



6 Canton

Community Overview

Canton is a rural town in Hartford County with a population of about 10,000. The Town encompasses 25 square miles and has an elevation ranging from 250 feet in Collinsville to 1100 feet in North Canton. Canton lies within the boundaries of the Farmington River Watershed. The principal watercourses in Town include the Farmington River and the Cherry, Barbour, and Jim Brooks. The major transportation routes that run through Canton include state routes 44, 202 and 179. Major industries located in Canton include plastic injection molding, small businesses and large commercial retail, restaurants, small farming, art galleries, and antique shops.

Critical Facilities

Critical Facilities throughout the Capitol Region are listed in Appendix B. In Canton these include the water pollution control facility (WPCF), the town garage (public works facility), the community shelter, and a new pet shelter facility.

Table 6-1: Critical Facilities, Canton

Facility	Shelter	Generator
Water Pollution Control Facility		
Town Public Works Garage		
Community Shelter	Primary	X
Pet Shelter Facility		
New Public Works Facility (active 2018)		X

The Public Works garage was relocated to a new Public Works Facility in 2018. The facility is closer to the WPCF, elevated two feet above the FEMA base flood elevation, and provided with dry land access to elevation two feet above the base flood elevation. The new address is 50 River Road. A new generator was installed.

Capabilities

Canton's hazard mitigation capabilities include its tree, road, and debris management programs, its emergency response departments, and its Community Emergency Response Team. Hazard mitigation is addressed specifically in the community's Plan of Conservation and Development.

Canton has a tree warden within its Public Works Department. Tree maintenance budgets are similar from year to year. The Town coordinates tree trimming around power lines with Eversource, and trimming has been vigorous in the last few years; nevertheless, the Town generally believes that trimming could be more aggressive, and that removal of entire trees rather than trimming would be preferable in some cases.

Debris from storms is typically processed at Dunning Sand & Gravel, while snow is brought to Town parking lots.

Canton is served by three volunteer fire departments. One facility is owned by the town. The Town is evaluating whether it should acquire a second station. The Town has been requiring developers to install fire tanks/cisterns in new developments without fire protection.

Community Emergency Response Teams (CERTs) are active in Canton.

New Capabilities

Since adoption of the 2014-2019 Capitol Region Natural Hazards Mitigation Plan Update (“2014 HMP”) there has been no new construction in the floodplain.

The Town recently obtained a new portable generator to be used as-needed during emergencies. The Town’s Emergency Operations Plan will be updated to describe its use; quick-connect switches will likely be installed at several locations such as shelters, warming stations, and cooking/food service facilities to enable its use during emergencies.

Since the 2014 HMP, the Town has established a pet sheltering facility.

Culverts have been replaced on Hansen Road and Bunker Hill Road; these were in-kind replacements, so capacity has not increased. The Bridge Street bridge will eventually be replaced, but the size and elevation will be the same.

A Federal Energy Regulatory Commission (FERC) application is pending for the Collinsville dam. New flashboards will raise the water surface elevation three feet. However, they are designed to detach during a flood, and will therefore not change the base flood elevation.

Heavier snow removal trucks have been acquired.

Challenges

Challenges Overview

The Town faces flooding challenges, especially at the sewage plant and town garage along the Farmington River, as well as at Dowd’s Corner where the East Branch of Rattlesnake Brook meets Rattlesnake Brook. Heavy rain will cause flooding on Old Canton Road, in particular. Residents have asked for assistance with the brook, but the topography makes it challenging to address through hydraulics. Private properties, including at least one commercial property, at Dowd’s Corner have experienced repetitive flood losses.

The Town Public Works Garage is currently located adjacent to the Farmington River, with its first floor about four feet under Base Flood Elevation; as noted above this facility was relocated in 2018. The row of homes on Powder Hill Road is near the Farmington River and the Nepaug River. A potential lawsuit against the town was related to flooding in this area.



The many upstream Farmington River dams remain a concern for the town. The MDC has repeatedly included the Town in emergency drills and planning for the Goodwin Dam, but not the others (Nepaug, Barkhamsted). The Town would like MDC to be more proactive in disseminating information about risks downstream and conducting planning and drills for the other dams. If the dam at the Barkhamsted Reservoir, located outside of Canton, failed, Canton would experience serious flooding along the Farmington River in about 20 minutes. Similarly, a failure in the Nepaug Reservoir Dam also located just outside of Canton, would quickly cause serious flooding in town.

Maintaining accessibility throughout Town during storms is another challenge, given the number of rivers and streams, and the steep slopes in many areas. Areas of potential concern include maintaining access in North Canton and maintaining access and power to the Town elderly housing development at 21 Dowd Avenue.

Canton experiences wildfires, though infrequently.

Hazard Losses

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

Historic FEMA Payments

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.

There has been \$96,103 in claims paid out on 18 losses to seven Repetitive Loss (RL) properties insured under the National Flood Insurance Program (NFIP). Overall, the NFIP has paid 25 claims in Canton totaling \$122,854 to-date.

Total PA reimbursements to the community were as follows:

- Flood Events: \$129,760 (\$6,829 annually)
- Hurricane Events: \$70,362 (\$3,703 annually)
- Winter Storm Events: \$915,235 (\$48,170 annually)

These are summarized in the tables below.



Table 6-2: Flood Event PA Reimbursements, Canton

Incident	Sep 1999	Oct 2005
Declaration	9/23/1999	12/16/2005
Disaster No.	1302	1619
Entity	FEMA PA Reimbursement	
State	\$477	\$592
Municipal	\$0	\$128,691
Nonprofit	\$0	\$0
Total	\$477	\$129,283
Annualized	\$25	\$6,804

Table 6-3: Hurricane Wind Event PA Reimbursements, Canton

Incident	Aug - Sep 2011 (T.S. Irene)	Oct - Nov 2012 (Storm Sandy)
Declaration	9/2/2011	10/30/2012
Disaster #	4023	4087
Entity	FEMA PA Reimbursement	FEMA PA Reimbursement
State	\$453	\$0
Municipal	\$33,659	\$0
Nonprofit	\$27,360	\$8,890
Total	\$61,472	\$8,890
Annualized	\$3,235	\$468

Table 6-4: Winter Storm PA Reimbursements, Canton

Incident	Mar 2003	Dec 2003	Jan 2005	Feb 2006	Jan 2011	Oct 2011	Feb 2013
Declaration	3/11/03	1/15/04	2/17/05	5/2/06	3/3/11	11/17/11	3/21/13
Disaster #	3176	3192	3200	3266	1958	4046	4106
Entity	FEMA PA Reimbursement						
State	\$8,924	\$8,000	\$10,554	\$12,810	\$11,161	\$4,603	\$21,691
Municipal	\$25,120	\$21,986	\$24,776	\$23,818	\$37,330	\$386,483	\$78,420
Nonprofit	\$0	\$0	\$0	\$0	\$41,253	\$146,966	\$51,341
Total	\$34,044	\$29,986	\$35,330	\$36,628	\$89,745	\$538,052	\$151,451
Annualized	\$1,792	\$1,578	\$1,859	\$1,928	\$4,723	\$28,319	\$7,971

National Centers for Environmental Information Losses

The National Centers for Environmental Information (NCEI) severe storm database was reviewed to identify events that had impacted Avon. The table below summarizes events in that database that were specifically noted as having impacted Canton since 2012.



Table 6-5: NCEI Database Losses since 2012, Canton

Date	Event	Property Damage
11/1/2013	Thunderstorm Wind	*\$8,300
4/6/2017	Lightning	\$2,500
Total		\$10,800

*damages from storm divided between multiple communities

NCEI losses under other event categories (such as drought, high wind, flooding, and winter storms) were not specifically noted as impacting Canton, though they did impact Hartford 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 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 6-6: Estimated Damages to Canton from a 1% Annual-Chance Flood

Loss Type	2014 Results	2018 Results
Households Displaced	155	113
People Needing Shelter	245	124
Buildings at Least Moderately Damaged	34	0
Economic Losses		
Residential Building & Content Losses	\$16,300,000	\$9,890,298
Other Building & Content Losses	\$35,680,000	\$23,166,948
Total Building & Content Loss	\$51,980,000	\$33,057,247
Total Business Interruption Losses	\$180,000	\$1,203,110
TOTAL	\$52,170,000	\$34,260,357



Table 6-7: Estimated Damages to Canton from a 1% Annual-Chance Hurricane

Loss Type	2014 Results (1938 event)	2018 Results (1% track)
Buildings at Least Moderately Damaged	148	1
Buildings Completely Damaged	3	0
Total Debris Generated (tons)	23,947	336
Truckloads (at 25 tons/truck) of building debris	83	13
Economic Losses		
Residential Building & Content Losses	\$15,800,000	\$1,080,156
Other Building & Content Losses	\$2,200,000	\$31,925
Total Building & Content Loss	\$18,000,000	\$1,112,081
Total Business Interruption Losses	\$1,900,000	\$5,523
TOTAL LOSSES	\$19,900,000	\$1,117,604

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 6-8: Estimated Damages to Canton from a Probabilistic Earthquake

Loss Type	2018 Results
Wage Loss	\$1,508
Rent Loss	\$1,192
Relocation Loss	\$2,054
Income Loss	\$1,192
Inventory Loss	\$114
Total Business Disruption	\$6,060
Structural Loss	\$4,120
Non-Structural Loss	\$12,857
Total Building Loss	\$16,977
Total Content Loss	\$4,935
TOTAL LOSSES	\$27,971

Table 6-9: Estimated Damages to Canton from Modeled Earthquake Scenarios

Epicenter Location	Magnitude	Estimated Total Losses
East Haddam	6.4	\$52,829.98
Haddam	5.7	\$14,395.22
Portland	5.7	\$36,176.18
Stamford	5.7	\$3,423.48

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 Canton 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.

Table 6-10: Average Annualized Losses, Canton

Dam Failure	Drought	Earthquakes	Flooding	Hurricanes and Tropical Storms	Severe Winter Storms	Thunderstorms	Tornadoes	Wildfires	Total
\$18	\$0	\$27,971	\$10,062	\$645,191	\$48,170	\$1,367	\$151,003	\$4,571	\$888,353

Losses Summary

A review of the above loss estimates demonstrates that the Town of Canton 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, specific hazard mitigation needs were noted.

- Canton’s communications facilities need improvement.
- Canton may pursue acquisitions of homes in the Old Canton Road area.

Status of Previous Mitigation Strategies and Actions

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

Table 6-11: Status of Previous Mitigation Strategies and Actions, Canton

Action #	Action	Notes	Status
GOAL: REDUCE THE LOSS OF LIFE AND PROPERTY, AND ECONOMIC CONSEQUENCES OF NATURAL HAZARDS			
Objective 1: Reduce flooding damages to existing municipal infrastructure.			
1.1	Continue to monitor the availability of an appropriate site for relocating the town garage.	Site has been identified and construction of a new garage was completed in 2018	Completed
1.2	Maintain flood proofing measures protecting the sewage treatment facility.	Supervision and control measures have been established as standard operating practices. Flood proofing measures will continue to be maintained on a routine and as needed basis. This is a capability.	Completed



Action #	Action	Notes	Status
Objective 2: Reduce flooding damages to private properties.			
2.1	Develop a list of private properties for acquisition as they become available at Dowd's Corner.	Limited progress has been made on this action. Action will be reworded to provide flexibility and acquire homes as they become available.	Carry Forward with Revisions
2.2	Continue to review and enforce development regulations to prevent increased flood risks.	The Town has adopted new development regulations and Low Impact Development provisions to further mitigate flood risks. Development regulations are enforced. This is a capability.	Completed
2.3	Study potential impacts of Nepaug Reservoir Dam failure.	MDC has prepared a dam failure analysis and EAP, so the study has been completed; however, the Town reportedly does NOT have copies of the dam failure analysis for Nepaug and Barkhamsted and would like them.	Carry Forward with Revisions
2.4	Develop appropriate evacuation plan based on Nepaug Reservoir Dam failure.	MDC repeatedly conducts tabletop exercises with the Farmington River towns regarding the Goodwin Dam. Canton would like to do the same for the Nepaug and Barkhamsted Reservoir dams. Canton would like training and drills related to potential failure of these two dams.	Carry Forward with Revisions
2.5	Develop appropriate evacuation plan based on Barkhamsted Reservoir Dam failure studies	MDC repeatedly conducts tabletop exercises with the Farmington River towns regarding the Goodwin Dam. Canton would like to do the same for the Nepaug and Barkhamsted Reservoir dams. Canton would like training and drills related to potential failure of these two dams.	Carry Forward with Revisions
2.6	Enhance town warning system: sirens, public address systems, etc.	Town uses Q-Notify, Everbridge, a new local radio station, social media, and Facebook. This is a capability.	Completed
Objective 3: Ensure good traffic management during any type of hazard event.			
3.1	Maintain good communications with neighboring communities' public safety officials to coordinate road closures and detours.	Canton has a robust CERT that is well-engaged and can help with traffic; and mutual aid with surrounding towns. The town can use the sandbagging machine acquired through the regional sharing program and stored in East Hartford.	Completed
3.2	Educate residents on most common alternative routes in advance of storms through municipal website and other resident communications.	Common alternative routes are posted on the website and communicated to residents as part of standard pre-event operating procedures. This is a capability	Capability
Objective 4: Minimize power disruptions.			
4.1	Maintain good communications with Connecticut Light & Power.	CL&P has been acquired by Eversource, and communications are good. This is a capability.	Capability



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.

<i>Action #1</i>	
Enter the Sustainable CT program through Registration and review actions that can be undertaken to pursue Certification. Make progress with the actions related to hazard mitigation.	
Goal	4. Increase the use of natural, “green,” or “soft” hazard mitigation measures, such as open space preservation and green infrastructure.
Category	Natural Resources Protection
Lead	Planning
Cost	\$0 - \$10,000
Funding	Town Operating Budget
Timeframe	01/2019 - 12/2019
Priority	High

<i>Action #2</i>	
Conduct outreach and education campaign to residents and property owners downstream of large dams (Goodwin, Nepaug, and Barkhamsted) about risks and emergency alert systems. Work with MDC if possible.	
Goal	6. Improve public outreach, education, and warning systems
Category	Education & Awareness
Lead	Emergency Management
Cost	\$10,000 - \$25,000
Funding	Town Operating Budget
Timeframe	01/2019 - 12/2020
Priority	High

<i>Action #3</i>	
Complete a study of existing municipal communication capabilities to determine opportunities for building resilience into the system.	
Goal	7. Improve the emergency response capabilities of the region and its communities
Category	Preparedness & Emergency Response
Lead	Emergency Management
Cost	\$10,000 - \$25,000
Funding	Town Operating Budget / Grants / DEMHS
Timeframe	07/2019 - 06/2021
Priority	High



Action #4

Acquire updated radio communication equipment for municipal departments to use for emergency response.

Goal	7. Improve the emergency response capabilities of the region and its communities
Category	Preparedness & Emergency Response
Lead	Emergency Management
Cost	\$25,000 - \$50,000
Funding	Town Operating Budget / DEMHS
Timeframe	01/2020 - 12/2020
Priority	High

Action #5

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.

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

Action #6

Receive and file current dam failure analysis and EAP for all upstream MDC reservoirs.

Goal	7. Improve the emergency response capabilities of the region and its communities
Category	Preparedness & Emergency Response
Lead	Emergency Management
Cost	\$0 - \$10,000
Funding	Town Operating Budget
Timeframe	01/2020 - 12/2020
Priority	Medium



Action #7

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.

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

Action #8

Approach homeowners in Dowd's Corner, in particular on Old Canton Road, to offer assistance if they are interested in property acquisition.

Goal	1. Minimize the impact of natural hazards on physical buildings and infrastructure
Category	Property Protection
Lead	Planning
Cost	\$0 - \$10,000
Funding	Town Operating Budget
Timeframe	07/2020 - 06/2021
Priority	Medium

Action #9

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

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



Action #10

Conduct annual exercise with MDC that specifically includes the Nepaug and Barkhamsted Reservoir dams.

Goal	7. Improve the emergency response capabilities of the region and its communities
Category	Preparedness & Emergency Response
Lead	Emergency Management
Cost	\$10,000 - \$25,000
Funding	Town Operating Budget
Timeframe	07/2019 - 06/2024
Priority	Medium

Action #11

Conduct an assessment of the Farmington River and Nepaug River to identify possible flood mitigation activities in this area.

Goal	1. Minimize the impact of natural hazards on physical buildings and infrastructure
Category	Prevention
Lead	Planning
Cost	\$25,000 - \$50,000
Funding	Grants / CT DEEP / DEMHS
Timeframe	07/2021 - 06/2023
Priority	Medium

Action #12

Complete relocation of Town Garage outside of flood zone.

Goal	1. Minimize the impact of natural hazards on physical buildings and infrastructure
Category	Structural Projects
Lead	Planning
Cost	More than \$100,000
Funding	Town Operating Budget / Grants / DEMHS
Timeframe	07/2022 - 06/2024
Priority	Medium



Action #13

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.

Goal	1. Minimize the impact of natural hazards on physical buildings and infrastructure
Category	Property Protection
Lead	Planning
Cost	\$0 - \$10,000
Funding	Town Operating Budget / DEMHS
Timeframe	07/2021 - 06/2022
Priority	Low

Action #14

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.

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

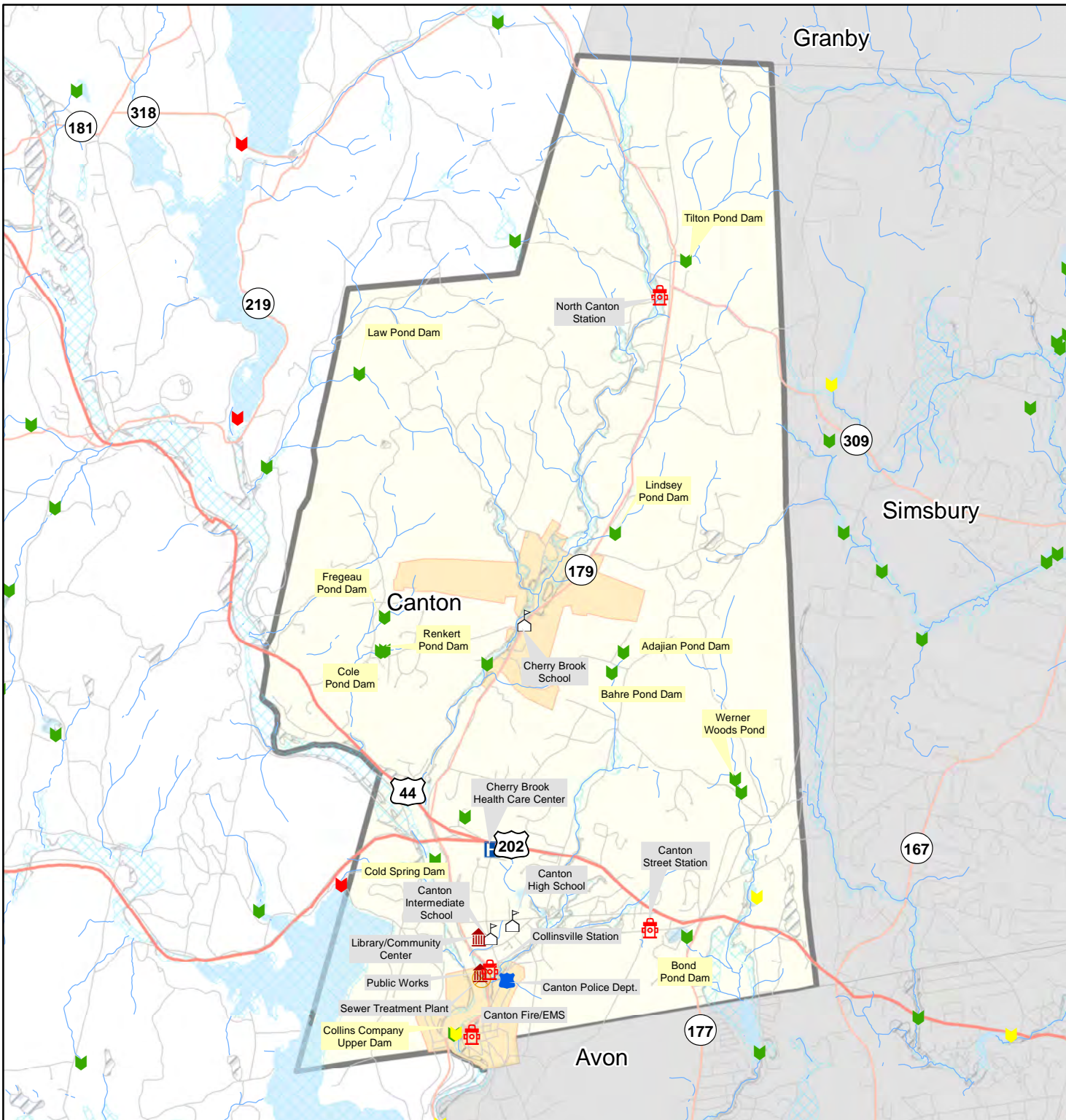
Action #15

Work with CT DEEP to complete a formal validation of the Repetitive Loss Property list and update the mitigation status of each listed property.

Goal	1. Minimize the impact of natural hazards on physical buildings and infrastructure
Category	Property Protection
Lead	Planning
Cost	\$10,000 - \$25,000
Funding	Town Operating Budget / CT DEEP / DEMHS
Timeframe	07/2021 - 06/2023
Priority	Low










Capitol Region Natural Hazards Mitigation Plan Update










Canton, Connecticut

Flood Plains, Dams & Critical Facilities

Dam Hazard Class



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

Critical Facilities

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

 NRHP Districts/Areas

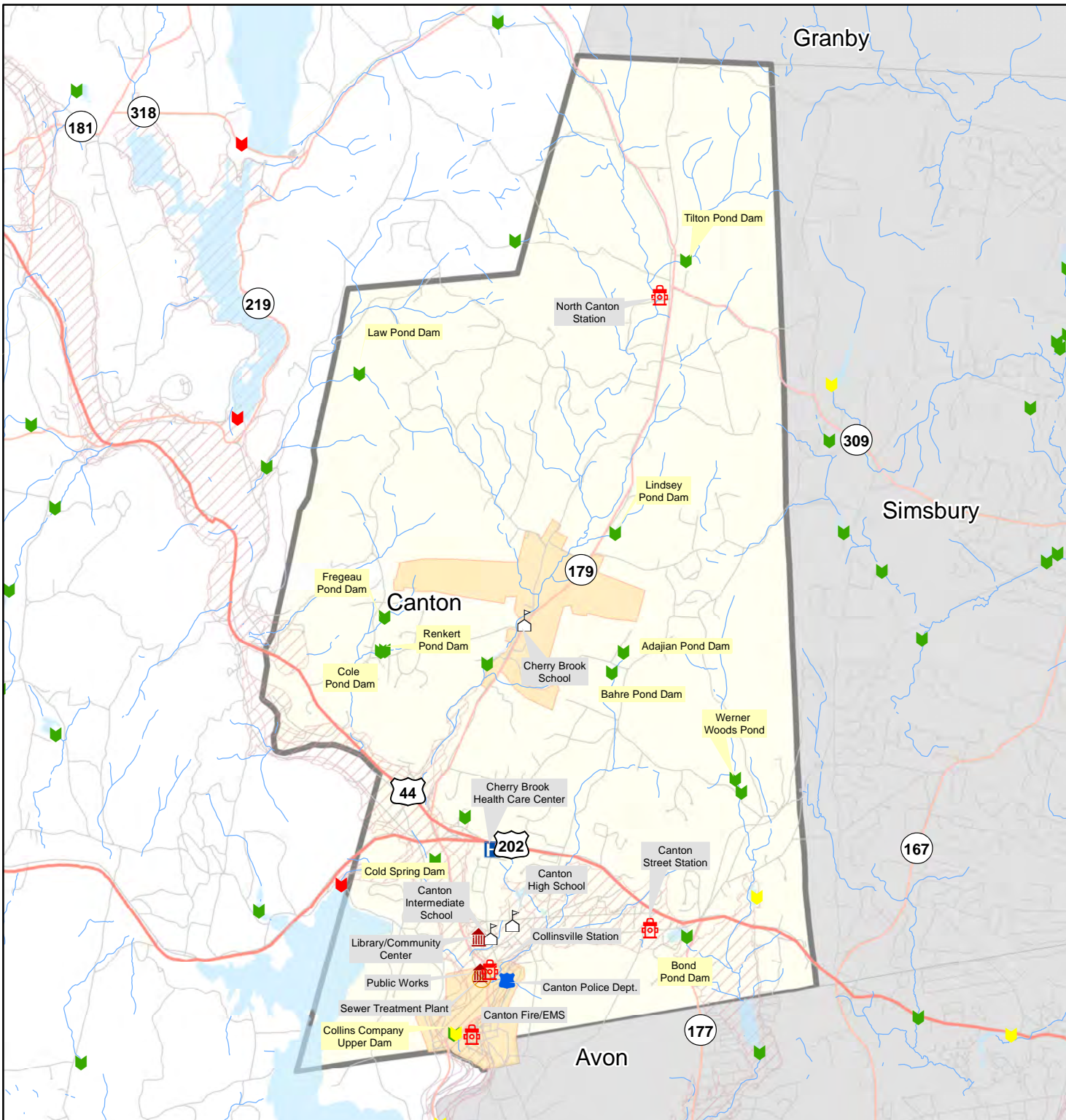
FEMA Flood Hazard Area

-  100 Year Flood Zone
-  500 Year Flood Zone

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



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Capitol Region Natural Hazards Mitigation Plan Update












Canton, Connecticut

Dam Breach Inundation Area & Critical Facilities

Dam Hazard Class

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

Critical Facilities

-  Fire Station
-  Police Station
-  School
-  Healthcare Facility
-  State Facility
-  Town Facility
-  Waste Water Facility
-  Emergency Center
-  NRHP Buildings/Sites
-  NRHP Districts/Areas
-  Dam Breach Inundation Areas

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



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