Western Connecticut Council of Governments Multi-Jurisdiction Hazard Mitigation Plan Update 2026-2031

Municipal Annex
for
Town of Greenwich

101 Field Point Road
Greenwich, CT 06830
Draft: October 2026

Prepared for:
WESTERN CONNECTICUT
COUNCIL OF GOVERNMENTS
1 Riverside Road
Sandy Hook, CT 06482
475-323-2060
www.westcog.org

Prepared by:
Dewberry
RESILIENT Land & Water

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1.0 INTRODUCTION

1.1 Purpose of Annex

The purpose of this Hazard Mitigation Plan (HMP) annex is to provide a community-specific hazard risk assessment, capability analysis, and evaluation and prioritization of hazard mitigation measures and projects. Background information and the regional effects of pertinent natural hazards are discussed in the main body of the Western Connecticut Council of Governments (WestCOG) Multi-Jurisdictional Hazard Mitigation Plan. This annex is designed to supplement the information presented in the Multi-Jurisdictional HMP with more specific detail for the Town of Greenwich and is not to be considered a standalone document.

The primary goal of this HMP, including this Municipal Annex, is to identify natural hazard risks and mitigation opportunities in order to reduce the loss of or damage to life, property, infrastructure, and natural, cultural, and economic resources. This includes the reduction of public and private damage costs. Limiting losses of life and damage to property will also reduce the social, emotional, and economic disruption associated with a natural disaster.

2.0 COMMUNITY PROFILE

2.1 Geography

2.1.1 Physical Setting

Declared a township in 1665, the Town of Greenwich is located in southern Fairfield County and is home to a population of 61,171 (2010 U.S. Census). Greenwich is bordered by the municipalities of Stamford to the east, New York State to the west and north, and Long Island Sound to the south. Refer to Figure 2-1 for a map showing the regional location of Greenwich.

Greenwich is a coastal community with several rivers and streams flowing throughout the community. The town is characterized by developed areas on lower elevations adjacent to the shoreline, with suburban development sprawling northward. The Byram River flows south along the western side of town before it eventually meets the Long Island Sound. Two large waterbodies are also located in Greenwich; Putnam Lake and Rockwood Lake. The highest elevation in Greenwich is Round Hill Summit - about 564 feet in Glenville. With the southern area of Greenwich being at or close to sea level. The varying terrain of Greenwich makes the town vulnerable to an array of natural hazards.

The Center for Land Use Education and Research (CLEAR) has developed a statewide land cover dataset derived from the 2023 Annual National Land Cover Dataset (NLCD). Areas identified as developed open space are maintained grasses such as residential and commercial lawns or golf courses. The northern portion of Greenwich is predominantly forested. Consistent with zoning, the highest density development is in the southern portion of Greenwich along Interstate 95. The land cover by percent of total land for Greenwich can be found in Table 2-1.

Table 2-1: Land Cover by Area

Land Cover Class	Percent of Total Land
Developed	18%
Forest	53%
Agriculture	1%
Developed Open Space	28%

Source: University of Connecticut Center for Land Use Education and Research (CLEAR)

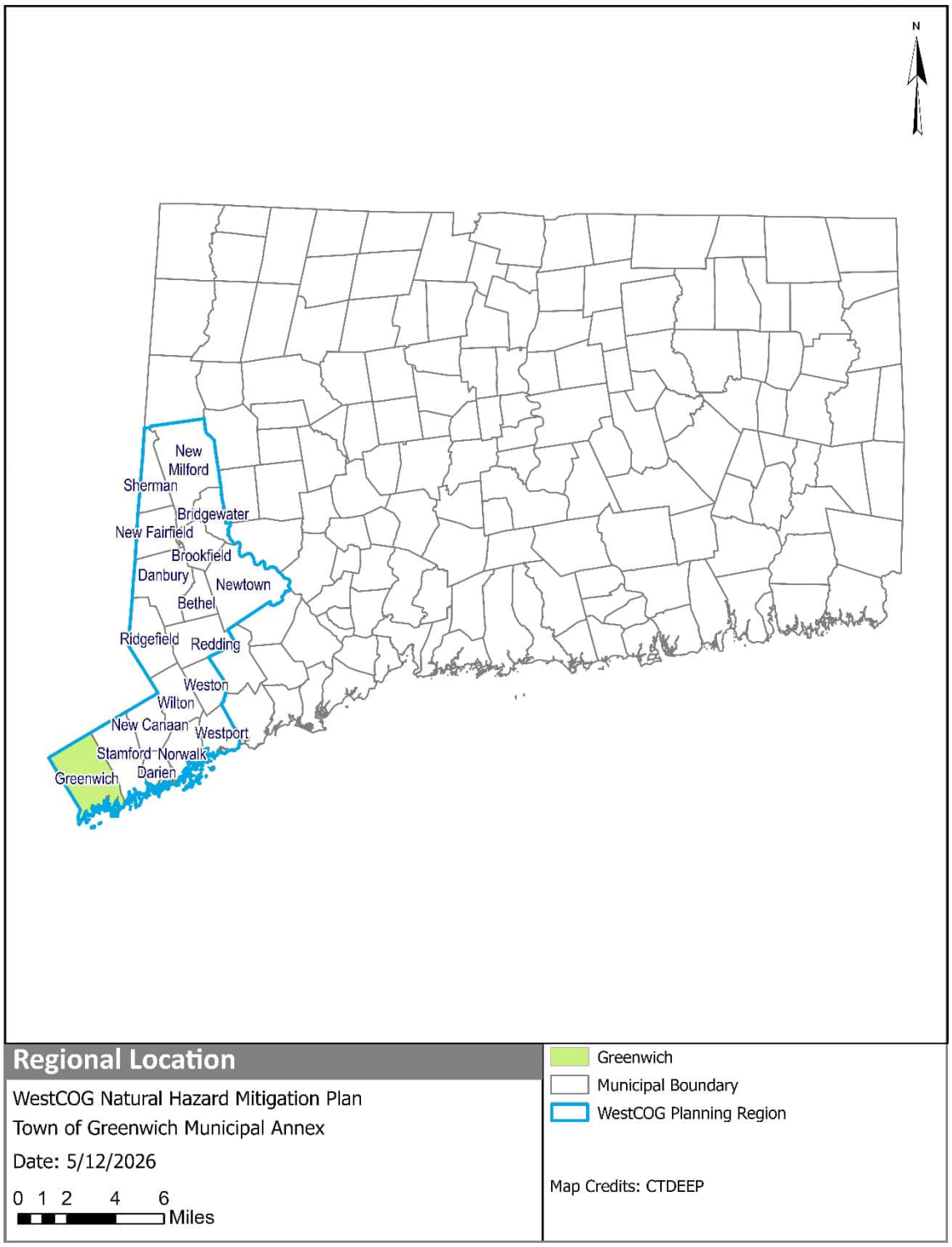

Figure 2-1: Location Map

2.1.2 Land Use

Greenwich is a large town with both highly developed areas, and suburban development. Most higher density development and commercial activity lies south of Route 1, with the highest concentration of commercial activity focused around the Greenwich Train Station. The areas to the north are primarily larger lot residential neighborhoods.

According to the city's 2019 Master Plan, Greenwich is over 48 square miles (50 miles including islands). The Town defines 95% of its land use as "residential" (including housing, open space, municipal uses, places of worship, nurseries, and schools) and 5% as "commercial" (including multi-family development and office, retail, and service uses). The Town has over 21,000 taxable real-estate parcels. The Town has over 25,500 housing units, 70% of which are single-family homes and 30% of which are multi-family buildings.

2.1.3 Climate and Climate Change

Current Conditions

Over the course of the year, the temperature in Greenwich typically varies from 24°F to 84°F and is rarely below 10°F or above 84°F. The warm season lasts from June 2 to September 16, with an average daily high temperature above 74°F. The hottest month of the year is July, with an average high of 83°F and a low of 68°F. The cold season lasts from December 3 to March 12, with an average daily high temperature below 47°F. The coldest month of the year is January, with an average low of 25°F and high of 38°F.

Precipitation falls throughout the year in Greenwich. The wetter season lasts from April 1 to August 22, with a greater than 29% chance of a given day being a wet day. The chance of a wet day peaks at 36% on May 30. The smallest chance of a wet day is 22% on January 29.

The most rain falls during the month of April with an average total accumulation of 3.7 inches. The least rain falls in February, with an average total accumulation of 2.1 inches.

The snowy period of the year lasts from November 20 to April 6, with a sliding 31-day liquid-equivalent snowfall of at least 1.0 inches. The most snow falls during February, with an average snowfall of 7.2 inches.

Climate data was sourced from Weather Spark based on analysis of the years 1980 to 2016.

Climate Change

Climate change projections for Connecticut were sourced from the 2019 Connecticut Physical Climate Science Assessment Report, developed by the University of Connecticut (UConn) Atmospheric Sciences Group and commissioned by the Connecticut Institute for Resilience and Climate Adaptation (CIRCA) with funding from the Department of Energy and Environmental Protection (DEEP). All projections are based on the IPCC high CO_2 emission scenario (RCP8.5).

Temperature

Annual temperatures have been increasing throughout Connecticut and are projected to continue to do so in the future. By mid-century, the average annual temperature is projected to increase by 5°F. Seasonal average temperatures are also expected to rise, with the greatest increase (6°F) experienced in summer (June to August). The number of nights over which the temperature remains above 68°F will quadruple from 10 days per year to more than 40 days, and the number of extremely hot days will increase from above 4 per year to 48 per year.

Precipitation

Rainfall data in "Technical Paper No. 40" by the U.S. Weather Bureau (now the National Weather Service) (Hershfield, 1961) dates from the years 1938 through 1958. According to these data, the 24-hour rainfall amount for a 50% annual-chance storm in Fairfield County is 3.3 inches.

The continued increase in precipitation only heightens the need for hazard mitigation planning as the occurrence of floods may change in accordance with the greater precipitation.

The Northeast Regional Climate Center (NRCC) has partnered with the Natural Resources Conservation Service (NRCS) to provide a consistent, current regional analysis of rainfall extremes (http://precip.eas.cornell.edu/). In 2020, this dataset listed the 24-hour rainfall amount for a 50% annual-chance storm in Greenwich as 3.45 inches.

The NOAA Atlas 14, released on September 30, 2015, puts the 24-hour rainfall amount for a 50% annual-chance annual storm in Greenwich at 3.58 inches.

These precipitation amounts and more details are summarized in Table 2-2, below.

Table 2-2: 24-Hour Rainfall Amounts by Annual-Chance Occurrence

Source	24-Hour Rainfall Amount (inches) by Annual-Chance Occurrence		
	50%	4%	1%
Technical Paper No. 40	3.3	5.7	7.2
NRCC	3.45	6.41	9.02
NOAA Atlas 14	3.58	6.57	8.34

Annual precipitation has been increasing statewide and is projected to continue to increase. By mid-century, annual precipitation is projected to increase by 8.5%, with the greatest increase (13.4%) occurring in the winter months. Extreme precipitation events are projected to increase in both frequency and magnitude. Based on this increase and the precipitation figures above, by 2050, Greenwich can expect the 24-hour rainfall amount for a 50% annual-chance storm to be around 3.7 to 3.9 inches or greater.

Impervious surfaces and infrastructure in town have increased over time as well, leading to increased runoff and peak discharge.

Despite overall increases in precipitation, drought risk is projected to rise, especially during summer, due to shifting precipitation patterns and rising potential evapotranspiration (plants taking up more water in hotter temperatures and longer growing seasons).

Sea Level Rise

WestCOG's coastal communities face an increasing threat related to rising sea levels. Per the Fifth National Climate Assessment, national rates of rise have increased from 0.05 inches (±0.01) per year between 1901 to 1900, to 0.13 inches (±0.02) per year between 1993 and 2022; these rates accelerated to 0.17 inches per year between 2013 and 2022. In an effort to establish a more local assessment and projection for Connecticut, the UConn CIRCA Sea Level Rise Report (2016) determined that the rate of rise for the NOAA Bridgeport tide station, the nearest station to WestCOG, was 4.0mm (±1.8) from 1976 to 2016. As of April 2026, the NOAA Bridgeport station reported a trend of 3.43mm per year from 1964 to 2025.

Connecticut legislature has identified a 2050 "planning threshold" of 0.5 meters (1.64 feet or nearly 20 inches) rise in sea levels, and a 2100 "caution threshold" of 1.0 meters (3.28 feet). This planning threshold

was a product of the sea level rise projections developed for the CIRCA Sea Level Rise Report. This planning threshold is required for certain types of planning and development projects in Connecticut.

2.1.4 Drainage Basins and Hydrology

Greenwich is divided among seven sub-regional watersheds as shown in Table 2-3. The majority of the sub-regional basins drain into Long Island Sound. All of the water that passes through Greenwich eventually empties into Long Island Sound.

Table 2-3: Sub-Regional Drainage Basins

Drainage Basin	Overall Sub-regional Area (sq. mi)	Area within Town (sq. mi)	Area within Town (acres)	Percent of Town
Blind Brook	11.45	0.48	305.22	1%
Byram River	18.67	8.37	5,356.33	18%
East Branch Byram River	11.29	10.07	6,445.57	21%
Greenwich Creek	8.89	8.89	5689.47	19%
Horseneck Brook	6.52	6.52	4173.27	14%
Mianus River	28.64	6.21	3975.29	13%
Southwest Shoreline	8.83	6.93	4433.38	15%
Total	n/a	47.47	30378.53	

Source: Connecticut Department of Energy & Environmental Protection GIS Data

The majority of Greenwich is encompassed within the Southwest Coast drainage basin. The Southwest Shoreline is considered its own basin, which also drains into the Sound. Of the seven subregional drainage basins and their respective streams, the East Branch of the Byram River is the largest, followed by Greenwich Creek in the southeastern part of town.

The East Branch of the Byram River is approximately 17 miles long and originates at Lake Mead in northwest Greenwich and runs south until it eventually joins the Byram River.

Greenwich Creek is approximately 20 miles long and originates between the Merritt Parkway and Londonderry Road. The basin drains 28.64 square miles directly into Long Island Sound in Greenwich, Connecticut.

2.2 Society, Culture, and Government

2.2.1 Population and Demographic Setting

According to the 2020 U.S. Census, Greenwich had a population of 63,518 with 1,332 persons per square mile. The Connecticut State Department of Public Health estimates Greenwich's 2026 population at 63,856. The American Community Survey (ACS) projects a population decline, with estimates putting the population at only 16,376 in 2030.

One important aspect of natural hazard mitigation planning is to identify a community's demographic trends in relation to natural hazards. The FEMA National Risk Index (NRI) (Version 1.20) explores and illustrates the relationships among social vulnerability, community resilience, expected annual losses from natural hazards, and risk from those hazards. The NRI has four ratings built into the dataset:

The social vulnerability incorporated into the NRI uses data from the United States Census Bureau's Community Resilience Estimate (CRE) dataset. This ten variable dataset represents the socioeconomic factors that are expected to contribute most to a community's ability to prepare for, withstand, and recover from a natural hazard event (Figure 2-2). The data used in the CRE from the 1-year American Community Survey and Population Estimates Program.

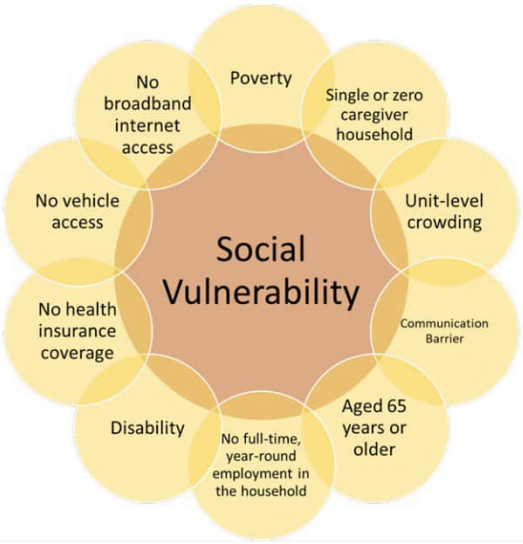

Figure 2-2 Community Resilience Estimates Vulnerability Components (Source: US Census Bureau)

The Town of Greenwich has neighborhoods in Town with very low social vulnerability, and others which have very high social vulnerability. Those that are moderate to high are the census tracts in the southern portion of Town along Interstate 95 and in the center of Town (Figure 2-3).

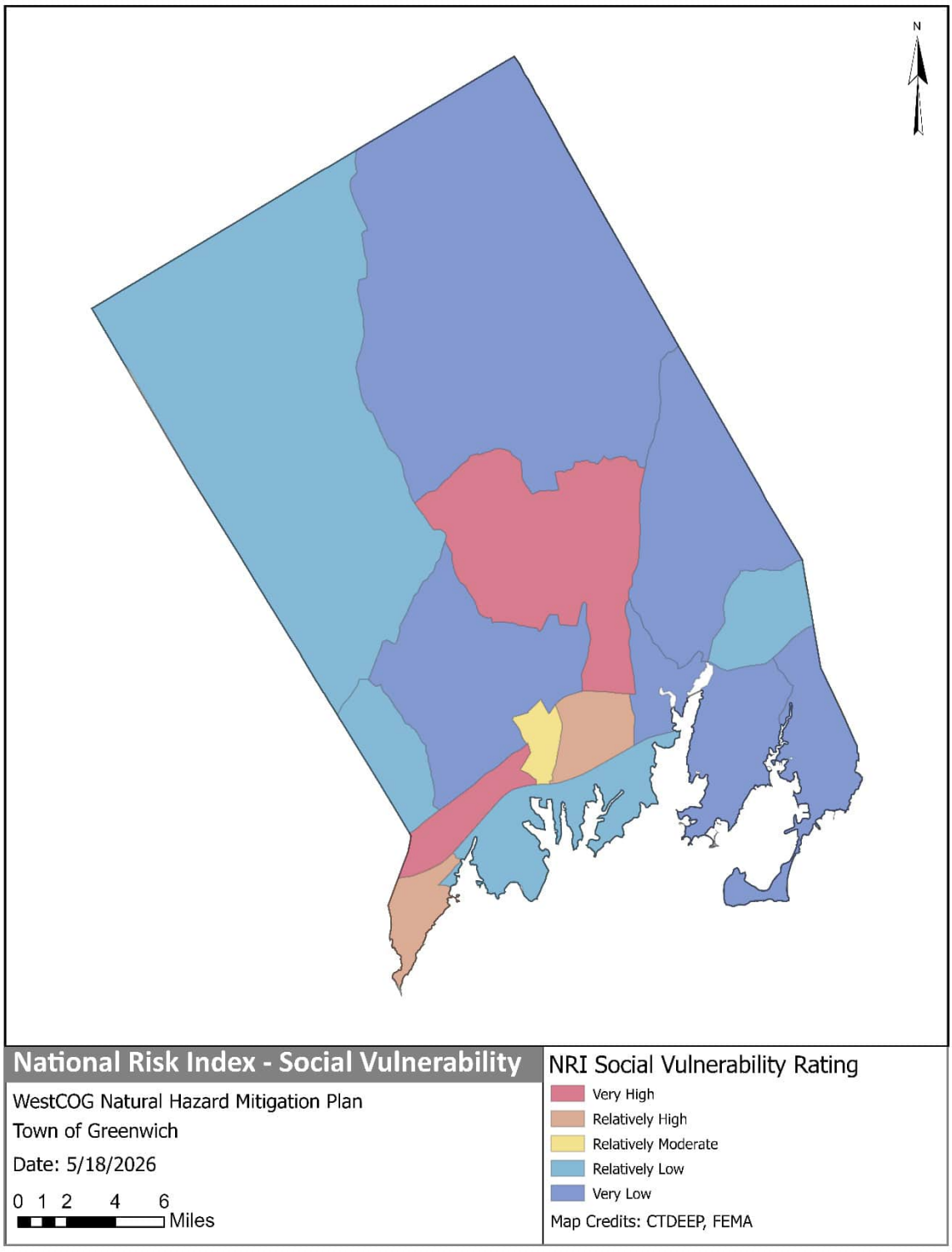

Figure 2-3 FEMA National Risk Index Social Vulnerability

2.2.2 Development Trends

During the 18th century, Greenwich was predominantly agricultural. The town grew after the construction of the New York and New Haven Railroad in 1848, linking it to New York City and eventually New Haven and beyond. In the late 19th century and early 20th century, the town had a resort industry with more than a dozen inns.

In 1938, the Merritt Parkway cut through the northern section of Greenwich, followed by I-95 to the south in 1957. New arrivals swelled the population of the town. The newcomers were typically employees of corporations leaving New York City for congenial suburban headquarters. While the beginning of the century saw the creation of great land estates, the post-World War II period witnessed their dissolution into smaller building lots to accommodate the new residents.

Economic activity continues to drive growth within the region, and the communities abutting Greenwich have grown rapidly in recent years. The population in Greenwich has remained relatively stable at around 60,000 for the last 50 years, though future growth is expected. There were 101 new residential permits issued in the 2017-2018 fiscal year.

The Greenwich POCD (2019) did not specifically reference locations within town for development or redevelopment, but it promotes the establishment of Village Districts for Banksville, Byram, Cos Cob, Chickahominy, Glenville, Old Greenwich, North Mianus, Pemberwick, and Riverside to foster individualized senses of place within a cohesive town-wide framework. The POCD encourages development of housing for seniors and affordable housing, preferably around transit. While transit-oriented development has not been specifically promoted, some potential exists. Town staff reports that some development does take place in low-lying areas that may be at risk from flooding; however, all new development within mapped FEMA flood zones meets or exceeds current FEMA standards. Overall, given the measured pace of development and redevelopment in Greenwich, community vulnerabilities are not increasing.

Since the last HMP update, development has been very strong in Greenwich. A number of major projects have been focused on the redevelopment of existing locations. The Town noted that there has been very little interest in developing in floodprone areas, and the very few projects that are in high risk areas are very cognizant of mitigation needs. Any new development that has occurred in Town has primarily been residential.

2.2.3 Governmental Structure

The First Selectman of Greenwich serves as the Chief Executive and Chief Administrative Officer of the Town. Along with presiding over Board of Selectmen meetings, the First Selectman serves as an ex-officio member of all Town Boards, Commissions, and Committees. The First Selectman acts as a link between Weston and State, regional, and federal agencies.

The Board of Selectmen Office is the focal point of the Greenwich town government. Along with its many responsibilities and duties, constituent contact with the public is an extremely important function of the day-to-day business of the Office. Every effort is made to keep open all lines of communication between the government and the people it serves.

The Selectmen's Office also supports and assists a variety of community interests, activities, and organizations through proclamations, statements, appearances, and active participation. This continues a long-established tradition of proactive involvement by the First Selectman and Selectmen in all aspects of town life.

Town departments provide municipal services and day-to-day administration. Many commissions and departments play a role in hazard mitigation, including the Planning and Zoning, Environmental Protection Board, the Building Official, the Land Use Bureau, the Fire Department, Emergency Management, and the Public Works Department.

2.2.4 Historic and Cultural Resources

Historic and cultural resources include sites, structures, and objects that are significant in history, architecture, archaeology, engineering, and culture. Protection of these resources grows economies and enhances community character and following a natural disaster they can help to reinforce neighborhood connections and reestablish a sense of community and normalcy. Consideration of these resources in this HMP is critical.

Historic preservation planning helps protect historic properties and cultural resources from demolition or alteration. **Hazard mitigation planning** helps protect life and property from damage caused by natural and manmade hazards. **Integrating** these two planning processes helps create safe and sustainable historic communities.
- Paraphrased from FEMA Report 386-6

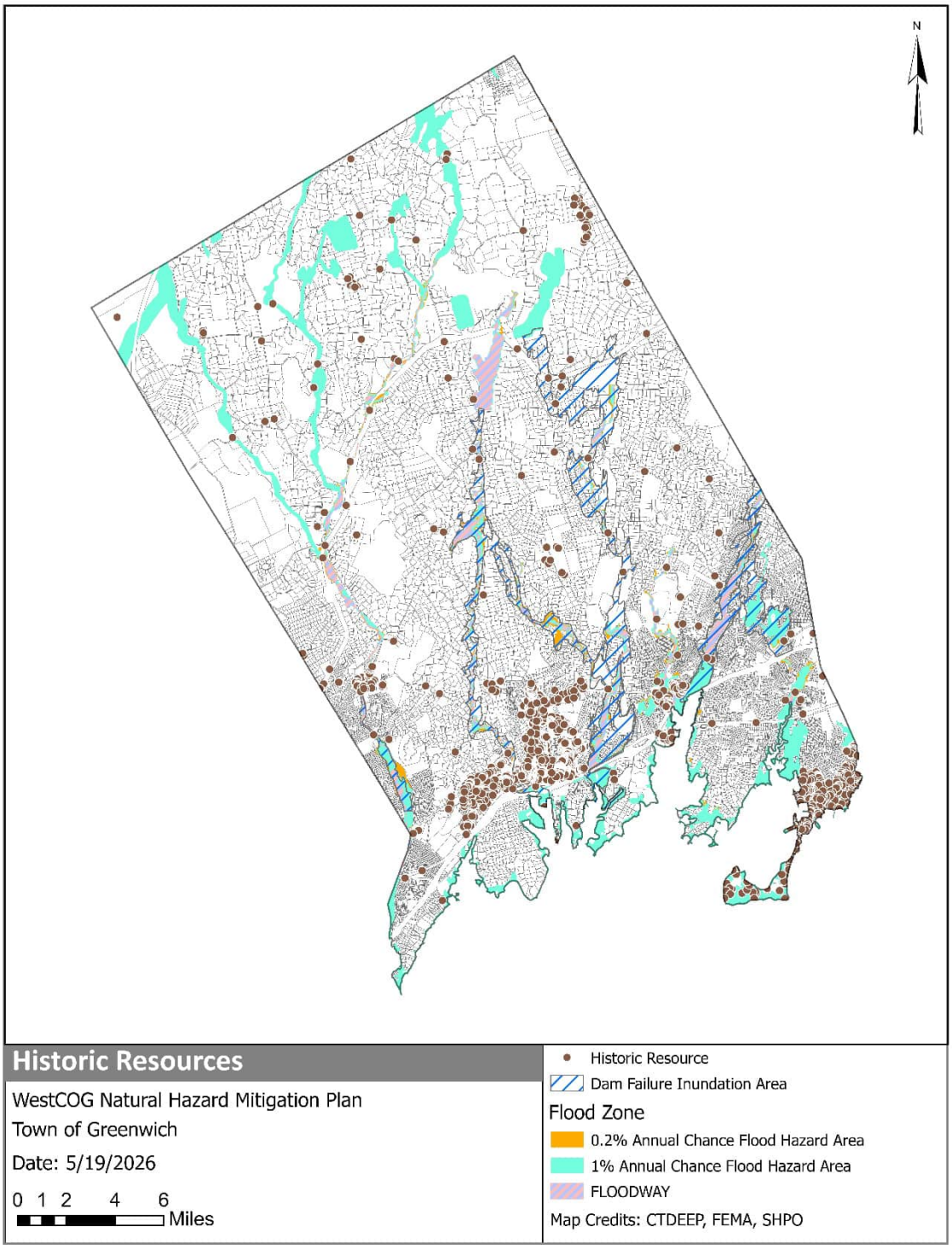

Figure 2-4 Historic Resources

Historic resources in Greenwich are concentrated within the John Street-Round Hill, Stanwich, Strickland Road, Stonybrook, Greenwich Municipal Center, Greenwich Avenue, Glenville, Nathaniel Witherell, Putnam Hill, River Road-Mead Avenue, and Fourth Ward Historic Districts. Greenwich historic resources also include the Indian Harbor Yacht Clubs, Mead Farm and French Farm, the Cos Cob Fire House, Ferris Farm Cemetery, Rosemary Hall, Montgomery Pinetum Greenhouse, the Cos Cob Power Station, and the Great Captain Island Lighthouse. Overall, there are over 600 historic sites, structures, and objects in Greenwich. See Figure 2-5for a map of historic resources in the community.

Analysis of the State Historic Preservation Office (SHPO) database of historic resources shows that some of these resources are exposed to natural hazards, as shown in Figure 2-5.

Table 2-4: Number of Historic Assets (by parcel) Exposed to Different Hazards in Greenwich

Hazard	Count	Value
Dam Failure	148	$601,511,540
Earthquake	1,368	$4,216,623,320
Flooding		
1% Annual	276	$1,291,662,820
0.2% Annual	182	$929,552,470
VE Zone	62	$553,361,480
Storm Surge		
Category 1	180	$768,612,180
Category 2	243	$898,100,420
Category 3	334	$1,032,700,760
Category 4	365	$1,086,153,250
Hurricane/Tropical Storm	1,368	$4,216,623,320
Sea Level Rise		
Thunderstorm	1,368	$4,216,623,320
Tornado	1,368	$4,216,623,320
Winter Storm	1,368	$4,216,623,320
Wildfire		
Intermix	24	$97,761,370
Interface	5	$18,707,780

Historic buildings and structures may be particularly susceptible to natural hazards because they were built prior to the establishment of more recent construction standards. Additionally, some of the structural integrity of these resources may have been degraded over the decades or centuries since their original construction. Structural retrofits and hazard mitigation methods may be challenging or restricted in cases where alteration of a resource will also diminish its cultural or historical aesthetic and value. Finally, miscommunications or lack of knowledge may lead to historic resources being damaged during the disaster recovery process.

Steps to incorporate historical and cultural preservation into hazard mitigation planning include:

- Inventory and survey historic and cultural resources
- Implement appropriate mitigation measures for those resources
- Take steps to move portable resources, such as artwork or documents, to safe locations prior to the occurrence of a hazard, if possible
- Consider these resources in emergency operations plans to prevent accidental damages during recovery efforts

Specific actions to mitigate natural hazard risks to historic resources were identified in the 2021 plan and are no longer current actions for the 2026-2031 update.

2.3 Infrastructure

2.3.1 Transportation

Major transportation routes in Greenwich include Interstate 95 and the Merritt Parkway (Route 15), which run north to south through the town. The Parkway runs through the central part of the town, while I-95 runs through the southern region of Greenwich.

In addition, the Metro North/Amtrak rail lines also run through the town, along Interstate 95. There are three stations, one in the downtown, Cos Cob, and Riverside. The CTtransit bus system is also active in town with several stops throughout the community.

2.3.2 Utilities

Aquarion Water Company owns and operates public water systems in Greenwich. This system provides water for the southern half of the city, with some northeastern service lines along Route 137 and west along Mill Road. The Brunswick Middle School in the northwest part of the Town is served by its own community water system, and a number of transient non-community public water systems exist throughout the northern part of the Town. The remaining properties rely on a private well for drinking water.

Residents and businesses use oil, propane, or natural gas for heat. Natural gas is provided to the southern region of town by Eversource.

The Wastewater Division Manager, under the direction of the Commissioner of Public Works, has charge of the construction, maintenance, and repair of all sewers and sewerage systems, including the Grass Island Waste Water Treatment Plant and 28 pumping stations.

According to geoISP (geoISP.com), access to Broadband Internet is available to most residents in Greenwich. There are 4 DSL Providers (MegaPath, Verizon, Broadview Networks, XO Communications), 1 Cable Internet provider (CSC Holdings), and 5 Fiber Internet providers (CSC Holdings, Verizon, Fibertech Networks LLC, Level(3) Communications, and Connecticut Education Network). There are also 4 Mobile Broadband (cellular) providers with service available in Greenwich.

2.4 Planning and Regulatory Capabilities

Greenwich has in place a number of community planning mechanisms, regulations, and policies that serve to mitigate natural hazards by limiting development in hazardous areas, requiring buildings to be constructed to certain standards, or otherwise directing development and construction toward increased resilience. These are summarized below.

2.4.1 Review of Existing Local Plans

Greenwich has a number of plans that are relevant to hazard mitigation. These are noted here:

- **Pla**n of Conservation and Development (POCD): Greenwich's most recent POCD was adopted in 2019. It addresses natural hazard concerns within the community and includes strategies to mitigate risks from those hazards as the community continues to develop.

- **Stormwater Management:** Greenwich maintains a Stormwater Management Plan. This plan complies with the requirements of the US EPA 2017 updated General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4 General Permit). The Town also utilizes the Town of Greenwich Drainage Manual: Low Impact Development and Stormwater Management, developed in 2012 (amended in February 2021) to guide stormwater planning.
- **Capital Improvement Plan (CIP):** Greenwich maintains a CIP that is updated annually and lays out capital investments for a five-year period. The CIP often includes road, drainage, and other infrastructure improvement projects relevant to hazard mitigation.
- **Economic Development Plan:** Greenwich is included within the Western Connecticut Comprehensive Economic Development Strategy (CEDS) of 2023, developed by WestCOG. The plan aligns with the COG's other efforts to promote climate sustainability and resiliency in the region. The Town also has a local economic development plan called the Think Greenwich Campaign.
- **Emergency Operations Plan (EOP):** Greenwich's EOP is reviewed annually and updated as needed. Dam failure Emergency Action Plans (EAPs) for dams with failure inundation zones that may impact Greenwich, and for which EAPs are available, are on file locally.
- **Watershed Management Plan:** Watershed Management Plans have been developed for the Mianus River Watershed and the Byram River Watershed. The Mianus River Watershed Based Plan was developed for the South Western Regional Planning Agency (SWRPA) by AKRF, Inc. in 2012, while the Byram River Watershed Management Plan was developed for the Southwest Conservation District in 2011 by Steven Danzer Ph.D. & Associates, LLC, with support from the Town of Greenwich and the Byram Watershed Coalition. These plans are focused on water quality but can help the community mitigate inland flood risks by incorporating watershed management best practices into its planning efforts.
- **Open Space:** Greenwich's most recent Open Space Plan was developed in 2022 and has been incorporated into the community's POCD as an addendum.

2.4.2 Review of Regulatory Structures

Greenwich regulates development through a number of regulations, codes, and ordinances. These are summarized below. More detailed information about how these regulations relate to specific natural hazards is described in Section 3.

- **Building Code:** Greenwich enforces the Connecticut State Building Code locally.
- **Zoning Regulations:** Most recently updated in May 2026.
- **Inland Wetlands and Watercourses Regulations:** Most recently updated in October 2015.
- **Subdivision Regulations:** Most recently updated in May 2005. Include provisions promoting control of stormwater runoff, installation of firefighting water sources, and burial of utilities.

2.5 Emergency Services, Critical Facilities, Sheltering, and Evacuation

The town considers its police, fire, and governmental facilities to be critical since these are needed to ensure that emergencies are addressed while day-to-day management of Greenwich continues. The city also considers various facilities housing higher-risk individuals (such as elderly individuals or children) and large populations to be critical facilities. Table 2-5 and Figure 2-5 identifies all of these critical facilities. The Town has identified the Western Greenwich Civic Center, Eastern Middle School, and Greenwich High School as shelters; the Harvest Time Church, a privately owned facility, can also serve as a shelter in addition to a warming and cooling center. The Public Safety Complex and Library would also serve as warming and cooling centers during an extreme temperature event.

Table 2-5: Critical Facilities

Facility	Address or Location	Type	Emergency Power	Shelter	In 1% Floodplain
Town Hall	101 Field Point Rd	Town Hall	✓		
Western Greenwich Civic Center	449 Pemberwick Rd	Shelter	✓	✓	
Eastern Middle School	51 Hendrie Ave	Shelter	✓	✓	
Binney Park Shed	0 Sound Beach Ave	Public Works			
Bldg Maint/Construction	1 Newman St	Public Works			✓
Byram Hwy Shed	*[not mapped]*	Public Works			✓
Byram Park Dockmaster	0 Byram Shore Rd	Public Works			
Cos Cob Dockmaster	0 Strickland Rd	Public Works			
Indian Field Highway Shed and Fleet Maintenance (also known as Cos Cob / Boro Highway Shed)	100 Indian Field Rd	Public Works	✓		
Grass Island Waste Treatment Plant	0 Shore Rd	Public Works			✓
Greenwich Point - Dockmaster	0 Tods Driftway	Public Works			✓
Havemeyer (Shed)	381 North St	Public Works			
North Field Maintenance, Tree Crews; Animal Shelter	393 North St	Public Works	✓	✓	
Old Greenwich Hwy Shed	*[not mapped]*	Public Works			✓
Holly Hill Transfer Station	4 Holly Hill Lane	Public Works	✓		
Greenwich Police Department	11 Bruce Place	Police / EOC	✓		
Greenwich Police Marine Division	100 Arch St	Police			✓
Greenwich Hospital	5 Perryridge Rd	Hospital	✓		
Central Fire Station (Station 1 – Headquarters)	15 Havemeyer Place	Fire	✓		
Cos Cob Fire Station (Station 2)	200 East Putnam Ave	Fire	✓		
Byram Fire Station (Station 3)	264 Delavan Ave	Fire	*		
Glenville Fire Station (Station 4)	266 Glenville Rd	Fire	✓		
Sound Beach Fire Station (Station 5)	207 Sound Beach Ave	Fire	✓		✓
Round Hill Fire Station (Station 6)	166 West Old Mill Rd	Fire	✓		
North Street Fire Station (Station 8)	669 North St	Fire	✓		
Horseneck Fire Station	1 Horseneck Lane	Fire	✓		
Pemberwick Center	131 Pemberwick Rd	Community Center			
Senior Center	299 Greenwich Ave	Community Center			
Fairview Healthcare Center of Greenwich	1188 King St	Care Facility			
Family Centers, Inc.	20 Bridge St	Care Facility			
The Greens At Greenwich	1155 King St	Care Facility			
Greenwich Laurelton Nursing & Conv Home	1188 King St	Care Facility			
Greenwich Woods Health Care Center	1165 King St	Care Facility			
Greenwich Woods Rehabilitation	1165 King St	Care Facility			
Greenwich Youth Options	55 Old Field Point Rd	Care Facility			
Merry Go Round Alsa	1/2 Bolling Place	Care Facility			
Nathaniel Witherell	70 Parsonage Rd	Care Facility	✓		
Parsonage Cottage Senior Residence	88 Parsonage Rd	Care Facility			

Pathways, Inc	175 Milbank Ave	Care Facility			
Greenfield EMS Medic 4	143 Lower Cross Rd	Emergency	✓		
Greenwich High School	10 Hillside Road	Shelter	✓	✓	
Harvest Time Church	1338 King Street	Shelter/Private	**	✓	

* Generator will be installed upon completion of ongoing renovations

** Half of this facility is served by backup power

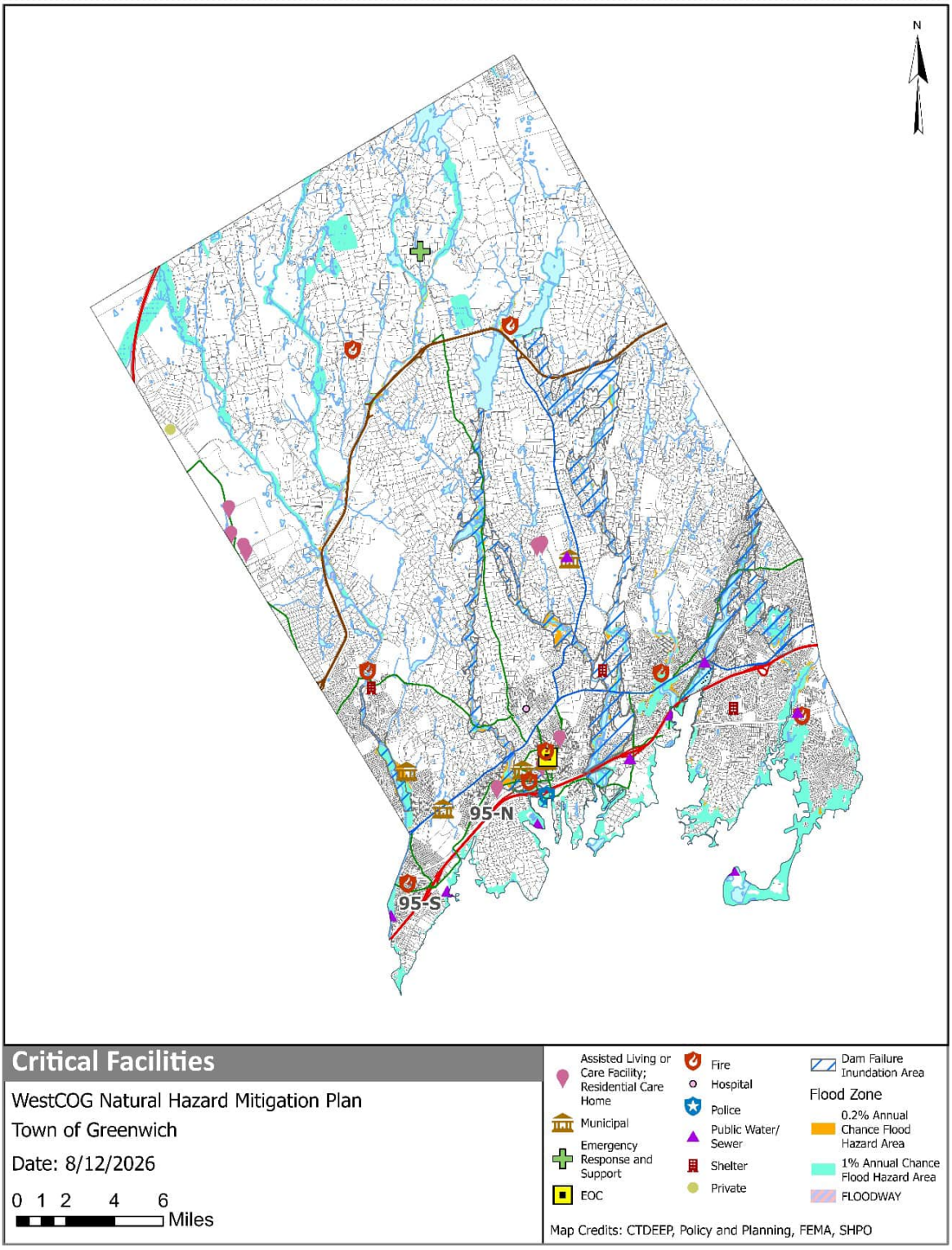

Figure 2-5: Critical Facilities

The Greenwich Town Hall does not have full backup power, but certain systems within the facility are tied-in to an emergency generator. The Health Department at Town Hall has its own backup power source to maintain refrigeration for medicines.

Emergency Shelters

The Western Greenwich Civic Center, Eastern Middle School, and Greenwich High School are the Town's emergency shelters. The Town Hall can also serve as a backup shelter, though its capacity is limited in part by its incomplete backup power capabilities. The North Field Maintenance facility on North Street serves as an emergency shelter for pets. The libraries in Town and the public safety complex would serve as warming and cooling centers during extreme temperature events.

Emergency Response

The Greenwich Police Department on Bruce Place serves as the Town's Emergency Operations Center. Greenwich is also served by eight fire stations, two police stations, and a number of Ambulance centers (not included on the critical facilities list). Byram Fire Station (Station 3) was closed and undergoing renovations at the time of plan development; when the renovations are completed, the facility will have backup power.

Emergency Communication Capabilities

Greenwich has improved its internal emergency communication systems in recent years, minimizing the risk of disruption and delays during an emergency. The Town maintains a public emergency notification system, regularly reviews its capabilities, and makes upgrades as necessary. The Town participates in the statewide CTAlert system.

Schools

Greenwich has a large number of public and private schools. Eastern Middle School and Greenwich High School serve as public emergency shelters; the other schools are not listed as critical facilities but are still considered by the Town to be important community sites worth special care and attention. Public schools are managed somewhat independently by the Board of Education.

Table 2-6 Town of Greenwich Schools

School	Address
Eastern Middle School	51 Hendrie Avenue
Brunswick School	100 Maher Avenue
Central Middle School	9 Indian Rock Ln.
Connecticut Institute of Art	581 West Putnam Avenue
Convent of The Sacred Heart	1177 King Street
Cos Cob School	300 East Putnam Ave.
Glenville School	33 Riversville Rd.
Greenwich Academy	200 North Maple Ave
Greenwich Catholic School	471 North Street
Greenwich Country Day School	401 Old Church Rd
Greenwich High School	10 Hillside Rd.
Greenwich Kokusai Gakuen	521 E Putnam Ave
Hamilton Avenue School	184 Hamilton Ave.
International School at Dundee	55 Florence Rd.
Julian Curtiss School	180 East Elm St.
New Lebanon School	25 Mead Ave.
North Mianus School	309 Palmer Hill Rd.
North Street School	381 North St.

School	Address
Old Greenwich School	825 Sound Beach Ave.
Parkway School	141 Lower Cross Rd.
Riverside School	90 Hendrie Ave.
The Greenwich Japanese School	15 Ridgeway
The Stanwich School	257 Stanwich Rd
Westchester Fairfield Hebrew Aca.	300 East Putnam Ave
Western Middle School	1 Western Junior Hwy.
Whitby School	969 Lake Avenue

3.0 HAZARD ASSESSMENT

3.1 FLOODING (COASTAL, INLAND, AND ICE JAMS)

3.1.1 Setting

The potential for flooding exists across Greenwich, with the majority of major flooding occurring along established riverine and coastal SFHAs. The areas impacted by river overflow are generally limited to river corridors and floodplains. Indirect flooding that occurs outside floodplains and localized nuisance flooding along tributaries can also be a concern. This type of flooding occurs particularly along roadways as a result of inadequate drainage and other factors. Coastal flooding can occur during a severe storm event by way of storm surge, and can also occur as nuisance flooding, which is experienced during extremely high tide events. The frequency of flooding in Greenwich is considered likely for any given year, with flood damage potentially having significant effects during extreme events.

A regulatory floodplain with AE designation has been mapped along Horseneck Brook. There are also regulatory floodplain areas with a VE or an AE designation along the Long Island Sound shoreline. The Areas identified as providing flood storage are identified with A Zone designations, meaning they are regulated as floodplain, but flood elevations have not been established. Rockwood Lake, Converse Lake, Converse Pond Brook, and the Byram River distribute these traits. Floodplain and floodway designations have also been established along the rivers with AE designations. Refer to Figure 2-5 for the areas of Greenwich susceptible to flooding based on FEMA flood zones.

In general, potential flooding problems in Greenwich are concentrated along the multiple rivers and the coastline.

Coastal flood events, especially storm surge during hurricanes and tropical storms, can cause some of the most severe damage with high economic impacts to the town and residential properties. Figure 3-1 depicts storm surge inundation zones from hurricanes and tropical storms.

3.1.2 Capabilities

The Town primarily attempts to mitigate future flood damage and flood hazards by restricting building activities in floodprone areas. This process is carried out through both the Planning and Zoning process. All watercourses are to be encroached minimally or not at all to maintain the existing flood-carrying capacity. These regulations rely primarily on the FEMA-defined 1% annual chance flood elevations to determine flood areas.

Floodplain Management and NFIP

The town has consistently participated in the NFIP since October 18, 1974, and intends to continue participation in the NFIP. SFHAs in Greenwich are delineated on a Flood Insurance Rate Map (FIRM) and Flood Insurance Study (FIS). The FIS and FIRMs for the town were most recently revised in 2013.

Greenwich has updated its zoning regulations over time to increase flood zone requirements. Changes have included:

- Stricter regulations encourage people to elevate homes
- Substantial Improvement definition calculates improvement cumulatively since the property became out-of-compliance with regulation updates (as far back as 1986)

Greenwich's floodplain management efforts far exceed those of other communities with regard to bringing homes into compliance.

Ordinances, Regulations, and Plans

Regulations, codes, and ordinances that apply to flood hazard mitigation in conjunction with and in addition to NFIP regulations are listed below, with examples of sections and content with specific relevance to flood mitigation.

Zoning Regulations:

- Section 6-139: Flood Hazard Overlay - intended to add additional safeguards to those areas of Greenwich subject to riverine and coastal flooding as shown on the Flood Insurance Rate Maps.

Inland Wetland and Watercourse Regulations:

- Section 4: To carry out the purposes of this section, any person proposing to carry out a permitted or non-regulated operation and use of a wetland or watercourse that may disturb the natural and indigenous character of the wetland or watercourse shall, prior to commencement of such operation and use, notify the Agency on a form provided by it, and provide the Agency with sufficient information to enable it to properly determine that the proposed operation and use is a permitted or non-regulated use of the wetland or watercourse. The Agency shall rule that the proposed operation and use, or a portion of it, is a permitted or a non-regulated operation and use, or that a permit is required. Such a ruling shall be in writing, shall state the factual bases for the ruling, and shall be made no later than the next regularly scheduled meeting of the Agency following the meeting at which the request was received. The Agency encourages the use of best management practices by those who conduct permitted and non-regulated operations and uses in order to minimize adverse impacts on wetlands and watercourses.

Subdivision Regulations:

- Subdivision proposals must be consistent with the need to minimize flood damage.
- Proposals must have public utilities and facilities such as sewer, gas, electrical, and water systems located and constructed to minimize flood damage.
- Proposals must provide adequate drainage to reduce exposure to flood hazards
- Base flood elevation data shall be provided for all subdivision proposals greater than five acres or fifty lots in Zone A

Drainage and Street Flooding

Residents can submit flooding and drainage complaints by phone, email, or a form on the town webpage. Complaints are sent or forwarded to the Engineering Department. The department compiles a list of complaint locations and tracks locations of concern over time. Complaints are often minor, requiring only minor maintenance or cleanings to address. The Town has, however, been receiving a larger volume of more significant complaints over time.

Actions Completed and New Capabilities

In May 2026, the Town amended zoning regulations, which further encourage proactive preservation of historic resources; this may translate to increased mitigation.

The Town has been working on conceptual designs to increase wastewater treatment facility resilience. The headworks project at the facility has also made progress in recent years.

3.1.3 The Greenwich Fire Department completed urban flooding response training in 2025. Vulnerabilities and Risk Assessment

Repetitive Loss Properties

There are 117 repetitive loss properties (RLPs) located in the Town of Greenwich; 109 are residential, and 8 are non-residential. Most are along the coast of the Long Island Sound.

Critical Facilities

There are nine facilities located within the 1% annual chance flood zones. Of these facilities, the Sound Beach Fire Station is critical to emergency response during a hazard event and has been identified as an emergency shelter also critical during a natural hazard event.

The at-risk facilities include:

- Sound Beach Fire Department, Station 5
- Greenwich Police Marine Division
- Cos Cob School
- Building Maintenance/ Construction on Putnam Ave
- Grass Island Maintenance Shed
- Byram Highway Shed
- Old Greenwich Highway Shed
- Cos Cob Dick Master
- Green Point Dock Master

At-Risk Areas

Figure 2-5 depicts FEMA flood zones in Greenwich. Figure 3-1 shows hurricane storm surge inundation zones.

Flooding is a concern at the following locations:

Sound Beach Avenue in Old Greenwich

- Town staff have observed road flooding more frequently in recent years. Coastal flooding and poor drainage flooding both impact the area.
- Flooding impacts emergency access. The town has explored alternative routes for emergency access, but flooding also floods those alternative routes.

Shore Road, near Greenwich Point

- Town reports “nuisance” flooding

Byram River between Route 1 and Comly Avenue

- Flooding is a problem in the Pemberwick Neighborhood
- The town has been working on a study with CT DOT since 2012 for this area. A draft Feasibility Study for proposed improvements to the area is nearing completion. The study addresses replacing bridges on Route 1 at the state line, so New York DOT is also involved.

Greenwich Creek at East Putnam Avenue and Hillside Road, near Greenwich High School

- Flooding has been a problem here in the past.
- CT DOT will be redoing the bridge at East Putnam Avenue and Hillside Rd in 2020.

Town staff have also noted a concern with regard to privately-owned and maintained roads; the associations responsible for these roads sometimes do not perform the maintenance or upgrades necessary to ensure adequate drainage and flood control. This can result in blocked or washed-out roads and a need for municipal intervention to perform emergency stabilization or resident rescues.

The Town recently experienced flood challenges as a result of heavy rain from Hurricane Ida in 2021. There were several road washouts, which caused minor impacts. The town is reportedly also experiencing

more “flashy flood” impacts, as those experienced in the August 2024 heavy rain event. This has resulted in residents throughout town questioning what the town is doing to mitigate heavy precipitation events.

Brothers Brook & Mianus River Pond

Southern reaches of these waterbodies have large, delineated floodplains, and therefore may be considered to be the most at-risk areas along the river. Within this southern half, there are 18 RLPs, indicating past flood challenges. There are road and rail crossings over this area, which may present challenges in regard to infrastructural capacity during a heavy event.

Long Island Sound Coastline

The shoreline of Greenwich is primarily residential, with pockets of commercial activity. The entire coastline, specifically Old Greenwich Point Park, Old Greenwich, and Cos Cob, are all identified to have low lying, coastal stretches which may be at risk of both nuisance and storm surge flooding.

Other Challenges

Town staff noted that many property owners don’t have flood insurance, or don’t file claims following damage, so information is missing about damages and risk. Data on damages and costs of flooding reflect less damage and lower costs than what is actually happening.

3.2 DAM FAILURE

3.2.1 Setting

Dam failures can be triggered suddenly, with little or no warning, and often from other natural disasters such as floods and earthquakes. Dam failures often occur during flooding when the dam breaks under the additional force of floodwaters. In addition, a dam failure can cause a chain reaction where the sudden release of floodwaters causes the next dam downstream to fail. While flooding from a dam failure generally has a moderate geographic extent, the effects are potentially catastrophic. Fortunately, a major dam failure is considered very unlikely in any given year.

3.2.2 Capabilities

Dam failure inundation areas are included in the CT Alert emergency notification system contact database. The Town has the Emergency Action Plan (EAP) for the Aquarion owned dams on file in the event of a potential failure. The high hazard dams include the Rockwood Lake Dam, the Pemberwick Dam, and the American Can Company Dam.

Most dams in Town are privately owned, and state efforts to ensure dam maintenance address the needs of those structures.

3.2.3 Vulnerabilities and Risk Assessment

As of March 2026, there were 108 DEEP-inventoried dams within the Town of Greenwich. These dams are shown in Figure 2-5. Seven of these dams are a Class C, or high hazard dam, with an additional two Class C dikes and one Class C levee. Four others are Class B, or significant hazard dams. As shown in Table 3-1, the high hazard dams located in the town pose a risk to Greenwich.

Table 3-1: High Hazard Dams with Potential to Affect the Town of Greenwich

#	Name	Location	Class	Owner
5753	Mianus Filter Plant Dam	Mianus Mill Pond	C	Aquarion Water Company of CT
5701	Putnam Reservoir Dam	Putnam Lake	C	Aquarion Water Company of CT
5703	Pemberwick Dam	Pemberwick Pond	C	Fairfield Associates Conservation; Greenwich Hills Association, Inc.
5704	American Felt Dam	American Felt Pond	C	1881 Limited Liability Company
5707	Converse Lake Dam	Converse Lake	C	Lake Association
5726	Rockwood Lake Dam	Rockwood Lake Reservoir	C	Aquarion Water Company of CT
5728	American Can Company Dam	North Lake	C	Bush & Greenwich Inc.
57103	Rockwood Lake North Street Dike	Rockwood Lake Reservoir	C	Aquarion Water Company of CT
57105	Pemberwick Levee	Pemberwick Pond	C	
57108	Converse Lake Dike	Converse Lake	C	Lake Association
5705	Wilcox Pond Dam	Byram River	BB	Private
5706	Ville Pond Dam	Otter Pond	BB	Private
5708	Angulus Pond Dm	Byram River	BB	Upper Cross Road Private Park
5709	Dublin Hill Dam	Brothers Brook Tributary	BB	Private
5701	Wooley Pond Dam	Wooley Pond	BB	Town of Greenwich
5711	East Pond Dam Greenwich Creek	Seabury	BB	The Orchards Property Owners Association
5712	Valley Pond Dam	Converse Pond Brook Tributary	BB	Private
5713	Lake Mead Dam	Converse Pond Brook Tributary	BB	National Audubon Society
5714	Cross Pond Dam	East Branch Byram River	BB	Upper Cross Road Private Park
5715	Street Pond Dam	Horseneck Brook	BB	Private
5716	East Pond Dam	East Pond	BB	Town of Greenwich
5717	Ridgeview Pond Dam	Converse Pond Brook	BB	Private
5718	Dingletown Road Dam	Greenwich Creek	BB	Private
5720	Coat Pond Dam	Coat Pond	BB	Private
5722	Carringtons Pond Dam	Carringtons Pond	BB	Private
5723	Indian Spring Pond Dam	Indian Spring Pond	BB	Indian Spring Land Company
5725	Babcock Pond Dam	Horseneck Brook	BB	Private
5727	F W Perry Dam	Perry Dam	BB	Private
5745	Wilshire Pond Dam	Wilshire Pond	BB	Private
5747	Topping Road Dam	Topping Pond	BB	Private
5751	Alder Pond Dam	Alden Pond	BB	Private
5754	Blind Pond Dam	Blind Pond	BB	Unknown
5762	Spahn Pond Dam	Spahn Pond	BB	Private
5763	West Fork Pond Dam	West Fork Pond	BB	Private
5786	Upper Pond Dam	Greenwich Creek	BB	Private
5798	Hall Pond Dam	Greenwich Creek	BB	Private
57100	Brunswick School Dam		BB	Brunswick School
5707	Converse Lake Dam	Converse Lake	B	Converse Lake Association
5719	Frye Lake Dam	Frye Lake	B	Frye Lake Association
5724	Mianus River Dam	Mianus Pond	B	Town of Greenwich

Failure of a high hazard dam can affect properties downstream of the impoundment both in and outside of town, with potential large inundation zones traveling along each respective waterway.

The Mianus Filter Dam is 130 feet in length, with a maximum height of 28 feet. It is a masonry structure and impounds roughly 118 acres at normal water levels with a contributing watershed of 0.80 square miles. The primary purpose of the dam is for public water supply containment.

The Putnam Reservoir Dam, also owned by Aquarion Water Company, is a 640-foot-long and 35-foot-high earth and concrete dam. This dam impounds roughly 1,775 acres, with a contributing watershed of 2.1 square miles.

The Pemberwick Dam is 115 feet in length, with a maximum height of 44 feet. It is a concrete structure and impounds roughly 25 acres at normal water levels with a contributing watershed of 25.80 square miles.

The American Felt Dam is a 208-foot-long and 33.3-foot-high masonry dam. This dam impounds roughly 36 acres and has a contributing watershed of 25.4 square miles.

The Rockwood Lake Dam, also owned by Aquarion Water Company, is 1,200 feet long and has a maximum height of 36 feet. It is an earth and concrete structure that impounds roughly 1,534 acres at normal water levels with a contributing watershed of 25.80 square miles. The primary purpose of the dam is for public water supply containment.

The American Can Company Dam is a 543-foot-long and 53-foot-high masonry dam. This dam impounds roughly 18 acres and has a contributing watershed of 0.02 square miles. The primary purpose of the dam is fire protection.

The Converse Lake Dam is a 175-foot-long and 30-foot-high earth and masonry dam. This dam impounds roughly 102 acres and has a contributing watershed of 1.1 square miles.

3.3 HURRICANES AND TROPICAL STORMS

3.3.1 Setting

A hurricane striking Greenwich is considered a possible event each year and could cause critical damage to the town and its infrastructure. Wind damage from a hurricane can occur anywhere in town, and heavy rainfall may cause riverine and urban flooding, and storm surge can occur anywhere along the coastline.

3.3.2 Capabilities

Wind loading requirements are addressed through the state building code. The Connecticut State Building Code was updated and effective as of October 1, 2022. The code specifies the design wind speed for construction in all Connecticut municipalities. Effective 2022, the design wind speed for Greenwich is 110 miles per hour for a Category 1, 120 miles per hour for a Category 2, 130 miles per hour for a Category 3, and 135 miles per hour for a Category 4 or greater. Greenwich has adopted the Connecticut Building Code as its building code.

The Parks and Recreation department is responsible for tree maintenance. Additionally, Eversource has been performing a significant amount of tree maintenance along power lines, and the CT DOT maintains trees along state roads. The town ran an “at-risk trees program” that was funded for a number of years, and which addressed a number of at-risk trees throughout the Town’s right-of-way. During the nor’easter

in March of 2018, many trees came down, and so there are fewer problem trees left standing. Overall, Greenwich considers its tree maintenance capabilities robust.

Actions Completed and New Capabilities

Coordination with the Town's electric utility, Eversource, continues to improve since the previous HMP. The State of Connecticut has updated its State Building Code; new construction that adheres to this new code is expected to be more resilient to hurricane winds.

3.3.3 Vulnerabilities and Risk Assessment

Most of the damage to the town from historical tropical cyclones has been due to the effects of flooding and wind. Areas of known and potential flooding problems are discussed in Section 3.1

Most of the housing stock in town predates recent building code changes and may therefore be susceptible to roof and window damage from high winds. The primary risk associated with tropical storm winds is the downing of trees and limbs, leading to power outages and blocked roads.

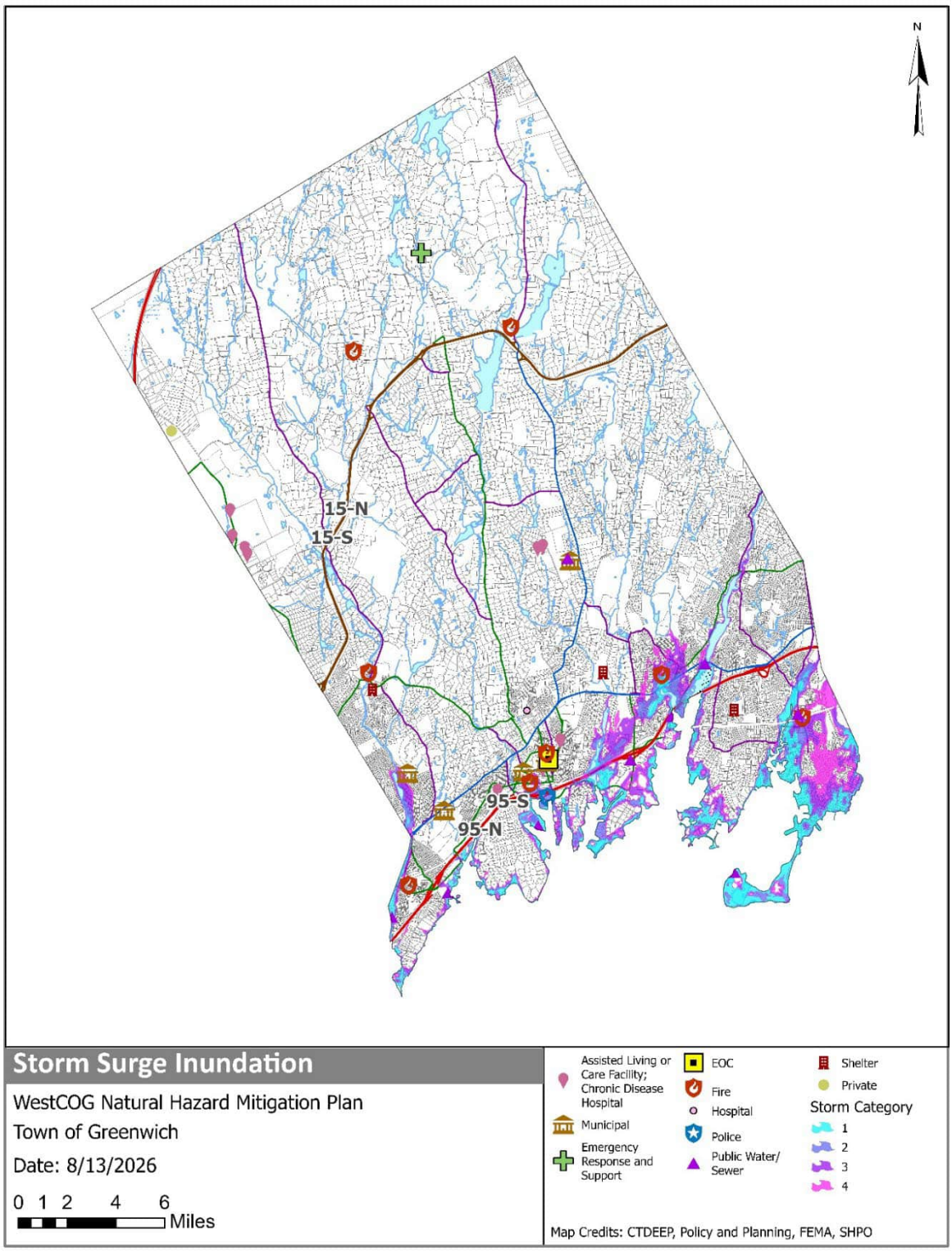

Figure 3-1: Storm Surge Inundation Zones

3.4 SUMMER STORMS AND TORNADOES

3.4.1 Setting

Summer storms and tornadoes have the potential to affect any area within the Town of Greenwich. Because these types of storms and the hazards that result (flash flooding, wind, hail, and lightning) might have a limited geographic extent, it is possible for a summer storm to harm one area within the town without harming another.

Based on the historical record, it is highly likely that a summer storm with lightning will affect Greenwich each year, although lightning strikes have a limited impact. Strong winds and hail are considered likely to occur during such storms, but also generally have limited effects. A tornado is considered a possible event in Fairfield County each year that could cause significant damage to a small area.

3.4.2 Capabilities

The town's capabilities regarding the mitigation of high wind events are described in Section 3.3.2.

Warning is the primary existing mitigation method for tornadoes and thunderstorm-related hazards. The NOAA National Weather Service issues watches and warnings when severe weather is likely to develop or has developed, respectively. Greenwich's emergency communication capabilities are described in Section 2.5.

Actions Completed and New Capabilities

Greenwich's tree trimming and maintenance capabilities, its coordination with the local electric utility, and its emergency communication capabilities have all been improved since adoption of the previous HMP.

3.4.3 Vulnerabilities and Risk Assessment

The entire Town of Greenwich is at relatively equal risk for experiencing damage from summer storms and tornadoes. Based on the historic record, a few summer storms have resulted in costly damages to town. Most damages are relatively site specific and occur to private property (and therefore are paid for by private insurance). For municipal property, the city budget for tree removal and minor repairs is generally adequate to handle summer storm damage.

Greenwich experiences many high-intensity, low-duration storms; for example, two or three inches of rain will fall in less than an hour, overwhelming drainage systems and causing flooding of roadways, yards, etc. Town staff observes that the frequency of such events seems to have increased in the last five years.

Changes and Improvements

Greenwich continues to improve its tree maintenance capabilities, reducing the vulnerability of the town's electric grid and road system to high wind events.

3.5 WINTER STORMS AND NOR'EASTERS

3.5.1 Setting

The entire Town of Greenwich is susceptible to winter storms and, due to its variable elevation, can have higher amounts of snow in the northern neighborhoods of the town than in the downtown area. In general, winter storms are considered highly likely to occur each year (although major storms are less frequent), and the hazards that result (nor'easter winds, snow, and blizzard conditions) can potentially have a significant effect over a large area of town.

According to the 2023 Connecticut State Natural Hazard Mitigation Plan, the state can expect to experience at least four major snow events each year, with an average of 8 winter events in a season for Fairfield County. It is estimated that Greenwich's average annual snowfall is about 2.5 to 4 feet.

3.5.2 Capabilities

Prior to a winter weather event, the Town ensures that all warning/notification and communications systems are ready and ensures that appropriate equipment and supplies, especially snow removal equipment, are in place and in good working order. In some known problem areas, pre-storm treatment is applied to roadways to reduce the accumulation of snow. The Town also prepares for the possible evacuation and sheltering of populations that could be affected by the upcoming storm (especially the elderly and persons with special needs).

The Town has sufficient staff and equipment for snow clearing. CTDOT plows all State roads and Interstates.

Actions Completed and New Capabilities

Greenwich continues to have sufficient capabilities to manage winter storm events.

3.5.3 Vulnerabilities and Risk Assessment

The entire Town of Greenwich is at relatively equal risk for experiencing damage from winter storms, although some areas (such as icing trouble spots and neighborhoods with a high concentration of flat roofs) are more susceptible. The public assistance reimbursement from Winter Storm Alfred was $122,326, proving that winter storms can be very costly. However, many damages are relatively site specific and occur to private property (and therefore are paid for by private insurance) while repairs for power outages are often widespread and difficult to quantify to any one municipality.

The structures and utilities in Greenwich are vulnerable to a variety of winter storm damage. Tree limbs and some building structures may not be suited to withstand high wind and snow loads. Ice can damage or collapse power lines, render steep gradients impassable for motorists, undermine foundations, and cause "flood" damage from freezing water pipes in basements. Drifting snow can occur after large storms, but the effects are generally mitigated through municipal plowing efforts.

Snow loads on roofs have not generally been a problem in Greenwich; however, in the winter of 2015, a private garage at the Putnam Park Apartments complex collapsed due to snow; nobody was injured, but cars were damaged.

In general, snow hazards are not a significant concern for the Town. Nevertheless, Town was hit relatively hard by a nor'easter on March 2, 2018. Precipitation saturated the soil, and high winds then downed many trees. According to a Patch article on the event:

- Power was out for over 6,600 customers
- The town set up temporary storm shelters (warming/charging centers at Greenwich Public Safety Complex, Western Greenwich Civic Center, Greenwich Library)
- Several hundred trees were downed
- Downed trees closed the Merritt Parkway, Sound View Drive near Field Point Road, Lake Avenue near Greenwich Hospital

Property damage was not substantial during that event.

3.6 WILDFIRES AND DROUGHT

3.6.1 Setting

The Town of Greenwich is generally considered a moderate risk area for small wildfires but a low risk area for large wildfires. Wildfires are of particular concern in outlying areas without public water service and other areas with poor access for firefighting equipment. Hazards associated with wildfires include property damage and habitat loss.

In addition, Greenwich and Fairfield County overall have experienced drought challenges over recent years. The 2023 Connecticut Natural Hazard Mitigation Plan assumes that the State of Connecticut is likely to experience a drought every two to three years. This assumption is based on climate change projections that anticipate hotter, wetter conditions in the near future. Climate forecasts often suggest that while precipitation may increase, the overall pattern will generally be higher intensity storms, with longer than average dry periods between events. The State Plan also identifies that Fairfield County accounts for roughly 7.28% of the state's total number of farms, with a market value of over $42 million in products sold from these farms.

3.6.2 Capabilities

The town's Fire Department is a dual level service, with both volunteer and career firefighters staffing the firehouses throughout the community. The GFD is a combination fire department that consists of over 100 uniformed career and approximately 85 volunteer firefighters who work together. Fire apparatus consists of 13 Engines, 3 Ladder Trucks, and a Heavy Rescue. The Greenwich Fire Department operates this equipment out of eight firehouses within Greenwich (and Banksville, New York).

Any new development is reviewed for the availability of firefighting water. The Town requires the installation of fire protection water in new developments where municipal water service is unavailable, and sprinkler systems where access is limited for fire apparatus.

The Town implements the state Open Burning Program locally. Information on open burning is available on the Town website.

Actions Completed and New Capabilities

Greenwich continues to have sufficient capabilities for mitigating wildfire risks. In 2026, the department will be adding two new engines and one new tanker truck to its fleet, which will continue to improve firefighting capabilities.

3.6.3 Vulnerabilities and Risk Assessment

According to the Connecticut DEEP, the actual forest fire risk in Connecticut is low due to several factors. First, the overall incidence of forest fires is very low. According to the 2023 State Hazard Mitigation Plan, an average of 243 fires per year occurred from 2013 to 2022; an increase from the average 109 fires per year reported in the 2019 State HMP. In 2020 alone, there were a reported 603 wildland fire events. Secondly, as the wildfire/forest fire prone areas become fragmented due to development, the local fire departments have increased access to those neighborhoods for firefighting equipment. Third, the problematic interface areas such as driveways too narrow to permit emergency vehicles are site specific. Finally, trained firefighters at the local and state levels are readily available to fight fires in the state, and inter-municipal cooperation on such instances is common.

In the drought year of 1999, the average wildfire in Connecticut burned 5 acres, compared with the two most extreme wildfires recorded since 1986, which burned 300 acres each. Given the availability of firefighting water in Greenwich, including the use of nearby water bodies, it is believed that this average value for a drought year and the extreme value are applicable to the town as well.

Wildfire Risk Areas are mapped in Figure 3-2.

A significant drought impacted Greenwich between 2015 and 2017. The drought had the following impacts:

- Aquarion enacted watering restrictions, which are still in force: irrigation has been limited to two days a week for private wells, indefinitely
- The Wastewater Division cut back on sewer cleanings during drought peak so save water
- The town put restrictions on private well withdrawals
- Reservoir levels were low; this affects fire protection abilities

The town reported a number of small brush fires in 2024, which coincided with periods of drought. There were no structural damages reported, just property damage. Additionally, as reported in 2025, there are concerns about water availability in the King Street area. This may be of concern both during a period of drought or in the event of a wildfire.

Consideration of the impact of droughts is important to the Town.

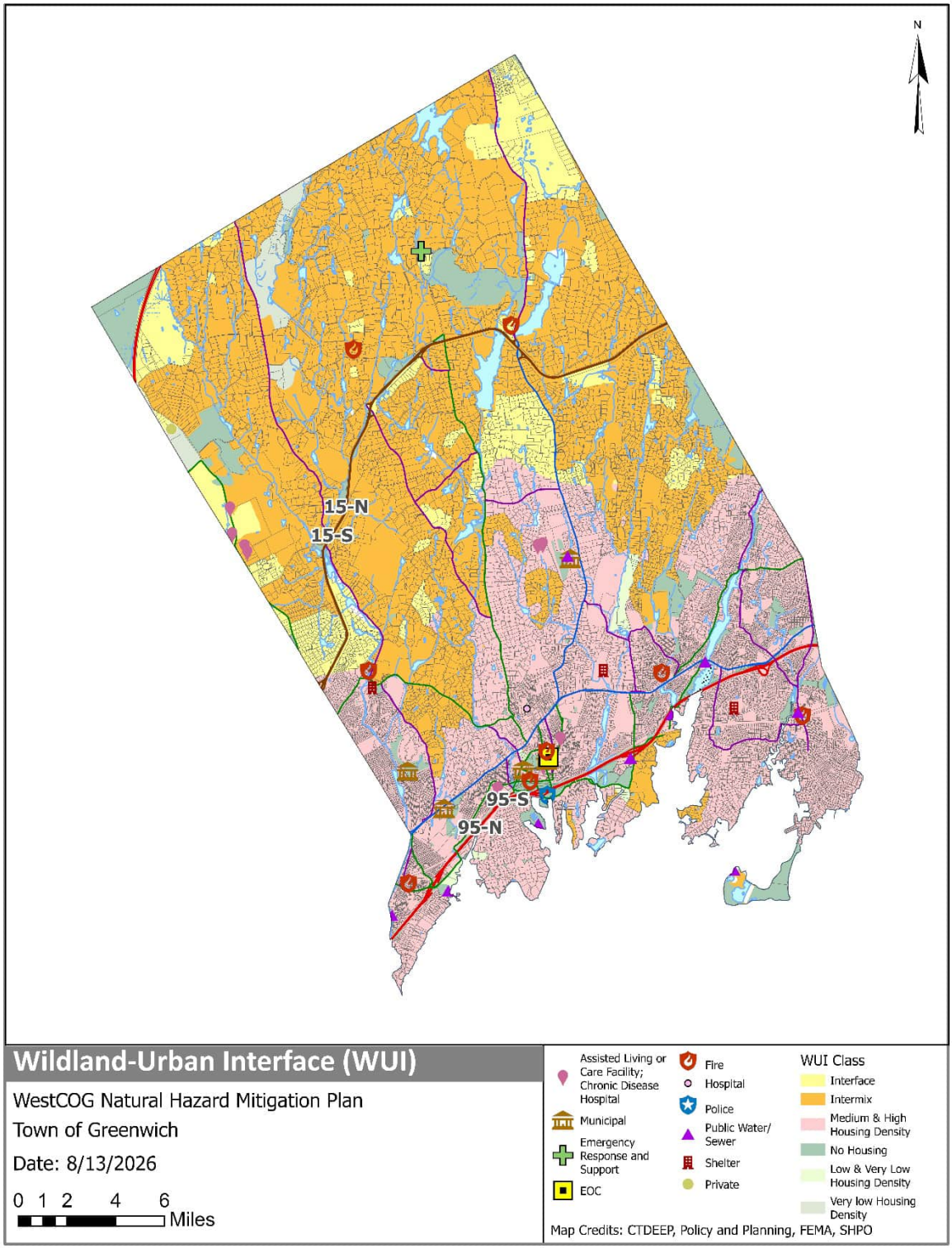

Figure 3-2: Wildfire Risk Areas

3.7 EARTHQUAKES AND LANDSLIDES

3.7.1 Setting

The entire Town of Greenwich is susceptible to earthquake damage. However, even though earthquake damage has the potential to occur anywhere, both in the town and in the northeastern United States, the effects may be felt differently in some areas based on the type of geology. In general, earthquakes are considered a hazard that may possibly occur, but that may cause significant effects to a large area of the town.

3.7.2 Capabilities

The Town has adopted the state building codes for new construction, and they are enforced by the Building Official. Due to the infrequent nature of damaging earthquakes, land use policies in the city do not directly address earthquake hazards. However, various documents indirectly discuss areas susceptible to earthquake damage and regulations that help minimize potential earthquake damage.

Actions Completed and New Capabilities

Greenwich continues to have appropriate capabilities for mitigating earthquake events.

3.7.3 Vulnerabilities and Risk Assessment

Some areas in Greenwich are underlain by sand and gravel and artificial fill. Structures in these areas are at increased risk from earthquakes due to amplification of seismic energy and/or collapse. Most of the remaining area is underlain by glacial till and is therefore not at increased risk during an earthquake due to unstable soils.

Changes and Improvements

The town's vulnerability to earthquakes continues to be low.

3.8 SEA LEVEL RISE AND SHORELINE CHANGE

3.8.1 Setting

The coastal areas of Greenwich are susceptible to sea level rise and shoreline change. With most of the shoreline being residential, with commercial and water dependent activity in pockets throughout, residential properties are at a greater risk of future inundation. Sea level rise may not be considered a high hazard risk in and of itself; however, rising seas in conjunction with extreme weather may result in inundation farther inland than seen during past events. In addition to extreme weather, nuisance flooding may also become a more frequent issue during extreme high tides.

The State of Connecticut has adopted the recent sea level rise projections developed by the University of Connecticut, Connecticut Institute for Resilience and Climate Adaptation (CIRCA), as the latest planning threshold for coastal municipalities. This projection anticipates a rise of 50 cm by the year 2050.

3.8.2 Capabilities

The town continues to see an increase in nuisance or sunny day flooding and has experienced the impacts of extreme storm surge, leaving city officials aware of the potential impacts of an extreme storm with elevated sea levels.

Town staff have begun to identify the areas that are at risk of increased nuisance flooding, and solutions and mitigation strategies are being recognized. In an effort to protect municipal infrastructure, projects are also being developed and funded, such as the Greenwich Avenue pump station, which is at risk of inundation.

Actions Completed and New Capabilities

Climate Change Risks – Town completed a climate change study to evaluate the impacts of sea level rise and storm surge, with particular focus on town-owned facilities and infrastructure. The study explores impacts along the coast and along four town-owned, tidally influenced ponds: Eagle Pond, Mill Pond, Binney Pond, and Bruce Pond. The town is now exploring the integration and implementation of the study's findings.

3.8.3 Vulnerabilities and Risk Assessment

The most at-risk areas are those immediately along the shoreline, with risk slightly declining moving inland. Greenwich Point is particularly at risk of increased nuisance flooding under future sea levels. In addition, a 100-year storm event with one foot of sea level rise has the potential to inundate many of the coastal areas, including portions of Cos Cob, Indian Harbor, and Greenwich Cove. With much of the infrastructure areas at risk of flooding during a 100-year event with elevated sea levels, there is a large economic factor at risk.

Coastal flooding has been reported to be a concern in the following areas:

- Sound Beach Avenue in Old Greenwich
- Shore Road, near Greenwich Point

The Town has expressed concern about the expected challenge of maintaining roadways in low-lying areas as the properties they serve become elevated; although the properties will be protected, the roads may continue to experience nuisance flooding. The Town will need to consider its responsibilities in this regard as sea levels continue to rise, and private properties continue to adapt.

Changes and Improvements

Town staff have observed that high tides have been getting higher due to sea level rise, and this is causing more nuisance flooding and increased impacts from high tides. This is especially true during King Tides or Spring Tides.

3.9 EXTREME HEAT

3.9.1 Setting

Extreme heat can occur at any time during the warmer months and can be defined as temperatures that hover 10 degrees or more above the average high temperature for the region. The NWS defines extreme heat as a period of abnormally hot weather generally lasting more than two days. A *heat wave* typically lasts three or more days with temperatures over 90 degrees for those days. These events typically last for a prolonged period of time, can vary in extent and intensity, and are often accompanied by high humidity.

An extreme heat event or heat wave can occur anywhere throughout Connecticut and any of the WestCOG communities. According to the 2023 Connecticut State Natural Hazard Mitigation Plan, Fairfield and Litchfield counties experienced, between 2012 and 2021, the greatest and least average annual number of days with temperatures greater than 90 degrees, respectively. Fairfield County experienced an average of 5 days, while Litchfield County experienced an average of 0 days.

Extreme heat events are expected to increase. The WestCOG Regional Climate Assessment (2026) notes that "by 2050, in a high CO_2-emissions scenario (RCP 8.5), average temperatures are expected to rise by approximately 5°F and continue to increase thereafter." The region is also likely to see an increase in heat wave days, summer days (where daily maximum temperatures are above 77 degrees), and tropical nights (where the daily minimum is below 68 degrees).

3.9.2 Capabilities

The Town of Greenwich has identified cooling centers in town which can provide respite to members of the community during an extreme heat event or heat wave. The Town also monitors the National Weather Service and local forecasts for heat warnings and advisories, in addition to guidance set forth by the State.

Actions Completed and New Capabilities

The town has identified two cooling centers in Greenwich.

3.9.3 Vulnerabilities and Risk Assessment

While the entire town is at risk of an extreme heat event, vulnerability can vary widely throughout the community as it does across Connecticut. To better characterize vulnerability to extreme heat, UConn CIRCA has developed a tool to aid in understanding extreme heat vulnerability for communities across the state. This tool, known as the Climate Change Vulnerability Index (CCVI), comprises dozens of factors that contribute to a community's heat sensitivity, exposure, adaptive capacity, and, ultimately, overall heat vulnerability. The CCVI can be used as a tool to characterize heat vulnerability for Greenwich.

In general, the most vulnerable populations in Greenwich would include the young and the elderly, and those populations living in the more densely developed areas in town which may have reduced tree coverage and a greater density of impervious surface. According to the CCVI, more heat vulnerable areas in Town are concentrated along the Interstate 95 and some of the more northern neighborhoods in town.

Changes and Improvements

The town, like all WestCOG communities, is now including extreme heat in its HMP and beginning to plan more intently to address extreme heat impacts.

4.0 MITIGATION STRATEGIES AND ACTIONS

4.1 Goals and Objectives

Municipal goals and objectives have been made consistent regionally and are presented in the Multi-Jurisdictional Plan document.

4.2 Status of Mitigation Strategies and Actions from Previous HMP

The table below lists the mitigation actions developed in the previous HMP and the status of each. Actions to be carried forward are noted as such. Actions that have been institutionalized as capabilities are not carried forward.

Table 4-1 Status of Previous Mitigation Strategies

#	Description	Status	Notes
1	Provide information on the Town website about CT DEEP training and information around small business chemical management for hazard resilience.	Remove	Unaware if this has been done
2	Use the CT Toxics Users and Climate Resilience Map to identify toxic users located in hazard zones within your community. Contact those users to inform them about the CT DEEP small business chemical management initiative.	Remove	Regional effort
3	Host a CT DEEP presentation for municipal staff and local businesses about business chemical management for hazard resilience.	Remove	Regional effort
4	Take one of the following actions that will mitigate natural hazard risks while also meeting Sustainable CT objectives: - Disseminate a toolkit for pre-disaster business preparedness. - Revise regulations to promote Low Impact Development. - Include the goals of this Hazard Mitigation Plan, and at least three other sustainability concepts, in your next POCD update.	Remove	Capability - Many completed, in 2024 Town achieved Silver and climate leader through Sustainable CT. Can provide more detail. Town had a big campaign to become a weather ready community. LID regulations tend to be some of the stronger across the state. LID manual is from 2014. The town makes adjustments as needed.
5	Collaborate with CIRCA on the "Resilient Connecticut" project	Carry forward with revision	Ongoing
6	Coordinate with CT SHPO to conduct outreach to owners of historic properties to educate them on methods of retrofitting historic properties to be more hazard-resilient while maintaining historic character.	Regional effort	Some town historic buildings, but no outreach to specific owners. As of last week, historic overlay was amended which would encourage historic preservation. New map to identify historic properties in Town.
7	Develop communication & education strategy for at risk populations & disaster preparedness; include targeted efforts toward households at risk of isolation during hazard events.	Part of operational model. Potentially remove	Continuous

#	Description	Status	Notes
8	Compare local floodplain regulations with Revised State Model Flood Regulations to identify any remaining opportunities for improvement	*westcog report/study	Unaware of any updates, waiting on updated maps.
9	Contact the owners of Repetitive Loss Properties and nearby properties at risk to inquire about mitigation undertaken and suggest options for mitigating flooding in those areas. This should be accomplished with a letter directly mailed to each property owner.	Regional effort	COG does this already
10	Distribute the CT DEEP Tidal Wetlands Guidance packet (or a similar pamphlet) to all property-owners abutting tidal wetlands in Greenwich. portal.ct.gov/DEEP/Coastal-Resources/Tidal-Wetlands/Tidal-Wetlands	Carry forward, maybe revise	Send a letter on a monthly basis to property owners to inform them that they have natural resources on their property
11	Coordinate with CT SHPO to conduct historic resource surveys, focusing on areas within natural hazard risk zones (flood zones, wildfire hazard zones, steep slopes) to identify historic resources at risk and support the preparation of resiliency plans across the state.	Remove	Unaware of any survey. Follow up with Sarah on this.
12	Perform a groundwater study and make recommendations for regulations to protect groundwater quality and quantity in order to improve the reliability of groundwater resources during drought conditions.	Carry forward	Completed 20 years ago and still interested in updating and revisiting.
13	Work with CT DEEP to validate and/or correct the RL list and update the mitigation status of each listed property.	Move to Regional effort	Unaware of any update
14	Annually conduct an emergency operations exercise for a local terrorism, sabotage, or mass casualty event.	Complete	Completed - annually and usually done twice a year, town specific and the state event.
15	Complete the Greenwich Coastal Resiliency Assessment and Plan and integrate with other municipal planning documents.	Follow up on this	Complete
16	Mitigate flooding in the Cos Cob area and at the Cos Cob Firehouse, informed by the Strickland Brook study and the planned Greenwich Coastal Resiliency Assessment and Plan.	Carry forward	Study is Complete. The study developed several scenarios and feasibility studies, and it was determined mitigation options are not feasible. Recommended floodproofing to the community. Study is complete, but mitigation at FH is not fully completed. The Cos Cob area will be up to residential/private property owners. Revise to reflect
17	Pursue actions identified in the Byram River Feasibility Study, completed in cooperation with the US Army Corps of Engineers in 2020.	Carry forward	Army Corps is working on design plans for this project, then will go to bid and construction. Goal is construction for 2027 but may be aggressive goal. Property owners should also consider private property mitigation.
18	Implement strategies identified in the Nature Conservancy living shoreline study in Greenwich.		Follow up resources - 2017 plan?

#	Description	Status	Notes
19	Incorporate floodproofing techniques into the renovation of the Binney Park Storage Shed.	Needs to be revised	Needs to be revisited and revised. There are a few different projects the Town is looking at by way of building replacement. There is a higher priority, the Old Greenwich Highway Shed.
20	Improve resiliency of the Waste Water Treatment Plant, based on the findings of the Waste Water Treatment Plant vulnerability and mitigation study	Carry forward	In initial conceptual design phase for this project, hoping to get to final design within next year. Headworks project has progressed. Future Town funding for project is in question.

4.3 Prioritization of Strategies and Actions

The STAPLEE method, described in the Multi-Jurisdictional document, was used to score mitigation activities. The STAPLEE matrix in Appendix A provides the total scores. Actions have been further prioritized based on implementation cost, project urgency, and municipal and public input. The strategies below are presented in priority order, with qualitative priority levels listed for each.

4.4 Mitigation Strategies and Actions Implementation Table

The Town proposed to initiate several new mitigation actions for the upcoming five years. Additionally, a number of actions from the previous planning period are being carried forward or replaced with revised actions. These are listed below.

APPENDIX A

Appendix A: STAPLEE Matrix

Action #	Action Description	Responsible Entity	Cost Range	Funding Sources	Timeframe	Community Priority	Type of Action	Hazard	Social Benefit	Social Cost	Technical Benefit	Technical Cost	Admin Benefit	Admin Cost	Political Benefit	Political Cost	Legel Benefit	Legal Cost	Economic Benefit	Economic Cost	Environ. Benefit	Environ. Cost	STAPLEE Score
GCH-01	Compare local floodplain regulations with Revised State Model Flood Regulations to identify opportunities for improved consistency when adopting the new FEMA maps for the Saugatuck, Southwestern CT, and Housatonic studies. Ensure that freeboard is consistent with the State Building Code.	Planning	$0 - $25,000	Operating Budget	2026 or when directed by the State NFIP Coordinator	High	Prevention	Flooding	1	0	1	0	1	0	1	0	1	0	1	0	1	0	**9**

Action #	Action Description	Responsible Entity	Cost Range	Funding Sources	Timeframe	Community Priority	Type of Action	Hazard	Social Benefit	Social Cost	Technical Benefit	Technical Cost	Admin Benefit	Admin Cost	Political Benefit	Political Cost	Legel Benefit	Legal Cost	Economic Benefit	Economic Cost	Environ. Benefit	Environ. Cost	STAPLEE Score
GCH-02	Include resources such as the CT DEEP Tidal Wetlands Guidance packet (or a similar pamphlet) in letter to property owners that have natural resources on their property. portal.ct.gov/DEEP/Coastal-Resources/Tidal-Wetlands/Tidal-Wetlands	CC	$0 - $25,000	Operating Budget	Annually in 2027, 2028, 2029, 2030, and 2031	Low	Natural Resources Protection	Multiple Hazards	0	0	0	0	1	1	0	0	1	0	0	0	1	0	**2**
GCH-03	Perform a study of groundwater conditions and make recommendations for regulations to protect groundwater quality and quantity in order to improve the reliability of groundwater resources during drought conditions.	CC, Health, Planning	$100,000 - $500,000	Capital Improvement	2028-2029	Low	Natural Resources Protection	Wildfire and Drought	1	0	1	0	1	1	0	0	0	0	0	0	1	0	**4**

Action #	Action Description	Responsible Entity	Cost Range	Funding Sources	Timeframe	Community Priority	Type of Action	Hazard	Social Benefit	Social Cost	Technical Benefit	Technical Cost	Admin Benefit	Admin Cost	Political Benefit	Political Cost	Legel Benefit	Legal Cost	Economic Benefit	Economic Cost	Environ. Benefit	Environ. Cost	STAPLEE Score
GCH-04	Pursue actions as identified in the Greenwich Coastal Resiliency Assessment and Plan	Planning	>$1M	Capital Improvement Plan, FEMA HMA, DCRF	2027-2031	Med	More than one category	Multiple Hazards	1	0	1	0	1	1	1	0	1	0	1	1	1	0	**6**
GCH-05	Mitigate flooding at the Cos Cob Firehouse, informed by the Strickland Brook study and the Greenwich Coastal Resiliency Assessment and Plan, and support residential/private property owners with mitigation strategies where feasible.	DPW, Fire, Engineering	>$1M	Capital Improvement Plan, FEMA HMA, DCRF	2027-2031	Med	Property Protection	Flooding	1	0	1	0	1	1	1	0	1	0	1	1	1	0	**6**

Action #	Action Description	Responsible Entity	Cost Range	Funding Sources	Timeframe	Community Priority	Type of Action	Hazard	Social Benefit	Social Cost	Technical Benefit	Technical Cost	Admin Benefit	Admin Cost	Political Benefit	Political Cost	Legel Benefit	Legal Cost	Economic Benefit	Economic Cost	Environ. Benefit	Environ. Cost	STAPLEE Score
GCH-06	Pursue municipal actions, and encourage residents to pursue actions, identified in the Byram River Feasibility Study as completed in cooperation with the US Army Corps of Engineers in 2020.	DPW	>$1M	Capital Improvement Plan, FEMA HMA, DCRF	2027-2031	Low	Property Protection	Flooding	1	0	1	0	1	1	1	0	1	0	1	1	1	0	**6**
GCH-07	Incorporate floodproofing techniques and building replacement into priroity locations including Binney Park Storage Shed and the Old Greenwich Highway Shed.	Parks and Rec	$100,000 - $500,000	Capital Improvement Plan, FEMA HMA, DCRF	2027-2028	Low	Property Protection	Flooding	1	0	1	0	1	1	1	0	1	0	1	1	1	0	**6**

Action #	Action Description	Responsible Entity	Cost Range	Funding Sources	Timeframe	Community Priority	Type of Action	Hazard	Social Benefit	Social Cost	Technical Benefit	Technical Cost	Admin Benefit	Admin Cost	Political Benefit	Political Cost	Legel Benefit	Legal Cost	Economic Benefit	Economic Cost	Environ. Benefit	Environ. Cost	STAPLEE Score
GCH-08	Improve resiliency of the Waste Water Treatment Plant, based on the findings of the Waste Water Treatment Plant vulnerability and mitigation study	DPW	>$1M	Capital Improvement Plan, FEMA HMA, CWSRF	2029-2031	High	Water & Wastewater Utility Projects	Flooding	1	0	1	0	1	1	1	0	1	0	1	1	1	0	**6**
GCH-09	As the opportunity arises, collaborate with CIRCA on the "Resilient Connecticut" project to advance further study in areas with flood and extreme heat risks.	BOS	$0 - $25,000	Operating Budget plus CIRCA funds from State and Federal sources	2028-2030	Low	More than one category	Multiple Hazards	1	0	1	0	1	1	1	0	0	0	1	0	1	0	**7**

Action #	Action Description	Responsible Entity	Cost Range	Funding Sources	Timeframe	Community Priority	Type of Action	Hazard	Social Benefit	Social Cost	Technical Benefit	Technical Cost	Admin Benefit	Admin Cost	Political Benefit	Political Cost	Legel Benefit	Legal Cost	Economic Benefit	Economic Cost	Environ. Benefit	Environ. Cost	STAPLEE Score
GCH-10	Continue to participate in the WestCOG program that provides outreach to repetitive loss property owners.	EM, BOS	$0 - $25,000	Operating Budget and COG general services budgets	Annually in 2026, 2027, 2028, 2029, and 2030	Medium	Property Protection	Flooding	1	0	1	0	1	0	1	0	0	0	1	0	1	0	**8**
GCH-11	Work with WestCOG to update the mitigation status of repetitive loss properties.	Planning	$0 - $25,000	Operating Budget and COG general services budgets	2029	Medium	Property Protection	Flooding	0	0	1	0	1	0	0	0	1	0	1	0	0	0	**6**
GCH-12	Work with Aquarion Water Company to enforce mandatory twice-per-week irrigation schedule.	CC, BOS	$0 - $25,000	Operating Budget	2027-2031	Low	Education & Awareness	Drought	1	0	1	0	1	1	0	0	0	0	0	0	1	0	**4**