Town of Stockbridge, VT

Local Hazard Mitigation Plan

Adopted December 16, 2021

Approved December 21, 2021

Prepared by the Two Rivers-Ottauquechee Regional Commission and the Town of Stockbridge, VT

CERTIFICATE OF ADOPTION

December 16, 2021

TOWN OF Stockbridge, Vermont Selectboard

A RESOLUTION ADOPTING THE Stockbridge, Vermont 2021 Local Hazard Mitigation Plan

WHEREAS, the Town of Stockbridge has historically experienced severe damage from natural hazards and it continues to be vulnerable to the effects of the hazards profiled in the **Stockbridge, Vermont 2021 Local Hazard Mitigation Plan**, which result in loss of property and life, economic hardship, and threats to public health and safety; and

WHEREAS, the Town of **Stockbridge** has developed and received conditional approval from the Federal Emergency Management Agency (FEMA) for its **Stockbridge, Vermont 2021 Local Hazard Mitigation Plan (Plan)** under the requirements of 44 CFR 201.6; and

WHEREAS, the **Plan** specifically addresses hazard mitigation strategies, and Plan maintenance procedures for the Town of **Stockbridge**; and

WHEREAS, the **Plan** recommends several hazard mitigations actions (projects) that will provide mitigation for specific natural hazards that impact the Town of **Stockbridge** with the effect of protecting people and property from loss associated with those hazards; and

WHEREAS, adoption of this **Plan** will make the Town of **Stockbridge** eligible for funding to alleviate the impacts of future hazards; now therefore be it

RESOLVED by Town of **Stockbridge** Selectboard:

1. The **Stockbridge, Vermont 2021 Local Hazard Mitigation Plan** is hereby adopted as an official plan of the
Town of **Stockbridge**;

2. The respective officials identified in the mitigation action plan of the **Plan** are hereby directed to pursue implementation of the recommended actions assigned to them;

3. Future revisions and **Plan** maintenance required by 44 CFR 201.6 and FEMA are hereby adopted as part of this resolution for a period of five (5) years from the date of this resolution; and

4. An annual report on the process of the implementation elements of the Plan will be presented to the Selectboard by the Emergency Management Director or Coordinator.

IN WITHNESS WHEREOF, the undersigned have affixed their signature and the corporate seal of the Town of **Stockbridge** this 16th day of December, 2021.

Selectboard Chair

Attest

Town Clerk

U.S. Department of Homeland Security
FEMA Region I
99 High Street, Sixth Floor
Boston, MA 02110-2132

FEMA

January 3, 2022

Stephanie A. Smith, State Hazard Mitigation Officer
Vermont Emergency Management
45 State Drive
Waterbury, Vermont 05671-1300

Dear Ms. Smith:

As outlined in the FEMA-State Agreement for FEMA-DR-4474, your office has been delegated the authority to review and approve local mitigation plans under the Program Administration by States Pilot Program. Our Agency has been notified that your office completed its review of the Town of Stockbridge, VT Local Hazard Mitigation Plan and approved it effective **December 21, 2021** through **December 20, 2026** in accordance with the planning requirements of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), as amended, the National Flood Insurance Act of 1968, as amended, and Title 44 Code of Federal Regulations (CFR) Part 201.

With this plan approval, the jurisdiction is eligible to apply to Vermont Emergency Management for mitigation grants administered by FEMA. Requests for funding will be evaluated according to the eligibility requirements identified for each of these programs. A specific mitigation activity or project identified in this community's plan may not meet the eligibility requirements for FEMA funding; even eligible mitigation activities or projects are not automatically approved.

The plan must be updated and resubmitted to the FEMA Region I Mitigation Division for approval every five years to remain eligible for FEMA mitigation grant funding.

Thank you for your continued commitment and dedication to risk reduction demonstrated by preparing and adopting a strategy for reducing future disaster losses. Should you have any questions, please contact Jay Neiderbach at (617) 832-4926 or Josiah.Neiderbach@fema.dhs.gov.

Sincerely,

Paul F. Ford
Acting Regional Administrator
DHS, FEMA Region I

PFF:jn

cc: Ben Rose, Recovery and Mitigation Section Chief, VEM

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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 seeks to provide an all-hazards mitigation strategy that will make the community of Stockbridge 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" include (1) averting the hazards through redirecting impacts by means of a structure or land treatment, (2) adapting to the hazard by modifying structures or standards, and (3) avoiding the hazard through improved public education, relocation/removal of buildings in the flood zone, or ensuring development is disaster resistant.

The Four Phases of Emergency Management

Mitigation planning is only one of four phases of emergency management. Preparedness, response, and recovery are the other pieces of the cycle. At any one time, a community may be in more than one phase of emergency management. It is important to distinguish between these four phases, especially between mitigation and preparedness. Mitigation is often confused with preparedness, and vice versa. Below are descriptions of each of the four phases of emergency management:

Figure 1. Four Stages of Emergency Management

- **Mitigation**: preventing future emergencies or minimizing their effects
  - Includes any activities that prevent an emergency, reduce the chance of an emergency happening, or reduce the damaging effects of unavoidable emergencies.
  - Buying flood and fire insurance for your home is a mitigation activity.
  - Mitigation activities take place before and after emergencies.

- **Preparedness**: preparing to handle an emergency
    - Includes plans or preparations made to save lives and to help response and rescue operations.
    - Training and proper equipment are preparation
    - Evacuation plans and stocking food and water are both examples of preparedness.
    - Preparedness activities take place before an emergency occurs.
- **Response**: responding safely to an emergency
    - Includes actions taken to save lives and prevent further property damage in an emergency situation. Response is putting your preparedness plans into action.
    - Rescuing people from flooding or putting out a fire are both response activities.
    - Response activities take place during an emergency.
- **Recovery**: recovering from an emergency
    - Includes actions taken to return to a normal, preferably incorporating mitigation actions to create an even safer situation following an emergency.
    - Recovery includes getting financial assistance to help pay for the repairs.
    - Rebuilding damaged roads or providing loans to businesses are both recovery activities.
    - Recovery activities take place after an emergency.

II. Purpose of the Plan

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

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

This document is updated from the 2015 Stockbridge Local Hazard Mitigation Plan, which was the first stand-alone mitigation plan drafted for the town. Previously, the Town had a town-specific 2009 Annex in the Regional Pre-Disaster Mitigation Plan. The 2015 Plan was reorganized, and the following sections had been added, including:

- 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 Stockbridge town officials and residents who will implement the hazard mitigation strategies in the future.

This 2021 Plan expands upon the 2015 plan by analyzing new hazards, adding new and relevant data, and creating new mitigation actions for the Town to follow over the next five years. In addition, this newer

Plan also serves as an important financial incentive during federally declared disasters. In October 2014, the state enacted new Emergency Relief and Assistance Fund (ERAF) rules that provide additional state matching funds for federal disaster relief under FEMA's Public Assistance Program (FEMA typically requires a 25% match). To qualify, municipalities must have taken four actions: (1) adopt updated road standards, (2) participate in the National Flood Insurance Program (NFIP) by adopting flood hazard area regulations, (3) annually adopt a local emergency management plan, and (4) have a local Hazard Mitigation Plan approved by FEMA. Under ERAF, there is a financial incentive that allows the town to lessen their financial burden during federally declared disasters. By having taken these four basic actions, the state will contribute half (12.5%) of the 25% match on federal disasters.

A fifth action, that not many communities in Vermont do, is to either adopt a River Corridor bylaw or participate in the Community Rating System (CRS). River Corridor bylaws regulate lands mapped by the State of Vermont that are usually beyond the FEMA mapped flood zone, with the concern being erosion that can undermine structures. CRS is a complex administrative process with a simple premise – that taking additional flood prevention steps will lessen flood damages. Communities in the CRS enjoy lower flood insurance rates. Doing either of these fifth actions will lower the financial burden under the ERAF rule to only a 7.5% match for the town. At the time of this writing, the town is financially responsible for 17.5% on the dollar in federally declared disasters due to the expiration of the local hazard mitigation plan.

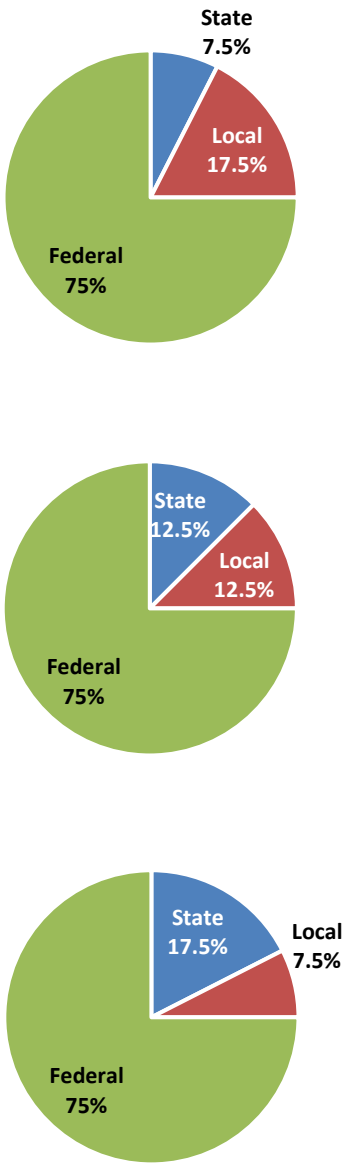


Figure 2. Different Levels of ERAF

Separately, in 2014, state planning law (24 V.S.A. Chapter 117) required that all updated municipal comprehensive plans must include a "flood resilience" element, addressing both flooding and fluvial erosion hazards. This requirement was met with the adoption of Stockbridge's Town Plan on August 20th, 2015.

III. Community Profile

The Town of Stockbridge is located in the northwestern portion of Windsor County, Vermont. It comprises an area of approximately 28,300 acres, or 45.41 square miles.

Stockbridge is located in the physiographic region known as the Intermountain Valleys and foothills of the Green Mountains. This area is characterized by mountainous terrain, narrow valleys, and a few peaks

above 2,500 feet. Stockbridge's narrow valleys are bisected by the White and Tweed Rivers and Fletcher and Stony Brooks.

On July 11, 2007, a storm centered on six towns in central Vermont, including the Town of Stockbridge. Six to eight inches of rain fell during the event, with about three inches per hour falling in Stockbridge. At least $8 million in damages to roads and stream crossing structures occurred in towns. Stockbridge is also home to the Gaysville area, a hamlet that was totally destroyed in the 1927 flood. More recently, Tropical Storm Irene caused widespread damage to the Stockbridge community in August of 2011, destroying numerous properties and wiping out large swathes of roadway and other infrastructure, most notably Route 107 leading to Bethel.

According to the U.S. Census Reports, population levels have increased in Stockbridge since 1980. The population estimate in Stockbridge for 2020 was 704. Compared to 618 in 1980, this was a 13.9% increase. The 13.9% rate of growth in Stockbridge was higher rate of growth than Windsor County experienced within that same time frame (.07%).

According to Vermont Housing data, there were 576 housing units in Stockbridge in 2019, an increase of 4.2% from the number of housing units in 2010, which was 553. According to 2019 data, nearly 41.3% of the Town's housing stock was comprised of units for seasonal, recreational, or occasional use. Nearly 12.2% of Stockbridge residences were built prior to 1939, according to 2019 housing data.

The Town lies within the service area of Green Mountain Power, which supplies electrical power to all sections of town.

The Town is serviced by the Stockbridge Volunteer Fire Department. The Town participates in a mutual aid district with Bethel, Barnard, Rochester, and Pittsfield, whereby assistance is provided in the event of a serious fire.

First and second constables are elected annually at Town Meeting. The Vermont State Police, Troop "D" located in Royalton, responds to emergencies in Stockbridge, such as traffic accidents, breaches of the peace, or other criminal rather than civil emergencies. The Windsor County Sheriff's Department, located in Woodstock, does not provide emergency service to Stockbridge but will, for a fee, provide radar surveillance and prearranged security service.

Medical emergencies are handled by the private, non-profit White River Valley Ambulance, Inc. located in Bethel. They have three ambulances. The closest hospital is Gifford Medical Center, located in Randolph. Medivac services are available by the DHART helicopter.

IV. The Planning Process

A. 2021 Plan Developers

Jake Palant, a Regional Planner at the Two Rivers-Ottauquechee Regional Commission (TRORC), assisted the Town of Stockbridge with updating its Hazard Mitigation Plan. Team 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
Lori Scott	Town Clerk/Treasurer	On June 1, 2021, TRORC Staff contacted Jim Shands, Stockbridge Select Board Member and EMD; Lee Ann Isaacson, Stockbridge Select Board Chair; and Lori Scott, Stockbridge Town Clerk to offer his assistance in updating the Stockbridge Hazard Mitigation Plan. TRORC also requested that the town assemble a small team of plan developers. A Stockbridge Select Board Meeting was held on June 3, 2021, in which the Planning Team members were identified. TRORC worked with the Local Hazard Mitigation Planning Team to schedule an initial meeting to review the Hazard Mitigation Plan on June 21, 2021.
Dave Brown	Road Commissioner, Stockbridge Fire Chief	
Jim Shands	Select Board Member and EMD	
Kevin Travis	Planning Commission Chair	

Figure 3. 2021 Stockbridge Local Hazard Mitigation Planning Team

B. Plan Development Process

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

The 2009 Stockbridge 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 Stockbridge Annex received subsequent FEMA approval, but, since it was part of a larger plan, FEMA treated its start date as September 30, 2008, meaning the Stockbridge Annex expired on September 30, 2013. In the following Sections, you can find the summary of changes and of the planning process for the 2015 Local Hazard Mitigation Plan Adopted Plan, and a thorough description of the changes and planning process for the 2021 Plan.

2015 Changes to the Plan

In 2015, this plan was reconstructed as a single jurisdiction, stand-alone Stockbridge Local Hazard Mitigation Plan, which was approved by FEMA on August 3, 2015. As such, several sections have been added or updated to include all necessary information. Several meetings were held during the 2015 Plan creation. A letter was drafted and emailed to the Select Board in November of 2013 to create a committee to start the mitigation plan process. Subsequent meetings were held in 2014 on February 6, March 20, May 1, and June 5. Notices for these meetings were posted in The Valley News, Herald of Randolph,

Journal Opinion, and the Vermont Standard. No substantive comments were received from neighboring communities.

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).

The 2015 changes to this Plan included:

- **General**
  - New sections: Plan Development Process, 2009 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 Spills, Structural Fire, Extreme Cold/Snow/Ice Storm, and Flash Flood/Flood/Fluvial Erosion remain on the list of "top hazards," which reflect the local officials' belief that the Town is still vulnerable to these hazards;
  - Wildfire has been added to 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 be vulnerable to in the next five years;
  - Landslides have been removed from the list of "top hazards;"
  - 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 Stockbridge depicting critical facilities, town infrastructure, and the NFIP designated floodway and 100-year floodplain has been added.

2021 Changes to the Plan

The 2015 Plan provided a good base for the 2021 Plan update. The changes to the 2021 plan were primarily focused on identifying new hazards and developing new mitigation strategies. On September 7th, 2021, TRORC staff emailed a draft copy of Stockbridge's LHMP to the Stockbridge Select Board for comments. On September 8th, TRORC staff then emailed the draft to the chairperson of the Select Board for each of the neighboring communities (See Appendix D for example), including: Bethel, Barnard, Killington, Pittsfield, Bridgewater, Rochester, and Braintree. On September 13th, TRORC received a comment via email from the Rochester EMD, who questioned if wildfires should be considered the top hazard in Stockbridge due to the large number of winter storms by comparison. The Stockbridge Select Board considered the Rochester EMD's comment at their October 7th meeting and noted that wildfires were becoming an increasingly bigger issue in the region and should still be considered the top hazard in Stockbridge. No other substantial comments from neighboring communities were received.

Figure 4. June 21, 2021 Meeting Flyer

2021 Planning Process and Changes:

- **General**
  - Data updates: new hazard incidents, new federal emergency declarations, and census data,
  - Reevaluation of hazards using a hazard ranking system.
- **Hazard Analysis**
  - An initial public meeting was held on **June 21st, 2021** where TRORC staff met with the LHM Planning Team and interested members of the public to identify and evaluate hazards within Stockbridge. The LHM Planning Team determined that the hazard rankings should remain the same as they were in the 2015 plan; however, the overall score for each hazard changed due to the hazard scoring system used. No citizens were in attendance at the meeting, thus no public comments were received. Notification was placed on the Stockbridge town website, the TRORC website, and at the Stockbridge Town Clerk's Office.

- On July 1st, the Stockbridge LHM Planning Team gave a status update on the Hazard Mitigation Plan to the Town Select Board. During that same meeting, the Select Board approved moving forward with the hazard rankings and scores for the 2021 LHMP.

- **Mitigation Strategies**
  - A public meeting was held on **July 21st, 2021**, where TRORC staff met with the LHM Planning Team to develop and discuss mitigation actions for the top five hazards identified in the Stockbridge LHMP. The LHM Planning Team provided updates on previous mitigation and preparedness actions that were originally developed for the 2015 Stockbridge LHMP. No citizens were in attendance at the meeting, thus no public comments were received. Notification was placed on the Stockbridge town website, the TRORC website, and at the Stockbridge Town Clerk's Office.
- **Review**
  - A draft of the LHMP was emailed to the LHM Planning Team on August 20th, 2021 for review. Additional Mitigation actions regarding investigation of potential landslides and the installation of a generator at Stockbridge School were added to the proposed Mitigation Actions Table, before TRORC staff emailed a revised draft to the Stockbridge Select Board on September 7th. The LHMP was then reformatted and emailed to the Stockbridge Select Board on September 24th.
  - A third public meeting was held with the Stockbridge Select Board in the Stockbridge Town Office, for comment, on **October 7th, 2021**. The meeting notice was posted at the Stockbridge Town Office, the Stockbridge Town Website, the TRORC Website, and in the Randolph Herald. There were no members of the public who provided any comment regarding the LHMP. The Stockbridge Select Board voted to move forward with the LHMP as written.
- **Review of existing plans, studies, reports, and technical information**

  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).

  - State of Vermont Hazard Mitigation Plan, 2018
  - Stockbridge Hazard Mitigation Plan (Adopted July 2, 2015)
    - This plan was referenced extensively during the update / development process, especially in regard to the worst threats and mitigation action strategies identified in 2015.
  - Stockbridge Town Plan (Adopted August 20, 2015)
    - This plan provided TRORC's staff with background information on the community, as well as more detail on their emergency services.
  - Stockbridge's Local Emergency Management Plan (LEMP) (Last Adopted April 15, 2021)
    - This Plan was referenced for general information about Stockbridge's emergency operations.
  - Additional data sources are listed in the *Hazard Identification* section of this Plan (V.A).
    - For Wildfires: information was provided by the Stockbridge Fire Department

- For Hazardous Material Spills: information was collected from the Vermont Department of Environmental Conservation's Spill List
- For Structure Fire: information was provided by the Stockbridge Fire Department
- For Extreme Cold/Snow/Ice Storm: information was collected from the National Centers for Environmental Information.
- For Flash Flooding/Flooding/Fluvial Erosion: information was collected from FEMA Database of Declared Disasters and the National Centers for Environmental Information.

C. Changes in Priorities Since the 2015 Plan

This 2021 Local Hazard Mitigation Plan reflects any changes in the Town's priorities since 2015. The top five hazards previously identified in the 2015 LHMP were wildfire, hazardous material spill, structural fire, extreme cold/snow/ice storm, and flash flood/flood/fluvial erosion. The 2021 LHM Planning Team determined that the new hazard rankings should remain consistent with the hazard rankings from the 2015 LHMP. While the overall hazard rankings did not change, the scores of these hazards did change due to a different hazard scoring system being used in this plan from the 2015 plan.

The hazard of Infectious Disease Outbreak/Pandemic was added to the Hazard Identification Table since it was one of the hazards listed in the 2018 Vermont State Hazard Mitigation Plan. The importance of including this hazard in local hazard mitigation plans was further exemplified by the Covid-19 Pandemic throughout 2020 and 2021. In addition, hazards that were listed but did not receive a hazard score in the 2015 plan due to low prioritization (drought, earthquake, extreme heat, and tornado) or due to low applicability (dam failure and water supply contamination) were given hazard scores in this new plan.

D. Status Update on Mitigation Actions Identified in 2015

The following table outlines the mitigation actions that were proposed in the 2015 Local Hazard Mitigation Plan for the Town of Stockbridge (adopted on July 2nd, 2015).

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

Participants in the 2021 Plan update process reviewed these actions and reported on the status of each in priority order:

Action	Local Leadership	Prioritization	Possible Resources*	Time Frame	2021 Status of Mitigation Action
All Hazards					
Ensure that Stockbridge's Local Emergency Operations Plan (LEOP) is kept up-to-date and identifies vulnerable areas and references this Plan. (Preparedness)	Emergency Management Director/ Coordinator	High	Local Resources; TRORC	1 year from date of Plan Approval	☑ Completed. The LEOP has been replaced by the Local Emergency Management Plan (LEMP). Last

Action	Local Leadership	Prioritization	Possible Resources*	Time Frame	2021 Status of Mitigation Action
					updated and approved on 4/15/2021. This action has been reincorporated as an action in the 2021 LHMP.
Develop a town methodology for consistently documenting infrastructure damage after weather events.	Road Commissioner	High	Local Resources	1 year from date of Plan Approval	☑ Completed as needed. Incorporated in multiple actions in the 2021 LHMP.
Complete designation of the proposed Red Cross Shelter at the Stockbridge School. (Preparedness/Mitigation)	Emergency Management Director/ Coordinator	High	Local Resources; Red Cross	1 year from date of Plan Approval	Not completed. Multiple transitions in school leadership created some difficulty completing this. Additional volunteers or staffing is needed to assist in this effort. Stockbridge also believed that installation of a generator at the school will further solidify these efforts. Incorporated in multiple actions in the 2021 LHMP.
Hazardous Material Spill					
Ensure that all emergency response and management personnel continue to receive HAZMAT Awareness training at a minimum. (Preparedness)	Fire Chief	Low	Local Resources; Vermont League of Cities &Towns; State	1 year from date of Plan Approval	Ongoing. There has been a shortage in training during the events of Covid-19. Incorporated as

Action	Local Leadership	Prioritization	Possible Resources*	Time Frame	2021 Status of Mitigation Action
			HAZMAT team		an action in the 2021 LHMP.
Acquire materials/equipment to help contain small spills when they happen (booms, absorbent materials, etc.). *(Preparedness)*	Fire Chief	Low	Local Resources; Vermont League of Cities & Towns	2-3 years from date of Plan Approval	☑ Ongoing. Incorporated as an existing action in the 2021 LHMP.
Structural Fire					
Ensure that some fire department personnel maintain their Firefighter certifications. (Preparedness)	Fire Chief	Low	Local Resources	1 year from date of Plan Approval	Not completed. The certification for the Town's firefighters expired. Currently, no firefighters are certified due to the increasing educational requirements. For that reason, the Town does not wish to incorporate this action into the 2021 LHMP.
Structural Fire/Wildfire					
Complete a comprehensive survey of potential dry hydrant sites to determine the need for additional sites and potential location, and install dry hydrants. (Mitigation)	Fire Chief	High	Local Resources; Vermont Rural Fire Protection Task Force grants	1 year from date of Plan Approval	☑ Completed as needed. Existing dry hydrants have been documented. This is incorporated in actions in the 2021 LHMP.
Wildfire					
Review and integrate Stockbridge's Community Wildfire Protection Plan into other local planning processes. Implement the recommendations in the Plan. (Mitigation)	Fire Department	Medium	Local Resources	2-3 years from date of Plan Approval	A Community Wildfire Protection Plan was drafted. Incorporated as

Action	Local Leadership	Prioritization	Possible Resources*	Time Frame	2021 Status of Mitigation Action
					an action in the 2021 LHMP.
Remove, where necessary, trees and brush from the rivers/streams (in consultation with Vermont Agency of Natural Resources) and from areas vulnerable to wildfire.(Mitigation)	Fire Department	Medium	Local Resources; Vermont ANR	2-3 years from date of Plan Approval	Not complete. No longer prioritized. Due to the difficulty with undertaking this action, the Town has decided to not incorporate this action in the 2021 LHMP.
Extreme Cold/Snow/Ice Storm					
Identify specific at-risk populations or "power-critical customers" that are exceptionally vulnerable in the event of a long-term power outage.(Mitigation)	Emergency Management Director/ Coordinator	High	Local Resources	1 year from date of Plan Approval	Not complete. Due to the changes in population, this effort is no longer prioritized. The town does not see the need to incorporate this in the 2021 LHMP.
Once specific at-risk residents are identified, develop a plan to reach out to those (and all) residents to educate them about accessible heating centers in Stockbridge.(Mitigation)	Emergency Management Director/ Coordinator	Medium-High	Local Resources	1-2 years from date of Plan Approval	Not complete. The town can more easily educate all residences about these issues, rather than specifically identify those at risk. Town has not identified specific heating centers. Due to the difficulty with undertaking this action, the Town has not

Action	Local Leadership	Prioritization	Possible Resources*	Time Frame	2021 Status of Mitigation Action
					incorporated it into the 2021 LHMP.
Budget to ensure the Town has sufficient funds to provide safe winter travel conditions.(Preparedness/ Mitigation)	Select Board in coordination with the Road Commissioner	High	Local Resources	1 year from date of Plan Approval	☑ Completed.
Encourage utilities to continue regular tree trimming along power lines.(Mitigation)	Emergency Management Director/ Coordinator	High	Local resources	1 year from date of Plan Approval	Not complete. Town would prefer if the utility companies manage these operation. Since the town does not wish to focus their efforts on this action, it is not incorporated into the 2021 LHMP.
Flash Flood/ Flood/ Fluvial Erosion					
Maintain and update town bridge and culvert inventories. Regularly inspect and maintain town bridges and culverts; and develop a schedule to replace and upsize undersized culverts. (Preparedness/Mitigation)	Road Commissioner	High	Local Resources; Better Backroads grants	1 year from date of Plan Approval	☑ Completed. Last updated as of June 2021. Bridges are typically inspected every two years.
As part of the Town Plan updates, review the Town's Flood Hazard Bylaw to determine where language could be revised, strengthened, or updated to maintain consistency with the NFIP and relevant state statutes. (Mitigation)	Planning Commission	Low	Local Resources; TRORC; Municipal Planning Grants; VT ANR's River Management Section; FEMA HMGP Planning	4-5 years from date of Plan Approval	☑ Completed as of the last Town Plan Adoption in 2015. Will need to be revisited in the next Town Plan update. Incorporated as an action in the 2021 LHMP.

Action	Local Leadership	Prioritization	Possible Resources*	Time Frame	2021 Status of Mitigation Action
Proceed with and close on the following home- buyout properties: 3 on Schaff Haus, 1 on Fletcher Brook, 1 on Bridge Street. (Mitigation)	Select Board	High	HMGP; CBDG; TRORC; local resources	1-3 years from date of Plan Approval	☑ Completed
Stabilize potential landslides on Blackmer Boulevard. (Mitigation)	Road Commissioner	Low-Medium	Local resources; State Geologist; Better Backroads grant; FEMA HMGP	3-5 years from date of Plan Approval	☑ In progress for improving on existing efforts. Has previously been stabilized. Incorporated in an action in the 2021 LHMP.
Develop a program to investigate the rehabilitation or replacement of the Gaysville Bridge, which is currently contributing to flooding. (Mitigation)	Select Board in coordination with the Road Commissioner	High	Local Resources; TRORC; State Resources	2-3 years from date of Plan Approval	Underway. Initial Local Access meeting held 6/3. Repair project is in the bid process. Incorporated as an action in the 2021 LHMP.
Increase dimensions of culvert on Music Mountain Road (located at N43.80608 and W072.73809) to improve the flow of floodwaters and reduce risk of road washouts. (Mitigation)	Select Board in coordination with the Road Commissioner	Medium	Local Resources; State Resources (Better Backroads grants, Structures grants); FEMA HMGP and PDM-C grants	2-4 years from date of Plan Approval	Incomplete. Incorporated as an action in the 2021 LHMP, but incorporated as a lower priority due to lack of immediate funding.
Increase dimensions of culvert on Blackmer Boulevard (located at N43.77695 and W072.75235) to improve the flow of floodwaters and reduce risk of road washouts. (Mitigation)	Select Board in coordination with the Road Commissioner	Medium	Local Resources; State Resources (Better Backroads grants, Structures grants); FEMA HMGP	2-4 years from date of Plan Approval	Incomplete. Incorporated as an action in the 2021 LHMP, but incorporated as a lower priority due to lack of immediate funding.

Action	Local Leadership	Prioritization	Possible Resources*	Time Frame	2021 Status of Mitigation Action
			and PDM-C grants		
Increase dimensions of multi-plate culvert on Stony Brook Road, at the intersection of Davis Hill and Stony Brook (located at N43.72726 and W072.72113) to improve the flow of floodwaters and reduce risk of road washouts. (Mitigation)	Select Board in coordination with the Road Commissioner	Medium	Local Resources; State Resources (Better Backroads grants, Structures grants); FEMA HMGP and PDM-C grants	2-4 years from date of Plan Approval	Incomplete. Incorporated as an action in the 2021 LHMP, but incorporated as a lower priority due to lack of immediate funding.
Increase dimensions of multi-plate culvert on Fletcher Brook Road, intersecting with Taggart Hill Brook (located at N43.73477 and W072.73591) to improve the flow of floodwaters and reduce risk of road washouts. (Mitigation)	Select Board in coordination with the Road Commissioner	Medium	Local Resources; State Resources (Better Backroads grants, Structures grants); FEMA HMGP and PDM-C grants	2-4 years from date of Plan Approval	Incomplete. Incorporated as an action in the 2021 LHMP, but incorporated as a lower priority due to lack of immediate funding.
Increase dimensions of multi-plate culvert on Labadie Road, which intersects with Taggart Hill Brook (located at N43.73542 and W072.74009) to improve the flow of floodwaters and reduce risk of road washouts. (Mitigation)	Select Board in coordination with the Road Commissioner	Medium	Local Resources; State Resources (Better Backroads grants, Structures grants); FEMA HMGP and PDM-C grants	2-4 years from date of Plan Approval	Incomplete. Incorporated as an action in the 2021 LHMP, but incorporated as a lower priority due to lack of immediate funding.

Action	Local Leadership	Prioritization	Possible Resources*	Time Frame	2021 Status of Mitigation Action
Stabilize Tweed riverbanks in Chalet Village along Route 100 by Canton and Lucerne Dr. (Mitigation)	Road Commissioner	Medium	Local Resources; State Resources (Better Backroads grants, Structures grants); FEMA HMGP and PDM-C grants	2-4 years from date of Plan Approval	Not completed. Town cannot determine who owns the property along the riverbank and does not wish to incorporate this action into the 2021 LHMP.

Figure 5. Mitigation Actions Identified in 2015

E. Status of Development in Stockbridge

Overall, there is very little development activity in the Town of Stockbridge. There had been 129 permits issued between 2014 and August 15, 2021. Only three of those permits issued were related to business use, including one home occupation established in 2015; a plant nursery, which received a permit in 2017; and a change of use to a home business for a gun shop in 2021. There were nineteen properties in the Town of Stockbridge that were involved in the state's post-Tropical Storm Irene property buyout program, which represents the antithesis of what is traditionally considered "development." The buildings and structures on each of these properties have since been demolished, and the Town of Stockbridge has received reimbursement from both FEMA and the State of Vermont. The land has been returned to open space and only very minor development is now permitted, such as a park or public river access, and will be allowed to flood with no or little risk of future damage to the property.

The Town of Stockbridge acquired the former Gaysville Campground following Hurricane Irene. As of the date of this code, the Town is working with the White River Partnership and has received a Grant to develop walking trails and day use activities.

F. Existing Hazard Mitigation Programs, Projects & Activities

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

The Town of Stockbridge 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 Stockbridge's Local Emergency Management Plan (LEMP). Last updated and approved on 04/15/2021.	Volunteer time from the Emergency Management Director/ Coordinator; assistance from TRORC. Funding from Vermont DEMHS.	This document is reviewed and updated each year to ensure that the contact information of emergency response personnel is up-to-date. This information is then sent to Vermont Emergency Management for their records. Current program works well, no need to expand or improve on.
	Program— Designation of Red Cross Shelter	Volunteer time from the Select Board, Emergency Management Director/ Coordinator. Funding from American Red Cross.	Considered one-time action. The current LEMP documents the Regional Shelter in Rutland. The Opening contact is the State EOC and The American Red Cross. The LEMP also documents the Primary Local Shelter as the Stockbridge Central School with the Principal as the primary contact.
	Program— Acquisition of materials/equipment to help contain small spills when they happen (booms, absorbent materials, etc.).	Volunteer time from Fire Chief. Possible resource includes Vermont League of Cities & Towns.	The LHM Planning Team discussed this at length. This is standard operation for the fire department, and it is conducted well. Currently, there is no need to expand or improve on this.
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 Stockbridge Zoning Administrator serves as the NFIP Administrator. Assistance from TRORC and Vermont ANR. Funding from local resources— annual town budget.	Stockbridge's initial Flood Hazard Boundary Map was identified on 11/01/74. The Town's initial Flood Insurance Rate Map (FIRM) was dated 9/4/86. The Town's FIRM has been updated, and the current effective map date is 9/28/07. The Town continues its participation in the NFIP by administering and enforcing its "Special Flood Hazard Area" zoning district, which was last updated and adopted on 09/28/2007. This zoning district regulates new construction in the Special Flood Hazard Area.
Land Use Planning	Policy/Program— Stockbridge Town Plan.	Volunteer time from Planning Commission, and assistance from TRORC and other state agencies on specific subject matter.	The Town Plan is updated every five years, as required by statute. The Planning Commission may expand or improve on any section it deems

	Type of Existing Authority / Policy / Program / Action	Resources: Staffing & Funding	Ability to Expand/Improve on
	Adopted on 08/20/2015, includes a "Flood Hazard Areas and Floodplains" element.	Funding from Municipal Planning Grants.	necessary, or that is required by changes in state statue.
	Completed Authority—Stockbridge Zoning Bylaws Adopted on 11/06/2018, includes a "Special Flood Hazard Area" (SFHA) zoning district.	Volunteer time from the Planning Commission, and assistance from TRORC. Funding from Municipal Planning Grants.	During the Town Plan review/update period, the Zoning Ordinance is also reviewed and updated if needed.
Hazard Control & Protection of Critical Infrastructure & Facilities	Policy/Program—Stockbridge Hazard Mitigation Plan Adopted on 08/15/2015.	Volunteer time from Town officials; assistance from TRORC and Vermont DEMHS. Funding from FEMA; Vermont DEMHS; TRORC.	The 2021 Stockbridge Hazard Mitigation Plan will replace the 2015 Plan. The 2021 LHMP has evolved from the 2015 Plan and has expanded and improved upon it. Future iterations of the Town's LHMP will be updated by the Town at least every five years.
	Program— Better Backroads culvert inventory in fall of 2015. This culvert inventory includes georeferenced locations for all Stockbridge culverts and recommendations for culvert upgrades to reduce vulnerabilities to flooding.	Town Road Foreman; assistance from TRORC. Funding from Better Backroads grant; local personnel time and funding.	The Town is currently using the culvert inventory to further its culvert improvement program, and seeking funding through the Better Backroads grant program for implementation projects. A list of major culverts that require upgrading is included in Appendix E of this Document. The town applied for a road erosion inventory grant in 2021, but it was not approved.
	Program— Fire department personnel training for safe fire response.	Volunteer time from Fire Department	The fire department can improve with more regularly-occurring in-department training.
	Program— Regular road maintenance for safe winter travel.	Staff time from Road Foreman, Select Board, Town Manager	The town effectively clears roadways in events of winter weather. Current program works well, no need to expand or improve on.
	Program- Buyouts of repetitive loss properties and convert to open space to increase flood storage capacity.	Volunteer time from Select Board; Resource is the State hazard mitigation program	There were nineteen property buyouts that have been completed following the events of Tropical Storm Irene. The Town will continue with property buyouts as needed. Current program works well. No need to expand or improve upon.
Education/ Public Outreach	Action— Designation of Red Cross Shelter	Volunteer time from the Select Board, Emergency Management Director/ Coordinator. Funding from American Red Cross.	Considered one-time action. The current LEMP documents the Regional Shelter in Rutland. The Opening contact is the State EOC and The American Red Cross. The LEMP

	Type of Existing Authority / Policy / Program / Action	Resources: Staffing & Funding	Ability to Expand/Improve on
			also documents the Primary Local Shelter as the Stockbridge Central School with the Principal as the primary contact.
	Action—Communication of events, hazards, and recovery.	Funding has been authorized by SB from Town Budget.	The Town has been actively using the Town's website as the place to get Town information. This allows for a fact based presentation without the clutter that can populate social media sites. The Town has also moved to a managed website platform that will allow for easier content creation and posting.

Figure 6. Existing Hazard Mitigation Programs, Projects & Activities

G. Plan Maintenance

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).

The Stockbridge Local Hazard Mitigation Plan will be updated and evaluated, by discussing its effectiveness and making note to incorporate any necessary revisions in the update process, annually at an April Select Board meeting, along with the review of their Local Emergency Management Plan (LEMP). At this meeting, the Select Board 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 comments 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.

The local Emergency Coordinator/Director will lead in monitoring and updating this plan. Updates and evaluation of this Plan by the Select Board and the local Emergency Coordinator/Director will also occur within three months after every federal disaster declaration directly impacting the Town of Stockbridge. The Town will monitor, evaluate, and update this Local Hazard Mitigation Plan at every April Select Board meeting and after every federally declared disaster according to the graphic on page 41. The Town shall reference the Local Hazard Mitigation Plan when working on Town Plan amendments or changes to the Town's bylaws.

The Stockbridge LHMP will expire within five years from plan adoption. By keeping an up-to-date LHMP in effect, the town shall be able to maintain eligibility for FEMA and VEM assistance and improve their ERAF rate (discussed in Chapter II). Within two to three years prior to the LHMP expiration, Stockbridge should seek funding through VEM for assistance with updating the plan.

At least one year before the Plan expires, the update process will begin (though annual updates, monitoring of progress and evaluation will occur at the April Select Board 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 Stockbridge and if funding is available. If TRORC is unable to assist the Town, then Stockbridge's Town Clerk, Administrative Assistant, or Select Board will update the Plan, or the Select Board 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 Herald of Randolph and the TRORC newsletter, inviting the public to the scheduled Select Board (or specially scheduled) meeting. The public will be given the opportunity to comment during these public meetings. Additional stakeholders should be invited to the meeting; these include: White River Valley Ambulance, Inc., the National Forest Service, 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 Clerk.

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 Select Board meetings.

Stockbridge shall also incorporate mitigation planning into their long-term land use and development planning documents. The 2015 Stockbridge Town Plan makes reference to the 2015 Stockbridge LHMP. 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.

The Town of Stockbridge does not have standalone flood hazard regulations, but rather the flood regulations are incorporated into the Zoning Bylaws. Town compliance with the NFIP is enforced by the Zoning Administrator and the Zoning Board of Appeals, as outlined in Section 3.9 of the Stockbridge Zoning Bylaws. A permit is required for all construction and development in special flood hazard areas. Certain activities within a floodway, such Stream stabilization projects or bridges with a State Stream Alteration Permit may be approved administratively by the Zoning Administrator. Conditional uses in a floodway area require approval from the ZBA, such as alterations to existing structures. New structures are prohibited within a floodway.

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 Stockbridge 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 Stockbridge, 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 Stockbridge 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 prior rankings from 2015 were determined by frequency of occurrence, warning time, and potential impact. In the 2021 Plan, it was decided to model the hazard ranking to the 2018 Vermont State Hazard Mitigation Plan to simplify the process. The table below shows the ranking criteria that was used.

Score	Frequency of Occurrence: Probability of a plausibly significant event.	Potential Impact: Severity and extent of damage and disruption to population, property, environment and the economy.
1	Unlikely: less than 1% probability of occurrence per year	Negligible: isolated occurrences of minor property and environmental damage, potential for minor injuries, minor economic disruption.
2	Occasionally: 1% through 10% probability of occurrence per year, or at least one chance in next 100 years	Minor: isolated occurrences of moderate to severe property and environmental damage, potential for injuries, minor economic disruption
3	Likely: between 10% to 75% probability per year, at least 1 chance in next 10 years.	Moderate: severe property and environmental damage on a community scale, injuries or fatalities, short-term economic impact
4	Highly Likely: 75% or greater probability in a year	Major: severe property and environmental damage on a community or regional scale, multiple injuries or fatalities, significant economic impact

Figure 7. Hazard Scoring

Using this ranking criterion, the table on the next page shows a list of hazards that may affect Stockbridge in the future, along with their ranking on which hazards are most likely to be severe. Out of this table, a list of five hazards that are believed to be the worst threats (bolded and highlighted in the table, below) are then followed-up with discussion and mitigation strategies throughout the rest of this Plan. The hazard score is calculated by multiplying the probability of the hazard occurring by the average of the potential impact that the hazard has on infrastructure, life, the economy, and the environment. 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.

Hazard	Probability	Potential Impact					2015 Hazard Score	2021 Hazard Score
		Infrastructure	Life	Economy	Environment	Average		
Wildfire	***4***	***3***	***2***	***2***	***3***	***2.5***	***10***	***10***
Hazardous Material Spill	***3***	***3***	***3***	***3***	***3***	***3***	***9.5***	***9***
Structure Fire	***3***	***3***	***3***	***3***	***2***	***2.75***	***9***	***8.25***
Extreme Cold/Snow/Ice Storm	***4***	***3***	***2***	***1***	***2***	***2***	***8.5***	***8***
Flash Flood/Flood/Fluvial Erosion	***4***	***2***	***2***	***2***	***2***	***2***	***8.5***	***8***
Ice Jams	3	3	2	2	3	2.5	8.5	7.5
Severe Weather (Thunderstorm, Lightning, High Wind, Hail and Flooding) *Note: We have defined "Severe Weather" to include two or more of the above hazards.	4	2	2	1	2	1.75	8	7
Hail Storms	3	3	2	2	2	2.25	8	6.75
Landslides/Mudslides/Rockslides	2	3	3	1	3	2.5	7	5
Hurricanes/Tropical Storms	2	3	3	2	2	2.5	7	5

Hazard	Probability	Potential Impact					2015 Hazard Score	2021 Hazard Score
		Infrastructure	Life	Economy	Environment	Average		
Infectious Disease Outbreak/Pandemic	*2*	*1*	*3*	*4*	*1*	*2.25*	N/A	*4.5*
Invasive Species/Infestation	3	1	1	2	2	1.5	5	4.5
Drought	2	1	2	2	2	1.75	N/A	3.5
Earthquake	2	2	1	2	2	1.75	N/A	3.5
Extreme Heat	2	1	2	2	2	1.75	N/A	3.5
Tornado	1	3	2	2	2	2.25	N/A	2.25
Dam Failure (To the LHM Planning Team's knowledge, there are no major or dangerous dams in Stockbridge that make the Town vulnerable to this hazard.)	0	N/A	N/A	N/A	N/A	N/A	N/A	0
Water Supply Contamination (There are no public water systems in Stockbridge.)	0	N/A	N/A	N/A	N/A	N/A	N/A	0

Figure 8. Hazard Identification and Ranking in Stockbridge, VT

Top Hazards in Stockbridge

The 2021 LHM Planning Team did not believe that there should be a change in the rankings to the hazards identified in the 2015 LHMP; however, due to the new criteria used for evaluating hazards (probability and potential impact), new hazard scores would need to be assigned. The 2021 hazard scores calculated by TRORC staff was approved by the LHM Planning Team.

The 2015 HMP committee recognized that, owing to the number of passenger vehicles and trucks passing through the town, there is always a threat that a large spill could occur, and, if it did, it would likely have a significant impact on Stockbridge. After engaging in discussions using their best available knowledge,

the Town of Stockbridge identified the following "top hazards" that they believe their community is most vulnerable to:

1. **Wildfire**
2. **Hazardous Material Spill**
3. **Structure Fire**
4. **Extreme Cold/Snow/Ice Storm**
5. **Flash Flood/Flood/Fluvial Erosion**

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. Hazard information was gathered from local sources (ex., town history book), the National Climatic Data Center's (NCDC's) Storm Events Database, the Spatial Hazard Events and Losses Database for the United States (SHELDUS), 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.	Strength or magnitude, and details of a 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

Figure 9. Hazard Matrix Example

Hazards not Discussed in This Plan

The following hazards listed on the Hazard Identification are not discussed further in the 2021 Stockbridge LHMP. Many of these hazards were previously identified in the 2015 LHMP and considered to be of low probability and/or low impact, both then and now. These hazards are discussed further in the 2018 Vermont State Hazard Mitigation Plan, where the reader can find a more detailed description and information:

6. **Ice Jams:** While ice jams are not an uncommon occurrence in Stockbridge, the Town ranked this hazard as having a low impact. In addition, the frequency of ice jam-induced flooding is not as high as the frequency of flooding by other causes. The Town has decided not to explore this hazard in the LHMP.
7. **Severe Weather:** Severe weather (Thunderstorm, Lightning, High Wind, Hail and Flooding) frequently occur in Stockbridge; however, the effects are not considered significant in comparison to other weather-related incidents, such as extreme cold/snow/ice storms and flash flooding, thus it is not explored further in the Stockbridge LHMP.

8. **Hail Storms:** Hail storms are not uncommon in Stockbridge; however, its frequency is less so than other forms of severe weather. In addition, the effects of hail storms in Stockbridge are not as significant as other hazards, thus it is not discussed further in the LHMP.
9. **Landslides/Mudslides/Rockslides:** Landslides, mudslides, and rockslides are considered an irregular occurrence in Stockbridge. The Town wishes to focus its attention to other hazards, thus this hazard is not discussed in the LHMP.
10. **Hurricanes/Tropical Storms:** Because Stockbridge is landlocked, hurricanes and tropical storms are not a regular occurrence is the Town. The effects of Tropical Storm Irene are discussed further in the Flash Flood/Flood/Fluvial Erosion section of the plan. Aside from incidents of flooding, hurricanes and tropical storms are not explored further in this plan due to the lack of occurrences.
11. **Infectious Disease Outbreak/Pandemic:** The Town of Stockbridge does not see infectious disease outbreak as being a significant threat. Stockbridge's small population makes the town less vulnerable compared to other communities in the country. This hazard is not discussed further in the LHMP.
12. **Invasive Species/Infestation:** Invasive species/infestations are not a rare occurrence in Stockbridge; however, the impacts that this hazard has had on the town is considered minor. This hazard is not discussed further in this LHMP.
13. **Drought:** While a drought may occur occasionally, it was decided to remove this hazard from further analysis due to the relatively large volume of precipitation the Town receives each year.
14. **Earthquake:** While an earthquake may occur occasionally, it was decided to remove this hazard from further analysis due to the very low magnitude earthquakes that have occurred in the Town in the past.
15. **Extreme Heat:** While extreme heat does occur occasionally, based on previous occurrences a reprieve from the heat often comes before serious issues result, and therefore this hazard was removed from further analysis.
16. **Tornado:** Due to the topography of Stockbridge, tornados are not likely to form in the Town, thus this hazard is not analyzed further in the LHMP.
17. **Dam Failure:** To the LHM Planning Team's knowledge, there are no major or dangerous dams in Stockbridge that make the Town vulnerable to this hazard, thus there is no further analysis on this hazard in the LHMP.
18. **Water Supply Contamination:** There are no public water systems in Stockbridge, thus this hazard is not explored further in the Stockbridge LHMP.

B. Hazard Profiles for "Top Hazards"

1. Wildfire

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 wildfires that can consume natural landscapes and man-made structures and

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**.

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 they burn on or below the forest floor. Crown fires, so called for their location in the crown of trees, effortlessly spread through treetops, often aided by wind.

The Vermont landscape is especially vulnerable to wildfire during 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. Roughly ninety percent of the Town of Stockbridge is forested land, and, of this, a portion is part of the federally owned and controlled Green Mountain National Forest. Because the vast majority of the Town is forest, the Town is considerably vulnerable to the impacts of wildfires, were they to occur within Town bounds. Wildfires in the town have typically been the result of natural events (e.g., lightning strikes), human error and accidents, and downed power lines sparking brush fires.

The following occurrences were reported by the LHM Planning Team. Several of the wildfires identified engulfed areas of over an acre.

History of Occurrences:

Date	Event	Location	Extent
05/16/2021	Forest fire	Sherburne Valley Road	The Stockbridge Fire Department responded to the report of a forest fire at along Sherburne Valley Road. There are not significant details on this incident. **No available data on the size of the land area that was impacted**
05/15/2021	Brush fire	Laury Road	The Stockbridge Fire Department responded to the report of a brush fire at 1062 Laury Road that covered **1 acre** in area. The fire was caused by unpermitted burning and caused an estimate of $250 in damage.
09/27/2020	Structure/Brush fire	Tweed River Drive	The Stockbridge Fire Department responded to a report of a structure and brush fire at 1137 Tweed River Drive, which caused an estimated $500 in damages. **No available data on the size of the land area that was impacted**
07/04/2020	Brush fire	Route 100	The Stockbridge Fire Department responded to the report of a brush fire at 329 Route 100 that caused an estimate of $250 in damage. **No available data on the size of the land area that was impacted**
04/17/2020	Brush fire	Taggart Hill Road	The Stockbridge Fire Department responded to the report of a brush fire that covered **1 acre** in area and caused an estimate of $250 in damage.
04/22/2013	Grass fire	Fletcher Brook Road, South Hill	The Stockbridge Fire Department responded to a report of a grass fire at 5365 Fletcher Brook Road in Stockbridge. The fire burned **1.8 acres** with 1 acre being field and the other .8 being wooded.

10/19/2013	Forest fire	Stockbridge Common	The Stockbridge Fire Department responded to a report of a Forest Fire at 192 Common Road. When they arrived, they found close to an acre burning out of control. The Fire Department used close to 2200 gallons of water to extinguish the fire. **No available data on the size of the land area that was impacted**
04/24/2009	Forest fire	Taggart Hill Road	The Stockbridge Fire Department responded to a report of a forest fire at 659 Taggart Hill Road in Stockbridge. When they arrived on scene they found about **half an acre** burning with the wind blowing heavily.
07/15/2001	Forest fire	Lillieville Road	The Stockbridge Fire Department responded to a report of a forest fire under the power line at 10 Lillieville Road in Stockbridge. Found **close to 1 acre** burning and being driven by high winds.

Figure 10. History of Wildfires in Stockbridge, VT

In 2013, three new dry hydrant sites were installed that may be utilized to help combat wildfires in Stockbridge. These new hydrants are located on Olmstead Drive, Herke White's Farm on Route 100, Gaysville, Lilliesville Brook Bridge, and Stony Brook, the latter of which is a municipal hydrant. There is also another hydrant that was added in Stockbridge Common in 2009. The hydrant in Stockbridge Common was most recently upgraded in 2020.

Forest areas exist where ground-based firefighting efforts would be very difficult, due to their remoteness. This creates the potential for wildfire to impact private land and property and any logging operations occurring at the time of the wildfire. Areas that are of concern, due to remoteness, include South Hill and Vulture Mountain. 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	Woodland areas, notably South Hill and Vulture Mountain.	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 to experience a more damaging wildfire, especially because over 90% of the Town is forested.	Most recent incidents range from $250 to $500 in estimated damages.	Highly Likely

Figure 11. Wildfire Location/Vulnerability/ Extent/Impact/Probability

2. Hazardous Material 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 two sites in town that has sufficient types and/or quantities of hazardous materials to require reporting. Stockbridge's village is predominantly located along Routes 100 and 107 along the White and Tweed Rivers. No major, functioning interstate highways or railways run through or near the Town. There are 213 residential and 29 commercial, industrial, and public buildings within 1,000 feet of a potential HAZMAT spill on major roads, such as Routes 100 and 107, and class 2 roads. This includes the Town Clerk's Office, the fire department, and the Stockbridge Central School. It should also 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.

The following data was retrieved from the Vermont Department of Environmental Conservation's Spill List and by searching the archives of local newspapers. The following table illustrates the ease with which trucks, trains and the day-to-day activities in the Town have the potential to create a hazardous material spill and dangerous conditions for emergency responders and town residents.

History of Occurrences:

Date	Event	Location	Extent
06/11/2018	Diesel spill	Rt. 107	Diesel fuel leaked from a fuel tank over 1.5 miles.
04/10/2015	Heating oil spill	3731 VT 107	3-5 gallons of heating oil released from a tank in the basement of a residence.
12/24/2014	Diesel spill	Rt. 107	Tractor trailer crashed during a storm releasing an unknown quantity of diesel oil.
09/03/2013	Diesel, motor oil spill	Rt. 107 @mm 4.14	Spill occurred after a stolen dump truck went off the road and down a bank, puncturing the truck's oil pan and contaminating approximately a 9'x12' by 1' deep area of soil.
08/22/2013	Hydraulic oil spill	Rt. 100 @ mm 3.59	Hose failure caused a 15 gallon spill from an hydraulic oil tank. AoT cleaned the affected pavement with pads and sand, and moved a 55-gallon truck full of debris to the Rochester AoT garage for temp storage.
06/23/2012	Fuel oil spill	Rt. 100	1000 gallon fuel oil spill at a private property from an AST orphaned during TS Irene.
04/18/2013	Hydraulic oil leak	Pit Road	A truck blew a hose at Harvey's Peavine Pit while unloading material at a gravel pit, resulting in a 15 gallon discharge spill that covered a 55'x6' area. EP&S hired by VTrans to perform clean-up. Soil had to be excavated.
10/06/2011	Kerosene Leak	Rt. 100	Neighboring property owner spotted an AST amongst numerous items washed downstream during TS Irene, and noticed it was leaking. CV Oil stopped the leak.
09/08/2011	Septic tank spill	White River Valley Campground	3 full septic tanks became flooded from TS Irene, and owner threatened to pump the waste out onto the ground at the camp (EEO had to investigate). Propane tanks were removed, handled by VHMRT.

06/24/2004	Transformer leak	Tweed River Road	Transformer on Pole 14-2 found empty; 5 gallons of transformer fluids leaked
10/31/2003	Diesel spill	Pouliout & Corriveau, Rts. 100 and 107	20 gallons of diesel spilled following a truck accident. Spill reached crushed stone, requiring polyencapsulation of contaminated soil for disposal elsewhere.
07/10/2003	Diesel spill	Pouliout & Corriveau, Rt. 100S	30 gallons of diesel spilled when a delivery hose fell apart, causing diesel to leak to nearby ditch and culvert. Clean-up completed by Irving, using booms and sorbents, etc.
03/05/2003	Diesel spill	Pouliout & Corriveau, Rt. 100S	50 gallons of diesel spilled as a result of an AST overfill. Spill largely contained by snow and ice on ground at the time, Irving handled clean-up.
03/12/2001	Diesel spill	Intersection of Rts. 100 and 107	A truck accident caused a 50 gallon diesel spill, but no clean-up was possible due to in being underneath snow and down a steep bank.
02/06/1989	Tank leak	Elementary school	240 gallons leaked from a tank at the school. NEMC did clean-up work to remediate.

Figure 12. History of Hazardous Material Spills in Stockbridge, VT

While only a small number of major spills of hazardous material have occurred in the Town of Stockbridge, the potential for a major spill exists. Routes 100 and 107, particularly at their point of intersection, pose constant threats to the Town of Stockbridge. 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 Town of Stockbridge. A truck accident and a resulting hazardous material spill could be exceedingly disastrous for the Town and its residents. The majority of Routes 100 and 107 in the Town of Stockbridge are built very close to the Town's rivers, which could create additional water contamination problems if a hazardous material spill were to occur on either of these major routes.

In order to prepare for hazardous material spills in Stockbridge, 3 members of the Stockbridge Fire Department are trained to the HAZMAT Awareness level and 1 to the HAZMAT Operations level.

Hazard	Location	Vulnerability	Extent	Impact	Likelihood/ Probability
Hazardous Materials Spill	Routes 100 and 107 running along the White and Tweed Rivers.	Road infrastructure, nearby structures (ex. Town Clerk's Office or fire department if fuel tank struck), White River, Tweed River.	Initially, local impacts only; but depending on material spilled, extent of damage may spread (ex. into groundwater)	Within 1,000 feet of Route 107, Route 100, and Class 2 roads, there are 213 residences and 29 commercial, industrial or public buildings which are susceptible in the event of a major hazmat spill.	Likely

Figure 13. Hazardous Material Spill Location/Vulnerability/ Extent/Impact/Probability

3. Structure Fire

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**.

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 2019, there were 909 reported structure fires in the state, resulting in 4 fatalities and an estimated $21.5 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.

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.

The Town is typified by a number of old wooden town buildings, residences, and a number of commercial spaces, including New England's oldest Ford dealership. A review of the fires listed in the "History of Occurrences" chart below demonstrates the potential for structures located in the rural Town of Stockbridge to be completely or severely destroyed by fire.

The following occurrences were reported by the LHM Planning Team or obtained from local sources. It is reasonable to assume that more structural fires have occurred in the period of time between the entries listed below, and that such fires have caused varying extents of property damage.

History of Occurrences:

Date	Event	Location	Extent
09/27/2020	Structure/Brush Fire	Tweed River Drive	The Stockbridge Fire Department responded to a report of a structure and brush fire at 1137 Tweed River Drive, which caused an estimated $500.00 in damages.
11/08/2019	House Fire	Blackmer Boulevard	The Stockbridge Fire Department responded to a report of a chimney fire at 654 Blackmer Boulevard. Roughly $5,000 in damages was estimated.
01/15/2019	Structure Fire	Spring Street	The Stockbridge Fire Department responded to a report of a structure fire at 40 Spring Street which caused an estimate of $15,000 in damages.
02/06/2012	Structure fire	Route 100	The Stockbridge Fire Department responded to a report of a structure fire at 662 on Route 100 in Stockbridge with smoke filling the building and no flames visible. The fire was found under the under the fireplace after it was disassembled at the bottom.
02/02/2012	Structure fire	Gilkey Road	The Stockbridge Fire Department responded to a report of a structure fire on 2264 Gilkey Road in Stockbridge. When the fire department arrived on scene, they found the building fully involved on one end.
11/26/2011	House fire	Tweed Lane	The Stockbridge Fire Department responded to a report of a structure fire at 118 Tweed Lane finding a chimney fire that extended to the structure.
10/19/2011	Barn fire	Route 107	The Stockbridge Fire Department responded to a report of a structure fire at 5361 on Route 107 in Stockbridge, finding an old horse barn fully involved.
07/09/2011	House fire	Whitney Road	A fire at a private property destroyed a building, killing 5 German Shepherds and 23 chickens.
02/01/2006	House fire	Mount Hunger Road	The Stockbridge Fire Department responded to 200 Mount Hunger Road in Stockbridge for a report of a structure fire. When the fire department arrived on scene, they found the kitchen fully involved.
11/18/2005	Structure fire	Whitney Road	The Stockbridge Fire Department responded to a report of a structure fire at 47 Whitney Road. The building was burning on the end near the stove pipe.
02/21/2005	Structure fire	Stony Brook Road	The Stockbridge Fire Department responded to a report of a structure fire at 1079 Stony Brook Road. When the fire department arrived, they found the building fully involved in the back around the chimney.
06/25/2004	House fire	River Road	The Stockbridge Fire Department responded to a report of a structure fire at 127 River Road. The basement of the house was burning.

Figure 14. History of Structural Fires in Stockbridge, VT

As noted, recognized fire protection problems for the community include the following: development in areas distant from the main roadways, development on class 3 and 4 roads, distance from water sources (rivers, hydrants and/or fire ponds), inaccessibility to fires that may spread from the forest, and inadequate snow removal (for building access). Stockbridge has installed 3 new dry hydrants within town limits in 2013 (Olmstead Drive, Herkes, in Gaysville, Lilliesville Brook Bridge, and Stony Brook), and another hydrant that was added to Stockbridge Common in 2009. The hydrant in Stockbridge Common was most

recently upgraded in 2020. There are additional areas where dry hydrants could be developed and installed, and a comprehensive survey may prove an effective means of determining this if more sites are needed.

Hazard	Location	Vulnerability	Extent	Observed Impact	Likelihood/ Probability
Structure Fire	Town-wide	All housing, municipal buildings, retail/commercial sites.	Depends on the location and extent of the fire.	Varies depending on the location and extent of the fire.	Likely

Figure 15. Structural Fire Location/Vulnerability/ Extent/Impact/Probability

4. Extreme Cold/Snow/Ice Storm

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 **Extreme Cold/Snow/Ice Storm**.

Winter storms are a regular occurrence in Vermont. However, severe winter storms can cause serious damage, including collapse of buildings due to overloading with snow or ice, brutal wind chills, downed trees and power lines, and stranded vehicles. People can be at risk of freezing in extended power outages if they lack wood heat or backup power, and individuals shoveling large accumulations of snow can also be at risk from frostbite, hypothermia, and heart attacks caused by cold and overexertion. While snow removal from the transportation system is standard fare in Vermont winters, extreme snow or ice can close rail and road systems, further jeopardizing any stranded persons that are in danger of freezing or needing medical assistance.

Severe winter storms include a blizzard on February 15-17 in 1958, which dumped over 30 inches and resulted in 26 deaths in New England. On December 26-27 in 1969, another blizzard left 18-36 inches of snow in northwestern Vermont and a whopping 45 inches in nearby Waitsfield. A string of storms in March 2001 hit the state, beginning with 15-30 inches on March 5-6th (later declared a federal disaster), 10-30 inches on the 22nd, and 10-20 inches on the 30th. Recent years have seen wet snowstorms that have toppled trees and caused widespread power outages.

One of the worst winter storms in terms of damage to hit the state was not a snowstorm, but an ice storm. In January of 1998, just the right combination of precipitation and temperature led to more than three inches of ice in spots, closing roads, downing power lines, and snapping thousands of trees. This storm was estimated as a 200-500 year event. Power was out up to 10 days in some areas, and 700,000 acres in of forest were damaged in Vermont. Amazingly, there were no fatalities in Vermont, unlike Quebec where 3 million people lost power and 28 were killed. The Town of Stockbridge was impacted by this ice storm.

Over the past few winters, Stockbridge has received numerous snowstorms that have dropped significant amounts of snow over a day or two-day period. However, the details of these events and the damage they caused are overshadowed by winter weather events of the past. This is not to say such extreme events will not repeat themselves. It should be assumed that extreme winter weather events will occur at some point in the future. The following table documents the occurrence of extreme cold/snow/ice

storms in the Town of Stockbridge and in Windsor County, with information collected from the National Centers for Environmental Information.

History of Occurrences:

Date	Event	Location	Extent
02/01/2021-02/02/2021	Winter Storm	Windsor County/Region-wide	**6 to 12 inches** of snowfall reported in Windsor County. Approximately $10k in property damage was reported.
03/23/2020-03/24/2020	Winter Storm	Windsor County/Region-wide	**7 to 10 inches** of snowfall and minor power outage incidents. **There is no information available on the duration of the power outage.** Approximately $5k in property damage was reported.
12/01/2019-12/02/2019	Winter Storm	Windsor County/Region-wide	**4 to 10 inches** of snowfall reported across Windsor County. $15k in property damages reported.
01/08/2019-01/10/2019	Winter Storm	Windsor County/Region-wide	**6 to 10 inches** of wet, dense snow caused power outages in Windsor County. **There is no information available on the duration of power outages.** Approximately $20k in property damage was reported.
11/26/2018-11/28/2018	Winter Storm	Windsor County/Region-wide	Heavy wet snow from **12 to 20 inches** in Windsor County. There was approximately $250k in damages. Power outages reported throughout Vermont. **There is no information available on the duration of the power outages.**
03/13/2018-03/15/2018	Winter Storm	Windsor County/Region-wide	**10 to 20 inches** of snow across Windsor County and $20k in property damage reported.
03/07/2018-03/09/2018	Winter Storm	Windsor County/Region-wide	Heavy snow ranging from **12-26 inches** across Windsor County. Approximately $40k in property damage reported.
12/12/2017-12/13/2017	Winter Storm	Windsor County/Region-wide	**8 to 16 inches** of snowfall in Windsor County and approximately $20k in property damage reported.
04/01/2017	Winter Storm	Windsor County/Region-wide	Heavy wet snowfall from **8 to 16 inches** in Windsor County. $25k in damages reported.
03/31/2017	Winter Storm	Windsor County/Region-wide	**8 to 16 inches** of snowfall in Windsor County with $25k reported in property damage.
03/14/2017-03/15/2017	Winter Storm	Windsor County/Region-wide	Heavy snowfall in Windsor County ranging from **12 to 24 inches**. Approximately $20k in property damage was reported.
12/29/2016-12/30/2016	Winter Storm	Windsor County/Region-wide	**6 to 12 inches** of snow in Windsor County with approximately $10k of damages.
02/02/2015	Winter Storm	Windsor County/Region-wide	Windsor County experienced **6 to 15 inches** of snowfall. $25k in damages was reported.
02/01/2015-02/28/2015	Cold/Wind Chill	Windsor County/Region-wide	Many locations throughout Vermont experienced **15 to 20° below zero** weather.

Date	Event	Location	Extent
01/27/2015-01/28/2015	Winter Storm	Windsor County/Region-wide	Strong blizzard throughout New England between January 26th and January 27th. Snowfall in Windsor County ranged from **6 to 10 inches**. Approximately $10k in damages was reported.
01/07/2015-01/08/2015	Extreme Cold/Wind Chill	Windsor County/Region-wide	On January 8th, 2015, temperatures in Windsor County ranged from **10 to 20° below zero**.
12/09/2014-12/10/2014	Winter Storm	Windsor County/Region-wide	Approximately **6 to 18 inches** of snowfall was experienced in Windsor County. $250k in property damage was reported.
11/26/2014-11/27/2014	Winter Storm	Windsor County/Region-wide	Roughly **10 to 12 inches** of snowfall were experienced in most of Windsor County. Approximately $50k in damages was reported.
03/12/2014-03/13/2014	Winter Storm	Windsor County/Region-wide	Varying amounts of snowfall were reported in Windsor County, ranging from **4 to 26 inches**, causing approximately $25k in damages.
02/13/2014-02/14/2014	Heavy Snow	Windsor County/Region-wide	**12 to at least 20 inches** of snowfall was reported across Windsor County, causing approximately $20k in damages.
02/05/2014	Heavy Snow	Windsor County/Region-wide	Windsor county experienced **8 to 12 inches** of snowfall, and approximately $10k in damages was reported.
01/02/2014-01/03/2014	Winter Storm	Windsor County/Region-wide	Windsor County experienced **6 to 9 inches** of snowfall. Approximately $5k in property damage was reported.
12/29/2013-12/30/2013	Winter Storm	Windsor County/Region-wide	**6 to 10 inches** of wet, heavy snowfall in Windsor County. Approximately $10k in property damage was reported.
12/14/2013-12/15/2013	Winter Storm	Windsor County/Region-wide	**10 to 15 inches** of snowfall in Windsor County. Approximately $10k in property damage was reported.
03/19/2013	Winter Storm	Windsor County/Region-wide	Moderate snowfall throughout the state, with accumulations between **6 to 12 inches**. Numerous vehicle accidents reported.
02/08/2013-02/09/2013	Winter Storm	Windsor County/Region-wide	Two-part system led to **8 to 16 inches** of snowfall across Windsor County.
12/29/2012-12/30/2012	Winter Storm	Windsor County/Region-wide	Snowfall in Windsor County ranged from **5 to 8 inches**.
12/26/2012-12/27/2012	Winter Storm	Windsor County/Region-wide	**6 to 12 inches** of snow fell throughout Windsor County, falling at rates of **1 to 2 inches per hour** at times and some vehicle accidents occurred.
02/05/2011-02/06/2011	Winter Weather	Windsor County/Region-wide	Roughly **4 to 8 inches** of snow, freezing rain, and sleet fell across Central Vermont, which had a large amount of snow from previous storms. Heavy snow loads caused structural damage. $35k of reported damage in Windsor County.
02/02/2011	Winter Storm	Windsor County/Region-wide	Snow totals across Windsor County ranged from **10 to 15 inches**, with $25k of damage reported.

Date	Event	Location	Extent
01/12/2011	Winter Storm	Windsor County/Region-wide	Generally **8 to 15 inches** of snow fell across Windsor County with $10k in damage reported.
12/26/2010	Winter Storm	Windsor County/Region-wide	Snowfall totals of **6 to 15 inches** with localized higher amounts occurred as well as considerable blowing and drifting of the snow due to north winds of **15 to 25 mph** with gusts approaching **40 mph**. Numerous vehicle accidents and some isolated to scattered power outages were witnessed, and $15k in damages were reported in the county. **There is no information available on the duration of the power outages.**
02/23/2010	Winter Storm	Windsor County/Region-wide	Snow accumulations ranging from **6 to 30 inches** reported throughout Vermont. Nearby towns of Warren and Randolph Center saw 32 and 26 inches, respectively. $1m in property damage was reported for the county.
01/28/2009	Winter Storm	Windsor County/Region-wide	A storm from the West brought accumulations of **8 to 14 inches** in Vermont. Nearby towns of Braintree and Rochester received 17 and 13 inches, respectively. $10k in damages reported throughout Windsor County, and numerous vehicle accidents were reported.
12/21/2008	Winter Storm	Windsor County/Region-wide	Snow accumulations of **10 to 18 inches** were reported across eastern Vermont, including 18 inches reported in nearby Rochester. This storm came on the heels of another storm that happened within 36 hours prior to the storm, causing snow totals altogether in excess of 24 inches in places and causing vehicle accidents and exhausting snow removal resources. Some CO poisoning injuries were reported, some small farm structures collapsed. Total of $15k in damages reported in the county.
12/11/2008-12/12/2008	Snow Storm	Windsor County/Region-wide	Snow and freezing rain fell across Vermont, ranging from **5 to 9 inches** of snow with a glazing of ice. This led to hazardous driving conditions, school closures, civic/government closures, power outages, and $250k in damage across Windsor County. **There is no information available on the duration of the power outages.**
02/14/2007*	Heavy Snow	Windsor County/Region-wide	Nor'easter brought **25.7 inches** of snow, with snowfall rates of **2 to 4 inches** per hour reported along with brisk winds of **15 to 25 mph**, causing a great deal of drifting and whiteout conditions. Windchills of **-10F or colder** reported. A total of $250k in county-wide damage (many roof collapses in the region, livestock killed in some instances).
12/06/2003-12/7/2013	Winter Storm	Windsor County/Region-wide	A snow storm traveling up the coast brought **12 to 20 inches** of snow to Windsor County, and caused $20k in damages.
04/04/2003-04/05/2003	Winter Storm	Windsor County/Region-wide	**10 to 20 inches** of snowfall reported in Windsor County, causing traffic accidents, road closures, and $40k of damage throughout the county.
01/04/2003	Winter Storm	Windsor County/Region-wide	A storm system brought between **10 to 20 inches** of snowfall to Windsor County, and caused power outages and $20k of reported damage.
01/07/2002	Heavy Snow	Windsor County/Region-wide	Snow fall of from **6 to 15 inches** reported throughout the region. Many power outages and school closures region-wide, along with a total of $30k in damage.
03/30/2001-03/31/2001	Winter Storm	Windsor County/Region-wide	**10 to 20 inches** of snow fell throughout Windsor County. The storm caused power outages and slippery roads, and led to $50k in damage county-wide. Closely followed a storm a week prior with **7 to 25 inches** of snow and $50k in damage for the county.

Date	Event	Location	Extent
03/05/2001-03/06/2001 (EM-3167)	Winter Storm	Windsor County/Region-wide	**20 to 30 inches** of snow fell throughout the region, causing numerous school closures and Town Meeting Day postponements. $100k of reported damage in Windsor County.
02/05/2001-02/06/2001	Winter Storm	Windsor County/Region-wide	**8 to 21 inches** of snow fell in Windsor County, causing a number of car accidents and a total of $75k in reported damage.
12/20/1999-12/21/1999	Winter Weather	Windsor County/Region-wide	Freezing rain hit Vermont, particularly near the Green Mountains. Caused numerous accidents due to icy road conditions and led to $50k in damage in the county.
01/06/1998—01/16/1998 (DR-1201)	Ice Storm	Windsor County/Region-wide	Ice accumulations in the region averaged **¾ of an inch or less**, and damaged tens of thousands of trees. Power lines were downed from the weight of the ice, and vehicular travel was seriously disrupted. Falling tree limbs and debris also led to accidents. $80k in damage reported in the county.
01/19/1997	Cold/Wind Chill	Windsor County/Region-wide	An arctic air mass brought bitterly cold temps to the region, including Windsor County. Nearby Bethel reported a low of **-32F**, not accounting for wind-chill.

Figure 16. History of Extreme Cold/Snow/Ice Storms in Stockbridge, VT

The Town of Stockbridge is no stranger to winter weather and the hazards that it brings. Depending on the event, though especially with heavy, wet snow or ice, electricity may be knocked out for a few hours or days. The utility company currently serving the Town of Stockbridge, Green Mountain Power, has followed a regular tree-trimming schedule. Stockbridge town officials believe this is satisfactory to mitigate damage and the power outages caused by downed trees and tree limbs during a heavy, wet snow or ice event. In the event of an extended power outage, the Town would open its emergency shelter. However, it is important for local officials to understand which residents may need additional assistance or be exceptionally vulnerable to extended power outages.

Heavy, wet snow or large quantities of snow may also leave structures vulnerable to roof collapse. Roof collapse occurs when the structural components of a roof can no longer hold the weight of snow. Flat roofs are most vulnerable to collapse because they do not drain well and the snow on the roof soaks up water like a sponge, increasing the weight that the roof must bear. More common, it seems, is the collapse of barns commonly used for livestock sheltering and other agricultural purposes. Unfortunately, livestock in the barn are often killed, and equipment stored in the barn may be damaged or ruined. It is difficult to determine whether a residential structure or a barn would be rebuilt after a roof collapse because the decision to rebuild would likely depend on the extent of damage. The collapse of a barn roof is likely to be a total loss, and the collapse of a house roof may be a 50% loss. Due to the amount of snow Vermont receives in any given winter, many homes are constructed with sloped roofs to prevent roof collapse.

In general, winter weather is most hazardous to travelers. Icy and snow-covered roads present multiple examples of dangerous driving conditions and situations. In Stockbridge, the mountainous terrain, steep slopes, and remoteness of some roads further complicate travel. The Town relies on Travel Advisories issued by the State of Vermont Department of Emergency Management Homeland Security and the National Weather Service to alert residents of dangerous travel weather. Despite this, it is difficult to

prohibit people from driving during winter weather events. As a result, emergency services personnel must always be prepared to provide assistance to stranded drivers or to those who have been in an accident.

Hazard	Location	Vulnerability	Extent	Observed Impact	Likelihood/ Probability
Extreme Cold/ Snow/Ice Storm	Town wide	The entire Town is vulnerable, including road infrastructure, town and privately owned buildings, utility infrastructure.	Snow fall has varied, from a few inches to over a foot or more. Heavy snow and wind downed trees and power lines. Snow/ice contributed to hazardous driving conditions.	For roof collapse: monetary damages will depend on each structure but, collapse of barn roof is often a total loss. This does not include the loss of livestock. Collapse of a house roof may be at a 50% loss. For car crashes due to poor driving conditions: minimal damage to vehicle to totaled vehicle. Health impacts could vary significantly.	Highly likely

Figure 17. Extreme Cold/Snow/Ice Storm Location/Vulnerability/ Extent/Impact/Probability

5. Flash Flood/Flood/Fluvial Erosion

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 **Flash Flood/Flood/Fluvial Erosion**.

Flooding is one of the worst threats to Stockbridge's residents and infrastructure. Past instances of flooding in Stockbridge have included rain and/or snowmelt events that cause flooding in the major rivers' floodplains and intense rainstorms over a small area that cause localized flash-flooding. Both kinds of events can be worsened by the build-up of ice or debris, which can contribute to the failure of important infrastructure (such as culverts, bridges, and dams).

Flash floods typically occurs after severe storms, in which a large amount of precipitation is amassed over a short period of time. According to the National Weather Service, flash floods usually occur within a period of six hours. Flash Floods and Floods from tropical storms and heavy rain events result in fluvial erosion, which can damage adjacent roads and properties. Fluvial erosion occurs when soils and other sediment are removed from river and stream banks. In the 2018 State Hazard Mitigation Plan, fluvial erosion is the number one hazard that threatens Vermont.

The worst flood disaster to hit the Town of Stockbridge, as well as the overarching region and the State of Vermont, occurred on November 3, 1927. This event was caused by nearly 10 inches of heavy rain from the remnants of a tropical storm that fell on frozen ground. Eighty-four Vermonters, including the Lieutenant Governor, were killed. The flooding in the White River valley was particularly violent, with an estimated 120,000 to 140,000 cubic feet/second (cfs) flowing out of the White River at West Hartford, Vermont. Like many towns in the region, the Town of Stockbridge received heavy precipitation, seeing roughly 7-8 inches of rainfall over the storm period.

A more recent flooding event that devastated the region and the state was the result of Tropical Storm Irene, which occurred on August 28, 2011. Record flooding was reported across the state and was responsible for several deaths, as well as hundreds of millions of dollars of home, road, and infrastructure damage. Due to the strong winds, 50,000 Vermont residents were initially without power, and many did not have electricity restored to their homes and businesses for over a week. Despite the damage wrought, the flooding

Figure 18. Flooding on Fletcher Brook Road during Tropical Storm Irene.

caused by Tropical Storm Irene is considered to be the second greatest natural disaster in 20th and 21st century Vermont, second only to the Flood of 1927.

The Town of Stockbridge suffered major damage to property and infrastructure during Tropical Storm Irene, although no lives were lost. It is estimated that Tropical Storm Irene dropped 5-7 inches of rain over the Town of Stockbridge in a very short span of time, some of the highest precipitation totals in Windsor County (which averaged 4-7 inches over its land area). Local reports following the event state that the total rainfall that hit Stockbridge was nearer to 11.8 inches overall. It is thought that the flooding that occurred as a result of the storm was close to being or was a full-fledged 500-year flood.

Virtually all of Stockbridge's roads were damaged by the storm to varying extents, including parts of: Route 100, Route 107, Stony Brook, River Road, Lilliesville Brook, Whitcomb Hill, and Davis Hill. The county-wide damage for Windsor County totaled over $32.5 million. Following the flood damage, the State of Vermont and FEMA have been coordinating on the home buy-out process across the state. There was a total of nineteen buyouts in Stockbridge alone, located on the following roads: Schaff Haus (10), Lucerne (1), Tweed (1), River Road (1), VT 100 (3), Fletcher Brook (1), Bridge Street (1) and Canton Drive (1).

Unfortunately, flooding is very common across the region, with many events impacting the Town of Stockbridge specifically. Flooding is one of the worst threats to Stockbridge's residents and infrastructure. The following list indicates the history of occurrence with regard to this hazard in Windsor County (given the small population of Stockbridge, town-specific data is limited); an asterisk "*" denotes the few instances in which town-specific data is available, and federal disaster numbers are listed where appropriate. Extent of fluvial erosion for these incidents is not available, as the data is not collected immediately after flooding events in the Town.

History of Occurrences:

Date	Event	Location	Extent
6/14/2019	Flooding	County-wide	Severe storms, Flooding. **No available data on the size of the land area that was impacted or the amount of rain in inches.**
4/15/2019	Flash Flooding	County-wide	**0.5 to 1.5 inches of rain** over rapidly melting snow. Water from the White River flooded onto Route 107 in Stockbridge. **No available data on the size of the land area that was impacted.**
8/16/2017	Flooding	County-wide	Severe storms, Flooding. **No available data on the size of the land area that was impacted or the amount of rain in inches.**
7/1/2017	Flash Flooding	County-wide	3 to 4 inches of heavy rainfall over saturated soils. **No available data on the size of the land area that was impacted.**
7/28/2014	Flash Flooding	County-wide	2 to 3 inches in an hour. **No available data on the size of the land area that was impacted.**
06/25-07/11/2013 (DR-4140)	Severe Storms and Flooding	County-wide	Severe storms caused flooding throughout the region, causing damage to some infrastructure and facilities. **No available data on the size of the land area that was impacted or the amount of rain in inches.**
08/28/2011 (DR-4022, TS Irene)*	Tropical Storm	Stockbridge, County-wide	Widespread flooding hit the region, striking Stockbridge particularly badly. Homes, businesses, and roads were flooded throughout Windsor County. Stockbridge saw **5 to 7 inches** of rainfall, which wrecked homes, roads, bridges, and culverts. As of early 2014, 19 landowners have had to seek buyouts for their properties. 4,000' of roadway on Rt. 107 between

Date	Event	Location	Extent
			Stockbridge was completely destroyed during the storm. $5,255,120.69 07 in damage total for Pittsfield according to FEMA's Public Assistance database (captures at least 70% of total damage). **No available data on the size of the land area that was impacted.**
04/27/2011	Flood	County-wide	Heavy rains, snowmelt from an above-normal snowpack, and high temps caused significant flooding in the region. **No available data on the size of the land area that was impacted or the amount of rain in inches.**
10/01/2010	Flood	County-wide	Heavy rains from the remnants of TS Nicole hit Vermont, dumping multiple inches of rain in the White River Valley, and washing out local roads (including Rt. 100 in Rochester). **No available data on the size of the land area that was impacted or the amount of rain in inches.**
07/21-08/12/2008 (DR-1790)	Flood	County-wide	Showers and thunderstorms produced significant rainfall across the region, causing sever flash flooding in places. Flood waters originating in Addison County traveled down the White River through Rochester and Stockbridge, causing portions of Route 100 to flood. **No available data on the size of the land area that was impacted or the amount of rain in inches.**
07/09-7/11/2007 (DR-1715)*	Severe Storms and Flooding	Stockbridge, County-wide	Tropical-like showers and thunderstorms caused heavy localized flooding. Rainfall exceeded **3 inches within a 2 hour time frame**, with some areas getting nearer to **6 inches**. Many washed out roads, flooded basements, and homes damaged or destroyed. Lilliesville Road, River Road, and Routes 100 and 107 were washed out. Also, significant structural and flood damage to seasonal camps in the area off of Lilliesville Road. Flooding completely destroyed Lilliesville Brook Bridge on River Road. Total of $250k in damage to the town. **No available data on the size of the land area that was impacted.**
04/15-04/21/2007 (DR-1698)	Severe Storms and Flooding	County-wide	Severe storms caused flooding throughout the region, causing damage to some infrastructure and facilities. **No available data on the size of the land area that was impacted or the amount of rain in inches.**
05/14/2006	Flood	County-wide	Storms brought **3 to 6 inches** of rain to Windsor County, causing flooding and minor washouts on several roads in the region. The White River experienced bankfull conditions and minor field flooding in places. **No available data on the size of the land area that was impacted.**
01/18/2006	Flood	County-wide	Rainfall of **1.5 to 2.5 inches** hit the region, increasing run-off into area watersheds. Some areas experienced field flooding and ponding on roadways. $3k in county-wide property damage reported. **No available data on the size of the land area that was impacted.**
10/07-10/09/2005	Flood	County-wide	Heavy rains resulted in minor flooding throughout Windsor County, and caused $20k in property damage. **No available data on the size of the land area that was impacted or the amount of rain in inches.**
10/29/2003	Flood	County-wide	Heavy rains fell on already-heavily saturated soils, and streams and rivers, including the White River, rose rapidly. Low land and field flooding occurred in the watershed. **No available data on the size of the land area that was impacted or the amount of rain in inches.**
07/21-08/18/2003	Severe Storms and Flooding	County-wide	Severe storms caused flooding throughout the region, causing damage to some infrastructure and facilities. **No available data on the size of the land area that was impacted or the amount of rain in inches.**
04/13-04/14/2002	Flood	County-wide	Widespread rainfall totaled **1 to 3 inches** across the region, and was compounded by snowmelt. The White River and its branches flooded in areas, and $50k in damages was reported for Windsor County. **No available data on the size of the land area that was impacted.**

Date	Event	Location	Extent
12/17/2000	Flash Flood	County-wide	Small streams overflowed their banks, causing some road and low land flooding. $5k in damage in the county. **No available data on the size of the land area that was impacted or the amount of rain in inches.**
07/31/2000	Flash Flood	County-wide	Heavy rainfall cased many small rivers to reach or exceed bankfull throughout the county. $10k in damage reported. **No available data on the size of the land area that was impacted or the amount of rain in inches.**
07/14-07/18/2000 (DR-1336)	Flash Flood	County-wide	Showers and thunderstorms resulted in heavy rainfall, particularly in mountainous areas. Led to $500k in property damage in the county. **No available data on the size of the land area that was impacted or the amount of rain in inches.**
04/04/2000	Flash Flood	County-wide	Steady rains and mild temps that caused snowpack melt led to stream and river flooding in the region. $10k in damage reported county-wide. **No available data on the size of the land area that was impacted or the amount of rain in inches.**
03/28/2000	Flash Flood	County-wide	Steady rains and melting snow led to rising water levels in streams and rivers throughout the county, causing $5k in county-wide damage. **No available data on the size of the land area that was impacted or the amount of rain in inches.**
09/16-09/21/1999 (DR-1307)	Severe Storms and Flooding	County-wide	TS Floyd brought heavy rains, high winds, and flooding to the region, causing extensive damage to public property. **No available data on the size of the land area that was impacted or the amount of rain in inches.**
07/13/1996	Flood	County-wide	Region was struck by the remnants of TS Bertha, causing heavy rainfall throughout the region and washing out numerous roads. $10k in damage reported in the county. **No available data on the size of the land area that was impacted or the amount of rain in inches.**
05/11-05/12/1996	Flood	County-wide	Rain and snowmelt led to many rivers swelling and minor field flooding in places. $5k in damage reported in the county. **No available data on the size of the land area that was impacted or the amount of rain in inches.**
01/19-01/20/1996	Flood	County-wide	A deadly storm caused strong winds and flooding throughout the state. Many roads washed out, numerous power outages were reported, and $900k in damage occurred in Windsor County. **No available data on the size of the land area that was impacted or the amount of rain in inches.**
06/28-06/30/1973 (DR-397)	Flooding	County-wide	Rainfall as much as **6 inches** in 24 hours in some locations. State declared disaster area. Deaths, 3; damage, $64 million. **No available data on the size of the land area that was impacted.**
11/02-11/04/1927 ("Flood of 1927")	Flooding	County-wide	Considered to be on of VT's most devastating events, the flood took our 1285 bridges, miles of roads and railways, and countless homes and buildings. 84 people were killed, including Lt. Gov. S. Hollister Jackson. Rainfall totaled 4 to 9 inches statewide, following a month with 150% the normal amount of rain. Stockbridge and the nearby vicinity saw between **7 to 8 inches** of rainfall during the storm. **No available data on the size of the land area that was impacted.**

Figure 19. History of Flash Floods/Floods/Fluvial Erosions in Stockbridge, VT

The Stockbridge does not have standalone flood hazard regulations. However, the Town's Zoning Bylaws severely restrict development in flood-prone areas within the designated Special Flood Hazard Area. New construction within the floodway is prohibited. There is no development currently underway within flood sensitive areas.

According to Flood Ready Vermont, there are currently 48 buildings in the Special Flood Hazard Area (SFHA) in Stockbridge. 13% of these properties have flood insurance in effect.

Recent studies have shown that most flooding in Vermont occurs along upland streams, as well as along road drainage systems that fail to convey the amount of water they are receiving. These areas are often not recognized as being flood prone, and property owners in these areas are not typically required to have flood insurance (DHCA, 1998). It should be noted that, while small, mountainous streams may not be mapped by FEMA in NFIP FIRMs (Flood Insurance Rate Maps), flooding along these streams is possible, and should be expected and planned for. Flash flooding in these reaches can be extremely erosive, causing damage to road infrastructure and to topographic features including stream beds and the sides of hills and mountains. The presence of undersized or blocked culverts can lead to further erosion and stream bank/mountainside undercutting. Furthermore, precipitation trend analysis suggests that intense, local storms are occurring more frequently. There are six residential structures, two commercial structures, and eighteen camp sites located in the fluvial erosion hazard zone.

Stockbridge maintains an up-to-date list of culverts and culvert conditions and has engaged in culvert upgrading since the 2009 Stockbridge Annex was drafted. The process of upgrading culverts is currently in process. Stockbridge is working with TRORC and the White River Partnership to address several significant culverts in the following table:

Location	Stream Name	Length	Height	Width	Comments
Culvert under Blanchard Road located approximately 165 feet east of the Blanchard Road Fletcher Brook Road intersection	Fletcher Brook	32	10.6	16	Significant outlet drop - barrier to AOP. Slight alignment problem. Algae growth within. Flow undermining wingwall on left downstream. Overall good condition.
Located at most upstream crossing on Johnson Brook to access gravel piles.	Johnson Brook	78	5	5	Structure problematic with AOP; freefall.
at junction of Stony Brk Rd and Davis Hill Road	Davis Hill Brook	62	6.6	9.7	remnants of concrete wingwall on u/s left bank; u/s concrete apron and head wall; invert missing in places outlet is about 100' from confluence with Stony Brook; culvert is in rough shape, way undersized.
at Heritage Farm near junction with Music Mtn Rd	Trib of White River	80	10	14	Left old DS footer and built on top of it. Freefall onto large cascade/waterfall.
south of driveway for 2238 Blackmer Blvd, across from the mouth of Tweed River	trib of White River	70	7.3	7.1	multiplate CMP: failed riprap dominate substrate at outlet. Culvert is at the confluence with White River; large sediment deposit upstream about 300-400

					feet. immediately u/s of culvert appears to have been dredged
at private drive for 1102 Davis Hill Rd	Davis Hill Brook	40	5.1	10.5	concrete box culvert with 2 baffle, additional baffles on top of bank d/s river right. top baffle is at inlet with 1' drop onto concrete slide; backwatered behind second baffle which is about 17' from outlet, some sand in the backwater; 1' drop from 2nd

Figure 20. Stream Crossing Culvert Priorities from White River Partnership

No development projects are planned in Stockbridge in areas that would be vulnerable to flooding. There is one repetitive loss property in the Town of Stockbridge. This property is characterized as a single family residence. This property has been approved for a home buyout in the wake of Tropical Storm Irene with FEMA HMGP and HUD CDBG monies.

Finally, in effort to help reduce the Town's vulnerabilities to flooding and protect structures and road infrastructure, it is important to restore floodplain, improve areas and/or increase the number of areas for retention wherever possible. Equally important to reduce vulnerabilities to flooding is the process of stabilizing river banks in areas that are vulnerable to slides and/or have the potential to damage critical or important infrastructure. In Stockbridge, this was accomplished in part by completing the Town's nineteen property buyouts. As a condition of the buyout process, the land will be returned to open space with no or minimal development (ex. park or river access), which will help reduce the vulnerabilities to flooding elsewhere.

Hazard	Location	Vulnerability	Extent	Observed Impact	Likelihood/ Probability
Flood/ Flash Flood/ Fluvial Erosion	All roadways and properties adjacent to the waterways.	Culverts, bridges, road infrastructure. There are 21 residential (18 single family and 3 mobile homes) and 7 commercial/ industrial/ public structures in the 500-year floodplain.	Tropical Storm Irene- 4-7" across county (5-7" in Stockbridge).	From TS Irene: $5,255,120.69 for Stockbridge from FEMA's Public Assistance database (captures at least 70% of total damage).	Likely

Figure 21. Flash Flood/Flood/Fluvial Erosion Location/Vulnerability/ Extent/Impact/Probability

VI. Mitigation

A. Mitigation Goals

1. To reduce long-term impacts and losses of the natural hazard of wildfire(s).
2. To reduce long-term impacts and losses of hazardous material spills.
3. To reduce long-term impacts and losses of the hazard of structural fire(s).
4. To reduce long-term impacts and losses of the natural hazard of extreme cold/snow/ice storms.
5. To reduce long-term impacts and losses of the natural hazard of flash flooding/flooding/fluvial erosion.

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

- To prevent the development of land clearly incapable of supporting, from a physical standpoint, the type or intensity of land use being proposed (p. 10).
- To protect the citizens of Stockbridge and the quality of our rivers as natural and recreational resources by using sound planning practices within designated Flood Hazard Areas (p. 30)
- To allow use of groundwater resources by new development in such a manner to protect the public right to adequate quality and quantity of the resource (p. 59)
- To consider surface water impacts and effects related to proposed or existing uses of land (p. 59).
- To identify and encourage land use development practices that avoid or mitigate adverse impacts on significant wetlands (p. 61).
- To enhance and maintain use of flood hazard areas as open space, greenways, recreation, pasture land, agricultural land, and renewable energy facilities (p. 64).
- To ensure no net loss of flood storage capacity in an effort to minimize potential negative impacts. These impacts include the loss of life and property, disruption of commerce, and demand for extraordinary public services and expenditures that result from flood damage (p. 64).
- Encourage the conservation, wise use and management of the town's agricultural and forestry resources, to maintain its environmental integrity, and to protect its unique and fragile natural features (p. 76).
- To identify and limit the adverse impacts of energy development and use on public health, safety and welfare, the town's historic and planned pattern of development, environmentally sensitive areas, and our most highly valued natural, cultural and scenic resources, consistent with related development, resource protection and land conservation policies included elsewhere in this plan (p. 105).

The Stockbridge Town Plan was updated and adopted on 08/20/2015 and is set to expire in 2023.

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, Stockbridge'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 LHM Planning Team, 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, but may take longer depending on feasibility. 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 typically 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 Stockbridge understands that, in order to apply for FEMA funding for mitigation projects, a project must meet more formal FEMA benefit cost criteria. The Town must have a FEMA-approved Hazard Mitigation Plan as well.

The following strategies will be incorporated into the Town of Stockbridge'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.

Individuals and organizations bolded in the following are primarily responsible for each corresponding action, followed by other individuals and organizations with supporting roles.

Action	Local Leadership	Prioritization	Possible Resources*	Time Frame
All Hazards				
Ensure that Stockbridge's Local Emergency Management Plan (LEMP) is kept up to date. (Preparedness/Mitigation)	**Select Board**	High	Local Resources; TRORC	1 year from date of plan approval
Refine the documentation of infrastructure damage that the Town experiences after weather events. Store documentation to a more centralized location for ease of access. (Mitigation)	**Road Foreman**	High	Local resources; TRORC	1 year from date of Plan Approval
Install a Generator at the Stockbridge School. (Mitigation)	**Select Board**, School Board	High	Local Resources	1 year from date of Plan Approval
Complete designation of the proposed Red Cross Shelter at the Stockbridge School. (Preparedness/Mitigation)	**Emergency Management Director**, School Board	High	Local Resources; Red Cross	1 year from date of generator installation
Develop a system on effective communication of hazards and their mitigation actions to the town of Stockbridge. (Mitigation)	**Select Board**; EMD; Fire Department	Medium	Local Resources	2 years from date of Plan Approval
1. Wildfire				
Work with the state and FEMA to make wildfire prevention education resources available to the public. (Mitigation)	**Fire Dept**, Fire Warden	Medium	Local resources; Vermont Emergency Management; FEMA	3-4 years from date of plan approval
When opportunities arise, develop additional dry hydrant sites in rural locations. (Mitigation)	**Fire Department**	Medium	Local resources, George Aiken Resource Conservation & Development grants	1-2 year from date of plan approval
Review and integrate Stockbridge's Community Wildfire Protection Plan into other local planning processes.	**Fire Department**	Low	Local Resources	5 years from date of Plan Approval

Action	Local Leadership	Prioritization	Possible Resources*	Time Frame
Implement the recommendations in the Plan. (Mitigation)				
2. Hazardous Material Spill				
Relocate Mount Hunger Road where it intersects with Route 107 to reduce collision. (Mitigation)	**Select Board**; Road Foreman	High	Better Roads Grant	3-4 years from date of plan approval.
Ensure that all emergency response and management personnel continue to receive HAZMAT Awareness training at a minimum. (Preparedness)	**Fire Department**	Low	Local/Fire Dept resources; Vermont State HAZMAT Team	1 year from date of plan approval
3. Structure Fire				
Identify areas in town where it would be appropriate to install new dry hydrants (for example, Blackmer Boulevard and Vulture Mountain Road). (Mitigation)	**Fire Department**	Medium	Local resources, George Aiken Resource Conservation & Development grants	1-2 year from date of plan approval
4. Extreme Cold/Snow/Ice Storm				
Rehabilitate the bridge in Gaysville for better access of delivery trucks in the event of road closures. (Mitigation)	**Select Board**; Road Foreman	High	VTrans	4-5 years from date of plan approval
5. Flash Flood/Flood Fluvial Erosion				
Investigate Geotech issues at Refrigerator Flats fishing access landslide and smaller landslide 0.5 miles upstream. Both will eventually impact class Blackmer Blvd. Smaller slide is very close to impacting road. Town will look to solutions to restore the natural system, such as incorporating tree plantings with riprap or bundles of living willow cuttings. (Mitigation)	**Road Commissioner**	Medium	Local resources; DED; BRIC; VTrans Emergency; State Geologist; Better Backroads grant; FEMA HMGP	3-5 years from date of Plan Approval
Increase dimensions of culvert on Music Mountain Road (located at N43.80608 and W072.73809) to improve the flow of floodwaters and reduce risk of road washouts. (Mitigation)	**Select Board** in coordination with the Road Commissioner	Low	Local Resources; State Resources (Better Backroads grants, Structures grants); FEMA	3-5 years from date of Plan Approval

Action	Local Leadership	Prioritization	Possible Resources*	Time Frame
			HMGP and PDM-C grants	
Increase dimensions of culvert on Blackmer Boulevard (located at N43.77695 and W072.75235) to improve the flow of floodwaters and reduce risk of road washouts. (Mitigation)	**Select Board** in coordination with the Road Commissioner	Low	Local Resources; State Resources (Better Backroads grants, Structures grants); FEMA HMGP and PDM-C grants	3-5 years from date of Plan Approval
Increase dimensions of multi-plate culvert on Stony Brook Road, at the intersection of Davis Hill and Stony Brook (located at N43.72726 and W072.72113) to improve the flow of floodwaters and reduce risk of road washouts. (Mitigation)	**Select Board** in coordination with the Road Commissioner	Low	Local Resources; State Resources (Better Backroads grants, Structures grants); FEMA HMGP and PDM-C grants	3-5 years from date of Plan Approval
Increase dimensions of multi-plate culvert on Fletcher Brook Road, intersecting with Taggart Hill Brook (located at N43.73477 and W072.73591) to improve the flow of floodwaters and reduce risk of road washouts. (Mitigation)	**Select Board** in coordination with the Road Commissioner	Low	Local Resources; State Resources (Better Backroads grants, Structures grants); FEMA HMGP and PDM-C grants	3-5 years from date of Plan Approval
Increase dimensions of multi-plate culvert on Labadie Road, which intersects with Taggart Hill Brook (located at N43.73542 and W072.74009) to improve the flow of floodwaters and reduce risk of road washouts. (Mitigation)	**Select Board** in coordination with the Road Commissioner	Low	Local Resources; State Resources (Better Backroads grants, Structures grants); FEMA HMGP and PDM-C grants	3-5 years from date of Plan Approval
As part of Town Plan updates, review the Town's Flood Hazard Area Regulations to ensure that they are compliant and consistent with state and federal guidelines and statutes. (Mitigation)	**Planning Commission**; Select Board	Low	Local resources; TRORC; Municipal Planning Grants	Year 5 of Planning Period

Figure 22. Hazard Mitigation Strategies: Programs, Projects & Activities

*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.

The LHM Planning Team considered Stabilizing Tweed riverbanks in Chalet Village along Route 100 by Canton and Lucerne Dr as a potential mitigation action; however, since the Town cannot determine who owns the property along the riverbank, this is not being considered as an action for the 2021 LHMP.

Appendices

Appendix A: Hazard Ranking Methodology

Score	Frequency of Occurrence: Probability of a plausibly significant event.	Potential Impact: Severity and extent of damage and disruption to population, property, environment and the economy.
1	Unlikely: less than 1% probability of occurrence per year	Negligible: isolated occurrences of minor property and environmental damage, potential for minor injuries, minor economic disruption.
2	Occasionally: 1% through 10% probability of occurrence per year, or at least one chance in next 100 years	Minor: isolated occurrences of moderate to severe property and environmental damage, potential for injuries, minor economic disruption
3	Likely: between 10% to 75% probability per year, at least 1 chance in next 10 years.	Moderate: severe property and environmental damage on a community scale, injuries or fatalities, short-term economic impact
4	Highly Likely: 75% or greater probability in a year	Major: severe property and environmental damage on a community or regional scale, multiple injuries or fatalities, significant economic impact

Appendix B: Critical Stream Crossings

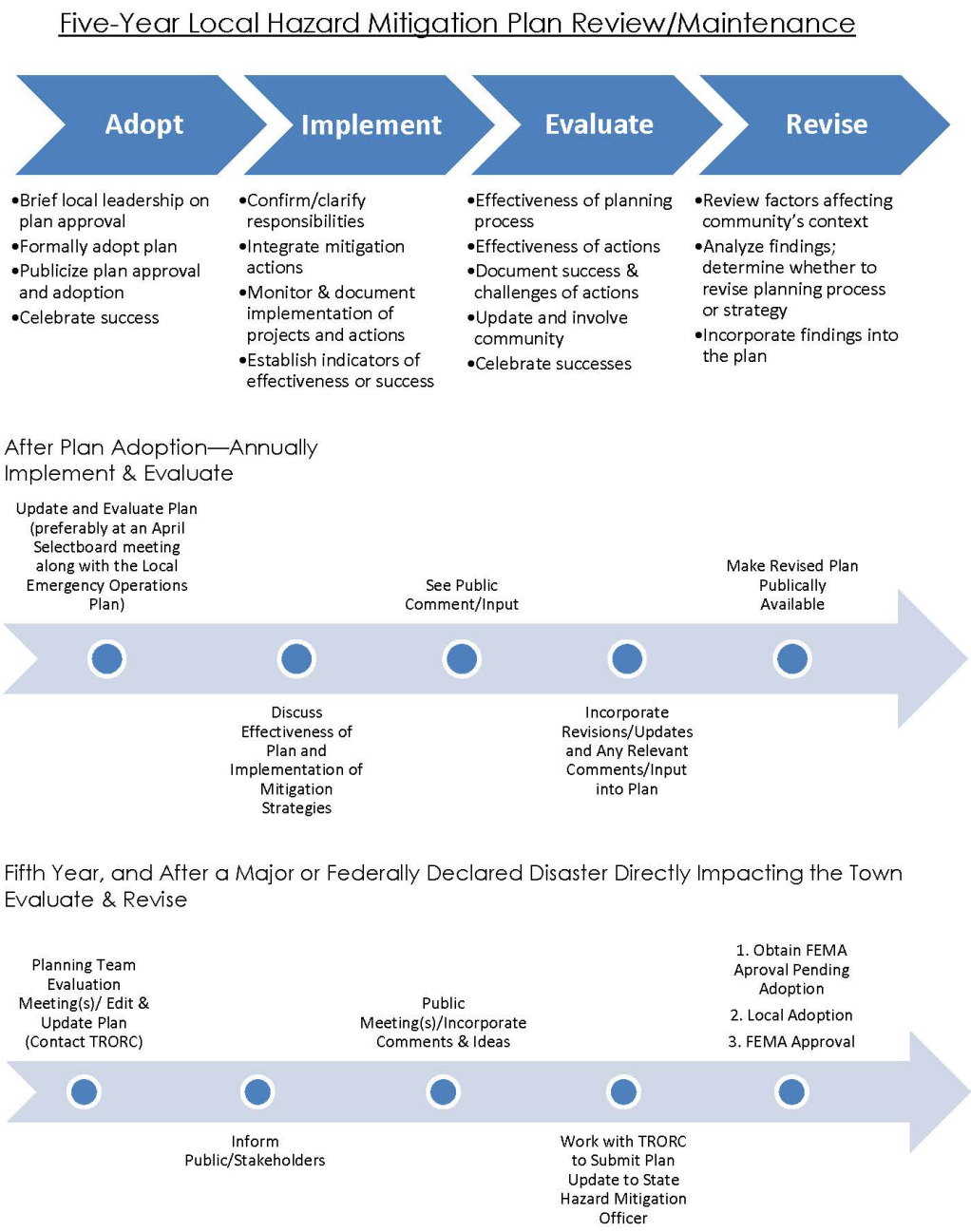
Critical crossings group one includes stream crossing structures on town highways that cross third order streams or larger. Headwater streams generally include first through third order. Third order was included as these headwater streams will have larger drainage areas and may have larger structures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

RDFLNAME	STRUCT_NUM	CATEGORY	X_COORD	Y_COORD	STR_TYPE	STR_MAT	CUL_WIDTH	CUL_HEIGHT	CUL_LEN
BRIDGE ST	101419003514191	B	-72.7005	43.7785		0	0	0	0
S HILL RD	101419003214191	B	-72.7686	43.7745		0	0	0	0
BLACKMER BLVD	101419000614191	B	-72.7231	43.7597		0	0	0	0
STONY BROOK RD	101419000514191	B	-72.7073	43.7605		0	0	0	0
RANNEY RD	101419002814191	B	-72.717	43.7506		0	0	0	0
FLETCHER BROOK RD	101419003314191	B	-72.7233	43.7373		0	0	0	0
DRISCOLLS RD	101419003014191	B	-72.7222	43.7202		0	0	0	0
STONY BROOK RD	101419002414191	B	-72.7213	43.7131		0	0	0	0
STONY BROOK RD	101419002514191	B	-72.7208	43.7123		0	0	0	0
STONY BROOK RD	101419002614191	B	-72.7209	43.7066		0	0	0	0
RIVER RD		C	-72.6796	43.7923	Round	Steel Corrugated	36	36	26
STOCKBRIDGE COMMON		C	-72.7573	43.7878	Round	Steel Corrugated	72	72	72
BLANCHARD RD		C	-72.7349	43.7357		0	0	0	0
STONY BROOK RD		C	-72.7211	43.7272		0	72	72	50

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	AOTCLASS	X_COORD	Y_COORD	CUL_WIDTH	CUL_HEIGHT	CUL_LEN	OpennesssR	ChannelWid
WHITCOMB HILL RD	Y	27095	C	0	-72.7079	43.804	36	36	31	0.28	3
STONY BROOK RD	Y	27095	C	0	-72.7068	43.7594	48	48	38	0.430244	9
STONY BROOK RD	Y	27095	C	0	-72.7113	43.7532	48	48	35	0.457143	11

Appendix C: Five-Year Review and Maintenance Plan



Appendix D: Sample Email to Neighboring Community

Stockbridge LHMP

Jake Palant <jpalant@trorc.org>
Wed 9/8/2021 9:16 AM
To: Chris Jarvis <cjarvis@pikeindustries.com>

3 attachments (8 MB)
Stockbridge Transportation Map.pdf; 9-7-2021 Stockbridge LHMP.docx; Stockbridge Flood Map.pdf;

Chris,
Good morning. I am assisting the Town of Stockbridge with updating their Local Hazard Mitigation Plan. As part of the planning process, FEMA requires that I send a copy of the draft plan to all communities neighboring Stockbridge for feedback. Would you please review at the plan and email to me any comments or concerns that you may have by the end of next Friday, September 17th?

There should be three attachments with this email: one draft hazard mitigation plan and two maps. Please confirm that you have received each of them.

Thank you,

Jake M. Palant, AICP | Regional Planner
TRORC
128 King Farm Road | Woodstock, VT 05091
802-457-3188 x3010
trorc.org | facebook | youtube

Appendix E: Stream Crossing Culvert Priorities from White River Partnership

Location	Stream Name	Length	Height	Width	Comments
Culvert under Blanchard Road located approximately 165 feet east of the Blanchard Road Fletcher Brook Road intersection	Fletcher Brook	32	10.6	16	Significant outlet drop - barrier to AOP. Slight alignment problem. Algae growth within. Flow undermining wingwall on left downstream. Overall good condition.
Located at most upstream crossing on Johnson Brook to access gravel piles.	Johnson Brook	78	5	5	Structure problematic with AOP; freefall.
at junction of Stony Brk Rd and Davis Hill Road	Davis Hill Brook	62	6.6	9.7	remnants of concrete wingwall on u/s left bank; u/s concrete apron and head wall; invert missing in places outlet is about 100' from confluence with Stony Brook; culvert is in rough shape, way undersized.
at Heritage Farm near junction with Music Mtn Rd	Trib of White River	80	10	14	Left old DS footer and built on top of it. Freefall onto large cascade/waterfall.
south of driveway for 2238 Blackmer Blvd, across from the mouth of Tweed River	Trib of White River	70	7.3	7.1	multiplate CMP: failed riprap dominate substrate at outlet. Culvert is at the confluence with White River; large sediment deposit upstream about 300-400 feet. immediately u/s of culvert appears to have been dredged
at private drive for 1102 Davis Hill Rd	Davis Hill Brook	40	5.1	10.5	concrete box culvert with 2 baffle, additional baffles on top of bank d/s river right. top baffle is at inlet with 1' drop onto concrete slide; backwatered behind second baffle which is about 17' from outlet, some sand in the backwater; 1' drop from 2nd

Attachments

Attachment A: Town of Stockbridge Flood Map

Attachment B: Town of Stockbridge Transportation Map