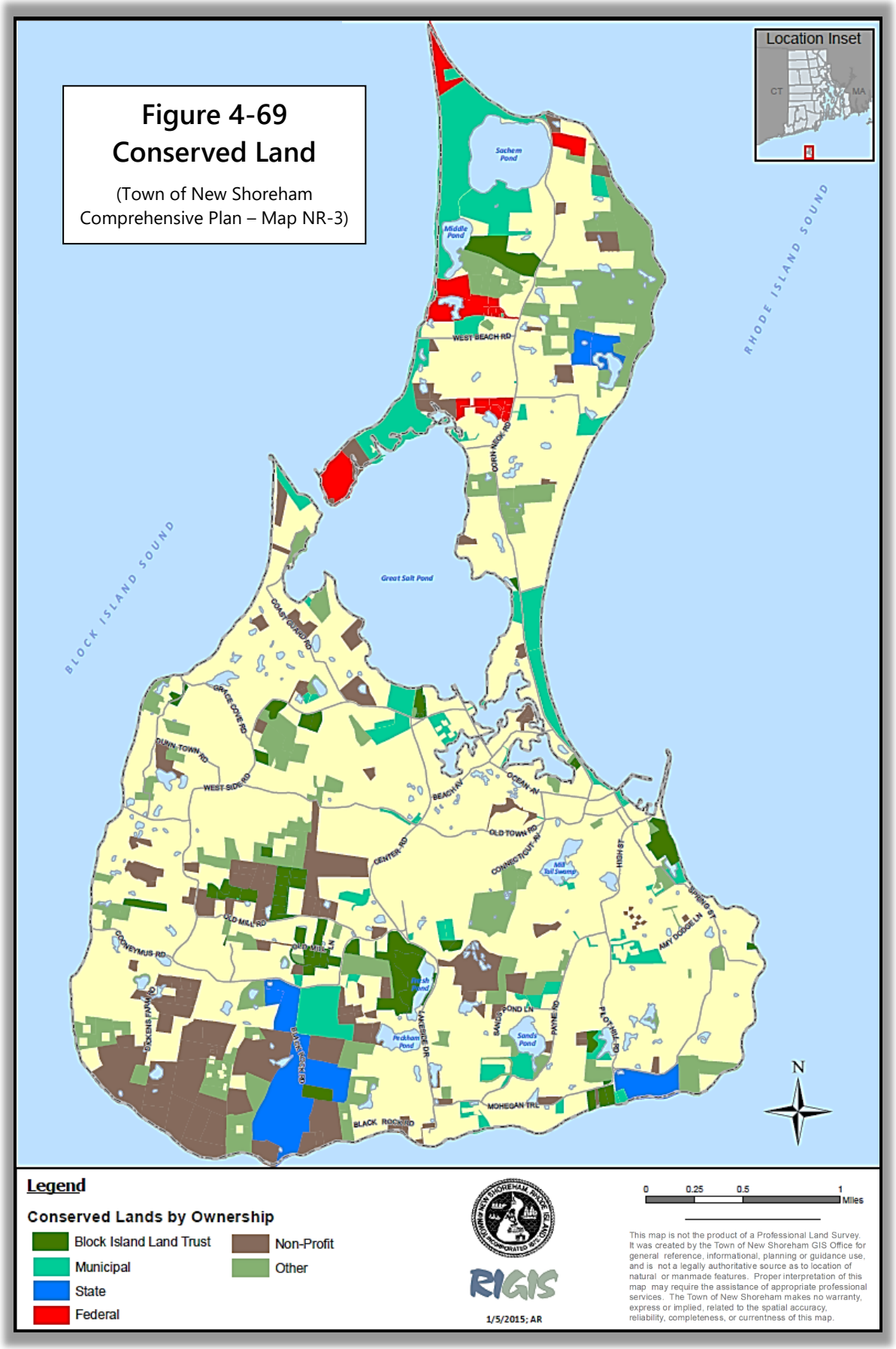
Over the years, the Town, particularly through the efforts of the Block Island Land Trust (BILT), combined with dedicated partners, have made substantial efforts in land conservation. Conservation efforts have helped protect New Shoreham's array of natural features including: freshwater ponds and emergent wetlands; groundwater supply; saltwater ponds, coastal marshes, and tidal flats; beach and dune complexes; rocky shorelines and coastal bluffs; open fields and morainal grasslands, and upland shrub and forested areas. Conservation of the island's natural features is critical in preserving its ecologically significant biodiversity which includes rare and endemic habitats for resident species and migratory songbirds, waterfowl, and raptors.

The Block Island Land Trust was established in 1986 by State legislation and is funded by a 3% fee on the transfer of real property in New Shoreham. The Trust acquires, holds, and manages real property and interest therein situated in the Town of New Shoreham consisting of open, agricultural, or coastal region property.

As shown in **Figure 4-69**, conservation land can be found throughout the Town. According to the Block Island Land Trust, as of September 2024, BILT conservation holdings represent 600 acres, or approximately 10% of the Town's total land area. Many of these acres were acquired jointly and are under shared ownership interest with conservation partners. **In September 2024, preserved open space in New Shoreham totaled 2,829 acres, or 46.1% of the island's 6,076 acres**. Of that, 371 acres (6%) is unprotected undevelopable open water and wetlands.

Some of the Town's conservation partners with holdings in New Shoreham include the Audubon Society of Rhode Island, Block Island Conservancy, Ocean View Foundation, RIDEM, The Nature Conservancy, USDA/NRCS, and U.S. Fish & Wildlife Service, along with privately held lots with conservation easements or development restrictions. Of the privately held conservation land, as of December 31, 2024, there were 82 parcels with roughly 325 acres enrolled in the Farm, Forest, and Open Space (FFOS) Program. The FFOS Program is administered by RIDEM. Under Rhode Island law (Chapter 44-27) eligible land is allowed to be enrolled in the FFOS Program for the purpose of conserving Rhode Island's open space, forested land, and productive agricultural land. While in the program, the land is assessed at its current use, not its value for development.

In addition to land conservation, as further discussed in **Section 5**, the Town has adopted various codes and regulations for the purposes of natural resource protection. Land conservation, coupled with regulatory efforts to protect the natural environment, increase the Town's resilience to the impacts of natural hazards.


Figure 4-69
Conserved Land
(Town of New Shoreham
Comprehensive Plan – Map NR-3)
Location Inset
CT
MA
RI
BLOCK ISLAND SOUND
RHODE ISLAND SOUND
Sachem Pond
Middle Pond
Great Salt Pond
Peckham Pond
Sand's Pond
Mill Tail Swamp
WEST BEACH RD
COAST GUARD RD
GRACE COVE RD
WEST SIDE RD
BEACH AV
OCEAN AV
OLD TOWN RD
CENTER RD
CONNECTICUT AV
HIGH ST
SPRING ST
AMY DODGE LN
OLD MILL RD
CORNEYMUS RD
LAKESIDE DR
SANDS POND LN
PAYNE RD
MOHEGAN TRL
BLACK ROCK RD
N
Legend
Conserved Lands by Ownership
Block Island Land Trust
Municipal
State
Federal
Non-Profit
Other
RIGIS
1/5/2015; AR
0 0.25 0.5 1 Miles
This map is not the product of a Professional Land Survey. It was created by the Town of New Shoreham GIS Office for general reference, informational, planning or guidance use, and is not a legally authoritative source as to location of natural or manmade features. Proper interpretation of this map may require the assistance of appropriate professional services. The Town of New Shoreham makes no warranty, express or implied, related to the spatial accuracy, reliability, completeness, or currentness of this map.

4.4.3.2 Freshwater and Saltwater Resources and their Floodplains

New Shoreham character is intertwined with the island's abundance of freshwater and saltwater resources. It is essential to understand both how these resources are vulnerable to climate change and sea level rise, and the important role they can play in mitigating natural hazards.

Water can be classified into two main categories based on its **salinity**, which is the amount of dissolved salts, particularly sodium chloride (NaCl), it contains. The amount or concentration of dissolved salts is generally measured by weight and expressed in "parts per million" (ppm). The two main categories are **freshwater** (containing salt levels that are safe for drinking and agricultural use) and **saline water** (containing salt levels that are unsuitable for drinking and agricultural use, but support marine ecosystems). The following salinity levels are from the United States Geological Survey (USGS|Water):

Freshwater

concentration of dissolved salt:

Less than 1,000 ppm

Saline Water (Saltwater)

concentration of dissolved salt:

Slightly saline water - From 1,000 ppm to 3,000 ppm

Moderately saline water - From 3,000 ppm to 10,000 ppm

Highly saline water - From 10,000 ppm to 35,000 ppm (ocean water has a salinity of approximately 35,000 ppm)

The Town of New Shoreham's groundwater and surface water resources are comprised of both freshwater and varying concentrations of saline water. As identified in **Table 4-32**, natural hazards, including floods, hurricanes, droughts, and wildfires can significantly impact both groundwater and surface water by causing contamination through debris, sediment, pollutants, and chemicals; alter water flow patterns; decrease availability; damage water infrastructure; and disrupt water treatment processes.

The Town of New Shoreham is highly protective of their groundwater and surface water resources. Because natural hazards can have complex and long-lasting effects on both groundwater and surface water resources, the Town is committed to mitigate natural hazard impacts that may negatively affect the island's water resources.

❖ *Groundwater*

"Groundwater is the water found underground in the cracks and spaces in soil, sand, and rock. It is held in aquifers - permeable water-bearing rock and/or sediment" (Hermann). Aquifers can be found at various depths, from just below the surface to hundreds of feet deep.

The entirety of Block Island is considered a **single continuous sole source aquifer**, with the Atlantic Ocean forming the lateral boundaries. This means that the island's groundwater system is the primary and only practical source of potable water for the entire island. A sole source aquifer classification helps ensure that the aquifer remains safe and sustainable for the community's needs. The U.S. Environmental Protection Agency (EPA) has special provisions for sole source aquifers, which include federal review of projects or activities that could impact the water quality, like new developments or other potentially harmful activities near the aquifer.

In addition, RIDEM has classified **New Shoreham's groundwater as GAA, the highest rating under Rhode Island's groundwater quality standards**. A GAA classification indicates the groundwater is of excellent quality (very low levels of contaminants and a high degree of natural purity) and suitable for public drinking water use without treatment (RIDEM. *A Summary*, 1). The GAA designation places the island's groundwater under strict regulations to ensure that it remains free from pollution and degradation.

Although groundwater may be brought to the surface naturally through a spring, or can be discharged into lakes and streams, it is predominately extracted by pumping it through a well that is drilled into the aquifer. Groundwater is replenished primarily through precipitation (rain and snowmelt) which seeps into the ground, infiltrating through soil and rock layers to reach the water table and replenish the aquifer below; this process is called recharge. Groundwater recharge can happen naturally as water percolates into the land surface or through managed methods like diverting surface water to specific areas such as detention basins. A water table describes the boundary between unsaturated ground and water-saturated ground. Water pressure and atmospheric pressure are equal at this boundary. Below the water table, rocks and soil are full of water. Water tables can fluctuate based on precipitation, or lack thereof. If stormwater runoff is managed effectively, it can benefit groundwater recharge.

Groundwater is the Town of New Shoreham's most important resource in terms of the health, safety, and welfare of all residents. The National Ground Water Association determined that approximately 38 percent of the population in the United States depends on groundwater for its drinking water supply (NGWA). **In New Shoreham, the entire community (100%) currently relies on groundwater for its primary drinking water supply.** More than 90 percent of island residents rely on private wells (RIDOH. *Protect*, 1), most of which tap into **freshwater aquifers**. The Block Island Water Company (BIWC), which provides potable water to the Old Harbor and New Harbor commercial districts, relies on 3 active production wells and 3 emergency backup wells. The three production wells are brackish water wells. The BIWC treats the brackish water through reverse osmosis, meeting or exceeding all RIDOH and EPA standards. The BIWC maintains Sands Pond and Fresh Pond as auxiliary reservoirs, should the need arise. There are also a number of other private public water suppliers on the island that operate small public wells.

The island has limited freshwater resources which makes **water conservation** an important consideration ensuring a sustainable supply, especially during dry periods or when the aquifers are under stress (such as over-pumping/over-extraction, salt water intrusion, contamination, reduced precipitation, land use changes, and declining recharge rates). Being a small island community, New Shoreham's proximity to the ocean means that the freshwater aquifers can be susceptible to **saltwater intrusion**, which occurs when seawater moves into the groundwater due to factors like excessive pumping (which lowers the water table), long-term drought conditions, or natural tidal effects. The groundwater near the coastline is the most vulnerable to saltwater intrusion.

Due to the Town's reliance on groundwater, it is important to protect it from contamination. Many of the environmental measures that have been put in place by the Town and conservations partners help to protect the quality of the groundwater (and surface water) resources in the New Shoreham. There remain however a number of potential non-point sources (*coming from disperse activities*) of pollution that can impact groundwater (and surface water) quality as well as threaten habitats. For example, while the use of synthetic pesticides is prohibited on Town-owned property, it does not apply to private land owners. Synthetic fertilizers and pesticides used in agriculture or for residential lawns, as well as contaminants from roads and other imperious surfaces, and leachate from failing onsite wastewater treatment systems (OWTS) can be picked up by floodwater and pollute groundwater and surface water. Residents, businesses, and other stakeholders can help to mitigate groundwater contamination by eliminating or minimizes these non-point sources of pollution.

In New Shoreham there are a number of homes and businesses that receive potable water through shallow wells which may be more vulnerable to both drought and contamination than deeper wells. Shallow wells penetrate into aquifers that are near the ground surface and are therefore more reliant on precipitation recharge than deeper wells. As they draw from a more limited capacity, the wells can quickly become depleted during dry periods. Further, because shallow wells draw from closer to the surface, pollutants carried by stormwater runoff bypass much of the natural process of soil media filtering. This makes shallow wells more vulnerable to pollutants like nitrates, bacteria, or other harmful substances, which can pose serious risks to water quality and public health.

While the Safe Drinking Water Act (SDWA) protects the quality of drinking water from public water systems, including the Block Island Water Company system, **private well owners** are responsible for delivering safe drinking water to their households. If a well may have been contaminated by surface water runoff/floodwater or other causes, it is advisable for the owner to take precautions such as those recommended by RIDOH - Keep Your Well Water Safe in an Emergency, or EPAs - What to Do After a Flood – Well Safety.

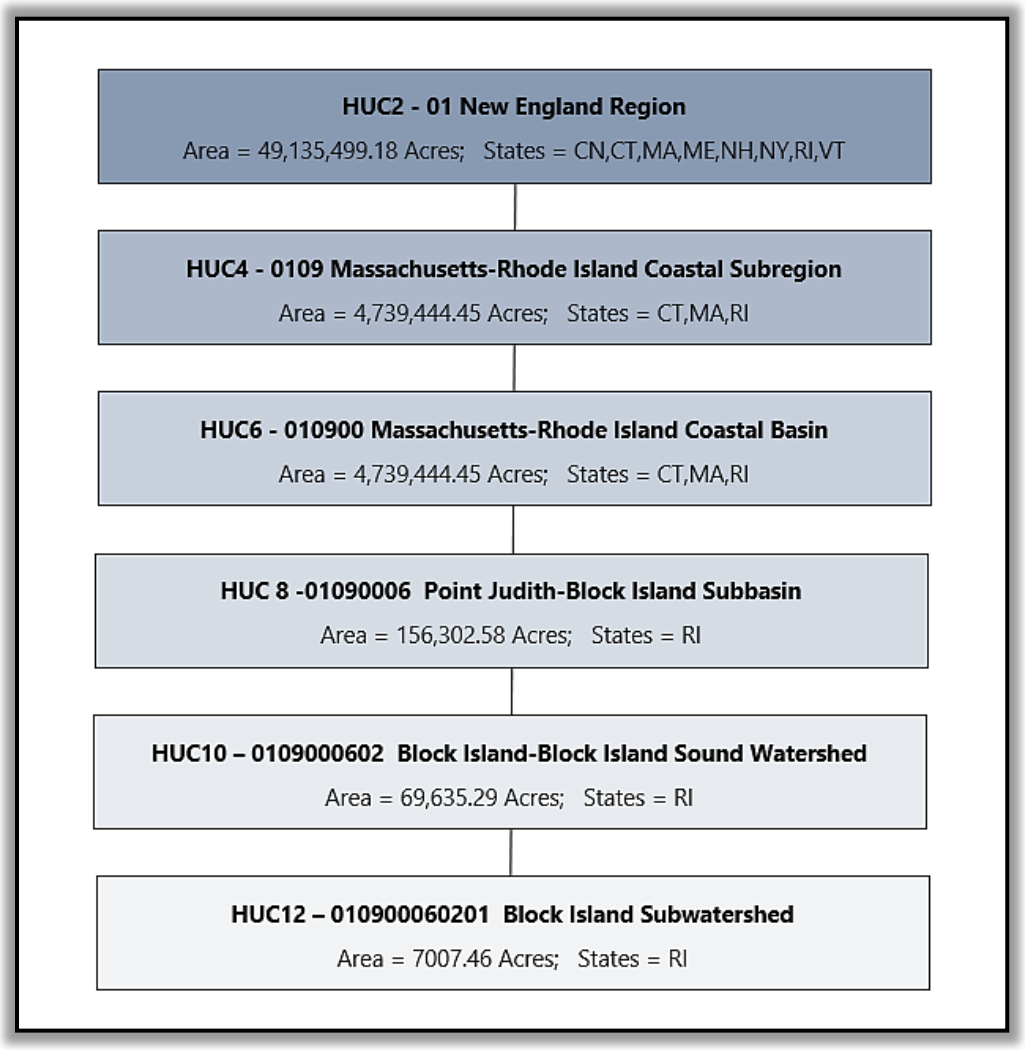
❖ *Surface Water*

Surface water refers to water found on the Earth's surface Although about 71% of the Earth's surface is covered by water, only 2.5% is freshwater (NASA. *Surface*). Surface water "is a key component of the hydrologic cycle and provides various societal and ecosystem services, including drinking water, agricultural irrigation, and habitat for aquatic plants and wildlife" (NASA. *Surface*).

A **watershed** is a land area that channels precipitation to **surface waterbodies**. As such, the environmental health of watersheds is critically important. Human activity, including land development (creating impervious surfaces such as buildings and roads, and sediment runoff during construction), agricultural practices (fertilizer and pesticide runoff), industrial waste discharge, deforestation, improper waste disposal, lawn care (fertilizer runoff), and wetland destruction can have a significant impact on surface water quality within a watershed.

Figures 4-70 shows the watershed hierarchy for New Shoreham. The USGS created a nationwide system of delineating watersheds based on surface hydrologic features. The system initially divided the country into 22 regions which each have a 2-digit hydrologic unit code (HUC). Within each region, five additional subdivisions are made: subregions (4-digit HUC), basins (6-digit HUC), subbasins (8-digit HUC), watersheds (10-digit HUC), and subwatersheds (12-digit HUC). The code is hierarchical with each progressing subdivision retaining the previous HUC code as a prefix (USGS. NAS). New Shoreham only has one HUC Level 12 subwatershed: ***Block Island Subwatershed***. The following watershed information is from USGS (USGS. *Science*) and RIGIS (RIGIS. *Watershed Boundary Datasets*).

Figure 4-70 New Shoreham Watershed Hierarchy



New Shoreham has an abundance of surface water resources, and the Town's character is deeply connected to them. In addition to providing scenic beauty, these resources help sustain life; control flooding, erosion, and pollution; sustain ecological systems and provide valuable fish, plant, and wildlife habitats; provide irrigation for agriculture; and offer year-round active and passive recreation. Due to the importance of surface water, the Town is committed to protect it from contamination. As indicated in the previous groundwater narrative, while the Town and conservation partners should be commended for the many environmental measures that have been put in place to protect water resources, non-point sources (*coming from disperse activities*) of pollution remain a threat to groundwater as well as surface water ecosystems.

There are essentially three basic types of **surface water ecosystems** based on the water movement and other unique characteristics within the system: Lotic, Lentic, and Wetlands.

Surface Water Ecosystems

All three systems can include both freshwater or saline water depending on the environmental conditions

Lotic: flowing/faster moving water systems that are typically characterized by water moving in a directional flow that is usually downhill due to gravity, but can also be influenced by tides, waves, and currents – examples include springs, creeks, brooks, streams, rivers, seas, oceans

Lentic: still water/standing water/slow moving water/water that exhibits minimal horizontal movement of water – examples include ponds, lakes, reservoirs

Wetlands: can be both lotic and lentic, depending on the type of water movement present in the area, but are treated as an independent category because they have unique characteristics which set them apart (unique hydrological conditions, plant and animal adaptations, and ecological functions); wetlands are areas where the soil is saturated or inundated for at least part of the time; essentially any low-lying land area that is saturated with water either permanently or seasonally and featuring hydric soils and aquatic plants – examples include bogs, tidal flats (intertidal wetlands), swamps, marshes

Lotic Systems

Lotic: *flowing/faster moving water systems that are typically characterized by water moving in a directional flow that is usually downhill due to gravity, but can also be influenced by tides, waves, and currents*

There is not an accepted standard regarding the various terms associated with lotic system watercourses. While those professionally working with these waterways may have a more defined geologic understanding of their gradation, watercourses are generally ranked on a relativeness of size in a particular geographic area (Šafarek). New Shoreham does not have any major rivers like you would find on the Rhode Island mainland. The island is small and its inland lotic watercourses are primarily (from smallest to largest): creeks, brooks, and streams. Oceans and seas are also lotic systems with their movement influenced by tides, waves, and currents.

New Shoreham's Lotic System:

Creeks: Ballard's Creek, Old Harbor Creek, Sandy Point Creek, and some additional unnamed smaller watercourses that may be considered creeks or brooks

Brooks/Streams: Cooneymus Brook, Dodge's Brook, and Rodman's Hollow Brook (*all three of which eventually drain into the Great Salt Pond*)

Ocean: Block Island Sound (*Block Island Sound acts more like a tidal strait or a flowing water system rather than a still or stagnant body of water. Water in the sound moves constantly due to tidal flow, currents, and the exchange between the ocean and surrounding bays*)

Lotic surface water can be saline, such as is the case with the Block Island Sound and Atlantic Ocean. However freshwater lotic systems are more common. In New Shoreham, most of the island's interior brooks and streams are freshwater or brackish (mixture of freshwater and saltwater) in their upper reaches and transition to more saline conditions near the coast, especially where they meet tidal waters. The level of salinity varies with tidal changes and the proximity to the saltwater bodies, so these areas can fluctuate between fresh and brackish depending on the season and water flow.

None of New Shoreham's lotic watercourses have been identified as impaired in the State of Rhode Island's 2024 Impaired Waters Report. However, as the lotic system of waterways channel spring fed and overland runoff into both the lentic systems and wetland systems, it is imperative that these waterways continue to be protected. The Rhode Island Coastal Resources Management Council (CRMC) is responsible for managing the State's coastal resources, including planning, conservation, and regulatory oversight of the shoreline and its development. CRMC produced Water Type Classification Maps for the State which identifies permittable activities. All other activities for a particular classification are prohibited unless an assent is granted by CRMC. Most of the New Shoreham's shoreline and coastal ponds are classified as Type 1 (conservation areas).

Lentic Systems

Lentic: still water/standing water/slow moving water/water that exhibits minimal horizontal movement of water

In terms of classification of waterbodies within the lentic system, "Generally lakes are thought of as being larger than ponds, but this isn't the case in RI where historically both terms were used to name waterbodies regardless of size… Most RI lakes and ponds are in fact man-made impoundments resulting from the construction of dams of varying sizes and types on rivers or streams. Among the lakes tracked by DEM, only 25% are considered natural lakes or ponds… Reservoirs are a primary source of public drinking water supply for RI residents. Forty-three (43) reservoirs, lakes or ponds covering 7,823 acres or 37% of the statewide lake [/pond/reservoir] acreage, are designated as public drinking water sources" (RIDEM. *Freshwater Lakes*).

New Shoreham's Lentic System:

> **Ponds:** there are approximately 365 freshwater ponds on the island, some of the more prominent ones include Champlin Farm Pond, Fresh Pond (*largest freshwater pond on the island*), Great Salt Pond, Harbor Pond, Middle Pond, Peckham Pond, Sachem Pond, Sands Pond, Spring House Pond, and Trim's Pond

In addition to New Shoreham's wealth of ponds being ecological and environmental crucial, enhancing the landscape, and being enjoyed recreationally, they help with stormwater management, erosion prevention, water filtration, carbon sequestration, two serve as auxiliary potable water resources, and several serve as drafting resources for fire suppression.

Fresh Pond, is located near the central part of the island, and is the largest freshwater pond in New Shoreham. Fresh Pond is valuable both ecologically and recreationally, serving as a key feature of the island's landscape and wildlife. Fresh Pond is part of the sole source aquifer upon which both public and private water supplies depend. The pond and adjacent wetland play an important role in maintaining the balance of groundwater on the island by acting as a natural source of recharge for the water table (groundwater) through infiltration. The Block Island Water Company (BIWC) maintains Fresh Pond (and Sands Pond) as an auxiliary reservoir, should the need arise.



Figure 4-71 Fresh Pond

Photo Credit: Experience Rhode Island

Sands Pond, on the south side of the island, was first used by islanders as a water system as far back as the 1870s. The Block Island Water Company (BIWC), located adjacent Sands Pond, used the pond as a primary water source for decades. However, in 1997, increasing water demands and difficulty in treating the water effectively encouraged the Town to test a reverse osmosis membrane treatment unit for slightly brackish well water. As the process proved successful, BIWC built a full scale membrane treatment plant in 2001. Since that time the BIWC's primarily sources its water from underground aquifers, with Sands Pond (and Fresh Pond) serving as an emergency backup source (Block Island Water Company. *About*).

Similar to Fresh Pond, Sands Pond and adjacent wetland play an important role in maintaining the balance of groundwater on the island by acting as a natural source of recharge for the water table (groundwater) through infiltration. However, over the years Sands Pond has had water quality issues due to turbidity, excess algal growth, and phosphorus (RIDOH. *Protect*, 3). According to RIDEM's 2024 Impaired Waters Report, the only pond in New Shoreham identified as impaired is Sands Pond. However, the Chlorophyll-A, Total Phosphorus, and Turbidity (noted in 2008) has the following disclaimer: "*These surface water impairments should not be interpreted as violations of the Safe Drinking Water Act (SDWA) standards since the water is treated at the Block Island Water Company water treatment plant prior to distribution and the finished water is monitored*" (RIDEM. *State,* 9).

Figure 4-72 The Great Salt Pond Photo Credit: The Committee for the Great Salt Pond



Great Salt Pond is a naturally formed large, shallow lagoon, located on the western side of the island, that is partially separated from the ocean by a narrow barrier beach and is influenced by both freshwater inputs from streams and brackish tidal waters. Although it is influenced by tidal action, it behaves like a lentic system because the water inside the pond is relatively still, with slower movement compared to rivers or streams. Great Salt Pond is a vital estuarine environment, supporting a wide range of aquatic life and providing a recreational area for boating, fishing, and wildlife observation.

In 1987, a group of concerned citizens formed the **Committee for the Great Salt Pond (CGSP)** with the mission of protecting and enhancing the environmental quality of the 770± acre pond and its watershed, including its shoreline and wetlands (CGSP, About). In 1993, with the help of CGSP, New Shoreham became the first community in Rhode Island to enact a *No Discharge Zone (NDZ)* law aimed at curtailing sewage discharge from boats. This law significantly helped reduce point source pollution in New Shoreham's harbors and the waters around the island. An ongoing challenge to Great Salt Pond and its watershed is the management and reduction of non-point sources of pollution. To that end, water quality testing is regularly conducted throughout the pond by CGSP and the Town (Town of New Shoreham RI. *Comprehensive*, 5-7). Although RIDEM's *2024 Impaired Waters Report* does not list the Trim's Pond-Harbor Pond area as being impaired, it has in past years been identified as having high bacteria counts.

In general the water quality of the Great Salt Pond is recognized as better than most harbors in New England (Town of New Shoreham RI. *Comprehensive*, 5-8). However, the Town with support from stakeholders must remain vigilant to protect the health of the Great Salt Pond which plays a central role in both the island's natural environment and its economy.

Wetlands Systems

Wetlands: can be both lotic and lentic, depending on the type of water movement present in the area, but are treated as an independent surface water ecosystem category because they have unique characteristics which set them apart (unique hydrological conditions, plant and animal adaptations, and ecological functions); wetlands are areas where the soil is saturated or inundated for at least part of the time; essentially any low-lying land area that is saturated with water either permanently or seasonally and featuring hydric soils and aquatic plants

At the Federal, State, and local levels, there is legislation to protect and regulate the use of wetlands (both freshwater and coastal) because of the many important functions they perform. There are a variety of definitions of wetlands. RIDEM has a **very broad definition of wetlands** for Rhode Island which basically includes all waterbodies and their floodplains and even some adjacent upland areas. While RIDEM's broad definition affords all of these areas certain protections, for purpose of this *Plan*, we will defer to FEMAs definition. FEMA defines wetlands as "those areas which are inundated or saturated by surface or ground water with a frequency sufficient to support, or that under normal hydrologic conditions does or would support, a prevalence of vegetation or aquatic life typically adapted for life in saturated or seasonally saturated soil conditions" (Code of Federal Regulations-44 CFR, 9). Utilizing FEMA's definition maintains a distinction between surface water ecosystems in New Shoreham: **Lotic Systems** (creeks, brooks, streams, ocean), **Lentic Systems** (ponds), and **Wetlands Systems** (bogs, tidal flats/intertidal wetlands, vernal ponds, swamps, marshes).

As depicted in **Figure 4-74,** at the State level CRMC regulates coastal wetlands and RIDEM freshwater wetlands. CRMC's jurisdiction is limited to a coastal buffer region, which extends 200 feet inland from the mean high water mark (MHW) or the high tide line. As CRMC's jurisdiction is based on area, in addition to coastal wetlands, any freshwater wetlands within the buffer area is also under their jurisdiction.

Coastal wetlands: FEMA defines coastal wetlands as wetlands located along the coastline that are influenced by saltwater or brackish water. These wetlands typically experience tidal fluctuations and are subject to the intertidal zone, where land and water meet. Coastal wetlands are areas of land that are saturated with water and are home to plants that can tolerate wet soil and low oxygen levels. In New Shoreham the most prominent coastal wetlands are salt marshes, tidal flats, and brackish wetlands.

Freshwater wetlands: FEMA defines freshwater wetlands as areas where water saturates the soil or covers the land for significant periods of time during the year, typically in areas where freshwater dominates. Freshwater wetlands commonly occur between uplands and water bodies, but may stand alone surrounded by upland. In New Shoreham the most prominent freshwater wetlands are vernal ponds, swamps, marshes, and riparian wetlands.

New Shoreham's Wetlands System:

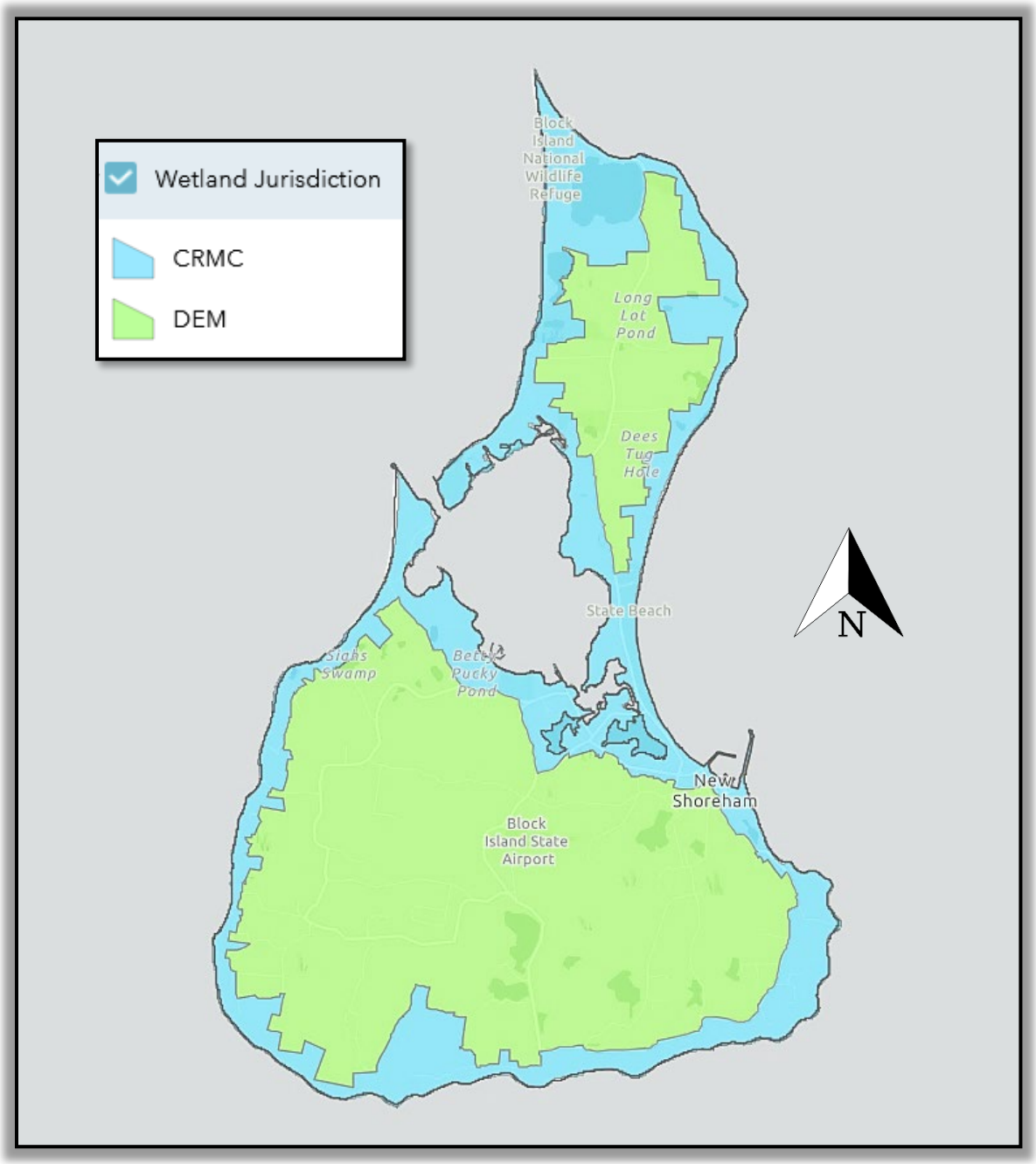
Coastal Wetlands (Saline): Andy's Way Salt Marsh, Crescent Beach Tidal Flats, Mosquito Beach Salt Marsh, North Point Tidal Marshes/Flats, outer wetlands at Rodman's Hollow, Sandy Point Marsh, Salt Marshes around the Great Salt Pond, South Point Tidal Marshes/Flats, Turtle Hole Tidal Flats

Freshwater Wetlands: Clayhead Swamp (peat bog), Franklin Swamp, Rodman's Hollow Marshes, Seneca Swamp, surrounding sections of Fresh Pond, surrounding sections of the Great Salt Pond



Figure 4-73 Fresh Pond Preserve
Photo Credit: Explore New England

Figure 4-74 Rhode Island Freshwater & Coastal Wetland Jurisdiction
(adapted from RIDEM Environmental Resource Map)



As documented in **Figure 4-75**, wetlands (and floodplains) provide an array of ecoservices, many of which assist in mitigating the impacts from natural hazards. These include providing flood storage area, reducing erosion, recharging groundwater to preserve water supplies and offset drought conditions, and maintaining surface water flow during dry periods. The Town of New Shoreham recognizes these benefits and has and will continue to protect these resources. Key measures include the continued enforcement of regulatory standards for wetland setbacks from dwellings and OWTS (septic systems), and continued support for programs that protect, conserve, and manage wetland resources. **The Town of New Shoreham has included in the 2025 Action Plan an assessment of how the RIDEM 2022 Freshwater Wetlands rules impact the Town**. There is speculation that the updated regulations may reduce future setbacks and buffers in New Shoreham, which would be disadvantageous to the protection of these significant and fragile ecosystems on Block Island.

❖ *Floodplains*

Floodplains are associated with all three surface water ecosystems. FEMA defines floodplains as "any land area susceptible to being inundated by floodwaters from any source" (FEMA. *Glossary*). The floodplains associated with New Shoreham's surface water resources are important community assets. Floodplains, are the low, flat, periodically flooded lands adjacent to waterbodies and are subject to geomorphic (land-shaping) and hydrologic (water flow) processes. It is only during and after major flood events that the connections between a waterbody and its floodplain become more apparent (RIEMA. *2019 RI-SHMP*, 3-111).

As identified in **Figure 4-75**, floodplains (and wetlands) provide an array of ecoservices, **many of which assist in mitigating impacts from natural hazards.** Continued enforcement of floodplain regulations (specifically in the Special Flood Hazard Area) is a critical tool for protecting communities, ecosystems, and economies from the damaging effects of flooding.

Figure 4-75 Benefits of Freshwater and Coastal Wetlands and their Floodplains

- **Provide flood storage area, reducing storm damage to upland property and structures**
- **Control stormwater runoff flow rate, reducing erosion**
- **Act as natural sediment traps, limiting the amount of sedimentation from surface water runoff that might otherwise negatively impact other ecosystems**
- **Filter runoff pollution and excess nutrients, helping to maintain and enhance water quality**
- **Recharge groundwater to preserve water supplies**
- **Maintain surface water flow during dry periods**
- **Provide natural coastal barriers to stabilize shorelines, dissipate waves, and protect upland areas from storm surge, flooding, and erosion**
- **Produce nutrients for organisms that form the base of the food web**
- **Provide fish and wildlife habitat and contribute to biodiversity**
- **Support large and diverse populations of plants**
- **Store carbon within their plant communities and soil, helping to moderate the effects of climate change**
- **Support commercial fishery, aquaculture, agriculture, and forestry**
- **Provide recreational opportunities (fishing, bird watching, hiking, etc.)**
- **Provide educational and scientific research opportunities**
- **Add aesthetic scenic value to the natural environment**

KMJ

❖ *Sea level Rise (SLR)*

As the sea levels rise, the deleterious impacts on the natural environment will accelerate, affecting coastal ecosystems, biodiversity, and natural processes. Some of the most significant impacts include: loss of salt marshes, dunes, and other important habitat; bluff destabilization, increased damage and erosion to inland areas due to loss of coastal features that function as natural barriers; shifts in species diversity affecting commercial and recreational fishing industries; and a reduction in freshwater resources due to brackish/saltwater intrusion. The impacts of sea-level rise are interconnected and cumulative, often triggering cascading effects across ecosystems. SLR not only threatens wildlife and natural environments but also undermines the ecological services that human communities depend on for survival.

Salt marshes are the most threatened habitat in Rhode Island and their conservation is of the highest priority. In March 2015, CRMC and partners developed Sea Level Affecting Marshes Model (SLAMM) Maps for the coastal wetlands throughout Rhode Island. "The purpose of these SLAMM maps is to show how coastal wetlands will likely transition and migrate onto adjacent upland areas under projected sea level rise scenarios of 1, 3 and 5 feet in the coming decades. These maps are intended to support state and local community planning efforts and to help decision makers prepare for and adapt to future coastal wetland conditions despite the inherent uncertainties associated with future rates of sea level rise" (CRMC. *Sea level Affecting*, 1). According to the technical findings from the SLAMM Project, "Coastal wetlands, especially tidal marshes, are one of the most susceptible ecosystems to climate change and in particular accelerated sea level rise. A considerable percentage of coastal wetlands may be permanently lost by the end of this century unless upland areas directly abutting coastal wetlands are protected or otherwise set aside for the purpose of providing wetland migration in response to sea level rise" (CRMC. *The Rhode*, Executive Summary).

Eight (8) SLAMM Map Panels were created for New Shoreham. Each Panel has four maps showing the initial wetland condition, followed by sea level rise scenarios of 1-, 3-, and 5-feet. The SLAMM maps were developed using a digital wetlands coverage derived from the 2010 National Wetlands Inventory for Rhode Island. The elevation data used in the model was developed from the 2011 USGS LIDAR elevation dataset (CRMC. *Sea level Affecting*, 1). All 32 SLAMM Maps prepared for New Shoreham can be accessed via the following link: New Shoreham SLAMM Maps

Under modeled conditions, the SLAMM Summary Report estimates a net gain in salt marsh in New Shoreham if it is allowed to migrate without protecting existing development and to a lesser extent if existing development is protected. However, the caveats are: that for various reasons it is unlikely that salt marsh will be established in many of the upland areas inundated by SLR; ecosystems replaced by salt marshes may not be able to migrate inland and will be lost; and the existing development patterns may change in a manner that negatively impacts the modeled scenarios. While the impact of sea level rise is generally connected to the impact on coastal wetlands, freshwater wetlands can also be impacted. The SLAMM Summary Report estimates that New Shoreham will lose 26.3± acres of freshwater wetlands with 1 foot of SLR, 30.0± acres with 3 feet of SLR, and 33.9± acres with 5 feet of SLR (CRMC. *Summary*, 1-18).

Because salt marshes are incredibly important ecosystems that provide a wide range of ecological, economic, and protective benefits, the Town and conservation partners are in the process of identifying and seeking to protect potential future salt marsh migration areas. The continuation of this process is supported in the HM&FMP Action Plan (**Subsection 6.4**).

LOCAL ECONOMY

4.4.4 Local Economy

The economic condition of the Town of New Shoreham is strong in terms of municipal finances, with an AA credit rating. A credit rating of AA assigned to any debt issuer denotes a high credit quality with the expectation of very low default risk (Fitch). This is important because if the Town needs to borrow money, it can do so at a more favorable rate.

Maintaining a resilient local economy is important to enable providing high quality municipal services, including protecting against natural hazard risks. The Town's total operating budget for FY2025 (July 1, 2024-June 30, 2025) was $19,286,912, of which $13,608,007 was attributed to the municipal side and $5,678,905 to the School District (Town of New Shoreham RI. *FY2025*, 1). As part of the budget process, each year the Town adopts a 6-year Capital Improvement Program identifying projects that should be undertaken during the upcoming 6 years. This long-range planning process is essential in addressing the future development and growth of the Town. The Town strives to balance pay as you go funding with borrowing for capital requirements, using long term financing for long-lived assets with broad community value.

New Shoreham is primarily a rural residential community with a mixture of higher density residential and commercial development in the areas near and between the two harbors. Over the years the Town has implemented land use policies that attempt to balance the protection of the natural environment, limited resources, and limited municipal services with residential and commercial development.

New Shoreham's tax base which funds public services and infrastructure is influenced by several factors, primarily relating to the types of properties and activities on the island.

Property Taxes: The largest portion of New Shoreham's revenue comes from real estate property taxes. This includes both residential and commercial properties. Residential development on the island is highly homogeneous. Most of the 1,947 housing units are single family dwellings (90.9%), with a smattering of 2 unit dwellings and a few 3 or more unit dwellings (US Census Bureau. *New,* Housing). Commercial development is concentrated to the eastern side of the island near Old Harbor and New Harbor and while critically important represents a relatively small tax base. As such, taxes are firmly reliant on residential property which accounted for 89.5% of the total assessed value as of December 31, 2023.

Local Services: The tax base is supplemented by charges for local services such as Town Hall functions (permits, transfer station stickers, document requests), public safety fines/fees, beach receipts, hotel and meals taxes, and landing fee (charged to all persons arriving on the island by ferry, private boat, and plane).

State Funding: New Shoreham receives some financial support from the State of Rhode Island through various funding mechanisms, but it does not rely heavily on direct State supplementation for its tax base.

Businesses and Tourism: New Shoreham (Block Island) is a prominent summer tourist destination. There is a reciprocal dependency between many of the businesses on the island and tourism. These local businesses add to the island's attraction, which works to further the tourism industry. In addition to businesses contributing to the tax base through property tax, they also contribute through sales tax, and business license fees, and provide local employment.

Utility Infrastructure: The **Block Island Water Company (BIWC)** which provides potable water and the **Water Pollution Control Facility (WPCF)** which handles the treatment of wastewater and sewage are both **quasi-public** entities overseen by commissions. The Water District Commission members are elected by the residents during bi-annual elections and responsible for overseeing BIWC operations including decisions about water policies, rates, and overall management of the utility. The WPCF Commission is appointed by the Town Council and is responsible for overseeing the operations and management of WPCF including decisions about wastewater policies, facility operations, and ensuring that the island meets environmental standards related to water pollution control. Although funding for these entities is predominately from user fees, some government funding may be used to offset capital projects. While these utilities do not directly contribute to the tax base the quasi-public status allows greater control on the quality of service which indirectly influence the tax base in several ways. For example, reliable utilities can make the island more attractive to current and potential residents and businesses and maintain a stable tourism economy. Additional information on these utilities is provided in **Subsection 4.4.2.3**. Additionally, renewable energy projects like the Block Island Wind Farm can generate revenue for the local government through taxes or payments in lieu of taxes.

Figure 4-76
New Shoreham (Block Island)
Photo Credit: Block Island Tourism Council



The economy of New Shoreham is comprised of a number of employment sectors including tourism, public service, real estate, construction, and an array of small businesses (retail, services, fishing, agriculture, home-based, etc.). These sectors are all **interdependent** and support one another, with **tourism** being the central pillar of the island's economic activity. Every year from Memorial Day through Columbus Day the island attracts thousands of visitors, with peak tourist season being July and August. Most of the businesses that cater to tourism are seasonal and located in the Old Harbor Historic District and in New Harbor. **The economic value of these two harbors cannot be overstated**. Old Harbor supports well over 50 businesses, including hotels, inns, B&Bs, restaurants, the Hospitality Center/Chamber of Commerce, a grocery store, gas station, auto repair shop, two churches, and a historic movie theater. The New Harbor area is also a prime attraction for tourists with five marinas (and two seasonal fuel stations), five restaurants, and four hotels.

In New Shoreham, based on the 2023 ACS, there are 394 workers employed in private companies (51.4% of the workforce); 226 self-employed entrepreneurs (29.5%); and 146 people working in governmental institutions (19.1%) (US Census Bureau. *New,* Employment).

The Town is the largest single employer with 28 full-time equivalent (FTE) positions in the School Department and 49 FTE positions on the municipal side, as well as part-time seasonal employment to support parks and recreation activities, beaches, and other summer programs. Fewer than 2% of the island's year-round residents work off-island.

The impact from most of the natural hazards profiled is not anticipated to have a long-term economic effect on the Town. Both flood- and wind-related hazards are expected to worsen in the future due to climate change and sea level rise, and may have substantial economic consequences for New Shoreham. In addition to the items identified in **Table 4-33**, the vulnerability to New Shoreham's local economy will be further explored in **Subsection 4.4.4.1 Flood- and Wind-Related Hazards.**

Table 4-33 Local Economy Vulnerability

Hazard Group	Vulnerability *(What is at Risk)*
 **Flood-Related Hazards** (Inland Flooding including Dam Failure; Coastal Flooding including Storm Surge; Coastal Erosion)	• In New Shoreham, a group at higher risk from flooding are those residing in the Special Flood Hazard Area (SFHA) comprised of the VE and AE Flood Zones; flood damage to homes or businesses may present an economic challenge for the owners/renters. • Substantial damage along the neck section of Corn Neck Road could isolate residents who live in the northern portion of the island which could economically impact them by cutting them off from work, supplies, or necessary services. • If residences and businesses are destroyed as a result of flooding, the corresponding decrease in the tax base would need to be shouldered by the remaining property owners. • The higher concentration of impervious surface due to building size and large parking areas makes commercial properties more susceptible to flooding. The most significant commercial development in New Shoreham is in the vicinity of and between the two harbors. Disruptions to the commercial area, or to accessing the commercial area, would have an economic impact. • **Refer to Subsections 4.4.4.1 for additional flood-related vulnerabilities.**
 **Wind-Related Hazards** (High Winds; Thunderstorms including Lightning & Hail; Tornadoes; Tropical Cyclones)	• Hurricane season coincides with the peak tourist season. Disruption to the steady flow of tourists visiting the island would have a negative impact on businesses and the local economy. • Although generally not an issue in New Shoreham, on occasion the Town may recognize an increase in municipal spending related to downed tree removal. • A study conducted in 2010 by Montclair State University suggests that individuals with lower incomes may not have the financial resources to maintain trees on their property, putting them at higher risks for tree-related damage associated with high wind events (Prioleau). • Although generally short-term, individuals may experience lost revenues from business closures, inability to get to work, or inability to provide services as a result of wind-related damage. • In general, power outage disruptions in New Shoreham are expected to be short-term and have minimal impact on the local economy. Disruptions that continue for multiple days can impact the normal operation of businesses. Business closures would decrease revenues to proprietors, loss of wages to employees, and reduce state and local tax revenues. Power outages could also spoil refrigerated food, the replacement of which could be economically burdensome to those with lower or fixed incomes. • **Refer to Subsections 4.4.4.1 for additional flood-related vulnerabilities.**
 **Winter-Related Hazards** (Heavy Snow; Ice; Extreme Cold)	• The Town may recognize an increase in municipal spending related to snow plowing and road surface treatments. • Although generally short-term, individuals may experience lost revenues from business closures, inability to get to work, or inability to provide services during and after severe winter weather events. • In general, power outage disruptions in New Shoreham are expected to be short-term and have minimal impact on the local economy. Disruptions that continue for multiple days can impact the normal operation of businesses. Business closures would decrease revenues to proprietors, loss of wages to employees, and reduce state and local tax revenues. Power outages could also spoil refrigerated food, the replacement of which could be economically burdensome to those with lower or fixed incomes.

Hazard Group	Vulnerability *(What is at Risk)*
 **Infectious Disease-Related Hazards** (Vector-borne Diseases Transmitted by Ticks or Mosquitoes; Contagious Respiratory Illness Caused by Influenza Viruses or Coronaviruses)	**Mosquitoes & Ticks** • Mosquitoes and/or tick abatement (should the Town choose to implement) are not expected to have an appreciable impact on New Shoreham's local economy. **Influenza Viruses or Coronaviruses** • Influenza viruses are not expected to have an appreciable impact on New Shoreham's local economy. • As related to Town finances, during the period from March 2020 through fiscal year 2022, the pandemic caused some additional burden including staff related sick leave, and PPE/cleaning supply expenses (some of which was reimbursed through FEMA). • During the Covid-19 Pandemic, food services and accommodations, retail stores, indoor activities and events, and other businesses were economically impacted. Because New Shoreham depends on the tourism industry the local economy was significantly impacted. • During the pandemic, New Shoreham (as was true Nationwide) experienced an increase in unemployment rate which impacted resident's income and subsequently their spending. • While it is difficult to assess, at this juncture it is not anticipated that Coronavirus-19 will have a significant impact on New Shoreham's economy over the upcoming 5-year period. • Seasonal workers living in sub-standard and over-crowed conditions may be at greater risk to contagious respiratory diseases.
 **Other Hazards** (Earthquakes; Extreme Heat; Drought; Brush Fires)	**Earthquake** • Earthquakes are not expected to have an appreciable impact on New Shoreham's local economy. **Extreme Heat** • Although residents may recognize higher energy bills due to increased energy use, primarily associated with air conditioning, extreme heat is not expected to have an appreciable impact on New Shoreham's local economy. **Drought** • Short-term droughts are not expected to have an appreciable impact on New Shoreham's local economy. However, as the entire Town relies on a sole-source aquifer, longer droughts could result in an economic burden to those needing to purchase water, dig new wells, or from losses associated with agriculture. **Brush Fires** • Brush fires are not expected to have an appreciable impact on New Shoreham's local economy. However, downed wires resulting from wind or winter weather, and lightning strikes, have been known to spark fires.

4.4.4.1 Flood- and Wind-Related Hazards

Residential and Commercial Property

As climate change exacerbates seasonal flooding, and SLR permanently changes the landscape, properties in FEMA's Special Flood Hazard Area (SFHA) are at high risk. New Shoreham's SFHA includes both the VE and AE Zones (both of these zones are part of the 100-year floodplain or have a 1% annual chance of flooding). The VE Zone (Velocity Zone) also has additional hazards associated with storm waves.

A flood zone analysis to provide a basic understanding of the tax base within the SFHA at risk from flooding was presented in **Subsection 4.4.2.1.** It was determined that approximately 4.7% of the tax base is derived from properties whose primary building is either fully or partially in the Special Flood Hazard Area (VE or AE Zones).

Based on NOAA's 2022 high-curve, sea level rise in Rhode Island could be 1.60 feet by 2050 (NASA. *Interagency*). Unlike flooding related to a precipitation event, where the floodwater eventually recedes, sea level rise is a permanent feature. As existing landmass is permanently inundated, structures in those environs may become uninhabitable. If SLR continues as currently projected, displacement of those residents and businesses on vulnerable properties will occur and the corresponding decrease in the property tax base resulting from property abandonment or buy-out would need to be shouldered by the remaining property owners or the tax base correspondingly expanded within the upland areas of Town.

Harbors

Peak hurricane season coincides in part with the island's peak tourist season. Should storm surge from a hurricane cause substantial damage to the infrastructure at either harbor, it would have economic implications, especially if it disrupted the steady flow of tourists visiting the island.

Old Harbor is where the year-round ferry service docks, which is an essential lifeline for year-round residents. The ferry is the primary means of transportation for both residents and tourists. A lack of ferry service would disrupt daily life and if occurring during the summer would likely lead to a sharp reduction in tourism.

New Harbor, known for its marinas, boating, and water-based recreation, also plays an important role in attracting tourists to the island. If marinas and related services were significantly damaged, it would disrupt vital aspects of the island's tourism and maritime activities.

Substantial damage at either harbor could result in a decline in tourism which could put a strain on the local economy. Businesses reliant on tourism for income may be forced to close temporarily or even permanently, resulting in loss of income for workers and business owners. Given that New Shoreham is somewhat isolated, recovery from significant storm damage could be slower and more costly creating additional economic stress. Prolonged disruptions and economic hardship could lead to residents leaving the island for more stable living conditions, and possibly being replaced by seasonal residents. As the island's economy depends heavily on both tourism and the activities of its year-round residents, a substantial shift could impact the local economy.

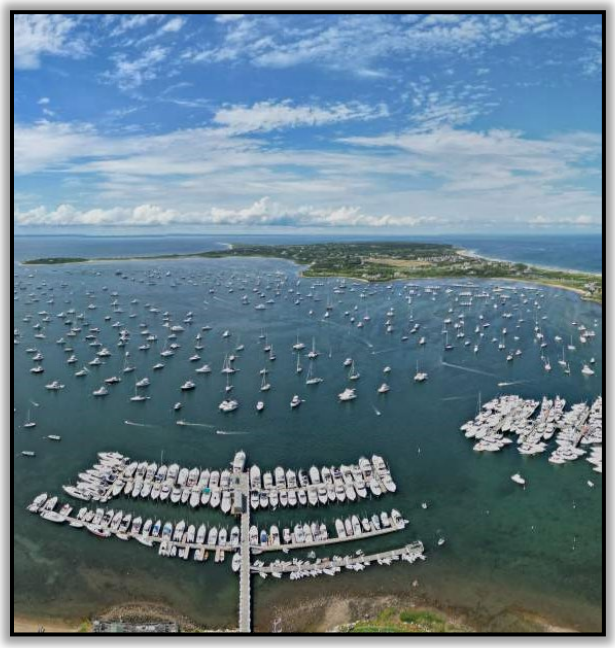


Figure 4-77 New Harbor
Photo Credit: Block Island Tourism Council

PEOPLE

4.4.5 People

The Town's Emergency Operations Plan (EOP) addresses the planned response to extraordinary emergency situations, including those related to natural disasters. The EOP is a preparedness document that outlines the concepts and methods for dealing with potential large-scale disasters while continuing to provide day-to-day essential services. The EOP provides procedures for warning and evacuating residents and visitors should it become necessary. In the event of a pending natural hazard threat, New Shoreham's protocol discourages non-residents from coming to the island and encourages non-residents on the island to vacate prior to the suspension of ferry/air service. Residents are generally encouraged to shelter-in-place, with those closer to the shoreline seeking temporary shelter from more inland neighbors as deemed necessary based on storm conditions. The small island community has adopted a neighbor-helping-neighbor approach which has effectively seen the island through numerous natural disaster events. Should it be necessary for residents or visitors, the Block Island School functions as the community's primary shelter and the Medical Center serving as a secondary shelter. These shelters both have backup generators and are large enough to accommodate the year-round population and a small number of visitors, but inadequate when the population rises dramatically in the summer months. As both the shelter capacity and emergency medical services are inadequate to handle the extensive summer population, minimizing the number of people on the island during a hazard event is critical.

It is important for Emergency Management to know the number of people that are considered to be at a higher risk in a natural hazard event in order to plan for their needs and safety. According to the 2020 Census, the population of New Shoreham is 1,410. The American Community Survey (ACS) five-year estimates (2019-2023) indicate that 11.6% of New Shoreham's year-round population is age 19 or younger, 37.0% age 60 or older, and **35.7% age 65 or older**. Comparatively, the population of those 65 or older in Washington County is 24.2% (US Census Bureau. *New,* Population), and for the State of Rhode Island is 18.3% (US Census Bureau. *Rhode,* Population).

Based on information from New Shoreham's Department of Human Services there are currently about 167 **seniors** living on the island full-time, with 21 identified as possibly needing assistance during a natural hazard emergency event due to a medical condition or financial limitations. This number may increase during the summer with the influx of seasonal residents. As New Shoreham has worked hard to cultivate a tight-knit community, generally those who need help tend to reach out to the Department of Human Services or neighbors/friends on the island.

Older residents may present additional challenges in terms of being safe during a natural hazard event and/or in the need to evacuate due to factors such as physical limitations, hearing or vision impairments, mobility issues, chronic health conditions, or medication needs. As there are no senior or assisted living facilities in New Shoreham, older residents are dispersed throughout Town which may make it more difficult for them to receive assistance during an emergency.

While it is important that all community members be encouraged to sign up for **the Code Red Emergency Notification System** and the **Rhode Island Special Needs Emergency Registry (RISNER)**, it is critical the Town continues making a concerted effort to inform seniors in the community of these two important emergency management programs. The Rhode Island Special Needs Emergency Registry is overseen by the RI Department of Health, and provides a reliable system for the identification of Rhode Islanders who may require assistance during emergencies (due to special healthcare needs, chronic conditions, disabilities, etc.) (RIDOH. *Special*). RISNER provides first responders the tools to reach out and prepare before the natural hazard arrives, which is highly beneficial especially in the case of evacuation orders. A link to Code Red and RISNER can be accessed through the Human Services webpage and a link to CodeRed is also on the Police Department webpage.

The 2023 ACS indicates there are roughly 1,947 housing units in New Shoreham, of which only 20.2±% (393 housing units) are identified as occupied year-round (US Census Bureau. *New,* Housing). As a summer tourist destination, most of the vacant housing units are either seasonal residents, vacation homes, or seasonal rental units. This community characteristic attributes to the Town's population increasing dramatically (often more than tenfold) during the summer months. **The influx of such a large population puts additional strain and challenges on local emergency management.**

The HM&FMP Public Opinion Survey had 182 respondents, of which the majority indicated that either they or someone in their household had been negatively impacted by a natural disaster while living or doing business in the Town of New Shoreham. Most people were impacted by *Vector Borne Diseases Transmitted by Ticks or Mosquitoes (52%),* Wind-Related Hazards (37%), Influenza/Coronaviruses (31%), and Coastal Erosion (31%).

An often-overlooked impact of a natural hazard is emotional and physical stress. Stress can affect residents if they have been hurt or witnessed people hurt; if their home or belongings are damaged; if they are forced to evacuate their home; have personal finances compromised; are subject to an extended period without electric power or with a shortage of supplies and necessities; and/or are not receiving effective communication regarding the hazard event. To help offset these impacts, the Town recognizes the continued need to impart to the community emergency preparedness and response awareness and to support additional services required as the result of a disaster. **Table 4-34** provides an overview of the risks to people from the profiled hazards.

Table 4-34 Human Vulnerability

Hazard Group	Vulnerability *(What is at Risk)*
 **Flood-Related Hazards** (Inland Flooding including Dam Failure; Coastal Flooding including Storm Surge; Coastal Erosion)	• Human vulnerability is based on: the availability, reception, and understanding of early warnings issued by the NWS for significant precipitation and flood-related events; heeding the advice of local officials; personal emergency preparedness; and access to substantial shelter and a means and desire to evacuate if so ordered. **Table 4-35** provides a list of weather watch, warnings, and advisories issued by the NWS and links to their definitions. • Flooding events increase the chance of spreading waterborne diseases, such as hepatitis A and cholera; the health risks to residents impacted may be significant during and after a flood event; at higher risk are those residing in the SFHA, and in areas subject to hurricane surge inundation. • Water intrusion into buildings can result in mold contamination, leading to indoor air quality problems; populations living in damp indoor environments experience increased prevalence of asthma and other upper and lower respiratory tract symptoms (CDC. *Precipitation*). • Receding floodwaters can create stagnant pools of water, which provide the perfect breeding ground for mosquitoes (*refer below to the Infectious Disease-Related information for the potential effects of mosquitoes on humans*). • Significant flooding can lead to extensive damage to structures and personal property which can cause emotional stress to those impacted. • Because the northern and southern land masses are connected by Corn Neck Road along a narrow straight which floods, the island can effectively be cut in half due to flooding or the impacts of storm surge . This could potentially leave those residing in the northern section of New Shoreham cut off from important lifelines, including emergency services, the medical center, and grocery store.

Hazard Group	Vulnerability *(What is at Risk)*
 **Flood-Related Hazards** *continued*	• Injuries to motorists may occur due to flooded roadways. • Based on data from Climate Central's Surging Seas Risk Finder (Climate Central. Surging) SLR will cause displacement of those residents and businesses on vulnerable properties: ➢ The number of people in New Shoreham who live on land below 3 feet above sea level is approximately 17. The localized projection based on the intermediate sea level rise scenario in the NOAA Technical Report for the 2018 U.S. National Climate Assessment points to a 100% risk of at least one flood over 3 feet taking place between today and 2050 in the New Shoreham area. ➢ The number of people in New Shoreham who live on land below 5 feet above sea level is approximately 36. The localized intermediate sea level rise scenario points to a 79% risk of at least one flood over 5 feet taking place between today and 2050. ➢ The number of people in New Shoreham who live on land below 7 feet is approximately 58. The localized intermediate sea level rise scenario points to a 15% risk of at least one flood over 7 feet taking place between today and 2050.
 **Wind-Related Hazards** (High Winds; Thunderstorms including Lightning & Hail; Tornadoes; Tropical Cyclones)	• Human vulnerability is based on: the availability, reception, and understanding of early warnings issued by the NWS for significant wind-related events including hurricanes and tornadoes; heeding the advice of local officials; personal emergency preparedness; and access to substantial shelter and a means and desire to evacuate if so ordered. **Table 4-35** provides a list of weather watch, warnings, and advisories issued by the NWS and links to their definitions. • New Shoreham residents and businesses in close proximity to the shoreline are generally at higher risk to the impacts from high wind events. • High wind events, particularly hurricanes, that cause a loss of electricity can result in dangerous conditions including no phone/internet service available for storm advisories and medical emergencies; spoilt refrigerated food; lack of heat, which, if occurring in conjunction with freezing temperatures can lead to dangerous health conditions and the potential for pipes to freeze and burst; loss of sanitary facilities and potable water. • If downed power lines are arcing they present a threat to personal safety. • High winds can cause bodily injury from flying debris or structures collapsing; debris can block roadways preventing emergency access or a means to evacuate. • Over the years, building codes have improved the structural integrity of buildings, including the impacts of high winds; those residing in older homes that have not been renovated to meet current building standards may be at higher risk to wind-related damage which could put residents at higher risk of injury or death. • The availability, reception, and understanding of early warnings tornado alerts and access to a substantial shelter will impact vulnerability. Once warned of an impending tornado hazard, seeking shelter indoors on the lowest floor of a substantial building away from windows is recommended as the best protection against bodily harm. • Swimming, boating, and fishing are particularly dangerous during periods of frequent lightning strikes, which can also cause power outages, topple trees, and spark fires. Individuals who immediately seek shelter in a sturdy building or metal roofed vehicle are much safer than those who remain outdoors. Early warnings of severe storms are also vital for aircraft flying through the area.

Hazard Group	Vulnerability *(What is at Risk)*
 **Winter-Related Hazards** (Heavy Snow; Ice; Extreme Cold)	• Human vulnerability is based on: the availability, reception, and understanding of early warnings issued by the NWS for impending significant winter weather events; heeding the advice of local officials; personal emergency preparedness; and access to substantial shelter and a means and desire to evacuate if so ordered. **Table 4-35** provides a list of weather watch, warnings, and advisories issued by the NWS and links to their definitions. • Heavy snow and ice events that cause a loss of electricity can result in dangerous conditions including no phone/internet service available for storm advisories and medical emergencies; lack of heat during extended cold periods can lead to dangerous health conditions and the potential for pipes to freeze and burst. Residents with backup generators will help to mitigate the impact from power outages. • Snow, ice, hail, and freezing temperatures may create treacherous driving conditions, cause transportation delays, and create transportation challenges for first responders or others who may need to be on the roads, including those trying to access emergency shelters. • Heavy snow may cause school and business closures as well as disrupt ferry and air service to/from the island. • Overexertion while shoveling snow may lead to dangerous health conditions including stokes or heart attacks. • Ice can create dangerous walking conditions – seniors or others who may be less stable are at more risk of falling and injuring themselves. • Snow and ice events can cause downed trees and limbs which can damage power lines and block transportation routes. Both pedestrians and vehicle passengers are at risk. • Exposure to extreme cold for an extended period can lead to health concerns including frost bite and hypothermia (of particular concern for infants/seniors); certain medications, medical conditions, or the consumption of alcohol can make people more susceptible to the cold. • Extreme cold may increase the potential for house fires and carbon monoxide poisoning due to increased use of supplemental heating devices. • Pets may be affected by severe winter weather, especially those that are kept outdoors. • There are some residential and commercial structures sporadically located throughout New Shoreham, particularly in the Historic District, that are of older construction and may be more susceptible to roof collapse due to heavy snow loads which could put residents at higher risk of injury or death. • Critical Buildings: Several critical buildings have at least some portion of their roof that is either flat or has a low pitch and may therefore be at greater risk of failure from heavy snow. These include the Block Island School, Block Island Historical Society, and Town Beach Pavilion. Should people be in the buildings at the time of roof failure, they may be injured.
 **Infectious Disease-Related Hazards**	**Mosquitoes & Ticks** • Increased tick and mosquito populations resulting from climate change may lead to more vector-borne diseases in people. • As mosquitoes lay eggs in standing water, conditions conducive for breeding can be found town-wide; residents who minimize standing water on their properties (including in outdoor vessels, etc.) will lessen the mosquito population in the vicinity of their homes.

Hazard Group	Vulnerability *(What is at Risk)*
 **Infectious Disease-Related Hazards** (Vector-borne Diseases Transmitted by Ticks or Mosquitoes; Contagious Respiratory Illness Caused by Influenza Viruses or Coronaviruses) *continued*	• The CDC states that everyone is at risk from mosquito bites (CDC. *Mosquito*); New Shoreham residents living or engaging in outdoor activities in close proximity to areas more conducive to mosquito breeding (forested/shrubland areas, and standing water along rivers, ponds, and wetlands) are at higher risk of being bitten. Similarly, New Shoreham residents living or engaging in outdoor activities in close proximity to wooded and grassy areas where higher populations of ticks tend to be found are at greater risk of being bitten. • Pets can be potential hosts for ticks, putting their owners at potentially greater risk. Owners should consult with veterinarians to determine how best to mitigate ticks on their pets. • If infected, elderly residents, children, and anyone with a weakened immune system may suffer more severe illness related to mosquito- and tick-borne diseases. • Higher populations of ticks tend to be found in wooded and grassy areas where the creatures they feed on live and roam. Typically, ticks climb to the top of a grass blade or the tips of a bush or branch and wait for potential prey to pass by. Higher concentrations of mosquitoes will be found in forested and wetland areas. Several of the Town's natural resources may provide environmental conditions more favorable for tick and mosquito populations, including the Block Island Nature Conservancy Preserve, Greenway Trails, Rodman's Hollow, and Southeast Lighthouse Trails. People frequenting these types of environments increase their opportunity to be bitten and infected. Signage at these locations educating the community to use appropriate repellants, stay on the trails, wear protective clothing such as long sleeves and pants, and perform a thorough tick check after outdoor activities may help to decrease vector-borne diseases. **Influenza (Flu)** • The CDC identifies those highest at risk of getting serious complications from flu as children younger than 5, but especially younger than 2 years old; adults 65 years or older; pregnant women; people with any chronic illness, especially heart, lung (including asthma), or kidney disease; and people with weak immune systems (CDC. *Seasonal Influenza*). **Coronavirus Disease 2019 (COVID-19)** • The CDC has indicated that there are many factors that increase a person's vulnerability to get severely ill from COVID-19. The following list (adapted from the CDC. *COVID-19 Risks,* CDC. *Press Release*, and CDC. *People*) identifies severity risk increases: o people in their 50s and further increases for people in their 60s, 70s, and 80s; people 85 and older are the most likely to get very sick; o people with chronic lung diseases, including COPD (chronic obstructive pulmonary disease), asthma (moderate-to-severe), interstitial lung disease, cystic fibrosis, and pulmonary hypertension; o people who have certain underlying medical conditions, including Chronic kidney disease; o Obesity (BMI of 30 or higher), immunocompromised state (weakened immune system) from solid organ transplant; and

Hazard Group	Vulnerability *(What is at Risk)*
 **Infectious Disease-Related Hazards** *continued*	○ Serious heart conditions, such as heart failure, coronary artery disease, or cardiomyopathies, Sickle cell disease, Type 2 diabetes, asthma, high blood pressure, neurologic conditions such as dementia, cerebrovascular disease such as stroke, pregnancy. • Systemic health and social inequities may increase the risk of getting sick and dying from COVID-19 among certain racial and ethnic minority groups and people with disabilities. Factors affecting health equity include (CDC. *Health Equity*): ○ **Discrimination**: can lead to chronic and toxic stress, and shapes social and economic factors that increase risk for COVID-19; ○ **Healthcare access and use:** multiple barriers to accessing health care, for example lack of insurance, transportation, child care, or the ability to take time off of work may increase risk for COVID-19; ○ **Occupation:** work in essential settings (healthcare facilities, farms, factories, grocery stores, public transportation, etc.) can lead to more chances of COVID-19 exposure; ○ **Educational, income, and wealth gaps:** less access to high-quality education may limit job opportunities that minimize exposure to COVID-19; and ○ **Housing:** living in crowded conditions can make it very difficult to isolate when you are or may be sick with COVID-19. • It should be recognized that the more underlying medical conditions or systemic health and social inequities a person is subject to, the higher their overall risk to COVID-19. • A number of factors associated with the COVID-19 Pandemic, including uncertainty, social isolation, closures/disruption to work and school has created significant emotional stress for many. • Critical Buildings: A number of the critical buildings are considered places where sufficient people are in contact and therefore more vulnerable to the spread of Influenza or Coronavirus. Those buildings include: BI School, BI Early Learning Center/ Community Center, BI Medical Center, BI State Airport, Block Island Grocery, Helping Hands Food Pantry, and the Island Free Library.
 **Other Hazards** (Earthquakes; Extreme Heat; Drought; Brush Fires)	**Earthquakes** • People who are socially isolated or less mobile may be at greater risk. • There are some residential and commercial structures located throughout New Shoreham that are of older construction and may be more susceptible to damage from earthquakes; this is particularly true in the Old Harbor Historic District. Structural failure or failing debris could put residents at higher risk of injury or death. • Critical Buildings: Although an earthquake of significance is considered a low probability for New Shoreham, should one occur, depending on the magnitude and epicenter, all critical buildings are vulnerable to some level of damage. People can be injured due to collapsing buildings or falling debris. **Extreme Heat** • Physical effects of heat can cause major health problems, dehydration, and may lead to death. • Some natural resources have limited shaded areas and therefore visiting those areas on hot days may put individuals at higher risk to the impacts of extreme heat.

Hazard Group	Vulnerability *(What is at Risk)*


Other Hazards (Earthquakes; Extreme Heat; Drought; Brush Fires)
	• Certain populations are particularly sensitive to extreme heat for various reasons including health conditions such as cardiac or breathing problems, living and working conditions, mobility, and limited financial resources. RIDOH lists the following populations at risk to extreme heat (RIDOH. *Extreme Heat*):
	  ○ Infants and young children
	  ○ People with chronic, long-term medical conditions
	  ○ Disabled
	  ○ Outdoor workers
	  ○ People who use certain medications/illegal drugs
	  ○ Low-income residents
	  ○ People who are overweight/obese
	  ○ Pregnant women
	  ○ Athletes
	  ○ People who are socially isolated
	• Critical Buildings: Young children and senior populations may be more at risk from the impacts associated with extreme heat. As such, critical facilities that serve this population should be cognizant of the health impacts associated with extreme heat. Critical buildings that provide targeted services to these populations include the BI School, BI Early Learning Center, and Community Center.
	
	Drought
	• Block Island is considered a single continuous sole source aquifer which means the island's groundwater system is the primary and only practical source of potable water for the entire island. Prolonged drought conditions may impact available groundwater which can impact the health, safety, and welfare of all residents.
	• Those residents and businesses reliant on shallow wells are more vulnerable to the availability of well water during a drought.
	• While there are not many farms on the island, those with high water demands are particularly vulnerable to impacts of drought.
	• During droughts, dry soils may increase the number of airborne particles, such as pollen, which can irritate the airways and worsen chronic respiratory illnesses such as asthma; those suffering from asthma or other respiratory illnesses may be at higher risk.
	
	Brush Fire
	• Human vulnerability is based on the availability, reception, and understanding of early warnings issued by the NWS for impending fire weather events; heeding the advice of local officials; and personal emergency preparedness. **Table 4-35** provides a list of weather watch, warnings, and advisories issued by the NWS and links to their definitions.
	• Smoke particles from fire can cause adverse health effects in people, particularly those with respiratory and cardiovascular conditions.
	• Brush fires can pose a risk to human life, particularly if it ignites nearby structures. While there are limited forested areas in New Shoreham, properties with more trees or piles of dried yard debris may be more at risk.

Figure 4-78 New Shoreham



Photo Credits:

(Top Left) Community Center Senior Lunch

(Top Rt) Block Island Arts and Artisans Festival

(Bottom Left) Block Island School

(Bottom Rt) Block Island Reservations







Table 4-35 provides a list of weather watch, warnings, and advisories issued by the NWS and links to their definitions.

Table 4-35 Definitions of Weather Watch, Warnings and Advisories (adapted from NOAA|NWS. *Watch*)

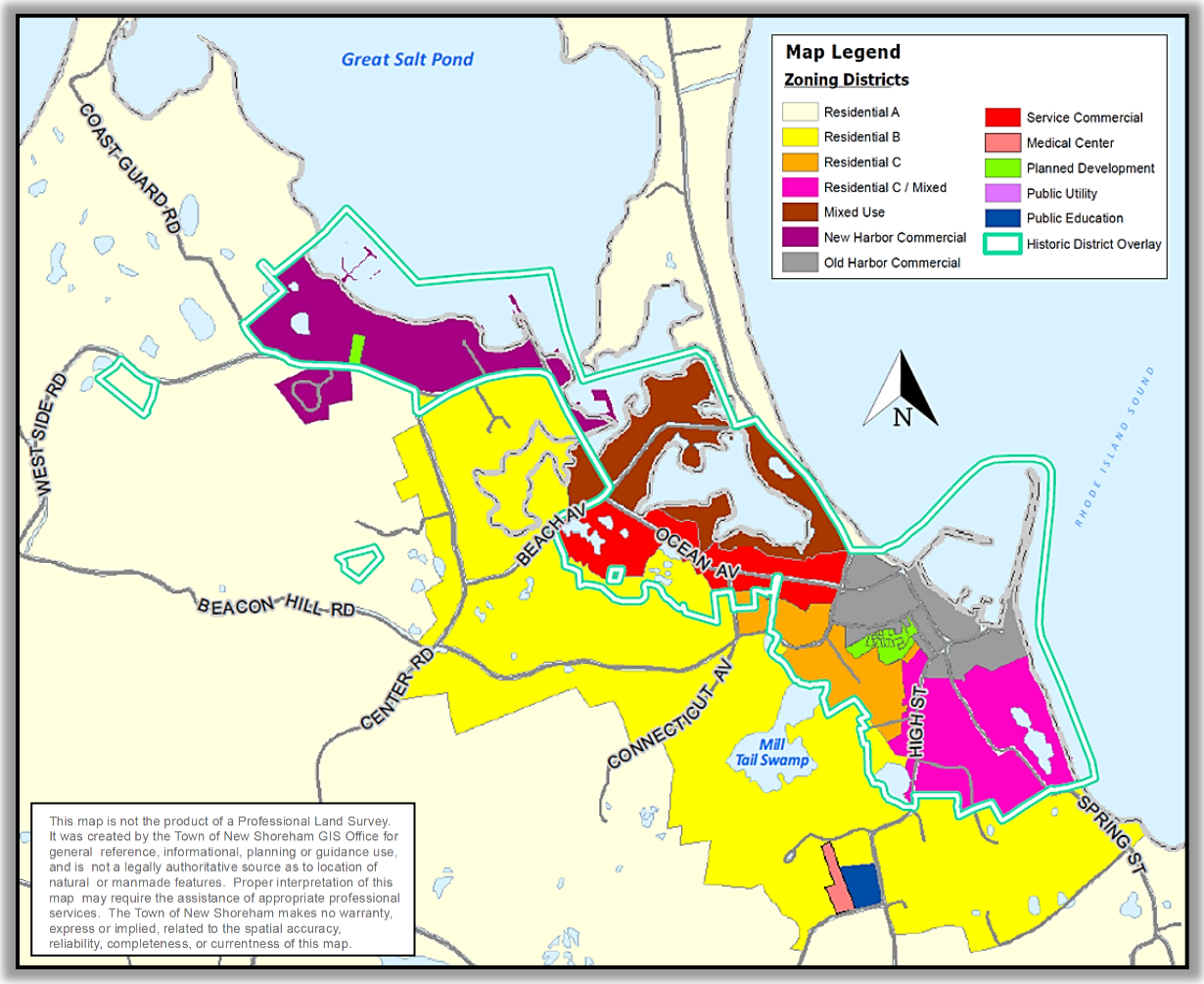
• Hazardous Weather Outlook	**Fire Weather** • Fire Weather Watch • Red Flag Warning	
Winter Weather/Cold Weather • Winter Storm Watch • Blizzard Warning • Winter Storm Warning • Ice Storm Warning • Winter Weather Advisory • Freeze Watch • Freeze Warning • Frost Advisory • Wind Chill Advisory • Wind Chill Warning	**Fog/Wind /Severe Weather** • Dense Fog Advisory • High Wind Watch • High Wind Warning • Wind Advisory • Severe Thunderstorm Watch • Severe Thunderstorm Warning • Tornado Watch • Tornado Warning • Extreme Wind Warning	**Flooding** • Coastal Flood Watch • Coastal Flood Warning • Coastal Flood Advisory • Flood Watch • Flash Flood Warning • Flood Warning • River Flood Watch • River Flood Warning
Marine • Small Craft Advisory • Gale Warning • Storm Warning • Hurricane Force Wind Warning • Special Marine Warning	**Excessive Heat** • Excessive Heat Watch • Excessive Heat Warning • Heat Advisory	**Tropical** • Tropical Storm Watch • Tropical Storm Warning • Hurricane Watch • Hurricane Warning

4.4.6 Future Development Trends

New Shoreham is a small island community that is coterminous (has the same boundaries) with Block Island. The island is located roughly twelve miles off the coast of Rhode Island (Town of New Shoreham RI. *Comprehensive*, 1-2) and is surrounded by the Atlantic Ocean to the south, east, and west, and to the north Block Island Sound separates it from mainland Rhode Island. Within its land boundaries New Shoreham's total municipal acreage is 6,076 acres, excluding the Great Salt Pond and connecting coastal ponds (Town of New Shoreham RI. *Comprehensive*, 11-3). Most of the island is rural with residential dwellings interspersed with open space and conservation land. However, as depicted in **Figure 4-79**, the area near and between Old Harbor and New Harbor is commercialized and supports the influx of summer tourist that can increase the year-round population of 1410 people (US Census Bureau. *New,* Population) by more than tenfold.

Development in New Shoreham is highly homogeneous. Based on the 2023 American Community Survey (ACS) 5-year estimates, approximately 90.9% of the 1,947 housing units in Town are single family dwellings. The remainder are a mix of 2 units (2.9±%), 3 or 4 units (1.2±%), and 5 or more units (4.9±%). Of the 1,947 housing units, only 393 (20.2±%) are identified as occupied (US Census Bureau. *New,* Housing). Housing units identified as vacant may be attributed to part-time residents, vacation homes, or seasonal rentals.

Figure 4-79 Existing Commercial Zoning (adapted from 2016 Comprehensive Plan Map LU2)



4.4.6.1 Development Between 2017-2024

Most of New Shoreham's growth over the past decade has been fueled by the purchase of vacation properties. Key development in New Shoreham since 2017 is listed in **Table 4-36**. As shown, only a modest amount of development has occurred which included two residential developments totaling 10 dwelling units. There have also been improvements to three commercial properties. **None of the development efforts initiated or completed since the previous Hazard Mitigation Plan (2017) have had an appreciable impact on the Town's vulnerability.**

Table 4-36 Development Post the 2017 HMP (2017-2024)

Project Name	Location	Number and Type of Units	Completion Date	SFHA/Hurricane Surge Inundation Area
Residential				
Cherry Hill Subdivision	171-175 Cooneymus Road	five (5) single family homes	Spring 2021	-----
Thomas Property	390, 197, 199 High Street	one (1) single family home and two (2) duplex residences (total 5 dwelling units)	Winter 2024	-----
Commercial				
The Grove (Lark Hotels)	137 Dodge Street	fifty-four (54) bed employee housing	Fall 2022	-----
The Gothic (Lark Hotels)	145, 440 Dodge Street	**renovated** fourteen (14) room hotel/annex	Spring 2024	-----
Inn at New Harbor	95, 585 Beach Avenue	**replacement** of ten (10) room inn that was demolished	Summer 2025	-----



Figure 4-80 View of Old Harbor Area Photo Credit: New Shoreham Zoning Board of Review

4.4.6.2 Buildout Analysis

A Residential Buildout Analysis was conducted as part of the 2016 Comprehensive Plan to assess the maximum future residential development capacity based on current zoning regulations. Anticipating the impacts of future development is essential to ensure and assure residents that their quality of life will not be negatively impacted.

The residential build-out analysis estimates that, under the existing Zoning Ordinance, approximately 532 additional residential building lots could be developed in New Shoreham. Using the 2006-2015 average of 10 new dwelling units per year, it is estimated that build-out would occur in 53 years (Town of New Shoreham RI. *Comprehensive*, 11-10).

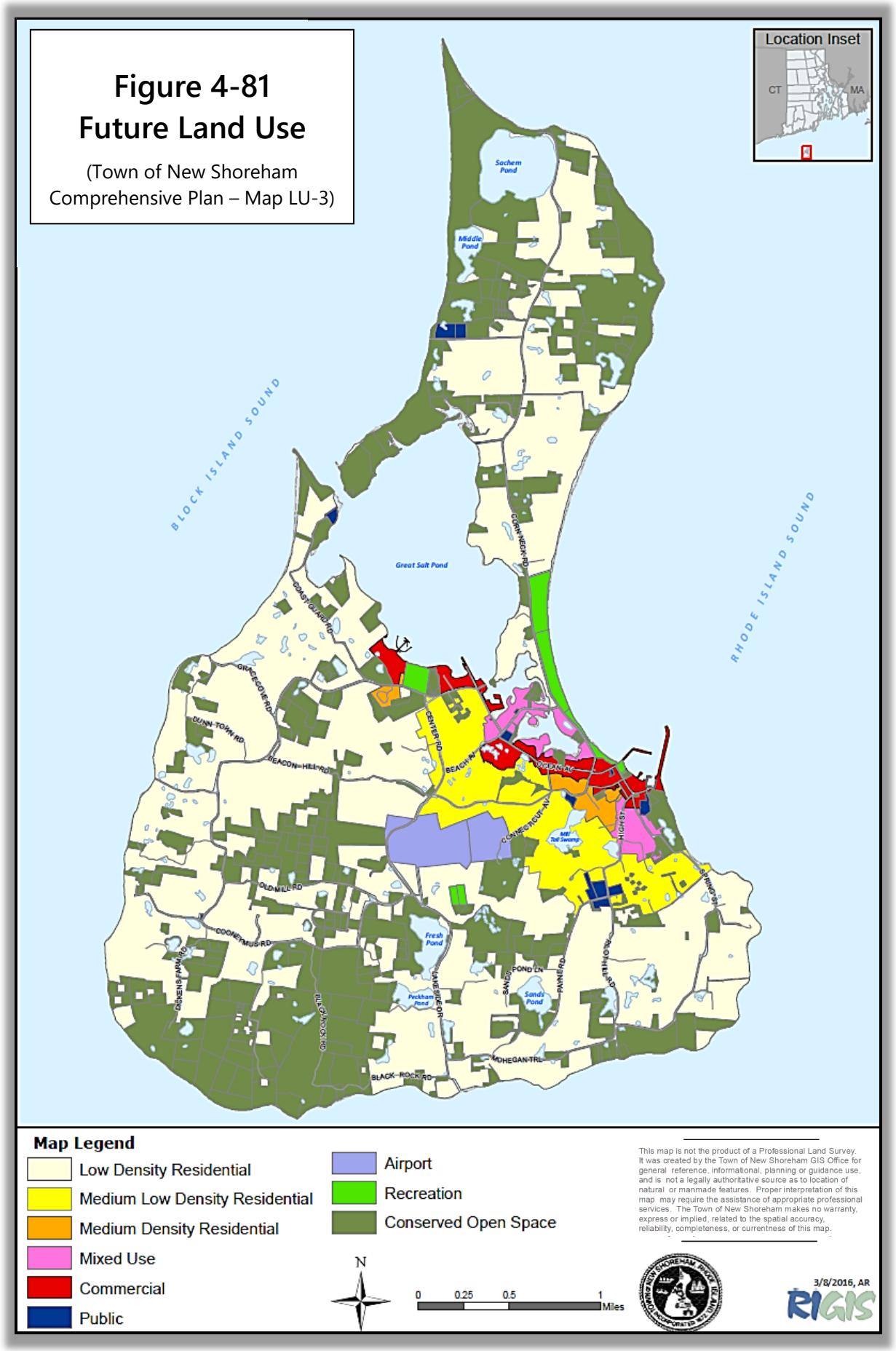
As commercial land use in Town is severely constrained, the Comprehensive Plan did not undertake a buildout analysis for this land use.

4.4.6.3 Future Land Use

A Future Land Use Map was created as part of the 2016 Comprehensive Plan and is considered "the visual depiction of the community's desires for types, patterns, and intensities of development. It is a policy statement directing municipal decision-makers as to what types of land uses are desired in each area and setting a vision for the municipality's future growth over the next 20-years [through 2036]. The Future Land Use Map serves as the underpinning for local zoning regulations that legally regulate development in the community" (Town of New Shoreham RI. *Comprehensive*, 11-12). The future land uses "were determined based upon the island's historic development pattern, the natural characteristics of the land, the transportation network, the availability of services and facilities, and the need to protect water quality, environmental quality, and the scenic quality of the Block Island" (Town of New Shoreham RI. *Comprehensive*, 11-1). The Future Land Use Map (**Figure 4-81**) includes the nine categories listed in **Table 4-37**.

Table 4-37 Future Land Uses

Low Density Residential minimum 120,000 sqft lots	**Medium Low Density Residential** minimum 60,000 sqft lots	**Medium Density Residential** ranging from 20,000 to 40,000 sqft lots depending on availability of public water and sewer
Mixed Use combination of residential and appropriate retail/services; ranging from 20,000 to 40,000 sqft lots depending on available services and natural resources present	**Commercial** adjacent to Old Harbor and New Harbor; minimum 20,000 sqft lots	**Public** land holdings of local, state, and federal governments or their agencies
Recreation publicly held land for recreation purposes	**Conserved Open Space** publicly and privately held conservation lands	**Airport** Block Island State Airport which covers an area of 136± acres


Figure 4-81
Future Land Use
(Town of New Shoreham
Comprehensive Plan – Map LU-3)
Location Inset
CT
MA
Sachem Pond
Middle Pond
Great Salt Pond
BLOCK ISLAND SOUND
RHODE ISLAND SOUND
CORN NECK RD
COAST GUARD RD
GRACE COVE RD
DUNN TOWN RD
BEACON HILL RD
CENTER RD
BEACH AV
CHESSMEGROT AV
OCEAN AV
HIGH ST
OLD MILL RD
COCHEMUS RD
OCEANS FARM RD
CHICKEN ROCK HILL
Fresh Pond
Peckham Pond
LAKESIDE DR
SANDS POND LN
Sands Pond
PAYNE RD
SLOCUM RD
SOUTH HILL RD
MOHEGAN TRL
BLACK ROCK RD
Map Legend
Low Density Residential
Medium Low Density Residential
Medium Density Residential
Mixed Use
Commercial
Public
Airport
Recreation
Conserved Open Space
This map is not the product of a Professional Land Survey. It was created by the Town of New Shoreham GIS Office for general reference, informational, planning or guidance use, and is not a legally authoritative source as to location of natural or manmade features. Proper interpretation of this map may require the assistance of appropriate professional services. The Town of New Shoreham makes no warranty, express or implied, related to the spatial accuracy, reliability, completeness, or currentness of this map.
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3/8/2016, AR
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4.4.6.4 Future Development

Strong resident sentiment has historically persevered in maintaining the unique character and historic charm of New Shoreham. This sentiment is interwoven into the Town's 2016 Comprehensive Plan, including zoning most of the island as low density residential with higher density residential and commercial being limited to the vicinity of the two harbors. Unregulated development within flood hazard areas, wetlands or near waterways is curbed by local land use regulations and ordinances as well as Federal and State regulations. In addition, the preservation of open space has a long and impressive history in New Shoreham. According to the Block Island Land Trust, as of September 2024, **preserved open space in New Shoreham totaled 2,829 acres, or 46.1% of the island's 6,076 acres**. Of that, 371 acres (6%) is unprotected undevelopable open water and wetlands.

As recognized in the Comprehensive Plan, the intent of the land use planning the Town has undertaken is to balance land uses which support the community's growth and economic needs while retaining the island's character and protecting the natural environment and historic sites. In doing so the Town has intrinsically helped to mitigate natural hazard risks.

As shown in **Table 4-38**, there are only three development efforts thus far identified for the ensuing five-year period, and two of them are replacements/renovations of existing buildings. The entrance to one of the existing buildings is in the AE flood zone and subject to surge inundation from a Category 3 Hurricane. The identified new residential housing project is located outside of both the Special Flood Hazard Area (SFHA) and hurricane surge inundation zones and will not have an appreciable impact on the Town's vulnerability.

Most of the remaining land available for development is away from the coast and upland from the Special Flood Hazard Area (SFHA) which minimizes vulnerability to flood and wind-related natural hazard risks. Further, all new development, **must comply with current floodplain regulations, State building codes, and stormwater standards.** New Shoreham's Land Use Department, in collaboration with the Town Council and HM&FMP Advisory Committee will monitor development trends and determine any resulting changes in vulnerabilities that natural hazards will present.

Table 4-38 Potential Development Over the Next 5-Years (2025-2030)

Project Name	Location	Number and Type of Units	Completion Date	SFHA/Hurricane Surge Inundation Area
Residential				
Ball O'Brien Housing	Map 18-Lot 2-3 West Side Road	10-20 dwellings in multi family structures	TBD	-----
Commercial				
Harborside Hotel	41 Water Street	**replacement** of 35± bedroom hotel after a fire and demolition	TBD	-----
Former Old Island Pub	85 Ocean Avenue	**convert existing building** (former pub and restaurant) to 10-bed employee housing	Summer 2025	Entrance to property in AE Zone and Cat 3 Hurricane Inundation Area

4.4.6.5 Town's Ability to Expand and Improve Capabilities

As further discussed in **Section 5**, the Town of New Shoreham has numerous ongoing capabilities (authorities, policies, programs, and resources). In an effort to further mitigate the impacts of natural hazards, the Town intends to expand on and improve many of their capabilities including the following which relate to future development:

Building Official

The Town's Building Official implements and enforces the State Building Code ensuring new structures or those substantially renovated are compliant. To ensure that no violations exist, mandatory, progressive, on-site inspections are made while work is in progress. The capability of the Building Official is continually expanded through ongoing education on the current NFIP policies and ordinances, floodplain management practices, and professional engagement with the Association of State Floodplain Managers, Rhode Island Emergency Management Agency (RIEMA), and the State Building Commissioner's Department.

Improved Floodplain Drainage

In compliance with the RI Nonpoint Source Pollution (RINPS) Management Plan and the RI Pollutant Discharge Elimination System (RIPDES) regulations, the Town of New Shoreham has an ongoing effort to improve stormwater drainage infrastructure in flood prone areas. Riverine, coastal, and sheet-flow flooding can be relieved through a well-designed and maintained drainage system that efficiently retains, detains, or directs the flow of stormwater to points where the impacts of flooding will be minimized. As identified in the Action Plan (**Section 6**), the following actions include implementing drainage projects to improve stormwater management.

- **Action 2025-E:** Expand green infrastructure stormwater management practices throughout the natural environment through monitoring, maintenance, and implementing new or retrofitting existing stormwater measures, and strengthening the Town's maintenance and management of public trees/forest floor.
- **Action 2025-F:** Continue to assess, monitor, maintain, and implement improvements to public roadways and associated drainage infrastructure to improve safety, mitigate flooding and erosion, and mitigate future impacts from SLR (which may require abandoning sections or raising sections of roadways); wherein feasible incorporate green infrastructure stormwater management practices and ensure resiliency in design for continued service during natural hazard events.

Regulations and Ordinances

The Town has enacted regulatory restrictions designed to reduce the potential impacts of flooding to property by limiting development in and around wetlands and flood-prone areas. **Appendix 5-1** provides information on ordinances such as the Flood Ordinance and Protection of Dunes Ordinance which assist in mitigating natural hazards. As identified in the Action Plan (**Section 6**), the following action includes reviewing and potentially amending the Zoning Ordinance and/or Land Development and Subdivision Regulations, to improve resilience to natural hazards. An excellent resource available for New Shoreham is *Subdivision Design in Flood Hazard Areas*, produced jointly by FEMA and the American Planning Association. This publication discusses site-specific measures to minimize flood damage and preserve natural functions of floodplains, including coastal high hazard areas and low lying areas near rivers.

- **Action 2025-M:** Review and as deemed locally practical, amend the Subdivision and Land Development Regulations and Zoning Ordinance to:

  a. ensure compatibility with State law and reflect updated development practices and approaches that will promote and improve resilience across New Shoreham including against the threat of SLR.

  b. ensure appropriate resiliency and environmental protection is incorporated in new private and public development and redevelopment, especially in vulnerable areas including special flood hazard areas (SFHA), sea level rise encroachment areas, and sensitive natural habitats.

  c. enhance green infrastructure approaches, including Low-Impact Development (LID) requirements (*practices that can be employed at the site-level to control stormwater and strive to replicate the pre-development hydrology of the site*), particularly in areas vulnerable to natural hazards.

Management of Open Space

The Town recognizes the importance of managing conservation lands held in public and private ownership. In 1986, through enabling legislation the Town established the Block Island Land Trust (BILT) to preserve agricultural property, coastal region property, open space, and other undeveloped natural areas through purchase of development rights or land in fee simple. The Trust is funded by a 3% fee on the transfer of real property in New Shoreham. According to the Trust, as of September 2024, conservation holdings of the BILT represent 600 acres, or approximately 10% of the Town's total land area. Many of these acres were acquired jointly and are under shared ownership interest with island conservation partners such as The Nature Conservancy, Block Island Conservancy, and state and federal agencies. All preserved open space on Block Island totals 2,829 acres, or 46.1% of the island's 6,076 acres.

While great achievements have been made to protect important natural resource areas, the Town is cognizant that climate change, including the threat of SLR, makes it imperative to preserve low-lying areas adjacent the ocean, coastal ponds, and key inland waterbodies.

These conservation efforts, along with local and State regulatory measures (such as CRMC's Coastal Buffer Zone requirement), reduce the potential for development in flood prone areas subject to the adverse effects of hurricanes, coastal storms, and riverine flooding. As identified in the Action Plan **(Section 6)**, the Town intends to continue working with the State and conservation organizations to preserve and protect open space and restoring degraded wetlands and shorelines which will help reduce the risk of damage from flood events.

- **Action 2025-K:** Block Island Land Trust, pursuant to its enabling legislation, will continue to coordinate with various stakeholders in the maintenance, restoration, acquisition, and protection of open space, especially wetlands, flood hazard areas, and other natural resource areas (ex. agricultural land) with the intent to improve resiliency.

Emergency Management

The Town recognizes the importance of continually improving emergency management capacity as it enables the Town to effectively respond to and recover from natural disasters and other crisis situations. Having trained personnel, readily available resources, and well-coordinated plans will potentially save lives, minimize damage, and ensure a quicker return to normalcy. As identified in the Action Plan (**Section 6**), and detailed below, the following two actions includes a list of potential programs and activities New Shoreham is interested in implementing in order to improve the Town's capacity for pre-natural disaster preparedness and post disaster response and recovery.

- **2025 Action-D:** Enhance the emergency services network to further improve emergency response and recovery communication and coordination amongst community facilities and services, and members of the public.

  Potential Programs Include:

  - Implementing improvements to strengthen the reliability of the communications network, particularly to reduce impacts from wind-related communication interruptions.
  - Improving the municipal communications strategy to get important information out to residents, including expanding CodeRED and the RIDOH Special Needs Emergency Registry.
  - Improving direct connections between the critical service organizations and the public to help get resources to those in need quicker during and after natural disasters.
  - Disseminating information to residents and visitors through the Town website, Block Island Bulletin Board, and other mechanisms, to help them better prepare themselves, family members, and their properties in advance of storm or other hazard events.

- **2025 Action-H:** Continue to improve the Town's capacity for pre-natural disaster preparedness and post disaster response and recovery.

  Potential Capacity Building Activities:

  - Develop a long-term sustainable strategy for hazard mitigation & resilience project development and implementation (especially those identified within this *HM&FMP*), which might include: collaborative opportunities both interdepartmentally and with partners; staff or consultants (such as a Resilience Official) to facilitate grant writing/administration/project management; and a resilient long-term financing mechanism such as a tourist fee or other non-tax income stream, more robust capital improvement program, or line item for hazard mitigation/ resilience initiatives in the annual budget that can be used for project development (to create "shovel ready" projects for grant funding), grant match, or project implementation.
  - Maintain and update this *HM&FMP* on at least an annual basis with a full update every five years.
  - As flood management projects and initiatives are implemented, document those that qualify for Community Rating System (CRS) credit per the FEMA's CRS Coordinator's Manual.
  - Continue to educate local boards and commissions on hazard mitigation and resilience to promote awareness and to the extent practical, encourage the integration of hazard mitigation and resilience strategies into their programs and activities.
  - Continue to support the Volunteer Fire and Rescue and proposed plans to relocate and/or substantially renovate the Fire Station in order to ensure the best services possible for residents. The Town received a grant for 3.5M through Senator Reed's Office toward the engineering/design and construction/renovation of the fire station which may include municipal employee housing. The RFP for design services is tentatively scheduled to be issued in 2025.
  - Evaluate need for paid fire or rescue personnel.
  - Identify a sustainable annual revenue stream to support ongoing training for volunteer fire personnel.
  - The police, fire, and rescue services should continue to train/prepare for natural hazard events, ensuring emergency services are equipped to respond anywhere on the island, including the northern section of Town should Corn Neck Road be compromised. Preparedness should include response to a Category-3 hurricane (including a map depicting potential property at risk from various storm surge and wind speed projections).
  - Evaluate and maintain sources of water for fire suppression across Town, and wherein beneficial, assess options, such as installing additional dry hydrants, to improve fire suppression capabilities.
  - Assess emergency management fleet and update accordingly (specifically, replace Tanker 1 and Engines 2 and 4).
  - Add a high water vehicle able to navigate flooded areas to the Police and Fire Department fleet. This would assist emergency services should flood events cause extensive flooding along Corn Neck Road or other roadways.
  - Engage with Interstate Navigation to discuss the immediate and long-term need to increase resilience of the ferry system and to explore a possible public/private partnership around critical community needs such as evacuation and re-supply.
  - Revise the Planning Board's subdivision and development checklist to incorporate sea level rise and climate change considerations. This should include requiring applicants to use tools like STORMTOOLS to assess potential flood hazards and other climate-related risks for the property or proposed development. For existing coastal protection structures, on an ongoing basis the Town should maintain records of maintenance and repair activities as well as date stamped photos documenting the physical condition. Should a coastal protection structure be damaged due to a storm event, this documentation will provide a condition basis that may be required by FEMA for funding assistance to reconstruct/repair said structure.
  - Assess critical facilities for Category 3 hurricane winds.

SECTION 5

Capability Assessment

Subsections

5.1 CAPABILITY INVENTORY

5.1.1 Planning and Regulatory Capabilities

5.1.2 Administrative and Technical Capabilities

5.1.3 Financial Capabilities

5.1.4 Key Local Mitigation Measures Related to Profiled Hazards

5.2 PARTNERSHIPS AND PUBLIC OUTREACH

5.3 ASSESSMENT OF 2017 HAZARD MITIGATION ACTION PLAN

KMJ – CE/RP

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5 Capability Assessment

The Town of New Shoreham has the capacity to implement and institutionalize hazard mitigation through its personnel, legal, and fiscal resources; intergovernmental coordination and communication; and academic and analysis tools. In addition, New Shoreham is fortunate to have a community base - residents, business owners, organizations, and institutional leaders - that support hazard mitigation and other critical issues important to the Town's future. A collaborative and engaged local governance and community are necessary to ensure New Shoreham's preparedness for natural hazards.

In **Section 4**, the planning process identified the natural hazards posing a threat to New Shoreham and described the vulnerability of the Town to those risks. In this Section, the *Capability Assessment* provides the opportunity to evaluate what mitigation mechanisms are already in place. In other words, what policies, programs, regulations, authorities, personnel, funding, and other resources are available to the Town to aid in natural hazard mitigation and reduce long-term vulnerability.

The *Capability Assessment* is an important step because understanding what is already in place and the effectiveness of those capabilities provides the opportunity to identify where additional measures or revisions to existing measures are needed. The Town has the capacity to expand and improve certain capabilities through measures included in the *Action Plan*; through the passage and enforcement of additional codes and regulations; by integrating mitigation measures into other Town planning documents and programs; and by continually increasing community and stakeholder engagement, including expanding those involved in the HM&FMP Advisory Committee to reflect growth and change in the community.

The *Capability Assessment* is structured in part as an inventory of existing mitigation capabilities, which may help decrease the community's hazard risk and/or impact the way pre- and post-hazard events are handled. In addition to the inventory, the *Capability Assessment* includes an overview of the Town's partnerships with various agencies and organizations that support hazard mitigation; public outreach efforts; and the status of the 2017 Hazard Mitigation Action Plan. This information has been provided in the following subsections:

5.1 Capability Inventory
5.2 Partnerships and Public Outreach
5.3 Assessment of 2017 Hazard Mitigation Action Plan

5.1 CAPABILITY INVENTORY

The Capability Inventory identifies existing mitigation capabilities that in some way contribute to or inform the hazard mitigation process in the Town of New Shoreham. The inventory includes Local, Regional, State, and Federal measures and has been organized into three categories. Although a number of the capabilities could be represented in more than one of the categories, for simplicity most have only been included once within the capability inventory.



As evidenced by the citations throughout the *HM&FMP*, relevant information from a significant number of the resources included in the Capability Inventory have been incorporated into the *Plan*. Integrating this information was critical to reflect updated Town priorities. Familiarization with the Town's existing capabilities helped to shape the mitigation goals and strategy. As documented in the *Action Plan*, a number of *Mitigation Actions*, are taken directly from or build on the good work and priorities identified in other Town planning documents. Some of the proposed mitigation actions were identified to fill gaps within the Town's existing protection matrix in an effort to make the community more resilient.

Over the ensuing five year period, the Town intends and has the ability to further expand on and improve existing policies and programs.

Over the ensuing five year period, the Town intends and has the ability to further expand on and improve existing policies and programs. This is evidenced in **Appendices 5-1 through 5-3**, as well as in **Subsections 4.4.6 and 6.4**. Key examples of New Shoreham's ability to improve its capabilities over the upcoming 5-year period include:

- The Town Council will work to strengthen their understanding of hazard mitigation, the beneficial uses of floodplains, and applicable State or national policies and programs (such as ASFPM's No Adverse Impact Initiative) that will aid in natural hazard mitigation and reduce long-term vulnerability
- New Shoreham will continue to explore opportunities to improve essential services and critical facilities
- The Emergency Management Task Force will work to strengthen the coordination between themselves, the Building Official, Land Use Department, and the Planning Board in order to leverage assets/resources to strengthen the effectiveness of hazard mitigation
- The Emergency Management Task Force will continue to have periodic reviews of backup procedures and redundant equipment to ensure they are adequately prepared for emergency situations
- The Volunteer Fire & Rescue intends to expand trainings, drills, and exercises
- Further integrating hazard mitigation into future Comprehensive Plan updates
- Integrating hazard mitigation into future planning initiatives
- Increasing coordination and engagement with the local business community, neighboring jurisdictions, and other stakeholders
- Expanding community outreach activities and public participation in hazard mitigation related activities
- Improving and expanding the Town's Website – including additional information on flood risks and preparedness
- Improving and expanding the Town's GIS – including a stormwater drainage layer
- Expanding CRS program activities
- Reviewing and strengthening existing codes and regulations associated with hazard mitigation

5.1.1 Planning and Regulatory Capabilities

As discussed in **Section 2**, an extensive plan integration was undertaken which examined Local, Regional, State, and Federal plans, policies, ordinances, regulations, and programs that support hazard mitigation and flood management goals in the Town of New Shoreham.

CRS CREDIT:

Mitigation Planning Element	CRS Planning Step	Max Pts
Phase III –Mitigation Strategy	7. Review Possible Activities (a & b)	10

CRS Coordinator's Manual – Activity 510: Floodplain Management Planning

While there is always room for improvement, the Town is proud of the efforts made to enact regulatory restrictions and undertake studies and activities which have laid the foundation for the mitigation strategy included herein. **As part of plan integration, and in accordance with CRS Activity 510 Planning Process - Step 7, the Town reviewed preventive activities including zoning, stormwater management regulations, building codes, subdivision ordinances, and the preservation of wetlands and open space.** With respect to floodplain management, how to reduce future flood losses and if the Town should adopt or revise these planning tools to better meet current or future conditions was considered. **Table 5-1** lists the *Planning and Regulatory Capabilities*.

The assessment of these capabilities, including key discussion points and *HM&FMP* integration considerations, has been included in **Appendix 5-1** with hyperlinks wherein available. In the Appendix, the section related to local capabilities also includes a **Level of Effectiveness rating to assist in determining limitations of the existing data and which measures should continue to be supported or enhanced.** Capabilities with a low or moderate rating were further reviewed to determine if the measure should be updated or if the 2016 Comprehensive Plan or other measures effectively incorporate that capability. The ideas, information and strategy from the HM&FMP will be further integrated into these planning mechanisms as they are updated in the future. Further, since the Town participates in the Community Rating System (CRS) program, it has been noted if a particular capability, or aspect thereof, may qualify for CRS credit.

Table 5-1 List of Planning and Regulatory Capabilities (Refer to Appendix 5-1 for Assessment Details)

LOCAL (the capabilities have been listed in alphabetical order)
A Blueprint for Community Wastewater Management (2003)
Block Island Harbors Sea Level Rise Adaptation Study (2013)
Block Island and the Invisible Burden of Tourism - Sustainable Tourism Report (2022)
Comprehensive Plan (2016)
Corn Neck Road Transportation Resiliency Study (2017)
Emergency Operations Plan (2011)
Flood Insurance Rate Maps
Geographic Information System (GIS)
Harbor Management Plan (2024)
Hazard Mitigation & Flood Management Plan (2025) ***** THIS DOCUMENT *****
Hazard Mitigation Plan (2017)
MRP Community Resilience Building (CRB) Process & Workshop Summary of Findings (2021)
The Code of the Town of New Shoreham RI: § 4-16. Building Code
The Code of the Town of New Shoreham RI: § 5-6. Open Fires
The Code of the Town of New Shoreham RI: Chapter 11 Natural Resources Protection
The Code of the Town of New Shoreham RI: § 15-1. Snow and Ice Removal
The Code of the Town of New Shoreham RI: Appendix D Land Development and Subdivision Regulations
The Code of the Town of New Shoreham RI: Appendix E Zoning Ordinance

REGIONAL/STATE (the capabilities have been listed in alphabetical order)
Association of State Floodplain Managers (ASFPM)
Coastal Resources Management Council (CRMC)
Narragansett Bay National Estuarine Research Reserve (NBNERR)
Resilient Rhode Island Act (2014) and subsequent 2021 Act on Climate
Resilient Rhody: Municipal Resilience Program
Rhode Island Climate Change Commission (RICCC)
Rhode Island Department of Administration (RIDOA) - Rhode Island Division of Statewide Planning (RIDSP)
Rhode Island Department of Environmental Management (RIDEM)
Rhode Island Department of Health (RIDOH)
Rhode Island Department of Public Safety (RIDPS)
Rhode Island Department of Transportation (RIDOT)
Rhode Island Emergency Management Agency (RIEMA)
Rhode Island Flood Mitigation Association (RIFMA)
Rhode Island Geographic information System (RIGIS)
Rhode Island Office of Energy Resources (RIOER)
Rhode Island Sea Grant
Rhode Island State Building Code
FEDERAL (the capabilities have been listed in alphabetical order)
Americans with Disabilities Act Guide for Small Towns
Clean Water Act
Federal Disaster Mitigation (some key Acts)
Federal Emergency Management Agency (FEMA)
National Oceanic and Atmospheric Administration (NOAA)

5.1.2 Administrative and Technical Capabilities

The *Administrative and Technical Capabilities* include policies, standard operating procedures, public services, trainings, and tools that can be used for mitigation planning and to implement specific mitigation actions. At the local level, it encapsulates the skills and expertise of the Town of New Shoreham staff in terms of their ability to effectively undertake hazard mitigation planning and implementation, and the coordination of associated resources. **Table 5-2** provides a list of the *Administrative and Technical Capabilities* that were reviewed at the Local, Regional, State, and Federal level. The full assessment has been provided in **Appendix 5-2** with hyperlinks wherein available.

Table 5-2 List of Administrative and Technical Capabilities (Refer to Appendix 5-2 for Assessment details)

LOCAL (the capabilities have been listed in alphabetical order)
Block Island Conservancy (BIC)
Block Island School
Boards & Commissions

Community Center
Coordination with Neighboring Mainland Municipalities
Coordination with Schools and Universities
Evacuation and Emergency Shelter
Helping Hands of Block Island, Inc. (Food Pantry)
Island Free Library
Map Information Services
Medical Facilities and Services
Senior Citizen Services
Town Administration and Departments
Town Communication - Website & Social Media
Warning and Notification Systems
REGIONAL/STATE (the capabilities have been listed in alphabetical order)
American Red Cross - Rhode Island Chapter
Northeast States Emergency Consortium (NESEC)
Rhode Island Association of Conservation Districts (RIACD)
Rhode Island Office of the State Fire Marshal
Rhode Island Public Utilities Commission and Division of Public Utilities and Carriers
Save The Bay
StormSmart Coasts Rhode Island
Stormwater Innovation Center
The Nature Conservancy (TNC)
University of New Hampshire Stormwater Center (UNHSC)
University of Rhode Island (URI)
FEDERAL (the capabilities have been listed in alphabetical order)
Institute for Business and Home Safety (IBHS)
National Flood Insurance
National Voluntary Organizations Active in Disasters (VOAD)
National Warning and Alert Systems
Pandemic and All-Hazards Preparedness Act (PAHPA)

5.1.3 Financial Capabilities

Funding of mitigation projects can at times cause delays in the implementation of the necessary action. New Shoreham, like most communities, rely on tax revenues with occasional grant funding to supplement a project. The Advisory Committee intentionally included a broad spectrum of mitigation actions (**Subsection 6.4**) in order to provide opportunities for smaller, low-budget projects to be implemented through the operating budget, as well as larger projects whose implementation may require Capital Improvement Program (CIP) funding and/or grant funding. With respect to grant funding, the Town - across all municipal departments - will consider and pursue applicable Local, Regional, State, and Federal grant opportunities to assist in implementing hazard mitigation programs.

The *Financial Capabilities* identified in **Table 5-3** represent potential funding sources the Town has access to, has used in the past, or may be eligible to use in the future for hazard mitigation measures. The full assessment of the financial capabilities has been provided in **Appendix 5-3** with hyperlinks wherein available. A number of the recent hazard mitigation related grants awarded to New Shoreham have been listed in **Table 5-4.**

Table 5-3 List of Financial Capabilities (Refer to Appendix 5-3 for Assessment details)

LOCAL (the capabilities have been listed in alphabetical order)
Community Organizations
Disaster Relief Funds
Mutual Aid Agreements for Public Safety Personnel and Equipment
Town Operating Budget & Capital Improvement Program (CIP)
REGIONAL/STATE (the capabilities have been listed in alphabetical order)
Congressionally Directed Spending (Earmark)
Narragansett Bay Estuary Program (NBEP)
Preserve Rhode Island
Rhode Island Coastal Resources Management Council (CRMC)
Rhode Island Commerce
Rhode Island Department of Environmental Management (RIDEM)
Rhode Island Department of Health (RIDOH)
Rhode Island Department of Transportation (RIDOT)
Rhode Island Division of Statewide Planning (RIDSP)
Rhode Island Emergency Management Agency (RIEMA)
Rhode Island Foundation
Rhode Island Housing - MTAP
Rhode Island Infrastructure Bank (RIIB)
Rhode Island Public Utilities Commission
Southern New England Program (SNEP)
Southern Rhode Island Conservation District (SRICD)
University of Rhode Island (URI) Cooperative Extension
Volunteer Organizations
FEDERAL (the capabilities have been listed in alphabetical order)
American Rescue Plan Act (ARPA)
Department of Commerce – U.S. Economic Development Administration (EDA)
Federal Emergency Management Agency (FEMA)
National Fish and Wildlife Foundation (NFWF)
National Oceanic and Atmospheric Administration (NOAA)
U.S. Army Corps of Engineers (USACE)
U.S. Department of Agriculture Natural Resources Conservation Service (USDA|NRCS)
U.S. Department of Housing and Urban Development (USHUD)
U.S. Economic Development Administration
U.S. Environmental Protection Agency (EPA)
U.S. Fish and Wildlife Service (FWS)

Grant Awards - Working together to build safer and more resilient communities

Table 5-4 List of Recent Hazard Mitigation Related Grants Awarded to New Shoreham
(Refer to **Appendix 5-3** for additional details)

Project Description	Year Award/ Project Status	Award Amount
Corn Neck Road Dune Restoration Project (implementation dollars)	Pending	Pending
Corn Neck Road Nature-Based Solutions/Dunes/Drainage Beach Parking Lot	2023	$465,000
Hazard Mitigation Plan Update	2023 - In Progress	$45,000
Recipient of two handicapped accessible vans for rural transportation	2023 - Completed	$250,000
MRP Technical Assistance for Community Resilience Building Workshop	2021 - Completed	Technical Assistance
Block Island Housing Board - Rental Development Project in New Harbor - Engineering and Site Work	2022	$250,000
Zoning and Subdivision Regulation Amendments - 2023 State Law Changes	2023	$95,000
Corn Neck Road Nature-Based Solutions	2023	$187,000
Block Island School	2024	$50,000
Public Safety Complex	2024	$3,500,000
Maintenance/Operation of the Pump Out Program	2024	$7,500
Purchase Heat Gun and Safety Gloves	2022	$1,000
Purchase Extinguish Balls	2023	$1,000
Removal of Derelict Vessel in Great Salt Pond	2022	$10,000
Senior Transportation	2024	$8,000
Handy Person Services for Seniors	2024	$5,000
Winter Storm Kenan – January 2022 (DR 4653)	2023 Completed	Recovery Reimbursements
American Rescue Plan Act of 2021 (ARPA)	2021 In Progress	$302,198

5.1.4 Key Local Mitigation Measures Related to Profiled Hazards

In **Section 4**, the Advisory Committee identified and profiled those hazards thought to have a higher likelihood of occurring or potentially having a greater impact on the Town should they occur. **Table 5-5** relates key local capabilities to each of the profiled hazards. The Town will continue to expand and improve these capabilities.

Table 5-5 Key Local Mitigation Measures Related to Profiled Hazards

Hazard	Existing Mitigation Measure
All Hazards Identified in HM&FM Plan	CodeRED™ Communications Equipment Comprehensive Plan Emergency Operations Plan Emergency Power Generators Hazard Mitigation & Flood Management Plan (*this document*) Local Emergency Management conducts trainings/exercises Monthly department head meetings where emergency management related items are discussed as necessary MOUs with neighboring (mainland) Towns Professionalism, Expertise, and Dedication of Town Staff Town Website Upgraded emergency management equipment
Flood-Related	Dam Safety Regulations Floodplain Regulations Harbor Management Plan Implementing Structural and Non-Structural Projects New Shoreham GIS Local Emer. Cooling & Warming Shelters MOUs with local contractor for debris removal National Flood Insurance Program Participation Regional Red Cross Certified Shelter (off island) RIEMA - Flood Safety & NFIP information on Town Website RI STORMTOOLS Roadway Treatments Site Plan Review for Stormwater and Erosion Control State Building Codes Storm Drainage & Catch Basin Maintenance on State Roads (RIDOT) Street Sweeping on State Roads (RIDOT) Subdivision Regulations Wetlands and Open Space Acquisition Zoning Ordinance
Wind-Related	Local Emergency & Warming Shelters MOUs with local contractor for debris removal Regional Red Cross Certified Shelter (off island) RIEMA – Hurricane Preparedness link on Town website State Building Codes Tree Maintenance Program
Winter-Related	Local Emergency & Warming Shelters MOUs with local contractors for snow removal Regional Red Cross Certified Shelter (off island) Roadway Treatments Snow Removal
Vector-borne Diseases Transmitted by Ticks & Mosquitoes	RIDOH – Mosquito & Tick Booklet link on Town website
Contagious Respiratory Illness Caused by Influenza Viruses or Coronavirus	Covid-19 Home Testing Kits made available to public during pandemic Town Covid-19 Testing was conducted through the Block Island Medical Center Town Website: Information on Covid-19
Earthquake	Local Emergency Shelters Regional Red Cross Certified Shelter (off island) State Building Codes
Extreme Heat, Drought, Brush Fires	Local Emergency Cooling Shelters Local Fire Safety Education Program Permits Requirements for Outdoor Fires and Commercial Fireworks State Fire Building Code Tree Maintenance and Replacement Program

5.2 PARTNERSHIPS AND PUBLIC OUTREACH

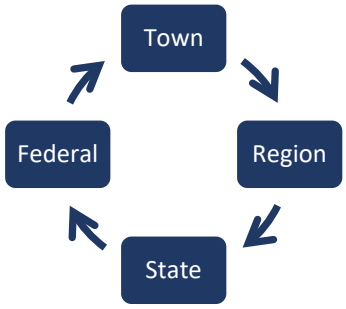
The Town of New Shoreham recognizes the benefit of coordinating and working collaboratively with an array of partners. The list in **Appendix 2-3**, **identifies 25 local government & school district groups, as well as 54 businesses, community lifelines, agencies, and organizations outside of New Shoreham's governmental structure, that were invited to be part of the *HM&FMP* planning process**. The Town has established partnerships with many of those agencies and organizations.

As identified in **Appendices 5-1, 5-2, and 5-3**, many of these partners have helped to enhance Town projects and community outreach through their expertise, resources, and funding support. As evidenced through the **References and Work Cited** documentation, resources from many of the partners have been used throughout this *Plan*.

This *HM&FMP* is a prime example of the integral nature of these partnerships. Stakeholders from the Block Island Chamber of Commerce, Block Island Land Trust, Block Island Utility District, Coastal Resilience Committee, Emergency Management Task Force, The Nature Conservancy, and the Volunteer Fire & Rescue are serving on the Advisory Committee.

As part of the *Capability Assessment*, it was determined that it would be beneficial for the Town to continue to build upon existing partnerships to ensure the Town remains current with respect to hazard risks and mitigation. Throughout the *Action Plan*, the Advisory Committee recognized the benefit of partnerships and informational connections.

The Town is particularly grateful of the partnership with the Rhode Island Emergency Management Agency (RIEMA) and the Federal Emergency Management Agency (FEMA) for their knowledgeable staff; databases; tools to perform local risk assessments and other analysis; resources to support development of mitigation strategies; grant funding opportunities; and for their vast collection of public outreach materials, including those that promote flood risk awareness and flood insurance.



Additionally, over the years the Town, particularly through the Block Island Land Trust, has worked closely with a number of resilience and conservation focused organizations and individuals, including the Audubon Society of Rhode Island, Block Island Conservancy, Coastal Resources Management Council, Ocean View Foundation *(transferred to TNC in 2017)*, RI Department of Environmental Management, Southern Rhode Island Conservation District, The Nature Conservancy, U.S. Army Corps of Engineers, U.S. Department of Agriculture/Natural Resources Conservation Service, U.S. Fish & Wildlife Service, and Block Island's many generous property owners.

Partnering with government agencies and other organizations to plan and carry out hazard mitigation and climate adaptation activities, as well as emergency preparedness and response, and has been a successful strategy that the Town will endeavor to expand in the coming years. In particular the Town recognizes the benefit of expanding the role of stakeholder partners in public outreach. As evidenced in the *Action Plan* (**Section 6**), several of the action items fall into the **Public Education & Awareness Category**. The Town will look for opportunities to involve their partners in community outreach activities that promote a safer, more disaster resilient community. Successful outreach programs provide accurate data and information that serves to make citizens better prepared for potential hazard events. Public outreach and education also builds an understanding of the concept of hazard mitigation and climate change, therein helping to create a base of support for implementing *Plan* activities.

Within the Town administrative structure, two ongoing outreach and educational programming efforts that support hazard awareness and reinforce both Town initiated and individual citizenry pro-active hazard mitigation measures include:

Information on the Town Website

Throughout the COVID-19 pandemic, the Town regularly provided updates to the community via the Town website. The Town continues to use the website to provide natural hazard-related information to the citizenry.

A critical tool administered by New Shoreham Emergency Management is the CodeRED™ Emergency Notification System. This system facilitates more rapid citizen notification and warning in advance of or during a disaster.

As part of the *Capability Assessment*, it was determined that it would be beneficial for the Town to continue to improve the scope and breadth of hazard mitigation/ emergency preparedness awareness. In the *Action Plan*, the Advisory Committee prioritized the need for expanded public education and outreach efforts through information on the Town website, workshops, presentations, and other mechanisms (**Subsection 6.4** – 2025 Action A).

A number of Town webpages provide information, such as the following, related to hazard mitigation:

- Building Inspection Requirements, Permitting, and State Building Code
- CodeRed Emergency Notification Signup
- FEMA Flood Map Services
- Flood Insurance
- Hazard Mitigation and Flood Protection
- HM&FMP Project Webpage (including risk from flooding & other natural hazard & disaster preparedness information & links)
- RIDEM/CRMC Wetlands Jurisdiction Maps
- RI Special Needs Emergency Registry
- Senior Services
- Town Documents (2016 Comprehensive Plan, 2017 Hazard Mitigation Plan, 2021 MRP CRB Process & Workshop Summary of Findings, 2013 SLR Adaptation Study, 2025 HM&FMP, etc.)
- Town Ordinances

As part of the *Capability Assessment*, it was determined that it would be beneficial for the Town to continue to build their GIS capability and provide additional valuable information to the community through this visual mapping tool. In the *Action Plan*, the Advisory Committee prioritized the need for enhancing the Town's GIS capabilities (refer to **Subsection 6.4** – 2025 Action C).

Information on the Town GIS Web Viewer

The Town's on-line *GIS Web Viewer* provides Town departments and the public easy access to New Shoreham's ArcGIS mapping which includes FEMA flood hazard areas. Providing this information allows users (residents, potential home buyers, insurance agencies, lenders, Town staff, etc.) to understand how a particular property or area of the Town may be impacted by flooding.

Over the ensuing five-year period the Town intends to continue improving and expanding its GIS capabilities.

5.3 ASSESSMENT OF 2017 HAZARD MITIGATION ACTION PLAN

Throughout the life-cycle of the 2017 HMP, the mitigation actions were tracked and assessed by the Town. In accordance with 44 CFR § 201.6 and CRS Activity 510 Planning Process - Step 7, the Advisory Committee conducted a review of the 2017 Mitigation Actions to determine their status and relevance for inclusion in this update.

Of the sixteen actions, six have been completed (Actions 1, 2, 5, 7, 8, 12), five are ongoing or in-progress (Actions 3, 4, 10, 11, 15), and five have had no action (Action 6, 9, 13, 14, 16).

As evidenced in **Table 5-6**, the Town has been **PROACTIVE** and made progress on most of the 2017 actions. After reviewing the work accomplished and what remains to be done, it was determined that **all of the NON-COMPLETED actions, with the exception of Action 13, remain relevant and compatible with the updated Goal and Objectives, and have therefore been carried over to the 2025 Action Plan.** Although these actions have been carried over to the *2025-2030 Action Plan*, most have been modified to account for work accomplished and/or plan integration of actions and measures from other resources. For cross-referencing, **Appendix 6-1** identifies where the 2017 actions have been incorporated into the *2025 Action Plan*.

Table 5-6 Overview of Actions included in 2017 HMP

2017 HMP Action Item	Status
Action 1: Mitigate Beach Erosion at Old Landfill **Project Description:** Recent storms have eroded the beach and caused the closed landfill to be uncovered. Debris has migrated onto the beach and into the ocean. This issue, if not corrected, has the potential to cause significant negative impacts on the surrounding natural resources in the area. A concern also exists for the people and wildlife coming into contact with the debris. Engineering work has been completed to construct a revetment from the shoreline to minimize ongoing erosion. The Town has received a CDBG-DR grant for construction but is in search of additional sources of funding to close an estimated $1,000,000 funding gap. **Action Type:** Structural Project, Post-Disaster **Priority:** High **Change in Priority since 2006 Plan:** New Action **Lead:** Town Manager **Supporting:** Engineering **Time Frame:** Medium-term (6-18 months) **Cost:** $$$$ **Finance Options:** CDBG-DR; FEMA **Benefit:** Environmental, Aesthetic and Public Health **Figure 5-1 Recapped Exposed Area of Landfill** Photo Credit: Michael Shea 	**Status: Completed** • Due to requirements associated with the CDBG-DR grant, the Town declined the grant and instead bonded 1.95M through the RIIB for construction of a revetment from the shoreline to the closed landfill to minimize further erosion. In 2019 the exposed landfill area was recapped and the area along the ocean side of the landfill (West Beach) was terraced and a new 2,600 ton stone revetment (rip-rap slope with large boulders) was constructed. Clean fill was brought in and the area was plugged with beach grass (RIDEM|McKenzie, 3). The overall stability of the revetment and the establishment of beach grass has been successful. • Due to the nature of wave action eroding the lower slope area, maintenance of the revetment will be an ongoing issue. Money is budgeted each year for this maintenance. A section of the existing wall is scheduled to be reinforced in 2025 pending CRMC approval.

2017 HMP Action Item	Status
Action 2: Old Town Road Sluice/Bridge **Project Description:** Upgrade the culvert and sluice, construct the bridge/roadway capable of serving as an evacuation/rescue route. Old Town Road serves as a main route connecting Old Harbor with the airport and points west of town. The portion of road containing the bridge also serves as a connector from the Police/Fire/Rescue Building with the school and the medical center. At this time, the roadway over the sluice is unable to support trucks or rescue vehicles. The bridge also serves as a culvert, directing drainage from Mill Tail Pond to Harbor Pond and, ultimately, the Atlantic Ocean. Malfunction of the dam/sluice would put the road and downstream properties at risk from flooding. Also downstream is Ocean Avenue, a heavily traveled connecting road from Old Harbor to the Police and Fire/Rescue Building and New Harbor locations. Also located on Ocean Avenue, just below the overflow from the dam/sluice is the sewer pump station. This pump station is at risk of flooding if the dam fails. The Town Engineer completed design and presented project on December 15, of 2016 to the public. Current activities include seeking DEM wetlands determination and undergoing an archeological survey. Objectives of the Old Town Road Improvements Project include pedestrian safety, vehicle safety, maintaining Mill Pond Dam Overflow, maintaining island history, complying with wetland and dam permit conditions. Design elements include maintaining historical features of the roadway and culvert, sizing culvert for 100-year storm event and H-20 wheel loading, stormwater management, guard rails and pedestrian rails. The project design, permitting and construction will involve coordination with the State permitting agencies and local utility providers. The town received a RIIB (Rhode Island Infrastructure Bank grant in the amount of $269,000 to implement this activity). **Action Type:** Structural Project, Pre-Disaster **Priority:** High **Change in Priority since 2006 Plan:** 1.4 in 2006 Plan **Lead:** Engineering **Supporting:** Highway Department **Time Frame:** Short-term (0-6 months) **Cost:** $$ **Finance Options:** RIIB (Rhode Island Infrastructure Bank); Town bond money **Benefit:** Public Safety, Emergency Access, Flooding Prevention	**Status: Completed** • Improvements to the Old Town Road sluice/bridge has been completed. However, because the old brick arch culvert was repaired – rather than replaced, the weight of the road was not changed and therefore still is unable to support trucks/rescue vehicles.
Action 3: Corn Neck Road Mitigation **Project Description:** Planning, design and construction of relocation or raising of roadbed for segments of Corn Neck Road to address ongoing inundation due to storm surge and the potential permanent inundation due to projected sea level rise. This road serves as an evacuation route and connects many homes on the northern end of the island to the rest of the island. Storm surge from Hurricane Sandy caused substantial damage to Corn Neck Road. The Town received emergency repair funding in the amount of $3.1M in order to repair Corn Neck Road and a shorter section of Spring Street which also suffered damage. Corn Neck Road is a state-owned roadway that is maintained by the Town of New Shoreham.	**Status: In Progress** • Superstorm (Hurricane) Sandy (Oct. 2012) damaged a section of Corn Neck Road (under RIDOT jurisdiction). Using FEMA emergency disaster funds, RIDOT rebuilt the damaged section (1,800 linear feet) to its previous elevation/location (i.e. no improvements) at a cost of $1,749,000 (including initial dune plantings and rip rap).

2017 HMP Action Item	Status
The Town of New Shoreham was awarded in 2016 a CDBG-DR grant in order to conduct a planning study to identify potential alternatives to address the issues described above. The study will be completed by August 2017 and will include a preferred alternative/s for the future of Corn Neck Road and maintaining a connection to the north end of the island in the event of potential permanent inundation. **Action Type:** Structural Project, Pre-Disaster **Priority:** High **Change in Priority since 2006 Plan:** New Action **Lead:** Town Manager; RIDOT **Supporting:** Engineering; Highway Department **Time Frame:** Long-term (18 months -5 years) **Cost:** $$$$ **Finance Options:** CDBG-DR; RIDOT; FEMA (Section 406), RIEMA **Benefit:** Decreased cost of post-disaster clean-up; increased public safety; effective evacuations; emergency access	• Recognizing that Corn Neck Road (CNR) will continue to be impacted by severe storms, the Town hired VHB (with HUD CDBG-DR funding) to identify alternatives for improvements to about 1.16 miles of CNR (from Scotch Beach south to Bridgegate Square) to mitigate future impacts from storm surge and sea level rise. Three conceptual design alternatives were identified. The alternatives vary somewhat but all propose elevating the road 6 feet above MHHW (5 feet of seal level rise plus 1 foot of freeboard). As the road is under RIDOT jurisdiction the State will ultimately decide on the road improvements. • Separately, the Town would like to pursue nature based solutions along the Corn Neck Road corridor.
Action 4: Back-up Power for Sewer Pump Stations **Project Description:** Purchase a generator and portable fuel storage tank which will provide back-up power for sewer pump stations. This will mitigate the potential danger to residents and damage to property by quickly providing power in the event of power disruption. This action item is partially completed as the Town purchased one portable generator for this purpose. The goal of the Town is to acquire an additional portable generator so the Town has access to two portable generators for the purposes of restoring power to sewer pump stations during times of outages. **Action Type:** Emergency Services, Pre-Disaster **Priority:** Medium **Change in Priority since 2006 Plan:** 1.3 in 2006 Plan (partially completed) **Lead:** Emergency Management; Town Manger **Supporting:** Facilities Manager **Time Frame:** Long-term (18 months -5 years) **Cost:** $ **Finance Options:** RIEMA; FEMA **Benefit:** Public Safety, Power	**Status: In Progress** • One portable generator was purchased by the Sewer Commission was in 2013 prior to this action. • A significant portable fuel tank was not purchased for the portable generator and has been determined unnecessary. The Water Pollution Control Facility (WPCF) uses standard 5-gallon diesel fuel containers to refill the generator. The existing generator can run for four days without re-fueling. • All five (5) of the Town's sewer pump stations were originally upgraded to connect to the portable generator. However, in 2018 the pump station at Champlin's Marina was modified to tie into the marina's emergency generator. This pump station is no longer compatible with the Town's portable generator. The WPCF is in the process of formally establishing a backup power agreement with Champlin's Marina. • In addition to the portable generator, the WPCF has two stationary generators located at the main facility which service both the facility and the Old Harbor pump station. • The WPCF intends to install stationary backup generators at the remaining three pump stations (two on Ocean Avenue and one at the BI Boat Basin). Procurement/ installation of a backup generator for Ocean Avenue pump station #1 is in progress and will be in part funded through a 2019 DEM Resiliency Grant.

2017 HMP Action Item	Status
Action 5: Participate in the FEMA NFIP Community Rating System (CRS) **Project Description:** The National Flood Insurance Program (NFIP) enables property owners in participating communities to purchase insurance protection against flood losses. This action is to undertake activities that, when combined, gain the Town entrance into the Community Rating System (CRS). CRS is a voluntary part of the National Flood Insurance Program that seeks to coordinate all flood-related activities, reduce flood losses, facilitate accurate insurance rating, and promote public awareness of flood insurance by creating incentives for a community to go beyond minimum floodplain management requirements. The incentives are in the form of insurance premium discounts for property owners based upon the community's CRS score. This project will involve engaging in several of the nineteen creditable activities under the four general categories of public information, mapping and regulations, flood damage reduction, warning and response. The Town already conducts several of the creditable activities. Project will include preparation of CRS application. Potential activities that are eligible to receive credit include: advising the public about the flood hazard areas, flood insurance, and flood protection measures; enacting and enforcing regulations that exceed NFIP minimum standards so that more flood protection is provided for new development; stormwater management, implementing damage reduction measures for existing buildings such as acquisition, relocation, retrofitting, and maintenance of drainageways and retention basins. **Action Type:** Property Protection and Incentives Program **Priority:** Low **Change in Priority since 2006 Plan:** New Action **Lead:** Building; Planning **Supporting:** Town Manager; GIS **Time Frame:** Long - term (18 months – 5 years) **Cost:** $ **Finance Options:** staff time / town's annual operating budget **Benefit:** Property Protection, Reduced flood insurance premium	**Status: Completed** • The Town submitted an application and was approved to participate in FEMA's CRS program. The Town currently has a Class 8 rating which affords community members who purchase flood insurance through NFIP a premium reduction. Those in the SFHA receive a premium reduction of 10% and those outside of the SFHA receive a 5% reduction. • The Town intends to continue to pursue CRS credit for further reductions. For example, rather than just a HMP update, the Town has elected to create this document (HM&FMP) which includes flood management and qualifies for additional CRS credit.
Action 6: Back-up Power for North End of Island **Project Description:** Purchase and install a 500 kw generator and portable fuel storage tank at the Transfer Station, which will be attached to the power grid and provide back-up power if the integrity of the grid is compromised. This will mitigate the potential danger to residents and damage to property by quickly providing power in the event of disruption. The north end of the island is vulnerable to being cut off from the rest of the island. Corn Neck Road, the only road connecting north to south could be breached by wave action during a hurricane or winter storm, or might be washed out by heavy rain. This would place residents on the north end of the island at risk of having no power or access to town and supplies. Historically, storms have flooded and damaged the road at its narrowest point, demonstrating the potential of isolating the north end. **Action Type:** Emergency Services, Pre-Disaster **Priority:** High **Change in Priority since 2006 Plan:** 3.1 in 2006 Plan **Lead:** Emergency Management **Supporting:** Fire **Time Frame:** Medium- term (6-18 months) **Cost:** $ **Finance Options:** RIEMA; FEMA **Benefit:** Public Safety, Power	**Status: No Action**

2017 HMP Action Item	Status
Action 7: Town/State Highway Garage Generator **Project Description:** The Public Works Department is a lead in natural hazard preparedness and recovery activities. A generator at the Town/State Highway Garage would permit essential town employees to continue work activities related to storm response and recovery during a power outage. This need was identified by Highway Superintendent. **Action Type:** Emergency Services, Pre-Disaster **Priority:** Medium **Change in Priority since 2006 Plan:** New Action **Lead:** Public Works **Supporting:** Facilities Manager; Emergency Management **Time Frame:** Long-term (18 months – 5 years) **Cost:** $ **Finance Options:** FEMA, RIEMA **Benefit:** Power, Essential Services	**Status: Complete** • A new generator was purchased and installed around 2017.
Action 8: Medical Center Generator Replacement **Project Description:** The Block Island Medical Center, which also serves as an emergency shelter for the island, is in need of a new generator. This will allow the Medical Center to continue to provide medical care and to serve as a shelter during a power outage. **Action Type:** Emergency Services, Pre-Disaster **Priority:** Medium **Change in Priority since 2006 Plan:** New Action **Lead:** Public Works **Supporting:** Block Island Medical Center; Emergency Management **Time Frame:** Long-term (18 months – 5 years) **Cost:** $ **Finance Options:** FEMA, RIEMA **Benefit:** Power, Essential Services	**Status: Completed** • As part of a facility upgrade, a backup generator was installed in January 2025.
Action 9: Town Hall Generator **Project Description:** Purchase and install generator at the New Shoreham Town Hall to provide back-up during times of outages. This will allow essential government services to continue during times of emergencies and loss of power. **Action Type:** Emergency Services, Pre-Disaster **Priority:** Medium **Change in Priority since 2006 Plan:** New Action **Lead:** Town Manager **Supporting:** Facilities Manager; Emergency Management **Time Frame:** Long-term (18 months – 5 years) **Cost:** $ **Finance Options:** FEMA, RIEMA **Benefit:** Power, Essential Services	**Status: No Action**

2017 HMP Action Item	Status
Action 10: Salt Marsh Migration **Project Description:** Existing salt marshes, subject to sea level rise, are showing signs of degradation in Rhode Island coastal communities. Marsh processes important for coastal protection include wave attenuation, shoreline stabilization, and floodwater attenuation. Marshes that can adapt, by migrating update, as sea levels rise are most likely to continue to provide coastal protection services in the face of sea level rise. The Town's Comprehensive Plan highlights the ecological significance of the network of coastal wetlands of the Great Salt Pond and states that they must be understood and protected. Many of these wetlands are threatened by sea level rise and accommodations should be planned for wetland migration. See SLAMM maps of Block Island for specific locations. This action is to first, identify and prioritize lands that will provide marsh migration areas for coastal wetlands of the Great Salt Pond in response to sea level rise utilizing existing GIS mapping information and site inspections, then work with land conservation partners to acquire or protect through conservation easements those lands with the greatest potential. **Action Type: Planning;** Property Protection; Pre-Disaster **Priority:** Moderate **Change in Priority since 2006 Plan:** New Action **Lead:** Planning; Land Trust **Supporting:** Town Manager; GIS **Time Frame:** Long - term (18 months – 5 years) **Cost:** $$$$ **Finance Options: BILT;** partners; open space bond; staff time **Benefit:** Property Protection, Natural Resources Protection	**Status: In Progress** • Tier 1 identification for marsh migration areas for coastal wetlands of the Great Salt Pond has been completed through a project led by URI Professor Mike Bradley. • The next steps are to continue working with land conservation partners to do site inspections and field evaluations, and acquire or protect through conservation easements those lands with the greatest potential. • The following properties were acquired on February 22, 2024 by the three conservation groups (TNC holds fee title, the BILT holds a conservation easement, and BIC holds enforcement rights in and to the conservation easement): Gasner lots (Plat 5, Lots 126-144, 147, 149, 150, 153, 155, 157, and 170 – approx. 3 acres)
Action 11: Block Island Stormwater Management Plan **Project Description:** Stormwater runoff can contribute to increased destabilization and erosion rates of the coastal bluffs of Block Island, flood island roadways and impair water quality of the Great Salt Pond. This project is to complete an island-wide stormwater management plan that will identify stormwater program activities and best management practices to reduce runoff volume to prevent flooding during rain events and improve water quality, particularly in the Great Salt Pond watershed. **Action Type:** Planning; Property Protection; Pre-Disaster **Change in Priority since 2006 Plan:** New Action **Lead:** Planning; Highways; Engineering **Supporting:** GIS **Time Frame:** Long-term (18 months – 5 years) **Cost:** $ **Finance Options:** CDBG-DR; RIDEM; other federal and private grants **Benefit:** Property & Natural Resources Protection; Drinking Water Quality	**Status: Ongoing** • The DPW maintains regular cleaning of catch basins and street sweeping to help minimize debris blockage in storm system and help maintain water quality
Action 12: Implement WebGIS **Project description:** Offer free interactive GIS hazard mapping online for residents, business owners, real estate professionals, town staff, emergency management officials, etc. A municipal GIS website could include information for the public on which properties may be subject to sea level rise impacts in the future and flood hazard areas. Additional data layers could include evacuation routes, utilities, and fire hydrants.	**Status: Completed** • In an effort to increase public access to municipal and natural hazard geographic data, the Town created and is hosting an online GIS website.

2017 HMP Action Item	Status
Action Type: Planning; Property Protection; Pre-disaster; Post-disaster **Change in Priority since 2006 Plan**: New Action **Lead**: GIS **Supporting**: IT **Time Frame**: Short-term **Cost**: $ **Finance Options:** Grants; staff time **Benefit:** Public Outreach; Property Protection; Improved Emergency Management before, during and after a natural disaster	
Action 13: Burying Overhead Power Lines **Project Description:** The island's distribution system consists of six 2.4 kilovolt circuits with about fifty miles of lines, the majority of which are overhead lines. The distribution system on Block Island is outdated and inefficient, resulting in large line losses, frequent power supply interruptions, brownouts and damage to appliances and equipment. The system requires upgrading to provide more reliable service. Burying power lines can protect this critical utility asset and infrastructure from the impacts of winter storms, hurricanes and wind storms. Placing the distribution system underground would keep utilities out of high wind, ice, and the corrosive salt of the island environment, thereby reducing vulnerability to natural hazards, power loss, and fire. This project involves burying critical lines along the east side of the island. The Old Harbor section on the eastern coast of the Island has been assessed as susceptible to high winds during much of the year and as highly susceptible during high winds or a hurricane, ice, or snow. Many of the town's critical facilities are in this area of the island including the Library, Town Hall, Community/Day Care Center, Post Office, and Sewer Treatment Plant and would be susceptible to power failure caused by downed power lines. The Town, with the assistance of the Old Harbor Task Force, could partner with the local Chamber of Commerce and area businesses to implement this project. **Action Type:** Structural Project, Pre-Disaster **Priority:** High **Change in Priority since 2006 Plan:** 3.2 in 2006 Plan **Lead:** Town Manager; Block Island Power Co. (BIPCO) **Supporting:** Engineering; Highway Department **Time Frame: Medium-term (**18 months to 5 years) **Cost:** $$$$ **Finance Options:** BIPCO, National Grid, Private Organizations **Benefit:** Public Safety, Power, Aesthetic	**Status: No Action** • In a meeting with the Coastal Resilience Committee (formerly the Sea Level Rise Committee) in October 2022, the Block Island Utility District (formerly BIPCO) recommended against burying power lines. • More recently the BIUD President indicated that while he would not support burying electric lines in flood prone areas, he does recognize benefits to burying new electric lines in dryer/higher elevation areas to combat the impacts from wind, ice, snow.
Action 14: Sand's Pond Drainage Project **Project Description:** Complete drainage project to divert excess water from Sand's Pond. The flood of March 2010 caused rapid elevation of the water level in Sand's Pond. The resulting overflow encroached upon the electrical boxes which service the Water Company's reservoir pumps. These were damaged, and the underground backwash holding tanks were submerged underwater. Neighboring properties were also compromised. Flooding of this equipment causes damage, which in turn, compromises the operation of the Company and its ability to provide safe drinking water to its users. This project involves re-establishing the natural drainage to the South that was blocked about 50 years ago. A structural design would have to be implemented that would be in compliance with RI Department of Environmental Management and Coastal Resource Management Council. Easements would have to be given from neighboring property owners.	**Status: No Action** • Although the level of the pond did eventually recede this situation will occur again and therefore needs to be mitigated.

2017 HMP Action Item	Status
Action Type: Structural Project, Pre-Disaster **Priority:** High **Change in Priority since 2006 Plan:** New Action **Lead:** Town Manager **Supporting:** Engineering; Water Company **Time Frame:** Medium-term (6-18 months) **Cost:** $$$ **Finance Options:** RIDEM **Benefit:** Property Protection, Essential Services, Environment & Water Quality	
Action 15: New Fire Station **Project Description:** The Town has identified the need for a new fire station. The current fire station, built in 1972, is now over 40 years old. This is a critical facility which serves as the center for dispatch and emergency operations. The existing site is surrounded by and in close vicinity to A and V flood hazard zones. Adjacent roadways are subject to flooding. An alternative location has not been identified as an option. The current location is in close proximity to a greater density of structures, public facilities and population. If a new fire station is to be constructed at the same location, a combination of structural and nonstructural flood proofing measures could be incorporated into the design. The planning and design of the new fire station should consider the preparedness measures necessary in order to respond to different areas of the island during hazard events and potential inundation of roadways. **Action Type:** Structural Project, Pre-Disaster **Priority:** Low **Change in Priority since 2006 Plan:** 2.2 in 2006 Plan (partially completed) – New Rescue Barn constructed in 2009 **Lead:** Town Manager; Fire **Supporting:** Facilities Manager **Time Frame:** Long- term (18 months – 5 years) **Cost:** $$$$ **Finance Options:** Town Bond **Benefit:** Public Safety, Essential Services	**Status: In Progress** • The new Fire Station the Block Island Volunteer Fire and Rescue and Town leaders envision (which may include municipal employee housing) is slated to cost roughly $15 million. As such, the Town is also evaluating the cost to substantially renovate the existing fire station. • On July 17, 2024 the Town received a grant for 3.5M through Senator Reed's Office for the engineering, design, and construction of the new station. The RFP for design services is tentatively scheduled to be issued in 2025.
Action 16: Public Outreach Regarding Droughts and Brushfires **Project Description:** Develop a guide to educate property owners on actions that they can take to reduce risk to property from brush fires including drought tolerate landscape design and maintenance measures. Include also measures regarding safe disposal of yard and household waste rather than open burning. Conduct public outreach to discourage the use of water resources for non-essential usage, such as landscaping, washing cars, filling swimming pools, etc., during droughts. **Action Type:** Planning; Property Protection; Pre-disaster; Post-disaster **Change in Priority since 2006 Plan**: New Action **Lead:** Land Use, Building & Zoning; Water Company, Fire Department **Supporting:** Planning; IT; BILT **Time Frame:** Long-term **Cost:** $ **Finance Options:** staff time **Benefit:** Public Outreach; Property Protection; Improved Emergency Management before, during and after a natural disaster	**Status: No Action** • Although a guide has not been developed, the Volunteer Fire & Rescue has, on several occasions, conducted public outreach through the dept's Facebook Page (2.9K followers), to educate on brush fire prevention and the need to clear/widen private roadways in order for emergency vehicles to have access.

SECTION 6

Mitigation Strategy

Subsections

6.1 MISSION STATEMENT

6.2 GOAL AND OBJECTIVES

6.3 DEVELOPMENT OF ACTION PLAN

6.3.1 Review Possible Activities/Actions

6.3.2 Choose & Develop Possible Actions

6.3.3 Prioritize Actions - STAPLEE Evaluation

6.3.4 Actions Supporting CRS Program

6.4 ACTION PLAN (2025-2030)

6.4.1 Action Descriptors

6.4.2 Action Plan

KMJ – CE/RP

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6 Mitigation Strategy

Hazard Mitigation Plan: The Town of New Shoreham has successfully met the following requirement ➔
44 CFR Subsection D §201.6(c)(3): [The plan shall include] a mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.

CRS - Flood Management Plan: The Town of New Shoreham has successfully met the following Mitigation Strategy requirements based on the 10-step planning process for CRS Activity 510 ➔
Set Goals (Step 6); Review Possible Activities (Step 7); and Draft an Action Plan (Step 8)

The *Mitigation Strategy* is the culmination of the mitigation planning process. It provides the Town with the basis for action to reduce the risk to people and property from natural hazards and assists the Town in achieving compatible economic, environmental, and social objectives. The *Mitigation Strategy* stems from the comprehensive planning process used in creating this document, and the findings of the *Risk Assessment, Vulnerability Analysis,* and *Capability Assessment.*

The *Hazard Mitigation & Flood Management Plan (HM&FMP)* Advisory Committee used the information outlined in the previous Sections to create a broad-based mission statement, update the 2017 goal and objectives, and revise/create actions which are intended to guide the Town's day-to-day operations and long-term approach to reduce the impacts of hazards and improve flood management. This updated strategy builds upon the extensive mitigation, climate adaptation, and flood management work the Town of New Shoreham has previously implemented and will serve as a roadmap for the next 5 years.

FEMA's Mitigation Strategy is comprised of three main components, depicted in **Figure 6-1** and described below:

- ***Goals*** – General guidelines explaining what the plan proposes to achieve. These are usually broad statements with long-term applicability that provide the framework for achieving the intent of the mission statement.
- ***Actions*** – Specific projects for achieving the goals.
- ***Action Plan*** – A plan for implementing the actions. The Action Plan establishes priorities, assigns responsible parties, defines the type of action, provides a magnitude of cost, potential funding sources, and an estimated timeframe for completion.

It was important to the Town to develop a comprehensive and aggressive *Mitigation Strategy* that will lead to a safer and more sustainable community. The Town has and will continue to implement and institutionalize hazard mitigation and flood management through: its human, legal, and fiscal resources; effective coordination and communication with the state, neighboring jurisdictions, stakeholders, community members, and across Town departments; and use of knowledge and tools to analyze and cope with hazard risks.

Figure 6-1 Mitigation Strategy Components

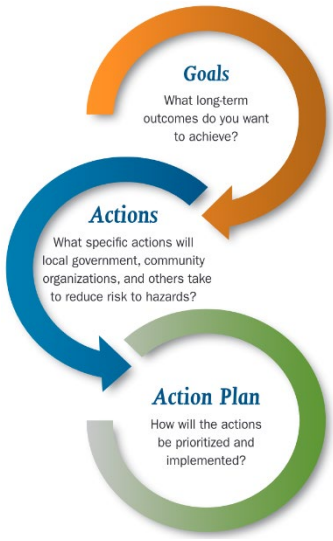


Image Credit: FEMA Local Hazard Mitigation Planning Handbook, Page 6-1

As the Town has undertaken to develop a combined hazard mitigation and flood management plan, the *Mitigation Strategy* includes a mix of mitigation and non-mitigation actions. Non-mitigation actions include measures that are emergency response or operational preparedness in nature.

6.1 MISSION STATEMENT

The Town of New Shoreham is striving to become a disaster resilient community and achieve sustainable development by mitigating hazard impacts before disaster strikes and by restricting infringement on sensitive lands. The following *Mission Statement* forms the foundation upon which the *Mitigation Strategy* is built.

Mission Statement

The purpose of the *Town of New Shoreham Hazard Mitigation & Flood Management Plan (HM&FMP)* is to reduce New Shoreham's vulnerability to the impacts of natural hazards, including safeguarding against and facilitating recovery from the increasing threats associated with climate change, including sea level rise, thereby fostering a safe, resilient community that preserves and enhances quality of life for all generations. By identifying areas and resources at risk to natural hazards and corresponding feasible, sustainable mitigation measures for government, non-profit, and private implementation, the *HM&FMP* provides the foundation for an ongoing local mitigation program to reduce the adverse impacts of natural hazards on residents and visitors, critical facilities and services, built and natural environment, historic and cultural resources, and economic vitality.

6.2 GOAL AND OBJECTIVES

DMA Requirement §201.6(c)(3)(i):
The hazard mitigation strategy shall include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

CRS CREDIT:

Mitigation Planning Element	CRS Planning Step	Max Pts
Phase III –Mitigation Strategy	6. Set Goals	2

CRS Coordinator's Manual – Activity 510: Floodplain Management Planning

The *Mitigation Strategy* consists of a goal and corresponding objectives for mitigating natural hazard impacts to people, the built and natural environments, and the local economy by integrating policy and action across functional areas. This includes strengthening interdepartmental and stakeholder/partner efforts to identify and understand potential natural hazard risks and communicating this information to citizens and business owners through public education and engagement. It also includes establishing conditions for improved pre-disaster preparedness and post-disaster response and recovery.

As discussed in **Subsection 2.3**, the Town of New Shoreham recognizes the benefit of **plan integration**. The Advisory Committee was therefore cognizant that the *HM&FMP* goal and objectives be consistent with and complement those outlined in the Town's 2016 Comprehensive Plan and other planning efforts (**Appendix 5-1** has an **EXTENSIVE LIST** of local planning documents reviewed as part of the *HM&FMP* planning process).

In an effort to effectively review the 2017 HMP goal and objectives for continued relevance, and update as deemed appropriate, the Advisory Committee envisioned what they would want the community to look like in the future in terms of resilience to flooding and other natural hazards. The Committee recognizes the Town's commitment to becoming a safer, more resilient community, through the implementation of mitigation programs and policies, and to achieving sustainable development by striving to mitigate hazard impacts before disasters strike.

The updated **2025 HM&FMP Goal and Objectives** were developed to support current and future natural hazard mitigation and flood management efforts.

Goal

Reduce current and future risk to people and property from natural hazards and climate change

Objectives

- Protect the lives and property of New Shoreham residents, businesses, and visitors
- Increase municipal capacity to effectively communicate and coordinate preparedness, response, and recovery efforts to all natural hazard disasters
- Safeguard New Shoreham's critical facilities and infrastructure in order to maintain essential operations and services including transportation connections to the mainland
- Safeguard New Shoreham's historically significant structures and sites
- Protect the natural features, habitats, and wildlife of New Shoreham and ensure the Island remains ecologically healthy
- Increase resiliency of the Island to climate change including sea level rise impacts
- Implement hazard mitigation strategies and actions
- Educate the public on community resilience, including steps individuals, families, and businesses can take to better protect themselves and their property from the impacts of natural hazards, and measures that will reduce contributions to climate change, which is a threat multiplier for many natural hazards
- Incorporate hazard resilience for property development and land use into zoning ordinances and other regulatory provisions in an effort to reduce exposure to natural hazards

6.3 DEVELOPMENT OF ACTION PLAN

The Advisory Committee considered a wide-range of mitigation and non-mitigation actions to incorporate into the *2025 Action Plan*.

DMA Requirement §201.6(c)(3)(ii):
The mitigation strategy shall include a section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure. All plans approved by FEMA after October 1, 2008, must also address the jurisdiction's participation in the NFIP, and continued compliance with NFIP requirements, as appropriate.

CRS CREDIT:

Mitigation Planning Element	CRS Planning Step	Max Pts
Phase III –Mitigation Strategy	7. Review Possible Activities (c-g)	25

CRS Coordinator's Manual – Activity 510: Floodplain Management Planning

6.3.1 Review Possible Activities/Actions

As discussed in **Section 5**, the Town reviewed possible preventive activities, such as zoning, building codes, and subdivision ordinances, as well as the status of the actions included in the Town's 2017 HMP for potential inclusion in the updated *Action Plan*. To further support CRS Activity 510 Planning Process-Step 7, a large array of additional possible activities was also reviewed.

The **broad-based list of possible activities** was generated from Advisory Committee input, public engagement via the Public Opinion Survey, and through key planning documents. The list of possible mitigation and non-mitigation activities compiled from the documents and Public Opinion Survey is included in **Appendix 6-1**. The possible activities were reviewed based on the following criteria:

- supports the 2025 *HM&FMP* goal and objectives
- supports the 2016 Comprehensive Plan Natural Hazard & Climate Change goal & policies
- potential funding capability
- staff and implementation capability
- supports CRS program
- mitigation category
- activity was completed or is no longer a priority

In the Public Opinion Survey (Appendix 2-2), when asked to rank level of concern regarding specific natural hazards, the top five hazards of concern were: Coastal Erosion, Vector-Borne Diseases (Ticks/Mosquitoes), Coastal Flooding, Wind-Related, and Contagious Respiratory Diseases (Flu/Covid-19). The Advisory Committee used the results of the Public Opinion Survey, amongst other resources and their own experiences, in developing their *Risk Assessment* (**Subsection 4.2.2**). The Committee's *Risk Assessment* identified the Public Opinion Survey's top five among their high risk natural hazards along with Winter-Related (Heavy Snow/Ice/Extreme Cold) and Extreme Heat.

To mitigate the potential impacts from natural hazards, particularly those identified as a greater risk to New Shoreham or the region, the Advisory Committee performed a systematic review of a broad spectrum of possible activities, including actions from all six of the categories below. As documented in **Appendix 6-1**, under consideration were measures that would reduce flood and other natural hazard damage to buildings and infrastructure through preservation of open space, revisions to zoning and subdivision ordinances, and implementation of structural projects and green infrastructure. Green infrastructure encompasses natural and engineered systems that mimic natural ecosystems to provide various environmental, social, and economic benefits by managing stormwater, improving air and water quality, and enhancing biodiversity. Examples of **green infrastructure practices** include: bioretention (rain gardens); planter boxes; bioswales and grassed swales; permeable pavements; green roofs; rainwater harvesting; tree planting; and constructed wetlands.

Outreach actions to promote awareness and encourage the private sector to take preventative action to mitigate risks associated with flooding and other hazards were also reviewed, as were actions associated with emergency services and capacity building within the municipal government.

Action Categories:

- **Prevention:** Government administrative or regulatory actions or processes that influence the way land and buildings are developed and built, or otherwise assist in reducing the impacts of a natural hazard. These actions include public activities to reduce hazard losses such as planning and zoning, building codes, capital improvement programs, open space preservation, and stormwater management regulations.

- **Property Protection:** Actions that involve the modification of existing buildings or infrastructure to protect them from a hazard or removal from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, flood proofing, storm shutters, shatter resistant glass, **as well as implementing or improving green/natural infrastructure.**
- **Public Education & Awareness:** Actions to inform and educate citizens, elected officials, and property owners about the potential risks from hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.
- **Natural Resource Protection:** Actions that, in addition to minimizing hazard losses, also preserve, supplement, and restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, tree planting and maintenance, and wetland restoration and preservation.
- **Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include storm water controls (e.g., culverts), floodwalls, seawalls, retaining walls, and safe rooms.
- **Emergency Services:** Actions that will protect or enhance emergency services before, during, and immediately after an occurrence. Examples of these actions include protection of critical facilities, emergency response infrastructure, and protection of or improvements to warning system capability.

6.3.2 Choose and Develop Possible Actions

Due to budgetary and other constraints it would be impossible over the ensuing 5-year period to implement all of the possible activities/actions the Committee reviewed. As such, it was necessary to scale back the possible actions based on a number of parameters including, if the action is: expected to substantially reduce the impact of one or more of the hazards identified in the *Risk Assessment*; compatible with current community priorities, including a better understanding of the potential consequences of climate change; compatible with other community programs and objectives; compatible in terms of the Town's vulnerabilities and capabilities; supports the *Mitigation Goal/Objectives;* in compliance with NFIP requirements; a possible crossover CRS activity; and pragmatic in terms of staff time and potential funded resources.

The possible actions which originated from other Town planning documents (refer to the list below) or from the 2024 Public Opinion Survey, have been included in **Appendix 6-1,** and for cross-referencing have been identified as either being included or not in the *2025 Action Plan*. **It should be noted that the specification "included" refers to the general intent of the reviewed action (i.e. the wording may vary or some particular aspects may not be included – however, the action in some form is essentially represented)**. Similar actions from various sources were combined and rewritten for inclusion in the *2025 Action Plan*.

Key Planning Documents:

- Hazard Mitigation Plan (2017)
- Comprehensive Plan (2016)
- MRP Community Resilience Building (CRB) Process & Workshop Summary of Findings (2021)
- Harbor Management Plan (2024)
- Corn Neck Road Transportation Resiliency Study (2017)
- Geographic Information System (GIS)
- Block Island Harbors Sea Level Rise Adaptation Study (2013)
- TNC's Block Island Coastal Resilience Coordinator's Summary (2024)
- HM&FMP Public Opinion Survey (2024) - *Outreach Activity #5*

6.3.3 Prioritize Actions - STAPLEE Evaluation

In accordance with the *Disaster Mitigation Act 2000 (DMA)*, the Advisory Committee undertook a process to prioritize actions in order to assist in creating an implementation guideline for mitigating natural hazard risks. Each of the actions reviewed received a priority score based upon a general set of criteria common to public administration officials and planners, known as STAPLEE. The acronym stands for Social, Technical, Administrative, Political, Legal, Economic, and Environmental.

The STAPLEE method includes a general benefit-cost review as part of prioritizing actions. The Committee considered the probable benefits that would result from an action versus a general magnitude of cost. This review was done based on experience and judgment but is not considered a full benefit-cost analysis. When seeking funding assistance or inclusion in the capital improvement program (CIP), a more detailed analysis may need to be conducted. A description of the **criterion and the full STAPLEE evaluation** can be found in **Appendix 6-2**.

All 14 actions, even those with lower STAPLEE rankings, have been included in the 2025-2030 *Action Plan*. It was determined that actions receiving lower rankings should be included as they are still relevant to achieving the overall goal and objectives of the *HM&FMP,* and over the *Plan's* lifecycle circumstances may change to improve their ranking (e.g., political/social support is bolstered, grant funding opportunities arise, etc.). In the *Action Plan*, to recognize the higher prioritized actions, the listing is from highest to lowest STAPLEE ranking.

6.3.4 Actions Supporting Community Rating System (CRS) Program

The most common and the most destructive natural disaster in the United States is flooding; the damage from which is generally **not covered** under a standard homeowner's policy. In 1968, to protect lives and property and to reduce the financial burden of providing disaster assistance, Congress created the National Flood Insurance Program (NFIP) which is administered by the Federal Emergency Management Agency (FEMA). The NFIP offers flood insurance to communities that comply with minimum standards for floodplain management. All Rhode Island municipalities, including the Town of New Shoreham, currently comply with the minimum standards, allowing residents to purchase federal flood insurance through the NFIP.

As discussed in **Subsection 2.3**, beyond the minimum NFIP requirements, communities can choose to participate in a voluntary incentive program known as the Community Rating System (CRS), to further improve flood mitigation and achieve discounts on NFIP flood insurance premiums for property owners. A community's CRS classification is based on credit points earned for its activities. Any combination of activities that reduce flood losses through better mapping, regulations, public information, flood damage reduction, and flood warning and preparedness programs can be implemented. The discounts on flood insurance premiums range from 5% (rate class 9) up to 45% (rate class 1). It has been shown that CRS incentives have encouraged communities to broaden mitigation programs and keep them going even during periods of budgetary challenges (FEMA. *National Flood*).



As previously indicated, the Town of New Shoreham is committed to continued compliance with the NFIP and also participates in the CRS program. To improve flood management throughout the Town, New Shoreham chose to integrate CRS Activity 510 (Floodplain Management Planning) into their Hazard Mitigation planning process therein creating a *Hazard Mitigation & Flood Management Plan*. Throughout this document both HMP and CRS requirements have been noted.

In the *Action Plan*, **cross-over actions** that could potentially garner CRS credit, depending on how they are implemented and documented, have been identified.

NFIP: Participation in the National Flood Insurance Program (NFIP) is voluntary and is based on a community's agreement to adopt and enforce, at a minimum, the Federal standards for building within a Special Flood Hazard Area (SFHA). In exchange, the Federal Government makes flood insurance available as a financial protection against flood losses.

In compliance with NFIP Requirements and per Town Ordinance Chapter 11 Natural Resource Protection (ARTICLE I - Flood Ordinance), the Town of New Shoreham takes the following steps:

- Adopts and enforces Floodplain Management Regulations including the latest effective Flood Insurance Rate Maps (FIRMs); assists in the preparation and revision of floodplain maps
- Issues or denies floodplain development/building permits
- Requires buildings in the Floodplain District comply with the floodplain requirements of the RI State Building Code
- Inspects all development to assure compliance with floodplain management regulations
- Maintains records of floodplain development
- Participates in Floodplain Management Activities
- Assists residents in obtaining information on flood hazards, floodplain map data, flood insurance, and proper construction measures

Additional information on the Town of New Shoreham's compliance with the NFIP is provided in **Subsection 4.4.2.1 and Appendix 5-1**.

6.4 ACTION PLAN (2025-2030)

All of the chosen *Actions* support the *Mission Statement* and *Goals*. They reflect **updated community priorities**, including response to climate change and accelerated sea level rise, and address the Town's current and projected future needs. The *Action Plan* includes a description of the action, along with other descriptors including the STAPLEE priority ranking, which may assist the Town as a guideline for implementation.

The priority ranking, timeframe, and kickoff for each action is provided as a guide and recognized as flexible due to staff and funding availability. It is also recognized that the identified lead for an action may shift from one party to another, or become a shared responsibility. To augment local funding, the Town should aggressively pursue grants to support these actions.

DMA Requirement §201.6(c)(3)(iii):
The mitigation strategy section shall include an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

CRS CREDIT:

Mitigation Planning Elements	CRS Planning Steps	Max Pts
Phase III –Mitigation Strategy	8. Draft an Action Plan	60

CRS Coordinator's Manual – Activity 510: Floodplain Management Planning

6.4.1 Action Descriptors

The *Action Plan* includes the following descriptors:

- **Action Number and Description**. The description is a brief overview of the action. The Action Number has been assigned based on the STAPLEE priority ranking (from highest to lowest). If two or more actions received the same priority score, they have been arbitrarily listed one after the other.

- **Priority Ranking & CRS Activity.** The priority ranking was determined by the Advisory Committee through the STAPLEE evaluation (**Appendix 6-2**). The STAPLEE numeric ranking is provided for each action and the actions have been listed in order of ranking. As the Town participates in the Community Rating System (CRS) program, cross-over actions that could **potentially garner CRS credit, depending on how they are implemented and documented**, have been identified.

- **Lead & Support.** The lead(s) identified is the proposed authority responsible for overseeing implementation of an action. **It is likely that most actions will require interdepartmental and stakeholder support**. In **Table 6-1**, the anticipated lead(s) has been listed first with some potential supporting partners listed alphabetically in parentheses. Following are the list of acronyms for the various leads and supports listed in the Action Plan.

Acronyms describing lead and supporting partners

- ASRI: Audubon Society of RI
- BD: Building Department
- BIC: Block Island Conservancy
- BILT: Block Island Land Trust
- BIMC: Block Island Medical Center
- BISD: Block Island School Department
- BIUD: Block Island Utility District
- BIWC: Block Island Water Company
- CC: Conservation Commission
- CRC: Coastal Resilience Committee
- CRMC: Coastal Resources Management Center
- DPW: Department of Public Works
- EM: Emergency Management
- ENGR: Engineering
- FIN: Finance Department
- FM: Facilities Management
- GIS: Geographical Information System
- HM: Harbormaster
- HM&FMP-AC: Hazard Mitigation & Flood Management Plan Advisory Committee
- I-NAV: Interstate Navigation
- IT: Information Technology
- P: Planning
- PB: Planning Board
- PD: Police Department
- REC: Recreation Department
- RIDOH: RI Department of Health
- RIDOT: RI Department of Transportation
- RIEMA: RI Environmental Management Agency
- SEN-AC: Senior Advisory Committee
- SIC: Stormwater Innovation Center
- SRICD: Southern RI Conservation District
- TC: Town Council
- TCL: Town Clerk
- TM: Town Manager
- TNC: The Nature Conservancy
- TXA: Tax Assessor
- URI-CE: URI Cooperative Extension
- URI-CI: URI Coastal Institute
- USACE: United States Army Corps of Engineers
- VF&R: Volunteer Fire and Rescue
- WI: Wastewater Inspector
- WTCF: Wastewater Treatment Control Facility
- ZO: Zoning Official

- **Estimated Cost & Funding Source**. The magnitude of cost is a generalized estimate based on Advisory Committee, departmental, or stakeholder experience with similar initiatives. It is recognized that some degree of municipal staff time will be necessary for the successful implementation of all actions. Hence, staff time is represented within each category. As funding is often an obstacle to implementing mitigation actions, potential funding sources have been identified in **Table 6-1.** Refer to **Appendix 5-3** for information about specific grants identified as a possible funding opportunity.

  Estimated costs are categorized as follows:

  - ◊ Minimal $: less than $50,000
  - ◊ Moderate $$: between $50,000 - $100,000
  - ◊ Significant $$$: over $100,000

- **Timeframe & Kickoff.** The timeframe was based on a combination of factors including STAPLEE priority, complexity of the action, and the current phase of the action (e.g., conceptual, preliminary design, final design). For non-ongoing actions, the kickoff indicates in which year of this five-year *Plan* the action is proposed to commence.

  Timeframe

  - ◊ Ongoing: in place and expected to continue
  - ◊ Short-term: completed in less than 2-years
  - ◊ Medium-term: completed between 2 to 4-years
  - ◊ Long-term: will take over 4-years to complete

  Kickoff

  - ◊ Begin in X: where X = the year in the Plan's lifecycle (2025-2030) when the action is proposed to commence

- **Action Category.** In developing the *Action Plan*, the Advisory Committee sought to include a wide-range of actions to comprehensively address the established hazard mitigation Goals. The following categories, described in **Subsection 6.3.1**, were used:

  - ◊ Prevention
  - ◊ Property Protection
  - ◊ Public Education & Awareness
  - ◊ Natural Resource Protection
  - ◊ Structural Projects
  - ◊ Emergency Services

- **Hazard Addressed.** Which hazard(s) a particular action addresses has been recorded in **Table 6-1**. The *Action Plan* has at least one action for each of the hazard categories identified in **Subsection 4.2** and listed below:

  - ◊ Flood-Related
  - ◊ Wind-Related
  - ◊ Infectious Disease-Related (Vector-borne Diseases from Ticks or Mosquitoes; and Contagious Respiratory Illness caused by Influenza Viruses or Coronaviruses)
  - ◊ Winter-Related
  - ◊ Earthquake
  - ◊ Extreme Heat
  - ◊ Drought
  - ◊ Brush Fire

- **Reference.** Actions from the following **KEY LOCAL PLANNING DOCUMENTS** were considered for inclusion in the *2025 Action Plan*. The *Action Plan* identifies which, if any, of the following sources reference the measure. Often more than once source is referenced because similar actions from various documents were grouped together and rewritten as single actions in the *2025 Action Plan*. A more detailed crossover assessment has been included in **Appendix 6.1**. Many of the actions that originate from other documents have been expanded on based on Advisory Committee, community, and/or other input.

  - ◊ **2017 HMP**: Hazard Mitigation Plan (2017)
  - ◊ **2016 CP**: Comprehensive Plan (2016)
  - ◊ **2021 SOF**: MRP Community Resilience Building Process & Workshop Summary of Findings (2021)
  - ◊ **2024 Harbor**: Harbor Management Plan (2024)
  - ◊ **2017 CNR-TRS**: Corn Neck Road Transportation Resiliency Study (2017)
  - ◊ **GIS**: Geographic Information System (GIS)
  - ◊ **2013 SLR**: Block Island Harbors Sea Level Rise Adaptation Study (2013)
  - ◊ **2024 TNC**: TNC's Block Island Coastal Resilience Coordinator's Summary (2024)
  - ◊ **2024 POS**: HM&FMP Public Opinion Survey (2024) - *Outreach Activity #5*

Additional Anonyms

The following acronyms are included in the *Action Plan* and provided here as reference. These are in addition to the acronyms provided under specific descriptors.

- ◊ BMP: Best Management Practice (*stormwater management measure*)
- ◊ BRIC: Building Resilient Infrastructure and Communities
- ◊ CDBG-DR: Community Development Block Grant - Disaster Recovery
- ◊ CEHRPTF: Coastal and Estuary Habitat Restoration Program and Trust Fund
- ◊ CIP: Capital Improvement Program
- ◊ CRS: Community Rating System
- ◊ EMPG: Emergency Management Performance Grant
- ◊ FEMA: Federal Emergency Management Agency
- ◊ GIS: Geographic Information System
- ◊ LID: Low-Impact Development
- ◊ MRP: Municipal Resilience Program
- ◊ NBEP: Narragansett Bay Estuary Program
- ◊ NFWF: National Fish & Wildlife Foundation
- ◊ NCRF: National Coastal Resilience Fund
- ◊ OSCAR: Ocean State Climate Adaptation & Resilience Fund
- ◊ PA: Public Assistance
- ◊ RIDEM: RI Department of Environmental Management
- ◊ RIDSP: RI Division of Statewide Planning
- ◊ SLAMM: Sea level Affecting Marshes Model
- ◊ SLR: Sea level Rise
- ◊ SNEP: Southeast New England Program
- ◊ STIP: State Transportation Improvement Program
- ◊ USDA|NCRS: United States Department of Agriculture Natural Resources Conservation Service
- ◊ USFWS: United States Fish and Wildlife Service

6.4.2 Action Plan

Natural Hazard Mitigation Action Plan

The *HM&FMP* Advisory Committee chose to developed an **AMBITIOUS Action Plan** that sought to **INTEGRATE** actions and initiatives identified in key local planning documents (**Appendix 6-1**); comments provided by community members, businesses, and other stakeholders in the *HM&FMP* Public Opinion Survey; and additional ideas spurred by relevant actions identified in other jurisdiction mitigation plans, Committee members, and the public-at-large.

By intentionally being broad-based and inclusive, the Committee recognizes that the potential work associated with the Action Plan will realistically span beyond the five-year *Plan* life-cycle. The Committee also recognizes that budgetary, staffing, and other constraints will also impact the amount of mitigation-related work implemented by the Town over the next five-years. **However, by including a broad spectrum of actions, the Advisory Committee is providing opportunities for smaller, low-budget projects to be implemented as staff time permits, as well as leveraging opportunities to implement larger projects based on the availability of grant funding.**

Table 6-1 Town of New Shoreham 2025-2030 Action Plan

Goal

Reduce current and future risk to people and property from natural hazards and climate change

Objectives

- Protect the lives and property of New Shoreham residents, businesses, and visitors
- Increase municipal capacity to effectively communicate and coordinate preparedness, response, and recovery efforts to all natural hazard disasters
- Safeguard New Shoreham's critical facilities and infrastructure in order to maintain essential operations and services including transportation connections to the mainland
- Safeguard New Shoreham's historically significant structures and sites
- Protect the natural features, habitats, and wildlife of New Shoreham and ensure the Island remains ecologically healthy
- Increase resiliency of the Island to climate change including sea level rise impacts
- Implement hazard mitigation strategies and actions
- Educate the public on community resilience, including steps individuals, families, and businesses can take to better protect themselves and their property from the impacts of natural hazards, and measures that will reduce contributions to climate change, which is a threat multiplier for many natural hazards
- Incorporate hazard resilience for property development and land use into zoning ordinances and other regulatory provisions in an effort to reduce exposure to natural hazards

Action 2025-A

Conduct community outreach and engagement to increase awareness of and/or improve emergency preparedness/response to impacts from all profiled natural hazards. This action includes education related to risks and preparedness associated with flooding, erosion, dam failure, high winds, thunderstorms, lightning, tornadoes, hurricanes, winter weather, tick- or mosquito-borne diseases, influenza or coronavirus, earthquakes, extreme heat, drought, and brush fires, as well as information on climate change/SLR. The intent of the action is to educate and engage the public-at-large through implementing various types of programs which may include: presentations; workshops; technical demonstrations; disseminating information through the Town website, school newsletter, Block Island Bulletin Board, *The Block Island Times,* various social media platforms, direct mailings, and posting information at Town facilities or in high pedestrian traffic areas. Target audiences include the general public, property owners in higher-risk hazard areas, seniors, students, local businesses, elected officials/decision-makers, and local boards/ commissions. To increase effectiveness of programs, engage stakeholders such as the Block Island Land Trust, Conservation Commission, Coastal Resilience Committee, Senior Advisory Committee, Audubon Society of Rhode Island, Stormwater Innovation Center (SIC), RI Department of Health (RIDOH), RI Emergency Management Agency (RIEMA), Southern RI Conservation District (SRICD), and The Nature Conservancy (TNC) to participate/lead outreach activities.

Potential Programs Include:

- Strengthen interdepartmental efforts to identify and understand potential natural hazard risks in New Shoreham through implementation of *HM&FMP* actions, participation in the annual *HM&FMP* assessment, and by Including hazard mitigation review as part of all development projects.
- Publicize the *HM&FMP* annual evaluation report, including submitting the report to the Town Council, releasing the report to the media, and making the report available to local boards/ commissions and the public-at-large (*this is a CRS requirement for participating communities*).
- Develop a publicly accessible online tracking program (*ex. ArcGIS StoryMap)* identifying the Town's hazard mitigation and climate adaptation projects so the public, Town Council, and other boards/commissions are aware of progress that has been made and future plans toward enhancing resilience of residences, businesses, infrastructure, and ecosystems.
- Encourage all Department Heads, Town Council members, and Chairs of local boards/commissions to complete the PREP-RI training modules, which focus on increasing the capacity of decision-makers to enhance local resilience to the impacts of natural hazards and climate change. Publicize the highlights from the training modules.
- Publicize signing up for the CodeRED Emergency Notification System to receive communication prior to, during, and after natural hazard events that threaten to or impact the Town and publicize enrolling in the RI Special Needs Emergency Registry (RISNER).
- Develop and promote a tutorial on how to use web mapping tools (including Town GIS; CRMC STORMTOOLS; FEMA's Flood Map Service Center, National Risk Index (NRI), and other tools; etc.) to identify potential hazard impacts on property; provide a public demonstration on the tutorial and invite local officials, realtors, and conservation groups
- Conduct community outreach through the Town's website, GIS web based mapping & data, social media, mailings, and publications to increase awareness and improve preparedness for impacts of all profiled natural hazards.
- Continue to implement annual public education programs which explain the importance of people remaining off dunes and the importance of utilizing the wooden dune walkover structures/staircases as access points for the beach to minimize damage to dune grasses and other vegetation that stabilizes the dunes.
- At the Island Free Library, provide copies of FEMA, RIDOH, and other publications on how to mitigate risks from/prepare for/recover from natural hazards profiled in the *HM&FMP*. Include links to these publications on the Town's website.
- Conduct a public workshop on adaptive risk reduction strategies for earthquake-, wind-, and flood-related hazards (including erosion and SLR). Topics may include: steps to take before/during/after a hazard event; retrofitting homes/businesses to meet current building code requirements to reduce potential damage from flood, wind, and earthquake events; hazard resistant designs and materials; flood insurance; minimizing impermeable surfaces on properties; benefits of backup generators; etc. The Northeast States Emergency Consortium is a good resource on how to protect your home & property and plan for specific hazards events.
- Distribute information on flood prone areas and flood insurance to local real estate agencies, which can be passed on to potential purchasers.

- Work with Tourism Council, Chamber of Commerce, marinas, realtors, and other local businesses and partners to develop an education program aimed at visitors and renters to encourage environmentally responsible actions. The educational outreach may include media campaigns to spread messages about the importance of responsible environmental practices. For example: consider partnering with the Block Island Ferry to implement a silent film series played on the ferry's TV screens that celebrates resilience efforts on Block Island or promotes water conservation, energy conservation, and solid waste reduction; or make available color-in-posters about environmental issues that passengers can complete during their voyage and can then be displayed on the ferry or around the island for a two-week period. The educational outreach program may also include community engagement projects such as beach cleanups, tree planting, or local gardening initiatives which strengthen visitors' bonds with the community while positively impacting the environment. Additionally, local businesses may support the program by requiring patrons bring their own bags or by making available products that are sustainable, reusable, or biodegradable in an effort to reduce the consumption of single-use plastics and minimize waste.
- Publicize maps identifying New Shoreham's Special Flood Hazard Area (SFHA), as well as various web-based tools, such as STORMTOOLS for determining a property's flood zone and risks to flooding from a 100-year storm event and various Sea Level Rise scenarios.
- Conduct a workshop/presentation to educate on how extreme heat, drought, and brush fires are interconnected through a combination of environmental, climatic, and biological factors. Include in the discussion how climate change is intensifying these patterns, and the important of clearing brush from properties.
- Develop a guide to educate property owners on actions that they can take to reduce risk to property from brush fires including drought tolerate landscape design and maintenance measures. Identify resilient ways to dispose of yard and household waste other than open burning which is not permitted. Also include that it is critical for emergency vehicle access that all private roads be a minimum of 14 feet wide and well maintained, with a 13 foot clearance above.
- Conduct a workshop to teach residents the basics of fire safety including proper use of fire extinguishers, window ladders, advantageous locations of smoke detectors, etc. and also publicize the information on the Town's website.
- Conduct public outreach to discourage the use of water resources for non-essential usage, such as landscaping, washing cars, filling swimming pools, etc., during droughts.
- Conduct a workshop to promote the benefit of shade structures on public property to protect from extreme heat, and determine potential location, types, and configuration of shade structures to be installed.
- Conduct outreach regarding public health risks and preventative measures associated with extreme heat, winter weather, vector-borne diseases transmitted by ticks or mosquitoes, and influenza or coronavirus.
- Conduct outreach on reducing earthquake risk in homes, schools, and businesses. Topics may include: creating earthquake emergency plans; securing heavy objects like furniture and appliances to prevent them from falling and causing injury; practicing *Drop, Cover, and Hold On* drills; and providing resources such as FEMA's Earthquake Safety at Home.
- Consider signage in public places that identify steps to reduce the spread of communicable diseases; and work with community members who are immune compromised (and their support systems) to identify measure the Town can implement to better accommodate their needs.
- Consider subsidizing the Volunteer Fire and Rescue to teach annual courses, free to the public, such as Basic First Aid and CPR, Advanced First Aid, Fire Safety Awareness, and Disaster Preparedness.
- Encourage student/youth groups to learn about conservation practices and volunteer for tree-planting and invasive plant management projects.

Lead & Support	Estimated Cost & Funding Source	Time-frame & Kickoff	Priority Ranking & CRS Activity	Action Category	Hazard Addressed	Reference
EM; TM; DPW (BD; BIMC; BISD; BIWC; CC; CRC; CRMC; GIS; HM&FMP-AC; IT; P; RIDOH; RIEMA; SIC; SRICD; TCL; TNC; URI-CE; VF&R)	Minimal $ Funding: Operating Budget; Grants (MRP Action Grant; SNEP-Technical Assistance Network; SRICD Technical Assistance)	Ongoing Begin in 2025	Ranking Score 24 CRS Activity 330, 340, 350, 440	Property Protection; Public Education & Awareness	All Profiled Hazards	2017 HMP; 2016 CP; 2024 POS

Action 2025-B

Conduct community outreach and engagement to increase awareness of and promote residents, businesses, and visitors to take actions that will improve the quantity and quality of surface water and groundwater. The intent of the action is to educate and engage the public-at-large through implementing various types of programs which may include: presentations; workshops; technical demonstrations; disseminating information through the Town website, school newsletter, Block Island Bulletin Board, *The Block Island Times,* various social media platforms, direct mailings, and posting information at Town facilities or in high pedestrian traffic areas. Target audiences include the general public, property owners with shallow or poor producing wells, property owners with older onsite wastewater treatment systems (OWTS), seniors, students, local businesses, elected officials/decision-makers, and local boards/ commissions. To increase effectiveness of programs, engage stakeholders to participate/lead outreach activities.

Potential Programs Include:

- Communicate through various mechanisms what measures community members can take to improve the quantity and quality of the Town's groundwater, including but not limited to:
  - supporting town-wide preservation of wetlands and open space
  - supporting town-wide implementation of green infrastructure stormwater management
  - minimizing the use of chemical fertilizer, pesticides, and deicing solution
  - properly disposing of all waste, including pet waste and household hazardous waste
  - encouraging residents to test their wells as often as pollution risks demand
  - minimizing water use during periods of drought
  - in order to reduce the threat of sewage contaminating wells, local water resources, and the environment in general, educate residents on the importance of maintaining properly functioning onsite wastewater treatment systems (OWTS) and the potential of obtaining low-interest loans through the Community Septic System Loan Program (CSSLP)
  - implementing green infrastructure on their property, such as rain gardens, planting/maintaining native trees and vegetation, replacing sections of mowed lawn area with wildflower gardens, and improving/restoring riparian buffers along streams
- Enlist the help of community members and other stakeholders, such as the TNC and SRICD, to restore vegetated buffers around streams, and to implement green infrastructure BMPs (stormwater management measures) on conservation land.
- Work with partners to conduct a study to identify potential non-point sources of pollution upstream of the Great Salt Pond.
- Increase awareness that abandoned residential private wells can pose public health and safety issues and therefore MUST BE abandoned in accordance with **Rhode Island Administrative Code: Title 250, Chapter 150, Section 05-3.22** regulations which essentially require a registered well contractor to properly seal the well to prevent the spread of contaminants and accidental injury.
- Increase awareness that discharged pool water can be harmful to the environment if not properly managed. Prior to discharging, allow chemicals (like chlorine) to dissipate (which generally takes about two weeks) so that it can be safely used for irrigation. It is environmentally detrimental to discharge pool water into storm drains or waterways. Resources: PA-DEP and PA- WVSA
- Implement a program with the help of community members and stakeholders such as the Block Island Conservancy or The Nature Conservancy to offer rain barrels to New Shoreham residents and businesses
- Work with partners, such as the SRICD, to provide guidance and tools for farmers (including small part-time farmers) regarding identification of non-point source pollution (coming from disperse activities), where and what type of BMPs (stormwater management measures) to implement (nutrient management, fencing livestock out of streams and wetlands, planting cover crops, etc.), and available educational and funding resources, such as through USDA|NRCS, and RIDEM (Clean Water Act – Section 319).

Lead & Support	Estimated Cost & Funding Source	Time-frame & Kickoff	Priority Ranking & CRS Activity	Action Category	Hazard Addressed	Reference
BILT; BIWC; CC; P; TM (ASRI; CRMC; HM&FMP-AC; IT; RIDOH; RIEMA; SEN-AC; SIC; SRICD; TNC; URI-CI)	Minimal $ Funding: Operating Budget; Grants (MRP Action Grant; RIDEM - Section 319; SNEP - Technical Assistance Network; SRICD Technical Assistance; URI-CE Technical Assistance)	Long-term Begin in 2025	Ranking Score 24	Prevention; Public Education & Awareness; Natural Resource Protection	Flood-Related; Drought; Brush Fire	2016 CP; 2021 SOF

Action 2025-C

Continue to enhance GIS capabilities. The intent of the action is to improve Geographic Information Systems (GIS) capabilities through increased training to Town personnel and through adding to the geodatabase to support Emergency Management and DPW activities, planning, grant development, property tax revaluations, and community use. In addition to including some additional RIGIS layers or developing some new Town-specific layers, the Town's GIS program would benefit by creating a ***Resilience Map*** which includes base layers such as parcels, roads, contours, etc. as well as hazard mitigation/resilience layers such as FEMA flood zones, hurricane storm inundation areas, etc. The ***Resilience Map*** would be made available on the Town's website.

Potential New GIS Layers:

- stormwater drainage system
- stormwater catchment areas for outfalls
- location of major flood events to identify patterns of flooding
- elevation certificates
- RIGIS Coastal Features layer
- dry hydrant and pond drafting locations for fire suppression
- wildfire risk areas
- wells (or a subset of wells that are known to go dry first as a mechanism to gage groundwater level)
- onsite wastewater treatment systems (OWTS)
- well locations
- benchmarks

Lead & Support	Estimated Cost & Funding Source	Time-frame & Kickoff	Priority Ranking & CRS Activity	Action Category	Hazard Addressed	Reference
GIS (BD; DPW; TXA; VF&R; WI)	Minimal $ Funding: Operating Budget; Grants (*depending on GIS layer* - MRP Action Grant; NBEP)	Short-term Begin in 2027	Ranking Score 20 CRS Activity 310, 440	Public Education & Awareness; Emergency Services	Flood-Related; Wind-Related; Winter-Related; Drought; Brush Fire	GIS; 2024 TNC

Action 2025-D

Enhance the emergency services network to further improve emergency response and recovery communication and coordination amongst community facilities and services, and members of the public. These improvements will directly benefit island-wide emergency management and help reduce potential damage and loss of life associated with all profiled hazards.

Potential Programs Include:

- Implementing improvements to strengthen the reliability of the communications network, particularly to reduce impacts from wind-related communication interruptions.
- Improving the municipal communications strategy to get important information out to residents, including expanding CodeRED and the RIDOH Special Needs Emergency Registry.
- Improving direct connections between the critical service organizations and the public to help get resources to those in need quicker during and after natural disasters.
- Disseminating information to residents and visitors through the Town website, Block Island Bulletin Board, local newspaper (Block Island Times), and other mechanisms, to help them better prepare themselves, family members, and their properties in advance of storm or other hazard events.

Lead & Support	Estimated Cost & Funding Source	Time-frame & Kickoff	Priority Ranking & CRS Activity	Action Category	Hazard Addressed	Reference
EM; TM (BD; BIMC; DPW; TCL; PD; RIDOH; RIEMA; VF&R)	Minimal $ (*except for strengthening reliability of network*) Funding: Operating Budget; Grants (RIEMA - EMPG)	Medium-term Begin in 2025	Ranking Score 19 CRS Activity 610	Public Education & Awareness; Emergency Services	All Profiled Hazards	2024 POS

Action 2025-E

Expand green infrastructure stormwater management practices throughout the natural environment through monitoring, maintenance, and implementing new or retrofitting existing stormwater measures, and strengthening the Town's maintenance and management of public trees/forest floor. The primary intent of this Action is to mitigate the impact of flooding, increase groundwater recharge and improve groundwater quality, and manage trees to reduce the risks associated with falling trees/limbs and forest floor fuel for brush fires.

- Improve flood storage capacity by increasing the frequency of maintenance on stormwater BMPs (stormwater management measures), and cleaning out waterways and drainage areas to help increase conveyance and minimize localized flooding from stormwater runoff.
- Retrofit or implement green infrastructure (such as stormwater infiltration areas, tree and vegetation plantings, rain gardens, tree trench BMPs) on Town-owned property and rights-of-way (ROWs) to mitigate stormwater flooding and/or improve flood storage capacity. Care should be taken to improve stormwater retention in new designs or improvements to existing public parks and public building grounds, including reducing the amount of hardscape or replacing hardscape with permeable materials.

Potential Projects Include:

- Wherein beneficial, implement green infrastructure stormwater management measures at all Town properties.
- Develop a flood attenuation design for Sand's Pond to mitigate the potential of high precipitation events causing bank overflow to flood adjacent low-lying properties including that owned by the BI Water Company. RIDEM and CRMC may need to review/approve the potential stormwater attenuation design and easements may be required by neighboring property owners.
- Strengthen Town maintenance and management of public trees to mitigate hazards such as stormwater flooding, erosion, extreme heat, and brush fires and to reduce risk to people or property from falling trees/limbs. Management/maintenance may include tree trimming, removal of downed trees to maintain forest floor thereby reducing readily available fuel for brush fires and improving ecosystems, planting new native tree species (preferably with high carbon sequestering rates) on Town property and rights-of-way (*right tree/right place*), and identifying locations where trees should not be planted.
- Develop a Watershed Management Plan.

Lead & Support	Estimated Cost & Funding Source	Time-frame & Kickoff	Priority Ranking & CRS Activity	Action Category	Hazard Addressed	Reference
DPW; ENGR; P (BILT; CC; CRC; GIS; TM; REC)	Minimal $-Significant $$$ Funding: Operating Budget; CIP; Grants (FEMA - BRIC; MRP Action Grant; NBEP; RIDEM - Climate Resilient Fund, Forestry Grant, Local Open Space Grant, OSCAR, Urban/Community); Conservation Partners	Ongoing Begin in 2026	Ranking Score 19 CRS Activity 540	Property Protection; Natural Resource Protection	Flood-Related; Wind-Related; Winter-Related; Extreme Heat; Drought; Brush Fire	2017 HMP; 2016 CP; 2024 POS

Action 2025-F

Continue to assess, monitor, maintain, and implement improvements to public roadways and associated drainage infrastructure to improve safety, mitigate flooding and erosion, and mitigate future impacts from SLR (which may require abandoning sections or raising sections of roadways); wherein feasible incorporate green infrastructure stormwater management practices and ensure resiliency in design for continued service during natural hazard events. By incorporating green infrastructure measures to the extent feasible, this action will also serve to enhance infiltration, increase groundwater recharge, and improve groundwater quality. This action requires coordination with the Rhode Island Department of Transportation (RIDOT) on State roadways and the Coastal Resources Management Council (CRMC) on roadways in the vicinity of coastal features and waters. *Resources: RI Stormwater Solutions; Inventory of LID projects in RI*

Potential Projects Include:

- Continue to implement a comprehensive annual stormwater maintenance program for Town-owned roads.
- Review and update the Town's road design and parking standards to ensure aesthetics, environmental quality, stormwater management, and pedestrian/bike safety are appropriately and adequately addressed, while allowing flexibility in the application of the standards depending upon the location and use proposed.
- Implement upgradient stormwater control improvements to decrease stormwater runoff to low-lying areas
- Sections of **Town-owned public roads** that are subject to repetitive flooding and require stormwater management improvements either upgradient or adjacent to the roadway include (but may not be limited to):
  - Coast Guard Road (Champlin Road)
  - Scotch Beach Road
- For sections of public roads under **RI Department of Transportation (RIDOT) jurisdiction** that are subject to repetitive flooding, work with the State to include these roads as part of the State Transportation Improvement Program (STIP); wherein deemed appropriate, identify the need for roadway drainage improvements (regrading, install/improve existing BMPs, repair/replace existing culverts) and possible sectional redesign and/or realignment. These roads include (but may not be limited to):

Highest Priority	Priority
• Beach Avenue - including repair/replacement of the culvert west of Ocean Avenue • Corn Neck Road • Ocean Avenue - during full moons and storms the catch basins and culverts along Ocean Avenue between Old and New Harbor backflow into the roadway; these are a PRIORITY for repair/ replacement by RIDOT • Spring Street	• Chapel Street - including repair/replacement of compromised catch basin • Old Town Road - between Dodge Street and Chapel Street, including Bridgegate Square • Water Street

Lead & Support	Estimated Cost & Funding Source	Time-frame & Kickoff	Priority Ranking & CRS Activity	Action Category	Hazard Addressed	Reference
DPW; TM; RIDOT (CRMC; ENGR; FIN: GIS; P; RIDEM; SIC)	Minimal $-Significant $$$ Funding: CIP; Grants (CDBG-DR; FEMA - BRIC, HMGP, PA-401; MRP Action Grant; NBEP; RIDEM - Climate Resilient Fund, OSCAR; RIDOT -STIP)	Ongoing Begin in 2025	Ranking Score 18 CRS Activity 540	Property Protection; Natural Resource Protection; Structural Projects	Flood-Related	2017 HMP; 2016 CP; 2021 SOF; 2017 CNR-TRS; 2013 SLR; 2024 POS

Action 2025-G

Prioritize and implement shoreline stabilization and adaptation projects. Continue to work with the Conservation Commission, Coastal Resilience Committee, and other applicable boards and stakeholders, to increase the resiliency of the Town to climate change and sea level rise impacts including reducing upland property damage through shoreline stabilization and adaptation projects. To the extent practical, implement green infrastructure (including planting trees and other vegetation in living shoreline projects, and replacing invasive species with native species) on Town-owned/BI Land Trust property. Resources: SLAMM Maps; BI Harbors Sea Level Rise Adaptation Study.

It should be noted that FEMA's post hazard event management practices indicate that reconstruction or repair funding for coastal protection structures are typically only be made available when the damage can be directly attributed to a specific storm event. Therefore, in order to receive this funding, the Town must maintain records of maintenance and repair activities that demonstrate the status of each structure.

Potential Projects Include:

- In conjunction with stakeholders, identify, design, and implement nature-based solutions, focusing on **dune restoration** along the eastern side of Corn Neck Road, to reduce flooding and damage occurrences during and following storm events, as well as enhance the function of natural ecosystems and protect critical habitat. Strategies to be investigated include enhancing dune system through revegetation, elevating salt marsh habitat through thin layer deposition technique, and/or absorbing strong wave energy by installing near-shore reef systems. Resources: CRMCs Coastal Landscapes Program
- The BI Coastal Resilience Committee (BI-CRC) will continue to discuss bluff erosion and the permitting process for bluff remediation measures with the Town Council, BI Conservation Commission and the CRMC. The CRMC has jurisdiction within 200 feet of any coastal feature, and generally prohibits the construction of new shoreline protection structures to regain property lost to erosion.
- In conjunction with the U.S. Army Corps of Engineers (USACE), CRMC, and other partners, investigate measures to mitigate the impact of storm surge and wave action in the Cresent Beach, Spring Street, and Old/New Harbor areas. Concepts may include a riprap breakwater, a natural reef such as oyster beds, and a chain of moored floating wave attenuators.
- Identify, prioritize, and implement conservation projects that increase the current and long-term resilience at Scotch Beach.
- Initiate High-Water Mark (HWM) and roadway/beach signage programs to increase public awareness of flooding risk and potential future high tide levels from sea level rise.

Lead & Support	Estimated Cost & Funding Source	Time-frame & Kickoff	Priority Ranking & CRS Activity	Action Category	Hazard Addressed	Reference
DPW; CRC; P (CC; CRMC; ENGR; GIS; HM; SRICD; TM; TNC; USACE)	Minimal $-Significant $$$ Funding: Operating Budget; CIP; Grants (CRMC – CEHRPTF; FEMA-BRIC; MRP Action Grant; NBEP; NFWF-NRC; RIDEM - Climate Resilient Fund, Local Open Space Grant, OSCAR)	Long-term Begin in 2026	Ranking Score 18 CRS Activity 330	Property Protection; Natural Resource Protection; Structural Projects	Flood-Related; Wind-Related; Winter-Related	2017 HMP; 2016 CP; 2021 SOF; 2017 CNR-TRS; 2024 TNC; 2024 POS

Action 2025-H

Continue to improve the Town's capacity for pre-natural disaster preparedness and post disaster response and recovery.

Potential Capacity Building Activities:

- Develop a long-term sustainable strategy for hazard mitigation & resilience project development and implementation (especially those identified within this *HM&FMP*), which might include: collaborative opportunities both interdepartmentally and with partners; staff or consultants (such as a Resilience Official) to facilitate grant writing/administration/project management; and a resilient long-term financing mechanism such as a tourist fee or other non-tax income stream, more robust capital improvement program, or line item for hazard mitigation/ resilience initiatives in the annual budget that can be used for project development (to create "shovel ready" projects for grant funding), grant match, or project implementation.
- Maintain and update this *HM&FMP* on at least an annual basis with a full update every five years.
- As flood management projects and initiatives are implemented, document those that qualify for Community Rating System (CRS) credit per the FEMA's CRS Coordinator's Manual.
- Continue to educate local boards/commissions on hazard mitigation and resilience, including the importance of green infrastructure, to promote awareness and to the extent practical, encourage the integration of these strategies into their programs and activities.
- Continue to support the Volunteer Fire and Rescue and proposed plans to relocate and/or substantially renovate the Fire Station in order to ensure the best services possible for residents. The Town received a grant for 3.5M through Senator Reed's Office toward the engineering/design and construction/renovation of the fire station which may include municipal employee housing. The RFP for design services is tentatively scheduled to be issued in 2025.
- Evaluate need for paid fire or rescue personnel.
- Identify a sustainable annual revenue stream to support ongoing training for volunteer fire personnel.
- The police, fire, and rescue services should continue to train/prepare to respond to all profiled natural hazard events and ensure emergency services are equipped to respond anywhere on the island, including the northern section of Town should Corn Neck Road be compromised. Preparedness should include response to a Category-3 hurricane (including a map depicting potential property at risk from various storm surge and wind speed projections).
- Evaluate and maintain sources of water for fire suppression across Town, and wherein beneficial, assess options, such as installing additional dry hydrants, to improve fire suppression capabilities.
- Assess emergency management fleet and update accordingly (specifically, replace Tanker 1 and Engines 2 and 4).
- Add a high water vehicle able to navigate flooded areas to the Police and Fire Department fleet. This would assist emergency services should flood events cause extensive flooding along Corn Neck Road or other roadways.
- Engage with Interstate Navigation to discuss the immediate and long-term need to increase resilience of the ferry system and to explore a possible public/private partnership around critical community needs such as evacuation and re-supply.
- Revise the Planning Board's subdivision and development checklist to incorporate sea level rise and climate change considerations. This should include requiring applicants to use tools like STORMTOOLS to assess potential flood hazards and other climate-related risks for the property or proposed development. For existing coastal protection structures, on an ongoing basis the Town should maintain records of maintenance and repair activities as well as date stamped photos documenting the physical condition. Should a coastal protection structure be damaged due to a storm event, this documentation will provide a condition basis that may be required by FEMA for funding assistance to reconstruct/repair said structure.
- Assess critical facilities for Category 3 hurricane wind impacts and in terms of building safety to reduce the risk of falling objects in the event of an earthquake.

Lead & Support	Estimated Cost & Funding Source	Time-frame & Kickoff	Priority Ranking & CRS Activity	Action Category	Hazard Addressed	Reference
EM; TM (FIN; FM; HM&FMP-AC; I-NAV; PB; PD; VF&R)	Minimal $-Significant $$$ Funding: Operating Budget; Town Bond; Grants (MRP Action Grant; RIEMA - EMPG)	Ongoing Begin in 2025	Ranking Score 18 CRS Activity 330, 610	Prevention; Emergency Services	All Profiled Hazards	2017 HMP; 2016 CP; 2021 SOF; 2013 SLR; 2024 TNC; 2024 POS

Action 2025-I

Conduct an assessment of back-up power capabilities for critical Town buildings/infrastructure to ensure power is available during hazard events. Based on the assessment, where identified as necessary, install backup generators and/or transfer switches to accommodate trailer mounted generators. As an island community an important consideration is the potential of being isolated during hazard events and effectively having to *fend for itself* without neighboring community or State assistance. If a natural hazard results in the island's ferry and/or air transportation being suspended, the Town must be prepared to meet the needs of the community. It is therefore essential that all critical buildings and infrastructure have functioning emergency generators. Critical buildings/ infrastructure which may require backup generators for redundancy include, but may not be limited to:

- Rescue Building (10 Beach Avenue)
- Sewer Pump Stations (Ocean Avenue Pump Stations #1 and #2, and BI Boat Basin)
- Town Hall (16 Old Town Road)
- Transfer Station (14 West Beach Road)

Lead & Support	Estimated Cost & Funding Source	Time-frame & Kickoff	Priority Ranking & CRS Activity	Action Category	Hazard Addressed	Reference
FM; TM; WTCF (BD)	Moderate $$ (*per site*) Funding: Operating Budget; Grants (FEMA - EMPG; RIDEM; RIEMA)	Medium-term Begin in 2025	Ranking Score 18	Property Protection; Emergency Services	Wind-Related; Winter-Related	2017 HMP

Action 2025-J

The Town will take steps to help ensure the safety of the public from potential dam breach/failure. There are 2 dams in New Shoreham, both classified by RIDEM as Significant Hazard:

- ◊ Dam #424 - Block Island Rod & Gun Club Pond Dam (privately owned)
- ◊ Dam #765 – Mill Dam (Town of New Shoreham)

- Continue to work with RIDEM to ensure that the State is inspecting the dams per State requirements and are enforcing dam owners to make necessary repairs. For both dams in New Shoreham, request RIDEM include New Shoreham's Town Manager and DPW Director on all correspondence to dam owners related to inspections conducted and suggested maintenance/repairs identified.
- Educate residents downstream of dams on potential risks due to breach or failure either through a public forum or by mailing an informational brochure.

Lead & Support	Estimated Cost & Funding Source	Time-frame & Kickoff	Priority Ranking & CRS Activity	Action Category	Hazard Addressed	Reference
EM; ENGR; TM (BD; DPW; RIDEM, RIEMA)	Minimal $-Significant $$$ Funding: Operating Budget; Grants (FEMA - BRIC; MRP Action Grant; RIDEM - Climate Resilient Fund, OSCAR; SNEP)	Ongoing Begin in 2026	Ranking Score 18 CRS Activity 630	Property Protection; Public Education & Awareness; Natural Resource Protection	Flood-Related	

Action 2025-K

Block Island Land Trust (BILT), pursuant to its enabling legislation, will continue to coordinate with various stakeholders in the maintenance, restoration, acquisition, and protection of open space, especially wetlands, flood hazard areas, and other natural resource areas (ex. agricultural land) with the intent to improve resiliency. Potential Stakeholders include, but are not limited to: the Town of New Shoreham; Conservation Commission; Block Island Conservancy; The Nature Conservancy; Audubon Society; RIDEM; USFWS; USDA|NRCS; and local property owners.

- **Existing Conservation Holdings: Maintenance & Restoration**
  - Continue to maintain a detailed inventory and map of all conserved lands in New Shoreham and periodically submit new acquisitions for inclusion in updates to map layers created by the Town's GIS consultant.
  - On Town/BILT owned or managed conservation lands, continue to implement maintenance and/or restoration projects to improve resilience and enhance wildlife habitat.
  - Continue to provide land for presentations, education, public walks and tours, on conserved lands to highlight environmental and resilience benefits.

- **Potential Future Conservation Holdings: Acquisition & Protection**
  - Identify property that would be appropriate to acquire for resiliency purposes. Prioritize properties contiguous to protected land or which connect to protected land thereby creating *green corridors*.
  - Continue to promote cooperation with abutting land owners for awareness of management strategies covering contiguous greenways.
  - Work with stakeholders to acquire or protect through fee and conservation easement acquisition those lands with the greatest potential to accommodate salt marsh migration.

Lead & Support	Estimated Cost & Funding Source	Time-frame & Kickoff	Priority Ranking & CRS Activity	Action Category	Hazard Addressed	Reference
BILT; TC; TM (ASRI; BIC; CC: CRC; GIS; TNC; RIDEM; USDA|NRCS; USFWS)	Minimal $-Significant $$$ Funding: BI Land Trust; Grants (RIDEM - Local Open Space Grant, Section 319)	Ongoing Begin in 2025	Ranking Score 16 CRS Activity 420	Prevention; Public Education & Awareness; Natural Resource Protection	Flood-Related; Wind-Related; Winter-Related; Extreme Heat; Drought; Brush Fire	2017 HMP; 2016 CP; 2021 SOF

Action 2025-L

To mitigate impacts from flooding, erosion, high winds, and future SLR, assess and implement improvements and/or identify potential future relocation sites for Town-owned infrastructure (except roadways - *refer to Action F*), and discuss with/encourage private entities to do the same for their vulnerable assets. This action may require coordination with RIDOT, RIDEM, CRMC, and various private entities.

Potential Projects Include:

Town-owned	State-owned	Privately-owned

• Block Island Water Company (quasi-municipal corporation - 426 Sands Pond Road): infrastructure
• Boardwalks on Andy's Way and a bit further south at Mosquito Beach; improvements at Andy's Way need to recognize erosion of the underlying substrate at the beach end of the boardwalk due to wave action/upland runoff
• Coast Guard Station
• Grace's Cove beach access infrastructure (boardwalk)
• Marinas/Docks/Boat Ramps:
  ○ New Harbor Boat Ramp (Ocean Avenue
  ○ Old Harbor Dock (132 Water Street)
• New Shoreham Water Pollution Control Facility (WPCF) (quasi-municipal corporation): Infrastructure, including: installation of stationary backup generators at the two pump stations on Ocean Avenue and the one at the BI Boat Basin; raising the electronic controls at four pump stations (Ocean Avenue I & II, Boat Basin, and Champlin's); installation of cured-in-place pipe (CIPP) lining for the gravity sewer mains to mitigate against floodwater infiltration; and in low-lying areas, evaluate measures such as watertight manholes to mitigate floodwater intrusion during flood events
• North Light House (northern terminus of Corn Neck Road)
• Town Beach Parking Area (Frederick J. Benson Town Beach – 7 Corn Neck Road)
• Town Beach Pavilion (7 Corn Neck Road): pavilion may need to be relocated upland
• Transfer Station: storm surge/erosion along western bank of capped landfill (14 West Beach Road)
	• Block Island State Airport (4 Center Road)
	• Edward S. Payne Overlook Staircase - Mohegan Bluffs (Mohegan Trail)
	• State Highway Garage (13 Ocean Avenue)
	• Point Judith/Port of Galilee State Parking Lot G (147-159 Galilee Connector Road, Narragansett, RI)
		• Block Island Grocery Store (242 Ocean Avenue)
		• Block Island Historical Society (18 Old Town Road)
		• Block Island Utility District (BIUD) (Non-profit 501C3 - 100 Ocean Avenue)
		• Community Center/Block Island Early Learning Center (91 Chapel Street)
		• Marinas/Docks/Boat Ramps:
		  ○ Ballard's Marina (432 Water Street)
		  ○ Block Island Maritime Institute (216 Ocean Avenue)
		  ○ Champlin's Marina & Resort (80 West Side Road)
		  ○ Harbor Road Yacht Basin (834 Ocean Avenue)
		  ○ Interstate Navigation Ferry Terminal – aka BI Ferry Dock (132 Water Street)
		  ○ Interstate Navigation Ferry Terminal – aka Port of Galilee Ferry Dock (304 Great Island Road, Narragansett RI – property owned by RI State)
		  ○ New Harbor Boat Basin (221 Jobs Hill Road)
		  ○ Payne's Fort Island Marina (1 Payne's Dock)
		  ○ Payne's Hog Pen Marina (2 Payne's Dock)
		  ○ Payne's New Harbor Dock (133 Ocean Avenue)
		  ○ Smuggler's Cove- aka Block Island Maritime Institute (216 Ocean Avenue)
		• M & C Gas Station (596 Corn Neck Road)
		• Sewer Infrastructure Laterals (residences & businesses)
		• Washington Trust Bank (123 Ocean Avenue)

Lead & Support	Estimated Cost & Funding Source	Time-frame & Kickoff	Priority Ranking & CRS Activity	Action Category	Hazard Addressed	Reference
DPW; TM (BIUD; BIWC; CRMC; ENGR; FIN; GIS; P; RIDEM; RIDOT; SIC; WPCF)	Minimal $-Significant $$$ Funding: CIP; Grants (CDBG-DR; FEMA - BRIC, HMGP, PA-401; MRP Action Grant; RIDEM - Climate Resil Fund, OSCAR)	Ongoing Begin in 2025	Ranking Score 15 CRS Activity 540	Property Protection; Natural Resource Protection; Structural Projects	Flood-Related; Wind-Related	2017 HMP; 2016 CP; 2021 SOF; 2013 SLR; 2024 TNC; 2024 POS

Action 2025-M

Review and as deemed locally practical, amend the Subdivision and Land Development Regulations and Zoning Ordinance to:

- **ensure compatibility with State law and reflect updated development practices and approaches that will promote and improve resilience across New Shoreham including against the threat of SLR.**
- **ensure appropriate resiliency and environmental protection is incorporated in new private and public development and redevelopment, especially in vulnerable areas including special flood hazard areas (SFHA), sea level rise encroachment areas, and sensitive natural habitats.** This action is intended to revise existing ordinances and create new ordinances with consideration of the impacts of natural hazards and climate change including sea level rise. Guidance and potential incorporation of documents from State and Federal environmental agencies such as the Rhode Island Department of Environmental Management (RIDEM), Federal Emergency Management Agency (FEMA), and United States Fish and Wildlife Service (USFWS) into local regulations is also intended with this action. The Town will:
    - help ensure compliance with the National Flood Insurance Program (NFIP) requirements by disallowing variances from flood regulations for new construction and 50%+ renovations located within the Special Flood Hazard Area (SFHA)
    - develop a zoning overlay district with special use permit for high hazard areas that may include storm surge inundation, sea level rise, SLAMM projected potential salt marsh areas, and coastal/bluff erosion areas
    - Evaluate impact of SLR on existing structures; for structures at risk of SLR encroachment consider setback relief if relocating existing structure on existing site, and building height relief for elevating existing structure
    - review current RI State wetlands setback regulations and determine if additional protection measures are required to protect the quality and habitat of the wetlands systems in New Shoreham
    - review and strengthen landscaping requirements for new developments to provide specificity for implementing low maintenance native vegetation that minimizes the need for watering and use of lawn fertilizers and pesticides
    - review local regulations to ensure the inclusion of adequate protection for the Great Salt Pond and significant freshwater and brackish ponds
    - review Flexible Subdivision Design (conservation-style) to ensure regulations will result in desired development and open space set aside outcomes
    - require developers to retain existing trees and valuable forested areas where possible, and to provide deciduous street trees in new developments and redevelopments that will not negatively impact power lines
    - investigate and implement strategies to reduce and limit impervious surface on the island and establish a policy identifying an upper limit on the total percentage of impervious cover on the island to be incorporated in the next update of the Comprehensive Plan
    - modify current vegetative buffer zone ordinance width requirements to increase the amount of nature-based risk reduction strategies around development and existing natural areas
    - in conjunction with RIDEM and CRMC, revisit and update as deemed appropriate Zoning Ordinance § 506 Onsite Wastewater Treatment Systems (OWTSs); consider identifying a setback perimeter/ elevation from Great Salt Pond wherein advanced treatment systems are required; consider inclusion of stipulation that all conventional systems in need of repairs in excess of a specified amount must instead be upgraded to an advanced treatment system; also consider inclusion of stipulation that all conventional systems in need of repair with a failed drain field must be upgraded to an advanced treatment system
- **enhance green infrastructure approaches, including Low-Impact Development (LID) requirements (*practices that can be employed at the site-level to control stormwater and strive to replicate the pre-development hydrology of the site*), particularly in areas vulnerable to natural hazards.** The Town will complete RIDEM's LID Municipal Self-Assessment and use EPA's Revising Local Codes to Facilitate Low Impact Development and/or other guidance to assist in reviewing LID measures (such as incorporation of vegetation and trees, reduction in impervious surface, porous pavement, tree trench BMPs, raingardens, and biofiltration) to treat and reduce stormwater runoff, especially in floodplains, and to reduce solar heat conduction and wind velocities. *Note: Best Management Practice (BMP) means a practice, or combination of practices, that is determined to be an effective and practicable means of preventing or reducing the amount of pollution generated by nonpoint sources* (*coming from disperse activities*) *to a level compatible with water quality goals.*

Lead & Support	Estimated Cost & Funding Source	Time-frame & Kickoff	Priority Ranking & CRS Activity	Action Category	Hazard Addressed	Reference
P; PB; TM; ZO (BD; CC; CRC; CRMC; DPW; ENGR; RIDEM; WI)	Minimal $ Funding: Operating Budget; Grants (RIDSP - Technical Assistance Program)	Short-term Begin in 2026	Ranking Score 14 CRS Activity 420, 430, 450	Prevention	Flood-Related; Wind-Related; Winter-Related; Extreme Heat	2017 HMP; 2016 CP; 2021 SOF; 2024 TNC; 2024 POS

Action 2025-N

Implement policies and programs to reduce the impacts of infectious diseases, specifically tick- and mosquito-borne, influenza, and coronavirus.

Potential Programs Include:

- Review and update the Town's policies and programs for controlling the mosquito and tick populations. Consider installing tick- and mosquito-borne disease warning signs at high risk Town properties and encourage local conservation groups to take similar action.
- Review and update the Town's policies and programs for preventing the spread of influenzas and coronaviruses. Infectious disease programming will primarily be focused on public education, but should also include operational procedures for dealing with outbreaks.

Lead & Support	Estimated Cost & Funding Source	Time-frame & Kickoff	Priority Ranking & CRS Activity	Action Category	Hazard Addressed	Reference
BIMC; EM; TM (ASRI; BIC; BILT; RIDOH; TNC; VF&R)	Minimal $ Funding: Operating Budget; Grants (RIEMA - EMPG)	Short-term Begin in 2026	Ranking Score 14	Prevention; Public Education & Awareness; Emergency Services	Infectious Disease-Related	

SECTION 7

Plan Adoption, Implementation, and Maintenance

Subsections

7.1 ADOPT THE PLAN

7.2 IMPLEMENT AND MAINTAIN THE PLAN

7.2.1 Implement the Plan

7.2.1.1 Incorporate the Plan into Existing Planning Mechanisms

7.2.2 Evaluate and Revise the Plan

7.2.2.1 Continued Public Involvement

7.2.2.2 Funding Opportunities

7.2.3 5-Year Plan Update

KMJ – CE/RP

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7 Plan Adoption, Implementation, and Maintenance

Hazard Mitigation Plan: The Town of New Shoreham has successfully met the following requirements ➔
44 CFR Subsection D §201.6(c)(4): [The plan shall include] a plan maintenance process.

44 CFR Subsection D §201.6(c)(5): [The plan shall include] documentation that the plan has been formally approved by the governing body of the jurisdiction requesting approval of the plan.

CRS - Flood Management Plan: The Town of New Shoreham has successfully met the following Mitigation Strategy requirements based on the 10-step planning process for CRS Activity 510 ➔ Adopt the Plan (Step 9); and Implement, Evaluate, Revise (Step 10)

The Town of New Shoreham has completed a lengthy **community-based process** to update their 2017 Hazard Mitigation Plan and expand it to encompass flood management planning in accordance with CRS Activity 510. In doing so, the HM&FMP Advisory Committee has sought to embrace all aspects of the process and create a broad-based *Action Plan* including prevention, property & natural resource protection, structural projects, public education & awareness, and emergency service protection activities. As has been demonstrated through the inclusion of the Code of Federal Regulations (CFR) Local Mitigation Plan requirements throughout this document, and further demonstrated through the use of FEMA's Local Mitigation Plan Review Tool (**Appendix 7.2**), the *Town of* New Shoreham *2025 Hazard Mitigation & Flood Management Plan* meets all 44 CFR §201.6 requirements.

The Town of New Shoreham and the HM&FMP Advisory Committee are committed to the implementation of this *Plan* and recognize that successful hazard mitigation is an ongoing process that requires:

- ❖ endorsement and support from Town Officials and the community
- ❖ a strategy for monitoring, evaluating, and updating the *Plan*
- ❖ incorporating the mitigation goals and activities into other local planning mechanisms
- ❖ continued public participation



Figure 7-2 January 4, 2018 Blizzard (Payne Road)
Photo Credit: Michael Shea



Figure 7-1 Highway Dept. clearing Settlers' Rock Storm Damage (January 10, 2024) Photo Credit: Renee Meyer | Block Island Times

7.1 ADOPT THE PLAN

The *HM&FMP* went through an **EXTENSIVE ITERATIVE PROCESS** before formal adoption by the New Shoreham Town Council. Throughout the development of the *Plan*, the Advisory Committee followed FEMA's CRS floodplain management 10-step planning process, which aligns with the Disaster Mitigation Act (DMA) of 2000 requirements. The CRS planning process was beneficial as it helped to ensure that the opportunity for public input and feedback occurred throughout the process.

CRS CREDIT:

Mitigation Planning Elements	CRS Planning Steps	Max Pts
Phase IV – Plan Maintenance	9. Adopt the Plan	2

CRS Coordinator's Manual – Activity 510: Floodplain Management Planning

As documented in **Section 2**, during the development of the *Plan*, the Advisory Committee met numerous times to provide input, feedback, and guidance on the document. Once satisfied that all provisions had been successfully met, the Advisory Committee authorized the Town's Consultant, Kim Jacobs, to finalize the *DRAFT Plan* and disseminate it for public review. The public review period occurred from March 17-April 7, 2025. During this 3-week period, the *Public Review DRAFT* was posted on the Town's website (Project webpage), and a hard copy was made available for viewing at the New Shoreham Town Clerk's Office.

In order to further encourage public participation in the process, the Public Review Period and Public Hearing were **widely advertised**. Publicity included a press release and three Public Hearing notices in *The Block Island Times;* the Public Hearing notice posted on the Secretary of State website, Town website, and at the Town Hall; information on the Town's website and at the library kiosk (both in English and in Spanish); an announcement at the Informational Presentation (March 3, 2025); information on the March meeting agendas for six local Boards; and an email to the businesses, community lifelines, agencies, and organizations listed in **Appendix 2-3**.

During the three-week Public Review Period the Town received one written comment from a member of the community which, as shown in **Appendix 2-2**, resulted in two clarifications in the document. At the end of the Public Review Period (April 7, 2025) a **Public Hearing** was hosted by the New Shoreham Town Council. No questions or comments were offered by the Town Council or members of the public.

Town Council Adoption of HM&FMP

After the public comment period at the Public Hearing, the Town Council voted unanimously to adopt the *HM&FMP*, with the Resolution acknowledging that during the subsequent review/approval process by RIEMA/FEMA, any required revisions would be accepted by said adoption. The Town Council Resolution adopting the *Town of New Shoreham 2025 Hazard Mitigation & Flood Management Plan* is included in **Appendix 7-1**.

FEMA Approval of HM&FMP

On May 29, 2025, the *HM&FMP* received approval from FEMA, which confirmed that the *Plan* met all requirements (**Appendix 7-2**). The FEMA Approved and Town Council adopted ***Town of New Shoreham 2025 Hazard Mitigation & Flood Management Plan*** will be maintained on the Town's website and replaces the Town's 2017 Hazard Mitigation Plan.

7.2 IMPLEMENT AND MAINTAIN THE PLAN

DMA Requirement §201.6(c)(4)(i):
[The plan maintenance process shall include] a section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

CRS CREDIT:

Mitigation Planning Elements	CRS Planning Steps	Max Pts
Phase IV – Plan Maintenance	10. Implement, Evaluate, Revise	26

CRS Coordinator's Manual – Activity 510: Floodplain Management Planning

The success of the *HM&FMP* lies in the ability to effectively implement the mitigation actions, and to ensure continued relevancy, regularly evaluate and revise the *Plan*. In doing so, New Shoreham will continue building a resilient community; one in which critical lifeline systems, including roads, utilities, infrastructure, and other support facilities, will function in the midst of natural hazards, helping to ensure the safety of the community.

7.2.1 Implement the Plan

Implementation of the mitigation activities will be more successful if they are incorporated into the day-to-day functions and priorities of New Shoreham's government. A number of action descriptors were included in the *Action Plan* (**Table 6-1**)**,** which will aid implementation. For each mitigation action, the descriptors provide a clear course for the actions to be incorporated into departmental and committee-based work plans and budgets.

The *2025-2030 Action Plan* outlines a substantial number of mitigation measures the Town could implement to improve resiliency. The timeframe for each action is provided as a guide and recognized as flexible due to staff and funding availability. It is also recognized that the identified lead for an action may shift from one party to another, or become a shared responsibility.

7.2.1.1 Incorporate the Plan into Existing Planning Mechanisms

DMA Requirement §201.6(c)(4)(ii):
[The plan maintenance process shall include] a process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.

State regulations require that hazard mitigation be addressed within Comprehensive Plans (CP). The Town of New Shoreham's 2016 Comprehensive Plan contains a Natural Hazards and Climate Change Element. It is the intent of the Town to further integrate hazard mitigation into all applicable elements as the CP is updated. Incorporating pertinent aspects of the *HM&FMP* throughout the CP will strengthen the Town's position to implement hazard mitigation as it will carry the full legal weight and authority of the Comprehensive Plan.

In addition to the Comprehensive Plan, the mitigation strategies & principles, vulnerability information and mitigation actions outlined in the *HM&FMP,* will be incorporated, where appropriate, into other Town planning mechanisms. Doing so will leverage activities that have co-benefits, reduce risk, and increase resilience. **Appendix 5-1 includes plan integration considerations for key existing planning documents**. Further integration will occur as land use plans & regulations, mutual aid agreements, and such, are updated or developed.

7.2.2 Evaluate and Revise the Plan

As directed by FEMA, "To be useful, planning must be ongoing and plans must be dynamic. Therefore, the community must have an evaluation and update process" (FEMA. *National Flood*, 510-25).
Success of New Shoreham's *Hazard Mitigation & Flood Management Plan* will be measured by the degree to which actions are sustainably implemented and the *Plan* is maintained.

At the Town Council's regular meeting August 21, 2024, the Council authorized the formation of an Advisory Committee comprised of Town staff, residents, local business and utility representatives, and other stakeholders to provide input and help guide plan development (Town of New Shoreham RI. *Town Council*, 5, 6). **The Advisory Committee, or its successor committee with a similar membership, will be charged with monitoring and evaluating implementation of the *Plan***. Doing so will maintain public representation in the implementation and evaluation process and will afford the Town more CRS credit points for Activity 510-Step 10.

The Administrative Assistant to the Town Manager and the Town Planner will jointly serve as the *Hazard Mitigation & Flood Management Plan* facilitators, reviewing actions on an ongoing basis and coordinating the annual *HM&FMP* Evaluation Meetings. **At a minimum, the Town will conduct an annual review which is key to ensuring the *Plan* reflects current information and continues to meet the needs of the Town.** The annual meeting(s) will be publicly noticed in accordance with Town and State open meeting laws and the public will be encouraged to attend and participate. Should the Advisory Committee choose to convene on a semi-annual or quarterly basis, additional CRS credit points can be achieved.

It is recommended the annual HM&FMP Evaluation Meeting be held between November 1-January 15. New Shoreham's annual municipal budget process requires all departments, boards and committees, submit budget requests for the ensuing fiscal year to the Town Manager prior to the first Monday in February. Holding the annual meeting by January 15 will allow actions requiring capital improvement funding to be identified and included in the budget process.

The Rhode Island Emergency Management Agency (RIEMA) has issued a State Requirement (Element H) related to plan evaluation, with which the Town of New Shoreham will comply. While RIEMA encourages jurisdictions to meet twice a year to discuss mitigation goal progress, they are requiring the following occur at the annual meeting: RIEMA is to be invited; the meeting minutes are to be sent to RIEMA within 30 days after the meeting; and the meeting is to be open to the public and posted in several places to promote community awareness and encourage public engagement. In addition RIEMA is requiring certain local stakeholders (wherein applicable to the particular municipality) participate in the annual meeting: Town Manager, Emergency Manager, Director of DPW, Fire Chief, Police Chief, Planning Department, Finance Department, Floodplain Manager, and Building Official. With respect to New Shoreham, most of these positions are represented on the HM&FMP Advisory Committee (**Section 2**). **To ensure compliance with RIEMA's Element H, in addition to the Town staff already designated as part of the HM&FMP Advisory Committee, the Police Chief, Finance Director, and Building Official will be invited to participate in the annual evaluation meetings**.

During the annual review, an assessment of progress on each of the goals and activities in the *Plan* will be discussed and documented in an Evaluation Report. Recommendations will be made concerning the various aspects of *Plan* implementation, including timeframes for completion of activities, funding and staffing resources, responsible entities, stakeholder engagement, coordination efforts, and priority standings of activities. Some activities that are found to be unachievable may be removed from the *Plan* and activities addressing problems unforeseen during plan development may be added. Implementation successes, hurdles, and lessons learned will also be identified. Further, the Committee will consider whether there have been any changes to the nature, magnitude, or type of risks, and whether the goals remain current and appropriate. The meeting also provides an opportunity to discuss new recommendations or findings from other planning initiatives, policy changes, studies, research, etc. that may influence plan implementation. As New Shoreham participates in the CRS program, the annual Evaluation Report needs to be submitted to the Town Council, released to the media, made available to the public, and submitted with the annual CRS recertification.

The Committee will also convene within a month after a natural disaster to discuss the effectiveness of implemented actions, and if deemed appropriate, revise the *Plan* to reflect lessons learned from Town officials and community members based on their experiences during and after the hazard event.

7.2.2.1 Continued Public Involvement

For the *Plan* to be effective and relevant over time, continued community involvement throughout the implementation and maintenance process will be essential. Ongoing community engagement continues the hazard risks discussion and builds support for mitigation activities. Community members will be given the opportunity to affect the content and outcomes of the *HM&FMP* through outreach, public meetings, and community forums. New Shoreham residents, local and regional stakeholders, neighboring mainland community members, and the public-at-large will be encouraged to participate in the process through advertised meetings and events.

DMA Requirement §201.6(c)(4)(iii):
[The plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process.

The annual *Plan* Evaluation Meetings, which will provide updates and findings on the progress and implementation of the *Plan*, will be open to the public. The annual Evaluation Report will be presented to the Town Council and posted on the HM&FMP Project webpage.

7.2.2.2 Funding Opportunities

An array of funding can be used to finance improvements that mitigate hazards. The Town of New Shoreham can budget for larger mitigation projects in its Capital Improvement Program (CIP) or finance improvements locally through bond issues. Various grants have assisted the Town over the past five years in funding projects associated with natural hazard mitigation and community resilience, and similar grants may be utilized in the future. A list of the Town's recent hazard mitigation related grant awards has been included in **Appendix 5-3**. Rhode Island State Department of Transportation (RIDOT) projects may address stormwater runoff and flood management on roadways under State jurisdiction. Further, local college programs, conservation groups, and other organizations, may be able to donate resources to help plan, communicate risks, or implement mitigation activities.



Figure 7-3 FEMA Grant Programs
Image credit: FEMA

Adoption of this *Plan* by the New Shoreham Town Council will also assist the Town in maintaining eligibility and enhancing application priority for certain federal and State grants utilized for mitigation efforts. FEMA prioritizes municipalities that have completed a risk assessment and established mitigation projects with detailed information on the timeline, cost, and municipal department responsible for leading the project. FEMA grant opportunities for mitigation activities include FEMA's Flood Mitigation Assistance (FMA) Grant Program, Pre-Disaster Mitigation (PDM) Grant Program, Building Resilient Infrastructure & Communities (BRIC), and post-disaster Hazard Mitigation Grant Program (HMGP). Additional information on grant opportunities has been provided in **Appendix 5-3**.

7.2.3 5-Year Plan Update

The *Town of New Shoreham 2025 Hazard Mitigation & Flood Management Plan* is a **dynamic document** and, as discussed in **Subsection 7.2.2**, over the 5-year implementation period there will be an ongoing plan maintenance schedule. Additionally, as required by FEMA, in accordance with 44 CFR §201.6(d)(3), to maintain eligibility for mitigation project grant funding, the plan needs to undergo a **full update every 5-years** to reflect changes in development, progress in local mitigation efforts, changes in priorities, and updated science-based data and tools on hazard tracking, climate change, etc. To ensure that the revised plan will be approved within the 5-year cycle, it is proposed that the Town commence the update on the fourth anniversary of the *Plan* approval date. To financially support the 5-year plan update process, the Town should consider applying for FEMA BRIC or other applicable funding during the third year of the plans' life-cycle.

The HM&FMP Advisory Committee will be responsible for overseeing the 5-year update. All relevant Town departments, boards, agencies, and other stakeholders will be engaged in the process.

In general, the 5-year update will follow the process implemented for the development of this document. The process will include Advisory Committee meetings (open to the public) to update the community profile; review and modify hazard profiles and potential impacts to the Town based on improved data; update vulnerable assets, changes in development, community capabilities, and mitigation goals; identify the status of mitigation actions included in the *2025 HM&FMP*; identify lessons learned based on the effectiveness of the *Plan*; and identify carry-over and new mitigation actions. As the Town appreciates the emphasis placed on **public participation** in CRS Activity 510, the 5-year update will also follow the CRS Activity 510-10 Step Planning Process. Similar to this update, an extensive public outreach program will be implemented and public comments will be solicited throughout the planning process.



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KMJ – CE/RP

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ACRONYMS

KMJ – CE/RP

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Acronyms

ACS - American Community Survey
ADA - Americans with Disabilities Act
ARPA - American Rescue Plan Act of 2021
ASCE - American Society of Civil Engineers
ASFPM - Association of State Floodplain Managers

BCC - Building Code Commission
Beach SAMP - Rhode Island Shoreline Change Special Area Management Plan
BFE - Base Flood Elevation
BIC - Block Island Conservancy
BILT - Block Island Land Trust
BIPCO - Block Island Power Company
BIUD - Block Island Utility District dba Block Island Power Company
BIWC - Block Island Water Company
BMP - Best Management Practice
BRIC - Building Resilient Infrastructure & Communities

CBRA - Coastal Barrier Resources Act
CDBG - Community Development Block Grant
CDC - Centers for Disease Control and Prevention
CEHRPTF - Coastal and Estuary Habitat Restoration Program and Trust Fund
CERI - Coastal Environmental Risk Index
CERT - Community Emergency Response Team
CFR - Code of Federal Regulations
CGSP - Committee for the Great Salt Pond
CHA - Coastal Hazard Application
CIP - Capital Improvement Program
COVID-19 - Coronavirus Disease 2019
CP - Comprehensive Plan
CRB - Community Resilience Building
CRMC - Rhode Island Coastal Resources Management Council
CRS - Community Rating System
CSSLP - Community Septic System Loan Program
CSTE - Council of State and Territorial Epidemiologists
CWSRF - Clean Water State Revolving Fund

DMA - Disaster Mitigation Act
DMP - Debris Management Plan

EAP - Emergency Action Plan
EAS - Emergency Alert System
EC4 - Executive Climate Change Coordinating Council
EDA - US Economic Development Administration
EEE - Eastern Equine Encephalitis
EMA - Emergency Management Agency
EMD - Emergency Management Director
EOP - Emergency Operations Plan
EPA - United States Environmental Protection Agency
EQIP - Environmental Quality Incentives Program
ERICD - Eastern Rhode Island Conservation District

FEMA - Federal Emergency Management Agency
FFOS - Farm, Forest and Open Space Program
FIMA - Federal Insurance and Mitigation Administration
FIRM - Flood Insurance Rate Map
FIS - Flood Insurance Study
FMA - Flood Mitigation Assistance
FSA - Farm Service Agency
FTE - Full-Time Equivalent

GIS - Geographic Information System
GMSL - Global Mean Sea Level
GSP - Great Salt Pond

HDC - Historic District Commission
HHS - Health and Human Services
HM&FMP - Hazard Mitigation & Flood Management Plan
HMGP - Hazard Mitigation Grant Program
HMP - Hazard Mitigation Plan
HSGP - Department of Homeland Security Grant Program
HWM - High-Water Mark

IBC - International Building Code
ICC - International Code Council

IPCC - Intergovernmental Panel on Climate Change
ISDS - Individual Sewage Disposal System

LCAS - Large Capital Asset Subcommittee
LID - Low-Impact Development

MMI - Modified Mercalli Intensity
MPO - Metropolitan Planning Organization
MRP - Municipal Resilience Program
MSC - Map Service Center

NASA - National Aeronautics and Space Administration
NAWAS - National Warning System
NBEP - Narragansett Bay Estuary Program
NBNERR - Narragansett Bay National Estuarine Research Reserve
NCDC - National Climatic Data Center
NCEI - National Centers for Environmental Information
NEPA - National Environmental Policy Act
NESEC - New England States Emergency Consortium
NFDRS - National Fire Danger Rating System
NFIP - National Flood Insurance Program
NFWF - National Fish and Wildlife Foundation
NHC - National Hurricane Center
NOAA - National Oceanic and Atmospheric Administration
NRDC - Natural Resources Defense Council
NRICD - Northern RI Conservation District
NWS - National Weather Service

OSCAR - Ocean State Climate Adaptation and Resilience
OWMP - Onsite Wastewater Management Plan
OWTS - On-site Wastewater Treatment System

PAHPA - Pandemic and All-Hazards Preparedness Act
PDM - Pre-Disaster Mitigation
PDSI - Palmer Drought Severity Index
PR - Public Review
PSI - Pandemic Severity Index

RIACD - Rhode Island Association of Conservation Districts
RIDEM - Rhode Island Department of Environmental Management
RIDOA - Rhode Island Department of Administration
RIDOH - Rhode Island Department of Health
RIDOT - Rhode Island Department of Transportation
RIDPS - Rhode Island Department of Public Safety
RIDSP - Rhode Island Division of Statewide Planning
RIEMA - Rhode Island Emergency Management Agency
RIFMA - Rhode Island Flood Mitigation Association
RIGIS - Rhode Island Geographic Information System
RIGL - Rhode Island General Law
RIIB - Rhode Island Infrastructure Bank
RIOER - Rhode Island Office of Energy Resources
RIPTA - Rhode Island Pubic Transit Authority
RIRRC - Rhode Island Resource Recovery Corporation
RISCON - Rhode Island Statewide Communications Network
RI-SHMP - Rhode Island State Hazard Mitigation Plan
RISNER - Rhode Island Special Needs Emergency Registry
RL - Repetitive Loss
ROW - Right-of-Way

SAWG - Shoreline Access Working Group
SDWA - Safe Drinking Water Act
SFHA - Special Flood Hazard Area
SHSP - State Homeland Security Program
SLAMM - Sea Level Affecting Marshes Model
SLOSH - Sea, Lake, and Overland Surges from Hurricanes
SLR - Sea Level Rise
SMPDBK - Simplified Dam Break
SNEP - Southern New England Program
SOF - Summary of Findings
SRICD - Southern RI Conservation District
SRL - Severe Repetitive Loss
STAPLEE - Social, Technical, Administrative, Political, Legal, Economic, and Environmental
STIP - State Transportation Improvement Program

TA - Technical Advisor
TNC - The Nature Conservancy

UNHSC - University of New Hampshire Stormwater Center
URI - University of Rhode Island

USACE - United States Army Corps of Engineers

USDA|NRCS - United States Department of Agriculture Natural Resources Conservation Service

USFWS - United States Fish and Wildlife Service

USGS - United States Geological Survey

USHUD - US Department of Housing and Urban Development

VOAD - Voluntary Organizations Active in Disasters

WCT - Wind Chill Temperature

WHIP - Wildlife Habitat Incentives Program

WHO - World Health Organization

WNV - West Nile Virus

GLOSSARY

KMJ – CE/RP

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Glossary

Action Plan – A sequence of steps to achieve specific goals, including identification of responsible parties, resources required, and a timeline.

American Community Survey – The framework by which the Census Bureau collects and publishes demographic, social, housing, and economic data.

Base Flood Depth (BFD) – The depth shown on the Flood Insurance Rate Map (FIRM) for Zone AO that indicates the depth of water above highest adjacent grade resulting from a flood that has a 1% chance of equaling or exceeding that level in any given year.

Base Flood Elevation (BFE) – The computed elevation to which floodwater is anticipated to rise during the base flood. BFEs are shown on Flood Insurance Rate Maps (FIRMs) and on the flood profiles. The BFE is the regulatory requirement for the elevation or floodproofing of structures. The relationship between the BFE and a structure's elevation determines the flood insurance premium.

Beaufort Scale – Created in 1805, a scale still used today as a standardized scale for characterizing wind.

Berm – A geomorphologic feature usually located at mid-beach and characterized by a sharp break in slope, separating the flatter backshore from the seaward-sloping foreshore.

Brush Fire – A fire burning in vegetation that is predominantly shrubs, brush, and scrub growth. Peak fire season in Rhode Island is typically between mid-March and mid-May when dry windy weather can occur increasing the potential for fires.

Building Code – The Rhode Island State Building Code.

Built Environment – Manmade surroundings including buildings, infrastructure, parks, lawns, etc.

Climate – An area's typical or average weather.

Climate Change – A change in the typical or average weather of a region or city. This could be a change in a region's average annual rainfall, for example. Or it could be a change in a city's average temperature for a given month or season. Climate change is also a change in Earth's overall climate. This could be a change in Earth's average temperature, for example. Or it could be a change in Earth's typical precipitation patterns.

Coastal Barrier – A naturally occurring island, sandbar or other strip of land, including coastal mainland, that protects the coast from severe wave wash.

Coastal Erosion – The process of the gradual wearing away of land masses along the coast.

Coastal Flooding – Inundation of areas along the coast resulting from storm surge, wave action.

Coastal High Hazard Areas – Special Flood Hazard Areas (SFHAs) along the coasts that have additional hazards due to wind and wave action. These areas are identified on Flood Insurance Rate Maps (FIRMs) as zones V, V1-V30 and VE.

Coastal Resources Management Council (CRMC) – The Coastal Resources Management Council is a State of Rhode Island management agency with regulatory functions. Its primary responsibility is for the preservation, protection, development and where possible the restoration of the coastal areas of the state via the implementation of its integrated and comprehensive coastal management plans and the issuance of permits for work with the coastal zone of the state.

Code of Federal Regulations (CFR) – The Code of Federal Regulations (CFR) is the codification of the general and permanent rules and regulations published in the Federal Register by the executive departments and agencies of the federal government.

Community Assets – The people, structures, facilities, and systems that have value to the community.

Community Rating System (CRS) – A voluntary program developed by FEMA to provide incentives for NFIP compliant communities who want to implement extra measures to provide protection from flooding.

Comprehensive Plan/Comprehensive Community Plan – A municipal-level plan written in accordance with requirements of the Rhode Island Comprehensive Planning and Land Use Regulation Act.

Coronavirus Disease 2019 (COVID-19) – is a virus strain that has only spread in people since December 2019. On March 11, 2020 the Coronavirus Disease was declared a pandemic by the World Health Organization and on March 13, 2020 the United States declared the outbreak a national emergency.

Critical Facilities – A structure or other improvement that, because of its function, size, service area, or uniqueness, has the potential to cause serious bodily harm, extensive property damage, or disruption of vital socioeconomic activities if it is destroyed or damaged or if its functionality is impaired.

Drought – A natural climatic condition which occurs in virtually all climates, the consequence of a natural reduction in the amount of precipitation experienced over a long period of time, usually a season or more in length. High temperatures, prolonged winds, and low relative humidity can exacerbate the severity of drought.

Earthquake – A sudden motion or trembling that is caused by a release of strain accumulated within or along the edge of the earth's tectonic plates.

Elevated Building – A building that has no basement and that has its lowest elevated floor raised above ground level by foundation walls, shear walls, posts, piers, pilings, or columns. Solid (perimeter) foundations walls are not an acceptable means of elevating buildings in V and VE zones.

Erosion – The collapse, undermining or subsidence of land along the shore of a lake or other body of water. Erosion is a covered peril if it is caused by waves or currents of water exceeding their cyclical levels which result in flooding.

Extent – The strength or magnitude of the hazard. Extent can be described in a combination of ways depending on the hazard.

Farm, Forest, and Open Space Program – A tax incentive program that helps to achieve open space protection, but does not provide permanent protection. The program is intended to encourage property owners to manage their land for forestry, agriculture, and open space. Property owners enter into an agreement with the Town to keep their properties undeveloped for at least 15 years in exchange for lower property tax assessments.

Federal Emergency Management Agency (FEMA) – An agency within the U.S. Department of Homeland Security charged with responding to Presidentially-declared disasters.

Flash Flood – A flood that occurs when excessive water fills normally dry creeks or river beds along with currently flowing creeks and rivers, causing rapid rises of water in a short amount of time. They can happen with little or no warning.

Flood – A general and temporary condition of partial or complete inundation of normally dry land areas from: the overflow of inland or tidal waters; the unusual and rapid accumulation of runoff of surface water from any source.

Flood Insurance Rate Map (FIRM) – Official map of a community on which FEMA has delineated the Special Flood Hazard Areas (SFHAs), the Base Flood Elevations (BFEs) and the risk premium zones applicable to the community. A FIRM that has been made available digitally is called a Digital Flood Insurance Rate Map (DFIRM).

Floodplain – Any land area susceptible to being inundated by floodwaters from any source.

Floodplain Management – The operation of an overall program of corrective and preventive measures for reducing flood damage, including but not limited to, emergency preparedness plans, flood-control works and floodplain management regulations.

Floodproofing – Any combination of structural and nonstructural additions, changes or adjustments to structures, which reduce or eliminate risk of flood damage to real estate or improved real property, water and sanitation facilities or structures with their contents.

Flood Zone A (1% annual chance) – Zone A is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study (FIS) by approximate methods. Mandatory flood insurance purchase requirements apply. For areas within the A Zone where detailed hydraulic analyses has been performed and Base Flood Elevations (BFEs) identified, additional classifications (VE, V1-V30) are made.

Flood Zone V (1% annual chance) – Zone V is the flood insurance rate zone that corresponds to the 100-year coastal floodplains that have additional hazards associated with storm waves. Mandatory flood insurance purchase requirements apply. For areas within the V Zone where detailed hydraulic analyses has been performed and Base Flood Elevations (BFEs) identified, additional classifications (AE, AH, AO, AR, A1-A30, A99) are made.

Flood Zone X (0.2% annual chance) – Zone X is the flood insurance rate zone that corresponds to the 500-year floodplains that are determined in the Flood Insurance Study (FIS) by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no BFEs (base flood elevations) or depths are shown within this zone.

Foundation Walls – Masonry walls, poured concrete walls or precast concrete walls, regardless of height, that extend above grade and support the weight of a building.

Freeboard (FEMA Definition for Flood Zones) – An additional amount of height above the Base Flood Elevation (BFE) used as a factor of safety (e.g., 2 feet above the Base Flood) in determining the level at which a structure's lowest floor must be elevated or floodproofed to be in accordance with state or community floodplain management regulations.

Freeboard (bridge clearance) – The space between the bottom of a bridge's structure and the surface of the water underneath the bridge.

Freshwater Wetlands (Per RIDEM) – areas that are flooded or that have water at or near the surface for part of most growing seasons. They commonly occur between uplands and water bodies; however, many freshwater wetlands stand alone and are surrounded by upland. Freshwater wetlands are widespread throughout Rhode Island. Swamps, marshes, bogs, ponds, rivers, and streams are considered wetlands in Rhode Island as are other smaller areas and certain adjacent areas known as perimeter wetlands, riverbank wetlands, and floodplain.

Fujita Scale – An intensity scale which rates tornadoes with numeric values from F0 to F5 based on tornado wind speed and damage sustained. An F0 rating indicates light damage such as broken tree limbs or signs, while an F5 rating indicates incredible damage was sustained.

Geographic Information System (GIS) – A computer system that analyzes and displays geographically referenced information. It uses data that is attached to a unique location.

Greenhouse Gas Emissions – Gases that trap heat in the atmosphere, including carbon dioxide and methane.

Hazard – A natural or man-made source or cause of harm or difficulty.

Hazard Identification – The process of identifying hazards that threaten an area.

Hazard Mitigation – Sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards.

Hazard Mitigation Plan – A plan, written to comply with FEMA requirements, that identifies local policies and actions that can be implemented over the long term to reduce risk and future losses from hazards. These mitigation policies and actions are identified based on an assessment of hazards, vulnerabilities, and risks and the participation of a wide range of stakeholders and the public in the planning process.

Hazard Profiles – Profiles of each identified hazard.

Hurricane – A tropical cyclone in which the maximum sustained surface wind is 74 mph or more. The term hurricane is used for Northern Hemisphere tropical cyclones east of the International Dateline to the Greenwich Meridian. (The term typhoon is used for Pacific tropical cyclones north of the Equator west of the International Dateline).

Hydrology – The science of dealing with the waters of the earth. A flood discharge is developed by a hydrologic study.

Impact – The effect of a hazard on the community and its assets.

Inland Flooding – Flooding that presents a risk within inland (non-coastal) areas, including riverine flooding and shallow flooding.

Inundation – The total water level that occurs on normally dry ground as a result of the storm tide, and is expressed in terms of height of water, in feet, above ground level.

Letter of Map Amendment (LOMA) – An amendment to the currently effective FEMA map which establishes that a property is not located in a Special Flood Hazard Area (SFHA). A LOMA is issued only by FEMA.

Letter of Map Revision (LOMR) – An official amendment to the currently effective FEMA map. It is issued by FEMA and changes flood zones, delineations and elevations.

Location –The geographic areas within the planning area that are affected by the hazard, such as a floodplain.

Lowest Floor Elevation (LFE) – The measured distance of a building's lowest floor above the National Geodetic Vertical Datum (NGVD) or other datum specified on the FIRM for that location.

Magnitude – A measure of the strength of a hazard event. The magnitude (also referred to as severity) of a given hazard is usually determined using technical measures specific to a hazard.

Mean Higher High Water (MHHW) – There are two high tides in each day, and one of those two is always higher than the other. The higher of the two high tide lines is called "Higher High Water." The National Oceanic Observatory Administration defines the MHHW as the average of the Higher High Water readings in a location over a 19 year period.

Mission Statement – A statement that drives the process and describes in a short, simple statement the intended outcome.

Mitigation – An effort to reduce the impact or loss from an incident.

Mitigation Strategy – The heart of the mitigation plan is the mitigation strategy, which serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process.

Modified Mercalli Intensity (MMI) Scale – An intensity scale created to evaluate the effects of earthquakes, the MMI is the one currently used in the United States. Developed in 1931 by seismologists this scale is composed of increasing levels of intensity that range from imperceptible shaking to catastrophic destruction. Each level is designated by Roman numerals. It does not have a mathematical basis; instead it is an arbitrary ranking based on observed effects.

National Centers for Environmental Administration Information – Formerly the National Climatic Data Center, a division of the National Oceanic and Atmospheric Administration responsible for "preserving, monitoring, assessing, and providing public access to the Nation's treasure of climate and historical weather data and information."

National Flood Insurance Program (NFIP) – A program that makes federally-backed flood insurance available in those states and communities that agree to adopt and enforce flood-plain management ordinances to reduce future flood damage.

National Geodetic Vertical Datum (NGVD) of 1929 – National standard reference datum for elevations, formerly referred to as Mean Sea Level (MSL) of 1929. NGVD 1929 may be used as the reference datum on some Flood Insurance Rate Maps (FIRMs).

National Weather Service – A component of NOAA that provides weather, water, and climate data, forecasts and warnings for the protection of life and property and enhancement of the national economy.

Natural Disaster – A natural hazard event, such as a flood or tornado, which results in widespread destruction of property or caused injury and/or death.

Natural Environment – Natural systems with limited human influence. Examples: freshwater wetlands, coastal marshes, woodlands.

Natural Grade – The grade unaffected by construction techniques such as fill, landscaping or berming.

Natural Hazard – An unexpected or uncontrollable natural event of unusual magnitude that threatens the activities of people or people themselves.

Nor'easter – A storm along the East Coast of North America, so called because the winds over the coastal area are typically from the northeast. These storms may occur at any time of year but are most frequent and most violent between September and April.

North American Vertical Datum (NAVD) of 1988 – The vertical control datum established for vertical control surveying in the Unites States of America based upon the General Adjustment of the North American Datum of 1988. It replaces the National Geodetic Vertical Datum (NGVD) of 1929.

Repetitive Loss Structure – Any insurable building for which two or more claims of more than $1,000 were paid by the National Flood Insurance Program (NFIP) within any rolling 10-year period, since 1978 (claims made within 10 days of each other are counted as one claim). A repetitive loss property may or may not be currently insured by the NFIP (FEMA. Repetitive Loss Structure).

Resilience – The ability of systems, infrastructures, government, business, communities and individuals to resist, tolerate, absorb, recover from, prepare for, or adapt to an adverse occurrence that causes harm, destruction or loss.

Return Period – The return period of a storm is a shorthand way for experts and policy makers to standardize and discuss the strength of a theoretical storm event. It is also an expression of the characteristics of that theoretical storm, and an educated guess as to how often such a storm could occur.

Richter Scale – The Richter magnitude scale, developed in 1935 by Charles F. Richter, is a mathematical device to compare the size of earthquakes. The magnitude of an earthquake is determined from the logarithm of the amplitude of waves recorded by seismographs. Adjustments are included for the variation in the distance between the various seismographs and the epicenter of the earthquakes.

Risk – The potential for an unwanted outcome resulting from an incident, event, or occurrence, as determined by its likelihood and the associated consequences.

Risk Assessment – A product or process that collects information and assigns values to risks for the purpose of informing priorities, developing or comparing courses of action, and informing decision making.

Riverine Flooding – Surface water runoff introduced into streams and rivers exceeds the capacity of the natural or constructed channels to accommodate the flow; as a result, water overflows the stream banks, spilling out into adjacent low-lying areas.

Save the Bay – A Providence-based nonprofit organization whose mission is to "protect and improve Narragansett Bay."

Sea, Lake and Overland Surges from Hurricanes (SLOSH) Model – A computerized numerical model developed by the National Weather Service (NWS) to estimate storm surge heights resulting from historical, hypothetical, or predicted hurricanes by taking into account the atmospheric pressure, size, forward speed, and track data. These parameters are used to create a model of the wind field which drives the storm surge. The SLOSH model consists of a set of physics equations which are applied to a specific locale's shoreline, incorporating the unique bay and river configurations, water depths, bridges, roads, levees, and other physical features.

Sea Level Rise – The upward trend in average sea level height.

Severe Repetitive Loss – Any NFIP-insured single-family or multi-family residential building that has incurred flood-related damage for which four or more separate claims payments have been made, with the amount of each claim (including building and contents payments) exceeding $5,000; or for which at least two separate claims payments (building payments only) have been made, with the cumulative amount exceeding the market value of the building. In both instances, at least two of the claims must be within any rolling 10-year period, since 1978, and claims made within 10 days of each other are counted as one claim.

Shallow Flooding – For purposes of the National Flood Insurance Program (NFIP), shallow flooding is defined as that with a depth limited to 3.0 feet or less where no defined channel exists.

Shear Walls – Walls used for structural support but not structurally joined or enclosed at the ends (except by breakaway walls). Shear walls are parallel or nearly parallel, to the flow of the water and can be used in any flood zone.

Sheet Flow Hazard – A type of flood hazard with flooding depths of 1 to 3 feet that occurs in areas of sloping land. The sheet flow hazard is represented by the zone designation AO on the FIRM.

Special Flood Hazard Area (SFHA) – The shaded area on the Flood Insurance Rate Map (FIRM) which identifies an area that has a one percent chance of being flooded in any given year (100-year floodplain). The FIRM identifies these shaded areas as FIRM Zones A, AO, AH, A1 -A30, AE, A99, V, V1 -30, and VE.

Shelter – A place of refuge that provides life-sustaining services in a congregate facility for individuals who have been displaced by an emergency or a disaster.

State Hazard Mitigation Plan (SHMP) – A Plan that provides comprehensive guidance for hazard mitigation in the State of Rhode Island.

Storm Surge – The abnormal rise of water generated by a storm, over and above the normal astronomical tide, and is expressed in terms of height above predicted or expected tide levels. Since storm surge represents the deviation from normal tide levels, it is not referenced to a vertical or tidal datum.

Tornado – A violently rotating column of air extending ground-ward.

Tropical Cyclone – A generic term for a cyclonic, low-pressure system over tropical or sub-tropical waters.

Tropical Storm – A tropical cyclone with maximum sustained winds greater than 39 miles per hour and less than 74 miles per hour.

Variance – A grant of relief by a participating community from the terms of its floodplain management regulations.

Vector-borne diseases – Infections transmitted to humans and other animals by blood-feeding arthropods, such as mosquitoes and ticks.

Vertical Datum - A base elevation used as a reference from which to measure heights (or depths).

Vulnerability – Characteristics of community assets that make them susceptible to damage from a given hazard.

Vulnerability Analysis – An analysis of the risk of hazards impacting community assets.

Wildfire – A wildfire is an unplanned, unwanted fire burning in a natural area, such as a forest, grassland, or prairie. Wildfires can damage natural resources, destroy homes, and threaten the safety of the public and the firefighters who protect forests and communities.

Wildland Urban Interface (WUI) Zone – As building development expands into natural areas, homes and business may be situated in or near areas susceptible to wildfires.

Wind Chill Index – Wind chill index is an attempt to quantify the cooling effect of wind with the actual outside air temperature to determine a wind chill temperature that represents how cold people and animals feel, based on the rate of heat loss from exposed skin.

Zoning Ordinance – Regulations that define how property can be used within zones as mapped on a Zoning Map. Regulations specify how property may be used and establish dimensional requirements including lot size, building placement, bulk (or density) and the height of structures.

Glossary Sources

Centers for Disease Control and Prevention (CDC)
Https://www.cdc.gov/

Coastal Resources Management Council (CRMC)
Http://www.crmc.ri.gov/aboutcrmc.html

Federal Emergency Management Agency (FEMA)
Https://www.fema.gov/about/glossary
Https://www.fema.gov/pdf/nfip/manual201205/content/22_definitions.pdf
Https://www.fema.gov/sites/default/files/2020-05/fim_appendix-i-severe-repetitive-loss-properties_apr2020.pdf
Https://www.fema.gov/sites/default/files/2020-06/fema-local-mitigation-planning-handbook_03-2013.pdf

National Oceanic and Atmospheric Administration (NOAA)
Https://forecast.weather.gov/glossary.php?
Http://www.nhc.noaa.gov/aboutgloss.shtml
Http://www.nhc.noaa.gov/news/20130806_pa_defineSurge.pdf
Https://www.weather.gov/safety/winter-noreaster

National Park Service (NPS)
Https://www.fs.fed.us/nwacfire/home/terminology.html

RI Department of Environmental Management (RIDEM)
Http://www.dem.ri.gov/programs/benviron/water/wetlands/pdfs/scoop.pdf

Save the Bay (STB)
Https://www.savebay.org/

Statewide Planning (RI Dept. of Administration)
Http://www.planning.ri.gov/documents/sea_level/2016/TP167.pdf

United States Geological Survey (USGS)
Http://earthquake.usgs.gov/
Https://www.usgs.gov/faqs/what-geographic-information-system-gis
https://www.usgs.gov/programs/earthquake-hazards/modified-mercalli-intensity-scale

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Town of New Shoreham 2025 Hazard Mitigation & Flood Management Plan

APPENDICES

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APPENDIX 2-1

CRS Credit for Activity 510

KMJ – CE/RP

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Appendix 2-1
CRS Credit for Activity 510

The FEMA Community Rating System (CRS) is a voluntary incentive program designed to encourage communities to engage in various community focused activities which promote a comprehensive approach to floodplain management beyond the minimum National Flood Insurance Program (NFIP) requirements. As the Town of New Shoreham is a Community Rating System (CRS) program participant, the Advisory Committee chose to follow the 10-Step planning process associated with CRS Activity 510, Floodplain Management Planning. The following Table outlines the 10-Step planning process and references the Section(s) within this *Plan* where that step has been addressed. The maximum and anticipated CRS Credit has also been provided.

CRS Activity 510 Planning Process - Credit Checklist

CRS Planning Steps	CRS Credit Point Criteria Corresponding Section within New Shoreham HM&FMP	Maximum CRS Credit	Estimated CRS Credit
1. Organize to Prepare the Plan	a. The office responsible for community land use and comprehensive planning was involved throughout the entire planning process. **Subsection 2.12; Tables 2-2 and 2-3 (pp 2-3)**	4	4
	b. The department staff on the Advisory Committee represented offices responsible for all six categories of flood mitigation activities. **Subsection 2.12; Tables 2-2 and 2-3 (pp 2-3)**	9	9
	c. The planning process was formally created by the community's governing board (August 21, 2024 Town Council meeting). **Executive Summary (p 1); Subsection 2.12 (p 2)** *Note- these sections include the link to TC Meeting Minutes*	2	2
2. Involve the Public	a. Members of the public comprise half of the planning committee membership; the Advisory Committee met 7 times and was actively engaged in all aspects of plan development; all meetings were publicized and open to the public. **Subsection 2.1.2 (pp 2-3); Subsection 2.2.2 (pp 5-12)**	60	60
	b. A public informational meeting (Outreach Activity #6) hosted by the Coastal Resilience Committee was held October 10, 2024 (within the first 2 months of the planning process) to obtain public input on the natural hazards, problems, and possible solutions. **The first part of the meeting was held in the floodplain (SFHA)** toward the southern end of Corn Neck Road in order to discuss flood concerns both specific to this area and similar concerns for other areas of the island. The second part of the meeting was held at the Town Hall. **Subsection 2.2.2 (p 9); Appendix 2-2 (p 24)**	15	15
	c. A public informational session (Outreach Activity #7) was hosted by the Town Council at the end of the planning process, March 3, 2025 (**a month before the Public Hearing** where the Town Council voted to adopt the Plan). An overview of the planning process and Action Plan was presented and attendees had the opportunity to provide input and feedback. **Subsection 2.2.2 (p 11); Appendix 2-2 (p 25)**	15	15

CRS Planning Steps	CRS Credit Point Criteria Corresponding Section within New Shoreham HM&FMP	Maximum CRS Credit	Estimated CRS Credit
2. Involve the Public *continued*	d. In addition to the Advisory Committee meetings being open to the public, eleven (11) other outreach activities were conducted to encourage public awareness of plan development and encourage input and feedback. **Executive Summary (p 1); Subsection 2.2.2 (pp 5-12); Appendix 2-2**	30	30
3. Coordinate	a. The Town conducted an extensive review of existing studies, reports, and technical information (REQUIRED for Step 3 credit). **Subsection 2.3 (pp 13-16); Subsection 5.1.1 (pp 3-4); Appendix 5-1** *Also, as evidenced by existing studies, reports, and technical information being cited throughout Sections 2, 3, 4, and 6, extensive review and integration of documents took place.*	5	5
	b. The Town coordinated with 54 businesses, community lifelines, agencies, and organizations outside of New Shoreham's governmental structure through emails (or letters if an email was unavailable) at the beginning of the planning process as well as at the end of the plan development process in order to provide an opportunity for pre-adoption review of the *Draft HM&FMP*. **Subsection 2.3.2 (p 16); Appendix 2-3**	30	30
4. Assess the Hazard	a. The *Plan* includes an assessment of the flood hazard (REQUIRED), including the SFHA, repetitive loss areas, areas not mapped on the FIRM that have flooded in the past, and other surface flooding identified in other studies. 1. Maps of the flood hazard areas have been included: **Section 4 - Figures 4-11 (p 19), 4-14 (p 26), 4-20 (p 35), 4-58 (p 108), 4-60 (p 115), 4-61 (p 116); Appendix 4-2** 2. A description of the known flood hazards has been included for: Inland Flooding (Riverine Flooding, Shallow Flooding, and Dam Failure), Coastal Flooding including Storm Surge, and Coastal Erosion. **Subsection 4.3 (pp 17-34); Subsection 4.4 (pp 103-157); Appendix 4-3** 3. A discussion of past floods has been included. **Subsection 4.2.1 (pp 12-13); Subsection 4.3.1 (pp 27-29, 36-38, 41-44)**	15	15
	b. The *Plan* includes an assessment of less-frequent flood hazards. An inventory was conducted and concluded that there are 2 dams, but no levees in Town. Both dams are classified as significant hazard by RIDEM. **Subsection 4.3.1 (pp 22, 24-26)** The inventory also identified that only one of the seven special flood-related hazards identified in CRS Coordinator's Manual (401) is applicable – coastal erosion. **Subsection 4.3.1.3 (pp 40-44)** Inland flooding, coastal flooding/storm surge, dams, and coastal erosion have all been described, and the SFHA has been mapped. **Subsection 4.3.1 (pp 17-44); Appendix 4-2**	10	10

CRS Planning Steps	CRS Credit Point Criteria Corresponding Section within New Shoreham HM&FMP	Maximum CRS Credit	Estimated CRS Credit
4. Assess the Hazard *continued*	c. The risk assessment identifies areas likely to be flooded and flood problems that are likely to get worse in the future as a result of changes in floodplain development and climate change or sea level rise. **Subsection 4.1 (pp 2-10); Subsection 4.3 (pp 17-44); Subsection 4-4 (pp 103-131, 141-144, 147, 149); Appendix 4-2; Appendix 4-3**	5	5
	d. The *Plan* includes a description of the magnitude or severity, history, and probability of future events for other natural hazards; the natural hazards identified have also been included in the Rhode Island State Hazard Mitigation Plan. **Executive Summary (2-10); Subsection 4.2 (pp 11-15); Subsection 4.3 (16, 45-98); Appendix 4-1; Appendix 4-2; Appendix 4-3**	5	5
5. Assess the Problem	a. The *Plan* includes an overall summary of the jurisdiction's vulnerability to each hazard identified in the hazard assessment and the impact on the community. (REQUIRED for Step 5 credit) **Executive Summary (2-10); Subsection 4.2.2 (pp 14-15); Appendix 4-1**	2	2
	b. The *Plan* includes a description of the impact that the identified hazards have on the following features: 1. life safety and the need for warning and evacuating residents and visitors – **Executive Summary (2-10); Subsection 4.4.5 (pp 150-157)** 2. public health, including health hazards to individuals from flood waters and mold – **Executive Summary (2-10); Subsection 4.4.5 (pp 150-157)** 3. critical facilities and infrastructure – **Executive Summary (2-10); Subsection 4.4.1 (100-102)**; **Subsection 4.4.2 (pp 103-128); Appendix 4-3** 4. the community's economy and major employers – **Subsection 4.4.4 (145-149)** 5. the number and types of affected buildings – **Subsection 4.4.1 (100-102)**; **Subsection 4.4.2.1 (pp 107-116); Appendix 4-3**	25	25
	c. The assessment includes an estimate of the potential damage and dollar losses to vulnerable structures **Subsection 4.4.2.1 (109-113)**	5	5
	d. The assessment describes areas within the floodplain that provide natural functions **Subsection 4.4.3 (pp 129-144)**	5	5
	e. The assessment includes a description of development trends **Section 3 (pp 1-2, 5-8); Subsection 4.4.6 (pp 158-165)**	7	7
	f. The assessment includes a description of the impact of the future flooding conditions on people, property, and natural floodplain functions **Executive Summary (2-10); Subsection 4.4 (pp 99-157)**	8	8

CRS Planning Steps	CRS Credit Point Criteria Corresponding Section within New Shoreham HM&FMP	Maximum CRS Credit	Estimated CRS Credit
6. Set Goals	The *Plan* includes a statement of the community's goals for their hazard mitigation & floodplain management program which addresses all identified flood-related problems **Executive Summary (p 11); Subsection 6.2 (pp 2-3); Subsection 6.4.2 (p 11)**	2	2
7. Review Possible Activities	**Please Note**: For items a-g, in addition to reviewing the status of the 2017 actions and determining which of the non-completed actions should be included in the updated *Action Plan*, **a wide array of additional possible activities that were considered**, as well as what existing regulatory measures should be revised. Based on an **EXTENSIVE REVIEW** of the possible activities, the Committee selected 14 actions to undergo the STAPLEE analysis (**Appendix 6-2**). Those activities selected have been included in the Action Plan (**Subsection 6-4 pp 7-24**). The Action Plan includes a number of descriptors including magnitude of cost and potential funding source. a. The *Plan* reviewed preventive activities including zoning, stormwater management regulations, building codes, subdivision ordinances, and the preservation of wetlands and open space **Executive Summary (pp 2-6); Subsection 5.1.1 (pp 3-4); Subsection 5.3 (pp 11-18); Subsection 6.3 (pp 3-7); Appendix 5-1; Appendix 6-1**	5	5
	b. The *Plan* reviewed whether the community's floodplain management regulatory standards are sufficient for current and future conditions **Executive Summary (pp 2-6); Subsection 5.1.1 (pp 3-4); Subsection 5.3 (pp 11-18); Subsection 6.3 (pp 3-7); Appendix 5-1; Appendix 6-1**	5	5
	c. The *Plan* reviewed property protection activities, such as acquisition and flood insurance **Executive Summary (pp 2-6); Subsection 5.1.1 (pp 3-4); Subsection 5.3 (p 16); Subsection 6.3 (pp 3-7); Appendix 5-1; Appendix 6-1**	5	5
	d. The *Plan* reviewed activities to protect the natural and beneficial functions of the floodplain, such as wetlands protection **Executive Summary (pp 2-6); Subsection 5.1.1 (pp 3-4); Subsection 5.3 (pp 13, 16); Subsection 6.3 (pp 3-7); Appendix 5-1; Appendix 6-1**	5	5
	e. The *Plan* reviewed emergency services activities **Executive Summary (pp 2-10); Subsection 5.1.1 (pp 3-4); Subsection 5.3 (pp 13-15, 18); Subsection 6.3 (pp 3-7); Appendix 5-1; Appendix 6-1**	5	5
	f. The *Plan* reviewed structural projects **Executive Summary (pp 2-6); Subsection 5.1.1 (pp 3-4); Subsection 5.3 (pp 12-13); Subsection 6.3 (pp 3-7); Appendix 5-1; Appendix 6-1**	5	5
	g. The *Plan* reviewed public information activities, such as outreach projects and environmental education programs **Executive Summary (pp 2-10); Subsection 5.1.1 (pp 3-4); Subsection 5.3 (pp 16, 18); Subsection 6.3 (pp 3-7); Appendix 5-1; Appendix 6-1**	5	5

CRS Planning Steps	CRS Credit Point Criteria Corresponding Section within New Shoreham HM&FMP	Maximum CRS Credit	Estimated CRS Credit
8. Draft an Action Plan	a. The Action Plan includes a balanced program, with flood-related activities from all six floodplain management categories; at least one action for each Goal; and all required descriptors, including a prioritized ranking. **Executive Summary (p 11-14); Subsection 6.3 and 6.4 (pp 3-24)**	45	45
	b. The Action Plan includes items that establish or revise post-disaster redevelopment and mitigation policies and procedures. post-disaster redevelopment: **Subsection 6.4 (p19 – Action 2025-H)** mitigation policies and procedures: **Subsection 6.4 (p15 – Action 2025-D; p20 – Action 2025-I; p23 – Action 2025-M; p24 – Action 2025-N)**	10	10
	c. In addition to public information activities, the Plan includes action items to mitigate the effects of the other natural hazards identified in the hazard assessment. **Executive Summary (p 12-13); Subsection 6.3 and 6.4 (pp 3-24)**	5	5
9. Adopt the Plan	The *Plan* was officially adopted by the New Shoreham Town Council on April 7, 2025. **Executive Summary (p 15); Subsection 7.1 (p 2); Appendix 7-1**	2	2
10. Implement, Evaluate, and Revise the Plan	a. The Town intends to monitor implementation, review progress, and recommend revisions to the *Plan* in an annual evaluation report which will be submitted to the governing body, released to the media, and made available to the public. (REQUIRED) **Executive Summary (pp 15-16); Subsection 7.2 (pp 3-6)**	2	2
	b. The Town intends that the annual evaluation report is prepared by the same planning committee that prepared the *Plan* or by a successor committee with a similar membership. At this time, New Shoreham intends to meet once a year. If the committee meets only once a year (6 points) If the committee meets twice a year (12 points) If the committee meets at least quarterly (24 points) **Executive Summary (p 16); Subsection 7.2.2 (p 4)**	24	6

Summary of Points

CRS Activity 510 Planning Process	Maximum CRS Points (Total = 382)	Estimated CRS Points
Phase I – Planning Process		
Step 1. Organize to Prepare the Plan	15	15
Step 2. Involve the Public	120	120
Step 3. Coordinate	35	35
Phase II – Risk Assessment		
Step 4. Assess the Hazard	35	35
Step 5. Assess the Problem	52	52
Phase III – Mitigation Strategy		
Step 6. Set Goals	2	2
Step 7. Review Possible Activities	35	35
Step 8. Draft an Action Plan	60	60
Phase IV – Plan Maintenance		
Step 9. Adopt the Plan	2	2
Step 10. Implement, Evaluate, and Revise the Plan	26	8
Total Points	**382**	**364**

APPENDIX 2-2

Outreach Activities

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Appendix 2-2
Outreach Activities

Outreach Activity 1: Project Webpage

A *HM&FMP* project webpage was created on the Town's website as a mechanism to provide the community and other stakeholders with information about the planning process and promote upcoming meetings and outreach activities. The webpage was maintained throughout the duration of the Project and updated on several occasions. At the beginning of the Public Review period, the *Public Review Draft* was posted on the project webpage. Following is a **SNAPSHOT** of the information posted on the webpage at the beginning of the Project. The webpage can be accessed at:

https://www.newshorehamri.gov/437/Hazard-Mitigation-Flood-Management-Plan

Hazard Mitigation

New Shoreham, Be Prepared: for Flooding and Other Natural Hazards



Damage to Corn Neck Road from Superstorm Sandy (2012)

Image Credit: 2017 Corn Neck Road Transportation Resiliency Planning Study

2025 Hazard Mitigation & Flood Management Plan (HM&FMP)

While there are many aspects of coastal life in New Shoreham to celebrate, it does leave us vulnerable to several natural hazards. More frequent and intense rainfall is becoming the norm resulting in increased property and street flooding. Wind and storm surge damage from hurricanes is also problematic, and we are on the frontlines for sea level rise.

The Town of New Shoreham is working hard to be prepared and to that end is developing a ***2025 Hazard Mitigation & Flood Management Plan (HM&FMP)*** to strengthen our resilience to a number of natural hazards, including flooding and hurricanes. The HM&FMP will update the Town's 2017 Hazard Mitigation Plan (FEMA requires a 5-year update), and expand the focus on flood management. The Town hired Kim Jacobs, Civil Engineer & Resilience Planning Consultant to assist with the development of the Plan. An Advisory Committee comprised of Town staff, residents, and other stakeholders will guide plan development. The Advisory Committee meetings are posted below and are open to the public.

The Plan will assess the likely impacts of natural hazards that historically have or are reasonably anticipated to impact the people and property of the Town. A mitigation strategy and action plan (with a list of prioritized projects) will be developed in accordance with Federal Emergency Management Agency (FEMA) requirements, and will include Community Rating System (CRS) Flood Management provisions.

We need to work together to understand local risks, make solid choices, and invest in long-term community well-being.

The development approach for this plan is comprised of four key phases:

1. Planning Process – Research, Outreach, and Stakeholder Coordination
2. Risk Assessment – Identifying Hazards and Community Vulnerability
3. Mitigation Strategy – Identifying Goals, Mitigation Actions, and Implementation Strategies
4. Plan Maintenance – Adopting, Implementing, Evaluating, and Revising the Plan

Your Input is Important!

Community involvement is central to the planning process. We hope you will consider engaging in one or more of the following:

PUBLIC OPINION SURVEY: September 29 - October 24, 2024

To help ensure the Plan reflects community priorities and concerns, please take this quick online survey. Click here to take the survey: **https://www.surveymonkey.com/r/BI-HMFMP-Survey**

ADVISORY COMMITTEE MEETINGS:

Development of the Plan is overseen by an Advisory Committee made up of Town staff, residents, and other stakeholders. All meetings are open to the public and will be held in person at the Town Hall Council Chambers (16 Old Town Road, New Shoreham, RI). The tentative meeting schedule is posted below, but please refer to the Town's **website calendar** to ensure that the proposed meeting will occur as tentatively scheduled.

Meetings are scheduled from 9:00 - 10:30 am on the following dates:

Meeting #1 - Thursday September 12, 2024
Meeting #2 - Thursday October 10, 2024
Meeting #3 - Thursday November 7, 2024
Meeting #4 - Thursday December 5, 2024
Meeting #5 - Thursday January 9, 2025
Meeting #6 – TBD
Meeting #7 – TBD

PUBLIC INFORMATIONAL MEETING: October 10, 2024

A public informational session, hosted by the Coastal Resilience Committee, will be held on **Thursday October 10** to tour the repetitive flood area along Corn Neck Road; inform the public about the ***Hazard Mitigation & Flood Management Plan (HM&FMP)***; obtain public input on natural hazard concerns; and discuss potential steps that can be taken to create a safer, more resilient community.

Thursday October 10, 2024
6:00-6:30pm: Corn Neck Road – meet at the southern end of Corn Neck Rd across from the Beachhead (parking available at the Solviken parking area). We will view and discuss the flood and erosion concerns associated with this roadway.

6:30-7:30pm: HM&FMP Project Presentation & Public Discussion/Q&A – this portion of the meeting will be held in the Town Hall Council Chambers (16 Old Town Road).

What is Hazard Mitigation?

FEMA defines hazard mitigation as, "any sustained action taken to reduce or eliminate long-term risk to life and property from natural hazards." Good planning before, during, and after disasters can protect our health, our daily ways of life, and promote equity in our community.

What is Flood Management?

FEMA defines flood (floodplain) management as "a community-based effort to prevent or reduce the risk of flooding, resulting in a more resilient community." As inland flooding, coastal flooding, and coastal erosion is a problem in New Shoreham, it is important to identify measures that will help alleviate the impacts of flooding.

Why is a HM&FMP Important?

The Town of New Shoreham understands that a well-developed Hazard Mitigation & Flood Management Plan is an important planning tool that can:

- identify goals to prepare and adapt to changing hazards and vulnerabilities
- engage community and regional stakeholders and link local and regional planning efforts
- educate community members to increase personal safety and resiliency
- improve opportunities for mitigation funding

While we can't prevent natural hazard events, such as hurricanes and nor'easters, pre-disaster planning and investments in preventative measures can reduce the impact of these events and improve post-disaster recovery.

Want to Learn More?

Following are some links that will provide additional information related to the HM&FMP Project.

- 2017 Local Hazard Mitigation Plan
- 2016 Comprehensive Community Plan
- 2021 MRP Community Resilience Building Workshop Summary of Findings
- New Shoreham Geographic Information System (GIS)
- Sign-up for CodeRED Emergency Notification System
- Sign-up for Rhode Island Special Needs Emergency Directory
- Disaster Preparedness Guide for Seniors and Caregivers
- FEMA - Guide to Expanding Mitigation: Making the Connection with Public Health
- RI BeachSAMP and STORMTOOLS
- RIDOH - Climate Change and Your Health
- RIDOH - Mosquitoes & Ticks Booklet
- RIEMA - Disaster-Supply Kit Checklist
- RIEMA - Evacuation Plan & Checklist
- RIEMA - Flood Preparedness
- RIEMA - Flood Safety & NFIP
- RIEMA - Hurricane Preparedness

Questions?

Questions regarding the Plan update can be directed to Advisory Committee Co-Chairs: Shirlyne Gobern, Administrative Assistant to the Town Manager (sgobern@newshorehamri.gov) or Alison Ring, Town Planner (aring@newshorehamri.gov).

Outreach Activity 2: Social Media Posts

Information about the project, public outreach activities, and other opportunities for the public to provide input and feedback was posted in various formats on various platforms, including websites, Facebook pages, and email notices.

Town of New Shoreham Website: News Flash; Headlines & Local Events; and Calendar of Events

Posted on: September 30, 2024

PUBLIC OPINION SURVEY: Beginning September 29, 2024

To help ensure the Plan reflects community priorities and concerns, please take this quick online survey. Click here to take the survey: https://www.surveymonkey.com/r/BI-HMFMP-Survey

Posted on: September 30, 2024

PUBLIC INFORMATIONAL SESSION: October 10, 2024

A public informational session, hosted by the Coastal Resilience Committee, will be held on **Thursday October 10** to tour the repetitive flood area along Corn Neck Road; inform the public about the ***Hazard Mitigation & Flood Management Plan (HM&FMP)***; obtain public input on natural hazard concerns; and discuss potential steps that can be taken to create a safer, more resilient community.

Thursday October 10, 2024

6:00-6:30pm: Corn Neck Road – meet at the southern end of Corn Neck Rd across from the Beachhead (parking available at the Solviken parking area). We will view and discuss the flood and erosion concerns associated with this roadway.

6:30-7:30pm: HM&FMP Project Presentation & Public Discussion/Q&A – this portion of the meeting will be held in the Town Hall Council Chambers (16 Old Town Road).

Posted on: October 23, 2024

If you have 8 minutes - tell us what you think!

Tomorrow (October 24) is the **LAST DAY** of the HM&FMP Survey. The survey focuses on natural hazard concerns such as flooding and hurricanes. Your input will help guide and focus the Town's mitigation activities with the goal of lessening the impacts of future hazard events for you and your family. You can access the survey through the following link: https://www.surveymonkey.com/r/BI-HMFMP-Survey

Posted on: March 11, 2025

New Shoreham's HM&FMP Advisory Committee would like to bring to your attention that from March 17-April 7, 2025, a Draft of the ***Hazard Mitigation & Flood Management Plan (HM&FMP)*** will be available on the Town's website (Project webpage) for review and comment and a Public Hearing on the Draft Plan will be held at the Town Council's April 7, 2025 Meeting**.**

Project webpage: https://www.newshorehamri.gov/437/Hazard-Mitigation-Flood-Management-Plan

Block Island Bulletin Board

Posted on: October 1, 2024

PUBLIC OPINION SURVEY: Beginning September 29, 2024

To help ensure the Plan reflects community priorities and concerns, please take this quick online survey. Click here to take the survey: https://www.surveymonkey.com/r/BI-HMFMP-Survey. The Hazard Mitigation Plan is an extremely important factor when any town or city is applying for FEMA grants.

Posted on: October 1, 2024

PUBLIC INFORMATIONAL SESSION: October 10, 2024

A public informational session, hosted by the Coastal Resilience Committee, will be held on **Thursday October 10** to tour the repetitive flood area along Corn Neck Road; inform the public about the ***Hazard Mitigation & Flood Management Plan (HM&FMP)***; obtain public input on natural hazard concerns; and discuss potential steps that can be taken to create a safer, more resilient community.

Thursday October 10, 2024

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6:30-7:30pm: HM&FMP Project Presentation & Public Discussion/Q&A – this portion of the meeting will be held in the Town Hall Council Chambers (16 Old Town Road).

Posted on: October 10, 2024

All are welcome to attend a public informational session today, October 10 to tour the repetitive flood area along Corn Neck Road; inform the public about the Hazard Mitigation & Flood Management Plan (HM&FMP); obtain public input on natural hazard concerns; and discuss potential steps that can be taken to create a safer, more resilient community.

6:00-6:30pm: Corn Neck Road – meet at the southern end of Corn Neck Rd across from the Beachhead (parking available at the Solvikien parking area). We will view and discuss the flood and erosion concerns associated with this roadway.

6:30-7:30pm: HM&FMP Project Presentation & Public Discussion/Q&A – this portion of the meeting will be held in the Town Hall Council Chambers (16 Old Town Road).

Posted on: October 11, 2024

Community Input Wanted for Hazard Mitigation & Flood Management Plan

The Town of New Shoreham is currently updating their 2017 Hazard Mitigation Plan with an expanded focus on floodplain management. The objective of the updated ***Hazard Mitigation & Flood Management Plan (HM&FMP)*** is to reduce the impacts from future natural disasters (like hurricanes and nor'easters) on the people and property of New Shoreham. To help ensure the plan reflects **community priorities**, officials are asking residents and businesses to share opinions and participate in the planning process.

Online Survey:

Take a quick online survey to help officials better understand hazard concerns. The survey will be available until **October 24, 2024** and should **take less than 8 minutes** to complete. Hard copies of the survey are available at the Library and Town Hall. The online survey can be accessed by scanning the QR code or through the following link: https://www.surveymonkey.com/r/BI-HMFMP-Survey

Project Webpage: A webpage (on the Town's website) has been created to help inform the community about the planning process, the Advisory Committee meetings, outreach activities, and various available resources. The webpage can be accessed at: https://www.newshorehamri.gov/437/Hazard-Mitigation-Flood-Management-Plan

Posted on: October 23, 2024

If you have 8 minutes - tell us what you think!

Tomorrow (October 24) is the **LAST DAY** of the HM&FMP Survey. The survey focuses on natural hazard concerns such as flooding and hurricanes. Your input will help guide and focus the Town's mitigation activities with the goal of lessening the impacts of future hazard events for you and your family. You can access the survey through the following link: https://www.surveymonkey.com/r/BI-HMFMP-Survey

Posted on: March 11, 2025

New Shoreham's HM&FMP Advisory Committee would like to bring to your attention that from March 17-April 7, 2025, a Draft of the ***Hazard Mitigation & Flood Management Plan (HM&FMP)*** will be available on the Town's website (Project webpage) for review and comment and a Public Hearing on the Draft Plan will be held at the Town Council's April 7, 2025 Meeting**.**

Project webpage: https://www.newshorehamri.gov/437/Hazard-Mitigation-Flood-Management-Plan

Email Notices & Newsletters

Beginning September 22 2024

In addition to the list of Coordinating Agencies and Organizations included in **Appendix 2-3**, members of the HM&FMP Advisory Committee and other stakeholders sent emails to the following groups informing them about the project and opportunities to participate in the planning process (attending meetings, taking the Public Opinion Survey, visiting the Project Webpage, having the opportunity for pre-adoption review of the *Draft HM&FMP,* and generally encouraging the community and stakeholders to provide input and feedback on the Project).

- Email to all Town staff members
- Email to all members of Town Boards & Commissions
- Block Island Chamber of Commerce (250± members)
- School Department email to BI School Parents, Staff, and Teachers
- BIRA - Block Island Residents Association (600± members)
- Block Island Conservancy
- Committee for the Great Salt Pond
- Some Advisory Committee Members' sent emails to friends, families colleagues, etc.

Facebook Posts

Beginning September 22 2024

Members of the HM&FMP Advisory Committee and other stakeholders posted information on various Facebook pages about the project and opportunities to participate in the planning process (such as attending meetings, taking the Public Opinion Survey, visiting the Project Webpage, having the opportunity for pre-adoption review of the *Draft HM&FMP,* and generally encouraging the community and stakeholders to provide input and feedback on the Project).

- Block Island Facebook (41.4K members)
- Town of New Shoreham (256 followers)
- Some Advisory Committee Members' private Facebook pages

Outreach Activity 3: Newspaper Articles

An article was published in the local newspaper, *The Block Island Times*, on September 27, 2024, informing the public about the project and encouraging participation in the planning process, including the public opinion survey and Public Informational Session. A second article highlighting the public opinion survey was included in the October 18, 2024 online and paper editions.

A third informational piece was published in the March 7 online and paper editions informing the public that the *HM&FMP Public Review Draft* would be available for viewing or printing from March 17-April 7, 2025, and a hard copy would be available at the Town Clerk's Office. The press release included the purpose of the *Plan* and how to provide input and feedback to the Town or at the Public Hearing (April 7, 2025).

THE BLOCK ISLAND TIMES

September 27, 2024

Online survey will help New Shoreham officials understand hazard concerns - Survey is part of the Hazard Mitigation and Flood Management Plan

The Town of New Shoreham needs your help.

New Shoreham is working to become more resilient to flooding and other natural hazards. The town is currently updating their 2017 Hazard Mitigation Plan with an expanded focus on floodplain management. The objective of the updated Hazard Mitigation and Flood Management Plan (HM&FMP) is to reduce the impacts from future natural disasters on the people and property in New Shoreham.

To help ensure the plan reflects community priorities, officials are asking residents and businesses to share opinions and participate in the planning process. There are several ways you can become involved:

Project Webpage: A webpage (on the Town's website) has been created to help inform the community about the plan and how residents, businesses, and others interested in New Shoreham's resilience to natural hazards can provide input and feedback. The webpage can be accessed at:
https://www.newshorehamri.gov/437/Hazard-Mitigation-Flood-Management-Plan

HM&FMP Advisory Committee Meetings: Development of the plan is overseen by an Advisory Committee made up of town staff, residents, and other stakeholders. The Committee meetings are posted on the project webpage and the town's upcoming meeting calendar. All meetings are open to the public and will be held at the Town Hall Council Chambers (16 Old Town Road, New Shoreham, R.I.).

Public Informational Meeting: The Advisory Committee is in the process of organizing an informational meeting (tentatively scheduled for the evening of October 10) to provide the public with an overview of the project and an opportunity to discuss past occurrences of local natural hazards and potential future areas/issues of concern. Once confirmed, the meeting information will be advertised and posted on the Project webpage.

Online Survey: People can take a quick online survey to help officials better understand hazard concerns. Input will guide and focus mitigation activities to help lessen the impacts of future hazard events. The survey will be available online from September 29 through October 24, 2024 and should take less than eight minutes to complete. The survey can be accessed by scanning the QR code or through the following link: https://www.surveymonkey.com/r/BI-HMFMP-Survey

The town thanks you in advance for your engagement in this important project.

THE BLOCK ISLAND TIMES

October 18, 2024

If you have 8 minutes – we want to hear from you!

The Town of New Shoreham is currently updating their 2017 Hazard Mitigation Plan with an expanded focus on floodplain management. The objective of the updated ***Hazard Mitigation & Flood Management Plan (HM&FMP)*** is to reduce the impacts from future natural disasters (like hurricanes and nor'easters) on the people and property of New Shoreham. To help ensure the plan reflects community priorities, officials are asking residents and businesses to share opinions and participate in the planning process. The survey is open through October 24.

Online Survey: Take this quick online survey to help officials better understand your concerns regarding flooding and other natural hazards that impact the island. Hard copies of the survey are available at the Library and Town Hall. The online survey can be accessed through the following link: https://www.surveymonkey.com/r/BI-HMFMP-Survey or by using the QR code above.

Project Webpage: A webpage (on the Town's website) has been created to help inform the community about the planning process, the Advisory Committee meetings, outreach activities, and various available resources. The webpage can be accessed at:
https://www.newshorehamri.gov/437/Hazard-Mitigation-Flood-Management-Plan

THE BLOCK ISLAND TIMES

March 7, 2025

Public comment sought for New Shoreham's Draft Hazard Mitigation and Flood Management Plan

In accordance with the Federal Disaster Mitigation Act of 2000, the Town of New Shoreham is updating its hazard mitigation plan and will host a three-week public review period, commencing March 17 and ending April 7, 2025.

The "Draft Hazard Mitigation and Flood Management Plan" is an update and expansion of the Town's 2017 Hazard Mitigation Plan. The purpose of the plan is to strengthen the town's resilience to various natural hazards, including flooding and high-wind events. After familiarizing themselves with the potential impacts from various natural hazards, the Advisory Committee created an action plan that identifies potential mitigation measures.

The plan was completed with the assistance of Civil Engineer and Resilience Planning Consultant Kim Jacobs under the guidance of an Advisory Committee consisting of town staff, residents, business owners, conservation organizations, and other stakeholders. The plan also integrates comments and input from the community. The Advisory Committee received responses from 182 residents, business owners, and other stakeholders to a public opinion survey in October 2024. All comments were reviewed and many of the suggestions have been incorporated into the Action Plan. The results of the survey are available on the Project Webpage: https://www.newshorehamri.gov/437/Hazard-Mitigation-Flood-Management-Plan

The Draft HM&FMP will be available on the project webpage for viewing or printing from March 17 until April 7, 2025, and a hard copy will be available for viewing at the Town Clerk's Office. Written comments and input on the plan can be submitted to the committee co-chairs until April 4, 2025 at 1 p.m. EST, either via email (sgobern@newshorehamri.gov) or dropped off at the Town Hall (16 Old Town Road, New Shoreham, RI) with the following notation on the envelope: HM&FMP comments/input c/o Shirlyne Gobern.

On April 7, 2025 at 7 p.m., the New Shoreham Town Council will host a Public Hearing at the New Shoreham Town Council Chambers (16 Old Town Road, New Shoreham, RI) during which there will be an opportunity for the public to provide verbal input and feedback on the Draft Plan.

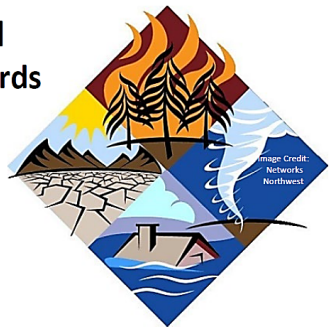
The town thanks you in advance for your engagement in this important project.

Shirlyne Gobern & Alison Ring
HM&FMP Committee Co-Chairs

Outreach Activity 4: Informational Posters

With input from the Advisory Committee, several styles of posters were created – **both in English and in Spanish** – to publicize the project and the various ways that the public could become involved. Approximately 20 posters were put up in Town buildings and other high pedestrian traffic areas throughout New Shoreham including: Senior Center/Early Learning Center, Island Free Library, BI School, DPW, Public Safety, Town Hall, Transfer Station, BI Medical Center, Washington Trust Bank, BI Grocery, BI Ferry landing and on the ferry, BI State Airport and diner, Post Office, and Great Salt Pond Kiosk. The posters were also emailed to Town Departments, the school community, and various other individuals and groups.

New Shoreham, Be Prepared For Flooding & Other Natural Hazards



We need your help!

New Shoreham is working to become more resilient to flooding and other natural hazards. The Town is currently updating our 2017 Hazard Mitigation Plan with an expanded focus on floodplain management. To help ensure the ***2024 Hazard Mitigation & Flood Management Plan (HM&FMP)*** reflects community priorities, we are asking residents, businesses, and others interested in the resilience of our community, to share your opinions through an online survey.

ONLINE SURVEY

Thank you for taking this QUICK online SURVEY to help us better understand your hazard concerns. Your input will guide and focus our mitigation activities to help lessen the impacts of future hazard events for you and your family. The survey will be available online from **September 29 – October 24, 2024** and should take **under 8 minutes** to complete. You can access the survey by scanning the QR code to the left, through a link on the Project webpage (below), or by typing into your browser: https://www.surveymonkey.com/r/BI-HMFMP-Survey

Hard copies of the survey are available at the Town Hall and the Island Free Library

TOWN WEBSITE – PROJECT WEBPAGE

Development of the Plan is overseen by a Advisory Committee made up of Town staff, residents, and other stakeholders. The Advisory Committee meeting dates, various opportunities for public input and feedback, and other information related to the Plan can be found on the Project Webpage: https://www.newshorehamri.gov/437/Hazard-Mitigation-Flood-Management-Plan

PUBLIC INFORMATIONAL MEETING

The Advisory Committee is in the process of organizing an informational meeting (evening of October 10) to provide the public with an overview of the project and an opportunity to discuss past occurrences of local natural hazards and potential future areas/issues of concern. Once confirmed, the meeting information will be advertised and posted on the Project webpage.

THANK YOU!

Example of posters in English & Spanish

Nuevo Shoreham, prepárese para inundaciones y otros peligros naturales



¡Necesitamos su ayuda!

New Shoreham está trabajando para ser más resistente a las inundaciones y otros peligros naturales. Actualmente, el Municipio está actualizando nuestro Plan de Mitigación de Riesgos 2017 con un enfoque ampliado en la gestión de llanuras aluviales. Para ayudar a garantizar que el Plan de Mitigación de Riesgos y Gestión de Inundaciones (HM&FMP) de 2024 refleje las prioridades de la comunidad, pedimos a los residentes, empresas y otras personas interesadas en la resiliencia de nuestra comunidad que compartan sus opiniones a través de una encuesta en línea.

ENCUESTA ONLINE

Gracias por responder esta ENCUESTA RÁPIDA en línea para ayudarnos a comprender mejor sus preocupaciones sobre los peligros. Sus comentarios guiarán y enfocarán nuestras actividades de mitigación para ayudar a disminuir los impactos de futuros eventos de peligro para usted y su familia. La encuesta estará disponible en línea del 29 de septiembre al 24 de octubre de 2024 y debería tardar menos de 8 minutos en completarse. Puede acceder a la encuesta escaneando el código QR de la izquierda, a través de un enlace en la página web del proyecto (abajo), o escribiendo en su navegador: https://www.surveymonkey.com/r/BI-HMFMP-Survey

Las copias impresas de la encuesta están disponibles en el Ayuntamiento y en la Biblioteca Gratuita de la Isla

SITIO WEB DE LA CIUDAD – PÁGINA WEB DEL PROYECTO El desarrollo del Plan es supervisado por un Comité Asesor compuesto por personal de la Ciudad, residentes y otras partes interesadas. Las fechas de las reuniones del Comité Asesor, las diversas oportunidades para recibir comentarios y comentarios del público, y otra información relacionada con el Plan se pueden encontrar en la página web del proyecto: https://www.newshorehamri.gov/437/Hazard-Mitigation-Flood-Management-Plan

REUNIÓN DE INFORMACIÓN PÚBLICA El Comité Asesor está en el proceso de organizar una reunión informativa (la noche del 10 de octubre) para proporcionar al público una visión general del proyecto y la oportunidad de discutir las ocurrencias pasadas de peligros naturales locales y las posibles áreas / temas de interés futuros. Una vez confirmada, la información de la reunión se anunciará y publicará en la página web del proyecto.

AGRADECER ¡TÚ!

Outreach Activity 5: Public Opinion Survey & Results

An integral element in hazard mitigation planning is broad public participation. Information provided by residents, businesses, and other stakeholders can illuminate local hazard concerns, gauge a community's awareness and preparedness for hazards, and inspire innovative solutions to reduce impacts of future hazard events. As online public opinion surveys are a highly accessible mechanism for gathering qualitative and quantitative data to inform the planning process, the Advisory Committee published an on-line survey **(September 29 – October 24, 2024)** hosted by SurveyMonkey.com. Hard copies of the survey were also available at the Town Hall and Island Free Library. **The survey had 182 respondents** and the results were used by the Advisory Committee to help guide and focus mitigation planning efforts.

The survey was promoted through the Town's website, newspaper articles, social media, and project posters. The survey was also publicized through emails sent to various groups including the 25 local government & school district groups and the 54 businesses, community lifelines, agencies, and organizations outside of New Shoreham's governmental structure listed in **Appendix 2-3**.

Summary of Survey Results:

The majority of the survey respondents were New Shoreham full-time adult residents (58%), half were property owners, and a third were seasonal residents.

Most respondents noticed that over the past ten years there has been significant environmental changes in terms of erosion and seasonal shifts such as shorter warmer winters, heavier spring precipitation, and longer warmer summers.

Most respondents were EXTREMELY CONCERNED about **Coastal Erosion** (60%), **Vector Borne Diseases Transmitted by Ticks or Mosquitoes** (50%), and **Coastal Flooding** (44%). The weighted score produced the ranking in the following table (weight of 5 for extremely concerned, 4 for moderately concerned, 3 for somewhat concerned, 2 for slightly concerned, 1 for not at all concerned).

Category	Score %					Weighted Score	Hazard Rank
	5	4	3	2	1		
Coastal Erosion	0.6000	0.2500	0.0778	0.0556	0.0167	4.361	1
Vector-Borne	0.4944	0.3056	0.1167	0.0667	0.0167	4.195	2
Flooding - Coastal	0.4358	0.3240	0.1285	0.0782	0.0335	4.050	3
Wind-Related	0.3240	0.4078	0.1508	0.1006	0.0168	3.922	4
Contagious Respiratory	0.1341	0.2011	0.2737	0.2458	0.1453	2.933	5
Drought	0.1056	0.2500	0.2667	0.2167	0.1611	2.923	6
Flooding - Inland	0.2000	0.1657	0.1943	0.2114	0.2286	2.897	7
Extreme Heat	0.1292	0.2697	0.1461	0.2191	0.2360	2.837	8
Winter-Related	0.0682	0.2102	0.2898	0.2102	0.2216	2.693	9
Brush Fire/Wildfire	0.0514	0.1657	0.2514	0.3143	0.2171	2.520	10
Earthquake	0.0115	0.0172	0.0517	0.1839	0.7356	1.385	11

The majority of participants indicated that either they or someone in their household had been negatively impacted by a natural disaster while living or doing business in the Town of New Shoreham. More people were impacted by **Vector Borne Diseases Transmitted by Ticks or Mosquitoes** (52%), **Wind-Related Hazards** (37%), **Influenza/Coronaviruses** (31%), and **Coastal Erosion** (31%).

With regard to which of the Town's resources might be most at risk from natural hazards over the next two decades, the weighted score produced the ranking in the following table (weight of 5 extremely vulnerable, 4 for moderately vulnerable, 3 for somewhat vulnerable, 2 for slightly vulnerable, 1 for not vulnerable).

Category	Score %					Weighted Score	Hazard Rank
	1	2	3	4	5		
Transportation	0.4862	0.2762	0.1381	0.0884	0.0110	4.138	1
Environmental	0.4413	0.2682	0.1508	0.1061	0.0335	3.977	2
Utilities	0.3591	0.3867	0.1271	0.1215	0.0055	3.972	3
Economic	0.3149	0.4033	0.1657	0.0939	0.0221	3.895	4
Structural	0.2983	0.3315	0.2099	0.1381	0.0221	3.746	5
Cultural/Historic	0.2303	0.3708	0.2191	0.1404	0.0393	3.612	6
People	0.0843	0.2753	0.2753	0.2921	0.0730	3.006	7
Governance	0.0833	0.2500	0.2889	0.2222	0.1556	2.883	8

In terms of communication preference, respondents indicated their top 3 preferences for receiving information about what to do BEFORE/DURING/AFTER a disaster were CodeRED Emergency Notification (87%), Block Island Bulletin Board (75%), and Town website (44%). The Block Island Times Newspaper also garnered nearly 40%.

Respondents indicated that they take a number of steps to prepare for natural hazard events. Nearly all respondents (**95%**) have installed smoke/carbon monoxide detectors, and almost as many (**86%**) have purchased a homeowners/rental insurance policy. Roughly **60%** have purchased and know how to use an ABC class fire extinguisher, have signed up for CodeRED Emergency Alerts, and regularly remove dead/dying/dangerous trees or vegetation from their yard. Around **50%** keep their gutters clean and point downspouts away from their house/business, have made roofing repairs, replacement, or other wind-resistant updates, and have installed high impact windows or doors to withstand high winds.

In terms of the type of projects respondents think local, state, or federal government agencies should implement to reduce the damage and disruption of natural disasters in New Shoreham, roughly **70%** indicated implementing nature-based solutions and retrofitting public infrastructure. Just over **60%** identified the importance of retrofitting/strengthening essential public facilities such as police, fire/emergency, schools and improving the resiliency of utilities on the island.

The survey generated **46 responses** to the question of what should the Town of New Shoreham do to mitigate the impacts from natural hazards. **Refer to Question 10 for the responses.**

Following is the Survey introduction and questions along with a summary of the responses.

New Shoreham RI - Hazard Mitigation & Flood Management Plan (HM&FMP) Public Opinion Survey & Results

We need your help!

New Shoreham is working to become more resilient to flooding and other natural hazards. The Town is currently updating its 2017 Hazard Mitigation Plan with an expanded focus on floodplain management. The 5-year update is required to maintain eligibility for certain FEMA mitigation grant funding. The objective of the Hazard Mitigation & Flood Management Plan (HM&FMP) is to assess our community's risks, and determine ways to effectively minimize and manage those risks. More information about the Plan can be found on the Project Website: https://www.newshorehamri.gov/437/Hazard-Mitigation-Flood-Management-Plan

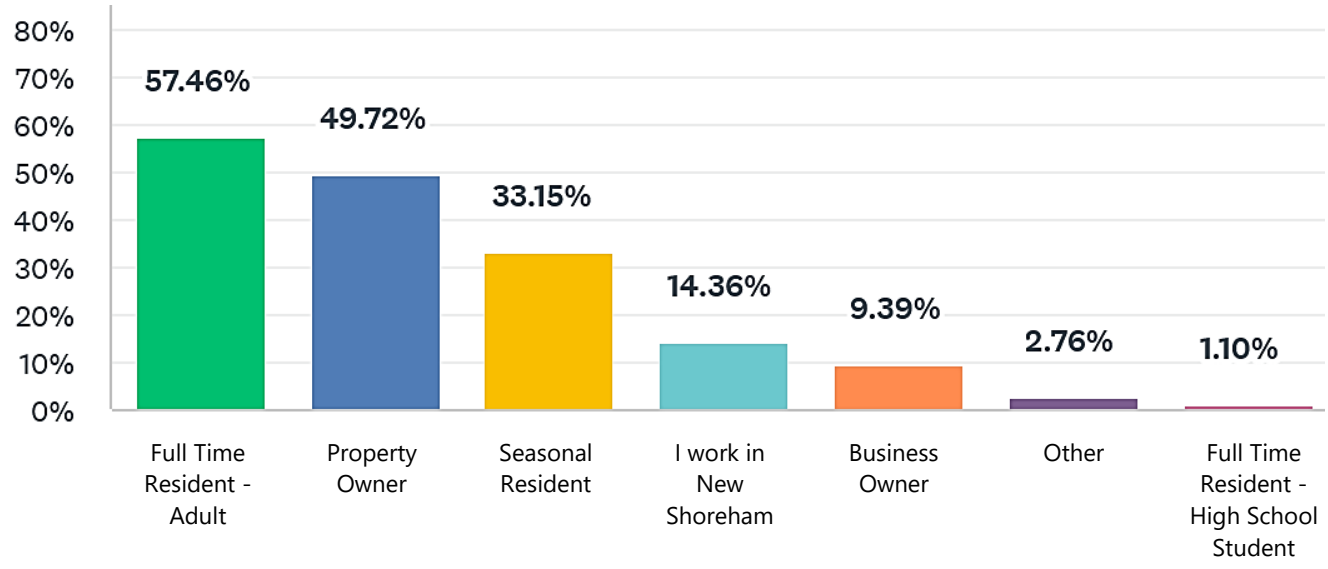
We'd like you to share your opinions and participate in the planning process. Please take this quick SURVEY to help us better understand your hazard and preparedness concerns. Your input will help guide and focus our mitigation activities with the goal of lessening the impacts of future hazard events for you and your family.

The survey is anonymous and should take less than 8 minutes to complete. Although we encourage you to answer all of the questions, the survey does allow for questions to be skipped.

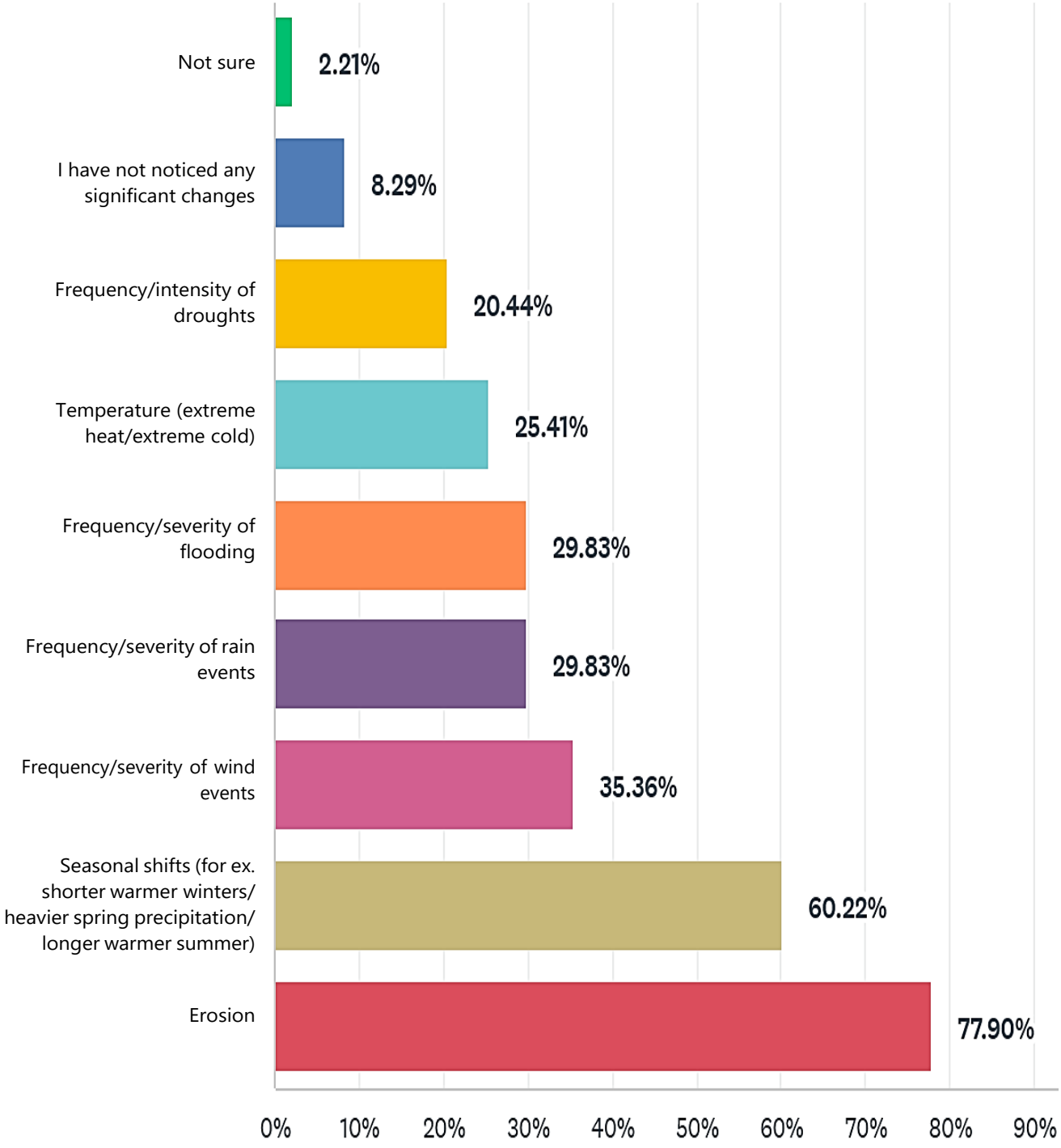
Thank you for your input!

Mitigation is the effort to reduce loss of life and property by lessening the impact of disasters. Effective mitigation requires that we all understand local risks, make hard choices, and invest in long-term community well-being. Good planning before, during, and after disasters can protect our health, our daily ways of life, and promote equity.
- FEMA

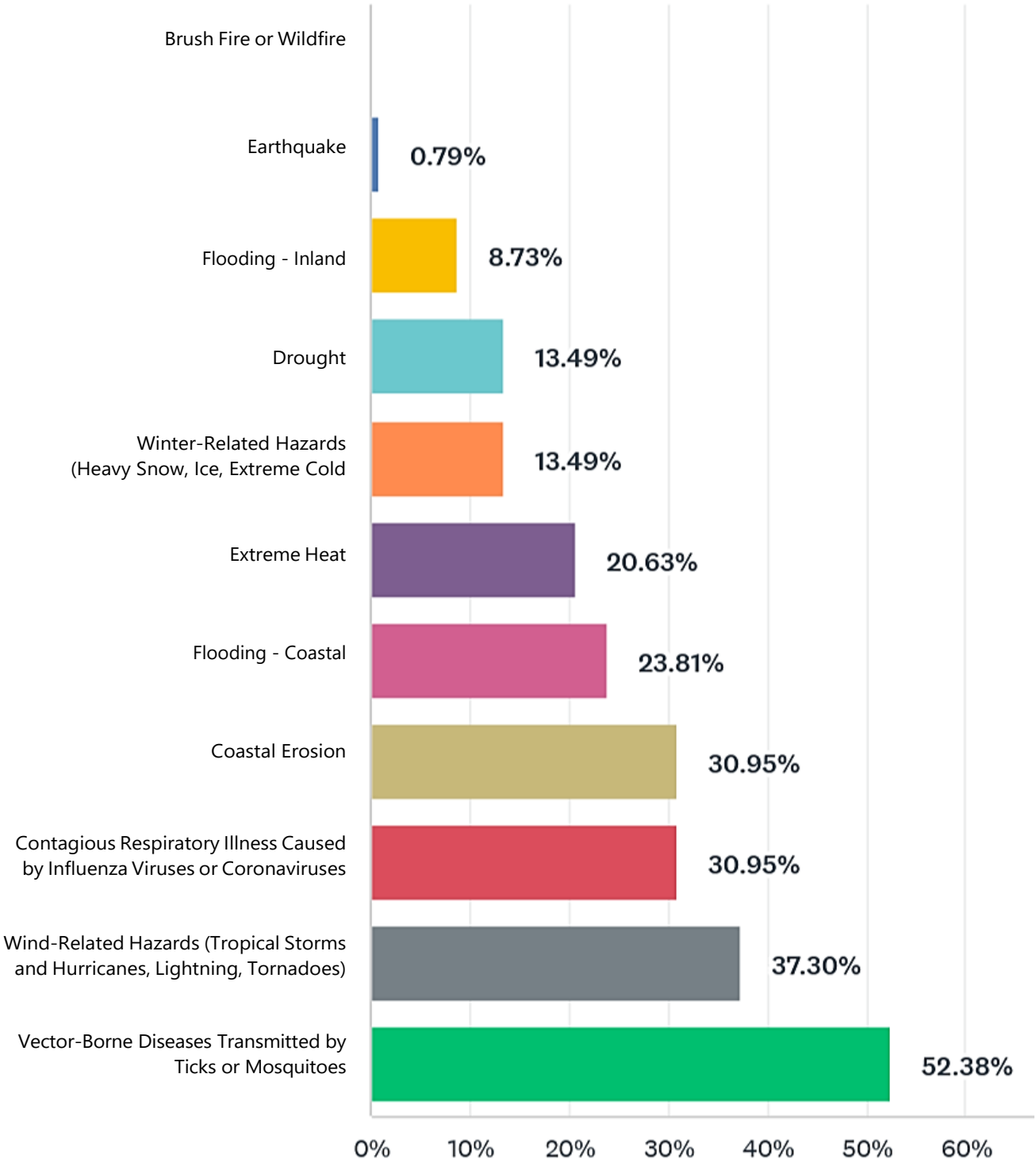
1. What is your connection to the Town of New Shoreham? ***Please check all that apply.***



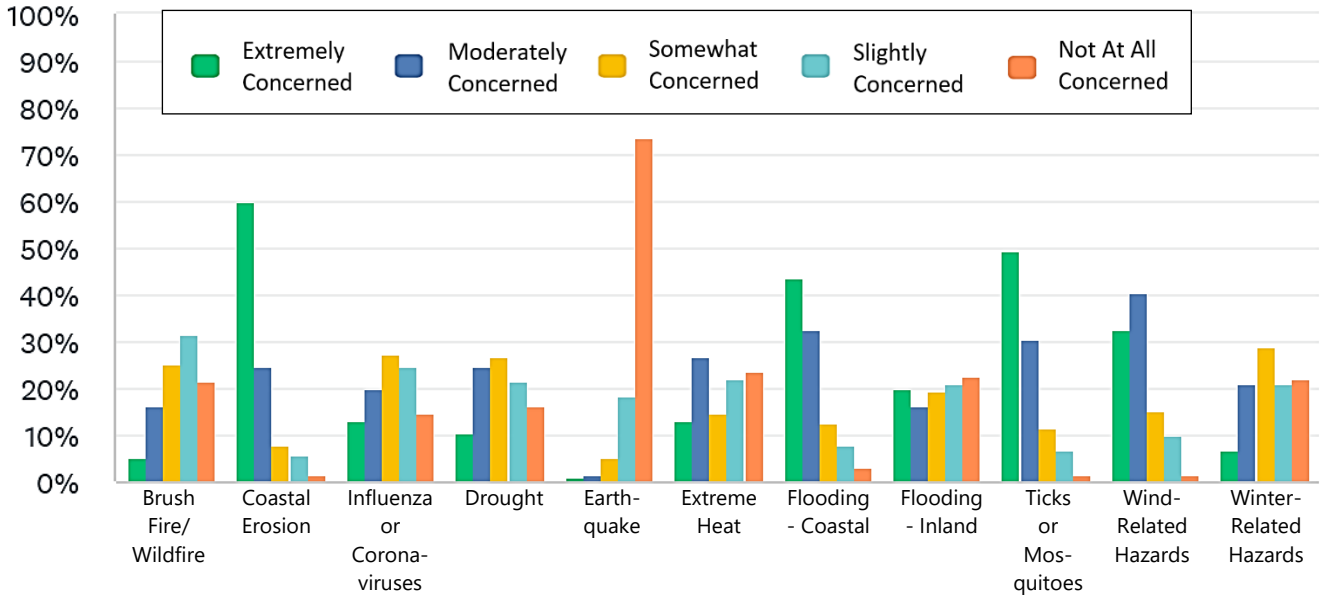
2. Have you noticed particular changes in the environment in the past 10 years? Please check all that apply.



3. Have any of the following types of natural hazard events negatively impacted you or someone in your household while living/doing business in the Town of New Shoreham in the past 10 years? For example, have you lost power due to high-winds? Have you been unable to leave because of downed trees? Have you been without well water due to drought? Please check all that apply.

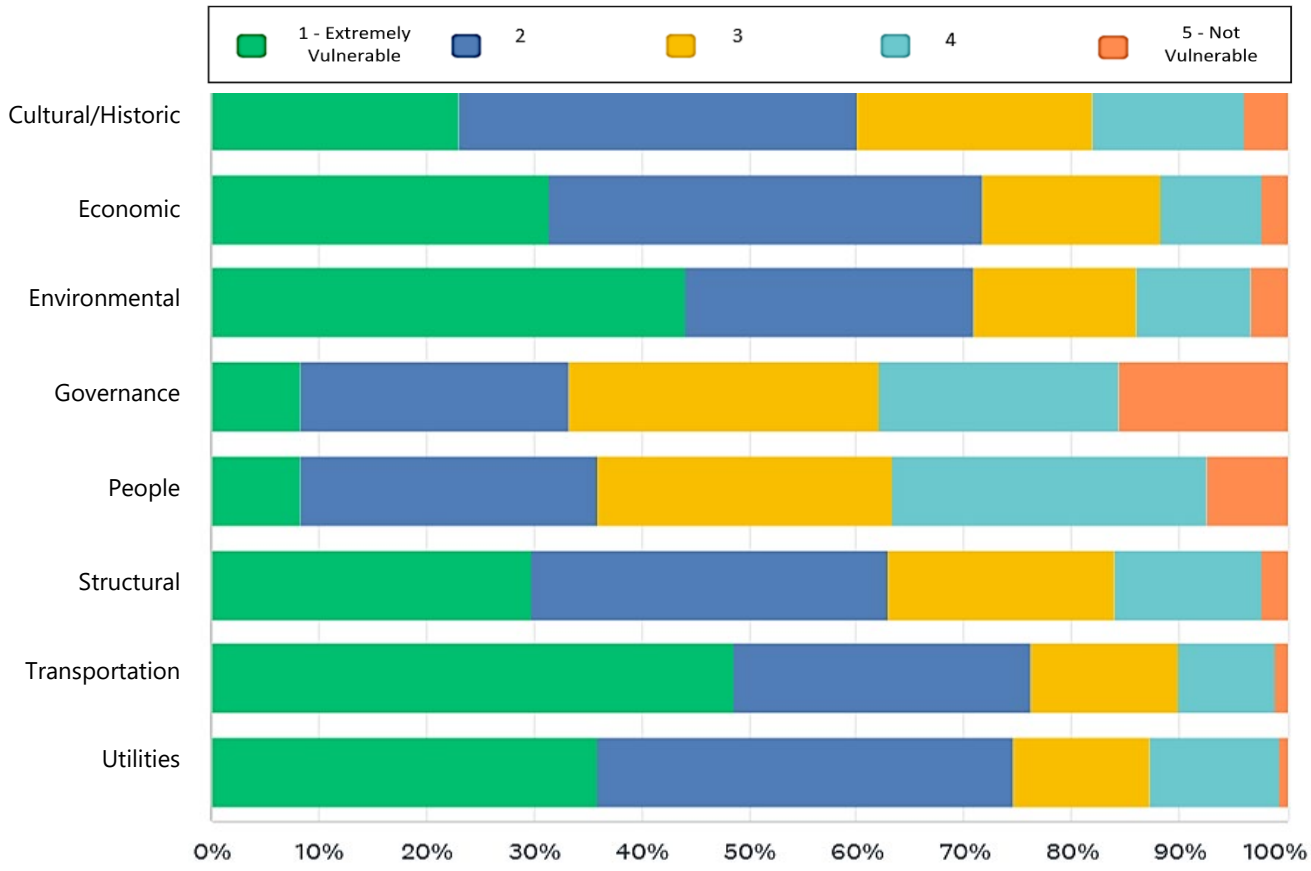


4. Please rank how concerned you are about each of the following natural hazards.



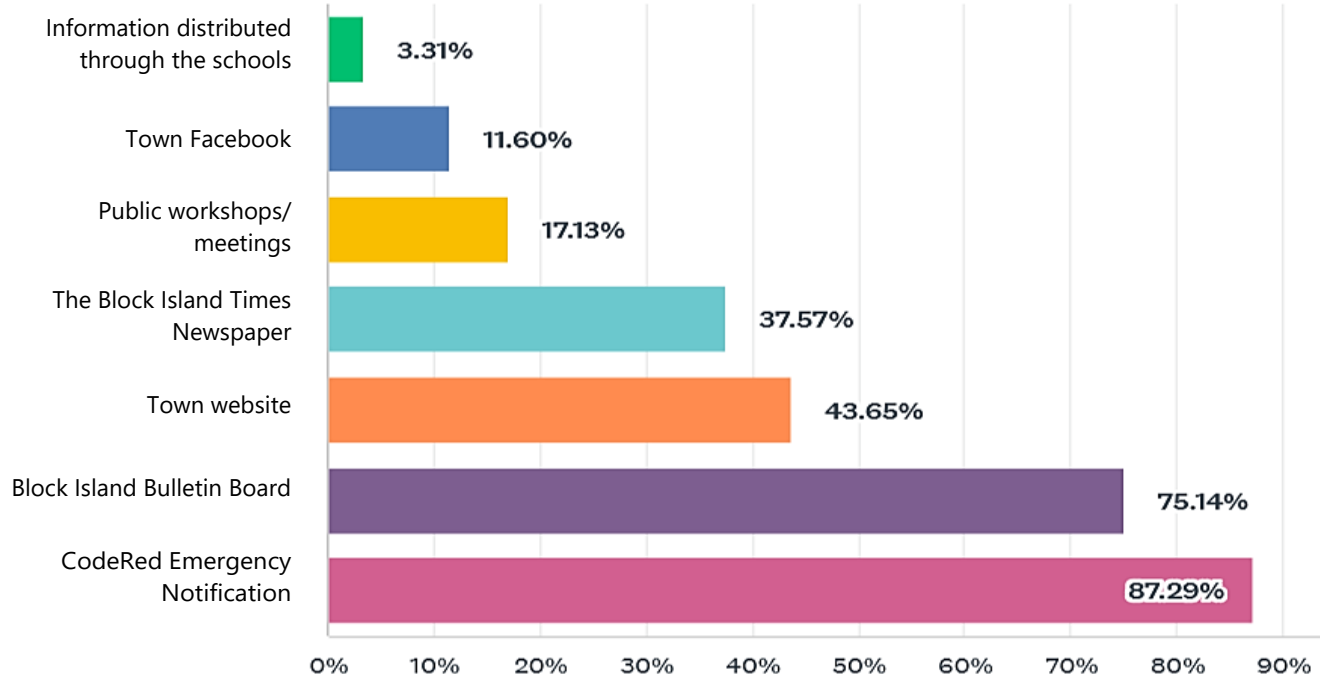
	EXTREMELY CONCERNED	MODERATELY CONCERNED	SOMEWHAT CONCERNED	SLIGHTLY CONCERNED	NOT AT ALL CONCERNED	TOTAL
Brush Fire/ Wildfire	5.14% 9	16.57% 29	25.14% 44	31.43% 55	21.71% 38	175
Coastal Erosion	60.00% 108	25.00% 45	7.78% 14	5.56% 10	1.67% 3	180
Contagious Respiratory Illness Caused by Influenza Viruses or Coronaviruses	13.41% 24	20.11% 36	27.37% 49	24.58% 44	14.53% 26	179
Drought	10.56% 19	25.00% 45	26.67% 48	21.67% 39	16.11% 29	180
Earthquake	1.15% 2	1.72% 3	5.17% 9	18.39% 32	73.56% 128	174
Extreme Heat	12.92% 23	26.97% 48	14.61% 26	21.91% 39	23.60% 42	178
Flooding - Coastal	43.58% 78	32.40% 58	12.85% 23	7.82% 14	3.35% 6	179
Flooding - Inland	20.00% 35	16.57% 29	19.43% 34	21.14% 37	22.86% 40	175
Vector-Borne Diseases Transmitted by Ticks or Mosquitoes	49.44% 89	30.56% 55	11.67% 21	6.67% 12	1.67% 3	180
Wind-Related Hazards (Tropical Storms and Hurricanes, Lightning, Tornadoes)	32.40% 58	40.78% 73	15.08% 27	10.06% 18	1.68% 3	179
Winter-Related Hazards (Heavy Snow, Ice, Extreme Cold)	6.82% 12	21.02% 37	28.98% 51	21.02% 37	22.16% 39	176

5. Which of the following Town resources do you think may be harmed by natural hazards in the next two decades? Please rate each category (row) based on how vulnerable/susceptible you think it is to potential impacts from natural hazards.



	EXTREMELY VULNERABLE	MODERATELY VULNERABLE	SOMEWHAT VULNERABLE	SLIGHTLY VULNERABLE	NOT VULNERABLE	TOTAL
Cultural/Historic: Damage to historic sites	23.03% 41	37.08% 66	21.91% 39	14.04% 25	3.93% 7	178
Economic: Business interruptions/closures, job losses, insurance costs, tourism, loss of internet, etc.	31.49% 57	40.33% 73	16.57% 30	9.39% 17	2.21% 4	181
Environmental: Damage, contamination, or loss of forests, wetlands, floodplains, etc.	44.13% 79	26.82% 48	15.08% 27	10.61% 19	3.35% 6	179
Governance: Ability to maintain order and/or provide public amenities and services	8.33% 15	25.00% 45	28.89% 52	22.22% 40	15.56% 28	180
People: Loss of life, injuries, compromised health	8.43% 15	27.53% 49	27.53% 49	29.21% 52	7.30% 13	178
Structural: Damage to public and private buildings	29.83% 54	33.15% 60	20.99% 38	13.81% 25	2.21% 4	181
Transportation: Interruptions or damage to roads, bridges, docks, ferry, flights, etc.	48.62% 88	27.62% 50	13.81% 25	8.84% 16	1.10% 2	181
Utilities: Interruptions or damage to water, sewer, electric, internet, phone, etc.	35.91% 65	38.67% 70	12.71% 23	12.15% 22	0.55% 1	181

6. To assist the Town in better communicating about what to do BEFORE/ DURING/AFTER a natural disaster, please select the top three (3) methods by which you would prefer to receive information.



In addition to the communication mechanisms listed above, respondents added the following:
Non-BIBBs emergency only email listserv or text signup; Whistle on Fire Barn; text messaging; Eye and ear it's happening right before you!; Communication to BIRA members; Emails and SMS to accounts on record with utilities (broadband, power company); BI POWER NOTIFICATION THROUGH BI BULLETIN; Town-controlled list-serve for normal communication and text for emergency; Start a new 'BI Bulletin' for hazards/emergencies only or for Town use only; Phone; Instagram; Phone chain; TV-Radio; Internet; and Twitter

7. Which of the following steps has your household/business taken to prepare for a natural hazard event? Please check all that apply. ***Table shows the number of people who checked each item*

# of people	My household/business has:
150	purchased a homeowners/renter's insurance policy
107	purchased and know how to use an ABC class fire extinguisher and ensure that it is within the recommended service life (varies by manufacturer - often between 5 to 12 years)
101	signed up for **CodeRED** emergency alerts through the Town of New Shoreham website or this direct link: CodeRED (if you do it right now – it counts!) CodeRED is an emergency notification service by which Public Safety can notify residents and businesses by telephone or cellular phone about emergency situations. The system is capable of sending messages to specific neighborhoods or the entire community.
41	prepared a disaster supply kit (for the first 72-hours of a disaster) with some or all of the following: basic medical supplies: food and water for people and pets; plates/cups/utensils/manual can opener; cash; change of clothes/shoes; list of prescriptions; list of key contact numbers; flashlight with extra batteries; whistle; face masks; hand sanitizer; toilet paper and other toiletries; plastic sheeting and duct tape; garbage bags and plastic ties; wrench/pliers; blankets; solar-powered cell phone charger
28	discussed with my family/employees an emergency plan and have a designated meeting place or a check-in procedure should our home/business need to be evacuated - and have an evacuation plan
16	discussed emergency preparedness and insurance items with landlord/condo association/home owner organization
13	purchased flood insurance through National Flood Insurance Program (NFIP)
12	purchased flood insurance through private insurer

8. Has your household/business taken any of these additional steps to prepare for a natural hazard event? Please check all that apply. ***Table shows the number of people who checked each item*

# of people	My household/business has:
164	installed smoke/carbon monoxide detectors
104	regularly remove dead/dying/dangerous trees or vegetation from the yard
96	kept gutters clean and pointed downspouts away from my house/business
84	made roofing repairs, replacement, or other wind-resistant updates
83	installed high impact windows or doors to withstand high winds
75	graded my lawn away from my house/business (to minimize pooling of water adjacent to the structure)
67	regularly inspect trees on my property that may impeded the power lines (for work near power lines, always contact Block Island Power Company and Dig Safe first)
65	not allowed mulch to sit up against my siding (mulch attracts termites and other pests)
54	had our well water tested
52	planted trees or other vegetation on my property to reduce the impacts from heat, flooding, drought, and erosion
51	elevated some or all of the following above flood level: electrical outlets/switches, generator, water heater, washing and drying machines
37	looked at FEMA Flood Insurance Rate Maps or used STORMTOOLS to determine which flood zone our property is located in
35	installed a sump pump
31	installed a backup generator
28	Installed a rain garden, removed pavement/other hardscape, or implemented other green infrastructure measures to manage rain water on my property
16	applied flood-proofing coatings or sealants

9. What types of projects do you think local, state, or federal government agencies should do to reduce the damage and disruption of natural disasters in New Shoreham? Please check all that apply.

# of people	Types of Projects
126	Implement nature-based solutions (approaches that incorporate natural features and protect, conserve, restore, sustainably use, and manage ecosystems to address socio-environmental challenges while providing measurable co- benefits to people and nature)
124	Retrofit public infrastructure, such as elevating roadways and improving drainage systems
109	Retrofit/strengthen essential public facilities such as police, fire/emergency, schools
109	Work to improve utilities resiliency (electric, communications)
97	Inform property owners of ways they can reduce the damage caused by natural events
76	Provide better information about hazard risks and high hazard areas
64	Assist vulnerable property owners with securing funding to make their properties more resilient
59	Strengthen codes/ordinances to require higher hazard risk management standards and/or provide greater control over development in high hazard areas
58	Replace inadequate/vulnerable bridges
48	Buy out flood prone properties and maintain as open space

10. OPTIONAL - What should the Town of New Shoreham do to reduce the community's potential harm from natural hazards?

Total Comments – 46
Please Note: The comments were included in their entirety with the exception that political references or inflammatory remarks, if any, were not included.

1. Make sure that when people purchase property on an offshore island that they will be prone to natural events and that they shouldn't be looking to the town, state or Fed to resolve their problems. They should prepare themselves.
2. Make solar power more accessible and affordable!
3. Tourists should have to pay a very small ($1) fee which will add up to thousands of dollars to aid in resiliency. The block island ferry should use there tv screens (with no sound!) but have subtitles educating the passengers!!! In the long run it is was more imperative to the town than the constant advertisements.
4. There needs to be widely available and well known information/infographics not just for islanders but the thousands of tourists who have absolutely zero idea of these issues the island faces.
5. I spend a lot of time on the beach and the signage and roping on the beach side has disappeared over the years and many people walk into and up the dunes from the beach side partially unknowing they also allow kids to play there. I also think some rope netlike fencing along/in front of the dunes in a couple rows would hold in sand and allow build back. The snow fencing worked but left dangerous metal and wood behind. The beach from south of state on needs this the most. The dune trails gather the most sand due [to] the narrow space it creates to trap winter sand the fencing would do the same
6. Build a causeway.
7. relax and please stop spending so much money
8. Pump town beach parking lot, encourage dune building, manage deer on narrow roadways: Andy's Way corner, Mansion Beach, dunes to Harbor Pond, base of Bush lot Hill, restore Mohegan Bluffs access to beach, harden Settlers Rock parking, provide public benches, picnic tables, ocean trash removal bins, safer area for parking ebikes, mopeds when folks walk out to view seals.
9. Raise up roads; Build up dunes; Don't allow building in low lying areas
10. Ensure main access points to the beach (Cooneymus, Grace's, etc.) are better erosion-proofed. Also consider dredging to rebuild some of the coast line to keep water line lower.
11. Implement an abatement project that keeps the island from washing into the ocean.
12. Have a plan to restore connectivity to the northern part of Block Island if and when Corn Neck is breached during a storm. The plan should adapt to the severity of the event, ranging from minor washover to a complete wipeout of Corn Neck Rd. There will be immediate life safety concerns as well as longer term issues such as the Town's access to critical services provided by the Transfer Station.
13. Fix the roads
14. smart engineering public protection
15. Make First Aid, CPR and other courses available free to all residents and high school students who would like to attend, more people with life saving skills and knowledge on a small island can help everyone and save lives; especially during times of natural disaster when Fire/Police/Emergency services are busy
16. Ensure the ferry landing on both sides can withstand flooding and sea level rise. Assess emergency shelters for category 5 hurricane winds. Engage the BIUD to ensure they're actually taking resiliency seriously; explore the possibility of virtual power plants and other energy independence models; ensure that residential solar is maximized and valued properly; ensure that all essential services can operate independently of the BIUD in case of emergency, i.e. solar, battery banks, etc.
17. stop the use of mopeds, and take care of kitchen fires

18. Ease zoning board process and make it easy to get waivers for homeowners doing repairs/ upgrades/ maintenance that mitigate hazards/ improve resiliency
19. Top priorities: Assure that the power plant is adequately protected from flooding. Assure that old harbor dockage facilities for lifeline boat service stay ahead of sea level rise.
20. 1) Make the Corn Neck Road connection between north and south portions of the island as resilient as possible (for as long as possible) by closing off openings in, and rebuilding, the dunes (incl. at Town Beach House), raising the roadway at the lowest spots etc. 2) Ensure the Power Plant is protected from severe flooding events from Harbor Pond and from New Meadow hill Swamp. 3) Ensure the police/emergency services are not cut off from the rest of the island by flooding events. This could be either by moving these services to a safer location or by protecting the access roads from flooding. 4) Refuse planning permission for new buildings within likely future flood zones (allowing for a reasonable future rise in sea level). Change local Planning /Zoning laws to achieve this. 5. The gas station and the BI grocery store are both vulnerable to flooding from moderate storm surges especially as sea level rises. In the long term, protection of this area from flooding would be extremely challenging, if not impossible. Since these are essential services to the island community, there needs to be a medium term plan to move these operations.
21. Prioritize actions that maintain routes that provide connectivity throughout the island.
22. educate and assist us in adopting recommendations
23. Address Spring St and Corn Neck Rd (areas impacted by Sandy)
24. Stop people from building houses on or near beach and bluffs and stop them from mitigating erosion as it doesn't work and leads to more erosion and trash in the ocean.
25. Invest in and implement nature-based solutions across public and private spaces, hire and train experts to be a part of the conversation, and trust science.
26. Possible retaining wall along corn neck rd at the vulnerable area where the dunes keep getting trampled on and storms blow them away
27. Educate Educate Educate
28. Make improvements in the Old Harbor to enhance resilience. Loss of access to the docks in a disaster would be a major problem. The breakwater should be improved and extended.
29. Hire a full time Coastal Resiliency Official. Support ideas put forth by the Coastal Resilience Committee and the experts they utilize for town hazard mitigation.
30. Prevent flooding of Scotch Beach Rd at Corn Neck and Scotch Beach by either closing the beach access path at Scotch Beach or by building up a significant dune where the Scotch Beach path goes through and then create a path that goes up, over, and down the dune to the beach, similar to how people access crescent beach all along Corn Neck Road.
31. Encourage neighbors to grow vegetable gardens and fruit and nut trees. Acknowledge them as essential workers and support housing for full-time tradespeople. Consider applying for NORC status for BI's elderly community to retain full-time inter-generational family residences and on-island taxpayer-workers.
32. build up the dunes across from the Beachhead and at Scotch Beach. the entrance to the beach at Scotch Beach is too wide. that is why corn neck rd washed out during sandy. need to refurbish the dunes and close that entrance. people don't need to drive on the beach from that spot. Emergency vehicles can enter at town beach and mansion beach.
33. Protect the areas providing infrastructure - water, power, sewer
34. A study should be in the works to plan for all vulnerable areas of the island. Surveys could be put in place to provide possible road relocations should any current roads be declared unreplaceable. Beach bluff revetments should be started beginning with the most vulnerable areas close to town services and businesses. All homeowners should be on a text blast that originates from the police or fire station that alerts them (whether on the Island or not) of potential threats to particular areas of the island.
35. Fix and maintain damage to Mohegan bluffs Keep up with maintenance on parks and roadways

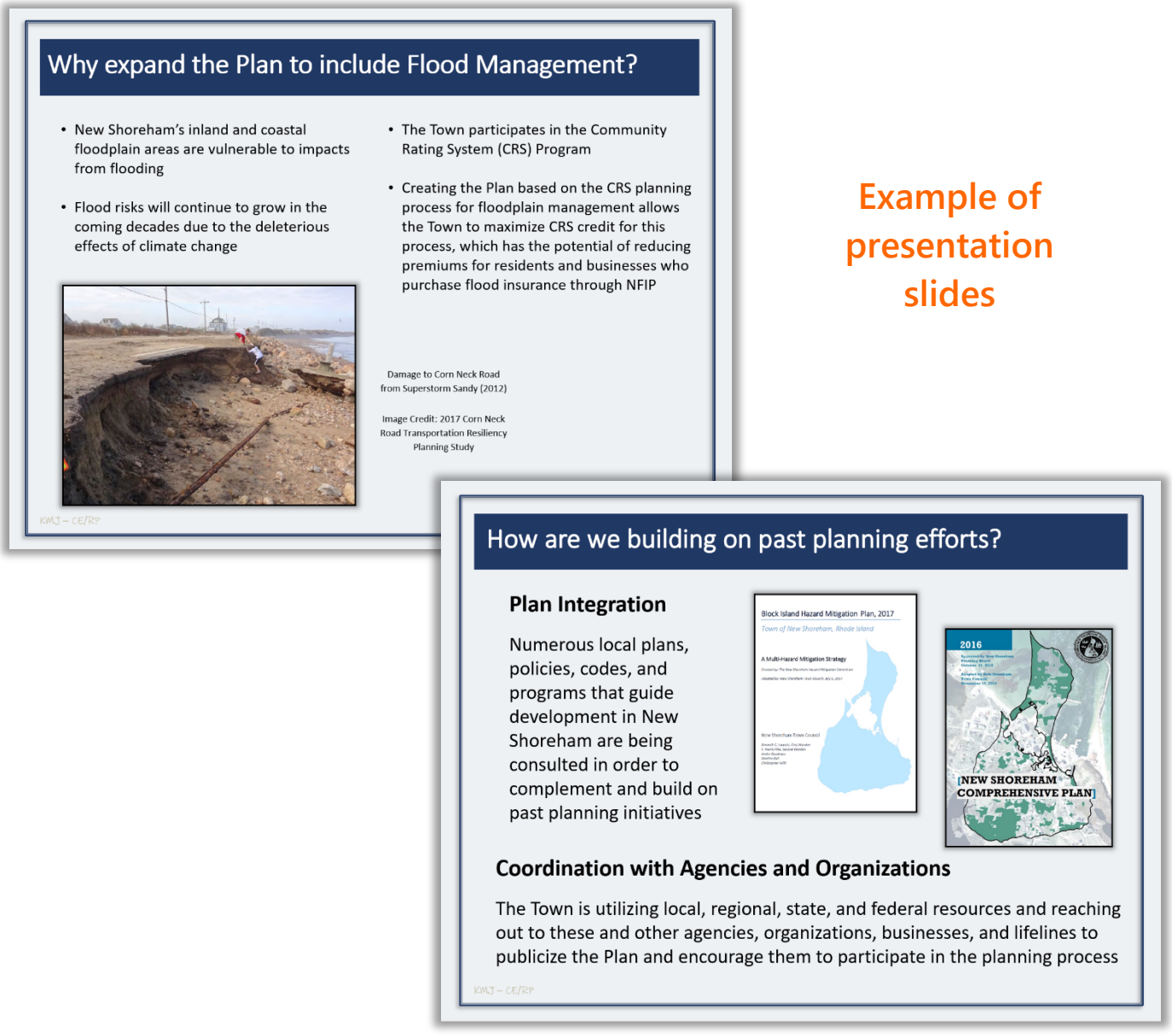
36. RAISE Corn Neck Rd., Ferry Dock (and mainland ferry dock), Ocean Av. New Harbor, State Parking Lot in Galilee and buttress hotels/business on Water St. Get State to RAISE Galilee Escape Rd.
37. full press on all aspects of costal erosion! It is the overall, near term need for every waterfront property. There is no Island without a solution to erosion.
38. Educate the public on an annual basis/ provide hand-outs to potential buyers/ amend our regulations
39. Close the Scotch Beach Rd beach access, rebuild/ fortify the dunes and build an accessible up and over ramp.
40. Keep up erosion prevention efforts.
41. Have a full time building inspector to enforce codes and ordinances.
42. Hello I am very scared to live in such a scary world in which a big storm can sweep us all off the island. I have watched the CNN and MSNBC and they say that the end of the world is close if we don't take action now and build more wind farms everywhere and also solar farms. We need to fill the oceans with these things and [not] cut down forests so we can save the planet from this climate change. We need to ban cars and oil heat on the island and not allow A/C this is very, very serious thank you so much for finally doing something about this. Me and a few other residents have gotten together to take action against the climate [change impacts] it's growing too fast because of the carbon emissions. My kids friends all say that they are scared of the future and my kids have all been taught to be afraid as well there is no time to stand by idly like Gretta says there is no future for these kids we have stolen it. Thank you again for everything you do and I hope to see real change to this island.
43. Elevate Corn Neck Road and upgrade Old Harbor docks (and motivate Point Judith to do the same)
44. Corn neck road will need to be elevated and/or strengthened against storm surge. We should devise a plan and secure federal funding to execute this over the next 5 years.
45. Rebuild dunes and use state of the art engineering and state of the art engineered products NOT just plantings which are a poor bandaid and old fashioned idea and pretty worthless on BI with the wind and erosion
46. #1, 2, &3) Hire a Coastal Resilience Officer. Someone to work with the Town Manager, Engineer, and Planner and has the authority to manage a budget and contracts, but also works closely with all the related entities on the mainland and can go to the frequent mainland meetings in person. #4) Look for property now for the relocation of the bank, grocery store, and gas station. Purchase the property and then do 99-year leases. Perhaps work with the Land Trust and Conservancies to identify appropriate property. #5) Apply for funds and start investing now in a rolling capital fund or some other instrument to save for moving the utilities under Ocean Avenue to an alternate location, working closely with the utilities' governing bodies. #6) Work with RIDOT on developing a long-term plan for Corn Neck Road. What are their preferences and how can we use natural and nature-based solutions to support that plan?

Thank you for participating in the Town of New Shoreham Hazard Mitigation & Flood Management Plan Public Opinion Survey. Your responses are very important! Survey results will be used by the Project Advisory Committee to guide and focus mitigation planning efforts. A summary of the survey results will be included as an Appendix to the Plan.

Outreach Activity 6: Stakeholder Hosted Public Informational Meeting

A public informational session, hosted by the **New Shoreham Coastal Resilience Committee**, was held on October 10, 2024, to inform the public about the Plan, promote discussion about creating a safer, more resilient community, and to obtain public input on local natural hazard concerns and possible solutions for consideration and integration into the *HM&FMP*. Information publicizing the meeting was included in Outreach Activities 1-4.

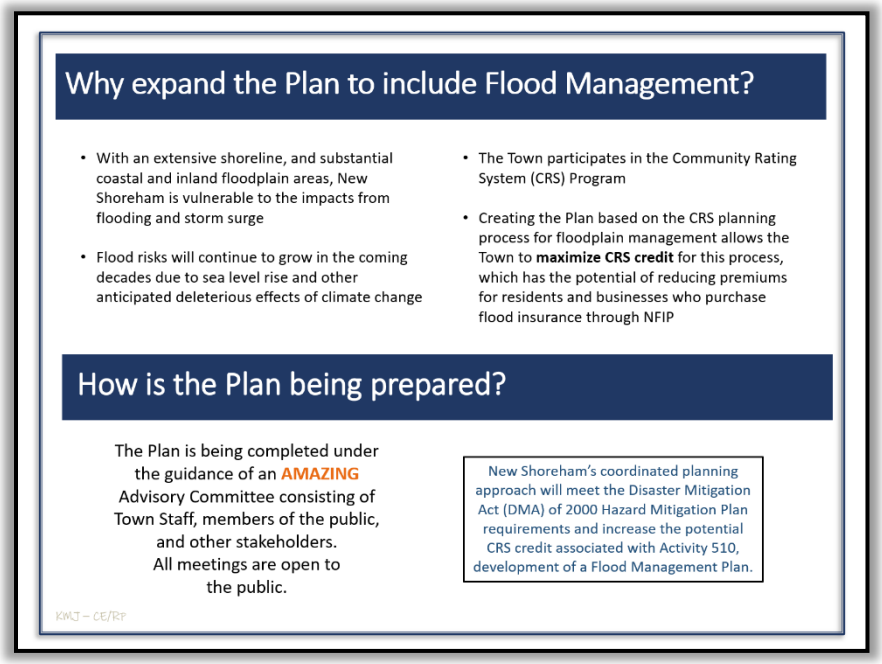
The meeting **initiated in the floodplain** at the southern end of Corn Neck Road across from the Beachhead. The 13± participants, led by the **Block Island Climate Resilience Coordinator for The Nature Conservancy**, viewed and discussed the flood and erosion concerns associated with this roadway. Participants also discussed other flood concerns throughout New Shoreham. The meeting moved indoors where the Town's Project Consultant directed a PowerPoint presentation followed by an open public discussion/Q&A period. Participants asked questions about the planning process and the ongoing Public Opinion Survey. Most of the discussion centered on the importance of communicating/educating residents on the need for hazard mitigation. To that end, after the meeting participants who provided their emails were sent survey information they could further disseminate.



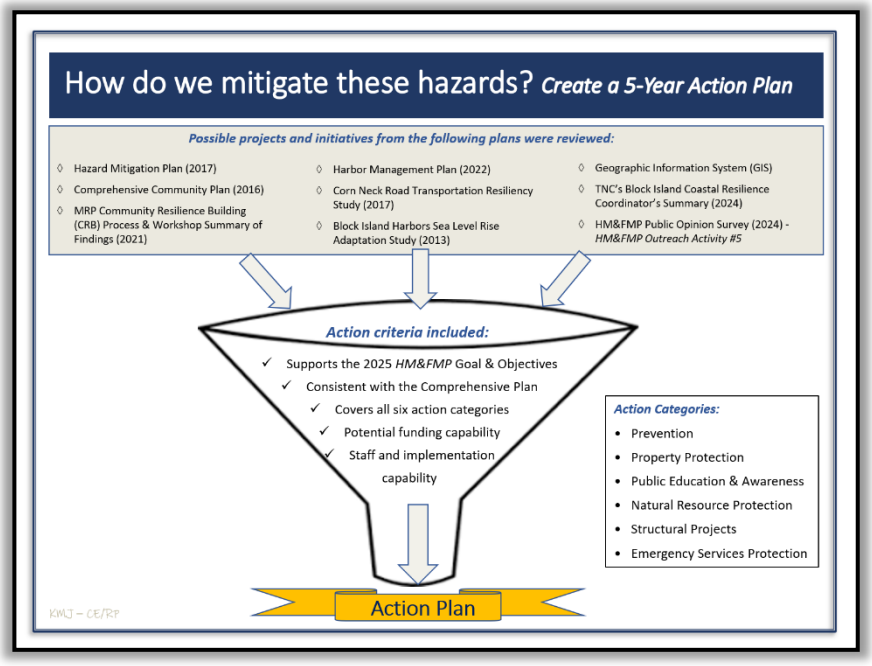
Example of presentation slides

Outreach Activity 7: Town Council Hosted Project Presentation and Discussion

At the New Shoreham Town Council's regular meeting on March 3, 2025, the Project Consulted presented an overview of the HM&FMP and upcoming 3-week Public Review Period, after which the Town Council opened the floor to questions and comments. Town Council members asked several general questions about the *Plan* but no specific input or feedback was provided that was outside of the *Plan's* existing narrative **(i.e. no follow-up discussions regarding potential inclusion of input/comments was required).** No members of the public asked questions or made comments. Information publicizing the presentation was included in the Town Council's Agenda (posted on the Town and Secretary of State websites, and a hard copy posted at the Town Hall), and on the Project webpage.



Example of presentation slides



Outreach Activity 8: Agenda Topic for Local Boards/ Commissions

Agenda Topic for Local Boards/Commissions:
The following Boards and Commissions included information on their March 2025 meeting agendas regarding the *Draft HM&FMP* being available on the Town's website for review and comment from March 17-April 7, 2025, followed by a Public Hearing at the Town Council's April 7, 2025 Meeting.

- Coastal Resilience Committee (March 4)
- Conservation Commission (March 11)
- Planning Board (March 12)
- Senior Advisory Committee (March 18)
- Historic District Commission (March 24)
- Zoning Board (March 26)

Outreach Activity 9: Kiosk at the Public Library

A kiosk – in both **English and Spanish** - was set up at the Island Free Library to publicize that the *PR Draft* was available to the public-at-large and encourage the community to provide input and feedback either prior to or at the Public Hearing. As shown below, maps and other material, as well as a link to the Draft HM&FMP were displayed. The kiosk remained from March 18 – April 8, 2025.



To access the DRAFT HM&FMP go to the Town's website:

https://www.newshorehamri.gov/437/Hazard-Mitigation-Flood-Management-Plan

Outreach Activity 10: Disseminate Public Review Draft (Public Review Period)

The *PR Draft* was posted on the Town's Project webpage on March 17, 2025, initiating a three-week public review period which allowed the community and stakeholders ample time to read, evaluate, and provide input and feedback prior to or at the Public Hearing. The Public Review Period and Public Hearing were widely advertised, including a press release and three Public Hearing notices in *The Block Island Times;* information on the Town's website and at the library kiosk in **both English and Spanish**); a notice posted at the Town Hall; an announcement at the Informational Session (March 3, 2025); information on the March meeting agendas for six local Boards; and an email to the businesses, community lifelines, agencies, and organizations listed in **Appendix 2-3**.

During the Public Review Period the Town received one written comment from a member of the community which resulted in the two document clarifications shown below.

During the 3-week Public Review Period, Anne Salinas, a member of the public, provided written input and feedback related to Section 6 of the *Draft Plan*. The Town's consultant responded to each of Ms. Salinas' comments, and the *Final Draft Plan* was updated as highlighted below.

Anne Salinas: Action 2025-C - I would recommend adding that the Resilience Map be made available to the public on the Town website.

On page6-15 of the Final Draft: The ***Resilience Map*** would be made available on the Town's website.

Anne Salinas: Consider recommending that town officials receive training in designing/building green infrastructure such as rain gardens.

On page 6-19 of the Final Draft:

- Continue to educate local boards and commissions on hazard mitigation and resilience, including the importance of green infrastructure, to promote awareness and to the extent practical, encourage the integration of these strategies into their programs and activities.

Outreach Activity 11: Public Hearing

At the end of the three-week Public Review Period, a Public Hearing was hosted by the New Shoreham Town Council at their regularly scheduled April 7, 2025 meeting. Both the Public Review Period and Public Hearing were widely advertised, including a press release and three Public Hearing notices in *The Block Island Times;* information on the Town's website and at the library kiosk in **both English and Spanish**); a notice posted at the Town Hall; an announcement at the Informational Session (March 3, 2025); information on the March meeting agendas for six local Boards; and an email to the businesses, community lifelines, agencies, and organizations listed in **Appendix 2-3**.

At the Public Hearing, the Town's Consultant was available to answer questions. The public was given the opportunity to provide input and feedback on the *Plan*. No questions or comments were offered by the Town Council or members of the public.

Town Council Adoption of HM&FMP: At the end of the Public Hearing, the Town Council voted unanimously to adopt the *HM&FMP*, with the Resolution acknowledging that during the subsequent review/ approval process by RIEMA/FEMA, any required revisions would be accepted by said adoption.

APPENDIX 2-3

Coordination with Businesses, Community Lifelines, Agencies, and Organizations

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Appendix 2-3 Coordination with Businesses, Community Lifelines, Agencies, and Organizations

The HM&FMP Advisory Committee recognized that the planning process would be greatly enhanced by inviting local, regional, state, and federal agencies and organizations to participate in the process. As indicated below, the Town coordinated with **25 local government & school district groups, as well as 54 businesses, community lifelines, agencies, and organizations outside of New Shoreham's governmental structure**.

Local Government & School District (25)		
Organization (alphabetized)	**Contact**	**Email Address**
Block Island Early Learning Center Board of Directors	Julie Conant	
Block Island Housing Board	Cindy Pappas	
Block Island Land Trust	Heidi Tarbox	
Block Island Volunteer Fire & Rescue	Beth Rousseau	
Coastal Resiliency Committee (formerly Sea Level Rise Committee)	Judy Gray *(Advisory Committee Member)*	
Conservation Commission	Amanda Boulay	
Emergency Management Task Force	William McCombe *(Advisory Committee Member)*	
Harbors Committee	Kate McConville *(Advisory Committee Member)*	
Health Services Board of Directors	Susan Stover	
Historic District Commission	Arlene Tunney	
Library Board of Trustees	Shirlyne Gobern *(Advisory Committee Member)*	
New Shoreham Tourism Council	Jessica Willi	
North Light Commission	Shirlyne Gobern *(Advisory Committee Member)*	
Old Harbor Task Force	Jennifer Brady	
Planning Board	Jennifer Brady	
Police Advisory Commission	Jim Hinthorn	
Police Chief	Chief Paul Deane	
Recreation Board	Dave Sniffen	
School Committee	Jessica Willi	
Senior Advisory Committee	Gail Pierce	
Sewer District Commission	Dylan Chase *(Advisory Committee designee)*	
Shellfish Commission	Kate McConville *(Advisory Committee Member)*	
Water District Commission	John Breunig *(Advisory Committee Member)*	
Zoning Board of Review	Jennifer Brady	
Zoning Official	Jennifer Brady	

Businesses, Community Lifelines, Agencies, and Organizations Outside New Shoreham's Governmental Structure (54)		
Organization (alphabetized)	**Contact**	**Email Address**
Audubon Society of Rhode Island	Scott Ruhren, Ph.D., Senior Director of Conservation	sruhren@asri.org
Block Island State Airport	Andy Transue	atransue66@gmail.com
Block Island Chamber of Commerce	Chris Crawford/ Sharon Tavilla *(Advisory Committee Member)*	chris@blockislandchamber.com; info@blockislandchamber.com
Block Island Conservancy	Caroline Barr, Executive Director	info@biconservancy.org
Block Island Historical Society	Shirlyne Gobern *(Advisory Committee Member)*	sgobern@newshorehamri.gov
Block Island Medical Center	Thomas Warcup	bihs@bihealthservices.com
Block Island Power Company (BIPCO)	Jeffrey Wright *(Advisory Committee Member)*	jwright@blockislandutilitydistrict.com
Block Island School	Dan Warner	dwarner@bischool.net
Block Island Volunteer Fire and Rescue	Chief Chris Hobe *(Advisory Committee Member)*	fdbihobe@msn.com
Coastal Resources Management Council	Leah Feldman, Coastal Policy	lfeldman@crmc.ri.gov
Committee for Great Salt Pond	Corrie Heinz *(Advisory Committee Member)*	blockislandkayak@gmail.com
ConserFest	Tracy Finn, Outreach Director	Conserfest@gmail.com
Critical Facilities and Infrastructure under Town Authority	Mike Shea *(Advisory Committee Member)*	mshea@newshorehamri.gov
Critical Facilities under Town Authority: Coast Guard Station (former); Davidson House; Doctor's House; Thomas House	Tom Risom *(Advisory Committee Member)*	trisom@newshorehamri.gov
Day Care Center	Julie Conant	bielcmail@gmail.com
Food Pantry	Mimi Levielle	Sleeplessonbi05@yahoo.com
Island Free Library	Robert Farwell	islandfreelibrary@gmail.com
Narragansett Bay Estuary Program	Darcy Young, Watershed Outreach Manager and Interim Executive Director	dyoung@nbep.org
National Oceanic and Atmospheric Association (NOAA)	Kim Texeira, Chief of the Policy, Planning, & Communications - NOAA Office for Coastal Management	Kimberly.Texeira@noaa.gov
North Light	Shirlyne Gobern *(Advisory Committee Member)*	sgobern@newshorehamri.gov
Public Safety – Police/Volunteer Fire & Rescue	Beth Rousseau	brousseau@newshorehamri.gov
Rhode Island Department of Environmental Management (RIDEM)	Dylan Ferreira	Dylan.ferreira@dem.ri.gov
Rhode Island Department of Environmental Management (RIDEM) - Office of Water Resources	Elizabeth Dake, Senior Environmental Scientist	betsy.dake@dem.ri.gov
Rhode Island Department of Transportation (RIDOT)	Pamela Cotter, Acting Administrator of Planning	Pamela.Cotter@dot.ri.gov
Rhode Island Department of Transportation (RIDOT) - Stormwater Management	Nicole Leporacci Lineberry, Environmental Scientist	Nicole.Leporacci@dot.ri.gov

Organization (alphabetized)	Contact	Email Address
Rhode Island Division of Statewide Planning	Roberta Groch, Assistant Chief, AICP	roberta.groch@doa.ri.gov
Rhode Island Emergency Management Agency (RIEMA)	Melinda Hopkins, Planning Branch Chief	melinda.hopkins@ema.ri.gov
Rhode Island Emergency Management Agency (RIEMA)	Rae-Anne Culp, Mitigation Planning Supervisor & State Hazard Mitigation Officer	raeanne.culp@ema.ri.gov
Rhode Island Infrastructure Bank (RIIB)	Anthony Hebert	ahebert@riib.org
Rhode Island State Conservation Committee	Maria Mack	cfm@cox.net
Save The Bay	Bridget Kubis Prescott, Director of Education	education@savebay.org
Save The Bay	Catie Alves, South County Coastkeeper	calves@savebay.org
Senior Center	Gail Pierce	Ggpie12@gmail.com
Southern Rhode Island Conservation District	Gina Fuller, District Manager	gfuller@SRICD.org
State Representative - District 36	Tina Spears	rep-spears@rilegislature.gov
State Senator – District 36	Alana DiMario	sen-dimario@rilegislature.gov
The Nature Conservancy RI	Jon O'Brien, Policy & Partnership Specialist	jobrien@tnc.org
Town Beach Pavilion	Dave Sniffen	dsniffen@newshorehamri.gov
Town of Charlestown, RI	EMA - Kevin Gallup	cemadirector@charlestownri.gov
Town of Narragansett, RI	EMA - Chief Scott Partington	spartington@narragansettri.gov
Town of South Kingstown, RI	Chief Steven Pinch	spinch@unionfiredistrict.com
Town of Westerly, RI	Nancy Letendre, Town Planner	nletendre@westerlyri.gov
Transfer Station	Sean McGarry	Birm02807@aol.com
University of Rhode Island - Coastal Institute	Nathan Vinhateiro, PhD, Science Director	nvinhateiro@uri.edu
University of Rhode Island - Department of Natural Resources Science	Alyson McCann, Cooperative Extension Water Quality Coordinator	amccann@uri.edu
US Army Corps of Engineers	Jenifer Thalhauser	Jenifer.E.Thalhauser@usace.army.mil
USDA Natural Resource Conservation Service Eastern RI Field Office	Ghyllian Alger	ghyllian.alger@usda.gov
US Fish & Wildlife Service (Block Island National Wildlife Refuge)	Karrie Schwaab	Karrie_schwaab@fws.gov
Verizon	Michelle Cinquegrano	michele.cinquegrano@verizon.com
Water Department; Water Pollution Control Facility	John Breunig *(Advisory Committee Member)*	jbreunig@newshorehamri.gov
Worship: Congregation Sons and Daughters of Ruth	Gloria Redlich	gloryb311@gmail.com
Worship: Harbor Baptist Church (shelter facility)	Alton Bentley	abentley@newshorehamri.gov
Worship: St. Andrew Church	Rev. Joseph Protano, Jr.	standrewbi@gmail.com
Worship: St. Ann's-By-The-Sea	Rev. Eileen C. Lindeman, Vicar	saintannsbythesea@verizon.net

APPENDIX 4-1

Hazard Impacts & Risk Assessment

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Appendix 4-1
Hazard Impacts & Risk Assessment

Due to New Shoreham's geographic location and land characteristics, in particular, being an island community, it is subject to a wide range of natural hazards that have the potential to adversely affect public health and safety.

To assist the HM&FMP Advisory Committee in analyzing each hazard and then comparing and prioritizing the hazards in terms of their potential impact on the Town, a standard methodology was used. The methodology was based on three semi-quantitative factors (probability of occurrence, likely range of impact, and likely magnitude of impact). The scoring rubric, the Committee's full analysis, and the Committee's overall priority ranking are provided below. The Advisory Committee utilized a number of resources to help them assess the hazards. These included a review of the Disaster and Emergency Declarations for Rhode Island, updated hazard profiles, input from the community via the HM&FMP Public Opinion Survey, the 2019 RI State Hazard Mitigation Plan (Washington County), 2017 Block Island Hazard Mitigation Plan, and from personal experience.

Hazard Probability, Impact & Vulnerability Scoring Rubric

Likelihood of Occurrence (Probability/Expected Frequency)
In other word, how likely is it that this hazard will occur in New Shoreham

1 = **Unlikely:** Less than 1% annual probability
2 = **Potential:** Between 1-49.9% annual probability
3 = **Likely:** Between 50-89.9% annual probability
4 = **Highly Likely:** Greater than 90% annual probability

Likely Range of Impact
In other word, if hazard occurs in New Shoreham, how much of the Town do you think might be damaged/impacted

1 = **Small:** less than 10% of Town
2 = **Medium**: 10-40% of Town
3 = **Large**: 41-100% of Town

Likely Magnitude of Impact (Vulnerability) –
In other word, if hazard occurs in New Shoreham, to what degree might the following be damaged

Built Environment Impact: Physical loses and damages to structures & infrastructure
1 = **Negligible:** Scattered incidental residential and commercial structure damages
2 = **Limited:** Fewer than 10% of residential and commercial structures damaged
3 = **Significant:** 20- 50% of residential and 10-25% of commercial structures are severely damaged

Natural Environment Impact: Physical loses and damages to the environment
1 = **Negligible:** Impacted fewer than 5% of natural resources
2 = **Limited:** Impacted fewer than 20% of natural resources
3 = **Significant:** Impacted greater than 20% of natural resources

Economic Impact: The interruption to business or services
1 = **Negligible:** No shutdown of businesses or services
2 = **Limited:** Short shutdown of some businesses or services
3 = **Significant:** Medium or longer shutdown of some businesses or services

Human Impact: Possibility of injury, illness, emotional stress, or death
1 = **Negligible:** Minor injuries and emotional stress
2 = **Limited:** Some injuries and emotional stress
3 = **Significant:** Multiple deaths, severe injuries, and emotionally very stressful

Risk Summary: Hazard Probability, Impact, and Vulnerability Analysis

Hazard Event	Likelihood of Occurrence	Likely Range of Impact	Likely Magnitude of Impact (Vulnerability)			
			Built Environment Impact	Natural Environment Impact	Economic Impact	Human Impact
	Probability this will occur in Town	How much of Town will be impacted	Physical losses and damages to structure & infrastructure	Physical losses and damages to the environment	Interruption to business or services	Possibility of injury, illness, emotional stress, or death
	1 = Unlikely 2 = Potential 3 = Likely 4 = Highly Likely	1 = Small 2 = Medium 3 = Large	1 = Negligible 2 = Limited 3 = Significant	1 = Negligible 2 = Limited 3 = Significant	1 = Negligible 2 = Limited 3 = Significant	1 = Negligible 2 = Limited 3 = Significant
FLOOD-RELATED HAZARDS						
Inland Flooding	4	1	1	2	1	1
Dam Failure	4	2	3	3	3	2
Coastal Flooding including Storm Surge	4	2	3	3	3	2
Coastal Erosion	2	1	1	1	1	1
WIND-RELATED HAZARDS						
High Winds	4	2	1	2	2	2
Thunderstorm including Lightning/Hail	4	1	1	1	1	1
Tornado	1	2	2	2	2	1
Tropical Cyclone (Tropical Depression, Tropical Storm & Hurricane)	4	3	3	3	3	3
WINTER STORM-RELATED HAZARDS						
Heavy Snow & Ice	4	3	2	2	2	2
Extreme Cold	4	3	2	2	2	2
INFECTIOUS DISEASE-RELATED HAZARDS						
Vector-borne Diseases Transmitted by Ticks or Mosquitoes	4	3	1	1	2	3
Contagious Respiratory Illness Caused by Influenza Viruses or Coronaviruses	4	3	1	1	2	3
OTHER HAZARDS						
Earthquake	1	2	2	1	2	1
Extreme Heat	4	3	1	2	2	2
Drought	1	2	1	2	2	2
Brush Fire	2	2	2	2	2	2

Risk Summary: Overview

Each of the three semi-quantitative factors (probability of occurrence, likely range of impact, and likely magnitude of impact) were given equal weight in the overall ranking. As such the numeric totals for the 4 components associated with Likely Magnitude of Impact (Built Environment Impact, Natural Environment Impact, Economic Impact, and Human Impact) were first summed and divided by four to produce an average Likely Magnitude of Impact (Vulnerability) subtotal.

Hazard	Overall Ranking	Risk Category
Tropical Cyclone (Tropical Depression, Tropical Storm & Hurricane)	3.33	**High**
Heavy Snow & Ice	3.00	
Extreme Cold	3.00	
Coastal Flooding including Storm Surge	2.92	
Coastal Erosion	2.92	
Vector-borne Diseases Transmitted by Ticks or Mosquitoes	2.92	
Contagious Respiratory Illness Caused by Influenza Viruses or Coronaviruses	2.92	
Extreme Heat	2.92	
High Winds	2.58	**Medium**
Inland Flooding	2.08	
Thunderstorm including Lightning and Hail	2.00	
Brush Fire	2.00	
Tornado	1.58	**Low**
Drought	1.58	
Earthquake	1.50	
Dam Failure	1.33	

APPENDIX 4-2

Maps

Maps:

Figure 4-11 FEMA Flood Zones

Figure 4-20 Hurricane Surge Inundation Areas

Figure 4-56 Critical Buildings

Figure 4-58 FEMA Flood Zones with Critical Buildings Overlay

Figure 4-60 Hurricane Surge Inundation Areas with Critical Buildings Overlay

Figure 4-61 Sea Level Rise Inundation Areas with Critical Buildings Overlay

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FEMA Flood Zones

KEY - FEMA D-FIRM Data

- VE Zone - High Risk (100-Year or 1% Annual Chance Flood Event with Velocity Wave Action)
- AE Zone - High Risk (100-Year or 1% Annual Chance Flood Event)
- X Shaded Zone - Moderate Risk (500-Year or 0.2% Annual Chance Flood Event)



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Graphic Scale

0 2000 4000 8000

1 inch = 2000 feet

March 2025

Source: RIGIS

Figure 4-11

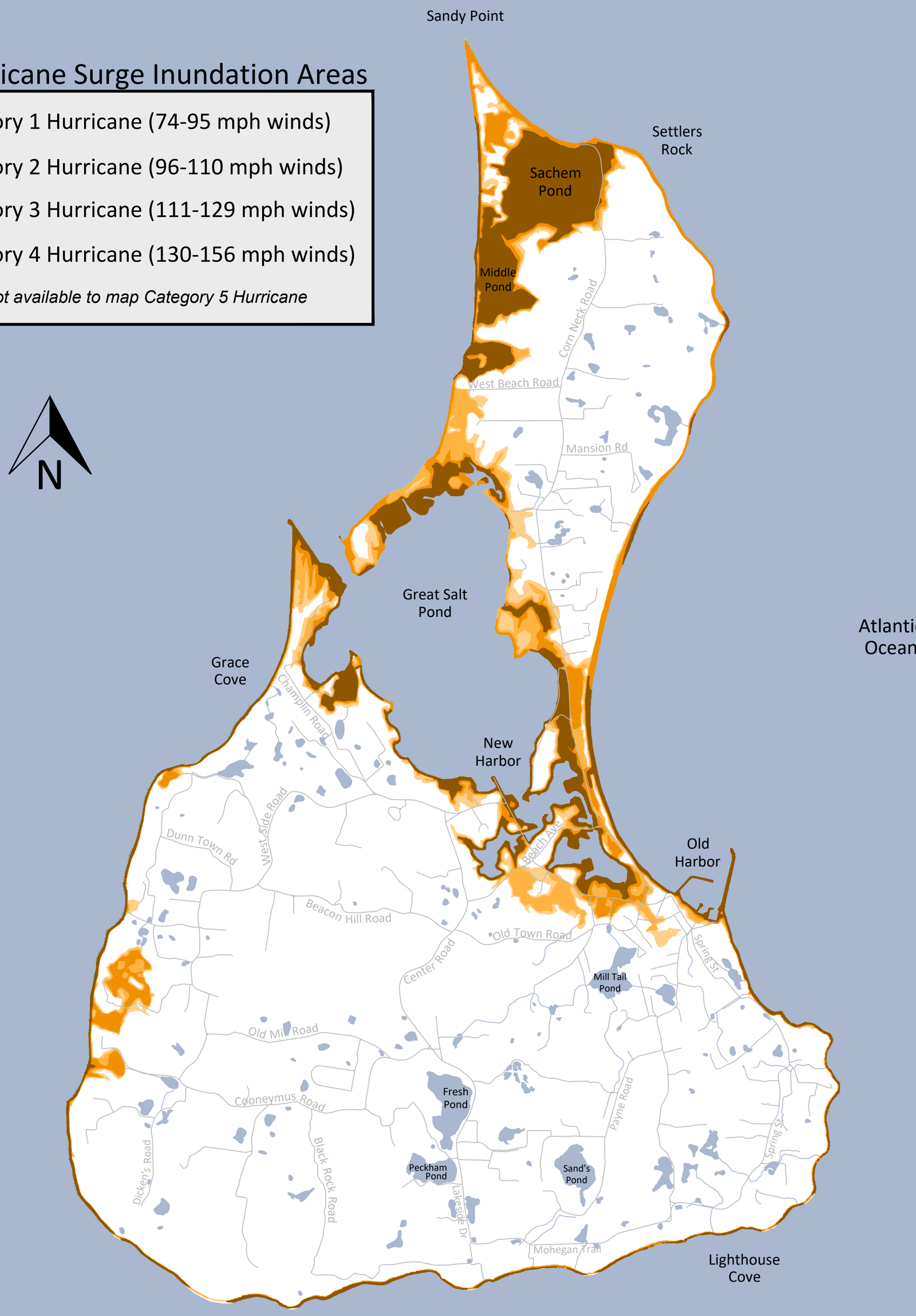
Kim Jacobs, Civil Engineer & Resilience Planning Consultant

Hurricane Surge Inundation Areas

KEY - Hurricane Surge Inundation Areas

- Category 1 Hurricane (74-95 mph winds)
- Category 2 Hurricane (96-110 mph winds)
- Category 3 Hurricane (111-129 mph winds)
- Category 4 Hurricane (130-156 mph winds)

Data is not available to map Category 5 Hurricane



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Source: RIGIS

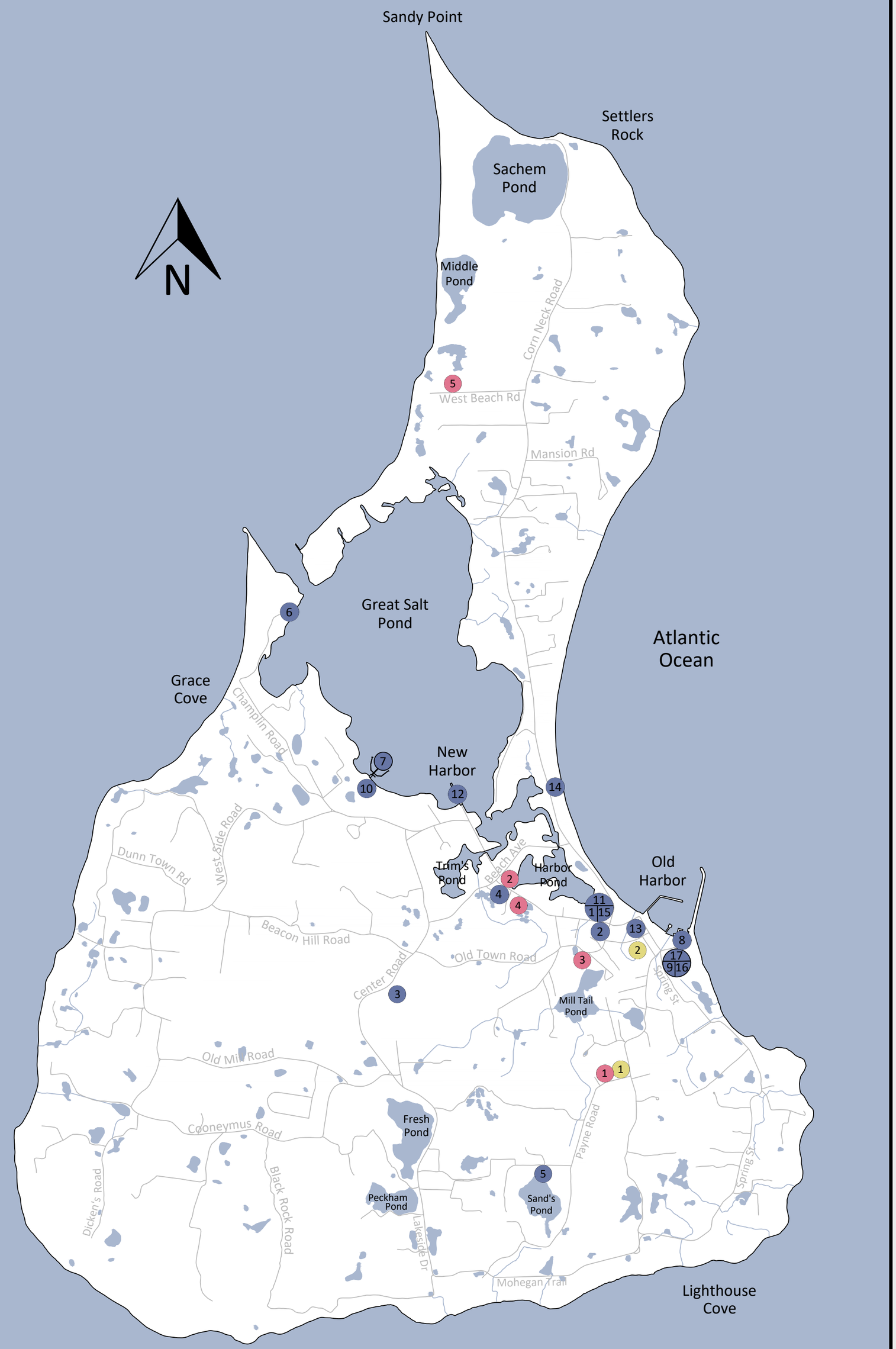
Figure 4-20

Kim Jacobs, Civil Engineer &
Resilience Planning Consultant

Critical Buildings

KEY - Critical Facilities

	Special Population Centers
1	Block Island School (public-Town; primary shelter) 15 High Street
2	Community Center; Block Island Early Learning Center (private) 91 Chapel Street
	Local & State Government Emergency Services
1	Block Island Medical Center (public building-Town; privately operated; secondary shelter) 6 Payne Road
2	Public Safety: Police Department (public); Volunteer Fire & Rescue (non-profit 501c3) 10 Beach Avenue
3	Town Hall (public-Town) 16 Old Town Road
4	State Highway Garage (public building-State; Town facilitated) 13 Ocean Avenue
5	Transfer Station (public-Town) 4 West Beach Road
	Local Government and/or Community Lifelines
1	Block Island Grocery (private) 242 Ocean Avenue
2	Block Island Historical Society (non-profit 501c3) 18 Old Town Road
3	Block Island State Airport (public-State) 4 Center Road
4	Block Island Utility District (BIUD) Office (non-profit member-owned utility district) 100 Ocean Avenue
5	Block Island Water Company (BIWC) (quasi-public) 426 Sands Pond Lane
6	Coast Guard Station (former) (Public-Town) 121 Champlin Road (Coast Guard Road)
7	Harbormaster's Shack - New Harbor (Public-Town) 83 West Side Road
8	Harbormaster's Shack - Old Harbor (Public-Town) 60 Water Street
9	Helping Hands of Block Island, Inc.- Food Pantry (non-profit 501c3) 21 Water Street (lower level Harbor Church)
10	Fuel: Champlin's Marina (private/summer season only) 82 West Side Road
11	Fuel: M&C Gas Station (private) 596 Corn Neck Road
12	Fuel: Paynes Dock (private/summer season only) 133 Ocean Avenue
13	Island Free Library (public-Town) 9 Dodge Street
14	Town Beach Pavilion (public-Town) 7 Corn Neck Road
15	Washington Trust (private) 123 Ocean Avenue
16	Water Pollution Control Facility (WPCF) (quasi-public) 252 Spring Street
17	United States Post Office (public-Federal) 32T Water Street



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Graphic Scale

0 2000 4000 8000

1 inch = 2000 feet

March 2025

Source: RIGIS

Figure 4-56

Kim Jacobs, Civil Engineer & Resilience Planning Consultant

FEMA Flood Zones with Critical Buildings Overlay

KEY - FEMA D-FIRM Data

- VE Zone - High Risk (100-Year or 1% Annual Chance Flood Event with Velocity Wave Action)
- AE Zone - High Risk (100-Year or 1% Annual Chance Flood Event)
- X Shaded Zone - Moderate Risk (500-Year or 0.2% Annual Chance Flood Event)

KEY - Critical Facilities

Special Population Centers

1. Block Island School (public-Town; primary shelter) 15 High Street
2. Community Center; Block Island Early Learning Center (private) 91 Chapel Street

Local & State Government Emergency Services

1. Block Island Medical Center (public building-Town; privately operated; secondary shelter) 6 Payne Road
2. Public Safety: Police Department (public); Volunteer Fire & Rescue (non-profit 501c3) 10 Beach Avenue
3. Town Hall (public-Town) 16 Old Town Road
4. State Highway Garage (public building-State; Town facilitated) 13 Ocean Avenue
5. Transfer Station (public-Town) 4 West Beach Road

Local Government and/or Community Lifelines

1. Block Island Grocery (private) 242 Ocean Avenue
2. Block Island Historical Society (non-profit 501c3) 18 Old Town Road
3. Block Island State Airport (public-State) 4 Center Road
4. Block Island Utility District (BIUD) Office (non-profit member-owned utility district) 100 Ocean Avenue
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Graphic Scale

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March 2025

Source: RIGIS

Figure 4-58

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Hurricane Surge Inundation Areas with Critical Buildings Overlay

KEY - Hurricane Surge Inundation Areas

- Category 1 Hurricane (74-95 mph winds)
- Category 2 Hurricane (96-110 mph winds)
- Category 3 Hurricane (111-129 mph winds)
- Category 4 Hurricane (130-156 mph winds)

Data is not available to map Category 5 Hurricane

KEY - Critical Facilities

Special Population Centers

1 Block Island School (public-Town; primary shelter) 15 High Street

2 Community Center; Block Island Early Learning Center (private) 91 Chapel Street

Local & State Government Emergency Services

1 Block Island Medical Center (public building-Town; privately operated; secondary shelter) 6 Payne Road

2 Public Safety: Police Department (public); Volunteer Fire & Rescue (non-profit 501c3) 10 Beach Avenue

3 Town Hall (public-Town) 16 Old Town Road

4 State Highway Garage (public building-State; Town facilitated) 13 Ocean Avenue

5 Transfer Station (public-Town) 4 West Beach Road

Local Government and/or Community Lifelines

1 Block Island Grocery (private) 242 Ocean Avenue

2 Block Island Historical Society (non-profit 501c3) 18 Old Town Road

3 Block Island State Airport (public-State) 4 Center Road

4 Block Island Utility District (BIUD) Office (non-profit member-owned utility district) 100 Ocean Avenue

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6 Coast Guard Station (former) (Public-Town) 121 Champlin Road (Coast Guard Road)

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10 Fuel: Champlin's Marina (private/summer season only) 82 West Side Road

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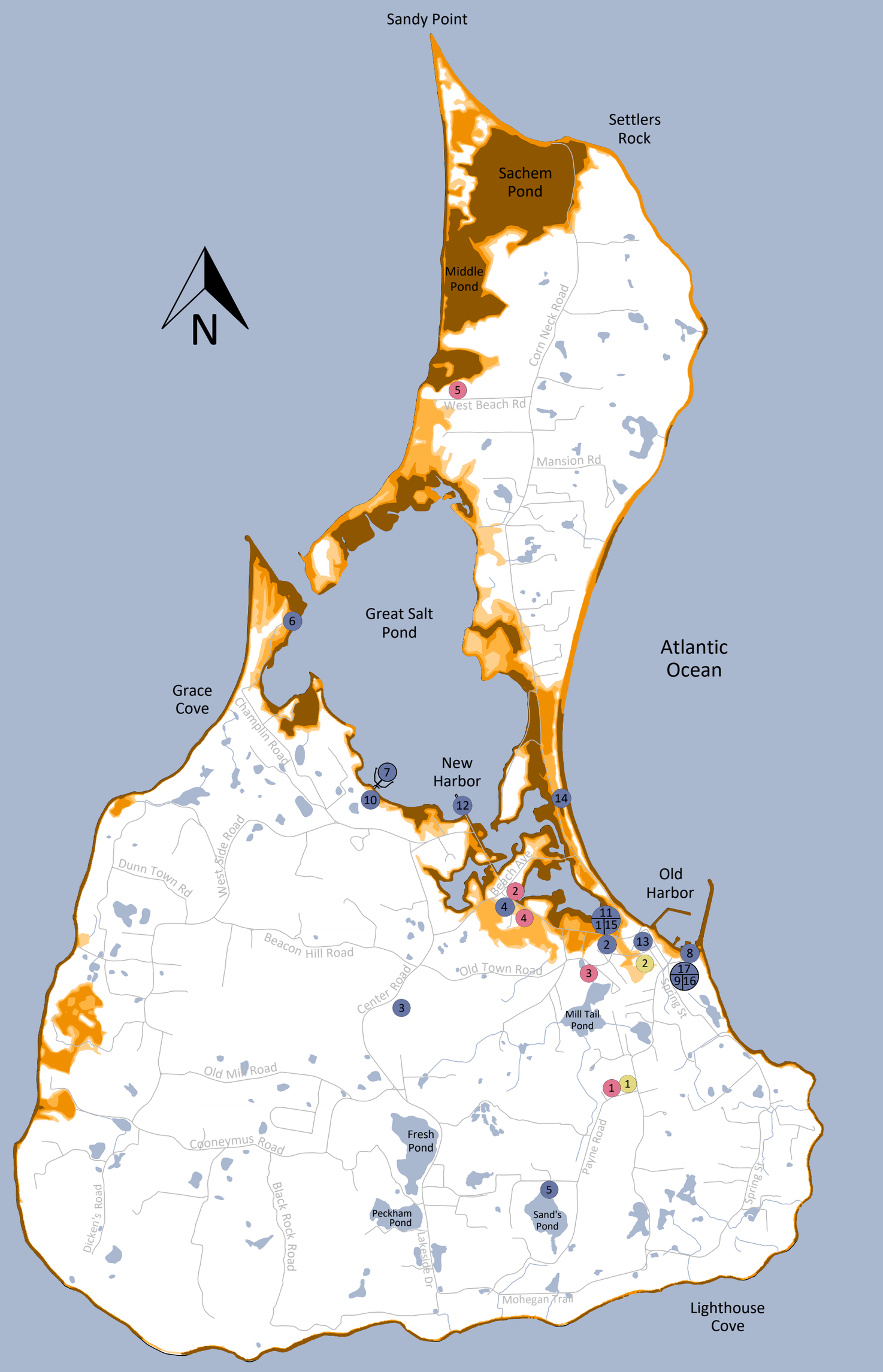
13 Island Free Library (public-Town) 9 Dodge Street

14 Town Beach Pavilion (public-Town) 7 Corn Neck Road

15 Washington Trust (private) 123 Ocean Avenue

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Graphic Scale

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March 2025

Source: RIGIS

Figure 4-60

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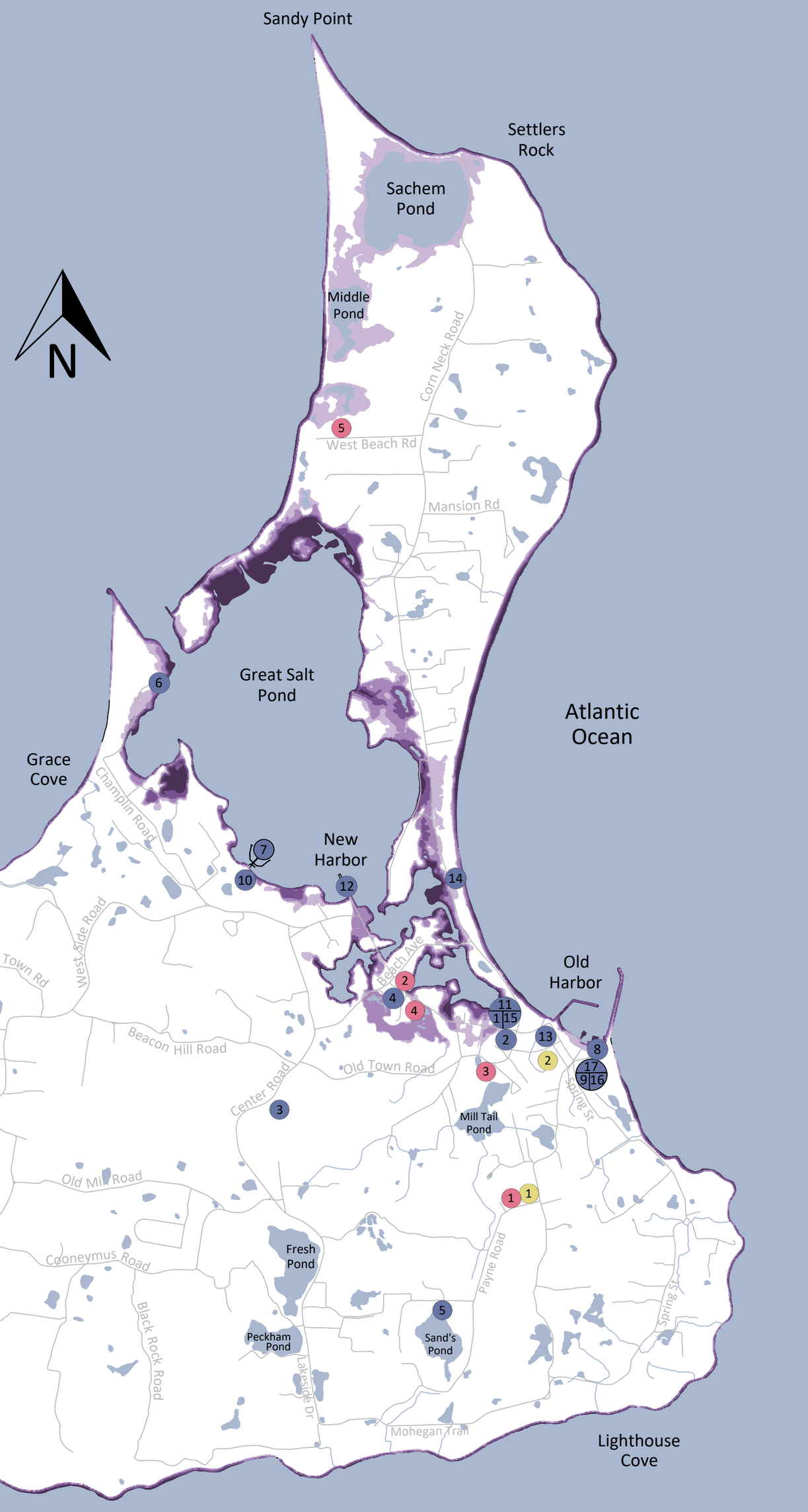
Sea Level Rise Inundation Areas with Critical Buildings Overlay

KEY - Hurricane Surge Inundation Areas

- Mean Higher High Water (MHHW)
- 1 FOOT Sea Level Rise (SLR)
- 3 FEET Sea Level Rise (SLR)
- 5 FEET Sea Level Rise (SLR)

KEY - Critical Facilities

Special Population Centers	
1	Block Island School (public-Town; primary shelter) 15 High Street
2	Community Center; Block Island Early Learning Center (private) 91 Chapel Street
Local & State Government Emergency Services	
1	Block Island Medical Center (public building-Town; privately operated; secondary shelter) 6 Payne Road
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3	Town Hall (public-Town) 16 Old Town Road
4	State Highway Garage (public building-State; Town facilitated) 13 Ocean Avenue
5	Transfer Station (public-Town) 4 West Beach Road
Local Government and/or Community Lifelines	
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2	Block Island Historical Society (non-profit 501c3) 18 Old Town Road
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Graphic Scale

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Source: RIGIS

Figure 4-61

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APPENDIX 4-3

Critical Facilities Vulnerability Assessment

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The Critical Facilities Vulnerability Assessment has been broken into three assessment categories:

- ❖ **Critical Buildings:** Summary of analysis is provided below in tabular format and in **Subsection 4.4.2** in narrative format
- ❖ **Historical Resources on the NRHP:** Summary of analysis is provided below in tabular format and in **Subsections 4.4.2 & 4.4.4** in narrative format
- ❖ **Critical Infrastructure:** Summary of analysis is provided in **Subsection 4.4.2** in narrative format

Critical Buildings with Map Numbering System

Special Population Centers
1 Block Island School (public-Town; primary shelter) 15 High Street
2 Community Center; Block Island Early Learning Center (private) 91 Chapel Street

Local & State Government Emergency Services
1 Block Island Medical Center (public building-Town; privately operated; secondary shelter) 6 Payne Road
2 Public Safety: Police Department (public-Town); Volunteer Fire & Rescue (non-profit 501c3) 10 Beach Avenue
3 Town Hall (public-Town) 16 Old Town Road
4 State Highway Garage (public building-State; Town facilitated) 13 Ocean Avenue
5 Transfer Station (public-Town) 4 West Beach Road

Local Government and/or Community Lifelines
1 Block Island Grocery (private) 242 Ocean Avenue
2 Block Island Historical Society (non-profit 501c3) 18 Old Town Road
3 Block Island State Airport (public-State) 4 Center Road
4 Block Island Utility District (BIUD) Office (non-profit member-owned utility district) 100 Ocean Avenue
5 Block Island Water Company (BIWC) (quasi-public) 426 Sands Pond Lane
6 Coast Guard Station (former) (Public-Town) 121 Champlin Road (Coast Guard Road)
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9 Helping Hands of Block Island, Inc.- Food Pantry (non-profit 501c3) 21 Water Street (lower level Harbor Church)
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12 Fuel: Paynes Dock (private/summer season only) 133 Ocean Avenue
13 Island Free Library (public-Town) 9 Dodge Street
14 Town Beach Pavilion (public-Town) 7 Corn Neck Road
15 Washington Trust (private) 123 Ocean Avenue
16 Water Pollution Control Facility (WPCF) (quasi-public) 252 Spring Street
17 United States Post Office (public-Federal) 32T Water Street

Critical Buildings Vulnerability Assessment Summary

Quantitative Analysis Criteria:

FEMA Flood Zone: highest risk zone that any portion of the building footprint is touching

Flood Depth 100-year Storm: Based on STORMTOOLS - highest depth identified for any portion of the building footprint

Inundation by SLR: Based on STORMTOOLS – lowest SLR scenario that any portion of the building footprint is included within; modeled scenarios include 1ft, 2ft, 3ft, 5ft, 7ft, 10ft, and 12ft

Hurricane Category: lowest hurricane surge inundation category that any portion of the building footprint is touching

Note: rows associated with Town owned buildings are highlighted in tan

Critical Buildings Category	Critical Buildings Location & Ownership	General Information	FEMA Flood Zone	Flood Depth 100yr Storm	Inundated by SLR	Hurricane Category	Winter Storm-Related (snow load)	Earthquakes	Extreme Heat	Drought	Brush Fires	Contagious Respiratory Illness (Flu/Coronavirus)	Vector Borne Diseases (Ticks/Mosquitos)	Primary Concern
Special Population Centers	1 Block Island School (public-Town; primary shelter) 15 High Street	**Population Served**: 125± students (grades K -12) **Town Building:** built in 1933 with additions in 2006 **Emergency Management:** primary emergency shelter; on-site generator; rooftop solar array installed in 2019; electrical school bus	-----	-----	-----	-----	yes (flat roof on large sections of the building)	yes	yes (children are more susceptible to extreme heat)	-----	-----	yes	-----	public safety, property damage, disruption of services The emergency shelter is an important resource
	2 Community Center; Block Island Early Learning Center (private) 91 Chapel Street	**Population Served**: the Early Learning Center services children; the Community Center services all populations with seniors being a target audience; the Block Island Economic Development Foundation (BIED) owns and operates the Community Center	-----	-----	-----	Cat 4	-----	yes	yes (both children and seniors are more susceptible to extreme heat)	-----	-----	yes	-----	public safety, property damage, disruption of services senior populations may have more mobility or health issues that need to be considered in navigating a natural hazard event

Critical Buildings Category	Critical Buildings Location & Ownership	General Information	FEMA Flood Zone	Flood Depth 100yr Storm	Inundated by SLR	Hurricane Category	Winter Storm-Related (snow load)	Earthquakes	Extreme Heat	Drought	Brush Fires	Contagious Respiratory Illness (Flu/Coronavirus)	Vector Borne Diseases (Ticks/Mosquitos)	Primary Concern
Local & State Government Emergency Services	1 Block Island Medical Center (public building-Town; privately operated; secondary shelter) 6 Payne Road	**Town Building:** built in 1992 with renovations in 2024 **Emergency Management:** emergency response; secondary shelter; on-site generator	-----	-----	-----	-----	-----	yes	-----	-----	-----	yes	-----	public safety, property damage, disruption of services
	2 Public Safety: Police Department (public); Volunteer Fire & Rescue (non-profit 501c3) 10 Beach Avenue	**Town Buildings:** Police Station (built in 1970); attached fire barn (built in 1972); and rescue barn (built in 2009) **Emergency Management:** Police, Fire & Rescue personnel and their apparatus; central dispatch center; Emergency Operations Center (EOC); emergency response; on-site generator for Police & Fire Building but not for Rescue Building; cell/ communication tower on property	-----	-----	-----	----- high winds may impact cell tower	-----	yes	-----	-----	-----	-----	-----	public safety, property damage, disruption of services; communication dispatch center
	3 Town Hall (public-Town) 16 Old Town Road	**Town Building:** built in 1920 with renovations and additions in 1978 and 2007; vault contains vital documents and historical records **Emergency Management:** municipal department operations & essential services	-----	-----	-----	-----	-----	yes	-----	-----	-----	-----	-----	public safety, property damage, disruption of services
	4 State Highway Garage (public building-State; Town facilitated) 13 Ocean Avenue	**Emergency Management:** emergency response; on-site generator	AE	-----	5 ft	Cat 3	-----	yes	-----	-----	-----	-----	-----	public safety, property damage, disruption of services
	5 Transfer Station (public-Town) 14 West Beach Road	**Town Building:** built in 1988 **Property:** a portion of the property functioned as a landfill from early 1900s to late 1980s when it was closed and capped; in 1988 the Town began using the site as a transfer station **Emergency Management:** debris storage area	-----	-----	-----	-----	-----	yes	-----	-----	yes	-----	-----	public safety, property damage, disruption of services the ocean side of the property, which includes the former capped landfill, is vulnerable to erosion from regular wave action as well as storm surge

Critical Buildings Category	Critical Buildings Location & Ownership	General Information	FEMA Flood Zone	Flood Depth 100yr Storm	Inundated by SLR	Hurricane Category	Winter Storm-Related (snow load)	Earthquakes	Extreme Heat	Drought	Brush Fires	Contagious Respiratory Illness (Flu/Coronavirus)	Vector Borne Diseases (Ticks/Mosquitos)	Primary Concern
Local Government and/or Lifelines	1 Block Island Grocery (private) 242 Ocean Avenue	**Services:** groceries (community lifeline)	AE	-----	7 ft	Cat 2	-----	yes	-----	-----	-----	yes	-----	public health & safety, property damage, disruption of services, economic loss
	2 Block Island Historical Society (non-profit 501c3) 18 Old Town Road	**Services:** preservation of historical documents	AE	-----	7 ft	Cat 3	yes (flat roof)	yes	-----	-----	-----	-----	-----	property damage, disruption of services
	3 Block Island State Airport (public-State) 4 Center Road	**Services:** air service (community lifeline)	-----	-----	-----	-----	-----	yes	-----	-----	-----	yes	-----	public safety (including access to medical care), property damage, disruption of services, economic loss
	4 Block Island Utility District (BIUD) Office (non-profit member-owned utility district) 100 Ocean Avenue	**Services:** electricity (community lifeline)	X shaded	-----	10 ft	Cat 4	-----	yes	-----	-----	-----	-----	-----	public health & safety, property damage, disruption of services, economic loss
	5 Block Island Water Company (BIWC) (quasi-public) 426 Sands Pond Lane	**Town Building:** built in 1970 with renovations in 1990 **Services:** potable water (community lifeline)	-----	-----	-----	-----	-----	yes	-----	-----	-----	-----	-----	public health & safety, infrastructure damage, disruption of services, economic loss
	6 Coast Guard Station (former) (Public-Town) 121 Champlin Road (Coast Guard Road)	**Town Building:** built in 1936	-----	-----	-----	Cat 4	-----	yes	-----	-----	-----	-----	-----	property damage
	7 Harbormaster's Shack - New Harbor (Public building-Town) 83 West Side Road	**Town Building:** building owned by Town; property privately owned	VE	-----	3 ft	Cat 1	-----	yes	-----	-----	-----	-----	-----	property damage, disruption of services
	8 Harbormaster's Shack - Old Harbor (Public-Town) 60 Water Street	**Town Building:** built in 2000	VE	-----	1 ft	Cat 1	-----	yes	-----	-----	-----	-----	-----	property damage, disruption of services
	9 Helping Hands of Block Island, Inc.-Food Pantry (non-profit 501c3) 21 Water Street (lower level Harbor Church)	**Services:** food bank (community lifeline)	-----	-----	-----	-----	-----	yes	-----	-----	-----	yes	-----	property damage, disruption of services

Critical Buildings Category	Critical Buildings Location & Ownership	General Information	FEMA Flood Zone	Flood Depth 100yr Storm	Inundated by SLR	Hurricane Category	Winter Storm-Related (snow load)	Earthquakes	Extreme Heat	Drought	Brush Fires	Contagious Respiratory Illness (Flu/Coronavirus)	Vector Borne Diseases (Ticks/Mosquitos)	Primary Concern
Local Government and/or Lifelines	10 Fuel: Champlin's Marina (private/summer season only) 82 West Side Road	**Services:** supplies fuel during the summer season	-----	-----	-----	-----	-----	yes	-----	-----	-----	-----	-----	property damage, disruption of services, economic loss
	11 Fuel: M&C Gas Station (private) 596 Corn Neck Road	**Services:** supplies fuel year-round	AE	-----	7ft	Cat 2	-----	yes	-----	-----	-----	-----	-----	property damage, disruption of services, economic loss
	12 Fuel: Paynes Dock (private/summer season only) 133 Ocean Avenue	**Services:** supplies fuel during the summer season	VE	-----	1 ft	Cat 1	-----	yes	-----	-----	-----	-----	-----	property damage, disruption of services, economic loss
	13 Island Free Library (public-Town) 9 Dodge Street	**Town Building:** built in 1975 with renovations in 2000 **Emergency Management:** RIEMA has designated all libraries as overflow warming/cooling/charging centers	-----	-----	-----	-----	-----	yes	-----	-----	-----	yes	-----	property damage, disruption of services
	14 Town Beach Pavilion (public-Town) 7 Corn Neck Road	**Town Building:** built in 1954 with renovations in 1981, 2017, and 2018	VE	-----	5 ft	Cat 1	yes (flat roof)	yes	-----	-----	-----	-----	-----	property damage, disruption of services; economic loss
	15 Washington Trust (private) 123 Ocean Avenue	**Services:** financial institution (community lifeline)	AE	-----	7 ft	Cat 2	-----	yes	-----	-----	-----	-----	-----	property damage, disruption of services
	16 Water Pollution Control Facility (WPCF) (quasi-public) 252 Spring Street	**Town Building:** sewer plant was built in 1980; added garage in 2000; added apartments over garage in 2006 **Services:** sewage treatment (community lifeline)	-----	-----	-----	-----	-----	yes	-----	-----	yes	-----	-----	public health & safety, infrastructure damage, disruption of services, economic loss
	17 United States Post Office (public-Federal) 32T Water Street	**Services:** mail (community lifeline)	-----	-----	-----	-----	-----	yes	-----	-----	-----	-----	-----	property damage, disruption of services

Historic Resources on the National Register of Historic Places (NRHP)

The Town of New Shoreham, RI has five (5) historic sites and two (2) historic districts on the National Register of Historic Places. These historic sites are a record of the community's history and culture, and preserve the stories of the people who built, lived, and worked in New Shoreham. Due to their historical significance, these sites are integral to New Shoreham's tourism-based economy and economic survival. Protection of historic resources, particularly those listed below, is critical.

Natural Hazard Impacts: The natural hazard impacts of primary concern are flooding, high winds, ice, and earthquakes. Property and buildings in the Special Flood Hazard Area (SFHA) and/or hurricane inundation areas have been identified in the following table. **Subsection 4.4.2** presents additional information on vulnerability associated with the Built Environment.

National Register of Historic Places	Date Designated	Location	Photo	General Description	SFHA
Block Island North Light (Town owned)	5/23/1974	Sandy Point, off the northern end of Corn Neck Road		The first light on the site was built in 1829. The current structure at Sandy Point is the fourth lighthouse built on the site and was made of granite and iron in 1867. The light was deactivated in 1973 and United States Fish and Wildlife Service acquired the lighthouse. After years of neglect, the lighthouse, along with two acres of land, was sold to New Shoreham in 1984 for $1 USD. Following much renovation by the North Light Commission, it was relighted in 1989, and a museum opened on the first floor in 1993. The lighthouse contains its original lens, a fourth-order Fresnel lens, which flashes white light every five seconds, and has a range of 11 nautical miles. In 2008, the light underwent restoration at Georgetown Ironworks in MA and was relighted on October 23, 2010.	VE Flood Zone Category 1 Hurricane Surge Inundation Zone
Block Island Southeast Light	8/6/1990; also designated a National Historic Landmark on 9/25/1997	Southeast Light Road (along the Mohegan Bluffs)		The lighthouse was built in 1874 and considered one of the best surviving example of late 19th-century U.S. lighthouse construction. It is a sophisticated expression of the Gothic Revival executed in brick, and was a marked contrast to earlier lighthouses, which were generally more functional in appearance. In 1990, the Coast Guard deactivated the light and replaced it with a nearby steel tower. Because of ongoing erosion of the bluffs, in 1993 the entire 2,000 ton structure was moved about 300 feet back from the cliffs. Ownership of the lighthouse was transferred in 1992 to the Southeast Lighthouse Foundation, which is dedicated to its preservation.	Bluffs to the south of the lighthouse are vulnerable to erosion from regular wave action as well as storm surge
Hygeia House	10/22/2001	582 Beach Avenue		The hotel was built in 1885 and operated as the Seaside House at a location about 150 yards south of its present location. It was moved in 1907 to the grounds of the Hygeia Hotel (named after the Greek Goddess of health, Hygeia) a much larger hotel that burned down in 1916. It is a 2-3 story wood-frame structure, four bays wide, with a mansard roof. The Hygeia House can now be rented as a fully staffed luxury vacation home.	-----
Peleg Champlin House	6/1/1982	918 Rodman Pond Lane		A 1.5 story wood-frame structure, five bays wide, with a side-gable roof and a large central chimney. An ell extends from the back (north) side of the house. The Federal style wooden house was built c. 1820 by Peleg Champlin, a farmer from one of the island's older families. The house is one of the best-preserved houses of the period on the island.	-----
U.S. Weather Bureau Station	8/4/1983	577 Beach Avenue		The U.S. Weather Bureau Station is a historic former weather station on Beach Avenue. It is a two-story wood-frame structure, three bays wide, with a flat roof surrounded by a low balustrade. There is a full-width porch across the front, supported by grouped columns. The Classical Revival building was designed by Harding & Upman, and constructed in 1903, replacing a station destroyed by fire the previous year. It originally had meteorological instruments mounted on the roof and the grounds, and was used as a weather station until 1950. It was then converted for use as a summer tourist residence.	-----
Great Salt Pond Archeological District	2/15/1990	Vicinity of Great Salt Pond	-----	The Great Salt Pond is a round and almost entirely enclosed body of water separating the north and south regions of the island. The pond has a small channel on its north west shore connecting it with Block Island Sound. The opening is artificial and was dug out in 1895 to make a harbor in the south part of the pond. The shores of the pond have a long history of human use, as the area was one of the primary areas of residence by Native Americans both before and after contact with Europeans. Evidence of occupation dates as far back as the Middle Woodland Period, and includes the site of a palisaded fortification.	VE Flood Zone Category 1 Hurricane Surge Inundation Zone
Old Harbor Historic District	5/8/1974	vicinity of Old Harbor	-----	The Old Harbor District is bounded by the Atlantic Ocean and Main Street, and includes Spring Street, High Street, and Water Street. There are 42 buildings listed in the district which include an impressive collection of vintage hotels, shops, and restaurants.	Portions of the historic district are subject to VE Flood Zone and Category 1 Hurricane Surge Inundation Zone

Resources: The Hygeia House; RIHPHC; Wikipedia. *Block Island North*; Wikipedia. *Block Island Southeast*; Wikipedia. *Great Salt*; Wikipedia. *Hygeia*; Wikipedia. *National Register*; Wikipedia. *Old Harbor*; Wikipedia. *Peleg*; Wikipedia. *US Weather*

APPENDIX 5-1

Planning and Regulatory Capabilities

KMJ – CE/RP

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Appendix 5-1
Planning and Regulatory Capabilities

As part of plan integration, and in accordance with CRS Activity 510 Planning Process - Step 7, the Town reviewed, key local, regional, state, and federal planning documents; local preventive activities including zoning, stormwater management regulations, building codes, subdivision ordinances; and the preservation of wetlands and open space.

With respect to local capabilities, a ***Level of Effectiveness*** **rating has been assigned to assist in determining limitations of the existing data and which measures should continue to be supported or enhanced**. Capabilities with a low or moderate rating were further reviewed to determine if the measure should be updated or if the Comprehensive Plan or another planning document effectively takes the place of the outdated document. As planning documents are maintained or updated, effort should be taken to incorporate hazard mitigation actions and policies to assist in reducing natural hazard risks to New Shoreham. Since the Town participates in the Community Rating System (CRS) program, it has been noted if a particular capability, or aspect thereof, may qualify for CRS credit.

Local Capability: Level of Effectiveness

High: Capability is working well and is regularly followed

Moderate: Capability could use some revisions but is followed

Low: Capability is not working and needs revisions

The following Table provides an overview of the critical planning and regulatory capabilities that play a role in the Town of New Shoreham's natural hazards mitigation effort. The information provided in the Table was obtained through the identified capability's website, New Shoreham's 2016 Comprehensive Plan, New Shoreham's 2017 Hazard Mitigation Plan, and/or Advisory Committee, Town Staff, or other stakeholder input. Where applicable, a hyperlink for the capability is provided.

LOCAL *(the capabilities have been listed in alphabetical order)*

Description	Area Served	Effectiveness & Enforcement/ Maintenance	Key Discussion Points/ Plan Integration Considerations
A Blueprint for Community Wastewater Management (2003)			
A Blueprint for Community Wastewater Management The Town of New Shoreham has an approved OWMP and has a municipal onsite wastewater management program in place. New Shoreham's onsite wastewater management ordinance requires system inspections and maintenance. A Town-wide cesspool phase-out program is ongoing. New Shoreham's zoning ordinance specifies treatment standards based on location and soil conditions. The town also participates in the CSSLP. **History:** New Shoreham established a wastewater management ordinance in 1996 that required inspection and maintenance of all onsite systems. In 1998 they amended their zoning ordinance to establish treatment standards and phase-out all cesspools. In 2000 the Town elected to participate in a pilot project led by URI: **A Blueprint for Community Wastewater Management**. In support of the project, the Town Council appointed the Block Island Steering Committee (BISC) to manage the project and accelerate implementation of the Town's wastewater management ordinance. Through the EPA funded project, the **URI Onsite Wastewater Resource Center** working with USEPA, RIDEM, RIAES, RIICA, RI-CRMC, and the Towns of Charlestown, New Shoreham, and South Kingstown installed 25 alternative onsite wastewater demonstration systems to replace failed septic systems. Performance of these systems was reported to local through national audiences and to RIDEM Technical Review Committee (TRC) for review and policy decisions.	Non-sewered areas of Town	Effectiveness: High Enforcement/ Maintenance: Wastewater Inspector	It is important to implement a septic system inspection & maintenance program to ensure OWMPs are functioning correctly and thereby not negatively impacting the quality of ground and surface water resources. The pilot project was an important resource for the entire State and it helped to improve New Shoreham's wastewater management program. The zoning ordinance (**§ 506 Onsite Wastewater Treatment Systems**) was further updated in 2011. By having a RIDEM approved OWTP, the Town is able to participate in the **Community Septic System Loan Program (CSSLP)** facilitated by the RIIB. CSSLP is a lending program that provides low-cost, long-term financing to residential property owners for the repair or replacement of substandard or failing septic systems or to replace cesspools when the homeowner wishes to upgrade to a septic system. As the Town continues to improve the community's wastewater management program, an excellent resource is the **URI Onsite Wastewater Training Center (OWTC)** located at the University's Peckham Research Farm is an important resource. It is a hands-on demonstration and field training facility for both conventional systems and advanced wastewater treatment technologies. The OWTC is one of eight regional centers in the nation and has been in operation since 1993.
Block Island Harbors Sea Level Rise Adaptation Study (2013)			
This study considered how to mitigate the impacts of flooding as a result of projected SLR and storm surges on the two harbors, as well as the island roadway system that connects the harbors to the commercial center of the island and to the outlying residential areas.	Harbor areas	Effectiveness: High Enforcement/ Maintenance: Coastal Resilience Committee	The study identified various structural engineering concepts to address the impact of SLR on the island's marine infrastructure, and contingency plans to respond to the potential inundation of the connecting roadways and bridges.

Description	Area Served	Effectiveness & Enforcement/ Maintenance	Key Discussion Points/ Plan Integration Considerations
For water-based transportation to and from the island, Block Island is served by two harbors, Old Harbor and New Harbor. Old Harbor, in the downtown area, is the principal ferry terminal where the majority of passenger trips arrive and depart. In addition, all vehicles and goods, commercial and private, are moved on and off the island at Old Harbor. Ferry service is year-round, providing a critical life-line for the island community. New Harbor supports a ferry service from Montauk, New York, which runs from Memorial day through Labor Day.			Refer to **Appendix 6.1** for an overview of the SLR Adaptation Study recommendations that were reviewed for inclusion in the *HM&FM Action Plan*. Those selected have been noted accordingly in the *Action Plan*.
Block Island and the Invisible Burden of Tourism - Sustainable Tourism Report (2022)			
Tourism is an important revenue stream for Block Island (New Shoreham), but it also has an "Invisible Burden" putting pressures on environmental and socio-cultural resources. This study, using an adaptation of the HEAT-D framework, focuses on measuring tourism's impact on environmental resources: economic, environmental, and socio-cultural. Of all the factors studied for this report, four were identified as areas requiring a priority focus to relieve stress: affordable housing, adequate police force staffing, water, and municipal solid waste. These resources appear to be hitting a tipping point.	Town-wide	Effectiveness: N/A Enforcement/ Maintenance: Block Island Tourism Council	Block Island has conserved nearly 50% of its land from development, but has seen considerable growth in tourism outside protected lands and is now experiencing building pressure on infrastructure, utilities, and public services. As Block Island is a key tourist destination in the summertime, understanding the impacts of tourism are important in terms of resources as well as in terms of hazard mitigation and emergency preparedness.
Comprehensive Plan (2016)			
In accordance with Rhode Island General Law (RIGL) §45-22.2, the RI Comprehensive Planning and Land Use Regulation Act, the Town of New Shoreham has created, adopted, and maintains a comprehensive plan. The New Shoreham Planning Board approved and the Town Council adopted the 2016 Comprehensive Plan (CP) update. The Comprehensive Plan presents a vision for New Shoreham: *Through proactive planning and responsible stewardship, the residents and the Town of New Shoreham will ensure that growth and change on Block Island sustains the community we treasure and protects the resources on which it depends*. The 2016 CP outlines the primary goals for the Town through 2036 and has been incorporated by reference into the Town of New Shoreham Municipal Code. The CP identifies the need for maintain a healthy year-round community and economy while at the same time preserving the community's natural resources and unique characteristics.	Town-wide	Effectiveness: High Enforcement/ Maintenance: Planning Board/Town Planner/ Town Council	To ensure alignment between the *HM&FMP* and the 2016 Comprehensive Plan (CP), it was reviewed and used as a key resource. The Goals, Policies, and Implementation Actions included in the **Natural Hazard & Climate Change** section, as well as other pertinent sections were reviewed and incorporated as appropriate into the *HM&FMP Action Plan*. It would be beneficial to coordinate the annual CP review with the annual *HM&FMP* review. Having at least one Planning Board member engaged in the *HM&FMP* review will serve to integrate the two processes. These two document reviews should occur prior to the Town's budgeting process (preferably in September/October) in order to ensure actions needing funding will be included in the Town's Capital Improvement Program.

Description	Area Served	Effectiveness & Enforcement/ Maintenance	Key Discussion Points/ Plan Integration Considerations
The CP identifies goals, policies, and actions for growth and development that reflect the community's values. It provides a framework for decision-making by establishing a basis for initiating and evaluating the consistency of proposed regulations, policies, and capital expenditures, and addresses increased development pressures, open space, natural resources, cultural & historic resources, natural hazards & climate change, public services & facilities, and economic development.			In future CP updates, natural hazard mitigation should be further integrated into all appropriate CP Elements. Further integration will strengthen the Town's position to implement the *HM&FMP* as it will carry the full legal weight and authority of the CP. Refer to **Appendix 6.1** for an overview of the Comprehensive Plan actions and measures that were reviewed for inclusion in the *HM&FM Action Plan*. Those selected have been noted accordingly in the *Action Plan*.
Corn Neck Road Transportation Resiliency Study (2017)			
Corn Neck Road is a 3.8 mile roadway under the authority of RIDOT. It is susceptible to repeated storm damage due to the low elevations and orientation relative to principle wave direction. Portions of the roadway were severely damaged during Superstorm Sandy in 2012, and were reconstructed with emergency funding and engineering design services provided by RIDOT. Using FEMA emergency disaster funds, 1,800 linear feet costing $1,749,000 (including initial dune plantings and rip rap) was rebuilt to its previous elevation/location. The Town received CDBG-DR Hurricane Sandy Resiliency funding to undertake a Planning Study to develop, analyze, and recommend transportation alternatives for Corn Neck Road to mitigate future impacts from storm surge and SLR. This Study (focused on a 1.2 mile section) evaluated existing roadway data and hydro-graphic data including storm surge and SLR data, incorporates public input, identifies a range of alternatives for further analysis.	Town-wide	Effectiveness: High Enforcement/ Maintenance: Town Manager/Town Planner	The State is aware that the section of Corn Neck Road from Bridgegate Square north to Scotch Beach is particularly vulnerable to erosion and flooding and forms the only connection between the island's north end and its commercial center. The Study identified three transportation alternatives were identified which the Town and RIDOT reviewed. A decision on how to improve the road section has not been decided. Recently, the Coastal Resilience Committee has expressed interest in nature-based solutions being implemented along the Corn Neck Road corridor. As such, a broader scope is being pursued with respect to how best to improve the long-term sustainability of the road and corridor. Refer to **Appendix 6.1** for an overview of the Corn Neck Road Transportation Study actions and measures that were reviewed for inclusion in the *HM&FM Action Plan*. Those selected have been noted accordingly in the *Action Plan*.
Emergency Operations Plan (2011)			
The Town of New Shoreham Emergency Operations Plan (EOP) is an in-house document that provides general guidance for emergency management activities and an overview of New Shoreham's methods of mitigation, preparedness, response, and recovery. The plan describes the emergency response organizations and assigns responsibilities for various emergency tasks for the Town of New Shoreham government leaders.	Town-wide	Effectiveness: Moderate Enforcement/ Maintenance: Monitored by Emergency Management Task Force/ Town Manager/ Fire Dept/ Police Dept	The EOP is designed to complement the State of Rhode Island Emergency Operations Plan and FEMA's National Response Framework (NRF). As the EOP is considered a preparedness document, it should be reviewed annually, or following any exercise or activation of the plan that identifies where potential improvements can be made. New Shoreham's EOP was developed in consonance with FEMA's 2010 Comprehensive Preparedness Guide (CPG) 101. However, as FEMA updated their guide in 2021, it is advisable for the Town to review and update their EOP accordingly.

<table>
<tr><th>Description</th><th>Area Served</th><th>Effectiveness & Enforcement/ Maintenance</th><th>Key Discussion Points/ Plan Integration Considerations</th></tr>
<tr><td colspan="4">Flood Insurance Rate Maps</td></tr>
<tr><td>As part of the National Flood Insurance Program (NFIP), the federal government provides Flood Insurance Rate Maps (FIRM) to municipalities that agree to regulate development in high risk flood areas. The maps identify flood prone areas that form the basis for the federally backed flood insurance rates.
A FIRM is an official map on which FEMA has delineated both the special flood hazard areas (SFHA) and the lower risk premium zones applicable to the community. SFHAs depict areas subject to the 1% annual chance flood (or base flood). The A and V zones are designated as SFHAs. Lower risk areas, 0.2% annual chance flood, are displayed to demonstrate extent of potential flooding.

The FEMA Map Service Center (MSC) serves as the official public source for flood hazard information produced in support of the NFIP.</td><td>Town-wide with emphasis on the SFHA</td><td>Effectiveness: High

Enforcement/ Maintenance: Building Official</td><td>The most current FIRM panels for the Town of New Shoreham are identified in the table below. These were used in for the Flood Zone mapping and analysis in this Plan.

<table><tr><th>Product ID</th><th>Effective Date</th><th>View</th></tr><tr><td>44009CIND3D</td><td>07/19/2023</td><td>VIEW</td></tr><tr><td>44009C0352J</td><td>10/16/2013</td><td>VIEW</td></tr><tr><td>44009C0353J</td><td>10/16/2013</td><td>VIEW</td></tr><tr><td>44009C0354J</td><td>10/16/2013</td><td>VIEW</td></tr><tr><td>44009C0356J</td><td>10/16/2013</td><td>VIEW</td></tr><tr><td>44009C0358J</td><td>10/16/2013</td><td>VIEW</td></tr><tr><td>44009C0361J</td><td>10/16/2013</td><td>VIEW</td></tr><tr><td>44009C0362J</td><td>10/16/2013</td><td>VIEW</td></tr><tr><td>44009C0363J</td><td>10/16/2013</td><td>VIEW</td></tr><tr><td>44009C0364J</td><td>10/16/2013</td><td>VIEW</td></tr><tr><td>44009C0366J</td><td>10/16/2013</td><td>VIEW</td></tr><tr><td>44009C0368J</td><td>10/16/2013</td><td>VIEW</td></tr></table></td></tr>
<tr><td colspan="4">Geographic Information System (GIS)</td></tr>
<tr><td>New Shoreham’s geodatabase and mapping is completed by the Town Planner/GIS Manager (consultant). The consultant updates information related to new subdivisions and street extensions, keeps layers up-to-date, and maintains the on-line web viewer which provides Town Departments and the public easy access to New Shoreham’s GIS mapping.

The Town’s online GIS mapping is available as 7 separate maps: Plat Maps; Zoning Districts; Sewer & Water Districts; Conserved Lands; Contours; Flood Zones; and Soils. The layers on these maps collectively include:

• Locally maintained data: broadband network (consultant and town staff), building footprints, catch basins (mapped in 2023 with GPS), condos, fire numbers (address number), open space, parcels, right of ways, sewer district, water district, zoning districts including historic district overlay

• State-maintained (RIGIS) data: address points (E911), contours, fire hydrants, FEMA flood zones (federal), roadways, soils, soils-hydric soils, aerial photography</td><td>Town-wide</td><td>Effectiveness: High

Enforcement/ Maintenance: GIS Manager/ Town Planner</td><td>The Town’s geodatabase is as an excellent tool to illustrate ideas through maps, and qualitatively and quantitatively assess hazard impacts for decision-making. As detailed in several Sections throughout the HM&FMP, GIS mapping and analysis assisted the Advisory Committee in understanding the extent of current and future hazard impacts.

Building and maintaining the Town’s GIS is an ongoing process which will benefit hazard mitigation planning.

Refer to Appendix 6.1 for an overview of the GIS actions and measures that were reviewed for inclusion in the HM&FM Action Plan. Those selected have been noted accordingly in the Action Plan.

Improvements to the community’s GIS may qualify for points under CRS Activity 440.</td></tr>
</table>

Description	Area Served	Effectiveness & Enforcement/ Maintenance	Key Discussion Points/ Plan Integration Considerations
Harbor Management Plan (2024)			
This plan recognizes that the Harbors of Block Island are a valuable environmental and economical asset and provides a comprehensive management plan for the uses of these Harbors. The CRMC is the state's primary agency for planning and management of coastal resources and the uses made of tidal waters. The plan was developed based on CRMC's Guidelines for the Development of Municipal Harbor Management Plans, and serves as the primary guide to establish and amend management ordinances for the overall benefit of waterway users within the jurisdictional boundaries of the waters managed by the Town of New Shoreham. The Harbormaster oversees all marine activity in the Great Salt Pond and Old Harbor, and is responsible for safe navigation within the harbor, for rental of moorings and the location of boats in the anchorage, and for the operation of sewage pump-out and refuse removal vessels. While the Harbormaster is in day-to-day control of the Great Salt Pond, jurisdiction is shared with other agencies and groups including Block Island's Shellfish Commission and its Shellfish Wardens, CRMC, and Army Corps of Engineers.	Town-wide	Effectiveness: High Enforcement/ Maintenance: Harbormaster	This plan is related to the HM&FMP in that it provides goals, policies, and implementation recommendations for the preservation, future protection, and management of the Harbors of Block Island. As such, to ensure alignment between the HM&FMP and the Harbor Management Plan, it was reviewed and used as a key resource. When the Harbor Management Plan is updated, natural hazard mitigation and climate change resilience should continue to be integrated into the document. Refer to **Appendix 6.1** for an overview of the Harbor Management Plan actions and measures that were reviewed for inclusion in the *HM&FM Action Plan.* Those selected have been noted accordingly in the *Action Plan*.
Hazard Mitigation & Flood Management Plan (2025) * THIS DOCUMENT *****			
This document - the Town of New Shoreham *2025 HM&FMP* - was developed with an understanding of the increased importance of identifying and implementing community centric strategies to reduce the impacts of future hazard events on people, property, and the environment. The *Plan* describes critical issues; planning opportunities; and goals, strategies, and actions related to natural hazard mitigation. This Plan will supersede the Town's 2017 Hazard Mitigation Plan.	Town-wide	Effectiveness: High Enforcement/ Maintenance: HM&FMP Advisory Committee/ Town Council	The HM&FMP Advisory Committee will be responsible for the annual *HM&FMP* review, which should be coordinated with the Comprehensive Plan annual review. The Committee consists of Town department staff, residents, and other stakeholders. Town staff will generally assume the lead role in implementing the actions identified in the Action Plan. As the *HM&FMP* has been developed with respect to CRS Activity 510, this plan should qualify for CRS credit.
Hazard Mitigation Plan (2017)			
The 2017 HMP describes critical issues, planning opportunities, and identifies goals, strategies, and actions related to natural hazard mitigation.	Town-wide	Effectiveness: High Enforcement/ Maintenance: Emergency Management task Force/ Town Council	The 2017 HMP was used as a key reference for this *HM&FMP* and will be superseded by the *2025 HM&FMP* (this document). A detailed review of the status of the 2017 Action Plan has been provided in **Subsection 5.3**. As shown in **Appendix 6.1**, all of the non-completed 2017 HMP actions (with the exception of Action 13) have been included in the *2025-2030 Action Plan.*

Description	Area Served	Effectiveness & Enforcement/ Maintenance	Key Discussion Points/ Plan Integration Considerations
MRP Community Resilience Building (CRB) Process & Workshop Summary of Findings (2021)			
This report provides a summary of the Town of New Shoreham's Community Resilience Building (CRB) Workshop that was held in September 2021. The workshop was part of the Resilient Rhody: Municipal Resilience Program (MRP) and provided a community-driven process to assess hazard and climate change impacts and to identify projects, plans, and policies for improved resilience. Measures identified in this report have the potential for funding assistance through the MRP Action Grant Program administered by the Rhode Island Infrastructure Bank (RIIB).	Town-wide	Effectiveness: High Enforcement/ Maintenance: Town Planner/ Coastal Resilience Committee	Key resources used at the 2021 CRB Workshop included the Town's 2017 HMP and 2016 Comprehensive Plan. It was important to the Town that the hazard mitigation strategies and principles, vulnerability information, and mitigation actions were integrated into the discussions (and therefore the *Summary of Findings Report*) at the Workshop. Similarly, to ensure alignment, the CRB Workshop Summary of Findings Report was reviewed and integrated into this HM&FMP. Refer to **Appendix 6.1** for an overview of the CRB Workshop actions and measures that were reviewed for inclusion in the *HM&FM Action Plan*. Those selected have been noted accordingly in the *Action Plan*.
The Code of the Town of New Shoreham RI: § 4-16. Building Code			
This Ordinance states pursuant to G.L. 1956, § 23-27.3-1 et seq., as amended, the State Building Code is to be enforced in the Town. New Shoreham's Building Official enforces **Rhode Island State Building Code (RISBC)** which incorporates the **International Building Code (IBC)**. The IBC was developed by the **International Code Council (ICC)**. It has been adopted for use as a base code standard by most jurisdictions in the United States. The Council's codes, standards, and solutions are used to ensure safe, affordable, and sustainable communities and buildings worldwide. The IBC consists of uniform regulations to control construction, reconstruction, repair, removal, demolition, and inspection of all buildings. It provides comprehensive construction requirements designed to mitigate the impacts from natural hazards, such as high wind events. In 2010 the RISBC added the requirement of one foot of freeboard for all new and substantially improved construction in the floodplain.	Town-wide	Effectiveness: High Enforcement/ Maintenance: Building Official	The Building Official, Zoning Official, and the Planning Board exercise a high level of regulatory control over proposed new construction and renovations in flood-prone areas. Before a building permit is issued for construction in the SFHA (V and A flood zones), a thorough review of the proposed work is compiled for flood zone requirements, and an elevation certificate may be required to verify the proposed structure meets the minimum first-floor elevation requirements. Regulating development in flood-prone areas is a critical component in flood mitigation and is a requirement for participating in the National Flood Insurance Program (NFIP). The Town of New Shoreham elects to comply with the requirements of the National Flood Insurance Act of 1968 (P.L. 90-488, as amended) which allows property owners to purchase flood insurance through the NFIP. The NFIP standards for wind, and snow loads are an integral part of the RI State Building Code, ensuring that all new construction and substantial improvements meet national flood resistant standards through consistent statewide application of the NFIP minimum criteria. Maintaining Elevation Certificates per CRS guidelines may qualify for credit under CRS Activity 310. Additional building code related credit may be obtained under CRS Activity 430.

Description	Area Served	Effectiveness & Enforcement/ Maintenance	Key Discussion Points/ Plan Integration Considerations
The Code of the Town of New Shoreham RI: § 5-6. Open Fires			
This Ordinance requires that the Fire Chief be notified and give permission for an open fire.	Town-wide	Effectiveness: High Enforcement/ Maintenance: Fire Dept.	This regulation helps to prevent fire hazards within the Town. Requiring the Fire Chief be notified helps to mitigate potential outdoor burning during high or extreme fire dangers.
The Code of the Town of New Shoreham RI: Chapter 11 Natural Resource Protection			
Chapter 11 includes a number of ordinances that help to protect vulnerable land and mitigate the impacts from natural hazards. **ARTICLE I - Flood Ordinance** The purpose of this ordinance is to ensure public safety; minimize hazards to persons and property from flooding, to protect watercourses from encroachment, and to maintain the capability of floodplains to retain and carry off floodwaters. **The Town of New Shoreham elects to comply with the requirements of the National Flood Insurance Act of 1968 (P.L. 90-488, as amended).** This ordinance establishes the special flood hazard area (SFHA), which encompasses the V and A Flood Zones, as a **floodplain overlay district**. Prior to the issuance of a building or development permit, all other necessary permits and approvals as required by federal or state law must be provided to the Town. **ARTICLE IA - Protection of Dunes** The purpose of this ordinance is to enhance the ability of dunes to serve as a natural storm buffer protecting property from damage and destruction, and to protect the scenic and ecologic value of dunes. **ARTICLE III - Environmental Protection** Which includes, among other things, protecting ponds, wetlands, and groundwater. **ARTICLE V - Soil Erosion & Sediment Control** The purpose of this chapter is to prevent soil erosion and sedimentation from occurring as a result of nonagricultural development within the Town by requiring proper provisions for water disposal, and the protection of soil surfaces during and after construction, in order to promote the safety, public health and general welfare of the Town. The building official administers and enforces this ordinance. Prior to obtaining a building permit the applicant must submit an erosion and sediment control plan as specified by the Ordinance.	Town-wide	Effectiveness: High Enforcement/ Maintenance: Building Official/ Planning Board/Police Department	As identified, a number of the ordinances associated with Chapter 11 help to protect vulnerable land and mitigate the impacts from natural hazards.

Description	Area Served	Effectiveness & Enforcement/ Maintenance	Key Discussion Points/ Plan Integration Considerations
The Code of the Town of New Shoreham RI: § 15-1. Snow and Ice Removal			
Whenever the sidewalk or any part thereof adjoining any building or lot of land on any street shall be encumbered with snow or ice, it shall be the duty of the owner, occupant, or any person having the care of such building or lot to remove the snow or ice (or cover with sand or some other suitable substance) and make the sidewalk safe.	Town-wide	Effectiveness: High Enforcement/ Maintenance: DPW	It is important to mitigate potential accidents related to snow and ice along sidewalks.
The Code of the Town of New Shoreham RI: Appendix D Land Development and Subdivision Regulations			
The purpose of these Regulations is to establish procedural and substantive provisions for the subdivision and development of land that will, consistent with New Shoreham's Comprehensive Plan and Zoning Ordinance. Subdivision Regulations were amended in 2024 to address recent state law changes. In New Shoreham the planning process is collaborative and the Planning Board has the authority to call upon other departments, boards, committees Town officials, regional, state, and federal agencies for information and assistance in the performance of its duties. Large subdivision projects are reviewed by the Planning Board in accordance with RI General Laws and New Shoreham's Code of Ordinances. Minor subdivision that do not involve a road creation or extension, and subdivisions that do not involve to creation of a new lot, are reviewed and approved administratively by the Administrative Officer with assistance as needed from the Technical Review Committee.	Town-wide	Effectiveness: High Enforcement/ Maintenance: Planning Board	As the Planning Board has the authority to enforce, adopt, modify, and amend the subdivision and land development rules and regulations, familiarize themselves with the *HM&FMP* would be beneficial. Much of this Ordinance, including *Residential Development Flexible Design*, supports the goal and objectives of the *HM&FMP*, including to: protect existing natural and built environments and mitigate the significant negative impacts of proposed development on those environments; protect the island's sole source aquifer to insure the quality and quantity of the Town's water supply, and; protect the Town's unique and important coastal features such as shorelines, dunes, beaches, bluffs, ponds and wetlands. Refer to **Subsection 6.4 (Action 2025-M)** regarding review of the Subdivision and Land Development Regulations. Depending on the recommendations and implementation, credit may be obtained under CRS Activities 420, 430, or 450.
The Code of the Town of New Shoreham RI: Appendix E Zoning Ordinance			
The Zoning Ordinance includes a statement of consistency with the Comprehensive Plan. The Building Official and Zoning Official, when reviewing an application for any permit required by law, shall determine that a use complies with all applicable performance standards. **The Town of New Shoreham is divided into twelve zoning districts:** RA - Residential A Zone; RB - Residential B Zone; RC - Residential C Zone; RC/M - Residential C/Mixed Use Zone; M - Mixed Use Zone; OHC - Old Harbor Commercial Zone; NHC - New Harbor Commercial Zone; SC - Service Commercial Zone; C - Coastal Zone; PD – Planned Development Zone; PE – Public Education Zone; PU – Public Utility Zone. In addition there are four Overlay Districts: FC - Flood Control Overlay District; PQ – Pond Quality Overlay District; H - Historic Overlay District; and W - Waterfront Overlay District.	Town-wide	Effectiveness: High Enforcement/ Maintenance: Zoning Official	As zoning provides the legal framework for land governance and can impact hazard mitigation, enforcement of these regulations is important. All proposed zoning changes should consider how the change will impact natural hazard mitigation. The Zoning Ordinance has a number of subsections that support the goals and objectives of the *HM&FMP*. Some zoning regulations may qualify for credit under CRS Activity 430 and some floodplain regulations may qualify for credit under CRS Activity 450.

REGIONAL/STATE *(the capabilities have been listed in alphabetical order)*		
Description	**Area Served**	**Key Discussion Points/ Plan Integration Considerations**
Association of State Floodplain Managers (ASFPM)		
The ASFPM is a professional association with a membership of almost 1,000 state employees that, assists communities with the NFIP. ASFPM has developed a series of technical and topical research papers and a series of proceedings from their annual conferences.	Town-wide	Town staff engaged in stormwater management should consider membership in the ASFPM, and utilize the networking and resources to help insure flood mitigation best practices are implemented in Town. The ASFPM has a **Floodplain Management Resources Center** with more than 900 flood-related documents in the library.
Coastal Resources Management Council (CRMC)		
The CRMC plans for and manages RI's coastal resources. Their Management Program includes numerous policies and programs for the protection of coastal resources, including coastal wetlands and other shoreline features. The adoption of *Section 145 Climate Change and Sea level Rise Policy* has helped the State and local communities prepare for climate change impacts through adaptation efforts and coastal resiliency measures. CRMC has statutory authority to restrict the alteration of coastal wetlands for preservation purposes, and to implement regulations, requiring erosion setbacks, coastal buffer zones, and to prohibit construction on beaches, in dunes, and on barrier spits that are identified as undeveloped or moderately-developed. The preservation of wetlands from development and destruction will provide for the natural and beneficial use of wetlands as related to flood retention and natural buffers from coastal storms. The CRMC staff give numerous presentations to professional groups and the general public on coastal hazards, climate change, and other topics. They also partner with communities, State Departments, and other stakeholders (The Nature Conservancy, URI, Sea Grant, Save The Bay, etc.) to examine sea level rise (SLR) impacts, recovery from storm events, and other issues related to coastal preservation.	Coastal Areas	Various CRMC's resources and tools, including those listed below, were used in developing this *HM&FMP* and should be consulted when reviewing/updating the *Plan* and as applicable when implementing actions. In 2018, CRMC adopted the **Shoreline Change Special Area Management Plan (Beach SAMP)** it developed in conjunction with URI, various State and local agencies, stakeholders, and coastal residents. The plan provides science-backed policies and planning tools to assess flood inundation coupled with SLR and shoreline erosion in order to better inform State and local planning efforts and decision-making. Through a five-step permitting process, the plan targets the areas most vulnerable to climate change, including beaches, historic waterfronts, bluffs, peninsulas, and salt marshes. The Coastal Hazard Application Process will be implemented by regulatory amendments to CRMC's Red Book to address the coastal hazard issues detailed in the Beach SAMP chapters. The **Beaches and Sand Trails of Southern Rhode Island** provides a detailed guide to the region's coastal trails and beaches, offering valuable information for those interested in exploring the natural beauty of southern Rhode Island. The publication underscores the need for conservation efforts in these sensitive coastal environments, advocating responsible recreation, emphasizing *Leave No Trace* principles and how visitors can help protect these natural areas for future generations. RI CRMC **Coastal Hazard Analysis (CHA)** Worksheet and Viewer is to notify the applicant of potential coastal hazards that should be taken into consideration when planning shoreline development. These hazards include SLR, storm surge and associated flooding, and shoreline erosion. The CRMC's goal is to increase understanding and awareness of these potential hazards among the development community (property owners, builders, realtors, financial institutions, and insurers) with the hope of guiding development and investment away from vulnerable areas. The **Coastal Property Guide** provides regulations and policies adopted by Federal and State regulatory agencies and encourages people to understand what it means to live/build along the water.

Description	Area Served	Key Discussion Points/ Plan Integration Considerations
		Rapid Property Assessment and Coastal Exposure (Rapid PACE) is a tool for identifying coastal flooding risk and possible impacts on a property or community. **RI Coastal Environmental Risk Index (CERI)** has been designed as an on-line Geographic Information System (GIS) based tool, and hence is fully compatible with current flood maps. The basic framework and associated GIS methods can be readily applied to any coastal area. The approach can be used by local and state planners to objectively evaluate different policy options for effectiveness and cost/benefit. **RI STORMTOOLS Design Elevation (SDE) Maps** have been designed to represent the once in one-hundred-year flooding and associated wave environment, and explicitly include the effects of sea level rise. Following FEMA methodology, the maps are provided in the form of Base Flood Elevations (BFE) and can be used to assist in the design of structures and infrastructure in the State. They have also been specifically structured to support CRMC's Coastal Hazard Application permit requirement. **STORMTOOLS** is a method to map coastal storm inundation, with and without sea level rise, for varying return period storms that covers all of Rhode Island's coastal waters. STORMTOOLS uses an ArcGIS platform and can be accessed online. The purpose of **Sea level Affecting Marshes Model (SLAMM) Maps** is to show how coastal wetlands will likely transition and migrate onto adjacent upland areas under projected sea level rise scenarios of 1, 3 and 5 feet in the coming decades.
Narragansett Bay National Estuarine Research Reserve (NBNERR)		
The Narragansett Bay National Estuarine Research Reserve is one of 30 **National Estuarine Research Reserves** located around the country. Established to provide long-term protection of coastal lands so they can serve as platforms for research, education, and recreation. The Reserve is supported and administered by NOAA and managed by the RIDEM.	Coastal Areas	The NBNERR is a good partner for outreach and education programs as well as a resource for science-based publications.
Resilient Rhode Island Act (2014) and subsequent 2021 Act on Climate		
In 2014, the General Assembly approved the **Resilient Rhode Island Act** which established the **Executive Climate Change Coordinating Council (EC4)**, a 12-member council chaired by the RIDEM Director. The **2021 Act on Climate** updates the Resilient RI Act and codifies specific greenhouse gas reduction targets, establishes two advisory bodies (EC4 Advisory Board & EC4 Science and Technical Advisory Board), and incorporates consideration of climate change impacts into the powers and duties of all state agencies.	Town-wide	The Resilient Rhode Island Act support hazard mitigation and climate change resilience. The EC4 is responsible for developing the 2025 Climate Action Strategy, which will outline how the state will reduce emissions to net zero by 2050. The EC4 also has two advisory boards that provide recommendations on climate change strategies. The Town should maintain awareness of the actions and outcomes from the EC4 and other stakeholders supporting the 2021 Act on Climate and determine how the information/actions/initiatives impact and/or can be implemented in New Shoreham.

Description	Area Served	Key Discussion Points/ Plan Integration Considerations
Resilient Rhody: Municipal Resilience Program		
In 2017, Governor Gina Raimondo signed an Executive Order appointing the State's first Chief Resilience Officer. The mandate of the new post was to drive climate resilience efforts throughout the State, both within government and in collaboration with business, academic, and nonprofit partners, and develop a Statewide Climate Resilience Action Strategy by July 2018. In July 2018 Governor Raimondo introduced the **Resilient Rhody: Municipal Resilience Program (MRP)** which outlines a comprehensive Climate Resilience Action Strategy for the State. Through the MRP program the State is providing support to communities to engage in a municipal-driven process referred to as *Community Resilience Building (CRB)* which was developed by The Nature Conservancy.	Town-wide	The Town of New Shoreham held their Community Resilience Building (CRB) Workshop in September 2021 and is designated as a Resilient Rhody Municipality. The Workshop Summary of Findings (SOF) is an excellent resource identifying and prioritizing climate adaptation and resilience actions. Additional Information on the Town's 2021 CRB Workshop is provided in **Subsection 2.2**. The Rhode Island Infrastructure Bank (RIIB) continues to provide support to Resilient Rhody Municipalities and makes available annual competitive MRP Action Grants to implement mitigation projects identified through the CRB Workshop process. The Town should seek financial assistance through this funding mechanism on an ongoing, as-needed basis.
Rhode Island Climate Change Commission (RICCC)		
The Rhode Island Climate Change Commission, established under a 2010 state law, is a standing commission made up of legislators and representatives from state agencies and business, community and environmental organizations. The Commission's mandate is to study the projected impacts of climate change on Rhode Island and identify methods to protect both the natural and built environment. The eventual goal is to integrate climate change planning and adaptation into state and municipal programs and policies, including infrastructure development and maintenance.	Town-wide	**Key Actions and Initiatives:** **Adapting to Climate Change in the Ocean State (2012):** The progress report describes the vulnerability of infrastructure located within river and coastal floodplains. These include wastewater treatment systems, energy infrastructure, and any number of transportation features including ports, roads, railroads and bridges. **Resilient Rhody Act (2014):** The state's initiative to build climate resilience, focusing on addressing vulnerabilities and developing strategies to mitigate climate-related threats. **Executive Climate Change Coordinating Council (EC4) (2014):** The RICCC works with the EC4, which coordinates efforts between state agencies to reduce greenhouse gas (GHG) emissions. The **Climate Change Website** serves as the State's primary portal for information and resources on climate change and resiliency. It addresses how to adapt to the effects of climate change such as coastal hazards like sea level rise and storm surge, as well as high heat, drought, and inland flooding. **GHG Emission Reduction Targets:** The EC4 pursues GHG emissions reductions of 10% below 1990 levels by 2020, 45% below 1990 levels by 2035, and 80% below 1990 levels by 2050. **Act on Climate (2021):** The 2021 Act on Climate codifies specific GHG reduction targets, establishes advisory bodies, and incorporates climate change considerations into the powers and duties of all state agencies. **2025 Climate Action Strategy:** The EC4 is developing a plan to incrementally reduce climate emissions and meet the Act on Climate goals with the 2025 Climate Action Strategy.

Description	Area Served	Key Discussion Points/ Plan Integration Considerations
Rhode Island Department of Administration (RIDOA) - Rhode Island Division of Statewide Planning (RIDSP)		
RIDOA plays a role in hazard mitigation and risk reduction in the State and manages the Rhode Island Climate Change website and other online resources. Technical assistance is provided by RIDOA divisions that have hazard mitigation and risk reduction capabilities, including the Office of Management and Budget, and Division of Statewide Planning. The Division of Statewide Planning prepares, maintains, and encourages the implementation of plans within the framework of the State's development goals and policies.	Town-wide	Various RIDOA resources, including mapping and modeling tools, were consulted when developing the HM&FMP and should continue to be consulted for future updates and to assist in prioritizing HM&FMP projects and implementing community outreach. **New Shoreham RI Coastal Sea Level Rise and Storm Surge: Transportation Fact Sheet** provides municipal leaders and practitioners with a survey of New Shoreham's transportation infrastructure elements that may be affected by sea level rise and storm surge. **New Shoreham RI Socioeconomics of Sea Level Rise Coastal Fact Sheet** identifies, amongst other things, population characteristics of the people located within sea level rise (SLR) inundation zones 1, 3, 5 and 7 ft. **Risk Reduction for Small Business Resilience**: Experience shows that 40% of small businesses affected by disaster never reopen; another 25% that do reopen fail. To help reduce this impact, the Risk Reduction for Small Business Resilience in RI project developed tools to support small businesses (less than 50 employees) to better prepare for extreme weather events. **Statewide Planning's 2015 Technical Paper 164**: Assesses vulnerability to SLR of Transportation Assets under state jurisdiction. **Statewide Planning's 2016 Technical Paper 167**: Vulnerability of Transportation Assets to Sea level Rise and Storm Surge assesses transportation assets under state jurisdiction.
Rhode Island Department of Environmental Management (RIDEM)		
RIDEM serves as the chief steward of the State's natural resources, with a mission to protect, restore, and promote the environment. RIDEM protects resources through development and enforcement of environmental laws; and works with partners to restore lands and waters, to conserve wildlife and marine resources, and to monitor environmental quality in order to build healthy, more resilient communities. Rhode Island General Laws, Chapter 46-19, makes RIDEM responsible for dam inspection in order to determine a dam's condition; review and approve plans for repair, new construction, or substantial alteration of a dam; ordering repairs or other action to address unsafe conditions; and submitting an annual report of its activities to the Governor. To meet that mandate, DEM established the **Dam Safety Program**, which is housed in the Bureau of Environmental Protection within the Office of Compliance & Inspection.	Town-wide	Various RIDEM resources were consulted when developing the *HM&FMP*. The RIDEM website should be perused on a regular basis for information that will support local hazard mitigation programs and initiatives. In addition, the Town should consider conducting a Low impact Self-Assessment and reviewing ordinances to determine benefit of integrating low impact practices. As the Town has a number of dams, the State's Annual Report to the Governor on the Activities of the **Dam Safety Program** should be reviewed as part of the HM&FMP annual evaluation. **Implications of Climate Change for RI Wastewater Collection & Treatment Infrastructure** assesses the projected implications of climate change on the state's nineteen public wastewater treatment systems and recommends adaptive strategies. **Rhode Island Low Impact Development Site Planning and Design Guidance Manual** provides examples for local planning officials of how their ordinances may be amended to avoid/reduce the impacts from development and encourage effective implementation of LID practices.

Description	Area Served	Key Discussion Points/ Plan Integration Considerations
		Rhode Island Municipal LID Self-Assessment is designed for municipal officials to systematically assess their local zoning and land development regulations so that they can compare local standards with current LID standards. **Stormwater Management:** Effective management of stormwater requires attention to both the quantity (volume and peak rate) and quality of stormwater runoff. All stormwater management practices in RI must be consistent with the **RI Stormwater Design and Installation Standards Manual (Amended March 2015)** and the **RI Soil Erosion and Sediment Control Handbook.** This includes demonstrating that a proposed project provides for protection of life and property from flooding.
Rhode Island Department of Health (RIDOH)		
RIDOH's mission is to prevent disease and protect and promote the health and safety of the people of Rhode Island.	Town-wide	RIDOH resources, including the following, should be used to assist in implementing community outreach for a variety of topics including climate change, water quality, and assisting vulnerable populations during hazard events. The **Climate Change and Health Program** has a number of resources that raise awareness about the connection between climate change and health. **Program Publications:** **Reports** • Climate Change and Health Needs Assessment (2021) • Climate Change and Health Resiliency (2015) **Brochures** • Climate Change and Air Quality (English) (Spanish) • Climate Change and Heat (English) (Spanish) • Climate Change and Mosquitoes (English) (Spanish) • Climate Change and Storms/Flooding (English) (Spanish) • Climate Change and Ticks (English) (Spanish) • Climate Change and Water (English) (Spanish) **Guides** • Climate Change and Health Teaching Resources • Climate Change and Your Health: A Guide for Rhode Islanders (English) (Spanish) (Portuguese) • Sustainability Pledge and Guide **Plans** • RI Climate Change Health Adaptation **Building Knowledge and Community Resilience** discusses improving climate resiliency as a key strategy to help RIDOH meet its overarching goals of addressing the socio-economic and environmental determinants of health for all Rhode Islanders. **Rhode Island Special Needs Emergency Registry** allows first responders to better prepare for and respond to community needs during a hurricane, storm, or other emergency. The Town of New Shoreham encourages those who may need extra help during an emergency to register. **SafeWater RI: Ensuring Safe Water for Rhode Island's Future** helps to address the implications of climate change on drinking water utilities.

Description	Area Served	Key Discussion Points/ Plan Integration Considerations
Rhode Island Department of Public Safety (RIDPS)		
The Department of Public Safety oversees all the State of Rhode Island's public safety agencies to ensure efficient delivery of the services those agencies provide.	Town-wide	RIDPS supports hazard mitigation through its E 911 Uniform Emergency Telephone System which provides prompt transfers of emergency 911 calls to the appropriate responding public safety and rescue agencies utilizing call location technology.
Rhode Island Department of Transportation (RIDOT)		
RIDOT designs, constructs, and maintains state designated roads, bridges, and bike paths, some of which are within the Town of New Shoreham. In 2016, RIDOT underwent a complete restructuring based on passage of the $5 billion RhodeWorks legislation that provides planning, execution, management and funding to bring Rhode Island's infrastructure into a state of good repair by the year 2025. The **Rhode Island State Transportation Improvement Program (STIP)** is prepared by the Division of Statewide Planning and implemented through RIDOT.	Town-wide - roadway and bridge corridors under the authority of RIDOT	The transportation sector is critical to enable emergency response during a natural hazard. It is therefore important to maintain transportation infrastructure including mitigating flooding on roadways and tree health along road shoulders. The Town of New Shoreham entered into a 10-year maintenance agreement with RIDOT in 2004, which was renewed in 2014 and again in 2024. The Town has diligently upheld their responsibilities as outlined in the agreement, which include maintenance of the state roadways, such as mowing, plowing, street sweeping, signage, clearing drains, sidewalks, and potholes. The State retains ownership of the roadways, the garage, and corresponding property. Per the agreement, for all roadways in New Shoreham under State jurisdiction, RIDOT is responsible for capital improvements, such as paving, rebuilding the roads (as well as the garage), installation of catch basins, guardrails, and break walls along Corn Neck Road, etc. Despite the agreement and continued engagement with RIDOT, many of the roads in New Shoreham that are under RIDOT jurisdiction are in poor condition with nearly 30 culverts needing repair or replacement.
Rhode Island Emergency Management Agency (RIEMA)		
RIEMA's mission is to reduce the loss of life and property for the whole community while ensuring that as a State jurisdictions work together to build, sustain, and improve capability to prepare for, protect against, respond to, recover from, and mitigate all natural, human-caused, and technological hazards.	Town-wide	The RIEMA website contains information on hazard mitigation, floodplain mapping, floodplain regulations, flood insurance, etc. It is an excellent resource and should be perused on a regular basis for information that will support hazard mitigation decision-making in the Town. RIEMA's **2024 State Hazard Mitigation Plan (SHMP)** was a key resource in the development of this HM&FMP. The SHMP provides comprehensive guidance for hazard mitigation with the intent of making homes, businesses, and communities in RI more resilient to the impacts of climate change, hurricanes, floods, tornadoes, earthquakes, winter storms, and other natural hazards. Some elements from RIEMA's **2019 State Hazard Mitigation Plan (SHMP)** were also used in developing this *Plan*.
Rhode Island Flood Mitigation Association (RIFMA)		
RIFMA was formed in October 2006 with the goal of forming a network of associates who share their ideas and experiences. The resultant Association is a network of floodplain managers who collaborate to improve the effectiveness and efficiency of floodplain management. RIFMA regularly provides training opportunities and an annual floodplain conference.	Town-wide	Town staff engaged in stormwater management should consider membership in the RIFMA, and utilize the networking and resources to help insure flood mitigation best practices are implemented in Town.

Description	Area Served	Key Discussion Points/ Plan Integration Considerations
Rhode Island Geographic information System (RIGIS)		
The Rhode Island Geographic Information System (RIGIS) is a group of government and private organizations which promote the use of the latest GIS data. They manage and provide free access to an extensive geospatial database for the State**.**	Town-wide	Many of the Town's ArcGIS layers were acquired from RIGIS and used to prepare the maps in the *HM&FMP*. As it is important to maintain a current geodatabase, on an annual basis the Town should review their RIGIS layers and update or add new layers as appropriate.
Rhode Island Office of Energy Resources (RIOER)		
RIOER's mission is to lead the State toward a clean, affordable, reliable, and equitable energy future. OER develops policies and programs that respond to the State's evolving energy needs, while advancing environmental sustainability, energy security, and a vibrant clean energy economy.	Town-wide	RIOER supports hazard mitigation through developing, administering, and monitoring a variety of programs designed to promote energy efficiency, renewable energy, and alternative fuels which will help to curb climate change by decreasing greenhouse gas emissions.
Rhode Island Sea Grant		
Rhode Island Sea Grant is a state-based program with federal funding from NOAA. They collaborate with scientists from URI and other institutions, to further understand the science and policy implications of climate change. They also work with coastal communities to support long-term, sustainable solutions.	Coastal Areas	Various resources from the Sea Grant website were consulted during development of the *HM&FMP*. The Sea Grant often collaborates with various partners on research to highlight impacts to the built environment, public health and welfare, and natural resources. Some of the documents they have consulted on include: • Precipitation and Storms in Rhode Island: Trends and Impacts • Sea level Rise in Rhode Island: Trends and Impacts • Smart Growth for Coastal and Waterfront Communities • Climate Change in Rhode Island: What's Happening Now & What You Can Do Sea Grant resources should be considered especially when implementing hazard mitigation education and outreach activities.
Rhode Island State Building Code		
As indicated in the **LOCAL** section above, Rhode Island administers a **State Building Code** through the **Rhode Island Building Code Commission (BCC)**. The Building Code is implemented statewide and enforced locally through the building official. The Code consists of uniform regulations to control construction, reconstruction, repair, removal, demolition, and inspection of all buildings.	Town-wide	As discussed in the LOCAL section above, Building Codes are an important regulatory tool for hazard mitigation.

FEDERAL *(the capabilities have been listed in alphabetical order)*		
Description	**Area Served**	**Key Discussion Points/ Plan Integration Considerations**
Americans with Disabilities Act Guide for Small Towns		
The Americans with Disabilities Act (ADA) gives civil rights protections to individuals with disabilities. This guide presents an informal overview of some basic ADA requirements and provides cost-effective tips on how small towns can comply with the ADA.	Town-wide	In the development of the *HM&FMP*, it was important for the Town to recognize how various vulnerable populations might be more severely impacted from certain hazards. In doing so, the opportunity to mitigate these impacts exists.
Clean Water Act		
The Federal Clean Water Act (CWA) employs regulatory and non-regulatory tools to reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. These tools are employed to achieve the broader goal of restoring and maintaining the chemical, physical, and biological integrity of the nation's surface waters so that they can support the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water. Evolution of CWA programs over the last decade has included a shift from a program-by-program, source-by-source, pollutant-by-pollutant approach to more holistic watershed-based strategies. Under the watershed approach, equal emphasis is placed on protecting healthy waters and restoring impaired ones.	Town-wide	As water quality can be impacted by hazard events, actions to mitigate water contamination or improve water quality were included in the *HM&FMP*.
Federal Disaster Mitigation (some key Acts)		
FEMA was established in 1979 through an Executive Order signed by President Carter that gave the agency the dual mission of emergency management and civil defense. The agency's authorities were further defined and expanded by the Disaster Relief and Emergency Assistance Amendments of 1988 also known as the **Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988**. The Stafford Act provided clear direction for emergency management and established the current statutory framework for disaster response and recovery through presidential disaster declarations. The Stafford Act authorizes technical, financial, logistical, and other assistance from the Federal government to state and local governments during declared major disasters and emergencies.	Town-wide	The following two acts are particularly beneficial to hazard mitigation. The **Disaster Mitigation Act of 2000** amended the Stafford Act and the Public Works Act to include grants for economic development and to require local governments to prepare hazard mitigation plans as a precondition for receipt of Hazard Mitigation Grant Program project funds. The Disaster Mitigation Act encourages communities to reduce preventable, repetitive disaster losses by mitigating natural hazards, vulnerability, and risk. The **Post Katrina Emergency Management Reform Act of 2006** clarified and modified the Homeland Security Act with respect to the organizational structure, authorities, and responsibilities of FEMA and the FEMA Administrator. It enhanced FEMA's responsibilities and its authority within DHS and transferred many functions of DHS's former Preparedness Directorate to FEMA.

Description	Area Served	Key Discussion Points/ Plan Integration Considerations
Federal Emergency Management Agency (FEMA)		
FEMA was established in 1979 through an Executive Order signed by President Carter that gave the agency the dual mission of emergency management and civil defense. The agency's authorities were further defined and expanded by the Disaster Relief and Emergency Assistance Amendments of 1988 also known as the Stafford Act. The Stafford Act provided clear direction for emergency management and established the current statutory framework for disaster response and recovery through presidential disaster declarations.	Town-wide with some resources more applicable to coastal and inland areas subject to flood inundation	Numerous FEMA resources were consulted during the development of the *HM&FMP*. The FEMA website contains information and tools related to hazard mitigation, floodplain mapping, floodplain regulations, flood insurance, emergency management, grants, etc. It is an excellent resource and should be perused on a regular basis for information that will support hazard mitigation decision-making in the Town. Some of the resources used can be found on the following webpages: • https://www.fema.gov/emergency-managers/risk-management/hazard-mitigation-planning • https://www.fema.gov/emergency-managers/risk-management/climate-resilience • https://www.fema.gov/flood-maps/tools-resources/flood-map-products/hazus • https://www.hurrevac.com/ • https://www.floodsmart.gov/ As discussed in **Section 4** of this *Plan*, the Town has consistently taken the required steps, and will continue to do so, to participate in the NFIP federally-backed flood insurance program. Additionally, the Town participates in the CRS Program. **National Flood Insurance Program (NFIP):** Regulating development in flood-prone areas is a critical component in flood hazard mitigation and is a requirement for participating in the NFIP. The NFIP makes flood insurance available to communities that enact minimum floodplain management regulations. The Town Building Department is the designated keeper of flood maps for New Shoreham. **Community Rating System (CRS):** The Community Rating System (CRS) is a voluntary incentive program designed to encourage communities to engage in various community focused activities, promoting a comprehensive approach to floodplain management beyond the minimum NFIP requirements. As the Town participates in the CRS program, the Advisory Committee followed the 10-Step planning process used for FEMA's CRS Activity 510 in developing this *HM&FMP*.
National Oceanic and Atmospheric Administration (NOAA)		
NOAA's mission to better understand our natural world and help protect its precious resources extends beyond national borders to monitor global weather and climate, and work with partners around the world. NOAA's many assets - including research programs, vessels, satellites, science centers, laboratories and a vast pool of distinguished scientists and experts - are essential, internationally recognized resources.	Town-wide with some resources more applicable to flood inundation areas	In preparing this HM&FMP, numerous NOAA resources were used. NOAA provides reliable science-based information which should continue to be used by the Town on a regular basis to support hazard mitigation decision-making. A few of the resources used include: **Adapting to Climate Change: A Planning Guide for State Coastal Managers, NOAA (2010)**, which highlights guidance on adaptation planning to the built environment, public health and welfare, and natural resources.

Description	Area Served	Key Discussion Points/ Plan Integration Considerations
NOAA works with other nations to advance their ability to predict and respond to changes in climate and other environmental challenges that imperil Earth's natural resources, human life, and economic vitality. NOAA has a number of line offices including: • National Weather Service • National Marine Fisheries Service • National Ocean Service • National Environmental Satellite, Data, and Information Service • Oceanic and Atmospheric Research • Office of Marine and Aviation Operations & NOAA Corps		The National Hurricane Center's **Sea, Lake and Overland Surges from Hurricanes (SLOSH)** model is a computerized numerical model developed by the National Weather Service (NWS) to estimate storm surge heights resulting from historical, hypothetical, or predicted hurricanes by taking into account the atmospheric pressure, size, forward speed, and track data. These parameters are used to create a model of the wind field which drives the storm surge. Hurricane evacuation zone maps have been produced based on the SLOSH model results. NOAA sponsored **Office for Coastal Management** has some excellent tools (for example Digital Coast) to address issues commonly associated with a changing climate and a growing population. NOAA has facilities, staff, programs, and activities based in, or focused on Rhode Island, including the Office of Ocean Exploration and Research Regional Office in Narragansett, and the Narragansett Bay National Estuarine Research Reserve on Prudence Island.

APPENDIX 5-2

Administrative and Technical Capabilities

KMJ – CE/RP

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Appendix 5-2
Administrative and Technical Capabilities

The following Table provides an overview of the critical administrative and technical capabilities that play a role in the Town of New Shoreham's natural hazards mitigation effort. The information provided in the Table was obtained through the identified capability's website, the Town's website, New Shoreham's 2016 Comprehensive Plan, New Shoreham's 2017 Hazard Mitigation Plan, and/or Advisory Committee, Town Staff, or other stakeholder input. Where applicable, a hyperlink for the capability is provided.

LOCAL *(the capabilities have been listed in alphabetical order)*

Block Island Conservancy (BIC)

The Block Island Conservancy was established in 1972 to maintain habitat for birds and animals, to protect the view of hills rolling to the sea, to provide walking trails and quiet recreation for islanders and visitors. BIC is a private nonprofit conservation organization led by a thirteen-member volunteer Board of Directors and part-time Executive Director, and operates an education center on Weldon's Way.

Block Island School

The public school system provides education from kindergarten through twelfth grade at the 15 High Street location. The School District is an important partner to the municipal government, and the building serves as the community's primary shelter. There may be opportunities to collaborate on hazard mitigation awareness in courses, clubs, or special programs at the schools. The schools can also support Town programs by disseminating information through their website, social media, and school district network.

Boards & Commissions

A number of local boards and commissions support Town Departments by assisting in the development, implementation, and updating of policies, plans, programs, and initiatives which promote the safety of residents and minimize risk to the community.

Block Island Land Trust

The Block Island Land Trust (BILT) was established in 1986 by state legislation and is funded by a 3% fee on the transfer of real property on Block Island. The Trust is administered by five trustees elected for staggered four-year terms. The BILT acquires, holds, and manages real property and interest therein situated in the Town of New Shoreham consisting of open, agricultural, or coastal region property, including barrier beaches, existing and future well fields and aquifer recharge areas, fresh and saltwater marshes and adjoining uplands, land for agricultural use, land for bicycling and hiking paths and for public recreational use, land providing access to or views of the ocean, harbors, and ponds, and wildlife habitats. As of September 2024, conservation holdings of the BILT represent 600 acres, or approximately 10% of the Town's total land area. Many of these acres were acquired jointly and are under shared ownership interest with island conservation partners The Nature Conservancy, Block Island Conservancy, and state and federal agencies. All preserved open space on Block Island totals 2,829 acres, or 46.1% of the island's 6,076 acres. Of that, 371 acres, or 6% is unprotected undevelopable open water and wetlands.

Block Island Tourism Council (BITC)

The Tourism Council is a non-profit organization that was established in 1992 to promote the Town of New Shoreham as a leisure travel destination. The BITC's promotional efforts include publication of a travel planner; a year-long advertising campaign directed at our leisure tourism market; public relations strategy; participation in numerous trade shows; and a comprehensive website. The BITC is available to assist travel professionals including media, tour operators, and travel agents, aid in planning a meeting or corporate event, and provide information to help visitors enjoy the destination. The Council has an Executive Director appointed by the Tourism Council, and seven members who are appointed by the Town Council for two-year terms. It is important for the Tourism Council to understand the community's vulnerability to natural hazards and balance tourism with community resilience.

Coastal Resilience Committee (CRC)
The Coastal Resilience Committee (formerly the Sea Level Rise Committee), is primarily focused on understanding the potential local impacts posed by sea level rise, assessing the community's vulnerabilities, engaging citizens, and recommending and implementing mitigation projects or other priority actions that will improve Block Island's coastal resiliency. The Committee has nine members who are appointed by the Town Council for two-year staggered terms.

Conservation Commission
The Conservation Commission was established to promote and develop the natural resources of the Town, to protect its watershed resources, and to preserve natural esthetic areas within the Town and the adjacent waters. The Commission has between three and seven members who are appointed by the Town Council for three-year staggered terms.

Emergency Management Task Force
In terms of mitigating and responding to natural hazards, New Shoreham, as an island community, has many unique challenges. The Emergency Management Task Force was established to plan for and respond to emergency situations. The Task Force has nine members who are appointed by the Town Council for one-year terms with the exception of one member elected by the community. The members represent the following positions: Town Manager, Block Island Health Services Representative and Alternate, Block Island Utility District Representative, Rescue Squad Captain, Fire Chief (Co-Director of Emergency Management), community elected Co-Director of Emergency Management, and two additional Co-Directors of Emergency Management.

The Task Force activates as deemed appropriate or upon notification from RIEMA of a pending threat. Generally, the Town Manager in consultation with the Emergency Management Co-Directors will determine the extent of a situation and how best to incorporate other Task Force members as well as department staff. The Task Force coordinates operations of emergency events at the primary Emergency Operations Center (EOC) located at the Police Station (10 Beach Avenue). The Town Hall (16 Old Town Road) functions as a backup EOC. Both of these facilities are equipped with emergency generators. When a severe storm is impending, an emergency mobile unit is set up at the north end of the island encase Corn Neck Road becomes impassible. Emergency information is provided to residents and visitors via the CodeRed emergency notification system and the Block Island Bulletin Board.

Harbors Committee
The Harbors Committee oversees the Old Harbor, New Harbor, and all harbor facilities and areas. The Committee has six members who are appointed by the Town Council for three-year staggered terms.

Hazard Mitigation & Flood Management Plan (HM&FMP) Advisory Committee
The HM&FMP Advisory Committee was established for the development of this *Plan*. The Committee has a diverse representation linking together Town departments and the public and private sectors. Post adoption of the *2025 HM&FMP*, the Advisory Committee will be responsible for maintaining the *Plan* through annual or bi-annual reviews, and five-year updates.

Historic District Commission
The Historic District Overlay (H overlay) comprises area and structures of historic and architectural value to the island. It is intended that areas and structures within the H Overlay will be regulated as to construction, alteration, repair, moving, and demolition in order to safeguard the heritage of the Island. The Historic District Commission serves to protect the island's unique and historic architecture and identity. Guidelines established by the Commission facilitate evaluation applications for new construction, restoration, and rehabilitation within the area on the Island subject to Historic District Zoning. The Committee consists of between three and seven members who are appointed by the Town Council for three-year staggered terms.

Planning Board
The Planning Board consists of seven members appointed by the Town Council for five-year staggered terms. The Board is tasked with enforcing the Subdivision Ordinance (Chapter 16), Land Development and Subdivisions Regulations (Appendix D), and Zoning Ordinance (Appendix E), in order to provide thorough, orderly and expeditious processing of land development and subdivision project applications that is in keeping with the provisions of New Shoreham's Comprehensive Plan. The Board is also responsible for maintaining and updating as required the Town's Comprehensive Plan.

Senior Advisory Committee

The Senior Citizen's Advisory Committee is tasked with organizing programs for senior citizens, promoting senior programs and services, and through consultation with local seniors, advising the Town Council about their needs, island-unique problems, and suggest solutions and actions that will benefit Block Island senior citizens. The Committee has nine members who are appointed by the Town Council for three-year staggered terms, and one alternate who is appointed for a one-year term.

Sewer District Commission

The Sewer District Commission was established to oversee management of the public sewage collection and treatment system, and recommend sewer rates. The Commission has five members who are appointed by the Town Council for five-year staggered terms, and two alternates who are appointed for one-year terms.

Water District Commission

The Water District Commission was established to oversee management of the public water distribution and treatment system, and recommend water rates. The Commission has five members who are appointed by the Town Council for five-year staggered terms, and two alternates who are appointed for one-year terms.

Community Center

The Old Harbor Meadow Community Center (generally referred to as just the Community Center) was built in 2002, and is owned and operated by the non-profit Block Island Economic Development (BIED) Foundation. The Community Center is located in the center of Old Harbor (behind Aldo's Restaurant) and is part of a development, Old Harbor Meadows, which includes eight ownership and one rental low and moderate income housing units. Half of the Community Center building hosts the Early Learning Center and the other half has a community room with a commercial kitchen. The Center hosts weekly events, such as Lunch Bunch and other senior focused programs. It is also available for community events, a meeting space for town boards and island organizations, and to rent for private events. Information on programs is available on the privately maintained bulletin board and email listserv.

Coordination with Neighboring Mainland Municipalities

Due to its geographic location mutual aid and effective coordination with neighboring communities is not always possible for the island community. That being said, the Town of New Shoreham des have a positive working relationship with several nearby mainland communities and endeavors to identify vulnerabilities from shared risks and coordinate applicable efficiencies. The Town will continue to coordinate with these communities on hazard mitigation planning. **Also, as deemed appropriate, the Town works with nearby communities to address administration of the NFIP following a major storm.**

The Fire Department participates in the Mutual Aid Agreement under the Southern New England Fire Emergency Assistance Plan. The Rhode Island Association of Fire Chief's Inc. has established a statewide mutual-aid response system with the consent and approval of local governments, for the purpose of updating, expanding, and controlling Mutual-Aid in the State of Rhode Island, and to act as a common entity for exploring and improving other areas of management, operation and effectiveness of the Fire Service. In addition, the Block Island Fire & Rescue is a member agency of the **RI Southern Firefighters League**.

In 2023 the RI Police Chiefs Association with advisement from the Attorney General's Office and local solicitors established a statewide mutual-aid response system which all RI police chiefs signed.

Coordination with Schools and Universities

The Town of New Shoreham will continue to support and coordinate with the Block Island School (public school grades K-12) on hazard mitigation and other resilience initiatives. Over the past several years the school has sponsored class trips to Save the Bay and the Providence Water Treatment Plant to learn about environmental resources and water quality. The Fire Department conducts a Fire Safety program at the school for elementary aged students and both the Fire Department and Police Department have internship/mentorship programs available for interested high school students.

Several universities have been engaged with research associated with New Shoreham including the University of Rhode Island, Eastern Connecticut State University, and Harvard T.H. Chan School of Public Health. The Conservation Commission was recently engaged in discussions with four environmental science students from Brown university to determine if a community outreach program focused on wastewater management on Block Island was warranted. Alternative suggestions for the outreach program included education on the adverse impact of pesticides and lawn fertilizers on septic system leach fields.

In addition, to assist with patient care at the Block Island Medical Center, over the summer months the Center's staff oversee a summer residents program through Brown University Alpert Medical School. In the summer of 2024 the Police Department facilitated a Community Service Officer summer internship program for college students interested in a career in law enforcement.

Evacuation and Emergency Shelter

The Town of New Shoreham has procedures in place for warning and evacuating residents and visitors should it become necessary. In the event of a pending natural hazard threat, New Shoreham's protocol discourages **non-residents** from coming to the island and encourages non-residents on the island to vacate prior to the suspension of ferry/air service. **Residents** are generally encouraged to shelter-in-place, with those closer to the shoreline seeking temporary shelter from more inland neighbors as deemed necessary based on storm conditions. The small island community has adopted a neighbor-helping-neighbor approach which has effectively seen the island through numerous natural disaster events.

Older residents may present additional challenges in terms of being safe during a natural hazard event and/or in the need to evacuate (move inland) due to factors such as physical limitations, hearing or vision impairments, mobility issues, chronic health conditions, or medication needs. New Shoreham's Department of Human Services assists in maintaining a list of **seniors** living on the island full-time and those possibly needing assistance during a natural hazard emergency event. In addition the Town is encouraging residents with special needs (which can include mobility issues) to enroll in the **Rhode Island Special Needs Emergency Registry (RISNER)**. Local public safety personnel are provided a copy of the registry which identifies residents of the Town who may require additional assistance during emergencies.

In order to assist communities, in 2013 the U. S. Army Corps of Engineers (USACE) provided **Hurricane Evacuation Route Maps** to Rhode Island's 21 coastal communities. As an island community, New Shoreham is a unique. In terms of the USACE maps, no evacuation route is provided but two evacuation zones are identified. **Zone A** includes those housed on the entire shoreline perimeter of the island, and especially those on 'the Neck' of the island and on Coast Guard Road, who could be isolated from the rest of the island due to storm surge and flooded roads. **Zone B** includes residents in the Old Harbor area and those located just south of Dorry's Cove Road on the island's west side. For Hurricane Categories 1, 2 or above, those residing in Zone A are advised to move inland and stay with inland residents or move to the island's shelters. For Category 3 or above, residents in Zone B are also advised to move inland and seek shelter. For lesser storms, the Town has a mobile emergency unit that is put in place to cover the northern portion of the island should it be cut off due to low elevations along Corn Neck Road.

Human Shelter

The primary shelter on the Island is the **Block Island School** (15 High Street). This shelter is more than adequate to accommodate the year-round island population in the event of an emergency, but would be **inadequate** when the population rises dramatically in the summer months. A section of the **Block Island Medical Center**, the only medical center on the island, is designated as a secondary shelter. Both of these shelters have back-up generators. The Medical Center administers routine services and acute emergency care. Patients with serious injuries and conditions must be transported off-island to hospitals on the mainland via ferry, plane or helicopter. As both the shelter capacity and emergency medical services are inadequate to handle the extensive summer population, minimizing the number of people on the island during a hazard event is critical.

For residents who are caught off-island during a storm event and need a temporary place to shelter, the American Red Cross has opened five storm shelters across Rhode Island. The closest to the Point Judith Ferry terminal is the South Kingstown High School (215 Columbia Street, Wakefield, RI). The Red Cross shelters across the State are opened to all who need a safe place during an emergency event. The emergency shelters may not be able to provide adequate supplies of food (especially for those with special dietary requirements), water, and bedding. If possible, individuals going to a shelter should bring prescription medication, personal hygiene supplies, foods for special dietary requirements, chargers for electronics, extra clothing, comfort items, bedding items, flashlights and batteries, important papers, and books and quiet games for entertainment.

Animal Shelter

New Shoreham does not have an Animal Shelter, and the local and Red Cross disaster shelters cannot accept pets due to health and safety regulations and other considerations (with the exception of service animals that assist people with disabilities). As such, pet owners should plan ahead in the event that a pet must be temporarily placed with someone else as a result of a natural hazard event. As a general emergency preparedness measure, it is recommended that pet owners create a *pet to-go kit* containing identification and supplies for each pet such as veterinary contact information, a copy of vaccination records, a recent photo of your pet, along with necessary supplies like food, water bowls, food for several days, medications (if needed), collar with updated ID tags, a leash, a carrier (especially for cats), and a small first aid kit tailored to your pet's needs.

Helping Hands of Block Island, Inc. (Food Pantry)

Helping Hands of Block Island Inc. is a nonprofit organization incorporated in 2009 to combat food insecurity in New Shoreham by operating a food bank, and sourcing supplies from donations and charitable organizations to those in need. Additionally, they extend their support to the local public school by providing supplemental snacks. Helping Hands is run solely with the aid of private donations and community volunteers. The Food Pantry is located in the lower level Harbor Church (21 Water Street) and generally open every other Wednesday.

Island Free Library

The Island Free library (IFL) was established on March 6, 1875 under the name The Island Library Association. On Halloween night in 1923 the library was completely destroyed when the town hall burned. After starting over again, the library was located for many years in the back of Star Department store. In 1958, the library moved to Chapel Street and in 1975, one hundred years after its beginning, the IFL moved into a brand new building on Dodge Street courtesy of Lester Dodge. In 2002, the Library underwent extensive renovations and expansion, doubling its floor area. The Library has staff members as well as a seven member Board of Trustees appointed by the Town Council for three-year staggered terms. The Board exercises general administrative supervision of, and makes policy for the library.

The mission of the Island Free Library is to fulfill the informational, cultural, and recreational needs of its patrons by providing a full spectrum of library services, including access to print, audio, video, and electronic formats; fostering a lifelong love of reading with programs for children and adults; and promoting computer literacy through appropriate forms of instruction. The library is a strong community resource, encouraging use of its space by other groups and organizations for discussions, meetings and tutoring. The library is also used as an emergency warming, cooling, and charging center should the need arise.

If the library houses specific flood protection books and publications, it may qualify for points under CRS Activity 350.

Map Information Services

As a public service (free of charge), upon request, the Building Department and/or Land Use Department will provide inquirers with information from the community's Flood Insurance Rate Maps (D-FIRMs) and other sources to inform about the local flood hazard and flood-prone areas that require special protection because of their natural functions. Key information provided includes:

- Whether a property appears to be in or out of the Special Flood Hazard Area (SFHA) as shown on the current D-FIRM
- Additional flood insurance data for a site, such as the FIRM zone and the base flood elevation or depth, if shown on the FIRM
- Handouts on the flood insurance through NFIP
- Providing copies of Elevation Certificates (wherein available) for buildings built in the floodplain when requested by members of the public

The map panels of the Washington County FIRM that are wholly or partially within the Town of New Shoreham are panel numbers: 44009C0352J, 44009C0353J, 44009C0354J, 44009C0356J, 44009C0358J, 44009C0361J, 44009C0362J, 44009C0363J, 44009C0364J, 44009C0366J, and 44009C0368J.

Community education and outreach on the hazards associated with flooding and sea level rise is an important goal of the *HM&FMP*. As such, this ongoing activity aligns with the goals of the *HM&FMP* and, if documented per FEMA requirements, may qualify for points under CRS Activity 320.

Medical Facilities and Services

Medical facilities and services play an important role in the quality of life for the community, and are of particular benefit should a natural hazard event create casualties.

Block Island Medical Center

The Medical Center is maintained and operated by Block Island Health Services, Inc. a private non-profit governed by an elected Board of Directors. The Board consists of seven from among its paid membership, two New Shoreham community members, and an appointee from both Block Island Rescue and the Town Council. The facility, which opened in 1989, is a fully equipped medical facility which offers both daily care and urgent care services, and is **the sole provider of medical care on the island**. It is staffed year-round by a physician, a nurse practitioner, registered nurse, and executive director, an office support specialist/receptionist, and financial specialist. With the influx of tourists, the Medical Center is busiest in the summer. To assist with patient care the staff oversees a summer residents program From Brown University Alpert Medical School. While it receives operating funds from the Town, the Medical Center also relies on patient fees, donations, grants, and special event revenues.

In addition to daily care, the Medical Center offers free blood pressure clinics, flu shot clinics and Lyme testing and referrals, and study groups. It also provides facilities for telemedicine and regular visits by several specialists providing dental care, orthodontics, acupuncture, chiropractic care, podiatry, and massage therapy.

When critical care is needed, the medical center and the Block Island Rescue Squad, in conjunction with the ferry and airline companies and a regional helicopter ambulance service, arrange for and provide emergency transport to mainland hospitals.

National Alliance on Mental Illness, Block Island (NAMI BI)

NAMI Block Island (a nonprofit 501(c)(3) corporation) is the new name for the **Mental Health Task Force**. Now affiliated with NAMI Rhode Island (founded in 1983) and NAMI, the National Alliance on Mental Illness (founded in 1979), the nation's largest grassroots mental health organization dedicated to building better lives for the millions of Americans affected by mental illness. NAMI Block Island is a mental health task force which has been a major advocate for increased mental illness support and services on Block Island. The group's goals are to bring more on-island services, educate the community about mental illness, and support families with mental illness. A member of the Medical Center staff serves on the task force. Currently services related to mental health in New Shoreham include: free telemedicine conferences with psychiatrists at Butler Hospital in Providence and Brown University Medical School; public educational programs on various mental conditions and illnesses; response training; and a family support group.

Further, the RIDOH funds several **Community Health Services** available to residents of New Shoreham.

Senior Citizen Services

Seniors on the island are typically actively involved in community and civic affairs. However, the small community and the isolation of living on an island, particularly during the winter, present special challenges for seniors, but efforts are made to meet these challenges. Resources on Block Island available to seniors include:

- a variety of recreation and social programs, including lunches, and inexpensive off-island trips for shopping and shows, that are organized by the Recreation Department and Senior Advisory Committee
- the Senior Advisory Committee which advocates to the Town Council regarding senior needs
- the Community Center (privately owned) which has space for senior programs
- local Churches and the Block Island Medical Center which provide some medical support services
- the Mary D. Fund which promotes community safety & wellness and provides financial support directly to individuals who apply for assistance
- private agencies, such as Visiting Nurses and Hospice, which can be hired for home care services

Town Administration and Departments

Town Administration and Departments, with support from local boards/commissions and other stakeholders, work together to develop, implement, and update policies and plans to promote the safety of residents and minimize risk to the community. Local government employees and officials' participation in and familiarity with this *HM&FMP* will ensure they understand the natural hazard risks facing New Shoreham and what mitigation measures can be implemented to reduce those risks. It is also beneficial that some Town staff participate in associations and organizations that support natural hazard risk reduction capabilities. Public facilities and services provided by the Town are crucial resources for preparing for natural hazard events, as well as responding to and mitigating such events. The Town has enacted and enforces a number of regulatory restrictions designed to reduce the potential impacts of flooding to property by limiting development in and around wetlands and floodplains. An overview of key staff engagement in hazard mitigation is provided below in alphabetized order. **The Town has the ability, and continues to expand on and improve its capabilities, to effectively address hazard mitigation and floodplain management.**

Building Department

The Building Department is engaged in Building permits and inspections, and land development. The Town's Building Official, who is a part-time consultant) implements and enforces the RI State Building Code ensuring new structures or those substantially renovated are compliant. The State Building Code incorporates NFIP construction criteria and includes sections on wind, snow loading, structural loads, and seismic retrofitting. In addition, the Building Official enforces locally adopted ordinances which place even greater restrictions on certain types and locations of development. In order to ensure that no violations exist, routine on-site inspections are made while work is in progress.

The Town of New Shoreham elects to comply with the requirements of the National Flood Insurance Act of 1968. The Building Official is educated on National Flood Insurance Program (NFIP) policies and ordinances. Flood determinations, mapping issues, and construction standards within special flood hazard areas (SFHAs) are addressed by the Building Department and/or Land Use Department. Through committed enforcement of the regulations relating to SFHAs as found in local, state or federal regulations, the Town will reduce its risk factors for loss/damage of lives and property, economic and social hardship, and environmental damage. **The Town implements the substantial improvement/substantial damage provisions of its floodplain management regulations as required per the NFIP (CFR Title 44, Parts 59 thru 65) and Rhode Island State Building Code. The Town also coordinates with State staff to assure that proper practices and procedures are followed.**

The current and historical FIRMs, flood insurance studies (FIS), and Letters of Map Amendment are maintained in the Building Department. A FIRM is a map developed and issued by FEMA for floodplain management and insurance purposes. The Building Department also retains copies of completed FEMA Elevation Certificates for buildings constructed in the floodplain. Elevation Certificates are used to obtain the elevation of a building to determine whether it is within the floodplain and, if so, by how much. The cost of flood insurance for a property is related to the information on the Elevation Certificate. If an Elevation Certificate has been prepared for an individual's property, they may be able to obtain a copy from the Building Department. If an elevation certificate is not available and a resident requires one, they can hire a licensed land surveyor to prepare it.

Additionally the Building Department and Land Use Department incorporates the Association of State Floodplain Managers (ASFPM) **No Adverse Impact Floodplain Management (NAI)** into local floodplain management programs and municipal plans. For the convenience of both property owners and contractors, the Town of New Shoreham employs an **online permit system**.

As the Town's Building Department and Land Use Department are charged with oversight of Floodplain Management and Stormwater runoff, it is important they work with the DPW (DPW Director oversees the Land Use and Building Departments), Planning Board, Block Island Land Trust, Conservation Commission, and Recreation Department which all have duties and responsibilities that could affect open space and land conservation within New Shoreham. Working closely together these individuals and boards can offer valued input regarding mitigation efforts for future consideration.

Facilities Management

In 2014, the Planning Board formed a subcommittee, the Large Capital Asset Subcommittee (LCAS), to work on a ten to fifteen year strategy for all Town properties and buildings. As a result of the LCAS work, New Shoreham created a new Town position, Facilities Manager, effective July 2015 to oversee, maintain, and plan for the use of and improvements to Town buildings. This work may involve coordinating implementation of mitigation activities for Town-owned structures.

Finance Department

In addition to other responsibilities, the Finance Department is critical in managing the financial aspects of hazard mitigation projects and associated grant funding.

Geographic Information System (GIS)

New Shoreham has GIS software, data, and professional capabilities to assist the Town in hazard mitigation planning, storm preparation and post disaster analysis. Currently the Town Planner functions as the Geographic Information System (GIS) Manager. As identified in **Appendix 5-1**, the Town maintains its own data layers and uses State maintained layers through RIGIS. Maps are publicly available on the Town's website including FEMA DFIRM flood maps. The Town's GIS Manager will continue to maintain this data warehouse. Resources to do field data collection will improve the accuracy of various local GIS layers.

Harbors Department

The Harbors Department, staffed by a harbormaster and administrative assistant, manages Block Island's two harbor areas, Old Harbor and New Harbor (The Great Salt Pond). Responsibilities include issuing mooring permits, managing the town rental moorings, monitoring dockages and overnight anchorages in the Great Salt Pond, and issuing shell fishing licenses. During the summer the Harbors Department hires over 20 seasonal employees who work between Old Harbor and New Harbor (mostly New Harbor) running the pump-out boats, collecting mooring fees, working in the department office in New Harbor (Boat Basin) and as shellfish wardens. The Harbors Department also facilitates updating the Harbor Management Plan, and is involved in natural hazard preparedness activities, such as, encouraging boat owners with moored vessels to seek refuge, remove boats from water, or to take other actions to minimize damaging effects.

Information Technology (IT)

The Town engages an Information Technology consultant to provide technology solutions and services utilized by general government operations. The School Department, in partnership with the Town of North Kingstown School District, shares an IT staff member.

Land Use Department

The Land Use Department, which includes the Zoning Official/Land Use Administrative Officer and an Assistant provides professional planning and community development services for the Town, with the assistance of a long-term contracted Town Planner and Town Engineer. Services include review of development applications including subdivisions, administration of land use and subdivision regulations, zoning regulations writing and reviews, plan updates, development and implementation of long-term planning projects and studies, coordination with federal and state agencies, and coordination with Town boards, departments, and agencies. This Department staffs the Planning Board, Zoning Board, Conservation Commission, and Historic District Commission.

The Zoning Official's primary responsibility is the review applications for compliance with the Town's Zoning Ordinance. Enforcement of Floodplain Management ordinances help to reduce damage to properties along the coastline, control erosion, and encouraging property owners to comply with RICRMC and RIDEM rules and regulations. The Town Planner and Town Engineer, in conjunction with Town staff, complete reviews of development application for boards including the evaluation of potential impacts of proposed development within or nearby flood zones, hydric soils, wetlands, coastal zones, and other environmentally sensitive areas. Among other issues, the review ensures that the application meets the Town's stormwater regulations and soil erosion and sediment control standards. Additionally, the Town Planner functions as the Geographic Information System (GIS) Manager.

Public Works Department

The Department of Public Works (DPW) is responsible for the general maintenance of Town-owned roadways as well as State-owned roadways through a cooperative reimbursement agreement with RIDOT. Maintenance includes roadside mowing; cleaning catch basins, storm drains, and drainage swales; snow and ice removal; pothole repair; tree maintenance (in conjunction with the Town's Tree Warden on questions of removing or salvaging a tree); and other minor maintenance issues. Contracts for major improvements to Town-owned roads is administered by the DPW Director and Town Manager and for State-owned roads through the State Transportation Improvement Program (STIP). The DPW maintains 9.4 miles of Town-owned roads, of which 7.5 miles are gravel/dirt roads; and 15.6 miles of State-owned roads which are all paved. Within the Town there are also numerous privately owned gravel/dirt roads which the Town does not maintain.

The municipal stormwater drainage system and outfalls in the Town of New Shoreham are not regulated under the RI DEM Pollutant Discharge Elimination System (RIPDES) Municipal Separate Storm Sewer Systems (MS4)General Permit. Although the Town is not designated as an MS4 entity (which requires specific maintenance practices and pollution mitigating activities), RIDOT is an MS4 entity, and therefore stormwater outfalls on State roadways in Town are regulated under this program.

Prior to storm events the DPW conducts a number of preparedness activities to lessen impacts on roadways and other municipal facilities, such as closing the beach access way in dunes for pedestrians and emergency vehicles to prevent sand, debris, and ocean water from spilling onto Corn Neck Road. For larger storm events, the Town contracts for snow removal, roadway treatments, and general storm cleanup. Although the Town does not have a formal Debris Management Plan, the DPW has strategies in place to promptly address debris or tree limbs accumulating on roads during or after a wind or other hazard event.

In addition to overseeing the roadways, the DPW also removes public trash cans and porta johns on Town property. Further, in conjunction with the Facilities Department, the DPW is responsible for building and ground maintenance of the Town's 15 municipal properties. The DPW also does plowing and assists with other maintenance for the school district.

Public Safety

Block Island's public safety complex is located near New Harbor at 10 Beach Avenue, and includes the Police Station (built in 1970), the attached fire barn (built in 1972), and the rescue barn (built in 2009). New Shoreham's Public Safety protects the community 24 hours a day, 365 days a year, and is committed to delivering the highest quality of service to the Town of in the most effective, efficient, and safest way possible. As deemed necessary the public safety entities conduct drills and exercises to prepare for emergency events.

Police Department: The Police Department currently has seven full-time year-round officers, including the chief, as well as five full-time dispatchers. The dispatch center's equipment is adequate consisting of consoles, radios, computers, monitors, and access controls. Additional seasonal employees are hired to handle the extra demand during the summer tourist season. Seasonal employment is budget dependent but generally includes six community service officers (bicycle patrol), and one police dog (K-9). From July-August there is also a Rhode Island State Trooper presence on the island Friday through Sunday. The department embraces a community oriented policing style typical of a small geographically isolated community where the officers and residents are well known to each other. The police on Block Island rarely deal with serious crime and even in the summer with the large influx of visitors and vacationers, the major challenge in recent years has been managing crowds of day trippers.

Volunteer Fire & Rescue : The Volunteer Fire & Rescue is a nonprofit corporation (501c3) that has been protecting life and property from fires and providing assistance in medical emergencies since 1925. The department also conducts fire safety awareness and training in CPR, First Aid and other courses. The Department currently has approximately 60 members, 24 of them licensed EMTs. The rescue squad maintains its status as a volunteer organization with the exception of a twelve-week period in the summer when people are paid to be on call in order to avoid any serious lapse in caring for the community and its visitors. The fleet currently consists of two aerial fire trucks; two tankers; two engines; one hose layer tanker; one special operations unit; and three ambulances

Town Council

Established in 1664 and incorporated by Home Rule Charter on October 30, 1672, the Town of New Shoreham has a Council-Manager form of government. This structure combines the strong political leadership of elected officials in the form of a five-member Town Council, with the strong professional managerial experience of an appointed Town Manager. The Town Council consists of a First Warden, Second Warden, and three Town Councilors, elected each even numbered year for a two-year term. Regular meetings are generally held the first Monday of every month at 7:00 pm in the Town Council Chambers with work session held as needed the first Wednesday of the month. Work Sessions are used to study issues, receive reports and data on assignments and special projects, informally review staff and development proposals, discuss Town services, evaluate existing programs and carry out other study-related work not generally requiring official action by the Town Council.

Through the Charter, all powers of the Town, except those vested in the financial town meeting, shall be vested in an elected Town Council. The Town Council is responsible for enacting local legislation; making decisions related to the Town's property, affairs, and government; setting the budget for the municipal side (the School Committee is responsible for the school budget); appointing a Town Manager; and confirming recommendations for employment by the Town Manager. In addition to the Town Manager and Town Departments, support is given to the Council through appointed boards and commissions. With the guidance of governing documents, the governmental structure of New Shoreham works to assure the community needs are met for growth, stability and public safety for future generations.

Town Manager

The Town Manager is appointed by the Town Council to assist in the discharge of the Council's executive and administrative responsibilities. The Town Manager is responsible for the appointment of department heads (with Town Council approval), and with the overall supervision and coordination of the activities and programs of all Town Departments. Additional responsibilities include executive support, procurement, preparation of the operating and capital budgets, and facilitating grants. In addition to regularly reporting to the Town Council, the Town Manager is also responsible for the preparation and submission of a complete report on the finances and administrative activities of the Town for the preceding year.

As this Plan will be adopted by the Town Council, the Town Manager will provide the leadership to ensure the *HM&FMP* actions are implemented across Town Departments.

Town Communication - Website & Social Media

To better prepare community members and reinforce individual pro-active hazard mitigation measures, the Town continues to improve its outreach and education programming efforts, including through postings on the Town's **Town of New Shoreham website**. The website is regularly updated to keep content current. Information for updates is provided by each Department to the Town's website consultant.

Information and links related to hazard mitigation can be found on the Town's website, including:

- Building Inspection Requirements, Permitting, and State Building Code
- CodeRed Emergency Notification Signup
- FEMA Flood Map Services
- Hazard Mitigation and Flood Protection
- HM&FMP Project Webpage (including risk from flooding & other natural hazard related information & links)
- RIDEM/CRMC Wetlands Jurisdiction Maps
- RI Special Needs Emergency Registry
- Senior Services
- Town Documents (Comprehensive Plan, Hazard Mitigation Plan, MRP CRB Process & Workshop Summary of Findings, Sea Level Rise Study, etc.)
- Town Ordinances

Social Media: The Town also uses social media as a communication platform, including: Website Headlines & Local Events; Website News Flash; *HM&FMP* Project Webpage; various other department webpages; Town Facebook Page (247 followers); Police Department Facebook Page (82 followers); and the Harbors Department Facebook Page (2.1K followers). Although not facilitated by the Town, the Town also provides information to be published on the Block Island Bulletin Board which is a key information network for islanders.

The Town's website may qualify for points under CRS Activities 330 and 350.

Warning and Notification Systems

The Town's Emergency Management Task Force oversees coordination and integration of activities necessary to build, sustain, and improve the capability to mitigate against, prepare for, respond to, and recover from threatened or actual natural disasters, acts of terrorism, or other man-made disasters. Emergency Management is coordinated at the Town's primary Emergency Operations Center (EOC) located at the Police Station (10 Beach Avenue) or at the backup EOC located at the Town Hall (16 Old Town Road). Both of these facilities are equipped with emergency generators. When a severe storm is impending, an emergency mobile unit is set up at the north end of the island encase Corn Neck Road becomes impassible.

An important aspect of emergency management is a well-honed warning and notification system.

Dispatch Center: The Town's dispatch center is located at Police Station (10 Beach Avenue) with adequate equipment consisting of consoles, radios, computers, monitors, and access controls. The Police Department currently has five full-time dispatchers.

Storm Ready: The Town of New Shoreham is a **StormReady** certified community which means it has complied with a set of standards including having a system that continually monitors local weather conditions and has mechanisms to alert the public to severe weather warnings. The Town monitors NOAA Weather Radio All Hazards (NWR), which is a network of radio stations broadcasting continuous weather information directly from a nearby National Weather Station (NWS) office.

Municipal Broadband: The BroadbandBI network builds on the community anchor institution (CAI) network launched by the Town in 2019 that serves critical facilities including the Block Island School, Block Island Medical Center, Island Free Library, Public Safety facilities, Town Hall, and Block Island Utility District. BroadbandBI leverages dark fiber installed during the CAI Network construction and leased subsea fiber strands owned by Rhode Island Energy (previously, National Grid). BroadbandBI was constructed and implemented through innovative public-private partnerships, and is the first municipally-owned fiber optic network in the State providing service to homes and businesses. The BroadbandBI network is operated and maintained by Sertex Broadband, and internet and voice-over-internet-protocol landline phone services are provided by Crocker Communications. OSHEAN, Inc. provides transport services for all internet traffic. The Town of New Shoreham owns and provides oversight of the network, including managing the vendor contracts and monitoring technical performance and quality of customer service.

Emergency information is primarily provided to residents and visitors via the **Town Website**, **CodeRed** emergency notification system, and the **Block Island Bulletin Board**.

> **CodeRED:** The Town uses the **CodeRED Emergency Notification System** to alert residents and businesses in emergency situations through any or all of the following: telephone, cell phone, text message, and emails. The notifications can be area specific or town-wide. The alert system is for an array of emergency situations including Amber Alerts, notifications of hazardous incidents, boil water advisories, evacuation notices, parking bans, and severe weather alerts. The Town encourages community members to sign up for this free program. CodeRED is promoted on the Town Website and at various community events. You do not have to be a New Shoreham resident to sign up for New Shoreham CodeRed alerts. This allows family members not residing in New Shoreham, tourist, or others to be serviced by this automated process.

RISNER: The **Rhode Island Special Needs Emergency Registry (RISNER)** is overseen by the RI Department of Health and provides a reliable system for the identification of Rhode Islanders who may require assistance during emergencies (due to special healthcare needs, chronic conditions, disabilities, etc.). Public safety personnel are provided a copy of the registry to help ensure those in need are assisted during natural hazard and other emergency events. Encouraging residents to sign up for the RISNER program allows public safety personnel to be proactive rather than reactive.

The Town's warning and notification systems may support CRS Activity 610.

REGIONAL/STATE *(the capabilities have been listed in alphabetical order)*

American Red Cross - Rhode Island Chapter

The *American Red Cross in Rhode Island* offers a variety of programs to help adults and children better prepare for emergencies. Their website houses several free online preparedness trainings for both adults and children. During hazard events, the American Red Cross will designate Red Cross staffed shelters across Rhode Island for people who need a safe place during the hazard event.

Northeast States Emergency Consortium (NESEC)

Established in 1991, the Northeast States Emergency Consortium (NESEC) is a not for profit all-hazards emergency management organization, located in Wakefield, Massachusetts (26 Princess Street, Suite 102 ; 781-224-9876). NESEC develops, promotes, and coordinates comprehensive all-hazards emergency management and resiliency activities throughout the Northeast. This includes all phases of emergency management: preparedness, response, recovery, and mitigation. NESEC works in partnership with federal, state and local governments, non-profits, and private organizations to reduce losses of life and property by becoming more resilient before the next disaster strikes the Northeast. NESEC conducts public awareness and education programs on natural disaster and emergency management activities throughout New England. Brochures and other resources are available on topics including hurricane safety and flood preparedness.

Rhode Island Association of Conservation Districts (RIACD)

In RI, Conservation Districts were established in 1944 as quasi-public organizations to focus efforts on environmental and conservation concerns within communities. The Conservation Districts are not regulatory or enforcement agencies, but rather provide assistance to those who desire to work as a team to face issues - watershed by watershed. They work in partnership with private land owners, farmers, municipalities, state and federal agencies, as well as non-governmental agencies, and focus on various issues, including the reduction of non-point sources of pollution such as soil erosion, animal waste, pesticides and fertilizers, poorly operating septic systems, and household hazardous wastes. There are three Districts in Rhode Island:

- Eastern RI Conservation District (**ERICD**), serving Newport and Bristol Counties
- Northern RI Conservation District (**NRICD**), serving Providence County
- Southern RI Conservation District (**SRICD**), serving Washington and Kent Counties

The Rhode Island Association of Conservation Districts, incorporated August 1995, is a 501-c-3 organization whose mission is to attract public and charitable monies that can be used by the three State of Rhode Island Conservation Districts for their work in the stewardship of the State's natural resources through education, outreach, and technical assistance and to assist and support the districts in their endeavors.

Conservation District services may include:

- Conservation Planning and Technical Services
- Mapping Services
- Municipal Resilience
- Outreach and Education
- Parcel Mapping Services
- Signage for Public Access on Public Lands
- Site Plan Review

Conservation Districts have a unique relationship with USDA Natural Resources Conservation Service (NRCS) to accomplish and improve the process for NRCS Outreach and Education, Conservation Technical Assistance, Wetland Restoration, enhancing Fish and Wildlife Habitat, Grassland and Forestland Ecosystems, improving Soil Quality, Water Management, Water Quality, Energy Conservation, and Forest/Farmland Conservation.

As applicable, when implementing actions from this *Plan*, coordination with the ERICD should be considered.

Rhode Island Office of the State Fire Marshal

The mission of the State Fire Marshal's Office is to enforce and perform the duties required by the Comprehensive Fire Safety Act, and all other provisions of the general and public laws insofar as such powers and duties relate to fires, fire prevention, fire protection, fire inspection, and fire investigation and fire training. The Website has numerous resources, including safety information and public programs.

Rhode Island Public Utilities Commission and Division of Public Utilities and Carriers

The Public Utilities Commission serves as a quasi-judicial tribunal to amongst other things, regulate electric, gas, telecommunications, water and waste water utilities in Rhode Island.

Save The Bay

Save The Bay is a nonprofit organization which works to protect and restore the ecological health of the Narragansett Bay region through advocacy, education, and habitat restoration and adaptation projects. In conjunction with *The International Coastal Cleanup*, the world's largest volunteer effort for our ocean, Save The Bay and The Nature Conservancy hosted a shoreline cleanup in New Shoreham at the Fred Benson Town Beach in September 2019. Save The Bay's bi-annual Tides Magazine is a good resource to maintain awareness of Save The Bay action updates including education, restoration, and advocacy.

StormSmart Coasts Rhode Island

A resilience-related web resource that provides tools for collaboration and is dedicated to helping decision makers in coastal communities address the challenges of storms, flooding, sea level rise, and climate change.

Stormwater Innovation Center

The Stormwater Innovation Center (SIC) located at Roger Williams Park in Providence, was developed by a partnership between the City of Providence Parks Department, Audubon Society of Rhode Island, The Nature Conservancy, the University of Rhode Island's Coastal Institute, Restore America's Estuaries, Rhode Island Department of Transportation, the SNEP Network, and the University of New Hampshire Stormwater Center. The goal of the SIC is to demonstrate to communities throughout Rhode Island and Southeast New England strategies for improving urban water quality and associated wildlife habitat through the use of innovative green stormwater practices. The Center engages hands-on training about stormwater management practices, and houses an array of resources.

The Nature Conservancy (TNC)

The Nature Conservancy was founded in 1951 when leading scientists, committed citizens, and dedicated leaders came together with a shared vision to protect and care for nature. Today, TNC is tackling the dual threats of accelerated climate change and unprecedented biodiversity loss across more than 70 countries and territories. TNC maximizes their impact to affect change by bringing together real-world solutions, policy expertise, sustainable financing, and collaborative partnerships. As applicable, when implementing actions from this *Plan*, coordination with The Nature Conservancy should be considered.

TNC has been working on Block Island since the 1970s and maintains an office and visitors center on High Street.

University of New Hampshire Stormwater Center (UNHSC)

UNHSC is dedicated to the protection of water resources through effective stormwater management. Center researchers evaluate and enhance the ability of stormwater treatment systems to treat the pollution in stormwater runoff and reduce the flooding that it can cause. When designing stormwater BMPs, the Town should consider reviewing the Center's research/resources and/or partnering with the Center, as appropriate.

University of Rhode Island (URI)

Coastal Institute: The URI Coastal Institute was founded to advance knowledge, encourage interdisciplinary partnerships, and develop solutions to environmental problems in Rhode Island's coastal ecosystems. The Institute works in partnership with local, state, federal, and international agencies.
The Coastal Institute has a number of publications, reports, and videos that were reviewed during development of the *HM&FMP*.

Natural Resources Science Department: The research program within the department addresses various areas including aquatic ecology, avian ecology, biodegradation and bioremediation, forest ecosystem ecology, landscape ecology, spatial data analysis, pedology, soil ecology, terrestrial remote sensing, watershed science, wetland science and management, and wildlife and conservation biology. The National Park Service's Coastal Field Station and Inventory and Monitoring Program, both located at the University of Rhode Island, afford research opportunities for faculty and students.

URI Coastal Resources Center: The Coastal Resources Center in the Graduate School of Oceanography at the University of Rhode Island focuses on using science to address societal issues and works with communities and citizens to become more effective stewards of their shores and seas. The site houses numerous resources.

FEDERAL & OTHER *(the capabilities have been listed in alphabetical order)*

Institute for Business and Home Safety (IBHS)

The IBHS is an insurance industry sponsored nonprofit organization dedicated to reducing deaths, injuries and property damage resulting from natural hazards. IBHS efforts are directed at five specific hazards: flood, windstorm, hail, earthquake and wildfire. Through its public education efforts and information center, IBHS communicates the results of its research and statistical gathering, as well as mitigation information, to a broad audience.

National Flood Insurance

The *National Flood Insurance Act of 1968* established the *National Flood Insurance Program (NFIP)* with the intent of reducing the need for post-disaster Federal aid by allowing property owners in participating communities to purchase federally backed flood insurance. Nationwide, over 22,000 communities participate in the NFIP by adopting and enforcing floodplain management ordinances to reduce future flood damage. The Town of New Shoreham participates in the National Flood Insurance Program and in the **Community Rating System (CRS) Program**. The CRS program is designed to encourage communities to engage in various community focused activities that promote a comprehensive approach to floodplain management beyond the minimum NFIP requirements.

In addition to providing flood insurance and reducing flood damages through floodplain management regulations, the NFIP identifies and maps the Nation's floodplains. Mapping flood hazards creates broad-based awareness of the potential risks of flooding and provides the data needed for floodplain management programs and to actuarially rate new construction for flood insurance. Additional information on the National Flood Insurance Program can be found in **Subsection 4-4**.

The **Biggert-Waters Flood Insurance Reform Act of 2012** made significant changes to the NFIP. This act required the NFIP to raise subsidized insurance rates to actuarial rates in an effort to make the program more financially stable. Rate increases began on January 1, 2013 for owners of subsidized policies on non-primary/secondary residences in a Special Flood Hazard Area (SFHA) with 25% increases annually until rates reflect true risk. On October 1, 2013, the same increases were applied to owners of subsidized policies on property that had experienced severe or repeated flooding and on business/non-residential properties in a Special Flood Hazard Area.

National Voluntary Organizations Active in Disasters (VOAD)

In 1970, seven national disaster response organizations convened for the first time to find a way to better coordinate responses and more effectively serve disaster survivors and their communities. As an outcome, *National VOAD* was formed as a forum for sharing knowledge and coordinating resources, money, materials and manpower throughout the disaster cycle: preparation, response, and recovery.

National Warning and Alert Systems

The **Integrated Public Alert & Warning System** is FEMA's national system for local alerting that provides authenticated emergency and life-saving information to the public through mobile phones using Wireless Emergency Alerts, to radio and television via the Emergency Alert System, and on the National Oceanic and Atmospheric Administration's Weather Radio.

The **National Warning System (NAWAS)** is used to convey warnings to United States-based Federal, state and local governments, as well as the military and civilian population. NAWAS has proven invaluable to local emergency managers responding to or coping with natural disasters.

The **Emergency Alert System (EAS)** is a national public warning system that requires TV and radio broadcasters, cable TV and wireless cable systems, satellite digital audio radio service providers, direct broadcast satellite service providers and wireline video service providers to offer to the President the communications capability to address the American public during a national emergency. The system also may be used by state and local authorities to deliver important emergency information such as AMBER (missing children) alerts and emergency weather information targeted to a specific area. A state emergency manager can use the EAS to broadcast a warning from one or more major radio stations in a particular state. EAS equipment in other radio and television stations, as well as in cable television systems in that state, can automatically monitor and rebroadcast the warning.

Pandemic and All-Hazards Preparedness Act (PAHPA)
The **Pandemic and All-Hazard Preparedness Act of 2006** had broad implications for the Department of Health and Human Service's preparedness and response activities, including providing new authorities for programs such as development and acquisition of medical countermeasures and the establishment of a quadrennial National Health Security Strategy. The act was reauthorized in March 2013.

APPENDIX 5-3

Financial Capabilities

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Appendix 5-3
Financial Capabilities

The following Table provides an overview of the critical financial capabilities, including grant opportunities, that have or may play a role in the Town of New Shoreham's natural hazards mitigation effort. The information provided in the Table was obtained through the identified capability's website, New Shoreham's 2016 Comprehensive Plan, New Shoreham's 2017 Hazard Mitigation Plan, and/or Advisory Committee, Town Staff, or other stakeholder input. Where applicable, a hyperlink for the capability is provided.

Following the Table, is a list of the hazard mitigation related grants awarded to the Town over the past five years.

LOCAL *(the capabilities have been listed in alphabetical order)*
Community Organizations
There are a number of local organizations that may be able to provide support and assistance to the community in the event of a natural disaster. Some of these include the Block Island Lions Club, NAMI Block Island, and area churches.
Disaster Relief Funds
After a disaster, local businesses, residents, and out-of-town groups often donate money to local relief funds. These funds may be managed by the local government, churches, or other groups. If a disaster declaration has been made, it may be prudent to hold the local funds until applicants exhaust all sources of public disaster assistance. Doing so allows the funds to be used for mitigation and other assistance that cannot be funded elsewhere.
Mutual Aid Agreements for Public Safety Personnel and Equipment
The Town of New Shoreham is somewhat isolated as an island community. The Town does have mutual aid agreements/ understandings in place for fire and police services through the Statewide mutual-aid response system. With respect to hazard mitigation, there may be opportunities to identify vulnerabilities from shared risks and coordinate applicable efficiencies with other jurisdictions.
Town Operating Budget & Capital Improvement Program (CIP)
Maintaining a resilient local economy is important to enable providing high quality municipal services, including protecting against natural hazard risks. The Town's total operating budget for FY2025 (July 1, 2024-June 30, 2025) was $19,286,912, of which $13,608,007 was attributed to the municipal side and $5,678,905 to the School District (Town of New Shoreham RI. *FY2025*, 1). The Town Council is responsible for setting the budget for the municipal side and the School Committee for the School District. As part of the budget process, each year the Town adopts a 6-year Capital Improvement Program identifying projects that should be undertaken during the upcoming 6 years. This long-range planning process is essential in addressing the future development and growth of the Town. The Town strives to balance pay as you go funding with borrowing for capital requirements, using long term financing for long-lived assets with broad community value. There is an important connection between the CIP and the effective implementation of the *HM&FMP*. Risk assessment and mitigation must become a regular part of the CIP development process. Prioritization of action items needed to build community resilience, and development of a variety of finance options to address those needs, are critical steps in protecting the Town's residents and economic vitality. In 2014, the Planning Board formed a subcommittee, the Large Capital Asset Subcommittee (LCAS), to work on a ten to fifteen year strategy for all Town properties and buildings. As a result of the LCAS work, New Shoreham created a new Town position effective July 2015, a Facilities Manager, to oversee, maintain and plan for the use of and improvements to Town buildings.

REGIONAL/STATE *(the capabilities have been listed in alphabetical order)*

Congressionally Directed Spending (Earmark)

Earmarks allow Members of Congress to request that federal funds be set aside for specific projects in their states. This is an opportunity for state, local, and tribal governments and nonprofit organizations to apply for funding for projects that would benefit from a one-time allocation of funds.

2024 US House of Representatives from RI: District 1 – Gabe Amo (D); District 2 - Seth Magaziner (D)

2024 US Senators from RI: Jack Reed (D); Sheldon Whitehouse (D)

Narragansett Bay Estuary Program (NBEP)

The Narragansett Bay Estuary Program is a stakeholder-led organization pursuing place-based conservation across the three-state Narragansett Bay region. NBEP, through its host **Roger Williams University,** is providing oversight for the **Green Infrastructure Project Planning Grant Program**. Grant funding will support planning activities that advance future implementation of green infrastructure projects in the Narragansett Bay, Little Narragansett Bay, Coastal Ponds, and their watersheds in Rhode Island, Massachusetts, and Connecticut. The program spans boundaries to provide independent convening, scientific data analysis, and watershed project funding. The program supports often under-funded pre-project steps, including studies, assessments, and engineering design. Projects need to be consistent with **NBEP Comprehensive Conservation and Management Plan (2012).** Past RFPs have addressed watershed and estuarine habitat restoration, public access, and green infrastructure.

Preserve Rhode Island

Rhode Island Matching Grants for Historic Preservation is a partnership between **Preserve Rhode** Island and **The 1772 Foundation** to provide funding for non- profit organizations completing historic preservation projects. Funding is provided for the following types of projects: exterior painting, finishes and surface restoration; install or upgrade fire detection, lightning protection, and security systems; repairs to/restoration of porches, roofs, and windows; structural foundation and sill repair/replacement; and chimney and masonry repointing.

Rhode Island Coastal Resources Management Council (CRMC)

Coastal and Estuary Habitat Restoration Program and Trust Fund (CEHRPTF)

The Rhode Island Coastal Resources Management Council (CRMC) in partnership with the Narragansett Bay National Estuarine Research Reserve (NBNERR) oversees grants for habitat restoration projects that seek to restore or enhance ecological conditions that have been degraded by human impacts in coastal or estuarine habitats such as coastal wetlands, submerged aquatic vegetation beds, shellfish beds, vegetated coastal upland and anadromous fish runs. Priority will be placed on those projects that seek to enhance coastal habitats' resiliency to climate change and sea level rise; for example, projects that remove barriers to future wetland migration with sea level rise or that enhance shoreline vegetation where habitat is threatened by increased coastal erosion. Additionally, priority will be placed on projects located within Environmental Justice communities and/or that address Environmental Justice Concerns. Funding for projects is from an annual account totaling $225,000. Individual project awards generally range from $5,000 to $50,000 per year. Longer-term projects may reapply for additional funds in subsequent years.

Rhode Island Commerce

Main Street Streetscapes Improvement Fund

This program awards grants on a competitive basis for improvements to commercial districts, such as signage, lighting, facade, and sidewalk improvements. Projects should revitalize main street and downtown business districts and generate activity in these areas. This grant program fosters private-public partnerships for the improvement of streetscapes in local business districts. These investments will strengthen Rhode Island's small business environment and attract future growth and events to our main street and downtown districts.

Rhode Island Department of Environmental Management (RIDEM)

319 Non-Point Source Grant

The RIDEM Office of Water Resources administers funding from the U.S. Environmental Protection Agency (EPA) under Section 319 of the Federal Clean Water Act for grants to assist in the implementation of projects that protect and restore water quality from nonpoint sources of pollution and to improve or restore aquatic habitats. Eligible projects must be in watersheds that have an approved watershed plan. In addition to municipalities, other entities such as public schools and universities, and non-profit watershed, environmental, or conservation organizations are eligible for funding.

Clean Water & Drinking Water

The **Clean Water State Revolving Fund (CWSRF)** was set up to help ensure the State's drinking and recreational waters are clean and safe. It is a federal (EPA)/state partnership designed to finance the cost of infrastructure needed to achieve compliance with the Clean Water Act. The program is available to fund a wide variety of water quality projects including: development/implementation of non-point source (NPS) pollution management programs; management, reduction, treatment, or recapture of stormwater/ subsurface drainage water; development/implementation of an estuary conservation/management plans; development/ implementation of watershed pilot projects; projects for reusing/recycling wastewater, stormwater, or subsurface drainage water; traditional municipal wastewater treatment projects; wetlands restoration; and groundwater protection. Through this program, Rhode Island maintains revolving loan funds to provide low-cost financing for a wide range of water quality infrastructure projects. Funds to establish or capitalize these programs are provided through federal government grants and state matching funds. The interest rate charged to the Clean Water State Revolving Fund is one-third off the borrower's market rate. Some communities may be eligible for partial forgiveness of loan depending upon community need. CWSRF Applicants should also determine eligibility for the **Water Infrastructure Finance and Innovation Act (WIFIA)**, which is a program that works in coordination with the CWSRF to help subsidize large dollar-value projects focusing on issues such as NPS pollution, stormwater management, estuary and watershed improvements, drought mitigation, and green infrastructure.

Climate Resilient Fund Grant

The Climate Resilience Fund provides financial support for implementing climate resilience projects for climate-driven challenges facing Rhode Island communities, both inland and coastal. Specifically, projects that will support governmental and non-profit entities in restoring and improving the climate resilience of vulnerable coastal habitats, as well as river and stream floodplains and related habitats, including projects that improve community resilience and public safety.

Green Space Grant Opportunities

RIDEM oversees several green space funding opportunities that support land conservation, recreational land acquisition and development, and recreational trail development and improvements. Each of the following programs operates under a set of rules and regulations with Committee and Department oversight:

- ***Local Open Space Grants*** - This grant program provides up to 50% matching funds to municipalities, land trusts, and non-profit conservation land organizations to preserve valuable open space throughout the state (per-project cap of $400,000).
- ***Outdoor Recreation Grants*** - This grant program provides matching funds for the acquisition, development, and renovation of outdoor recreational lands and facilities.
- ***Recreational Trail Grants*** - This grant program provides financial assistance to municipalities and non-profit organizations for the development and maintenance of recreational trails and trail-related projects.

Narragansett Bay and Watershed Restoration Fund (BWRF) Grant

State funds approved by RI voters are periodically available from this bond fund to restore and protect the water quality, and enhance the economic viability, environmental sustainability and resiliency of Narragansett Bay and the state's watersheds. The fund is meant to provide funding assistance for the feasibility analysis, design, and construction of means to control nonpoint sources of pollution, stormwater pollution control projects, riparian buffer and aquatic habitat restoration projects. In addition to municipalities, other entities such as public schools and universities, non-profit watershed, environmental, or conservation organizations, and non-governmental for-profit businesses, private schools are eligible for funding.

Ocean State Climate Adaptation and Resilience (OSCAR) Grant

This newly established fund enables cities, towns and the State to apply for grants to fund projects that restore and improve the climate resilience of vulnerable coastal habitats, as well as river and stream floodplains, with priority to projects that improve community resilience and public safety. Program priorities include: Funding for Planning, Design, and Construction; Entities who own or control public land are eligible; Strong focus on projects delivering feasible and technically sound climate adaptation solutions with habitat restoration and public access co-benefits; and Environmental Justice and Community Engagement scoring criteria.

Project types include: projects that reduce the vulnerability of low-lying infrastructure on public land through measures that include removal and relocation of infrastructure; restoration of river and stream floodplains, including regrading of banks; revegetation; acquisition of that area of land necessary to maintain and preserve public access; redesigning, resizing, and replacing culverts and bridge spans at existing wetland crossings; additional adaptation and resilience projects deemed to be eligible under R.I. Gen. Laws §46-23.3-5.

Rhode Island's Farm, Forest, and Open Space Program

Rhode Island law (Chapter 44-27) allows property enrolled in the Farm, Forest and Open Space Program to be assessed at its current use, not its value for development. The purpose of the law is not to reduce property taxes, but to conserve Rhode Island's productive agricultural and forest land by reducing the chance it will have to be sold for development.

Urban and Community Forestry Grant Program

The Urban and Community Forestry Grant Program funds projects which lead to a more effective and efficient management of urban and community forests and improve public understanding of the benefits of preserving existing tree cover in communities. Grant projects should address at least one of these goals: promote active and sustainable management to conserve trees and forests where people live, work and play; protect trees and forests from threats through planning and response (invasive, catastrophic, climate, etc.); enhance the public benefits from trees and forests through improved management practices.

Wastewater Treatment Resilience Fund (WWTFRF)

The WWTFRF provides funding to municipalities and/or quasi-state entities to protect government-owned wastewater collection systems and treatment facilities against the effects of climate change and flooding. WWTFRF projects will harden, relocate, repair/replace, and/or provide redundancy infrastructure at these wastewater treatment facilities.

Rhode Island Department of Health (RIDOH)

RIDOH offers various grants to communities. To assist communities with Covid-19, RIDOH was administering grants for community vaccination medical pods. In addition, they provide grant opportunities to support and expand upon Environmental Health Risk Assessment Program (EHRAP) efforts to engage with and educate communities on the impact environmental hazards have on public health. When funding is available, RIDOH also offers various mini-grants, some of which are applicable to hazard mitigation.

Environmental Health Risk Assessment Program - Community Outreach, Education & Assessment Mini-Grant Opportunity

RIDOH offers mini-grants of up to $4,950 each to eligible entities to support and expand upon Environmental Health Risk Assessment Program's (EHRAP's) efforts to engage with and educate communities on the impact environmental hazards have on public health.

Environmental Public Health Tracking Network and Emergency Communications - Mini Grant

RIDOH will award mini-grants up to $4,950 to organizations to support the development and dissemination of communication products that address preparedness for extreme weather events that have negative impacts on the public's health.

Rhode Island Department of Transportation (RIDOT)

Refer to RI Division of Statewide Planning for information on the State Transportation Improvement Plan (STIP).

Beginning in 2015, RIDOT has budgeted $112 million over the ensuing ten years to ensure compliance with the Clean Water Act and a number of remedial measures under a consent decree with the Environmental Protection Agency. This initiative will reduce pollution from stormwater flowing into Narragansett Bay and hundreds of lakes, ponds, and rivers throughout Rhode Island.

In addition, RI DOT has a debris management program that goes into effect during a storm event. The new federal transportation bill, TEA-21, is a successor to the 1991 Inter-model Surface Transportation Efficiency Act (ISTEA). There are a few categories within this bill that may have available funding for natural hazard mitigation projects. These include transportation enhancement (categories include storm water remediation, storm water runoff protection, and environmental mitigation) and bridge replacement. The municipality must apply for project funds through RI DOT.

Rhode Island Division of Statewide Planning (RIDSP)

State Transportation Improvement Plan (STIP)

The STIP is a list of transportation projects the State of Rhode Island intends to implement using United States Department of Transportation funds. For a transportation project to utilize federal funds it must be included in the STIP. Federal regulations require that the **State Planning Council**, acting as the single statewide **Metropolitan Planning Organization (MPO)** in Rhode Island, adopt a new STIP at a minimum of every four (4) years. A project's inclusion in the STIP is a critical step, but it does not represent an allocation of funds, obligation to fund, or grant of funds. Projects supported with federal dollars are only guaranteed funding after the Rhode Island Department of Transportation (RIDOT) or the Rhode Island Public Transit Authority (RIPTA) or the U.S. Department of Transportation (USDOT) reviews the design, financing, and environmental impacts of a project.

Technical Assistance Programs

To provide funding to municipalities for planning projects for RI communities with populations under 50,000. The municipality must provide a match of at least twenty percent (20%) of the total cost of the technical assistance, but the match can include in-kind municipal staff time, and volunteer time. You must apply for one of the two categories:

- Active Transportation: up to $200,000 per project
- Climate Resilience: up to $75,000 per project (can include Climate Vulnerability Assessment and Action Plans OR Advancing Climate Resilience through review or drafting new local regulations/bylaws)

Rhode Island Emergency Management Agency (RIEMA)

The purpose of the Rhode Island Emergency Management Agency's (RIEMA's) Grants Program is to facilitate application and issuance of grants with the purpose of enhancing the preparedness, mitigation, response, and recovery efforts throughout the State in order to protect life and property from all hazards and disasters. **For Hazard Mitigation Grants (*refer to FEMA*).**

Emergency Management Performance Grant (EMPG)

The purpose of the EMPG program is to make grants available to assist in preparing for all hazards, including the evolving threats and risks associated with climate change.

Homeland Security Grant Program (HSGP)

The HSGP supports the implementation of State Homeland Security Strategies to address the identified needs in planning, organization, equipment, training, and exercise in order to prevent, protect against, mitigate, respond to, and recover from, acts of terrorism and other catastrophic events.

Rhode Island Foundation

The Foundation was organized at the Rhode Island Hospital Trust Co. in June 1916 by a small group of prominent Rhode Islanders. It was modeled after the first community foundation established in Cleveland two years earlier. The founders advocated that the charitable problems of each generation can and should be solved by the best minds of each generation. The Foundation administers a number of grant programs, each having a different purpose, application requirement, and deadline.

The **Community Grant Program** provides funding support (up to $10k) for community-building activities in cities and towns throughout Rhode Island, and may be applicable for certain hazard mitigation or resilience activities.

Rhode Island Housing - MTAP

The Municipality Technical Assistance Program (MTAP) may be used for technical assistance for cities and towns to support increased local housing production. Some of the eligible activities that may have hazard mitigation/climate resilience components include:

- **Developing model zoning ordinances:** Assistance in developing model zoning ordinances that increase density, promote a mix of housing types and otherwise remove barriers to housing development.
- **Infrastructure capacity assessment:** Assistance in evaluating the capacity of a municipality's infrastructure (such as water and sewer service) to serve existing and planned development and/or determine infrastructure needs to serve future development.
- **Updating land use and permitting requirements:** Assist municipalities with updating/improving their zoning/land use requirements and/or permitting process to remove barriers to housing development.

Rhode Island Infrastructure Bank (RIIB)

Community Septic System Loan Program (CSSLP)

The Community Septic System Loan Program (CSSLP) is a lending program that provides low-cost, long-term financing to residential property owners for the repair or replacement of substandard or failing septic systems or to replace cesspools when the homeowner wishes to upgrade to a septic system. Municipalities must opt in to provide this service to their residents.

Municipal Infrastructure Grant Program (MIGP)

The (MIGP) is a competitive grant program providing capital funds for municipalities, and other public entities, to make improvements to public infrastructure. The overall goal is to support projects that can achieve economic development and growth by accelerating housing production, spurring private development, and creating jobs across Rhode Island.

Municipal Resilience Action Grant Program

Participating municipalities in the MRP program are eligible to apply for MRP Action Grants annually. Eligible projects are required to be identified through the MRP workshop process, improve climate resilience, and result in design, engineering, and/or construction. MRP Action Grants are not available for research-related activities such as studies and strategic plans. Grant eligibility must fall under RIIB's broad portfolio of programs/ projects and must support program priorities, including resilience related infrastructure projects that improve community resiliency and strengthen public safety; and project must involve the removal, relocation or redesign of infrastructure **OR** incorporate nature-based solutions. Municipalities will be required to match grants with a 25% local project cost share. Projects which are shovel-ready will receive priority.

Project Types can include but not limited to: dam retrofits or removal, road elevation, floodproofing or elevation of pump stations, berms and levies, culvert resizing, green stormwater infrastructure, solar and battery back-up power, energy efficiency, energy infrastructure resiliency, watershed restoration, urban tree planting, and coastal and riparian resiliency, as well as funding for planning/design, outreach, modeling, permitting, and construction.

Sewer Tie-In Loan Fund (STILF)

The STILF is a lending program that provides low-cost loans to homeowners to connect to the local sewer system and abandon their individual septic system or cesspool. Municipalities must opt in to provide this service to their residents.

Small Business Clean Energy Grant Program (SBCEP)

SBCEP is a competitive grant financing program providing capital funds for small businesses in Rhode Island, including non-profit, private, and other business-related entities, to make clean energy and/or energy efficiency-related improvements. The overall goal is to support the small business community in making clean energy investments to their Rhode Island property.

Rhode Island Public Utilities Commission

Several utility companies have prevention and clean-up programs that require cooperation from municipalities. For instance, companies are usually willing to co-sponsor planting low-growing trees as part of a tree replacement program. Utility companies may provide the bucket truck area lift if the town/city helps dispose of tree trunks.

Southern New England Program (SNEP)

In 2012, the U.S. Environmental Protection Agency (EPA) created the Southeast New England Program (SNEP), a comprehensive effort to restore and protect the region's coastal waters and watersheds. SNEP works in partnership with stakeholders in these states to promote a resilient ecosystem of clean water, healthy diverse habitats, and sustainable communities in Southeast New England.

SNEP Opportunity to Advance Resilience (SOAR) Fund

To improve and support the climate resilience of **disadvantaged communities** throughout the SNEP region with meaningful community involvement as it relates to the design and implementation of projects to address the anticipated effects of climate change and the historic, long-term impacts of environmental and social injustices. Project Categories include: Planning, Implementation, Outreach, Training, and Capacity Building/Staffing. No match is required.

SNEP Technical Assistance Network

The SNEP Network provides FREE training and technical assistance to communities within the Southeast New England Region. The SNEP Network consists of environmental nonprofits, academic entities, regional planners, and consultants with expertise in a wide array of technical services including leadership, financing, stormwater/watershed management, and climate resilience. The Network utilizes the expertise of its Network Partners and its pre-approved contractors, refer to the **Partner Services Matrix**.

SNEP Watershed Implementation Grants (SWIG)

This grant program provides funding assistance to municipalities and other local organizations in Rhode Island and Massachusetts to accomplish the goals of EPA's SNEP program: a resilient ecosystem of safe and healthy waters, thriving watersheds and natural lands, and sustainable communities. The SNEP Network is managed by the **New England Environmental Finance Center (NEEFC)**, one of 10 university-based Environmental Finance Centers in the nation, and serves the six New England states of EPA Region 1. Its mission is to build local capacity to pay for the growing costs of protecting the environment and to be better prepared to manage the chronic and acute problems of environmental protection and finance. The NEEFC is based at the University of Southern Maine.

Southern Rhode Island Conservation District (SRICD)

SRICD is a non-profit, quasi-public organization that functions as a facilitator for meeting the needs of the local land user in the conservation of soil, water, and other related natural resources. The Conservation District is committed to providing public information and education on various topics, including reducing nonpoint sources of pollution from entering drinking water supplies as well as recreational rivers, lakes, ponds, and streams. SRICD works with a variety of people and groups including farmers, landowners, cities, towns, schools, and others in the community.

University of Rhode Island (URI) Cooperative Extension

The URI Cooperative Extension **Water Quality Programs** include the following four areas of technical assistance:

- New England Onsite Wastewater Training Program
- RI Nonpoint Education for Municipal Officials (NEMO)- provides information, education, and assistance to local land-use officials regarding how they can accommodate growth while protecting their water resources
- URI Home*A*Syst – provides information and training on pollution prevention for homeowners
- Watershed Watch Program– coordination of volunteer water quality monitoring

Volunteer Organizations

Organizations, such as the American Red Cross, Salvation Army, Habitat for Humanity, Interfaith, Mennonite Disaster Service, Lions Club, Elks Club, and VFW are often available to help after disasters. These types of organizations may be able to assist with food, shelter, clothing, and other necessities. Habitat for Humanity and the Mennonite Disaster Service provide skilled labor to help rebuild damaged buildings incorporating mitigation or flood proofing concepts. The offices of individual organizations can be contacted directly, or the FEMA Region I Office may be able to assist.

FEDERAL & OTHER *(the capabilities have been listed in alphabetical order)*

American Rescue Plan Act (ARPA)

The **American Rescue Plan Act of 2021**, also called the **COVID-19 Stimulus Package** or **American Rescue Plan**, was a $1.9 trillion economic stimulus bill passed by the 117th United States Congress and signed into law by President Biden on March 11, 2021, to speed up the country's recovery from the economic and health effects of the COVID-19 pandemic and the ongoing recession. First proposed on January 14, 2021, the package builds upon many of the measures in the March 2020 CARES Act and in the December 2020 Consolidated Appropriations Act. Congress required that all funds be "obligated" by December 2024 and spent by December 2026 - a timeline that accords with the legislation's goals around recovery.

Department of Commerce – U.S. Economic Development Administration (EDA)

The EDA's primary mission is to promote innovation and competitiveness, preparing American regions for growth and success in the worldwide economy. The EDA administers various grants and funding assistance. Key stimulus programs over the past several years were the 2021 American Rescue Plan and the 2020 CARES Act, both prompted by the Covid-19 pandemic economic downturn.

Federal Emergency Management Agency (FEMA)

Rhode Island is under the jurisdiction of **FEMA Region 1 Office** (99 High St, Boston, MA; 617-956-7506). FEMA administers a number of grant programs related to hazard mitigation and resilience including:

Building Resilient Infrastructure & Communities (BRIC)

Support for states, local communities, tribes and territories as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards.

Flood Mitigation Assistance (FMA) Grant Program

Provides funds for planning and projects to reduce or eliminate risk of flood damage to buildings that are insured annually under the National Flood Insurance Program.

Hazard Mitigation Grant Program (HMGP)
Assists in implementing long-term hazard mitigation planning and projects following a Presidential major disaster declaration.

Pre-Disaster Mitigation (PDM) Grant Program
Provides funds annually for hazard mitigation planning and projects.

Public Assistance (PA) Grant Program
The PA program authorizes the President to provide additional assistance to applicants when an incident occurs that exceeds the capabilities of the applying party to adequately respond and recover from major disasters.

National Fish and Wildlife Foundation (NFWF)

The NFWF awards competitive grants through a number of programs that support protecting and conserving the nation's fish, wildlife, plants, and habitats, including the following:

Five Star and Urban Waters Restoration Program seeks to develop nationwide community stewardship of local natural resources, preserving these resources for future generations and enhancing habitat for local wildlife. Grants seek to address water quality issues in priority watersheds, such as erosion due to unstable streambanks, pollution from stormwater runoff, and degraded shorelines caused by development. Funding priorities for this program include: on-the-ground wetland, riparian, in-stream and/or coastal habitat restoration; meaningful education and training activities, either through community outreach, participation and/or integration with K-12 environmental curriculum; measurable ecological, educational and community benefits; partnerships: - Five Star projects should engage a diverse group of community partners to achieve ecological and educational outcomes.

National Coastal Resilience Fund (NCRF)
The National Coastal Resilience Fund (NCRF), established in 2018. This fund will make investments in planning, design, and restoration projects that: **identify or implement nature-based solutions; benefit coastal communities by reducing threats from coastal hazards; and benefit fish and wildlife habitat.** Additional consideration will be given to projects that address the disproportionate risks faced by underserved communities, projects that are community led or incorporate direct community outreach and engagement, and projects that incorporate innovative, sustainable, or transferable approaches.

Project Types include: Community Capacity Building and Planning that engages stakeholders and builds the capacity to plan and execute a variety of future resilience strategies, projects, and other activities; **Site Assessment and Preliminary Design** of best options to address restoration and resilience goals of pre-identified and prioritized communities; **Final Design and Permitting** for on-the-ground projects (funding may be used for developing conceptual or preliminary designs into final designs and engineering plans, continued stakeholder engagement, detailed cost estimates, communications with permitting officials, and tasks to position projects for implementation); **Restoration and Monitoring** of projects that have been prioritized through planning, address coastal resilience, have completed all design and engineering plans necessary for implementation, and are ready to secure or have secured all permits and other approvals necessary for implementation.

Northeast Forests and Rivers Fund
The Northeast Forests and Rivers Fund is dedicated to restoring and sustaining healthy forests and rivers that provide habitat for diverse native bird and freshwater fish populations in the Northeastern United States. In particular, the fund supports projects that will restore early successional and mature forest habitat, modify and replace barriers to fish movement, restore riparian and instream habitat, and engage thousands of volunteers in forest habitat restoration and stream connectivity projects. The program annually awards competitive grants ranging from $75,000 to $300,000 each.

National Oceanic and Atmospheric Administration (NOAA)

Working at national, regional, and local levels, NOAA funded projects educate and inspire people to use Earth systems science to improve ecosystem stewardship and increase resilience to environmental hazards. NOAA has various grant programs including **Climate Program Grants**, as well as grant collaborations with other agencies or groups such as the National Fish and Wildlife Foundation (NFWF).

Coastal and Marine Habitat Restoration Grants
NOAA's Restoration Center grants supports projects that aim to rebuild fishery ecosystems in order to promote healthy ecosystems and foster ecological restoration. Eligible Applicants include higher education institutions, non-profits, commercial organizations, US states, territories, local governments, tribal governments.

U.S. Army Corps of Engineers (USACE)

USACE administers a number of grant and assistance programs including:

- Planning Assistance to States (PAS) Program
- Flood Plain Management Services Program (FPMS)
- Continuing Authorities Program (CAP)
- Inspection of Completed Works (ICW) Program
- Rehabilitation and Inspection Program (RIP)
- Beach Restoration and Shoreline Protection Program
- General Investigation (GI)
- Emergency Streambank and Shoreline Protection (CAP Section 14)
- Hurricane and Storm Damage Reduction Projects (CAP Section 103)
- Flood Damage Reduction Projects (CAP Section 205)

U.S. Department of Agriculture Natural Resources Conservation Service (USDA|NRCS)

As the USDA's primary private lands conservation agency, the Natural Resources Conservation Service (NRCS) generate, manage, and share the data, technology, and standards that enable partners and policymakers to make decisions informed by objective, reliable science. The NRCS is primarily focused on helping landowners, farmers, and ranchers improve their land's health and productivity, while also conserving natural resources like soil, water, air, and wildlife. The USDA|NRCS has several financial assistance programs including:

Agricultural Management Assistance - which helps agricultural producers use conservation to manage risk and solve natural resource issues through natural resources conservation.

Conservation Innovation Grants – Rhode Island - funding to stimulate the development and adoption of innovative conservation approaches and technologies in conjunction with agricultural production in Rhode Island.

Conservation Stewardship Program - which helps agricultural producers maintain and improve their existing conservation systems and adopt additional conservation activities to address priority resources concerns.

Emergency Watershed Program (EWP) - This is available to apply for within 60 days after a natural disaster strikes, for the purpose of protecting a watershed by removing the hazard and restoring stream hydrology to pre-disaster conditions.

Environmental Quality Incentives Program (EQIP) - which provides financial and technical assistance to agricultural producers to address natural resource concerns and deliver environmental benefits such as improved water and air quality, conserved ground and surface water, increased soil health and reduced soil erosion and sedimentation, improved or created wildlife habitat, and mitigation against increasing weather volatility. Through EQIP, farmers and forestland managers may receive financial and technical help to install or implement structural and management conservation practices on eligible agricultural and forest land. Examples of eligible EQIP activities include practices for farm waste storage, nutrient management, riparian buffers and stream bank improvements, wetland restrictions, and groundwater and surface water conservation activities. EQIP payment rates may cover up to 75 percent of the costs of installing certain conservation practices.

U.S. Department of Housing and Urban Development (USHUD)

Rhode Island is under the jurisdiction of the **HUD Region 1** Providence Field Office located at 380 Westminster Street, Suite 547, Providence, RI; 401-277-8300.

Community Development Block Grant Disaster Recovery (CDBG-DR)

CDBG-DR grant funds are appropriated by Congress and allocated by HUD to rebuild disaster-impacted areas and provide crucial seed money to start the long-term recovery process. These flexible grants help cities, counties, Indian tribes, and States recover from Presidentially declared disasters, especially in low-income areas, subject to availability of supplemental appropriations. Since CDBG-DR assistance may fund a broad range of recovery activities, HUD can help communities and neighborhoods that otherwise might not recover due to limited resources.

HUD Community Block Grant Program (CDBG)

The Community Development Block Grant (CDBG) Program provides annual grants on a formula basis to states, cities, and counties to develop viable urban communities by providing decent housing and a suitable living environment, and by expanding economic opportunities, principally for low- and moderate-income persons.

U.S. Economic Development Administration

U.S. Economic Development Administration empowers distressed communities to revitalize, expand, and upgrade their physical infrastructure to attract new industry, encourage business expansion, diversify local economies, and generate or retain long-term, private sector jobs and investment.

U.S. Environmental Protection Agency (EPA)

The mission of the EPA is to protect human health and the environment based on the best available scientific information. The EPA has an abundance of resources related to hazard mitigation to help inform communities.

Brownfields Program - provides grants and technical assistance to communities, states, tribes and others to assess, safely clean up and sustainably reuse contaminated properties.

Climate Resilience and Adaptation Funding Toolbox (CRAFT) - In September 2024 the EPA launched a new Website, known as CRAFT to support the development of Climate-Resilient Projects. CRAFT is a user-friendly resource for technical assistance providers working with federal funding applicants and recipients to develop, apply for and implement climate-resilient investments. The website provides simple, easy-to-understand resources that can help users consider climate adaptation and resilience before, during and after applying for EPA funding opportunities.

Healthy Communities Grant Program - is EPA New England's main competitive grant program to work directly with communities to reduce environmental risks to protect and improve human health and the quality of life. Eligible projects target resources to benefit communities at risk [areas needing to create community resilience, environmental justice areas of potential concern, sensitive populations (e.g., children, elderly, tribes, urban and rural residents, and others at increased risk)]; assess, understand, and reduce environmental and human health risks; increase collaboration through partnerships and community-based projects; build institutional and community capacity to understand and solve environmental and human health problems; achieve measurable environmental and human health benefits. Projects must: be located in and/or directly benefit one or more of the Target Investment Areas; and identify how the proposed project will achieve measurable environmental and/or public health results in one or more of the Target Program Areas.

Wetlands Program Development Grants (WPDG) - provide eligible applicants an opportunity to conduct projects that promote the coordination and acceleration of research, investigations, experiments, training, demonstrations, surveys and studies relating to the causes, effects, extent, prevention, reduction and elimination of water pollution.

U.S. Fish and Wildlife Service (FWS)

The U.S. Fish and Wildlife Service's (FWS) primary responsibility is the conservation and management of fish, wildlife, plants, and their habitats. The FWS issues grants and other financial assistance, which vary from year to year. The **FWS New England Field Office** is located at 70 Commercial Street, Suite 300 Concord, NH; 603-223-2541.

Clean Vessel Act (CVA) – facilitated by RIDEM

Boat sewage can threaten water quality by introducing bacteria and other pathogens, excess nutrients, and chemicals that are harmful to humans and marine life. This grant helps municipalities, marinas, and yacht clubs pay for improvements to marine and land-based pump-out facilities.

Grants between 2017 – 2024

Recent hazard mitigation related grants awarded to the Town				
Project Description	**Year Awarded/ Project Status**	**New Shoreham Lead**	**Grant Source**	**Award Amount**
Corn Neck Road Dune Restoration Project (implementation dollars)	Pending	Town Planner/DPW Director	Submitted by RIDEM through NFWF	Pending
Corn Neck Road Nature-Based Solutions/Dunes/Drainage Beach Parking Lot	2023	Town Planner/DPW Director/Town Engineer	RI Infrastructure Bank MRP Action Grant	$465,000
Hazard Mitigation Plan Update	2023 HMGP-4505-15P In Progress	Town Manager	FEMA Hazard Mitigation Grant Program	$45,000
Recipient of two handicapped accessible vans for rural transportation	2023 Completed	Town Manager	RIPTA Federal Transit Administration via RIPTA	$250,000
MRP Technical Assistance for Community Resilience Building Workshop	2021 Completed	Town Manager; Land Use Department	RI Infrastructure Bank The Nature Conservancy	Technical Assistance
Block Island Housing Board - Rental Development Project in New Harbor - Engineering and Site Work	2022	BI Housing Board	RI Infrastructure Bank Municipal Infrastructure Grant	$250,000
Zoning and Subdivision Regulation Amendments - 2023 State Law Changes	2023	Land Use Office	Rhode Island Housing Municipal Technical Assistance Program (MTAP)	$95,000
Corn Neck Road Nature-Based Solutions	2023	Town Planner/DPW Director	National Fish and Wildlife Foundation National Coastal Resilience Fund	$187,000
Block Island School	2024	BI School	Learn365RI Education Grant	$50,000
Public Safety Complex	2024	BI Volunteer Fire & Rescue/ Town Manager	Congressionally Directed Spending (Earmark)	$3,500,000
Maintenance/Operation of the Pump Out Program	2024	Harbormaster	RIDEM CVA- Clean Vessel Grant (Harbors applies/receives annually)	$7,500
Purchase Heat Gun and Safety Gloves	2022	Harbormaster	RI Interlocal Trust Harbors Safety Equipment	$1,000
Purchase Extinguish Balls	2023	Harbormaster	RI Interlocal Trust Harbors Safety Equipment	$1,000
Removal of Derelict Vessel in Great Salt Pond	2022	Harbormaster	RIDEM Derelict Vessel Grant	$10,000
Senior Transportation	2024	Human Services Director	OHA Senior Ride Service	$8,000
Handy Person Services for Seniors	2024	Human Services Director	OHA Home Helper	$5,000
Winter Storm Kenan – January 2022 (DR 4653)	2023 Completed	Town Manager/ Emergency Management	FEMA	Recovery Reimburse-ments
American Rescue Plan Act of 2021 (ARPA)	2021 In Progress	Town Manager	American Rescue Plan Act of 2021 (ARPA) U.S. Treasury Department	$302,198

APPENDIX 6-1

Possible Actions

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Appendix 6-1
Possible Actions

As it is good practice, and in support of CRS Activity 510 Planning Process - Step 7, an array of **POSSIBLE ACTIVITIES** was reviewed for inclusion in the *2025-2030 Action Plan*. The activities considered were those previously identified in the following Town of New Shoreham planning documents, those identified by the *HM&FMP* Public Opinion Survey respondents, and those offered by Advisory Committee members, members of the public, or other stakeholders. As part of this document's **EXTENSIVE PLAN INTEGRATION PROCESS**, this Appendix identifies the hazard mitigation related actionable items from the following documents/initiatives.

- Hazard Mitigation Plan (2017)
- Comprehensive Plan (2016)
- MRP Community Resilience Building (CRB) Process & Workshop Summary of Findings (2021)
- Harbor Management Plan (2024)
- Corn Neck Road Transportation Resiliency Study (2017)
- Geographic Information System (GIS)
- Block Island Harbors Sea Level Rise Adaptation Study (2013)
- TNC's Block Island Coastal Resilience Coordinator's Summary (2024)
- HM&FMP Public Opinion Survey (2024) - *Outreach Activity #5*

Appendix 2-2 includes the results of the Public Opinion Survey with all comments as they were provided. With respect to this Appendix, the actionable items were extracted from the Public Opinion Survey comments and organized into 11 categories. Survey comments that included multiple topics were separated into respective categories. It was **EXTREMELY IMPORTANT** to the Advisory Committee that the comments provided by residents and other stakeholders were reviewed, discussed, and incorporated into the mitigation strategy to the extent feasible. As shown, **many of suggestions by survey participants have been integrated into the *2025 Action Plan*.**

Each of the possible actions from the following resources has been identified as either being included or not in the *2025 Action Plan*. For actions included, the corresponding action number has been provided. **It should be noted that the specification "included" refers to the general intent of the reviewed action (i.e. the wording may vary or some particular aspects may not be included – however, the action in some form is essentially represented)**. **Similar actions from various sources were combined and rewritten for inclusion in the *2025 Action Plan*.** For actions not included in the 2025 Action Plan, a reason has been provided.

Hazard Mitigation Plan (2017)

Refer to **Subsection 5.3** for a detailed review and status of the 2017 HMP actions listed below.

Possible Activity	2025 Action Plan	
	Included	**Reason Not included**
Action 1: Mitigate Beach Erosion at Old Landfill	Action 2025-L (ongoing maintenance)	Completed
Action 2: Old Town Road Sluice/Bridge		Completed
Action 3: Corn Neck Road Mitigation	Action 2025-F	
Action 4: Back-up Power for Sewer Pump Stations	Action 2025-I	
Action 5: Participate in the FEMA National Flood Insurance Program's (NFIP) Community Rating System (CRS)		Completed
Action 6: Back-up Power for North End of Island (Transfer Station)	Action 2025-I	
Action 7: Town/State Highway Garage Generator		Completed
Action 8: Medical Center Generator Replacement		Completed
Action 9: Town Hall Generator	Action 2025-I	
Action 10: Salt Marsh Migration	Action 2025-G; Action 2025-K; Action 2025-M	
Action 11: Block Island Stormwater Management Plan	Action 2025-E; Action 2025-F; Action 2025-M	
Action 12: Implement WebGIS		Completed
Action 13: Burying Overhead Power Lines		BIUD does not support burying electric lines in flood prone areas
Action 14: Sand's Pond Drainage Project	Action 2025-G	
Action 15: New Fire Station	Action 2025-H	
Action 16: Public Outreach Regarding Droughts and Brushfires	Action 2025-A	

Comprehensive Plan (2016)

Possible Activity	2025 Action Plan	
	Included	Reason Not included
Historic & Cultural Resources		
HC.1.B.1. Document and photograph high tides and storm flooding impacts, bluff erosion, etc. in the vicinity of historically significant structures		Existing program MyCoast RI
HC2.A.1. Work with partners to identify and implement solutions to control vegetation growth and invasive species	Action 2025-G	
Natural Resources		
NR1.A.1. Review new State wetlands setback regulations and determine if additional protection measures are required to protect the quality and habitat of the wetlands systems on Block Island	Action 2025-M	
NR1.A.2. Develop zoning overlay district with special use permit for high hazard areas that include storm surge inundation, sea level rise and SLAMM projected potential salt marsh areas	Action 2025-M	
NR1.B.1. Identify undeveloped land containing habitats of endangered species and/or having a high potential for coastal wetland migration		Completed
NR1.B.2. Explore issues related to reforestation and identify potential lands where reforestation may be a good option		Completed (Nevas Lot 12:3-8)
NR1.D.1. Develop an invasive species management plan for Town-owned open space properties		Completed
NR1.D.2. Investigate ordinances relating to the control of invasive flora and fauna		Lower Priority
NR1.E.1. Develop an education program aimed at visitors and renters to promote good environmental behavior and responsible stewardship	Action 2025-A	
NR1.E.2. Institute programs at the Block Island School with partners that encourage outdoor learning, natural resources preservation and stewardship among the next generation		Completed (TNC Program)
NR2.A.1. Investigate strategies to reduce and limit impervious surface on the island and establish a policy identifying an upper limit on the total percentage of impervious cover on the island to be incorporated in the next update of the Comprehensive Plan	Action 2025-M	
NR2.A.2. Enact guidelines and institute an education campaign on the appropriate use of fertilizers, pesticides and herbicides; Town should serve as a model of best practices	Action 2025-B; Action 2025-M	
NR2.A.3. Review and strengthen current regulations regarding LID (low impact development)	Action 2025-M	
NR2.A.4. Review and strengthen landscaping requirements to ensure low maintenance native vegetation that minimizes the need for watering and use of lawns, fertilizers, and pesticides are used for all new development projects	Action 2025-M	
NR2.B.1. Draft and adopt regulations to require the preservation or restoration of naturally buffered areas along the Great Salt Pond and significant freshwater ponds	Action 2025-M	

Possible Activity	2025 Action Plan	
	Included	Reason Not included
NR3.B.1. Install beach access signage to encourage pedestrians to remain off dunes		Completed
NR3.B.2. Implement an effective public education campaign which explains the importance of people remaining off dunes	Action 2025-A	
NR3.B.3. Install public walkover structures at the Town Beach to discourage traversing the fragile dunes (NHC1.B.2.)		Completed
Recreation & Conservation Areas		
RC1.A.1. Partner with nonprofits to identify and prioritize open space lands that should be conserved	Action 2025-K	
RC1.A.2. Collaborate with non-profits when acquiring, developing, and maintaining recreation and conservation areas	Action 2025-K	
RC1.A.3. Prioritize the conservation of lands abutting conserved lands to create large protected greenways, habitat areas and opportunities for trail extensions	Action 2025-K	
RC1.B.4. Determine if conservation-style subdivisions should be mandatory for all major subdivisions	Action 2025-M	
RC2.D.1. Require that significant land development projects, including major subdivisions, incorporate open space and recreational amenities	Action 2025-M	
The Great Salt Pond		
GSP1.B.1. Work with partners to conduct a study to identify potential non-point sources of pollution upstream of the Great Salt Pond	Action 2025-B	
GSP1.B.2. Encourage local land conservation groups such as the Block Island Land Trust, the Nature Conservancy, and the Block Island Conservancy to prioritize land conservation investments which will have a positive impact on water quality of the GSP	Action 2025-K	
GSP1.B.3. Educate property owners on best management practices such as minimizing use of herbicides and pesticides	Action 2025-B	
GSP1.C.1. Seek grant funding to implement strategies identified in the Block Island Sea Level Rise Adaptation Study	Action 2025-H	
GSP1.C.2. Identify lands that will provide marsh migration areas for coastal wetlands of the Great Salt Pond in response to sea level rise		Completed
GSP1.C.3. With the help of partners, pursue dune restoration projects to mitigate erosion and provide habitat along the Great Salt Pond	Action 2025-G	
GSP1.C.4. Consider sea level rise and storm flooding when designing upgrades to or locating public facilities including roads, bridges, structures, utilities, and pump stations	Action 2025-F Action 2025-L	
GSP3.A.1. Review current local regulations (subdivision, zoning etc.) to ensure they provide the necessary protections for the Great Salt Pond	Action 2025-M	
Economic Development		
ED1.K.1. Establish island-wide reliable high-speed internet connection		Completed
ED2.A.1. Control access to the beaches in a way that protects dunes and bluffs from damage		Completed

Possible Activity	2025 Action Plan	
	Included	Reason Not included
Transportation		
T1.E.2. Conduct regular road and sidewalk condition surveys as a means to better prioritize infrastructure investments		Existing program
T1.H.1. Evaluate each road currently or potentially impacted by sea-level rise or flooding to determine appropriate actions to limit impacts to the community	Action 2025-F	
T1.H.2. Conduct a planning study of Corn Neck Road to identify alternatives to mitigate future impacts from storms and climate change	Action 2025-F	Completed
Services & Facilities		
SF1.B.1. Include costs of necessary and significant improvements to town facilities in the capital budget		Existing Policy
SF1.E.2. Evaluate need for paid fire or rescue personnel	Action 2025-H	
SF2.A.1. Work with Tourism Council, Chamber of Commerce and other partners to promote water conservation, energy conservation and solid waste reduction among tourism industry and visitors	Action 2025-A	
SF2.D.4. Make necessary upgrades to the transfer station including drainage improvements and improved processing capabilities		Completed
SF2.E.1. Educate the public on the problems associated with impaired stormwater quality, the conditions which contribute to impaired water quality, and the actions which can be taken by the community both individually and as a whole to improve the quality of stormwater runoff	Action 2025-B	
SF2.E.2. Complete a watershed management plan	Action 2025-E	
SF2.E.3. Review and strengthen current regulations regarding LID (low impact development) (NR2.A.3.)	Action 2025-M	
SF2.E.4. Continue to identify inadequately functioning or failed (OWTS) systems through an inspection and monitoring program, first targeting critical resource areas		Existing program
SF2.E.5. Draft regulations which will require phase out of septic systems which do not meet current standards for on-site treatment and explore funding opportunities to assist homeowners		Completed
Land Use		
LU1.C.2. Review Flexible Subdivision Design (conservation-style) to ensure regulations will result in desired development and open space set aside outcomes	Action 2025-M	
LU2.C.1. Identify scenic and/or ecologically significant lands that have yet to be protected		Completed
LU2.C.2. Establish a criteria for prioritizing the acquisition of conservation land		Completed

Possible Activity	2025 Action Plan	
	Included	Reason Not included
Natural Hazards & Climate Change		
NHC1.A.1. Complete an assessment of the potential impacts to public structures and infrastructure resulting from projected sea-level rise	Action 2025-F; Action 2025-L	
NHC1.A.2. Include in the capital improvement program projects required to mitigate threats to infrastructure and properties	Action 2025-H	
NHC1.A.3. Evaluate current zoning and land use regulations related to future impacts from climate change and sea level rise	Action 2025-M	
NHC1.A.4. Conduct a planning study of Corn Neck Road to identify alternatives to mitigate future impacts from storms and climate change (T1.H.2.)		Completed
NHC1.B.1. Work with the land trust and other stakeholder to identify and protect from development low-lying land vulnerable to impacts from flooding and sea level rise and areas adjacent to coastal wetlands susceptible to increased inundation due to sea level rise	Action 2025-K	
NHC1.B.2. Install public walkover structures at the Town Beach to discourage traversing the fragile dunes (NR3.B.3.)		Completed
NHC.1.B.3. Implement green infrastructure stormwater management strategies to enhance infiltration and increase retention on town properties and road rights-of-way	Action 2025-E; Action 2025-F	
NHC.1.B.4. Evaluate the potential impacts of sea-level rise on public sewer infrastructure and potential inundation of onsite wastewater treatment systems	Action 2025-L	
NHC.1.B.5. Investigate options to mitigate flooding along Beach and Ocean Avenues and its impacts on public safety buildings and services	Action 2025-F	RIDOT jurisdiction
NHC1.C.1. Apply for funding to assist in implementing projects identified in the town's Hazard Mitigation Plan	Action 2025-H	
NHC1.C.2. Establish a committee responsible for a. reviewing progress on implementation of the Hazard Mitigation Plan and b. activities resulting in CRS credit and other mitigation projects related to potential impacts of sea level rise		Completed (a - HM&FMP Advisory Committee; b - Coastal Resilience Committee)
NHC1.D.1. Assess the feasibility of burying power lines particularly in scenic and high risk areas and when road construction is planned		BIUD does not support burying electric lines in flood prone areas
NHC2.A.1. Establish a process to directly contact special populations such as those who are particularly vulnerable due to location, age or infirmity, to ensure their understanding of procedures prior to and following a storm event		Protocol in Place (CodeRED)
NHC2.A.2. Collaborate with agencies monitoring the impacts of climate change with efforts such as documenting high tide events, storm flooding impacts, bluff erosion and impacts on species		Existing Protocol
NHC2.B.1. Undertake actions that qualify the town for advanced FEMA CRS scoring	Action 2025-H	

Municipal Resilience Program Community Resilience Building (CRB) Process & Workshop Summary of Findings (2021)

Category	Possible Activity	2025 Action Plan	
		Included	Reason Not included
Priority Capacity Building	• Create a study group to consider options to relocate or flood-proof the Power Company Substation which is currently in a low-lying area.	Action 2025-L	
Priority Projects	• Maintain access to the mainland by advancing specific actions from the Harbor Sea Level Rise Study (2013) including re-evaluating engineering based on updated data and identified priorities such as raising the docks on-island and at Point Judith.	Action 2025-L	
	• Explore potential for using living breakwaters or reefs to protect select coastal areas of the Island longer-term through the dissipation of wave energy generated by storms before reaching shore.	Action 2025-G	
	• Continue to advance the Corn Neck Road Transportation Resiliency Planning Study (2017) so that a project is in place for next round of disaster funds with construction proceeding according to how the municipality desires amongst the various alternatives identified (5 alternatives identified ranging in cost from $SM to $65M).	Action 2025-F	
	• Secure funding to conduct engineering and designs for identified and priority flood prone road segments and other locations including Spring Street, Bridge Street Square, and Payne Dock.		RIDOT jurisdiction; privately owned
	• Assess to determine which utilities (sewer, water, electrical, communications) along Ocean Avenue and in other low-lying areas are vulnerable to hazards and then identify what technical solutions are needed.	Action 2025-L	
	• Identify suitable alternative location (i.e. site suitability analysis) for the Public Safety Building out of flood vulnerable areas and relocate to help ensure long-term availability and continuity of associated municipal services.	Action 2025-H	
Priority Planning/ Prepared-ness/ Outreach	• Explore the possibilities of conducting cost/benefit analysis of various resilience actions to determine urgency, cost effectiveness, and immediate versus long term risk reduction benefits with the goal of creating a more resilient Capital Improvement Plan for New Shoreham (e.g. Portsmouth, Rhode Island) with integrated long-term financing mechanism.		Redundant
	• Engage with Interstate Navigation to discuss the immediate and long-term need to increase resilience of the ferry system and to explore a possible public/private partnership around critical community needs such as evacuation and re-supply.	Action 2025-H	
	• Conduct education outreach to private homeowners on the use of natural buffers, bioswales, rain gardens, and dune restoration/reinforcement efforts, among others, in hopes of fostering use of more nature-based solutions versus traditional structural engineering.	Action 2025-B	

Category	Possible Activity	2025 Action Plan	
		Included	Reason Not included
Priority Planning/ Prepared-ness/ Outreach *continued*	• Conduct a review of existing work and develop a community plan to address transportation connection assurances in post storm and longer-term sea level rise scenarios at different times of year including potential impacts such as harbor siltation and breakwater impacts on both the Island and mainland.	Action 2025-F; Action 2025-L	
Priority Policy	• Modify zoning designations and locations to help ensure development does not occur in current and future flood areas and that coastal setbacks include elevation and linear distance along with restriction to increases in existing structural footprints.	Action 2025-M	
	• Develop and utilize a sea level rise/climate change checklist as part of Planning Board review of proposed development across the Island.	Action 2025-H	
Other Actions Projects	• Conduct a technical review of hydrology and drainage of all roads on the Island and look for ways to reduce runoff and decrease storm damage including use of green stormwater infrastructure, where feasible.	Action 2025-F	
	• Establish water table monitoring program that measures water table fluctuations and levels of saltwater intrusion seasonally and annually.	Action 2025-C	
	• Identify and fund flood/wind mitigation measures for identified and mapped vulnerable properties including Block Island Power Company (including land around it), Highway Garage, and the daycare center.	Action 2025-L	
	• Identify a location and construct an emergency shelter for housing pre-deployed resources on the north end (i.e. up the neck) in the event the Island becomes bisected by storm-related hazards (e.g. flooded, impassable roads).		Financial constraints
	• Identify, prioritize, and implement conservation projects that increase the current and long-term resilience at Middle Pond, Wash Pond, and Sachem Pond.		Coastal adaptation zones
	• Continue to preserve and manage open space to serve as advancement zones for future salt marsh and other shifting habitat types in critical areas such as around Great Salt Pond.	Action 2025-K	
	• Install temporary structures that could be moved during storm events, instead of permanent structures including bathrooms and showers once current structure are damaged (e.g. Beach Pavilion on Corn Neck Road).		Technical & logistical constraints
	• Ensure school receives all needed upgrades to further enhance this emergency shelter including fixing the leaks in the roof, eliminating mold issues, updating the heat system, and securing back-up power via dedicated generator(s).		Completed
	• Initiate transition from traditional septic systems to nitrogen removal systems (T2 systems) via a pilot program with identified financing mechanisms (low interest loans and grants) for septic upgrades.	Action 2025-M	

Category	Possible Activity	2025 Action Plan	
		Included	Reason Not included
Other Actions Planning/ Prepared-ness/ Outreach	• Incorporate resulting resilience actions from the New Shoreham Community Resilience Building workshop into future updates of Comprehensive Plan and Hazard Mitigation Plan.		Incorporated into HM&FMP
	• Re-evaluate level of preparedness against worst case Category-3 hurricane (including wind and storm surge projections) and generate a single island-wide maps that clarifies risk and location from extreme 8'-12' storm surge projections.	Action 2025-H	
	• Continue to identify and secure affordable, year-round housing for residents.		Outside of HM&FMP scope
	• Conduct a cost and feasibility assessment of placing above ground power and telephone lines below ground in select high risk areas around the Island.		BIPCO recommended against
	• Explore opportunities to reduce the vulnerability of the Scotch Beach area including elevation of amenities to let tides and surge go under.	Action 2025-F; Action 2025-G	
	• Plan for relocation of Transfer Station to the middle of the Island in proximity to the Power Plant which would ultimately help to reduce traffic on Corn Neck Road.		Completed
Other Actions Policy	• Modify current vegetative buffer zone ordinance width requirements to increase the amount of nature-based risk reduction strategies around development and existing natural areas.	Action 2025-M	
	• Explore potential retreat or relocation policy strategies for vulnerable public facilities including much of the downtown area.	Action 2025-L	

Harbor Management Plan (2024)

Possible Activity	2025 Action Plan	
	Included	Reason Not included
Help to ensure that all landside development is in keeping with the provisions of the Town's Comprehensive Plan, Zoning Ordinance, Open Space and Recreation Plan, and the requirements of all other agencies. **** The Town of New Shoreham has adopted a **comprehensive harbor storm preparedness plan** written in conformance with the guidance detailed in Guidelines for The Development of Municipal Harbor Management Plans, State of Rhode Island, by the Coastal Resources Management Council. Block Island harbors contain many of the physical attributes found in a typical harbor in Rhode Island. The plan includes storm preparedness features for Old Harbor and New Harbor/Great Salt Pond. The Storm Preparedness Plan can be found in Appendix F.*		Existing policy

Corn Neck Road Transportation Resiliency Study (2017)

Possible Activity	2025 Action Plan	
	Included	Reason Not included
The key outcome of the *Corn Neck Road Transportation Resiliency Study* was the identification of strategies to improve the resilience of Corn Neck Road, which is a critical roadway on Block Island. The study focused on addressing vulnerabilities due to storm surges, flooding, and rising sea levels that affect the road and its ability to connect key areas of the island. Recommendations to reduce flood risk and enhance the road's resilience to extreme weather events included elevating sections of the road, installing protective measures like berms and seawalls, and developing long-term plans for sustainable road management in the face of climate change and rising sea levels. The study aimed to ensure safe and reliable access to important locations such as the ferry terminal, residential areas, and businesses. *Note: As Corn Neck Road is under RIDOT jurisdiction, the State is responsible for the final design and construction. The Town is currently evaluating nature-based stormwater management and dune stabilization improvements along the Corn Neck Road corridor.*	Action 2025-F; Action 2025-G	

Geographic Information System (GIS)

Possible Activity	2025 Action Plan	
	Included	Reason Not included
The Town has an online geographical information system which is facilitated by the Town Planner (a part-time contract position) that enables Town Departments and the public easy access to New Shoreham's GIS mapping and data. It is important that the Town continues to enhance their GIS program through training personnel and adding to the geodatabase. In addition to including some additional RIGIS layers or developing some new Town-specific layers, the Town's GIS program would benefit by building a ***Resilience Map*** which includes base layers such as parcels, roads, contours, etc. as well as hazard mitigation/resilience layers such as FEMA flood zones, hurricane storm inundation areas, etc. **Potential New GIS Layers:** ➢ stormwater drainage system ➢ stormwater catchment areas for outfalls ➢ location of major flood events to identify patterns of flooding ➢ elevation certificates ➢ RIGIS Coastal Features layer ➢ dry hydrant and drafting locations for immersing fire suppression water pumps ➢ wildfire risk areas ➢ wells (or a subset of wells that are known to go dry first as a mechanism to gage groundwater level) ➢ onsite wastewater treatment systems (OWTS) ➢ benchmarks	Action 2025-C	

Block Island Harbors Sea Level Rise Adaptation Study (2013)

Possible Activity	2025 Action Plan	
	Included	Reason Not included
The study was part of efforts to assess and plan for climate change-related challenges, including rising sea levels, in order to improve resilience for the island's residents, businesses, and visitors. The study focused on evaluating how rising sea levels could impact Block Island's harbors, including the main port areas, docks, and associated infrastructure. It also identified key vulnerable areas, such as the coastline, roads, and developed areas near the shore. **Identify engineering solutions to infrastructure at risk to SLR:** **Old Harbor** - ferry terminal facility/timber dock operated by Interstate Navigation, Town timber docks (timber dock system at the Inner Basin), harbormaster building (updated with flood vents in the exterior walls), stone breakwater system (north end of system is in poor condition and has partially failed, revetment system (steel sheet-pile bulkhead structures that line much of the shoreline) **New Harbor** - Town timber docks & dock system, Town boat ramp (poor condition) **Road System** - sections Ocean Avenue, Beach Avenue, and Corn Neck Road (all under RIDOT jurisdiction) **Sewer Pump Stations** - the following four pump stations will eventually be impacted by SLR inundation: 2 on Ocean Avenue, 1 at the Boat Basin, and 1 at Champlin's Marina **Point Judith** - dock, parking, and roadway improvements to accommodate SLR	Action 2025-F; Action 2025-L	
Emergency Management Procedures: The police, fire and rescue services must eventually prepare for such an event, including setting up a satellite public safety center and stationing fire engines and fully equipped ambulances at other island locations.	Action 2025-H	
Public Awareness: Block Island must remain committed to studying and responding to the issues of climate change and sea level rise. This includes working with the State to continuously update the scientific data, and to keep adaptation always in mind when developing policies, planning for the future and regulating development in future inundation areas.		Existing policy

TNC's Block Island Coastal Resilience Coordinator's Summary (2024)

Possible Activity	2025 Action Plan	
	Included	Reason Not included
Grant identification, writing and project management for underway contracts including reporting to meet capacity gaps in the town.	Action 2025-H	
Updating the town GIS layers, specifically the Coastal Feature layer which may be useful to community members and town boards.	Action 2025-C	
Securing funding for technical assistance for critical infrastructure should remain a priority, especially in the Bridgegate square area.	Action 2025-H	
Following through on suggestions from the town ordinance review.	Action 2025-M	
Supporting the Conservation Commission in a similar way to the Coastal Resilience Committee to improve enforcement and prioritizing resiliency in the development process.		Outside of HM&FMP scope
Bringing living shoreline pilot projects to the island to provide the town more ability to set the tone on nature-based solutions.	Action 2025-G	
Continue to develop relationship with CRMC through a more consistent process for CRMC permits (consider including the coastal hazard worksheet in the New Shoreham review process).	Action 2025-G	
Expand beyond working with the municipality and critical infrastructure to encompass resiliency work in community organizations (For example bringing community care resiliency grants to local churches).		Outside of HM&FMP scope
Evaluating and prioritizing culverts using the NAAC system with DPW and Block Island students.		RIDOT jurisdiction
Beach nourishment projects focusing on the placement of dredged sand by ACORE or the town.	Action 2025-G	
Major wave attenuation solutions along crescent beach.	Action 2025-G	
Non-tax income streams for resiliency work.	Action 2025-H	
Longer-term infrastructure migration projects (including moving vulnerable areas and supporting underutilized ones).	Action 2025-L	

HM&FMP Public Opinion Survey (2024) – *Outreach Activity #5*

Appendix 2-2 includes the results of the Public Opinion Survey with all comments as they were provided. With respect to this Appendix, the **actionable items** were extracted from the Public Opinion Survey comments and organized into 11 categories. Survey comments that included multiple topics were separated into respective categories. As shown, many of suggestions by survey participants have been integrated into the *2025 Action Plan*.

Category	Possible Activity	2025 Action Plan	
		Included	Reason Not included
Beach Access	• Ensure main access points to the beach (Cooneymus, Grace's, etc.) are better erosion-proofed. • Close the Scotch Beach Rd beach access • harden Settlers Rock parking		Coastal adaptation zones
Deer	• manage deer on narrow roadways: Andy's Way corner, Mansion Beach, dunes to Harbor Pond, base of Bush lot Hill		Outside of HM&FMP scope
Emergency Management	• Have a plan to restore connectivity to the northern part of Block Island if and when Corn Neck is breached during a storm. The plan should adapt to the severity of the event, ranging from minor washover to a complete wipeout of Corn Neck Rd. There will be immediate life safety concerns as well as longer term issues such as the Town's access to critical services provided by the Transfer Station. • Ensure the police/emergency services are not cut off from the rest of the island by flooding events. This could be either by moving these services to a safer location or by protecting the access roads from flooding. • Tourists should have to pay a very small ($1) fee which will add up to thousands of dollars to aid in resiliency. • Assess emergency shelters for category 5 hurricane winds. • Have a full time building inspector to enforce codes and ordinances. • Hire a full time Coastal Resiliency Official. Support ideas put forth by the Coastal Resilience Committee and the experts they utilize for town hazard mitigation. • Hire a Coastal Resilience Officer. Someone to work with the Town Manager, Engineer, and Planner and has the authority to manage a budget and contracts, but also works closely with all the related entities on the mainland and can go to the frequent mainland meetings in person. • hire and train experts to be a part of the conversation, and trust science	Action 2025-H	
	• All homeowners should be on a text blast that originates from the police or fire station that alerts them (whether on the Island or not) of potential threats to particular areas of the island.	Action 2025-A; Action 2025-D	Protocol in Place CodeRED

Category	Possible Activity	2025 Action Plan	
		Included	Reason Not included
Energy	• Make solar power more accessible and affordable! • ensure that residential solar is maximized and valued properly; • ensure that all essential services can operate independently of the BIUD in case of emergency, i.e. solar, battery banks, etc. • build more wind farms everywhere and also solar farms. We need to fill the oceans with these things • explore the possibility of virtual power plants and other energy independence models • Engage the BIUD to ensure they're actually taking resiliency seriously • stop the use of mopeds • Apply for funds and start investing now in a rolling capital fund or some other instrument to save for moving the utilities under Ocean Avenue to an alternate location, working closely with the utilities' governing bodies. • We need to ban cars and oil heat on the island and not allow A/C		Consider as part of future Energy & Climate Action Plan
Miscellaneous	• provide public benches, picnic tables, ocean trash removal bins, safer area for parking ebikes, mopeds when folks walk out to view seals. • take care of kitchen fires • relax and please stop spending so much money • Encourage neighbors to grow vegetable gardens and fruit and nut trees. Acknowledge them as essential workers and support housing for full-time tradespeople. • Consider applying for NORC status for BI's elderly community to retain full-time inter-generational family residences and on-island taxpayer-workers.		Outside of HM&FMP scope
Natural Environment - Stormwater Management	• Invest in and implement nature-based solutions across public and private spaces • [don't] cut down forests	Action 2025-E	
Non-roadway Infrastructure	• RAISE Ferry Dock (and mainland ferry dock), New Harbor, State Parking Lot in Galilee and buttress hotels/business on Water St. • Ensure the ferry landing on both sides can withstand flooding *and sea level rise*. • Assure that old harbor dockage facilities for lifeline boat service stay ahead of sea level rise. • Ensure the ferry landing on both sides can withstand *flooding and* sea level rise.	Action 2025-L	

Category	Possible Activity	2025 Action Plan	
		Included	Reason Not included
Non-roadway Infrastructure ***continued***	• upgrade Old Harbor docks (and motivate Point Judith to do the same) • Make improvements in the Old Harbor to enhance resilience. Loss of access to the docks in a disaster would be a major problem. The breakwater should be improved and extended. • restore Mohegan Bluffs access to beach • Pump town beach parking lot • Assure that the power plant is adequately protected from flooding. • Ensure the Power Plant is protected from severe flooding events from Harbor Pond and from New Meadow hill Swamp. • Look for property now for the relocation of the bank, grocery store, and gas station. Purchase the property and then do 99-year leases. Perhaps work with the Land Trust and Conservancies to identify appropriate property. • The gas station and the BI grocery store are both vulnerable to flooding from moderate storm surges especially as sea level rises. In the long term, protection of this area from flooding would be extremely challenging, if not impossible. Since these are essential services to the island community, there needs to be a medium term plan to move these operations. • Protect the areas providing infrastructure - water, power, sewer	Action 2025-L	
Public Outreach & Education, and Communication	• The block island ferry should use there tv screens (with no sound!) but have subtitles educating the passengers!!! In the long run it is was more imperative to the town than the constant advertisements. • There needs to be widely available and well known information/ infographics not just for islanders but the thousands of tourists who have absolutely zero idea of these issues the island faces. • educate and assist us in adopting recommendations • Educate the public on an annual basis/provide hand-outs to potential buyers • Make First Aid, CPR and other courses available free to all residents and high school students who would like to attend, more people with life saving skills and knowledge on a small island can help everyone and save lives; especially during times of natural disaster when Fire/Police/Emergency services are busy • Make sure that when people purchase property on an offshore island that they will be prone to natural events and that they shouldn't be looking to the town, state or Fed to resolve their problems. They should prepare themselves. • Educate	Action 2025-A	

Category	Possible Activity	2025 Action Plan	
		Included	Reason Not included
Roads	• Raise up roads • Fix the roads • Keep up with maintenance on parks and roadways • Prioritize actions that maintain routes that provide connectivity throughout the island. • Make the Corn Neck Road connection between north and south portions of the island as resilient as possible (for as long as possible) by closing off openings in, and rebuilding, the dunes (incl. at Town Beach House), raising the roadway at the lowest spots etc. • Build a causeway. • Work with RIDOT on developing a long-term plan for Corn Neck Road. What are their preferences and how can we use natural and nature-based solutions to support that plan? • Address Spring St and Corn Neck Rd (areas impacted by Sandy) • Elevate Corn Neck Road • Corn neck road will need to be elevated and/or strengthened against storm surge. We should devise a plan and secure federal funding to execute this over the next 5 years. • RAISE Corn Neck Rd… Ocean Av. • the entrance to the beach at Scotch Beach is too wide. that is why corn neck rd washed out during sandy. need to refurbish the dunes and close that entrance. people don't need to drive on the beach from that spot. Emergency vehicles can enter at town beach and mansion beach. • Prevent flooding of Scotch Beach Rd at Corn Neck and Scotch Beach by either closing the beach access path at Scotch Beach or by building up a significant dune where the Scotch Beach path goes through and then create a path that goes up, over, and down the dune to the beach, similar to how people access crescent beach all along Corn Neck Road. • A study should be in the works to plan for all vulnerable areas of the island. Surveys could be put in place to provide possible road relocations should any current roads be declared unreplaceable.	Action 2025-F	
Shoreline Stabilization & Adaptation	• the signage and roping on the beach side has disappeared over the years and many people walk into and up the dunes from the beach side partially unknowing they also allow kids to play there. I also think some rope netlike fencing along/in front of the dunes in a couple rows would hold in sand and allow build back. The snow fencing worked but left dangerous metal and wood behind. The beach from south of state on needs this the most. The dune trails gather the most sand due [to] the narrow space it creates to trap winter sand the fencing would do the same		Existing Signage is considered Adequate

Category	Possible Activity	2025 Action Plan	
		Included	Reason Not included
Shoreline Stabilization & Adaptation ***continued***	• encourage dune building • Build up dunes • build up the dunes across from the Beachhead and at Scotch Beach. • Rebuild dunes and use state of the art engineering and state of the art engineered products NOT just plantings which are a poor bandaid and old fashioned idea and pretty worthless on BI with the wind and erosion • rebuild/fortify the dunes and build an accessible up and over ramp. • Keep up erosion prevention efforts. • full press on all aspects of costal erosion! It is the overall, near term need for every waterfront property. There is no Island without a solution to erosion. • consider dredging to rebuild some of the coast line to keep water line lower.	Action 2025-G	
	• Beach bluff revetments should be started beginning with the most vulnerable areas close to town services and businesses. • Fix and maintain damage to Mohegan bluffs		Technical & logistical constraints; Subject to CRMC policy
	• Possible retaining wall along corn neck rd at the vulnerable area where the dunes keep getting trampled on and storms blow them away		Generally not permitted by CRMC
Zoning & Land Use & Policy & Procedures	• Don't allow building in low lying areas • Stop people from building houses on or near beach and bluffs and stop them from mitigating erosion as it doesn't work and leads to more erosion and trash in the ocean. • Refuse planning permission for new buildings within likely future flood zones (allowing for a reasonable future rise in sea level). Change local Planning /Zoning laws to achieve this. • amend our regulations	Action 2025-M	
	• Ease zoning board process and make it easy to get waivers for homeowners doing repairs/ upgrades/maintenance that mitigate hazards/ improve resiliency		Town/CRC/TNC are in the process of auditing regulations to determine how to improve, including supporting resiliency measures

APPENDIX 6-2

STAPLEE Evaluation

KMJ – CE/RP

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Appendix 6-2
STAPLEE Evaluation

In accordance with the *Disaster Mitigation Act 2000 (DMA)*, the Advisory Committee undertook a process to prioritize actions for implementation in order to develop a realistic approach toward mitigating risks. Each of the actions reviewed received a priority score based upon a general set of criteria common to public administration officials and planners, known as STAPLEE. As indicated below, the acronym stands for Social, Technical, Administrative, Political, Legal, Economic, and Environmental. The STAPLEE method includes a general benefit-cost review as part of prioritizing actions.

Rating Scale

Cost	0 = no/insignificant cost		-1 = minimal cost	-2 = moderate+ cost	
Benefit	4 = exceptional	3 = highly beneficial	2 - beneficial	1 = somewhat beneficial	0 = not beneficial

STAPLEE Criteria for Selecting Mitigation Measures

Category	Criteria
Social	Does the proposed project have (or can easily gain) the support and acceptance of the community and is it compatible with present and future community needs and values? Will the action cause social disruption? Does the proposed project benefit a critical facility/infrastructure? Is there public support both to implement and to maintain the project?
Technical	Is the proposed project technically feasible? How effective is the proposed project in avoiding or reducing future losses for the long term? Will it create more problems than it solves? Does it solve a problem or only a symptom?
Administrative	Can the community implement the action? Is there someone to coordinate and lead the effort? Is there sufficient funding, staff, and technical support available? Are there ongoing administrative requirements that need to be met?
Political	Will the proposed project comply with comprehensive plan and land use elements, zoning activities, transportation, environmental, flood zone, historical and other long-range plans? Is the action politically acceptable?
Legal	Will the proposed project comply with local, state, and federal regulations? Are the proper laws, ordinances, and resolutions in place to implement the proposed project? Are there potential legal consequences or is the proposed project likely to be challenged by stakeholders who may be negatively affected?
Environmental	Is the proposed project consistent with community environmental goals? Will the action need environmental regulatory approvals? Will it meet local and state regulatory requirements? Are endangered or threatened species likely to be affected?
Economic	How will this action affect the fiscal capability of the community? Has funding been secured for the proposed action? Does the action contribute to other community goals, such as capital improvements or economic development?

Please Note:

The Description of Action has been simplified in the following table – the full actions are included in **Subsection 6.4**

After the STAPLEE Evaluation was complete, the Actions were **RENUMBERED** in order of priority ranking; actions with the same priority ranking were arbitrarily listed

Description of Action	Cost/ Benefit	Social	Technical	Administrative	Political	Legal	Environmental	Economic	Total	Prioritization
Action 2025-A: Conduct community outreach and engagement to increase awareness of and/or improve emergency preparedness/ response to impacts from all profiled natural hazards.	Cost	-1	0	-1	0	0	0	0	-2	**24**
	Benefit	4	4	4	4	3	4	3	26	
Action 2025-B: Conduct community outreach and engagement to increase awareness of and promote residents, businesses, and visitors to take actions that will improve the quantity and quality of surface water and groundwater.	Cost	-1	0	-1	0	0	0	0	-2	**24**
	Benefit	4	4	4	4	3	4	3	26	
Action 2025-C: Continue to enhance GIS capabilities.	Cost	0	-1	-1	0	0	0	-1	-3	**20**
	Benefit	3	4	4	3	2	4	3	23	
Action 2025-D: Enhance the emergency services network to further improve emergency response and recovery communication and coordination amongst community facilities and services, and members of the public.	Cost	0	0	-1	0	0	0	0	-1	**19**
	Benefit	4	3	4	3	3	0	3	20	
Action 2025-E: Expand green infrastructure stormwater management practices throughout the natural environment through monitoring, maintenance, and implementing new or retrofitting existing stormwater measures, and strengthening the Town's maintenance and management of public trees/forest floor.	Cost	0	-1	-1	0	0	-1	-1	-4	**19**
	Benefit	4	4	2	3	2	4	4	23	
Action 2025-F: Continue to assess, monitor, maintain, and implement improvements to public roadways and associated drainage infrastructure to improve safety, mitigate flooding and erosion, and mitigate future impacts from SLR (which may require abandoning sections or raising sections of roadways); wherein feasible incorporate green infrastructure stormwater management practices and ensure resiliency in design for continued service during natural hazard events.	Cost	0	-2	-2	0	0	0	-1	-5	**18**
	Benefit	4	3	3	3	2	4	4	23	
Action 2025-G: Prioritize and implement shoreline stabilization and adaptation projects.	Cost	0	-2	-1	0	-1	-1	0	-5	**18**
	Benefit	3	4	2	3	3	4	4	23	
Action 2025-H: Continue to improve the Town's capacity for pre-natural disaster preparedness and post disaster response and recovery.	Cost	0	-2	-1	0	0	0	-1	-4	**18**
	Benefit	4	3	4	3	3	2	3	22	

Description of Action	Cost/ Benefit	Social	Technical	Administrative	Political	Legal	Environmental	Economic	Total	Prioritization
Action 2025-I: Conduct an assessment of back-up power capabilities for critical Town buildings/ infrastructure to ensure power is available during hazard events. Based on the assessment, where identified as necessary, install backup generators and/or transfer switches to accommodate trailer mounted generators.	Cost	0	-1	-1	0	0	0	-1	-3	18
	Benefit	3	4	4	3	2	2	3	21	
Action 2025-J: The Town will take steps to help ensure the safety of the public from potential dam breach/failure.	Cost	0	-1	-1	0	-2	-1	-1	-6	18
	Benefit	4	4	4	4	4	4	0	24	
Action 2025-K: Block Island Land Trust, pursuant to its enabling legislation, will continue to coordinate with various stakeholders in the maintenance, restoration, acquisition, and protection of open space, especially wetlands, flood hazard areas, and other natural resource areas (ex. agricultural land) with the intent to improve resiliency.	Cost	-1	-1	0	0	-1	0	-2	-5	16
	Benefit	4	2	3	3	2	4	3	21	
Action 2025-L: To mitigate impacts from flooding, erosion, high winds, and future SLR, assess and implement improvements and/or identify potential future relocation sites for Town-owned infrastructure (except roadways -*refer to Action F*), and discuss with/encourage private entities to do the same for their vulnerable assets.	Cost	0	-2	-1	0	-1	-2	-1	-7	15
	Benefit	4	4	3	3	2	2	4	22	
Action 2025-M: Review and as deemed locally practical, amend the Subdivision and Land Development Regulations and Zoning Ordinance to: • ensure compatibility with State law and reflect updated development practices and approaches that will promote and improve resilience across New Shoreham including against the threat of SLR. • ensure appropriate resiliency and environmental protection is incorporated in new private and public development and redevelopment, especially in vulnerable areas including special flood hazard areas (SFHA), sea level rise encroachment areas, and sensitive natural habitats. • enhance green infrastructure approaches, including Low-Impact Development (LID) requirements (*practices that can be employed at the site-level to control stormwater and strive to replicate the pre-development hydrology of the site*), particularly in areas vulnerable to natural hazards.	Cost	-1	-2	-1	0	-2	0	0	-6	14
	Benefit	4	3	2	1	3	4	3	20	
Action 2025-N: Implement policies and programs to reduce the impacts of infectious diseases, specifically tick- and mosquito-borne, influenza, and coronavirus.	Cost	-1	-1	-1	0	0	-1	0	-4	14
	Benefit	4	3	3	3	2	0	3	18	

APPENDIX 7-1

New Shoreham Town Council Resolution

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Appendix 7-1
New Shoreham Town Council Resolution

NEW SHOREHAM TOWN COUNCIL RESOLUTION

Town of New Shoreham
2025 Hazard Mitigation & Flood Management Plan

R-05-2025

The Town Council of the Town of New Shoreham hereby resolves as follows:

WHEREAS, the New Shoreham Town Council recognizes the threat that natural hazards pose to people and property within our community; and

WHEREAS, pro-active mitigation of known natural hazards before a disaster event can reduce or eliminate long-term risk to people and property; and

WHEREAS, the Town of New Shoreham, under the guidance of a Hazard Mitigation & Flood Management Plan (HM&FMP) Advisory Committee, has prepared a multi-natural hazards mitigation plan in accordance with the Disaster Mitigation Act of 2000 (Public Law 106-390) requirements; and

WHEREAS, the 2025 HM&FMP identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in New Shoreham from impacts of future hazards and disasters; and

WHEREAS, approval by the Federal Emergency Management Agency (FEMA) and adoption by the New Shoreham Town Council of the 2025 HM&FMP will allow the Town to be eligible for certain federal funding grant assistance programs through FEMA; and

WHEREAS, adoption by the New Shoreham Town Council demonstrates their commitment to achieving the hazard mitigation and flood management goals outlined in the 2025 HM&FMP;

NOW THEREFORE BE IT RESOLVED THAT:

The Town Council of the Town of New Shoreham, Rhode Island, hereby on this 7th day of April 2025 adopts in its entirety, the ***Town of New Shoreham 2025 Hazard Mitigation & Flood Management Plan*** (*including any required RIEMA/FEMA modifications*) and resolves to support the execution of actions identified in the Plan.

The Town Manager is hereby directed to pursue implementation of the recommended actions. Any action proposed in the Plan shall be subject to and contingent upon budget approval if funding is required and this resolution shall not be interpreted so as to mandate any such appropriations.

The Town Council of the Town of New Shoreham has met the legal requirements for official adoption of its Hazard Mitigation & Flood Management Plan.

FURTHER BE IT RESOLVED that we decree that this resolution be made a part of the permanent record of the Town. Witness our hands and seal this April 7, 2025.

First Warden, Keith Stover

Second Warden, Nancy Dodge

Town Councilor, William McCombe

Town Councilor, Margaret O'Neill

Town Councilor, Tristan Payne

Town Clerk, Millicent McGinnes Highet

APPENDIX 7-2

Local Mitigation Plan Review Tool

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Appendix 7-2
Local Mitigation Plan Review Tool

Plan Review Checklist

The Plan Review Checklist is completed by FEMA. States and local governments are encouraged, but not required, to use the PRT as a checklist to ensure all requirements have been met prior to submitting the plan for review and approval. The purpose of the checklist is to identify the location of relevant or applicable content in the plan by element/sub-element and to determine if each requirement has been "met" or "not met." FEMA completes the "required revisions" summary at the bottom of each element to clearly explain the revisions that are required for plan approval. Required revisions must be explained for each plan sub-element that is "not met." Sub-elements in each summary should be referenced using the appropriate numbers (A1, B3, etc.), where applicable. Requirements for each element and sub-element are described in detail in Section 4: Local Plan Requirements of this guide.

Plan updates must include information from the current planning process. If some elements of the plan do not require an update, due to minimal or no changes between updates, the plan must document the reasons for that. Multi-jurisdictional elements must cover information unique to all participating jurisdictions.

Element A: Planning Process

Element A Requirements	Location in Plan (section and/or page number)	Met / Not Met
A1. Does the plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement 44 CFR § 201.6(c)(1))		
A1-a. Does the plan document how the plan was prepared, including the schedule or time frame and activities that made up the plan's development, as well as who was involved?	Subsection 2.1 (**1-3 entirety**); Subsection 2.2.2 (**5-12 entirety**); Appendix 2-2 (**entirety**) **Additional:** Executive Summary (1, 2); Subsection 7.1 (2)	Met
A1-b. Does the plan list the jurisdiction(s) participating in the plan that seek approval, and describe how they participated in the planning process?	Subsection 2.1 (**1-3 entirety**); Subsection 2.2.2 (**5-12 entirety**); Appendix 2-2 (**entirety**) **Additional:** Executive Summary (1, 2, 12, 14, 15); Subsection 7.1 (2); Appendix 7-1 (**entirety**)	Met

A2. Does the plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development as well as businesses, academia, and other private and non-profit interests to be involved in the planning process? (Requirement 44 CFR § 201.6(b)(2))		
A2-a. Does the plan identify all stakeholders involved or given an opportunity to be involved in the planning process, and how each stakeholder was presented with this opportunity?	Subsection 2.1.2 (**2-3 entirety**); Subsection 2.3.2 (**16 entirety**); Appendix 2-3 (**entirety**); Subsection 5.2 (9) **Additional:** Executive Summary (1, 2, 14, 15); Subsection 2.2 (**4-12 entirety**); Appendices 2-2; Subsection 7.1 (2)	Met
A3. Does the plan document how the public was involved in the planning process during the drafting stage and prior to plan approval? (Requirement 44 CFR § 201.6(b)(1))		
A3-a. Does the plan document how the public was given the opportunity to be involved in the planning process and how their feedback was included in the plan?	Subsection 2.1.2 (**2-3 entirety**); Subsection 2.2 (**4-12 entirety**); Appendix 2-2 (**entirety**); Appendix 2-3 (**entirety**); Subsection 6.3.2 (5); Subsection 6.4 (**7-24 entirety**); Appendix 6-1 (13-17) **Additional:** Executive Summary (1, 2, 14, 15); Subsection 7.1 (2)	Met
A4. Does the plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement 44 CFR § 201.6(b)(3))		
A4-a. Does the plan document what existing plans, studies, reports and technical information were reviewed for the development of the plan, as well as how they were incorporated into the document?	Subsection 2.3 (**13-16 entirety**); Section 4 (1, 14, 15); Subsection 4.4.2.1 (**107-116 entirety**); Subsection 5.1.1 (3, 4); Subsection 5.3 (**11-18 entirety**); Appendix 5-1 (**entirety**); Subsection 6.3.2 (5); Subsection 6.4.1 (10); Subsection 6.4.2 (**11-24 entirety**); Appendix 6-1 (**1-12 entirety of all local documents**); References & Works Cited (**entirety**) **Additional:** Executive Summary (2, 12)	Met

Element B: Risk Assessment

Element B Requirements	Location in Plan (section and/or page number)	Met / Not Met
B1. Does the plan include a description of the type, location, and extent of all natural hazards that can affect the jurisdiction? Does the plan also include information on previous occurrences of hazard events and on the probability of future hazard events? (Requirement 44 CFR § 201.6(c)(2)(i))		
B1-a. Does the plan describe all natural hazards that can affect the jurisdiction(s) in the planning area, and does it provide the rationale if omitting any natural hazards that are commonly recognized to affect the jurisdiction(s) in the planning area?	Subsection 4.2 (11); Subsection 4.3 (**description for each profiled hazard**: 20-22, 31-33, 40, 45-46, 48-50, 52-53, 55-57, 62-64, 69-70, 73-75, 82-84, 86-87, 90-91, 94-95)	Met
B1-b. Does the plan include information on the location of each identified hazard?	Subsection 4.3 (**location for each profiled hazard**: 23-26, 34-35, 40-41, 47, 50, 53, 57, 64, 71, 75, 84, 87, 91, 95-96) **Additional:** Appendix 4-2 (**entirety)**	Met
B1-c. Does the plan describe the extent for each identified hazard?	Subsection 4.3 (**description for each profiled hazard**: 20-22, 31-33, 40, 45-46, 48-50, 52-53, 55-57, 62-64, 69-70, 73-75, 82-84, 86-87, 90-91, 94-95)	Met
B1-d. Does the plan include the history of previous hazard events for each identified hazard?	Subsection 4.3 (**previous occurrences for each profiled hazard**: 27-29, 36-38, 41-44, 47, 51, 53-54, 58-61, 64-67, 71-72, 75-81, 85, 87-88, 91-93, 96-97)	Met
B1-e. Does the plan include the probability of future events for each identified hazard, including the type, location and range of anticipated intensities?	Subsection 4.3 (**climate change impacts & probability of future events for each profiled hazard**: 29-30, 39, 44, 48, 51, 55, 61, 67-68, 72-73, 81, 85, 88-89, 93, 97-98) **Additional:** Subsection 4.1 (**2-10 entirety**); Appendix 4-1 (**entirety**)	Met
B1-f. For participating jurisdictions in a multi-jurisdictional plan, does the plan describe any hazards that are unique to and/or vary from those affecting the overall planning area?	N/A	Choose an item.

B2. Does the plan include a summary of the jurisdiction's vulnerability and the impacts on the community from the identified hazards? Does this summary also address NFIP-insured structures that have been repetitively damaged by floods? (Requirement 44 CFR § 201.6(c)(2)(ii))		
B2-a. Does the plan provide an overall summary of each jurisdiction's vulnerability to the identified hazards?	Executive Summary (**vulnerability summary: 3-10 entirety**); Subsection 4.2.2 (**14-15 entirety**); Appendix 4-1 (**entirety**) **Additional:** Appendix 4-3 (**entirety**)	Met
B2-b. For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction?	Subsection 4.4 (**99-157 entirety**); Appendix 4-3 (**entirety**) **Additional:** Subsection 4.1 (**2-10 entirety**); Appendix 4-1 (**entirety**); Appendix 4-2 (**entirety**)	Met
B2-c. Does the plan address NFIP-insured structures within each jurisdiction that have been repetitively damaged by floods?	Subsection 4.4.2.1 (111-113)	Met

Element C: Mitigation Strategy

Element C Requirements	Location in Plan (section and/or page number)	Met / Not Met
C1. Does the plan document each participant's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement 44 CFR § 201.6(c)(3))		
C1-a. Does the plan describe how the existing capabilities of each participant are available to support the mitigation strategy? Does this include a discussion of the existing building codes and land use and development ordinances or regulations?	Subsection 5.1.1 (**3-4 entirety**); Subsection 5.1.2 (**4-5 entirety**); Subsection 5.1.3 (**5-7 entirety**); Subsection 5.1.4 (**7, 8 entirety**); Appendix 5-1 (**2-9 entirety of Local**); Appendix 5-2 (**1-10 entirety of Local**); Appendix 5-3 (**1 entirety of Local**); Section 4.4.6.5 (**163-165 entirety**);	Met
C1-b. Does the plan describe each participant's ability to expand and improve the identified capabilities to achieve mitigation?	Subsection 4.4.6.5 (**163-165 entirety**); Subsection 5.1 (2); Subsection 6.4 (**7-24 entirety**)	Met

C2. Does the plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement 44 CFR § 201.6(c)(3)(ii))		
C2-a. Does the plan contain a narrative description or a table/list of their participation activities?	Appendix 5-1 (5, 7); Appendix 5-2 (2, 3, 5, 6-7); Section 6 .3.4 (7) **Additional:** Section 4.3.1 (17-19); Section 4.4.2.1 (111); Section 4.4.6.5 (163, 165); Appendix 4-2; Subsection 5.1.4 (**7-8 entirety**)	Met
C3. Does the plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement 44 CFR § 201.6(c)(3)(i))		
C3-a. Does the plan include goals to reduce the risk from the hazards identified in the plan?	Executive Summary (11); Subsection 6.2 (2-3)	Met
C4. Does the plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement 44 CFR § 201.6(c)(3)(ii))		
C4-a. Does the plan include an analysis of a comprehensive range of actions/projects that each jurisdiction considered to reduce the impacts of hazards identified in the risk assessment?	Appendix 6-1 (**entirety**); Subsection 6.3.1 (**4, 5 entirety**); Subsection 6.3.2 (**5 entirety**); Subsection 6.3.3 (**6 entirety**); Subsection 6.3.4 (**6-7 entirety**) **Additional:** Subsection 5.3 (**11-18 entirety**)	Met
C4-b. Does the plan include one or more action(s) per jurisdiction for each of the hazards as identified within the plan's risk assessment?	Subsection 6.4 (**7-24 entirety**)	Met
C5. Does the plan contain an action plan that describes how the actions identified will be prioritized (including a cost-benefit review), implemented, and administered by each jurisdiction? (Requirement 44 CFR § 201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))		
C5-a. Does the plan describe the criteria used for prioritizing actions?	Subsection 6.4 (**7-24 entirety**) **Additional:** Appendix 5-3 (**entirety**)	Met
C5-b. Does the plan provide the position, office, department or agency responsible for implementing/administrating the identified mitigation actions, as well as potential funding sources and expected time frame?	Subsection 6.4 (**7-24 entirety**) **Additional:** Appendix 5-3 (**entirety**)	Met

Element D: Plan Maintenance

Element D Requirements	Location in Plan (section and/or page number)	Met / Not Met
D1. Is there discussion of how each community will continue public participation in the plan maintenance process? (Requirement 44 CFR § 201.6(c)(4)(iii))		
D1-a. Does the plan describe how communities will continue to seek future public participation after the plan has been approved?	Subsection 7.2.2 (4-5) **Additional:** Executive Summary (15, 16)	Met
D2. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a five-year cycle)? (Requirement 44 CFR § 201.6(c)(4)(i))		
D2-a. Does the plan describe the process that will be followed to track the progress/status of the mitigation actions identified within the Mitigation Strategy, along with when this process will occur and who will be responsible for the process?	Subsection 7.2.1 (3); Subsection 7.2.2 (4-5) **Additional:** Executive Summary (15, 16)	Met
D2-b. Does the plan describe the process that will be followed to evaluate the plan for effectiveness? This process must identify the criteria that will be used to evaluate the information in the plan, along with when this process will occur and who will be responsible.	Subsection 7.2.1 (3); Subsection 7.2.2 (4-5) **Additional:** Executive Summary (15, 16)	Met
D2-c. Does the plan describe the process that will be followed to update the plan, along with when this process will occur and who will be responsible for the process?	Subsection 7.2.3 (6) **Additional:** Executive Summary (15, 16)	Met
D3. Does the plan describe a process by which each community will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement 44 CFR § 201.6(c)(4)(ii))		
D3-a. Does the plan describe the process the community will follow to integrate the ideas, information and strategy of the mitigation plan into other planning mechanisms?	Subsection 7.2.1 (3) **Additional:** Executive Summary (15, 16); Section 5.1.1 (3); Appendix 5-1 (**2-9 entirety of Local)**	Met
D3-b. Does the plan identify the planning mechanisms for each plan participant into which the ideas, information and strategy from the mitigation plan may be integrated?	Section 5.1.1 (3); Appendix 5-1 (**2-9 entirety of Local)** **Additional:** Executive Summary (15, 16); Subsection 7.2.1 (3)	Met
D3-c. For multi-jurisdictional plans, does the plan describe each participant's individual process for integrating information from the mitigation strategy into their identified planning mechanisms?	N/A	Choose an item.

Element E: Plan Update

Element E Requirements	Location in Plan (section and/or page number)	Met / Not Met
E1. Was the plan revised to reflect changes in development? (Requirement 44 CFR § 201.6(d)(3))		
E1-a. Does the plan describe the changes in development that have occurred in hazard-prone areas that have increased or decreased each community's vulnerability since the previous plan was approved?	Subsection 4.4.6.1 (**159 entirety**)	Met
E2. Was the plan revised to reflect changes in priorities and progress in local mitigation efforts? (Requirement 44 CFR § 201.6(d)(3))		
E2-a. Does the plan describe how it was revised due to changes in community priorities?	Executive Summary (1, 2, 11); Section 2.1 (1-2); Subsection 4.1 (**2-10 entirety**); Subsection 4.2 (11); Subsection 4.3 (**addition of climate change impacts for each profiled hazard**: 29, 39, 44, 48, 51, 55, 61, 67-68, 72, 81, 85, 88-89, 93, 97-98); Subsection 5.1 (2); Subsection 5.3 (**11-18 entirety**); Appendix 6-2 (**entirety**) **Additional:** Subsection 6.1 (2, 3); Subsection 6.3.1 (4)	Met
E2-b. Does the plan include a status update for all mitigation actions identified in the previous mitigation plan?	Subsection 5.3 (**11-18 entirety**)	Met
E2-c. Does the plan describe how jurisdictions integrated the mitigation plan, when appropriate, into other planning mechanisms?	Section 2 (15-16); Appendix 5-1 (**2-9 entirety of Local)**	Met

Element F: Plan Adoption

Element F Requirements	Location in Plan (section and/or page number)	Met / Not Met
F1. For single-jurisdictional plans, has the governing body of the jurisdiction formally adopted the plan to be eligible for certain FEMA assistance? (Requirement 44 CFR § 201.6(c)(5))		
F1-a. Does the participant include documentation of adoption?	Appendix 7-1 (**entirety**) **Additional:** Executive Summary (15); Subsection 7.1 (2)	Met
F2. For multi-jurisdictional plans, has the governing body of each jurisdiction officially adopted the plan to be eligible for certain FEMA assistance? (Requirement 44 CFR § 201.6(c)(5))		
F2-a. Did each participant adopt the plan and provide documentation of that adoption?	N/A	Choose an item.

Element G: High Hazard Potential Dams (Optional)

HHPD Requirements	Location in Plan (section and/or page number)	Met / Not Met
HHPD1. Did the plan describe the incorporation of existing plans, studies, reports and technical information for HHPDs?		
HHPD1-a. Does the plan describe how the local government worked with local dam owners and/or the state dam safety agency?	Click or tap here to enter text.	Choose an item.
HHPD1-b. Does the plan incorporate information shared by the state and/or local dam owners?	Click or tap here to enter text.	Choose an item.
HHPD2. Did the plan address HHPDs in the risk assessment?		
HHPD2-a. Does the plan describe the risks and vulnerabilities to and from HHPDs?	Click or tap here to enter text.	Choose an item.
HHPD2-b. Does the plan document the limitations and describe how to address deficiencies?	Click or tap here to enter text.	Choose an item.
HHPD3. Did the plan include mitigation goals to reduce long-term vulnerabilities from HHPDs?		
HHPD3-a. Does the plan address how to reduce vulnerabilities to and from HHPDs as part of its own goals or with other long-term strategies?	Click or tap here to enter text.	Choose an item.
HHPD3-b. Does the plan link proposed actions to reducing long-term vulnerabilities that are consistent with its goals?	Click or tap here to enter text.	Choose an item.
HHPD4-a. Did the plan include actions that address HHPDs and prioritize mitigation actions to reduce vulnerabilities from HHPDs?		
HHPD4-a. Does the plan describe specific actions to address HHPDs?	Click or tap here to enter text.	Choose an item.
HHPD4-b. Does the plan describe the criteria used to prioritize actions related to HHPDs?	Click or tap here to enter text.	Choose an item.
HHPD4-c. Does the plan identify the position, office, department or agency responsible for implementing and administering the action to mitigate hazards to or from HHPDs?	Click or tap here to enter text.	Choose an item.

Element H: Additional State Requirements (Optional)

Element H Requirements	Location in Plan (section and/or page number)	Met / Not Met
This space is for the State to include additional requirements.		
Provide 1 month out of the year that you will hold a Hazard Mitigation Meeting per the requirements below (2 times per year is preferred, but a minimum of 1 is required).	Subsection 7.2.2 (4)	Met

Plan Assessment

These comments can be used to help guide your annual/regularly scheduled updates and the next plan update.

Element A. Planning Process

Strengths

- The planning process narrative is detailed and includes the events and meetings that were part of the plan's development.
- The public outreach strategy gave the public a number of ways to take part and give feedback. It was in-depth to capture local residents' perception of natural hazards and widely distributed.

Opportunities for Improvement

- [insert comments]

Element B. Risk Assessment

Strengths

- Maps clearly show the areas and sites that are most at risk for most hazards.
- The risk and vulnerability to the profiled hazards is explained clearly. There is a lot of detail about the context of the hazard and the risk it presents.
- The plan notes the community's assets and how each hazard event may affect them. This was extensive and helpful.

Opportunities for Improvement

- Rather than death or injuries as a metric for hazard events, include inches of precipitation, wind speeds, or other storm specific factors that led to the property damage shown in the table.

Element C. Mitigation Strategy

Strengths

- The plan gives a detailed description of the community's programs, plans and policies to reduce risks. The plan assesses current capabilities and looks at how to expand them to further reduce risk.
- The plan clearly lays out the actions in the plan that will directly reduce risk for the vulnerable and underserved communities in the area.
- The plan includes many types of mitigation actions [e.g., local plans and regulations; structure and infrastructure projects; natural system protections; and education and awareness programs].

Opportunities for Improvement

- The mitigation actions are clear on what they want to accomplish. However, with the number of potential activities included below each action, additional information on the funding sources and responsible parties for each of these could be helpful for future tracking and implementation.
- Organizing actions in a table, and clearly labeled with corresponding hazards can be helpful in ensuring that all hazards have a mitigation action.
- Make sure that the mitigation actions focus on mitigation, not preparedness. Mitigation actions reduce long-term risk. They are not the same as actions taken to prepare for or respond to hazard events. Mitigation activities lessen the need for preparedness or response resources in the future.

Element D. Plan Maintenance

Strengths

- The steps to update the plan are described clearly. The timeline of when the update process is expected to begin is also clear and gives the town enough time to produce an approvable plan prior to expiration. This will make the plan update process easier
- The hazard mitigation plan spells out how the community will use its data, goals, actions and other elements in other plans and planning processes.

Opportunities for Improvement

- Discuss the strength of the last plan's maintenance strategy. Did the community face any hardships during the monitoring, evaluating, and updating efforts? Were any strong elements carried over in the plan update? Explain how the last plan's maintenance efforts shaped those planned for the next five years.

Element E. Plan Update

Strengths

- The plan clearly describes changes in the community's development since the last update.
- Progress on mitigation actions is clear and described in depth.

Opportunities for Improvement

- Add lessons learned about carrying out mitigation actions. This would strengthen the plan. A short narrative on some "success stories" would also help.

Element G. HHPD Requirements (Optional)

Strengths

- [insert comments]

Opportunities for Improvement

- [insert comments]

Element H. Additional State Requirements (Optional)

Strengths

- [insert comments]

Opportunities for Improvement

- [insert comments]

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