



## 18 Hebron

### Community Overview

Hebron is a rural community in Tolland County that covers 37 square miles with an estimated population of 9,700 (2010 Census). Most of the residential development in Hebron consists of single family homes. Recently, most new development has been constructed near the center of town.

Elevation in Hebron ranges from 300 to over 650 feet above sea level. Most water drains to the Salmon River Watershed, but a small portion in the northeast drains to the Willimantic Watershed. The principal watercourses in Hebron are Fawn, Mint, Raymond and Senate Brooks. The 184 acre Amston Lake is located in the southeast portion of Town.

Major transportation routes through Hebron include state routes 66, 85, 207 and 316.

### Critical Facilities

Critical Facilities throughout the Capitol Region are listed in Appendix B. A number of Hebron critical facilities are listed here.

**Table 18-1: Critical Facilities, Hebron**

Facility	Shelter	Generator
Town Hall (EOC)		X
Library		X
Senior Living Facility		X
RHAM High School	In Progress	X
RHAM Middle School	In Progress	X

Since adoption of the 2014-2019 Capitol Region Natural Hazards Mitigation Plan Update (“2014 HMP”), Hebron relocated the EOC to Town Hall. This site now has emergency backup power and internet capability. The Library is considered the internet hub of the Town and has also had backup power and alternate heating and cooling added since the last plan update. All Town buildings, including schools, have been or are currently being converted to use gas as fuel.

A new, large Senior Living Facility was being completed at the time of this Plan development in the downtown area of Hebron. The development was installing its own dry-hydrant and back-up power generation.

Hebron, Andover and Marlborough share a regional middle/high school (RHAM) located in the center of the town of Hebron. The high school is being considered for use as a regional general population shelter while the middle school is being considered for use as a special needs shelter. Electrical upgrades, generators and fuel capacity sufficient to provide power to operate

bathroom and cooking facilities are needed to enable the schools to be used as emergency shelters.

## Capabilities

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Hazard mitigation is incorporated into Hebron's Plan of Conservation and Development. The HMP document itself is cited.

Public water service, provided through a private water company, has recently been extended, and is available in several neighborhoods including the Town Center and the Amston Lake area; however, there are no hydrants. Hebron has a robust fire suppression program that primarily relies on tanker trucks to transport water. The Fire Department has inventoried all fire ponds and dry hydrants in Town and is now working to develop a plan for additional dry hydrant locations. The High School has a sprinkler system and is serviced by CT Water.

The Town of Hebron has worked to limit its vulnerability to flood hazards. No new construction has occurred in a floodplain since 2008. The building codes are based on FEMA requirements or reference FEMA recognized ASCE 24 construction standards.

Eversource has a contract with Asplundh Tree Services to provide tree maintenance services in Hebron. Additionally, the Town has its own bucket truck and crew for tree removal needs impacting Town property.

Amston Lake's water level is controlled by an earthen dam with a concrete spillway. The outlet of the lake is an unnamed watercourse that feeds into Raymond Brook. The dam was recently repaired and upgraded.

The Town actively seeks to protect sensitive lands. Approximately 20% of the Town's land area is permanently protected open space.

## New Capabilities

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The Town recently updated its Plan of Conservation and Development and assessed its infrastructure needs as part of that process.

A map modernization effort by FEMA is currently underway for Tolland County, but its full extent, and how much of Hebron it will cover, is unknown.

One bridge replacement was underway at the time of development of this Hazard Mitigation Plan.

The Hebron CERT team has increased three-fold in size since the 2014 HMP, and merged with the Andover CERT.

Hebron received the Bronze Certification within the SustainableCT program in October 2018



## Challenges

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The Town relies primarily on groundwater for its drinking water. Most residences and businesses have private wells. The Town's most extensive aquifer is located in the Raymond Brook Marsh area. Among the challenges facing Hebron in the event of a natural disaster are providing adequate water supply and emergency shelter for residents. The Town and Chatham Health District will need to monitor the available capacity of the sewer treatment plant and ability of the Town's ground water reserves to address the needs of future development including fire suppression particularly in the event of drought. The Town will also need to assess the capability of the RHAM middle and high school to serve as regional emergency shelters.

Power loss is particularly challenging because of the residences and businesses that rely on wells and grinder pumps. A wind storm in November 2017 damaged property and required sheltering of one individual.

There are no public water hydrants in Town; the Fire Department relies on dry hydrants and tanker trucks to find and transport water for fire suppression.

Debris management after storm events is another concern for the Town. Hebron's landfill is capped and cannot be used for debris disposal.

The NFIP has paid three property damage claims in Hebron totaling \$5,043.26 to-date. Hebron has no Repetitive Loss (RL) Property claims to-date.

## Hazard Losses

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The economic losses faced by Hebron from natural hazards can be estimated by reviewing historic, and modeling future, loss figures. Loss estimates are summarized below.

### *Historic FEMA Payments*

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FEMA reimburses communities for hazard losses through programs including Public Assistance (PA) and the National Flood Insurance Program (NFIP). Combining PA and private flood insurance payments can give an estimate for total losses to a community.

The NFIP has paid three property damage claims in Hebron totaling \$5,043 to-date. Hebron has not had any Repetitive Loss (RL) Property claims to-date.

Total PA reimbursements to the community were as follows:

- Flood Events: \$1,408 (\$74 annually)
- Hurricane Events: \$121,009 (\$6,369 annually)
- Winter Storm Events: \$513,068 (\$27,004 annually)

These are summarized in the tables below.



**Table 18-2: Flood Event PA Reimbursements, Hebron**

<b>Incident</b>	Oct 2005
<b>Declaration</b>	12/16/2005
<b>Disaster No.</b>	1619
<b>Entity</b>	<b>FEMA PA Reimbursement</b>
<b>State</b>	\$1,408
<b>Municipal</b>	\$0
<b>Nonprofit</b>	\$0
<b>Total</b>	<b>\$1,408</b>
<b>Annualized</b>	<b>\$74</b>

**Table 18-3: Hurricane Wind Event PA Reimbursements, Hebron**

<b>Incident</b>	Aug - Sep 2011 (T.S. Irene)	Oct - Nov 2012 (Storm Sandy)
<b>Declaration</b>	9/2/2011	10/30/2012
<b>Disaster #</b>	4023	4087
<b>Entity</b>	<b>FEMA PA Reimbursement</b>	
<b>State</b>	\$623	\$2,915
<b>Municipal</b>	\$61,537	\$48,339
<b>Nonprofit</b>	\$6,742	\$854
<b>Total</b>	<b>\$68,902</b>	<b>\$52,107</b>
<b>Annualized</b>	<b>\$3,626</b>	<b>\$2,742</b>

**Table 18-4: Winter Storm PA Reimbursements, Hebron**

<b>Incident</b>	Mar 2003	Dec 2003	Jan 2005	Feb 2006	Jan 2011	Oct 2011	Feb 2013	Jan 2015
<b>Declaration</b>	3/11/03	1/15/04	2/17/05	5/2/06	3/3/11	11/17/11	3/21/13	4/8/15
<b>Disaster #</b>	3176	3192	3200	3266	1958	4046	4106	4213
<b>Entity</b>	<b>FEMA PA Reimbursement</b>							
<b>State</b>	\$9,835	\$10,173	\$14,539	\$13,235	\$16,558	\$2,536	\$16,101	\$26,687
<b>Municipal</b>	\$36,013	\$33,444	\$41,826	\$26,187	\$47,786	\$23,474	\$69,739	\$48,273
<b>Nonprofit</b>	\$0	\$0	\$3,696	\$3,566	\$12,082	\$4,815	\$30,810	\$21,691
<b>Total</b>	<b>\$45,848</b>	<b>\$43,616</b>	<b>\$60,061</b>	<b>\$42,989</b>	<b>\$76,426</b>	<b>\$30,826</b>	<b>\$116,650</b>	<b>\$96,652</b>
<b>Annualized</b>	<b>\$2,413</b>	<b>\$2,296</b>	<b>\$3,161</b>	<b>\$2,263</b>	<b>\$4,022</b>	<b>\$1,622</b>	<b>\$6,139</b>	<b>\$5,087</b>

*National Centers for Environmental Information Losses*

The table below summarizes events in the National Centers for Environmental Information (NCEI) severe storm database that were specifically noted as having impacted the community since 2012.



**Table 18-5: NCEI Database Losses since 2012, Hebron**

Date	Event	Property Damage
7/2/2012	Lightning	\$10,000
9/18/2012	Thunderstorm Wind	\$5,000
10/7/2013	Thunderstorm Wind	\$5,000
2/25/2016	Thunderstorm Wind	\$5,000
<b>Total</b>		<b>\$25,000</b>

NCEI losses under other event categories (such as drought, high wind, flooding, and winter storms) were not specifically noted as impacting this community, though they did impact Tolland County and nearby towns. NCEI losses are reported in Section II of this Plan.

*HAZUS-MH Losses*

CRCOG used FEMA’s Hazus-MH model to analyze the risks that the community might face from flooding, hurricanes, and earthquakes. The model estimates economic losses to the town due to damage to buildings and building contents, as well as other economic disruptions. Both residential and commercial structures are addressed. Losses from different hazards are summarized below. Where available, estimates from the previous and current versions of the HMP are provided side-by-side; differences between the two may have been caused by a combination of the following:

- Changes in methodology: such as hazard zone mapping
- Changes in data: such as population and property values
- Changes in the model: this HMP utilized Hazus-MH version 4.0 rather than 2.1
- Other factors: inherent in a complex software like Hazus-MH

More details are available in the Multi-Jurisdictional HMP. Ultimately, changes in the loss estimates reflect the reality that small differences in hazard event features can have a significant impact on losses incurred.

**Table 18-6: Estimated Damages to Hebron from a 1% Annual-Chance Flood**

Loss Type	2014 Results	2018 Results
Households Displaced	74	68
People Needing Shelter	37	29
Buildings at Least Moderately Damaged	0	0
Residential Building & Content Losses	\$2,870,000	\$2,992,955
Other Building & Content Losses	\$1,520,000	\$729,492
<b>Total Building &amp; Content Loss</b>	<b>\$4,400,000</b>	<b>\$3,722,447</b>
<b>Total Business Interruption Losses</b>	<b>\$0</b>	<b>\$12,169</b>
<b>TOTAL</b>	<b>\$4,400,000</b>	<b>\$3,734,616</b>



**Table 18-7: Estimated Damages to Hebron from a 1% Annual-Chance Hurricane**

Loss Type	2014 Results (1938 event)	2018 Results (1% track)
Buildings at Least Moderately Damaged	335	1
Buildings Completely Damaged	22	0
Total Debris Generated (tons)	69,870	14,963
Truckloads (at 25 tons/truck) of building debris	140	599
<b>Economic Losses</b>		
Residential Building & Content Losses	\$38,940,000	\$8,023,397
Other Building & Content Losses	\$3,190,000	\$162,566
<b>Total Building &amp; Content Loss</b>	<b>\$42,130,000</b>	<b>\$8,185,963</b>
<b>Total Business Interruption Losses</b>	<b>\$3,970,000</b>	<b>\$242,921</b>
<b>TOTAL LOSSES</b>	<b>\$46,100,000</b>	<b>\$8,428,884</b>

Losses were calculated from a modeled probabilistic earthquake (1% annual-chance of occurrence), as well as for four specific scenarios with epicenters around Connecticut.

**Table 18-8: Estimated Damages to Hebron from a Probabilistic Earthquake**

Loss Type	2018 Results
Wage Loss	\$847
Rent Loss	\$683
Relocation Loss	\$1,473
Income Loss	\$764
Inventory Loss	\$53
<b>Total Business Disruption</b>	<b>\$3,820</b>
Structural Loss	\$2,970
Non-Structural Loss	\$11,164
<b>Total Building Loss</b>	<b>\$14,133</b>
<b>Total Content Loss</b>	<b>\$4,419</b>
<b>TOTAL LOSSES</b>	<b>\$22,373</b>

**Table 18-9: Estimated Damages to Hebron from Modeled Earthquake Scenarios**

Epicenter Location	Magnitude	Estimated Total Losses
East Haddam	6.4	\$465,366.87
Haddam	5.7	\$135,841.37
Portland	5.7	\$154,764.85
Stamford	5.7	\$2,010.38

### *Average Annualized Losses*

Average Annualized Loss (AAL) figures are useful tools for comparison of the risks faced from different hazards with different likelihoods of occurring in a given time period. AAL estimates were prepared for the community based on the methodologies discussed in Section II of the Multi-Jurisdictional HMP. Dam failure, drought, tornado, and wildfire losses were sourced from the 2014 Connecticut Natural Hazard Mitigation Plan Update, with dam failure data supplemented by the National Performance of Dams Program and the Connecticut Department



of Energy & Environmental Protection. Earthquake and hurricane losses were calculated in HAZUS-MH. Losses for flooding came from NFIP claims, for winter storms from Public Assistance Reimbursements, and for thunderstorms from the NCEI database. These are presented in the table below in dollars per year. Note that Hurricanes and Tropical Storms represent the largest share of total annualized losses.

**Table 18-10: Average Annualized Losses, Hebron**

Dam Failure	Drought	Earthquakes	Flooding	Hurricanes and Tropical Storms	Severe Winter Storms	Thunderstorms	Tornadoes	Wildfires	Total
\$595	\$0	\$22,373	\$207	\$656,385	\$27,004	\$3,526	\$2,815	\$4,847	\$717,751

### Losses Summary

A review of the above loss estimates demonstrates that the community has experienced significant expenses as a result of natural hazards, and is at risk for additional losses if some of the less-frequent events were to occur. These actual and potential losses justify hazard mitigation actions to reduce losses in the future.

### Mitigation Strategies and Actions

#### Noted Hazard Mitigation Needs

During the course of this Plan development, multiple hazard mitigation needs of Hebron were noted.

- The Town and Chatham Health District will need to monitor the available capacity of the sewer treatment plant and ability of the town’s ground water reserves to address the needs of future development including fire suppression particularly in the event of drought.
- The Town will need to assess the capability of the RHAM middle and high school to serve as regional emergency shelters. Electrical upgrades, generators and fuel capacity sufficient to provide power to operate bathroom and cooking facilities are needed to enable the schools to be used as emergency shelters.

#### Status of Previous Mitigation Strategies and Actions

The community reviewed the mitigation actions proposed in the 2014 HMP and determined the status of each. That information is included in the table below.



**Table 18-11: Status of Previous Mitigation Strategies and Actions, Hebron**

Action #	Action	Notes	Status
<b>GOAL: ASSURE ADEQUACY OF RESPONSE TO WINTER STORMS.</b>			
<b>Objective 1: Provide adequate equipment, staff and other resources to maintain passable roads and facilitate power restoration.</b>			
1.1	Maintain and implement equipment replacement schedules.	This is performed as part of the Town's standard operations. This is a capability.	Capability
1.2	Investigate regional service sharing initiatives.	Town's services are sufficient and this action is no longer needed.	Drop
1.3	Continue informal arrangements with private contractors.	This is part of the Town's standard operations. This is a capability.	Capability
1.4	Continue with tree maintenance program.	This is part of the Town's standard operations. This is a capability.	Capability
1.5	Expand salt/sand storage facilities.	Town now believes its salt/sand storage facilities are sufficient and this action is no longer needed.	Drop
<b>Objective 2: Educate public on how to prepare for hazardous conditions.</b>			
2.1	Continue to maintain special needs population list for monitoring during emergency situations.	This is performed as part of the Town's standard operations. This is a capability.	Capability
2.2	Develop and disseminate public outreach materials to citizens.	The Hebron CERT team conducts public outreach, and the Town has an info booth that includes natural hazards information each year at the Hebron Harvest Fair.	Capability
<b>GOAL: OPTIMIZE MITIGATION ACTIVITIES AGAINST NATURAL HAZARDS.</b>			
<b>Objective 1: Minimize risk of forest fires.</b>			
1.1	Continue to encourage installation of dry hydrants in new developments without water sources.	Further research required, including potential of codifying this into current development regulations if not there already.	Carry Forward with Revisions
1.2	Develop and implement timber management plan for town-owned forested land. Because this is expected to be a long term, multi-year project, for the 2014-2019 Plan period, the action to be taken is to complete a draft plan.	No progress was made due to limited staff and budget.	Carry Forward with Revisions
<b>Objective 2: Minimize risk from flooding.</b>			
2.1	Continue to monitor bridges and culverts for adequate flow capacity.	This is a capability.	Capability
2.2	Continue to enforce development regulations to minimize impacts on wetlands and flood zones.	Change this to a strategy to update regulations when new FIRM maps are issued - consider higher regulatory standards during that update	Carry Forward with Revisions
<b>Objective 3: Improve ability of town and residents to prepare for and respond to severe weather.</b>			
3.1	Establish RHAM High School as a regional shelter. Because this is expected to be a long term, multi-year project, for the 2014-2019 Plan period, the action to be taken is to develop a scope of work for establishing the school as a shelter.	Still a priority for Hebron. RHAM still needs electrical system improvements.	Carry Forward with Revisions
3.2	Establish Town Hall as the Emergency Operations Center with generator	This has been completed.	Completed



Action #	Action	Notes	Status
3.3	Establish the Fairgrounds as a shelter for pets and other animals and as a staging location for shuttle service to and from the shelter. Because this is expected to be a long term, multi-year project, for the 2014-2019 Plan period, the action to be taken is to develop a scope of work for establishing the school as a shelter.	Town has determined that this action is not practical for this community.	Drop
<b>Objective 4: Improve School Security and response to emergency situations.</b>			
4.1	Establish a security review of all schools, reevaluate current school plans, and establish Standard Operations Plan (SOP) for all schools in the Town of Hebron. Because this is expected to be a long term, multi-year project, for the 2014-2019 Plan period, the action to be taken is to complete the security review and evaluation of current school plans.	Major changes to school security capabilities (including improved radio communication, smartphone apps, and other programs) have improved school SOPs and make additional action unnecessary.	Drop

### Active Mitigation Strategies and Actions

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.

Each of the following actions has been prioritized based on FEMA guidelines, listed from highest to lowest priority, and numbered.

<b>Action #1</b>	
<b>Assess the capability of the RHAM middle and high school to serve as regional emergency shelters.</b>	
<b>Goal</b>	7. Improve the emergency response capabilities of the region and its communities
<b>Category</b>	Preparedness & Emergency Response
<b>Lead</b>	Emergency Management
<b>Cost</b>	\$0 - \$10,000
<b>Funding</b>	Town Operating Budget
<b>Timeframe</b>	07/2019 - 06/2020
<b>Priority</b>	High

<b>Action #2</b>	
<b>Perform study to determine Town's ability to maintain sufficient water supply to use for wildfire suppression in the future given continued development. Consider the effect of droughts and climate change.</b>	
<b>Goal</b>	7. Improve the emergency response capabilities of the region and its communities
<b>Category</b>	Prevention
<b>Lead</b>	Planning
<b>Cost</b>	\$10,000 - \$25,000
<b>Funding</b>	Town Operating Budget / Grants
<b>Timeframe</b>	07/2019 - 06/2021
<b>Priority</b>	High



**Action #3**

**Conduct outreach to local small businesses with the aim of preventing the accidental release and pollution from chemicals stored and used at their facilities during or following natural hazard events.**

<b>Goal</b>	6. Improve public outreach, education, and warning systems
<b>Category</b>	Education & Awareness
<b>Lead</b>	Planning, in coordination with DEEP
<b>Cost</b>	\$0 - \$10,000
<b>Funding</b>	Materials & Resources Provided by CT DEEP
<b>Timeframe</b>	01/2019 - 12/2019
<b>Priority</b>	Medium

**Action #4**

**Participate in EMI courses or the seminars and annual conference held by the Connecticut Association of Flood Managers.**

<b>Goal</b>	3. Improve institutional awareness and understanding of natural hazard impacts and mitigation within municipal governments and other decision-making bodies
<b>Category</b>	Education & Awareness
<b>Lead</b>	Planning
<b>Cost</b>	\$0 - \$10,000
<b>Funding</b>	Town Operating Budget
<b>Timeframe</b>	07/2019 - 06/2024
<b>Priority</b>	Medium

**Action #5**

**Update floodplain regulations when new FIRM maps are issues by FEMA to be at or higher than regulatory standards.**

<b>Goal</b>	2. Ensure Municipal Codes and Regulations support hazard mitigation
<b>Category</b>	Prevention
<b>Lead</b>	Planning
<b>Cost</b>	\$10,000 - \$25,000
<b>Funding</b>	Town Operating Budget
<b>Timeframe</b>	07/2020 - 06/2022
<b>Priority</b>	Medium



**Action #6**

**Review the LID Manual developed by the Northwest Hills Council of Governments and determine whether LID can be incorporated locally to increase rural resiliency.**

<b>Goal</b>	1. Minimize the impact of natural hazards on physical buildings and infrastructure
<b>Category</b>	Prevention
<b>Lead</b>	Planning
<b>Cost</b>	\$10,000 - \$25,000
<b>Funding</b>	Town Operating Budget
<b>Timeframe</b>	07/2021 - 06/2022
<b>Priority</b>	Medium

**Action #7**

**Perform upgrades to the electrical system, generators, and fuel capacity of the RHAM Middle and High Schools so that they can operate bathroom and cooking facilities and be used as emergency shelters.**

<b>Goal</b>	7. Improve the emergency response capabilities of the region and its communities
<b>Category</b>	Structural Projects
<b>Lead</b>	Public Works
<b>Cost</b>	More than \$100,000
<b>Funding</b>	Town Operating Budget / Grants / DEMHS
<b>Timeframe</b>	07/2022 - 06/2024
<b>Priority</b>	Medium

**Action #8**

**Coordinate with NEMO and CRCOG to share resources and gain technical support for hazard mitigation actions involving stormwater management and public outreach, which have parallel benefits related to MS4 stormwater permit compliance.**

<b>Goal</b>	1. Minimize the impact of natural hazards on physical buildings and infrastructure
<b>Category</b>	Prevention
<b>Lead</b>	Public Works
<b>Cost</b>	\$0 - \$10,000
<b>Funding</b>	Town Operating Budget
<b>Timeframe</b>	01/2019 - 12/2020
<b>Priority</b>	Low



**Action #9**

**Complete a draft timber management plan for Town-owned forested land.**

<b>Goal</b>	1. Minimize the impact of natural hazards on physical buildings and infrastructure
<b>Category</b>	Prevention
<b>Lead</b>	Fire Department
<b>Cost</b>	\$0 - \$10,000
<b>Funding</b>	Town Operating Budget / CT DEEP
<b>Timeframe</b>	07/2021 - 06/2022
<b>Priority</b>	Low

**Action #10**

**Make progress with the hazard mitigation goals associated with SustainableCT certified actions.**

<b>Goal</b>	4. Increase the use of natural, "green," or "soft" hazard mitigation measures, such as open space preservation and green infrastructure.
<b>Category</b>	Natural Resources Protection
<b>Lead</b>	Planning
<b>Cost</b>	\$0 - \$10,000
<b>Funding</b>	Town Operating Budget
<b>Timeframe</b>	07/2021 - 06/2022
<b>Priority</b>	Low

**Action #11**

**Coordinate with CT SHPO to conduct historic resource surveys, focusing on areas within natural hazard risk zones (such as flood or wildfire hazard zones and areas near steep slopes), to support identification of vulnerable historic properties and preparation of resiliency plans across the state. This action leverages existing resources and best practices for protection of historic and cultural resources through an ongoing statewide initiative by CT SHPO.**

<b>Goal</b>	8. Ensure community character and social equity are addressed in mitigation activities
<b>Category</b>	Property Protection
<b>Lead</b>	Planning, in coordination with SHPO
<b>Cost</b>	\$10,000 - \$25,000
<b>Funding</b>	SHPO
<b>Timeframe</b>	07/2021 - 06/2023
<b>Priority</b>	Low



# Capitol Region Natural Hazards Mitigation Plan Update

## Hebron, Connecticut

Flood Plains, Dams & Critical Facilities

### Critical Facilities

-  Fire Station
-  Police Station
-  School
-  Healthcare Facility
-  State Facility
-  Town Facility
-  Waste Water Facility
-  Emergency Center
-  NRHP Buildings/Sites

### Dam Hazard Class

-  BB, A, AA OR Unclassified
-  Class B - Significant Hazard
-  Class C - High Hazard

### FEMA Flood Hazard Area

-  100 Year Flood Zone
-  500 Year Flood Zone
-  NRHP Districts/Areas

Data Sources: FEMA, National Register of Historic Places, CT DEEP, CRCOG, ESRI



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