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Town of Waterford

Hazards and Community Resilience Workshop

Summary of Findings

Town of Waterford

Hazards and Community Resilience Workshops

Summary of Findings

Overview

The need for municipalities, regional planning organizations, states and federal agencies to increase resilience and adapt to extreme weather events and mounting natural hazards is strikingly evident along the coast of Connecticut. Recent events such as Tropical Storm Irene, the Halloween Snow Storm, Hurricane Sandy, and most recently Blizzard Juno have reinforced this urgency and compelled leading communities like the Town of Waterford to proactively plan and mitigate potential risks. Ultimately, this type of leadership is to be commended because it will reduce the exposure and vulnerability of Waterford's citizens, infrastructure and ecosystems and serve as a model for communities across Connecticut, the Atlantic Seaboard, and the Nation.

In the fall of 2011, a partnership formed between the Town of Waterford and The Nature Conservancy that resulted in a Risk and Vulnerability Assessment Report alongside the Towns of East Lyme, Old Lyme, and Stonington. The partnership's focus was refreshed in 2013-14 with increasing awareness of risks from natural and climate-related hazards through a more elaborate assessment of the Town of Waterford. This focus was actualized through a series of initial presentations, individual interviews, and outreach to build stakeholder willingness and engagement followed by a Hazards and Community Resilience Workshop in November, 2014. The core directive of this effort was the engagement with and between community stakeholders in order to facilitate the education, planning and ultimately implementation of priority adaptation action. The Workshop's central objectives were to:

- Define extreme weather and local natural and climate-related hazards;
- Identify existing and future vulnerabilities and strengths;
- Develop prioritized actions for the Town and broader stakeholder networks;
- Identify opportunities for the community to advance actions to reduce risk and increase resilience.



The Town of Waterford’s Hazards and Community Resilience Workshop employed a community-driven process developed by The Nature Conservancy as part of the Coastal Resilience Program. Elements of the “Roadmap for Adapting to Coastal Risk” (NOAA) were used frame portions of the workshop (i.e., “profiles”). The Conservancy’s Risk Matrix and Coastal Resilience Tool (www.coastalresilience.org) were integrated into the workshop process to provide both decision-support and risk visualization for the Town of Waterford. Using this workshop process, rich with information, experience, and dialogue, the participants produced findings which are outlined in this summary report. The following report provides an overview of the top hazards, current concerns and challenges, current strengths and vulnerabilities, and recommendations to improve the Town of Waterford’s resilience to natural and climate-related hazards today and in the future.

The summary of findings transcribed in this report, like any that concern the evolving nature of risk assessment and associated action, are proffered for comments, corrections and updates from workshop attendees and additional stakeholders alike. The Town of Waterford’s leadership on hazards and community resilience will benefit from the continuous and expanding participation of all those concerned.

Summary of Findings

Top Hazards and Vulnerable Areas for Town of Waterford

During the Hazards and Community Resilience Workshop (November 2014), participants from the community were asked to identify the top natural hazards for the Town of Waterford. Coastal and inland flooding from intense storms and resulting storm surge and riverine flooding were identified as the hazard of greatest concern by most participants. Extreme winter storms with snow, ice, and wind were also listed as priority hazards by workshop attendees. These events have direct and severe impacts on town resources such as its residential neighborhoods, natural areas (beaches, wetlands, rivers, parks), roads, and critical infrastructure. In addition, the participants determined that environmental changes associated with climate change, such as sea level rise, extreme precipitation events, and periods of lingering drought can elevate the damaging impact of natural hazards in Waterford.



Top Hazards and Vulnerable Areas For Town of Waterford

Top Hazards

Coastal Flooding and Storm Surge

Inland Flooding

Ice and Snow Storms

High Wind Events

Other Hazards: Severe Drought, Extreme Temperatures, Sea Level Rise

Vulnerable Areas

Neighborhoods: Millstone Point Beach Association, Jordan Cove, Ridgewood Park, Great Neck.

Ecosystems: Barrier Beach, Waterford Town Beach, Smith Cove, trout streams (4), Lake Konomoc Reservoir, Jordan Spit, Jordan Brook.

Transportation: RTE 213/Rope Ferry Road, Goshen Road, Braman Road, Way Hill Road, Gardiners Woods Road, Gurley Road/Oil Mill Road intersection.

Infrastructure: Sewer Pump Stations (28), stormwater culvert drainage system, old dam near Millstone Power Plant, power grid connections, nursing/assisted care homes and affordable housing, Mago Point, Millstone Power Plant, Gurley Road bridge, Amtrak Railroad, cell towers (inadequate coverage).



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Current Concerns and Challenges Presented by Hazards

The Town of Waterford has several concerns and faces multiple challenges related to the impacts of natural hazards. In recent years, Waterford has experienced a series of highly disruptive and damaging weather events including Tropical Storm Irene (August 2011), Hurricane Sandy, (October 2012), and winter Nor'easter Nemo (February 2013). Impacts from Irene included significant coastal flooding, heavy-rain induced inland flooding, and wind damage. Sandy caused coastal flooding and extensive power outages across large portions of the Town. Nemo dropped nearly three feet of snow on Waterford knocking out power and isolating residents and neighborhoods. The magnitude and intensity of these events across Connecticut over the course of just 18 months has increased awareness of natural hazards along with climatic change and motivated communities like Waterford to comprehensively improve resilience both at the municipal and regional level.

This series of extreme weather events highlighted for Waterford that impacts from hazards are felt differently across the town from the low-lying coastal area to the forested uplands in the north of Town. The southern part of town borders Long Island Sound and is exposed to damage from coastal flooding and surge during storms. The heavily forested northern uplands experience the effects of tree damage from wind, snow, and ice as well as damage from inland flooding during heavy precipitation events. This presents a challenge to preparedness, response, and mitigation priorities and requires comprehensive yet tailored actions for particular locations and/or areas of Town.

The workshop participants were generally in agreement that the Town of Waterford is experiencing more intense and frequent storms events. The impacts, particularly during Tropical Storm Irene, affected the daily activities of every resident. Coastal areas are experiencing greater impact from major storms and increases in average tidal ranges are resulting in routine flooding events in certain low lying places. There was the recognition that many more residents are witnessing generally elevated ground water levels. Additionally, there was a general concern about the need and challenges of being prepared with contingency plans for worst case scenarios during different times of the year (i.e., major hurricanes (Cat-3 or above)) particularly in the late fall/winter versus summer due to more intense winter Nor'easters.



Specific Categories of Concerns and Challenges

Vulnerability of Road Network

One of the primary concerns expressed by participants was the vulnerability of Waterford's road network during and after routine and extreme events. Road blockage prevents emergency management services from reaching stricken areas, reduces public access to evacuation routes and critical facilities like gas stations, grocery stores, and pharmacies. In addition, impassable roads can limit access to sheltering facilities in Town. In some cases, the Waterford Police Department have used their Humvees to transport residents trapped in their homes to shelters

It was clear at the Workshop that Waterford residents are highly reliant on I-95 which may at times become impassable due to heavy snow storms but sometimes routine traffic accidents can be very disruptive to mobility. The CT DOT has begun purchasing larger equipment in the aftermath of the last large storms to increase their capacity for snow removal. DOT's Waterford garage has most of the new larger equipment in the state. DOT's policy is to first ensure passable conditions on the interstate system, followed by secondary roads. Usually within 12 hours of a snow storm response, DOT plows can begin plowing secondary roads. The DOT maintains routine communications with towns via public works departments. Concerns persist around cooperation between DOT and town public works departments that would allow for better response coverage during larger storms. For smaller storms there is sometimes an issue with municipal plows scraping off DOT's pre-treatment on secondary roads.

Additional concerns related to roads includes the recognition by the Town that many of Waterford's culverts are too small to effectively convey floodwaters downstream resulting in back-ups and exacerbating flooding of critical intersections, roadways, and adjoining properties/right-of-ways. Furthermore, there are streets names that are very similar which can cause confusion for emergency communications; for example

Waterford has three roads named Miner Lane, Miner Avenue, and Miner Court. There is the potential for responders to waste critical time going to the wrong address during an emergency. Finally, Gardiners Wood Road often gets flooded and would benefit from being elevated although it is acknowledged that this road only serves a single neighborhood.



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Millstone

The biggest hazard for the Millstone Power Plant facility is a Category 2 or 3 hurricane. The Millstone facility has made some enhancements as a result of lessons learned by the Fukushima incident. Personnel access to the Millstone facility is a primary issue during any hazard event. The last major snow storm had the greatest impact of all the recent storms to hit the region. Workers stayed overnight at the station ahead of the storm to ensure continuous operations, however their replacements could not get there to relieve them due to poor road conditions. Coastal flooding during major storms can also impacts access and egress for employees. Fortunately, most employees live locally or within the 10 town evacuation zone. In addition to ensuring shifts can move in and out of facility, power and communication systems recovery is a high priority after winter storms. One additional concern is the significant amount of storm debris and pollution that is carried down the Niantic River and deposited along the shoreline of the facility

Mago Point

Mago Point is prone to flooding and steps to address the risk have been limited to date. This area is a mixed use (residential and commercial) neighborhood that used to be a dense commercial area. It is also a popular recreation area for residents of nearby neighborhoods. Mago Point also provides a rare area of public shore access whereas most of Waterford's shoreline is privately owned. Flooding tends to have a short-term economic impact on Mago Point. The Mago Point Marina (1 First Street) is the only parcel that doesn't typically flood so it becomes isolated during storms. The marina has also just received necessary permits to complete an expansion. In addition, coastal flooding blocks the evacuation route for the neighborhood. The town had hired a consultant to develop a master plan for Mago Point. The planning process has and will involve workshops and many opportunities for public input. Any substantial redevelopments or any new developments will be subject to FEMA's standards for developing in floodplains, including minimum elevation requirements. The cost of complying with FEMA requirements may prevent some entities from developing there.

The greatest economic impact has been the move of the Route 156 Niantic River Bridge many years ago. This move altered the course of the busy state route away from Mago Point and has had an impact on business in the neighborhood. For example, several Mago Point restaurants have gone out of business after the bridge was moved. The marinas and fishing outlets have been able to remain open. The CT DOT is responsible for operating the Route 156 bridge.



Elderly Residents

The Department of Social Services is challenged by the need to reach all vulnerable residents in Town. The average age of Waterford residents is increasing and residents tend to stay in their homes (aging and shelter in place). Town staff has noticed different attitudes towards impacts of storms among younger versus older residents that have bearing on emergency management operations and response. For example, after the 2012 snow storm, an older couple in Great Neck said they considered the impacts of the storm like they were camping compared to younger residents who were more frustrated by the loss of power.

Inland and Coastal Wetlands

One of the key challenges raised during the Workshop is the lack of awareness amongst residents of the benefits and critical services (including flood storage and prevention) provided by the wetlands on their property as well as the lack of knowledge regarding regulations in place for wetland protection. Permit violations are common with many examples of inspectors finding properties where wetlands have been filled and wetland vegetation has been cut or removed. Waterford has many long term property owners who have long forgotten about potential land use restrictions that apply to their property. In general, the Town is an active proponent of open space protection but does not want the responsibility of managing all the conserved lands. As a result, the Town of Waterford tends to encourage homeowner associations and/or the Waterford Land Trust to manage the open space properties. The larger concern is that the wetlands are not being valued and incorporated as natural infrastructure that can help reduce risk and improve resilience.



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The concerns around impacts to wetlands and floodplains in Waterford are accentuated by the implications of inland flooding which is one of the most frequent hazard events experienced by residents. There are several areas and structures that are commonly impacted by floods as follows:

- Miller's Pond is a privately owned dam (LLC) with a low flow control. The Town has requested that the owner lower the water level in the pond prior to major storm events. When the pond floods, undersized culverts on Hunt's Brook Road restrict flood waters which impact homes on that road.



- A house located at the intersection of Gurley Rd and Oil Mill Road is often impacted by inland flooding. The bridge on Gurley Road gets over washed by Oil Mill Brook.
- Gardiners Woods Road playing fields on Millstone property floods routinely.
- Jordan Mill Pond Dam is privately owned and equipped with a sluiceway for a fish ladder. This Dam does not necessarily serve a purpose today. Nearby culverts are undersized and houses experience flooding.
- Gardiners Woods Road underpasses the Amtrak railroad tracks where heavy rains and coastal flooding regularly fill this low-lying section of road. The Millstone Point community becomes isolated from the rest of town. Also, a detention basin for the neighborhood has become filled with mud and now holds less storm water than it used to retain.
- Even in minor situations, Gardiners Woods Road floods easily.

It was also noted that large sections in the central area of Waterford remain undeveloped and help to absorb precipitation and inland floodwater. Because there is less development, there are fewer flood impacts in this area. Waterford's Conservation Commission understands the benefits of keeping this area undeveloped.

One particular concern raised involves the pond owned by the Millstone Point Homeowners Association which does not currently drain properly resulting in localized flooding on adjoining property. Improvements to the drainage system at this pond would require an agreement between the Gardiner family, Millstone, and the neighborhood association making it a potentially complicated project. This also highlights the challenges presented by the need to collaborate across organizations and governments to improve resilience in Waterford.

Wastewater

Waterford has 28 pump stations and approximately 140 miles of sewer lines to maintain. The inflow of water can overwhelm pump stations that require generators. These pumps are vulnerable to flooding and power loss. Some pumps have been upgraded (to operate despite flooding) but some are still outdated. There is an estimated \$11 million pending capital investment to upgrade and improve the resilience of this wastewater system in Waterford. In addition, there was a recent incident in Smith Cove where the sewage pipes running along the bottom of the cove, sprung a leak and contaminated the cove due to the improper installation of the original pipes.



Cell Phone Coverage

Town residents are dependent on a limited number of towers. The installation of an additional tower is currently being planned.

Current Strengths and Assets in Waterford

As a result of Waterford's recent experiences with extreme weather, the Town is well acquainted with the existing strengths within the community. In addition, the long term presence of the Millstone facility within the community has required routine upgrades and response exercises for the emergency management professionals. Reinforcing and expanding these supportive practices and assets will generate greater benefits to the community through increased resiliency against future storms, with greater frequencies and intensities, as well as long term impacts from the ongoing increases in air temperature, precipitation, and sea level.

- Clearly, the responsive and committed leadership by the elected officials is a very much appreciated strength in Waterford. Regional cooperative agreements with adjoining municipalities and state entities were cited as critical and potentially cost-saving outcomes of this leadership.
- Due to the Millstone Power Plant facility and associated funding for emergency preparedness, Waterford has excellent emergency management resources and infrastructure in comparison to many other towns.
- Waterford's first responders are a major asset during emergency events due to their experience and knowledge with a diverse array of situations. The overarching coordination amongst various departments including Police, Fire, and EMS was cited as ongoing community strengths.
- Supportive social services such as the activities and transportation systems for seniors, youth and families, as well as faith-based organizations were highlighted as important community assets.



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- The marshes, beaches, coves, floodplains and open space along Waterford’s coast and inland areas offer increased defense against storms through surge attenuation, inland flooding storage, and capture for surface runoff infiltration. Intact forested watersheds, reservoirs, and other park land provide public amenities and serve to maintain water quality and quantity for well-dependent residents. Without these natural resources in place, Waterford’s coastal and inland infrastructure and homes would suffer greater damage and higher ongoing costs to rebuild or relocate. Also, Waterford has large tracts of undeveloped upland forests which protect local water quality and also provide water storage services that replenish the aquifers.

Top Recommendations to Improve Resilience to Hazards

Recent Improvements:

Workshop participants highlighted a variety of positive actions taken by the Town and residents in the wake of recent storm. These include a \$6 million investment in an upgraded emergency communication system (fire, police, EMS) so that responders can be on the same designated frequency. Coverage extends across Waterford and includes all of New London and a portion of both Montville and East Lyme. The First Selectman would like to create a regional 911 dispatch center/Public Safety Answering Point to include the shoreline towns of Waterford, New London, and East Lyme. The resiliency of the power distribution supply system has been improved through the recent installation of an additional power line feeder and a new substation by CL&P. In addition, CL&P has been trimming trees and working on maintaining areas around power lines. Power lines have also been separated which helps to spread the risk. There are also new transmissions lines out of the Millstone facility. The ‘Make Safe’ program is a significant programmatic asset to the Town. This program helps to improve coordination between CL&P, Waterford Department of Public Works, and local first responders during emergency events. It also provides for preparedness training to increase responders understanding of how to handle downed wires as well as exercises to practice coordination and responsibilities among the emergency response stakeholders after an event.

In addition to these best practices a common thread throughout the workshop discussions was the recognition that the Town and residents need to be better prepared through longer term contingency planning across key areas of concern. The core highlights are addressed below.



Emergency Shelters and Facilities

The Waterford Community Center opens after severe weather events to provide facilities for showering as well as outlets for charging electronics. During the 2012 severe snow storm, the Department of Social Services staff made phone calls to vulnerable residents ahead of the storm to offer transportation to the East Lyme regional shelter. Residents can bring their pets (cats & dogs) with them to this shelter. Pre-designated shelter facilities for residents include the high school, where the first floor can be powered by a generator. The Community Center is also a designated shelter equipped with hurricane windows and a generator. The town hall also has a generator. The Youth Services facility has a stock of Continuous Positive Airway Pressure (CPAP) equipment, oxygen generators, and MREs. Red Cross has found that New Englanders tend to avoid using a shelter compared to other regions and demand for shelter space it usually low. However in Waterford, coastal residents tend to use them more than residents in inland areas. Having an established multijurisdictional shelter helps ensure there is sufficient staff to run the facility. Typically volunteers work three days and get relieved by a new shift. Often these volunteers are older residents and may also be part of other emergency response organizations, so it would help to recruit younger volunteers who do not have other obligations during an emergency event. The Crystal Mall facility was also highlighted as a critical staging area during emergencies along with the Department of Public Works garage.

Infrastructure

The Town has \$700,000 in revolving funds for low- to moderate-income residents to use to make home repairs that primarily address safety concerns and compliance with building codes. The funding comes from the Connecticut Department of Economic and Community Development's Housing Rehabilitation program. In addition, the manholes in Town have been sealed up to the 500-year flood elevation to reduce the costs of treating stormwater at the New London treatment plant.

Emergency Notifications

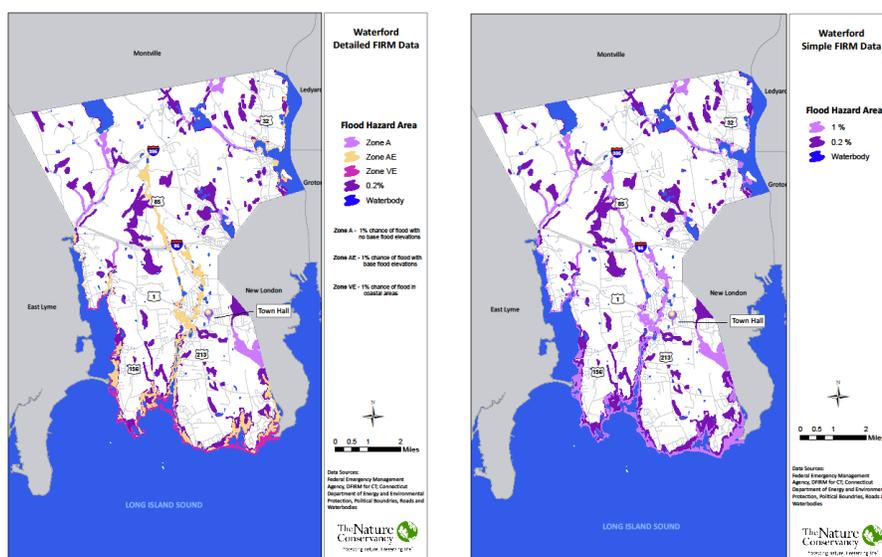
Overall, emergency communications and awareness is a vulnerability, however Waterford has taken many steps to help its residents prepare for and assist them during emergency events. The town periodically makes public service announcements to let residents know they can register for the Town's Emergency Notification System. Currently; few people in town have signed up to date. In addition, the Town reaches out to special needs individuals in advance of hazard events which is a requirement due to the presence of Millstone, and sends annual announcements to register with the



Town. The focus is on residents over 60 and/or those who are not able to drive. Additionally, anyone who registers for transportation assistance is automatically added. Recently Waterford included a survey with the newsletter to collect information about residents needs during emergencies and the actions they would take under certain circumstances. However, there was a low response rate. It is a challenge to reach residents about evacuation orders. There was a mandatory evacuation in place for Shore Road residents prior to Sandy and many people did not know. The phone notifications by the town did not reach all the affected residents.

Open Space

The town is approximately 60% built-out and there is some ongoing development pressure. The Gardiner family owns about 50% of the remaining open space land and they have proven to be advocates for conservation and seem unlikely to sell or develop it. There is currently a general lack of understanding of the ecosystem services and quality of life improvements that benefit residents from maintaining and enhancing open space. It is key for decision-makers to understand the impacts and potential reduction in services that new development may cause. The Conservation and Planning and Zoning Commissions ensure that there are conservation easements set aside for new developments. However, these easements often just cover the required wetland areas without fully appreciating the potential for further risk reduction options in upland areas. One key area for improvement as voiced in the Workshop was the need for a full evaluation at a watershed scale of the existing drainage system obstacles and identification of solutions to minimize flooding across all impacted areas in Town (undeveloped and developed).



Workshop's Recommendations for Waterford

The following are recommendations for the Town of Waterford generated by the Workshop participants organized from highest to lowest priority.

Highest Priority

- Continue to advance an inventory to identify which of the 28 pump stations are vulnerable to flooding under various scenarios and consider ways to separate power lines and sources for vulnerable pump stations.
- Seek to improve internal training for emergency management professionals and update emergency management plans for all areas of Town. Find ways to reverse the declining interest amongst residents in volunteerism.
- Need for additional and ongoing investment in communication upgrades and outreach approaches such as social media, websites, and active education of residents.
- Integrate Town's Natural Hazards Mitigation Plan with Plan of Conservation and Development
- Conduct a vulnerability and cost/benefit assessment of barrier beaches and salt marsh under various storm and future scenarios. Use the vulnerability assessment along with "willingness to pay" surveys (Clark University/TNC) to develop and implement short and longer term resiliency plans for natural infrastructure (Goshen Cove, Waterford Town Beach, Dock Road, Millstone Point Association Beach) that maintains the ecosystem, continues to provide a public amenity, and provides ongoing storm surge and flooding protection of adjoining residents and property.
- Conduct a study to evaluate the benefits of ecosystems for hazard reduction across Town. Look to institute education programs for all stakeholders that will enhance the management of natural infrastructure as part of a larger, more comprehensive, risk reduction plan (Plan of C&D integrated with Natural Hazards Mitigation Plan). Develop a prioritize list of areas for potential acquisitions and protection that would maximize risk reduction (i.e., TNC's Salt Marsh Advancement Zone Assessments).



Workshop's Recommendations for Waterford

Highest Priority

- Develop a prioritize management plan for trees along transportation corridors across Town.
- Complete an inventory of culverts and develop a prioritized replacement strategy across Town that is tied to capital plans. As needed, reevaluate drainage system of roads and adjoining transportation corridor including culvert areas.
- Define solutions to reduce flooding on state roads (RTE 213/156) to increase access to regional hospital facilities before, during, and after hazard events.
- Maintain the ecological integrity and defensive services provided by Waterford's coves and coastal wetlands to residents and property (Alewife, Smith, and Jordan Cove).
- Increase effectiveness of outreach to compel the elderly population to minimize the level of "sheltering in place" during extreme hazard events.



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Moderate Priority

- Improve communications between Town and Utility (CL&P). Seek to coordinate on agreeable tree trimming plan.
- For Waterford Town Beach, conduct a longer-term vulnerability and cost assessment for bridge and parking lot.
- Incorporate flood proofing and other risk reduction measure in sewer line expansion and upgrades.
- Identify source and reason for increase in polluted runoff during heavy precipitation events from high density residential neighborhoods. Work with neighborhoods to develop localized runoff management plans.



Workshop's Recommendations for Waterford

Moderate Priority

- Continue to maintain and improve sheltering capacity and services across Town.
- Improve level of communication between nursing home facilities and Town emergency management and planning staff. Town to assist with improvement as needed to emergency management plans for facilities (Bay View, Park Lane) and ensure that facility staff understands the evacuation plans and protocols.
- Continue planning for Mago Point in ways that will limit the impacts to businesses and improve access during and after storms.
- Maintain and expand healthy riparian buffers across Town and identify ways to minimize stormwater runoff impacts to water ways.
- Need to improve management of coastal natural resources in select neighborhoods to ensure protection from storm surge and sea level rise.
- Continue to support voluntary buyouts of properties repeatedly flooded and seek to add “undeveloped” open space into Natural Hazard Mitigation Plans and Plan of Conservation and Development.
- Identify high risk areas associated with Amtrak rail infrastructure and overpasses. Seek to improve communications with Amtrak on hazards across Town associated with identified risks along rail corridor.

Lower Priority

- Improve ability to quickly evacuate staff from Millstone Power Plant facilities and consider improvement including added sub-station for plant. Continue to conduct joint preparedness and mitigation operations between Dominion and Town.
- Strengthen communications between state staff at Harkness State Park and Town on hazard mitigation and preparedness opportunities.



Workshop's Recommendations for Waterford

Lower Priority

- Identify opportunities to increase number of cell towers and coverage across Town and assess level of vulnerability of existing towers.
- Connect coastal homeowners with state funding programs to help cover the increasing cost to upgrade and elevate homes after storm events.
- Work with Millstone Point neighborhood to ensure barrier beach is both maintained and restored after hazard events including improvements to the pond's drainage system.
- For Jordan Cove, develop and implement projects to minimize erosion.
- Work with CT DOT to ensure Route 156 bridge is properly maintained due to the critical need for continued use.
- Ensure drought contingency plan is in place in the event of extreme heat waves - Lake Konomoc reservoir.

Recommended Report Citation

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Workshop Participants: Departments, Organizations and Other Entities

Connecticut Department of Transportation
Crystal Mall
Defenders Industries
Dominion Nuclear Connecticut
Harkness State Park
Ledgelight Health District*
Mago Point Business Association
Millstone Point Association
New London Water Company*
Northeast Utilities
Ridgewood Park Association*
Sonalysts
Southeastern CT Council of Governments*
The Waterford Association, Inc.*
Town of East Lyme Department of Planning*
Town of Waterford Board of Selectmen
Town of Waterford Chamber of Commerce*
Town of Waterford Flood & Erosion Control Board*
Town of Waterford Planning Department
Town of Waterford Planning & Zoning Commission
Town of Waterford Conservation/Inland Wetlands
Town of Waterford Recreation & Parks Commission
Town of Waterford Harbor Management Commission*
Town of Waterford Public Works
Town of Waterford Utility Commission
Town of Waterford Senior Services
Town of Waterford Fire Departments
Town of Waterford Police Department
Town of Waterford Board of Education
Town of Waterford Board of Finance
The Nature Conservancy
Visiting Nurse Association
*invited but unable to attend.

Workshop Project Team: Organization and Principal Contacts

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Acknowledgements

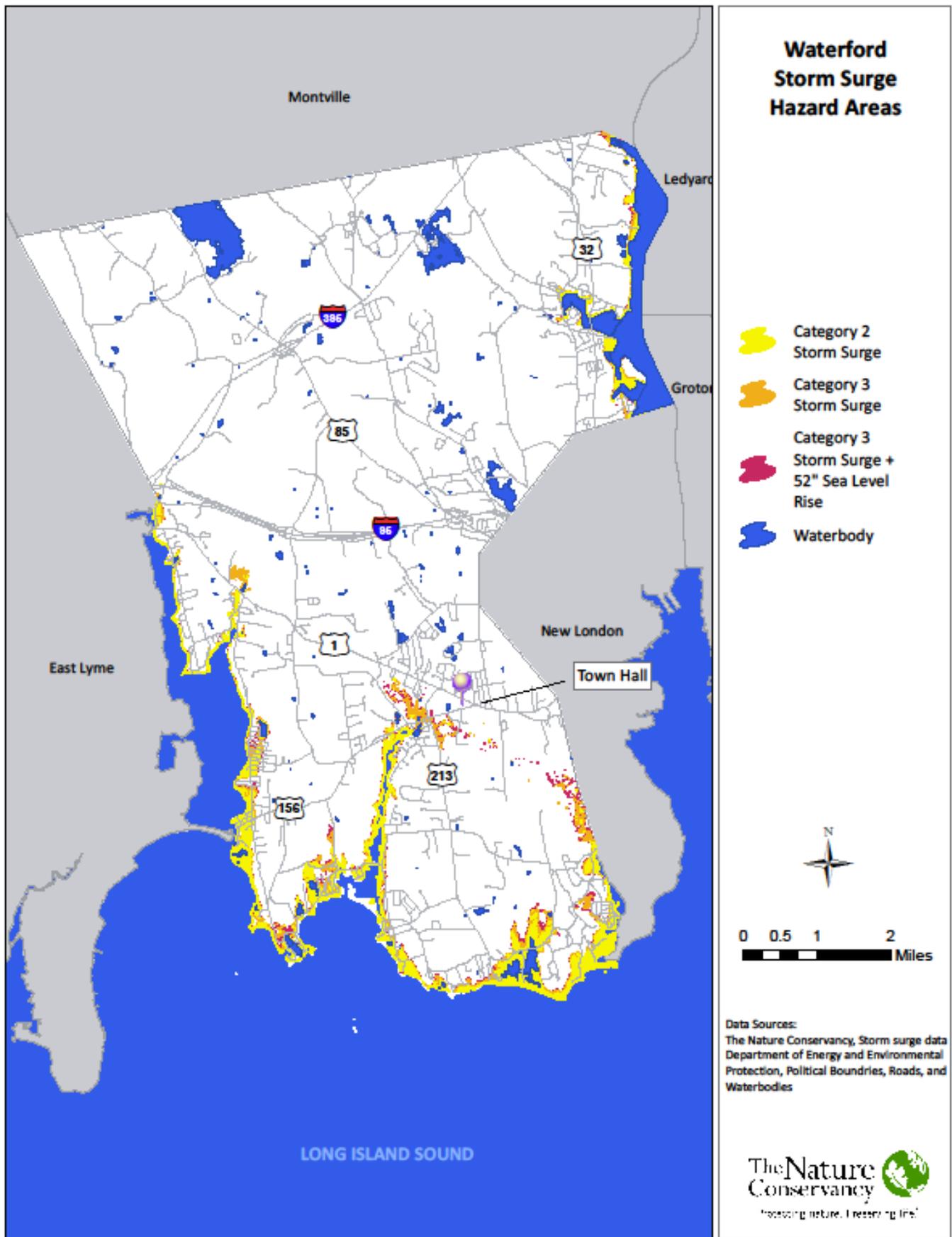
Special thanks to the Town of Waterford for their willingness to embrace this process and provide the facilities to convene, in particular Dan Stewart (First Selectmen), Denise Goderre, Mark Wujtecwicz, and Maureen FitzGerald.

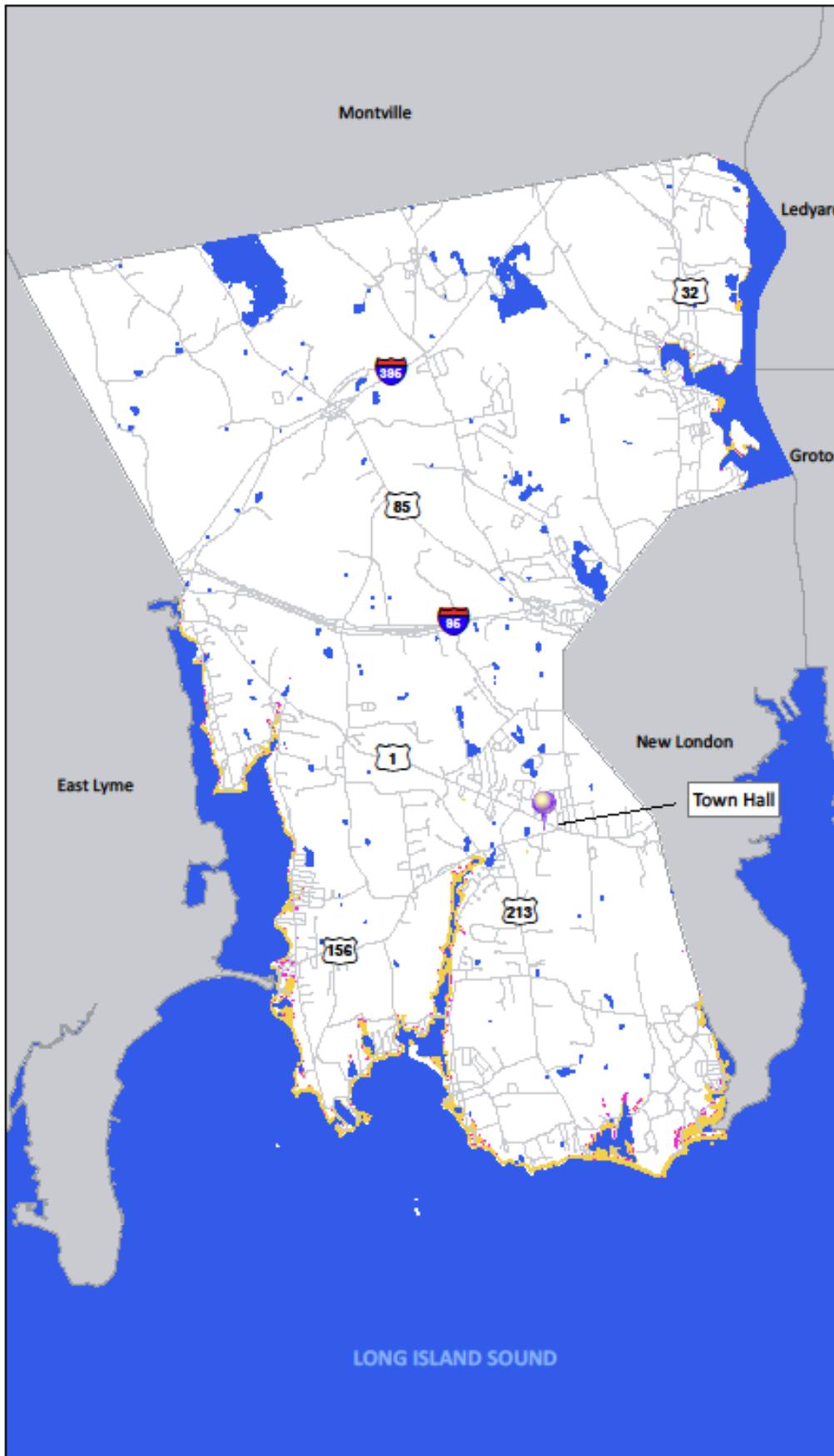
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Appendix

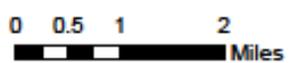
Maps of Waterford Used During Workshop





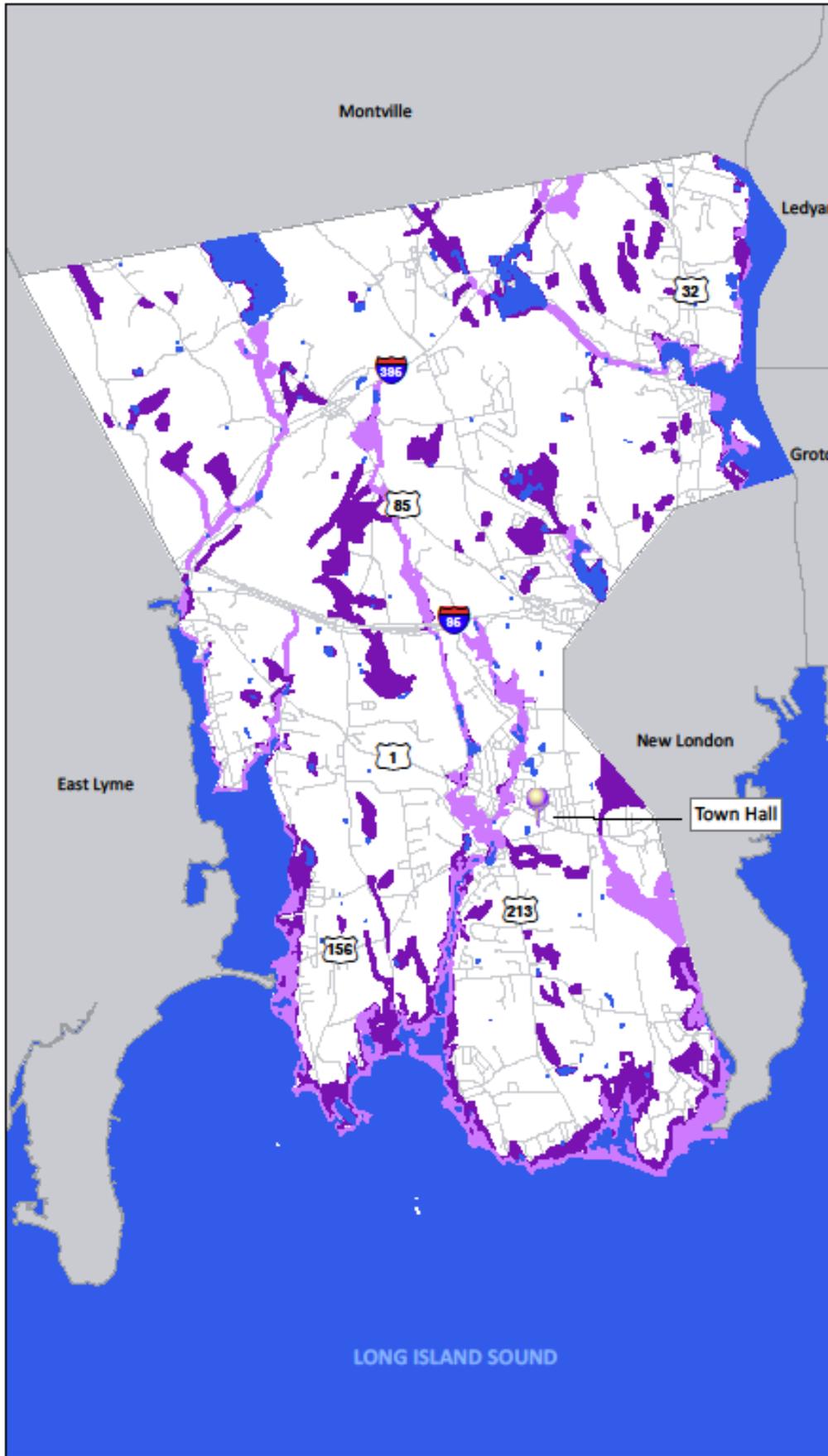
Waterford Sea Level Rise Hazard Areas

-  Waterbody
-  Sea Level Rise Inundation (10")
-  Sea Level Rise Inundation (20")



Data Sources:
 The Nature Conservancy,
 Medium Sea Level Rise projections
 Department of Energy and Environmental
 Protection, Political boundaries, Roads, and
 Waterbodies

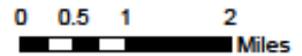




Waterford Simple FIRM Data

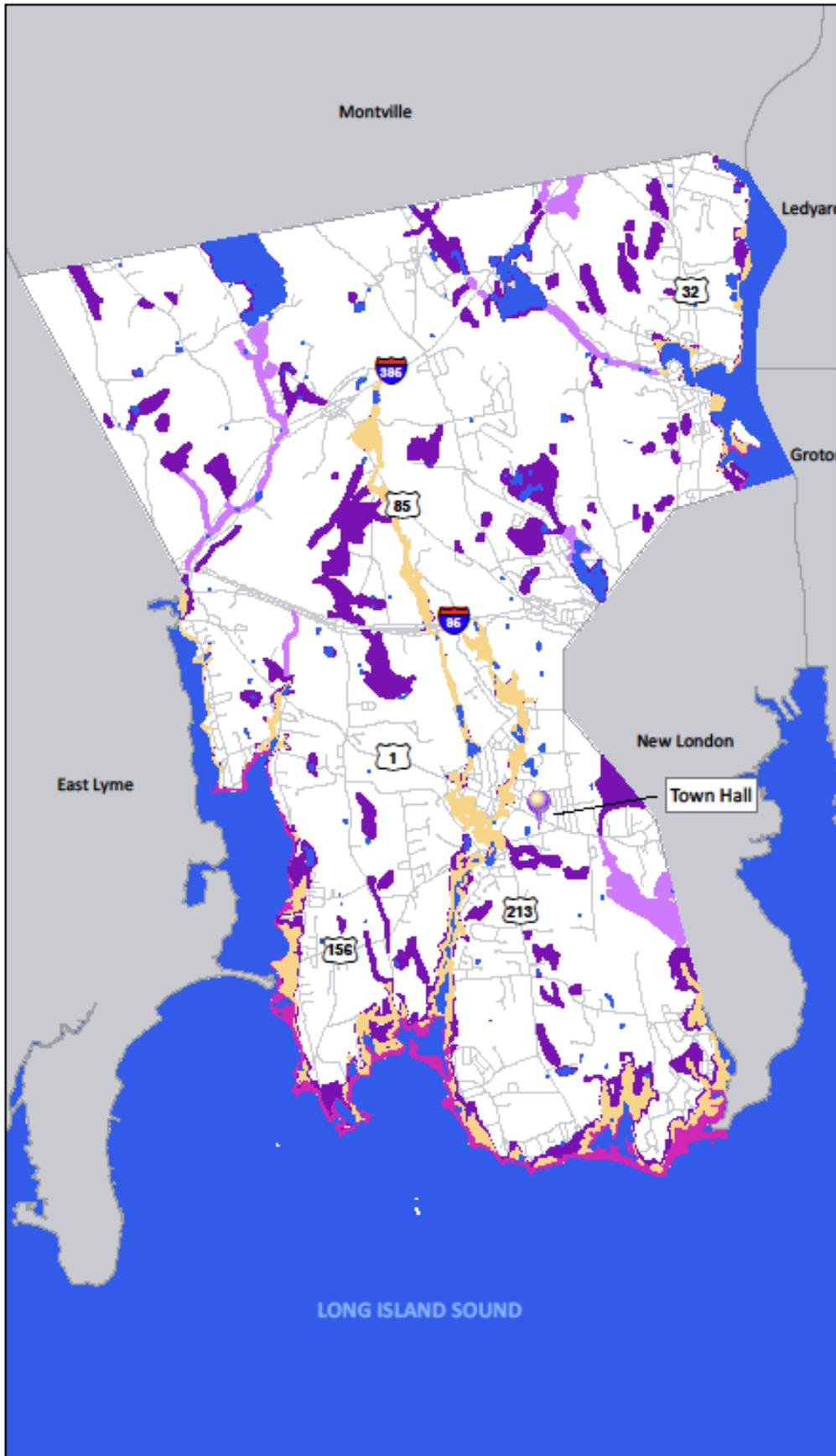
Flood Hazard Area

-  1 %
-  0.2 %
-  Waterbody



Data Sources:
 Federal Emergency Management Agency, DFIRM for CT; Connecticut Department of Energy and Environmental Protection, Political Boundries, Roads and Waterbodies





Waterford Detailed FIRM Data

Flood Hazard Area

-  Zone A
-  Zone AE
-  Zone VE
-  0.2%
-  Waterbody

Zone A - 1% chance of flood with no base flood elevations

Zone AE - 1% chance of flood with base flood elevations

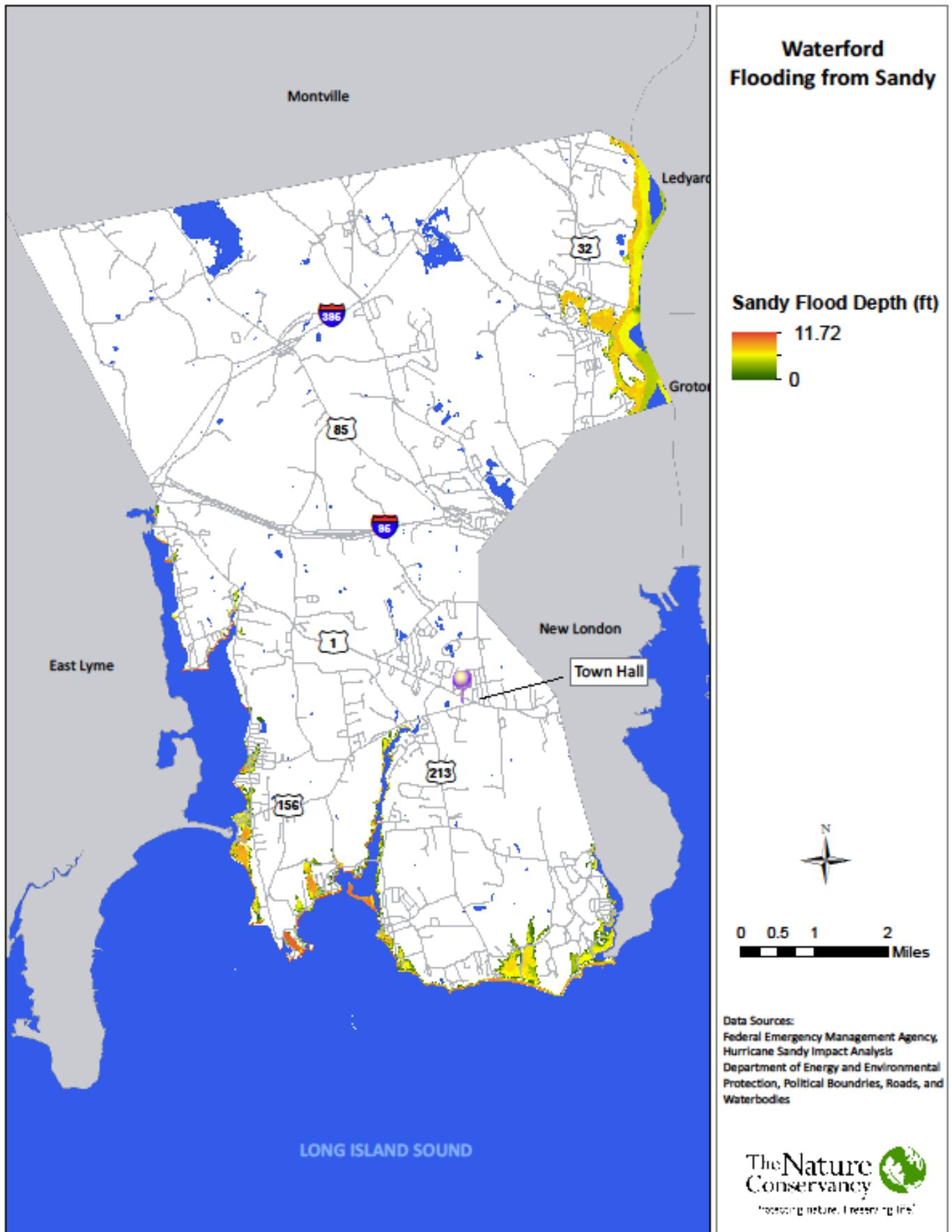
Zone VE - 1% chance of flood in coastal areas

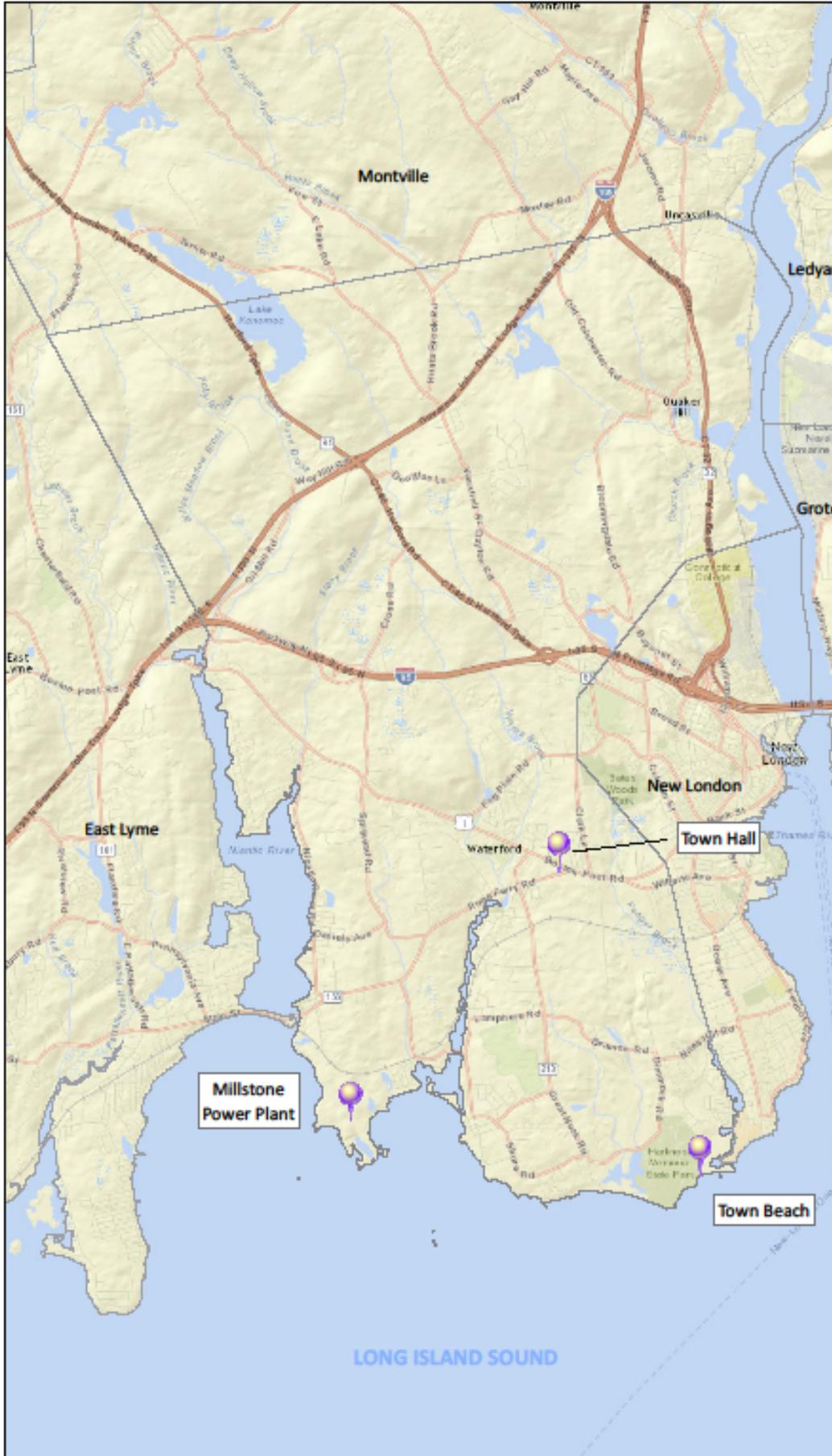


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Miles

Data Sources:
Federal Emergency Management Agency, DFIRM for CT; Connecticut Department of Energy and Environmental Protection, Political Boundaries, Roads and Waterbodies







Waterford Base Map

Notes



0 0.5 1 2
Miles

Data Source: ESRI, World Streetmap





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