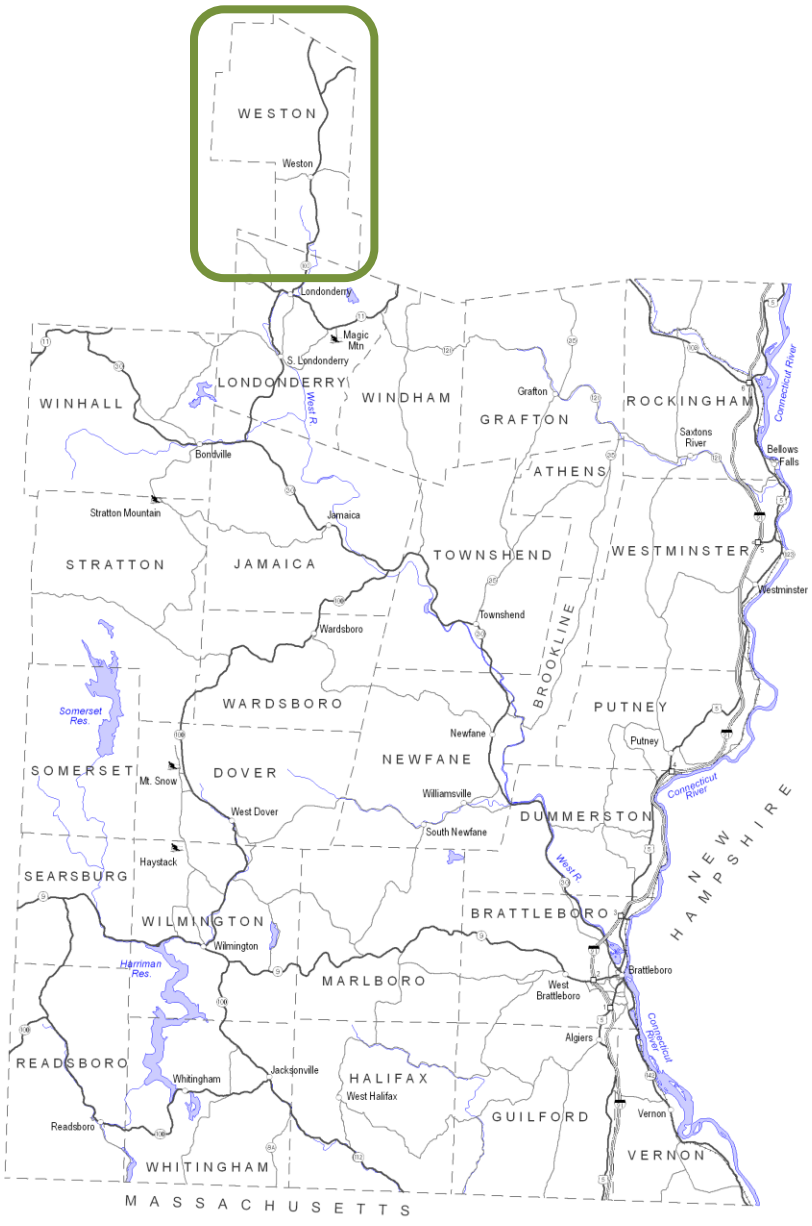
Town of Weston
Local Hazard Mitigation Plan



Municipal Adoption Date: October 11, 2022

FEMA Formal Approval Date: October 14, 2022

Technical Assistance by the
Windham Regional Commission

WINDHAM
REGIONAL
COMMISSION

Table of Contents

INTRODUCTION AND PURPOSE

This Hazard Mitigation Plan is an update to a prior plan adopted by the Town of Weston on April 12, 2016 and approved by FEMA on May 17, 2016. This is a single jurisdiction plan covering the Town of Weston, Vermont. The purpose of this plan is to assist the Town of Weston in identifying all of the hazards facing the town and to identify new and continuing strategies to reduce risks from identified hazards.

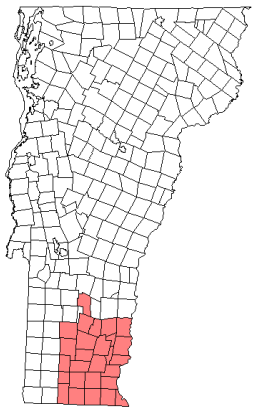
Hazard mitigation is any sustained action that reduces or eliminates risk to people, property, and the natural environment from natural and human-caused hazards and their effects. Based on the results of previous Project Impact efforts, FEMA and state agencies have come to recognize that it is less expensive to prevent damage from disasters than to repeatedly repair damage after a disaster has occurred. This plan recognizes that communities also have an opportunity to identify mitigation strategies and measures during all of the other phases of Emergency Management: preparedness, response, and recovery. While hazards cannot be eliminated, a community can determine what the potential hazards are, where the hazards are most severe within the community, and identify what local actions can be taken to reduce the severity of hazard-related damage.

Hazard mitigation strategies and actions alter the hazard impact by eliminating or reducing the frequency of occurrence; averting the hazard by redirecting the impact by means of a structure or land treatment; adapting to the hazard by modifying structures or standards; or avoiding the hazard by stopping or limiting development. Mitigation could include projects such as:

- Flood-proofing structures
- Tying down propane/fuel tanks in flood-prone areas
- Elevating furnaces and water heaters
- Identifying and modifying high traffic incident locations and routes
- Ensuring adequate water supply
- Elevating structures or utilities above flood levels
- Identifying and upgrading undersized culverts
- Planning for land use for floodplains and other flood-prone areas
- Proper road maintenance and construction
- Ensuring critical facilities are safely located
- Establishing and enforcing appropriate building codes
- Public information

WINDHAM REGION GEOGRAPHY

The Windham Region is located in southeastern Vermont and consists of 23 towns in Windham County, the neighboring towns of Readsboro, Searsburg, and Winhall in Bennington County, and Weston in Windsor County. The region is bordered by Massachusetts to the south and New Hampshire to the east. At over 920 square miles (590,000 acres), the region accounts for roughly 9.6% of the State's total land area. The Windham Region has several distinctive identities, largely defined by the diverse natural environment.



The Region's topography is relatively flat or gently rolling land in the Connecticut River valley in the east, while the western part of the region is characterized by the Green Mountain ridges and peaks with narrow stream valleys. Stratton Mountain is the highest point in the region at 3,936 feet. The

lowest point is along the Connecticut River in Vernon, at 200 feet.

In addition to the Connecticut River, other major rivers of the region are the Deerfield, Green, North, Saxtons, West, and Williams, all tributaries of the Connecticut. There are two major flood control reservoirs on the West River, Ball Mountain and Townshend, and two major storage reservoirs for hydropower generation on the Deerfield River, Somerset and Harriman.

WESTON GEOGRAPHY & TOWN PROFILE

The Town of Weston is a rural community in the mountains of Windsor County in southeastern Vermont. It is a picturesque town with the West River valley, part of the Connecticut River watershed, running north-south through the central part of the town. Enclosing the West River valley are several dominant ridgelines. To the west are Peabody Hill and Holt Mountain and to the east is Markham Mountain. Elevations range from 1,200 to 2,200 feet above sea level. The wide floodplain along the West River forms a prominent feature and runs along the main road in Town, Route 100. Weston has a centrally located historic village center located on the West River and is surrounded by predominantly rural residential development scattered along winding secondary roads.

The settlement density is low, as the population is only slightly more than 600 people in 35 square miles, with over half of that total land area being conserved. The Route 100 corridor is the primary entry to the town from both the north and south, and runs directly through the village center. Route 155 splits from Route 100 in the northern part of the town and continues to the adjacent town of Mt. Holly. There are two main east-west roads: the Chester Mountain Road runs east from Route 100 in the Village Center to Andover, and the Landgrove Road runs west from Route 100 in the Village Center to the Weston/Landgrove town line. These roads are both paved except a portion of Landgrove Road. The majority of the remaining roads in town are gravel surfaces.

The village center contains numerous residences and community facilities. These include the Town offices, the fire station, the Weston Playhouse, two churches, a library, the post office, an inn, and several retail establishments. Outside of the village, the Route 100 corridor contains hundreds of acres of open agricultural lands and meadows situated along the West River. Maintaining these rural open spaces, and the aesthetics associated with these open spaces, has been a long-time goal of the residents of Weston. Most of the population is located along the Route 100 corridor, though there are a number of residences on secondary roads going into the mountains east and west of Route 100.

Weston is located in land of the headwaters of the West River. Much of the land in town has been unsuitable for development because of steep slopes and soils that are too wet, shallow or unstable for development. Currently, residential land use in Weston is predominantly single-family dwellings, both permanent and second homes. Commercial and industrial land use is quite limited. Agricultural land is used primarily for hay production, with some pasturage for domestic animals, and a sheep cheese making operation. The town is a total of 22,247 acres. Of this, the US Forest Service owns 9,430 acres of National Forest land. Vermont Land Trust has conserved over 1,500 acres in Weston. An additional 860

acres are in the Okemo State Forest and an estimated 450 acres are used for agriculture. In total, approximately 53% of the land area in Weston is permanently preserved forest land, either through the National Forest and State Forest, or conservation easements.

Existing Authorities

The Town of Weston is governed by a five-member Selectboard. There is a Selectboard Administrative Assistant position that supports the work of the Selectboard members. The town has a Zoning Administrator position, which is a part-time position appointed by the Selectboard. This position administrates the Town of Weston Zoning Bylaws, Subdivision Regulations, and Flood Hazard Area Regulations (contained in the Zoning Bylaws). The Zoning Bylaws were last amended by the town at Town Meeting on March 4, 2014. The Subdivision Regulations were last amended at Town Meeting on March 4, 1996. Weston created a Development Review Board in 2022, which consists of seven regular members appointed by the Weston Selectboard. The town also has a Planning Commission that consists of five regular members appointed by the Selectboard.

Emergency Services

Weston has the all-volunteer Weston Volunteer Fire Company (WVFC). The town also has an Emergency Management Director position. The Weston firehouse is located at the north end of the Village on Route 100. If needed, WVFC can call upon Southwestern New Hampshire Mutual Aid (Keene, NH) for assistance. For police protection, Weston relies upon the Vermont State Police, who have a barracks in Rockingham approximately 16 miles away. The nearest hospital is in Springfield, though residents can also use the Mountain Valley Medical Clinic located in Londonderry. There are several helicopter landing spots in town if there is a major medical emergency. The town population is too small to support a full-time physician or health services clinic in Weston. Search and rescue service is provided by Londonderry Rescue Squad. The primary local shelter is the Colonial House Inn (motel). The inn has 13 rooms and has a backup generator. The alternate local shelter is the Brandmeyer's Mountainside Lodge (motel). There are an additional two annexes: Flood Brook School in Londonderry, the Weston Town Garage and the Fire Station.

The town manages a local Emergency Operations Center (EOC) during disasters. The town has also utilized a virtual joint EOC with the surrounding towns of Londonderry, Peru and Landgrove. This strategy has proved to be successful and the communities intend to continue this in the future, as needed.

Electric Utility Distribution System

Green Mountain Power provides electric service to approximately 649 meters in Weston. Outage statistics between 2017 and 2021 are shown in the table below. The results show that 2018 and 2019 were particularly impacted years for power outages, with these years having the highest number of outages and hours that the average customer was without power. Power outages are of particular concern for vulnerable populations during cold weather months in Vermont.

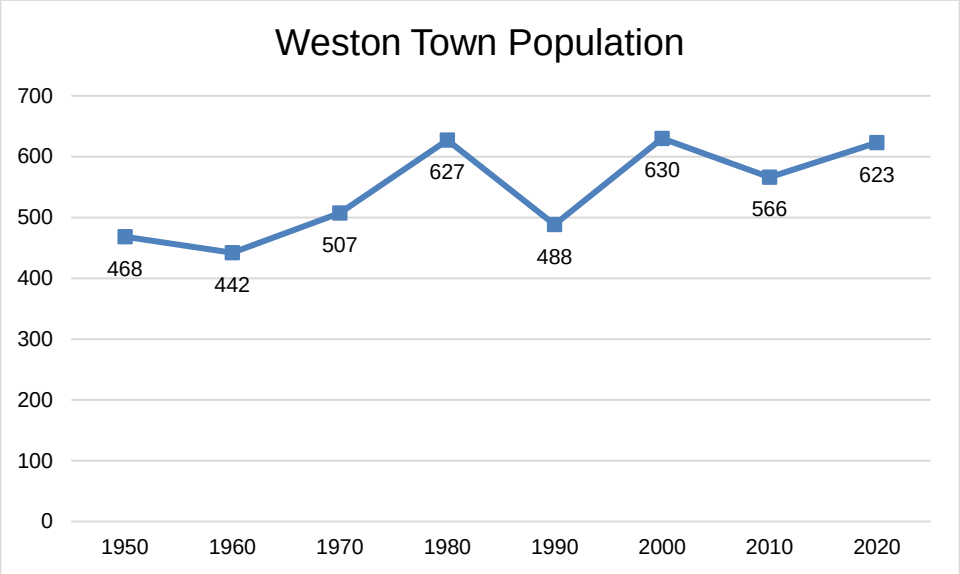
During the planning process it was noted there has been an increase in the frequency of high wind events that have resulted in extended power outages. Green Mountain Power is currently working on upgrades to the transmission lines in Weston and adjacent Londonderry. As of the writing of this report, the project has been staked and designed, and Green Mountain Power is in the process of obtaining easements from property owners. This project should help reduce the occurrences of power outages as a result of high winds.

	Number of Incidents	Total Customers Affected	Customer Hours Out	Avg interruption time in hours per customer per year	Avg length of system outage per year	# of system interruptions per customer per year
2017	35	725	2,521	3.48	1.15	4.01
2018	105	4,860	87,600	18.02	7.67	138.17
2019	74	4,210	52,190	12.40	6.59	81.67
2020	59	612	3,049	4.98	0.95	4.73
2021	55	2,836	8,609	3.04	4.37	13.26
5 Year Average	65.6	2,649	30,794	8.38	4.15	48.37

Source: Green Mountain Power; 5-year averages by WRC

Population Data

As the below graph and table show, population has increased slightly since 2010, with an additional 57 residents in town. Weston gained population between 2010 and 2020 at a similar rate as compared with adjacent towns. Generally, the town's population has remained stable since 1980.

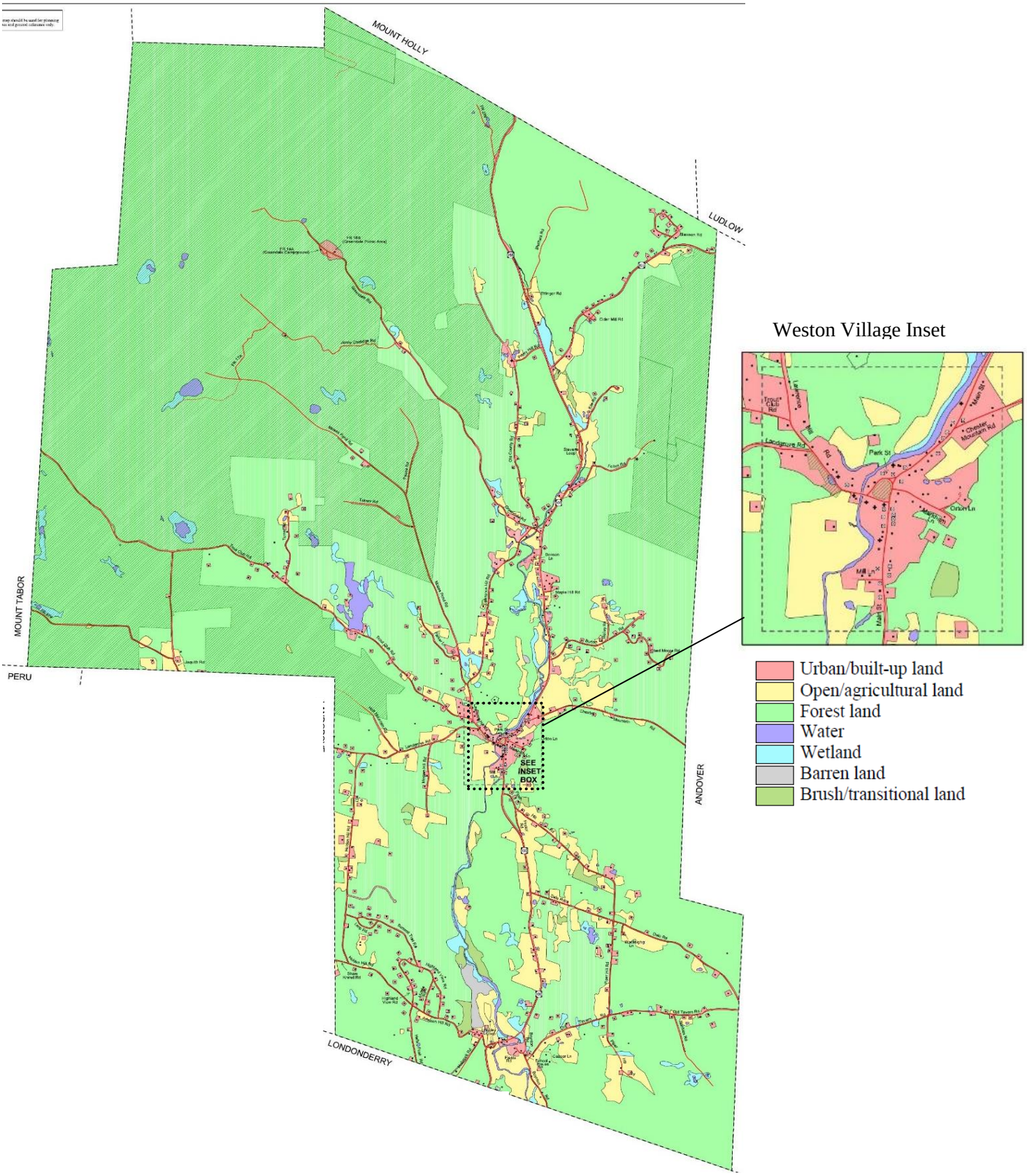


Source: U.S. Census

Population Growth Trends in Weston & Adjacent Communities					
Town	**2000**	**2010**	**2020**	**% Change 2000 - 2010**	**% Change 2010 - 2020**
Weston	630	566	623	-10%	10%
Londonderry	1,709	1,769	1,919	4%	8%
Andover	496	467	568	-6%	22%
Landgrove	144	158	177	10%	12%
Ludlow	2,449	1,963	2,172	-20%	11%
Mt. Holly	1,241	1,237	1,385	14%	12%
Mt. Tabor	203	255	210	-5%	-18%

Source: U.S. Census

Existing Land Use Map from the 2016 Weston Town Plan



PLANNING PROCESS

Th town residents who took part in the planning process for developing the Local Hazard Mitigation Plan may be affiliated with more than one association for the town. In rural areas of Vermont, it is typical that people who are concerned about the safety, health and welfare of their community will participate on more than one board and may, for example, hold the role of Fire Chief, or school teacher, or a small business owner, in addition to owning personal property in the town. Therefore, although the meetings may not have had as many people in attendance as a more populated community, those present at the meetings are representing a variety of roles that would be held by numerous individuals in a more populated area.

Documentation of the Plan Update Process

Matt Bachler, Senior Planner for the Windham Regional Commission (WRC), assisted the Town with the update. Pre-Disaster Mitigation Grant funds from FEMA supported this update process.

The Hazard Mitigation Planning Team members that assisted with the update included:

- Denis Benson, Weston Selectboard Member
- Jim Linville, Weston Selectboard Member
- Lisa Yrsha, Weston Selectboard Member
- Almon Crandall, Road Foreman
- Ryan Hart, Weston Volunteer Fire Department Chief
- Michael Smilovich, Weston Fire Department & Emergency Management Director
- Fred Probst, Weston Fire Department
- Natalie Boston, Selectboard Administrative Assistant
- Ken Hall, Weston Resident and Conservation Commission Member

The Hazard Mitigation Planning Team participants met at the Weston Town Office on April 14, 2022 with Matt Bachler from the WRC. Planning Team members were invited by Natalie Boston and the meeting was also advertised and open to the public.[1] The meeting covered the following topics:

- Review the purpose of the Local Hazard Mitigation Plan and the process for developing the Plan.
- Review of existing Local Hazard Mitigation Plan.
- Completion of hazard analysis and discussion of what hazards the town wants to focus on.
- Review of town map to note where hazard events are causing repeated or large-scale damage.

The Hazard Mitigation Planning Team held an additional public meeting on May 10, 2022 at the Weston Town Office. The meeting was advertised and open to the public. This meeting covered the following topics:

- Review of Mitigation Actions Table from expiring Plan.
- Development of an updated Mitigation Actions Table for the updated Plan.
- Identify gaps and capabilities with implementation.

[1] See appendix for sign in sheet and meeting agenda.

WRC updated the plan to meet the current standards and guidelines of FEMA for hazard mitigation plans. WRC took the information from the public meetings, along with follow-up information gathered in conversations and emails with the Road Foreman and the Selectboard Administrative Assistant. WRC also reviewed and utilized the data sources noted and cited throughout this plan to gather further information.

The draft was presented for internal town review by the Committee, town personnel, Planning Commission, and the Selectboard on July 15, 2022. The internal town review period was from July 15 – July 29, 2022. During the review period, one comment was received from a Selectboard member regarding an action item in the mitigation table that required a change to the draft plan. WRC then updated the draft for public comment.

The revised draft plan was sent out for public comment on August 1, 2022. The public comment period was from August 1 – August 15, 2022. An electronic copy of the plan was posted on the town's website and a hard copy of the plan was made available at the town office for those who could not access the website. Flyers were posted in town and on the town's website advertising that the draft plan was available for review and comment. One comment was received, but it did not require any changes to the draft plan.

The draft plan was also distributed to adjacent towns and regional commissions via email for comments on August 1, 2022. The following towns and regional commissions were contacted: Londonderry, Ludlow, Mount Holly, Mount Tabor, Landgrove, Peru, Bennington County Regional Commission, Rutland Regional Planning Commission, and Mount Ascutney Regional Commission. No comments were received from adjacent towns or regional commissions. The plan was finalized by WRC for submittal to Vermont Emergency Management (VEM). This submittal allows VEM to make suggested revisions on the draft and allows for any revisions to be made before the final draft is adopted by the town and submitted to the Federal Emergency Management Agency Region 1 (FEMA) for final approval.

In addition to the local knowledge of Planning Team members and other relevant parties, and information in the 2016 Weston Local Hazard Mitigation Plan, several existing plans, studies, reports, and technical information were utilized in the preparation of this Plan. A summary of these data sources is provided below and specific references are listed in footnotes throughout this Plan:

- 2021 Local Emergency Management Plan
- Floodready VT Community reports and NFIP information
- 2016 Weston Town Plan
- 2017-2021 Green Mountain Power Outage Data
- 2018 State of Vermont Hazard Mitigation Plan
- 2020 American Community Survey Five-Year Estimates
- Weston Flood Hazard Area Regulations
- National Oceanic and Atmospheric (NOAA) National Climatic Data Center's Storm Events Database

- FEMA Disaster Declarations for Vermont
- OpenFEMA Dataset: Public Assistance Funded Project Summaries for Vermont
- U.S. Geological Survey National Water Information System- Stream Gage Data
- FEMA Flood Insurance Rate Maps
- 2013 FEMA Mitigation Ideas Report

RISK ASSESSMENT

The risk assessment portion of a Hazard Mitigation Plan contributes to the decision-making process for allocating available resources to mitigation projects. 44 CFR Part 201.6(c)(2) of FEMA's mitigation planning regulations requires local municipalities to provide sufficient hazard and risk information from which to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.

Methodology

A **vulnerability analysis** for each community begins with an inventory of possible hazards and an assessment of the risk that they pose. These are the questions to be answered: What hazards can affect your community? How bad can it get? What is the likelihood of future events occurring? What areas of your town are most vulnerable to these hazards? How does climate change impact your town currently and what are you worried about for future impacts? Information collected from the planning team went into this vulnerability assessment to identify the hazards the town feels most vulnerable to.

The following table is the scale used to rank each hazard that is analyzed:

Hazard Assessment Ranking Criteria	
	Frequency of Occurrence: Probability of a plausibly significant event
1	Unlikely: <1% probability of occurrence in the next 100 years
2	Occasionally: 1–10% probability of occurrence per year, or at least 1 chance in next 100 years
3	Likely: >10% but <75% probability per year, or at least 1 chance in next 10 years
4	Highly Likely: 100% probability in a year

Potential impact was considered and scored separately for impacts to infrastructure, life, economy and the environment. Additionally, seasonal patterns that may exist are considered, what areas are likely to be affected most, the probable duration of the hazard, the speed of onset (amount of warning time, considered with existing warning systems). Finally, the effects of climate change are also taken into account. Vermont is experiencing warming temperatures, shorter winter seasons, and an increase in the intensity of storm events, which needs to be considered as part of the LHMP and addressed in the hazard profiles and mitigation actions when relevant.

The combination of the frequency scores for each hazard and the impact ranking for each hazard related to infrastructure, life, economy and the environment, were together used determine the hazard ranking score for each hazard. These results were analyzed with the planning participants at the public meeting on April 14, 2022. Results along with community input were used to determine which hazards the plan

would address. The participants used the results to formulate their discussion, however, local knowledge and the will to act or not act did impact their choices on the chosen hazards to address.

Results

While all hazards were considered by the Hazard Mitigation Planning participants for inclusion in this plan, it is not feasible to study each in depth. For hazards that are not profiled in this plan, the reader is directed to the Vermont State Hazard Mitigation Plan, which is available on the Vermont Emergency Management website. The rationale for not addressing all of the hazards is that Weston has a low level of risk associated with them and/or the town does not choose to mitigate for them at this time. This plan will only focus on the hazards that Weston has decided are pertinent to their community and they have chosen to mitigate for at this time, which are Flooding, Fluvial Erosion, and Invasive Species. The below tables show the results of the hazard assessment:

Frequency of Hazard Occurrence: Ranking by scores	
Frequency of Occurrence	**Score**
Significant Snow Event	4
Below Normal Cold	4
Inundation Flooding	4
Fluvial Erosion	4
Invasive Species	4
Significant Ice Storm	3
Significant Wind Event	3
Significant Hail Event	2
Severe Drought	2
Wildfire	2
Above Normal Heat	1
Infectious Disease Outbreak	1
Landslide	1
Earthquake	1

The above frequency ranking table highlights in green the hazards that the town has chosen to address. As shown, the town has not chosen to address all of the highest ranking hazards. Particular to heavy snow and extreme cold weather events, these are hazards that Weston is accustomed to handling due to the location of the town. It is felt that the town's current measures for handling these hazards are adequate and further mitigation is not needed.

Ice storms and wind events are not chosen for profiling, but did score relatively high for frequency. This higher frequency scoring indicates that the town feels these hazards are occurring more often than in the past, which may be linked to a changing climate. For ice storms, the town believes it has measures in place currently to handle these types of events and that further mitigation is not needed. It was noted that wind events are challenging to mitigate because it is difficult to predict what part of the community will be impacted and the maintenance of electric transmission infrastructure that is vulnerable to high winds is the responsibility of the local utility, Green Mountain Power. There is currently a project under construction to improve the main transmission line in town, which should reduce the occurrence and severity of power outages.

Hail, wildfire, and drought scored somewhat high on the frequency ranking, indicating that these hazards may be rising in frequency and may become more pressing in terms of the 'will to mitigate' over time. Wildfires were noted as a particular concern for the community because the large area of land under control of Green Mountain National Forest and the potential impact of wildfires at the interface of the wilderness area and adjacent residential areas. At this point, however, these hazards are seen as rare enough that mitigation is not justified on a wide scale.

The group discussed the fact that the community is still dealing with the COVID-19 Pandemic that began in Spring 2020. While the group acknowledged the significant impact of the pandemic on Weston, they also noted that an infectious disease outbreak of this severity is not likely to occur very frequently.

The table below shows the results of the same hazards when surveyed in relation to their potential impacts to infrastructure, life, the economy, and the natural environment. The chosen hazards are highlighted in green to show where they lie in the rankings. In this ranking, the chosen hazards rank towards the top of the list in terms of impact. Of note is that snow, ice, cold, and wind again rank somewhat high for impact, just as they did for frequency, but the impacts are accustomed to in Weston and the town has programs in place currently to address these hazards.

Possible Hazard	**Potential Impact**				
	Infrastructure	**Life**	**Economy**	**Environment**	**TOTAL**
Inundation Flooding	2	2	2	2	8
Fluvial Erosion	3	2	2	2	9
Invasive Species	1	1	1	3	6
Ice	2	2	1	1	6
Cold	1	2	1	1	5
Snow	1	2	1	1	5
Wind	2	1	1	1	5
Hail	1	1	1	1	4
Drought	1	1	1	1	4
Wildfire	1	1	1	1	4
Landslides	2	1	1	1	5
Heat	1	1	1	1	4
Infectious Disease Outbreak	1	3	3	1	8
Earthquake	4	4	4	4	16

For infectious disease/pandemic, the group noted the potential for significant impact to life and the local economy, but because this type of hazard ranked low in terms of frequency of occurrence the community decided not to study this hazard in depth. Similarly, earthquakes rank high in terms of impact to infrastructure, life, health, and the environment if a major earthquake were to occur, but the likelihood of occurrence for this hazard is extremely low in Weston.

On a separate note, the awareness of potential impact of heat and drought is likely increasing in the population, though the current impact level remains on the lower end to justify mitigation at this time. The town may choose to mitigate them in the future. For the remaining hazards, either the possibility is considered too low to mitigate them or current methods of handling them are deemed adequate. As noted above, for all hazards not addressed in this plan readers are referred to the State Hazard Mitigation Plan.

Identifying and Profiling Hazards

The following sections include a narrative with a Description, Geographic Area of the Hazard, Impact, Extent, Probability, and discussion of Past Occurrences of the three highest ranking natural hazards affecting Weston.

Flooding and Fluvial Erosion

Description

Flooding is the most widespread and destructive hazard in Vermont. Flood damages are associated with inundation flooding and fluvial erosion. Inundation flooding refers to the rise in water levels that result in flood events. Fluvial erosion occurs when streambanks are eroded by the movement of rivers and streams. Flooding can occur anytime of the year as a result of heavy rains, thunderstorms, tropical storms, hurricanes, Nor'easters, snowmelt, or ice jams. These hazards can also be exacerbated as result of human alterations to the environment or waterways, such as inadequate local drainage infrastructure or development within flood-prone areas.

Residents and businesses in Weston located in the floodplain are at greater risk from flooding than those properties located outside of the floodplain. The floodplain refers to the area around a river, lake, or stream where inundation occurs during high water events. There is a 26% chance of experiencing a flood during the life of a 30-year mortgage compared to a 4% chance of a fire. Weston has an NFIP compliant Floodplain Ordinance, which gives residents access to discount flood insurance and enables the Town to regulate development within the Special Flood Hazard Area (SFHA).

SFHAs are subject to inundation by the 1 percent annual chance of flood (100-year flood). River Corridors are subject to fluvial erosion and are defined and mapped by the Vermont Agency of Natural Resources (ANR). River Corridor mapping delineates fluvial erosion hazard areas and includes a 50-foot buffer beyond those designated areas. For small streams, a 50-foot buffer from top-of-bank on either side of the waterway constitutes the River Corridor. Maps of these areas can be found at the Town Office or online at the FEMA Map Service Center[2] (SFHAs only) or on the VT ANR Natural Resources Atlas[3] (SFHAs and River Corridors).

Much of the destruction from flooding in Weston is due to fluvial erosion rather than inundation, which is the type of flooding targeted in FEMA mapping. Statewide data shows that more than 75% of flood damage costs in Vermont are a result of fluvial erosion versus inundation flooding.[4] Property owners outside of the FEMA floodplain can purchase flood insurance at a lesser expense, and it still covers damages resulting from fluvial erosion in events that damage multiple properties.

[2] https://msc.fema.gov/portal
[3] https://anr.vermont.gov/maps/nr-atlas
[4] https://floodready.vermont.gov/RCFAQ#4

Example of fluvial erosion on West River in proximity to Boynton Road

Fluvial erosion is the destruction of river banks caused by the movement of rivers and streams, when stream power overcomes resistance of bed and bank material. This can range from gradual bank erosion to catastrophic changes in river channel location and dimension during flood events. This occurs when the stream has more energy than is needed to transport its sediment load, due to channel alterations or runoff events that increase water speed in the channel, leading to erosion.

Gravity and water power are the forces driving fluvial erosion. Factors that allow the force of gravity to overcome the resistance of earth material to erosion include: saturation by water, steepening of slopes by erosion or construction, alternate freezing or thawing, removal of trees and other vegetation, and earthquake shaking. Major erosion events are typically associated with periods of heavy rainfall or rapid snow melt, and tend to worsen the effects of flooding that often accompany these events. Associated issues in Weston are related to road cutting and bank erosion for the most part, areas where roads have been built between steep slopes on one side of the road, and slopes to a river or brook on the opposite side.

Bends in a river or stream are prone to movement as part of natural river processes, and their movements can be even more dramatic when manmade impacts and development upstream impinges on these natural stabilizing forces. A local example of this is shown above along Boynton Road where it runs adjacent to the West River. The road is within the River Corridor and the movements of the West River are eroding the bank that is supporting Boynton Road. The interaction of the dramatic forces of river movement, combined with the stationary location of the closely located roads is what leads to road damages during heavy weather events.

Felton Road after Tropical Storm Irene

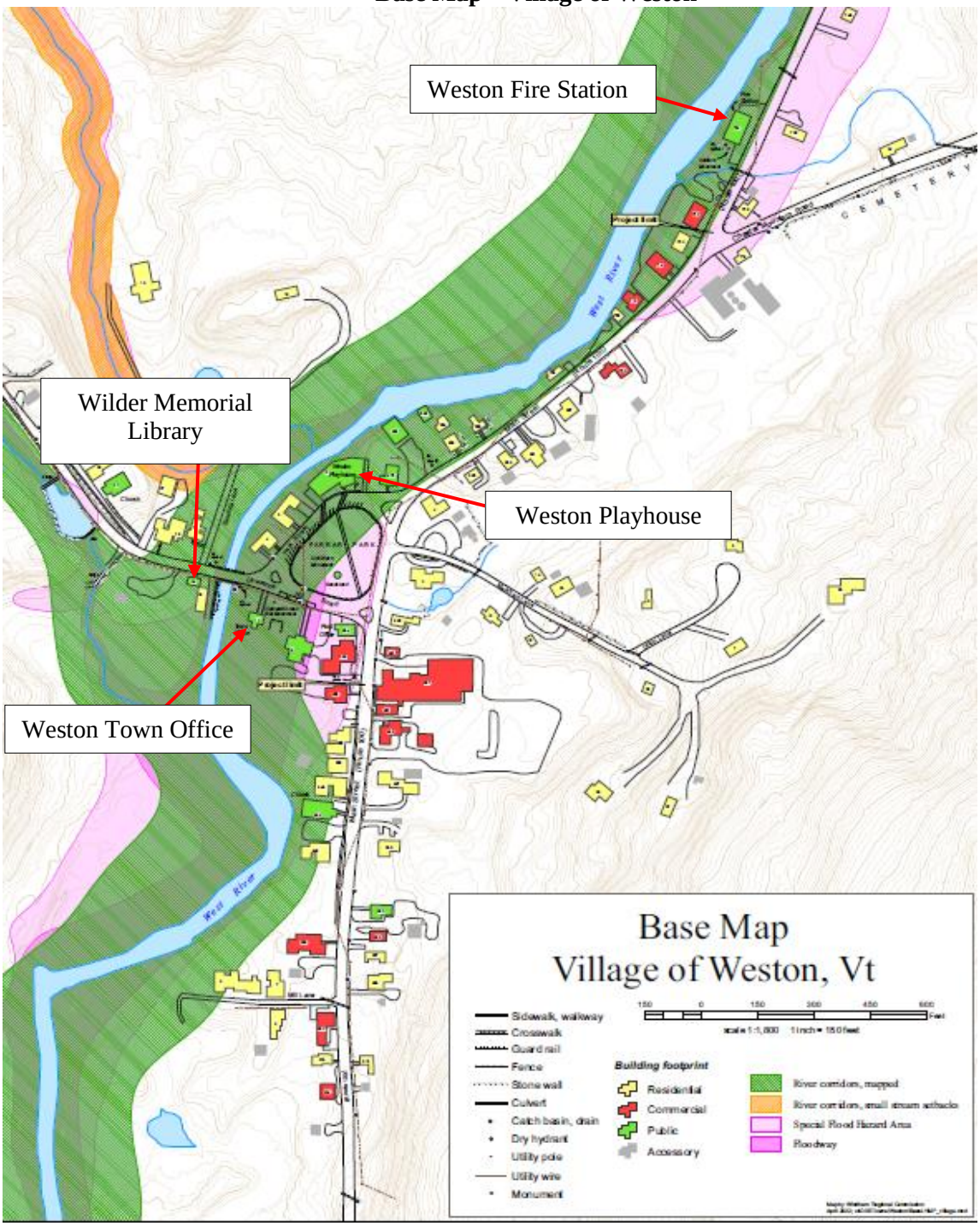
Impact

Weston's topography and town layout lends it to be prone to inundation flooding. There are a number of areas in town that are particularly susceptible, the main one being the village center. The village area lies along the headwaters of the West River, in an area just south of a wide section of floodplain along Route 100. The floodplain area north of the village is largely open agricultural fields, and allows floodwaters to inundate, thereby protecting the village center to a large extent. However, the village still lies in the floodplain and does get flooded during large events. For example, during Tropical Storm Irene in August 2011, there was between 3 – 6 inches of water covering the entirety of the village along the West River from the Post Office to the Fire Station. During this event there was extensive damage to roads in the village center area as well, including Dale Road, Greendale Road, Felton Road, Holden Hill Road, Obed Moore Road, Old Tavern Road, Piper Hill Road, Shaw Knoll Road, and Slawson Road.

The map on the following page shows the village center of Weston. The map shows approximate building footprints and one can see the cluster of structures in the village area located within the floodway, including the Town Office and other community facilities and historic structures.

The Fire Station is located on Route 100 just north of the village center and is prone to flooding. The building has been flood-proofed in terms of elevating the generator. If a flood is warned, equipment is moved out of the station, and things are brought to the second floor for storage. The Planning Committee also noted there are several properties immediately south of the Fire Station that are also prone to flooding. These properties include a commercial gas station with underground fuel storage tanks.

Base Map – Village of Weston



The Town Garage is located on Greendale Road and is outside of the floodplain. This facility has not experienced flooding to-date, but flooding does occur around it due to its proximity to the confluence of

Greendale Brook and the West River, which makes it vulnerable. Both the Fire Station and Town Garage are emergency shelters.

Other roads in the community prone to flooding include Felton Road, Slawson Road, Trout Club Road, Turner Road, Jenny Coolidge Road, Greendale Road, and Parker Lane. Several of these roads were impacted during Tropical Storm Irene and during another significant rain event that occurred in July 2000. Route 100 also is prone to flooding, especially in the southern part of town and into adjacent Londonderry. There are local roads that allow vehicles to bypass Route 100 in this area in the event of flooding. It is important to note that some of the flood-prone roads extend into the National Forest lands located on the western edge of Weston and are outside of the Town's management. For example, Jenny Coolidge Road crosses into the National Forest and was impassable after Tropical Storm Irene for more than two days.

There are several areas in Weston with fluvial erosion risks. The primary concern is the potential impact of fluvial erosion to roadways that could result in residences being cut off. The deeper layer of the soil is clay-based composition that stays in place, but the soil with vegetation on top of it will slide off when inundate with water and erode into the stream eating away at the land holding the road.

Repeatedly having to repair roadways, slow areas prone to erosion with short-term stabilization methods, and cleaning out culverts are threats to the town budget. Weston has taken steps to implement stabilization and mitigation projects that have helped, but there are areas in town where issues remain. The River Corridor mapping (included in this plan) shows the ANR defined River Corridors, which are more likely to have fluvial erosion. The map also points out some of the issues discussed in the text of particular problem spots.

Ice jam flooding is fairly common in the springtime. Heavy rainfall, combined with the runoff from snowmelt due to mild temperatures, can cause frozen rivers to swell and break up the ice on top of the river. The chunks of broken up ice then flow downstream and can get caught up at narrow passages or other obstructions. Weston does not have mapped ice jams.[5] However, sometimes jams will form on the West River by the Fire Station, though the flooding they cause has only inundated the fields of the open floodplain.

Log jam on Greendale Brook

Weston has also expressed a concern about log jams that exist in some of the mountain streams in the National Forest land. Some of these jams can remain in place for several years, and pose a risk if they break and release a significant amount of water and debris downstream. In the past, the town has been advised by the Vermont Agency of Natural Resources not to remove log jams when they occur.

Flash floods typically occur in high elevation drainage areas as a result of summer thunderstorm activity. These events occur when a large amount of precipitation falls during a short period of time and the soil is not able to absorb the water, resulting in runoff into streams. Compared to inundation flooding, there is often little notice of flash flood events. Infrastructure and structures along higher elevation streams and drainage areas are most susceptible to damage from flash flooding. Drainage ditches and culverts are the biggest concern for local flash flooding events. Moses Pond Road and Trout Club Road have experienced

[5] CRELL Ice jam database/map: https://icejam.sec.usace.army.mil/

damage from springtime rain events. Other areas of concern during flooding events are homes located along brooks such as those near Greendale Brook.

The Vermont Dam Inventory shows three active dams located in Weston (*see map to left*). Dam failure can result in significant damages to downstream property and structures due to the flooding. Dam failure is caused by structural failure or overtopping. The Department of Environmental Conservation has classified the Wantastiquet Lake dam as a high hazard potential (shown by red diamond). This dam is owned by the Wantastiquet Trout Club. The Planning Team noted that there are two spillways on the eastern side of the lake to alleviate flood risk in the event of a dam failure. The Trout Club recently completed an update to the emergency action plan in the event this dam fails.

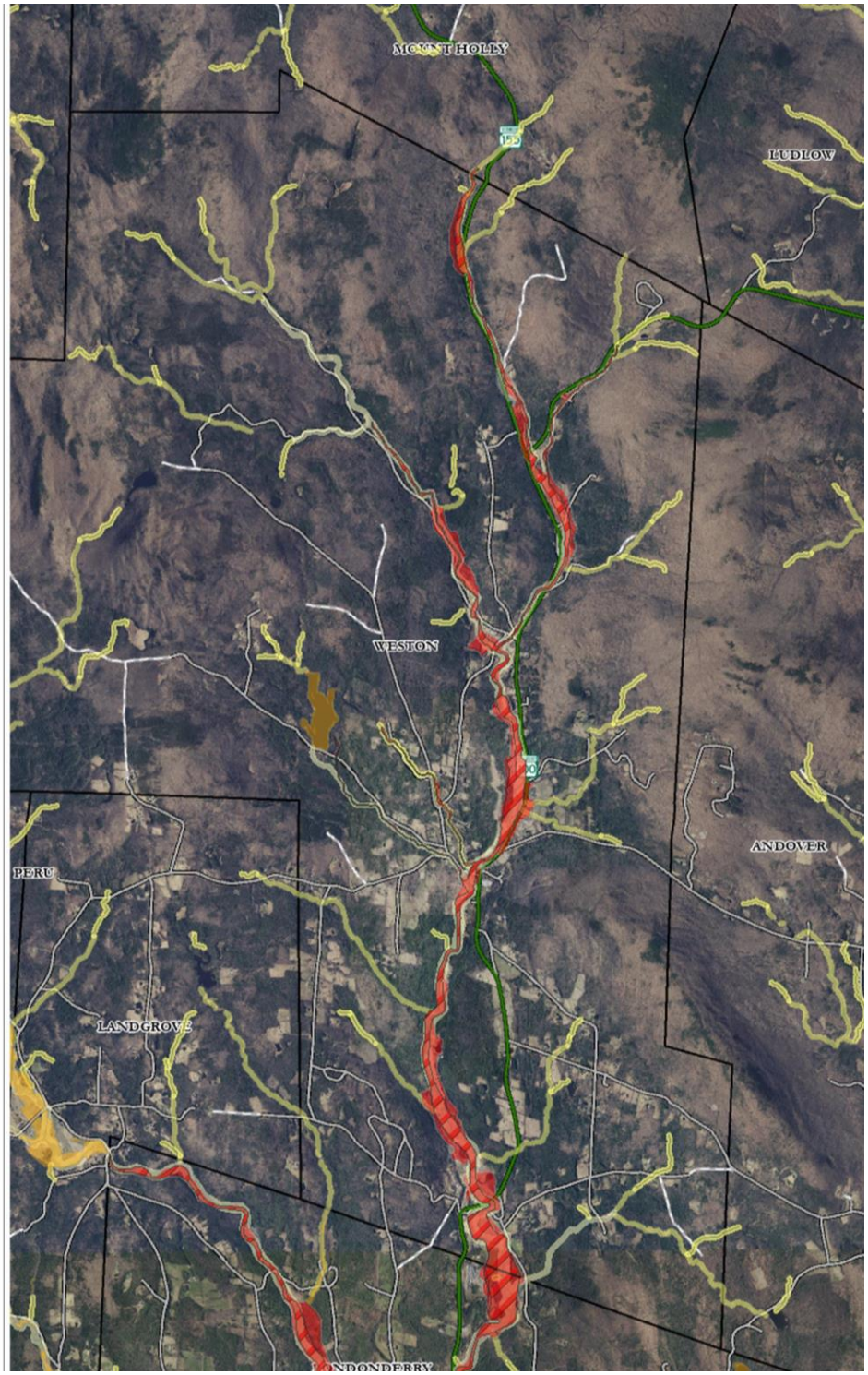
The other two dams are located in the village area, one on the West River and one on the unnamed stream from Wantastiqut Lake to the West River. These dams are owned by the Weston Community Club. VT DEC classifies these two dams as low hazard potential (shown by yellow diamond). There is another former dam in the town that has been breached (shown by blue diamond).

Flooding and Fluvial Erosion Mapping

FEMA has mapped "A" zones, "AE" zones without floodway, and "AE" with Floodway zones in Weston. "A" zones are the lowest level of risk and "AE" with Floodway is the highest level of risk that FEMA maps. These zones are all part of the Special Flood Hazard Area (SFHA). Properties within the SFHA that have a mortgage are required to purchase flood insurance. Weston's participation in the NFIP gives residents access to discount flood insurance through the NFIP. The Flood Hazard Summary Sheets on FloodReady Vermont's website says there are 39 structures in the Special Flood Hazard Area and only 15 percent of these structures have flood insurance.[6]

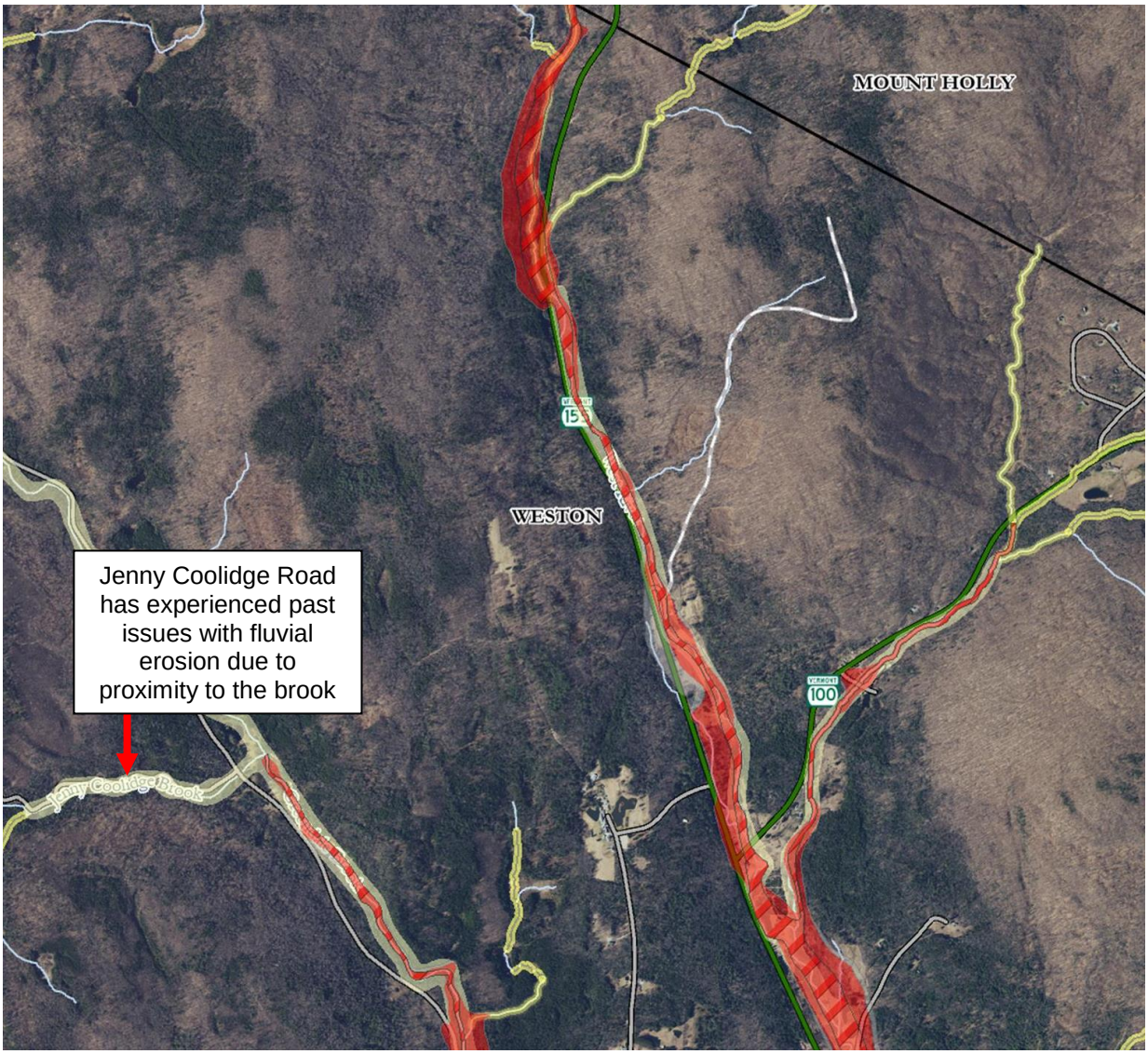
The below maps were created using the Vermont Agency of Natural Resources 'Natural Resources Atlas' which is an online mapping tool. These maps show all of the special flood hazard areas (SFHAs) that FEMA has designated in Weston. They are shown in orange, red and red hatching. The floodplains shown in these maps are based on the FEMA Flood Insurance Rate Maps (FIRMs) available through the FEMA Map Service Center.[7] The map effective date for the latest FIRMs for Windsor County is 9/28/2007. The map also shows the River Corridors that Vermont Agency of Natural Resources (ANR) has mapped. River Corridors encompass an area around the present channel where fluvial erosion, channel evolution and down-valley meander migration are most likely to occur. The mapped river corridor includes this area and a 50-foot buffer on either side to allow for the recommended setback and zone of avoidance to protect the riparian/fluvial erosion hazard corridor. The ANR defined River Corridor also includes a 50-foot buffer on all streams shown on the Vermont Hydrologic dataset. The mapped River Corridors are for streams with a watershed of 0.25 square miles or greater.

[6] Flood Hazard Summary Report for Weston, accessed 4/20/22
[7] FEMA Map Service Center: https://msc.fema.gov/portal



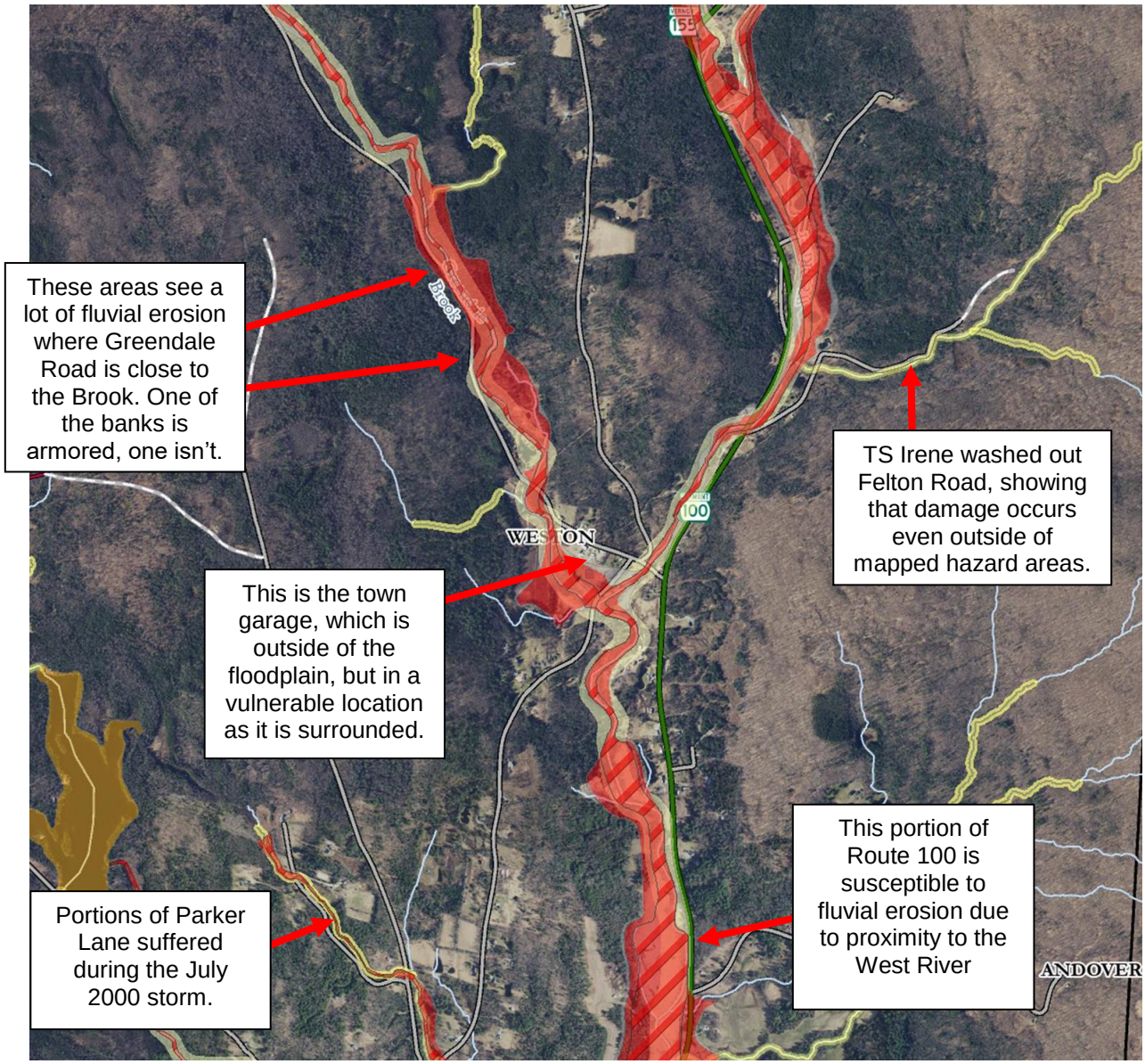
The map on the following page shows the Special Flood Hazard Areas (SFHAs) in red and red hatching (AE and floodway), and the River Corridors in white and the 50-foot buffers for streams in yellow for the northern section of Weston. The SFHAs in this portion of Weston are primarily along Route 100, Route

155, Greendale Road, and Jenny Coolidge Road. The River Corridor extends farther up Greendale Road and onto Jenny Coolidge Road. There is a strong correlation between the low lying SFHA areas and the main transportation routes in Weston, including Route 100 and Route 155. This can lead to road washouts and culvert issues during storm events. Weston completed culvert upgrades after the major flood in July 2000, as a result they suffered less damage town-wide from Tropical Storm Irene than other towns in the area.



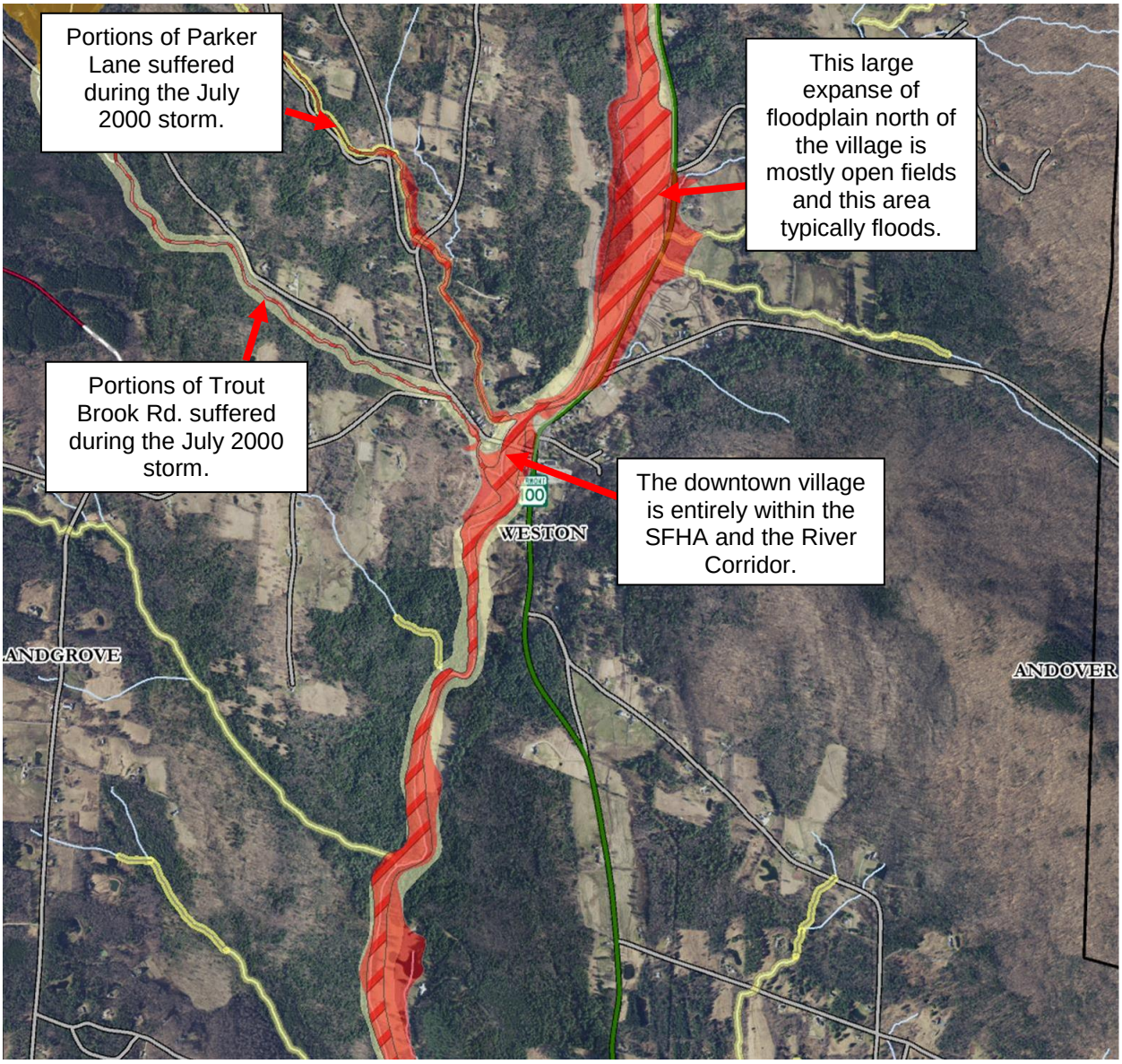
Jenny Coolidge Road is an area with past issues with fluvial erosion, but it is not affecting the road currently. A major slide here happened in the summer of 2015 that was caused by the buildup of material over numerous years. The slide occurred on National Forest land so was not addressed by the town. The fluvial erosion occurring on the Brook is on the opposite side of the waterway from the road so it does not threaten the road. The primary concern is log jams in the Brook as a result of the erosion that could create a dam at Bridge 27 (intersection of Jenny Coolidge Road and Greendale Road). In the past, the town has been advised by the Vermont Agency of Natural Resources not to remove log jams when they occur. However, the Army Corps of Engineers has support removing fallen trees.

The below map shows the Special Flood Hazard Areas and River Corridors for the middle portion of Weston. SFHAs are along Route 100, Greendale Road, and Parker Lane. The mapped River Corridor is on the West River and extends up Greendale Brook. There are also several small streams in this area of town shown with the yellow 50-foot buffer.

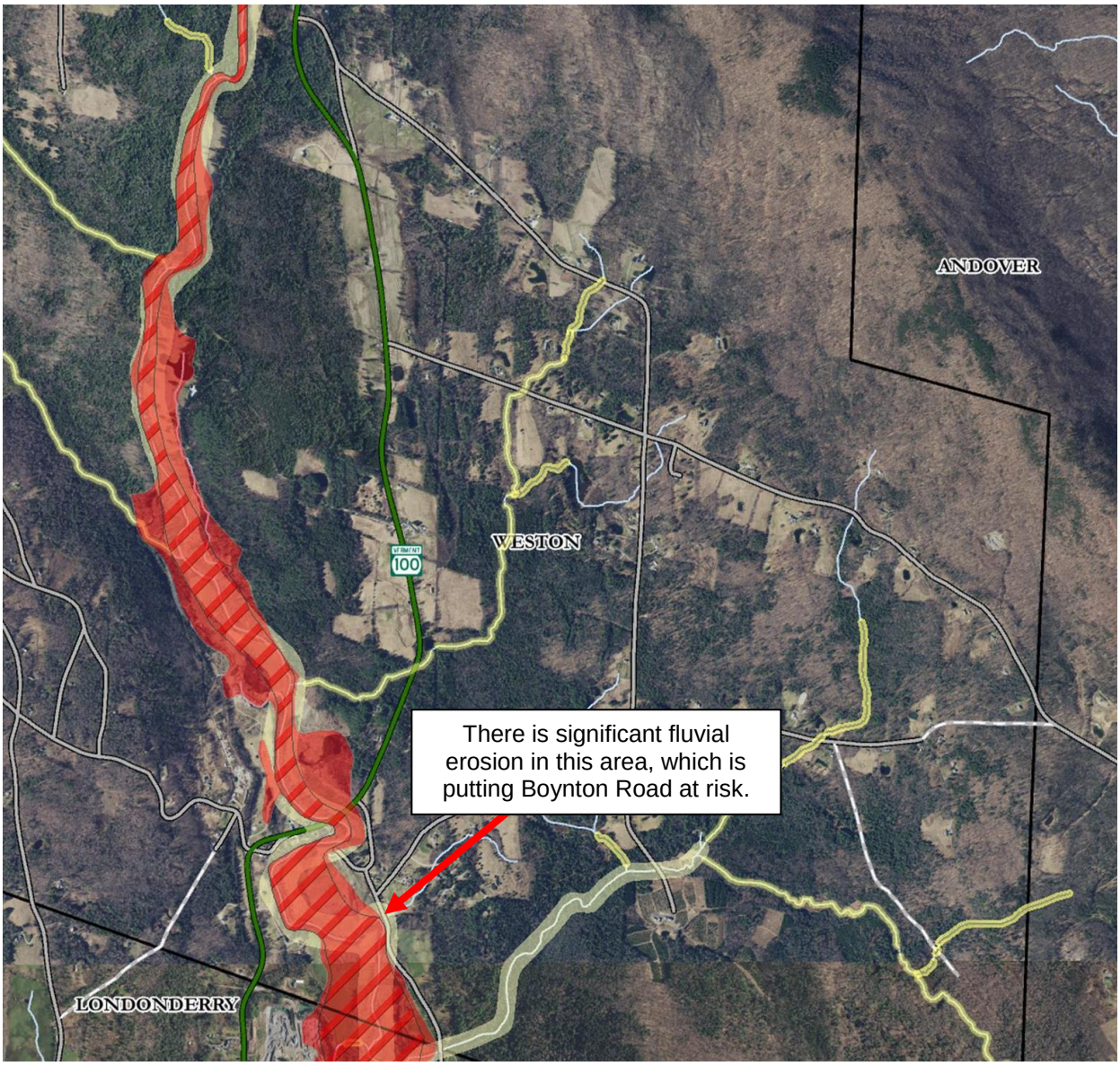


Greendale Road is one area in town particularly susceptible to fluvial erosion. High water in Greendale Brook contributes to eroding the bank under Greendale Road. In consultation with ANR, the town put in a 5-foot minus rock (stacked and slightly tipped rock) retaining wall that is 300 feet long and 10 feet high parallel between the brook and Greendale Road. This mitigation strategy, known as bank armoring, is a permanent fix to protect the road. High water will now disperse in the other side where it will be safely able to get onto unimproved floodplain without damaging any infrastructure and alleviating flood waters. Another area of concern along Greendale Brook is Lawrence Hill Road (near bridge 28). The bank was armored in 2014, but a remaining portion still needs to be armored. The town met with representatives from the Army Corps of Engineers in April 2022 regarding completing this additional work.

The below map shows the Special Flood Hazard Areas and River Corridors for the middle portion of Weston. SFHAs are along Route 100, Trout Club Road, Parker Lane, Moses Pond Road, and in the village area. The mapped River Corridor is on the West River and extends up the stream along Trout Club Road. There are also several small streams in this area of town shown with the yellow 50-foot buffer.



The below map shows the Special Flood Hazard Areas and River Corridors for the southern portion of Weston. SFHAs are along Route 100. Much of the floodplain on the West River in the area of Route 100 and Boynton Road is agricultural land. The mapped River Corridor is on the West River and extends up the unnamed stream that that runs into the West River from approximately Piper Hill Road. There are also several small streams in this area of town shown with the yellow 50-foot buffer.



Boynton Road is also an area of town where there are concerns about fluvial erosion. High water in the West River is eating into the bank and the road is at risk without attention and mitigation. The specific area of concern is located 500-600 feet east of the intersection of Boynton and Old Tavern Road. The erosion is about 200 feet long. The town has estimated the erosion will read the roadway in approximately 2 – 4 years. This is a larger scale project because it flows into the West River, and any dredging or material movement on the West River, or tributaries, are monitored and need to be permitted by the Army Corp of Engineers. The town met with representatives from the Army Corp of Engineers in April 2022 regarding this project.

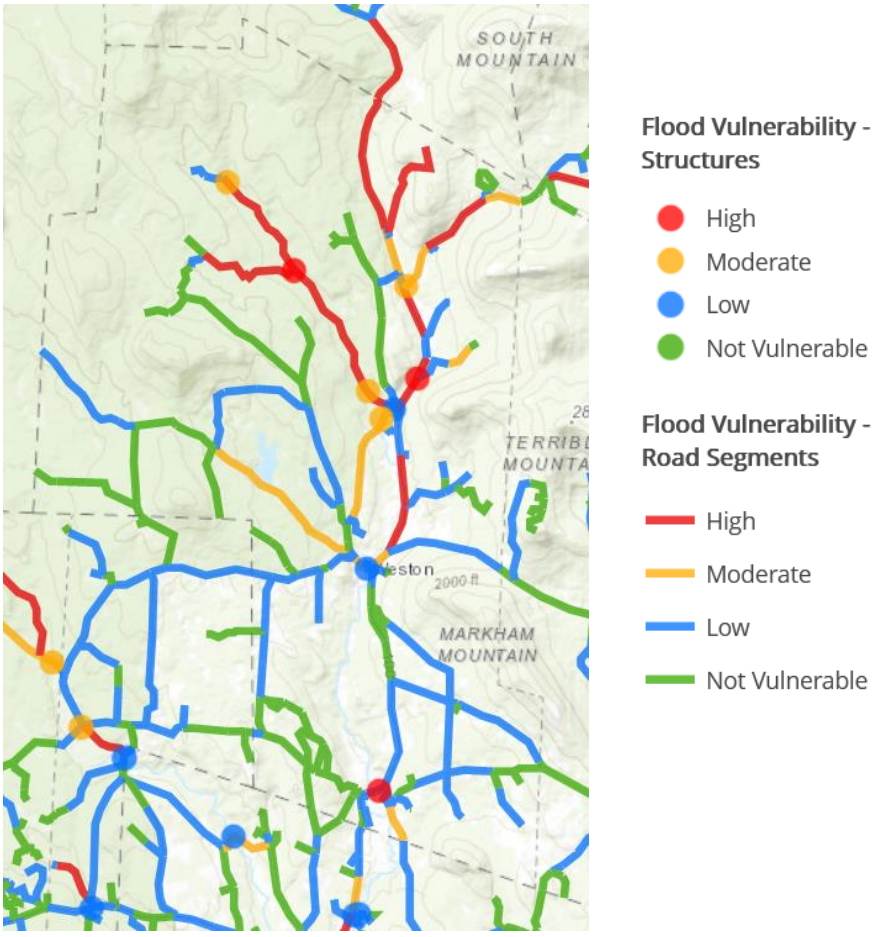
VTrans Highway Flood Vulnerability and Risk Mapping

As part of the scope of work for the Transportation Resilience Planning Tool, the Vermont Department of Transportation has developed metrics to quantify the flood vulnerability and risk of bridges, culverts, and road embankments throughout the state.[8] Vulnerability assessments were completed for the following infrastructure:

- Road/river embankments along state and town highways
- All long structures (spans greater than 20 feet) on state and town highways
- All culverts and short structures on the state highway system

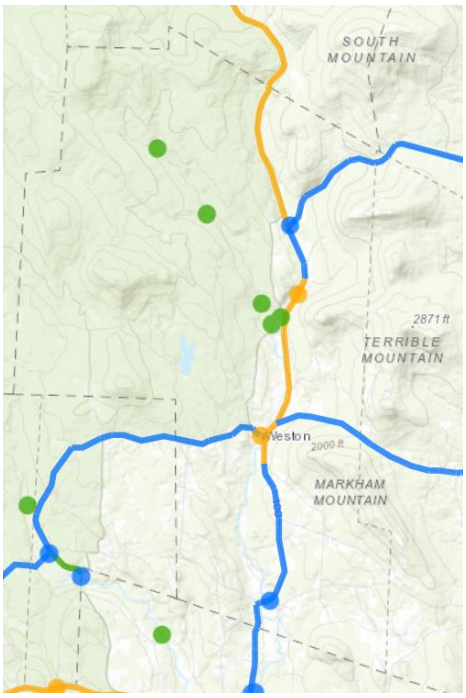
This analysis provides an estimate that can be used for hazard mitigation planning, supporting emergency preparedness, and for capital programming. The analysis was done for three different categories: vulnerability, criticality, and flood risk.

The vulnerability map below provides an analysis of the probability of inundation, erosion, or deposition and the potential severity of the damage to infrastructure or structure. The map identifies sections of Route 100, Route 155, Greendale Road, Jenny Coolidge Road, and Shattuck Road as being highly vulnerable road segments. The following structures are identified as highly vulnerable: (1) bridge at the intersection of Greendale and Jenny Coolidge Roads; (2) bridge on Route 100 in proximity to Felton Road; (3) bridge on Route 100 south of Boynton Road.



[8] VTrans Statewide Highway Flood Vulnerability and Risk Website: https://vtrans.vermont.gov/planning/transportation-resilience/statewide

The transportation criticality map below provides an analysis of the relative importance of each segment in the roadway network. Only segments of Route 100 and Route 155 are identified as moderately critical road segments. The Route 100 bridge at Felton Road and the Lawrence Hill Road over the West River are identified as moderately critical structures.



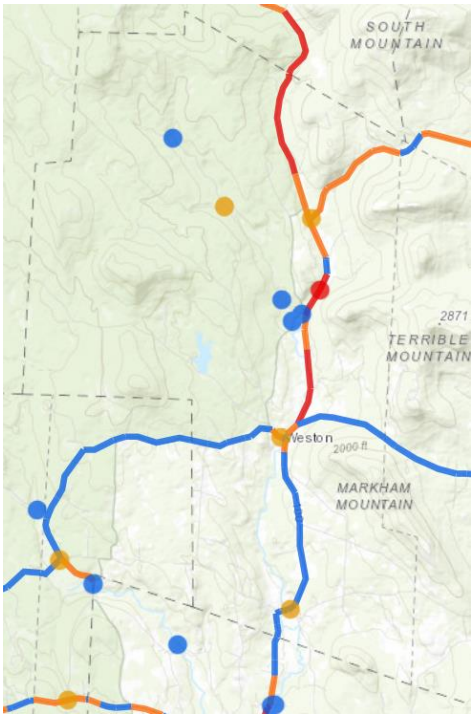
Criticality - Structures

- High
- Moderate
- Low
- Not Vulnerable

Criticality - Road Segments

- High
- Moderate
- Low
- Not Vulnerable

The flood risk map below provides an analysis based on the average of generalized vulnerability and criticality. Segments of Route 100 and Route 155 are identified as high flood risk roads. The Route 100 bridge at Felton Road is identified as a high risk structure.



Flood Risk - Structures

- High
- Moderate
- Low
- No Risk

Flood Risk - Road Segments

- High
- Moderate
- Low
- No Risk

Extent

The extent of a flood event can vary from minor to major. A minor flood event may occur due to a typical rain event, where a major flooding event may result from rapid spring snow melt, a tropical depression or storm, or rain falling on frozen ground. It is important to note that this plan is looking at flooding data primarily as it relates to resulting fluvial erosion.

Damage to Obed Moore Road after Tropical Storm Irene

Extent for inundation flood events: The nearest stream gauge to Weston on the West River is in Jamaica, located downstream from Weston. The highest recorded measurement at that gauge was 14.87 feet, which was measured on December 31, 1948.[9] The average height for this reach is about 6.5 feet. From discussions with the Planning Team, inundation flood events have mostly occurred in the West River floodplain north of the village and in the southern part of town in the vicinity of Route 100 and Boynton Road.

Extent for fluvial erosion events: Data on the extent for fluvial erosion is unavailable as fluvial erosion loss has not historically been collected after flooding events. However, there are several noticeable fluvial erosion sites along the West River, Greendale Brooke, and an unnamed stream that runs adjacent to Felton Road.

There is a large area of fluvial erosion along the West River in proximity to Boynton Road in the southern portion of town. The segment of Boynton Road being impacted is located within the River Corridor and the movements of the river are slowly eroding the bank that is supporting the road. The town met with representatives from the Army Corp of Engineers in April 2022 regarding this issue. Fluvial erosion is also evident along the West River along Route 100 in proximity to the intersection with Burton Road.

Smaller streams in Weston experience fluvial erosion during heavy rain events as well. Infrastructure is particularly vulnerable when located in close proximity to streams that are prone to erosion. Greendale Brook has known areas of fluvial erosion that occur after heavy rains, which has impacted the adjacent Greendale Road. The town has completed bank armoring along a portion of Greendale Brook and is seeking to do additional work. Another example is the unnamed stream that runs along Felton Road. The road was washed out in 2011 during Tropical Storm Irene as a result of flooding along this stream.

Extent for thunderstorms/heavy rain events: The table below shows the top 10 rain events at the Bennington County National Weather Service Cooperative station in the adjacent town of Peru. To give context to the data, for a 1-day period a 50-year event is 3.97 - 6.13 inches, a 100-year event is 4.45 - 7.47 inches, a 200-year event is 5.00 - 9.10 inches, and a 500-year event is 5.84 -11.82 inches. If we base on lower confidence limits, the #1 event listed below that occurred in 1984 is between a 100 and 200-year event. Note that the two primary storms that the hazard mitigation planning committee spoke of, in 2000 and 2011 (TS Irene) are not in the below records. It is important to remember that precipitation levels vary significantly throughout the region and that Weston may have experienced greater rainfall events than the adjacent Town of Peru.

[9] USGS Stream gauge 01155500 Tributary to West River Tributary near Jamaica, VT, http://waterwatch.usgs.gov/index.php

Maximum 1-Day Total Precipitation[10] for PERU		
Rank	Value (inches)	Ending Date
1	7.45	1984-05-31
2	4.76	1999-09-17
3	4.71	1987-06-23
4	4.43	1990-08-07
5	4.25	1948-12-31
6	3.66	1951-10-08
7	3.50	1995-08-04
8	3.43	1966-08-12
9	3.42	1976-07-12
10	3.39	2005-10-09
Period of record: 1940-11-01 to 2022-04-19		

Probability

Inundation flooding and fluvial erosion is highly likely, as determined by the Hazard Mitigation Planning Team. There are events every year, especially during spring snow melt and heavy rain events in the summer season. Fluvial erosion is highly likely and exists in Weston. Similar to other communities in the area, the damage caused by Tropical Storm Irene in 2011 de-stabilized many steep-sloped out areas and washed out riparian areas adjacent to roads and streams leaving Weston more susceptible to future flood events.

Past Occurrences

Since 1996, when National Climatic Data Center detailed records start, there have been 38 flash flood events recorded in Windsor County, Vermont and 18 food events. Weston experiences routine spring flooding, but this is not always documented. There have been 23 Presidential Disaster Declarations in Windsor County since 1953.

Disaster Declarations for Windsor County, VT						
Disaster Number	**Declaration Date**	**Incident Type**	**Title**	**Incident Begin Date**	**Incident End Date**	**Disaster Close Out Date**
3567	8/22/21	Hurricane	TROPICAL STORM HENRI	8/22/2021	8/22/2021	
4532	4/8/20	Pandemic	COVID-19	1/20/2020	Continuing	
3437	3/13/20	Pandemic	COVID-19	1/20/2020	Continuing	
4445	6/14/19	Severe Storms	SEVERE STORMS AND FLOODING	4/15/2019	4/15/2019	
4330	8/16/17	Severe Storms	SEVERE STORMS AND FLOODING	6/29/2017	7/1/2017	
4207	2/3/2015	Severe Storm(s)	SEVERE WINTER STORM	12/9/2014	12/12/2014	
4140	8/2/2013	Flood	SEVERE STORMS AND FLOODING	6/25/2013	7/11/2013	
4022	9/1/2011	Hurricane	TROPICAL STORM IRENE	8/27/2011	9/2/2011	
3338	8/29/2011	Hurricane	HURRICANE IRENE	8/26/2011	9/2/2011	3/10/2014
1790	9/12/2008	Severe Storm(s)	SEVERE STORMS AND FLOODING	7/21/2008	8/12/2008	
1715	8/3/2007	Severe Storm(s)	SEVERE STORMS AND FLOODING	7/9/2007	7/11/2007	3/13/2013
1698	5/4/2007	Severe Storm(s)	SEVERE STORMS AND FLOODING	4/15/2007	4/21/2007	3/13/2013
1488	9/12/2003	Severe Storm(s)	SEVERE STORMS AND FLOODING	7/21/2003	8/18/2003	1/4/2011
3167	4/10/2001	Snow	SNOW	3/5/2001	3/7/2001	2/28/2005
1336	7/27/2000	Severe Storm(s)	SEVERE STORMS AND FLOODING	7/14/2000	7/18/2000	6/30/2008
1307	11/10/1999	Severe Storm(s)	TROPICAL STORM FLOYD	9/16/1999	9/21/1999	6/30/2008
1228	6/30/1998	Severe Storm(s)	SEVERE STORMS AND FLOODING	6/17/1998	8/17/1998	7/20/2006
1201	1/15/1998	Severe Storm(s)	SEVERE ICE STORMS, RAIN, HIGH WINDS AND FLOODING	1/6/1998	1/16/1998	2/9/2006

[10] Data courtesy of the Northeast Regional Climate Center at Cornell University. http://www.nrcc.cornell.edu/ using the SC ACIS climatological research tool http://scacis.rcc-acis.org/

Disaster Number	Declaration Date	Incident Type	Title	Incident Begin Date	Incident End Date	Disaster Close Out Date
1101	2/13/1996	Flood	ICE JAMS AND FLOODING	1/19/1996	2/2/1996	2/17/2005
938	3/18/1992	Flood	HEAVY RAINS, ICE JAMS & FLOODING	3/11/1992	3/11/1992	2/26/2001
518	8/5/1976	Flood	SEVERE STORMS, HIGH WINDS & FLOODING	8/5/1976	8/5/1976	4/16/1981
397	7/6/1973	Flood	SEVERE STORMS, FLOODING, & LANDSLIDES	7/6/1973	7/6/1973	11/12/1976
277	8/30/1969	Flood	SEVERE STORMS & FLOODING	8/30/1969	8/30/1969	5/26/1972

Detail on Specific Flood Events that have Affected Weston:

April 15, 2019 - Widespread 0.5 to 1.5 inches of rain and significant melting snow at mid and upper elevations caused flash flooding across portions of southern and central Vermont.

July 17, 2017 - A weak surface and mid-level wave moved across Vermont in a moderately unstable (very cool aloft) air mass during the afternoon of July 17th. Scattered thunderstorms developed with a few containing large hail (> .75 inch in diameter) and some winds. Heavy rain additionally produced some isolated Flash Flooding.

July 28, 2014 – Stationary thunderstorms developed in the early evening of July 28 over south central Windsor County Vermont in the headwaters of the Williams River. Rainfall totals were two to three inches in a little over an hour.

July 10, 2013 - Warm moist air over the northeast provided the ingredients for heavy rainfall, and saturated ground from record May and June rainfall made the region vulnerable to flooding. Showers and thunderstorms developed during the afternoon and evening of July 2 2013, producing heavy rainfall moved repeatedly across southeast Vermont, with isolated flash flooding.

Aug. 28, 2011 – Tropical Storm Irene – The Federally Declared Disaster DR-4022, Tropical Storm Irene, tracked northeast across eastern New York and western New England during Sunday, August 28th, producing widespread flooding, and damaging winds across the region, including Weston. The greatest impact from Irene across southern Vermont was due to heavy to extreme rainfall, which resulted in catastrophic flooding. Rainfall amounts generally averaged 4 to 8 inches. Much of the rain which fell occurred within a 12 hour period, beginning early Sunday morning, and ending Sunday evening. Route 9, the main route across southern Vermont was closed. Numerous evacuations were reported. The West River inundated the entire village area with 3-6 inches of water, the whole way up to the fire station and the post office was covered. The fire station had four feet of water inside it during TS Irene. Within 2-3 days all the roads in Weston were passable, except Jenny Coolidge Road. No one was stranded. There was water across the road, but that was in Londonderry, so Route 100 was cut off temporarily, but back roads were passable. Just over $402,330 in damages in Weston paid by FEMA (90% of damage total). A video of footage of the village area during Irene can be seen on YouTube.[11]

August 2008 - A strong trough of low pressure moved across central New York into Vermont during the morning and early afternoon of August 6th. A very moist air mass and favorable steering winds accounted for training showers and thunderstorms with very heavy rain across portions of the southern Green Mountains as well as northeast Vermont during the morning into early afternoon hours.‖Severe flash flooding occurred around Hancock and East Middlebury (Addison County) due to 3 to 5 inches of rainfall, with numerous road and bridge washouts. Additional flash flooding occurred along the headwater

[11] YouTube video link: https://www.youtube.com/watch?v=cXZ78gptqZM&feature=em-share_video_user

region and tributaries of the White River near Rochester (Windsor County). Flash flooding occurred in Brandon (Rutland County) as well as in the northeast Vermont communities of Barnet, Danville and St. Johnsbury (Caledonia County).

July 2007 - On the afternoon of July 11th...a warm and very moist air mass was draped across Vermont. In addition, a slow moving cold front entered Vermont from west to east during the afternoon. This front promoted the development of numerous tropical-like showers and thunderstorms that repeatedly generated and moved over the same areas of central and eastern Vermont. Localized heavy rainfall exceeded 3 inches within a two hour time frame with some localized storm totals approaching 6 inches across a very hilly or mountainous terrain, which resulted in flash flooding of several communities. The hardest impacted areas included Barre, Randolph, Bethel, Hardwick, Craftsbury and Stockbridge...with washed out roads, flooded basements and homes damaged or destroyed. A Presidential Federal Flood Disaster was declared in Washington, Windsor, Orange, Orleans and Caledonia counties with a estimated storm damage total in excess of 3 million dollars. FEMA paid about $50,000 to Weston (75% of damages).

May 14, 2006 - A strong blocking pattern developed across the Eastern United States on the 12th and continued through the 14th. A vertically stacked low across the Great Lakes, with an highly amplified flow from the Gulf of Mexico and Tropical Atlantic, supplied copious amounts of moisture into the system as well as generated low pressure off the East Coast. Heavy rainfall was focused across New York and southern Vermont on the 12th, then shifted into the central Connecticut River Valley, central Vermont and the northern Champlain Valley of Vermont on the 13th, before retrograding back into Windsor county Vermont by the 14th. Widespread rainfall totals in Windsor County were 3 to 6 inches with 3 inches in Bethel, 3.68 inches in Woodstock, 4.62 inches in Springfield and 6 inches in Cavendish. The end result was flooding and minor washouts on several roads in Woodstock, Ludlow, Chester, Proctorsville and Cavendish. The Williams River overflowed its banks and caused flooding along Route 103 between Ludlow and Chester, while the White and Ottaquechee Rivers experienced bankfull conditions and minor field flooding.

October 7-9, 2005 - A slow moving cold front, elongated north to south, moved across New York and New England Friday Night, October 7th and Saturday, October 8th. In addition, the remnants of Tropical Storm Tammy added tropical moisture enhancing the rainfall amounts. Across Windsor County, rainfall ranged from 2 1/2 inches in the northwest corner to 6 1/2 inches in the east and south portions of the county. Specifically, 6.40 inches was reported in Chester, Vt. A mud slide was reported near North Pomfret with minor flooding. In addition, minor street flooding due to clogged culverts occurred in the Springfield and Chester areas late on the 8th and early on the 9th of October.

August 29, 2005 - A surface convergence boundary resulted in the development of and helped focus thunderstorms with very heavy rain over Windsor county. Specifically, intense rain fell across the southwest portion of the county. Near Weston, there were 2 reports of intense rainfall amounts. Two miles northwest of Weston, a county official reported 4.15 inches in 2 hours, with a total of 7.75 inches for the entire afternoon and evening rain event. The rain started around 330 PM EDT (230 PM EST) and lasted until 730 PM EDT (630 PM EST). The flash flooding occurred between 5PM and 7 PM EDT (4 PM - 6 PM EST). Several roads were washed out and the West River was out of its banks. $50,000 in damages in Weston.

October 29, 2003 – Areas of low pressure moved northeast along a frontal boundary across New York and western New England from Sunday night, October 26th into Monday night, October 27th. Rainfall ranged from 1 1/2 to 2 1/2 inches with the greatest amounts in and east of the Green Mountains.

September 28, 2002 - The remnants of Tropical Storm Isidore moved northeast from the Ohio Valley on Friday, September 27th into New York state during the afternoon of the 27th and across central Vermont during Friday night, September 27th. Heavy rain accompanied this system with generally between 1 1/2 and 2 inches of rainfall reported. Amounts were locally higher in the mountains. Earlier in the month, September 14-15, the remnants of Tropical Storm Hannah resulted in rainfall of around an inch across the same area. No flooding was reported with either event.

April 2002 - During April 13th and 14th, a slow moving cold front drifted southeast across the area. An area of low pressure moved along the front, passing across the region with widespread rainfall. Flooding occurred due to the combination of snowmelt and 1 to 3 inches of rainfall across the area. The heaviest rainfall was in the south half of Vermont. In Windsor county, flooding was reported from the White River and its branches in the towns of Sharon, Bethel and Rochester with some road washouts. In Royalton, 2 people were rescued after their vehicle was moved by flood waters.

December 2000 – County-wide in Windsor, small streams overflowed their banks with some road flooding and low land flooding.

July 2000 – An upper level low over the eastern Great Lakes and western New York and it's related surface low pressure system resulted in showers and thunderstorms across Vermont during the afternoon and night of Sunday July 16th. Slow moving thunderstorms resulted in especially heavy rainfall...especially across the mountainous portions of the county, such as Weston. This rain event flooded and took out portions of Jenny Coolidge Brook Road, Greendale Road, Turner Road, Trout Club Road, Moses Pond Road and Parker Lane. People at Ferdinand's Campground (private) were stranded for a day. $45,000 paid by FEMA (75% of damage total cost) to Weston. $500,000 in damages countywide in Windsor County.

March 2000 - A storm system moved across eastern New York Tuesday morning, March 28th and into northern Vermont Tuesday afternoon, March 28th. Steady rain and melting snow resulted in rising water levels on county rivers and streams, especially in the south portion of the County. The north branch of the Williams River in and around the Chester, Vermont area was over its banks during the late morning and early afternoon of March 28th.

January 1999 - A storm system moved through the Great Lakes region Saturday and Saturday night (January 23) and into eastern Canada Sunday (January 24). Mild weather with melting snow and rain Saturday night and Sunday coupled with ice jams resulted in many rivers reaching bankfull during Sunday. Flooding occurred along the Williams River in and around Chester, VT.

In 1996, Between Saturday morning July 13 and Sunday morning July 14 rainfall from three to five inches was common across southern Vermont resulting in significant damage and a Presidential Declaration of Emergency. Flooding occurred throughout New England causing millions of dollars in damage. The remnants of Hurricane Bertha tracked from the Mid-Atlantic region northeast to Quebec, Canada. Several roads and streams were flooded throughout the region, including low-land flooding along the Hoosic River in Bennington County. Scattered power outages also occurred over the area, when strong winds downed water-laden tree branches onto wires.

During 1976, flooding occurred throughout New England, as result of Hurricane Belle, causing millions of dollars in damage.

In 1973 there was an extreme rainfall event from June 28-30 that affected all areas of Vermont except the northwest section. Rainfall amounts as much as 6 inches in 24 hours in some locations. This was the largest rain event since the 1927 flood. Highway damage was extensive in the south-central,

southeastern, and northeastern areas of the State. The town of Ludlow on the Black River was seriously damaged. Three persons were killed in the 1973 flood, and damage was estimated at $64 million. Sizable crop loss was reported, and damage to State highways was estimated to be $10 million. The entire State was declared a disaster area.[12] This was the first significant flood that put water into the fire station in Weston. The fire station was built in 1972.

1955 – Weston saw 8.2 inches of rain. Route 100 was paved only a year before this.[13]

The Vermont Flood of 1927 was the deadliest flooding event in the history of the State; eighty-four people were killed with over $28 million in property damage. The Spring Floods of 1938, which had an effect on all of New England, caused $113 million in damage, killed 24 people and made 77,000 people homeless. During this flood alone, the main street of Hooksett, New Hampshire was 18 to 20 feet underwater.

Sources Used
Local town knowledge and records, VT ANR online mapping, FEMA FIRM maps, US ACE's CRELL Ice Jam mapping tool, USGS stream gauge data, Northeast Regional Climate Center data, National Climatic Data Center storm event database data for Windsor County[14]. Local knowledge of areas of concern and impacts, Discussions and emails with the Road Foreman during August 2015

Invasive Species

Description and Impact
Invasive plant species are a region-wide hazard. However, each location will be confronted with a distinct mix of invasive species that thrive under the particular ecological conditions of that place. Each invasive species has a different potential to spread to other areas based on the rate at which it spreads and the ecological suitability of the ecosystem that it is expanding into.

An invasive species can be defined as an exotic species that is introduced into an ecosystem in which the species is not native and causes or is likely to cause environmental or economic harm, or harm to human health.[15] Another definition is an exotic species that colonizes both disturbed and undisturbed habitats.[16] An example of the second definition not being met is Coltsfoot (*Tussilago farfara*), which is usually only found in disturbed areas mainly on the edges of unpaved roads, but is less common in undisturbed habitats. In contrast, Burningbush (*Euonymus alatus*), an invasive shrub often planted in local yards, has its seeds carried by birds to nearby woods where they grow well in undisturbed areas and crowded out native plants. Keep in mind that an "exotic" plant species may be hard to define. For example, the Black locust tree (*Robinia pseudoacacia)* is native to the United States, mainly in and near the Ohio River Valley, but it is not native to Vermont. It was brought here by settlers who planted it mainly to use for fence posts. It spreads rapidly to undisturbed woods, so it is considered an invasive in Vermont.

[12] USGS "Vermont Floods and Droughts" information page http://md.water.usgs.gov/publications/wsp-2375/vt/. Accessed 4/3/15.
[13] Description from Donald Hart, who lived through the event. Further data could not be found about the event.
[14] http://www.ncdc.noaa.gov/stormevents/ accessed May 20, 2022
[15] (USDA) https://www.nrcs.usda.gov/wps/portal/nrcs/detail/ct/technical/ecoscience/invasive/?cid=nrcs142p2_011124
[16] CT Invasive Plant Working Group, https://cipwg.uconn.edu/criteria-for-listing/

Top Invasive Plant Species and their Impacts

Japanese Knotweed .org

In the absence or near absence of natural predators or controls, invasive non-native plants are able to spread quickly and out-compete native plants. Invasive plant species can create monocultures, which often provide poor habitat for native animals that have not evolved with the non-native species, resulting in degraded habitat value and increased vulnerability. The invasive plant issue in the Windham Region escalated in the early 1990s. Invasive plants tend to thrive in disturbed areas. Within the Windham Region, invasive species are more prolific in the towns along the Connecticut River than in communities to the west because these towns are more populated, contain major transportation routes, such as Interstate 91 and the rail corridor, that serve as vectors for their expansion, and tend to have significant land disturbance resulting from development. Some of these invasive plant species were originally planted because of their perceived positive aspects, such as their ability to grow in difficult growing conditions, growing season length, large seed production, and ornamental value. These features are also a reason that these plant species have become invasive in our region.

While Weston has been less impacted by invasive species that communities in the Connecticut River Valley, Route 100 traverses the town and is a major transportation route that can be a vector for the species to expand. Waterways, such as the West River, can also act as vectors for invasive plant species. Particular invasive plant concerns for Weston are listed in two groups based on their estimated threats to natural and hard infrastructure. All (except spindle tree) are quarantined, Class B Noxious Weeds in Vermont.[17]

Group A—Higher threats to infrastructure

1. Japanese Knotweed (*Fallopia japonica*) along the West River. It leaves shorelines susceptible to erosion because there is no other vegetation stabilizing the stream bank (Basin 11 Management Plan, Preliminary Draft 2007). Flood events can erode stream and river banks, removing riparian trees and can move fragments of knotweed to new areas.
2. Asiatic (Oriental) bittersweet (*Celastrus orbiculatus*), an aggressive climbing vine that can smother trees, utility poles, and buildings. Not a high prevalence in Weston at this time.
3. Amur, Morrow's, Tartarian, and Bell's honeysuckle (*Lonicera mackii, morrowii, tatarica, x bella)*
4. Japanese & Common barberry (*Berberis thunbergii & B. vulgaris)*, which promote Lyme disease by harboring high populations of deer mice, one of the intermediate hosts of deer ticks.
5. Common and glossy (European) buckthorn (*Rhamnus cathartica & R. frangula*), which slows forest regrowth.
6. Burningbush (*Euonymus alatus*), still a common ornamental in yards, spreading to woods via birds that eat the low-value fruit, little wildlife value.
7. Water chestnut (*Trapa natans*), Displaces native aquatic plants, can block boat traffic.

[17] Vtinvasives.org is the primary website for information. This list was developed by Peter Bergstrom of the Rockingham Conservation Commission. Email dated 8/21/2021.

Group B—Lesser threats to infrastructure

8. Mile-a-minute vine (*Persicaria perfoliate*), on Federal invasive list that is included in state list. Considered a "watch list" species in VT, but can cover other plants as well as hard infrastructure.
9. Garlic mustard (*Alliaria petiolate*) is common along roads and in fields and riparian areas in Weston, and can invade forests.
10. European spindle tree (*Euonymus europaeus*) - locally problematic. Not on VT invasives list; suggested for addition to it. Very hard to control.
11. Goutweed (*Aegopodium podagraria*)—Highly invasive, has solid green leaves, or variegated green & white leaves. Very hard to control.
12. Norway maple (*Acer platanoides*)—Inhibits growth of nearby plants spread widely by seeds to nearby woods, little food or habitat value to wildlife. Should not plant any new ones. Provides good breeding habitat for Asian long-horned beetles (ALB).
13. Common reed (*Phragmites australis*)—more in wetlands than riparian areas.
14. Purple loosestrife (*Lythrum salicaria*)
15. Yellow flag iris (*Iris pseudacorus*)—primarily wetland plant.
16. Amur maple (*Acer ginnala*
17. Tree-of-heaven - Looks very similar to sumac and walnuts (black and butternut) but has smelly leaves when crushed, and smooth leaf margins except at the base.
18. Wild Chervil *(Anthriscus sylvestris)* - This invasive plant can be seen starting in May alongside roads, and is notable in our rolling Vermont fields. Often confused for Queen Ann's Lace which blooms later in the summer.
19. Wild Parsnip (*Pastinaca sativa*) – common along roadsides and utility right-of-ways in Weston.

Six groups of invasive plants found in Weston, listed below, are thought to likely pose the highest threat to native and/or hard infrastructure.

Common name	**Latin name**	**Locations**	**Threats**	**Control**
Japanese Knotweed	*Fallopia japonica*	Banks of all rivers and many brooks	Can grow through asphalt, into basements, and block trails; more likely to wash out than natives	Mowing, repeated cutting & digging (3-10 years)
Common and Glossy (European) Buckthorn	*Rhamnus cathartica & R. frangula*	Clearcuts, woodland edges	Prevents regrowth of native trees	Excavation including roots
Japanese & Common Barberry	*Berberis thunbergii & B. vulgaris*	Planted shrub, escapes to woods	Increases deer mice which harbor deer ticks with Lyme disease	Excavation including roots
Burningbush	*Euonymus alatus*	Planted as ornamental, birds spread seeds to woods	Displaces native shrubs	Excavation including roots

Common name	Latin name	Locations	Threats	Control
Amur, Morrow's, Tartarian, and Bell's honeysuckle	*Lonicera mackii, morrowii, tatarica, x bella*	Planted as ornamental, birds spread seeds to woods	Displaces native shrubs	Excavation including roots
Wild Parsnip	*Pastinaca sativa*	Disturbed areas, such as roadsides and utility ROWs	Displaces native plants in fields and meadows. Causes intense, burning rash on contact with human skin	Mow when plants first produce flowers, but before seeds enlarge.

Elevations generally below 1,500 feet are most susceptible to invasive species, although any land with some sort of major disturbance (from wind, water, logging, or land clearing and development) could potentially host invasives. For Weston, much of the land area immediately along and adjacent to the West River is below 1,500 feet in elevation. Invasives tend to come up early in the growing season and flower early, allowing them to get established before native plants. It may be possible to slow down or even halt the spread of these species by identifying and removing plants as soon as they appear. Early detection is the key. This detection can be aided by educating residents about the identification of and problems caused by invasive species. Below are some examples of how invasive plants and insects are impacting Weston:

Natural infrastructure

1. Japanese Knotweed has taken over sections of streambanks on the West River and its tributaries. It is also becoming more common along roadsides and other disturbed areas.
2. Common & Glossy Buckthorn, Morrow's Honeysuckle, Japanese Barberry, and Burning Bush are colonizing disturbed forest areas and forest edges, and may be preventing regeneration of other species.
3. Invasive vines such as Oriental bittersweet can cover and eventually kill a tree.
4. Invasive tree pests are killing some of our valuable trees such as ash and hemlock.

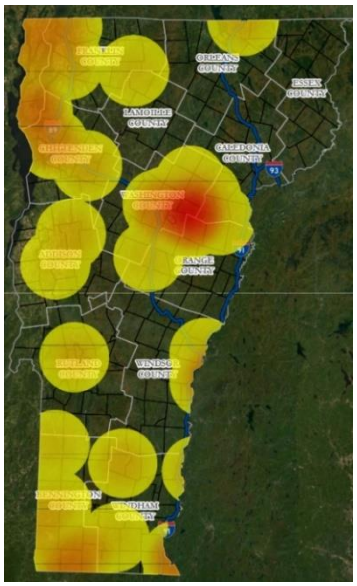
Hard (human) infrastructure

1. Any human structure near Japanese knotweed is vulnerable to invasion by its stems. It can spread up to 30 feet underground, and come up through asphalt. Roadside trees killed by invasive insect pests can fall and damage roads, utility lines, and human structures, and cause accidents. Some towns, including Londonderry, are mapping their roadside ash trees and identifying the ones that are highest priority of removal due to these risks.
2. Invasive vines can cover utility poles and make servicing the lines, transformers, and junction boxes on them very difficult.

Preventing the spread of invasive plants is something that everyone can assist with. The first step is to only plant native species on your property and to remove invasives that exist. Additionally, it is important that when soil is disturbed, to plant native cover before invasives have a chance to establish themselves. Proper disposal of non-native vegetation is critical to avoid its spread, safely burning the material when possible. Avoid transporting non-native plants, including firewood and garden debris, as this is critical to prevent the spread of non-native seeds and insects. Mowing roadsides from the north to the south can also help prevent the migration of invasive seeds on-site.

The website VTinvasives.org is a great resource for towns interested in engaging in activities around invasives, including using their template to develop a custom invasive species plan for your town. The idea is to continue to create as much awareness as you can so residents know who to contact. Insect pests are often found first by concerned citizens, members of the Conservation Commission, arborists and foresters.

Top Invasive Forest Pests and their Impacts



Emerald Ash Borer Map provided by VTinvasives.org

Non-native invasive species cause irreversible impacts on tree health, forest composition, and biodiversity. Three non-native insects that currently threaten Vermont are the Emerald Ash Borer (EAB), Asian longhorned beetle (ALB), and hemlock wooly adelgid (HWA). Hemlock wooly adelgid is currently present throughout the state. Initially discovered in Orange County in February 2018, Emerald Ash Borer (EAB) has spread quickly and has been determined to be present in the orange areas on the map to the left. Asian longhorned beetle have been identified within fifty miles of Vermont's border. Over half of the trees in Vermont are host species of one of these three invasive insects.[18]

Emerald Ash Borer

Emerald Ash Borer (EAB), *Agrilus planipennis*, is an exotic beetle that was discovered in southeastern Michigan in the summer of 2002. The larvae feed in the cambium between the bark and wood, producing S-shaped galleries that girdle and kill branches and trees. EAB most likely arrived in the United States on solid wood packing material carried in cargo ships or airplanes originating in its native Asia and it has spread rapidly in the United States, killing millions of trees. Currently, it is present in 33 states.

EAB has not been confirmed in Weston yet, but it has been confirmed in other towns within the Windham Region, including the adjacent community of Londonderry. Because EAB has been detected so close to Weston, the town needs to be especially aware of its potential impacts and take proactive mitigation steps. The State ANR completed an inspection for EAB in Mt. Holly in 2021 as a result of reports from the public or through incidental observation, but the insect was not discovered.[19]

Weston is almost entirely covered under what VTinvasives.org calls the "Slow the Spread Movement". Carefully planning and managing the movement of infested or potentially infested material will slow the spread and provide greater protection for forests. The town is not seeing any tree damage yet, but the town has been planning for Ash tree removal along roads. GMP has been removing Ash trees along the power lines.

White ash is one of the ten most common tree species in Vermont, so this insect will have a major impact in Vermont. EAB only feeds on Ash trees, but these comprise seven percent of Vermont's tree species.

[18] vtinvasives.org (accessed 2/20/15)
[19] Forest Insect and Disease Conditions in Vermont 2021, Agency of Natural Resources Department of Forests, Parks & Recreation

From a forestry standpoint, there is an impact on the sale of Ash wood to allow it only to go to USDA approved receiving sawmill facilities and only be transported during the non-flight season of winter. Before that, EAB ash could be moved more freely. EAB is often moved around on firewood that people transport. Eradicating the insect on wood requires heating it to at least 140 degrees or higher for greater than 60 minutes.

Signs and Symptoms: Symptoms and signs include D-shaped adult exit holes, bark splitting, serpentine frass-filled (sawdust-like waste) feeding galleries, wood pecker feeding, crown dieback, and epicormic shoots (whips growing off the trunk and branches). Many of these symptoms and signs are similar to other insects and diseases of ash.


Blonding with pecked holes on ash trees is a sign of EAB infestation.

EAB essentially girdles the ash trees, killing them. It lives between the inner bark and the wood, so it does not bore that deep. Woodpeckers feed on EAB, but the woodpecker population is not large enough to significantly impact the EAB population. Also, woodpeckers do not generally detect the insects in the trees until they have been present for about two years, which is too late to save the tree. One of the best diagnostic methods for detecting EAB is called “blonding”. "Blonding" is a clear symptom of EAB infestation. It occurs when woodpeckers, while foraging for EAB larvae, flake off outer layers of bark, revealing the lighter or blond-colored inner layers of bark.[20]

A native ground-nesting wasp, *Cerceris fumipennis*, is also providing a handy solution to the EAB detection problem. This wasp will prey on the adult EAB (as well as related native beetles) and carry them, paralyzed, back to its burrow. The paralyzed beetle is then stored underground as food for the wasp's larva.

Hemlock Woolly Adelgid

The Hemlock Woolly Adelgid (HWA), *Adelges tsugae*, is a tiny insect from east Asia that attacks forest and ornamental hemlock trees. It feeds on young twigs, causing needles to dry out and drop prematurely. Trees may die in four to six years after being infected. Some survive, but with sparse foliage, losing value as shelter for wildlife and their ability to shade streams.

The HWA first arrived in the southeast U.S. and spread to the northeast. Sustained cold leads to kill off of the adelgid insects. Mortality rates of even 91%, however, can still lead to population growth through the warm season because they reproduce asexually so it only takes one for the population to expand. The HWA mortality rate shifts each year based on temperature patterns throughout the year. As the climate warms, HWA mortality rates will decrease allowing this insect to increase its presence in Vermont.

[20] University of New Hampshire Cooperative Extension – Blonding on Ash trees information sheet. <http://extension.unh.edu/resources/files/Resource004103_Rep5824.pdf> Accessed 3/2/15.

HWA is not yet present in Weston, but it has been identified in nearby towns including Jamaica and Townshend. In the Windham Region, it was initially found in Brattleboro in 2010 and is now found in approximately 15 towns in our area, and has been recently found in Springfield in Windsor County. HWA is moving south to north in lower elevations first, and is mostly throughout southern Vermont at this point.

Hemlock trees and whole stands of trees are showing signs of decline, but trees in Vermont have not been reported to have been killed from HWA alone. This is most likely because winter temperatures kill off enough of the HWA to give the tree a temporary reprieve. However, HWA does still weaken the trees to the point that other secondary stresses, such as funguses and disease, may result in their mortality. Another pest impacting this species, Hemlock elongate scale, was found recently for the first time in Guilford, Vernon, and Brattleboro.

Asian Longhorned Beetle

The Asian Longhorned Beetle (ALB), *Anoplophora glabripennis*, is an invasive insect that feeds on certain species of hardwood trees, eventually killing them. Also known as the Starry Sky or Sky Beetle, the ALB is native to eastern Japan, and Korea and was brought to the United States in packing material. ALB attacks a variety of native hardwood species, including maple, birch, elm, poplar, horse chestnut and willow. ALB prefers maples and does not feed on trees in the oak family. Upon hatching, the larvae tunnel through the heartwood of a host tree until fully grown. They then burrow out of the trunk as adult beetles. This process weakens the wood, making it prone to breakage, and can cause tree health to decline.

Outbreaks of this beetle pose a severe threat to healthy trees in both forests and urban and suburban areas. The beetle has caused tens of thousands of trees to be killed in Illinois, Massachusetts, New Jersey, New York, and Ohio. The closest area to the Windham Region where the pest has been identified is Worcester County, Massachusetts (2008).[21] The State ANR has deployed flight intercept/pheromone traps for detection of ALB for the last several years and the insect has not been detected. This monitoring included a site in Jamaica State Park in 2021, approximately 8 miles south of the Weston town boundary.[22] About half of Vermont's trees are susceptible to Asian Longhorned Beetle and it will have a major impact if it ever becomes established in the state.

Signs and Symptoms of Infestation: Oval to round wounds on the bark where the females have chewed out a site to deposit their eggs. Round emergence holes in the trunks and branches of trees. Piles of coarse sawdust at the base of trees. It is difficult to spot infected trees from the ground, so inspectors need to climb trees.

Impact

The impacts of invasive species have extensive effects. Hemlock is a foundation tree species, and when hemlock stands die off invasive plant species tend to take over, causing wildlife habitat and water quality to decrease. Deer use hemlock stands in winter because of the cover a healthy tree provides, so there could be a detrimental impact to the deer population, and hunting, caused by the loss of hemlock.

[21] http://www.worcesterma.gov/city-manager/asian-longhorned-beetles. Accessed 3/2/15.
[22] Forest Insect and Disease Conditions in Vermont 2021, Agency of Natural Resources Department of Forests, Parks & Recreation

Hemlocks provide shade to waterways, so their loss could mean warmer streams and lower water quality, potentially impacting aquatic life. The hemlock isn't a comparatively very valuable wood product, but it is used for logging and wood products, so there are economic threats to its loss as well.

Ash logs are more valuable than hemlock logs, but the bigger concern with the loss of ash is the cascading ecological impacts. There are over 40 arthropod obligate species that depend on the ash tree for survival and are threatened by the loss of ash trees. The ripple effects of the loss of these arthropods species and the interrelationships are not fully known at this point. Ash is a valuable tree for wood products and logging, so the economic impacts resulting from the loss of these trees could be severe. In addition, towns will need to budget for removing dead or dying ash trees, and plan for the aesthetic and community open space impacts caused by their loss. Ash trees are about 12% of the forest cover in Vermont, and there are pockets of ash trees in Weston. The main concern in Weston is impacts of hazard trees to roads and power lines. Weston has not done a comprehensive ash tree survey to know where vulnerable trees are located. They have also not completed an EAB plan. Interested private citizens can obtain purple traps for assistance with early detection of EAB on their property.

The loss of maple trees to ALB would be devastating to the maple syrup industry, which is an important industry in Vermont, including in Weston. Sugaring is also an important activity for residents, even if its not done commercially. Sap can't be used once a maple is treated with insecticide, and the lag time before it can be used again is unknown. Fall foliage is a big draw for visitors to Vermont and Weston. The loss of tourism during the fall foliage season would have a significant negative economic impact.

Probability

As mentioned earlier in this section, Emerald Ash Borer is not currently known to be present in Weston. Hemlock Woolly Adelgid has been confirmed in 15 other towns in the Windham Region, but is not yet present in Weston. Additionally, certain invasive plant species are present in every town in the region. The Asian Longhorned Beetle is not currently present in Vermont.

Extent

Over half of the trees in Vermont are host species of one of these three main invasive insects, so the potential impact is great. EAB only feeds on Ash trees, which are 7% of Vermont's tree species and a strong component of beech and birch forest stands. Southeastern Vermont has primarily white ash and green ash, while black ash is less common as compared to northern Vermont. Green ash is common in urban environments because they are good shade trees and do well in an urban setting.

Ash planted on roadside rights of way have the highest potential for infestation of EAB. The current mortality rate is 99.8% of trees. Cutting dead trees is a very hazardous activity and the potential for numerous dead trees along road ways is a concern for protecting public safety and infrastructure. Green Mountain Power expects EAB to severely impact their grid over time, so they are proactively removing vulnerable Ash trees near their power lines in confirmed affected areas. Areas that haven't been confirmed must contract for tree removal for trees they are concerned with.

Being proactive is key for stopping, or at least slowing down, the spread when pests are detected. Inventories of roadside ash trees are a good thing for towns to do proactively. Training road crews to identify threats and who to alert of outbreaks is also a good idea.

There are EAB insecticides that are registered for use in Vermont and are fairly effective at protecting trees. However, they need to be applied to each tree individually so this is not a practical strategy to protect all ash trees in a forest environment, but could be a good option for an urban tree canopy. Additionally, trees have to be retreated with the insecticide every one to two years because of the insect's life cycle. The method for eradicating ALB is to cut and chip all the trees that are infested. There is

another insecticide that works for ALB, but it is only effective if the tree is treated before the larvae burrow too deeply into the wood beyond the tree's vascular system.

Invasive plants are also a threat to the ecology and economy of Weston. Long-standing and spreading forest threats in the Windham Region are glossy buckthorn, purple loosestrife, Japanese barberry, multi-flora rose, Japanese knotweed, cow parsley, garlic mustard, and Asiatic bittersweet. All threaten forest regeneration, and multi-flora rose and Asiatic bittersweet can destroy mature trees. Smaller invasive plants, such as garlic mustard, purple loosestrife, and goutweed, present a threat to native herbaceous plants.

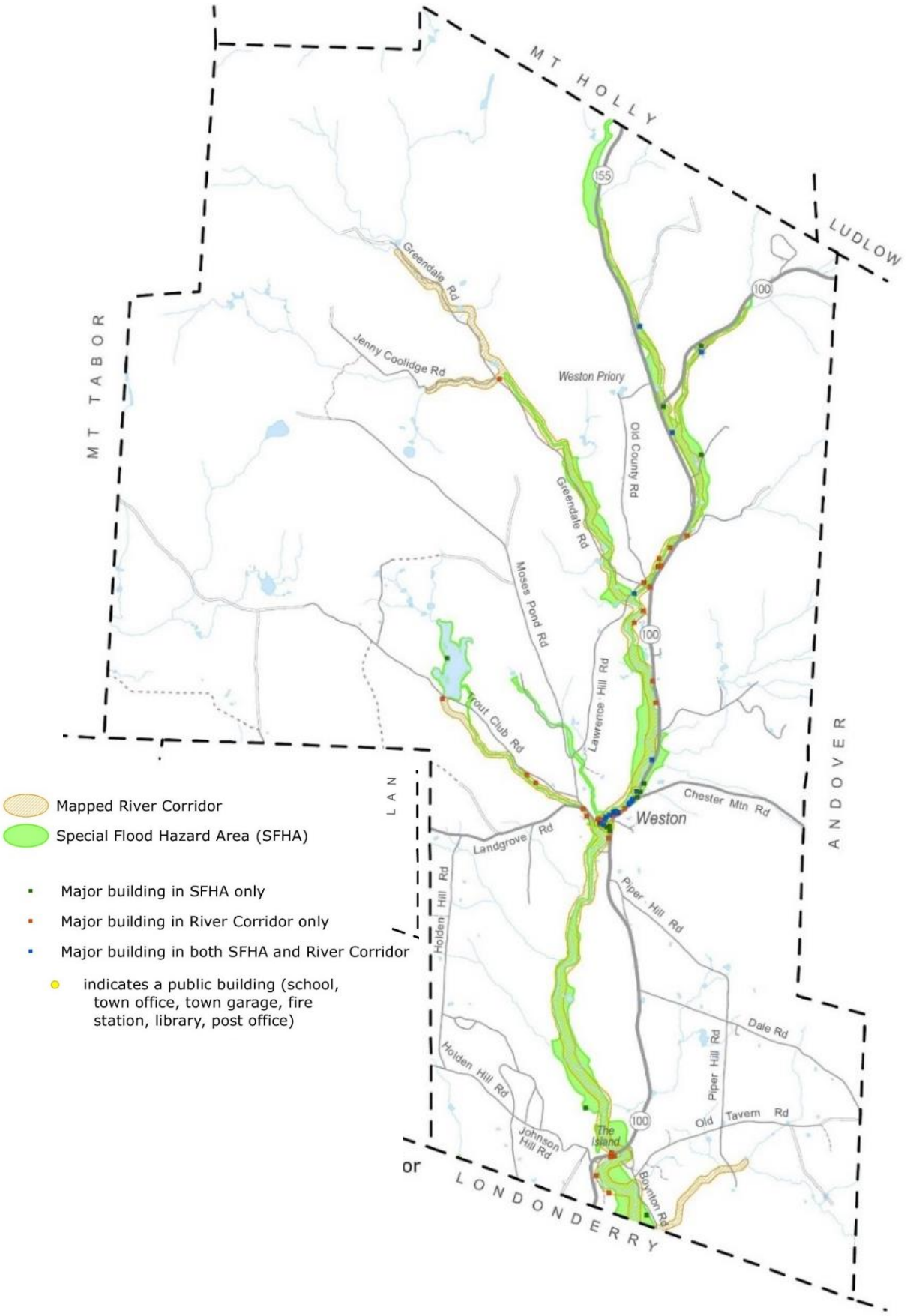
Tropical Storm Irene had the effect of spreading many invasive plants around the region through the transport of seed material from various sources, including flood waters. Logging, and particularly clear cutting, create areas that are particularly susceptible to invasive plants. Logging is a frequent occurrence in Weston as approximately 11 percent of the town parcels are in the Current Use program totaling 6,428 acres. Current use qualification requires 25-acres minimum to be enrolled in the forestry program. Many parcels are in the range of a hundred acre or more. Forestry is the dominant current use enrollment in Weston as compared to agriculture, which allows for up to 20% to be open agriculture land on the property. Logging is recognized as an important industry in Weston and statewide.

Sources Used
Invasive plant lists from Peter Bergstom of the Rockingham Conservation Commission, sent 8/21/2021; Email with VT State Forester Jim Esden on 2/21/20 (802-885-8822 or jim.esden@vermont.gov); Email with Windham County Forester Sam Schneski on 2/21/20 (sam.schneski@vermont.gov); Interview with Windham County forester Bill Guenther on 3/2/15 (802-257-7967 or bill.guenther@vermont.gov); Interview with First Detector Jordan Fletcher on 4/29/15; VT Fish and Wildlife website; VTinvasives.org; Cerceris.info webpage; Maine Forest Service webpage[23]; Cornell University Cooperative Extension website; Images courtesy of Google images and Maine Forest Service.

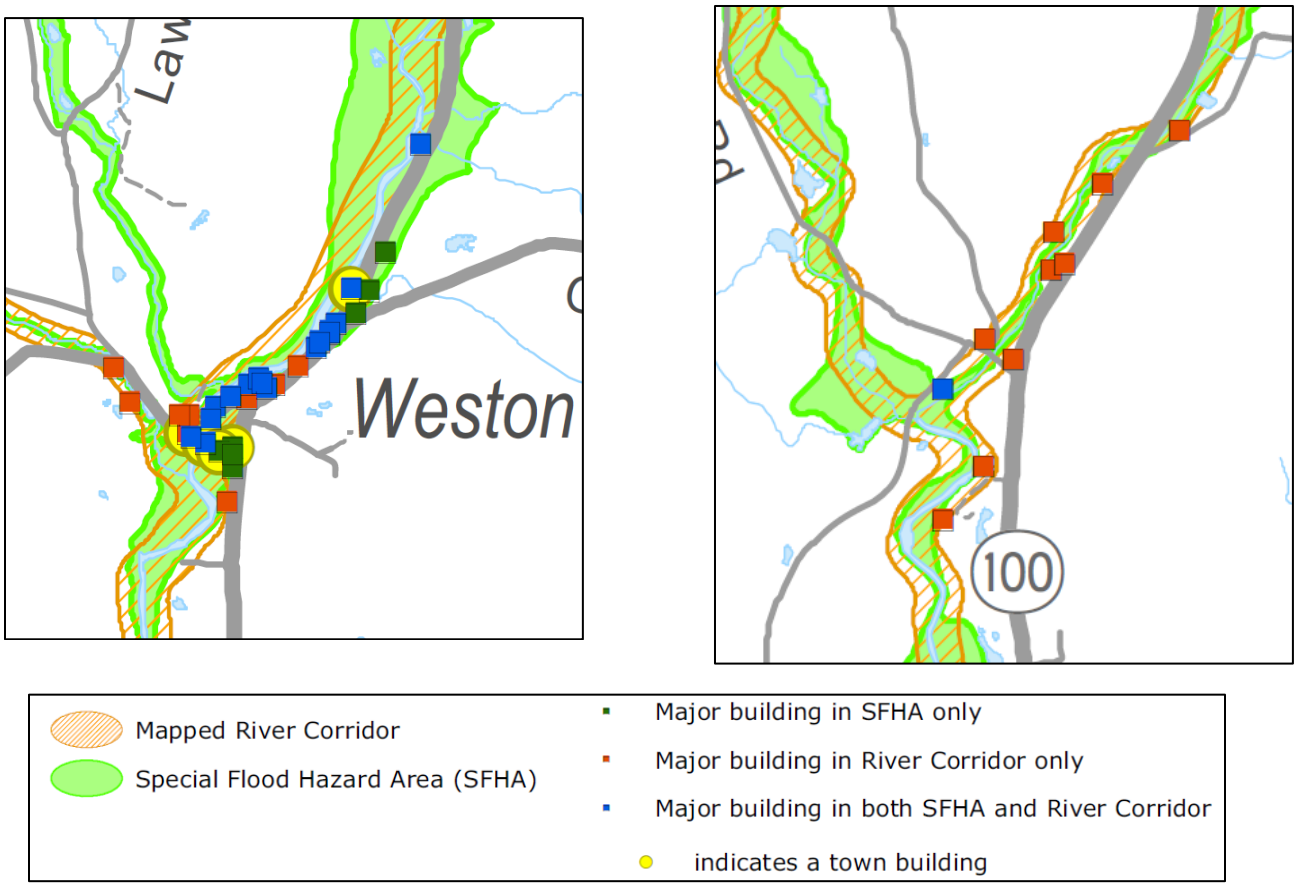
ASSESSING VULNERABILITY

Structures in the SFHA and River Corridor
According to GIS mapping analysis completed by the Windham Regional Commission, there are 62 buildings within FEMA-designated Special Flood Hazard Areas (SFHAs), the mapped River Corridor, or both.[24] Of these, 33 buildings are only located in the SFHA, 49 buildings only in the River Corridor, and 20 buildings in both. The maps on the following pages show the location of these structures.

[23] http://www.maine.gov/dacf/mfs/forest_health/invasive_threats/index.htm
[24] GIS mapping analysis performed by WRC, June 9, 2022


MT HOLLY
LUDLOW
MT TABOR
ANDOVER
LAN
or
LONDONDERRY
Weston
Weston Priory
Greendale Rd
Jenny Coolidge Rd
Old County Rd
Moses Pond Rd
Trout Club Rd
Lawrence Hill Rd
Chester Mtn Rd
Landgrove Rd
Holden Hill Rd
Piper Hill Rd
Dale Rd
Old Tavern Rd
Johnson Hill Rd
The Island
Boynton Rd
155
100
Mapped River Corridor
Special Flood Hazard Area (SFHA)
Major building in SFHA only
Major building in River Corridor only
Major building in both SFHA and River Corridor
indicates a public building (school, town office, town garage, fire station, library, post office)

Most of the vulnerable structures are located in the village of Weston and in the area at the confluence of Greendale Brook and the West River. The inset maps below show that the majority of affected structures in the village of Weston are in both the SFHA and the River Corridor or just the SFHA. The map also shows that a large number of town buildings in the village center are located in the SFHA and/or River Corridor. In the area of the Greendale Brook and West River confluence, most of the buildings are only located in the River Corridor of the West River.



Properties within SFHAs that have a mortgage are required to purchase flood insurance. Currently, only 15 percent of structures within an SFHA have flood insurance according to Flood Ready Vermont. Weston's participation in the National Flood Insurance Program (NFIP) gives residents access to discount flood insurance through the National Flood Insurance Program. Flood insurance can still be purchased privately, however it is more expensive. Development in SFHAs must meet additional construction standards as outlined in Weston's floodplain regulations, which is part of their zoning bylaws.

Repetitive Loss Structures

A Repetitive loss structure is an NFIP-insured structure that has had at least 2 paid flood losses of more than $1,000 each in any 10-year period since 1978.[25] According to FloodReady.Vermont.gov, Weston has no repetitive loss claims.[26] Severe repetitive loss (SRL) structures are NFIP-insured buildings that, on the basis of paid flood losses since 1978, meet either of the loss criteria described in the SRL section. SRL

[25] https://www.fema.gov/national-flood-insurance-program/definitions
[26] Report listing repetitive losses is available here:
https://floodready.vermont.gov/sites/floodready/files/documents/cisrpt_RL%206.26.18.PDF

properties with policy effective dates of January 1, 2007 and later will be afforded coverage (new business or renewal) only through the NFIP Servicing Agent's Special Direct Facility (SDF) so that they can be considered for possible mitigation activities. An SRL property is defined as a residential property that is covered under an NFIP flood insurance policy and:

- That has at least four NFIP claim payments (including building and contents) over $5,000 each, and the cumulative amount of such claims payments exceeds $20,000; or
- For which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.
- For both (a) and (b) above, at least two of the referenced claims must have occurred within any ten-year period, and must be greater than 10 days apart.

Participation in and Compliance with the National Flood Insurance Program (NFIP)

The National Flood Insurance Program (NFIP) is a voluntary program organized by FEMA that includes participation from 20,000 communities nationwide and 247 Vermont towns and cities. Combined with floodplain mapping and floodplain management at the municipal level, the NFIP participation makes affordable flood insurance available to all homeowners, renters, and businesses, regardless of whether they are located in a floodplain.

The NFIP was instituted in 1968 to make flood insurance available in those communities agreeing to regulate future floodplain development. As a participant in the NFIP, a community must adopt regulations that: 1) require any new residential construction within the 100-year floodplain to have the lowest floor, including the basement, elevated above the 100-year flood elevation; 2) allow non-residential structures to be elevated or dry flood proofed (the flood proofing must be certified by a registered professional engineer or architect); 3) require anchoring of manufactured homes in flood prone areas. The community must also maintain a record of all lowest floor elevations or the elevations to which buildings in flood hazard areas have been flood proofed.

In return for adopting floodplain management regulations, the federal government makes flood insurance available to the citizens of the community. In 1973, the NFIP was amended to mandate the purchase of flood insurance as a condition of any federally regulated, supervised or insured loan on any construction or building within the 100-year floodplain. In 2012, Congress passed the Biggert-Waters Flood Insurance Reform Act to reduce subsidies for structures built before the NFIP was instituted (called pre-FIRM structures). Over 50 percent of Vermont's NFIP policies are pre-FIRM, which means that flood insurance premiums for many will increase over the ensuing years.

While the NFIP floodplain management criteria are administered by states and communities through their floodplain management regulations, FEMA's role is to provide technical assistance and to monitor communities for compliance with the minimum NFIP criteria. Weston joined the NFIP on July 1, 1991 and is a member in good standing (CID 500157). The latest floodplain ordinance was adopted in December 2009 and is in the zoning bylaws. The latest Flood Insurance Rate Maps (FIRMs) and Flood Insurance Study (FIS) referred to in the development of this plan have an effective date of September 28, 2007 (portions of the town are undergoing map updates as of this Plan writing).

The Zoning Administrator also serves as the Floodplain Administrator and reviews all development to determine if it is located in any floodplain boundaries. If so, the Administrator reviews the application to ensure that all relevant regulations are proposed to be adhered to and does any needed inspections before working with the Development Review Board or issuing a permit. ANR has 30-days to review all applications in floodplain boundaries and may offer comment to the town. ANR review opportunity is

required before the town can issue a permit, and serves as a second technical review of applications which can assist the town in deciding whether to issue or deny a permit.

The latest record indicates that there are sixteen (16) active NFIP policies in Weston. These policies have a total value of $3,918,300. There have been thirteen (13) NFIP claims paid in Weston since they joined the NFIP, totaling $215,148.[27]

The Town works with the elected officials, Windham Regional Commission, the state and FEMA to correct any compliance issues and prevent further NFIP compliance issues through continuous communications, training and education.

Vulnerable Community Assets in Weston

Similar to many Vermont communities, the historic development patterns in Weston have been clustered around the main waterways in the community. There are a significant number of community facilities and historically significant structures that are located in the SFHA and/or River Corridor of the West River, along Route 100, and Lawrence Hill Road. Some of the primary assets noted by the town are:

- Town Office – The basement was flooded during TS Irene. Since then the building foundation has been flood-proofed with putting in flood water openings in the building foundation.
- Wilder Memorial Library
- Town Garage – flooding has surrounded the garage, but because the garage sits on higher ground it has not been flooded to date. This is an emergency shelter and does have a generator.
- Weston Fire Station – The fire station has experienced flooding due to its location in the West River SFHA. The building has been floodproofed in terms of elevating the generator six feet and strapping down propane tanks. If a flood is warned, equipment is moved out of the station, and items are brought to the second floor for storage. During TS Irene, the station saw four feet of flooding inside. The fire station also serves as an emergency shelter.
- Weston Playhouse – Experienced flooding in TS Irene. Popular destination in town.
- Old Parish Church
- Rod & Gun Club
- Church on the Hill
- Weston Recreation Club
- Town Office Annex (Little School)
- Grist Mill – Old mill in the village.
- Vermont Country Store

Fluvial erosion caused by undersized culvert on Old Tavern Road after TS Irene, 2011

[27] FEMA NFIP Insurance Report, June 2018, accessed 5/27/2022 https://floodready.vermont.gov/sites/floodready/files/documents/cisrpt_NFIP%206.26.18.PDF

- Weston Village Store
- Post Office
- Crafts Building
- Colonial House - This is a motel that also serves as an emergency shelter and does have a generator.
- Brandmeyer's Mountainside Lodge - This is a motel that also serves as an emergency shelter and does have a generator.

Development Trends

As noted in the introduction, the population has increased slightly since 2010 with an additional 57 residents in town. Weston gained population at a similar rate as compared with adjacent towns. Generally, the town's population has remained stable since 1980. Today's population is slightly more than half of the peak population of 1,032 in 1840.

Weston's current resident population is older and wealthier than the State of Vermont average. According to five-year estimates from the 2016-2020 American Community Survey (ACS), Weston's median age is 49.9 years compared with 42.8 years for the state. The median household income in Weston is approximately $88,409 as compared with $63,477 for the state.

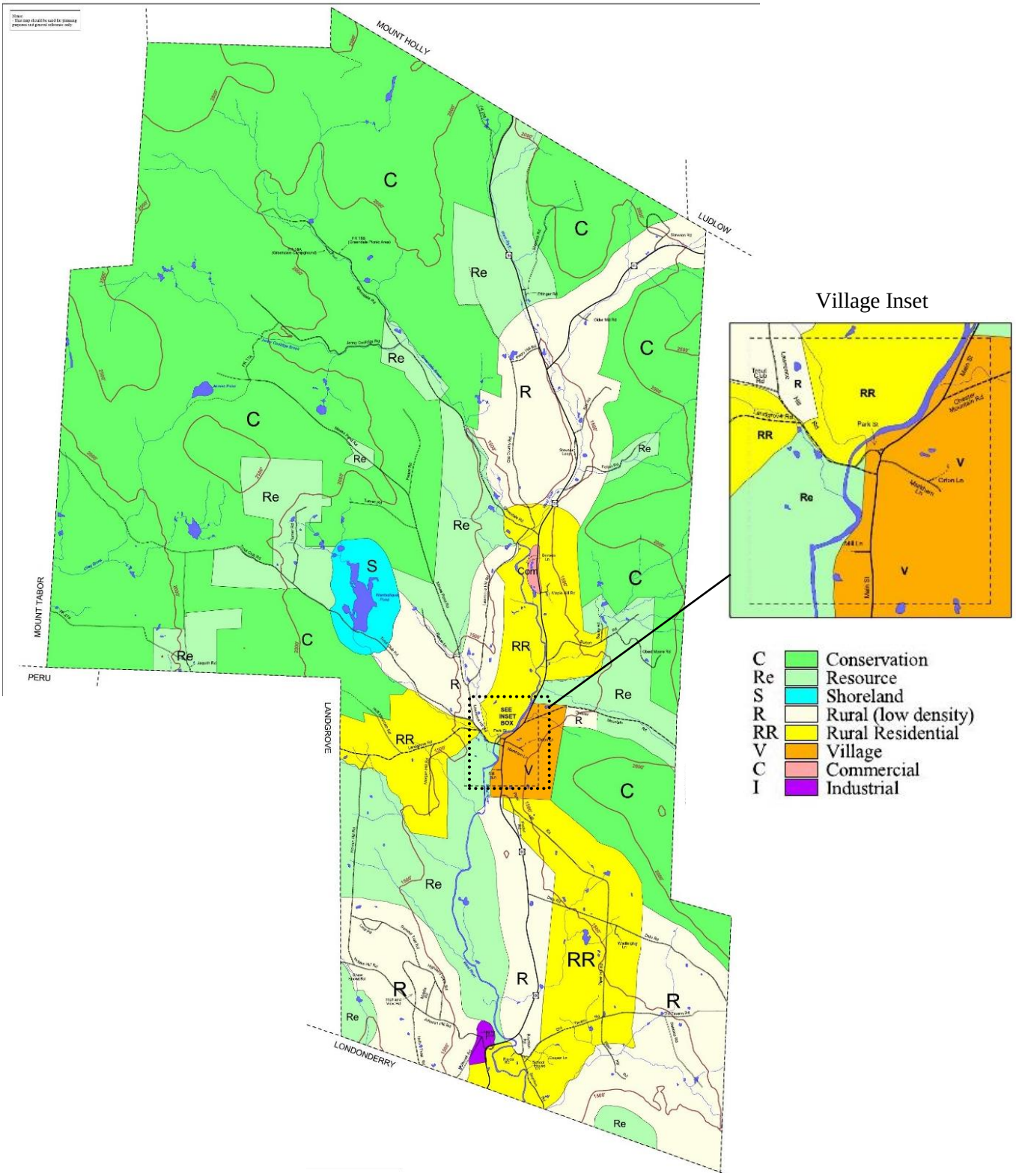
According to the 2016-2020 ACS, there are a total of 594 housing units in Weston. Of this total, only approximately 45% of homes are year-round residences with the remaining homes being occupied seasonally. According to the Vermont Department of Taxes, in 2021 there were 629 housing units in Weston and homesteaded properties (owner of primary homes) represented only 29 percent of the total homes. In terms of new development, on average a few new homes are built in Weston every year, and most of these are second homes.

Historically, Weston's economy was based around dairy farming and forestry through the 19th and first half of the 20th century. Today, the local economy has evolved and is now driven by tourism, retail sales, construction, and service businesses. The Vermont Country Store and the Weston Priory attract a large number of visitors year-round. The Weston Playhouse Theatre Company and Kinhaven Music School bring a significant number of actors, musicians, and technical staff to the town during the summer months in addition to attracting visitors.

These development trends create vulnerabilities for Weston. The town is economically vulnerable because so much of the local economy is based around tourism. If a major disaster were to occur and tourism declined, the economy is Weston would suffer. The on-going COVID-19 pandemic and its impact on tourism, especially towards the beginning of the pandemic, highlights this vulnerability.

The built environment of Weston is also vulnerable because of the number of structures located in flood zones. However, the new development that is taking place in Weston is mostly happening outside of the valley areas and more in the mountains. Development in remote areas is vulnerable to being cut off during a disaster. When granting permits for new development, Weston should consider the vulnerability of the new development and the means that the town has to access the area if a disaster happens and roads are out.

Proposed Land Use Map from 2016 Weston Town Plan



MITIGATION STRATEGY

Local Hazard Mitigation Goals for this Plan
The Hazard Mitigation Goals as outlined below were agreed up by consensus among the Planning Committee during meetings for the development of this plan:

- Reduce the loss of life and injury resulting from all hazards.
- Reduce the impact of hazards on the town's water bodies, natural resources, and historic resources.
- Reduce the economic impacts from hazard events.
    - Minimize disruption to the road network and maintain access.
    - Mitigate financial losses incurred by municipal, residential, industrial, agricultural and commercial establishments due to disasters.
    - Ensure that community infrastructure is not significantly damaged by a hazard event.
    - Being proactive in implementing any needed mitigation projects for public infrastructure such as roads, bridges, culverts, municipal buildings, etc.
- Encourage hazard mitigation planning to be incorporated into other community planning projects, such as the Town Plan, and the Local Emergency Management Plan.
- Ensure that members of the general public continue to be part of the hazard mitigation planning process.

Town Plan Policies that Support Mitigation

The 2016 Weston Town Plan presents an indirect focus on mitigation, which is highlighted by the number of policies and action items that relate to mitigation. Relevant policies are highlighted here:

<u>Land Use Policies</u>
- Scenic vistas, environmental qualities, and the preservation of open space should be encouraged and preserved.
- Lands in the Conservation District are not desirable for dense development because of their attributes.
- Primary use of lands should be for agriculture, forestry, open space, and low-impact recreation (Conservation District)

<u>Transportation Policies</u>
- Require that all road maintenance activities focus on safety, efficiency, cost-effectiveness and prevention of deterioration rather than on facilitation of greater traffic volumes or speed.
- Require that all road cuts and embankments be properly graded and seeded to minimize erosion and to maintain the scenic character.
- Require that all road construction activities, public or private, preserve scenic and historic features of the landscape and have minimal impact on important natural areas.
- Require that all land use regulations continue to limit density and discourage development in remote areas, thereby minimizing negative impacts on Town roads.

<u>Town Government, Community Facilities, Services and Recreation Policies</u>
- Ensure that adequate health care, police and fire protection and emergency services remain available to the community and that the Town continues to support these critical service organizations through annual appropriations.
- Encourage the preparation of a Town capital budget and program indicating future needed and desired capital expenditures in order to coordinate the financing of major public expenditures. The budget

should be prepared according to the State guidelines, so that the Town would be eligible for State and Federal grant monies.
- Require all developments and subdivisions provide necessary means of fire protection, including dry hydrants and fire ponds where feasible.
- Encourage the review and updating of all emergency plans and work with the Windham Regional Planning Commission's ongoing emergency planning efforts.

Natural Resources Policies
- Require that land capability be an important factor in deciding how the lands of Weston will be used.
- Required that development be discouraged and strictly regulated within the ecological zone above 2,000 feet.
- Encourage the Town to cooperate with organizations engaged in the conservation and preservation of land.
- Work to maintain the environmental, scenic, and recreational value and quality of stream and riverbanks.
- Support maintaining rivers and streams in a natural state and retain existing public access.
- Settlement on lands of resource value for woodlands shall occur in patterns and densities that will not substantially reduce the area or woodland productivity of those lands. Fragmentation of forest blocks should be avoided.

Surface Water, Wetland, Watercourse and Shoreline Policies:
- Require that significant wetlands, watercourses and shorelines be protected by appropriate setback and frontage requirements as well as all other development standards that apply. Shorelines and streambanks shall be retained in a natural state and protected from uses and settlement that would cause erosion, prohibit public access, and reduce scenic qualities of surface waters.
- Encourage the protection of wetlands and watercourse in accordance with federal and state regulations, for the provision of wildlife habitats, retention areas for surface runoff, recreation and scientific value.

Topography and Soil Policies
- Prohibit development in areas where the topography and soil conditions are such that development may cause contamination of surface or subsurface waters, soil, erosion, or failure of waste disposal systems.

Energy Policies
- Encourage new construction take into consideration shelter from the winter winds and the use of trees shall be encouraged for summer shade.

Flood Resilience Policies
- It is the policy of the town to foster the protection and restoration of river corridors, floodplains, wetlands, and upland forest areas that attenuate and moderate flooding and fluvial erosion.
- It is the policy of the Town to protect floodplains, river corridors, land adjacent to streams, wetlands, and upland forests through adoption and administration of flood hazard area regulation governing development in designated Special Flood Hazard Areas and River Corridors, in order to reduce the risk of flood damage to infrastructure, improved property, people, and the environment.
- New development in identified flood hazard, fluvial erosion, and river corridor protection areas should be avoided. If new development is to be built in such areas, it should not exacerbate flooding and fluvial erosion.
- The protection and restoration of geomorphic equilibrium, floodplains and upland forested areas that attenuate and moderate flooding and fluvial erosion should be encouraged.
- Flood emergency preparedness and response planning are encouraged.

Past and Ongoing Mitigation and Maintenance Efforts

Below is an update on prior identified hazard mitigation projects that were listed in the 2016 Weston LHMP. The planning participants reviewed these actions in May 2022 and provided the current status on each item.

	Mitigation Action	Responsible Party	Timeframe	Funding Source	Project Priority	Current Status as of Spring 2022
1	Purchase a site for relocation of Fire Station out of SFHA and River Corridor	Selectboard, Planning Commission, Fire Company	Decide on site within 2 years - by 2018; Purchase by 2021	Grant funding with Town Support	High	Equipment has been relocated in the station to reduce damage during flood events. A Building Committee has begun the process of evaluating modifications to the existing structure. Action has been modified and carried over to new plan.
2	Bank armoring of West River near Boynton Road	Road Foreman	Start and Finish 2016	Grant funding	High	Town officials met with representatives from the Army Corps of Engineers in April 2022. Action has been carried over to new plan.
3	Bank armoring on Greendale Road with 5 foot minus ledge. This is about a ¼ mile up Greendale Road and more detail is shown before this table.	Road Foreman	Start and Complete in about two weeks; Summer 2016 or 2017	VTrans Structure Grant; HMGP; or Better Back Roads grant	~~High~~ Medium	Rip rap has been placed to reinforce road. Town officials met with representatives from the Army Corps of Engineers in April 2022 to discuss additional mitigation actions. Action has been modified and carried over to new plan.
4	Purchase a tanker truck with increased water capacity	Selectboard, Fire Company	Purchase 2017, delivery 2019	Potential grant funding; town funding	High	**Completed**
5	Upsize culvert #8 on Upper Old Tavern Road	Road Foreman and Selectboard	Start and Finish 2017	Vtrans Structures Grant	Medium	**Completed**
6	Update Floodplain zoning bylaw to include River Corridors	Selectboard and Planning Commission	Rewrite in 2016; goal to vote on it at Town Meeting Day 2017	WRC dues; potential grant funding	Medium	Not completed at this time and no longer a priority. Planning Commission is currently reviewing priorities for zoning bylaw changes, which may include looking at River Corridor bylaws.

	Mitigation Action	Responsible Party	Timeframe	Funding Source	Project Priority	Current Status as of Spring 2022
7	Install beaver fencing at Bridge 23 at Kyle Road	ANR / Road Foreman	Install Fall 2017, start and finish; depending on funding and town budget	Grant funding and town budget	Medium	The town has determined that beaver fencing is not needed at this location and this is no longer a priority. Monitoring and maintenance is completed as needed
8	Install beaver fencing at the intersection of Piper Hill and Old Tavern Road		Install Fall 2017, start and finish; depending on funding and town budget	Grant budget and town budget	Medium	**Completed**
9	Upsize culvert #9 on Upper Old Tavern Road	Road Foreman	Start permit process Spring 2017 or Spring 2018; construction by Spring-Fall 2020 at the latest	Vtrans Structures Grant	~~Low~~ High	Not completed. Hydraulic Study has been completed at this time. The Town is waiting until it is eligible for funding from VTrans. Action has been carried over to new plan.
10	Upgrade culvert #17 on Holden Hill Road	Road Foreman	Start this after Culvert #9 (which is a higher priority); Two year process with permitting and construction	Vtrans Structures Grant	~~Low~~ High	Not completed. The Town is waiting until it is eligible for funding from VTrans. Action has been carried over to new plan.
11	Cutting trees in the stream to alleviate tree dams	Road Crew	Start summer 2017 or 2018; It will be done as time allows and will take place over several years	Town budget	Low	**Completed**. This is an on-going activity that has been carried over to the new plan.

There are certain ongoing efforts in the town that serve to either mitigate for hazards, assist with readiness of town to deal with a hazard, or both. Those efforts are listed here:

1. Leaf removal and ditch cleaning are maintenance activities done every spring by the road crew. If ditches are being eroded, the crew may also stone line them.

2. Weston updates their culvert inventory every three years. The last update was done in fall 2019. Updates include detailed condition information for every culvert and take into account all changes from the last update.

3. The road crew goes around twice per year and inspects trees and brush that could cause hazards along roadways. Green Mountain Power hires a tree service to prune trees around lines every several years.

4. The town maintains four emergency shelters throughout Weston.

5. Weston is a member in good standing of the National Flood Insurance Program. The floodplain ordinance is kept compliant and the town maintains SFHA maps at the town office.

Identification of Mitigation Actions

The Weston Hazard Mitigation Planning participants identified the following hazard mitigation activities based on an evaluation of hazard event vulnerability not addressed by existing hazard mitigation initiatives and the feasibility of new activities.

Mitigation actions are listed in priority order by hazard. Actions were prioritized by the plan participants. These are new actions and actions carried over from the previous Hazard Mitigation Plan. The following criteria were used in establishing project priorities. The ranking of these criteria is largely based on the best available information and best judgment as many projects are not fully scoped out at this time. Prioritization was done during the meetings for the plan development in discussions among participants and guided by the WRC Planner.

- Does the action reduce damage?
- Does the action contribute to community objectives?
- Does the action meet existing regulations?
- Does the action protect historic structures or structures critical to town operations?
- Can the action be implemented quickly?
- Is the action socially acceptable?
- Is the action technically feasible?
- Is the action administratively possible?
- Is the action politically acceptable?
- Is the action legal?
- Does the action offer reasonable benefits compared to its cost of implementation?
- Is the action environmentally sound?

The table on the following page was reviewed at the public meeting on May 10, 2022 to assist in consideration of action types:

Mitigation Action	Description of Category	Examples of Mitigation Actions
1 **Local Plans and Regulations**	These actions include government authorities, policies, or codes that influence the way land and buildings are developed and built.	• Comprehensive plans • Land use ordinances • Building codes and enforcement • Capital improvement programs • Open space preservation • Stormwater management • regulations and master plans
2 **Structure and Infrastructure Projects**	These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.	• Acquisitions and elevations of structures in flood prone areas • Utility undergrounding • Structural retrofits. • Floodwalls and retaining walls • Detention and retention structures • Culverts • Safe rooms
3 **Natural Systems Protection**	These are actions that minimize damage and losses and also preserve or restore the functions of natural systems.	• Sediment and erosion control • Stream corridor restoration • Forest management • Conservation easements
4 **Education and Awareness Programs**	These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. A greater understanding and awareness of hazards and risk among local officials, stakeholders, and the public is more likely to lead to direct actions.	• Radio or television spots • Websites with maps and information • Real estate disclosure • Mailings to residents in hazard-prone areas. • StormReady • Firewise Communities

Cost-Benefit Analysis

As part of public involvement discussions, there was a rough cost/benefit analysis done for each action listed in the table and those results are shown in the table. The below cost and benefits tables address the priorities for the mitigation strategies that are stated in the Mitigation Actions Table. This was how the mitigation actions were assessed by the Hazard Mitigation Planning participants. Priority was assessed somewhat independently of cost/benefit and was based more on the perceived need of each action and availability of funding, versus what the action costs and benefits.

At the time of applying for FEMA's PDM-C, FMA or HMGP grant programs, each project listed below will undergo full benefit-cost analysis (BCA) methodology, version 5.1 or higher to maximize savings. Whenever possible, Weston will utilize FEMA 406 Mitigation Funding.

Cost Estimates

High	= >$100,000
Medium	= $25,000 – 100,000
Low	= < $25,000

Benefit Estimates

High	Public Safety
Medium	Infrastructure/ Functionality
Low	Aesthetics/ General Maintenance

	HAZARD ADDRESSED	ISSUE DETAIL	ACTION	RESPONSIBLE ENTITY / PARTNERSHIPS	Start/ Complete TIMELINE	POTENTIAL FUNDING	MITIGATION / PREPAREDNESS	COST/ BENEFIT	PRIORITY	Notes / Status
1	Flooding / Fluvial Erosion	Flood waters on West River cause fluvial erosion of the river bank in close proximity to Boynton Road. Bank erosion is threatening the road integrity.	Complete bank armoring of West River near Boynton Road.	**Road Foreman,** Selectboard, Army Corp	Start 2022, Complete by 2027	Town Funding, Grants	Mitigation	High/ High	High	Town met with officials from Army Corps of Engineers in April 2022 and completed site visit
2	Flooding / Fluvial Erosion	With the increasing intensity of rain events, many existing culverts are not adequately sized to manage runoff. This can result in flooding and erosion.	Upsize culvert #9 on Upper Old Tavern Road	**Road Foreman**, Selectboard	Start and complete in 2027	VTrans Structures grant; Better Roads grant; Town match	Mitigation	Medium/ Medium	High	A hydraulic study has been completed. Existing culvert may need to be replaced by box culvert or a bridge.
3	Flooding / Fluvial Erosion	With the increasing intensity of rain events, many existing culverts are not adequately sized to manage runoff. This can result in flooding and erosion.	Upgrade culvert #17 on Holden Hill Road	**Road Foreman**, Selectboard	Start and complete in 2027	VTrans Structures grant; Better Roads grant; Town match	Mitigation	Medium/ Medium	High	Existing culvert may need to be replaced by box culvert or a bridge.

	HAZARD ADDRESSED	ISSUE DETAIL	ACTION	RESPONSIBLE ENTITY / PARTNERSHIPS	Start/ Complete TIMELINE	POTENTIAL FUNDING	MITIGATION / PREPAREDNESS	COST/ BENEFIT	PRIORITY	Notes / Status
4	Flooding / Fluvial Erosion	Weston Fire Station is located in the SFHA and River Corridor of the West River and has experienced numerous floods.	Form advisory committee to make recommendations to Selectboard on costs, benefits and possible funding sources to minimize flood impact, including upgrades to the existing station, building a new station, and improving coordination or consolidating with other local Fire Departments.	**Selectboard**, Planning Commission, Fire Company	Form advisory committee in 2023 and present final report to Selectboard in 2024	Town Funding	Mitigation	Low/ High	High	The goal for this 5-year period is to reach a consensus on what the town should do about the flooding issue at the Fire Station.
5	Flooding / Fluvial Erosion	Fluvial erosion and inundation flooding are historically the most common hazards. Leaders should have current understanding and tools to manage watershed resources and prevent flooding and erosion.	Train 1 town personnel and 1 member of the selectboard in VT Flood Training course to guide town in use of tools on VT Flood Ready, basics of floodplain and river corridor dynamics, and how to manage development in hazard areas.	**Selectboard**, Planning Commission, Road Foreman, Fire Department	Start in 2023, Complete by 2024	Town Funding	Preparedness	Low/Low	Medium	

	HAZARD ADDRESSED	ISSUE DETAIL	ACTION	RESPONSIBLE ENTITY / PARTNERSHIPS	Start/ Complete TIMELINE	POTENTIAL FUNDING	MITIGATION / PREPAREDNESS	COST/ BENEFIT	PRIORITY	Notes / Status
6	Flooding / Fluvial Erosion	Flood waters on Greendale Brook cause fluvial erosion along the waterway bank, impacting and potentially undermining the adjacent Greendale Road.	Complete additional armoring on Greendale Brook.	**Road Foreman**, Selectboard, Army Corp	Start 2022, Complete by 2027	Town Funding, Grants	Mitigation	High/ High	Medium	Town met with officials from Army Corps of Engineers in April 2022 and completed site visit
7	Flooding / Fluvial Erosion	With the increasing intensity of rain events, many existing culverts are not adequately sized to manage runoff. This can result in flooding and erosion.	Upgrade culvert #6 on Dale Road	**Road Foreman**, Selectboard	Start in 2022, complete by 2023	VTrans grant; Town funds	Mitigation	Low/ Medium	Medium	In discussion now and budgeted for 2022
8	Flooding / Fluvial Erosion	With increasing intensity of rain events, existing culverts not adequately sized to manage runoff. This can result in flooding and erosion.	Upgrade culvert #1 on Johnson Hill Road	**Road Foreman**, Selectboard	Start in 2022, complete by 2023	VTrans grant; Town funds	Mitigation	Low/ Medium	Medium	In discussion now and budgeted for 2022

	HAZARD ADDRESSED	ISSUE DETAIL	ACTION	RESPONSIBLE ENTITY / PARTNERSHIPS	Start/ Complete TIMELINE	POTENTIAL FUNDING	MITIGATION / PREPAREDNESS	COST/ BENEFIT	PRIORITY	Notes / Status
9	Flooding / Fluvial Erosion	During flood events, it can be challenging to repair and reopen roads quickly due to a lack of readily available materials	Evaluate storage of materials at the public works facility for fixing roads in the event of flooding. Ensure adequate materials are stored in a place out of harms way.	Road Foreman	Start in 2023 and ongoing	Town Funding	Preparedness	Medium/ High	Medium	
10	Flooding / Fluvial Erosion	GMNF has responsibility for maintaining town roads that cross onto federal land. Tree falls on National Forest land can result in tree dams along streams and brooks.	Hold regular meetings with GMNF to discuss issues with town roads that cross onto federal land and tree dams along streams and brooks.	Road Foreman	Start in 2023 and ongoing	Town Funding	Preparedness	Low/ Medium	Medium	
11	Flooding / Fluvial Erosion	The location of the West River dam in the village may impact flooding upstream during high water events.	Complete a study on the impacts of the West River dam on flooding upstream.	**Selectboard**, Contractor	Start in 2025, complete in 2026	ANR Grant	Preparedness	Low/ Medium	Low	Dam is owned by a private community non-profit organization.

	HAZARD ADDRESSED	ISSUE DETAIL	ACTION	RESPONSIBLE ENTITY / PARTNERSHIPS	Start/ Complete TIMELINE	POTENTIAL FUNDING	MITIGATION / PREPAREDNESS	COST/ BENEFIT	PRIORITY	Notes / Status
12	Flooding / Fluvial Erosion	Property owners can face challenges selling buildings in vulnerable locations due to known flood risks.	Raise awareness for residents and businesses to consider buyouts by providing information on the town's website.	**EMD**, Selectboard	Start in 2024 and ongoing	Town Funding	Mitigation	Low/ Low	Low	
13	Invasive Species	Deteriorating or falling trees can impact power lines and cause power outages. Presence of Emerald Ash Borer is concerning for Ash Trees located near power lines.	Complete a tree inventory to determine location of Ash Trees that may impact power lines.	**Conservation Commission**, GMP	2023	Volunteer Time, Town Funding	Preparedness	Low/ Medium	Medium	
14	Invasive Species	Invasive plant species have potential negative effects on public infrastructure. Japanese Knotweed has been spotted on the West River and Poison Parsnip is located along roadsides.	Develop strategy and specific actions for monitoring and eradicating invasive plants along roads and rivers.	**Conservation Commission, Road Crew**	Develop strategy in 2024, Begin eradicating invasives in 2025, and ongoing	Town Funding, Grants	Mitigation	Low/ Medium	Medium	Poison Parsnips biggest challenge along roads currently.

	HAZARD ADDRESSED	ISSUE DETAIL	ACTION	RESPONSIBLE ENTITY / PARTNERSHIPS	Start/ Complete TIMELINE	POTENTIAL FUNDING	MITIGATION / PREPAREDNESS	COST/ BENEFIT	PRIORITY	Notes / Status
15	Invasive Species	Training and education for community members to raise awareness about Emerald Ash Borer and other invasives.	(1) Host a first detector meeting; (2) provide information about identifying and managing invasive species on the town's website.	Conservation Commission	2024	Town Funding, ANR Funding	Preparedness	Low/ Low	Low	
16	All hazards	There are numerous dry hydrants on private property that are not being properly maintained and have access issues for the town's emergency apparatus.	Form a working group to compile information on location and status of private and public dry hydrants. Develop plan to ensure maintenance of fire ponds and hydrants	**Fire Department**, Selectboard	Create working group in 2023, Complete action plan in 2024, Implement in 2025	Town Funding, Grants	Preparedness	Low/ High	High	
17	All Hazards	A permanent and certified Emergency Management Director is vital to ensure the town is able to respond to disasters and emergencies.	Seek permanent Emergency Management Director and have EMD complete certification with VEM	**Selectboard**, EMD	Appoint permanent EMD in 2022; complete certification in 2023	Town Funding	Preparedness	Low/ High	High	Emergency Management Director appointed in 2022

	HAZARD ADDRESSED	ISSUE DETAIL	ACTION	RESPONSIBLE ENTITY / PARTNERSHIPS	Start/ Complete TIMELINE	POTENTIAL FUNDING	MITIGATION / PREPAREDNESS	COST/ BENEFIT	PRIORITY	Notes / Status
18	All hazards	Residents are not aware of local hazard mitigation and local emergency management plans.	Include information on emergency management plans in the Town Annual Report and website. Urge residents to sign up for VT-Alert and respond to warnings.	**EMD**, Selectboard, Fire Department	Begin in 2023 and ongoing	Town Funding	Preparedness	Low/ Low	Medium	
19	All hazards	When there is an extended power outage, extreme cold, extreme heat, etc., emergency shelters with sufficient capacity will be needed.	Establish a working group to review existing emergency shelters and develop plans for upgrades as needed.	**EMD**, Selectboard, Fire Department	Begin in 2023 and complete plan in 2024	Volunteer Time	Preparedness	Low/ High	Medium	
20	All Hazards	Universal support for vulnerable populations is key to health and safety in disasters.	Utilize 'Vulnerable Population Phone Tree' to connect home health and social service partners. Maintain up-to-date list of non-connected vulnerable populations.	**EMD**, Fire Department	Begin in 2023 and ongoing	Town Funding	Preparedness	Low/ High	Medium	

	HAZARD ADDRESSED	ISSUE DETAIL	ACTION	RESPONSIBLE ENTITY / PARTNERSHIPS	Start/ Complete TIMELINE	POTENTIAL FUNDING	MITIGATION / PREPAREDNESS	COST/ BENEFIT	PRIORITY	Notes / Status
21	All Hazards	Basic training on ICS is important for ensuring that local officials can effectively participate during town response to emergency events.	ICS-100 & ICS-402 training for new town officials who may be needed to assist in town emergency response activities	Town Officials	As needed	Volunteer time / No cost training	Preparedness	Low/ High	Medium	
22	All Hazards	Training of Floodplain Administrators is vital to ensuring the town carries out required duties for utilizing and enforcing flood hazard bylaw regulations.	The Floodplain Administrator should take advantage of available training opportunities.	Floodplain Administrator	As available and needed	Town Funding	Preparedness	Low/ Low	Medium	
23	All Hazards	WebEOC is the online incident management system used by the state emergency operations center to coordinate statewide emergency response.	Ensure that EMD and other town officals get WebEOC training	**EMD**, Selectboard	By the end of 2023	Town Funding	Preparedness	Low/ High	Medium	

Implementation of Mitigation Actions / Capabilities

Barriers to Implementation:

1. Financial constraints of town budget
2. Limited staff at town level
3. Emergency staff in Weston is all volunteer – though they function well, reliance upon all volunteers can be risky
4. There is no funding allocated to emergency management set aside in local budget. The town should consider doing this.
5. Small population means limited tax base
6. Large number of second homes
7. Downtown is susceptible to flooding
8. Weston does not currently regulate development in the River Corridor, which limits control of this hazardous area.

Capabilities to build upon for implementation:

1. Town cohesion and social capital
2. Active Selectboard
3. Active Planning Commission
4. Active Development Review Board
5. Four town employee positions, engaged employees
6. Three full-time Road Crew employees
7. Great volunteer base, like the EMD, to carry out projects - though they function well, reliance upon all volunteers can be risky
8. Windham Regional Commission assistance when needed
9. Floodplain ordinance in place. Town could update floodplain ordinance to include River Corridors and/or more restrictive standards.
10. Strong tourism base which brings financial capital into town

Recognizing that every community faces barriers when it comes to project implementation, Weston is in a good position overall. There are committed volunteers and staff who make the town function well. Weston also has good relationships with the businesses in the town. The Vermont Country Store is headquartered in Weston, and is an important anchor business and revenue generator for the community. There are a number of tourism draws in Weston which also bring in revenue. Weston is not struggling financially, though they have a limited real estate tax base because they have a small population and limited commercial and industrial uses. The town is also located in a relatively remote part of the region, away from major towns and amenities. This lends to a “do it yourself” mentality that serves Weston positively. Their remote location could increase vulnerability during a major disaster event, or conversely it could protect Weston.

The town looks to and works closely with the Windham Regional Commission. They look to the Regional Plan policies for guidance on land use decisions which influence their town plan policies and goals. The town works closely with VT Department of Environmental Conservation Agency of Natural Resources and the Army Corps of Engineers when mitigating any work in streams or rivers. Additionally, the town adopts the latest VTrans Road Standards for road, culvert, and bridge improvement projects. With the support of these agencies and the Windham Regional Commission, Weston is capable of carrying out all of the mitigation actions outlined in this plan.

Existing Authorities, Policies, Programs and Resources

The following policies, programs, and activities related to hazard mitigation have been put in place and/or are being implemented by Town of Weston:

- The 2016 Town Plan includes a Flood Resilience section that incorporates the LHMP by reference and specific policies and strategies to protect flood hazard areas and to mitigate risks to pubic safety, critical infrastructure, historical structures, and municipal investments. The Town Plan also includes numerous policies in other sections that relate to hazard mitigation.
- The Town has completed a Local Emergency Management Plan and updates it regularly.
- Town Road and Bridge Standards are followed.
- A culvert inventory was completed and mapped by the Windham Regional Commission in 2019 and is updated as needed.
- The Town is compliant with the National Flood Insurance Program.

The Planning Team reviewed these policies, programs, and plan for their effectiveness and noted improvements below as needed. As Weston goes through the update process for these planning mechanisms, they will look to the LHMP to help guide land use district decisions, and guide goals and policies for those districts. The goals of this hazard mitigation plan will be incorporated in the upcoming Town Plan update to ensure that emergency preparedness and mitigation planning efforts are included in the Town Plan, with particular attention to including the projects in the Mitigation Actions Table. This will assist with ensuring that this plan is utilized and project follow-through occurs.

Plans and Studies

Capability	Description	Improvement Opportunity
Town Plan	Plan for coordinated town-wide planning for land use, municipal facilities, etc.	Town Plan was adopted in 2016 and includes a Flood Resilience Plan that incorporates the LHMP by reference. Town will begin process of updating plan shortly and will integrate this updated LHMP into the planning process.
Stormwater Plan	Plan that identifies stormwater improvements for municipal roads.	Town received General Permit 3-9040 to discharge stormwater from municipal roads, 7/24/18
Local Emergency Management Plan (LEMP)	Municipal procedures for emergency response.	None identified. Updated regularly.
Invasive Species Management Plan	Plan that provides guidance on effective management of invasive species.	Identified as a mitigation action.
Culvert Inventory	An inventory of the size, material, condition and location of culverts. Updated annually by Public Works Department.	Culvert Inventory last updated in fall 2019 by WRC. Will be updated as mitigation actions completed.
School Emergency Response Protocol	School procedures for emergency response	None identified. Schools maintain their own Emergency Response Plans per state regulations.

Administrative Capacity and Capability

Capability	Description	Improvement Opportunity
Emergency Management Director	Prepares plans and procedures for responding to natural disasters other emergencies and leads response efforts.	None identified.
Planning Commission	Municipal body responsible for planning for the community, including maintaining the town plan, zoning bylaws, and subdivision regulations.	None identified.
Development Review Board	Municipal body responsible for evaluating and deciding on proposed development.	None identified.
Zoning Administrator	Administrative officer responsible for administering zoning bylaws.	None identified.
Tree Warden	Responsible for trees on public property, including town properties, schools, and within public right-of-way.	None identified.
Selectboard	Legislative body of the town for all purposes required by the state.	None identified.
Mutual Aid Agreements – Emergency Services	Agreement for regional coordinated emergency services.	None identified. Keene (NH) Mutual Aid – written agreement/contract for Fire/Ambulance and HazMat
Mutual Aid Agreements – Public Works	Agreement for regional coordinated emergency highway maintenance services.	None identified. Public Works MAA signed 04/28/03.
VEM Training	Training provided by state to ensure emergency responders are adequately prepared to respond to emergency incidents.	Identified as a mitigation action item in draft LHMP
Highway Department	Municipal department responsible for overseeing all aspects of municipal road network, including maintenance and construction.	None identified.
Town Clerk & Treasurer	Responsible for receiving and recording town archives, recording deeds, filing vital statistics information, running treasury.	None identified

Financial Resources

Capability	Description	Improvement Opportunity
Town Budget	Annual municipal operating budget, approved at Town Meeting	Consider adding Emergency Management funding to budget
Taxing Authority	Ability to assess and collect property taxes.	None identified

Zoning and Regulations

Capability	Description	Improvement Opportunity
National Flood Insurance Program (NFIP)	Provides ability for residents to acquire flood insurance.	None identified. Weston has been an NFIP member since 1992.
SFHA bylaws	Regulates development in FEMA identified SFHAs.	None identified. Currently included in Weston zoning bylaws.
Zoning	Regulates the development and division of land, standards for site access and utilities	None identified
Road Standards	Design and construction standards for roads and drainage systems.	None identified. State road standards adopted.
Wetland Protections	Protection of environment, water resources, wildlife, biota. Protected by 1990 Vermont Wetland Rules	None identified.
River Corridor bylaws	Regulates development in River Corridors as identified by Vermont ANR.	Consider including River Corridor bylaws in zoning bylaws.
Sewage Regulations	Regulates on-site sewage systems.	None identified. Town Sewage Ordinance in place

Outreach and Education

Capability	Description	Improvement Opportunity
Town Website	Municipal website providing relevant information to residents and businesses about public meetings, resources, etc.	Provide additional information on emergency management and preparedness, and invasive species on town website.

PLAN MAINTENANCE PROCESS

Monitoring and Updating the Plan – Yearly Review

Once the plan is approved and adopted, the Emergency Management Director (EMD) and the Planning Commission, along with interested and appointed volunteers and stakeholders, will continue to work with the Windham Regional Commission to monitor, evaluate, and update the plan throughout the next 5-year cycle. The plan will be reviewed annually before Town Meeting Day at a Selectboard meeting along with the review of the town's Local Emergency Management Plan (LEMP). This meeting will allow town officials and the public to discuss the town's progress in implementing mitigation actions and determine if the town is interested in applying for grant funding for projects that can help mitigate future hazard events. This could include bridge and culvert replacements, road replacements and grading, as well as buying out any repetitive loss structures that may be in the Special Flood Hazard Area. Windham Regional Commission's emergency planner will assist the EMD in Weston with this review, as requested by the Town. Progress on actions will be tracked using a table that WRC will provide to the Town. There will be no changes to the plan, unless deemed necessary by the Town; if so the post disaster review procedure will be followed.

Plan Maintenance – 5 Year Update and Evaluation Process

The Hazard Mitigation Plan is dynamic. To ensure that the plan remains current and relevant, it is important that it undergo a major update periodically as required in 44 CFR § 201.6(c)(4)(i). This update process will be thorough and occur every five years. This update will include a thorough evaluation of the plan and incorporate any new requirements that FEMA has for Hazard Mitigation Plans. Participants outlined below will work with the Emergency Planner at the Windham Regional Commission (WRC) in accordance with the following procedure:

1. The Weston EMD will appoint a team to convene a meeting of the hazard mitigation planning committee. The EMD will chair the committee, and other members should include local officials such as Selectboard members, fire chief, zoning administrator, constable/police chief, road commissioner, Planning Commission members, health officer, Conservation Commission members, interested stakeholders, etc. The EMD will work with the Windham Regional Commission Emergency Planner and be the point person for the Town.

2. The WRC Emergency Planner will guide the Committee through the update process. This update process will include several advertised public meetings. At these meetings the Committee will use the existing plan and update as appropriate guided by the WRC Emergency Planner to address:
   - Update of hazard events and data gathered since the last plan update.
   - Changes in community and government processes, which are hazard-related and have occurred since the last review.
   - Changes in community growth and development trends and their effect on vulnerability.
   - Progress in implementation of plan initiatives and projects.
   - Incorporation of new mitigation initiatives and projects.
   - Effectiveness of previously implemented initiatives and projects.
   - Evaluation of the plan for its effectiveness at achieving its stated purpose and goals.
   - Evaluation of unanticipated challenges or opportunities that may have occurred between the date of adoption and the date of the report, and their effect on capabilities of the town.
   - Evaluation of hazard-related public policies, initiatives and projects.
   - How mitigation strategy has been incorporated into other planning mechanisms
   - Review and discussion of the effectiveness of public and private sector coordination and cooperation.
   - Impacts of climate change and how the local environment is changing due to climate impacts

3. From the information gathered at these meetings, and other interactions the Emergency Planner has with the Town, along with data collected independently during research for the update, the WRC Emergency Planner will prepare the updated draft in conformance with the latest FEMA Region 1 *Local Hazard Mitigation Plan Review Crosswalk* document.

4. The Planning Commission will review the draft report. Consensus will be reached on changes to the draft. Emphasis in plan updates will be put on critically looking at how the plan can become more effective at achieving its stated purpose and goals.

5. Changes will be incorporated into the Plan by the WRC Emergency Planner.

6. The EMD and town staff will notify the public that the draft is available for public comment. The Town will advertise and make available the draft plan to provide comments both electronically

and in hard copy. The draft plan will simultaneously be distributed electronically to adjacent towns for review and comment.

7. Public and adjacent town comments will be incorporated by the WRC Emergency Planner. The final draft will be provided to the individuals that participated in the update, for final review and comment, with review comments provided to the Committee and incorporated into the plan.

8. WRC Emergency Planner will finalize the plan with any remaining comments from the Emergency Management Director and others, and submit electronically to VEM and FEMA.

9. The Plan will be reviewed by the VEM State Hazard Mitigation Officer (SHMO) and FEMA Region 1.

10. SHMO and FEMA comments will be addressed in the plan by the WRC Emergency Planner.

11. The plan will be resubmitted as needed until the plan is approved pending adoption. Once the plan is approved by FEMA, it will be ready for adoption.

12. The Selectboard will adopt the plan and distribute to interested parties.

13. The final adopted plan will be submitted by the WRC Emergency Planner to VEM and FEMA.

14. FEMA will issue final approval of the adopted plan and the five year clock will begin again.

Post-Disaster Review/Update Procedure

Should a declared disaster occur, a special review will occur amongst the Planning Commission, the EMD, the WRC Emergency Planner, and those involved in the five-year update process described above. This review will occur in accordance with the following procedures:

1. Within six months of a declared emergency event, the town will initiate a post disaster review and assessment. Members of the State Hazard Mitigation Committee will be notified that the assessment process has commenced.

2. This post disaster review and assessment will document the facts of the event and assess whether existing Hazard Mitigation projects effectively lowered community vulnerability/damages. New mitigation projects will be discussed, as needed.

3. A draft After Action Report of the review and assessment will be distributed to the hazard mitigation committee.

4. A meeting of the committee will be convened by the Selectboard to make a determination of whether the plan needs to be amended. If the committee determines that NO modification of the plan is needed, then the report is distributed to local communities.

5. If the committee determines that modification of the plan IS needed, then the committee drafts an amended plan based on the recommendations and forwards to the Selectboard for public input.

6. The Selectboard adopts the amended plan after receiving approval-pending-adoption notification from FEMA.

Continued Public Participation
Maintenance of this plan and implementation of the mitigation strategy will require the continued participation of local citizens, agencies, and other organizations. To keep the public aware of and involved in local hazard mitigation efforts, the town will take the following measures:

- Provide hazard mitigation information at Town Meeting
- Schedule and advertise a planning meeting each year, soon after Town Meeting
- Seek participation from key players in addition to general public interest:
    - Selectboard
    - Planning Commission
    - Public Works
    - School
    - Fire & Rescue
    - Police
    - Emergency Management/ 911 Coordinator
- Post the hazard mitigation plan on the town website
- Selectboard will review current hazard mitigation committee members and consider whether new members should be added. Representatives of local businesses, nonprofits, academia, etc. should especially be considered.
- Notify the public of committee meetings through town bulletin board, town website, community forum, Chester Telegraph, etc.

APPENDIX

1. Adoption Form for Local Governing Body
2. Website advertisement for Draft Hazard Mitigation Plan Public Meetings
3. Flyer advertisement for Draft Hazard Mitigation Plan Public Meetings posted at Town Office
4. Email sent to adjacent towns/RPCs for public comment on the draft plan
5. Flyer advertising availability of Draft Hazard Mitigation Plan for public comment
6. Emails received during public comment period
7. Email sent to town staff and Hazard Mitigation Planning Committee for review of the draft
8. Emails received during town and Hazard Mitigation Planning Committee review period
9. April 14, 2022 Hazard Mitigation Committee meeting sign-in sheet
10. April 14, 2022 Hazard Mitigation Committee meeting agenda
11. May 10, 2022 Hazard Mitigation Committee meeting agenda
12. Damage photos from Tropical Storm Irene (these photos do not show the entire extent of damage in Weston)

1. PREREQUISITE

Adoption by the Local Governing Body

Certificate of Adoption
Town of Weston, VT
Selectboard

A Resolution Adopting the Local Hazard Mitigation Plan for the Town of Weston, VT

WHEREAS, the Town of Weston, VT has worked with the Windham Regional Commission to identify natural hazards, analyze past and potential future damages due to natural disasters, and identify strategies for mitigating future damages; and

WHEREAS, The Town of Weston, VT Local Hazard Mitigation Plan analyzes natural hazards and assesses risks within the community; and

WHEREAS, the Town of Weston, VT Local Hazard Mitigation Plan recommends the implementation of action(s) specific to the community to mitigate against damage from natural hazard events; and

WHEREAS, the Town of Weston, VT authorizes responsible agencies to execute their responsibilities to implement this plan for the purposes of long term risk reduction and increased community resiliency and;

WHEREAS, the Town of Weston, VT will follow the Plan Maintenance Process outlined in this plan to assure that the plan stays up to date and compliant; and

NOW, THEREFORE BE IT RESOLVED that the Town of Weston, VT adopts the *Town of Weston Local Hazard Mitigation Plan* as well as future revisions and maintenance required by 44 CFR 201.6 and FEMA for a period of five (5) years from the date of this resolution.

Duly adopted this 11 day of Oct 2022
date *month, year*

Selectboard

Denis Benson, Chair

Jim Linville

Anne Fuji'i

Charles Goodwin

Lisa Yrsha

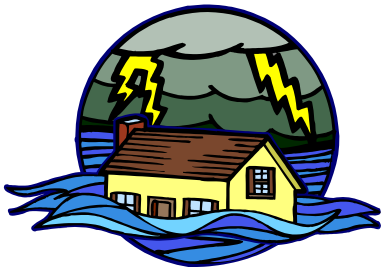
ATTEST

Natalie Boston, Selectboard Assistant

2. Website advertisement for Draft Local Hazard Mitigation Plan (posted 3/29/22 – 5/11/22)

3. Flyer advertisement for Draft Hazard Mitigation Plan posted at Town Office

Update of the Weston Local Hazard Mitigation Plan Public Meeting Announcement



2 Meeting Dates: April 14 and May 10, 2022
Time: 6:00 -7:30 PM
Weston Town Hall, 12 Lawrence Hill Road, and via Zoom
See Weston Town website for meeting details

Come learn about and help to update Weston's Local Hazard Mitigation Plan! What hazards does the town face? What actions can the Town take now to lower vulnerability before the next natural hazard strikes?

For more information, contact:
Matt Bachler at 802-257-4547 x112 or
mbachler@windhamregional.org

WINDHAM REGIONAL COMMISSION

4. Email sent to adjacent towns/RPCs for public comment on the draft plan

Mon 8/1/2022 12:32 PM

MB

Matthew Bachler <mbachler@windhamregional.org>

Draft Weston Hazard Mitigation Plan - Public Review Period

To 'townadmin@londonderryvt.org'; 'village@tds.net'; 'jeff@chasevermont.com'; 'mttabor@vermontel.net'; 'Clerk@landgrove.vermont.gov'; 'peruclerk@gmail.com'; 'astrohl@bcrcvt.org'; 'sbourque@rutlandrpc.org'; 'ahopkins@marcvt.org'

Cc 'selectboard westonvt.org'

You forwarded this message on 8/2/2022 10:33 AM.

Weston_ 2022 Haz Mit Plan_DRAFT 8-1-22.pdf
7 MB

Dear Towns and RPCs Adjacent to the Town of Weston,

Please find attached a draft of the Weston Local Hazard Mitigation Plan. The Windham Regional Commission recently worked on updating the Weston LHMP with the help of the Weston Hazard Mitigation Planning Committee. We are now distributing it to towns and RPCs adjacent to Weston for your review and comment. If you are not the appropriate person at your town or RPC, please forward this to the correct individual for review. **We are requesting that you provide any comments by Monday, August 15th**. Comments and questions can be sent directly to me.

Thank you for your time!

Matt

Matthew Bachler, AICP
Senior Planner
Windham Regional Commission
139 Main Street, Suite 505
Brattleboro, VT 05301
(802) 257-4547, ext. 112
www.windhamregional.org

Tue 8/2/2022 10:34 AM

MB

Matthew Bachler <mbachler@windhamregional.org>

Draft Weston Hazard Mitigation Plan - Public Review Period

To 'clerk@vermontel.net'

Weston_ 2022 Haz Mit Plan_DRAFT 8-1-22.pdf
7 MB

Hi Jeanette,

Please find attached a draft of the Weston Local Hazard Mitigation Plan. The Windham Regional Commission recently worked on updating the Weston LHMP with the help of the Weston Hazard Mitigation Planning Committee. We are now distributing it to towns and RPCs adjacent to Weston for your review and comment. If you are not the appropriate person at your town or RPC, please forward this to the correct individual for review. **We are requesting that you provide any comments by Monday, August 15th**. Comments and questions can be sent directly to me.

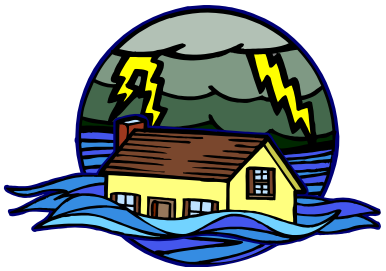
Thank you for your time!

Matt

Matthew Bachler, AICP
Senior Planner
Windham Regional Commission
139 Main Street, Suite 505
Brattleboro, VT 05301
(802) 257-4547, ext. 112
www.windhamregional.org

5. Flyer advertising availability of Draft Hazard Mitigation Plan for public comment

Weston Hazard Mitigation Plan



Public Comment Period

The draft Weston Hazard Mitigation Plan is now available for public review on the town website: https://www.westonvt.org/. A hard copy is also available at the Town Office Monday – Friday, 9:00 a.m. – 2:00 p.m. **The plan will be available for comment until August 15, 2022**.

Anyone who would like to comment on the plan should contact Matt Bachler at the Windham Regional Commission at 802-257-4547 x112 or mbachler@windhamregional.org.

WINDHAM
REGIONAL
COMMISSION

6. Emails received during public review period

From: Michael Smilovich <michaelsmilovich@gmail.com>
Sent: Monday, August 15, 2022 4:06 PM
To: selectboard westonvt.org <selectboard@westonvt.org>
Subject: Re: LHMP Draft

Natalie,

After a thorough review of the HAZ-MIT plan, the points of contention I have are minor and wouldnt contribute to the overall message of the Plan. Thank you!

-Mike

7. Emails sent to town staff and Hazard Mitigation Planning Committee for review of the draft

SW

Fri 7/15/2022 12:42 PM

selectboard westonvt.org <selectboard@westonvt.org>

DRAFT Weston Local Hazard Mitigation Plan

To Michael Smilovich; Kenneth Hall; Weston Fire Department; James Linville; Annie Fujii; Deborah Hennessey; garage westonvt.org; clerk westonvt.org; denisbenson1118@yahoo.com; Jeff Yrsha; Charles Goodwin; Michael Smilovich; fprobstjr

Cc Matthew Bachler

If there are problems with how this message is displayed, click here to view it in a web browser.

Please review the draft and provide any comments to me (or to Matthew) by Friday, July 29th.

Natalie Boston
Administrative Assistant
Weston Selectboard
P.O. Box 98
Weston, VT 05161
802-824-6988
selectboard@westonvt.org
www.westonvt.org

Due to COVID-19 I am currently working from home most days. I can be reached on my cell: 802-770-4844

8. Emails received during town and Hazard Mitigation Planning Committee review period

From: Annie Fujii <ann.fujii@gmail.com>
Sent: Thursday, July 28, 2022 12:29 PM
To: James Linville <jimlinville@gmail.com>
Cc: Charles Goodwin <cmgood04@gmail.com>; Denis Benson <denisbenson1118@yahoo.com>; Lisa.yrsha@gmail.com <Lisa.yrsha@gmail.com>; selectboard westonvt.org <selectboard@westonvt.org>
Subject: Re: Proposed language for the LHMP

I like your suggestion but wonder if "improve coordination " is needed just say or " consolidating with other local fire departments" I'm fine with either way.

On Thu, Jul 28, 2022 at 12:23 PM James Linville <jimlinville@gmail.com> wrote:

> Under the 'Issue Detail' of "Weston Fire Station is located in the SFHA and River Corridor of the West River and has experienced numerous floods" I am suggesting that we change the 'Action' from "Form advisory committee to make recommendations to Selectboard on costs/benefits of retrofitting existing station or building a new building on an alternative site and provide information on funding sources" to the following:
>
> "Form advisory committee to make recommendations to Selectboard on costs, benefits and possible funding sources to minimize flood impact, including upgrades to the existing station, building a new station, and improving coordination or consolidating with other local Fire Departments."
>
> Note that in the plan the responsible entities - who are charged with forming the committee - are the SB (that's us, folks), the Planning Commission and the WVFD, with the committee to be formed in 2023 and reporting to the SB in 2024, all reasonable dates. I'm not sure that the Planning Commission will have much to add to this, but they should be notified that a committee is being formed and asked if they have any suggestions for committee members.
>
> Even though the deadline for updates to the LHMP is tomorrow, I think it would be appropriate for us to discuss and vote on it at our next SB meeting. In the meantime, unless I hear otherwise, I think we should have Natalie update the plan tomorrow and send the Planning Commission a copy of the changes (a copy of this email should do it).
>
> Jim
>
> --
> Jim Linville
> 18 Ettinger Road
> Weston, VT 05161
>
> Home: 802-824-6761
> Cell: 203-858-4113

9. April 14, 2022 Hazard Mitigation Committee meeting sign-in sheet

Weston, VT Local Hazard Mitigation Plan Development Meeting
April 14, 2022
Location: Weston Town Office

SIGN IN SHEET

Name and email address	Affiliations – Please list all	Town where you live
Ken Hall hall.kenneth.e@gmail.com	Conservation Commission but here on my own	Weston
Michael Smkovich michaelsmkovich@gmail.com	Weston FD	Londonderry
FRED PROBST FPROBSTJR@GMAIL.COM	WESTON FIRE DEPT.	ANDOVER
RYAN HART RHART 05161 @ COMCAST.NET	CHIEF - WESTON FIRE DEPT.	LONDONDERRY
Almon Crandall	Road Farman	Weston
Tom Linville	Select Board	Weston
Dennis Benson	Select Board	Weston

10. April 14, 2022 Meeting agenda

Weston Local Hazard Mitigation Plan
Update Meeting #1
April 14, 2022, 6:00 – 7:30 p.m.
Weston Town Hall, 12 Lawrence Hill Road

Agenda

1. Overview of Updating the Weston Local Hazard Mitigation Plan

- Purpose
- Process

2. Hazards

- Brief review of existing Weston Local Hazard Mitigation Plan
- Discuss hazard events that have occurred since the last Plan
- Complete hazard ranking worksheet
- Discuss meeting participant survey results
- Decide what the updated Plan will address
- Mark up map with local hazard notes

3. What to think about for the next meeting

- Next Meeting Date: Tuesday, May 10th, from 6:00 – 7:30PM

11. May 10, 2022 Meeting agenda

Weston Local Hazard Mitigation Plan
Public Update Meeting #2
Weston Town Hall, 12 Lawrence Hill Road
Tuesday, May 10, 2022, 6:00 - 7:30pm

Agenda

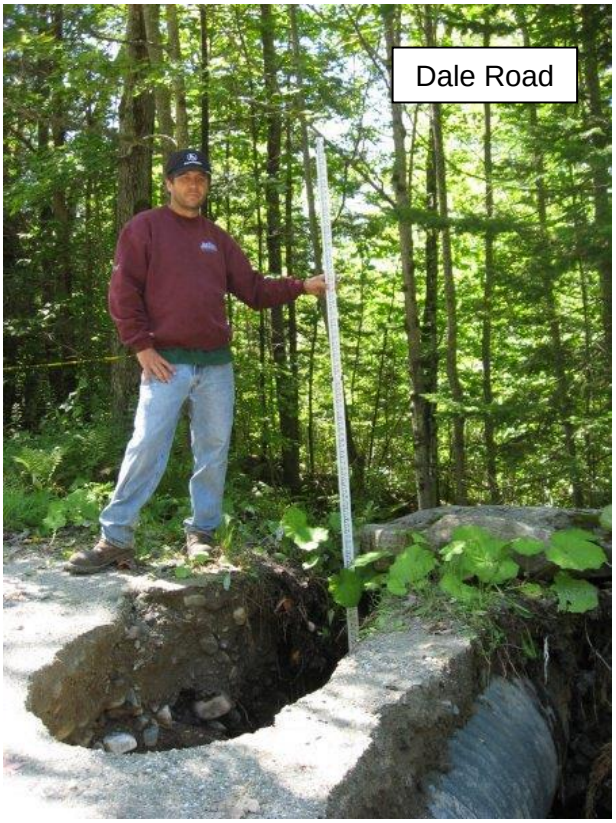
1. **Review of decisions made on April 14th regarding hazards to address in the Updated Plan**
   a) Highest Priority Natural Hazards:
      - Fluvial Erosion
      - Inundation Flooding
      - Invasive Plants/Insects

2. **Mitigation Goals and Actions**
   a) Discuss Mitigation Goals vs. Actions
   b) Review of Mitigation Actions Table from Current Plan
   c) Create a Mitigation Actions Table for the Updated Plan
   d) Identify gaps and capabilities with implementation

3. **Other Updates**
   a) Discuss recent mitigation work completed by the town
   b) Discuss development trends – new developments, upcoming developments
   c) Overall resiliency concerns or ideas
   d) Review of other elements and address questions that weren't discussed

4. **Next Steps**

12. Damage photos from Tropical Storm Irene (these photos do not show the entire extent of damage in Weston)



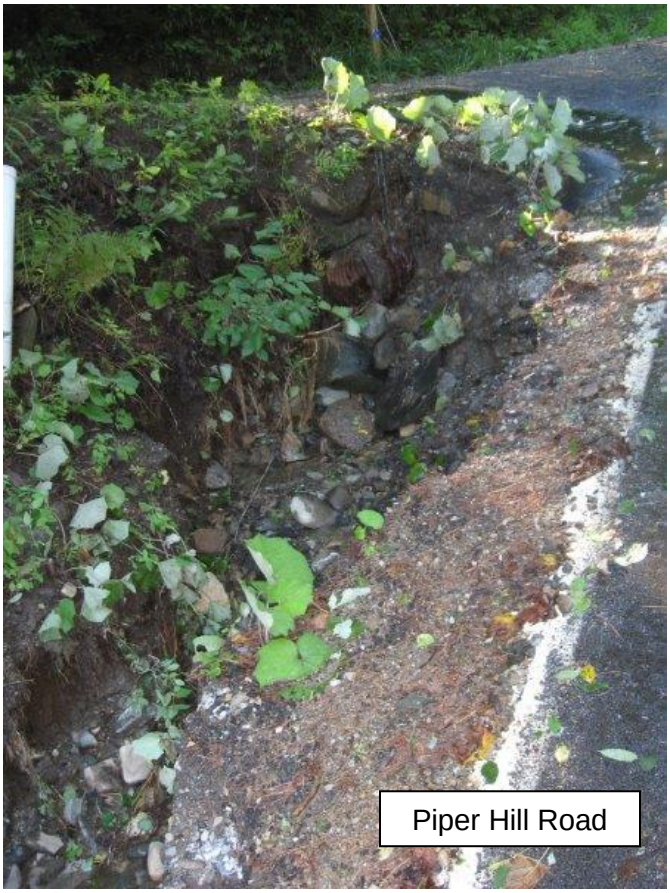

Holden Hill Road


Slawson Road


Burton Road


Piper Hill Road


Piper Hill Road


Piper Hill Road


Piper Hill Road