Town of Hartland, Vermont

Local Hazard Mitigation Plan

January 2015 Draft

Prepared by the Two Rivers-Ottauquechee Regional Commission and the Town of Hartland

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I. Introduction

Natural and human-caused hazards may affect a community at any time. They are not usually avoidable; however, their impact on human life and property can be reduced through community planning. Accordingly, this Local Hazard Mitigation Plan (hereafter referred to simply as the Plan) seeks to provide an all-hazards mitigation strategy that will make the community of Hartland more disaster resistant.

"Mitigation" is defined as any sustained action that reduces or eliminates long-term risk to people and property from natural and human-caused hazards and their effects. Previous Federal Emergency Management Agency (FEMA), State and Regional Project Impact efforts have demonstrated that it is less expensive to anticipate disasters than to repeatedly ignore a threat until the damage has already been done. While hazards cannot be eliminated entirely, it is possible to identify prospective hazards, anticipate which might be the most severe, and recognize local actions that can be taken ahead-of-time to reduce the damage. These actions, also known as 'hazard mitigation strategies' can (1) avert the hazards through redirecting impacts by means of a structure or land treatment, (2) adapt to the hazard by modifying structures or standards or, (3) avoid the hazard through improved public education, relocation/removal of buildings in the flood zone, or ensuring development is disaster resistant.

II. Purpose of the Plan

The purpose of this Plan is to assist Hartland in identifying all hazards facing the town, ranking them, and identifying strategies reduce risks from known priority hazards.

The Town of Hartland seeks to be in accordance with the strategies, goals, and objectives of the State Hazard Mitigation Plan.

The 2015 Hartland Local Hazard Mitigation Plan is the first stand-alone mitigation plan drafted for the Town. Previously, the Town had a town-specific 2011 Annex in the Regional Pre-Disaster Mitigation Plan. This new Plan has been reorganized and new sections have been added:

- Program eligibility subsequent to plan approval
- Authority for plan development
- Participating jurisdictions
- Funding for plan development
- Brief information about the community

Old assumptions have been challenged throughout and new information has been added to make the plan stronger and more useful for the Hartland town officials and residents who will implement the hazard mitigation strategies in the future.

III. Community Profile

The Town of Hartland, located in Windsor County, in the Eastern-Central section of the State on the Connecticut River bordering the State of New Hampshire, has an area of 28,544 acres, or 44 square miles and a population of 3,383 (ACS 2008-2012).

Highways Route 4, Route 5, Route 12 and Interstate 91, provide the major highway access to the Town. Railroads passing through the town are Amtrak and New England Railroads.

The town has a volunteer fire department. Fire station 1 is located on Route 12, Hartland. Station 2 is located on Clay Hill Road, North Hartland. The Fire Department has mutual aid agreements with Upper Valley Mutual Aid and the Upper Valley Regional Emergency Services Association (U.V.R.E.S.A.), which include 12 towns in New Hampshire, 10 towns in Vermont, and the VA Hospital in Hartford. Mutual Aid assistance is intended to supplement rather than replace local efforts.

Law enforcement is handled by a Town Constable and the State Police with headquarters in Bethel. Hartford Dispatch and Bethel State (now Rockingham) Police Barracks provide dispatching services.

The town Highway Maintenance garage is located on Route 12 and is responsible for 75 miles of highways within the Town. The State Highway district garage is located in White River Junction on Beswick Drive.

There is one elementary school, one nursery school, and one day care facility in Hartland. School buses transport the public elementary school students. The town has experienced population growth over the last 10 years due to the influence of Hanover, Lebanon and White River Junction.

Primary industries in town are Netam, D&D Gravel/Excavating, and Britton Lumber.

The nearest hospitals are the Mt. Ascutney Hospital, located in Windsor; VA Medical Center, in White River Junction; Dartmouth-Hitchcock Medical Center, Lebanon, N.H.; Alice Peck Day, Lebanon, N.H.; and, Valley Regional Hospital, Claremont, N.H.

The US Army Corps of Engineers North Hartland Lake flood control property extends from the North Hartland Dam in a rural residential area of Hartland to the heavily-visited Quechee Gorge, the new Visitor Center and the State Park area in Hartford. Many homes in Hartland are located close to brooks. Lull's Brook flows through two of the town's densely developed village areas, Three Corners and Four Corners. As noted previously, much development in town has followed the logical path provided by the brooks and so many homes are located close to these streambanks. It is recognized that the interests of property owners in expanding or redeveloping these residences must be balanced with the need to prevent further water quality degradation.

The FEMA Flood Insurance Rate Maps for Hartland identified floodplain areas along McArthur Brook, the Connecticut River, the Ottauquechee River and its tributaries, Lull's Brook and its tributaries including Alder Meadow Brook, and portions of Babcock Brook along Route 12. These mapped floodplains cover only a small portion of the land area of Hartland. The lands surrounding the Army Corps of Engineers North Hartland Lake are controlled by the ACOE as part of the flood control dam project.

IV. The Planning Process

A. Plan Developers

Samantha Holcomb and Ellie Ray, both Land Use Planners at the Two Rivers-Ottauquechee Regional Commission (TRORC), assisted the Town of Hartland with updating its Hazard Mitigation Plan. Committee members who assisted with the revisions include:

This section of the Plan satisfies 44 CFR 201.6(b)(1) and 201.6(c)(1) (or, A3.a and A3.b of FEMA's Local Mitigation Plan Review Guide, 2011).

Name	Role/Organization	How Participation Was Solicited
Mary O'Brien	Selectboard Member	On 02/20/2014, Samantha Holcomb and Ellie Ray (TRORC staff) reached out to the Hartland Selectboard, and the Town Manager (Bob Stacey). TRORC staff coordinated with Hartland town officials to set up an introductory meeting. The first meeting was scheduled for 06/03/2014. TRORC's staff attended that meeting, followed by several more meetings in which participants revised and developed the HMP. See below for more meeting-specific details.
Tom White	Selectboard Member	
Bob Stacey	Town Manager/ Emergency Coordinator	
Charles Jeffries	Planning Commission	
Skip Erskine	Highway Department	
Doug Harrington	Highway Department/ Hartland Volunteer Fire Department	
Bill Barrows	Highway Department/ Hartland Volunteer Fire Department	
Nicole Buck	Hartland Volunteer Fire Department	

B. Plan Development Process

The 2011 Hartland Annex was originally part of the 2008 multi-jurisdictional Regional Hazard Mitigation Plan, drafted by Two Rivers-Ottauquechee Regional Commission, and approved by FEMA on September 30, 2008 with its first local annex. The Hartland Annex received subsequent FEMA approval, but since it was part of a larger plan, FEMA treats its start date as September 30, 2008 and so the Hartland Annex expired on September 30, 2013.

This section of the Plan satisfies the Element A: Planning Process requirements set out in 44 CFR 201.6.

This Plan has been reconstructed now as a single jurisdiction, standalone Hartland Local Hazard Mitigation Plan that will be submitted for individual approval to FEMA. As such, several sections have been added or updated to include all necessary information.

The changes to this Plan include:

- **General**
  - New sections: Plan Development Process, 2011 Mitigation Strategies Status Update chart, Existing Hazard Mitigation Programs, Projects & Activities, Plan Maintenance;
  - Data updates: New hazard incidents, emergency declarations, census data;
  - Hazards have been reevaluated with the hazard ranking system used by the Vermont Division of Emergency Management and Homeland Security.
- **Hazards Analysis**
  - Hazardous Material Spill and flood-related hazards remain on the list of "top hazards," which reflect the local officials' belief that the Town is still vulnerable to the hazards caused by hazardous material spills;
  - Severe Weather, Landslides/Mudslides/Rockslides, Structural Fire and Wildfire are now on the list of "top hazards," which reflects the intention/priorities of local officials to expand their analysis of hazards that the Town is or may vulnerable to in the next five years;
  - The hazard Extreme Cold/Snow/Ice Storm has been removed from the list of "top hazards;"
  - Severe Weather events are depicted in a chart that shows the multiple hazards involved during each event;
  - For each hazard, a location/vulnerability/extent/impact/likelihood table has been added to summarize the hazard description.
- **Maps**
  - A map of the Town of Hartland depicting critical facilities, town infrastructure, and the NFIP designated floodway and 100 year floodplain has been added.

The following represent the avenues taken to draft the Hartland Hazard Mitigation Plan:

- **Activities**
  - 06/02/2014: Met with the Hartland HMP committee members to introduce the update/plan development process, reviewed Hartland's existing Hazard Mitigation Plan (adopted in April 2011), considered the status of various mitigation actions, potential hazards, and the data collection/research process. During this meeting, the Hartland committee also discussed and ranked hazards. Determined the "Top Hazards" in the Town. TRORC staff explained to the committee what the next steps in the process were (draft plan, then schedule a meeting to review and discuss it).
  - 09/08/2014: Met with committee to discuss first draft. The entire draft was reviewed in detail, with TRORC staff making note of any comments or errors.
  - 11/05/2014: Met with the committee to discuss and devise a list of hazard mitigation actions to address the Town's top five hazards, as determined during the hazard ranking exercise on 09/08/2014.

- 02/02/2015: TRORC staff attended a Selectboard meeting to inform Hartland residents about the work that had been done to update the Town's Hazard Mitigation Plan. The Selectboard agenda is posted at the Town Office. TRORC staff also asked for comments at the meeting, but none were received.

- **Public participation and involvement** (*44 CFR 201.6(b)(1)*)
  - 06/06/2014: A notice was placed in the Two Rivers-Ottauquechee Regional Planning Commission Newsletter alerting recipients that Hartland was engaging in hazard mitigation planning and updating their Hazard Mitigation Plan. Contact information was provided in the notice to allow those interested in Hartland's efforts to receive more information and how to find out about upcoming meetings. No comments were received.
  - Posted a notice in four local papers alerting the public to the Hazard Mitigation Planning process that was taking place. Contact information was provided in the notice to allow those interested in Hartland's efforts to receive more information and how to find out about upcoming meetings. No comments were received.
    - Valley News—ran 03/20/2014
    - The Herald of Randolph—ran 03/20/2014
    - Journal Opinion—ran 03/20/2014
    - Vermont Standard—ran 03/20/2014
  - Posted a notice in four local papers alerting the public to the Hazard Mitigation Planning process that was taking place. Contact information was provided in the notice to allow those interested in Woodstock's efforts to receive more information and how to find out about upcoming meetings. No comments were received.
    - Valley News—ran 01/15/2015
    - The Herald of Randolph—ran 01/15/2015
    - Journal Opinion—ran 01/15/2015
    - Vermont Standard—ran 01/15/2015
  - 02/02/2015: TRORC staff attended a Selectboard meeting to inform Hartland residents about the work that had been done to update the Town's Hazard Mitigation Plan. The Selectboard agenda is posted at the Town Office. TRORC staff also asked for comments at the meeting, but none were received.
- **Governmental participation and involvement** *(44 CFR 201.6(b)(2)*)
  - Sent revised draft to Selectboard Chair and provided contact information for receiving comments via hard copy/email —01/13/2015
    - No comments were received.
  - Sent revised draft to the Planning Commission Chair and provided contact information for receiving comments via hard copy/email —01/13/2015
    - No comments were received.
  - Sent revised draft to the Army Corps of Engineers (North Hartland Lake) and provided contact information for receiving comments via email5 —01/13/2015
  - Sent revised draft to Division of Emergency Management and Homeland Security—
- **Neighboring community participation and involvement** *(44 CFR 201.6(b)(2)*)

- 06/06/2014: A notice was placed in the Two Rivers-Ottauquechee Regional Planning Commission Newsletter alerting recipients that Hartland was engaging in hazard mitigation planning and updating their Hazard Mitigation Plan. Contact information was provided in the notice to allow those interested in Hartland's efforts to receive more information and how to find out about upcoming meetings. No comments were received.
- Posted a notice in four local papers alerting the public to the Hazard Mitigation Planning process that was taking place. Contact information was provided in the notice to allow those interested in Hartland's efforts to receive more information and how to find out about upcoming meetings. No comments were received.
  - Valley News—ran 03/20/2014
  - The Herald of Randolph—ran 03/20/2014
  - Journal Opinion—ran 03/20/2014
  - Vermont Standard—ran 03/20/2014
- Sent revised draft to neighboring towns' Selectboards for comment and provided contact information for receiving comments via hard copy/email —01/13/2014
  - Towns of: Hartford, Windsor, West Windsor, and Woodstock
  - No comments were received.

- **Review of existing plans, studies, reports, and technical information** (*44 CFR 201.6(b)(3)*)

This section of the Plan satisfies 44 CFR 201.6(b)(3) (or, A4.a and A4.b of FEMA's Local Mitigation Plan Review Guide, 2011).

  - Hartland Hazard Mitigation Plan (Adopted 10/21/2011)
    - This Plan was referenced extensively during the plan development process, especially in regard to the worst threats and mitigation action strategies identified in 2011.
  - Hartland Local Emergency Operations Plan (LEOP) (Adopted 05/05/2014)
    - The Hartland LEOP was provided a general understanding of the Town's emergency operations.
  - Hartland Town Plan (Adopted 08/20/2012)
    - The Town Plan provided TRORC's staff with background information on the community, as well as more detail on their emergency services.
  - Hartland's Flood Hazard Area Regulations (Adopted 09/04/2007)
    - The Flood Hazard Bylaw was referenced when drafting the Severe Weather sections of this Plan.
  - Ottauquechee River Watershed Stream Geomorphic Assessment (January 29, 2013)
    - This document provided background information on the Ottauquechee River, which empties into the Connecticut River in North Hartland.
  - Flood Insurance Study: Windsor County, Vermont (09/28/2007)
    - This resource provided specific information on the watercourses within the Town of Hartland, notably the Ottauquechee River and the Connecticut River.
    - Relevant peak flow data for the Connecticut River on page 21, while peak flow data regarding the Ottauquechee River can be found on page 24.

- This information was incorporated into the mapping/GIS components of this Plan; specifically in determining the number of structures that are vulnerable to SFHA, and into the Severe Weather section of this Plan.

C. Status Update on Mitigation Actions Identified in 2011

The following table outlines the mitigation actions that were proposed in Hartland's 2011 All-Hazard Pre-Disaster Mitigation Plan for the Town of Hartland (adopted on October 21, 2011 as an appendix to the Two Rivers-Ottauquechee Regional Commission's multi-jurisdictional Pre-Disaster Mitigation Plan).

This section of the Plan satisfies the requirements of 44 CFR 201.6(d)(3).

Participants in the new Plan update process reviewed these actions and reported on the status of each:

Mitigation Action	Who (Leadership)	When (Timeframe)	How (Funding/ Support)	2015 – Status of Mitigation Actions
ALL HAZARDS 1. Ensure that the Basic Emergency Operations Plan (BEOP) is current. As of 2014, this document is now called the Local Emergency Operations Plan (LEOP).	Town Manager	Every April	With TRORC assistance	Complete for 2014; the LEOP was adopted by the Selectboard on 05/05/2014.
2. Maintain activity in Upper Valley (UV) Mutual Aid.	Hartland Volunteer Fire Department	Revised each April	Town Budget/ Emergency Funds available through State/Fed. Declaration	The Town maintains their activity in UV Mutual Aid annually.
3. Continue involvement with LEPC 3 + LEPC 12.	Town representatives (Selectboard, Fire Dept.)	4-6 times a year	Volunteered time	Because the Town of Hartland is located on the border of two LEPC regions, Hartland representatives continue to attend both LEPC 3 and LEPC 12 meetings.
4. Keep Town Plan Current.	Planning Commission, with assistance from TRORC	Updated every five years	Town Budget/ Volunteered time	The Town of Hartland has a current Town Plan, which was adopted on August 20, 2012.
5. Update Emergency Operations Plan (EOP).	Fire Dept. with assistance from TRORC	Review and update as needed every year	State funding through TRORC/LEPC 3	Complete for 2014; the LEOP was adopted by the Selectboard on 05/05/2014.

Mitigation Action	Who (Leadership)	When (Timeframe)	How (Funding/ Support)	2015 – Status of Mitigation Actions
6. Emergency training for local officials.	Town Manager, with assistance from LEPC 3	As needed/ available	State and Federal training/ funding programs	Town officials continue to receive emergency training—all Fire Department members and the Town Manager are trained in ICS and NIMS; Fire Department members are trained to the HAZMAT Awareness level and receive annual refresher courses; approximately 15 individuals in the Fire Department have been "Firefighter 1" certified; and approximately 12 individuals are trained EMTs.
<u>FLOOD</u> 7. Continue inspection and road improvement planning program that addresses culvert survey and upgrade and ditching.	Road Foreman and Town Manager	Each August	Local resources	This action is in progress and ongoing.
8. Improve flood and fluvial erosion Hazard Identification and Mapping.	Town Manager	2010	With TRORC and state assistance	In progress. The Town Manager recently sent a notification to homeowners whose properties were located in the Special Flood Hazard Area (SFHA).
9. Identify frequently flooded roads and bridges.	Road Foreman and Town Manager	Every May	Local resources	This action is ongoing, but some of the higher-risk areas have been identified in the Town's LEOP.
<u>HAZMAT</u> 10. Identify and create emergency access points to the railroad corridor in locations where access is presently difficult in the event of a derailment.	Emergency Management Coordinator	April 2013	With state transportation agency assistance	The work to satisfy this action is not complete, and remains in process.

Mitigation Action	Who (Leadership)	When (Timeframe)	How (Funding/ Support)	2015 – Status of Mitigation Actions
<u>WINTER STORM</u> 11. Educate citizens on preparedness for winter travel and extended power outages.	Emergency Management Coordinator	Each October	Local resources	The Town includes its snow removal plan (which specifies the time when specific roads will be plowed in the winter) in the annual Town Report, on the Town's website and on the Town's listserv.
12. Emergency power backup for school and Damon Hall.	Principal/Town Manager	2013	State or Federal Grants may be needed	This action has not been completed. Town officials were not sure if installing a generator at Damon Hall was the priority location for a generator installation. The priority may actually be for the Fire Department building to have a generator installed instead. Finally, Town officials were unsure if there was any movement from the school to install a generator at that location.
13. Continue a regular schedule of tree trimming along power lines.	Emergency Management Coordinator	Each September	Local resources	Green Mountain Power trims along the power lines, and Town Officials believed they did a satisfactory job.

There are a few scattered single-family homes that are being constructed in the Town of Hartland, but there are not many instances of this type of development. There are currently no residential developments currently under construction. However, there is one development project that may be on the horizon is located on a parcel of land off of Eastman Road. This project would consist of a subdivision of the parcel of land into five lots. Finally, there is a commercial development proposal for a gas/station convenience store to be built at the I-91 intersection that is currently caught up in court.

D. Existing Hazard Mitigation Programs, Projects & Activities

This section of the Plan satisfies the requirements of 44 CFR 201.6(c)(3).

The Town of Hartland is currently engaged in the following hazard mitigation programs, projects and activities:

	Type of Existing Authority / Policy / Program / Action	Resources: Staffing & Funding	Ability to Expand/Improve on
Community Preparedness Activities	Program—Annual update of Hartland's Local Emergency Operations Plan (LEOP). Last updated and approved on 05/05/2014.	Staff time from the Town Manager; assistance from TRORC. Funding from Vermont DEMHS.	Current program works well, no need to expand or improve on.
	Program— Participation in the Local Emergency Planning Committee Districts 3 and 12 (LEPC 3 and 12).	Volunteer time from Fire Department members; TRORC convenes meetings. Funding from Vermont DEMHS.	No need to expand or improve on attendance, as it is satisfactory.
	Program— Inclusion in the Orange and Windsor Counties Public Works Emergency/Non-Emergency Mutual Aid group, which serves as a compact to provide a framework through which nine municipalities give and receive mutual aid	Staff time from the Town Manager. Volunteer time from Hartland Volunteer Fire Department members. Funding from local sources (town and/or fire department budgets).	This program is ongoing, and there is no need to expand or improve upon it as it is currently satisfactory.
Insurance Programs	Authority/ Program— participation in National Flood Insurance Program (NFIP) [Note: This section of the Plan satisfies the requirements of 44 CFR 201.6(c)(3)(ii).]	The Hartland Town Manager serves as the NFIP Administrator. Assistance from TRORC and Vermont ANR. Funding from local resources—annual budget.	Hartland's initial Flood Hazard Boundary Map was identified on 12/24/76. The Town's initial Flood Insurance Rate Map (FIRM) was dated 6/15/88. The Town's FIRM has been updated, and the current effective map date is 9/28/07. This bylaw regulates new construction in the Special Flood Hazard Area. The Town continues its participation in the NFIP by administering and enforcing its flood hazard bylaw, which was last updated and adopted on 09/04/2007.
Land Use Planning	Policy/Program—Hartland Town Plan Adopted on 08/20/2012	Volunteer time from Planning Commission, and assistance from TRORC and other state agencies on specific subject matter. Funding from Municipal Planning Grants.	The Town Plan is updated every five years, as required by statute. The Planning Commission may expand or improve on any section it deems necessary, or that is required by changes in state statue.
	Completed Authority— Hartland Flood Hazard Area Regulations Adopted on 09/04/2007	Volunteer time from the Planning Commission, and assistance from TRORC and possibly Vermont ANR. Funding from Municipal Planning Grants.	During the Town Plan review/update period, these Regulations are also reviewed and updated if needed. At this time, local officials believe the flood regulations are satisfactory.

	Type of Existing Authority / Policy / Program / Action	Resources: Staffing & Funding	Ability to Expand/Improve on
Hazard Control & Protection of Critical Infrastructure & Facilities	Policy/Program— Hartland Hazard Mitigation Plan Adopted on 10/21/2011	Volunteer time from Town officials; assistance from TRORC and Vermont DEMHS. Funding from FEMA; Vermont DEMHS; TRORC.	The 2015 Hartland Hazard Mitigation Plan will replace the 2011 Plan. The 2015 HMP has evolved from the 2011 Plan and has greatly expanded and improved upon it. Future iterations of the Town's LHMP will be updated by the Town at least every five years.
	Upcoming Program— Completion of full culvert inventory with TRORC in 2015. This culvert inventory will include georeferenced locations for all Hartland culverts and recommendations for culvert upgrades to reduce vulnerabilities to flooding.	Personnel time from Town Road Commissioner/Foreman; assistance from TRORC. Funding from Better Backroads grant/CDBG-DR monies; local personnel time and funding.	The Town will use the culvert inventory to further its culvert improvement program by helping to prioritize culvert upgrade projects. The Town will keep the culvert inventory up-to-date on a routine basis. Previously, the Town completed a culvert inventory in 2012 with assistance from TRORC.
Education/ Public Outreach	Ongoing Action— Emergency Shelter information is posted on the Town's website	Staff time from the Town Manager/other town staff. Funding from local sources—town budget.	This is an ongoing action, and town officials believe there is no need to expand or improve on this action at this time.
	Ongoing Program— Distribution of structure fire/emergency preparedness pamphlets	Volunteer time from the Hartland Volunteer Fire Department, and staff time for the Town Manager/other town staff members. Funding from the Hartland Volunteer Fire Department's prevention budget.	This is an ongoing action, and town officials believe the education program is adequately meeting expectations.

E. Plan Maintenance

This Plan (the Hartland Local Hazard Mitigation Plan) will be updated and evaluated annually, by discussing its effectiveness and making note to incorporate any necessary revisions in the update process, at an April Selectboard meeting, along with the review of their Local Emergency Operations Plan (LEOP). At this meeting, the Selectboard will monitor the implementation of the hazard mitigation strategies outlined in this Plan, by noting those that have been completed, are in the process of completion, or any issues with initiating the activity. Any comment s from local officials and the public will be incorporated when relevant. This meeting will constitute an opportunity for the public and other town officials to hear about the town's progress in implementing mitigation strategies and to give input on future activities and Plan revisions. The public will be given the opportunity to comment at this meeting, and the comments will be incorporated when relevant.

Updates and evaluation of this Plan by the Selectboard and the local Emergency Coordinator/Director will also occur within three months after every federal disaster declaration directly impacting the Town of Hartland. The Town will monitor, evaluate and update this Local Hazard Mitigation Plan at an April Selectboard meeting and after every federally declared disaster directly impacting the Town according to the graphic on page 40. The Town shall reference the Local Hazard Mitigation Plan when working on Town Plan amendments or changes to the Town's bylaws.

This section of the Plan satisfies 44 CFR and 201.6(c)(4)(i), 201.6(c)(4)(ii), and 201.6(c)(4)(iii).

At least one year before the Plan expires, the update process will begin (through annual updates, monitoring of progress and evaluation that will occur at the April Selectboard meeting). For this next Plan update, the Two Rivers-Ottauquechee Regional Commission (TRORC) will help with Plan updates if assistance is requested by the Town of Hartland and if funding is available. If TRORC is unable to assist the Town, then Hartland's Town Manager, Administrative Assistant, or Selectboard will update the Plan, or the Selectboard may appoint a committee of interested citizens (including the current local Emergency Coordinator/Director) to draft changes. Ultimately, it will be the Town's responsibility to update their Local Hazard Mitigation Plan.

The process of evaluating and updating the plan will include continued public participation through public notices posted on the municipal website, notice within the municipal building, and notice in The Valley News and the TRORC newsletter and blog, inviting the public to the scheduled Selectboard (or specially scheduled) meeting. The public will be given the opportunity to comment during this process. Additional stakeholders should be invited to the meeting; these include: UV Mutual Aid, the Army Corps. of Engineers, and the Vermont Agency of Natural Resources (VT ANR). VT ANR will be invited because they can provide assistance with NFIP outreach activities in the community, models for stricter floodplain zoning regulations, delineation of fluvial erosion hazard areas, and other applicable initiatives. These efforts will be coordinated by the Town Manager.

Updates may include changes in community mitigation strategies; new town bylaws, zoning and planning strategies; progress on the implementation of initiatives and projects; effectiveness of implemented projects or initiatives; and evaluation of challenges and opportunities. If new actions are identified in the interim period, the plan can be amended without formal re-adoption during regularly scheduled Selectboard meetings.

Hartland shall also incorporate mitigation planning into their long-term land use and development planning documents. The 2013 Vermont Legislature passed a law requiring all towns to incorporate flood resiliency elements into their town plans as of July 2014. To do so, flood hazard and fluvial erosion hazards will be identified, and strategies and recommendations will be provided to mitigate risks to public safety, critical infrastructure, historic structures and public investments. This Local Hazard Mitigation Plan will help the town to comply with the new community flood resiliency requirement for town plans adopted after July 2014.

It is also recommended that the process work both ways and the Town review and incorporate elements of the Local Hazard Mitigation Plan into updates for the municipal plan, zoning regulations, and flood hazard/ fluvial erosion hazards (FEH) bylaws. The incorporation of the goals and strategies listed in the Local Hazard Mitigation Plan into the municipal plan, zoning regulations and flood hazard/FEH bylaws will also be considered after declared or local disasters. The Town shall also consider reviewing any future TRORC planning documents for ideas on future mitigation projects and hazard areas.

V. Community Vulnerability by Hazard

A. Hazard Identification

Mitigation efforts must be grounded in the rational evaluation of hazards to the area and the risks these hazards pose. This is done through a process, which in essence asks and answers three basic questions:

- What bad things can happen?
- How likely are they to occur?
- How bad could they be?

This process, which is laid out in the table below, is an attempt to inventory the known hazards, establish the likelihood of them occurring in the future, and then assess the community's potential vulnerability to each. In performing this analysis, we are then able to prioritize actions that are designed to mitigate the effects of each of these disaster types and ultimately make Hartland a safer place.

It is important that we learn from the past in order to avoid the same disasters and their outcomes. Disasters that have occurred within the Town of Hartland, the larger region, and the State of Vermont can give us good information about what types of disasters we can expect in the future and what kinds of damage they might cause. However, while this historical data can inform our perspective of what might happen in the future, it is by no means a prophecy. While Hartland might not have been impacted by a specific hazard in the past, this does not necessarily mean it will never be affected in the future. Indeed, the advance of climate change means that old weather patterns may not hold. For instance, in recent years, Vermonters have seen an increase in the number and severity of storms, especially rainfall events. Armed with historical data and a healthy respect for climate change and the unknown, we have tried our best to identify hazards and prepare for the future.

The following table reflects the hazards that we believe can be expected, or are at least possible, in the central Vermont area. We have considered factors such as frequency of occurrence, warning time and potential community impact to rank each and determine which hazards pose the greatest threats to life and property in Hartland.[1] The worst threats (bolded in the table, below) are then followed-up with discussion and mitigation strategies throughout the rest of this Plan.[2] It should be noted that hazards assigned with the same "Hazard Score" are not in order and their placement in the table should not be assumed to reflect their potential to create hazards for the town.

[1] The ranking methodology used in this Plan (see Appendix A) is closely modeled on that which is used by the Vermont Division of Emergency Management & Homeland Security (VDEMHS). The only changes made were intended to reflect the more limited geographical scope of this analysis, which is focused on a small, rural town rather than the entire State of Vermont (which is the focus of VDEMHS).

[2] It's important to note that those hazards which were not found to pose the greatest threats may still occur in Hartland's future; however, they are not the focus of this Plan.

Hazard	Frequency of Occurrence	Warning Time	Potential Impact	Hazard Score
Structure Fire	**Highly Likely**	**None**	**Minor**	**10**
Wildfire	**Highly Likely**	**None**	**Negligible**	**9**
Hazardous Material Spill	**Occasionally**	**None**	**Moderate-Major**	**9**
Tornado	Occasionally	None	Minor	9
Severe Weather	**Highly Likely**	**6-12 hours**	**Minor**	**8**
Landslides/Mudslides/Rockslides	**Likely**	**None**	**Negligible**	**8**
Extreme Cold/Snow/Ice Storm	Highly Likely	12+ hours	Minor-Moderate	7.5
Flash Flood/Flood/Fluvial Erosion	Likely	6-12 hours	Minor	7
Hurricane/Tropical Storms	Occasionally	12+ hours	Moderate-Major	7
Water Supply Contamination	Unlikely	None	Minor	7
Earthquake	Occasionally	None	Negligible	7
Invasive Species	Highly Likely	12+ hours	Minor	7
Hail Storms	Occasionally	3-6 hours	Negligible	6
Dam Failure	Unlikely	12+ hours	Major	6
Extreme Heat	Likely	12+ hours	Minor	6
Ice Jams	Likely	12+ hours	Negligible	5
Water Supply Contamination	N/A	N/A	N/A	N/A
Tsunami (Vermont is landlocked.)	N/A	N/A	N/A	N/A
Volcano (Vermont has no active volcanoes.)	N/A	N/A	N/A	N/A

The Hartland HMP committee discussed the results of the hazard ranking activity and decided to focus on hazards that had the potential to impact the Town on a town-wide scale and/or had the potential to occur frequently. While the committee determined that possibility of a large hazardous material spill occurring was small, they recognized that there is always a threat that a large spill could occur and if it did, it would likely have a significant impact on the Town. The Hartland committee also recognized that

small and/or minor hazardous material spills occur often. In addition, even though tornados could occur in Hartland, and have occurred in surrounding areas, the HMP committee decided to omit this hazard from further analysis because they occur infrequently and those that have occurred in the past have resulted in minor damage. However, the HMP committee realizes that past weather events are not necessarily a reliable way of determining the severity of future events.

After engaging in discussions using their best available knowledge, the Town of Hartland identified the following "top hazards" which they believe their community is most vulnerable to:

- Structure Fire
- Hazardous Material Spill
- Wildfire
- Severe Weather
- Landslides/Rockslides/Mudslides

Each of these "top hazards" will be discussed in the following sections. Within each section, previous occurrences of each hazard will be listed, including the County-wide FEMA Disaster Declarations (DR-#), where applicable. Hazards information was gathered from local sources (ex. town history book), the National Climatic Data Center's (NCDC's) Storm Events Database (1950-2012 and 2006-2012), the Spatial Hazard Events and Losses Database for the United States (SHELDUS) 1960-2012, and Special Reports produced by the National Weather Service in Burlington, Vermont. This section also includes a description of each "top hazard" and a hazard matrix that will also include the following information (please see each hazard profile for a hazard-specific matrix):

Hazard	**Location**	**Vulnerability**	**Extent**	**Observed Impact**	**Likelihood/Probability**
Type of hazard.	General areas in community that may be vulnerable to the hazard.	Community structures affected by hazard.	Magnitude or strength , and general details of the most notable event(s).	Dollar value or percentage of damages.	Occasionally: 1–10% probability of occurrence per year, or at least one chance in next 100 years Likely: >10% but <100% probability per year, at least 1 chance in next 10 years Highly Likely: 100% probable in a year

B. Hazard Profiles for "Top Hazards"

Please note: The following hazard profiles are organized based on their *Hazard Score,* as determined by local officials in the hazard ranking methodology.

1. Structure Fire

Vermont has one of the highest per capita death rates from fire in the nation. This is in fact the deadliest form of disaster throughout the state. In 2012, there were 2,225 reported structural fires in the state, which included 6 fatalities and $17.8 million dollars in damage. Although there have been requirements for smoke detectors in rental housing for over 20 years, and requirements for smoke detectors in single-family dwellings since 1994, there was only one building involved in the fatal fires in 2000 that had evidence of working smoke alarms.

This section of the Plan satisfies the requirements of 44 CFR 201.6(c)(2)(i), 201.6(c)(2)(ii), and 201.6(c)(2)(iii) for **Structure Fire**.

Structure fires may occur at any point, and are typically initiated within a single fuel object. Smoke produced by the burning object forms a smoke plume and rises, creating a layer of smoke while also transporting heat to the smoke layer. Fire then spreads quickly by radiation from the flames, or from the smoke layer. Once other objects are engulfed, more smoke plumes are formed and heat radiates to other objects. Fire burns and moves across different materials depending on the material's composition, orientation, surface to mass ratio and air supply in the structure/room.

A review of the fires listed in the "History of Occurrences" chart below demonstrates the potential for structures located in the Town of Hartland to be completely or severely destroyed by fire. The following list indicates the history of occurrence with regard to this hazard in the Town of Hartland. The details of these events were obtained from the Hartland Fire Department's records, and some additional details were obtained from searching local newspaper archives.

History of Occurrences:

Date	Event	Location	Extent
03/18/2013	Structure Fire	Coutermarch Street	Heavy Fire in kitchen. Heavy smoke & heat 2nd floor.
03/02/2013	Structure Fire	Gilson Farm Lane	Total loss.
05/20/2012	Structure Fire	Pelham North Road	Leaves under porch on fire. Charred porch.
02/19/2012	Structure Fire	Davis Road	Vehicle on fire spread to mobile home as the Skunk Hollow Mobile Home Park. Total loss, estimated losses at $75,000.
05/27/2011	Structure Fire	Webster Road	Structure fire caused by lightning strike. Extinguished prior to arrival.
03/12/2011	Structure Fire	Quechee Road	Fully involved structure fire. Total loss.
03/01/2011	Structure Fire	Rice Road	Small fire on top of hay in 20'x40' barn. Fire spread to walls prior to extinguishing. No loss.
10/29/2010	Structure Fire	Rice Road	Fully involved structure fire in the 2nd story of the barn. Total loss.
10/21/2010	Structure Fire	Weed Road	Fully involved structure fire. Barn/Studio 1 1/2 story structure. Total loss.

Date	Event	Location	Extent
05/07/2010	Structure Fire	Family Circle	Fire under mobile home. Originated in overloaded electrical
11/10/2009	Structure Fire	Tinkham Hill Road	Fully involved fire.
05/03/2009	Structure Fire	Brownsville Road	Minimal Damage. Owner extinguished fire. Limited to crawlspace in basement

Poor access to fires, limited water supply for firefighting, and the distance of some homes from the fire station represent a few of the challenges that leave Hartland vulnerable to the impacts of structure fires. Some recreational and retirement homes with single access roads and no fire-fighting water supply are also vulnerable.

The villages of Hartland Three Corners, Hartland Four Corners and North Hartland have the most intensive development. Each of these centers contains a variety of housing types mixed with small retail businesses, personal services and offices. North Hartland and Hartland Four Corners are also areas of relatively greater density containing predominantly single-family dwellings and a few commercial establishments. North Hartland has a fire station and a community water supply system with fire hydrants.

Areas of relatively dense development pose greater fire hazards due to the threat of the fire spreading to adjacent buildings. In addition, a fire in a multi-family building has the potential to injure or displace a larger number of people. Similarly, a structure fire in a mobile home park has the potential to spread to other structures, as the structures are often placed relatively close together. There is one mobile home park in the Town of Hartland, the Skunk Hollow Mobile Home Park. A structure fire occurred in this mobile home park on February 19, 2012, which led to a total loss of the structure and the owner's vehicle. According to news archives detailing this event, firefighting personnel were concerned that the fire had the potential to spread to other nearby structures. Luckily, the February 2012 fire did not spread to other structures, but the event demonstrates the potential for future fires to do so.

To help combat structure fires, members of the Hartland Fire Department attend monthly firefighting trainings, and receive recertifications when necessary. In addition, the Town of Hartland has installed dry hydrants along the following roads: Clay Hill Road; County Road; Evarts Road; Garvin Hill Road; Hartland Hill Road; Martinsville Road; Maxfield Lane; McCabe Street; Merritt Road; Mill Street (in two locations); Quechee Road; Reeves Road; Route 5 (in 5 locations); and Wood Circle. The Hartland Fire Department is looking for new locations to install additional hydrants, but overall, they view the hydrant coverage in the Town as satisfactory.

Hazard	Location	Vulnerability	Extent	Observed Impact	Likelihood/ Probability
Structure Fire	Town-wide.	Public and privately owned structures.	Depends on fire location and conditions.	Depends on fire. Some structures have had the potential for a serious fire (chimney fires), some structures have sustained only minor damage, and some have been severely or completely destroyed.	Highly Likely

2. Hazardous Materials Spill

This section of the Plan satisfies the requirements of 44 CFR 201.6(c)(2)(i), 201.6(c)(2)(ii), and 201.6(c)(2)(iii) for **Hazardous Materials Spill**.

Based on available VT Tier II data, there are no sites in the Town of Hartland that have sufficient types and/or quantities of hazardous materials that require reporting. Vermont Route 12 intersects with US Route 4 in the northwest corner of the town, while US Route 5 and Interstate 91 run parallel to the Connecticut River within Hartland. All of these roads see a large amount of truck traffic. As a result, there is always the threat of a hazardous material spill along these routes through the Town of Hartland. Fuel oil and gasoline are some of the most commonly transported hazardous materials that pass through Hartland. The New England Central Railroad also runs through North Hartland, parallel to both I-91 and US 5. At any given time, there can be hazardous materials aboard the train. Therefore, this corridor is vulnerable to hazardous material spills, and poses an area of high concern to the fire department in particular.

Within 1,000 feet of the railroad tracks and Vermont Route 12, US Routes 4 and 5 and I-91, there are 1,742 residences (including 390 mobile homes, 38 multi-family homes and 1,282 single family dwellings) and 245 commercial, industrial, or public buildings (including the Town Office, the Hartland Fire Station and 6 government buildings). In the event that 5% of these structures were involved in a HAZMAT incident, the estimated damage would be $22,757,424. It should be noted that the State of Vermont currently has one fully trained HAZMAT response team, with vehicles located in Essex Junction, Brandon, and Windsor. The HAZMAT crew chief is available within minutes of a call for the team but on-scene response would be a matter of hours. In the event of a serious accident in town, there would be little time for evacuation and response would be difficult.

Perhaps the most impactful and serious spill to occur in the Hartland during this timeframe was in July 1997 when a tanker truck rolled over and spilled approximately 100 gallons of gasoline containing the fuel additive MTBE. According to a Vermont Public Radio article, the MTBE spill in Hartland was one of the three largest in the Vermont (the other two spills being located in Hinesburg and Killington). The Hartland spill impacted 38 water supplies in Hartland. Despite the fact that the State of Vermont banned MTBE in 2005, the remains of an MTBE spill can be detected for years to come.

The following occurrences were retrieved from the Vermont Department of Environmental Conservation's Spill List. Entries marked with an asterisk were found by searching through local newspaper archives.

History of Occurrences:

Date	Event	Location	Extent
02/26/2014	Fuel Oil Spill	Hartland/Quechee Road	Small overfill in basement, approx.. 1 gallon spilled.
05/22/2013	Fuel Oil Spill	Ogden Mill Road	Contents of tank lost over the course of several days before being discovered, approx. 200 gallons spilled.
05/07/2012	Unknown/ Unspecified Petroleum Spill	Route 5	Complainant alleges property owner is dumping oil ground at illegal salvage yard. Also states that there are two USTs sitting on the ground that are releasing oil from the tops of the tanks and down the outside of the tank walls. Unknown quantity spilled.
10/22/2012	Petroleum/ Gasoline Spill	I-91, mile marker 63.7	Tractor trailer saddle tank fell off and broke, approx. 125 gallons spilled.
10/12/2011	Unknown Spill	Confluence of Connecticut River and Ottauquechee River	Sheens on Connecticut River at confluence Ottauquechee River
07/11/2011	Gasoline Spill	Route 5, near Exit 9	Fuel tank fell off vehicle, approx. 15-20 gallons spilled. Possibility for nearby stream to have been impacted.
06/06/2011	Oil Spill	Vermont Route 12	Truck accident caused oil pan to be punctured. Crankcase oil into gravel in shoulder/drainage ditch. Approximately 10-20 gallons of oil spilled.
03/07/2010	Oil Spill	Quechee Road	30 gallon oil spill at private residence. Release to basement floor after filling. Cleaned up by Enpro, and no reported impacts to water supply.
10/20/2009	Septic Spill	Quechee Road	A valve leaked from a tanker over 9/10 of Quechee Road, leaking 200 gallons of septic waste. Town had to wash waste off of the road afterward.
06/02/2009	Hydraulic Oil Spill	Quechee Road	Hydraulic failure, approx. 15 gallons spilled.
04/07/2009	Transformer Fluid Spill	Hartland Road	A transformer overheated, causing a 120 gallon spill at the Super 8 Motel. One drum of soil was picked up and disposed of.
04/19/2005	Diesel Spill	Rt. 12 and Barron-Advent Road	A vehicle leak led to a 75 gallon diesel spill. FD responded to the incident and cleaned the site. No impact was found.
01/31/2005	Diesel Spill	Route 12	A tractor trailer hit a telephone pole, causing a 30 gallon diesel spill. The FD responded and contained the spill with absorbents. There was no impact to the nearby brook.
10/07/2001	Unspecified Spill	Brownsville Road	An AST was leaking in the basement of a private residence, spilling 200 gallons altogether. Soil was excavated and stockpiled on-site.
01/05/2000	Kerosene Spill	Hartland Hill Road	275 gallons of kerosene spill as the result of an AST leak, impacting local groundwater.
11/13/1998	Oil Spill	Route 5	An oil spill at the North Hartland Hydro Project contaminated 12,000 gallons of water. Water had to be treated and disposed of.
07/24/1997*	Gasoline Spill	Hartland/Quechee Road	Tanker truck rolled over, spilling approx. 100 gallons of gasoline containing MTBE into the ground. 38 water supplies in Hartland were contaminated.

Date	Event	Location	Extent
01/30/1981	Oil Spill	CVRR Yard	8,000 gallons of oil was spilled at the CVRR Yard. Subsequently cleaned by NEMC and CVRR.
01/22/1977	Oil Spill	Unspecified Location	1,600 gallons of oil were spilled following a truck accident in town. All oil was contained.
11/21/1973	Unspecified Spill	Unspecified Location	A 500 gallon spill of an unspecified substance occurred, a small portion of which was released into the river. Purcell Oil Co. were the responsible party.
06/14/1973	Tar Spill	Flood Control Dam	Rains from storms washed 200 gallons of road tar into the water.

Although a relatively small number of major spills consisting of hundreds of gallons of hazardous material have occurred in the Town of Hartland over the past 20 years, the potential for a major spill is ever present and such events do occur, as noted in the table above. Numerous major roadways crisscross the Town's landscape, presenting opportunities for spills to occur throughout Hartland's boundaries. The majority of hazardous materials transported through the area by tractor trailer occur along Vermont Route 12, US Routes 4 and 5, and Interstate 91. These routes serve as the main thoroughfares for trucks and other motor vehicles transporting a wide-range of goods, including a wide range of hazardous materials, within the confines of Hartland. A number of tractor trailer accidents have been reported along these major roadways, particularly on Route 5 and I-91. With so many properties and businesses located along these roadways as well as waterways, there is huge concern for impacts to health, safety, and property in the event that a hazard material disaster occurs in Hartland.

In order to prepare for hazardous material spills in the Town of Hartland, approximately 24 members of the Hartland Volunteer Fire Department have up-to-date HAZMAT Awareness and Operations Level training, at a minimum.

Hazard	Location	Vulnerability	Extent	Estimated/Potential Impact	Likelihood/ Probability
Hazardous Materials Spill	Vermont Route 12; US Routes 4 and 5; Interstate 91 and railway corridors; local roads.	Road and rail infrastructure, nearby structures.	Initially, local impacts only; but depending on material spilled, extent of damage may spread (ex. into groundwater)	Within 1,000 feet of the railroad tracks and Vermont Route 12, US Routes 4 and 5 and I-91, there are 1, 742 residences (including 390 mobile homes, 38 multi-family homes and 1282 single family dwellings) and 245 commercial, industrial or public buildings (including the Town Office, the Hartland Fire Station and 6 government buildings). In the event that 5% of these structures were involved in a HAZMAT incident, the estimated damage would be $22,757,424.	Occasionally

3. Wildfire

Generally speaking, a wildfire is an outdoor fire that is not controlled, supervised or arranged. Wildfire may be sparked by natural or human activities. Lightning is one of two main natural causes of wildfire. However, across the United States, approximately 90 percent of wildfires are started by humans. According to FEMA, there are three types of wildfire that can consume natural landscapes and man-made structures and features: surface fire, ground fire and crown fire. Surface fires are slow moving across the forest floor, and, as a result, kill and damage trees. Ground fires are usually caused by lightning strikes, and burn on or below the forest floor. Crown fires, so called for their location in the crown of trees, effortlessly spread through tree tops, often aided by wind. Wildfire probability depends on local weather conditions; outdoor activities, debris burning and construction; and the degree of public cooperation with fire prevention measures.

This section of the Plan satisfies the requirements of 44 CFR 201.6(c)(2)(i), 201.6(c)(2)(ii), and 201.6(c)(2)(iii) for **Wildfire**.

The Vermont landscape is especially vulnerable to wildfire during the period of time in early spring when all the snow has melted, vegetation has not begun to develop leaves, and the land and vegetation are very dry and/or dead. It is important to note that the scale of wildfires that burn in the state of Vermont tend to be smaller, and are therefore able to be extinguished more quickly than many of the wildfires that rage in the western United States. In Vermont, wildfires are often called "brush fires" or "grass fires," and, even if for only a short period of time, are uncontrolled and can be become dangerous despite their relatively small size.

Approximately 80-85% of the Town of Hartland is forested land, with approximately 263 acres included within the Densmore Hill Wildlife Management Area. Owing to the fact that the large portion of the Town is forestland, Hartland is vulnerable to the impacts of wildfires. The following instances of wildfire were reported by the Hartland Fire Department.

History of Occurrences:

Date	Event	Location	Extent
06/07/2014	Brush Fire	Bowers Road	210' x 60' brush fire including dumpster. Dumpster fire caused brush fire.
05/21/2014	Brush Fire	Route 5	50' x 150' area on fire.
05/12/2014	Brush Fire	Ocean View Drive	200' x 200' brush fire.
04/29/2014	Brush Fire	Merritt Road	Small brush fire started by electric fence.
04/11/2014	Grass Fire	Clay Hill Road	40' x 100' grass fire.
04/11/2014	Brush Fire	Route 4	25' x 75' brush fire extending into the woods.
04/10/2014	Brush Fire	Route 12	20' x 60' brush fire.
10/26/2013	Brush Fire	Gun Range	20' x 40' brush fire.
05/16/2013	Brush Fire	Quechee Road	Out-of-control burn into the woods.
05/04/2013	Brush Fire	Ferry Road	30' x 20' brush fire. Logs and mulch from permitted burn 3 weeks prior.
05/04/2013	Brush Fire	Route 5	30' x 30' brush fire travelling up hill
05/03/2013	Brush Fire	Beaver Lane	Small roadside brush fire.
04/29/2013	Brush Fire	Hartwood Way	.25 acre brush fire. Woodstock Fire on scene and extinguished (on the town line).
04/28/2013	Brush Fire	Quechee Road	15' x 30' campfire out-of-control
04/27/2013	Brush Fire	Depot Road	Small brush pile with small extended into woods.

Date	Event	Location	Extent
04/09/2013	Grass Fire	Weed Road	slow moving grass fire approximately .25 acre
03/31/2013	Brush Fire	Mace Hill	Nearly an acre burnt from leftover camp fire.
01/07/2013	Brush Fire	Route 5	2' x 3' fire on hill side
11/29/2012	Brush Fire	Route 5	Small 20' x 6' slow moving brush fire.
11/12/2012	Large Brush Fire	Maxham Drive	Over three acres of woods caught fire on a ridge line near the North Hartland dam. Multiple fire departments called in.
11/10/2012	Brush Fire	Ellison Road	100' x 200' brush fire at wood's edge. No structures involved.
10/22/2012	Brush Fire	Route 12	100' x 50' brush fire on side hill.
08/08/2012	Brush Fire	Webster Road	100' x 85' brush fire partially into tree line.
06/21/2012	Brush Fire	Route 5	Out-of-control small brush fire. Spontaneous combustion.
04/15/2012	Grass Fire	Clay Hill Road	50' x 75' grassy area burning.
03/24/2012	Brush Fires	I-91 NB MM 59 & 61	2 brush fires 12' x 40 ' & 20' x 20'
03/23/2012	Brush Fire	Gun Range	150' x 100' large brush fire on bank and in trees.
08/11/2011	Brush Fire	Merritt Road	Small fire on the side of the road.
07/06/2011	Brush Fire	Grout Road	10' x 10' brush fire
05/13/2011	Grass Fire	I-91 s MM 61	5' x 10' grass fire.
04/22/2011	Brush Fire	Quechee Road	Brush fire on side bank approximately 75 yards into the woods. Approximately .5 acre in size.
09/26/2010	Brush Fire	Evarts Road	Large wood and brush pile burning.
07/03/2010	Brush Fire	Route 5	5' x 20' small brush fire.
04/10/2010	Grass Fire	Clay Hill Road	100' x 80' Grass Fire
03/20/2010	Brush Fire	Barber Lane	50' x 30' Brush Fire
12/04/2009	Brush Fire	I-91 SB MM 62-63	3' x 400 yards multiple small brush fires
05/21/2009	Brush Fire	Brothers Road	100’ brush fire
04/19/2009	Brush Fire	Brothers Road	.5 acre brush fire
04/11/2009	Brush Fire	Brothers Road	.5 acre brush fire
03/28/2009	Brush Fire	Mount Hunger Road	60' x 80' brush fire

The Town of Hartland typically experiences several brushfires per year. There can be as many as five to ten in a year in Hartland, of varying sizes, but they are often relatively small. One of the larger wildfires to occur in Hartland was on November 12, 2012 when a brush fire that burned over three acres on Maxham Drive. According to newspaper archives, this wildfire was spreading rapidly before it was contained, and could have become more dangerous as this fire was relatively close to at least one residential property and the North Hartland dam. Nevertheless, the potential exists for brush fires to get out of hand rapidly, particularly in areas where there is a 15% slope which impedes firefighting efforts. According to members of the Committee, the entire Town is vulnerable to wildfires and areas that have repeatedly burned in the part includes those surrounding Route 5, Route 12, Brothers Road, Merritt Road, and Clay Hill Road.

The Town of Hartland has installed hydrants along the following roads: Clay Hill Road; County Road; Evarts Road; Garvin Hill Road; Hartland Hill Road; Martinsville Road; Maxfield Lane; McCabe Street; Merritt Road; Mill Street (in two locations); Quechee Road; Reeves Road; Route 5 (in 5 locations); and Wood Circle. The Hartland Fire Department is looking for new locations to install additional hydrants, but overall, they view hydrant coverage in Hartland as being satisfactory.

By virtue of being a rural town, forested areas exist in the Town of Hartland where ground-based firefighting efforts would be very difficult, due to their remoteness or steep slopes. This creates the potential for wildfire to impact private land and property and any logging operations occurring at the time of the wildfire. A wildfire would likely impact or result in the damage of wildlife habitat and recreational lands used for hunting, hiking, mountain biking, and ATV and snowmobiling trails (maintained by VAST, Vermont Association of Snow Travelers).

Hazard	Location	Vulnerability	Extent	Estimated/ Potential Impact	Likelihood/ Probability
Wildfire	Areas surrounding Route 5, Route 12, Brothers Road, Merritt Road, and Clay Hill Road.	Private property, town buildings, utility infrastructure	Up to this point, the extent of damage has been minimal but all that is needed are the right conditions (mostly a very dry spring, before leaf-out) to experience a more damaging wildfire, especially because over 80% of the Town is forested.	Unknown—data gap.	Highly Likely

4. Landslides/Mudslides/Rockslides

This section of the Plan satisfies the requirements of 44 CFR 201.6(c)(2)(i), 201.6(c)(2)(ii), and 201.6(c)(2)(iii) for **Landslide/Mudslide/Rockslide**.

The movement of a mass of rock, debris or earth down a slope by force of gravity is considered a landslide. A landslide occurs when the slope or soil stability changes from stable to unstable due to an outside force, such as an earthquake, a severe storm, erosion, fire or a human-induced activity. Slopes greater than 10 degrees and slopes where the height from the top of the slope to its toe is greater than 40 feet are more likely to slide. A lack of vegetative cover and/or soils with a high water content contribute to the slope's vulnerability to fail.

In simple terms, the two factors needed to trigger a landslide are gravity and precipitation. Therefore, because much of Vermont is mountainous and receives relatively high levels of precipitation, the land areas in Vermont have certain predisposition towards landslides. Heavy winter snows combined with spring snow melt and heavy rains in the spring, summer and fall all contribute to high water content in the soil. The majority of landslides within Vermont involve a small quantity of rock and soil materials, but they frequently occur without any warning. Over 200 years ago (1783), landslides in Vermont were made famous in newspaper accounts that chronicled devastating spring flooding events. It is important to highlight the connection between precipitation, flooding and landslides in Vermont.

For the Town of Hartland, this connection is well-documented, especially in the past few years. During or following the flooding caused by Tropical Storm Irene, landslides occurred in two areas, one on Jenneville Road and one on Weed Road. As a result of the landslide on Jenneville Road, one lane of road was lost and therefore unpassable. Given the widespread devastation that occurred as a result of

Tropical Storm Irene, this slide would have further complicated travel along and access to/from Jenneville Road.

Two years later, the Town of Harland was hit by a severe storm on July 3, 2013 that, according to the National Oceanic and Atmospheric Administration's Online Weather Data (NOWData), dropped 2.99" in North Hartland. This caused two landslides on Gilson Road, resulting in the loss of one lane of the road and repairs totaling $82,000. It is possible that the flooding that occurred as a result of Tropical Storm Irene left both sites on Gilson Road vulnerable to future landslides.

The following data was retrieved from various sources, including the NCDC Database, publications issued by the State of Vermont, and from local knowledge reported by Hartland residents.

History of Occurrences:

Date	Event	Location	Extent
07/03/2013	Landslide	30 Gilson Road	100' long, 80' deep, lost one lane of road $70,000 to repair.
07/03/2013	Landslide	36 Gilson Road	30' long, 60' deep, lost one lane of road $12,000 to repair.
08/28/2011	Landslide	275 Jenneville Road	300' long, 50' deep lost one lane of road $69,000 to repair.
08/28/2011	Landslide	44 Weed Road	Top of embankment sliding into Weed Brook. Lots of debris remains.

Landslides within the Town of Hartland are likely to be associated with heavy precipitation, flooding, erosion and/or snow melt. As previously discussed, two recorded slides occurred during or following Tropical Storm Irene and two occurred after Hartland and the region was hit by a severe storm that dropped 2.99" of rainfall. Because much of the Town of Hartland is very hilly, there are areas that are currently vulnerable to landslides. These areas include: Densmore Hill Road, Gilson Road; Jenneville Road and Weed Road. With the anticipated increase in precipitation events due to global climate change, this particular hazard may become more prevalent in the future.

Hazard	Location	Vulnerability	Extent	Observed Impact	Likelihood/ Probability
Landslide/ Mudslide/ Rockslide	Vulnerable areas include: Densmore Hill Road, Gilson Road, Jenneville Road, and Weed Road.	Road infrastructure, public and private property.	Often landslides are localized. For 07/03/2013 slide at 30 Gilson Road, slide was 100'x 80'.	For slide that occurred on 07/03/2013 at 30 Gilson Road, $70,000 to repair. A larger slide, near more infrastructure/ structures could cause significantly more damage.	Likely

4. Severe Weather (Thunderstorm, Lightning, High Winds, Hail, Flooding)

More common than hurricanes or tropical storms are severe thunderstorms (usually in the summer), which can cause flooding as noted above, and are associated with lightning, high winds, hail and tornadoes. Hailstorms have occurred in Vermont, usually during the summer months. While local in nature, these storms are especially significant to area farmers, who can lose entire fields of crops in a single hailstorm. Large hail is also capable of property damage. Three hundred eighty-two hail events were recorded between 1950 and 2008 in the state, making hail a regular annual occurrence in at least some part of the state. Most of these events had hail measuring .75 inches, but many had hail at least 1.5 inches in size. The largest hail during the period was 3-inch hail that fell in Chittenden County in 1968 (NCDC). Tennis ball-sized hail was reported in the town of Chittenden during a storm in the summer of 2001. Thunderstorms can generate high winds, such as hit the region on July 6, 1999, downing hundreds of large trees in a few minutes.

This section of the Plan satisfies the requirements of 44 CFR 201.6(c)(2)(i), 201.6(c)(2)(ii), and 201.6(c)(2)(iii) for **Severe Weather (Thunderstorm, Lightning, High Winds, Hail, Flooding)**.

In Hartland, severe weather is quite common, typically in the late spring and summer months when the region experiences high temperatures. Severe thunderstorms tend to bring other hazards, such as high winds, hail, and lightning, and flooding. These hazards are often experienced in combinations that create many unique weather and emergency management situations. Over the years, Hartland has been hit with high winds that have downed and uprooted numerous trees, and knocked out electricity to residents in the Town. Town-specific wind data could not be found, but the "Remarks" section of NCDC Database helps to illuminate the impact strong winds can have on the Town of Hartland. Sizeable hail has also accompanied storms moving through the Town and region.

The following list indicates the history of occurrence with regard to this hazard in Windsor County (given that small population of Hartland, town-specific data is limited); an asterisk "*" denotes the few instances in which town-specific data is available, and federal disaster numbers are listed when appropriate. In an attempt to capture the individual hazards that may arise, and the different circumstances caused by the hazards in concert, the separate hazards are documented in the table below.

History of Occurrences:

Severe Weather Date	**Event**					**Location**	**Extent**
	Thunderstorm /severe storm	Flooding	Hail	High Winds	Lightning		
09/11/2013*	✓		✓	✓		Hartland; County-wide	Severe thunderstorms, hair, and winds of up to 50 kts hit the county. Several trees were downed on I-91 between MMS 62 and 73, which includes part of the interstate within the Town of Hartland.

Severe Weather Date	Event					Location	Extent
	Thunderstorm /severe storm	Flooding	Hail	High Winds	Lightning		
06/25/2013-07/11/2013 (DR-4140)*	✓	✓		✓		Hartland; County-wide	Severe storms caused flooding, property damage, intermittent power losses, etc. Two to three inches of rain fell within two hours in early July, damaging about 90% of Hartland's roads. A large box culvert collapsed on Densmore Hill Road, causing flooding and a road closure. Gilson Road was washed out. Mill Street and Rice Road were damaged, and nearly all Class 3 roads were damaged to some extent.
06/02/2013	✓		✓	✓		County-wide	Severe thunderstorms with pockets of high wind and damaging hail hit the region. Roughly 20,000 customers lost power.
09/08/2012	✓			✓		County-wide	Severe thunderstorms and high winds hit the region, with winds reaching 50 kts. Branches and small trees were downed in many places, with $10k in reported damage for the county.
07/17/2012	✓			✓		County-wide	Severe thunderstorms and high winds hit the region.
05/28/2012	✓		✓	✓		County-wide	A severe storm brought heavy rains, lightning, high wind, and hail to the region.
08/28/2011-08/29/2011 (DR-4022)*	✓	✓		✓		Hartland; County-wide	Tropical Storm Irene brought winds in excess of 60 mph in places and heavy rains to the state, causing significant flooding in places. Homes, businesses and roads were flooded throughout Windsor County along the Ottauquechee River. Hartland was recorded as having between 3-7"of rainfall over the course of the storm. The White River in West Hartford crested at 28.40 feet, about a foot below the record crest of 29.30 feet set in the Great Flood of 1927. A total of $32.5m in damage was reported for Windsor County. $172,004.08 for Hartland from FEMA's Public Assistance database (captures at least 70% of total damage).
08/21/2011	✓			✓		County-wide	Severe storms brought high winds and hail to the region. Microbursts of 70-90mph winds were recorded in neighboring Rutland County.

Severe Weather Date	Event					Location	Extent
	Thunderstorm /severe storm	Flooding	Hail	High Winds	Lightning		
07/06/2011*	✓			✓	✓	Hartland; County-wide	Severe storms, including high winds and lightning, hit the state. Over 15K Vermonters lost power during the storm. Several trees were downed in Hartland.
06/09/2011	✓		✓	✓		County-wide	A cold front moved into the region, bringing scattered thunderstorms and reports of high winds up to 59mph and large hail.
05/09/2009	✓		✓	✓		County-wide	Severe storms and high winds hit the area. Reports of hail up to 1" diameter were made, and many trees were downed.
08/07/2008 (DR-1719)	✓	✓				County-wide	Heavy rainfall led to flash flooding throughout the region. $25k in property damage was reported in the county.
07/21/2008-08/12/2008 (DR-1790)	✓	✓				County-wide	Severe storms and flooding hit Windsor County and other parts of Vermont, leaving damage in their wake. Storms on 8/6 caused over $100k in damage alone in Windsor County.
07/09/2007-07/11/2007 (DR-1715)*	✓	✓				Hartland; County-wide	Severe storms and flooding struck a number of counties in Vermont, including Windsor. As much as 3" of rain fell within two hours in some areas, washing out roads and causing flash flooding. A tree came down on Quechee Road.
04/15/2007-04/21/2007 (DR-1698)	✓	✓				County-wide	Severe storms and flooding hit Windsor and other counties throughout Vermont.
05/14/2006*	✓	✓				Hartland; County-wide	Strong storms brought 3.03" of rainfall to Hartland, causing flooding and minor washouts on several roads. The Ottauquechee River experienced bankfull conditions and minor field flooding occurred.
09/29/2005	✓			✓		County-wide	Trees and power lines were downed across Windsor County in the wake of severe thunderstorms, heavy rains, and high winds that hit the area. Winds were generally sustained at 35-45mph. $100k in damage was reported for the county.
06/09/2004*	✓		✓	✓		Hartland; County-wide	Thunderstorms, damaging winds, and large hail struck the area. In Hartland, trees and power lines blew down. Widespread power outages were reported.

Severe Weather Date	Event					Location	Extent
	Thunderstorm /severe storm	Flooding	Hail	High Winds	Lightning		
07/21/2003-08/18/2003 (DR-1488)	✓	✓			✓	County-wide	Severe storms with lightning and flooding his Windsor County and other portions of the state, causing damage. In Hartland, a lighting strike exploded a large tree, throwing branches about 100 ft. in all directions and causing $5k in property damage.
07/14/2000-07/18/2000 (DR-1336)	✓	✓				County-wide	Strong showers and thunderstorms across the state resulted in especially heavy rainfall. $500k in reported damage throughout the county.
09/16/1999-09/21/1999 (DR-1307)	✓	✓		✓		County-wide	Tropical Storm Floyd brought heaving rains, high winds, and flooding to many counties in Vermont, including Windsor.
06/27/1998	✓	✓				County-wide	Heavy rains brought 3 to 6 inches of rainfall to northern portions of Windsor County, causing extensive flood damage. $1m in property damage was reported throughout the county.
07/06/1973 (DR-397)*	✓	✓				Hartland; County-wide	Extensive rains fell on already soaked watersheds, including the Ottauquechee. Hartland was recorded to have had 5.2" of rainfall over the course of the storm, forcing evacuations. Rivers and streams throughout the town reached or breached bankfull conditions, causing widespread damage.
11/03/1927-11/04/1927*	✓					Hartland; County-wide	The greatest recorded flood disaster in Vermont history devastated the state, losing countless homes, 1,285 bridges, hundreds of miles or roadways and railway tracks, and taking a total of 84 lives, including then-Lt. Gov. S. Hollister Jackson. Rain totals over the 3rd and 4th reached 6-7" in Hartland, and the White River crested at a record 29.30 feet.

As demonstrated in the table of previous occurrences above, high winds have caused damage in Windsor County and in the Town of Hartland specifically. Damage caused by high winds has included downed trees and power lines, and, as a result, power outages. Power outages can be particularly serious for "power critical customers" that do not have the luxury of having a generator. However, in general, high winds cause relatively minor damage on a town-wide scale.

The main hazard caused by severe weather throughout the Town is flooding. Located within the Town of Hartland is the Ottauquechee River and several smaller streams, while the Connecticut River forms the eastern border of the Town. One of the more recent examples of the extent of flooding from severe storms is Tropical Storm Irene in late August 2012. Nearly every dirt and gravel road in the Town of Hartland suffered washouts during the storm, with Jenneville Road, Densmore Hill Road, Hartland Hill Road, and Reeves Road being some of the most adversely impacted roadways. One private residence in town was flooded by the Alder Brook during the storm though was not destroyed by flood waters.

Most recently, the spring and early summer of 2013 brought numerous severe storms and flooding to much of the State of Vermont. These storms prompted a federal disaster declaration (DR-4140 VT), covering Orange, Washington and Windsor Counties. Multiple inches of rain fell within a matter of hours in early July, ultimately damaging around 90% of Hartland's roadways. Additionally, a large box culvert located on Densmore Hill Road collapsed during the event, which caused flooding and a road closure. Gilson Road was completely washed out during the storm, and Mill Street and Rice Road were also severely damaged. All told, nearly all Class 3 roads were severely impacted. In an effort to help protect structures and road infrastructure, it is important to restore floodplain, improve areas and/or increase the number of areas for retention of floodwaters to reduce the risk to structures and road infrastructure wherever possible.

The Town maintains an up-to-date culvert inventory, and its work to upgrade culverts remains in process, as the Town is consistently upgrading culverts.

Hazard	**Location**	**Vulnerability**	**Extent**	**Observed Impact**	**Likelihood/ Probability**
Severe Weather	Town-wide for hail, high winds, lightning and thunderstorm impacts; for flooding most notably: Densmore Hill Road; Gilson Road, Jennelville Road, Hartland Hill Road, Reeves Road, Mill Street and Rice Road.	Town and private buildings, utilities, culverts, bridges, and road infrastructure.	June/July 2013 storms damaged nearly 90% of the town's road, downed trees. TS Irene brought 3-7" of rain.	Often minimal, but severe weather has the potential to cause significant damage, most frequently when flooding occurs. $172k in damage (from FEMA's Public Assistance Database, capturing at least 70% of total damage) as a result of TS Irene.	Highly likely

***Note**: The main hazard caused by severe weather is typically flooding (though not always). In addition, flooding is often the most expensive hazard caused by severe weather. Therefore, the Extent and Impact categories for Severe Weather will reflect the data reported, as it represents the higher limits of damage caused by severe weather.

VI. Mitigation

A. Mitigation Goals

1. To reduce injury and losses from the hazard of structure fire(s).
2. To reduce injury and losses from the hazard of hazardous material spills.
3. To reduce injury and losses from the natural hazard of wildfire.
4. To reduce injury and losses from the natural hazard of landslides/mudslides/rockslides.
5. To reduce injury and losses from the natural hazard of severe weather.

B. Excerpted Town Plan Goals & Objectives Supporting Local Hazard Mitigation

- To provide Town services and facilities that meet the education, public safety, and health needs of current residents and the anticipated needs of a growing population in a cost effective manner (page 6).
- To conserve natural areas, unique habitats, and the quality of ground and surface waters (page 6).
- In all areas where soils have severe limitations, development shall be permitted only where it can be adequately proven that such development will not be harmful to the environment or to the health of the community (page 10).
- Maintain and improve the quality of Hartland's surface waters (page 38).
- Continue to limit development in the floodplain to uses that would not pose a threat to health or safety if a flood occurs and do not involve the development of structures or alteration of the natural surface of the land (page 40).
- Continue to update Hartland’s Flood Hazard Area Regulations as needed to comply with FEMA's requirements for participation in the National Flood Insurance Program and to reflect new understanding of wise floodplain development (page 40).
- Ensure that groundwater quality is maintained for use by current and future Hartland residents (page 43).
- Provide and maintain a safe, efficient and cost effective transportation system which meets the needs of the public in a manner consistent with the other goals, policies and recommendations of this Town Plan (page 55).

The Hartland Town Plan was updated and adopted on 08/20/2012, and has a 5 year lifespan.

The Town of Hartland has no intentions, at this time, to take steps to enroll in the NFIP’s Community Rating System (CRS).

C. Hazard Mitigation Strategies: Programs, Projects & Activities

Vermont's Division of Emergency Management & Homeland Security encourages a collaborative approach to achieving mitigation at the local level through partnerships with Vermont Agency of Natural Resources, VTrans, Vermont Agency of Commerce and Community Development, Regional Planning Commissions, FEMA Region 1 and others. That said, these agencies and organizations can work together to provide assistance and resources to towns interested in pursuing hazard mitigation projects.

This section of the Plan satisfies the requirements of 44 CFR 201.6(c)(3)(ii), 201.6(c)(3)(iii) and 201.6(c)(3)(iv).

With each mitigation strategy, general details about the following are provided: local leadership, possible resources, implementation tools, and prioritization. The prioritization category is based upon the economic impact of the action, Hartland's need to address the issue, the cost of implementing the strategy, and the availability of potential funding. The cost of the strategy was evaluated in relation to its benefit as outlined in the STAPLEE guidelines. A range of mitigation strategies were vetted by the committee, and those that were determined to be feasible (economically, politically, environmentally, etc.) are included in the table below.

Strategies given a "High" prioritization indicate they are either critical or potential funding is readily available, and should have a timeframe of implementation of less than two years. A "Medium" prioritization indicates that a strategy is less critical or the potential funding is not readily available, and has a timeframe for implementation of more than two years but less than four. A "Low" prioritization indicates that the timeframe for implementation of the action, given the action's cost, availability of funding, and the community's need to address the issue, is more than four years.

The Town of Hartland understands that, in order to apply for FEMA funding for mitigation projects, a project must meet more formal FEMA benefit cost criteria, and a project seeking FEMA funds will undergo a full benefit-cost assessment in the FEMA-approved format. The Town must have a FEMA-approved Hazard Mitigation Plan as well.

The following strategies will be incorporated into the Town of Hartland's long-term land use and development planning documents. In addition, the Town will review and incorporate elements of this Local Hazard Mitigation Plan into updates for the municipal plan, zoning regulations, and flood hazard/ fluvial erosion hazards (FEH) bylaws. The incorporation of the goals and strategies listed in the Local Hazard Mitigation Plan into the municipal plan, zoning regulations and flood hazard/FEH bylaws will also be considered after declared or local disasters. The Town shall also consider reviewing any future TRORC planning documents for ideas on future mitigation projects and hazard areas.

Hazard(s) Mitigated	Mitigation Action	Local Leadership	Prioritization	Possible Resources*	Time Frame
All Hazards	*Ensure that Hartland's Local Emergency Operations Plan (LEOP) is kept up-to-date and identifies vulnerable areas and references this Plan.*	Town Manager	High	Local resources; TRORC; Vermont DEMHS	1 year after date of Plan Approval

Hazard(s) Mitigated	Mitigation Action	Local Leadership	Prioritization	Possible Resources*	Time Frame
All Hazards	*Develop a methodology the Town can use for consistently documenting infrastructure damage after weather events.*	Road Foreman	High	Local resources; TRORC	1 year after date of Plan Approval
	Meet with Vermont DEMHS regarding setting up VT Alert in Hartland.	Selectboard/ Town Manager	Medium	Local resources; Vermont DEMHS	2 years after date of Plan Approval
Structural Fire	*Ensure that fire department personnel maintain their Firefighter certifications.*	Hartland Volunteer Fire Department	High	Local resources (FD); VT Fire Academy; mutual aid departments	1 year after date of Plan Approval
	Conduct a public education program on fire prevention at the three school in Hartland.	Hartland Volunteer Fire Department	High	Local resources (FD); small prevention budget; mutual aid departments	1 year after date of Plan Approval
	Develop a pre-plan program for significant structures in the Town of Hartland. For each significant structure, develop a pre-fire plan and tour the structure to familiarize FD members with the layout of the structure.	Hartland Volunteer Fire Department	Medium	Local resources (FD)	2-4 years after date of Plan Approval
Hazardous Material Spill	*Ensure that all emergency response and management personnel continue to receive HAZMAT Awareness training at a minimum.*	Hartland Volunteer Fire Department	High	Local resources (FD)	1 year after date of Plan Approval
	Continuously stock gear to help contain small spills when they occur (booms, absorbent materials, etc.).	Hartland Volunteer Fire Department	High	Local resources (FD)	1 year after date of Plan Approval
Wildfire/ Brushfire	*Seek funding to draft a Community Wildfire Protection Plan (assesses and maps the community wildfire risk, discusses the ability to respond and recommends actions to reduce wildfire risk).*	Hartland Planning Commission/ Town Manager	Low	Local resources; Vermont Rural Protection Task Fore	4-5 years after date of Plan Approval

Hazard(s) Mitigated	Mitigation Action	Local Leadership	Prioritization	Possible Resources*	Time Frame
Wildfire/ Brushfire	*Develop a public education program to educate residents about wildfire/brushfire risks and how to minimize the occurrence of wildfire/brushfire.*	Hartland Volunteer Fire Department	Medium	Local resources (FD)	2 years after date of Plan Approval
	Develop a program to receive training and practice using brushfire/forestry equipment.	Hartland Volunteer Fire Department	High	Local resources (FD)	1 year after date of Plan Approval
	Complete a comprehensive survey of potential dry hydrant sites to determine the need for additional sites and potential location, and install dry hydrants.	Hartland Volunteer Fire Department	Low	Local resources (FD)	4-5 years after date of Plan Approval
Landslides/ Mudslides/ Rockslides	*Complete an inventory of locations where critical facilities, buildings, and infrastructure are vulnerable to landslides/ mudslides/rockslide, and map them.*	Town Manager/Road Foreman	Medium	Local resources; TRORC	2-4 years after date of Plan Approval
Landslides/ Mudslides/ Rockslides// Severe Weather	*Seek funding to fix the landslide issues on Densmore Hill Road.*	Town Manager	Medium	Local resources; state resources; HMGP	2-4 years after date of Plan Approval
Landslides/ Mudslides/ Rockslides// Severe Weather	*Encourage and support floodplain restoration and bank stabilization projects, including willow and tree plantings on the C. Jones property, on a site that is town-owned and around a replaced snowmobile bridge next to the Hartland fire station.*	Town Manager	Medium	Local resources; Ecosystem Restoration Program grants; Trout Unlimited	2-4 years after date of Plan Approval
Severe Weather	*Complete an up-to-date geo-referenced culvert inventory.*	Road Foreman	High	Local resources; TRORC; HUD CDBG-DR grant	1 year after date of Plan Approval
	Regularly inspect and maintain town bridges and culverts; and develop a schedule to replace undersized culverts.	Road Foreman	High	Local resources; TRORC; HUD CDBG-DR grant	1 year after date of Plan Approval

Hazard(s) Mitigated	Mitigation Action	Local Leadership	Prioritization	Possible Resources*	Time Frame
Severe Weather	*Review Vermont ANR's river corridor maps and regulation requirements during the update process of the Town Plan and incorporate supportive language in the Town Plan.*	Planning Commission/ Town Manager/ Selectboard	Low	Local resources; TRORC; Vermont ANR	3-5 years after date of Plan Approval
	Clear and maintain town road rights-of-way, and work with local utilities to request that utility corridors are cleared and maintained, as needed.	Road Foreman	High priority for dangerous trees	Local resources	1 year after date of Plan Approval
	Replace a 3'x4' stone culvert on Densmore Hill Road with a 6'x12' culvert. This culvert was damaged in the 07/03/2013 rain event.	Town Manager/Road Foreman	Medium	Local resources; Vermont Structures grant; FEMA HMGP	2-4 years after date of Plan Approval
	Replace severely undersized stone culvert at 2 Mace Hill Road to an appropriately sized structure (a hydraulic study has not yet been completed).	Town Manager/Road Foreman	Medium	Local resources; Vermont Structures grant; FEMA HMGP	2-4 years after date of Plan Approval

*Depending on the mitigation action, local resources may include the following: town personnel/staff time; town volunteer time; town budget line items, donations, cash from capital campaigns, among others.

Certificate of Adoption

The Town of Hartland
Select Board
A Resolution Adopting the Local Hazard Mitigation Plan
_____, 2015

WHEREAS, the Town of Hartland has worked with the Two Rivers-Ottauquechee Regional Commission to identify hazards, analyze past and potential future losses due to natural and manmade-caused disasters, and identify strategies for mitigating future losses; and

WHEREAS, the Hartland Local Hazard Mitigation Plan contains several potential projects to mitigate damage from disasters that could occur in the Town of Hartland; and

WHEREAS, a duly-noticed public meeting was held by the Town of Hartland Select Board on _____ __, 2015 to formally adopt the Hartland Local Hazard Mitigation Plan;

NOW, THEREFORE BE IT RESOLVED that the Hartland Select Board adopts and implements the Hartland Local Hazard Mitigation Plan Update.

_____
Chair of Select Board

_____
Member of Select Board

ATTEST

Appendices

Appendix A: Hazard Ranking Methodology

Frequency of Occurrence Probability	Warning Time Amount of time generally given to alert people to hazard	Potential Impact Severity and extent of damage and disruption
1 = *Unlikely* <1% probability of occurrence in the next 100 years 2 = *Occasionally* 1–10% probability of occurrence per year, or at least one chance in next 100 years 3 = *Likely* >10% but <100% probability per year, at least 1 chance in next 10 years 4 = *Highly Likely* 100% probable in a year	1 = More than 12 hours 2 = 6–12 hours 3 = 3–6 hours 4 = None–Minimal	1 = *Negligible* Isolated occurrences of minor property damage, minor disruption of critical facilities and infrastructure, and potential for minor injuries 2 = *Minor* Isolated occurrences of moderate to severe property damage, brief disruption of critical facilities and infrastructure, and potential for injuries 3 = *Moderate* Severe property damage on a neighborhood scale, temporary shutdown of critical facilities, and/or injuries or fatalities 4 = *Major* Severe property damage on a metropolitan or regional scale, shutdown of critical facilities, and/or multiple injuries or fatalities

Appendix B: Critical Stream Crossings

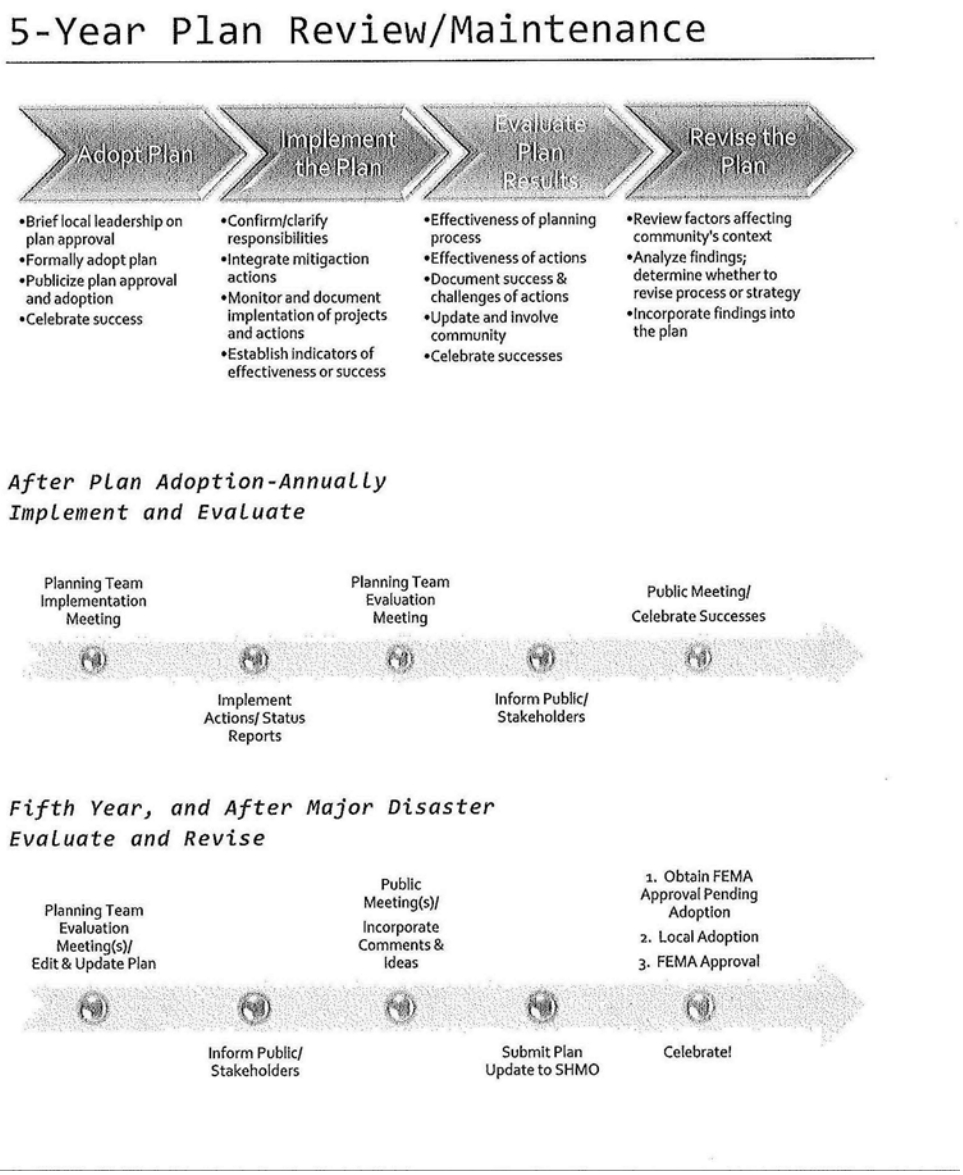
Critical crossings group one includes stream crossing structures on town highways that cross third order streams or larger. Headwater streams generally include first through third order. Third order was included as these headwater streams will have larger drainage areas and may have larger structures that are more difficult to replace and have a larger impact on the road network. Most of these are bridges.

RDFLNAME	STRUCT_NUM	OWNER_FIPS	CATEGORY	STRUCTYPE	STRC_LBL	AOTCLASS	X_COORD	Y_COORD	CUL_WIDTH	CUL_HEIGHT	CUL_LEN
SHUTE RD		27045	C			0	-72.414	43.5656	18	18	40
SHUTE RD		27045	C			0	-72.4112	43.564	60	60	40
QUECHEE RD	401409002514091	27045	B	TS	B25	2	-72.4018	43.5558	0	0	0
DENSMORE HILL RD		27045	C			0	-72.4762	43.5486	18	18	40
JENNEVILLE RD		27045	C			0	-72.476	43.5415	48	48	40
JENNEVILLE RD	401409001414091	27045	B	TS	B14	3	-72.4865	43.5374	0	0	0
TH 56	401409001714091	27045	B	TS	B17	3	-72.4896	43.5342	0	0	0
JENNEVILLE RD		27045	C			0	-72.4997	43.5316	72	48	40
BROWNSVILLE RD	101409000414091	27045	B	TL	B4	0	-72.4521	43.535	0	0	0
BROWNSVILLE RD	101409003414091	27045	B	TL	B34	0	-72.4413	43.5383	0	0	0
BROWNSVILLE RD		27045	C			0	-72.4387	43.5385	15	15	50
BROWNSVILLE RD	200152000514092	27045	B	SL	B5	0	-72.4319	43.5372	0	0	0
MARTINSVILLE RD	101409002014091	27045	B	TL	B20	0	-72.4016	43.5345	0	0	0
MARTINSVILLE RD	101409001814091	27045	B	TL	B18	0	-72.3973	43.5314	0	0	0
MARTINSVILLE RD	101409002314091	27045	B	TL	CB23	0	-72.396	43.5324	0	0	0
MILL ST	101409002214091	27045	B	TL	CB22	0	-72.3493	43.5938	0	0	0

Critical crossings group two includes significantly undersized structures, usually culverts, were identified from the ANR-DEC stream geomorphic assessment survey with openness ratios less than 50%. This measure refers to when structure's width is less than half of the stream bankfull width. Several of these structures may have been damaged during TS Irene or other events and may have been replaced. The town, at some point, should look at these sites and assess their status and need for repair/upgrades.

RDFLNAME	GROUP_TWO	OWNER_FIPS	CATEGORY	X_COORD	Y_COORD	CUL_WIDTH	CUL_HEIGHT	CUL_LEN	OpennesssR	ChannelWid
QUECHEE RD	Y	27045	C	-72.4066	43.6054	72	72	40	0.261935	12.7
QUECHEE RD	Y	27045	C	-72.4066	43.5961	72	72	40	0.469412	10
GROUT RD	Y	27045	C	-72.406	43.5915	36	36	42	0.214286	9.3
HARTLAND HILL RD	Y	27045	C	-72.4611	43.5878	48	48	40	0.38025	12.3
DENSMORE HILLS RD	Y	27045	C	-72.4883	43.5622	48	48	40	0.4	7
DENSMORE HILLS RD	Y	27045	C	-72.4817	43.558	48	48	40	0.4	9
SPEAR RD	Y	27045	C	-72.4588	43.5503	48	48	35	0.457143	9
BROTHERS RD	Y	27045	C	-72.4228	43.601	36	36	34	0.273529	16.3
BROTHERS RD	Y	27045	C	-72.4221	43.5844	48	48	52	0.290769	9.9

Appendix C: Five-Year Review and Maintenance Plan



Attachments

Attachment A: Map of the Town of Hartland

Flood Region:
National Flood Insurance Program
Digital Flood Insurance Rate Map Data

Stream Geomorphic Assessment Data:
Obtained from the Data Management Sys.
Maintained by the VANR River Management Program

Village Centers:
Designated by the State for,
historic tax credit and other benefits,
pursuant to 24 VSA sections 2793a

0 1 Miles

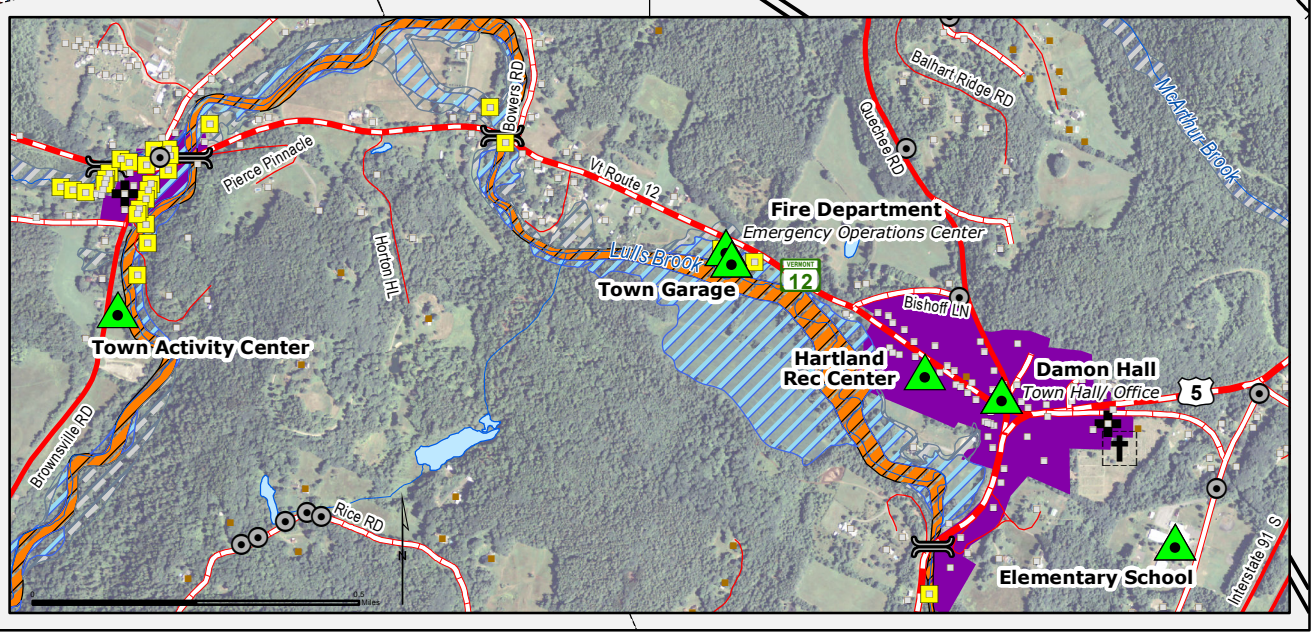
HARTFORD

WOODSTOCK

READING

Ottauquechee River
North Hartland Reservoir
North Hartland Lake
North Hartland Water Coop
Quarry RD
Maxfield LN
Interstate 91 S
Mill ST
Clay Hill RD
Quechee RD
Draper RD
Ellison RD
Grout RD
Interstate 91 N
Fulling Brook
Harlow Brook
Th 8
Barron Hill RD
Advent Hill RD
Gray RD
Th 19
Shepherd Brook
Gilson RD
Blothers RD
Center Of Town RD
Damon RD
Garvin Hill RD
Crystal Pond
Babcock Brook
McArthur Brook
Shute RD
Us Route 5
Beaver Pond
Cobb Hill RD
Merritt RD
Densmore Brook
Cream Pot RD
FAA
Communications Tower
Weed Brook
Fareham Farm RD
Linden RD
Ferry RD
Th 47
Bryant RD
Spear RD
Flower LN
Weed RD
Town Farm Hill RD
Brownsville RD
Rice RD
Tinkham Hill RD
Densmore Hill RD
Cady Brook
Dodge LN
Morley RD
Peabody RD
Jenne RD
Best RD
County RD
Bashan Brook
Moeller RD
Reeves RD
Willow Brook

Floodplain eSITES	
RESIDENTIAL	
CAMP	2
MOBILE HOME	13
OTHER RESIDENTIAL	1
SINGLE FAMILY DWELLING	46
COM/IND/PUB	
COMMERCIAL	3
FIRE STATION	1
INDUSTRIAL	1
OTHER	4
Grand Total	**71**



Hazard Mitigation Plan
Essential Services Map
Hartland, Vermont

- TH cls 1 (village VT rt)
- TH cls 2
- TH cls 2 gravel
- TH cls 3
- TH cls 3 gravel
- TH cls 4 impassable
- VT forest hwy
- trail
- private
- VT route
- US route
- US interstate
- TH cls 4 gravel
- TH cls 4 primitive
- Railroad
- Major Electric Transmission

- Critical Facility
- Critical Stream Crossing
- Church
- Cemetery
- Significantly Undersized Structure
- Culvert Under 18" Wide
- Bridge
- Electric Substation

- e911 in Floodplain
- e911 Within 1000' of Major Route
- e911 Address
- Designated Village
- Floodway
- 100 Year
- 100 Year, No BFE
- 500 Year

Two Rivers-Ottauquechee
Regional Commission
GIS Service Center
128 King Farm Rd
Woodstock, VT 05091
802-457-3188
trorc.org