



GROTON



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Community Resilience Building Summary of Findings

June 2024

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Town of Groton, Connecticut

Community Resilience Building

Summary of Findings

Overview

The need for municipalities, regional planning organizations, academic institutions, 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 Connecticut. Relatively recent events such as Super Storm Sandy, severe winter storms (2013 & 2015), COVID-19 pandemic, and Tropical Storm Isaias have reinforced this urgency and compelled leading communities like the Town of Groton 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 Connecticut and beyond.

Recently, the Town of Groton embarked on certification with Sustainable CT as well as a comprehensive, town-wide, resilience program called Resilient Groton. As part of that certification and the Resilient Groton effort, The Nature Conservancy (TNC) and Sustainable CT provided the Town with a community-driven process to assess current hazard and climate change impacts and to generate potential and prioritized solutions to improve resilience and sustainability. In June 2024, Groton's Core Team helped organize a Community Resilience Building process and workshop facilitated by TNC in partnership with Sustainable CT. The core directive of this effort was the engagement with and between community members to define strengths and vulnerabilities and the development of agreeable priority resilience actions for the Town of Groton.

The Groton 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 Groton employed an “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 Groton. The Southeastern Connecticut Council of Government Hazard Mitigation Plan Update – Groton Annex (2023) and the Groton Plan of Conservation and Development (2016) were particularly instructive as references. Using the CRB process - rich with information, experience, and dialogue - the participants produced the findings presented in this summary report. This includes an overview of the top hazards, current concerns and challenges, existing strengths, and proposed actions to improve Groton’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, is proffered for comments, corrections and updates from workshop attendees and other stakeholders alike. The leadership displayed by the Town of Groton 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 Groton CRB Core Team identified the top hazards for the Town. The hazards of greatest concern included coastal flooding (including sea level rise, storm surge, king tides, and nuisance flooding), precipitation-induced flooding (including stormwater and riparian), and extreme heat. Additional hazards highlighted by participants during the CRB workshop included high winds associated with hurricanes and tropical storms, extended droughts in the later summer months, and winter storms such as Nor’easters and blizzards. These hazards have direct and increasing impacts on the infrastructure, environment, and residents of and visitors to Groton. These effects are seen in residential areas, natural areas (beaches, wetlands, rivers, salt marshes, preserves), roads, bridges, businesses, transportation infrastructure, municipal facilities, churches, social support services, arts and culture, and other critical infrastructure and community assets within and across Groton.

Current Concerns and Challenges Presented by Hazards

The Town of Groton has several concerns and faces multiple challenges related to the impacts of natural hazards and climate change. In the last decade, Groton has experienced a series of highly disruptive and damaging weather events including Tropical Storm Irene (August 2011), Storm Alfred (October 2011), Super Storm Sandy (October 2012), winter Nor'easter Nemo (February 2013), Tropical Storm Isaias (July 2020), and other less impactful but more frequent events. Impacts from Irene included coastal flooding and inland flooding with wind damage. Sandy caused additional coastal flooding across low lying portions of Groton. Storms Alfred and Nemo respectively dropped several feet of snow on the Town knocking out power and isolating residents and neighborhoods for periods of 72 hours or more. The magnitude and intensity of these events and others across Connecticut have increased awareness of natural hazards and climate change, while motivating communities such as Groton to proactively improve their resilience.

This series of extreme weather events highlights that the impacts from hazards are diverse. In Groton, this includes coastal and riverine flooding of critical infrastructure, bridges, roads, and low-lying areas; localized flooding from stormwater runoff during intense storms and heavy precipitation events; road closures due to flooding and downed trees; property damage from trees, 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/or isolated residents. The combination of these issues presents a challenge to preparedness and mitigation priorities and requires comprehensive, yet tailored actions for various locations and/or areas across the Town of Groton.

The workshop participants were generally in agreement that Groton 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 thunderstorms and hurricanes) particularly in the late summer and in the fall/winter months when more intense storms coincide with colder weather (i.e., snow/ice storms, Nor'easters, blizzards). The impact of the recent COVID-19 pandemic was raised by workshop participants as well.

Specific Categories of Concerns and Challenges

As in any community, Groton is not uniformly vulnerable to hazards and climate change. 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 several broad categories.

Municipal Functions, Operations, & Growth:

- Despite high level of coordination and dependence amongst City and Town staff the degree of “fragmentation” in terms of purview and jurisdiction (City, Town, Noank, Groton Long Point, etc.) amongst a complicated array of entities, organizations, Councils, Boards, and Commissions can cause communication and coordination challenges.
- Limited means for municipal leadership and staff to communicate with vulnerable populations and lack of staff dedicated to conducting community-based outreach to better understand the needs of vulnerable populations across Groton.
- Overrepresentation of the Mystic and Noank areas of Groton on Boards and Commissions versus broader representation from across Groton (“lack of geographic diversity and representation on Boards and Commissions”).
- Approximately 40% of Groton’s population is economically vulnerable and struggling to maintain status quo.
- Residents impacted by coastal flooding are generally people of relatively high income whereas lower income and unhoused members of the community are more impacted by extreme heat events.
- Lack of shelter for unhoused individuals in Groton (closest shelter in New London) resulting in encampments being set up within open space areas which can increase exposure during storms and extreme heat waves.
- Limited housing opportunities with an escalating demand driven by the desirability of living in Groton coupled with increases in local employment opportunities (Electric Boat, Naval Submarine Base, etc.). Current unmet demand is at approximately 6,000 housing units just to meet baseline need.
- Young families and professionals are unable to find and/or afford housing within the Town of Groton.
- Reluctance by existing residents to be receptive to development and new housing to accommodate the need for diverse housing types for different demographics (i.e., higher density housing, single family starter homes, etc.).
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Specific Categories of Concerns and Challenges (cont'd)

- Challenging to readjust zoning restrictions to allow for the necessity of higher density and more diverse new housing development (“lots of red tape”).
- Relatively large amount of protected open space limits opportunity for development and subsequent increases in tax revenue without changes in zoning to allow for greater densities within existing developed portions of Groton.
- Consternation amongst some residents around the permitted use of accessory dwelling units (ADUs) that are then used by private homeowners as short-term rentals versus longer term, more permanent housing, which is in critically short supply.
- Poquonnock Bridge and Midway Oval areas are currently vulnerable to coastal and inland flooding and are also two of the more socioeconomically vulnerable areas in town.
- Concerns that the economic growth and benefits generated by Downtown Mystic are not being evenly distributed across other less advantaged areas of Groton (i.e., Poquonnock Bridge, Midway Oval, etc.). Residents in these areas do not have adequate resiliency opportunities compared to other areas of Groton (i.e., Mystic, Noank, Groton Long Point, etc.) because of a lack of access to funding to make improvements to their homes that can protect them from extreme weather events like flooding and sea level rise.
- Downtown Mystic and the greater Mystic area (Groton plus Stonington) are increasingly vulnerable to coastal flooding from regularly occurring high tides to more extreme impacts of storm surge produced during storm events. Impacts are felt by residents and tourists alike as well as the stress placed on supportive services and businesses currently situated in Mystic.
- General lack of resources to help reduce the growing impacts to Downtown Mystic due to coastal flooding and the inability to adequately manage stormwater runoff.
- State of Connecticut promotes Mystic as a tourist destination, which generates revenue for the state, but does not provide resources to help reduce the mounting threat to this area from coastal flooding and sea level rise (“lack of financial match from State to keep up with threats and needs of Mystic”). No mechanism in place to address or pressure state to fairly contribute to the long-term success of Mystic.
- Ongoing issues of lack of parking for visitors looking to explore Mystic as well as complaints from residents regarding tourism related issues including increases in petty crime incidents.
- Large number of historic buildings located in relatively vulnerable areas within the Mystic area of Groton. Current owners generally lack an understanding of what it takes to preserve historic buildings as well as ensure these structures become resilient to flooding.

Specific Categories of Concerns and Challenges (cont'd)

- Limited synchronization between the City and Town of Groton on the development of the Town of Groton's Plan of Conservation and Development. Five years separate their respective update schedules for Plans of Conservation and Development.
- Although Eversource, which services the eastern portion of Groton, is generally considered as responsive to community needs there is concerns that the ongoing increases in rates are becoming onerous to residents given that Groton Utilities, which serves the western portion of Groton, are not raising rates. Relatively high electricity rates in Connecticut present a burden to residents and businesses across Groton.
- Groton-New London Airport, which is a state facility, is in a highly vulnerable, low-lying location increasingly subject to coastal flooding and sea level rise, which is and will continue to have an impact on commerce and travel to and from the facility. Long-term viability of this enterprise is in question given the projected climate risks to the facility and the ability to maintain operations.
- Current deficiency of two full-time engineers on staff results in staffing limitation to review plans for development and think forward about potential engineering solutions to chronic infrastructure challenges across Groton.
- Within the City of Groton, which is a political subdivision of the Town of Groton, over 60% of the population are renters, which can present a challenge when trying to disseminate important health and safety-related materials and information. Spanish speaking residents require additional resources and services to ensure proper translation and dissemination occurs in a timely manner.
- Narrow sidewalks coupled with challenging intersections for pedestrians in the City of Groton presents a situation that limits safe, alternate transportation options.
- Groton doesn't have a town-wide, trash or recycling, curbside pickup program currently in place.
- Youth engagement is a challenge with limited involvement of younger generations in town issues.
- Recognition by leadership and staff that not all structures will be able to be moved out of the ever-expanding flood zones.
- Limited access for residents to public transit across Groton and the region.

Emergency Management & Preparedness:

- Challenges exist in coordinating responses in the aftermath of disasters between the two utilities that service Groton (Groton Utilities and Eversource).

Specific Categories of Concerns and Challenges (cont'd)

- Residents new to Groton are not always familiar with the impacts of major storms and how to prepare and respond safely per methodically prepared municipal emergency response plans. Some longer-term residents are sometime unwilling to evacuate despite the magnitude of storm events along the shoreline.
- Groton Long Point, which is a political subdivision of the Town of Groton, is in a very low-lying area with only one way in and out which presents a challenge for emergency management access and egress during major coastal flooding events.
- Increased number of people, automobiles, and boats during the summer months present a concern to emergency management professional due to the growing likelihood of major summer hurricanes and tropical storms.
- Power grid and supply network is vulnerable due to reliance on overhead wires that are susceptible to damage during high wind events and impacts from trees and tree limbs.
- Only one half of the High School is air conditioned.
- Ongoing issues of motorists disregarding emergency detour signage and flooded roads and getting cars and trucks stuck, which requires time and resources from the Town to rescue drivers and remove vehicles.
- Limited participation of local businesses in immediate and long-range planning for resiliency due to the necessity of focusing on managing the day-to-day operations of their businesses.
- Despite the favorable conditions within the Thames River Estuary, facilities such as Electric Boat and Naval Submarine Base are at risk from coastal flooding and storm surge as well as from stormwater runoff during intense precipitation events (“water sandwich – water from the Thames and water running off from the City”).
- Evacuation challenges for Groton Long Point and Willow Point because on a peninsula with one only egress route (“one way in, one way out”).
- Concerns regarding local and regional overdependence on the Gold Star Bridge and ramifications for traffic congestion during routine travel days as well as evacuation operations in the event the Bridge is impassable (i.e., major accidents, fires, extreme weather, etc.). Alternate travel routes in the event of closure of Gold Star Bridge exist but are limited.
- Traffic congestion during routine Electric Boat shift changes is a concern to emergency managers in Groton given the added potential complications during major disasters requiring universal evacuation of residents.
- Limited cell coverage in various sections of Groton.

Specific Categories of Concerns and Challenges (cont'd)

- Lack of awareness and understanding amongst tourists as to how to park along Gravel Street during King Tides, which can create emergency situations.
- Concerns about the reoccurrence frequency and duration of drought conditions in southeastern Connecticut and the impacts it is having on people and natural ecosystems.
- Cycles of drought and intense rainstorms coupled with a warming climate is increasing the risk of vector borne diseases across Connecticut including Groton.

Roads, Bridges, Road Networks, Bridges, Rail, & Shoreline Infrastructure:

- River Road is currently subjected to routine flooding during high tide events that can make this transportation corridor impassable along with routine flooding issues on other roads including Pearl Street and Grove Avenue.
- Elevated flooding issues due to stormwater runoff on High Street.
- Ongoing concerns within Groton Utilities revolving around flooding of the access road to the Water Treatment Plant.
- Certain roadways are subject to stormwater flooding during intense rainfall including railroad underpasses.
- Amtrak rail system is currently vulnerable to coastal flooding which can cause washouts of facilities and interruption of services. Long-term impacts will accelerate resulting in significant costs to make the system more resilient and maintain the current level of service.
- Challenges in securing and allocating enough funds to support required bridge upgrades and/or replacements including the bridge to Groton Long Point as well as cost sharing on two bridges associated with the Amtrak rail line (“difficult to balance low taxes and future infrastructure expenses”).

Stormwater System, Waste Systems, & Drinking Water Supply:

- Mounting inadequacies of municipal stormwater management infrastructure in various locations due to the increasing frequency and magnitude of precipitation events (“10-year design storms when installed in the 1970s are now happening multiple times a year”).

Shoreline, Watersheds, Wetlands, Rivers, Open Space, & Trees:

- Growing concerns about the spread and impact of invasive pest, pathogens, and plants including emerald ash borer and Japanese knotweed, among many others.

Specific Categories of Concerns and Challenges (cont'd)

- Ongoing loss of American Beech trees due to Beech Leaf Disease which is impacting existing urban tree canopies and shifting forest dynamics in the forested areas of Groton.
- Tree canopy cover limitations in more urban developed portions of Groton coupled with older housing stock without air conditioning creates issues with heat for residents.
- Concerns about estimates that Groton could lose over 50% of the existing tree canopy in the event a category 3 or stronger hurricane was to come through the region.
- Ongoing impacts to wildlife due to inadequate wildlife crossing complete with educational signage for motorists.
- Dumping of grass clippings and other lawn waste into river, streams, and ponds (and eventually Long Island Sound) across Groton presents an ecological impact to natural areas and may cause localized flooding.



Credit: SeeGroton



Credit: Town of Groton



Credit: PlanetWare

Current Strengths and Assets

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

Municipal Functions, Operations, & Growth:

- Clearly, the responsive and committed engagement exhibited by leadership, staff, and residents is a very appreciated strength within and across Groton. Ongoing collaboration between municipal staff, board/commission/committee volunteers, business community, faith-based organizations, school districts, non-governmental organizations, adjoining municipalities, Council of Governments, and various state-wide organizations (i.e., Sustainable CT), among others, on priorities identified herein will help advance comprehensive, cost-effective, community resilience-building actions.
- Town of Groton is viewed as a desirable place to live and raise a family in a healthy and safe environment with good schools and supportive community services.
- Groton has had great success hosting "Community Conservation" type events to surface concerns and opportunities to increase the livability, resilience, and sustainability of the Town.
- Boards and Commissions depend on relationships they have forged over many years with non-governmental organizations and ad hoc committees.
- Resilient Groton is advancing the development of Groton's first climate resiliency plan, which will place an emphasis on ensuring voices from the community are integrated alongside leadership and staff regarding the challenges and opportunities for Groton due to a rapidly changing climate. Groton's Community Resilience Building process (encapsulated herein) is the first step in the longer-range Resilient Groton endeavor.
- Long standing and ongoing coordination between the City and Town of Groton through various initiatives and services such as the public school district.
- Collaboration between the City and Town recently expressed through the building of a sea wall in the City of Groton (Five Corners Area) with American Rescue Plan Act funding being contributed by the Town.

Current Strengths and Assets (cont'd)

- Both the City and Town have now completed their respective Community Resilience Building processes with the City of Groton using their CRB process (March 2019) at the start of a more comprehensive process, which is analogous to Town of Groton using the CRB process as a foundation for Resilient Groton.
- Important municipal facilities are located close together including the Town Hall, Community Center, and Thrive 55+ Active Living Center.
- Large corporations and entities such as Electric Boat, Pfizer, and the Naval Submarine Base are important components of the overall tax revenue of Groton.
- Relatively high numbers of local and regional economic drivers located with Groton including Electric Boat, Navy Submarine Base, Pfizer, and UConn Avery Point. These entities are generally located at higher elevations and are actively preparing their respective properties for the projected impacts from climate-related hazards, which helps to reduce the overall burden placed on the surrounding municipalities (i.e., City and Town of Groton).
- University of Connecticut's Avery Point Campus offers specialized academic and research programs that take advantage of the facility's location along Long Island Sound. University also provides a unique opportunity for commuting students to experience life in southeastern Connecticut in hopes of enticing them to move to Groton afterwards.
- Groton Long Point represents a separate taxing district within the Town of Groton, which may represent a source of revenue to advance actions to enhance the resilience and sustainability of this area.
- Downtown Mystic is an economic engine for the Town of Groton and continues to draw more people and subsequent investment in businesses. In addition, the greater Mystic area (Groton and Stonington combined) is a top tourist attraction for the state of Connecticut resulting in strong revenue creation at the state level.
- Ledge Light Health District has close relationships with the unhoused population in Groton as well as working partnership with Homeless Hospitality in New London that helps in coordinate a more regional approach to this ongoing community need.
- State Representatives for Groton are aware of and engaged with effort to increase the viability, resilience, and prosperity of the Town.

Current Strengths and Assets (cont'd)

- Home ownership trends includes a decline in the percentage of housing stock representing second and/or third homes coupled with more residents remaining in Groton over the winter versus warmer climates (“lower number of snowbirds these days”).
- Groton has completed a housing needs assessment.
- Fitch High School’s Environmental Club, with support from faculty and leadership, the Marine Science Magnet High School, Alliance for the Mystic River Watershed, Town of Groton, and the City of Groton, participated with three other high schools (approximately 80 students) in the first Youth Climate Summit. Topics explored included how to be environmentally conscious at home, as well as highlighting key environmental justice issues. Participating students appreciated the opportunity to learn about topics that weren’t normally discussed during their environmental science classes and were motivated to take action to improve their community in areas they thought were only achieved through town boards, committees, and commissions.
- Groton-New London Airport, which is owned and operated by the state, is an economic driver for the region as well as a base for the Air National Guard.

Emergency Management & Preparedness:

- Ability to travel across Groton through multiple north-south and east-west routes which increases egress options for evacuating residents and access options for emergency managers including police and fire personnel.
- Gold Star Bridge is a major transportation asset for Groton which provides commuters, residents, and tourist access across the Thames River as well as being a critical evacuation route in southeastern Connecticut.
- Naval Submarine Base has a dedicated Fire Department that contributes to the overall safety of Groton. The Base also has the only Hazardous Material (HazMat) Team in eastern Connecticut.
- New cell phone tower installed behind Police Station.
- New Middle School has had air conditioning installed.

Current Strengths and Assets (cont'd)

- Availability of the Fitch High School and the Bill Memorial Library as emergency/crisis spaces to accommodate residents and a place to provide charging stations, food, medical supplies, and other necessary sheltering-related services.
- Division of Town into two different utility supply areas with the western portion of Groton being serviced by Groton Utilities and the eastern portion being serviced by Eversource. Despite this division, both utilities have been responsive to the needs of the community during and after major storm events that have resulted in power outages of various lengths.

Roads, Bridges, Road Networks, Bridges, Rail, & Shoreline Infrastructure:

- Public Works Department viewed as very responsive and dedicated to needs of the community particularly during winter snowstorms and tree removal associated with road closure. Concerted effort placed on ensuring roadways are well maintained and able to be utilized during major storm events in all but a select number of areas (i.e., River Road, etc.).
- In response to ongoing coastal flooding, the Town will be starting to look at the feasibility of raising portions of River Road while improving two culverts.
- Bridge servicing Groton Long Point is in the process of being replaced with funding secured and designs being generated that will help to enhance the resilience of this critical connecting infrastructure.
- Ongoing project to expand the bike and pedestrian lanes across the Gold Star Bridge allowing for connections between New London and Groton (Bridge Street access point).

Stormwater System, Waste Systems, & Drinking Water Supply:

- Large amounts of protected lands in many locations that help to promote natural stormwater storage and infiltration, which limits downstream impacts to people, property, and supportive infrastructure.
- Department of Public Works routinely cleans debris from storm drains and catch basins to ensure proper operations of the stormwater management system.

Current Strengths and Assets (cont'd)

- Recent study associated with flooding in Mystic identified the need to install green stormwater infrastructure (i.e., raingardens, bioswales, etc.) to slow and retain stormwater upstream from areas and road segments experiencing localized flooding.
- Groton Utilities is a critical asset because it is municipally owned and operated with the integration of power, wastewater, and drinking water systems. This results in highly responsive and comprehensive understanding of the needs of the Groton community in advance of, during, and in the aftermath of routine and major events, alike.
- Majority of wastewater treatment pump stations are surrounded by protective concrete walls that help minimize coastal flooding despite being in low-lying, flood prone areas.
- Groton Utilities recently completed the installation of a new water filtration system that can filter 12 million gallons a day. Currently, Groton uses an average of 4 million gallons a day. The new filtration system was built to sustain a significantly greater demand for drinking water in anticipation of population growth (“locally sourced water with excess capacity for growth in the system is an enviable strength in Groton”).
- Naval Submarine Base has a microgrid which is owned by the federal government with contracted microgrid work done by the Connecticut Municipal Electric Energy Cooperative (CMEEC) in agreement with Groton Utilities.
- Groton Utilities has an agreement in place with CMEEC to provide residents of the Naval Submarine Base with natural gas that is then converted into energy.
- Naval Submarine Base has invested in renewables such as solar panels as well as fuel cell energy generation which has reduced the installation’s reliance on fossil fuels.
- Groton has a local transfer station that is available to use for Groton residents.
- Southeastern Connecticut Regional Resource Recovery Authority (SCRRA) has recently received permits and is in the process of constructing a composting facility in Preston, CT, which the Town will be able to utilize to recycle food scraps and receive compost.

Shoreline, Watersheds, Wetlands, Rivers, Open Space, & Trees:

- Bluff Point State Park is recognized locally as a significant asset for the community for recreation and gathering of families.

Current Strengths and Assets (cont'd)

- Recently updated Open Space Plan (2021), which was the first update in over 30 years.
- Combination of state, municipal, and privately owned (Avalonia Land Conservancy, Groton Open Space Association, and others) open space (30% of Groton) viewed as a significant asset in Groton and is highly prized by residents and visitors alike.
- Well cared for and accessible network of state and municipally owned parks available at all times of year for residents of and visitors to Groton. State and municipal parks provide a draw for tourists that spend both time and money in Groton.
- Groton's first Community Tree Management Plan is in its final stages of completion and will help increase awareness amongst residents and serve as a guide to maintaining and enhancing trees across the Town. Study will provide recommendations on the location of trees that are dying and need to be taken down as well as opportunities where new trees could be planted (including urban areas).
- Growing emphasis on environmental education curriculum inside and outside the classroom across the Groton School District. Currently, Fitch High School's Environmental Club is working to restore an old greenhouse to grow vegetables to be served in their school cafeteria.
- Groton's rich biodiversity makes it home to many migratory species such as warblers and shorebirds during migration and summer months, which provides eco-tourism opportunities and ancillary benefits to the local economy.
- Groton Utilities owns and manages the drinking water reservoir and surrounding protected lands providing local control over a critical natural resource. Groton Utilities has been very proactive in preserving lands around the reservoir which helps increase the amount of protected open space within the Town.
- Groton Utilities source water supply extends from the center of Groton into Ledyard and includes multiple lakes, reservoirs, and ponds.
- Thames River Estuary is a significant ecological treasure for the region and also offers favorable conditions for enterprises such as Electric Boat and the Naval Submarine Base.
- Topography of the Town's western shoreline coupled with relatively rapid increases in elevation are viewed as helpful at the Navel Submarine Base given the longer-term projections for sea level rise.

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 reinforce Groton's strengths and reduce vulnerability to extreme weather, climate change and other common concerns raised. To that end, the workshop participants helped to identify several priority topics requiring more immediate and/or ongoing attention including:

- **Long-term vision and growth** (i.e., sustainable growth, geographically diverse volunteerism, conservation & recreation, economic development, affordable housing);
- **Infrastructure improvements** (i.e., roads/bridges/culverts, green stormwater infrastructure/management systems, shoreline infrastructure, resilient housing);
- **Quality of life improvements** (i.e., parks and recreation, open space & accessibility, sustainability, health & safety, economic prosperity, housing, education, transportation);
- **Emergency management** (i.e., communications, outreach, education, continuation of services, business recovery, evacuation, vulnerable populations).

In direct response, the Community Resilience Building workshop participants developed the following actions and identified, but not ranked, them as priority or as additional actions. Mitigation actions from the Groton Hazard Mitigation Plan Annex (2023) are provided in Appendix A for cross reference with actions presented herein. Resilience-related projects identified in Groton during the development of the Southeastern Connecticut Regional Framework for Coastal Resilience are presented in Appendix B. Maps provided during the CRB Workshop, gathered from the Groton's Plan of Conservation and Development (2016) and Hazard Mitigation Plan (2013) (among other reports), are provided in Appendix C. See Appendix D for participatory maps generated during workshop.

Priority Actions

1. Advance "Resilient Groton" by completing this Community Resilience Building process and setting up a steering committee composed of an ad-hoc group from Boards, Commissions, and Committees, non-government organizations, and concerned Groton residents, among others. Continue to work over the next 18 months to generate Groton's first climate resiliency plan.

Priority Actions (cont'd)

2. Create a plan of action to help connect the youth and the larger community with the Town Council, Boards, and Commissions in Groton including informal “community conversations”, “coffee hours”, focus groups, open houses, yearly updates, and increased use of social media platforms. Entertain all topics of discussion including affordability of housing and equitable distribution of resources and support across the municipality, among others. Advance goal to encourage residents of all ages and backgrounds to become more involved and express their perspectives and ideas in hopes of a more “community-forward”, inclusive vision and path forward for Groton.
3. Equitably increase communications and coordination across all aspects of the Towns governance, operations, and planning. Work to ensure education on key issues, resources, and services for residents is equitably distributed across the entirety of Groton as well as provided in multiple languages.
4. Continue to support and emulate elsewhere in Groton the translation services provided at municipal parks through the Parks and Recreation Department.
5. Create a municipal fellowship or internship program for high school students looking to become more involved with shaping the future of Groton as a more resilient and sustainable community via involvement with the Town’s Boards, Commissions, and Committees.
6. Review existing sheltering system and if needed look to create additional accessible spaces (“Resilience Hubs”) where residents can secure immediate needs such as food, power sources, medical services, cooling/heating, and pet housing as well as long term support such as educational support materials during and after large natural disasters or other types of emergencies. Ensure that Fire District staff are engaged to help identify underserved areas of Groton that would benefit from this type of additional shelter space.
7. Develop a communications plan around the importance of increasing housing development for the future of Groton and conduct outreach to residents.

Priority Actions (cont'd)

8. Explore opportunities to adapt and incorporate different approaches to housing in Groton including changing zoning to promote higher density (i.e., lower parking requirements) as well as building or redeveloping housing at all price points. Concurrently, look to incorporate a full assessment of impacts to services (sewer, schools, roads, etc.) of additional housing development.
9. Continue to work with the United States Department of Defense via a recent grant to create more housing for employees at the Naval Submarine Base.
10. Develop educational materials and conduct outreach to residents and visitors on the implications of climate change including sea level rise and extreme heat. Develop specific materials to help build awareness on the economic implications of climate change amongst residents and businesses owners in Mystic and elsewhere in Groton.
11. Work with state representatives to advance state legislation to enable sales tax revenue sharing on proceeds generated through tourist-based commerce in Mystic. Direct returned funds towards supporting priority investments designed to improving the resilience and sustainability across Groton including the greater Mystic area. (Example - State of Rhode Island currently gives a portion of hotel tax back to the communities from which the funds were generated).
12. Convene environmental groups and advocates for Groton's first conservation summit to help build coordination and collaboration around key planning efforts involving forest management, tree assessments, salt marsh advancement, and Resilient Groton as well as central land management issues such as shifts in biodiversity and invasive species control, among others.
13. Create educational material to inform existing and future residents of Groton on the requirements and responsibilities of owning a historic residence and how to properly prepare their homes in advance of extreme weather events.

Priority Actions (cont'd)

14. Introduce a historic building resiliency pilot program designed to feature property owners who have made upgrades on their historic homes to foster a peer-to-peer exchange with other owners of historic properties located in areas experiencing routine and extreme coastal and inland flooding issues (i.e., Mystic).
15. Continue to advance a feasibility assessment of the flooding issues on River Road in hopes of eventually identifying ways to minimize impacts to this roadway as well as to not create a disproportionate financial strain on the municipal budget to upgrade a single road among many others in need across Groton.
16. Conduct a Poquonnock Bridge vulnerability assessment to identify the areas of greatest impact due to extreme weather and changes in climate. Simultaneously, identify opportunities to assist residents with resources and materials to help build more resilience amongst this community and their homes.
17. Build upon synergies between the Groton Long Point Climate Resiliency Plan and the Downtown Mystic Resiliency and Sustainability Plan by seeking ways for Groton Long point and the Town to coordinate on similar resiliency actions.
18. Utilize the new inventory and mapping of tree across Groton to remove high-risk trees and to plant new trees in areas with low tree canopy cover.
19. Update the Town's landscape regulations and create a comprehensive tree planting guide, complete with information for municipal staff and residents. Ensure guidance materials have information on species to plant in a changing climate as well as maintenance techniques and best practices for long term survival of trees planted.



Credit: Town of Groton



Credit: Hartford Courant



Credit: The Boston Globe

Additional Actions

Capacity Building

1. Reexamine rules on term limits on Board, Commission, and Committee members in hopes of encouraging greater and more diverse service by Groton residents.
2. Seek out ways to recruit more diverse commissioners for the Planning and Zoning Commission in hopes of fostering greater opportunities for more creative approaches to enhancing the resilience and sustainability of Groton.
3. Groton Parks and Recreation Department should seek to enlist community members in the care of trees in their neighborhoods (“adopt-a-tree”) and look to engage residents, particularly youth, in tree planting efforts across Groton.
4. Continue collaboration between various entities including Groton’s Public Works Department, Parks and Recreation Department, and land trusts such as Avalonia Land Conservancy to research and apply techniques to control invasive species on protected and public open spaces.
5. Continue to support the recent development by the Town Council of a list of two-year goals by encouraging the routine review and update of identified progress towards stated goals (“we need greater vision and accountability by our leadership”).

Capital Projects

6. Look to expand the microgrid service area on the Naval Submarine Base to include enough power for an additional 1,500 housing units. Ensure the expansion is done in partnership with Groton Utilities.
7. Groton Utilities working to assess the infrastructure requirements needed to support the expansion of electric vehicle charging across Groton.
8. Work towards increasing the resilience of critical pump stations for the wastewater treatment system in Groton.

Additional Actions (cont'd)

9. Look to install flood gauges or elevation signage to help prevent motorists from driving into flood waters in select locations around Groton.
10. Generate and install signage to encourage motorists to be more careful in areas where wildlife frequently cross roadway.
11. Install signage at locations such as the South Road underpass to warn motorists not to drive into roads that are visibly flooded.
12. Continue to design and install a more resilient replacement bridge out to Groton Long Point.
13. Complete design and secure funding for installation of a larger culvert along Haleys Brook at both Cow Hill Road and River Road.
14. Work to either elevate the current access road to Groton Utilities' Water Treatment Facility to minimize access issues due to flooding or identify alternative access routes to and from the Facility.
15. Advance plans and implementation to reduce the immediate risks and improve the long-term resilience of River Road.
16. Implement the Community Tree Management Plan once completed and coordinate with Parks and Recreation Department to ensure priority projects are installed.

Plans/Studies/Outreach/Preparedness

17. Through the processes of generating Resilient Groton, look to create a list of resilience-related projects that have been prioritized and therefore represent a collective action plan for all of Groton going forward. Use prioritized list to communicate why certain projects are moving forward across Groton. Consider conducting a cost-benefit analysis of projects during the prioritization process.

Additional Actions (cont'd)

18. Ensure the development of Resilient Groton is synchronized or at least integrated with Town of Groton's Plan of Conservation and Development updates currently underway.
19. Develop a strategy to track implementation of actions prioritized in the Groton Plan of Conservation and Development and forthcoming Resilient Groton. Insert an annual reporting requirement on progress back to Town Council in hopes of elevating this critical work and ensuring accountability towards the intended goal of a more resilient and sustainable Groton.
20. Explore opportunities to better coordinate on updates to Plans of Conservation and Development between the City and Town of Groton. Ideally, consider ways to eventually synchronize update schedules between the City and Town in the future.
21. Enhance communication and exchange of approaches and actions between the City and Town of Groton during respective updates to Plans of Conservation and Development if unable to synchronize update schedules.
22. Develop and multi-year priority list of road and roadway resiliency projects to help reduce the current and future impacts from flooding including stormwater management systems (culverts, pipes, tide gates, bioswales, etc.) associated with roads. Emphasis to be placed on vulnerable roadways in Groton that are critical for traffic flow and commerce (i.e., River Road, among others). Ensure priority list identifies the potential sources of funding for various projects including the likely cost that will need to be covered by the municipality versus state and federal funding.
23. Review all potential roadway and infrastructure project to see if the use of green stormwater infrastructure (i.e., tree pits, bioswales, rain gardens, etc.) would be feasible and help to lower overall costs of projects.

Additional Actions (cont'd)

24. Evaluate ongoing Groton Plan of Conservation and Development update and to insert new recommendations to enhance Groton's approach to the conservation of open space. More specifically look to create a shift or broadening of focus on protecting additional land and move towards greater stewardship of currently owned parcels.
25. Coordinate planning efforts in Town with open space advocates in hopes of securing support for smart development (including higher density housing) in Groton that strikes a balance between growth and preservation. In addition, open space acquisition should be directed to areas of Town with open space deficits like the northwest corner to ensure all residents have access to and benefit from natural resources.
26. Reexamine current percentages of open space protection and explore setting goals for future acquisition coupled with an assessment of priority locations for acquisition. Priority locations should focus on places where open space protection can help to reduce flooding risks by increasing opportunities for storage of stormwater runoff and flood waters ("natural systems like wetlands are real asset that can help us deal with flooding if we are smart about it").
27. Continue to explore the potential for land acquisition in upland areas projected to become salt marsh in the future as sea levels continue to rise. Ensure exploration is advantaged by The Nature Conservancy's Salt March Advancement Zone Assessment for Groton (see Appendix C for overview map) as well as via the Coastal Resilience mapping portal complete with overlays of future salt marsh areas on digital parcel map layers for Groton.
28. Increase investments in nature-based solutions along the shoreline and waterways to help reduce the impacts of routine tidal flooding, storm surge, and sea level rise including the design and installation of living shorelines and salt marsh elevation through techniques such as thin layer deposition.

Additional Actions (cont'd)

29. Update a town-wide stormwater management plan with a focus on nature-based solutions and create a prioritization list that also factors in new solutions to make sure any repairs and updates are utilizing green stormwater infrastructure best management practices (i.e., bioswales, tree pits, rain gardens, etc.).
30. Create a low impact development (LID) checklist coupled with informational materials to share with residents and contractors/consultants submitting proposals to the Planning and Zoning Commission and Office of Planning and Development Services.
31. Look to conduct a rain barrel and low impact development (LID) best practices campaign to encourage and inspire residents to better manage stormwater on their properties.
32. Prioritize the building of awareness amongst residents and the eventual advancement of a stormwater authority in Groton potentially in cooperation with Groton Utilities.
33. Implement “My Coast” community-based photo taking program to help the Town document the extent and duration of flooding along roadways. This will also help to increase public input and awareness around the issue of flooding in the community.
34. Cross reference actions generated through the Groton Community Resilience Building process with mitigation actions (see Appendix A for list of mitigation actions) identified in the recently updated Groton Hazard Mitigation Plan (2023).
35. Engage with neighboring municipalities regarding priority actions generated during Community Resilience Building workshops (particularly City of Groton and New London) as well as those identified via the Southeastern Connecticut Regional Framework for Coastal Resilience (see Appendix B for list of priority projects) in hopes of fostering more regional approaches and projects over time.

Additional Actions (cont'd)

36. Town to coordinate with State Department of Transportation, Southeastern Connecticut Council of Governments, Amtrak, and other state/federal officials on the vulnerability of the rail line as well as exploration of potential rerouting options and improvements to roads that go underneath existing rail lines.
37. Coordinate with state officials on ongoing study of the Groton-New London Airport to help ensure the Town of Groton is fully engaged as a critical stakeholder in steps forward for this important facility.
38. Continue to advance an ongoing effort to help local businesses with resiliency and continuity planning.
39. Look to improve and expand the long-term resilience of the Town's wastewater treatment system.
40. Conduct a comprehensive needs assessment of the unhoused population in Groton in partnership with the Ledge Light Health District and the Thames Valley Council for Community Action.
41. More effectively communicate the location and hours of operation for cooling centers in Groton. Concurrently, look to evaluate the accessibility of cooling centers with public transportation, if available.
42. Ensure cooling center and municipal facilities have public drinking water filling stations readily available for all residents and visitors.
43. Analyze the vulnerability of overhead utility lines, evaluate priorities in respective tree trimming/removal programs, and where feasible look to underground utility lines in areas of greatest vulnerability.

Additional Actions (cont'd)

44. Complete Community Tree Management Plan to identify roadways at greatest risk of closure due to downed trees and limbs and provide recommendations on trees to remove and successfully integrate street trees to provide shade in urban areas and help mitigate the heat island effect.
45. Continue to collaboratively advance efforts (City and Town) to secure grants in hopes of elevating the issue of urban heat impacts on communities in Groton and southeastern Connecticut.
46. Convene a forum between Emergency Management, Office of Planning and Development Services, and the Historic District Commission to discuss collaborative approaches to increasing resilience of historic building, places, and structures across Groton.
47. Work to educate homeowners with property adjoining natural waterways on the ecological damage caused by the dumping of yard waste and leaf litter in hopes alternatives means of disposing of the debris can be utilized.
48. Establish a public education program to ensure prospective property buyers fully understand the historic impacts associated with a given location in Groton as well as the future projections for flooding. Work to provide tools such as The Nature Conservancy's Coastal Resilience mapper (www.coastalresilience.org) to new buyers so current and future risk from storm surge and/or sea level rise is fully disclosed. Engage local real estate agencies in process to ensure agents are fully able to responsibly and in good faith transfer awareness of flooding concerns to their clients.
49. Foster a vision of Groton as a "blue-technology" center with expertise and install projects that highlight the potential of renewable energy, nature-based solutions, and climate and marine research applications to help solve the impacts of climate-related hazards and associated societal needs.
50. Groton Utilities to explore the opportunities to create green fleets, vehicles that are powered by renewable energy (could be electric).

Additional Actions (cont'd)

51. Ensure Groton Utilities maintains public ownership of the drinking water reservoir and does not allow it to become privately owned by a for-profit company.
52. Explore opportunities to host a second Youth Climate Summit for students within the Groton School District alongside students from other adjoining school districts.
53. Promote the location of housing projects such as Grasso Gardens, which consists of 70 one-bedroom units along with a Community Center, all within walking distance from the Groton Library, Community Center, and Thrive 55+ Active Living Center.
54. Review and revise zoning regulations to clarify “substantial improvements” for development and redevelopment and to prevent work arounds on the 50% threshold.
55. Continue to encourage future development and redevelopment in areas away from the coastline and out of areas known to flood.
56. Work towards increasing flood storage along the Birch Plain Brook through the establishment of an protected open space corridor.
57. Identify the beach nourishment and revegetation needs at Esker Point Beach as well as advancing Housing and Urban Development project via The Nature Conservancy at the Esker Point Beach parking lot.
58. Explore opportunities for enrollment in the Federal Emergency Management Agency’s Community Rating System.
59. Continue to maintain the ecological integrity and viability of the 3-acre riparian restoration project at Sutton Park per The Nature Conservancy in partnership with Groton Parks and Recreation Department.

CRB Workshop Participants: Department/Organization

Town of Groton – Town Council Representative

Town of Groton – Office of the Town Manager

Town of Groton – Office of Planning and Development Services (Planning Division)

Town of Groton – Office of Planning and Development Services (Sustainability & Resilience Division)

Town of Groton – Office of Planning and Development Services (Inspection Services Division)

Town of Groton – Parks and Recreation Department

Town of Groton – Public Works Department

Town of Groton – Economic Development Commission

Town of Groton – Conservation Commission

Town of Groton – Residents

Poquonnock Bridge Fire Department

Groton Housing Authority

Groton Long Point Resiliency & Conservation Commission

Groton Utilities

Thames Valley Council for Community Action

Ledge light Health District

Avalonia Land Trust

Naval Submarine Base

Fitch High School Students

State Representative (41st House District)

Southeastern Connecticut Council of Governments

Southeast CT Enterprise Region

City of Groton – Department of Planning and Economic Development

Groton CRB Core Project Team

Megan Granato – Sustainability & Resilience Manager, Office of Planning and Development Services – Town of Groton

Jon Reiner – Director, Office of Planning and Development Services – Town of Groton

Deb Jones – Assistant Director, Office of Planning and Development Services – Town of Groton

Dave Prescott – Planner, Office of Planning and Development Services – Town of Groton

Shannon Noonan – Planning Technician – Office of Planning and Development Services – Town of Groton

Online CRB Workshop Facilitation Team

The Nature Conservancy – Adam Whelchel, Ph.D. (Lead Facilitator)

Sustainable CT – Jessica LeClair (Small Group Facilitator)

The Nature Conservancy – Drew Goldsman (Small Group Facilitator)

Sustainable CT – Torin Radicioni (Scribe)

Sustainable CT – Dorothy Piszczek (Scribe)

The Nature Conservancy – Jessica Jones (Scribe)

Sustainable CT – Paige Booth (Scribe)

The Nature Conservancy – Jessica Cañizares (Scribe)

Recommended Citation

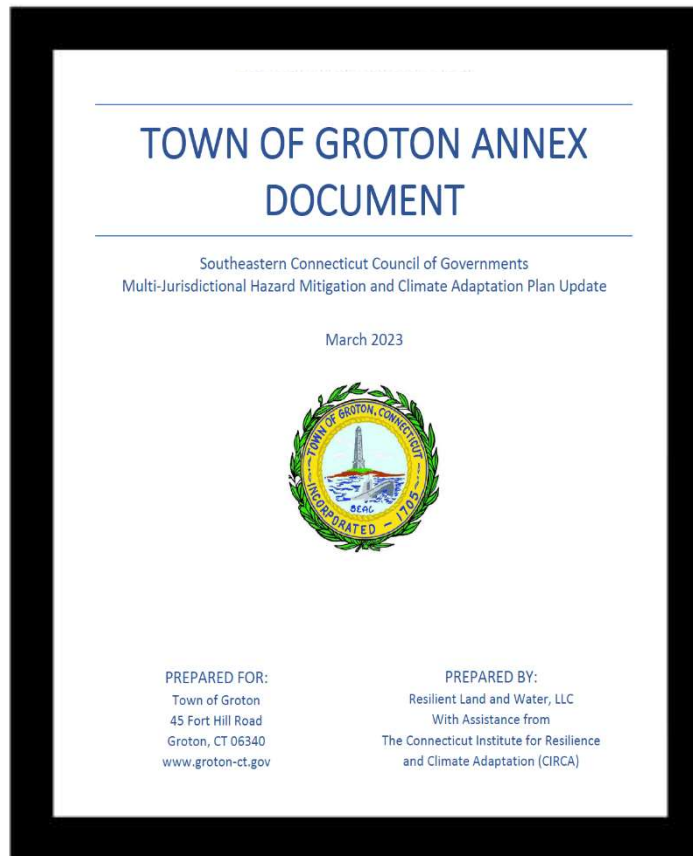
Town of Groton Community Resilience Building Workshop - Summary of Findings Report. (2024). Community Resilience Building Program. The Nature Conservancy and Sustainable CT. Groton, Connecticut.

Acknowledgements

Special thanks to the Town leadership, staff, and community members for their willingness to embrace the process in hopes of a more resilient future for Groton. This Community Resilience Building Workshop was made possible in large part through the dedicated contribution of the facilitation team members who skillfully conducted the Groton Community Resilience Building workshop in close partnership with the Town's Community Resilience Building Core Project Team.

Appendix A

Town of Groton Mitigation Action Plan and Actions*



***Gathered from Southeastern Connecticut Council of Governments Hazard Mitigation Plan Update – Groton Annex (2023).**

Table 8-1 Town of Groton Actions and STAPLEE and PERSISTS Scores

Number	Hazard Mitigation and Climate Adaptation Actions	Hazard Mitigation and Climate Adaptation Goal	Type of Action	Responsible Department	Approx. Cost Range	Potential Funding Sources	Timeframe	Priority	PERSISTS Score	STAPLEE Score	PERSISTS x STAPLEE =
TG1	Expand the availability of standby power in the Town's critical facilities (including but not limited to the Senior Center, which can be used as a cooling center).	Ensure that critical facilities are resilient, with special attention to shelters and cooling centers.	Preparedness & Emergency Response	Office of the Chief Elected Official	\$100,000 - \$500,000	FEMA HMA; Other Preparedness Grants	7/2023 - 6/2025	High	16	5	80
TG2	Assess mobility constraints for accessing all emergency shelters (including cooling centers) and critical facilities.	Ensure that critical facilities are resilient, with special attention to shelters and cooling centers.	Preparedness & Emergency Response	Office of the Chief Elected Official	\$0 - \$10,000	Municipal Operating Budget	7/2023 - 6/2025	Medium	16	7	112
TG3	Upgrade the new middle school generator to ensure backup power capacity is sufficient to run the entire building.	Ensure that critical facilities are resilient, with special attention to shelters and cooling centers.	Preparedness & Emergency Response	Office of the Chief Elected Official	\$100,000 - \$500,000	FEMA HMA; Other Preparedness Grants	7/2023 - 6/2025	Medium	16	6	96
TG4	Install air-conditioning units in emergency shelters so that they can be used safely during summertime emergencies	Ensure that critical facilities are resilient, with special attention to shelters and cooling centers.	Preparedness & Emergency Response	Office of the Chief Elected Official	\$100,000 - \$500,000	Preparedness grants	7/2023 - 6/2025	High	16	6	96
TG5	Upgrade the standby generator at the High School so that it is capable of powering the entire building	Ensure that critical facilities are resilient, with special attention to shelters and cooling centers.	Preparedness & Emergency Response	Office of the Chief Elected Official	\$100,000 - \$500,000	FEMA HMA; Other Preparedness Grants	7/2023 - 6/2025	High	16	6	96
TG6	Work with the City of Groton to create an open space corridor along Birch Plain Creek to increase flood capacity.	Reduce flood and erosion risks by reducing vulnerabilities and consequences, even as climate change increases frequency and severity of floods.	Natural Resources Protection	Office of the Chief Elected Official	>\$1M	DEEP Open Space Grants; Land Trusts	7/2024 - 06/2028	Low	19	2	38
TG7	Seek funding to assess/study all roads/highways susceptible to storm surge, sea level rise, severe rainfall	Invest in resilient corridors to ensure that people and services are accessible during	Structural Projects	Public Works	\$100,000 - \$500,000	DEEP Climate Resilience Fund; CT DOT or LOTCIP;	7/2024 - 06/2028	Medium	17	5	85

Number	Hazard Mitigation and Climate Adaptation Actions	Hazard Mitigation and Climate Adaptation Goal	Type of Action	Responsible Department	Approx. Cost Range	Potential Funding Sources	Timeframe	Priority	PERSIST Score	STAPLEE Score	PERSIST x STAPLEE =
	flooding events, sunny day flooding, etc.	floods and that development along corridors is resilient over the long term.				Municipal CIP Budget					
TG8	For the Groton Long Point Police/Fire Facility: Partner with the jurisdiction to complete additional utility room dry floodproofing and expanded wet floodproofing as recommended in the Southeastern Connecticut Critical Facilities Assessment.	Reduce flood and erosion risks by reducing vulnerabilities and consequences, even as climate change increases frequency and severity of floods.	Property Protection	Office of the Chief Elected Official	\$50,000 - \$100,000	FEMA HMA	7/2023 - 6/2025	High	17	8	136
TG9	Consider flexible yard requirements and regulatory incentives to allow for and encourage larger separations of buildings from coastal high hazard areas and encourage or require property owners to build as far back from eroding shorelines and vulnerable beach areas as possible.	Reduce flood and erosion risks by reducing vulnerabilities and consequences, even as climate change increases frequency and severity of floods.	Prevention	Land Use Staff	\$0 - \$10,000	Municipal Operating Budget	7/2023 - 6/2025	Medium	19	7	133
TG10	Provide technical assistance to owners of non-residential structures that suffer flood damage regarding floodproofing techniques such as wet and dry floodproofing.	Reduce flood and erosion risks by reducing vulnerabilities and consequences, even as climate change increases frequency and severity of floods.	Property Protection	Floodplain Manager	\$0 - \$10,000	Municipal Operating Budget	7/2024 - 06/2028	Medium	19	9	171
TG11	Develop a protocol to address redevelopment of buildings severely damaged or destroyed after a major coastal storm.	Reduce flood and erosion risks by reducing vulnerabilities and consequences, even as climate change increases frequency and severity of floods.	Property Protection	Building Official	\$0 - \$10,000	Municipal Operating Budget	7/2023 - 6/2025	Medium	19	6	114
TG12	Conduct beach nourishment and revegetation as needed to keep up with erosion, such as Esker Point Beach and others.	Reduce flood and erosion risks by reducing vulnerabilities and consequences, even as climate change increases frequency and severity of floods.	Natural Resources Protection	Conservation Staff	\$500,000 - \$1M	NOAA/NFWF; LISFF; Municipal CIP Budget	7/2023 - 6/2025	Medium	13	3	39
TG13	Secure funding to construct and implement the Groton Long Point Road and Groton Long Point Bridge design upgrades to maintain emergency egress and address sea level rise and coastal storms. Work with CT DOT as needed to complete the elevations and upgrades.	Invest in resilient corridors to ensure that people and services are accessible during floods and that development along corridors is resilient over the long term.	Structural Projects	Public Works	>\$1M	DEEP Climate Resilience Fund; CT DOT or LOTCIP; IJA BIP; Municipal CIP Budget	7/2024 - 06/2028	High	17	6	102

Number	Hazard Mitigation and Climate Adaptation Actions	Hazard Mitigation and Climate Adaptation Goal	Type of Action	Responsible Department	Approx. Cost Range	Potential Funding Sources	Timeframe	Priority	PERISTS Score	STAPLEE Score	PERSISTIS x STAPLEE =
TG14	Study risk of storm surge inundation in coastal floodplain areas (including Groton Long Point and Mumford Cove) - study to include assessment of critical infrastructure, homes, and businesses.	Reduce flood and erosion risks by reducing vulnerabilities and consequences, even as climate change increases frequency and severity of floods.	Structural Projects	Public Works	\$500,000 - \$1M	NOAA/NFWF; LISFF; Municipal CIP Budget	7/2023 - 6/2025	Medium	18	2	36
TG15	Using the process developed by CIRCA for Resilient Connecticut pilot projects in Branford and Fairfield, work with Amtrak and the State to study potential bridge replacements at town owned Poquonnock Road and state-owned South Road underpasses to facilitate enhanced emergency transportation. Evaluate potential drainage Improvements at the South Road and Poquonnock Road underpasses to reduce flooding. This actions includes studies and concept design but not construction.	Invest in resilient corridors to ensure that people and services are accessible during floods and that development along corridors is resilient over the long term.	Structural Projects	Public Works	\$100,000 - \$500,000	DEEP Climate Resilience Fund; CIRCA Resilient Connecticut; CT DOT	7/2024 - 06/2028	High	17	6	102
TG16	Determine if any at-risk structures that are not yet eligible for historic designation will be eligible in the future. This may take the form of a historic resources survey.	Reduce flood and erosion risks by reducing vulnerabilities and consequences, even as climate change increases frequency and severity of floods.	Property Protection	Land Use Staff	\$10,000 - \$25,000	SHPO	7/2025 - 6/2026	Medium	15	6	90
TG17	Implement specific pump station resilience recommendations resulting from the feasibility study completed in 2022.	Reduce flood and erosion risks by reducing vulnerabilities and consequences, even as climate change increases frequency and severity of floods.	Property Protection	Public Works	\$500,000 - \$1M	FEMA HMA; CWSRA	7/2023 - 6/2025	High	20	6	120
TG18	Seek funding from DEEP Climate Resilience Fund to develop a Climate Action Plan (including vulnerability assessment).	More than one goal	More than one category	Sustainability Manager	\$100,000 - \$500,000	DEEP Climate Resilience Fund	4/2023 - 9/2024	High	21	5	105
TG19	Seek funding for Poquonnock Plains Park evaluation from DEEP Climate Resilience Fund.	Reduce flood and erosion risks by reducing vulnerabilities and consequences, even as climate change increases frequency and severity of floods.	Natural Resources Protection	Sustainability Manager	\$100,000 - \$500,000	DEEP Climate Resilience Fund	4/2023 - 9/2024	High	15	3	45

Number	Hazard Mitigation and Climate Adaptation Actions	Hazard Mitigation and Climate Adaptation Goal	Type of Action	Responsible Department	Approx. Cost Range	Potential Funding Sources	Timeframe	Priority	PERISTS Score	STAPLEE Score	PERISTS x STAPLEE =
TG20	Partner with the Town of North Stonington, Town of Ledyard, Town of Stonington, and the Native American tribes to ensure that risks downstream of Long Pond are characterized in the new Emergency Action Plan for the Long Pond Dams.	Reduce flood and erosion risks by reducing vulnerabilities and consequences, even as climate change increases frequency and severity of floods.	Preparedness & Emergency Response	Office of the Chief Elected Official	\$10,000 - \$25,000	Municipal Operating Budget; SCCOG Municipal Service Funds	7/2023 - 6/2024	High	21	4	84
TG21	Partner with the Town of Stonington and the Town of Ledyard to determine appropriate steps to reduce risks associated with additionally breaching of the Whitford Pond Dam; document in a report that lists potential solutions.	Reduce flood and erosion risks by reducing vulnerabilities and consequences, even as climate change increases frequency and severity of floods.	Structural Projects	Office of the Chief Elected Official	\$25,000 - \$50,000	NOAA/NFWF; DEEP Climate Resilience Fund	7/2024 - 6/2025	High	21	5	105
TG22	Participate in a dam failure tabletop exercise for Long Pond with the Towns of Ledyard, Stonington, and North Stonington.	Reduce flood and erosion risks by reducing vulnerabilities and consequences, even as climate change increases frequency and severity of floods.	Preparedness & Emergency Response	Emergency Management	\$0 - \$10,000	Municipal Operating Budget	7/2025 - 6/2026	High	21	5	105
TG23	Ensure that copies of EAPs for all the Groton Utilities dams are on file with the Town of Groton Office of Emergency Management.	Reduce flood and erosion risks by reducing vulnerabilities and consequences, even as climate change increases frequency and severity of floods.	Preparedness & Emergency Response	Emergency Management	\$0 - \$10,000	Municipal Operating Budget	7/2023 - 12/2023	High	14	6	84
TG24	Work with Groton Utilities to conduct a tabletop exercise (drill) that simulates a potential dam failure.	Reduce flood and erosion risks by reducing vulnerabilities and consequences, even as climate change increases frequency and severity of floods.	Preparedness & Emergency Response	Emergency Management	\$0 - \$10,000	Municipal Operating Budget	7/2025 - 6/2026	Low	17	5	85
TG25	Work with CT DEEP to update the list of repetitive loss properties and ensure that errors and updates are incorporated by FEMA.	Reduce flood and erosion risks by reducing vulnerabilities and consequences, even as climate change increases frequency and severity of floods.	Property Protection	Floodplain Manager	\$0 - \$10,000	Municipal Operating Budget	7/2023 - 12/2023	High	12	6	72

Number	Hazard Mitigation and Climate Adaptation Actions	Hazard Mitigation and Climate Adaptation Goal	Type of Action	Responsible Department	Approx. Cost Range	Potential Funding Sources	Timeframe	Priority	PERISTS Score	STAPLEE Score	PERISTS x STAPLEE =
TG26	Conduct direct outreach to property owners in repetitive loss areas with information about how to mitigation flood losses.	Reduce flood and erosion risks by reducing vulnerabilities and consequences, even as climate change increases frequency and severity of floods.	Property Protection	Floodplain Manager	\$0 - \$10,000	Municipal Operating Budget	1/2024 and annually during January	High	13	4	52
TG27	Work with SCCOG and CIRCA to scope a corridor study for Lantern Hill Road that evaluates its capabilities and risks relative to providing access between and among MPTN, Ledyard, North Stonington, the Eastern Pequots, Stonington, and the Old Mystic part of Groton.	Invest in resilient corridors to ensure that people and services are accessible during floods and that development along corridors is resilient over the long term.	Structural Projects	Office of the Chief Elected Official	\$100,000 - \$500,000	SCCOG Special Projects; DEEP Climate Resilience Fund; CIRCA Resilient Connecticut	7/2024 - 6/2025	High	24	3	72
TG28	Secure funding to advance at least one recommendation from the Mystic resiliency study scheduled for completion in 2023.	Reduce flood and erosion risks by reducing vulnerabilities and consequences, even as climate change increases frequency and severity of floods.	More than one category	Sustainability Manager	>\$1M	DEEP Climate Resilience Fund; CIRCA Resilient Connecticut	7/2023 - 6/2026	Medium	15	3	45
TG29	Apply for participation in the Community Rating System (CRS) and solicit interest in involvement from Groton Long Point and Noank Fire District.	Reduce flood and erosion risks by reducing vulnerabilities and consequences, even as climate change increases frequency and severity of floods.	More than one category	Floodplain Manager	\$0 - \$10,000	Municipal Operating Budget	7/2023 - 12/2023	Medium	14	8	112
TG30	Require floodplain manager and land use staff to take free training at https://portal.ct.gov/DEEP/P2/Chemical-Management-and-Climate-Resilience/Chemical-Management-and-Climate-Resilience to reduce risks of spills from businesses during floods.	Reduce flood and erosion risks by reducing vulnerabilities and consequences, even as climate change increases frequency and severity of floods.	Education & Awareness	Land Use Staff	\$0 - \$10,000	Municipal Operating Budget	7/2023 - 12/2023	Low	14	6	84
TG31	Advance design and seek funding for replacement of the Eccleston Brook culvert at Route 1 with a larger culvert or bridge	More than one goal	Structural Projects	Public Works	\$100,000 - \$500,000	CT DOT; LOTCIP; DEEP Climate Resilience Fund; FEMA HMA; Save	7/2023 - 6/2025	Low	19	8	152

Number	Hazard Mitigation and Climate Adaptation Actions	Hazard Mitigation and Climate Adaptation Goal	Type of Action	Responsible Department	Approx. Cost Range	Potential Funding Sources	Timeframe	Priority	PERISTS Score	STAPLEE Score	PERISTS x STAPLEE =
						the Sound; IJA AOP					
TG32	Advance design and seek funding for replacement of the Haleys Brook culvert at River Road with a larger culvert or bridge	More than one goal	Structural Projects	Public Works	\$100,000 - \$500,000	CT DOT; LOTCIP; DEEP Climate Resilience Fund; FEMA HMA; Save the Sound; IJA AOP	7/2023 - 6/2025	Low	19	8	152
TG33	Advance design and seek funding for replacement of the Haleys Brook culvert at Cow Hill Road with a larger culvert or bridge	More than one goal	Structural Projects	Public Works	\$100,000 - \$500,000	CT DOT; LOTCIP; DEEP Climate Resilience Fund; FEMA HMA; Save the Sound; IJA AOP	7/2023 - 6/2025	Low	19	8	152
TG34	Advance design and seek funding for replacement of the West Branch Red Brook culvert at Pumpkin Hill Road with a larger culvert or bridge	More than one goal	Structural Projects	Public Works	\$100,000 - \$500,000	CT DOT; LOTCIP; DEEP Climate Resilience Fund; FEMA HMA; Save the Sound; IJA AOP	7/2023 - 6/2025	Low	19	8	152

Appendix B

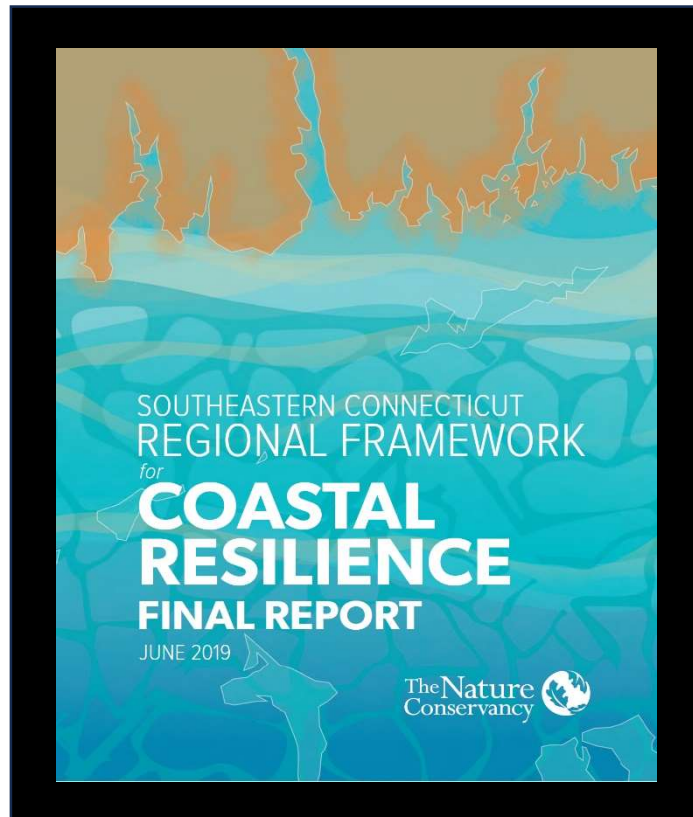
Groton Projects & Maps

from

Southeastern Connecticut Regional Framework

for

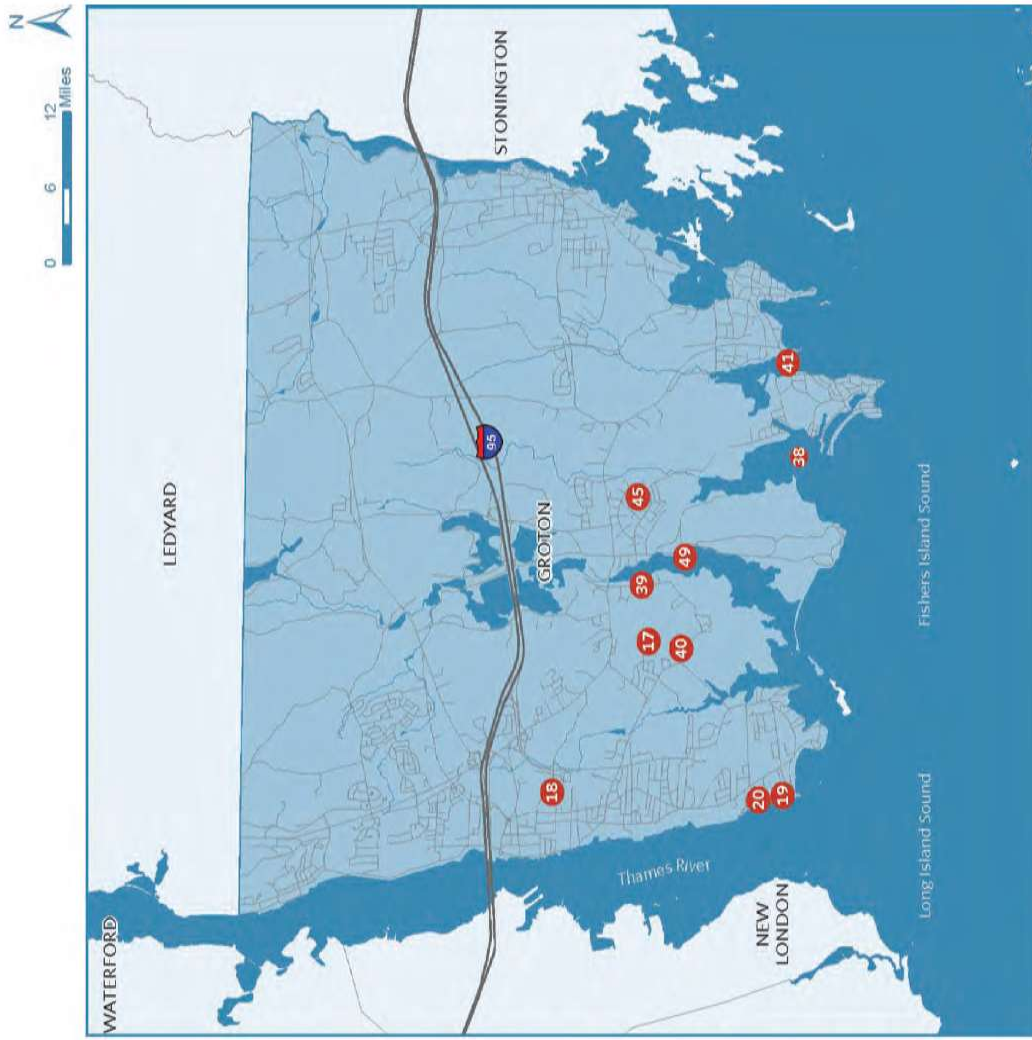
Coastal Resilience (June 2019)



GROTON

Groton Summary												
PROJECT	TYPE	STRATEGY	ACTION	ADDRESS	PLAN REFERENCE	RISK - PRIMARY	RISK - SECOND	NDDB	FLOOD ZONE	BASE FLOOD ELV (")	LMI (%)	HUC12
High Rock Infiltration Swales - 17	SM	RG/B	C	D, G, H Streets	Baker Cove Track Down Survey and Abbreviated Watershed-Based Plan	Ecosystems	N/A	N	AE	11	0.0949	Coastal drainages-Pawcatuck Point to Eastern Point
Washington Park/Lake George Stormwater retrofit - 18	SM	SR	E	Washington Park	Baker Cove Track Down Survey and Abbreviated Watershed-Based Plan	Sewer System	Ecosystems	Y	X	-9999	0.2674	Coastal drainages-Pawcatuck Point to Eastern Point
Shore Ave Drainage Improvements - 19	SI	R	E/M	Shore Ave	2012 Hazard Mitigation Plan	Roads	Private Property	Y	AE	10	0.2552	Thames River-Frontal New London Harbor
Shore Ave Seawall Repairs - 20	SI	S	M	Shore Ave	Public Works	Roads	N/A	N	AE	10	0.2552	Thames River-Frontal New London Harbor
Mumford Cove tide Gate - 38	HI	TG	C	Mumford Cove	2017 Hazard Mitigation Plan	Buildings	Critical Facility	Y	N/A	N/A	0.3231	N/A
South Rd Underpass - 39	HI	R	M	165-257 South Rd	2017 Hazard Mitigation Plan	Roads	N/A	Y	X	-9999	0.3712	Poquonock River
Tower Ave Railroad crossing - 40	SI	R	E/M	60-58 Tower Ave	2017 Hazard Mitigation Plan	Roads	Critical Facility	Y	AE	9	0.0949	Coastal drainages-Pawcatuck Point to Eastern Point
Groton Long Point Bridge - 41	SI	R	E/M	Groton Long Point Rd	2017 Hazard Mitigation Plan	Roads	N/A	Y	VE	13	0.3231	N/A
Fort Hill Neighborhood Redevelopment - 45	HI	B	A/D	Midway Oval	2017 Hazard Mitigation Plan	Buildings	Town Property	N	0.2 PCT ANNUAL CHANCE FLOOD HAZARD	-9999	0.1984	Coastal drainages-Pawcatuck Point to Eastern Point

Groton Summary													
PROJECT	TYPE	STRATEGY	ACTION	ADDRESS	PLAN REFERENCE	RISK - PRIMARY	RISK - SECOND	NDDDB	FLOOD ZONE	BASE FLOOD ELV (')	LMI (%)	HUC12	
Bluff Point parking lot marsh restoration - 49	CNI	TM	R	100 Depot Rd	2017b Tidal Wetlands Habitat Restoration Workplan	Ecosystems	N/A	Y	VE	11	0.3231	Poquonock River	

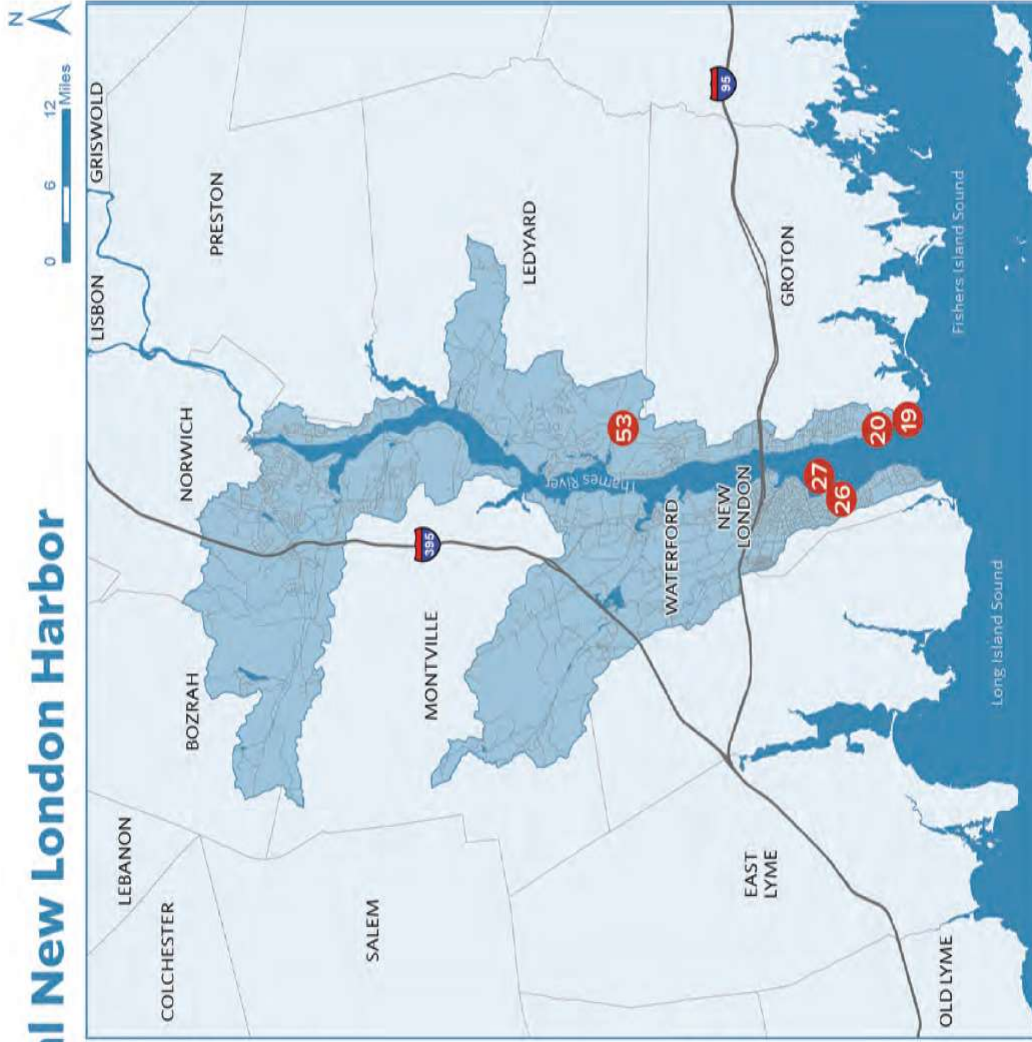


Groton

- 18** Washington Park/Lake George Stormwater Retrofit
- 40** Tower Avenue Railroad Crossing
- 39** South Road Underpass
- 20** Shore Avenue Seawall Repairs
- 19** Shore Avenue Drainage Improvements
- 17** High Rock Infiltration Swales
- 41** Groton Long Point Bridge
- 45** Fort Hill Neighborhood Redevelopment
- 49** Bluff Point Parking Lot Marsh Restoration

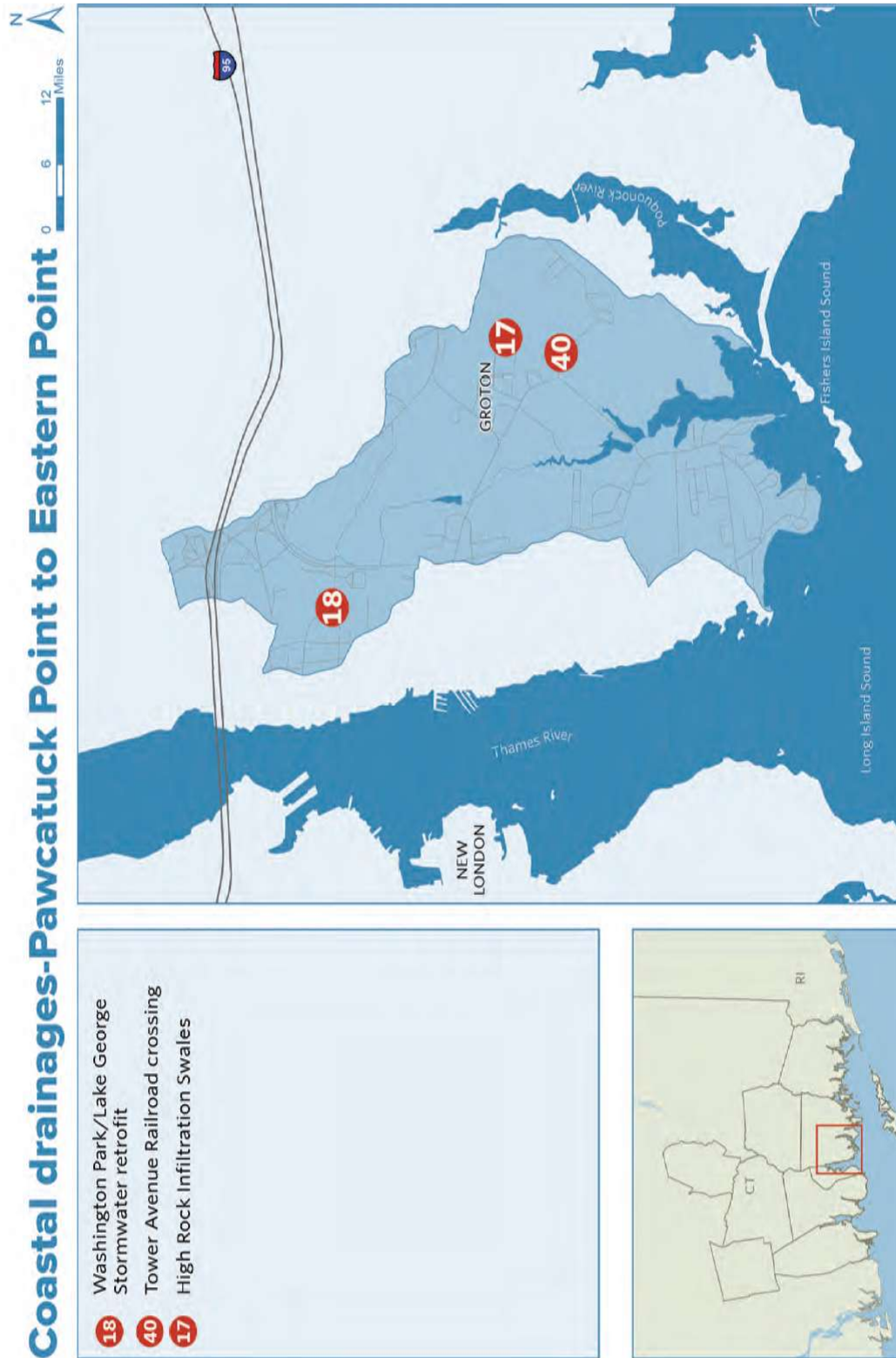


Thames River-Frontal New London Harbor



- 20** Shore Avenue Seawall Repairs
- 19** Shore Avenue Drainage Improvements
- 26** Fort Trumbull Wastewater treatment plant
- 27** Fort Trumbull Development Phase III Infrastructure Project
- 53** Baldwin Hill Rd Stream Channel Restoration









Appendix C

Groton Map Resource Packet* Used During Workshop

***Gathered from Groton's Plan of Conservation and Development (2016) and the Southeastern Connecticut Council of Governments Hazard Mitigation Plan Update - Groton Annex (2013).**

Map Introduction-1: Town Boundary



Groton
PLAN OF CONSERVATION + DEVELOPMENT

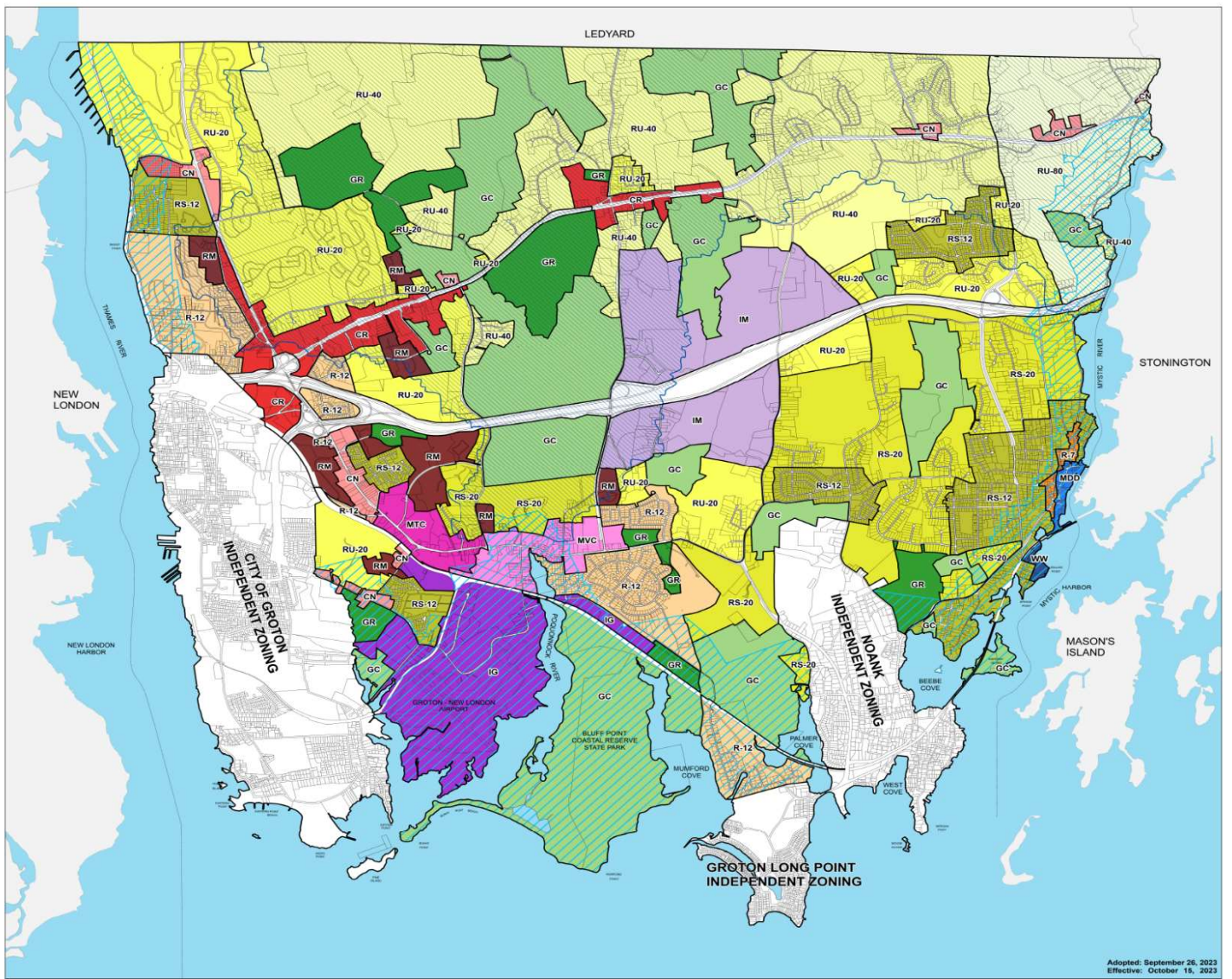
— Interstate, US, and State Highways
— Local Roads

Sources:
 * Street Centerlines: Town of Groton Information Technology
 * State Roads: Streetmap USA (2011)
 * Basemap Data: Connecticut DEEP Map & Geographic Information Center (2012)
 This map was developed for use as a planning document. Delineations may not be exact.



Groton's Place in the Region

Source: Groton Plan of Conservation & Development (2016)



Adopted: September 26, 2023
Effective: October 15, 2023



Town of Groton Zoning

Scale: 1:14,400

- | | | |
|---|---|--------------------------------|
| Water Resource Protection District | RS-12 (Residential Single-Unit 12,000 SF) | MTC (Mixed-Use Town Center) |
| Coastal Area Management Zone | R-12 (Residential 12,000 SF) | IM (Industrial, Mixed-Use) |
| Nautilus Memorial Design District | R-7 (Residential 7,000 SF) | IG (Industrial, General) |
| RU-80 (Rural Residential 80,000 SF) | RM (Residential Multi-Unit) | GC (Green, Conservation) |
| RU-40 (Rural Residential 40,000 SF) | CN (Commercial, Neighborhood) | GR (Green, Recreation) |
| RU-20 (Rural Residential 20,000 SF) | CR (Commercial, Regional) | MDD (Mystic Downtown District) |
| RS-20 (Residential Single-Unit 20,000 SF) | MVC (Mixed-Use Village Center) | WW (Working Waterfront) |

Disclaimer:
The planning and geographic information displayed on this map was compiled by Trigen based on an aerial photograph taken in March 2023. The plan and property line information displayed on this map has been compared to official deeds, maps, assessment records, and other sources of information on the Town of Groton. The intent of this map is to depict a graphical representation of our property information relative to the geographic features for the Town of Groton and is subject to change as a more accurate survey may disclose. The Town of Groton and the mapping companies assume no legal responsibility for the information contained in this data.

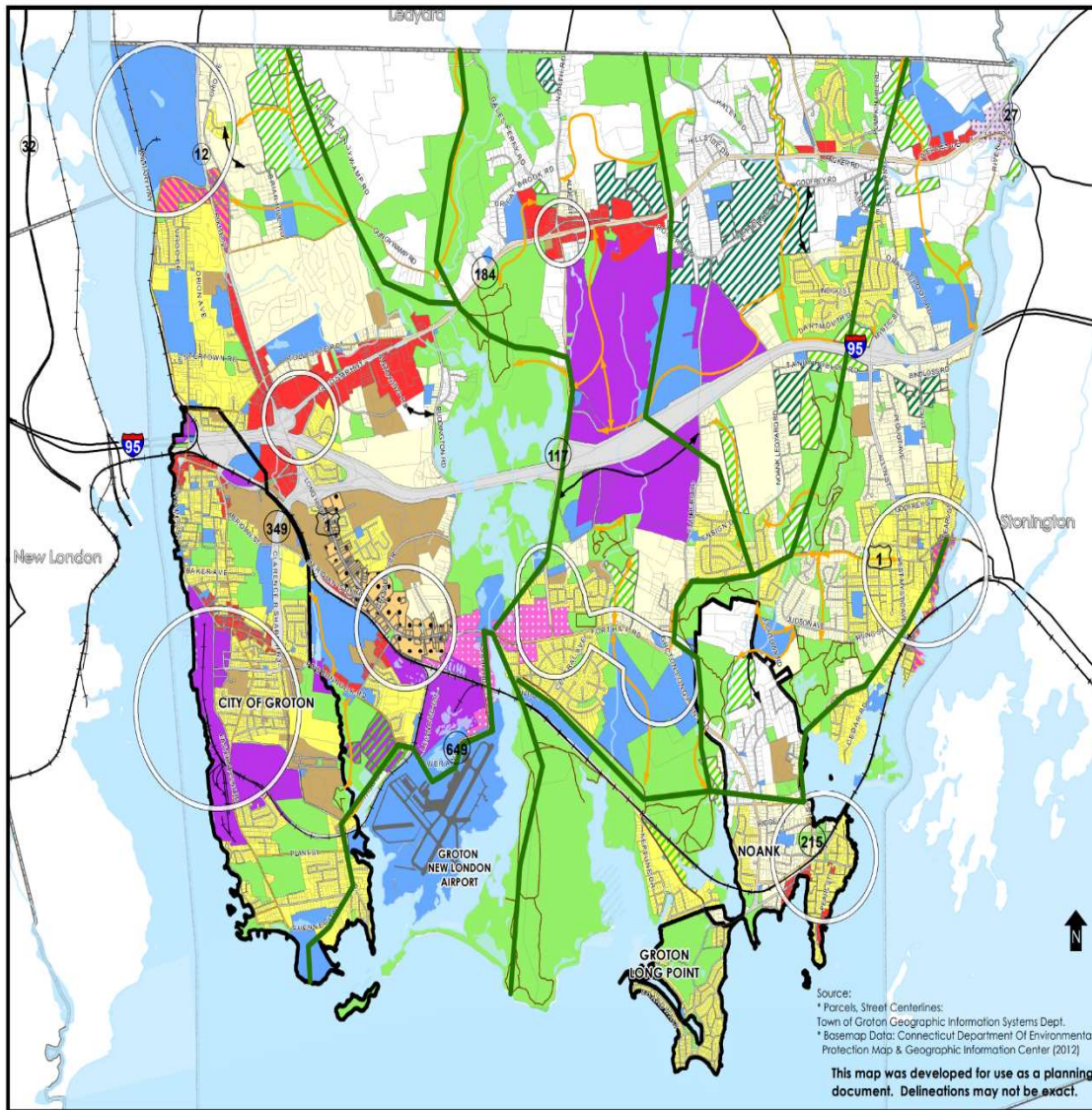
Horizontal Datum:
Connecticut State Plane Coordinates, North American Datum of 1983 (NAD83) Feet.
Vertical Datum:
North American Vertical Datum of 1988 (NAVD88).



Source: Town of Groton (2023)

Future Land Use

- Residential**
 - Rural Residential
 - Low Density Residential
 - Medium Density Residential
 - High Density Residential
- Open Space & Agriculture**
 - Existing Open Space and Parks
 - Desirable Open Space, Parks, and Connections
 - Desirable Agriculture
- Business**
 - General Commercial
 - Industrial
 - Design Districts
- Other Uses**
 - Government Facilities, Institutional, and Infrastructure
 - Nodes
- Special Focus Areas**
 - Downtowns**
 - Downtown Groton
 - Villages**
 - Old Mystic
 - Poquonnock Bridge
- Connectivity**
 - Proposed Greenways
 - Existing Trails or Bikeways
 - Proposed Trails or Bikeways
 - Proposed Vehicular Transportation Connections
 - Airport
 - Town and Jurisdictional Boundary

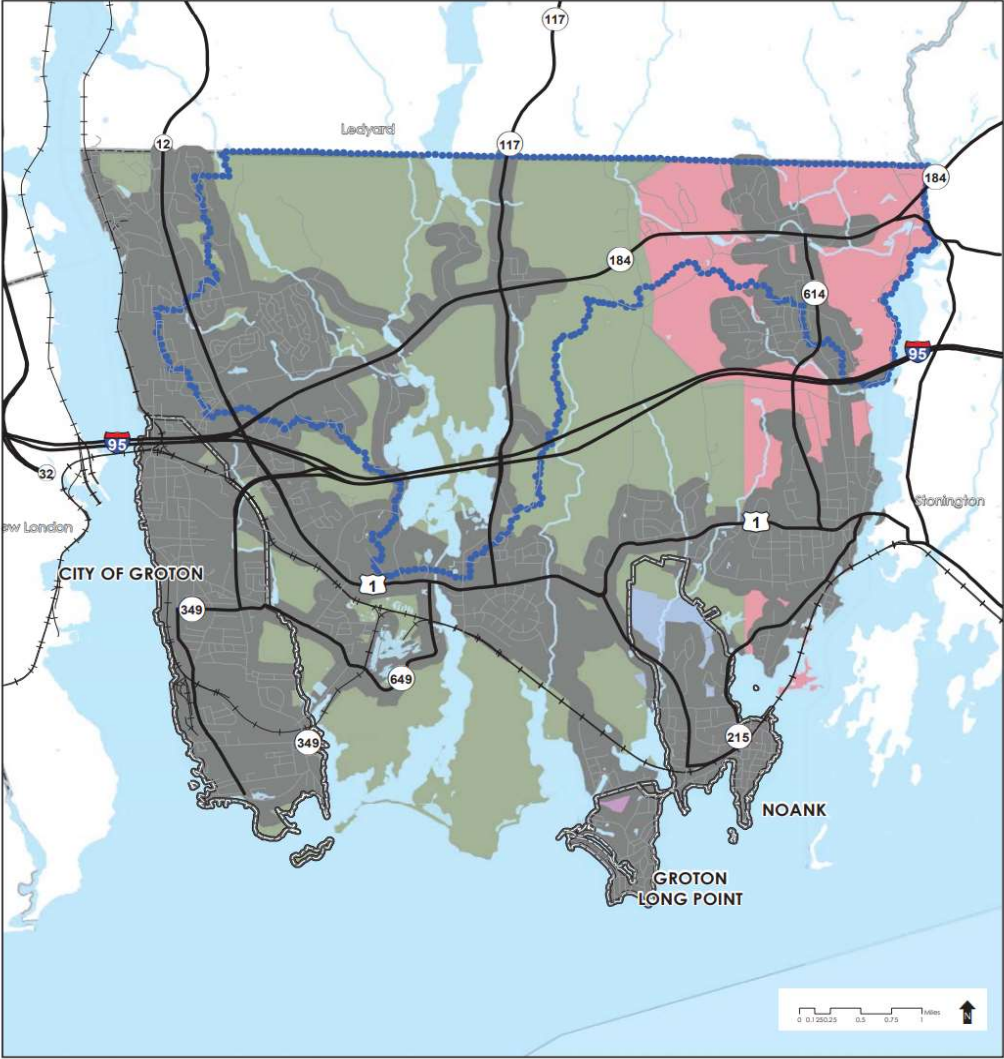


Source:
 * Parcels, Street Centerlines:
 Town of Groton Geographic Information Systems Dept.
 * Basemap Data: Connecticut Department Of Environmental
 Protection Map & Geographic Information Center (2012)
 This map was developed for use as a planning
 document. Delineations may not be exact.



Source: Groton Plan of Conservation & Development (2016)

Map C-1: Water District and Service Areas



Water District & Service Areas

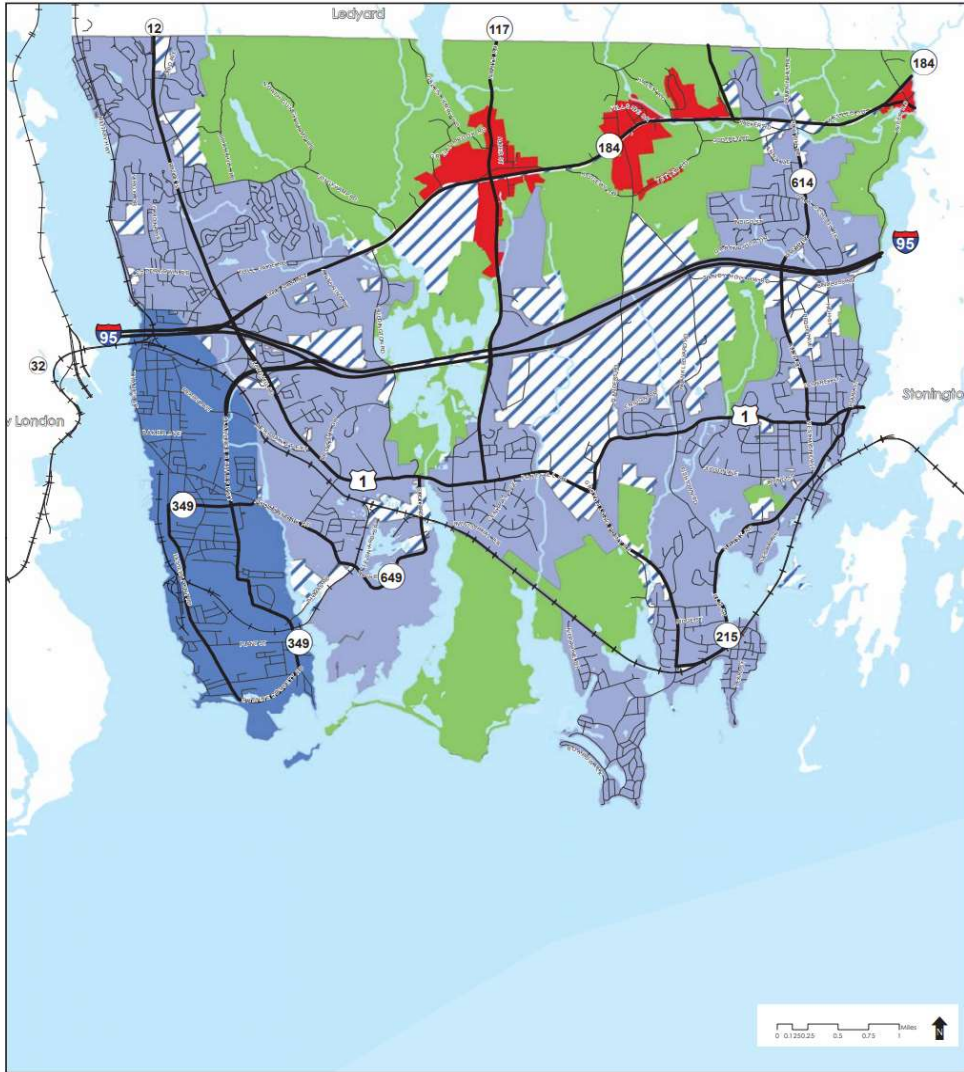
- Public Water Service Areas
- Water Resource Protection District (WRPD)
- AQUARION WATER COMPANY
- CITY OF GROTON UTILITIES
- GROTON LONG POINT WATER
- NOANK WATER COMPANY

Sources:
 * Street Centerlines: Town of Groton/GISDept.
 * State Roads: Streetmaps USA (2011)
 * Basemap Data: Connecticut DEEP Map & Geographic Information Center (2012)

October 2016

Source: Groton Plan of Conservation & Development (2016)

Map I-8: Sewer Service Area



Groton
PLAN OF CONSERVATION + DEVELOPMENT

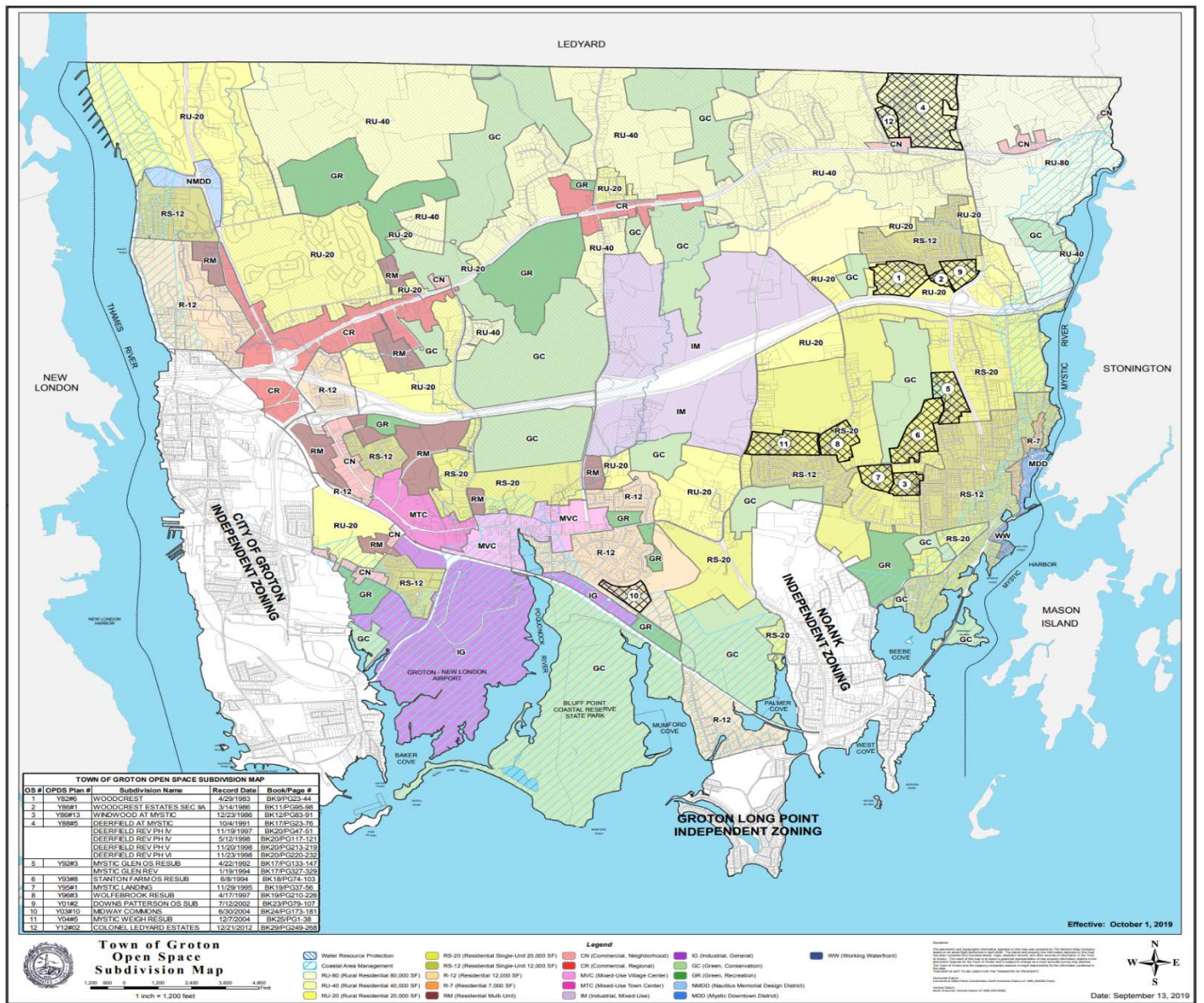
Sewer Service Area

- Existing Sewer Service Area¹
- Possible Future Service Areas
- Planned Sewer Avoidance
- Outside Sewer Service area recommended to be sewered when need arises
- City of Groton WPCF

Sources:
 * Street Centerlines: Town of Groton GIS Dept.
 * State Roads: Streetmaps USA (2011)
 * Base Map Data: Connecticut DEEP Map & Geographic Information Center (2012)

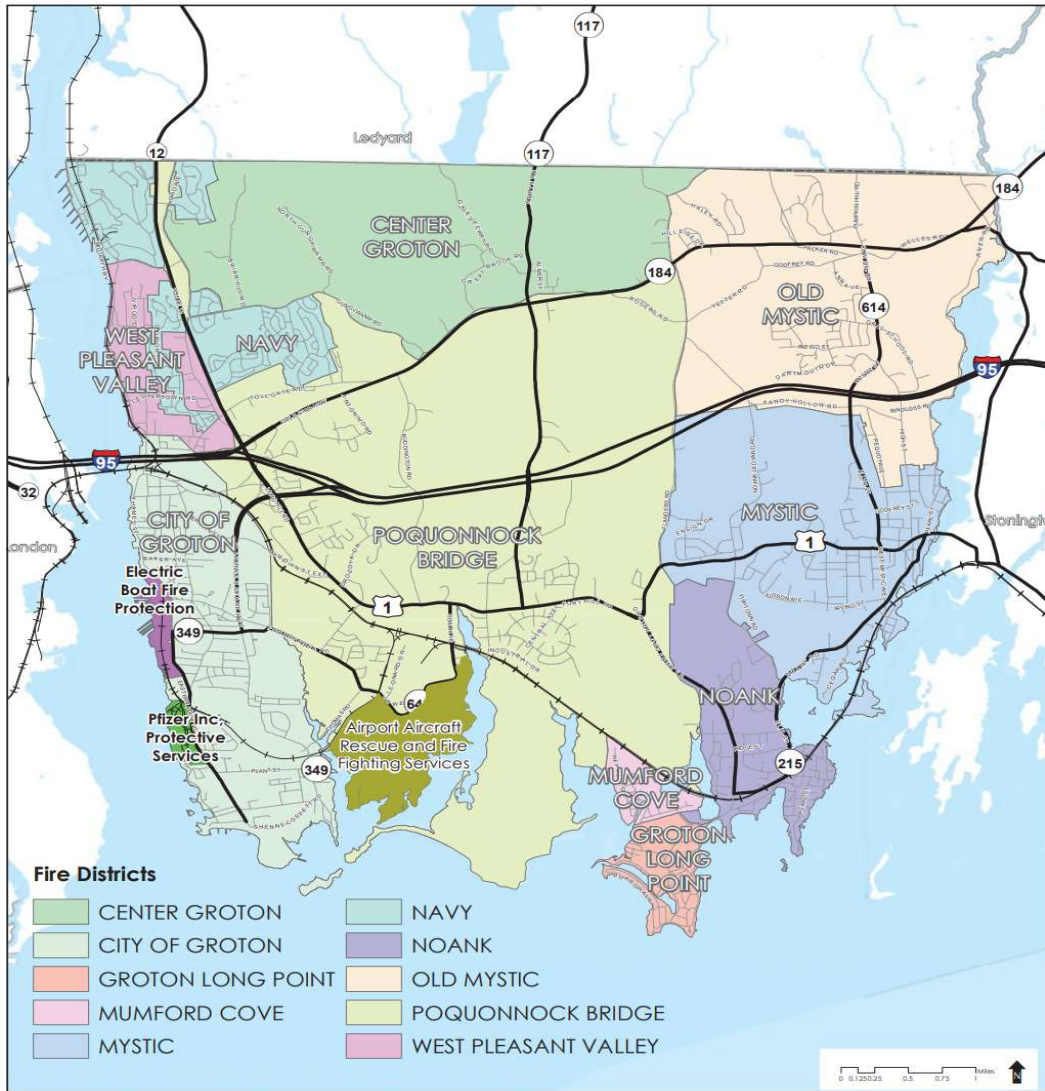
¹ Not all properties within the Existing Sewer Service Area are currently hooked into sewer access. This map was developed for use as a planning document. Distances may not be exact.
August 2015

Source: Groton Plan of Conservation & Development (2016)



Source: Town of Groton (2019)

Map I-6: Public Safety Facilities and Fire Districts



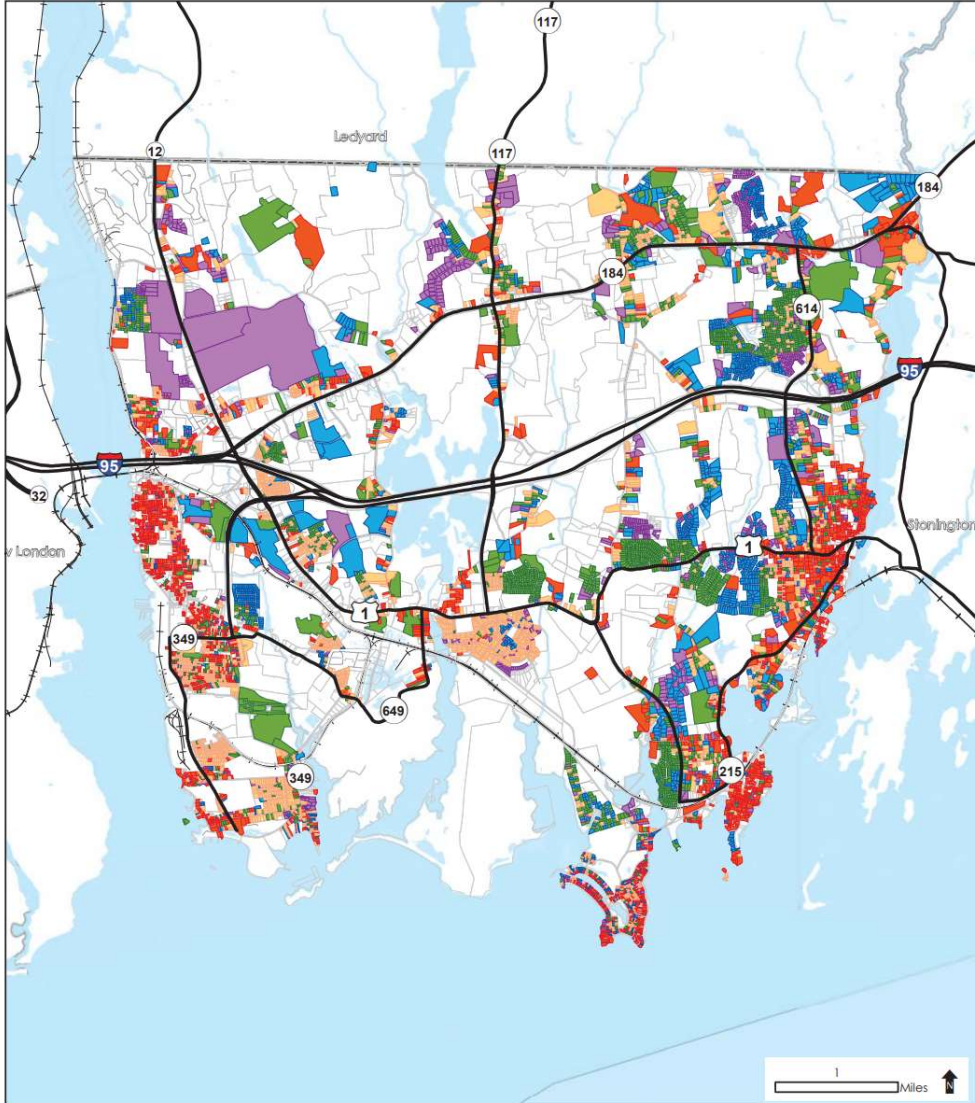
Sources:
 * Street Centerlines: Town of Groton GIS Dept.
 * State Roads: Streetmaps USA (2011)
 * Basemap Data: Connecticut DEP Map & Geographic Information Center (2012)
 This map was developed for use as a planning document. Delineations may not be exact.

April 2014

Fire Districts

Source: Groton Plan of Conservation & Development (2016)

Map D-12: Housing Stock by Year Built



Groton
PLAN OF CONSERVATION + DEVELOPMENT

Housing Stock by Year Built

Housing Stock by Year Built



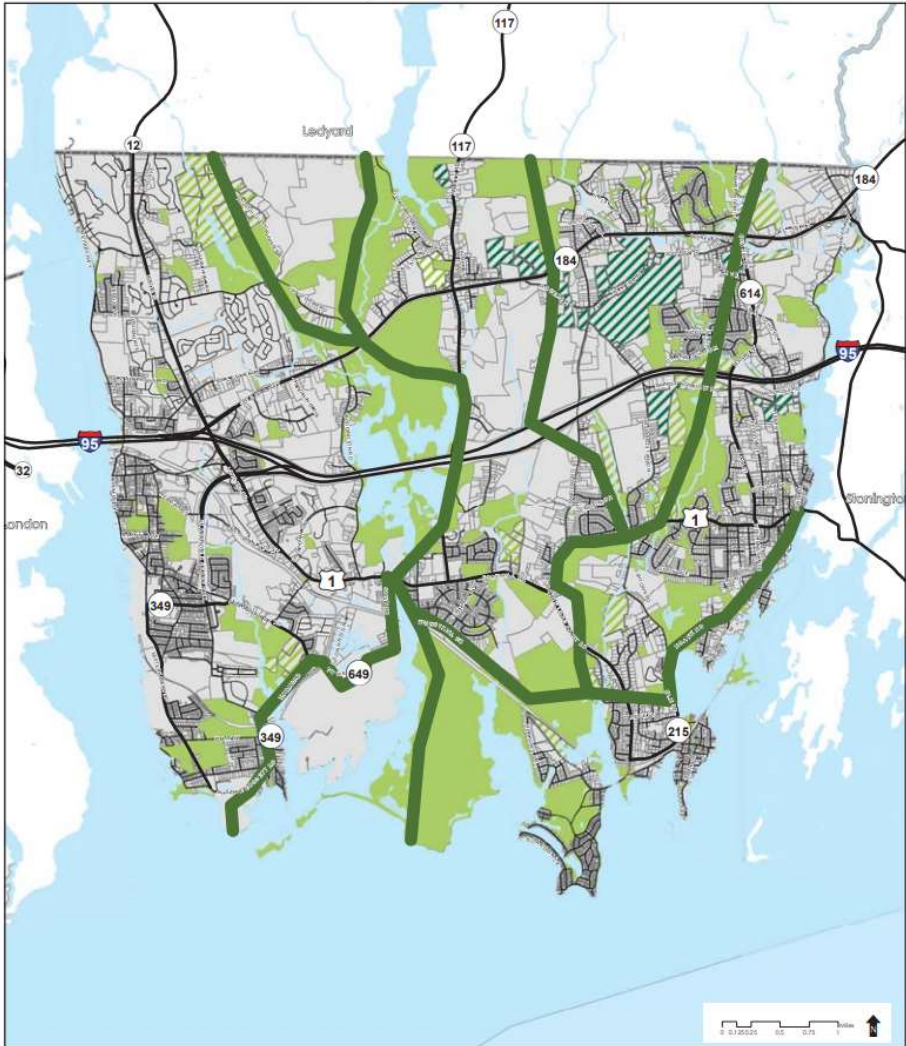
Sources:
* Street Centerlines: Town of Groton GIS Dept.
* State Roads: Street Maps USA (2011)
* Base Map Data: Connecticut DEEP Map & Geographic Information Center (2012)

This map was developed for use as a planning document. Delineations may not be exact.

October 2015

Source: Groton Plan of Conservation & Development (2016)

Map C-6: Potential Greenways



Groton
PLAN OF CONSERVATION + DEVELOPMENT

Potential Greenways

- Potential Greenways
- Desirable Open Space
- Desirable Agriculture
- Existing Open Space and Parks

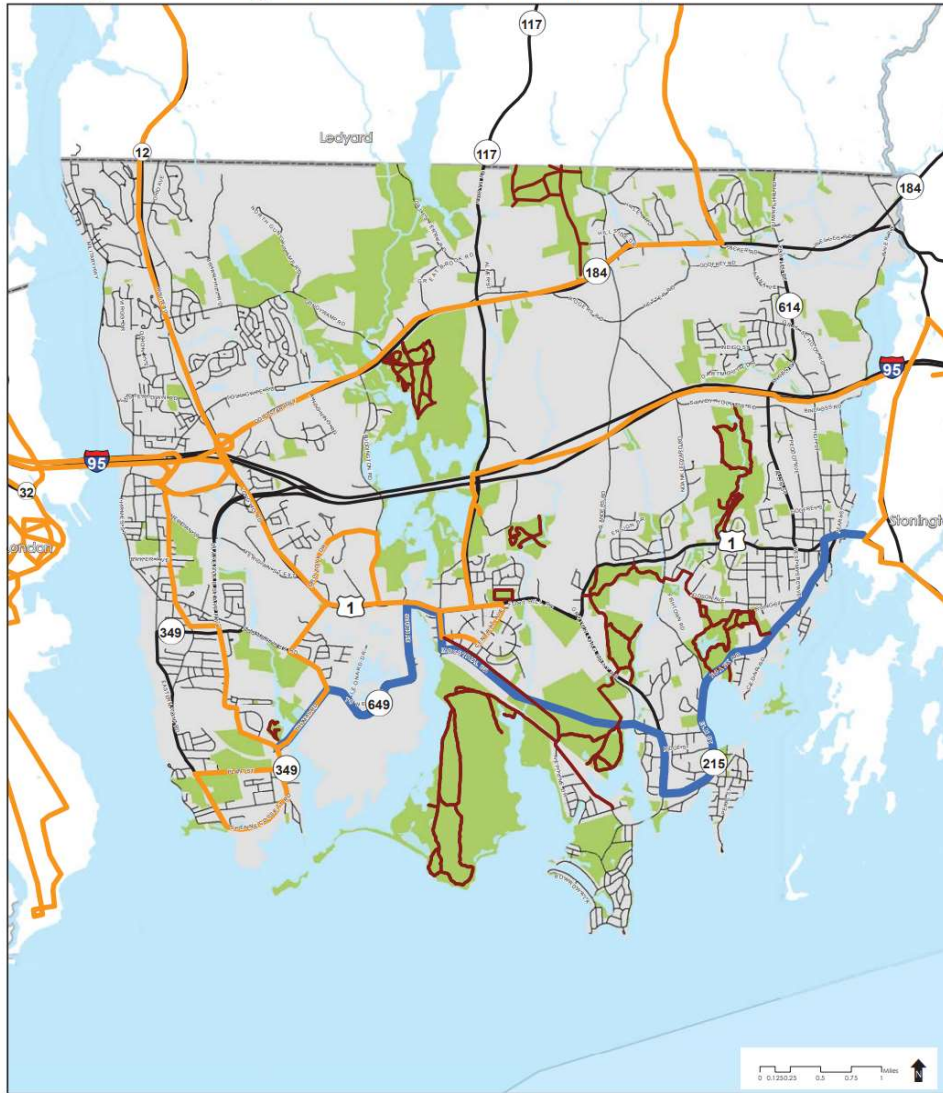
Sources:
 * Street Centerlines: Town of Groton GIS Dept.
 * State Roads: Streetmap USA (2011)
 * State Road Classifications: CT DOT (2011)
 * BaseMap Data: Connecticut DEEP Map & Geographic Information Center (2012)

This map was developed for use as a planning document. Delineations may not be exact.

August 2016

Source: Groton Plan of Conservation & Development (2016)

Map C-7: Existing Bus Routes, Trails, and Bikeways



Groton
PLAN OF CONSERVATION + DEVELOPMENT

**Existing Bus Routes,
Trails, and Bikeways**

- Recreation Trails
- SEAT Bus Routes
- Established Bikeway

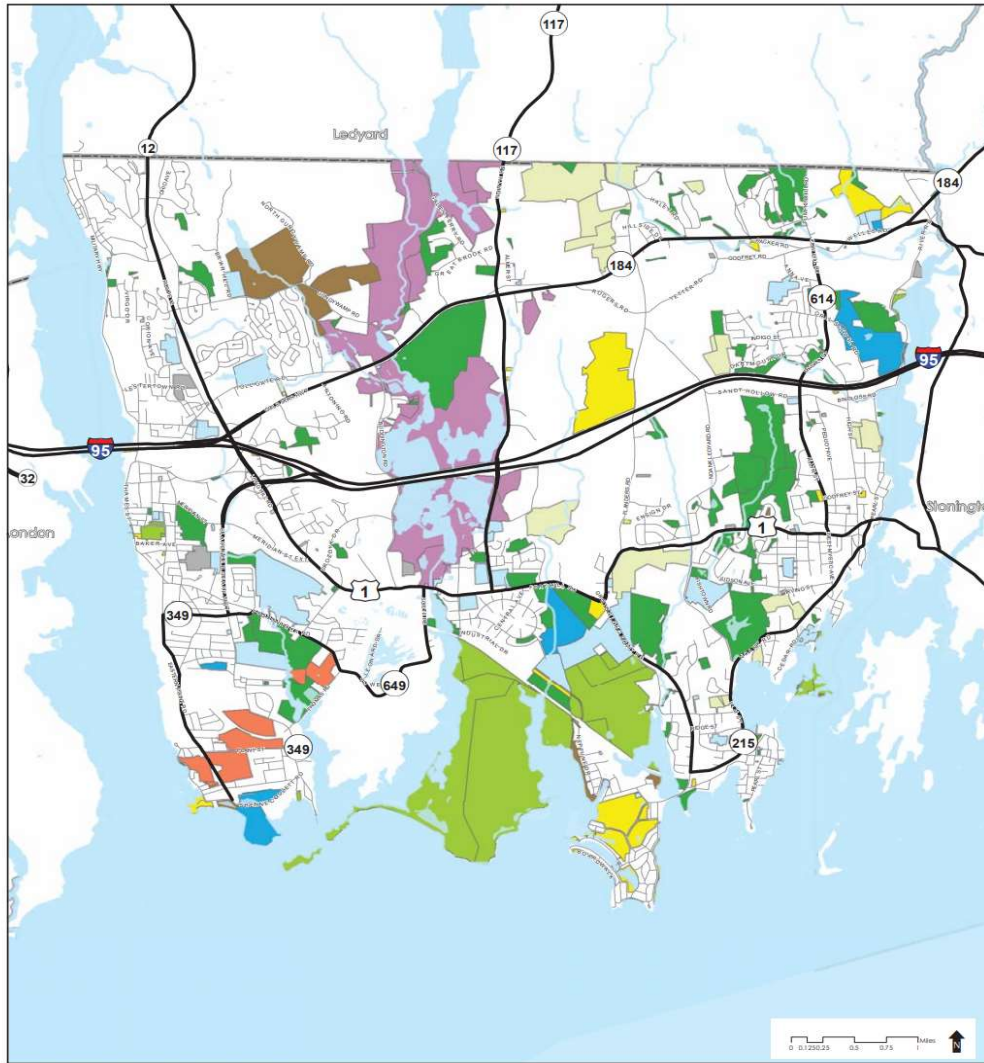
Sources:
 * Street Centerlines: Town of Groton GIS Dept.
 * State Roads: Street Maps USA (2011)
 * State Road Classifications: CT DOT (2011)
 * Basemap Data: Connecticut DEEP Map & Geographic Information Center (2013)

This map was developed for use as a planning document. Delineations may not be exact.

January 2016

Source: Groton Plan of Conservation & Development (2016)

Map C-4: Existing Parks, Recreation, and Open Space



Groton
PLAN OF CONSERVATION + DEVELOPMENT

**Existing Parks,
Recreation,
and Open Space**

2-16

Facilities

- Municipal Facilities
- State Facilities

Dedicated Open Space

- Municipal Dedicated OS
- State Dedicated OS
- Private Land Trust Dedicated OS

Managed Open Space

- Public Managed OS
- Private Managed OS
- Groton Utilities Land
- Cemetery
- Golf Course

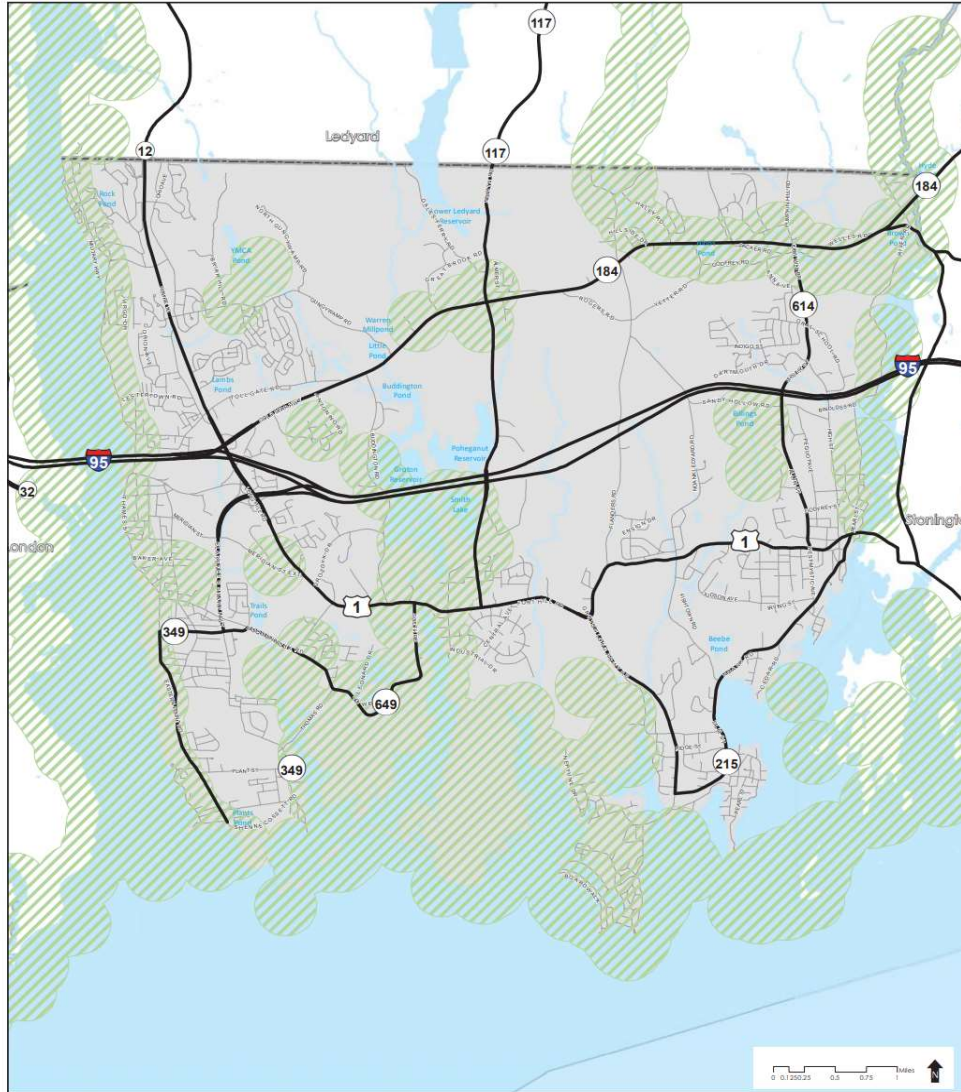
Sources:
* Street Centerlines: Town of GrotonGISDept.
* State Roads: Streetmaps USA (2011)
* BaseMap Data: Connecticut DEEP Map & Geographic Information Center (2012)

This map was developed for use as a planning document. Delineations may not be exact.

April 2014

Source: Groton Plan of Conservation & Development (2016)

Map C-2: Significant Habitat



Groton
PLAN OF CONSERVATION + DEVELOPMENT

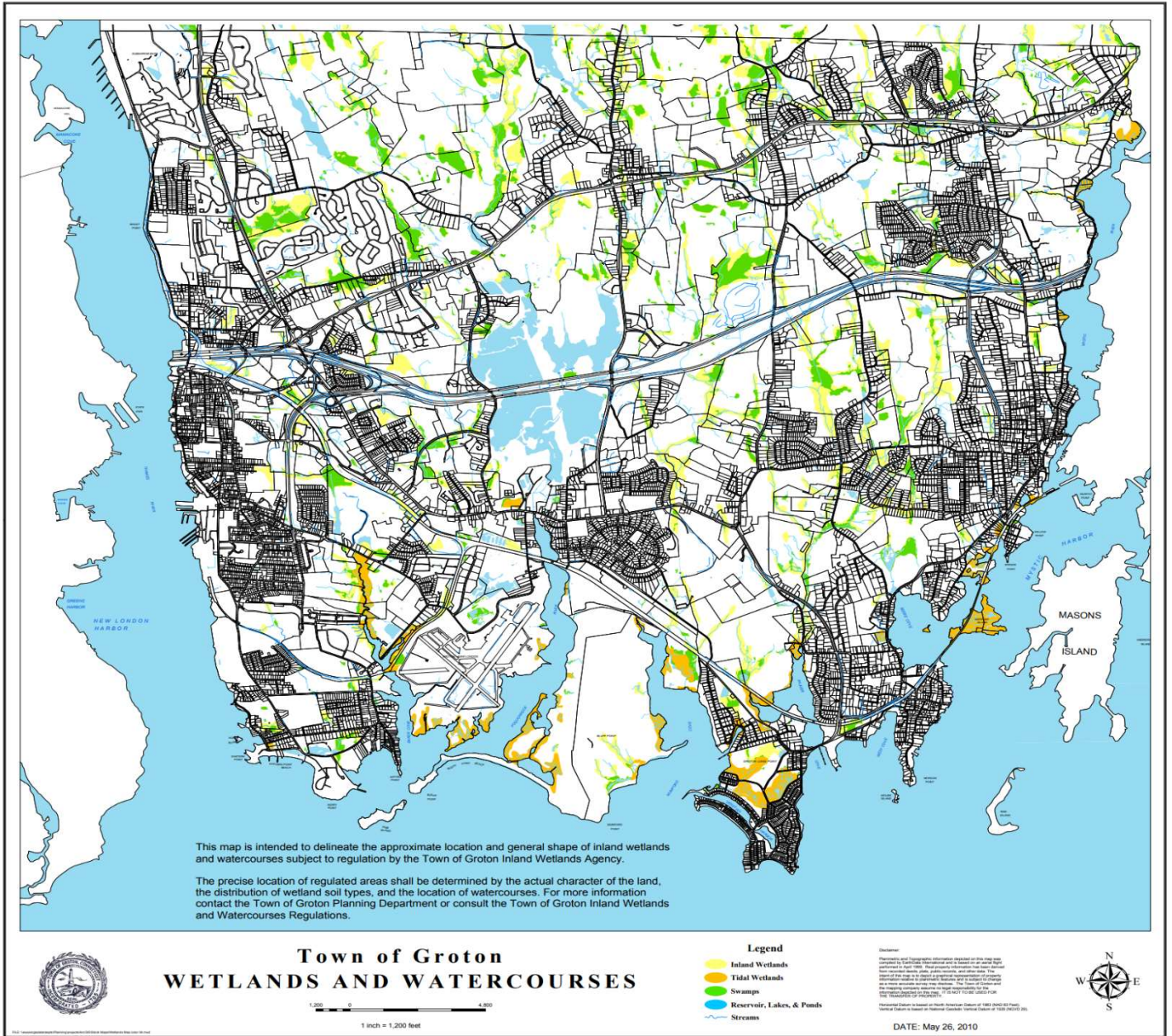
Significant Habitat

 Natural Diversity Data Base Area

Sources:
 * Street Centerlines: Town of GrotonGIS Dept.
 * State Road: Streetmaps USA (2011)
 * Basemap Data: Connecticut DEEP Map & Geographic Information Center (2012)

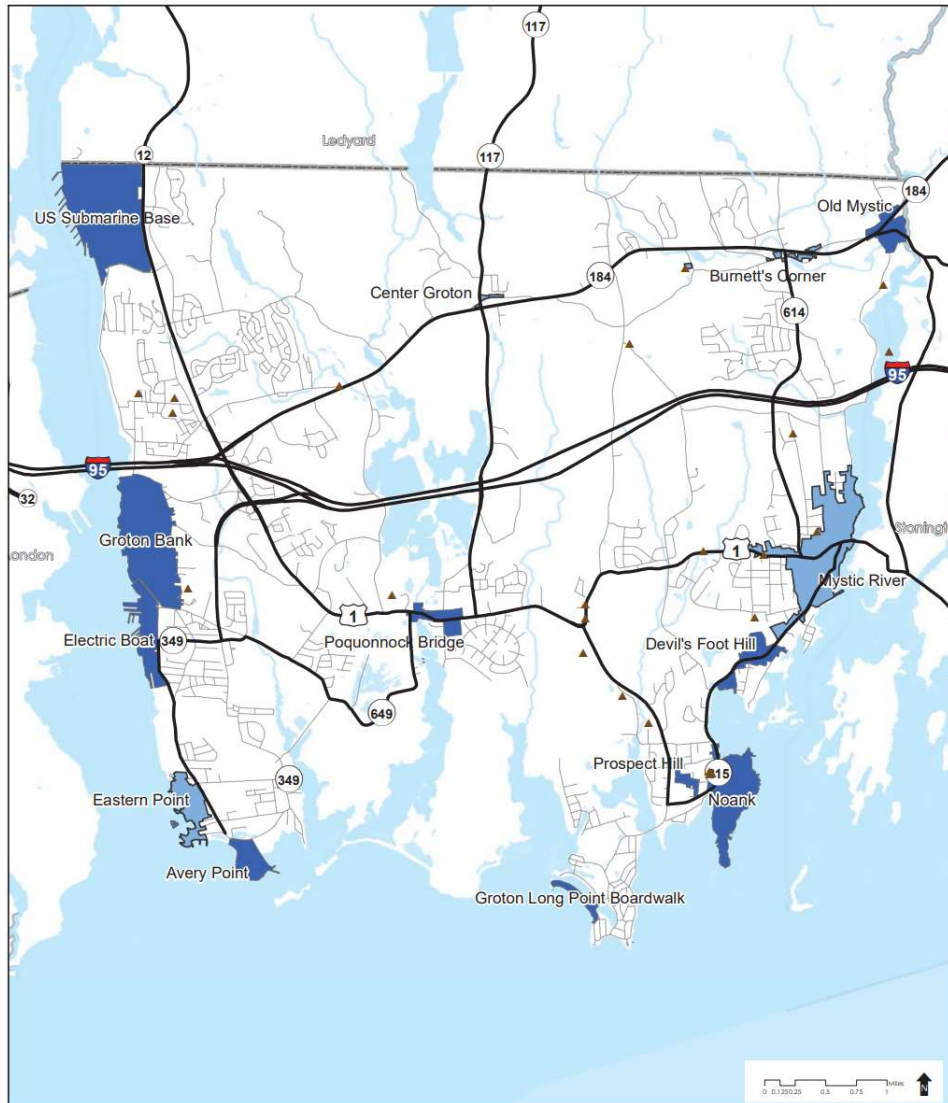
This map was developed for use as a planning document. Delineations may not be exact.
June 2014

Source: Groton Plan of Conservation & Development (2016)



Source: Town of Groton (2010)

Map C-10: Local Historic District



Groton
PLAN OF CONSERVATION + DEVELOPMENT

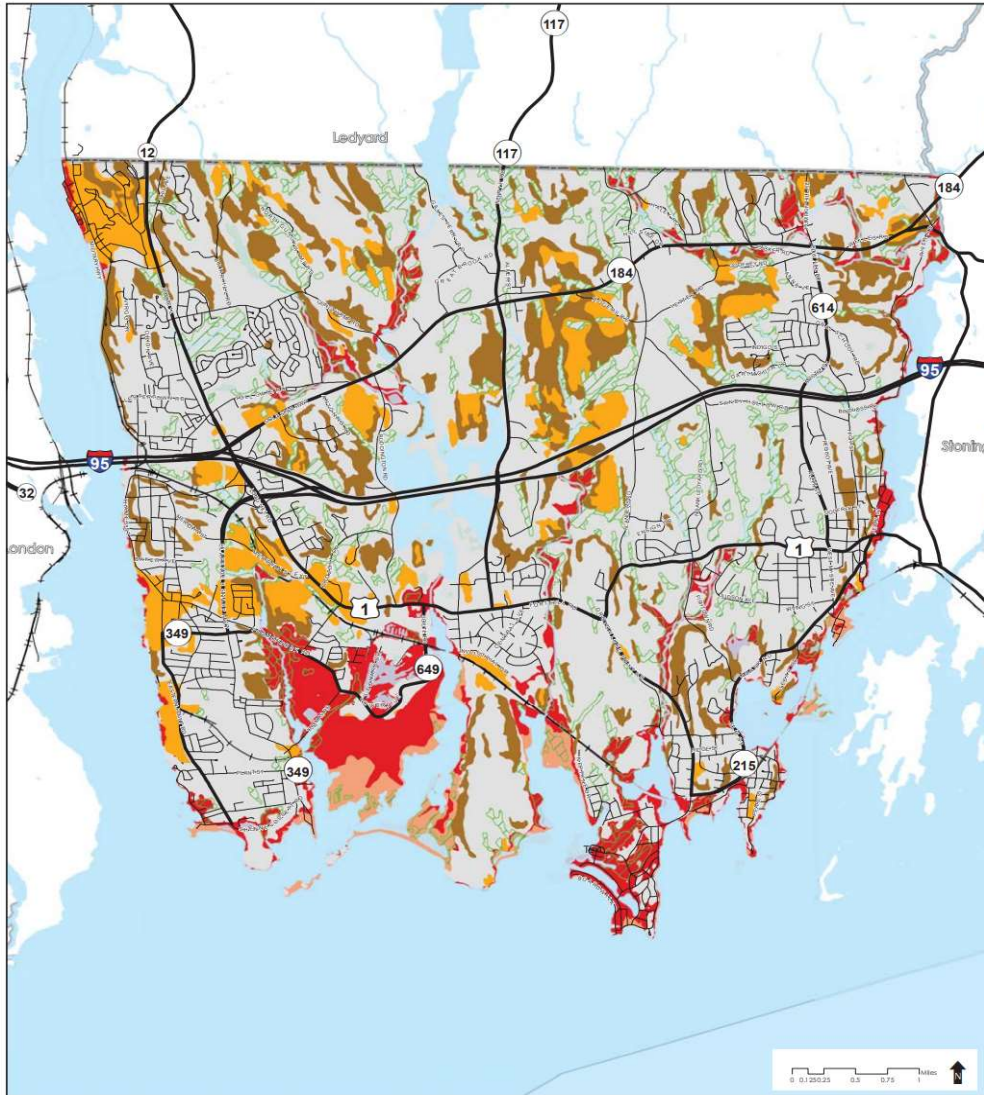
Local Historic District

- Historic District
- Potential Local District
- Cemetery

Sources:
 * Street Centerlines: Town of GrotonGISDept.
 * State Roads: Streetmaps USA (2011)
 * Basemap Data: Connecticut DEEP Map & Geographic Information Center (2012)
 This map was developed for use as a planning document. Delineations may not be exact.
April 2014

Source: Groton Plan of Conservation & Development (2016)

Map C-3: Areas Physically Sensitive to Development



Groton
PLAN OF CONSERVATION + DEVELOPMENT
Areas Physically Sensitive to Development

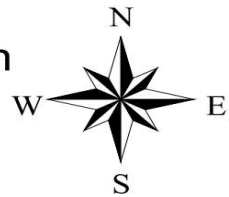
-  Wetland Soils
-  Steep Sloped Soils*
-  100-Year Flood Zone
-  Coastal Flood Zone**
-  Shallow Soils (Max. Depth <60'')

Sources:
 *Street Centerlines: Town of Groton GIS Dept.
 *State Roads: Streetmaps USA (2011)
 **Wetlands and FEMA Data: Connecticut DEP
 Map & Geographic Information Center (2012)
 *NRCS soils with a lower limit of slopes >15% and an upper limit of slopes >25%
 **As identified by FEMA
 This map was developed for use as a planning document. Delineations may not be exact. **April 2014**

Source: Groton Plan of Conservation & Development (2016)



Bicycle, Pedestrian, & Trails Master Plan



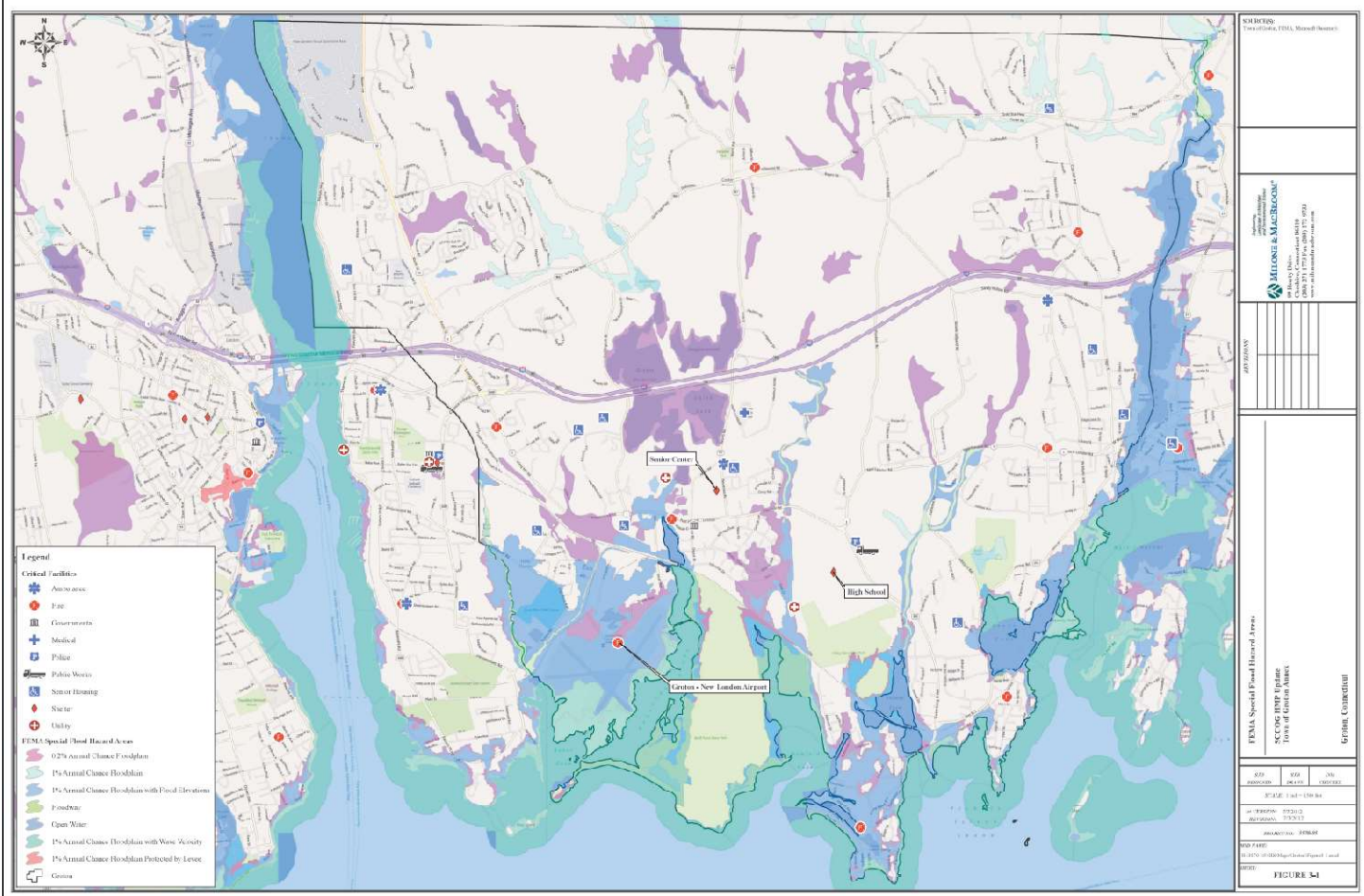
July 15, 2004

Brian Kent Associates

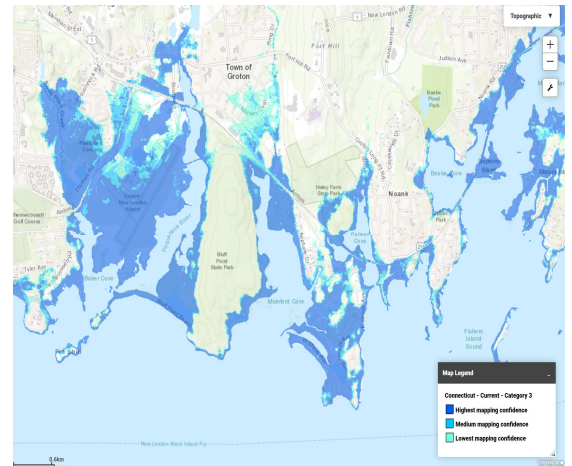
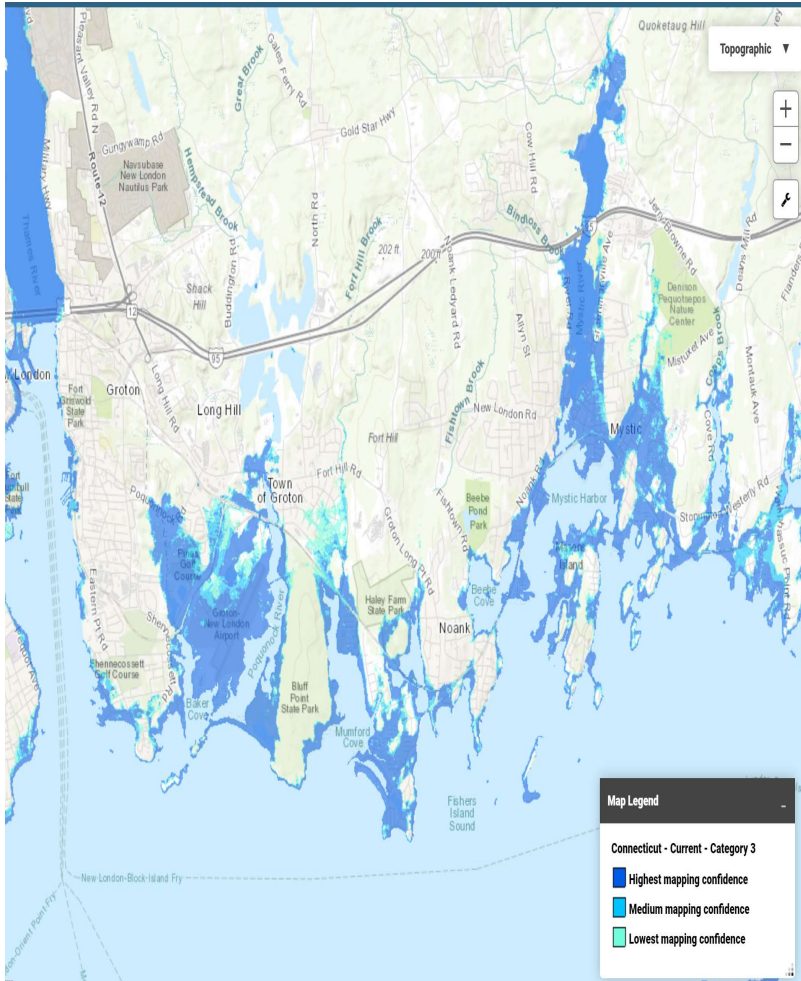


- * Some Improvements Needed
Striping, Signage, Road Repairs
- ** Very Minor Improvements Warranted
Signage & Road Repairs
- *** Road Cannot Accomodate Widening
Add Signage
- **** Create Bike Lanes or Paved Shoulders
With Signage

Source: Town of Groton (2004)



Source: Hazard Mitigation Plan Update Annex for the Town of Groton (2013)



Coastal Resilience Connecticut

Flood and Sea Level Rise

Select a Region: Connecticut

Select a Hazard: Sea Level Rise (Coastal Resilience)

Select Storm Type: None Category 2 **Category 3**

Climate Year: Current 2020 2050 2080

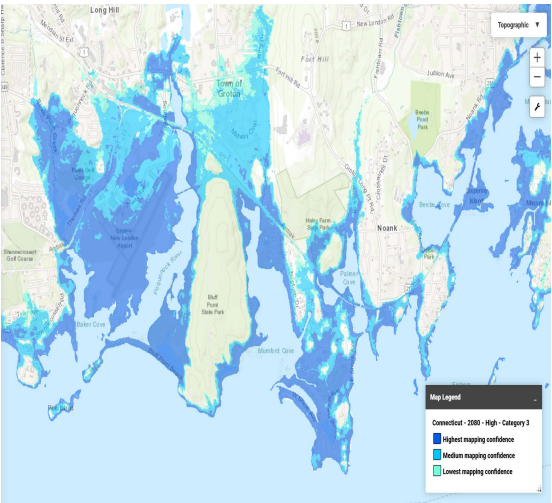
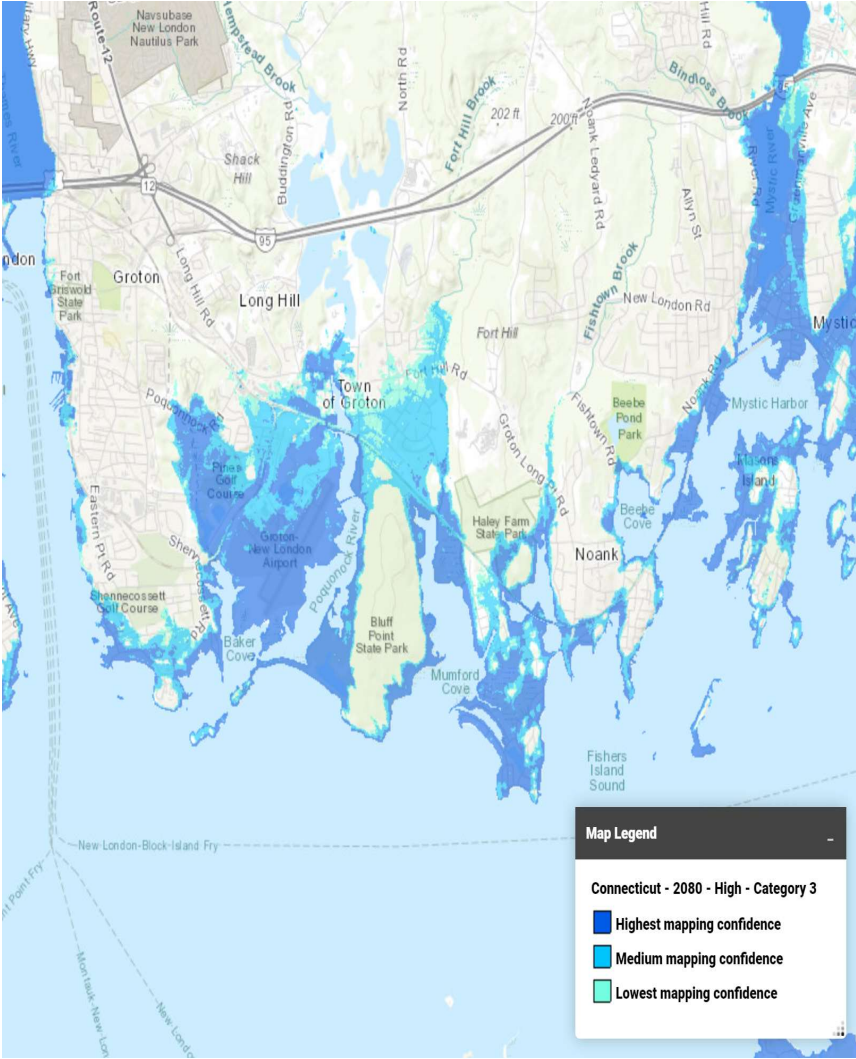
Sea Level Rise: Low Medium High

Opacity

NOAA – SLOSH (CAT 3)

0” of Sea Level Rise

Source: The Nature Conservancy – Coastal Resilience - <https://maps.coastalresilience.org/connecticut/>



Coastal Resilience Connecticut

Flood and Sea Level Rise [Close]

Select a Region: Connecticut

Select a Hazard: Sea Level Rise (Coastal Resilience)

Select Storm Type: None | Category 2 | **Category 3**

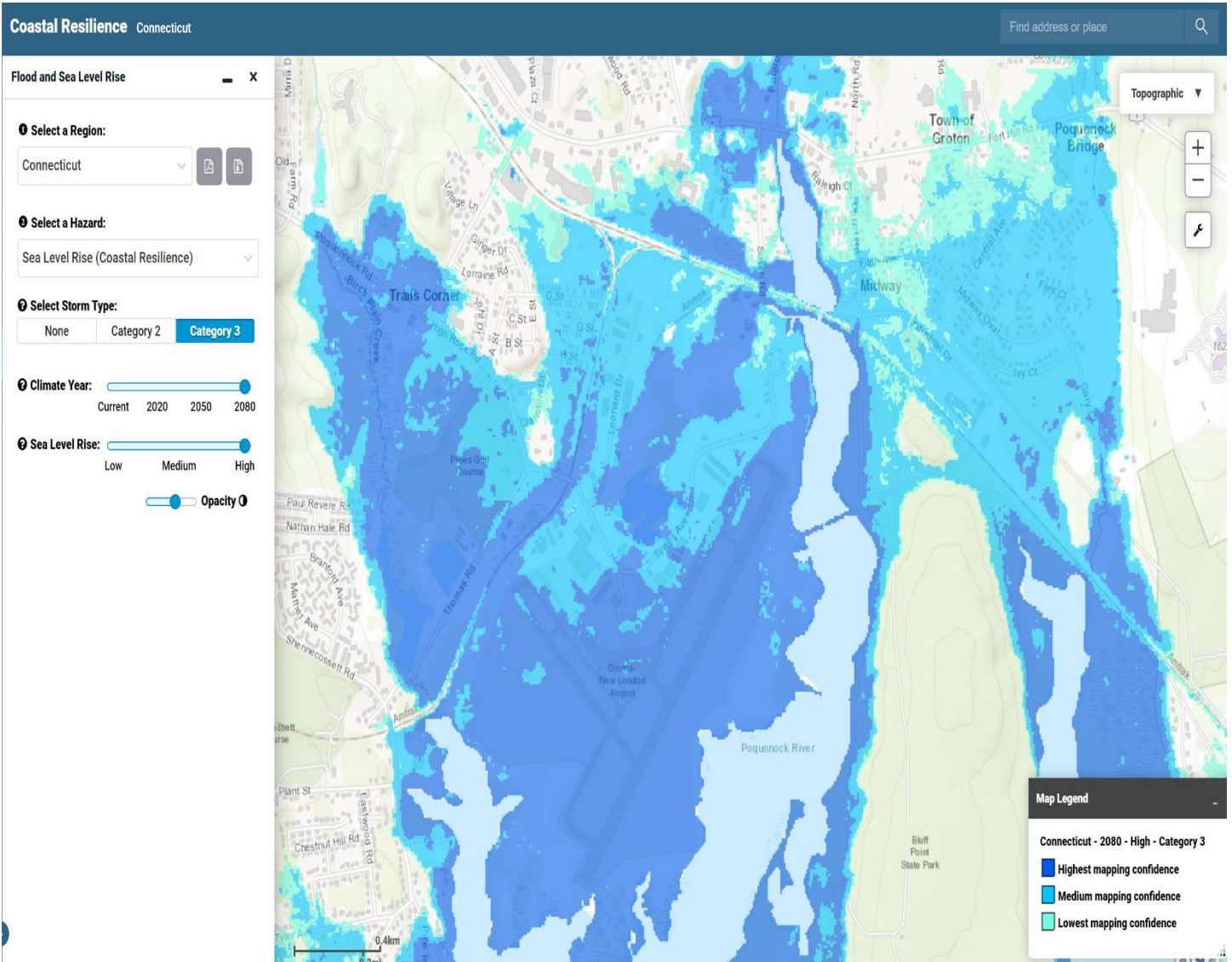
Climate Year: Current | 2020 | 2050 | 2080

Sea Level Rise: Low | Medium | High

Opacity [Slider]

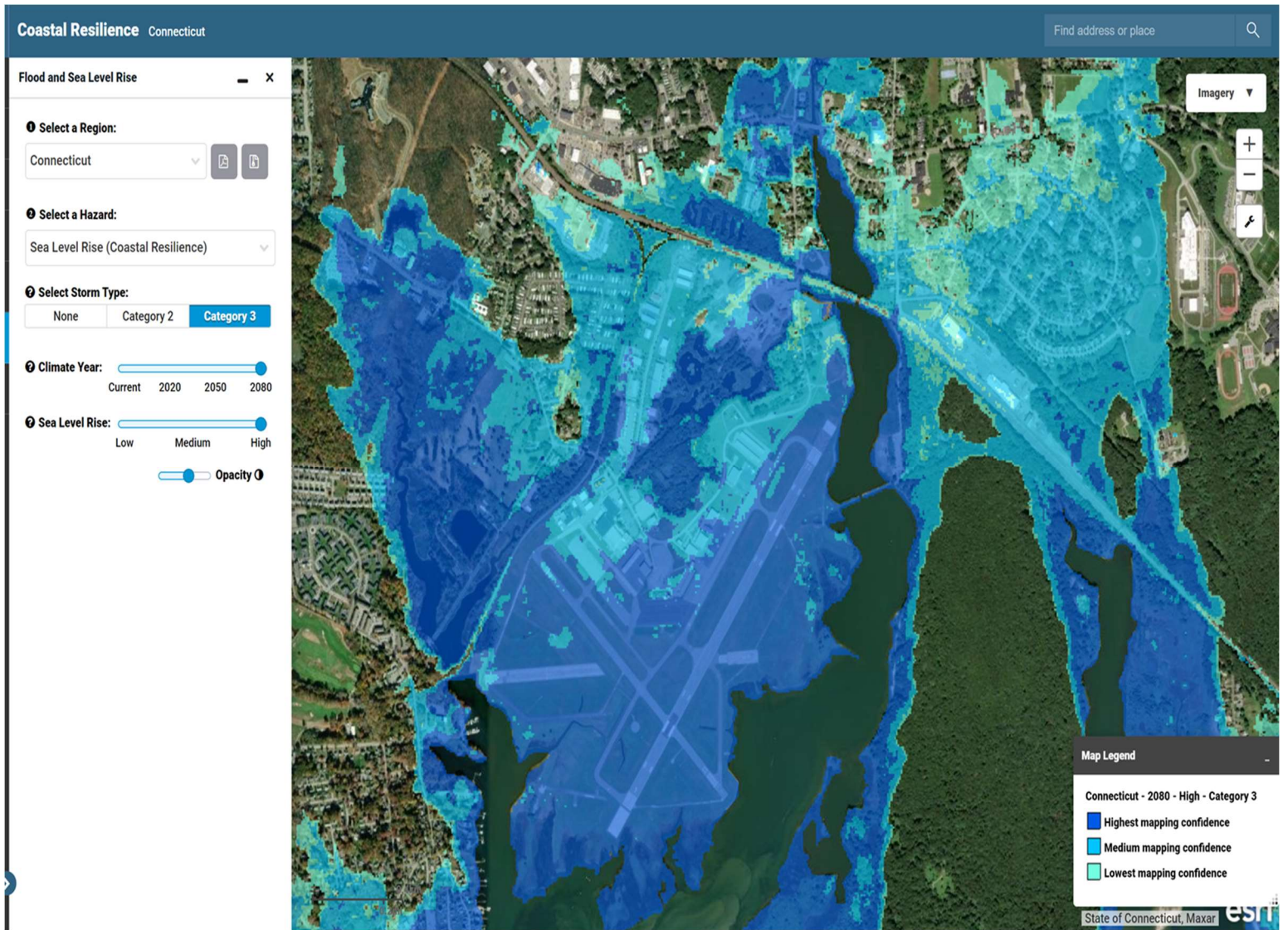
NOAA – SLOSH (CAT 3)
52” of Sea Level Rise

Source: The Nature Conservancy – Coastal Resilience - <https://maps.coastalresilience.org/connecticut/>



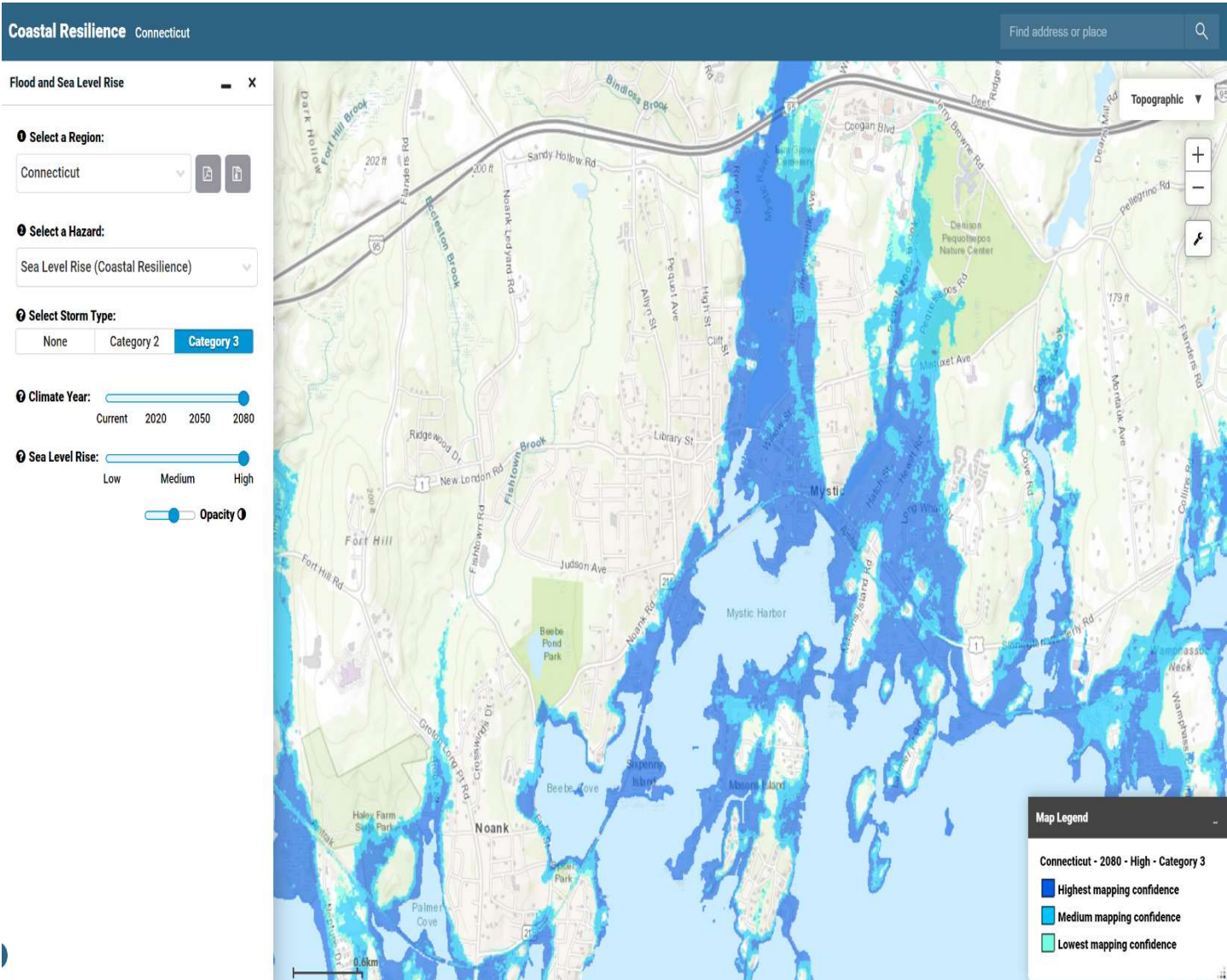
NOAA – SLOSH (CAT 3)
 52” of Sea Level Rise

Source: The Nature Conservancy – Coastal Resilience - <https://maps.coastalresilience.org/connecticut/>

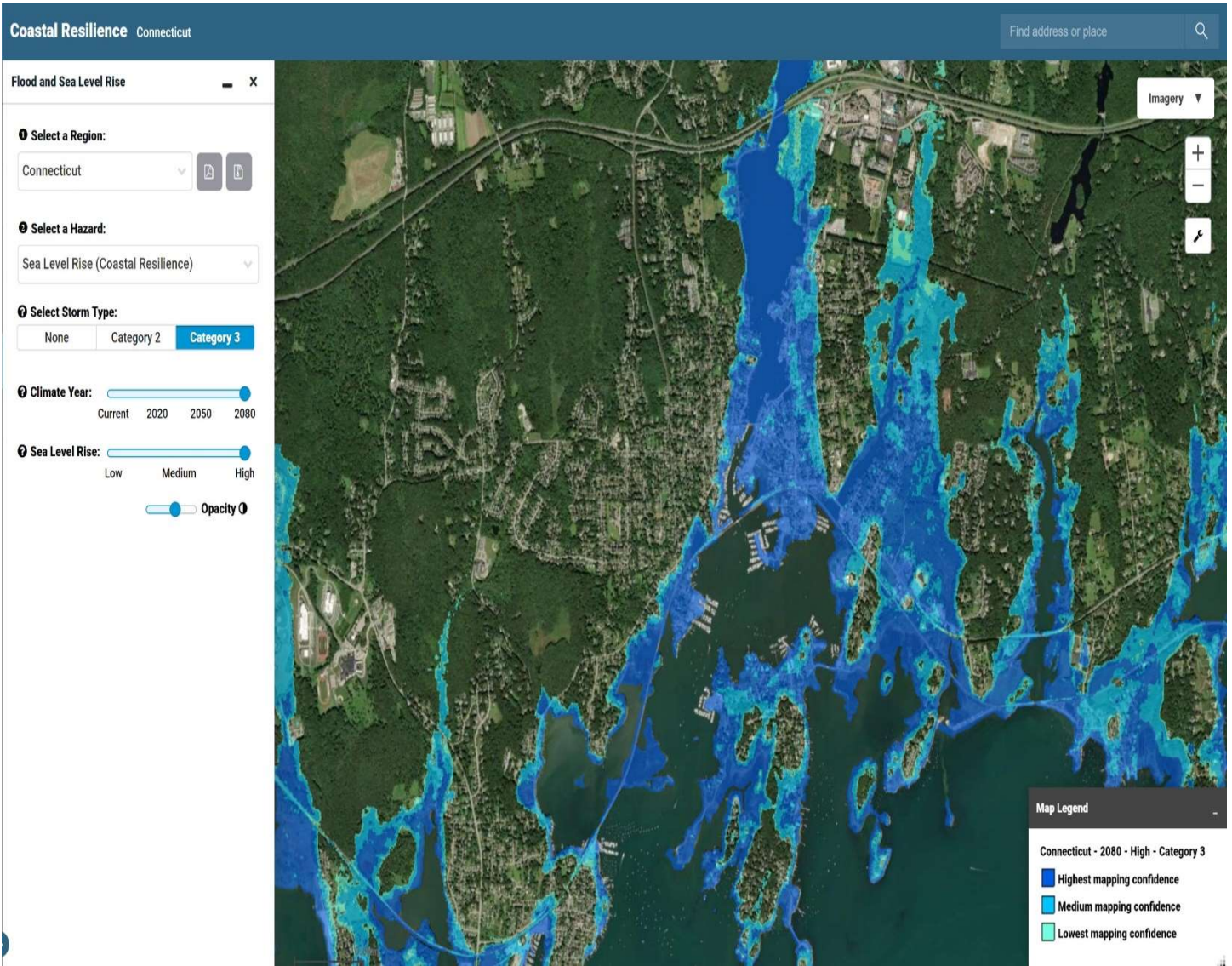


NOAA – SLOSH (CAT 3)
52” of Sea Level Rise

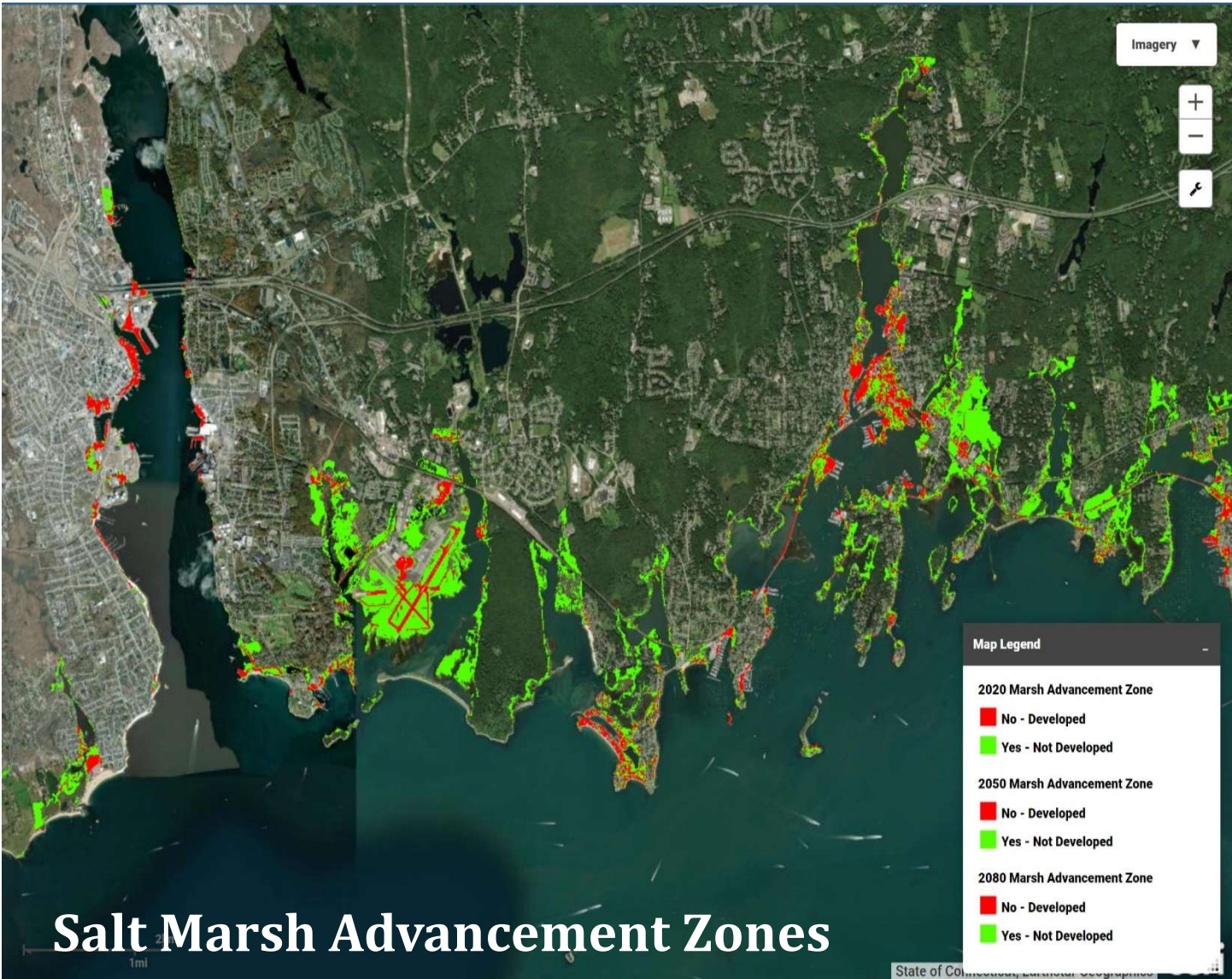
Source: The Nature Conservancy – Coastal Resilience - <https://maps.coastalresilience.org/connecticut/>



Source: The Nature Conservancy – Coastal Resilience - <https://maps.coastalresilience.org/connecticut/>



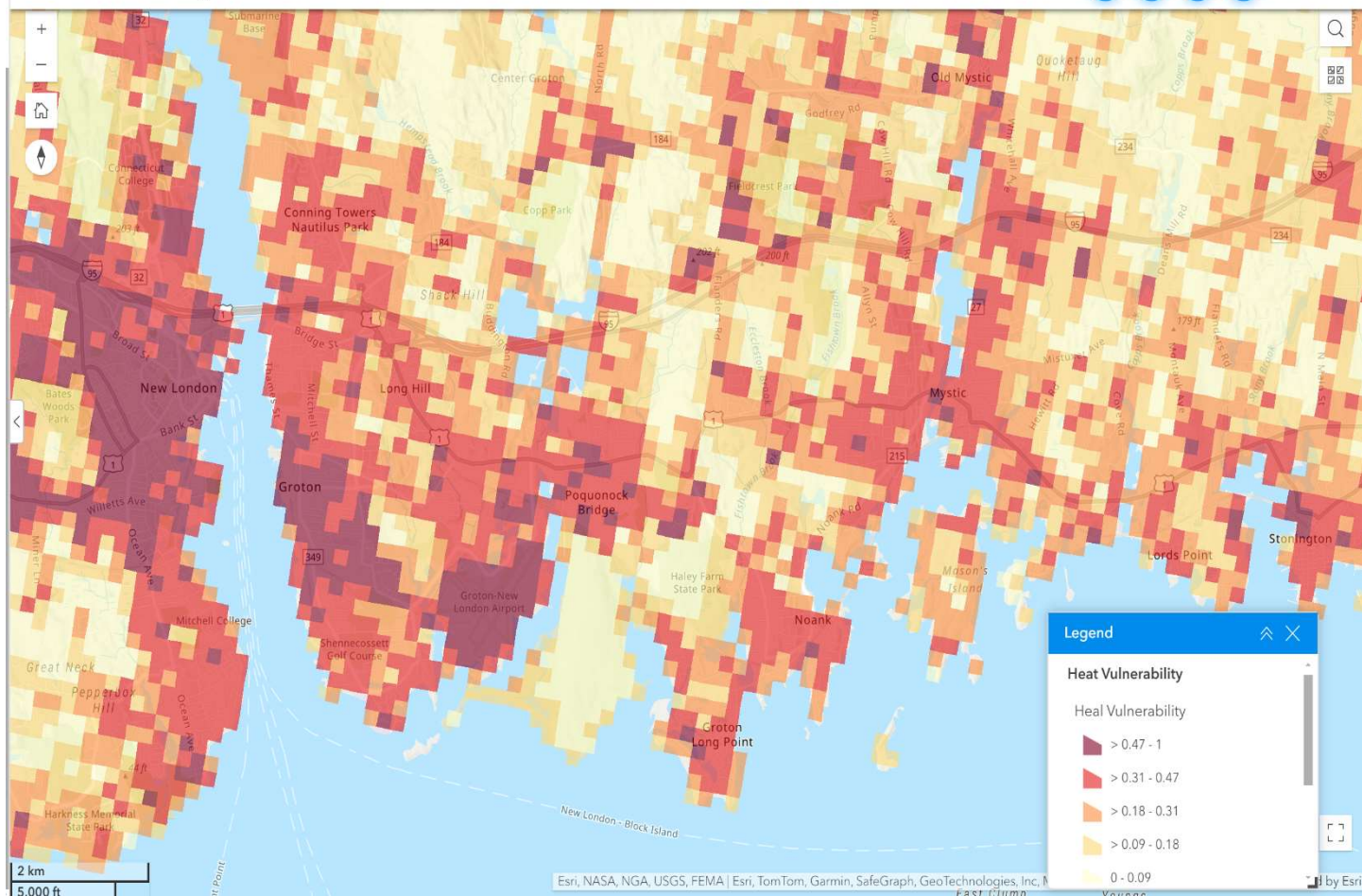
Source: The Nature Conservancy – Coastal Resilience - <https://maps.coastalresilience.org/connecticut/>



2080 - 52" of Sea Level Rise

Source: The Nature Conservancy – Coastal Resilience - <https://maps.coastalresilience.org/connecticut/>

Heat Vulnerability



Source: CIRCA Heat Vulnerability Index

Appendix D

Groton

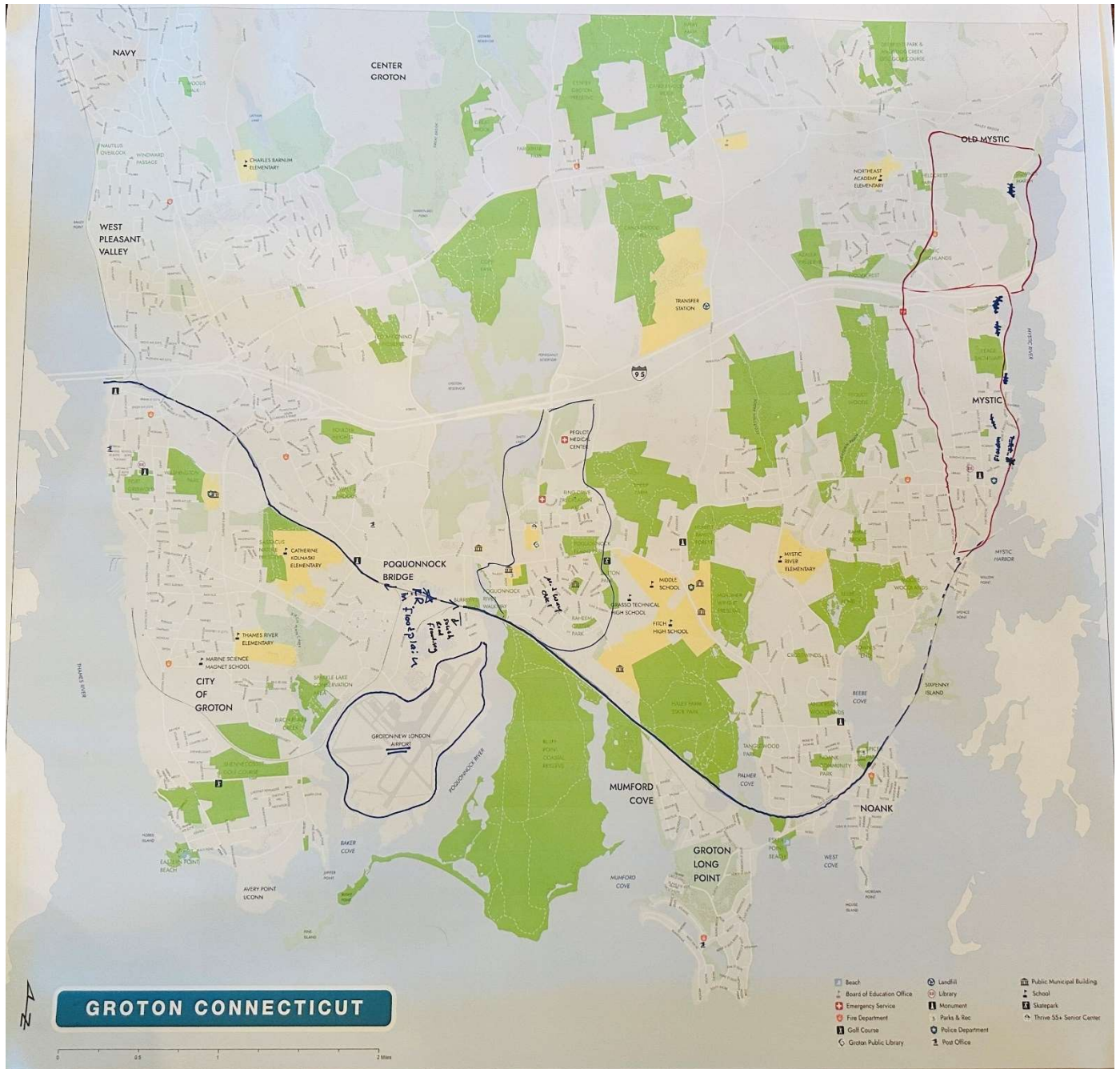
Base Maps

Generated During the

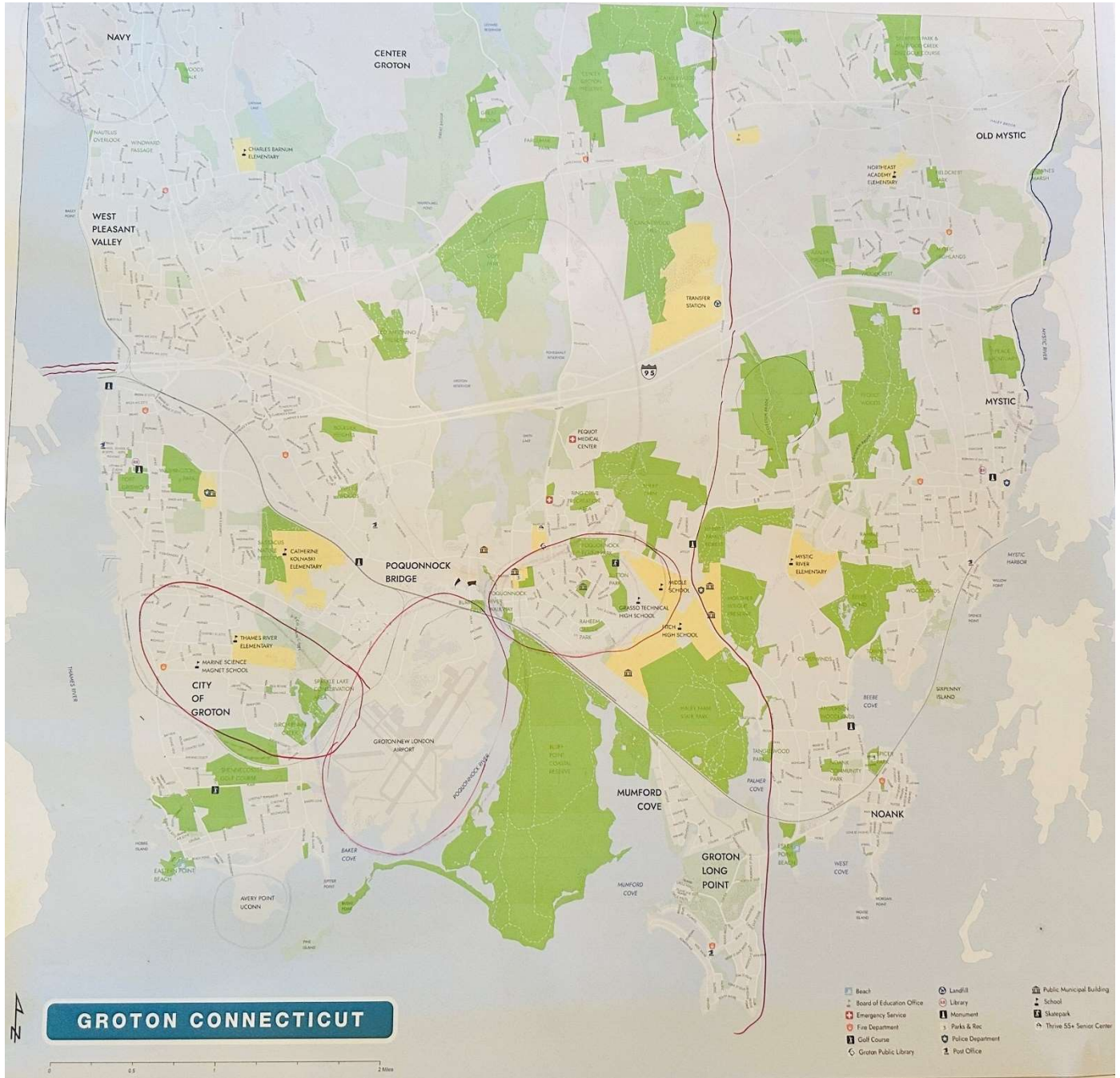
Community Resilience Building Workshop

by

Participants



Green Small Group Groton Base Map



Blue Small Group Groton Base Map

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www.CommunityResilienceBuilding.org