



New Shoreham



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Municipal Resilience Program Community Resilience Building Process & Workshop Summary of Findings September 2021



Town of New Shoreham, Rhode Island

Community Resilience Building Workshop

Summary of Findings

Overview

The need for municipalities, regional planning organizations, corporations, states, and federal agencies to increase resilience to extreme weather events and a changing climate is strikingly evident amongst the communities across the state of Rhode Island. Recent events such as Tropical Storm Irene and Super Storm Sandy have reinforced this urgency and compelled leading communities like the Town of New Shoreham to proactively collaborate on planning and mitigating risks. Ultimately, this type of leadership is to be commended because it will reduce the vulnerability and reinforce the strengths of people, infrastructure, and ecosystems and serve as a model for other communities in Rhode Island, New England, and the Nation.

In the spring of 2021, the Town of New Shoreham embarked on certification within the state of Rhode Island's Municipal Resilience Program (MRP). As part of that certification, the Rhode Island Infrastructure Bank (RIIB) and The Nature Conservancy (TNC) provided the Town with a community-driven process to assess current hazard and climate change impacts and to surface projects, plans, and policies for improved resilience. In September 2021, New Shoreham's Core Team helped organized a Community Resilience Building Workshop facilitated by TNC in partnership with RIIB. The core directive of this effort was the engagement with and between community members to define strengths and vulnerabilities and the development of priority resilience actions for the Town of New Shoreham.

The New Shoreham Community Resilience Building Workshop's central objectives were to:

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

The Town of New Shoreham employed a unique “anywhere at any scale”, community-driven process called Community Resilience Building (CRB) (www.CommunityResilienceBuilding.org). The CRB’s tools, reports, other relevant planning documents, and local maps were integrated into the workshop process to provide both decision-support and visualization around shared issues and existing priorities across New Shoreham. The New Shoreham Local Hazard Mitigation Plan (2017) and Comprehensive Plan (2016) were particularly instructive. Using the CRB process, rich with information, experience, and dialogue, the participants produced the findings presented in this summary report including an overview of the top hazards, current concerns and challenges, existing strengths, and proposed actions to improve New Shoreham’s resilience to hazards and climate change today, and in the future.

The summary of findings transcribed in this report, like any that concern the evolving nature of risk assessment and associated action, are proffered for comments, corrections and updates from workshop attendees and other stakeholders alike. The leadership displayed by the Town of New Shoreham on community resilience building will benefit from the continuous participation of all those concerned.

Summary of Findings

Top Hazards and Vulnerable Areas for the Community

Prior to the CRB Workshop, the New Shoreham Core Team identified the top hazards for the Town. The hazards of greatest concern included coastal storm surge and flooding associated with Nor’easters to hurricanes, sea level rise, and high winds from major storms and hurricanes. Additional hazards mentioned during the workshop included more intense heat waves as well as extreme cold events. These hazards have direct and increasing impacts on the infrastructure, environment, and residents of New Shoreham. These effects are seen in built up areas, natural areas (wetlands, preserves), coastal areas, roads, bridges, businesses and commerce, public transportation, municipal facilities, civic events, churches, social support services and other critical infrastructure and community assets within New Shoreham and adjoining municipalities.

Top Hazards and Areas of Concern for the Community

Top Hazards

- Storm Surge & Flooding (Nor'easters to hurricanes)
- Sea Level Rise
- High Winds (major storms, hurricanes)
- Extreme Temperatures (cold and heat waves/droughts)

Areas of Concern in New Shoreham* - Several categories and locations were identified as being particularly vulnerable by workshop participants including:

Infrastructure: Drinking Water System Pump Stations, Spring House, Bridge Gate Square, Private Drinking Water Wells, Public Services/Emergency Services Building, Cell Phone Coverage, Ferry Docks (both sides), Power Company Facility (BIPCO - Ocean Avenue) & Substation, Fire Station, Transfer Station, Historic & Cultural Resources, North Light, Southeast Light Downtown, Town Hall, Highway Garage, Day Care Facilities, Beach Pavilion, Sewer Line (between New & Old Harbor), New Harbor Boat Pump-out & Gas Station, Hotels, Old Harbor, Harbormaster's Shack, Coast Guard Station (former), Old Town Road Dam, Mill Tail Brook Dam, Cell Tower.

Ecosystems/Waterways: Great Salt Pond, Coastal Bluffs, Dunes & Beaches, Freshwater Ponds, Scotch Beach, Middle Pond, Wash Pond, Sachem Pond, Beane Point, Grasslands, Crescent Beach, Aquifer, Trim's Pond, Mill Tail Brook.

Roads, Bridges, and Road Network: Corn Neck Road, Ocean Avenue, West Side Road, Spring Street, Four Corners, Champlin Road, Chapel Street, Old Town Road (east end), Ocean Avenue Bridge, Beach Avenue Bridge, Local & Privately-Owned Dirt Roads.

Vulnerable Populations: Elderly/Senior Citizens, Residents with Special Needs, Disabled Residents, Ethnic Minorities, Non-English Speakers, Low/Moderate Income Residents, Local Business Owners, Long-term Renters, Tourist/Visitors.

*Information from workshop participants augmented via review of the Town of New Shoreham's Local Hazard Mitigation Plan (2017) and Comprehensive Plan (2016). ***See Appendix A for full list of mitigation/adaptation actions from the Town of New Shoreham's LHMP.***

Current Concerns and Challenges Presented by Hazards

The Town of New Shoreham has several concerns and faces multiple challenges related to the impacts of natural hazards and climate change. In recent years, New Shoreham has experienced a series of highly disruptive and damaging weather events including major flooding (March 2010), Tropical Storm Irene (August 2011), major snowstorms (January 2011 & February 2013), Tropical Storm Sandy, (October 2012), Blizzard Juno (January 2015), and winter Nor'easter Nemo (February 2013). Impacts from Irene included heavy, rain-induced, inland flooding and wind damage. Sandy caused extended coastal erosion and power outages across portions of New Shoreham. The winter storm Nemo dropped 19-20" of snow on the Town knocking out power and isolating residents. The magnitude and intensity of these events and others across Rhode Island have increased awareness of natural hazards and climate change, while motivating communities such as New Shoreham to proactively improve their resilience.

This series of extreme weather events highlights that the impacts from hazards are diverse, ranging from: coastal flooding of critical infrastructure, roads, and low-lying areas; localized flooding from stormwater runoff during intense storms and heavy precipitation events; and, property damage and utility outages from wind, snow, and ice. Longer periods of elevated heat, particularly in July and August, have raised concerns about vulnerable segments of the population including elderly, disabled, and disproportionately disadvantaged residents. The combination of these issues presents a challenge to preparedness and mitigation priorities and requires comprehensive, yet locally-specific actions across the Town.

The workshop participants were in agreement that New Shoreham is experiencing more intense and frequent storm events and heat waves. Additionally, there was a general concern about the increasing challenges of being prepared for the worst case scenarios (e.g. major storms, hurricanes (Cat-3 or above)) particularly in the late summer with a high number of visitors and in the fall/winter months when more intense storms coincide with colder weather. The impact of the current Covid-19 pandemic was raised by workshop participants as well.



(Credit: blockislandferry.com)



(Credit: newenglandliving.tv)



(Credit: ecori.org)

Specific Categories of Concerns and Challenges

As in any community, New Shoreham is not uniformly vulnerable to hazards and climate change, and certain locations, assets, and populations have been and will be affected to a greater degree than others. Workshop participants identified the following items as their community's key areas of concern and challenges across three broad categories - Infrastructure, Societal, and Environmental.

Infrastructure Concerns and Challenges

Roads, Bridges, and Road Networks:

- Effects of storm flooding and increasing inundation from sea level rise of Corn Neck Road.
- Implications of sea level rise on several exposed segments of Ocean Avenue (i.e. intersection with West Side Road).
- Lack of water depth gauges or signage to help assess the extent and level of danger to motorists from flooded roads around the Island.

Utilities:

- Drinking water system pump stations located in 100-yr flood zone.
- Power Company Facility on Ocean Avenue not accessible if floods and requires staging personnel and equipment to the north to get around low lying areas.
- Electrical distribution system above ground with poles and wires all susceptible to damage and resulting power interruptions.

Emergency Management and Preparedness:

- Generally isolated and heavily dependent on ferry service to and from the mainland for critical needs during emergencies including drinking water supply and health care supplies (i.e. "Life Line").
- Limited opportunities for mutual aid agreements and provisioning due to isolated nature of the Island from adjoining municipalities and state resources.
- Inability to handle serious health crisis requiring hospitalization with on-island ambulatory facility.
- Concerns about ability to maintain communications during major events due to the reliance on private cell signal carriers and the low priority placed on New Shoreham because of the relatively low population density as compared to municipalities on the mainland (i.e. last on the list for service recovery).
- Public Services/Emergency Services Building located in flood-prone area.
- Ferry docks and associated mechanical equipment on the Island and mainland are currently at sea level and vulnerable to storm surge which presents a serious concern due to the critical importance to maintaining supportive connections via the ferry service.

Specific Categories of Concerns and Challenges

Stormwater Management:

- Increasing amount of stormwater runoff due to more intense and longer duration precipitation events.

Societal Concerns and Challenges

Vulnerable Populations:

- Overall population tends to be older with a unique suite of concerns and considerations given the fact that New Shoreham is an Island.
- Difficult for residents to age in place to the lack of necessary medical care and available housing for elderly people.

Development & Community Issues:

- Overcrowded road network during peak summer months.
- Reduction in cell coverage and connectivity during the summer months due to large increase in population (i.e. 10,000 – 20,000 visitors a day versus 1,000 residents).
- Concerns about saltwater intrusion into aquifer and longer-term implications to drinking water supply.
- Exposure of historic and cultural resources due to flooding.
- Private drinking water wells increasingly compromised during flooding and storm surge events (e.g. wells near salt marshes/Great Salt Pond).
- PREP-RI suggestions for buildings difficult to follow and apply to structure on the Island due to space constraints.
- All transportation services and lifeline connections via airline and ferry are privately owned and operated resulting in minimal control by New Shoreham leadership, staff, and residents.
- Concerns about long-term inundation into Great Salt Pond that could bisect the Island on a permanent basis (i.e. North End & main part of Island).
- Expected higher cost of living on the Island as expenses to maintain and replace infrastructure and private residents increase.
- Residential septic systems subjected to changing conditions due to storms.

Community Service & Capacity:

- High level of dependence on the Ferry for transportation, food, building materials, and just about everything that residents, business owners, and visitors need while on the Island.
- Limited financial resources in the municipal budget restricts ability to completed necessary projects that could increase overall resiliency of the Island and its residents and businesses.

Specific Categories of Concerns and Challenges (cont'd)

- Insufficient zoning codes and ordinances currently to accommodate resiliency needs across the Island.
- Concerns about inability to retain personnel with institutional knowledge and on-island experience as well as attract qualified people to replace when key staff leave.
- General lack of support for larger, more expensive projects in response to future conditions.
- Increasing amounts of conserved lands reduces the number of tax-generating properties on the Island which has ramifications on the municipal budget despite the social, tourism, and ecological benefits.

Environmental Concerns and Challenges

Open Space, Wetlands, Watersheds, and Coastline:

- Impacts to existing salt marsh due to shifts in sea level rise.
- Repetitive loss of dunes along Corn Neck Road due to winter storms and associated surge.



(Credit: vacationidea.com)

Current Strengths and Assets

Just as certain locations, assets, and populations in New Shoreham stand out as particularly vulnerable to the effects of hazards and climate change, other features are notably assets for New Shoreham's resilience building. Workshop participants identified the following items as their community's key strengths and expressed interest in using them as the core of future resilience building actions.

- Clearly, the responsive and committed engagement exhibited by leadership, staff, and residents is a very appreciated strength within and across New Shoreham. Ongoing collaboration between municipal staff, boards/commissions, volunteers, business community, faith-based organizations, non-profit organizations, academic institutions, and various state-level organizations, among others, on priorities identified herein will help advance comprehensive, cost-effective, community resilience building actions.
- Community is very vested in ensuring that all residents are well cared for and supported regardless of the circumstances and issues.
- Robust and dependable public safety efforts as provided by volunteer fire and rescue team.
- Residents are very willing to adapt to changes, which stems from living on an island where resources are not always readily available.
- Strong desire by the community to protect the environment and properly manage conserved lands which currently sits at approximately 50% of the Island.
- The Block Island Medical Center is viewed as a community asset which currently has a capital campaign to restore and renovate Center.
- Large number of beaches around the Island that are all publicly accessible and free year-round.
- The combination of conservation and recreational areas provides for an outstanding trail system that is heavily utilized by residents and visitors.
- Community members and visitors donate their time and resources to help the Island with various causes.
- Growing emphasis on providing affordable housing with levels that often meets and exceeds state standards.

Current Strengths and Assets (cont'd)

- New Shoreham is enrolled in FEMA's Community Rating System.
- Sole source aquifer fosters a great deal of focus on watershed protection across the Island including areas like Great Salt Pond and associated projects such as maintaining 50'+ vegetative buffers around wetlands.
- Education and outreach to community members - with a particular emphasis on grade school children – around the importance of natural resources management and resilience.
- Topography of the Island with the slope rising relatively quickly away from the shore largely reduces the potential for immediate and long-term inundation due to sea level rise (with the exception of a few critical locations).
- Residents closely attune to weather events and climate shifts due to living on an island disconnected from the mainland by 12 miles of ocean.
- Great deal of experienced residents that have a lot of background with the Island and have lived through a diverse array of routine and major events.
- Most if not all residents are engaged to some extent in activities and programs that are designed to improve the livability of the Island and wellbeing of the overall community.
- Governmental leadership and departments along with organizations such as those focused on conservation have strong relationships with the business community due to an acknowledgement of mutual benefits for all.
- Leadership and staff associated with water and sewer utilities are viewed as approachable and engaged in activities that improve the services and therefore those served.
- Majority of residential homes are elevated or at a high enough elevation where sea level rise projections are not much of a concern for most structures.
- School is well positioned in a relatively high elevation and adequately serves as a hurricane shelter.
- Current zoning codes and ordinances help to prevent development that could potentially present issues with more extreme weather events and shifts in climate – particularly in low lying areas.

Current Strengths and Assets (cont'd)

- Airport and landing strip on the Island can accommodate large resupply aircraft such as C-130s.
- Interstate Navigation ferry service for evacuation from Island and for bringing in supplies (i.e. generators) and equipment (i.e. ambulance) worked well during last storm (Hurricane Henri).
- High level of communications from municipal leadership and staff to residents during crisis.
- Utility power provider and Public Works able to get everything back up and running quickly after Hurricane Henri.
- Ambulatory facility on Island able to handle relatively minor health care needs.
- Use of the Block Island Bulletin Board to increase distribution of information amongst residents and visitors.
- Successful pilot site for offshore wind may encourage municipality to move into leading edge on climate solutions going forward.
- Block Island Water Company is sourcing water from two ponds (primary and secondary), wells, and a robust reverse osmosis system without tapping into the aquifer, to date.
- Shifting more and more to a “year-round community” with larger over-winter population with greater dependability of broadband and work from home options.
- Strong partnership between the Block Island Conservancy, Block Island Land Trust, and The Nature Conservancy.



(Credit: anewenglandwithlove.com)

Recommendations to Improve Resilience

A common theme among workshop participants was the need to continue community-based planning efforts focused on developing adaptive measures to reduce New Shoreham's vulnerability to extreme weather, climate change and other common concerns raised. To that end, the workshop participants reached agreement on several priority topics requiring more immediate and/or ongoing attention including:

- **Long-term Vision and Growth** (i.e. development, conservation, transportation (air, ferry), commerce/economic growth, volunteerism, housing, affordability, budget);
- **Infrastructure Improvements** (i.e. roads, harbor, ferry docks, wastewater treatment system and facilities, stormwater management, low-impact development, utility infrastructure, nature-based solutions/green stormwater infrastructure);
- **Resilient Community Support** (i.e. affordable housing, sustainability, business and residential recovery, community support, cost of living, health care);
- **Emergency Management** (i.e. communications, outreach, education, continuation of services, coordinating and exercise plans, sheltering facilities/centers, mutual aid).

In direct response, the workshop participants developed the following priority and other action list. Mitigation actions from the New Shoreham's Local Hazard Mitigation Plan (2017) are provided in Appendix A for cross reference. In addition, actions previously identified in the New Shoreham's Comprehensive Plan (2016) were reviewed for consistency with input from workshop participants.

Priority Actions

- 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.
- 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.

Priority Actions (cont'd)

- Develop and utilize a sea level rise/climate change checklist as part of Planning Board review of proposed development across the Island.
- 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.
- 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.
- 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 \$5M to \$65M).
- 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.
- 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.
- 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.
- Create a study group to consider options to relocate or flood-proof the Power Company Substation which is currently in a low-lying area.



(Credit: forbes.com)



(Credit: visitrhodeisland.com)



(Credit: pbn.com)

Priority Actions (cont'd)

- 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.
- 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.
- 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.

Other Actions

- Incorporate resulting resilience actions from the New Shoreham Community Resilience Building workshop into future updates of Comprehensive Plan and Hazard Mitigation Plan.
- 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.
- Modify current vegetative buffer zone ordinance width requirements to increase the amount of nature-based risk reduction strategies around development and existing natural areas.
- Explore potential retreat or relocation strategies for vulnerable public facilities including much of the downtown area.
- Establish water table monitoring program that measures water table fluctuations and levels of saltwater intrusion seasonally and annually.
- 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.
- 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.

Other Actions (cont'd)

- 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).
- Continue to identify and secure affordable, year-round housing for residents.
- 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.
- 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.
- 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).
- Conduct a cost and feasibility assessment of placing above ground power and telephone lines below ground in select high risk areas around the Island.
- Look to relocate the Transfer Station to the middle of the Island perhaps in proximity to the Power Plant which would ultimately help to reduce traffic on Corn Neck Road.
- 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).
- Identify, prioritize, and implement conservation projects that increase the current and long-term resilience at Middle Pond, Wash Pond, and Sachem Pond.
- Explore opportunities to reduce the vulnerability of the Scotch Beach area including elevation of amenities to let tides and surge go under.

CRB Workshop Participants: Department/Organization

Town of New Shoreham - Office of the Town Manger
Town of New Shoreham - Building, Zoning, Land Use and Planning
Town of New Shoreham - Fire and Rescue
Town of New Shoreham - Harbors
Town of New Shoreham - Police
Town of New Shoreham - Public Works
Town of New Shoreham - Wastewater Management
Town of New Shoreham - New Shoreham Tourism Council
Town of New Shoreham - Planning Board
Town of New Shoreham - School Committee
Town of New Shoreham Chamber of Commerce
Town of New Shoreham - Local Business Owner
Town fo New Shoreham - Community Member/Resident
Block Island Conservancy
The Nature Conservancy

North Kingstown Core Project Team

Maryanne Crawford - Town Manager, Town of New Shoreham

Alison Ring - Town Planner, Town of New Shoreham

Jenn Brady - Land Use Officer, Town of New Shoreham

Charlotte Herring - Block Island Program Manager, The Nature Conservancy

Online CRB Workshop Facilitation Team

Rhode Island Infrastructure Bank - Shaun O'Rourke (MVP Program Lead)

The Nature Conservancy - Adam Whelchel (Lead Facilitator)

The Nature Conservancy - Sue AnderBois (Lead Coordinator/Small Group Facilitator)

The Nature Conservancy - Samantha Lash (IT Management/Scribe)

URI Coastal Resource Center - Pam Rubinoff (Small Group Facilitator)

Narragansett Bay Research Reserve - Caitlin Chaffee (Small Group Facilitator)

Rhode Island Infrastructure Bank - Kim Koriath (Scribe/MRP Program Support)

Rhode Island Infrastructure Bank - Kellie King (Scribe)

The Nature Conservancy - Sharon Gold (Scribe)

The Nature Conservancy - Ashley Pulscak (Scribe)

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Appendix A

Town of New Shoreham Local Hazard Mitigation Plan (2016)

Mitigation Strategies and Actions

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 to 18 months)

Cost: \$\$\$\$

Finance Options: CDBG-DR; FEMA

Benefit: Environmental, Aesthetic and Public Health

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

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. 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

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

Action 5: Participate in the FEMA National Flood Insurance Program's (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 for Block Island property owners

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

Action 7: Town Highway Garage Generator

Project Description: The Public Works Department is a lead in natural hazard preparedness and recovery activities. A generator at the Town 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

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

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

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 upland, 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)

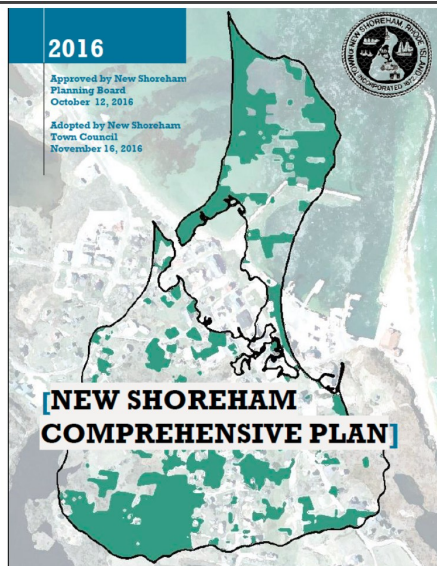
Cost: \$\$\$\$

Finance Options: BILT; partners; open space bond; staff time

Benefit: Property Protection, Natural Resources Protection

Appendix B

New Shoreham Map Resource Packet* Used During Workshop



Block Island Hazard Mitigation Plan, 2017

Town of New Shoreham, Rhode Island

A Multi-Hazard Mitigation Strategy

Created by: The New Shoreham Hazard Mitigation Committee

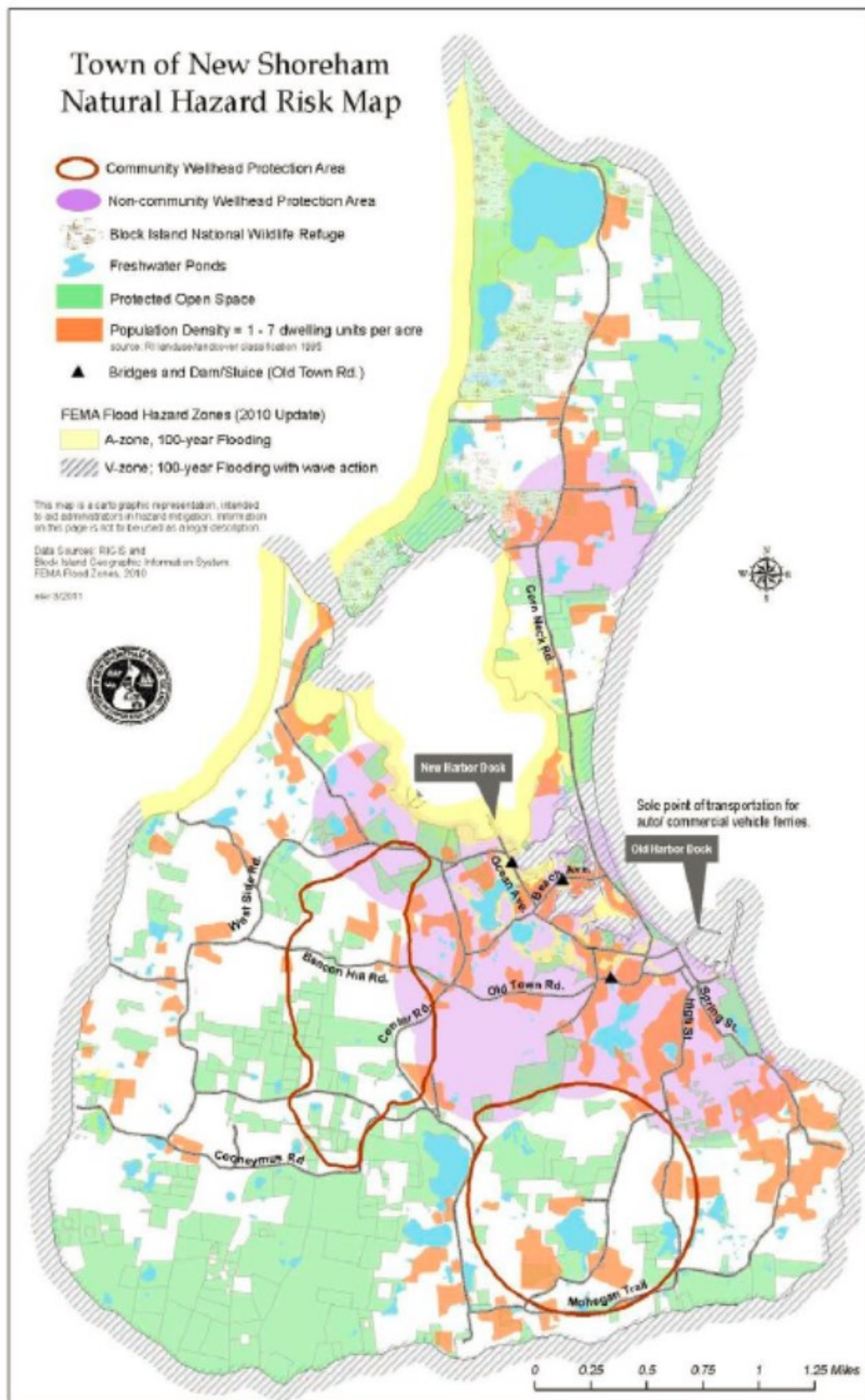
Adopted by: New Shoreham Town Council, July 5, 2017

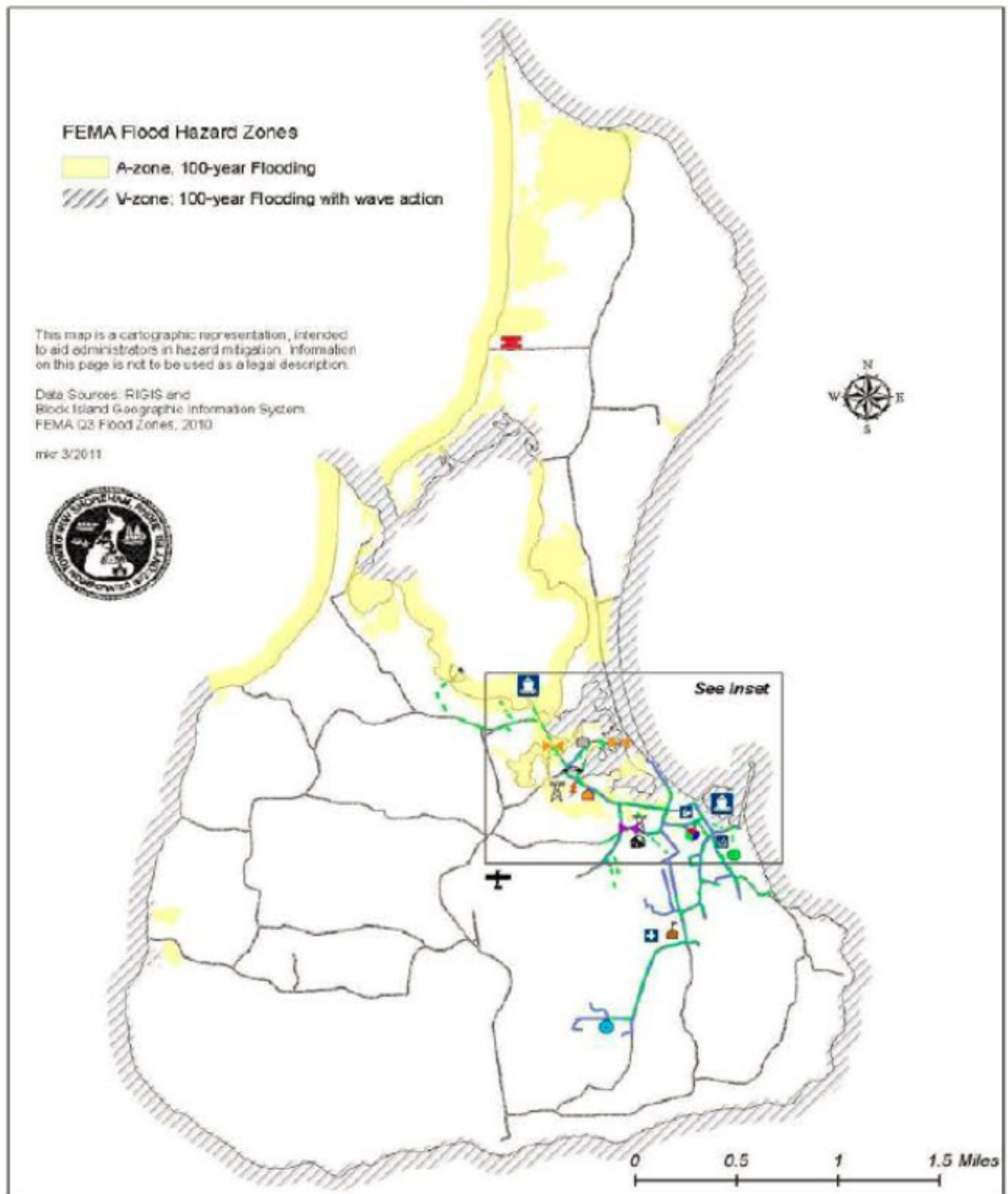
New Shoreham Town Council

*Kenneth C. Lacoste, First Warden
F. Norris Pike, Second Warden
Andre Boudreau
Murtha Ball
Christopher Willi*



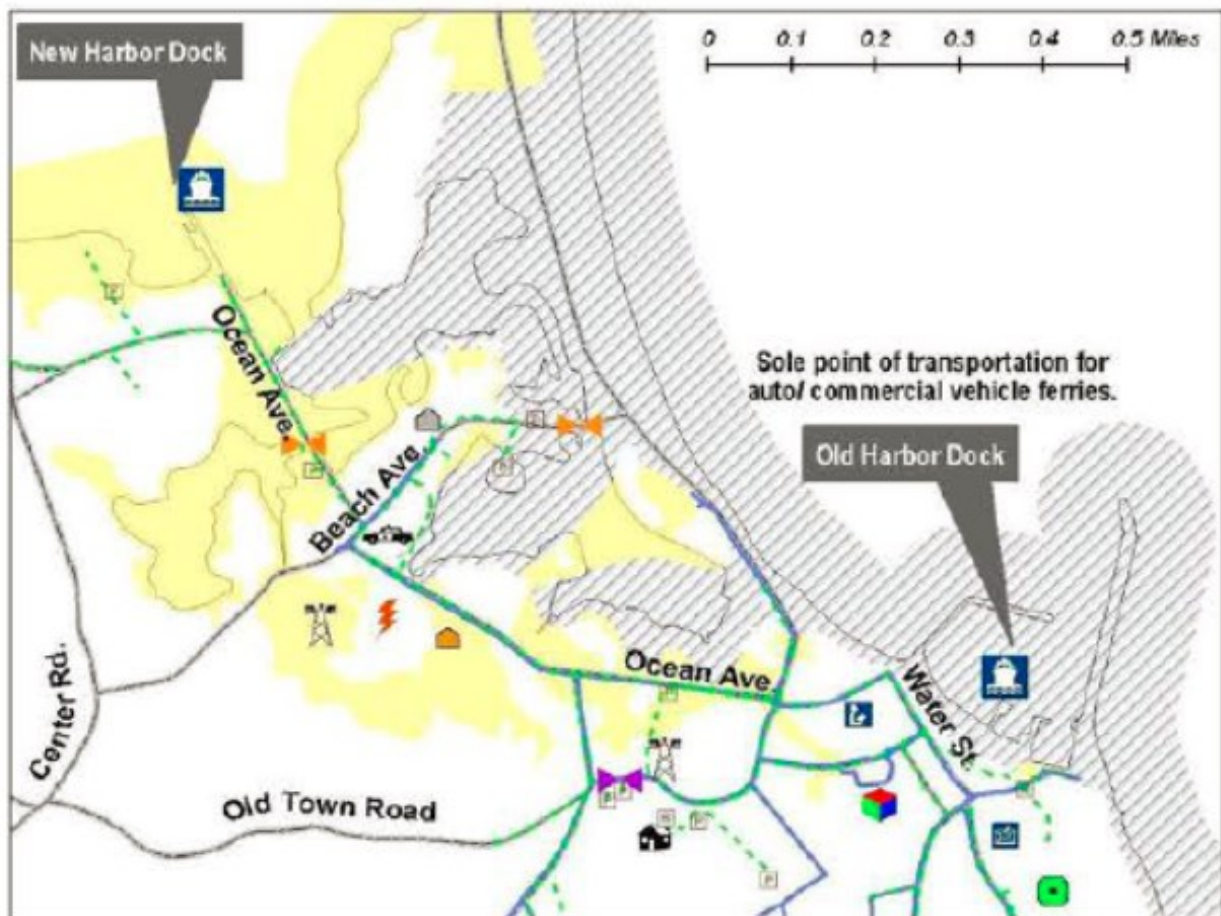
***Gathered from New Shoreham's Local HMP (2017) & Comprehensive Plan (2016)**

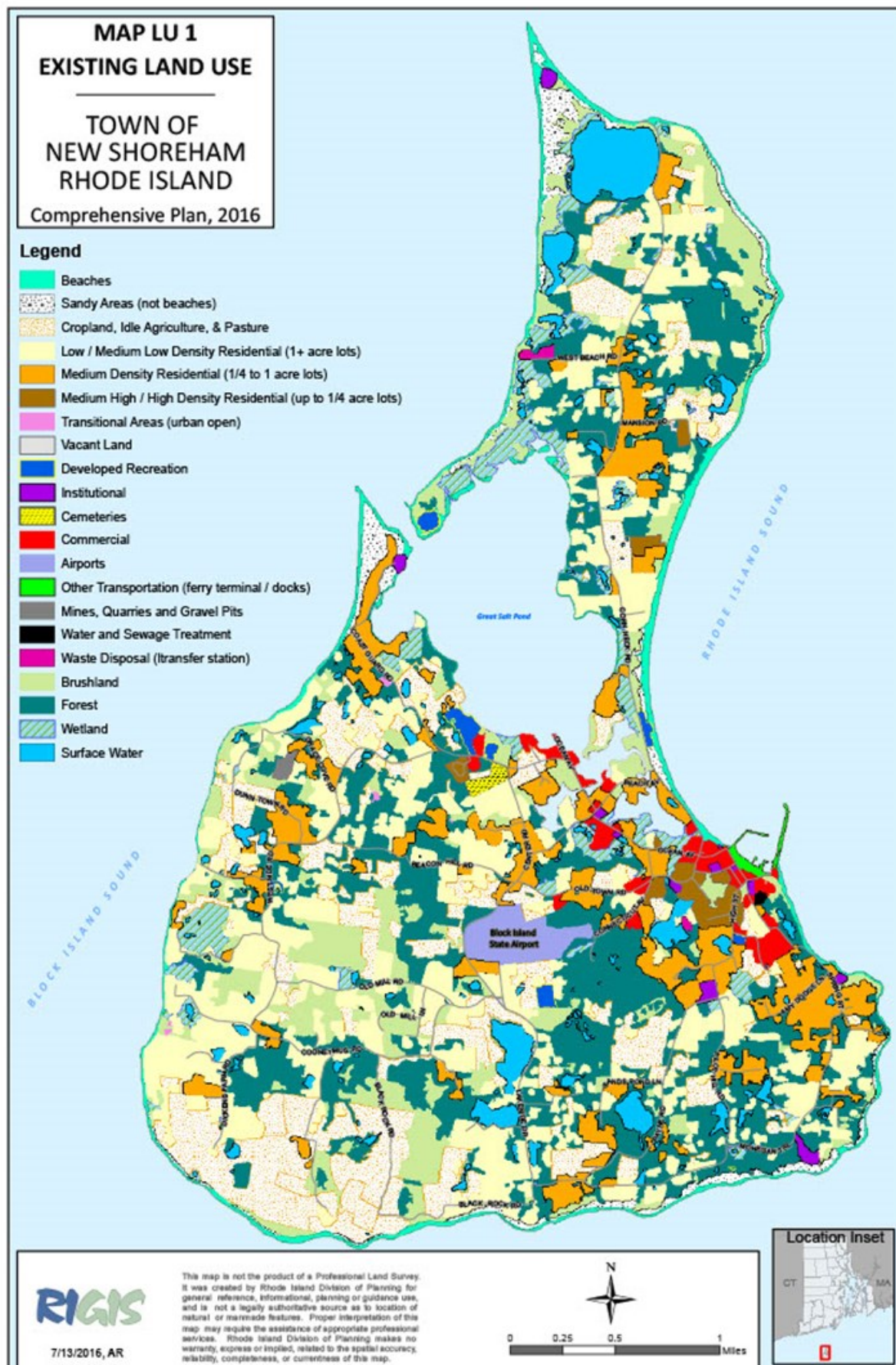


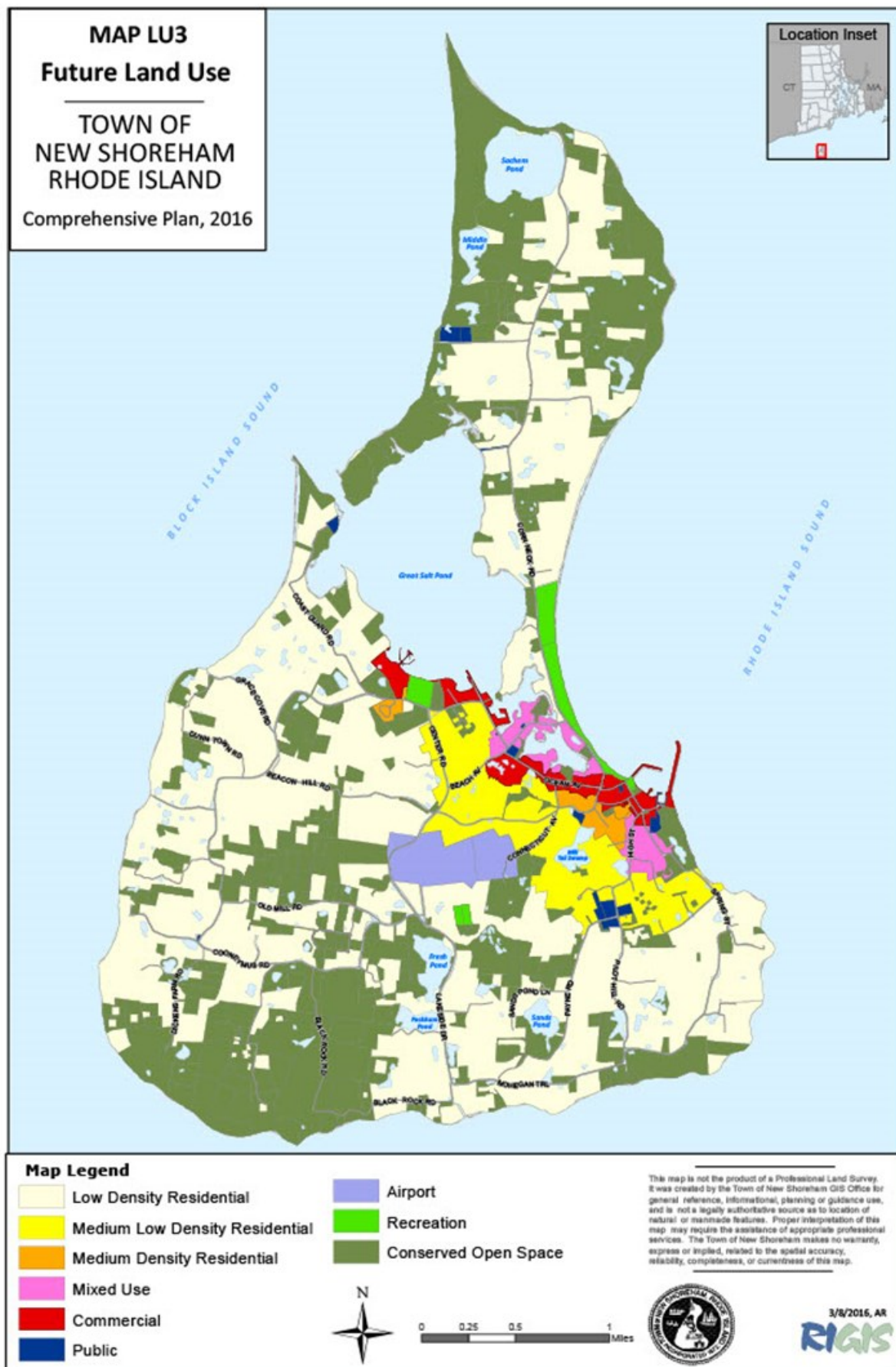


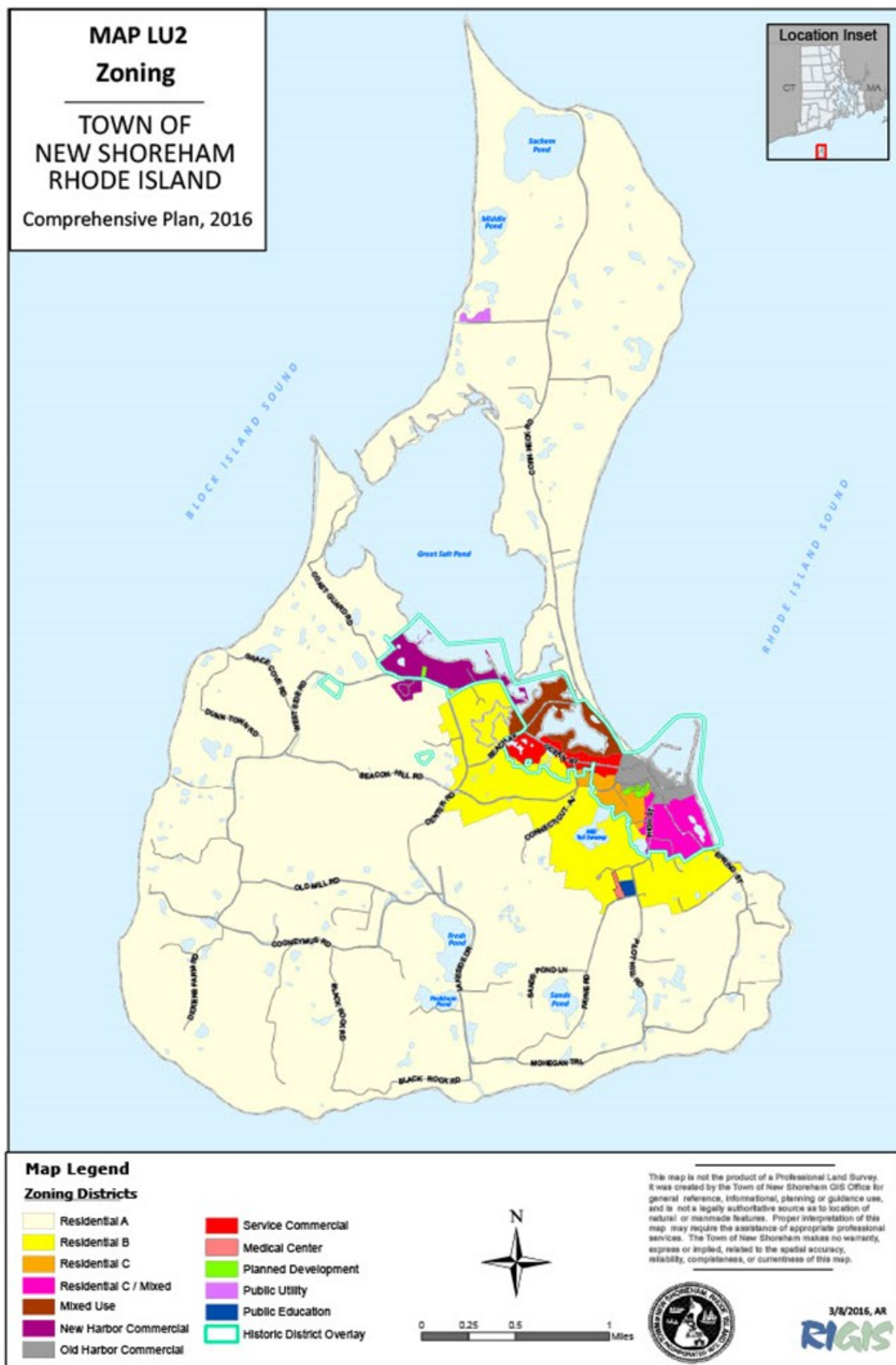
Town of New Shoreham Critical Facilities

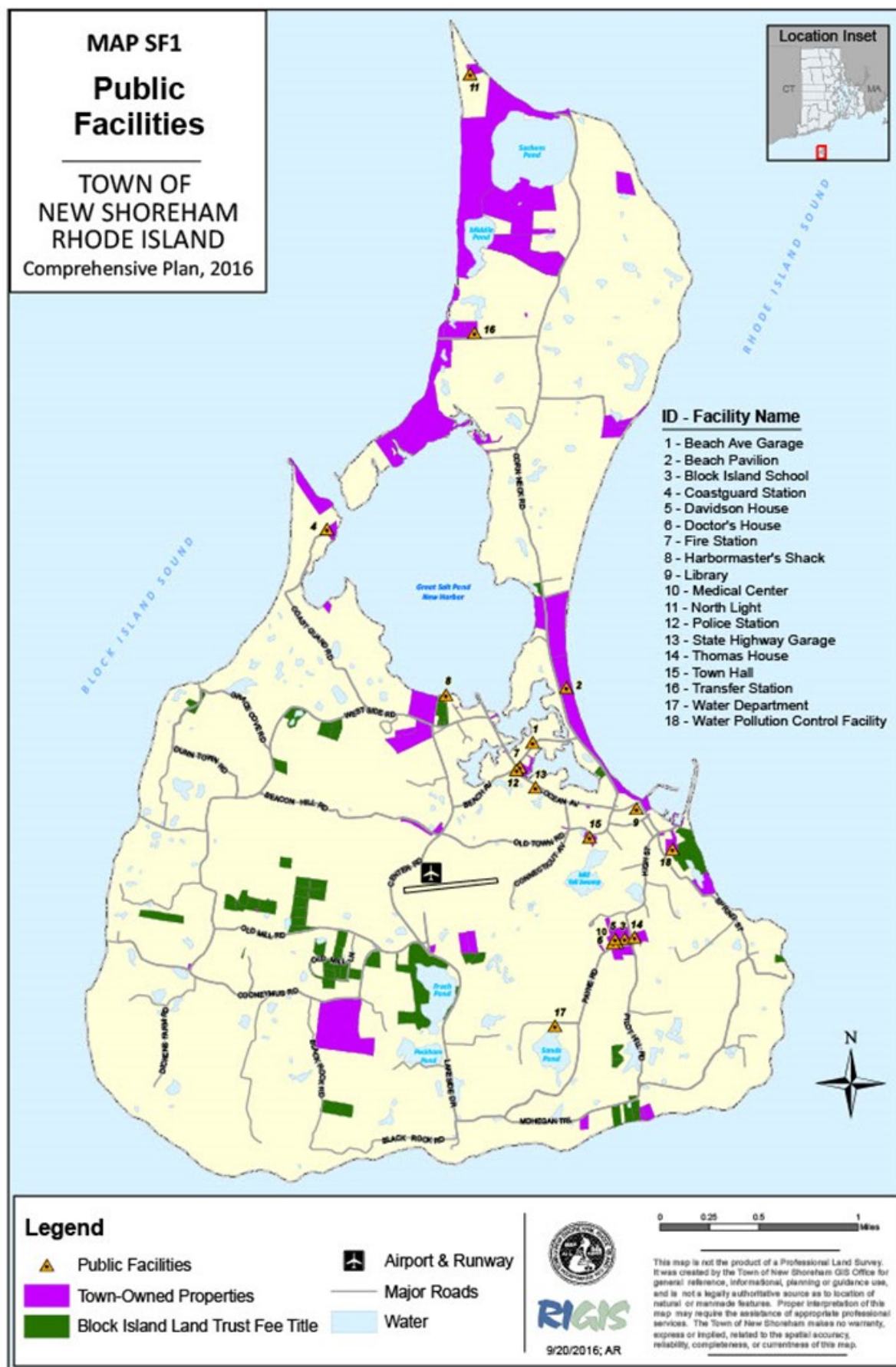
- | | |
|--------------------------|----------------------------|
| ✈ Airport | ✂ Old Town Rd Sluice |
| 🏫 BI School | 🌉 Bridge |
| 🎨 Community Ctr/Day Care | 🏠 State Highway Garage |
| 📖 Library | 🏠 Town Highway Garage |
| 🏥 Medical Center | 🚚 Transfer Station |
| 🚢 Ferry Docks | 🟢 Sewer Plant |
| 🏛 Town Hall | 📦 Sewer Pump Stations |
| 🚒 Police, Fire, Rescue | 🟢 Sewer Lines |
| 📧 Post Office | 💧 Water Company |
| 📶 Cell Tower | 💧 Water Distribution Lines |
| | ⚡ Power Company |







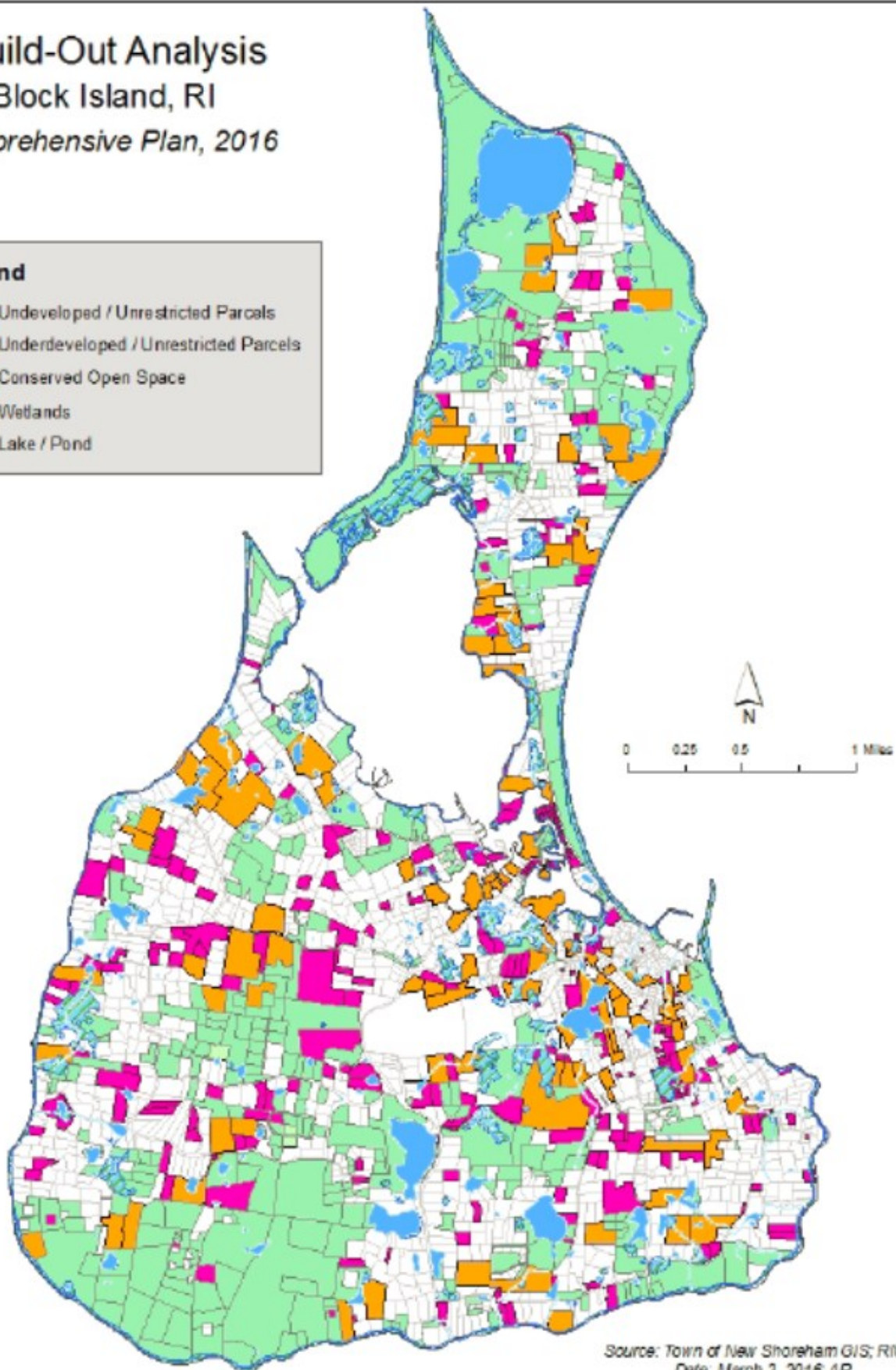


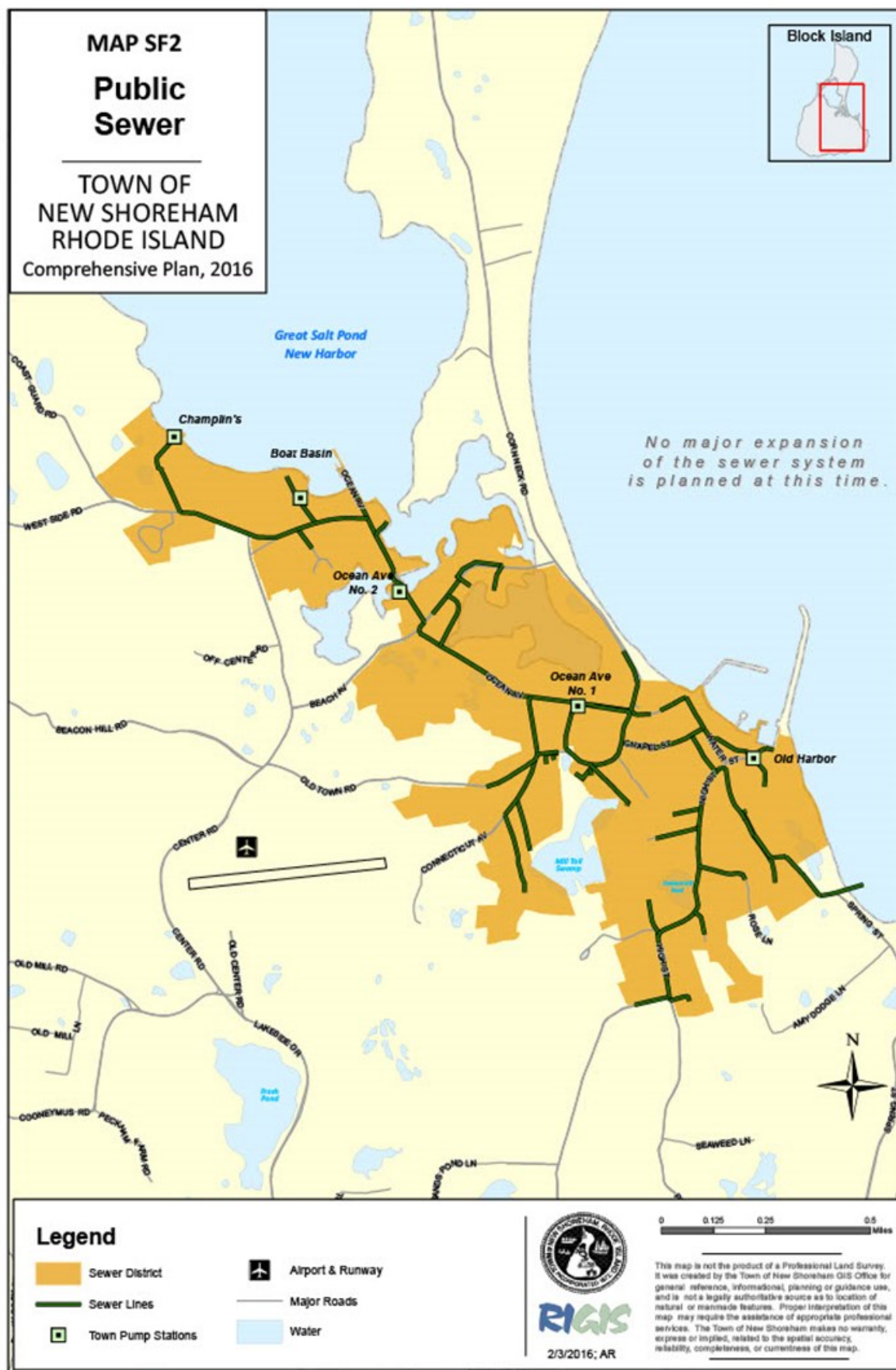


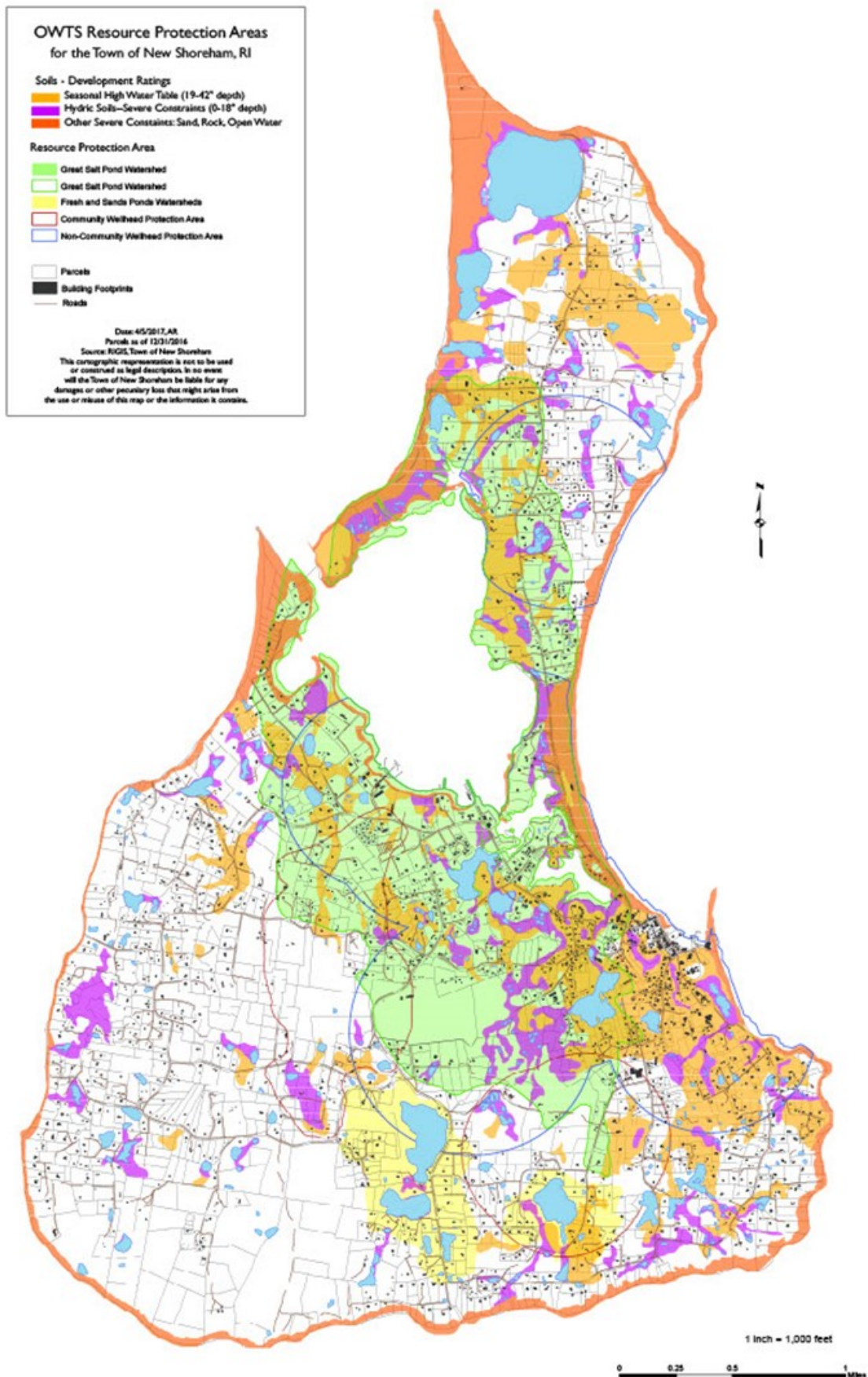
Build-Out Analysis Block Island, RI *Comprehensive Plan, 2016*

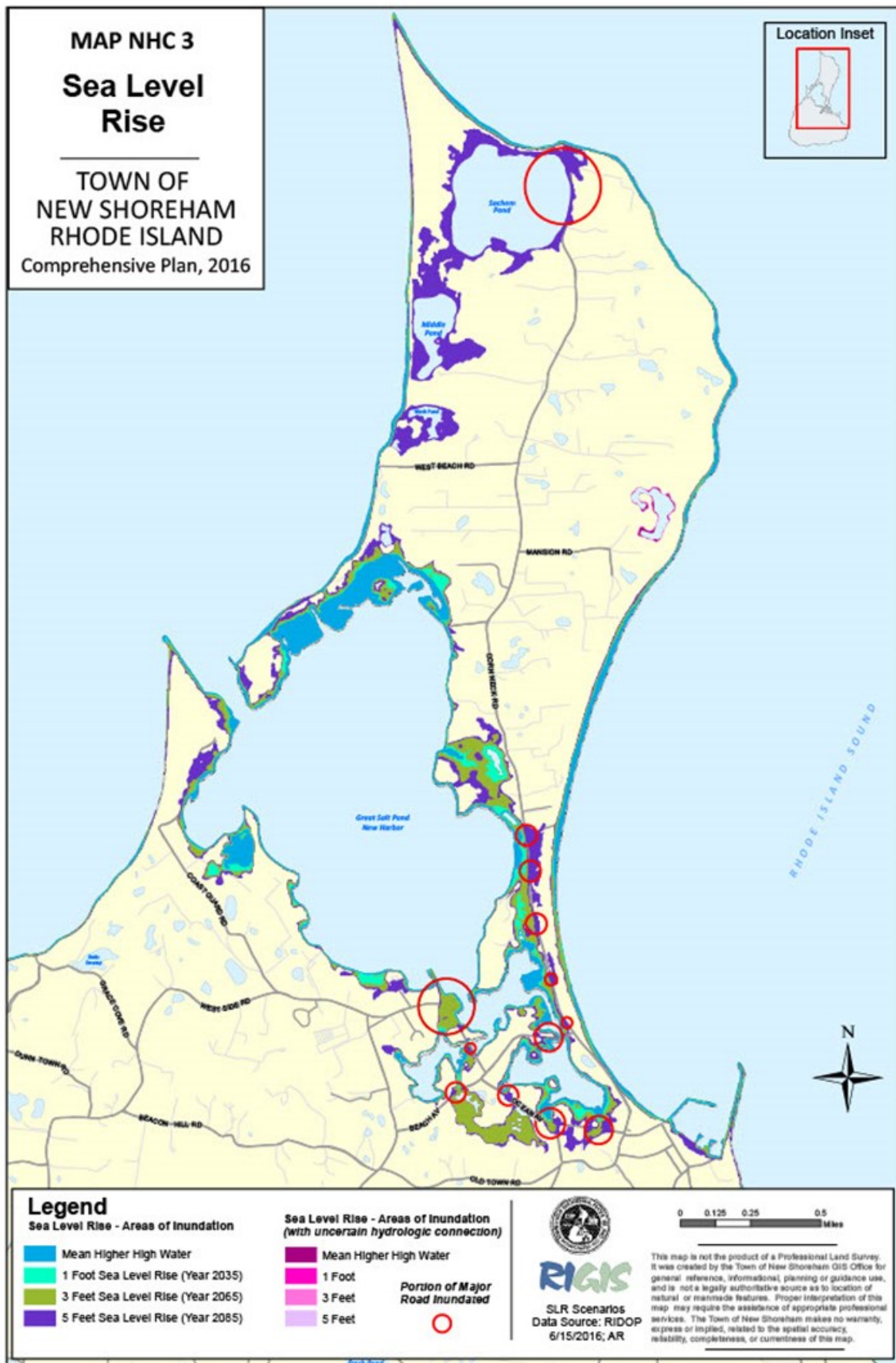
Legend

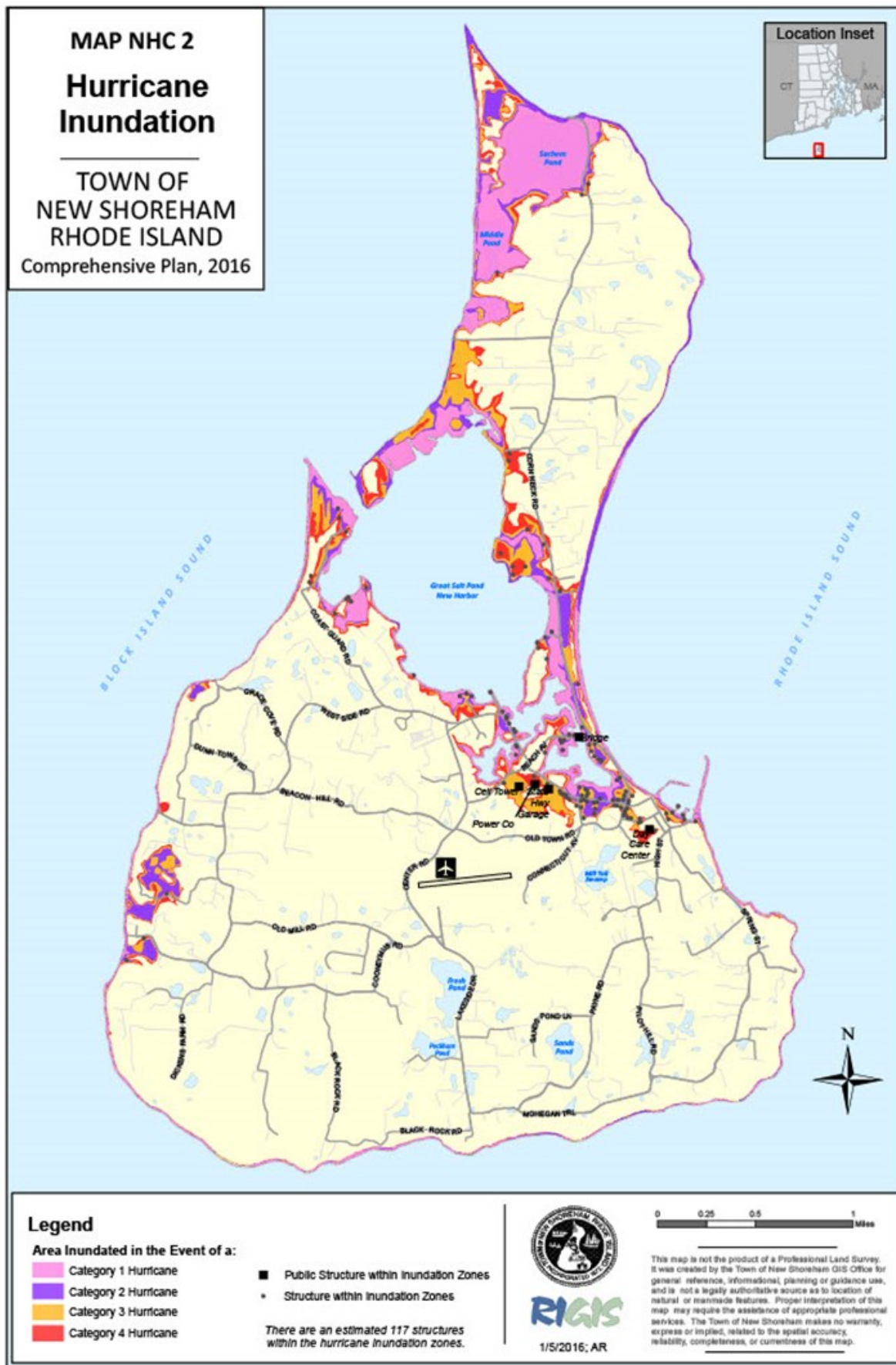
- Undeveloped / Unrestricted Parcels
- Underdeveloped / Unrestricted Parcels
- Conserved Open Space
- Wetlands
- Lake / Pond

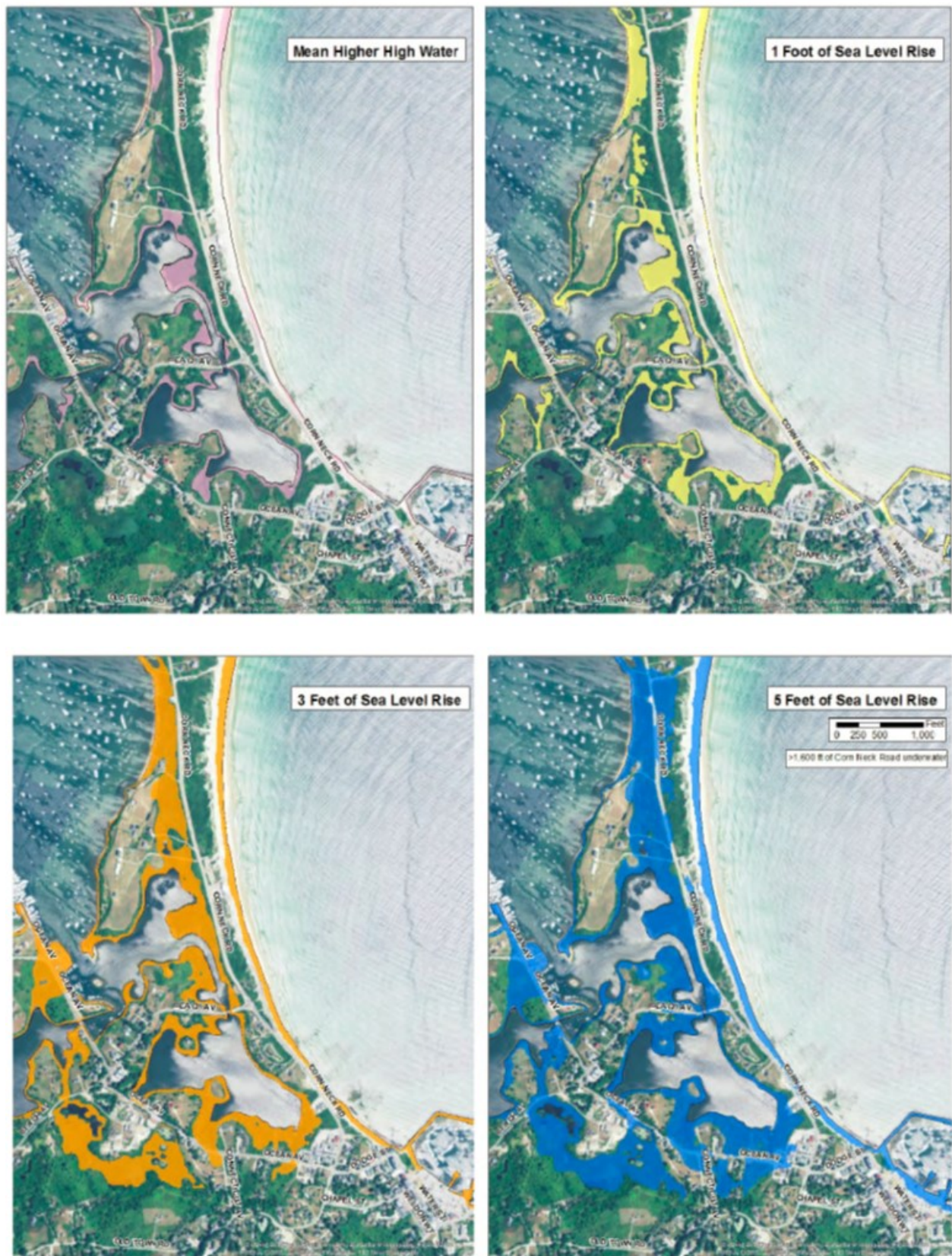






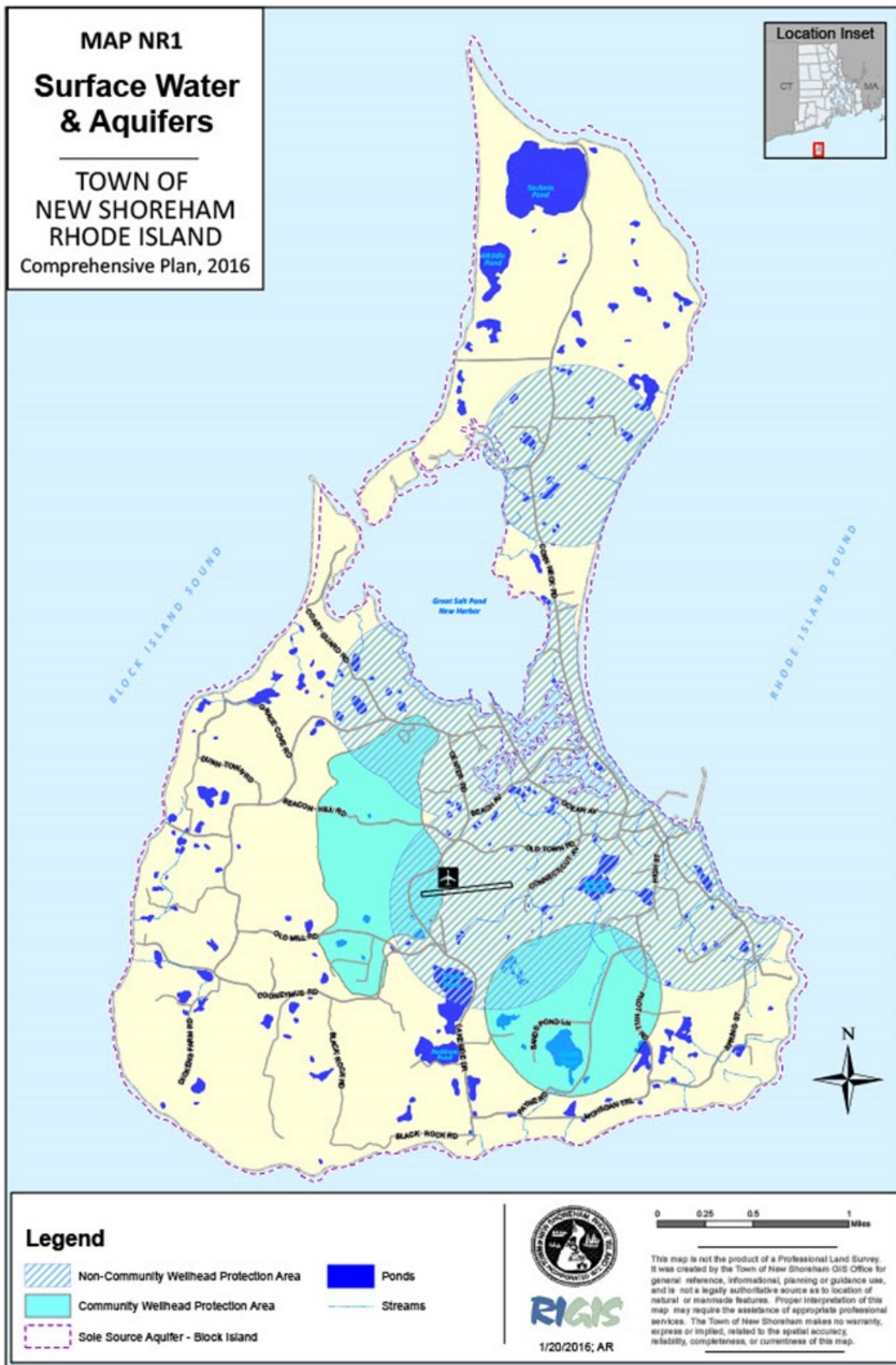


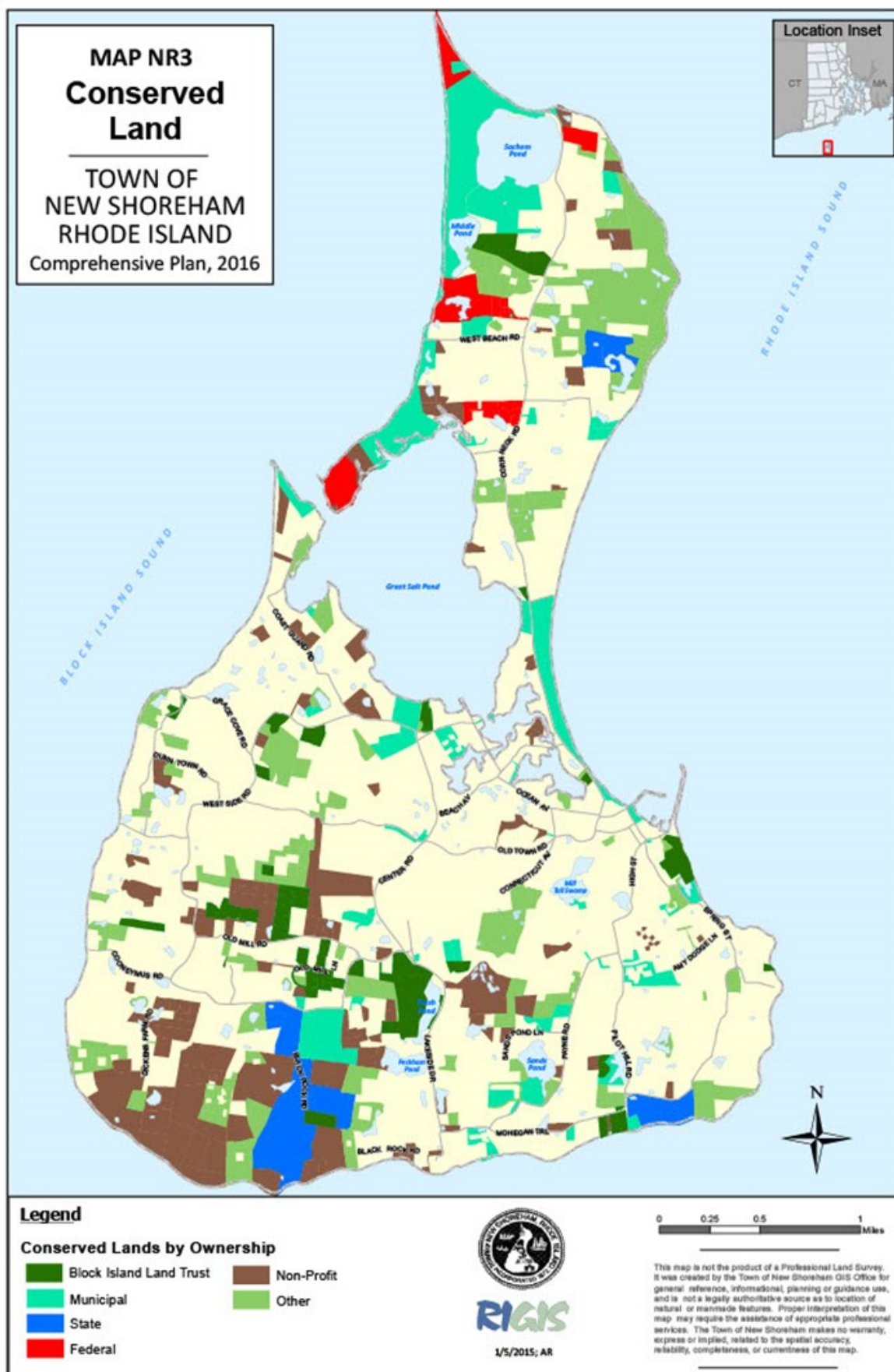




Stormtools, URI, 2017.

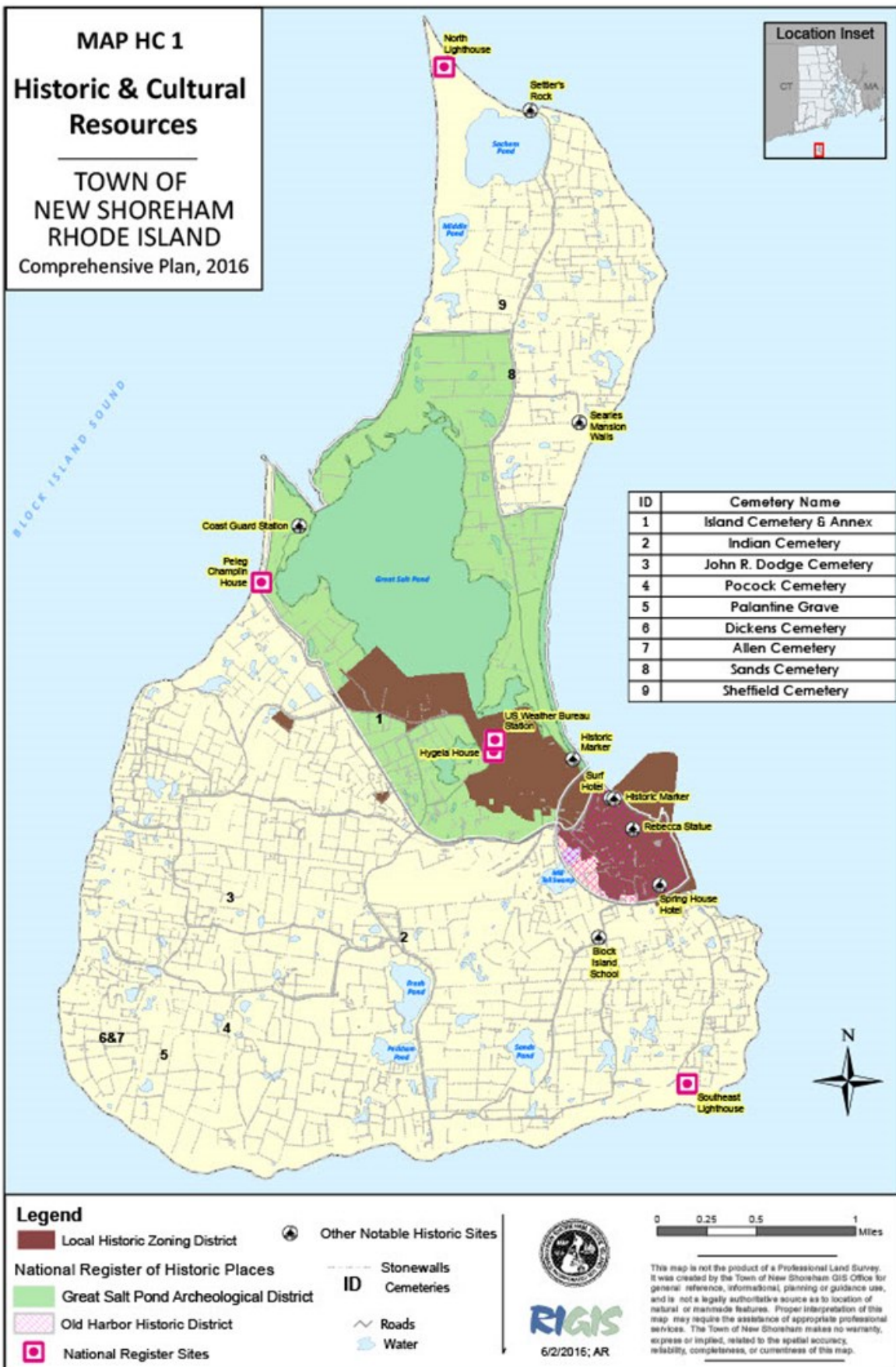
















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www.CommunityResilienceBuilding.org