# Naugatuck Valley Council of Governments
# Hazard Mitigation Plan Update
## 2021 – 2026

Municipal Annex
for

# CHESHIRE, CT

84 South Main Street,
Cheshire, CT 06410
MMI #3211-29

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# 1.0 INTRODUCTION

## 1.1 Purpose of Annex

This Hazard Mitigation Plan (HMP) annex provides 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 Naugatuck Valley Council of Governments (NVCOG) Multi-Jurisdictional Hazard Mitigation Plan. This annex is designed to supplement the information presented in the Multi-Jurisdictional HMP with more specific local detail, 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 and damage to life and property will also reduce the social, emotional, and economic disruption associated with a natural disaster.

## 1.2 Planning Process

A meeting was held with Cheshire representatives on October 19, 2020 for the purposes of initial data collection and review of necessary updates for this document. The meeting was convened by the HMP local coordinator, Suzanne Simone.

Additional input was provided at the two regional municipal staff workshops, held on November 18, 2020, and February 3, 2021.

Public input collected at public workshops and through an online survey have also informed development of this HMP update.

## 1.3 Physical Setting

The Town of Cheshire is located in New Haven County at the intersection of Interstate 84 and Interstate 691. It is bordered by the City of Waterbury and the Town of Prospect to the west, the Towns of Southington and Wolcott to the north, the Town of Wallingford and City of Meriden to the east, and the Town of Hamden to the south.

Cheshire is located within the southern part of the Triassic Valley, a broad central lowland containing prominent basalt ridges in central Connecticut. The topography of the Town consists mainly of gently rolling hills, with the Peck Mountain ridgeline running along most of the western boundary of the Town. Elevations range from approximately 100 feet above sea level (based on the National Geodetic Vertical Datum of 1929) to approximately 700 feet in the steeper hills located in the northwestern part of the town.

As the home of a suburban residential community, numerous industrial facilities, three state prison facilities (Cheshire Correctional Institution, Manson Youth Institution and Webster Correctional Institution), many

state and federal buildings, utility organizations, and major financial institutions, the Town of Cheshire is vulnerable to a loss of life and property due to an array of hazards.

## 1.4 Land Cover

Cheshire encompasses 32.9 square miles and is characterized by a compact commercial district surrounded by low- to medium-density residential districts interspersed with agricultural operations.

Table 1-1 summarizes 2015 land cover data which was derived from satellite imagery. Areas shown as turf and grass are maintained grasses such as residential and commercial lawns or golf courses. According to this data, about 49% of Cheshire is forested and approximately 26% is developed.

**Table 1-1: 2015 Land Cover by Area**

| Land Cover | Area (acres) | Percent of Community |
|---|---|---|
| **Developed** | 5,466.2 | 25.83% |
| **Turf & Grass** | 2,772.5 | 13.10% |
| **Other Grass** | 812.2 | 3.84% |
| **Agricultural Field** | 1,058.5 | 5.00% |
| **Deciduous Forest** | 8,973.8 | 42.40% |
| **Coniferous Forest** | 539.0 | 2.55% |
| **Water** | 431.7 | 2.04% |
| **Non-Forested Wetland** | 26.4 | 0.12% |
| **Forested Wetland** | 870.9 | 4.11% |
| **Tidal Wetland** | 0.0 | 0.00% |
| **Barren** | 133.8 | 0.63% |
| **Utility Row** | 80.2 | 0.38% |
| **Total** | 21,165 | 100% |

*Source: UCONN Center for Land Use Education and Research (CLEAR)*

The largest concentration of industrial land uses is located in the northern end of Cheshire near the I-691 and I-84 interchanges. Just south of the industrial area along Route 10 is the largest of Cheshire's three correctional institutions, Cheshire Correctional Institution.

Most commercial facilities are located along Route 10, especially at the intersection of Route 10 with Route 68 and Route 70. Residential areas extend from Route 10 outward towards the town's borders. Most of the residential development is low-density in character. Agricultural facilities are located throughout the town, and Cheshire is known as the "Bedding Plant Capital of Connecticut." Steep slopes and water features limit development at the east and west borders of the town.

## 1.5 Geology

Geology is important to the occurrence and relative effects of natural hazards such as floods and earthquakes. Thus, it is important to understand the geologic setting and variation of bedrock and surficial formations in Cheshire.

The Town of Cheshire's bedrock consists of three general lithologies: volcanic and intrusive igneous silicate gneisses and basalts, sedimentary arkose, and metasedimentary and metaigneous schists. The bedrock intrusions trend northeast-southwest through the Town.

Approximately 83% of the Town is underlain by the New Haven Arkose of the Newark Terrane. The New Haven Arkose is a thick sequence of sedimentary rock striking north-northeast and dipping approximately 15° to the east. Igneous intrusions include the Buttress Dolerite and the West Rock Dolerite. Historic mines are associated with the igneous intrusions.

A number of unnamed faults are located in Cheshire in the northwestern and southeastern parts of Town, and the Western Border Fault divides the Newark Terrane and the Iapetos Terrane in Cheshire near the northwestern part of Town. The Western Border Fault is a large fault extending along the western edge of the Mesozoic Basin and stretches from Milford northwards into Massachusetts. None of these faults are active. Bedrock outcrops can be found at higher elevations and on hilltops. Brick (1997) noted that the barite ore deposits at Jinny Hill occupy faults that are presumably inactive.

At least twice in the late Pleistocene, continental ice sheets moved across Connecticut. As a result, surficial geology of the Town is characteristic of the depositional environments that occurred during glacial and postglacial periods.

A vast area of the Town is covered by glacial till. Tills contain an unsorted mixture of clay, silt, sand, gravel, and boulders deposited by glaciers as a ground moraine. This area includes most of the northwestern, central, and southeastern portions of Cheshire. The remainder of the Town consists primarily of stratified sand and gravel areas associated with the major rivers and brooks throughout the Town. These deposits accumulated by glacial meltwater streams during the outwash period following the latest glacial recession.

## 1.6 Drainage Basins and Hydrology

The Town of Cheshire lies within drainage basins corresponding to the Quinnipiac River, the Ten Mile River, Broad Brook, Willow Brook, Mill River, Beaver Pond Brook, and the Mad River. These are described below. Cheshire's water bodies include several ponds and reservoirs and numerous streams, most of which are unnamed. Many impoundments are present in Cheshire, and many of the floodplains surrounding the channels are undeveloped due to nearby wetlands.

### Quinnipiac River

The Quinnipiac River originates at the borders of New Britain and Farmington in Deadwood Swamp, a Connecticut DEP wildlife management and flood control area. The river flows southward through the municipalities of Plainville, Southington, Cheshire, Meriden, Wallingford, North Haven, and New Haven for 38 miles, emptying into New Haven Harbor and eventually reaching Long Island Sound.

Most of northeastern Cheshire (7.21 square miles, 21.79% of Cheshire's land area) lies within the Quinnipiac River drainage basin, and over 60% of the land area of the Town eventually drain into the Quinnipiac River. The Quinnipiac River forms part of the town boundary between northeastern Cheshire and Southington. At the location where the Quinnipiac River enters Cheshire proper, it drains about 40 square miles, including the area of Cheshire that drains to the Ten Mile River.

The major tributary to the Quinnipiac River in northeastern Cheshire is Honeypot Brook. Honeypot Brook has its headwaters in an unnamed pond in east-central Cheshire and drains southwest under Wiese Road where it enters Honeypot Brook Pond. After flowing out of this impoundment, Honeypot Brook flows west through an unnamed pond, eventually turning north and entering the impoundment of Weeks Pond. It then flows north through a well-developed residential section of Cheshire near Honeypot Glen, after which it is joined by the outflow from the impounded Cheshire Park Pond. Honeypot Brook continues flowing northeast through an undeveloped section of Cheshire and then under Blacks Road to enter the Quinnipiac River in a swampland. In total, Honeypot brook drains 3.41 square miles of the Quinnipiac River basin in Cheshire.

The Quinnipiac River continues to flow south and east across Cheshire, being joined by several unnamed streams that drain the Honeypot Glen area and another that drains the northeastern corner of Cheshire near Meriden, before being joined by the outlet of Broad Brook at the Meriden city line. The DEP and Quinnipiac River Watershed Association stock trout in the Quinnipiac Gorge along the Cheshire/Meriden town line. There are no dams of note directly on the Quinnipiac River in the town of Cheshire.

### Ten Mile River

Most of northern Cheshire (10.35 square miles, 31.29% Cheshire's land area) drains to the Ten Mile River. The Ten Mile River has its headwaters in Prospect consisting of two main streams: West Brook and Mixville Brook. West Brook is impounded at the West Brook Reservoir, and then empties into the Cheshire Reservoir in Prospect. Mixville Brook also drains into the Cheshire Reservoir. The Ten Mile River begins in Prospect as the outflow of the Cheshire Reservoir at the Cheshire Reservoir Dam. When the Ten Mile River enters Cheshire, it has already drained 4.76 square miles.

The Ten Mile River flows north and is next impounded in the Town of Cheshire at Mixville Pond by the Mixville Pond Dam. The river is next joined by Mountain Brook, which drains a large marsh in Prospect, before being impounded at Moss Farms Pond / Lake Percivel by the Lake Percivel Dam. Downstream of this dam is the Ten Mile River's confluence with Cuff Brook, a stream that drains most of northwestern Cheshire and has multiple impoundments along its run.

After the tributary of Cuff Brook, the Ten Mile River drains northeastward through a large wetland area, after which it is joined by Judd Brook in the Cheshire Industrial Park, and then finally empties into the Quinnipiac River near Milldale. In total, the Ten Mile River drains 20.26 square miles across the municipalities of Prospect, Waterbury, Cheshire, Wolcott, and Southington.

### Broad Brook

The Broad Brook drainage basin comprises most of the lightly-developed eastern part of Cheshire, draining a total of 3.71 square miles in the Town and comprising 11.22% of Cheshire's land area. Broad Brook has its headwaters just north of Boulder Road and flows in a northeasterly direction through Copper Valley, being joined by an unnamed stream before draining into the Broad Brook Reservoir just south of Yalesville Road. This large impoundment is 290 acres in size and is fed by swampland and three other unnamed streams besides Broad Brook. After draining through the Broad Brook Reservoir Dam, it flows north to empty into the Quinnipiac River near the Cheshire / Meriden municipal boundary. In total, Broad Brook drains an area measuring 4.81 square miles in the towns of Cheshire and Meriden.

## Willow Brook

The southwestern part of Cheshire lies within the drainage basin of Willow Brook, comprising an area of 6.83 square miles and 20.65% of Cheshire's land area. Willow Brook has its headwaters in the swamps near West Cheshire south of Route 68. Most of the streambed of Willow Brook lies in wetlands near fairly developed residential and commercial areas. The brook winds south through Cheshire collecting outflow from several wetland areas before being joined by the outflow of Roaring Brook near Brooksvale, and the outflow from Sanford Brook and Brooksvale Stream which flows out of Hamden.

Willow Brook then flows south into Hamden where it is joined by Jepp Brook before emptying into the Mill River near Sleeping Giant State Park. In total, Willow Brook drains a land area of 12.97 square miles across the towns of Cheshire, Prospect, Bethany, and Hamden. There are no impoundments of note along Willow Brook or its tributaries in the Town of Cheshire, although there is one at the Mount Sanford Road Pond near the swamps along the Hamden / Cheshire town line.

## Mill River

The southeastern part of Cheshire lies within the Mill River drainage basin. This drainage basin consists of 4.70 square miles in the town of Cheshire and makes up 14.21% of Cheshire's land area. The Mill River has its headwaters in Cheshire near Hicock Pond, a small impoundment in central Cheshire near State Route 68 / 70. It flows in a southwesterly / southerly direction through a lightly developed area, being impounded by the Tyler Pond Dam near Wallingford Road. It continues to flow into a heavily developed commercial area near Richards Corner, where it is joined by an unnamed stream that is the outflow of a small impoundment named Ravenswood Pond to the east.

The Mill River next flows through a swampland north of Cook Hill Road before being intersected by an unnamed stream that has its headwaters in Fresh Meadows Swamp in Wallingford. This unnamed stream drains through a small, unnamed impoundment at the Wallingford town line before flowing southwest through the impounded Cook Hill Pond. It next flows into another unnamed pond before emptying into the Mill River. The Mill River then continues south into Hamden where it is joined by the outflow from Willow Brook, Butterworth Brook, Eaton Brook, and Shepard Brook before eventually draining into New Haven Harbor. In total, the Mill River drains 38.41 square miles in the towns of Cheshire, Wallingford, Hamden, Bethany, North Haven, and New Haven.

## Beaver Pond Brook

A very small portion of northwestern Cheshire (0.27 square miles) near the Waterbury city line lies in the drainage basin of Beaver Pond Brook. This area comprises only 0.80% of the land area of Cheshire, and is largely undeveloped with some residential land use. The drainage area within Cheshire drains primarily into the headwaters of Beaver Pond Brook, while the rest drains to an unnamed tributary in Waterbury that is the first stream to intersect Beaver Pond Brook.

Beaver Pond Brook has its headwaters in a swamp near Milloy Road in the northwestern corner of Cheshire. It flows in a westerly direction into the southeastern part of Waterbury, being joined by Turkey Hill Brook and East Mountain Brook before intersecting the Mad River at City Mills Ponds (Upper) in Waterbury. The

total drainage area of Beaver Pond Brook is 5.58 square miles, extending into the municipalities of Wolcott, Cheshire, Prospect, and Waterbury.

While there are no dams of note along the reach of Beaver Pond Brook, there are dams on its tributaries. The Waterbury Reservoir Dam #2 is on the Waterbury / Prospect Reservoir in Prospect, and outflows into Turkey Hill Brook. The East Mountain Reservoir Dam outflow begins East Mountain Brook, and the Daigle Pond Dam on Daigle / DeBishop Pond also outlets into East Mountain Brook.

### Mad River

A small portion of the land area in Cheshire (7.89 acres, 0.01 square miles, 0.04% of total land area) lies within the Mad River drainage basin. This area has a light residential land use and drains to Hitchcock Lake in southeastern Wolcott. This large impoundment drains into Hitchcock Lake Brook, and in turn flows west into Theriaults Ice Pond. Theriaults Ice Pond is a small impoundment that is the headwaters for Lily Brook, and drains northwest to join the Mad River in southwestern Wolcott.

## 1.7 Climate and Climate Change

In Cheshire, the summers are warm and wet, the winters are freezing, and it is partly cloudy year round. Over the course of the year, the temperature typically varies from 20°F to 83°F and is rarely below 5°F or above 90°F.

The warm season lasts for 3.5 months, from June 1 to September 16, with an average daily high temperature above 73°F. The hottest day of the year is July 21, with an average high of 83°F and low of 64°F. The cold season lasts for 3.3 months, from December 3 to March 12, with an average daily high temperature below 45°F. The coldest day of the year is January 29, with an average low of 20°F and high of 36°F.

The wetter season lasts 3.5 months, from May 3 to August 19, with a greater than 29% chance of a given day being a wet day. The chance of a wet day peaks at 35% on May 31. The drier season lasts 8.5 months, from August 19 to May 3. The smallest chance of a wet day is 22% on January 29.

The most rain falls during the 31 days centered around June 4, with an average total accumulation of 3.9 inches. The snowy period of the year lasts for 5.3 months, from November 4 to April 13, with a sliding 31-day liquid-equivalent snowfall of at least 0.1 inches. The most snow falls during the 31 days centered around January 26, with an average total liquid-equivalent accumulation of 1.0 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, which was developed by the University of Connecticut (UConn) Atmospheric Sciences Group, 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 is projected to continue to do so in the future. By mid-century, 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 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 a 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 10% annual-chance storm in New Haven County is 5 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 10% annual-chance storm in Cheshire as 5.03 inches.

The NOAA Atlas 14, released on September 30, 2015 puts the 24-hour rainfall amount for a 10% annual-chance storm in Cheshire at 5.43 inches.

These precipitation amounts, and more details, are summarized in Table 1-2, below.

**Table 1-2: 24-Hour Rainfall Amounts by Annual-Chance Occurrence**

| Source | 24-Hour Rainfall Amount (inches) by Annual-Chance Occurrence | | |
|---|---|---|---|
| | 10% | 4% | 1% |
| **Technical Paper No. 40** | 5.0 | 5.6 | 7.1 |
| **NRCC** | 5.0 | 6.3 | 8.9 |
| **NOAA Atlas 14** | 5.4 | 6.7 | 8.5 |

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 Cheshire can expect the 24-hour rainfall amount for a 10% annual-chance storm to be around 5.4 to 5.9 inches or greater.

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

## 1.8 Development Trends

Industrial development began in Cheshire with the opening of rail service. The accessibility of the railroad facilitated a 19th century mining industry in the Town. The first half of the 20th century saw increasing residential development with the improvement of the roadway network. Cheshire established itself as a

residential community for workers in nearby industrial cities. Suburbanization increased in the 1960s as Cheshire became a popular location for employees commuting to New Haven.

Agriculture played a significant role in shaping the town's transportation routes and zoning and land use patterns, and it remains a significant element of the local economy. Cheshire has developed an economic niche producing bedding plants for wide distribution; hence the town's slogan, "The Bedding Plant Capital of Connecticut."

The 2010 U.S. Census reported a population in Cheshire of 29,147 individuals. U.S. Census Bureau estimates for 2019 show a population around 27,087 individuals, a decrease from 2010 of 7.1%. The Connecticut State Data Center predicts that population will decrease by 8.8% through 2025 to an estimated population of 5,333 individuals.

According to the Connecticut Data Collaborative, the number of annual housing permits in Cheshire remained steady over the last decade. The number of permits issued in 2010 and 2011 was 39 and 58, respectively, while 29 permits were issued in 2016, and 22 permits were issued in 2017. On average, 38 housing permits were issued each year in Cheshire between 2010 and 2017.

According to the U.S. Census Bureau, the overall number of housing units in Cheshire rose by approximately 4.9-percent between 2010 and 2019, from 10,424 units in 2010 to 10,958 units in 2019. In 2019, the housing stock was made up of approximately 83% single-unit structures, 2% two-unit structures, 15% multi-unit structures, and 0% mobile-homes or other types of structures.

According to the Connecticut Office of Policy and Management, Cheshire's 2019 Total Equalized Net Grand List was valued at $2,844,000,000. The equalized net grand list is an estimate of the market value of all taxable property in the municipality, and gives some indication of the value of property at risk in the event of a major natural disaster.

Additional information can be found in the 2019 Connecticut Economic Resource Center profile for Cheshire, included as Appendix C.

The current primary land use objective is the preservation of small town character, small farms and open space. Small farms are viewed as an important component of the local economy, and innovative conservation approaches such as transfer of development rights are being enacted to preserve farmland. It is expected that the northern end of town will remain the location for the concentration of both industrial uses and farmland.

Most of the land area zoned R-20 is already developed. The R-40 and R-80 zoned areas have capacity for residential development, but growth remains slow. As a reference, in the year 2000, only 68 single-family home permits were issued. All utilities in new subdivisions are underground, making them less vulnerable to natural hazards. An estimated 40% of residential units in town are currently served by underground utilities.

The Police and Fire Departments review new subdivision plans for safety and access concerns at monthly meetings. The Town discourages driveway gates and gated subdivisions as the gates act as obstacles slowing emergency response. Cul-de-sacs in new developments are discouraged and connectivity of roads is encouraged. Subdivisions featuring cul-de-sacs offer a single access point for emergency services,

lengthening emergency response times and rendering those residential areas vulnerable if access is cut off by flooding or downed tree limbs. Cheshire requires a 50-foot right of way at the end of dead end streets, and dead end roads may range in maximum length between 1,000 feet and 1,700 feet depending on zone. All new roads must have less than 10% grade, and if they can connect through to an existing road, they will be connected on both ends.

Since the adoption of the first HMP, commercial development and redevelopment has continued along Route 10 and several other areas of town. Much of the commercial development has been service-based such as new retail and pharmacy stores, and several medical office buildings have also been constructed along Route 10. This corridor is located outside of the areas of highest risk in Cheshire.

Over the last few years, there has been a significant amount of development in Cheshire including the following:

- Four residential subdivisions have been built.
- Many single-family residential homes have been built.
- There have been many residential home modifications; generator hookups and solar array installations have been the most popular.
- Several large lot commercial developments, including two new buildings on Knotter Drive, new medical centers on West Johnson Avenue and South Main Street, and the new facility at Marbridge.
- Several commercial buildings have constructed significant additions, including Viron Rondo Osteria on Route 10, the Whole Foods distribution center on East Johnson Avenue, and the nurseries on East Johnson Avenue.

A relatively large mixed-use development was proposed prior to adoption of the previous HMP in 2014. This development was to be located west of Route 10 and adjacent to Interstate 691 in the northern part of Cheshire, and would include outlet stores, other shops, and a number of residential units. The Tenmile River flows from south to north through the center of the development site, and one of the important considerations for the development is ensuring that buildings are located outside of the areas at risk for flooding. This development has not yet been completed.

The Town has concerns about anhydrous ammonia at three industrial facilities and the potential for airborne plume migration following a release. CT DEEP has been spearheading a statewide initiative aimed at reducing the potential for spills and releases from businesses, particularly small businesses, during natural disasters. Therefore, an acceptable strategy for the HMP from the State's perspective is for the Town to request that the three facilities model the potential plume migration area.

## Summary

Significant recent development in Cheshire has been balanced by the community's continued improvement of its hazard mitigation capabilities, and enforcement of the Town's zoning regulations; therefore, this development is has not increased overall natural hazard risks over the past five years. Continuation of these development trends are similarly not expected to increase overall natural hazard risks, as the Town will continue to balance growth with hazard mitigation capability improvements.

## 1.9 Historic and Cultural Resources

Historic and cultural resources include sites, structures, and objects that are significant in history, architecture, archaeology, engineering, and culture. These resources grow economies and enhance 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 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.

**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*

Historic resources in Cheshire near flood sources may be damaged during flooding or other hazard events.

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 are listed at the end of this Annex.

## 1.10 Social Vulnerability Index

By evaluating local social vulnerabilities, a community can identify populations that may be more vulnerable to natural hazards, and implement actions to better respond to the needs of those populations. The Center for Disease Control and Prevention (CDC) uses 15 factors extracted from census data to calculate a Social Vulnerability Index (SVI) for communities. The SVI factors fall into four categories:

- socioeconomic status
- household composition and disability
- minority status and language
- housing type and transportation

Cheshire is considered to have a Low to Moderate level of social vulnerability, with a higher vulnerability score for the SVI categories of Household Composition & Disability, Minority Status & Language, and Housing Type & Transportation. In other words, particular challenges in Cheshire may include the presence

of residents who need additional assistance during a disaster event due to disabilities or mobility limitations, language barriers or marginalization of local residents due to their minority identities, or the presence of lower-quality housing or lack of access to transportation for evacuation.

# 2.0 MUNICIPAL CAPABILITIES

## 2.1 Governmental Structure and Capabilities

The Town of Cheshire is governed by a Council-Manager form of government. The Town Council serves as the legislative body of the Town, responsible for policy, ordinances, and the general operating and capital budgets. The council is composed of nine elected volunteer members whose term of office is two years, with elections on odd numbered years. The chairman of the council serves as the honorary mayor and is selected by council at the beginning of each term. The Town Manager is selected by the Town Council and oversees the day-to-day management of the Town. There are 12 Town departments providing municipal services and day-to-day administration.

In addition to the personnel and departments listed above, there are 22 boards, commissions and committees providing input and direction to Town Council and Town administrators. Establishment of these commissions and departments to oversee subsets of municipal affairs is authorized by the Town Charter. Many of these commissions and departments may play a role in hazard mitigation, including the Planning and Zoning Commission, the Zoning Board of Appeals, the Building Code Board of Appeals, the Energy Commission, the Environmental Committee, the Inland Wetland and Watercourses Commission, the Public Building Commission, the Public Safety Commission, the Water Pollution Control Authority/Flood and Erosion Control Board, the Chesprocott Health District, the Quinnipiac River Watershed Partnership, the Building Official, the Fire Department, the Police Department and the Public Works and Engineering Department. The Emergency Management Director also plays a significant role in hazard mitigation and coordinates emergency preparedness in the Town of Cheshire.

The Environmental Commission works closely with the residents of Cheshire regarding a variety of issues including conservation and passive recreation. While other departments and commissions such as the Inlands Wetlands and Watercourses Commission have primarily regulatory roles, the Environmental Commission's goals are education and outreach.

The Public Works Department is a critical municipal department related to hazard mitigation because it maintains, repairs, and constructs stormwater systems and roadways. The Department is responsible for maintaining stormwater systems for proper drainage and flood mitigation, as well as clearing snow and ice and maintaining access for emergency vehicles. In particular, the Department of Public Works handles complaints associated with natural events such as flooding; each complaint is assigned a tracking number and is addressed by a member of the department.

Likewise, the Public Works Department believes that establishment of working inter-municipal agreements with other public works departments in nearby communities would allow for sharing of resources when disasters affect one community more than others. This Plan therefore supports these types of agreements.

## 2.2 Infrastructure

### Transportation

Cheshire has convenient access to nearby towns on the following state routes that function as major transportation arteries: Route 10, Route 68, Route 70, Route 42, I-691 and I-84. The State routes – Route 10, Route 68, Route 70, and Route 42 – can also be used to travel from the residential areas of Cheshire to the two designated shelters.

Cheshire is served by the CTtransit bus system.

### Utilities

Public water in Cheshire is primarily provided by the South Central Connecticut Regional Water Authority; small sections of Town are served by the Wallingford and the Southington Water Department. There are also a handful of small Non-Community Public Water Systems. Public sewer is provided by the Town to residents.

Eversource is the primary electricity provider in Cheshire. Natural gas service is provided by Eversource.

According to geoISP (geoISP.com), there are 3 DSL Providers, 1 Cable Internet providers, 1 Fiber Internet (FTTH) providers, and 0 Fixed Wireless (WISP) providers in Cheshire, CT. There are also 4 Mobile Broadband (cellular) providers with service available in Cheshire.

## 2.3 Critical Facilities and Emergency Response

Cheshire has identified several critical facilities throughout the town, as summarized on Table 2-1 below.

**Table 2-1: Critical Facilities**

| Facility | Address or Location | Comment | Emergency Power | Shelter | SFHA |
|---|---|---|---|---|---|
| **Chesprocott Health District** | 1247 Highland Ave | Public Health | | | |
| **Cheshire Fire Dept Co. 2** | 1511 Byam Rd | Em. Response | ◆ | | |
| **Cheshire Fire Dept HQ** | 250 Maple Ave | Em. Response | ◆ | | |
| **Cheshire Fire Dept Station 3** | 1125 South Main St | Em. Response | ◆ | | |
| **Cheshire Public Library** | 104 Main St | Municipal | ◆ | | |
| **Cheshire Police Dept Headquarters** | 500 Highland Ave | EOC | ◆ | | |
| **Cheshire Youth Center** | 559 South Main St | Primary Shelter | ✓ | ✓ | |
| **Cheshire Town Offices** | 84 South Main St | Municipal | ✓ | | |
| **Sewage Treatment Plant** | Cheshire St | Utility | ◆ | | ✓ |
| **Public Works Garage** | 1286 Waterbury Rd | Municipal | ◆ | | |

| Facility | Address or Location | Comment | Emergency Power | Shelter | SFHA |
|---|---|---|---|---|---|
| **Chapman School** | 38 Country Club Rd | School | ◆ | | |
| **Cheshire Academy** | 10 Main St. | School | ◆ | | |
| **Cheshire High School** | 525 South Main St | Secondary Shelter | * | ✓ | |
| **Darcey School** | 1686 Waterbury Rd | School | ◆ | | |
| **Dodd Junior High School** | 100 Park Place | School | ◆ | | |
| **Doolittle School** | 735 Cornwall Ave | School | ◆ | | |
| **Highland School** | 490 Highland Ave | Comfort Station | ◆ | ◆◆ | |
| **Humiston School** | 30 Spring St | School | ◆ | | |
| **Norton School** | 414 North Brooksvale Rd | School | ◆ | | |
| **Legionaries of Christ Seminary** | 475 Oak Ave | School | | | |
| **St. Bridget Elementary School** | 171 Main St | Private School | | | |
| **Elim Park Baptist Home** | 140 Cook Hill Rd | Assisted Living | ❖ | | |
| **Marbridge Retirement Center/Fairwinds** | 665 West Main St** | Assisted Living | ❖ | | |
| **Highlands Health Care** | 745 Highland Ave | Assisted Living | ❖ | | |
| **Cheshire Correctional Institution** | 900 Highland Ave | Correctional Facility | ❖ | | |
| **Manson Youth Institution** | 42 Jarvis Rd | Correctional Facility | ❖ | | |
| **Webster Correctional Institution** | 111 Jarvis Rd | Correctional Facility | ❖ | | |

◆ Has a hookup for a portable generator
◆◆ Warming/cooling center; no overnight sheltering
❖ Unknown generator status
* Generator only powers part of the facility
** The Marbridge Retirement Center is presently replacing one of its buildings with a new, larger facility.

## Emergency Response Capabilities

The Town has a separate list that it maintains for priority power restoration which is provided to Eversource each year. That list includes facilities that are missing from the above list, including two daycare facilities, a low-income housing facility with medically compromised residents, and a small school and mental health facility on Jarvis Street. In addition, Cheshire has two portable generators that can be moved around town when necessary. All municipal buildings and schools have hookups installed to support the portable generators.

A third portable generator is desired as the Town experienced two permanent generator failures during Isaias. A new strategy is for the Town, in coordination with the Board of Education, to outfit all of its schools with permanent generators in the next five years. Currently, only the High School has a generator, and that generator only powers 50% of the building.

The Town's Emergency Operation Center (EOC) is in the basement of the Police Department Headquarters. This location is not ideal as it is distant from other Town buildings used for emergency response and lacks dedicated emergency power. A portable generator is used to provide power to the facility when necessary. The Town would like to apply for a grant to outfit a new EOC building or Annex to an existing building that has dedicated emergency power.

The Town has a formal evacuation plan that was developed by the local police department in coordination with the State Police. It reportedly contains a variety of evacuation scenarios that can be referenced by Town staff.

## Sheltering Capabilities

The Cheshire Youth Center is the primary shelter. The Youth Center has a generator for emergency power. It has an overall capacity of 50 individuals. The secondary shelter is Cheshire High School. The High School has an overall capacity of 500 people and can provide bedding for 200 people. The High School is located on Route 10 about one-half of a mile south of the Town Hall. Its location on Route 10 makes it easily accessible from most locations in town.

These buildings have been designated as public shelter facilities by meeting specific American Red Cross guidelines. Amenities and operating costs of the designated shelters including expenses for food, cooking equipment, emergency power services, bedding, etc., are the responsibilities of the community and generally are not paid for by the American Red Cross. The Police, Fire, and Human Services Departments staff the shelters.

The Cheshire Emergency Management Team has approximately 200 cots and the Cheshire Correctional Institution (CCI) presently stores 900 emergency cots for the American Red Cross that would be used in Cheshire during an emergency.

In case of an extended power outage, it is anticipated that 10-20% of the population would relocate, although not all of those relocating would necessarily utilize the shelter facilities. Many communities only intend to use these facilities on a temporary basis for providing shelter until hazards such as hurricanes diminish. Regionally-located mass care facilities operated and paid for by the American Red Cross may be available during recovery operations when additional sheltering services are necessary.

## Communications

The Town of Cheshire is in Region 2 of the Connecticut Emergency Medical Service regions.

As a feature of its emergency response program, Cheshire has GPS capabilities to locate incoming cell phone calls as well as "Enhanced 9-1-1." Enhanced 911 improves the effectiveness and reliability of wireless 911 calls by having wireless service providers inform the 911 operator of the wireless telephone number of the caller, and the origin of the call within a 50 to 300 meter radius. This technology allows emergency services to provide a faster response to wireless callers.

Cheshire subscribes to the CodeRED notification system.

# 3.0 FLOODING

## 3.1 Existing Capabilities

### Participation in the NFIP

Cheshire has participated in the NFIP since 07/16/1981. The Flood Insurance Rate Map (FIRM) for the community was most recently updated in 05/16/2017. Cheshire does participate in the FEMA Community Rating System (CRS) program.

According to FEMA, there are 88 flood insurance policies in force in Cheshire as of 6/30/2019 with an insurance value of $26,492,300.

### Regulations

In general, developments in floodplains are regulated during the zoning and land subdivision application processes. The Town has several regulations, codes, and ordinances preventing encroachment and development near floodways.

The Cheshire Zoning Regulations were adopted April 8, 1970 and have been amended many times over the years. Amendments addressing flood damage prevention have occurred on April 26, 2010 (effective May 14, 2010) and November 22, 2010 (effective December 17, 2010). These updates have incorporated the FIS and FIRM panels that were effective on December 17, 2010.

Section 46 of Cheshire Zoning Regulations (Flood Plain Management Regulations) is essentially the town's local articulation of the NFIP regulations. This section is a comprehensive set of regulations governing development of floodplains in Cheshire. It relies on the FEMA FIS elevations and FIRM mapping to delineate floodplain boundaries.

Section 46.4 provides the standards. In particular, new construction or substantial improvement of buildings and other structures for human occupancy shall not be located in any Special Flood Hazard Area. Any new construction or substantial improvement of buildings and other structures for other than human occupancy shall either have the lowest floor, including basement, elevated to or above the base flood elevation or shall be floodproofed so that, below the base flood elevation, the structure is watertight with wall substantially impermeable to the passage of water. The prohibition of new residential structures in flood zones is considered very restrictive but consistent with the goals of hazard mitigation.

Other sections address compensatory storage and conveyance:

- Section 46.4.7 addresses compensatory storage and states that the water holding capacity of the floodplain, except those areas which are tidally influenced, shall not be reduced. Any reduction caused by filling, new construction or substantial improvements involving an increase in footprint to the structure, shall be compensated for by deepening and/or widening of the floodplain.

- Section 46.4.8 addresses equal conveyance and states that within the floodplain, encroachments resulting from filling, new construction or substantial improvements involving an increase in footprint of the structure are prohibited unless the applicant provides certification by a registered professional engineer demonstrating that such encroachments shall not result in any (0.00 feet) increase in flood levels.

A residential property owner may obtain a variance to these regulations with the approval of the Town Engineer. The process typically involves the property owner getting a Letter of Map Amendment from FEMA or going through a related FEMA process to demonstrate that the home is not affected by the 1% annual chance flood. Within the past five years, only two or three residential property-owners within the floodplain have applied for variances.

The Town's regulations for *non-residential* construction or substantial improvement in the floodplain are consistent with the NFIP minimum standards and do not require freeboard. However, one foot of freeboard is now required by the State Building Code. *Non-residential* developers have not requested floodplain permits over the past five or six years and such development has been out of the 1% annual chance floodplain.

Other sections of regulations, codes, and ordinances that apply to flood hazard mitigation include:

- ***Soil Erosion and Sedimentation Control Regulations*** (Section 49 of Cheshire Zoning Regulations). This section outlines the Planning Commission's expectations regarding sedimentation and erosion controls to prevent excess soil from entering watercourses.

- ***Drainage*** (Section 4.4 of Cheshire Subdivision and Other Land Use Regulations). This section outlines the Planning Commission's expectations regarding existing and proposed storm drainage systems and culverts, including design, easement rights, and effects on adjoining property.

- ***Design Standards*** (Section 5.2 and 5.3 of Cheshire Subdivision and Other Land Use Regulations). These regulations outline floodplain management and construction standards for new structures and subdivisions located within the 100-year floodplain, and define lands that are unsuitable for development.

- ***Drainage Facilities for Storm Water and All other Drainage Excluding Sanitary Drainage Facilities*** (Section 7 of Cheshire Subdivision and Other Land Use Regulations). This section outlines the design standards for stormwater and other non-sanitary drainage facilities, including location, suitable receiving water bodies, design specifications for pipes, manholes, and culverts, and the use of underdrains.

- ***Inland Wetlands and Watercourses Regulations***. The Town of Cheshire's regulations regarding development near wetlands and watercourses that are sometimes coincident with flood management zones.

Specific provisions are made for flood hazard reduction, including rules that regulate construction material and methods, anchoring, location of service facilities, and design specifications for drainage, sanitary sewer, and water supply systems. These ordinances require that all new land uses have a zero net increase in

runoff, and that all structures in flood hazard areas have the lowest floor constructed above established base flood elevations. Site plan standards require that all proposals be consistent with the need to minimize flood damage, that public facilities and utilities be located and constructed to minimize flood damage, and that adequate drainage structures are provided. The Cheshire Police Department and Cheshire Fire Department review new subdivision applications for safety concerns as well, although not specifically for flooding.

The Cheshire Inland Wetlands and Watercourses Commission reviews new developments and existing land uses on and near wetlands and watercourses. Any development which may potentially impact a watercourse, as defined as being "significant activities" in Section 2 of the Town of Cheshire Inland Wetlands and Watercourses Regulations, must be approved by the Inland Wetlands and Watercourses Commission in the Town before being approved by the zoning board.

Most of the wetland violations in the Town are matters of encroachment due either from ignorance or disregard of the buffer zones. A 50-foot wetland buffer area is posted on land records and with permanent markers on each property. While technically this is an "upland review area," the Commission tends to review it as a non-encroachment area. Some wetlands are given a larger upland review area. Wetland complaints are tracked by paper filing. Protecting wetland buffers helps prevent nuisance flooding and is important for both habitat conservation and flood control.

The Cheshire Plan of Conservation and Development summarizes several guidelines used by the Town in approving changes in land use. The following guidelines promote flood hazard mitigation:

- Retain natural vegetation, topography, infiltration, and drainage patterns;
- Avoid channelizing, piping, and filling of wetlands and watercourses;
- Minimize impervious surfaces, especially in low-traffic areas;
- Encourage sheet-flow and "soft-drainage" instead of curbing and piping;
- Maximize buffers to wetlands and watercourses;
- Follow state-recommended methods for erosion and sedimentation control.

## Public Works and Drainage

The Cheshire Department of Public Works is in charge of the maintenance of the Town's drainage systems, and performs clearing of bridges and culverts and other maintenance as needed. The majority of the drainage structures in Town are properly sized to safely convey the 100-year flood event.

In the 1980s a comprehensive storm drainage inventory was completed for the Town, and in 1991 a Master Drainage Study was completed to evaluate existing drainage structures, provide computer models to calculate the runoff impact of land use changes, and to provide guidance on how to reduce the impact of urbanization on the riverine system. The Town uses these documents to identify potential problems and plan for maintenance and upgrades.

Cheshire has a catch basin cleaning program that targets the cleanouts of each basin with an average frequency of five years. Approximately 180 catch basins are cleaned each spring, and others are cleaned throughout the year. The town owns its own equipment for this program.

Since the adoption of the initial HMP, sediment removal has been conducted in a tributary of the Mill River in the vicinity of Fawn Drive. Although the project was conducted mainly to enhance water quality and reduce stagnation, it may have moderately contributed to reduced flood risks. A repetitive loss property (refer to Section 3.5 below) is located nearby.

Also subsequent to the adoption of the initial HMP, the town completed a drainage system check valve improvement project along Riverside Drive. This project is believed to provide some relief from drainage-related nuisance flooding near the Quinnipiac River. A repetitive loss property is located nearby.

Zoning regulations require no net increase in runoff from new developments and on-site detention of stormwater. As a result, none of the recent developments have resulted in drainage concerns or issues.

### Natural Resource Protection

Cheshire preserves, acquires, and creates open space when appropriate and possible. As an example, the Town added open space along the Mill River in the southern part of Town, off Old Lane Road. Although the open space acquisition was not pursued specifically for flood mitigation, the land includes floodplains that are now protected from development. Prior open space acquisitions have also occurred in areas of flood risk. Open space creation outside of flood zones can also mitigate flooding by reducing impervious surfaces and increasing rainwater infiltration.

### Structural and Other Mitigation Projects

Around the time that the initial HMP was developed in 2008, flooding along the Tenmile River caused damage to an old arch that conveyed the former Farmington River canal over the river just north of Interstate 691. A bypass channel was constructed next to the arch to convey future flood discharges around the arch while maintaining normal river flows beneath the arch. This bypass channel is the only structural flood mitigation project in recent history in Cheshire.

The Town recently completed a reinforcement project on the bridge carrying Marion Road over Cuff Brook to protect the bridge from scour and flood damage.

### Flood Study

In 1991, the Town of Cheshire conducted a drainage study in order to determine how to properly manage its drainage basins, watercourses, floodplains, and stormwater runoff. This study presented a *Storm Drainage Management Program* designed to mitigate potential impacts from runoff, and presented guidelines to reduce the impact of urbanization on the riverine system. It also provided a thorough review of the existing drainage facilities within the Town in order to determine their hydraulic adequacy. The drainage study expressed the following conclusions in regards to flood management:

- As long as Cheshire continues its policy of zero net increase in runoff, the existing waterways should be sufficient even with continuing land development. Therefore, the Town should continue to regulate stormwater rates to prevent increases in surface runoff;
- The primary drainage system, consisting of bridges, culvers, and large storm drains, was adequate for the needs of the Town, with only 20% of the existing culverts being undersized;

- High-priority culvert improvements should be corrected;
- Erosive watercourses should be periodically monitored;
- Ensure that any fill in a floodplain area be designed to have an elevation above the 100-year flood and be resistant to erosive flows;
- Best Management Practices (BMPs) should be utilized for stormwater management in new developments;
- The filling of wetland and floodplain areas and the channelization of existing watercourses should be discouraged;
- The Town should continue to use hydrologic models to simulate the impact of any future land use change.

Since this study, the Town has made several culvert improvements and generally followed these guidelines and conclusions.

### Emergency Operations Plan

The Town of Cheshire Emergency Operations Plan contains a section for addressing flood hazards. It notes the two areas in the most danger for severe flooding to be the Quinnipiac River near Blacks Road and the Sewage Treatment Plant, and the Ten Mile River downstream of Mixville Pond should Mixville Pond Dam fail. The Mill River is also noted as an area of concern. The plan outlines steps to be taken by Town personnel to mitigate further flood damage and conduct recovery operations.

### New Capabilities and Completed Actions

Cheshire continues to maintain its strong flood mitigation capabilities. To reduce flooding of the Quinnipiac River near Sindall Road, the Meriden Water Department removed an abandoned water main that crossed underwater within the Quinnipiac River in the vicinity of Sindall Road. In the past, this main was reportedly an obstruction to river flow. It is believed that this will reduce flood risks in that area in the future.

In 2020, the West Johnson Avenue Bridge over the Ten Mile River was upgraded by the Town which increased its flood conveyance capacity.

Recently, the Town installed additional piping along Route 42 that is believed to have resolved the flooding issue involving the tributary to Willow Brook.

### Summary

Cheshire mitigates flood damages primarily through regulating development in floodprone areas, performing maintenance and upgrades of drainage infrastructure, and performing structural projects when appropriate. In many cases, the Town's regulations exceed the model ordinance such as by prohibiting new residential development or residential substantial improvements in the 1% annual chance floodplain.

## 3.2 Vulnerabilities and Risk Assessment

This section discusses specific areas at risk to flooding within the Town. Major land use classes and critical facilities within these areas are identified. According to the FIRM, approximately 1,990 acres of land in

Cheshire are located within the 100-year flood boundary. Indirect flooding occurs near streams and rivers throughout Cheshire due to inadequate drainage and other factors. Specific areas susceptible to flooding were identified by Town personnel. Flood prone areas in the community today, as mapped by FEMA, are presented in Figure 3-1.

## Vulnerability Analysis of Repetitive Loss Properties

Cheshire has four Repetitive Loss Properties (RLP). Of those, zero are classified as Severe RLP. Zero of the RLPs in Cheshire have been mitigated in the past. One is located near the Quinnipiac River and three are located near the Mill River.

**Table 3-1: Repetitive Loss Properties in Cheshire**

| Street | Associated Watercourse | Flood Zone | Type |
|---|---|---|---|
| **Fawn Drive** | Mill River | A | Single-Family Home |
| **Old Lane Road** | Mill River | A | Single-Family Home |
| **Riverside Drive** | Quinnipiac River | A | Single-Family Home |
| **Sturbridge Court** | Mill River | X | Single-Family Home |

Although past mitigation projects near Fawn Drive (sediment removal from a watercourse) and Riverside Drive (drainage improvement) may have had moderate benefits, the repetitive loss properties listed above may remain floodprone for the foreseeable future because they likely reflect riverine flooding situations. The Town of Cheshire will work with these property owners to address flooding if they request assistance.

## Vulnerability Analysis of Areas Along Watercourses

The September 2018 rain event caused minor flooding on a couple of roads in Cheshire.

Specific areas at risk of flooding, including areas at risk of localized flooding, are discussed below.

### Quinnipiac River and Tributaries

The reach of the Quinnipiac River located in Cheshire is characterized as only lightly developed. The northern part of the reach is predominantly wooded, with sections of agricultural fields and marsh. It is intersected only by Route 322 and Interstate 691. The area near Blacks Road is light-density single-family residential. As the river proceeds south and curves east near Riverside Drive the area is still light-density single-family residential on the south and west side of the river, with parks and the waste treatment plant on the northeast side. Wooded areas, the occasional agricultural use, and some houses line the remainder of the river before it discharges into Meriden.

The Quinnipiac River is prone to flooding along its entire reach in Cheshire, but the flooding is generally limited to the properties adjacent to the rivers. The majority of the SFHA and 500-year floodplain is not developed. Specific instances of flooding occur near East Johnson Avenue, Blacks Road, near the Sewage Treatment Plant, and north of Riverside Drive with a frequency of approximately one time every year. As noted above, one repetitive loss property is located on Riverside Drive.

Flooding often occurs along the tributaries to the Quinnipiac River. For example, out-of-bank and near flooding conditions were observed by Milone & MacBroom, Inc. staff at East Sindall Stream at Allen Avenue during storms. This area was also greatly impacted by the heavy rainstorm on June 2, 2006 that caused a detention pond failure near Debbie Drive in a new subdivision in the adjacent City of Meriden. This detention pond drained to a watercourse locally known as East Sindall Stream.

According to Town personnel, the failure of the detention pond sent a torrent of water down East Sindall Stream and under Beverly Drive in Meriden. A small, privately owned dam in the run of the stream locally known as "Nun's Dam", located at 405 Allen Avenue in Meriden, was breached as it was not designed to mitigate floods. The combination of the water from the detention pond and from behind Nun's Dam continued downstream, eroding the channel and accumulating debris between Finch Avenue and Allen Court. This area was covered in outwash following the storm. The debris blocked the culvert running under Allen Court in Cheshire, causing the stream to flood the road.

The stream continued eroding and accumulating debris between Allen Court and Allen Avenue, where the reduction in gradient caused the floodwaters to slow and deposit cobbles and larger debris on the property at 815 Allen Avenue. The stream floods portions of this property at least two times per year. The stream is shallow and wide in its reach, and was overbank through this property while discharging south. The stream continues south through undeveloped marshes, and no damage was reported south of this property. Eventually, this stream joins with West Sindall Stream to form Sindall Stream, which flows underneath Sindall Road and empties into the Quinnipiac River. Removal of an abandoned water main that crossed the Quinnipiac River in the vicinity of Sindall Road may have resulted in reduced flood risks in this area.

The watercourse locally known as West Sindall Stream flows under Northpond Road, Troutbrook Road, and Allen Avenue before its confluence with East Sindall Stream. The stream has two branches which formerly joined together south of the current configuration of Northpond Road. When Northpond Road was installed, the eastern branch was altered to flow west alongside Northpond Road to join the west branch at the culvert running under Northpond Road. The streambed elevation of the reach running parallel to the road is about 18 inches below the road surface. The Town plans to excavate a 400-foot section of the east branch to lower the level of the stream where it runs parallel to Northpond Road in order to eliminate flooding. A review of historical USGS topographical maps indicates that this area was formerly characterized as wetlands, which may explain why this area is floodprone.

Large areas of ponded water were observed in the yards of homes on the east side of Cheshire Street across from Blacks Road. This appears to be nuisance flooding without any serious effects.

Honeypot Brook is a tributary to the Quinnipiac River which drains a sizeable section of eastern Cheshire. Of particular interest in this area is that the culvert elevation causes a wide backwater condition on the south (upstream) side of the road. The storm event produced 2.33 inches of rain in about 18 hours at a weather station in Southington, an amount below the two-year, 12-hour frequency storm. The water elevation is just below the street. Any additional flow here could cause flooding of the roadway.

### Ten Mile River and Tributaries

The Ten Mile River enters Cheshire from the Town of Prospect and flows northeast through Cheshire before reaching its confluence with the Quinnipiac River in Southington. The majority of this reach includes

undeveloped wetlands with pockets of industrial use and some single-family residential areas abutting the SFHA.

The Ten Mile River enters Cheshire at Mixville Pond, a Town-owned recreation area. It flows through a light-density single-family residential area before passing near a commercial and industrial park. According to the FEMA mapping, the potential exists for the base flood to inundate some industrial parking lots but no buildings in this reach downstream to the culvert running under Route 70.

Town personnel indicated that the Ten Mile River occasionally floods a home near Jarvis Street. According to Town personnel, this flooding occurs about once every two years. This home lacks a basement and therefore does not file insurance claims.

The reach of the Ten Mile River from Jarvis Street to Peck Lane is predominantly wetlands. A major tributary named Judd Brook joins the Ten Mile River in this reach. FEMA mapping indicates that the potential exists for the river to flood some single-family houses, agricultural fields, and part of the Cheshire Industrial Park. Although the potential exists for flooding in and near the Cheshire Industrial Park, the large amounts of undeveloped land and wetlands tend to help mitigate flood waters.

Town personnel noted that the Bloomingdale's distribution facility parking areas in the Cheshire Industrial Park have flooded in the past with an unknown recurrence period. Most recently during the April 2007 nor'easter, roads in the Cheshire Industrial Park were covered by floodwaters associated with Judd Brook.

According to Town personnel, the Ten Mile River has been known to flood Peck Lane with an approximate frequency of one time per year. Beyond Peck Lane, the river continues to flow through wetlands and light industrial areas, eventually passing under West Johnson Avenue and Interstate 691. An unnamed tributary to the Ten Mile River that joins in this reach has previously flooded both Sandbank Road and Schoolhouse Road. The stream channel at Schoolhouse Road is lined with high-density reeds and grasses that restrict flow and could exacerbate flooding conditions.

Before entering the Town of Southington, the Ten Mile River channel is constricted by a stone masonry arched culvert, which was built as part of an aqueduct for the historic Farmington River Canal. The aqueduct is currently in the form of an earthen and stone bridge over the river.

A powerful spring nor'easter of April 15-16, 2007 caused heavy rains of three to eight inches and severe flooding throughout Connecticut. During this event, the Ten Mile River experienced severe flooding and the earthen ridge and stone arch bridge failed partially, as they could not adequately convey the storm flows. An emergency bypass channel was excavated to help convey flood flows.

### Willow Brook and Tributaries

The Willow Brook watershed drains the southwestern portion of the Town of Cheshire. The dominant features along the brook include medium-density single-family residential structures, wetlands, and the Farmington Canal Linear Park, which parallels Willow Brook and the old Farmington Canal from Cornwall Avenue south to Mount Sanford Road. The majority of the flooding problems associated with Willow Brook occurs on its tributaries, and are related to poor drainage at road crossings.

Willow Brook has its headwaters in West Cheshire near Mountain Road and proceeds generally southward into Hamden. According to FEMA mapping, the potential exists for the brook to flood two houses on Oak Avenue during the base flood. The reach between Oak Avenue and Cornwall Avenue is predominantly wetlands with a wide SFHA. An industrial complex on Cornwall Avenue lies within the SFHA, as well as the parking areas for the Farmington Canal Linear Park.

The brook parallels the linear park from Cornwall Avenue to Higgins Road, and some of the structures in the medium-density single-family residential neighborhood east of the park lie within the SFHA. The area near Higgins Road contains agricultural fields and light-density residential structures, along with a commercial/industrial parcel which could have its parking area inundated by the 100-year flood. Light- to medium-density residential areas flank the linear park between Higgins Road and North Brooksvale Road (Route 42).

A wetland near the Richards Corner section of Cheshire is the headwaters of an intermittent tributary that drains into Willow Brook south of Higgins Road. Flood depths of one foot occurred on Route 42 near Route 10 due to the heavy rains in April, May, and June 2006. The flood frequency for this area was estimated to be about three times per year by Town personnel. Recently, the Town installed additional piping along Route 42 that is believed to have resolved the flooding issue involving the tributary to Willow Brook.

South of North Brooksvale Road, the floodplain of Willow Brook contains undeveloped woodland and marshland downstream to the mouth of Roaring Brook. No flooding problems have been reported in Cheshire for Roaring Brook, which flows east from Prospect. It flows predominantly through wetlands and wooded areas in Cheshire, although there are areas of light-density single-family residential that fall within the SFHA.

A culvert along Roaring Brook in western Cheshire was previously clogging due to beaver activity. Public Works responded multiple times to clear the dam and obstructions from the culverts. Reportedly, the beavers eventually moved elsewhere.

South of Roaring Brook, Sanford Brook joins Willow Brook. Sanford Brook drains northeast from Prospect and Bethany down a steep gradient along Route 42. A SFHA has been delineated along Sanford Brook throughout most of its length in Cheshire. This area is mostly wooded, although a few houses near Mountain Crest Drive lie within the boundaries of the SFHA. East of Mountain Crest Drive, Sanford Brook continues through a light-density single family residential neighborhood downstream to South Brooksvale Road, which it has been known to flood during heavy rain events. According to Town personnel, this area floods about two times per year.

Downstream of South Brooksvale Road, the area extending to Sanford Brook's confluence with Willow Brook is primarily undeveloped, and only two houses lay within the SFHA.

The area of Willow Brook from Sanford Brook to South Brooksvale Road is undeveloped with the exception of the linear park. It is flanked to the east by a medium-density single-family residential neighborhood and agricultural fields to the west. Portions of the SFHA encroach into the neighborhood and the potential exists for flooding to impact some of the structures.

Brooksvale Stream flows northeast from Hamden and enters Cheshire at a small, unnamed pond off Mountain Brook Drive. Brooksvale Stream joins Willow Brook just south of South Brooksvale Road. A SFHA

has been delineated around the stream throughout its short length in Cheshire. The stream is surrounded by wooded areas and light-density single family residential structures. Brooksvale Stream has been known to flood the area around South Brooksvale Road and Mount Sanford Road during heavy rain events. According to Town personnel, this flooding occurs about twice per year. During the nor'easter of April 16, 2007, Brooksvale Stream jumped its culvert and crossed over Mount Sanford Road, damaging the roadway.

The remainder of the Willow Brook area south of South Brooksvale Road is wooded and flanked by light-density residential areas. No flooding problems have been reported in this reach despite the presence of some structures located in the SFHA. A tributary to Willow Brook in Hamden has its headwaters in a wetland south of Mount Sanford Road near a pond locally known as Mount Sanford Pond. This marsh has been known to flood Mount Sanford Road near the pond during heavy rain events, with a frequency of about one time per year.

### Mill River and Tributaries

Mill River drains the southern portion of Cheshire, and the river eventually discharges into New Haven Harbor. Few flooding problems have been reported in this watershed and the area is believed to have a low potential for flooding. Nonetheless, the residential density and commercial and industrial uses in this watershed present a fair amount of potential for flood damage. No flooding was observed in the culverts along the Mill River at Mansion Road, Fawn Drive, Forest Lane, and Cook Hill Road by Milone & MacBroom, Inc. staff on May 16, 2006 during a storm event that produced 1.65 inches of rain in nine hours. This rain event was less than a two-year, 6-hour storm for the area.

A SFHA has been delineated by FEMA for the Mill River throughout its reach in Cheshire. This floodplain begins near Williamsburg Drive and passes under Surrey Drive before passing under Williamsburg Drive and extending southwest towards Hillside Cemetery. The SFHA impacts one house near the cemetery access road before crossing under Wallingford Road near Wood Pond Road. The SFHA is predominantly woodlands from this point south but potentially impacts the commercial parking areas near the western end of Jinny Hill Road.

The SFHA continues to be a mixture of woodlands and commercial areas south to Mansion Road. The reach of the Mill River between Mansion Road and Forest Lane is again predominantly woodlands, with some commercial areas along Route 10 potentially impacted by the base flood. The area around Forest Lane and Fawn Drive is light-density single family residential, and an extreme flood has the potential to impact eight structures in the neighborhood. The wooded and undeveloped areas to the north and east of this neighborhood are also included in the SFHA.

South of Fawn Drive, the Mill River floodplain potentially impacts parts of Elim Park Place, a senior independent living and health care facility. Southeast of Elim Park Place, three houses are potentially impacted by the floodplain near where the Mill River passes under Cook Hill Road. The floodplain is entirely wooded south to Stonehenge Place, where it potentially impacts three single-family residential homes. The Mill River then passes through woodlands to Old Lane Road, and downstream potentially impacts one more structure before exiting the Town of Cheshire.

According to Town personnel, standing water occurs regularly during the summer and winter on Route 70 in the vicinity of Peach Tree Court. This flooding is caused by inadequate drainage from nearby greenhouses.

### Broad Brook and Tributaries

Broad Brook drains northward through the eastern portion of Cheshire to its confluence with the Quinnipiac River. No flooding problems have been reported in the Broad Brook watershed. This area consists primarily of undeveloped water company land and light-density residential structures, and has a low potential for flooding. The Broad Brook Reservoir is the primary impoundment along the brook and is used for water supply. A SFHA has been defined by FEMA for Broad Brook.

## Critical Facilities and Emergency Services

The Town of Cheshire Sewage Treatment Plant is the only municipal facility in the Town regularly impacted by flooding. Spring floods along the Quinnipiac River often approach the Treatment Plant, which was built in the SFHA. The Treatment Plant utilizes the Quinnipiac River to dilute treated effluent that is discharged to the river, and therefore must be located adjacent to the river.

In regards to emergency services, new subdivisions are required to connect new roads through to other existing roads wherever possible, and as a result the majority of roads in Cheshire have multiple modes of egress. This allows rescue services to have good access to neighborhoods, and reduces the number residents likely to be stranded behind roadway flooding.

Date Saved: 6/15/2021

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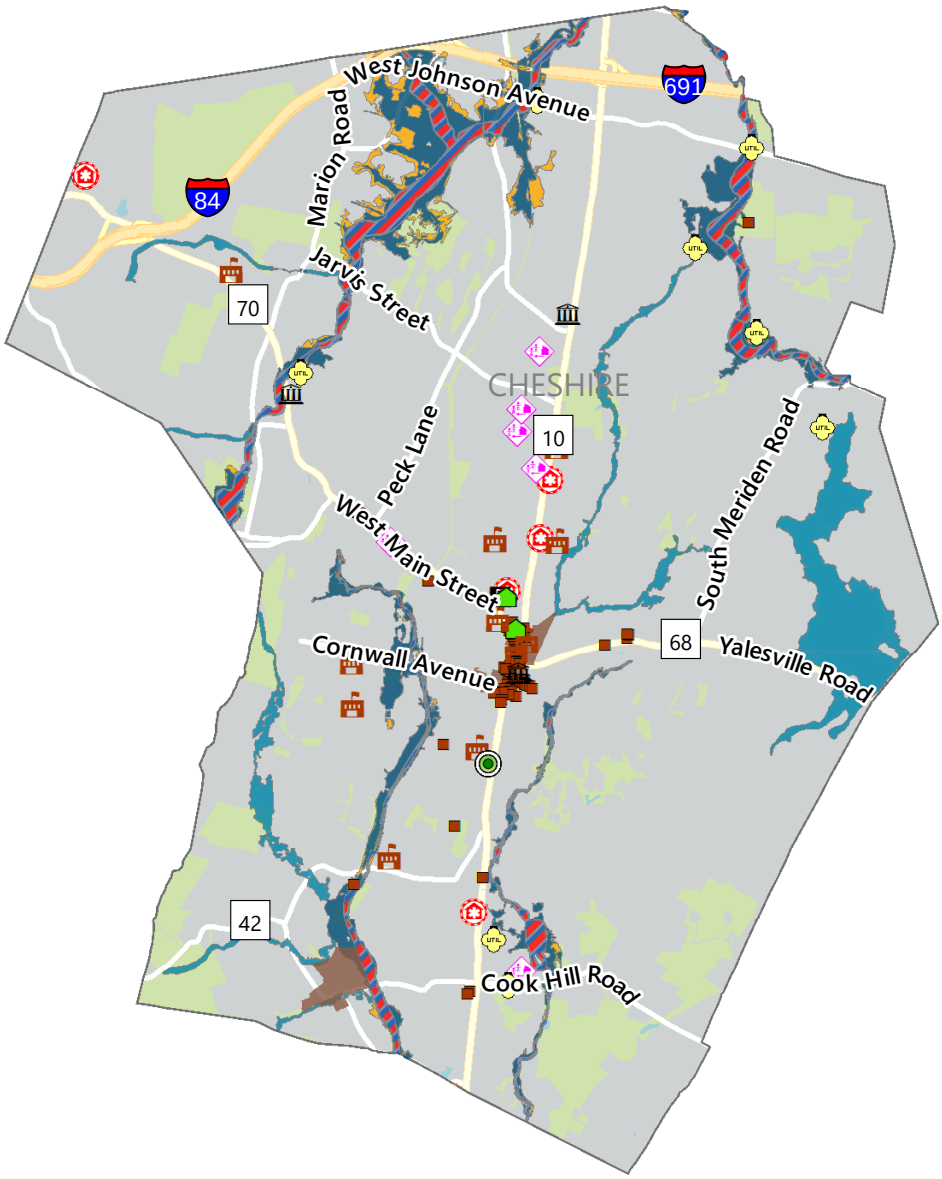



**Critical Facilities**
- Community Center
- Emergency Response
- Fuel
- Government Services
- Population Center
- School
- Utility
- Vulnerable Population

**Historic Sites**
- Historic Sites
- NR Historic Districts

**Flood Zone**
- A
- AE
- Floodway
- X: 0.2% Annual Chance
- Reduced Risk Due to Levee

SLR
99 REALTY DRIVE
CHESHIRE, CT 06410
203.271.1773

# Flood Hazards in Cheshire

NVCOG Hazard Mitigation Plan Update
Naugatuck Valley Council of Governments
47 Leavenworth Street, 3rd Floor
Waterbury, CT 06702

N

0 3,000 6,000
Feet

DATE 6/15/2021

141.3211.00029
PROJ. NO.

**FIG. 3-1**

# 4.0 HURRICANES AND TROPICAL STORMS

## 4.1 Existing Capabilities

### Flooding

Existing capabilities appropriate for flooding were discussed in Section 3.0. These include the ordinances, codes, and regulations that have been enacted to minimize flood damage. In addition, various structures exist to protect certain areas, including dam and local flood protection projects.

### Wind

Wind loading requirements are addressed through the state building code. The State Building Code has been amended several times in the past two decades. The 2005 Code was amended in 2009, 2011, and 2013. The code was then updated and amended in 2016, with the current code having been updated and effective as of October 1, 2018. The code specifies the design wind speed for construction in all the Connecticut municipalities. Effective October 1, 2018 the design wind speed for Cheshire is 115 mph for a Category 1 event, 125 mph for a Category 2, and 135 mph for a Category 3, 4 or 5 hurricane event.

Connecticut is located in FEMA Zone II regarding maximum expected wind speed. The maximum expected wind speed for a three-second gust is 160 mph. This wind speed could occur as a result of either a hurricane or a tornado in western Connecticut and southeastern New York. The American Society of Civil Engineers recommends that new buildings be designed to withstand this peak three-second gust.

Eversource, the local electric utility, provides tree maintenance near its power lines.

Trees and branches may fall during heavy wind events, potentially damaging structures, utility lines, and vehicles. The Town of Cheshire approaches residents on a case-by-case basis if branches appear to be hazardous. Otherwise, it performs roadside tree maintenance, and Eversource Energy performs trimming near power lines as well. The Town's tree warden has a budget of approximately $60,000 per year to remove trees. The Town policy is for utilities in new subdivisions to be located underground whenever possible in order to mitigate wind-related damages.

Eversource was under intense scrutiny after storms Irene and Alfred in 2011. The utility has reportedly done an adequate job trimming trees since 2011. Loss of power is a concern for the town. Trimming has reportedly helped avoid significant outages in a few recent high wind events.

During emergencies, the Town of Cheshire currently has two un-stocked shelter facilities available. The facilities have bed space available for a total of 300 people who need long-term shelter. The facilities have the capability to feed a total of 1,250 people per meal in five sittings. As hurricanes generally pass an area within a day's time, additional shelters can be set up after the storm as needed for long-term evacuees. These shelters are described in Section 2.9.

The website of the Cheshire Fire Department (http://www.cheshirefd.org/lepc.htm) has information for the public regarding hurricanes and actions to take to protect life and property. The Town relies on radio and

television to spread information on the location and availability of shelters, and sends town vehicles along established snow removal routes to further inform the public during emergencies. Prior to severe storm events, the Town ensures that warning/notification systems and communication equipment is working properly, and prepares for the possible evacuation of impacted areas. Town buildings have NOAA radios, municipal officials are notified of flood warnings, and emergency responder teams can be notified of emergency situations.

### New Capabilities and Completed Actions

Cheshire continues to maintain its strong tropical cyclone mitigation capabilities.

### Summary

Cheshire mitigates hurricane and tropical storm damages through tree and limb maintenance, public alert and communications procedures, and enforcement of building code requirements related to high winds.

## 4.2 Vulnerabilities and Risk Assessment

Factors that influence vulnerability to tropical cyclones in the town include building codes currently in place, and local zoning and development patterns and the age and number of structures located in highly vulnerable areas of the community.

Cheshire's housing stock consists of a handful of historic buildings greater than 50 and sometimes 100 years old, relatively younger buildings built before 1990 when the building code changed to mitigate for wind damage, and relatively recent buildings that utilize the new code changes. Since much of the existing housing stock in the town predates the recent code changes, many structures are highly susceptible to roof and window damage from high winds. Hurricane-force winds can easily destroy poorly constructed buildings and mobile homes. However, there are currently no mobile home parks in Cheshire since they are prohibited under current zoning regulations.

Town-owned critical facilities do not have wind-mitigation measures installed to specifically reduce the effects of wind. Thus, it is believed that nearly all of the critical facilities in the town are as likely to be damaged by hurricane-force winds as any other. However, newer critical facilities are more likely to meet current building code requirements and are therefore considered to be the most resistant to wind damage even if they are not specifically wind-resistant. Older facilities are considered to be more susceptible to wind damage.

The Town owns one important facility – the Town pool – that is particularly at risk to hurricane winds. Although past failure of the pool roof was caused by snow, the Town recognizes that wind events can damage the roof as well.

#### Tropical Storm Isaias

Tree damage was generally widespread throughout Cheshire following Tropical Storm Isaias in August 2020. The southern portion of town was generally hit harder than the northern portion. Many roads (or portions of roads) were closed for several days until power could be properly shut down and trees could be removed.

In particular, the intersection of Mount Sanford Road at South Brooksvale Road was closed for several days. Power outages generally lasted 6 to 7 days.

Similar to other communities in the region, Cheshire had issues coordinating with Eversource regarding the timing of Make Safe crews versus restoration crews. The Town is currently holding meetings with Eversource to discuss necessary coordination improvements. The generators at Town Hall and the Police Department both failed; as a result, the Town needed to rent a portable generator to power the Town Hall. The Town's two portable generators were used at the Police Department (to power the EOC) and at Highland School to power a warming/charging station. The primary and secondary shelters were not opened. The Town is working to streamline its internal processes for hazard response.

# 5.0 SUMMER STORMS AND TORNADOES

## 5.1 Existing Capabilities

Warning is the primary method of existing mitigation 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.

Aside from warnings, several other methods of mitigation for wind damage are employed in Cheshire as explained in Section 4. In addition, the Connecticut State Building Code includes guidelines for the proper grounding of buildings and electrical boxes.

Cheshire desires an increased budget for tree maintenance over the next few years to continue clearing away ash trees damaged by the Emerald Ash Borer throughout Cheshire. To this end, approximately $150,000 per year over the next several years has been budgeted in the Capital Improvement Plan for tree removal. However, the tree removal funding often needs to be reduced to balance the annual budget.

In the Town of Cheshire, Eversource is responsible for tree branch removal and maintenance above and near power lines. In addition, all new developments in Cheshire must place utilities underground wherever possible. The DPW has the responsibility of maintaining trees on municipal property, but hire contractors for elevated work. The DPW is responsible for trimming over roadways, and DPW staff routinely monitor for downed tree limbs during storms. The Town also approaches residents on a case-by-case basis when trees and branches on their property look hazardous.

Municipal responsibilities relative to tornado mitigation and preparedness include:

- Developing and disseminating emergency public information and instructions concerning tornado safety, especially guidance regarding in-home protection and evacuation procedures, and locations of public shelters.
- Designate appropriate shelter space in the community that could potentially withstand tornado impact.
- Periodically test and exercise tornado response plans.
- Put emergency personnel on standby at tornado 'watch' stage.
- Utilize CodeRED as needed to warn residents of watches and warnings.

### New Capabilities and Completed Actions

Cheshire continues to maintain its summer storm mitigation capabilities. Its tree and limb removal procedures continue to be adequate, and it coordinates closely with Eversource on protecting power lines.

### Summary

Cheshire mitigates summer storm risks primarily through tree, limb, and debris management, emergency communications, and coordination with Eversource.

## 5.2 Vulnerabilities and Risk Assessment

The entire community is at relatively equal risk for experiencing damage from summer storms and tornadoes. Based on the historic record, only a few severe thunderstorms have resulted in costly damages in Cheshire. Most damages are relatively site-specific and occur to private property (and therefore are paid for by private insurance). For municipal property, the budget for tree removal and minor repairs may need to be adjusted from time to time to address storms. Given the limited historic record for damaging tornado events, an estimate of several million dollars in damage may be reasonable for an EF2 tornado striking Cheshire, and with a greater damage amount to be expected should an EF3 or stronger tornado strike.

Cheshire is particularly vulnerable to damage from high winds due to its heavily treed landscape and residential land uses. Secondary damage from falling branches and trees is more common than direct wind damage to structures. Heavy winds can take down trees near power lines, leading to the start of electrical fires. Such fires can be extremely dangerous during the summer months during drought conditions. Most downed power lines in Cheshire are detected quickly and any associated fires are quickly extinguished. However, it is important to have adequate water supply for fire protection to ensure this level of safety is maintained.

There are no critical facilities believed to be more susceptible to summer storm damage than any other. Some critical facilities are more susceptible than others to flooding damage due to summer storms. Such facilities susceptible to flooding damage were discussed in Section 3.6.

The Cheshire Public Works Department reports that the typical cost for the town to respond to downed branches and wires from a localized severe thunderstorm is $500 per instance; this is the cost increment above and beyond normal daily budgets for the Public Works and Police Departments.

Several microbursts and thunderstorms occur each year that cause minor tree damage. These are not considered to be significant risks by Town officials.

A tornado in May 2018 primarily impacted southern Cheshire. Residents of 11 or 12 homes were displaced due to damage. The majority of tree damage from high winds occurred in the vicinity of Mount Sanford Road and South Brooksvale Road, Sir Walter Drive, and Higgins Road.

# 6.0 WINTER STORMS

## 6.1 Existing Capabilities

Programs that are specific to winter storms are generally those related to preparing plows, sand and salt trucks; tree-trimming to protect power lines; and other associated snow removal and response preparations.

As it is almost guaranteed that winter storms will occur annually in Connecticut, it important for municipalities to budget fiscal resources towards snow management. The Town ensures that all warning/notification and communications systems are ready before a storm, and ensures that appropriate equipment and supplies are in place and in good working order. The Town also prepares for the possible evacuation and sheltering of some populations which could be impacted by the upcoming storm (especially the elderly and special needs persons).

Snow removal policies are outlined on the Town of Cheshire's website (www.cheshirect.org/services). The Town policy is to plow main roads first, and then smaller roads. All roads are generally cleared within six hours of the end of a storm. The DPW has a partial written policy of 13 snow removal routes. The state plows Routes 10, 42, 68, and 70.

The Town of Cheshire Subdivision and Other Land Use Regulations discourage the creation of cul-de-sacs whenever a feasible connection to a through street can be created. This policy presents residents and emergency personnel with two means of egress into neighborhoods in the Town, ensuring that residents will not be cut off from critical facilities during times of need.

The town found it necessary to remove snow from municipal facilities and school roofs in January-February 2011 when buildings collapsed throughout Cheshire. As a result of this experience, and the loss of the pool facility roof, the town has been careful to watch for conditions that may lead to damage from snow loads.

### New Capabilities and Completed Actions

Cheshire continues to maintain its strong winter storm mitigation capabilities. Drainage piping has been installed by Connecticut DOT along Peach Tree Court and South Meriden Road to mitigate icing in those areas.

### Summary

Cheshire mitigates snow damages through implementation of road and building clearing protocols, enforcement of the State Building Code, and through the mitigation measures previously discussed for high wind events.

## 6.2 Vulnerabilities and Risk Assessment

The entire community is at relatively equal risk for experiencing damage from winter storms, although some areas may be more susceptible. Many damages are relatively site-specific and occur to private property (and therefore are paid for by private insurance), while repairs for power outages is often widespread and

difficult to quantify to any one municipality. For municipal property, the budget for plowing and minor repairs is generally adequate to handle winter storm damage, although the plowing budget is often depleted in severe winters. In particular, the heavy snowfalls associated with the winter of 2010-2011 drained the local plowing budget and raised a high level of awareness of the danger that heavy snow poses to roofs, as did the snow associated with Winter Storm Alfred in October 2011 and storm Nemo in February 2013

A few areas in the Town of Cheshire have been identified by Town personnel as having problems with ice during the winter months. The elevation, gradient, and tree cover combine to inhibit ice from melting on sections of Cook Hill Road. North Brooksvale Road (Route 42) near King Road also has icing issues due primarily to tree cover.

Drifting snow is an issue in several areas, including Boulder Road, East Johnson Road, Highland Avenue near Richards Chevrolet, and Waterbury Road near the "S" curves. This problem is mitigated through municipal and State plowing and treatment efforts.

Four private roofs and/or buildings collapsed in Cheshire in January and February 2014, and the Town's pool facility was damaged. Some of the private buildings were eventually demolished and rebuilt. The losses were undoubtedly in the millions, and the lost revenue from the pool facility was reportedly $600,000 due to its closure. The January 2015 winter storm produced a large amount of snow that required additional plowing efforts; however, no major damage occurred.

# 7.0 GEOLOGICAL HAZARDS

## 7.1 Existing Capabilities

### Earthquake Mitigation

The Connecticut Building Codes include design criteria for buildings specific to municipality, as adopted by the Building Officials and Code Administrators (BOCA). These include the seismic coefficients for building design in the Town of Cheshire. The Town has adopted these codes for new construction and they are enforced by the Town Building Inspector. Due to the infrequent nature of damaging earthquakes, land use policies in the Town of Cheshire do not directly address earthquake hazards. Cheshire's capabilities to mitigate for earthquake damage and prevent loss of life and property have not necessarily changed since the initial hazard mitigation plan was adopted, although the State's building code has been updated and the town has incorporated those changes.

### Sinkhole Mitigation

Sinkhole prevention programs, policies, or mitigation measures are not in place in the Town of Cheshire, as the Town is not responsible for their occurrence. However, the Town keeps a file of mining related documents in the Planning and Zoning office that the public can access. Problems in streets and on public property are repaired by DPW as needed. Previous efforts to obtain state funding in order to investigate the abandoned mines were reportedly denied. The state government has identified over 600 mines state-wide, and in 2004 contended that dealing with mine-related subsidence is best left to individual municipalities (Malinowski, 2006). The town's current approach for sinkholes is to address each on a case-by-case basis. This has not substantially changed since the initial hazard mitigation plan was adopted.

#### New Capabilities and Completed Actions

Cheshire continues to maintain its earthquake and landslide mitigation capabilities.

#### Summary

Cheshire mitigates geological hazards through enforcement of zoning and subdivision regulations preventing development in higher risk areas. Other mitigation measures consist of general emergency response capabilities.

## 7.2 Vulnerabilities and Risk Assessment

#### Earthquake Vulnerabilities

Portions of the Town of Cheshire are underlain by sand and gravel. In addition to sandy areas, some portions of Cheshire are built on old mine areas which have been filled. Structures in these areas are at increased risk from earthquakes due to amplification of seismic energy and/or collapse. The areas that are not at increased risk during an earthquake due to unstable soils are the areas underlain by glacial till.

Areas of steep slopes can collapse during an earthquake, creating landslides. Seismic activity can also break utility lines, such as water mains, electric and telephone lines, and stormwater management systems. Dam failure can also pose a significant threat to developed areas during an earthquake.

## Sinkhole Vulnerabilities

Subsidence is a small-scale phenomenon that affects a small number of buildings and streets in a limited number of areas. The creation of sinkholes is a slow process, although sinkholes appear to form quickly as the surface manifestation of settling becomes apparent.

Certain areas of the Town of Cheshire are at risk of developing sinkholes due to spalling of overlying sediments into mining tunnels used in the 19th and early 20th centuries. As the timbers holding the soil and rock above the mining tunnels rot away with age, spalling occurs in a similar fashion to cover-collapse and cover-subsidence sinkholes. When the soil migrates downward, the voids migrate upward until too little structural support remains above a section of the cavity, resulting in the sudden collapse those sediments into the cavity.

Unlike natural sinkholes, sinkholes associated with mining tunnels tend to form quasi-linear patterns across the surface landscape running parallel to the horizontal shafts below. Some of these areas are well-known and undeveloped, presenting little or no hazard to existing structures. Other areas have been developed into residential neighborhoods with little or no prior knowledge of the previous mining operations, and the potential for new sinkholes presents a dangerous structural hazard.

Damage from sinkholes and land subsidence consists of direct structural damage, property loss and depreciation of land values, as well as business and personal losses that accrue during periods of repair. Generally, sinkholes present a greater risk to property than to life.

Direct damage from sinkholes relates to the land subsidence which can cut both aboveground and belowground utilities and undermine foundations. Sinkholes can also redirect surface water flow patterns. When surface water enters a sinkhole, it fills the underground tunnels, causing underground erosion that leads to further subsidence. The water that enters the ground fresh eventually seeps out someplace else as mine drainage. A study performed by University of Connecticut geologists in 1996 found that the wetlands surrounding the Jinny Hill mine area in Cheshire are under no imminent threat from contamination. The hazard to other wetlands in Town due to contaminated groundwater from other mines has reportedly not been studied.

While sinkholes in Cheshire are developed through gravitational processes such as spalling and sediment settling, heavy rainfall often acts as a catalyst in the development of sinkholes. The influx of water into the soil increases the overall weight of the soil structure existing over the cavity and thus the likelihood of collapse. The influx of water also helps erode and spread the pile of collapsed soil in the shaft, weakening the column of soil above it, eventually inducing yet another sinkhole. Rainfall-induced sinkholes are more prevalent in areas where the mine shafts are closer to the surface.

With regard to future likelihood of occurrence, sinkholes and subsidence are more likely to occur in areas that have previously been mined, especially in areas above the mining tunnels where sinkholes have occurred previously. These areas are considered to be at low to moderate risk for developing a new sinkhole

each year. The likelihood of sinkholes occurring in other locations in the Town of Cheshire is considered to be low.

The table below outlines the mine locations in Cheshire.

**Table 7-1: Description of Abandoned Mines in Cheshire (From Fritts, 1962)**

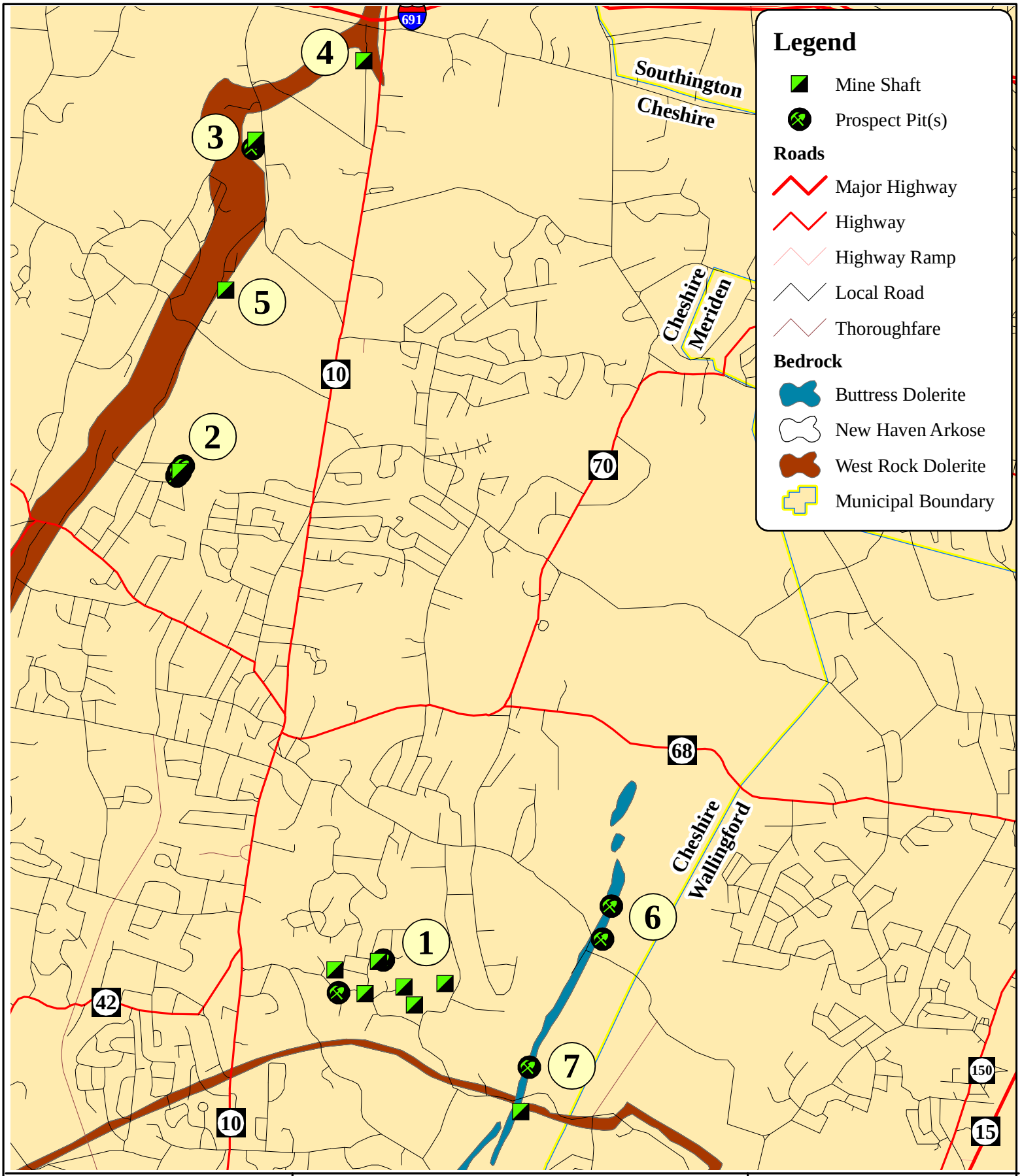
| Mine # | Name | Years of Operation | Description |
|---|---|---|---|
| **1** | Jinny Hill barite mines | 1838 - 1877 | Operated by Gastons (1838), Mineral & Manufacturing Co. (1839 - 1871), and Stamford Manufacturing Co. (1871 - 1877). The Cheshire Mining Co. also was active on this site from 1840 -1845. |
| **2** | Barite mine (Sheridan Drive) | 1866 - 1878 | Barite mine operated by Cheshire Barytes Co. (1866 - 1872) and Stamford Manufacturing Co. (1872 - 1878). |
| **3** | Barite mine (Peck Lane) | 1864 - 1877 | Barite mine operated by Cheshire Mining & Manufacturing Co. (1864 - 1871) and Stamford Manufacturing Co. (1876 - 1877). |
| **4** | Barite mine (Reinhard Road) | 1864 - 1871 | Barite mine operated by New Haven Mineral Co. |
| **5** | Barite mine (Peck Lane) | 1866 - 1871 | Barite mine operated by N. Booth & W. Hinman. |
| **6** | Copper Valley Mine | 1712 - 1901 | Operated as a copper prospecting site at various times from 1712 to 1901, mainly for the purpose of stock promotion. |
| **7** | Copper prospecting site | 1710 1901-1903 | Site of first copper prospecting in the area in 1710, an unsuccessful attempt was made to mine copper from 1901 to 1903. |

## Jinny Hill Barite Mines

The barite mines at Jinny Hill consisted of six shafts – two in the north vein, three in the central vein, and one in the south vein. According to Brick (1997), four of these shafts are identifiable in the field by sinkholes which have been filled. Refer to Figure 7-2.

The mines at Jinny Hill were the first barite mines in the United States and reportedly the deepest and most extensive mines in the State of Connecticut at 600 feet. The veins of barite were nearly vertical and originally only four feet wide at the surface, accounting for the depth and linear layout of the mines. Brick (1997) believes that the veins were not interconnected by shafts during the course of mining operations. As no detailed mining records of the area have been found, the width and layout of the underground passages is unknown.

An approximate mine hazard area has been delineated in Figure 7-2 for the three veins at the Jinny Hill mining site. From west to east, mining operations in the north vein potentially impact two houses on Jinny Hill Road, a section of an unnamed road, three houses on Merwin Circle, a section of Merwin Circle, a section of Radmere Road, and a house on the east side of Radmere Road. Mining operations in the central vein potentially impact a section of Barytes Drive, the intersection of Jinny Hill and Radmere Roads, sections of an unnamed road referred to by Brick (1997) as the "Central Vein Road", a commercial or industrial enterprise along the Central Vein Road, a house on the west side of Coleman Road, and Coleman Road. The south vein likely has no impacts on any surrounding structures.





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# Location of Abandoned Mines in Cheshire

**LOCATION:** Cheshire, CT

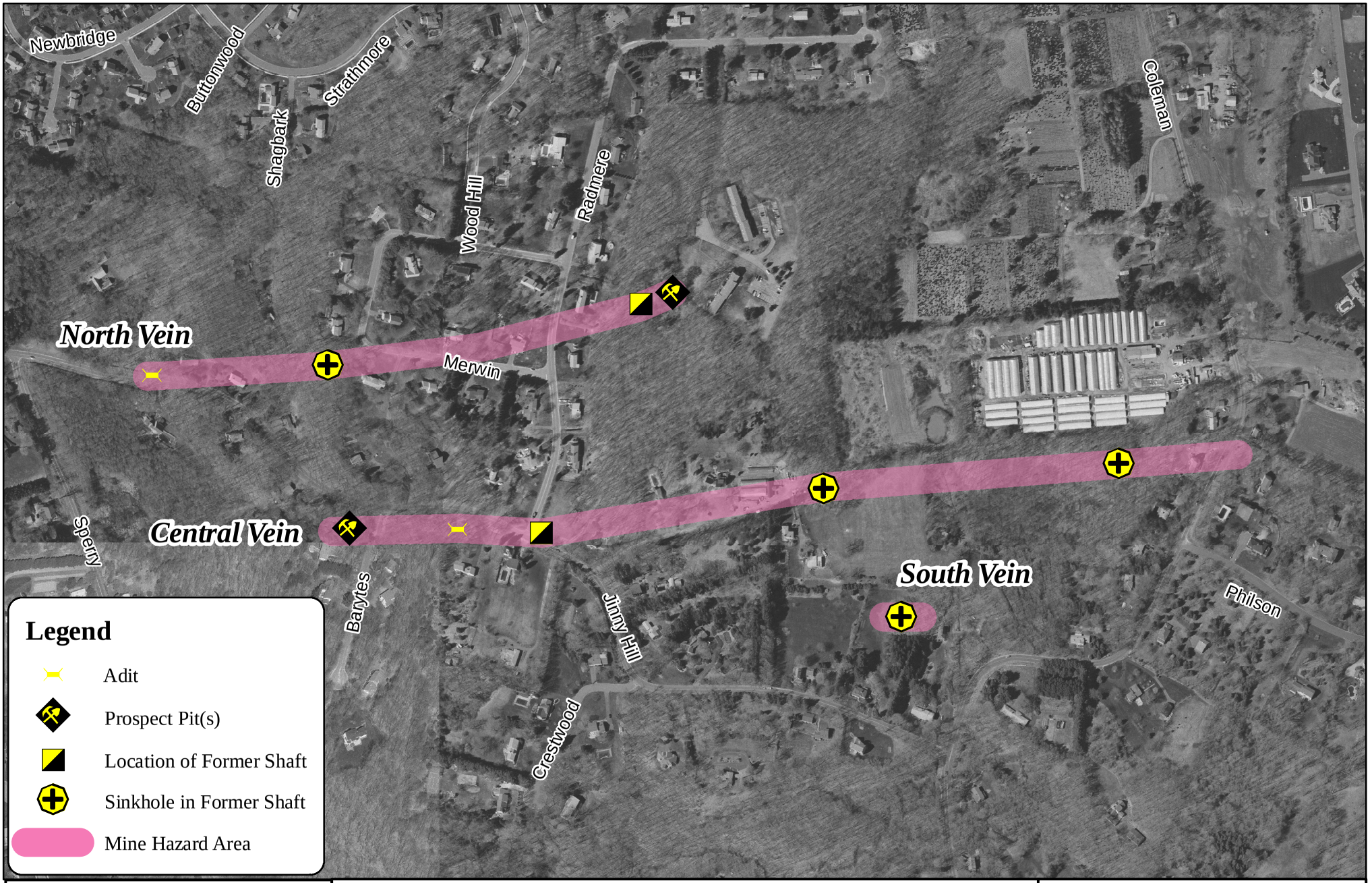
**MMI#:** 2937-01-2-3
**MXD:** H:8-1-Mine.mxd
**SOURCE:** Fritts, Brick, CT DEP

N

Town of Cheshire
Natural Hazard
Mitigation Plan

**DATE:** July 2007
**SCALE:** 1" = 3,500'

**SHEET:** Figure 7-1





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# Approximate Hazard Area
# Jinny Hill Barite Mine

**Location:** Cheshire, CT

MMI#: 2937-01-2-3
MXD: H:\8-2-Jinny Hill.mxd
Source: Brick '97, CLEAR, DEP

N

## Town of Cheshire
## Natural Hazard Mitigation Plan

**Date:** Dec. 2006

**Scale:** 1" = 500'

**Sheet:** Figure 7-2

Sinkholes at Jinny Hill only occur at the locations of the main (vertical) mine shafts which have been filled. These sinkholes are related to settling and usually exacerbated by heavy rainfalls. No sinkhole documentation was found related to adits (horizontal shafts) near the mines. It is believed that the deeper mines at Jinny Hill have more depth of solid bedrock supporting the ceilings over the cavities, lessening the potential development of sinkholes.

Due to the lack of accurate mining maps, it is difficult to qualify exactly which areas at the Jinny Hill mining site are more susceptible to sinkholes and their associated property damage. The location of existing sinkholes related to the former mineshafts is well known. These sinkholes have been repeatedly filled by the Town of Cheshire or individual land owners in the area over the past 70 years and the areas near the former shafts have not been developed. Based on the above information, the chance of occurrence of sinkholes around the Jinny Hill barite mines is considered to be low, and it is believed that the damage potential of the existing sinkholes is also low.

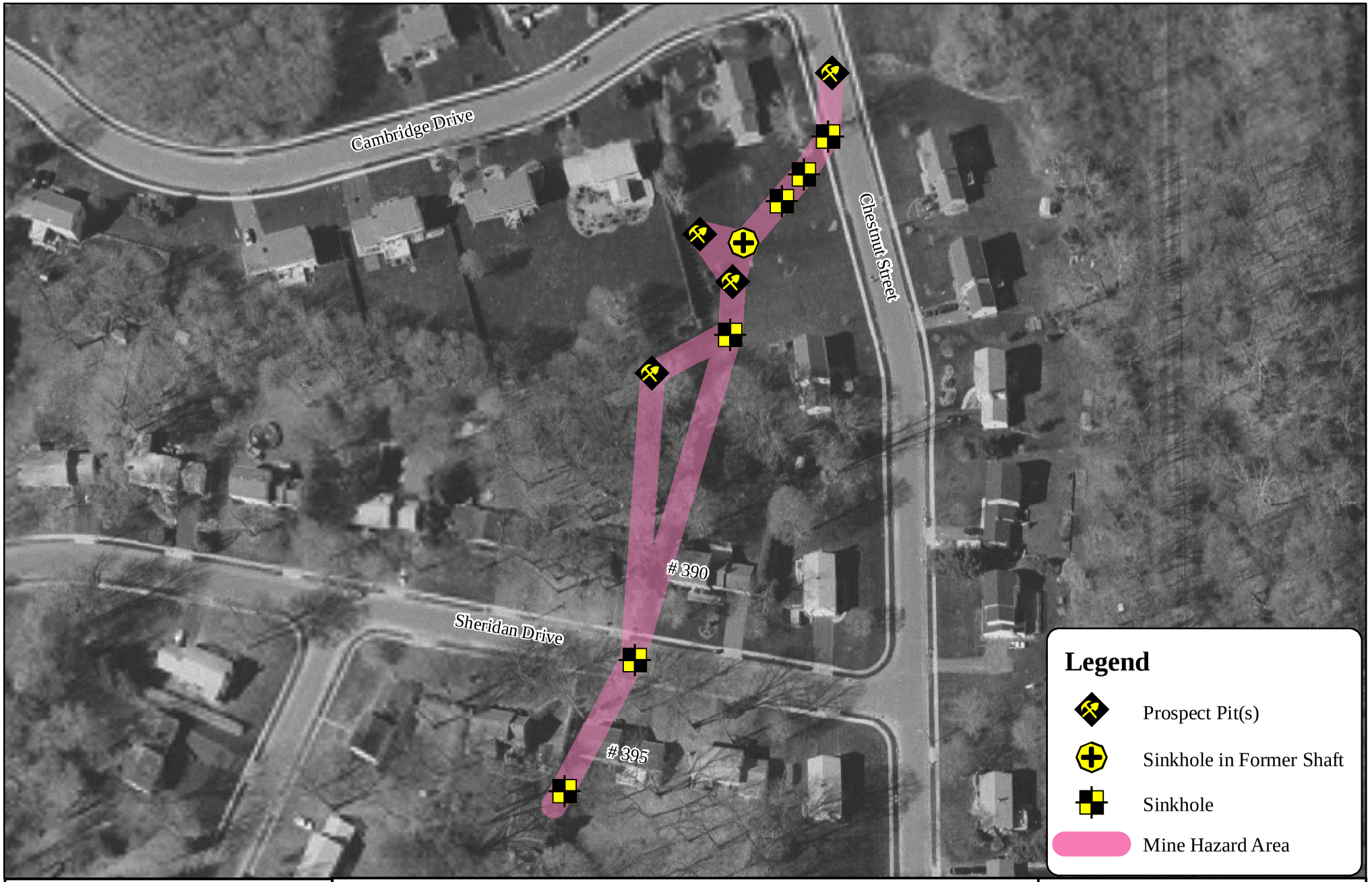
### Sheridan Drive Area Barite Mine

The barite mine near Sheridan Drive consisted of one main shaft (Fritts 1962). According to Hedberg (1993), the main shaft was visible in the field by the presence of a large sinkhole. It is assumed that the vein of barite here was vertical, similar to Jinny Hill. Records of the mining operations at this site have not been found.

Existing sinkholes and excavations assumed to be prospect pits in this area were mapped in 1993 for an engineering study performed during the extension of Chestnut Street. These sinkholes are depicted in Figure 7-3. An approximate mine hazard area is also depicted. From south to north, the sinkhole mapping indicates that mine shafts may potentially impact the building at 395 Sheridan Drive, a section of Sheridan Drive, 390 Sheridan Drive, an open lawn area, and a section Chestnut Street. The sinkholes at this mine appeared related to the central mine shaft and its related adits. These adits are at a shallower depth than at the Jinny Hill mines and thus the surface is more prone to developing sinkholes, especially during heavy rains.

The Town of Cheshire filled in the sinkholes delineated in the 1993 study before Chestnut Street was extended north and developed into single-family residential homes. The Town also filled in the sinkholes related to the collapse of Sheridan Drive. Other sinkholes have been filled in by individual property owners, and any small sinkholes (a few feet in width and depth) likely go unreported. Due to the lack of accurate mining maps, it is difficult to qualify exactly which areas at the Sheridan Drive / Chestnut Street barite mining site are more susceptible to sinkholes and their associated property damage. Based on the above information, there appears to be a low to moderate chance of occurrence of sinkholes around the mine.

In terms of damage potential, it appears that two houses on Sheridan Drive have the potential to be impacted by the mines, and depending on the location of the adits, other houses may be impacted as well. Should a sinkhole develop suddenly, damage could range from negligible (a sinkhole occurring in a wooded area), to very low (a small sinkhole appearing in a yard with no one present), to significant, where an entire house is undermined.

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# Approximate Hazard Area
# Sheridan Drive / Chestnut Street Barite Mine

Location: **Cheshire, CT**

MMI#: 2937-01-2-3
MXD: 8-3-Sheridan.mxd
Source: Hedberg '92, CLEAR

N

## Town of Cheshire
## Natural Hazard Mitigation Plan

Date: Dec. 2006

Scale: 1"= 120'

Sheet: **Figure 7-3**

## Other Peck Mountain Barite Mines

Mining records for the three northernmost barite mines in the Town of Cheshire are not available. According to Fritts (1962), each of these mines had one main shaft. It is assumed that the mines and the deposit were laid out similar to the mine at Sheridan Drive / Chestnut Street. No documentation was found with reports of sinkholes in the area of these abandoned mines.

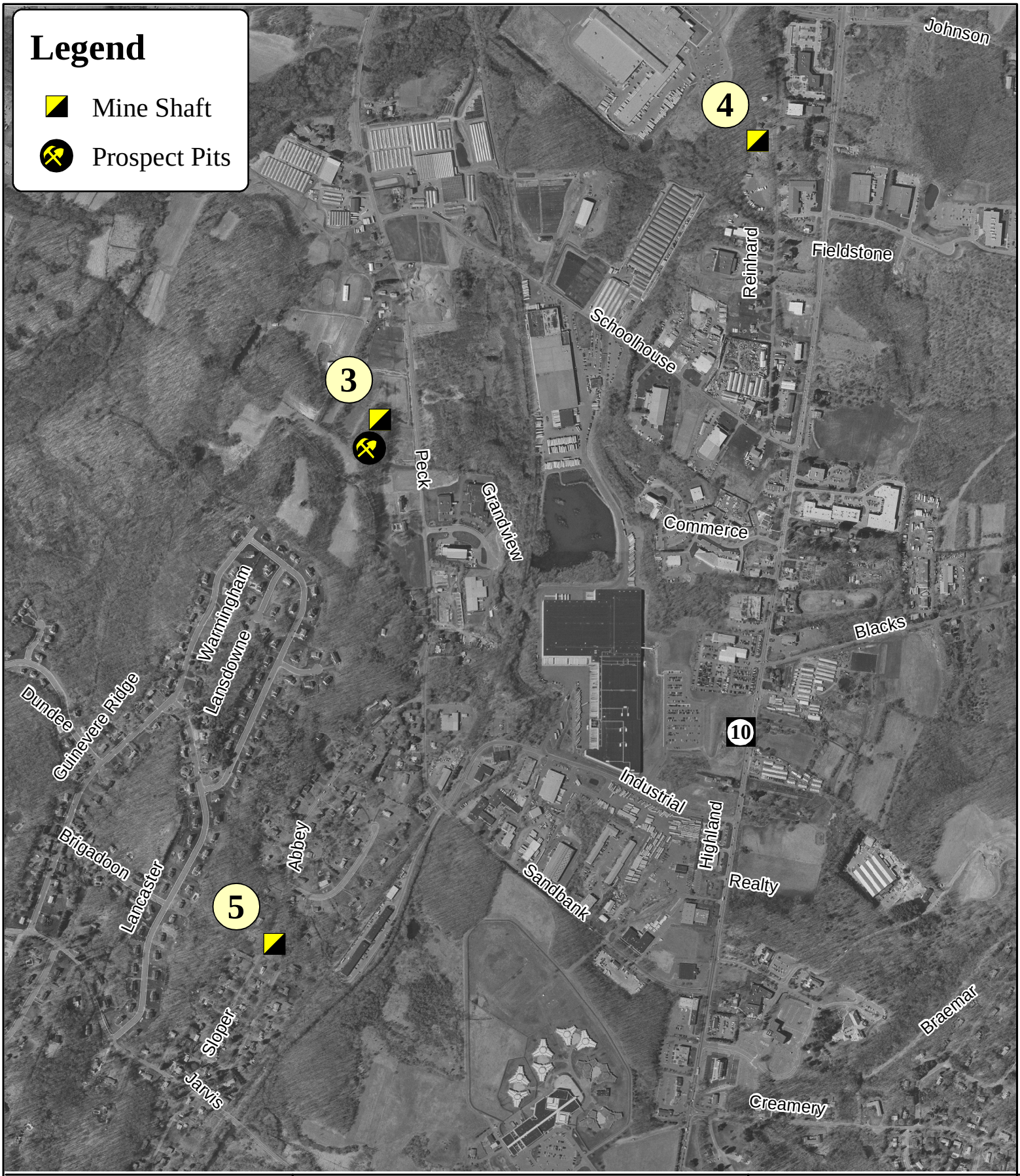
Figure 7-4 depicts the area of the mines. The area of approximate risk for these mine shafts is unknown. The damage potential of any sinkholes occurring near Mmine #3 is believed to be very low, as the mine and prospect pit are surrounded by woodlands and agricultural fields. Mine #4 appears to be located near some structures, but also in a wooded area. A sinkhole occurring here could undermine a structure, but sinkholes occurring anywhere else nearby would cause negligible damage. The damage potential of sinkholes associated with this mine is considered to be low. Mine #5 appears to be in a residential area on Peck Lane South of Abbey Court. The mine appears to be in a wooded area, but there are structures around the mine which potentially could be undermined. The damage potential of sinkholes associated with this mine is considered to be low.

## Copper Prospecting and Mining Sites

Mining records are not available for the abandoned copper mines in the southeastern section of Cheshire. Figure 7-5 depicts the area of the mines. According to Fritts (1962), the northern area was used primarily for prospecting, and some adits were dug into the hillside. The southern area was used for both prospecting and mining and had one main shaft. No documentation was found with reports of sinkholes in the area of these abandoned copper mines. The area of approximate risk is unknown. In general, the damage potential of sinkholes occurring in these areas is considered to be very low due to the extensive wooded areas surrounding the mine shafts.

## Conclusion

Although addressed in this Hazard Mitigation Plan, sinkholes in Cheshire are not strictly natural hazards. They have resulted from mining activities. Although the Town of Cheshire is not responsible for preventing or providing relief from sinkhole activity, this Plan is believed to be an appropriate forum for discussing the sinkhole problem and recommending potential mitigation actions that can be undertaken. There have not been any new occurrences of sinkholes in the past few years.

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# Location of Other Abandoned Barite Mines in Cheshire

**LOCATION:** Cheshire, CT

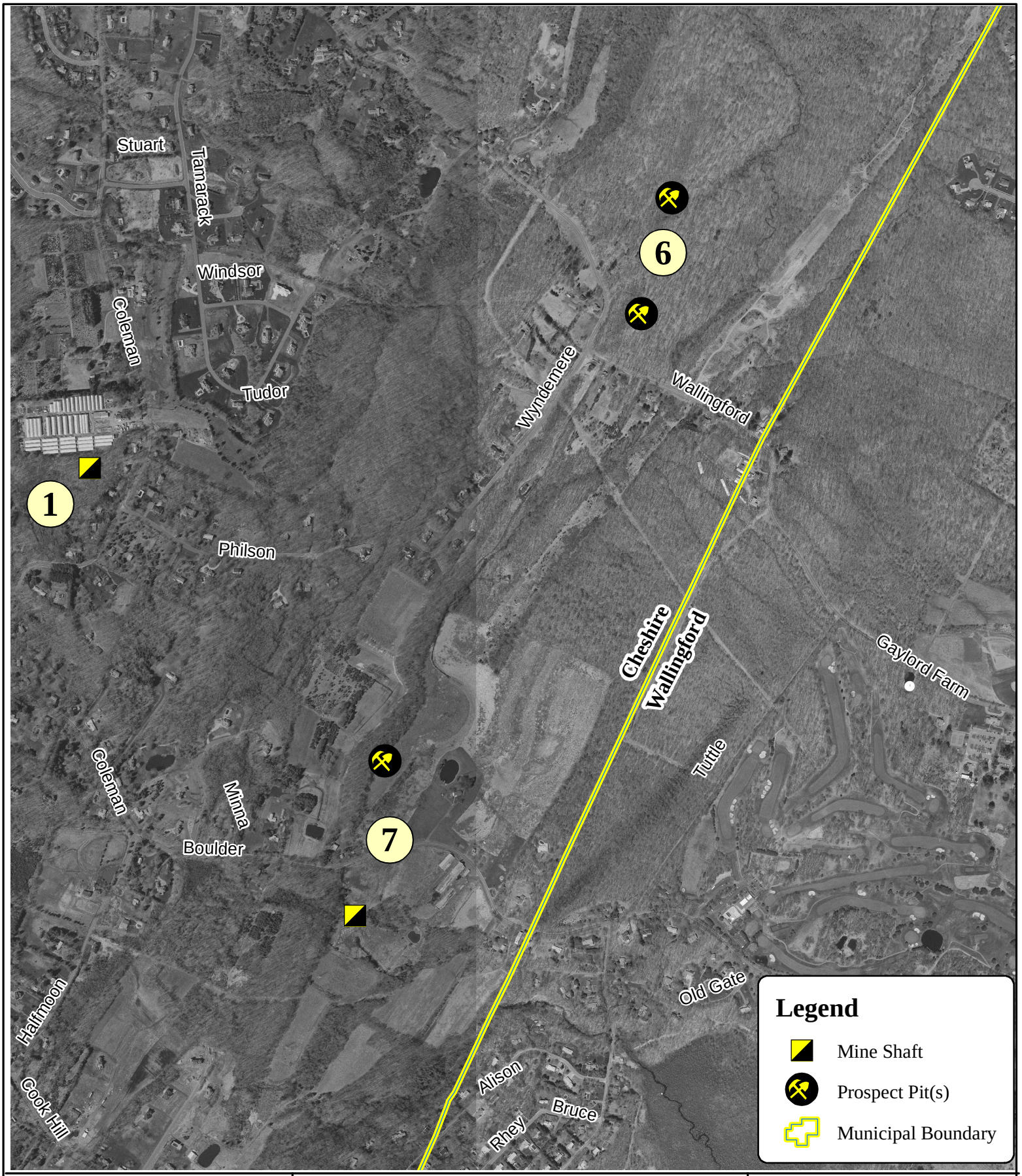
**MMI#:** 2937-01-2-3
**MXD:** H:8-4-Other Barite.mxd
**SOURCE:** Fritts, DEP, CLEAR

N

**Town of Cheshire Natural Hazard Mitigation Plan**

**DATE:** Dec. 2006
**SCALE:** 1" = 1,000'

**SHEET:** Figure 7-4

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# Location of Abandoned Copper Mines in Cheshire

**LOCATION:**
**Cheshire, CT**

**MMI#:** 2937-01-2-3
**MXD:** H:8-5-Copper.mxd
**SOURCE:** Fritts, DEP, CLEAR

N

**Town of Cheshire Natural Hazard Mitigation Plan**

**DATE:** Dec. 2006
**SCALE:** 1" = 1,000'

**SHEET:**
**Figure 7-5**

# 8.0 DAM FAILURE

## 8.1 Existing Capabilities

The Dam Safety Section of the Connecticut DEEP Inland Water Resources Division is responsible for administration and enforcement of Connecticut's dam safety laws. Dam safety laws are codified in Sections 22a-401 through 22a-411 of the Connecticut General Statutes. The statutes require that permits be obtained to construct, repair, or alter dams and that existing dams be inventoried and periodically inspected to assure that their continued operation does not constitute a hazard.

Dams regulated by the Connecticut DEEP must be designed to pass the 1% annual chance rainfall event with one foot of freeboard, a factor of safety against overtopping.

Significant and high hazard dams are required to meet a design standard greater than the 1% annual chance rainfall event.

Effective October 1, 2013, the owner of any high or significant hazard dam (Class B and C) must develop and implement an Emergency Action Plan (EAP). The EAP shall be updated every two years, and copies shall be filed with DEEP and the chief executive officer of any municipality that would potentially be affected in the event of an emergency. The EAP must include inundation zone mapping, procedures for monitoring the structure during periods of heavy rainfall and runoff, and a system to alert local officials in the event of an emergency.

The CT DEEP also administers the Flood and Erosion Control Board (FECB) program, which can provide noncompetitive state funding for repair of municipality-owned dams. State statute Section 25-84 allows a municipality to form an FECB.

Subsequent to the adoption of the initial HMP, the town of Cheshire Public Works Department commissioned the development of an EAP for Mixville Pond Dam. The EAP was submitted to DEEP and is also on file at the town hall. The Public Works Department has also commissioned at least two dam inspections since 2007, and a consultant has completed a hydrologic study and calculated the appropriate spillway capacity. Since then, the Town has completed the necessary spillway repairs at Mixville Pond Dam.

The Meriden Water Department maintains an EAP for the Broad Brook Reservoir Dam. Recently, the City of Meriden performed significant cutting of dead ash trees on its lands draining to Broad Brook reservoir.

### Actions Completed and New Capabilities

Cheshire continues to maintain its capabilities for mitigating and responding to dam failure risks.

Improvements to the Weeks Pond Dam are anticipated in the next few years. There is concern that detailed onsite investigations will determine that the entire dam needs replacement. A total of $140,000 is earmarked in the fiscal year 2023-2024 Capital Improvement Plan for this work.

It should be noted that the Town has not received EAPs from the DEEP for privately owned dams whose failure would affect Cheshire.

### Summary

Cheshire mitigates dam failure hazards primarily by supporting State Dam Safety Program efforts locally.

## 8.2 Vulnerabilities and Risk Assessment

While flooding from a dam failure generally has a moderate geographic extent, the effects are potentially catastrophic. The Connecticut DEEP administers the statewide Dam Safety Program and designates a classification to each state-inventoried dam based on its potential hazard.

- *Class AA*: negligible hazard potential
- *Class A*: low hazard potential
- *Class BB*: moderate hazard potential
- *Class B*: significant hazard potential
- *Class C*: high potential hazard

As of 2020, there were 25 DEEP-inventoried dams within Cheshire. Four of these dams had a Significant or High Hazard Potential rating. These dams are listed in Figure 8-1 and shown in Figure 8-1.

**Table 8-1: DEEP-Inventoried Dams in Cheshire**

| Number | Name | Class | Owner |
|---|---|---|---|
| 2501 | BROAD BROOK RESERVOIR DAM | C | Municipal |
| 2502 | MIXVILLE POND DAM | C | Municipal |
| 2503 | MOSS FARM aka LAKE PERCIVEL DAM | BB | Association |
| 2504 | LARSEN'S POND DAM | B | Private |
| 2505 | WEST JOHNSON AVE POND DAM | A | State Owned |
| 2506 | CUFF BROOK POND DAM | A | Private |
| 2507 | WEEKS POND DAM | A | Private |
| 2508 | COOK HILL POND DAM | A | Private |
| 2509 | MT SANFORD ROAD POND DAM | BB | Private |
| 2510 | HONEY POT BROOK POND DAM | A | Private |
| 2511 | HICOCK POND DAM | A | Private |
| 2512 | SHAPIRO POND DAM | AA | Private |
| 2513 | TYLER POND DAM | A | Association |
| 2514 | SKABEIKIS POND DAM | | Private |
| 2515 | RAVENSWOOD DAM | BB | Private Corporation |
| 2516 | CHESHIRE PARK POND DAM | | Municipal |
| 2517 | TIERS POND DAM | | Municipal |
| 2518 | THOMAS POND DAM | AA | Private |
| 2519 | FAZZONE DAM | A | Private |
| 2520 | SHUSTER DAM | | Private |
| 2521 | DEER PARK DETENTION DAM | A | Private Corporation |
| 2522 | BOZZUTOS DETENTION DAM | | Private Corporation |
| 2523 | MALONEY CENTER DETENTION DAM | AA | State Owned |
| 2524 | BETHANY MOUNTAIN ROAD DAM | AA | Private |
| 2525 | CHESHIRE STP RING LEVEE | B | Municipal |

The following table summarizes the status of EAPs for the higher-hazard potential dams in Cheshire:

**Table 8-2: EAP Status of Higher-Hazard Dams**

| Number | Name | Class | EAP Status | EAP Status Date |
|---|---|---|---|---|
| 2501 | BROAD BROOK RESERVOIR DAM | C | Acceptance Letter Sent | 3/8/2017 |
| 2502 | MIXVILLE POND DAM | C | Acceptance Letter Sent | 12/21/2020 |
| 2504 | LARSEN'S POND DAM | B | Assigned to DEEP Staff for review | 6/1/2020 |
| 2525 | CHESHIRE STP RING LEVEE | B | Working with Municipality - LEVEE | 9/8/2017 |

Cheshire should work to ensure EAPs are up-to-date.

Of the two Class C dams in the Town of Cheshire, Mixville Pond Dam presents the highest damage potential to Town residents, while the Broad Brook Reservoir Dam presents an extreme damage potential to residents downstream on the Quinnipiac River in Meriden and Wallingford, but will also cause backwater flooding upstream into Southington. A serious dam failure on Broad Brook Reservoir would also impede the City of Meriden's ability to provide water to its residents, as discussed below.

## Broad Brook Reservoir Dam

Broad Brook Reservoir is owned and operated by the City of Meriden. It covers a surface area of approximately 314 acres and has a storage capacity of 2951 acre-feet. This reservoir typically supplies up to 50% of the total system demand for the Meriden Water Department and is one of Meriden's primary drinking water sources. The outflow from Broad Brook Reservoir flows approximately 0.4 miles to the north before reaching its confluence with the Quinnipiac River.

The area downstream of Broad Brook Reservoir is mainly residential, with the stream forming a boundary between the Broad Brook Treatment Plant to the east and a single-family subdivision on Cornerstone Court to the west. Broad Brook then flows underneath Route 70 before entering the Quinnipiac River.

The Quinnipiac River flows southeast through Quinnipiac Gorge in Meriden and into Hanover Pond. Hanover Pond is impounded by a Class C Dam, and a dam failure at Broad Brook during a period of heavy flooding could cause Hanover Pond Dam to dangerously overtop or fail, with a high potential for increasing damage downstream in Meriden and Wallingford. Note that Hanover Pond Dam was partially breached during the extended rainfall of October 2005. Thus, a dam failure at Broad Brook Reservoir has the potential to undermine a public water supply as well as damage a large area downstream, although these areas are not in the Town of Cheshire. A dam failure would also cause a backwater condition along the Quinnipiac River that would potentially reach upstream into Southington. This backwater condition would cause flooding at properties along the river in Cheshire, including at the Cheshire Waste Treatment Plant.

## Mixville Pond Dam

Mixville Pond is encompassed by the Mixville Recreation Area and owned by the Town of Cheshire. The Ten Mile River is the primary inflow and outflow from Mixville Pond, which eventually drains to the Quinnipiac River. The area downstream of Mixville Pond Dam is lightly developed, consisting primarily of single-family residential combined with light and medium-density industrial areas.

Several houses and structures would be seriously damaged by flood waters should the dam at Mixville Pond fail. Four houses are located in the 100-year floodplain immediately downstream of the dam, and a failure would likely cause Marion Road to flood. Rising floodwaters and debris would also impact industrial areas and several side streets to Route 70. The extensive wetlands in the vicinity of West Johnson Avenue would likely diminish the flood stage and mitigate additional damage downstream in Southington.

### Cheshire Reservoir Dam

Two Class C dams are located in the Town of Prospect, adjacent to the Town of Cheshire to the west. The failure of the Class C dam retaining the Cheshire Reservoir would have few impacts in the Town of Prospect but potentially significant impacts downstream in the Town of Cheshire.

A dam failure at Cheshire Reservoir would send a torrent of water down the Ten Mile River. The sudden increase in water levels would likely cause Mixville Pond Dam to fail. This subsequent failure of Mixville Pond Dam would cause a significant amount of damage to infrastructure and residential and industrial properties downstream in the Towns of Cheshire and Southington, as discussed above.

According to CT DEEP, the Cheshire Reservoir Dam EAP was accepted by the state in September 2018. Cheshire Reservoir is owned and operated by the Town of Prospect.

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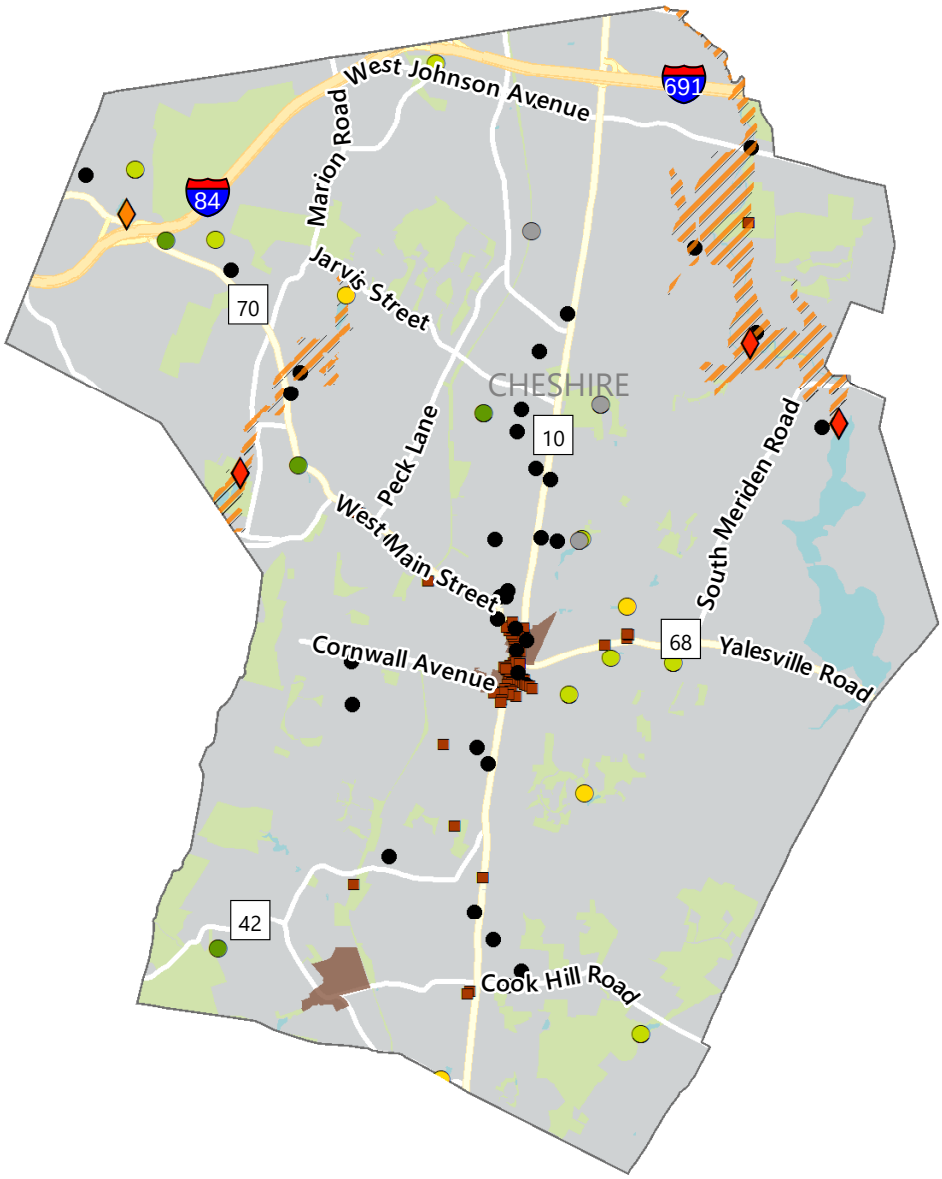


**Dam Hazard Class**

- Unclassified
- AA - Negligible Hazard
- A - Low Hazard
- BB - Moderate Hazard
- B - Significant Hazard
- C - High Hazard
- Dam Breach Inundation Area

**Critical Facilities**

- Critical Facilities

**Historic Sites**

- Historic Sites
- NR Historic Districts

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# Dam Failure Hazards in Cheshire

NVCOG Hazard Mitigation Plan Update
Naugatuck Valley Council of Governments
47 Leavenworth Street, 3rd Floor
Waterbury, CT 06702

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Feet

DATE 6/15/2021

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PROJ. NO.

**FIG. 8-1**

# 9.0 WILDFIRES

## 9.1 Existing Capabilities

Existing mitigation for wildland fire control is typically focused on Fire Department training and maintaining an adequate supply of equipment. The Town of Cheshire has a brush truck capable of accessing remote fires, and several pumpers carry extra lines of hose to supplement the range of this truck. The fire department has some water storage capability, but primarily relies on the Regional Water Authority's (RWA) water service. Approximately 80% of the Town of Cheshire has water service that includes fire protection hydrants. This measure speeds the containment time for most fires occurring in the Town. The RWA has made important improvements to the public water system along Route 42 and in a few other areas, increasing the town's firefighting capabilities.

Education is also an important element of existing mitigation. Information is available through the Cheshire Fire Department's website (http://www.cheshirefd.org), including information about how to protect your home from fires.

Locally, the Cheshire Fire Department and Cheshire Police Department review all new subdivision applications to provide safety comments relative to fire risks and firefighting capabilities. The Town Subdivision Regulations also call for creating through streets in new developments, increasing the amount of egress available to the fire department for combating wildfires.

The Connecticut DEEP Open Burning Program requires designated "Open Burning Officials" in every community to oversee open burning within the town. The Town of Cheshire is compliant with this program and has a designated Burning Official.

### Actions Completed and New Capabilities

Cheshire continues to maintain its capabilities for mitigating and responding to wildfire risks.

### Summary

The Town mitigates wildfire hazards by implementing the state's Open Burning Program locally, installing dry hydrants and firefighting-water sources in remote areas, and training its fire department to fight wildfires.

## 9.2 Vulnerabilities and Risk Assessment

The approximately 12,285 acres of forests and undeveloped land in Cheshire may be susceptible to drought conditions that make them more vulnerable to wildfires. The approximately 1,871 acres of agricultural fields and maintained grasses may be vulnerable to direct damage from drought conditions.

Despite having a large amount of forest/urban interface, the overall risk of wildfires occurring in the Town of Cheshire is also considered to be low. The fire department responds to approximately 10 to 12 small brush fires each year as well as additional fires along Interstate 691 and Interstate 84. Such fires fail to

spread far due speed of detection and strong fire response. As 80% of the Town has water service, a large amount of water pressure is available for fire fighting equipment. As stated above, the creation of through streets increases the range of fire fighting and emergency equipment, and increased public awareness has further mitigated the risk. Areas of contiguous wooded areas of more than 50 acres in size without access to public water service are the most at risk. To enhance the emergency response, the Town would like to expand public water service. However, the Town would likely need to fund these main extensions.

Wildfire risk zones are mapped in Figure 9-1.

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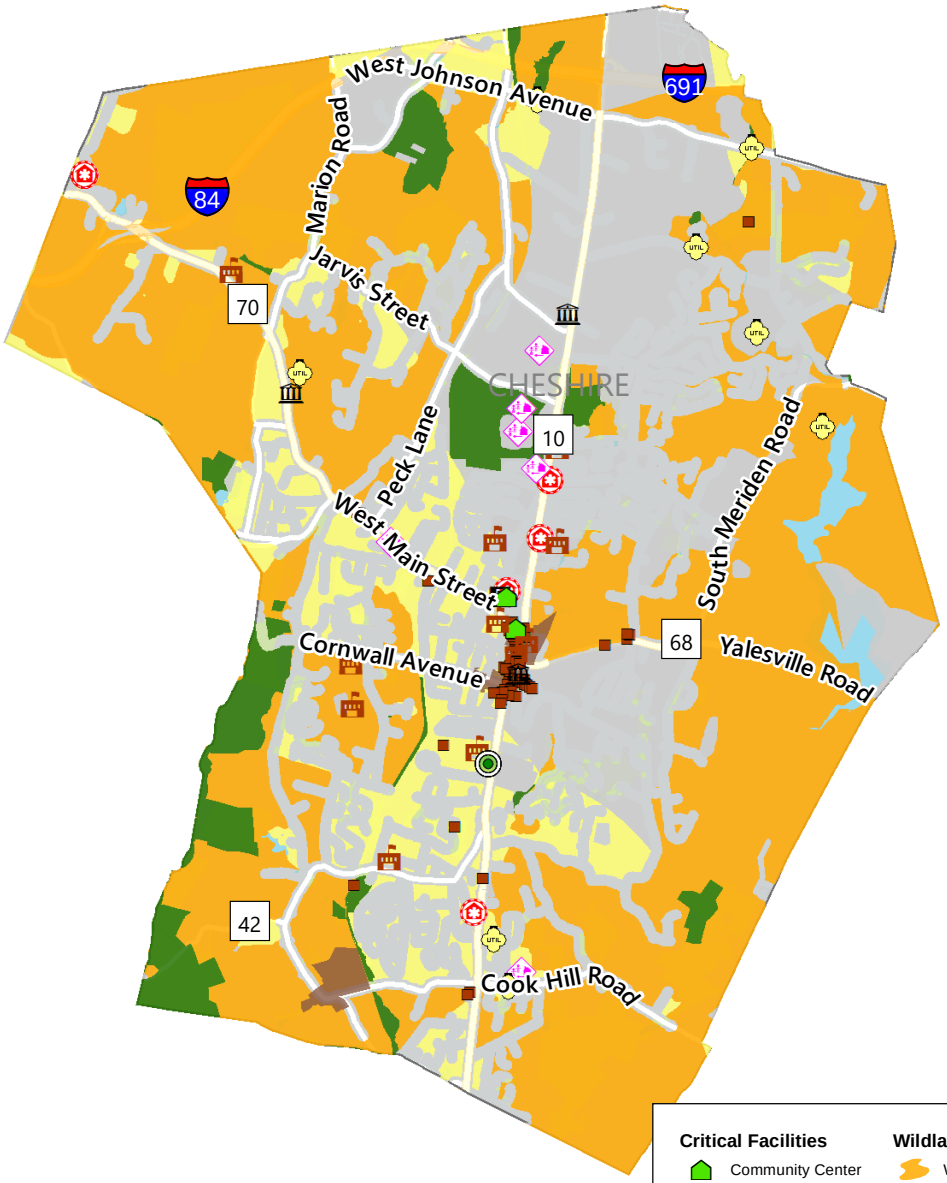


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203.271.1773

# Wildfire Hazard in Cheshire

NVCOG Hazard Mitigation Plan Update
Naugatuck Valley Council of Governments
47 Leavenworth Street, 3rd Floor
Waterbury, CT 06702

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Feet

DATE 6/15/2021
141.3211.00029
PROJ. NO.

**FIG. 9-1**

# 10.0 MITIGATION STRATEGIES AND ACTIONS

## 10.1 Goals and Objectives

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

## 10.2 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.

| Strategy | Description | Responsible Party | Status | Notes |
|---|---|---|---|---|
| ***CHR-1*** | Increase the conveyance capacity of the bridge over Honeypot Brook at Blacks Road | Public Works | Complete | The bridge was replaced during summer 2014. The conveyance capacity was reportedly increased. |
| ***CHR-2*** | Ensure that the development project at I-691 and Route 10 is flood damage resistant and causes no adverse impacts upstream or downstream | Planning | Capability | This development has not yet been built. The permits are expired, and the zoning process for any new development would need to be reperformed. This is a capability as these items are evaluated as part of the review process. |
| ***CHR-3*** | Acquire standby power supplies for two critical facilities that do not have generators | Public Works | Complete | The 2014 plan does not identify the critical facilities where generators were to be pursued. Attendees indicated that these were for new generators at Youth Center and High School (the two shelters). The generators were installed. |
| ***CHR-4*** | Determine best course of action to make the town pool facility more resilient to severe storms | Public Works | Complete | This is now a solid structure and no longer the inflatable bubble. This facility also has a hookup for the Town's portable generators. |
| ***CHR-5*** | Consider adding earthquakes to the list of hazards specifically identified in the EOP | Police & Fire Dept. | Complete | The Town is in the final phase of EOP revisions. As Cheshire is using the State's EOP template, and earthquake hazards are in the State's EOP template, response to earthquakes will be in next year's EOP. |

| Strategy | Description | Responsible Party | Status | Notes |
|---|---|---|---|---|
| ***CHR-6*** | Ensure that municipal departments have adequate backup facilities in case earthquake damage occurs | Public Works | Complete | In general, the Town is in a far better place for redundancy than 5 years ago. For example, they have a backup plan if the primary fuel depot at Public Works is damaged. The Town also has 2 portable generators and would like another one. Furthermore, Cheshire has multiple data and server backups. IT-wise the Town has significant redundancy. |
| ***CHR-7*** | Consider bracing systems for assets and equipment inside critical facilities | Public Works | Drop | An evaluation was not performed. This is unlikely to be completed in the next five years as it is low priority given the redundant functions noted above. |
| ***CHR-8*** | Address each sinkhole incident or complaint on a case-by-case basis rather than making townwide policy | Town Manager | Capability | This is a capability and continues to be Town policy. |
| ***CHR-9*** | Support CT DEEP in its requirement for inspections of all Class B and C dams and maintenance as needed | Public Works | Capability | This is a capability and is Town policy. |
| ***CHR-10*** | Support CT DEEP in its requirement that owners of Class B and C dams have up to date EAPs and Dam Failure Analyses | Public Works | Capability | This is a capability and is Town policy. |
| ***CHR-11*** | Complete the Mixville Pond dam mitigation report as per DEP request | Public Works | Complete | This was the recently completed spillway repair project. |
| ***CHR-12*** | Make copies of the Class B and C dam EAPs on file at the Town Hall | Public Works | Carry Forward with Revision | The EMD has not received copies of EAPs for dams within and upstream of Cheshire whose failure would affect Cheshire. This could be because new EAPs were developed relatively recently. Outreach to DEEP and the dam operators should be performed to secure copies of these EAPs to keep at the Town Hall. |
| ***CHR-13*** | Explore other fire protection solutions when water main extensions are not feasible, such as the use of cisterns | Fire Department | Capability | This is likely a capability and is performed as part of Fire Marshall review of a potential project. The Town also has a list of approximately 10 outlying areas where there would like to see water main extensions performed. |

| Strategy | Description | Responsible Party | Status | Notes |
|---|---|---|---|---|
| ***CHR-14*** | Pursue the acquisition of additional open space properties within SFHAs | Town Manager | Capability | This was not meant to be a specific project, but rather a policy to be included in the 2016 POCD update. Although purchase of additional open space properties is encouraged, purchase of open space within floodplains does not appear to be specifically discussed. Instead, the Plan recommends acquiring open space property to fulfill valid and identifiable public goals, which includes prevention of development in the floodplain. The Town considers protection of floodplains in the evaluation conducted when evaluating an open space purchase. |
| ***CHR-15*** | Acquire private land in SFHAs and set it aside as greenways and parks | Town Manager | Capability | This was not meant to be a specific project, but rather a policy to be included in the 2016 POCD update. Although purchase of additional open space properties is encouraged, purchase of open space within floodplains does not appear to be discussed. Instead, the Plan recommends acquiring open space property to fulfill valid and identifiable public goals, which includes prevention of development in the floodplain. The Town considers protection of floodplains in the evaluation conducted when evaluating an open space purchase. |

## 10.3 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.

## 10.4 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.

| Action CHR-01 | |
|---|---|
| **Take one of the following actions that will mitigate natural hazard risks while also meeting Sustainable CT objectives:<br>1. Disseminate a toolkit for pre-disaster business preparedness.<br>2. Revise regulations to promote Low Impact Development.<br>3. Include the goals of this Hazard Mitigation Plan, and at least three other sustainability concepts, in your next POCD update.** | |
| **Lead** | Plan |
| **Cost** | $0 - $25,000 |
| **Funding** | OB, CT DEEP, Sustainable CT |
| **Timeframe** | 2022 |
| **Priority** | High |

| Action CHR-02 | |
|---|---|
| **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.** | |
| **Lead** | EM, Plan, FS |
| **Cost** | $0 - $25,000 |
| **Funding** | OB |
| **Timeframe** | 2022 |
| **Priority** | High |

| Action CHR-03 | |
|---|---|
| **Work with CT DEEP to complete a formal validation of the Repetitive Loss Property list and update the mitigation status of each listed property.** | |
| **Lead** | EM, Plan, FS |
| **Cost** | $0 - $25,000 |
| **Funding** | OB, CT DEEP |
| **Timeframe** | 2022 |
| **Priority** | High |

| Action CHR-04 | |
|---|---|
| **Fully incorporate the provisions of the DEEP model flood regulations into the local flood damage prevention regulations (or ordinance), including but not limited to the required design flood elevations for the first floor, building electrical systems, and building mechanical systems.** | |
| **Lead** | Plan, FS, NFIP Coordinator |
| **Cost** | $0 - $25,000 |
| **Funding** | OB, FEMA Grant, CT DEEP |
| **Timeframe** | 2022 |
| **Priority** | Med |

| Action CHR-05 | |
|---|---|
| **Increase Substantial Damage and Substantial Improvement lookback periods to two or more years.** | |
| **Lead** | Plan, FS, NFIP Coordinator |
| **Cost** | $0 - $25,000 |
| **Funding** | OB, FEMA Grant, CT DEEP |
| **Timeframe** | 2022 |
| **Priority** | Med |

| Action CHR-06 | |
|---|---|
| **Remain engaged with CIRCA's Resilient Connecticut project and utilize vulnerability mapping tools to help with local planning and project development.** | |
| **Lead** | Plan |
| **Cost** | $0 - $25,000 |
| **Funding** | OB, CT DEEP, Resilient CT |
| **Timeframe** | 2022 |
| **Priority** | Med |

| Action CHR-07 | |
|---|---|
| **Apply as a sponsor/sub-applicant to three property owners to offset the cost up upgrading the private culverts. The local match would be paid for by the property owners.** | |
| **Lead** | DPW |
| **Cost** | $0 - $25,000 |
| **Funding** | OB, CIP, FEMA Grant, CT DEEP |
| **Timeframe** | 2022 |
| **Priority** | Low |

| Action CHR-08 | |
|---|---|
| **Request that the three anhydrous ammonia industrial facilities model the potential airborne plume migration area in the event of a release.** | |
| **Lead** | EM, FS |
| **Cost** | $0 - $25,000 |
| **Funding** | CT DEEP |
| **Timeframe** | 2022 |
| **Priority** | Low |

| Action CHR-09 | |
|---|---|
| **Increase budget to meet needs for clearing away ash trees damaged by the Emerald Ash Borer.** | |
| **Lead** | DPW |
| **Cost** | $0 - $25,000 |
| **Funding** | OB |
| **Timeframe** | 2022 |
| **Priority** | Low |

| Action CHR-10 | |
|---|---|
| **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.** | |
| **Lead** | Plan, HC/HDC |
| **Cost** | $0 - $25,000 |
| **Funding** | OB, CT SHPO |
| **Timeframe** | 2022 |
| **Priority** | Low |

| Action CHR-11 | |
|---|---|
| **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.** | |
| **Lead** | EM, FS |
| **Cost** | $0 - $25,000 |
| **Funding** | CT DEEP |
| **Timeframe** | 2022 |
| **Priority** | Low |

| Action CHR-12 | |
|---|---|
| **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 support the preparation of resiliency plans across the state.** | |
| **Lead** | Plan, HC/HDC |
| **Cost** | $0 - $25,000 |
| **Funding** | OB, CT SHPO |
| **Timeframe** | 2022 – 2023 |
| **Priority** | Low |

| Action CHR-13 | |
|---|---|
| **Complete an evaluation of Weeks Pond Dam to determine the types and costs of measures necessary to ensure its continued, safe operation. Dam may need repair or replacement. (A total of $140,000 is earmarked in the fiscal year 2023-2024 Capital Improvement Plan for this work.)** | |
| **Lead** | EM, DPW, FS |
| **Cost** | $25,000 - $50,000 |
| **Funding** | OB, CT DEEP |
| **Timeframe** | 2022 – 2024 |
| **Priority** | Low |

| Action CHR-14 | |
|---|---|
| **Secure copies of the EAPs for Class B and C dams in and upstream of Cheshire to file at the Town Hall and with the EMD. Reach out to CT DEEP and the dam operators to secure the EAPs:<br>- Broad Brook Reservoir Dam: City of Meriden<br>- Mixville Pond Dam: Town of Cheshire<br>- Larsen's Pond Dam: Private Owner<br>- Cheshire Reservoir Dam: Town of Prospect** | |
| **Lead** | Public Works |
| **Cost** | $25,000 - $50,000 |
| **Funding** | OB, CT DEEP |
| **Timeframe** | 2022 – 2024 |
| **Priority** | Low |

| Action CHR-15 | |
|---|---|
| **Complete repairs or replacement of Weeks Pond Dam based on the findings of the detailed evaluation identified in Action CHR-13.** | |
| **Lead** | EM, DPW, FS |
| **Cost** | $100,000 - $500,000 |
| **Funding** | CIP, CT DEEP |
| **Timeframe** | 2023 – 2025 |
| **Priority** | Low |

| Action CHR-16 | |
|---|---|
| **Obtain grants to outfit a new EOC building or Annex to an existing building that has dedicated emergency power.** | |
| **Lead** | EM, DPW |
| **Cost** | More than $1 million |
| **Funding** | CIP, FEMA Grant, CT DEMHS |
| **Timeframe** | 2025 – 2027 |
| **Priority** | Low |

# APPENDIX A

**STAPLEE MATRIX**

| # | Action Description | Regional Theme | Lead Department | Cost Estimate | Potential Funding Sources | Timeframe for Completion | Weighted STAPLEE Criteria | | | | | | | | | | | | | | Total STAPLEE Score |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Benefits | | | | | | | Costs | | | | | | | |
| | | | | | | | Social | Technical (x2) | Administrative | Political | Legal | Economic (x2) | Environmental | Social | Technical (x2) | Administrative | Political | Legal | Economic (x2) | Environmental | |
| CHR-02 | 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. | RLP | EM, Plan, FS | $0 - $25,000 | OB | 2022 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| CHR-03 | Work with CT DEEP to complete a formal validation of the Repetitive Loss Property list and update the mitigation status of each listed property. | RLP | EM, Plan, FS | $0 - $25,000 | OB, CT DEEP | 2022 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| CHR-04 | Fully incorporate the provisions of the DEEP model flood regulations into the local flood damage prevention regulations (or ordinance), including but not limited to the required design flood elevations for the first floor, building electrical systems, and building mechanical systems. | Flood Regulations | Plan, FS, NFIP Coordinator | $0 - $25,000 | OB, FEMA Grant, CT DEEP | 2022 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | -1 | 0 | 0 | 0 | 5 |
| CHR-05 | Increase Substantial Damage and Substantial Improvement lookback periods to two or more years. | Flood Regulations | Plan, FS, NFIP Coordinator | $0 - $25,000 | OB, FEMA Grant, CT DEEP | 2022 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | -1 | 0 | 0 | 0 | 5 |
| CHR-06 | Remain engaged with CIRCA's Resilient Connecticut project and utilize vulnerability mapping tools to help with local planning and project development. | Resilient CT | Plan | $0 - $25,000 | OB, CT DEEP, Resilient CT | 2022 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| CHR-07 | Apply as a sponsor/sub-applicant to three property owners to offset the cost up upgrading the private culverts. The local match would be paid for by the property owners. | Culvert & Bridge Upgrades | DPW | $0 - $25,000 | OB, CIP, FEMA Grant, CT DEEP | 2022 | 0 | 1 | 0 | 1 | 1 | 1 | 0.5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6.5 |
| CHR-09 | Secure copies of the EAPs for Class B and C dams in and upstream of Cheshire to file at the Town Hall and with the EMD. Reach out to CT DEEP and the dam operators to secure the EAPs:<br>- Broad Brook Reservoir Dam: City of Meriden<br>- Mixville Pond Dam: Town of Cheshire<br>- Larsen's Pond Dam: Private Owner<br>- Cheshire Reservoir Dam: Town of Prospect | Dam Safety | Public Works | $25,000 - $50,000 | OB, CT DEEP | 2022 – 2024 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 6.5 |
| CHR-10 | Complete repairs or replacement of Weeks Pond Dam based on the findings of the detailed evaluation identified in Action CHR-08. | Dam Safety | EM, DPW, FS | $100,000 - $500,000 | CIP, CT DEEP | 2023 – 2025 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 6.5 |
| CHR-11 | Request that the three anhydrous ammonia industrial facilities model the potential airborne plume migration area in the event of a release. | Small Business Chemicals | EM, FS | $0 - $25,000 | CT DEEP | 2022 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| CHR-12 | Increase budget to meet needs for clearing away ash trees damaged by the Emerald Ash Borer. | Tree and Debris Management | DPW | $0 - $25,000 | OB | 2022 | 0 | 0.5 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | -1 | 0 | 0 | 0 | 6 |
| CHR-13 | 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. | Historic & Cultural Resources | Plan, HC/HDC | $0 - $25,000 | OB, CT SHPO | 2022 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| CHR-14 | 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. | Small Business Chemicals | EM, FS | $0 - $25,000 | CT DEEP | 2022 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| CHR-15 | 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 support the preparation of resiliency plans across the state. | Historic & Cultural Resources | Plan, HC/HDC | $0 - $25,000 | OB, CT SHPO | 2022 – 2023 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| CHR-16 | Obtain grants to outfit a new EOC building or Annex to an existing building that has dedicated emergency power. | Critical Facility Protection | EM, DPW | More than $1 million | CIP, FEMA Grant, CT DEMHS | 2025 – 2027 | 0 | 0.5 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |

# APPENDIX B

**RECORD OF MUNICIPAL ADOPTION**

MOTION by Mr. Borowy; seconded by Mr. Slocum.

BE IT RESOLVED, that the Town Council approves Resolution #111621-2

**RESOLUTION #111621-2**

BE IT RESOLVED, that the Town Council adopts the Naugatuck Valley Council of Governments Hazard Mitigation Plan Update for 2021-2026 as presented.

VOTE The motion passed unanimously by those present.

**B. Authorization to apply for the DEEP CT Recreational Trails Grant.**

MOTION by Ms. Nichols; seconded by Mr. Walsh.

BE IT RESOLVED, that the Town Council approves Resolution #111621-3

**RESOLUTION #111621-3**

BE IT RESOLVED, that the Town Council authorizes application for the DEEP CT Recreational Trails Grant for the purpose of installing chicanes on the Farmington Canal Linear Trail at the West Main Street Crossing.

Discussion
Ms. Nichols commented on the ongoing problems with safer crossing of West Main Street since installation of the Hawk System. It is a busy crossing with a need to make it safer. She noted people are not using the system and there is crossing at high rates of speed (bikes/vehicles). The town instituted temporary measures to slow down, use of the Hawk system, and this fund will provide permanent offset gates to keep everyone safe. It is an 80% grant with 20% town matching funds. Total project cost is about $30,000. Ms. Nichols supports the resolution for the safety of the entire area of town.

It was stated by Mr. Oris that the Hawk Lighting System is a disaster waiting to happen, and he supports the replacement with permanent offset gates. The Hawk lighting is confusing, with the State dictating how it operates. In addition to the chicanes, he would like to reach out to the Legislators or someone at the State level to modify the system for public safety.

VOTE The motion passed unanimously by those present.

**C. Authorization to apply for the 2022 Public, Educational and Governmental Programming and Educational Technology Investment Account (PEGPETIA) Grant Program.**

# APPENDIX C

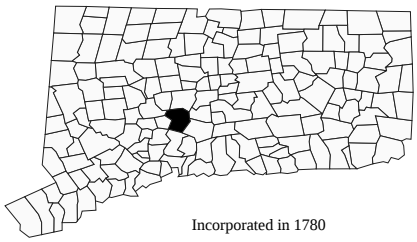
**CERC Town Profile 2019**

# Cheshire, Connecticut

CERC Town Profile 2019 *Produced by Connecticut Data Collaborative*

**Town Hall**
84 South Main Street
Cheshire, CT 06410
(203) 271-6660

*Belongs To*
New Haven County
LMA New Haven
Naugatuck Valley Planning Area



Incorporated in 1780

## Demographics

*Population*

| | Town | County | State |
|---|---|---|---|
| 2000 | 28,543 | 824,008 | 3,405,565 |
| 2010 | 29,261 | 862,477 | 3,574,097 |
| 2013-2017 | 29,274 | 862,127 | 3,594,478 |
| 2020 | 28,257 | 898,514 | 3,604,591 |
| '17 - '20 Growth / Yr | -1.2% | 1.3% | 0.1% |

| | Town | County | State |
|---|---|---|---|
| Land Area (sq. miles) | 33 | 605 | 4,842 |
| Pop./Sq. Mile (2013-2017) | 885 | 1,426 | 742 |
| Median Age (2013-2017) | 46 | 40 | 41 |
| Households (2013-2017) | 10,214 | 327,402 | 1,361,755 |
| Med. HH Inc. (2013-2017) | $107,579 | $64,872 | $73,781 |

| | Town | State |
|---|---|---|
| Veterans (2013-2017) | 1,341 | 180,111 |

*Age Distribution (2013-2017)*

| | 0-4 | | 5-14 | | 15-24 | | 25-44 | | 45-64 | | 65+ | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Town | 1,071 | 4% | 3,210 | 11% | 3,717 | 13% | 6,153 | 21% | 10,048 | 34% | 5,075 | 17% | 29,274 | 100% |
| County | 45,072 | 5% | 100,549 | 12% | 120,727 | 14% | 216,208 | 25% | 240,037 | 28% | 139,534 | 16% | 862,127 | 100% |
| State | 186,188 | 5% | 432,367 | 12% | 495,626 | 14% | 872,640 | 24% | 1,031,900 | 29% | 575,757 | 16% | 3,594,478 | 100% |

*Race/Ethnicity (2013-2017)*

| | Town | County | State |
|---|---|---|---|
| White Non-Hisp | 23,984 | 553,000 | 2,446,049 |
| Black Non-Hisp | 1,252 | 105,661 | 350,820 |
| Asian Non-Hisp | 2,065 | 33,678 | 154,910 |
| Native American Non-Hisp | 46 | 783 | 5,201 |
| Other/Multi-Race Non-Hisp | 706 | 20,448 | 84,917 |
| Hispanic or Latino | 1,221 | 148,446 | 551,916 |

| | Town | County | State |
|---|---|---|---|
| Poverty Rate (2013-2017) | 2.0% | 12.1% | 10.1% |

*Educational Attainment (2013-2017)*

| | Town | | State | |
|---|---|---|---|---|
| High School Graduate | 4,414 | 21% | 673,582 | 27% |
| Associates Degree | 1,606 | 8% | 188,481 | 8% |
| Bachelors or Higher | 11,359 | 53% | 953,199 | 38% |

## Economics

*Business Profile (2018)*

| Sector | Units | Employment |
|---|---|---|
| Total - All Industries | 959 | 16,844 |
| 23 - Construction | 84 | 943 |
| 31-33 - Manufacturing | 43 | 1,439 |
| 42 - Wholesale Trade | 99 | 2,085 |
| 44-45 - Retail Trade | NA | NA |
| 62 - Health Care and Social Assistance | 103 | 2,188 |
| Total Government | 24 | 2,051 |

*Top Five Grand List (2018)*

| | Amount |
|---|---|
| INDUSTRIAL AVENUE LLC | -$9,999 |
| CONNECTICUT LIGHT AND POWER COMPANY | -$9,999 |
| BOZZUTOS INC | -$9,999 |
| YANKEE GAS SERVICE | -$9,999 |
| CT INDY CH LLC | -$9,999 |
| Net Grand List (SFY 2016-2017) | $2,750,332,351 |

*Major Employers (2018)*

Bozzuto's
State of Connecticut
Collins Aerospace
Town
Macy's Logistics

## Education

*2018-2019 School Year*

| | Grades | Enrollment |
|---|---|---|
| Cheshire School District | PK-12 | 4284 |

*Smarter Balanced Test Percent Above Goal (2017-2018)*

| | Grade 3 | | Grade 4 | | Grade 8 | |
|---|---|---|---|---|---|---|
| | Town | State | Town | State | Town | State |
| Math | 76.7% | 53.8% | 75.3% | 51.3% | 53.4% | 43.0% |
| ELA | 74.8% | 53.1% | 80.4% | 54.9% | 74.2% | 56.1% |

*Pre-K Enrollment (PSIS)*

| | 2018-2019 |
|---|---|
| Cheshire School District | 100 |

*Rate of Chronic Absenteeism (2017-2018)*

| | All |
|---|---|
| Connecticut | 10.7% |
| Cheshire School District | 5.0% |

*4-Year Cohort Graduation Rate (2017-2018)*

| | All | Female | Male |
|---|---|---|---|
| Connecticut | 88.3% | 91.8% | 85.1% |
| Cheshire School District | 94.9% | 94.8% | 94.9% |

*Public vs Private Enrollment (2013-2017)*

| | Town | County | State |
|---|---|---|---|
| Public | 88.4% | 88.2% | 86.8% |
| Private | 11.6% | 11.8% | 13.2% |

# Cheshire, Connecticut

CERC Town Profile 2019

Connecticut Economic Resource Center

## Government

Government Form: Council - Manager

| | | | | | |
|---|---|---|---|---|---|
| Total Revenue (2017) | $119,697,574 | Total Expenditures (2017) | $119,138,739 | Annual Debt Service (2017) | $7,465,300 |
| Tax Revenue | $86,340,125 | Education | $81,465,369 | As % of Expenditures | 6.3% |
| Non-tax Revenue | $33,357,449 | Other | $37,673,370 | Eq. Net Grand List (2017) | $4,007,441,337 |
| Intergovernmental | $29,594,581 | Total Indebtedness (2017) | $103,752,070 | Per Capita | $136,633 |
| Per Capita Tax (2017) | $2,935 | As % of Expenditures | 87.1% | As % of State Average | 90.5% |
| As % of State Average | 100.1% | Per Capita | $3,537 | Moody's Bond Rating (2017) | Aa1 |
| | | As % of State Average | 140.7% | Actual Mill Rate (2017) | 31.19 |
| | | | | Equalized Mill Rate (2017) | 21.48 |
| | | | | % of Net Grand List Com/Ind (2017) | 13.3% |

## Housing/Real Estate

*Housing Stock (2013-2017)*

| | Town | County | State |
|---|---|---|---|
| Total Units | 11,003 | 365,546 | 1,507,711 |
| % Single Unit (2013-2017) | 77.4% | 53.6% | 59.2% |
| New Permits Auth (2017) | 22 | 750 | 4,547 |
| As % Existing Units | 0.2% | 0.2% | 0.3% |
| Demolitions (2017) | 7 | 202 | 1,403 |
| Home Sales (2017) | 320 | 4,763 | 21,880 |
| Median Price | $329,000 | $244,400 | $270,100 |
| Built Pre-1950 share | 13.6% | 33.2% | 29.3% |
| Owner Occupied Dwellings | 8,873 | 204,037 | 906,798 |
| As % Total Dwellings | 86.9% | 62.3% | 66.6% |
| Subsidized Housing (2018) | 384 | 46,013 | 167,879 |

*Distribution of House Sales (2017)*

| | Town | County | State |
|---|---|---|---|
| Less than $100,000 | 1 | 106 | 536 |
| $100,000-$199,999 | 15 | 1,232 | 5,237 |
| $200,000-$299,999 | 114 | 1,785 | 6,681 |
| $300,000-$399,999 | 100 | 888 | 3,863 |
| $400,000 or More | 90 | 752 | 5,563 |

*Rental (2013-2017)*

| | Town | County | State |
|---|---|---|---|
| Median Rent | $1,186 | $1,100 | $1,123 |
| Cost-burdened Renters | 33.3% | 54.5% | 52.3% |

## Labor Force

| | Town | County | State |
|---|---|---|---|
| Residents Employed | 15,297 | 438,576 | 1,827,070 |
| Residents Unemployed | 469 | 20,171 | 78,242 |
| Unemployment Rate | 3.0% | 4.4% | 4.1% |
| Self-Employed Rate | 13.3% | 8.5% | 10.0% |
| Total Employers | 959 | 24,958 | 122,067 |
| Total Employed | 16,844 | 366,848 | 1,673,867 |

*Connecticut Commuters (2015)*

| Commuters Into Town From: | | Town Residents Commuting To: | |
|---|---|---|---|
| Cheshire, CT | 2,105 | Cheshire, CT | 2,105 |
| Waterbury, CT | 1,963 | New Haven, CT | 1,506 |
| Meriden, CT | 911 | Wallingford, CT | 853 |
| Southington, CT | 901 | Waterbury, CT | 733 |
| Wallingford, CT | 669 | Meriden, CT | 555 |
| Bristol, CT | 496 | Hamden, CT | 539 |
| Naugatuck, CT | 444 | Hartford, CT | 417 |

## Quality of Life

*Crime Rates (per 100,000 residents) (2017)*

| | Town | State |
|---|---|---|
| Property | 582 | 1,777 |
| Violent | 10 | 228 |

*Disengaged Youth (2013-2017)*

| | Town | State |
|---|---|---|
| Female | 0.0% | 4.2% |
| Male | 2.2% | 5.6% |

| | Town |
|---|---|
| Library circulation per capita | 12.24 |

*Distance to Major Cities*

| | Miles |
|---|---|
| Hartford | 21 |
| Providence | 79 |
| New York City | 80 |
| Boston | 112 |
| Montreal | 281 |

*Residential Utilities*

*Electric Provider*
Eversource Energy
(800) 286-2000

*Gas Provider*
Eversource Energy
(800) 989-0900

*Water Provider*
South Central CT Regional Water Auth.
(203) 562-4020

*Cable Provider*
Cox Communication, Meriden
(800) 955-9515