Town and Village of Woodstock Multi-Jurisdictional Local Hazard Mitigation Plan

Selectboard Adopted: 03/11/2022

Village Trustees Adopted: 03/19/2022

FEMA Approved: 07/18/2022

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

FEMA

July 18, 2022

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

Dear Stephanie 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 and Village of Woodstock Multi-Jurisdictional Local Hazard Mitigation Plan and approved it effective **July 6, 2022** through **July 5, 2027** 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.

This plan approval includes the following participating jurisdictions that provided copies of their resolutions adopting the plan:

- Town of Woodstock
- Village of Woodstock

With this plan approval, the communities listed above are eligible to apply to the 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 the 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 Digitally signed by PAUL F FORD
Date: 2022.07.18 13:28:29 -04'00'

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

PFF:jn

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

CERTIFICATE OF ADOPTION
March 8, 2022
TOWN and Village OF Woodstock, Vermont Selectboard and Village Trustees
A RESOLUTION ADOPTING THE Town and Village of Woodstock, Vermont 2021 Multi-Jurisdictional Local Hazard Mitigation Plan

WHEREAS, the Town and Village of Woodstock has historically experienced severe damage from natural hazards and it continues to be vulnerable to the effects of the hazards profiled in the **Town and Village of Woodstock, Vermont 2021 Multi-Jurisdictional 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 and Village of Woodstock** has developed and received conditional approval from the
Federal Emergency Management Agency (FEMA) for its **Town and Village of Woodstock, Vermont 2021 Multi-Jurisdictional 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 and Village of Woodstock**; and

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

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

RESOLVED by **Town and Village of Woodstock** Selectboard and Village Trustees:

1. The **Town and Village of Woodstock, Vermont 2021 Multi-Jurisdictional Local Hazard Mitigation Plan** is hereby adopted as an official plan of the
Town and Village of Woodstock;

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 and Village Trustees by the Emergency Management Director or Coordinator.

IN WITHNESS WHEREOF, the undersigned have affixed their signature and the corporate seal of the **Town and Village of Woodstock** this 8th day of March, 2022.

Town of Woodstock Selectboard

1. Joe Swanson (Mar 11, 2022 09:09 EST)
2. Raymond Bourgeois (Mar 11, 2022 10:21 EST)
3. Mary Y. Riley (Mar 11, 2022 11:37 EST)
4. Keri Cole (Mar 19, 2022 07:39 EDT)
5. _____

Selectboard Adoption Date: 3/11/2022

Village of Woodstock Trustees

1. Jeffrey Kahn (Mar 19, 2022 09:09 EDT)
2. Seton McIlroy (Mar 21, 2022 15:46 EDT)
3. Daphne Lowe (Mar 21, 2022 16:12 EDT)
4. Brenda Blakeman (Mar 22, 2022 06:45 EDT)
5. William Corson (Mar 22, 2022 06:57 EDT)

Village Trustees Adoption Date : 3/19/2022

Attest

F. Charles Degener
Town Clerk

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

FEMA

July 18, 2022

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

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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.

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Sincerely,

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

PFF:jn

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

Table of Contents

I. Introduction

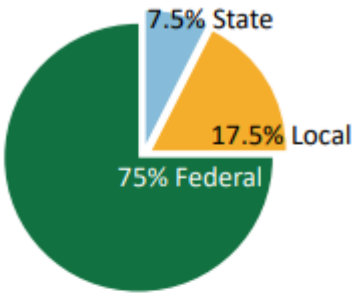
Natural and human-caused hazards may affect a community at any time. They are not usually avoidable; however, their impact on human life and property can be reduced through community planning. Accordingly, this Multi-Jurisdictional Local Hazard Mitigation Plan (hereafter referred to simply as the Plan)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

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:

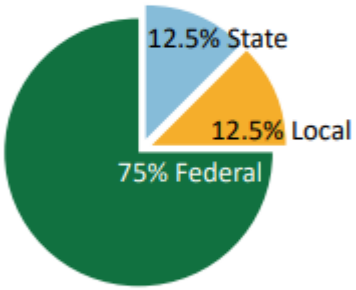
- **Mitigation**: preventing future emergencies or minimizing their effects
  - Includes any activities that prevent an emergency, reduce the chance of an emergency happening, or reduce the damaging effects of unavoidable emergencies.
  - Buying flood and fire insurance for your home is a mitigation 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 Woodstock in identifying all hazards facing the town, ranking them, and identifying strategies reduce risks from known priority hazards. The Town and Village of Woodstock seeks to be in accordance with the strategies, goals, and objectives of the State Hazard Mitigation Plan. The 2015 Town and Village of Woodstock Local Hazard Mitigation Plan was the first stand-alone mitigation plan drafted for the Town. Previously, the Town had a town-specific 2011 Annex in the Regional Pre-Disaster Mitigation Plan. This Plan has been reorganized and new sections were added:

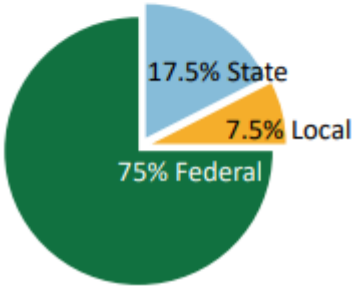


- Program eligibility subsequent to plan approval
- Authority for plan development
- Participating jurisdictions
- Funding for plan development
- Brief information about the community



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

This 2020 Plan expands upon the 2015 plan by analyzing new hazards, adding new and relevant data, and creates new mitigation actions for the Town to follow over the next five years.



In addition, for identifying hazards and ways to mitigate then in Woodstock, the 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: adopt updated road standards, participate in the National Flood Insurance Program (NFIP) by adopting flood hazard area regulations, annually adopt a local emergency management plan, and 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 incentive that not many communities in Vermont take advantage of is to adopt either 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 complicated 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.

Having either of the 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. Every percent saved in a million-dollar disaster is $10,000.

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 Woodstock's Comprehensive Plan in 2016. The flood resilience section references and incorporates material from the 2015 adopted and FEMA-approved hazard mitigation plan.

III. Community Profile

Woodstock has an especially picturesque setting. Located on a relatively broad plain at the intersection of the Town's main waterways, it is surrounded by high hills. The Ottauquechee River flows west to east through the Town, Kedron Brook flows north from Reading, and Barnard Brook flows south from Pomfret; these main waterways parallel the Town's main roads – U.S. Route 4 along the Ottauquechee, Vermont Route 106 along the Kedron, and Vermont Route 12 along Barnard Brook. Routes 106 and 12 serve mostly local traffic. U.S. Route 4 serves local traffic, but is also the main east-west highway across central Vermont.

Located near the center of Windsor County, Woodstock comprises an area of 27,384 acres. The Village occupies 726 acres at the intersection of State Routes 12 and 106 with U.S. Route 4. In addition to the Village, the Town has four other smaller communities (that are not legal entities) – South Woodstock, West Woodstock, Taftsville, and Prosper – each with its own institutions. The balance of the Town is essentially rural; its southwest corner is largely undeveloped. Most of the Town is considered part of the Vermont Piedmont, although the southwest corner of the Town is classified as an eastern extremity of the Inter-Mountain Valley Region of the Green Mountains.

From 2010 to 2020, according to the U.S. Census Reports, Woodstock's population declined by 43 (-1.4%) persons. The Town's population peaked in 2000, with 3,232 residents, before falling to the current level of 3,005. The population has not been below 3,200 since prior to the 1980 census, when the population stood at 3,214. While there has been a decline in population numbers in the decades between 2000 and 2020, there was a rise in the number of housing units in the Town. There has been an increase in the number of units in Woodstock, bringing the total number of units to 1,908 (up from 1,775 in 2000).

Woodstock's electricity is supplied by Green Mountain Power. To anticipate required electrical loads, GMP roughly expects one to two percent growth in electrical energy requirements per year per company. Strong economics can bring these figures to three or four percent, though a bad year can drop need level to less than one percent.

Fire protection, ambulance, dispatch services, town police department, and constables are currently housed together in a one-story brick and block building located on the East End of the Village on Route 4. In 2020, The Town and Village of Woodstock approved funding to hire 8 full-time EMT's, Paramedics, and Fire Firefighters to appropriately deal with the heavy call load. During the writing of this Plan, the emergency services building is undergoing construction to expand the buildings capacity for vehicles and its public safety services.

Fire protection is provided by two pumpers, one pumper/tanker, and one rescue truck. The Woodstock Fire Department E2 is the newest vehicle in the fleet, while a 1998 pumper is the oldest vehicle in the fleet. The Town/Village of Woodstock are serviced by two departments, the Woodstock and the South Woodstock Fire Departments, and the two departments respond to all calls together, although the Woodstock Fire Department is the primary fire department for all calls within the Town of Woodstock's boundaries. The Woodstock Fire Department operates two stations; one at the East End of the Village and one on U.S. Route 4 in West Woodstock where one ambulance and one fire truck are housed. Five firefighters respond out of the station located in West Woodstock. Woodstock Fire Department is also Staffed with 2 Full time Fire/EMS employees 24/7. The South Woodstock fire department, also known as the South Woodstock Fire Protection Association Inc., and has one Class A pumper, one mini-pumper, and a 2300 gallon tanker/pumper. Both the Town and South Woodstock departments are members of the Mutual Aid Program. This arrangement is planned to continue for the foreseeable future. Within ten years the South Woodstock Fire Protection Association, Inc. will need to replace one truck, the mini pumper, as a major purchase.

The Woodstock Ambulance Service (licensed as a paramedic service) serves the towns of Woodstock, Pomfret, Bridgewater, Plymouth, Reading, and Hartland with three vehicles that are replaced on a staggered basis every three years. The oldest vehicle on the fleet can be no more than nine years old. Development and its impacts on ambulance demand should continue to be monitored to predict when upgrades will be needed. The closest hospital is the Dartmouth Hitchcock Medical Center located in Lebanon, NH. Medivac services are available by the DHART helicopter.

The Village and Town are being served by the Village police department, one elected Constable with backup provided by the Vermont State Police, Troop "D" located in Bethel.

The Town Highway Department is located in West Woodstock on U.S. Route 4 and is responsible for 70 miles of roadway with the Town. The Village Highway Department is located on Mechanic Street and is responsible for the Village's roads that interconnect U.S Route 4 and VT Routes 12 and 106. The State Highway district garage is located in White River Junction on Beswick Drive.

There is one elementary school in the Village off of VT Route 106, while the High School and Middle School building is located on U.S. Route 4 in West Woodstock. There are five licensed childcare providers that are located on Elm Street, South Street, North Barnard Road, VT Route 12, and on River Street. All of these are in close proximity to Woodstock Village.

Woodstock is home to several businesses and industries. The largest area employer is the Woodstock Inn and Resort.

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

According to FEMA's Flood Insurance Rate Maps, most of the Village is located in the floodplain, along with several other properties that lie along the Ottauquechee River that straddles U.S. Route 4. Kedron Brook is another significant waterway in the Town and Village that connects with the Ottauquechee in the middle of the Village. This brook straddles VT Routes 12 and 106 whose floodplain encompasses many homes and businesses. The Flood Ready Vermont website states that there are 93 buildings in the Special Flood Hazard Area in the Town, as well as 97 additional buildings in the Village.

IV. The Planning Process

A. Plan Developers

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).

Victoria Littlefield and Jake Palant, Regional Planners at the Two Rivers-Ottauquechee Regional Commission (TRORC), assisted the Town and Village of Woodstock with updating their Hazard Mitigation Plan. The planning process involved representatives from both the Town and Village of Woodstock. Committee members who assisted with the revisions include:

- Bill Kerbin, Town/Village Manager/EMD
- Robbie Blish, Woodstock Police Chief
- Ray Bourgeous, Selectboard Member
- Daphne Lowe, Village Trustee
- David Green, Woodstock Fire Department, Chief

B. Plan Development Process

The 2011 Woodstock 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 Woodstock Annex received subsequent FEMA approval, but, since it was part of a larger plan, FEMA treats its start date as September 30, 2008, meaning the Woodstock Annex expired on September 30, 2013.

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

This Plan was reconstructed in 2015 (FEMA Approved August 21, 2015) as a stand-alone Woodstock Multi-Jurisdictional Hazard Mitigation Plan. As such, several sections have been added or updated to include all necessary information.

Summary of 2015 Changes, Additions, and Planning Process

New sections on the plan development process, updates to the mitigation strategies, existing hazard mitigation programs, projects, activities, maps, and plan maintenance were added. Data updates were made to relevant sections. All top hazards were kept the same from the 2011 Annex, with the addition

of Water Supply Contamination. These hazards were ranked using a system by Vermont Emergency Management (then the Vermont Division of Emergency Management and Homeland Security).

Six meetings were held with committee members on:

- March 26, 2014
- April 2, 2014
- July 15, 2014
- October 2, 2014
- January 13, 2015
- January 20, 2015

These meetings consisted of publicly warned hazard mitigation committee meetings, selectboard, and village trustee meetings. The number of public meetings held was higher than typical because of the transfer from an Annex to a formal Multi-Jurisdictional Plan.

2021 Plan Changes and Planning Process

While the 2015 Woodstock Town & Village Multi-Jurisdictional Plan provided a good basis for the 2021 Plan, there were several sections that needed updates based on public meetings. Below is a list of significant changes made to this Plan:

- General
    - Data updates: new hazard incidents, new federal emergency declarations, and census data,
    - Reevaluation of hazards using a hazard ranking system.
    - Maps were updated to reflect new state data layers.
- Hazard Analysis
    - Based on a hazard ranking exercise conducted at a public meeting held on July 6, 2021, the following hazards were identified as being the 'top hazards' in Woodstock; Hazardous Materials incidents, Water and Wastewater Contamination, Pandemic, Fire Hazards (Structure, Wildfire, and Brushfire), and Severe Weather (thunderstorms, extreme cold and heat, ice / snow, flooding, high wind, hurricanes, tropical storms, and hail). Each of these hazards is thoroughly analyzed for the Town and Village of Woodstock to include location, vulnerability, extent, impact, and likelihood.
    - Top hazards that were removed for the 2021 Plan was Flash Flood, Flood, and Fluvial Erosion. This hazard was placed under Severe Weather for this Plan. Structure Fire and Wildfire were merged together as one hazard.
- Mitigation Strategies
    - A public meeting was held on August 16, 2021 with the committee to develop mitigation strategies for this 2021 Plan.
    - Mitigation strategies related to Structure Fire and Wildfire from the 2015 Plan were merged under one category. The strategies for flooding were moved under the Severe Weather category.

- Mitigation strategies that were completed since the 2015 Plan were removed from the 2021 mitigation strategy table. A table was also created that showed all mitigation strategies from the 2015 plan and if they were completed or not.

The 2015 Plan process was an immersive process taken on by the committee and TRORC since it acted as an entirely new Plan (as it was an annex before). For the 2021 Plan, a similarly immersive process was conducted with the committee to gather as much public feedback as possible. Below is a thorough description of each public meeting that was held for this iteration of the Plan.

- July 6, 2021
  - Summary: a public meeting was notified and held at the Woodstock Town Offices to kick-off the planning process and to complete a hazard ranking process.
  - Major outcomes: TRORC staff did a brief presentation on the LHMP planning process and the importance of identifying and mitigating hazards in a hazard mitigation plan. The LHMP Committee then identified several hazards that were a threat to the Town and Village of Woodstock and ranked these hazards by their overall impact. While the meeting was open to the public, no members of the public were in attendance.
  - Notifications: Notifications were made in the Woodstock listserv, on the Town website, TRORC website, and in the Vermont standard.
- August 16, 2021
  - Summary: A second public meeting was notified and held at the Woodstock Town Offices to discuss previously identified mitigation actions and develop new actions.
  - Major outcomes: The committee informed TRORC staff of what mitigation actions identified in the 2015 LHMP were complete and which actions were still in progress. TRORC Staff and the committee then coordinated to develop new mitigation actions to address the top five hazards identified at the July 6th meeting. While the meeting was open to the public, no members of the public were in attendance.
  - Notifications: Notifications were made in the Woodstock listserv, on the Town website, TRORC website, and in the Vermont standard.
- November 8, 2021
  - Summary: A public meeting was notified and held at the Woodstock Town Offices to review the final draft of the mitigation plan.
  - Major outcomes: Members of the Woodstock Selectboard and Village Trustees held a joint meeting to review the final draft of the mitigation plan. There was one member of the public present in addition to the seven town officials and staff present. TRORC led them through the Plan and what revisions were made. Questions from the officials and public included how this mitigation plan interacts with FEMA and other funding sources that the town could access, and on the historical occurrences of the top hazards that the committee selected for this plan.
  - Notifications: Notifications were made in the Woodstock listserv, on the Town website, TRORC website, and in the Vermont standard.

A final draft of the Woodstock Town & Village Multi-Jurisdictional Plan was sent to bordering communities via email on November 15, 2021 to as for feedback. These communities include Bridgewater, Pomfret, Hartford, Hartland, West Windsor, and Reading. The Plan was sent to either the Selectboard Chair or Town Manager of those respective communities. No comments on the draft plan were received. The paragraph below shows the message that was emailed out to these communities:

Dear town official,

On behalf of the Town and Village of Woodstock, per 44 CFR 201.6 Local Mitigation Plans Requirement §201.6(b)(2), jurisdictions that are updating or creating a Local Hazard Mitigation Plan are required to send a draft of the plan to all neighboring communities for comment. The Woodstock Town & Village Multi-Jurisdictional Mitigation Plan is attached for your review. Any comments on this plan must be emailed back to me by ***Wednesday, December 1, 2021*** *for consideration.*

Review of existing plans, studies, reports, and technical information

- State of Vermont Hazard Mitigation Plan, 2018
- Town and Village of Woodstock Hazard Mitigation Plan (Adopted July 21, 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.
- Vermont Housing Data: Community Profile for Woodstock
- Town and Village of Woodstock Plan (Adopted September 17, 2019)
  - This plan provided TRORC's staff with background information on the community, as well as more detail on their emergency services.
- Woodstock's Local Emergency Management Plan (LEMP) (Last Adopted April 20, 2021)
  - This Plan was referenced for general information about Royalton's emergency operations.
- Additional data sources are mentioned in the *Hazard Identification* section of this Plan.
  - For Severe Weather: information was collected from the National Centers for Environmental Information and FEMA Database of Declared Disasters and the National Centers for Environmental Information.
  - For Hazardous Material Spills: information was collected from the Vermont Department of Environmental Conservation's Spill List
  - For Fire: information was provided by the Woodstock Fire Department
  - For Water/Wastewater Contamination: information was collected from the Vermont Department of Environmental Conservation's Spill List
  - For Pandemic: information was collected from the Center for Disease Control and Prevention and the U.S. Bureau of Labor Statistics

C. Status Update on Mitigation Actions Identified in 2015

The table in this section outlines the mitigation actions from the 2015 Multi-Jurisdictional Plan. Participants in this 2021 Plan reviewed these actions and reported on the status of each strategy.

Hazard(s) Mitigated	Mitigation or Preparedness Action	Addresses Town/ Village?	Local Leadership	Prioritization (Mitigation Proj. Status)	Possible Resources*	Time Frame	Completed since 2015?
All Hazards	*Ensure that Woodstock's Town and Village Local Emergency Operations Plan (LEOP) is kept up-to-date and identifies vulnerable areas and references this Plan. (Preparedness)*	Town and Village	Municipal Manager	High	Local resources; TRORC; Vermont Emergency Management	1 year from date of Plan approval	☑ Completed. LEOP was replaced by the Local Emergency Management Plan (LEMP). The Woodstock Town and Village LEMP was adopted on 4/20/2021.
	Consistently document infrastructure damage after weather events. (Preparedness)	Town and Village	Highway Superintendent	High	Local resources; Vermont Emergency Management	Per occur-ence	☑ Completed

Hazard(s) Mitigated	Mitigation or Preparedness Action	Addresses Town/ Village?	Local Leadership	Prioritization (Mitigation Proj. Status)	Possible Resources*	Time Frame	Completed since 2015?
	Set up a VT Alert (provides emergency-related information and alerts) booth at Town Meeting and encourage residents to sign-up. (Preparedness)	Town and Village	Municipal Manager	High	Local resources; Vermont Emergency Management; VT Alert	1 year from date of Plan approval	☑ Completed.
Hazardous Material Spill	*Ensure that all emergency response and management personnel continue to receive HAZMAT Awareness training at a minimum. (Preparedness)*	Town and Village	Fire Department	High	Local resources; Vermont Fire Academy	1 year from date of Plan approval	☑ Ongoing. Incorporated as an existing action in the 2021 LHMP.
	Continuously stock gear to help contain small spills when they occur (booms, absorbent materials, etc.). (Preparedness)	Town and Village	Fire Department	High	Local resources; Vermont Fire Academy	As needed	☑ Ongoing. Incorporated as an existing action in the 2021 LHMP.

Hazard(s) Mitigated	Mitigation or Preparedness Action	Addresses Town/ Village?	Local Leadership	Prioritization (Mitigation Proj. Status)	Possible Resources*	Time Frame	Completed since 2015?
	Identify hazardous material storage tanks, and raise awareness on risk factors. (Mitigation)	Town and Village	Fire Department	Medium-High (New)	Local resources; Tier II reports	1-2 years from date of Plan approval	☑ Completed.
	Obtain digital Tier II reports for facilities within the Town and Village of Woodstock. (Preparedness)	Town and Village	Fire Department	Medium-High	Local resources; TRORC; Tier II reports; Vermont State HAZMAT Team	1-2 years from date of Plan approval	☑ Completed.
Structure Fire	*Ensure that fire department personnel maintain their Firefighter certifications. (Preparedness)*	Town and Village	Fire Department	High	Local resources (most trainings done in-house)	Annually	☑ Completed.
	Conduct a public education program on fire prevention and disseminate information. (Preparedness)	Town and Village	Fire Department	Medium	Local resources	At least every other year	☑ Completed.

Hazard(s) Mitigated	Mitigation or Preparedness Action	Addresses Town/ Village?	Local Leadership	Prioritization (Mitigation Proj. Status)	Possible Resources*	Time Frame	Completed since 2015?
Structure Fire/ Wildfire	*Purchase a UTV to use for wildfires/brushfires and rescues. (Preparedness)*	Town and Village	Fire Department/ EMS	Medium	Local resources; donations	1-2 years from date of Plan approval	☑ Completed. Two UTVs have been purchased.
Wildfire	*Draft a Community Wildfire Protection Plan (assesses the community wildfire risk, discusses the ability to respond and recommends actions to reduce wildfire risk). (Mitigation)*	Town and Village	Planning Department/ Planning Commission	Low (New)	Local resources; Vermont Rural Fire Protection Task Force	4-5 years from date of Plan approval	Not completed. The Town will consider doing this. Incorporated as a proposed action in the 2021 LHMP.
	Develop a program to educate residents on how to safely conduct an outdoor burn upon granting of an individual's first burn permit. (Preparedness)	Town and Village	Fire Department	High	Local resources	As needed	☑ Completed.

Hazard(s) Mitigated	Mitigation or Preparedness Action	Addresses Town/ Village?	Local Leadership	Prioritization (Mitigation Proj. Status)	Possible Resources*	Time Frame	Completed since 2015?
	Develop a program to receive training and practice using brushfire/forestry equipment. (Preparedness)	Town and Village	Fire Department	High	Local resources	1 year from date of Plan approval	☑ Completed.
Water Supply Contamination	*Maintain and update the Town's Wellhead Protection Plan to reduce risk. (Mitigation)*	Village	Woodstock Aqueduct Company	Medium-High (New)	Woodstock Aqueduct Company; Vermont DEC's Drinking Water and Groundwater Protection Division	3 years from date of Plan approval	☑ Completed. Was adopted in 2020.
	Develop a program to educate landowners adjacent to Woodstock Aqueduct Wells on groundwater supply contamination mitigation practices. (Mitigation)	Town and Village	Woodstock Aqueduct Company	High (New)	Woodstock Aqueduct Company; Vermont DEC's Drinking Water and Groundwater Protection Division	1 year from date of Plan approval	Not completed. The Town will consider doing this. Incorporated as a proposed action in the 2021 LHMP.
	Consider adopting wellhead protection regulations. (Mitigation)	Town and Village	Planning Department/ Planning Commission	Low (New)	Local; Woodstock Aqueduct Company	4 years from date of Plan approval	Not completed. The Town will consider doing this. Incorporated as a proposed action in the 2021 LHMP.

Hazard(s) Mitigated	Mitigation or Preparedness Action	Addresses Town/ Village?	Local Leadership	Prioritization (Mitigation Proj. Status)	Possible Resources*	Time Frame	Completed since 2015?
Flash Flood/ Flood/ Fluvial Erosion	*Maintain and update town bridge and culvert inventories. Regularly inspect and maintain town bridges and culverts; identify which need mitigation. (Mitigation)*	Town and Village	Highway Superintendent	High overall; but Low-High depending on "what," "where" and "when" for culvert upgrades/ Repairs (was 2nd priority of 3 long term mit. projects in 2011 plan)**	Local resources; TRORC; Better Backroads grants;	1-5 years from date of Plan approval	Not completed. The Town will be hiring TRORC to conduct this inventory in 2022. Incorporated as a proposed action in the 2021 LHMP
	As part of Town Plan updates, determine if revising and strengthening the Town's flood hazard regulations contained within the Town's Zoning Bylaws is necessary to remain compliant with federal and state law and reduce risks. (Mitigation)	Town and Village	Planning Department	Low-Medium (New)	Local resources; TRORC; Municipal Planning Grants; Vermont DEC's River Management Section	4 years from date of Plan approval	☑ Completed. The Woodstock Town and Village Master Plan was adopted in 2016 that included recommended changes to the flood bylaws.

Hazard(s) Mitigated	Mitigation or Preparedness Action	Addresses Town/ Village?	Local Leadership	Prioritization (Mitigation Proj. Status)	Possible Resources*	Time Frame	Completed since 2015?
Flash Flood/ Flood/ Fluvial Erosion	*Adopt fluvial erosion hazard (FEH)/river corridor regulations which will incorporate VT ANR's river corridor maps. (Mitigation)*	Town and Village	Planning Department	Low-Medium (New)	Local resources; TRORC; Municipal Planning Grants; Vermont DEC's River Management Section	4 years from date of Plan approval	Not completed. The Town will consider doing this. Incorporated as a proposed action in the 2021 LHMP.
	Upgrade/upsize, repair or clean the culverts listed in the Town's priority list as determined by the Better Backroads culvert inventory; give priority to sites requiring mitigation. See Appendix D. (Mitigation)	Town	Highway Superintendent/ Municipal Manager	Low-High, depending on funding and capabilities (In 2011 plan) How different from 1st item above under flooding, previous page?)	Local resources; Better Backroads grants; Vermont DEC's River Management Section; VTrans; Structures grants, TRORC; HMGP/PDM	1-5 years from date of Plan approval	Partially completed. The last culvert inventory that provided a priority list is outdated, a new one will be created in 2022.
	Replace undersized culvert on Cox District Road (washed out road twice in 2014 alone) with a more hydraulically correct structure. (Mitigation)	Town	Highway Superintendent/ Municipal Manager	Medium-High (New)	Local resources; TRORC; VTrans; HMGP/PDM	1-3 years from date of Plan approval	☑ Completed.

Hazard(s) Mitigated	Mitigation or Preparedness Action	Addresses Town/ Village?	Local Leadership	Prioritization (Mitigation Proj. Status)	Possible Resources*	Time Frame	Completed since 2015?
	Upgrade/upsize, repair or clean the culverts listed in the Village's priority list as determined by the Better Backroads culvert inventory. See Appendix E. *(Mitigation)*	Village	Village Road Foreman/ Highway Superintendent/ Municipal Manager	Low-High, depending on funding and capabilities	Local resources; Better Backroads grants; Vermont DEC's River Management Section; VTrans; Structures grants, TRORC; HMGP/PDM	1-5 years from date of Plan approval	Partially completed. The last culvert inventory that provided a priority list is outdated, a new one will be created in 2022.
Flash Flood/ Flood/ Fluvial Erosion	*Develop a culvert replacement policy specifying culvert upsizing requirements, and include it in the Town Highway Ordinance. (Mitigation)*	Town	Municipal Manager	Medium (New)	Local resources	2-4 years from date of Plan approval	Not completed. The Town is working on a Capital Improvement Plan that will address this.
Flash Flood/ Flood/ Fluvial Erosion// Wildfire	*Remove, where necessary, trees and brush from rivers/streams that pose an imminent threat to public safety and property; inspect periodically to reduce risk of flooding (Mitigation).*	Town	Highway Superintendent/Municipal Manager	Low-High (New)	Local resources; Vermont DEC's River Management Section	1-5 years, from date of Plan approval (depends on area)	☑ Woodstock will proceed to do this only within 100 feet of a bridge. Incorporated as an existing action in the 2021 LHMP.

D. Changes in Town and Village Priorities and Vulnerabilities Since the 2015 Plan

This 2021 Multi-Jurisdictional Hazard Mitigation Plan reflects the evolution of the Town's and Village's priorities since 2015. A major change to this 2020 Plan includes the addition of Pandemic as a top hazard, merging wildfires and structure fires into one overarching hazard, and merging flooding under Severe Weather with several other hazards that cause severe weather. The committee felt that this reorganization of top hazards reflects the work that needs to be done over the next five years based on exposure to these hazards. The COVID-19 pandemic was a large reason why pandemic was added as a top hazard as the committee realizes the Town still has a lot of mitigation to perform to adjust to this new way of life. The committee was advised by TRORC to merge wildfires and structure fires into a Fire Hazard category. Both are fairly infrequent in town, but both require similar mitigation actions. While flooding was not completely removed as a top hazard, the committee discussed that flooding is not the only issue the Town and Village will face with changing climates in the future, there are several other types of severe weather that have had disastrous impacts on the Town and Village in the past five years.

E. Status of Development in the Town and Village of Woodstock

Woodstock has seen an increase in single-family residential development pressures in the town and the village. The residential development in is both existing and proposed. Offices in the central core have been converting to residential apartment units, while empty lots in the village are being developed with single family houses. In the town, there has been a trend in siting very large single-family houses near ridgelines to take advantage of views. The majority of these houses are for second homeowners from out of state. Woodstock has a ridgeline overlay district, which extends 500 feet from a ridgeline in either direction. Encroachment into this overlay district requires Conservation Commission approval and conditional use approval from the town development review board. Many of the houses request encroachments into the ridgeline overlay district, which is reviewed by the boards. A concern raised by the Conservation Commission on each encroachment request is about stormwater runoff. These houses typically have long and steep driveways that require extensive grading and blasting to install. Stormwater runoff from these driveways has been an issue. Additionally, Woodstock has many Class 2 and Class 3 wetlands. New residential development that is not on a hilltop oftentimes runs into wetland buffer encroachments. Careful analysis is necessary for each single-family residential development when it encroaches into wetland areas or near vernal pools. There has been a push to reduce the required wetland setbacks from developers. Water quality issues are raised each time encroachment into wetland buffers are requested. Hillside streams are numerous as well, putting water quality and stormwater runoff into focus as well. The net impact of this type of development could detrimentally impact the water quality of the Kedron Brook and the Ottauquechee River if mitigation measures are not effective.

The village is pushing for increased residential and commercial development within the Village Center. Policies promoting higher density are being discussed for the village. In the near future, if these policies are successfully implemented on a regulatory level, typical smart growth development patterns may reduce the potential for future residential development to increase the risk of hazards created through unmitigated development patterns. Covid-19 produced a large increase in residential development

pressures, particularly for second homeowners. The percentage of homes in Woodstock Village and Town owned by non-residents increased from roughly half of the housing stock to approximately 2/3 to 3/4 of the housing stock during 2020-2021. This trend has not subsided even after the vaccine rollout. This trend could lead to increased development pressures on environmentally sensitive areas. Stormwater runoff, water quality issues and deforestation of lots for long driveways with very large houses raises concerns for the net impact of this type of development by increasing hazards posed by future heavy rain events that have become ore common due to climate change. Careful consideration and analysis of this type of development should continue to prevent it from negatively affecting existing development downstream.

F. Existing Hazard Mitigation Programs, Projects & Activities

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

The Town and Village of Woodstock are 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 Woodstock's Local Emergency Management Plan (LEOP). Last updated and approved on4/20/2021.	Updated by the Municipal Manager/Emergency Management Coordinator, assistance from TRORC and funding from Vermont Emergency Management.	Current program works well, no need to expand or improve on. The LEMP is reviewed and updated each year. The Village of Woodstock is included in the Town of Woodstock's LEMP.
	Program—Maintains and updates an Emergency Operations Plan (different than the LEOP). Last updated and approved on 04/15/2014.	Updated by the Municipal Manager/Emergency Management Coordinator and emergency response personnel. Funding from local budgets.	Current program works well, no need to expand or improve on.
	Program— Participation/attendance in the Regional Emergency Management Committee.	Staff/volunteer time from the Woodstock Fire Departments; meetings convened by TRORC. Funding from Vermont Emergency Management.	This is a new concept created by Vermont Emergency Management that will require the EMD (who is the Town Manager) and a member of Fire/EMS to be representatives of the Town and Village. Representatives will need to be elected by the Selectboard and Village Trustees with regular attendance at these quarterly meetings by the two representatives.
	Program— Identify populations that are vulnerable to extreme cold and make a plan to assist them, if necessary, in the event that it occurs.	Volunteer and staff time from MD (Town Manager), Health Officer, Fire Department. Funding from local budgets.	Current program works well, no need to expand or improve on.
	Action— Continuously stock gear to help contain small spills when they occur	Volunteer time from Woodstock Fire Chief. Funding from local budgets.	Current program works well, no need to expand or improve on.

	Type of Existing Authority / Policy / Program / Action	Resources: Staffing & Funding	Ability to Expand/Improve on
	Program— Ensure that fire department personnel maintain their Firefighter certifications.	Volunteer time from Woodstock Fire Chief. Assistance from Local resources (FD); VT Fire Academy. Funding from mutual aid departments.	Current program works well, no need to expand or improve on.
	Ongoing Action— Continuously stock gear to help contain small spills when they occur (booms, absorbent materials, etc.).	Volunteer time from the Woodstock Fire Department. Funding from local budget and Vermont Fire Academy.	Current action works well, no need to expand or improve on.
	Ongoing Action— Ensure that all emergency response and management personnel continue to receive HAZMAT Awareness training at a minimum.	Volunteer time from the Woodstock Fire Department. Funding from local budget and Vermont Fire Academy.	Current action works well, no need to expand or improve on.
Insurance Programs	Authority/ Program—participation in National Flood Insurance Program (NFIP) The Town and Village participate and comply with the NFIP through their enforcement of the "Flood Hazard District" overlay district, which was adopted 06/15/2010 and 01/10/2012, respectively. They are kept up-to-date and regulate new development in the Special Flood Hazard Area (SFHA). [Note: This section of the Plan satisfies the requirements of 44 CFR 201.6(c)(3)(ii).]	The Woodstock Zoning Administrator serves as the NFIP Administrator for both entities. Assistance from TRORC and Vermont ANR. Funding from local resources—annual budget.	The Town's initial Flood Hazard Boundary Map was identified on 8/9/74. The Town's initial Flood Insurance Rate Map (FIRM) was dated 12/15/78. The Village's initial Flood Hazard Boundary Map was identified on 09/13/74. The Village's initial Flood Insurance Rate Map (FIRM) was dated 02/15/79. The Town and Village's FIRM and the Flood Insurance Study (FIS) has been updated, and the current effective date for all is 09/28/07.
Land Use Planning	Policy/Program— Woodstock Town and Village Master Plan. Adopted on 09/17/2019	Staff time from the Planning Department, volunteer time from Planning Commission, and assistance from TRORC and other state agencies on specific subject matter. Funding from Municipal Planning Grants and local budget.	The Master Plan is updated every eight years, as required by statute. The Planning Commission/Department may expand or improve on any section it deems necessary, or that is required by changes in state statue.
	Completed Authority— Woodstock Town & Village Zoning Regulations Adopted 06/15/2010 and 01/10/2012, respectively, includes "Flood Hazard District" (FHD) overlay district	Staff time from the Planning Department; volunteer time from the Planning Commission/Town Selectboard/Village Board of Trustees, and assistance from TRORC. Funding from Municipal Planning Grants, and local budgets.	During the Master Plan review/update period, the Zoning Regulations are also reviewed and updated if needed.

	Type of Existing Authority / Policy / Program / Action	Resources: Staffing & Funding	Ability to Expand/Improve on
	Authority— Woodstock Village Ordinance Adopted 09/25/1989, and revised on 05/10/2009. Includes provisions on topics such as: animals; buildings; business licenses and registration; health and safety; news racks; streets, highways and sidewalks; traffic, vehicles and parking; village green, parks and public places; and yard sales and auctions.	Staff time from Planning Department, volunteer time from the Village Board of Trustees. Funding from Municipal Planning Grants and local budgets.	The Ordinance may be revised by the Board of Trustees when deemed appropriate to do so.
Hazard Control & Protection of Critical Infrastructure & Facilities	Policy/Program—Woodstock Hazard Mitigation Plan Last approved on 08/21/2015	Updated with paid and volunteer time from local officials and assistance from TRORC and Vermont Emergency Management. Funding from VEM/FEMA.	The 2021 Woodstock Hazard Mitigation Plan will replace the 2015 Plan. The 2021 HMP has evolved from the 2015 Plan and has greatly expanded and improved upon it. Both the Town and Village of Woodstock will be included in the 2021 Multi-jurisdictional Plan. Future iterations of the Town's LHMP will be updated by the Town at least every five years.
	Authority— Highway Ordinance, Town of Woodstock, Vermont Adopted 05/03/2005, last amended on 05/15/2007	Staff time from Municipal Manager and Highway Superintendent. Funding from local budgets.	Regulates maintenance, upgrading and construction of the Town's highways. May be amended as needed.
	Program—culvert inventory completed in fall 2014 for the Town and Village of Woodstock This inventory includes georeferenced locations and attributes for all culverts/drop inlets in Woodstock. Both the Town and Village received targeted assistance in the culvert inventory and specific priority projects were identified for both entities.	Staff time from Woodstock Highway Superintendent, Village Road Foreman and Municipal Manager; assistance from TRORC. Funding from Better roads grant; local personnel time.	The Town/Village is currently using the culvert inventory to further its culvert improvement program, and seeking funding through various sources for implementation projects. The culvert inventory will need to be updated using assistance from TRORC in 2022.
	Ongoing Action— Plan for, budget and maintain roads for safe winter travel.	Volunteer and staff time from Road Foreman, Selectboard, Village Trustees, Town Manager. Funding from local budgets.	Current program works well, no need to expand or improve on.

	Type of Existing Authority / Policy / Program / Action	Resources: Staffing & Funding	Ability to Expand/Improve on
	Ongoing Action— Clear and maintain town road rights-of-way, and work with local utilities to request that utility corridors are cleared and maintained, as needed. Identify hazard trees in town rights-of-way (and those at risk at damaging other public infrastructure) and remove them to mitigate damage from severe wind storms.	Staff time from Road Foreman. Funding from town resources.	Current program works well, no need to expand or improve on.
	Ongoing Action— Remove, where necessary, trees and brush from rivers/streams that pose an imminent threat to public safety and property; inspect periodically to reduce risk of flooding	Staff time from Woodstock Highway Superintendent and Municipal Manager. Assistance and funding from Local resources; Vermont DEC's River Management Section.	Current program works well, no need to expand or improve on.
	Program – 2020 Road Erosion Inventory This Road Erosion Inventory (REI) will provide the town a list of road segments that are the most vulnerable to fluvial erosion as well as an improvement plan for this road segments to lessen erosion.	Personnel time from Town Road Commissioner/Foreman; assistance from TRORC. Funding from Better Roads grants and local resources.	The Town will use this REI to further its culvert and road improvement program by helping to prioritize culvert and ditching upgrade projects. The Town will keep the REI inventory up-to-date on a five-year basis. This will be the first time Hartland has a completed REI to comply with the Municipal Roads General Permit (MRGP).
Education/ Public Outreach	Ongoing Action/Program— Town/Village posts tips continually on Facebook, Twitter, and the Town website regarding safety and road closures.	Staff time from Woodstock Administration personnel and Woodstock emergency services personnel. Funding from local budgets.	This is an ongoing action/program, and currently works well so there is no need to expand/improve on it at this time.
	Conduct a public education program on fire prevention at the Woodstock Schools.	Volunteer time from Woodstock Fire Chief. Funding from Local resources (FD); small prevention budget; mutual aid departments.	Will be done annually.

G. Plan Maintenance

This Plan will be updated and evaluated annually, by discussing its effectiveness and making note to incorporate any necessary revisions in the update process, at a March or April Selectboard meeting, along with the review of their Local Emergency Management Plan (LEMP). At this meeting, the Selectboard, along with the Town Manager, 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 Selectboard and the local Emergency Coordinator/Director will also occur within three months after every federal disaster declaration directly impacting the Town and Village of Woodstock. The Town will monitor, evaluate and update this Local Hazard Mitigation Plan at a March or April Selectboard meeting and after every federally declared disaster directly impacting the Town. The Town shall reference the Local Hazard Mitigation Plan when working on Town Plan amendments or changes to the Town's bylaws.

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

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

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

Woodstock shall also incorporate mitigation planning into their long-term land use and development planning documents. The 2016 Town and Village of Woodstock Plan makes reference to the 2015 Woodstock 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 assisted the Town when the Town Plan was updated and adopted in 2019 when a new flood resilience element was added.

It is also recommended that the process work both ways and the Town review and incorporate elements of the Multi-Jurisdictional 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 and Village of Woodstock have flood hazard regulations that are integrated into their Zoning Bylaws. Town compliance with the NFIP is enforced by the Zoning Administrator and the Town Design Review Board, as outlined in Section 405 of the Town of Woodstock Zoning Regulations. Village compliance with NFIP is also enforced by the Zoning Administrator, but in conjunction with the Village's own Design Review Board instead of the Town's Design Review Board, as outlined in Section 404 of the Village of Woodstock Zoning Regulations. A permit is required for construction and development in special flood hazard areas and applications must be sent by the Zoning Administrator to the State NFIP Coordinator. Conditional uses within riparian buffers in either the Town or Village require approval from the respective Design Review Board.

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 Woodstock 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 and Village of Woodstock, 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 Woodstock might not have been impacted by a specific hazard in the past, this does not necessarily mean it will never be affected in the future. Indeed, the advance of climate change means that old weather patterns may not hold. For instance, in recent years, Vermonters have seen an increase in the number and severity of storms, especially rainfall events. Armed with historical data and a healthy respect for climate change and the unknown, we have tried our best to identify hazards and prepare for the future.

The following table reflects the hazards that we believe can be expected, or are at least possible, in the central Vermont area. In the 2021 Plan, it was decided to model the hazard ranking off of the 2018 Vermont State Hazard Mitigation Plan to simplify the process. The table below shows the ranking criteria that was used.

Hazard Assessment Ranking Criteria		
	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: ,1% probability of occurrence per year	Negligible: isolated occurrences of minor property and environmental damage, potential for minor injuries, minor economic disruption.
2	Occasionally: 1-10% 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: >10% by <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% probability in a year	Major: severe property and environmental damage on a community or regional scale, multiple injuries or fatalities, significant economic impact

Using this ranking criterion, the table on the next page shows a list of hazards that may affect Hartland 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 in the table, below) are then followed-up with discussion and mitigation strategies throughout the rest of this Plan.[1] As explained

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

earlier in this Plan, there was some reshuffling of hazards, as well as new hazards added to the ranking table. While Severe Weather is indicated to include at the minimum thunderstorms, extreme cold, extreme heat, ice, snow, flooding, high winds, hurricanes, tropical storms, and hail. This is not an all-encompassing list. It should also 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.

Table 1: Hazard Assessment

Hazards	Probability	Potential Impact					Score
		Infrastructure	Life	Economy	Environment	Average	
Severe Weather						***1.96***	***5.33***
Thunderstorms	4	3	1	2	2	2	8
Extreme Cold and Heat	3	2	2	1	2	1.75	5.25
Ice / Snow	3	2	1	1	2	1.5	4.5
Floods / Flash Floods / Fluvial Erosion	3	4	2	2	2	2.5	7.5
High Winds	2	3	1	1	2	1.75	3.5
Hurricanes / Tropical Storms	2	4	2	2	3	2.75	5.5
Hail	2	3	1	1	1	1.5	3
Hazardous Materials Incidents	**3**	**2**	**1**	**1**	**3**	**1.75**	**5.25**
Water & Wastewater Contamination	**1**	**4**	**3**	**4**	**3**	**3.5**	**3.5**
Pandemic	**1**	**2**	**4**	**4**	**1**	**2.75**	**2.75**
Fire Hazards (Structure, Wildfires, Brushfires)	**3**	**4**	**2**	**1**	**2**	**2.25**	**6.75**
Erosion	3	3	1	1	2	1.75	5.25
Landslides	2	4	2	2	3	2.75	5.5
Invasive Species	3	2	1	2	3	2	6
Drought	2	3	1	2	3	2.25	4.5
Carbon Dioxide Poisoning	1	1	3	1	1	1.5	1.5
Active Shooter	1	1	4	2	1	2	2
Dam Failure	1	4	3	2	3	3	3
Earthquakes	1	1	1	1	1	1	1
Tornado	1	1	1	1	1	1	1

Table 1: Hazard Assessment							
		Potential Impact					
Hazards	Probability	Infrastructure	Life	Economy	Environment	Average	Score
Tsunami (Vermont is landlocked)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Volcano (Vermont has no active volcanoes)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

The Woodstock LHMP committee discussed the results of the hazard ranking activity and decided to focus on hazards that had the potential to impact the Town on a town-wide scale and had the potential to occur frequently

After engaging in discussions using their best available knowledge, the Town and Village of Woodstock identified the following "top hazards" (based on frequency of occurrence and potential impact and the need for further analysis) which they believe their community is most vulnerable to:

Federal Disaster Declarations: Windsor County (1969-2020)

Disaster Number	Date	Incident Type	Description
277	8/30/1969	Flood	SEVERE STORMS, FLOODING
397	7/6/1973	Flood	SEVERE STORMS, FLOODING, LANDSLIDES
518	8/5/1976	Flood	SEVERE STORMS, HIGH WINDS, FLOODING
938	3/18/1992	Flood	HEAVY RAINS, ICE JAMS, FLOODING
1101	2/13/1996	Flood	ICE JAMS, FLOODING
1201	1/15/1998	Severe Storm(s)	SEVERE ICE STORMS, RAIN, HIGH WINDS, FLOODING
1228	6/30/1998	Severe Storm(s)	SEVERE STORMS, FLOODING
1307	11/10/1999	Severe Storm(s)	TROPICAL STORM FLOYD
1336	7/27/2000	Severe Storm(s)	SEVERE STORMS, FLOODING
1488	9/12/2003	Severe Storm(s)	SEVERE STORMS, FLOODING
1698	5/4/2007	Severe Storm(s)	SEVERE STORMS, FLOODING
1715	8/3/2007	Severe Storm(s)	SEVERE STORMS, FLOODING
1790	9/12/2008	Severe Storm(s)	SEVERE STORMS, FLOODING
4022	9/1/2011	Hurricane	TROPICAL STORM IRENE
4140	8/2/2013	Flood	SEVERE STORMS AND FLOODING
4207	2/3/2015	Severe Storm(s)	SEVERE WINTER STORM
4330	8/16/2017	Flood	SEVERE STORMS, FLOODING
4445	6/14/2019	Flood	SEVERE STORMS, FLOODING
4532	4/8/2020	Pandemic	PANDEMIC

Source: FEMA.

- Hazardous materials incidents,
- Water and Wastewater Contamination
- Pandemic
- Fire Hazards (structure, wildfire, and brushfires)
- Severe weather, to include at the minimum thunderstorms, extreme cold and heat, ice, snow, flooding, wind, hurricanes, tropical storms, and hail.

While many of the sub-categories under Severe Weather ranked lower than others in the hazard ranking table, the committee felt that combining these into one top hazard, Severe Weather, was still important to discuss in depth since this hazard has cumulatively caused the most damage to public infrastructure in Woodstock.

Each of these "top hazards" will be discussed in the proceeding sections. Data for these hazards were gathered from several federal resources, and are often only available at the county level. As such, information specific to Windsor County was used to identify and evaluate the type, frequency and relative impact of past events within the larger Woodstock region, which could therefore be expected to affect the community in the future.

According to FEMA, there were nineteen federally-declared major disasters for Windsor County between 1969 and 2020 – averaging about one every three years – though not all impacted Woodstock directly. As indicated in Federal Disasters Declaration table, the majority of declared disasters was due to flooding or other types of severe storms. Most recently, and one that has never before been declared for, was the

pandemic COVID-19 (or coronavirus).

Omission Rationale

The following hazards listed on the Hazard Identification are not discussed further in the 2021 Woodstock LHMP. Several of these hazards were identified by the committee members at the meeting held on June 6th, 2021. Several others of these hazards are discussed further in the 2018 Vermont State Hazard Mitigation Plan, where the reader can find a more detailed description and information

- **Erosion:** The committee identified erosion (to include fluvial erosion) by itself as a potential hazard during an exercise at the June 6th Hazard Mitigation Meeting for updating this LHMP. While it is not unusual for erosion to occur in the Town of Woodstock, there is little data regularly available for the extent of erosion that occurs, thus it is not covered significantly in this plan.
- **Landslides:** Landslides are identified as a hazard in the 2018 Vermont State Hazard Mitigation Plan. While it can potentially have devastating impacts on infrastructure, its occurrence in Woodstock is not as frequent as many other hazards identified in this plan, thus it is not discussed further.
- **Invasive Species:** Invasive species are a hazard identified in the 2018 Vermont State Hazard Mitigation Plan. Invasive species have a presence in Woodstock; however, the effects that they have on life, the economy, and infrastructure are far less impactful than various other hazards identified in this plan, thus this hazard is not explored further.
- **Drought:** Drought is identified as a hazard in the 2018 Vermont State Hazard Mitigation Plan. A drought is unlikely to occur in the Town of Woodstock, and thus it is not discussed further in this LHMP.
- **Carbon Dioxide Poisoning:** Carbon dioxide poisoning was identified as a potential hazard by the committee. While this hazard can lead to loss of life, the occurrence of carbon dioxide poisoning is rare and is often in conjunction with other hazards, such as power outages caused by severe weather. This hazard is not discussed further in this LHMP.
- **Active Shooter:** The possibility for the event of an active shooter was identified as a potential hazard by the committee. The likelihood of this event occurring is low, and thus it is not discussed further in this LHMP.
- **Dam Failure:** Dam Failure was a hazard previously identified in the 2015 Woodstock LHMP and was carried over into the 2021 LHMP. There are multiple dams located in the Town of Woodstock, thus dam failure is possible. The possibility of a dam failure, however, is low, and thus this hazard is not discussed further in this LHMP.
- **Earthquakes:** Earthquakes are a hazard identified in the 2018 Vermont State Hazard Mitigation Plan. They are a rare occurrence in Woodstock and their effects have typically been minor, thus they are not discussed further in this LHMP.
- **Tornados:** Tornados are a hazard previously identified in the 2015 Woodstock LHMP and was carried into the 2021 LHMP. Like earthquakes, tornados are not a common occurrence in this region, and thus are not discussed further in this LHMP.
- **Tsunami:** Tsunami was identified as a hazard by the Committee; however, they were well aware that there was a low probability of this hazard because Vermont is a landlocked state. This hazard

is not explored further in this LHMP.

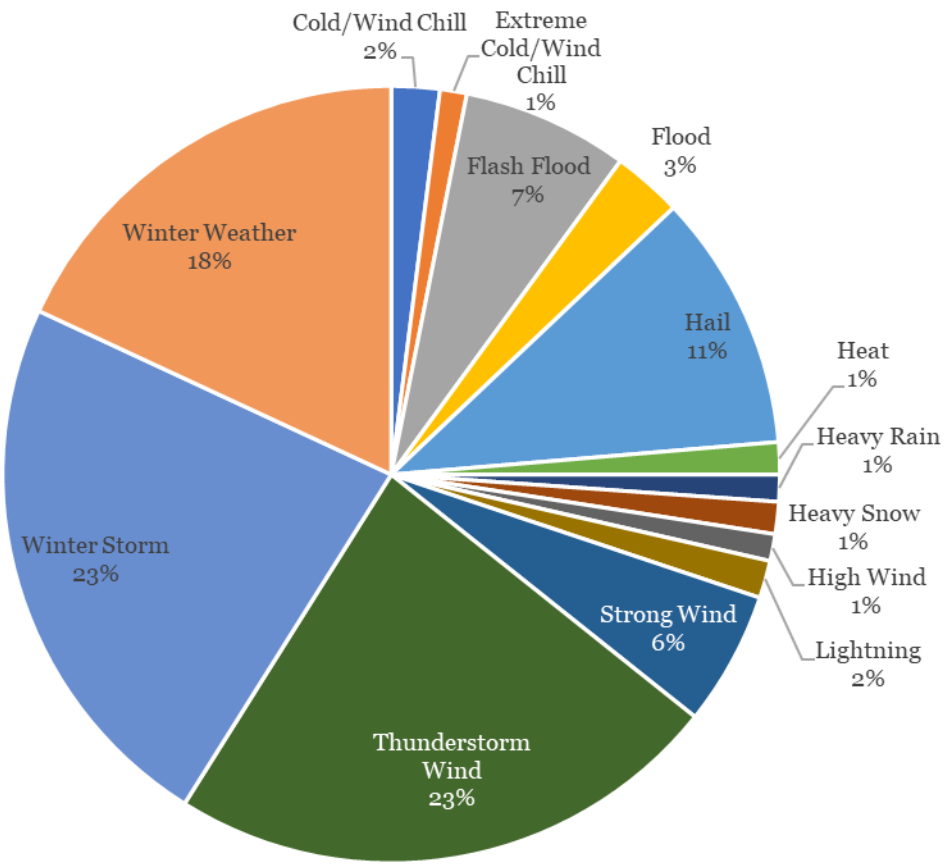
- **Volcano:** Volcanos were identified as a hazard by the Committee at the June 6th Meeting. Mount Ascutney, which is approximately 25 miles away from Woodstock, is a volcano; however, it is not active. Because there are no active volcanos in Vermont or nearby, this hazard is not discussed further.

B. Hazard Profiles for "Top Hazards"

1. Severe Weather

In Woodstock, severe weather is quite common, typically in the late spring and summer months when the region experiences high temperatures. Severe thunderstorms tend to bring other hazards such as high winds, hail, lightning, and flooding, and these hazards are often experienced in combinations which create many unique weather and emergency management situations.

In the 2015 LHMP for Woodstock, severe weather included instances of thunderstorm/lightning, high wind, hail, and flooding. As part of the 2021 plan update, the LHMT included extreme cold/heat, ice/snow, and hurricanes/tropical storms as subcategories of severe weather.



The National Oceanic and Atmospheric Administration (NOAA) compiles storm events data, dating from 1950 to present. For the purposes of this HMP, storm events from 2000 and onward were analyzed. These cover "regional" weather events for the larger Windsor County area (National Weather Service Forecast Zone) for periods of cold/wind chill, extreme cold/ wind chill, flash flood, flood, frost/freeze, hail, heat, heavy snow, high wind, strong wind, thunderstorm wind, winter storm, and winter weather. Over this 20-year reporting period, 449 reported regional storm events (averaging around 21 per year) were catalogued – including six events specific to Woodstock. In some cases, several events are reported for the same storm system. Database entries also include more general estimates of related property and crop damage – totaling over $142 million in this twenty-year period.

Below is a list of the five most costly severe weather events in Windsor County, excluding winter storms.

A list of the most costly winter storms can be found under the Ice/Snow subsection. Extent of fluvial erosion for these incidents is not available, as the data is not collected immediately after flooding events in the Town.

Date of Incident	Event	Extent	Estimated Cost in Damages	Location
8/28/2011-8/29/2011 (DR-4022)	High Wind	**Tropical Storm Irene brought 40 to 55 mph wind to Windsor County.**	$32.5 m in damages reported in Windsor County and approximately $4.8 m in damages reported in Woodstock from FEMA's Public Assistance database (captures at least 70% of total damage).	County-wide
	Flooding/Tropical Storm	**Woodstock received 7.34 inches of rainfall from Tropical Storm Irene.** Homes, businesses and roads were flooded throughout Windsor County along the Ottauquechee River. **No available data on the size of the land area that was impacted.**		County-wide
1/19/1996-1/20/1996 (DR-1124-VT)	Flooding	**No available data on the size of the land area that was impacted.** Two fatalities resulted from flooding.	$900 k in damages reported throughout Windsor County.	County-wide
	High Wind	**No available data on wind speed.** Power outages were reported throughout Vermont; however, there is **no available information on the duration of the power outages.**		County-wide
9/29/2005	High Wind	**Winds ranging from 25 to 46 mph** downed trees and powerlines throughout Windsor County. **There is no available information on the duration of the power outages.**	$100 k in damages reported throughout Windsor County.	County-wide

10/16/2018	High Wind	**Winds ranging from 35 to 50 mph** downed trees and utility lines throughout Windsor County.	$100 k in damages reported throughout Windsor County.	County-wide
11/3/2018	High Wind	**Winds between 35 and 45 mph** caused at least 8,000 power outages in Windsor County. **There is no available information on the duration of the power outages.**	$100 k in damages reported throughout Windsor County.	County-wide

Thunderstorms/Lightning

More common than hurricanes or tropical storms are severe thunderstorms (usually in the summer), which can cause flooding as noted above, and be associated with lightning, high winds, hail and tornadoes.

Thunderstorms can generate high winds, such as hit the region on July 6, 1999, downing hundreds of large trees in a few minutes. The region can also experience tornadoes, which are capable of damaging or destroying structures, downing trees and power lines and creating injuries and death from collapsing buildings and flying objects. Tornadoes are less common than hail storms and high winds, but have occurred throughout Vermont. In fact, 34 tornadoes were recorded between 1950 and 1999, injuring 10 people and causing over $8.4 million dollars in estimated property damage. Nearly all of these occurred from May through August and most of these occurred in the afternoon when thunderstorm activity is highest due to heating of the atmosphere.

High Wind

Generally speaking, wind is the result of differences in atmospheric pressure, and moves from an area of high pressure to an area of lower pressure. Slight or moderate winds are unlikely to be dangerous, and often have beneficial effects. However, severe wind may pose a threat to lives, property, and critical utility infrastructure. Light construction, such as manufactured homes, are often the most damaged by high wind events. High winds typically occur as a result of various weather events, such as severe storms, tropical storms or hurricanes. Storm events severe enough to generate wind shears, small cyclones and microbursts appear to be occurring with greater frequency in recent years, but associated damage tends to be highly localized. One of the strongest and most damaging types of high winds are straight-line winds. Unlike tornadoes, which demonstrate a rotational damage pattern, damage caused by straight-line winds tends to be very linear. This type of wind can be very strong, producing wind speeds as high as 80 to 90 mph, and can last twenty minutes or more. They often occur at the gust front of a thunderstorm or originate with a downburst from a thunderstorm. Straight-line winds are notorious for downing forest stands in linear swaths.

Another extremely dangerous weather event that produces high winds is a derecho. Derechos are widespread, long-lived windstorms that are associated with a fast-moving band of severe

thunderstorms. They are also capable of producing very high, straight-line winds and even tornadic winds. They are considered a warm weather phenomenon, as they occur most often in the summer months—spring through early fall in the Northern Hemisphere. According to a National Weather Service map, the state of Vermont, the northern half of New York State and the rest of New England, derechos have a frequency of occurring about once every four years. There have been a few derechos that have occurred in Vermont in the last 15 years: on July 14-15 of 1995 ("the Adirondacks/Ontario Derecho"), on September 7, 1998 ("the Syracuse Derecho of Labor Day 1998"), on July 4-5 1999 ("the Boundary Waters-Canadian Derecho") and most recently on July 15, 2005. It is thought that the worst derecho to hit Vermont was the "Boundary Waters-Canadian Derecho," killing one camper in the Northeast Kingdom.

Despite the threat of straight-line winds and derechos, the most common type of high winds, are strong, sustained winds or wind gusts or gales. These high wind events can still damage critical infrastructure or down trees, which can knock out electricity, block roads and cause bodily harm. The location of high-winds is town-wide.

Hail

Hailstorms have occurred in Vermont, usually during the summer months. While local in nature, these storms are especially significant to area farmers, who can lose entire fields of crops in a single hailstorm. Large hail is also capable of property damage. 107 hail events were recorded between 1959 and 1992 in the state, making hail an annual occurrence in some part of the state. Most of these events had hail measuring .75 inches, but many had hail at least 1.5 inches in size. The largest hail during the period was 3-inch hail that fell in Chittenden County in 1968 (NCDC). Tennis ball-sized hail was reported in the town of Chittenden during a storm in the summer of 2001. The location of hail events in Woodstock are random and generally affect the entire town.

Flooding

According to the 2018 State Hazard Mitigation Plan, fluvial erosion is the number one hazard that threatens Vermont.

A more recent flood 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, and 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 one week. Despite the damage wrought, the flooding 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.

Figure 1. Flooding in Woodstock during Tropical Storm Irene. (Source: TRORC)

As previously indicated Woodstock has flood hazard regulations that are integrated into its Zoning Bylaws. The Town and Village's Flood Hazard District is zoning overlay district protects a special flood hazard area designated on the Federal Insurance Administration's Flood Insurance Rate Maps. The purpose of this specifically designated overlay district is meant to "lessen or avoid the hazards or damage to property" that may

result from flooding along the banks of the Ottauquechee River and its tributaries. All development in the floodway areas is prohibited. Development standards for properties in floodway fringe areas (which includes special flood hazard areas that are outside of the floodway) must strictly conform to criteria outlined in the zoning bylaws that ensure existing and new structures are constructed to withstand the impacts of flood events.

There are currently 93 buildings in the Special Flood Hazard Area (SFHA) in Woodstock. 19% of these properties have flood insurance in effect.[2] There are no repetitive loss properties located in Woodstock.

Some areas of town are more affected by flooding than others. Roads and homes that are located along Kedron Brook, the Ottauquechee River, and many of the other towns smaller brooks and streams are the most at risk. This includes state routes 12 and 106, and U.S. Route 4 that have been heavily damaged in the past. Town roads that are most at risk for future flood impacts include Church Hill Road, Dana Road, Fletcher Hill Road, Long Hill Road, Randall Road, and Peterkin Hill Road. While large storm events, such as Tropical Storm Irene, impacted every road in Woodstock, smaller flood events are focused on the roads listed in the previous sentence.

Extreme Cold/Extreme Heat

Extreme cold or heat, while often associated with other disasters, can create emergencies by themselves if they continue for several days. Extreme cold, especially when the ground is not insulated by snow, can freeze water lines, overburden power and heating systems, hamper transportation and directly threaten individuals exposed to weather with frostbite and hypothermia. Extreme heat can overload power and cooling systems, buckle rail lines, wither crops and threaten people with heat exhaustion and stroke.

Luckily, Vermont has a climate where extreme cold is unusual and extreme heat is unlikely. However, these types of events do occur. In February of 1979, for over two weeks the state had an average temperature of only 9° F, with minimum recordings of -40° F. In 1972, Woodstock got down to -41° F and Randolph to -40° F. January 2003 saw an extended stretch of severely cold weather. On the other end of the scale, are extended heat waves, such as in July of 1911, when Northfield had a 12-day average of 90.75° F. The summer of 1949 was also very hot with 25 days above 90 ° F. 1995 brought a short period of extreme heat and the heat wave of 2003 that killed an estimated 19,000 people across Europe, with over 14,000 of these in France, is a reminder of this threat. There is no indication that any one town is more vulnerable than another to this hazard, and consequently there is no mapping done at this time. The general location of extreme cold or heat events are experience town-wide, county-wide, and above.

Ice/Snow

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

[2] https://floodready.vermont.gov/assessment/community_reports#Expanded

can also be at risk from frostbite, hypothermia and heart attacks due to 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 that 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 Waitsfield. Governor Dean Davis declared a state disaster. Drifts of snow from that storm piled up to 30 feet in places. Very recently, a string of storms in March 2001 hit the state, beginning with 15-30 inches on March 5-6 (later declared a federal disaster), 10-30 inches on the 22nd and 10-20 inches on the 30th. Brookfield received nearly 50 inches of snow from these storms.

The worst winter storm in terms of damage to hit the state recently was not a snow storm, but an ice storm. In January of 1998, just the right combination of precipitation and temperature led to more then 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, we had no fatalities, unlike Quebec where 3 million people lost power and 28 were killed. Thankfully, the temperature rose after the storm, melting the ice and permitting crews to reopen roads and keeping many residents from freezing in their unheated homes. Mapping of this hazard is still being developed, but may indicate a gradient of higher snow load risk the further northward one goes. A map showing vulnerability to this hazard will be added when available.

Below is a list of the five most costly winter storms reported in Windsor County.

Date of Incident	Event	Extent	Estimated Cost in Damages	Location
2/23/2010-2/24/2010	Winter Storm	**26 inches of snowfall was reported in the nearby town of Pomfret.** Power outages affected approximately 50,000 customers throughout the region. **Information on the duration of the power outage is not available.**	$1 million in damages reported throughout Windsor County.	County wide
2/14/2007	Heavy Snow	**17 inches of snowfall reported in Woodstock.**	$250 k in damages reported throughout Windsor County.	County wide
	Extreme Cold/Wind	**Temperatures as low as 10 degrees below**		County wide

	Chill	**zero were reported.**		
12/11/2008-12/12/2008	Winter Storm	**Snow accumulation in Vermont ranged from 5 to 9 inches. Power outage lasted from late on December 11th throughout most of the day on December 12. Information on the precise hourly duration of the power outages is not available.**	$250 k in damages reported throughout Windsor County.	County wide
12/9/2014-12/10/2014	Winter Storm	**9 inches of snowfall reported in Woodstock.** The wet nature of the snow induced several car accidents. 175,000 power outages were reported throughout the region. **Information on the hourly duration of the power outages is not available.**	$250 k in damages reported throughout Windsor County.	County wide
11/26/2018-11/28/2018	Winter Storm	**3 to 6 inches of snow reported in Windsor County.** Heavy wet snow damaged trees and caused power outages. **Information on the hourly duration of the power outages is not available.**	$250 k in damages reported throughout Windsor County.	County wide

Hurricanes/Tropical Storms

Hurricanes (storms with sustained winds greater than 74 mph) rarely reach as far inland as Vermont; more often, they have weakened to tropical storms. In either case, the high winds, heavy rains, and large affected areas from hurricane or tropical storms can make these rare events major disasters. The most infamous example of an actual hurricane hitting the state was the disastrous "Long Island Express" Hurricane of 1938. On September 21, 1938 a very fast-moving hurricane hit Vermont in the early evening, but was moving so fast that wind damage was more severe than damage from rain in places. However, there was severe flooding, as over 4 inches of rain accompanied the storm and followed upon

the heels of preceding storms that had saturated the ground and raised river levels. Buildings were lost, power lines downed, and millions of trees were felled. Much more recently, Tropical Storm Floyd in

September 1999 caused flooding and wind damage in parts of Vermont, as well as one fatality, and resulted in a federal disaster declaration.

Another flood that devastated Vermont, Windsor County 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, and millions of dollars of home, road and infrastructure damage. Due to the strong winds, there were 117,000 power outages across the state, and many did not have power restored for over a week. The damage and flooding 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. Often times, hurricanes and tropical storms impact the entire town and the county, as well as the State.

Figure 2. Flooding on River Street from Tropical Storm Irene. (Source: TRORC)

2. Hazardous Material Spill

Based on available VT Tier II data, there are 24 sites in town that has sufficient types and/or quantities of hazardous materials to require reporting. Woodstock is predominantly located along Routes 4, 12 and 106, running parallel to the Ottauquechee River, Kedron Brook, and Pomfret Brook. No major, functioning interstate highways or railways run through or near the Town. There are approximately 1,067 residential and 239 commercial, industrial or public buildings within 1,000 feet of a potential HAZMAT spill on major roads, such as Routes 4, 12, and 106. This includes the Town Office, the fire department, the Woodstock Union High School, and the police department. It should also be noted that the State of Vermont currently has only 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.

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**.

The following data was retrieved from the Vermont Department of Environmental Conservation's Spill List and by searching the archives of local newspapers. The table above is used to illustrate 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. Incidents of less than 10 gallons of spillage are not listed.

History of Occurrences:

Date	Event	Location	Extent
02/27/2021	Diesel Spill	I-89	Accident involving a tractor trailer lead to a 70 gallon diesel spill.
09/03/2020	Fuel Oil Leak	246 Stonebridge Way	Approximately 80-100 gallons of fuel oil leaked from an above ground tank and spilled through a drain in the basement floor, through a culvert feeding into Densmore Brook.
01/24/2020	Fuel Oil Leak	2851 Church Hill Road	A hole in the bottom of an above-ground storage tank allowed roughly 400 gallons of #2 fuel oil to leak. Possible contamination into an unnamed stream.
11/05/2019	Unspecified Spill	217-03 Maxham Meadow Way	A drum was uncovered during excavation, causing 15 gallons of unknown substance (presumably petroleum) to spill. Possibility that some of the substance made it into the Ottauquechee River.
06/23/2017	Gasoline Spill	433 Woodstock Road	Approximately 30 gallons of gasoline spilled from a fuel pump after it did not shut off.
01/25/2016	Diesel Spill	Route 4 and Bridges Road	Approximately 80 gallons of diesel spilled 100 feet along the roadway after a car collided with a tractor trailer.
01/02/2016	Diesel Spill	Maxham Meadow Road	A valve was turned incorrectly during the delivery of fuel at a bulk plant, causing 12 gallons of diesel to spill onto concrete.
08/18/2014	Transformer Oil Spill	US Route 4 and Spoon Barn Road	20 gallons of mineral oil dielectric fluid leaked after a tractor trailer hit a phone line.
02/04/2014	Fuel Oil Leak	Woodstock Inn	AST leaked 50-100 gallons while a transfer was being made from UST to emergency AST. AST was overfilled and fuel went into old fill pipe, which was compromised and came into basement sump.
08/31/2011	Fuel Oil Leak	Cross Street	2-275 gallon heating oil ASTs leaked into property's basement after it flooded during TS Irene. Silt had to be excavated and debris removed.
08/31/2011	Oil Spill	Golf Ave	A 275 gallon AST spilled and basement flooded at private residence during TS Irene. Oil absorbed
02/10/2010	Unspecified Spill	Woodstock Inn	AST system released 200 gallons of a hazardous substance on the side of the building. Led to soil excavation and installation of interceptor trench and monitoring wells.
10/31/2009	Transformer Oil Spill	Church Hill Road	A tree hit a power pole/transformer, spilling 15 gallons. FD responded, and 2 firefighters and police officers got sprayed, while also dodging a live wire. Determined spill substance was non-PCB. 5 drums were removed.
03/30/2009	Oil Overflow	Private property, Prospect Hill	A burner motor seal problem caused 10 gallons of oil to flow from furnace to flow into floor drain in basement.
04/01/2008	Kerosene Leak	River Bend Way	Vapors were noticed when residents were operating their dryer, found to be emanating for a 200 gallon kerosene leak. Tank was removed, soil excavated.
02/16/2007	Gasoline Spill	Maplefields, Pleasant Street	A cracked valve led to a 15 gallon gasoline leak.

Date	Event	Location	Extent
01/23/2007	Gasoline Spill	Maplefields, Pleasant Street	A vehicle went over an embankment, and its fuel line was severed while it was being towed. 15 gallons of gasoline was released into snow and soil.
03/09/2000	Gasoline Spill	Johnson & Dix Bulk Facility	A 1" diameter bung hole plug failure in an AST caused a 2,589 gallon gasoline spill. The product was released into a containment area, but quickly seeped into the porous backfill material. Gasoline was eventually found on the water table. Contaminated soil was stockpiled.
12/10/1999	Diesel Spill	Grand Union (Rt. 4)	A drum tipped over at the site, causing a 20 gallon diesel spill.
02/11/1999	Gasoline Spill	Johnson & Dix Bulk Supply	A truck struck a loading rack and ripped open a compartment, leading to a 130 gallon spill.
12/17/1998	Gasoline Spill	Maplefields (Pleasant St.)	A vehicle's gas tank overfilled, causing a 30 gallon spill. FD spread speedi-dri and contained the spill until cleanup crews arrived.
11/27/1998	Unspecified Spill	Kedron Valley Inn (Rt. 106)	An UST leaked into a nearby brook, releasing 270 gallons. River was boomed, and tank removed.
09/06/1996	Unspecified Spill	Blake Hill Townhouse	Leak at fitting, causing 50 gallon spill. Contaminated soil was removed and stockpiled.
06/28/1996	Kerosene Leak	Church Hill Trailer Park	An above ground storage tank leaked 100 gallons of kerosene at a private residence.
10/08/1991	Gasoline Spill	Johnson & Dix Bulk Facility	20 gallons of gasoline spilled during a transfer.
04/05/1988	Fuel Oil Spill	Unspecified Location	110 gallons of fuel oil was spilled.
09/18/1984	Unspecified Substance	Route 4	A truck fire led to a 100 gallon spill of an unspecified substance (gasoline or diesel, perhaps) on Rt. 4.
12/28/1982	Gasoline Spill	Unspecified Location	100 gallons of gasoline were spilled, likely from a car leaking gas outside. Created fumes in basement.
11/20/1981	Unspecified Spill	Unspecified Location	500 gallons of a hazardous material were dumped.
10/16/1981	Unspecified Spill	Private Residence	A tank failure led to a 150 gallon spill, possibly of propane or oil.
03/17/1979	Oil Spill	Gerrish Motors	A break in an oil line caused a 100 gallon spill.
11/22/1978	Unspecified Spill	Private Residence	50 gallons of an unspecified substance (likely oil?) spilled after a tank failed.
06/13/1978	Oil Spill	Riding Stables	200 gallons of oil used to suppress dust on roads spilled, and washed into nearby brook during rains.
05/07/1976	Kerosene Spill	McGee Fuel	566 gallons of kerosene spilled.
07/13/1973	Kerosene Spill	Roy Oil Tank Farm	100 gallons of gasoline spilled following the 1973 Flood.

While fewer than half of the spills recorded in Woodstock have consisted of hundreds of gallons of hazardous materials, the potential for a major spill exists. Routes 4 and 12 pose constant threats to the Town and Village of Woodstock due to the volume of traffic they see, particularly during prime tourist seasons. These routes serve as the main thoroughfares for trucks and other motor vehicles transporting a wide-range of goods, including a wide-range of hazardous materials, within the confines of Woodstock. A truck accident and a resulting hazardous material spill could be exceedingly disastrous for the Town and its residents. The majority of Routes 4 and 12 in the Town and Village of Woodstock are built very close to the Woodstock's rivers and streams, namely the Ottauquechee River and Kedron and

Pomfret Brooks, 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 Woodstock, 30 members of the Woodstock Fire Department are trained to the minuim HAZMAT Awareness level with most being trained to operations level.

3. Fire

Structural Fire

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

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

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

The majority of the Village of Woodstock's growth sprawls out from development along the main roadways that cut through the heart of the town and village along Routes 4 and 12. The Village is typified by a large array of old wooden and stone municipal buildings, historic private residences, brick commercial blocks, and commercial businesses. While both the Town and Village are vulnerable to structure fires, a fire in the Village has the potential to spread, especially in the commercial portion of the Village along Route 4, due to the close proximity of the buildings.

A review of the fires listed in the "History of Occurrences" chart below demonstrates the potential for structures located in the rural Town of Woodstock to be completely or severely destroyed by fire.
The following occurrences were reported by the Committee 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.

Figure 3. Vacant house on fire at 146 Gardner Way, November 11, 2019. (Source: Woodstock Fire/EMS Facebook Page)

History of Occurrences:

Date	Event	Location	Extent
12/21/2020	Chimney Fire	6 The Green	Extent unknown.
10/30/2020	Building Fire	5 Highland Avenue	Extent unknown.
10/13/2020	Chimney Fire	2381 Pomfret Road	Extent unknown.
09/22/2020	Chimney Fire	184 East Hill Road	Extent unknown.
06/22/2020	Building Fire	16 Elm Street	Extent unknown.
06/04/2020	Building Fire	1274 Dunham Hill Road	Camp being converted into a single family, days away from being done. Accidental cause-sanding and varnishing. Called in by resident across the valley- fire had major head start. Total loss at about $400,000.
04/15/2020	House Fire	1190 Long Hill Road	A double-wide mobile home was completely destroyed by a cooking grease fire. The residents delayed contacting the Fire Department and one of the residents suffered severe burns.
03/21/2020	Building Fire	35 Iver Johnson Way	Fire department arrived at a large pole shed fully involved, a barn on fire, and a house starting to catch fire. Total loss of the pole shed and contents. The house and barn received minimal damage. The damage was caused by an accidental burn outside. The estimated value of the destroyed shed structure was $50,000 and its contents was $80,000.
01/09/2020	Building Fire	11 Walker Way	Extent unknown.
11/29/2019	Building Fire	146 Gardner Way	Vacant building became completely engulfed. Cause of fire was unknown.
11/13/2019	Chimney Fire	9260 Pomfret Road	Extent unknown.
08/09/2019	Building Fire	210 Old River Road	Extent unknown.
06/14/2019	Building Fire	43 Parkview Way	Extent unknown.
05/08/2019	Building Fire	161 Hartland Hill Road	Extent unknown.
02/22/2019	Chimney Fire	588 Kendall Road	Extent unknown.
01/21/2019	Building Fire	26 Mountain Avenue	Extent unknown.
11/05/2018	Building Fire	247 Riverbend Way	Extent unknown.
07/16/2018	Building Fire	46-55 Central Street	Mixed-use residential and assembly. Building was a total loss and torn down by the insurance company. Still under investigation. Damages estimated at about $900,000.
07/16/2018	Building Fire	46-55 Central Street	Extent unknown.
03/31/2018	Building Fire	966 Church Hill Road	Extent unknown.
03/21/2018	Building Fire	1782 South Road	Extent unknown.

Date	Event	Location	Extent
03/19/2018	Chimney Fire	3 Eaton Place	Extent unknown.
01/19/2018	Chimney Fire	20 The Green	Extent unknown.
12/24/2017	Chimney Fire	20 The Green	Extent unknown.
11/04/2017	Building Fire	2741 Cox District Road	Extent unknown.
04/21/2017	Chimney Fire	3369 Hartland Hill Road	Extent unknown.
03/14/2017	Chimney Fire	2519 Cox District Road	Extent unknown.
01/02/2017	Chimney Fire	1507 Westerdale Road	Extent unknown.
08/09/2016	Building Fire	6029 Route 12 North	Extent unknown.
02/29/2016	Chimney Fire	5947 N Bridgewater Road	Extent unknown.
02/27/2016	Building Fire	11 Kelley Way	Extent unknown.
02/07/2016	Chimney Fire	442 East Woodstock Road	Extent unknown.
07/24/2015	Chimney Fire	East Woodstock Road	Extent unknown.
05/05/2015	Building Fire	370 Catamount Way	Extent unknown.
01/05/2015	Chimney Fire	7126 Route 4	Extent unknown.
12/08/2014	Building Fire	4165 Hartland Hill Road	Extent unknown.
08/10/2014	Building Fire	154 Stoughton Pond Road	Extent unknown.
06/24/2014	Chimney Fire	442 East Woodstock Road	Extent unknown.
04/27/2014	Chimney Fire	72 Pomfret Road	Extent unknown.
02/14/2014	Chimney Fire	2872 Garvin Hill Road	Extent unknown.
01/16/2014	Building Fire	Pomfret Road	Extent unknown.
01/11/2014	Chimney Fire	5525 N Bridgewater Road	Extent unknown.
05/13/2013	Chimney Fire	21 Linden Hill	Extent unknown.
03/18/2013	Chimney Fire	4632 South Road	Extent unknown.
02/16/2013	Chimney Fire	396 Peterkin Hill Road	Extent unknown.
01/26/2013	Chimney Fire	3101/3103 Hartland Hill Road	Extent unknown.

Date	Event	Location	Extent
01/02/2013	Chimney Fire	1026 Howe Hill	Extent unknown.
11/19/2012	Chimney Fire	2268 Church Hill Road	Extent unknown.
11/05/2012	Chimney Fire	119 English Mills Way	Extent unknown.
07/03/2012	Building Fire	Elm Street	Extent unknown.
04/28/2012	House Fire	Cox District Road, Town of Woodstock	Single-story home and garage in West Woodstock were completely destroyed, killing residents' two dogs, while the family was watching the Bridgewater raft race. FD was supported by S. Woodstock, Bridgewater, Barnard, North Pomfret, Teago, and Hartford FD's. Fire possibly started because of a new woodstove. A house burned down on nearly the same spot around 1970 under similar circumstances.
02/07/2012	Chimney Fire	5 Highland Avenue	Extent unknown.
02/03/2012	Farm Fire	Bassett Farm, Rt. 12, Town of Woodstock	Fast moving fire destroyed an antique dairy farm complex. Crews from eight departments spent more than two hours battling the blaze.
01/02/2012	Chimney Fire	78 Powder Lane	Extent unknown.
08/29/2011	Chimney Fire	6 River Street	Extent unknown.
07/16/2011	Building Fire	77 Pleasant Street	Extent unknown.
06/09/2011	Building Fire	5763 Woodstock Road	Extent unknown.
02/04/2011	Chimney Fire	565 Woodstock Road	Extent unknown.
12/30/2010	Chimney Fire	1237 Route 12 North	Extent unknown.
12/26/2010	Chimney Fire	1003-2 Larry Curtis Road	Extent unknown.
1960s	Block Fire	Gillingham's Block, Village of Woodstock	A fire took place in the commercial block containing Gillingham's and the butcher shop.
~100 yrs. ago	Block Fire	Bentley's Block, Village of Woodstock	A large fire took place in the commercial block containing Bentley's.

Of the calls that were received by Woodstock Fire & Rescue in 2013, none resulted in a great amount of property loss. Nine calls were for building fires, six were for chimney fires, and eleven were called in for brush or grass fires. Off all 126 fires noted in the State of Vermont Fire Statistics for 2013, none of the fires that occurred (all of which were caused by humans) resulted in burned acreage in Woodstock.

There are a number of recognized fire protection problems for the community, including the following: development in areas distant from the center of the Town, development on class 3 and 4 roads, distance from water sources in the Town of Woodstock (rivers, hydrants and/or fire ponds), inaccessibility to fires

that may spread from the forest, and inadequate snow removal (for building access). Approximately 10 to 15 years ago, Woodstock had a dry hydrant program, during which many dry hydrants were installed in strategic locations throughout the Town and Village. No additional dry hydrants have been installed within the past 5 years. There are additional areas that could potentially be utilized to this end, and a comprehensive survey may prove an effective means of determining this if more sites are needed. At present, though, the Town has enough hydrants in place to meet its needs.

Wildfire/Brushfire

Wildfire may be sparked by natural or human activities. Lightning is one of two main natural causes of wildfire. However, across the United States, approximately 90 percent of wildfires are started by humans. According to FEMA, there are three types of wildfire that can consume natural landscapes and man-made structures and features: surface fire, ground fire and crown fire. Surface fires are slow moving across the forest floor, and, as a result, kill and damage trees. Ground fires are usually caused by lightning strikes, and burn on or below the forest floor. Crown fires, so called for their location in the crown of trees, effortlessly spread through tree tops, often aided by wind.

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

The Vermont landscape is especially vulnerable to wildfire during the period of time in early spring when all the snow has melted, vegetation has not begun to develop leaves, and the land and vegetation are very dry and/or dead. Seventy-eight percent of the Town of Woodstock is forested land, and, of this, a portion is part of the federally-owned and controlled Marsh Billings National Park. A total of 645 acres of federal land in the Town is forested. Owing to the fact that the large portion of the Town is forestland, the Town is vulnerable to the impacts of wildfires, were they to occur within Town bounds.

The following instances of wildfire were reported by the Committee. Their reports were supported with research of news stories, where possible (indicated with an asterisk*).

History of Occurrences:

Date	Event	Location	Extent
04/04/2020	Grass Fire	2286 Church Hill Road	Extent unknown.
06/09/2019	Brush Fire	2 River Street	Extent unknown.
11/03/2018	Brush Fire	1111 Randall Road	Extent unknown.
10/16/2018	Vegetation Fire	3233 Garvin Hill Road	Extent unknown.
04/04/2018	Brush Fire	French's Road and Willowbrook Road	Extent unknown.
05/11/2017	Brush Fire	966 Church Hill Road	Extent unknown.
04/16/2017	Brush Fire	200 Peterkin Hill Road	Extent unknown.
04/15/2017	Brush Fire	2090 Randall Road	Extent unknown.
04/07/2016	Brush Fire	Garvin Hill Road	Extent unknown.
05/26/2015	Brush Fire	Happy Valley Road	Extent unknown.

05/23/2015	Vegetation Fire	Riverside Park Road	Extent unknown.
05/09/2015	Brush Fire	Cloudland Road	Extent unknown.
05/04/2015	Brush Fire	497 Tiger Town Road	Extent unknown.
04/19/2015	Brush Fire	2070 South Road	Extent unknown.
04/08/2015	Brush Fire	Wyman Lane	Extent unknown.
03/23/2015	Grass Fire	591 Route 12	Extent unknown.
03/21/2015	Grass Fire	1342 Fletcher Hill Road	Extent unknown.
11/16/2014	Grass Fire	217 Echo Ledge Road	Extent unknown.
09/17/2014	Vegetation Fire	South Road	Extent unknown.
08/26/2014	Vegetation Fire	Hartland Hill Road	Extent unknown.
06/05/2014	Vegetation Fire	Church Hill Road	Extent unknown.
05/12/2014	Brush fire	Cox District Road	Extent unknown.
04/24/2014	Brush Fire	Mecawee Road	Extent unknown.
11/16/2013	Vegetation Fire	2502 Woodstock Road	Extent unknown.
11/03/2013	Brush fire	1191 Curtis Hollow Road	Extent unknown.
08/11/2013	Brush Fire	4945 South Road	Extent unknown.
06/24/2013	Vegetation Fire	966 Church Hill Road	Extent unknown.
05/18/2013	Brush Fire	4726 Woodstock Road	Extent unknown.
11/03/2012	Brush fire	3663 Cox District Road	Extent unknown.
04/13/2012	Brush Fire	Doe Hill Way	Extent unknown.
07/31/2011	Brush Fire	708 Woodstock Road	Extent unknown.
04/01/2006	Controlled Burn	Town of Woodstock	Approximately .75 acres burned.
04/17/2005	Fire Caused by Outside Cooker/Stove	Town of Woodstock	Approximately 3 acres burned.
04/16/2005	Fire Caused by Burning Paper	Town of Woodstock	Approximately 1 acre burned.
04/19/2004	Brush and Trash Fire	Town of Woodstock	Approximately 31 acres burned.
06/13/1984	Burning Brush	Town of Woodstock	Approximately 2 acres burned.
05/09/1981	Fire Started by a Firecracker	Town of Woodstock	Approximately 7.2 acres burned.
04/11/1929	Unknown	Town of Woodstock	Approximately 10 acres were burned.

The Town of Woodstock typically experiences around two to three small brushfires per year; however, there can be as many as five to ten, affecting multiple property owners. The potential exists for brushfires to get out of hand rapidly, particularly in areas where there is a 15% slope or greater (generally included in Woodstock's forestry zone) that impedes firefighting efforts. According to the Committee, areas that are particularly vulnerable to wildfire are Biscuit Hill, Long Hill area, and Curtis Hollow. The Village, especially on the Town/Village interface that may be more forested, is also vulnerable to wildfire. While the location of this hazard is often in particular areas, the entire area of the town is at risk from wildfires and brushfires.

Approximately 15 to 20 years ago, Woodstock had a dry hydrant program, during which many dry hydrants were installed in strategic locations throughout the Town and Village. However, no additional dry hydrants have been installed within the past 5 years.

Forest areas exist where ground-based firefighting efforts would be very difficult, due to their remoteness or steep slopes. This creates the potential for wildfire to impact private land and property and any logging operations occurring at the time of the wildfire. New development in these areas would place structures, and potentially lives, at a greater risk of damage from wildfire/brushfire. In addition, 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).

4. Water/Wastewater Contamination

The majority of town and individuals in Vermont use groundwater as their primary source of water. While groundwater is more protected from contamination than surface water and is generally of a high quality, groundwater is still at risk of contamination from a number of point and non-point sources. Sources of surface contamination located directly above the aquifer may leach through the soil and into the groundwater, or groundwater contamination from another distant source may migrate, and consequently, contaminate a town or individual's water supply.

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 **Water Supply Contamination**.

The migration of contaminates is made more complex because the patterns of groundwater movement, and their relationship to surface water movement, are not completely understood. This creates the potential for groundwater supplies to become contaminated from discrete and unknown sources. It is important to protect groundwater supplies from contamination to the greatest extent possible, because, once contaminated, it is difficult and expensive to clean them to the point where they are again suitable for drinking water.

The following data was retrieved from the Vermont Department of Environmental Conservation's Spill List. It includes some data copied from the Hazard Materials Spill section of this Plan discussed later because the spilling of any hazardous materials also has the potential to contaminate the water supply for the Town of Woodstock.

History of Occurrences:

Date	Event	Location	Extent
09/03/2020	Fuel Oil Leak	246 Stonebridge Way	Approximately 80-100 gallons of fuel oil leaked from an above ground tank and spilled through a drain in the basement floor, through a culvert feeding into Densmore Brook.
01/24/2020	Fuel Oil Leak	2851 Church Hill Road	A hole in the bottom of an above-ground storage tank allowed roughly 400 gallons of #2 fuel oil to leak. Possible contamination into an unnamed stream.

11/05/2019	Unspecified Spill	217-03 Maxham Meadow Way	A drum was uncovered during excavation, causing 15 gallons of unknown substance (presumably petroleum) to spill. Possibility that some of the substance made it into the Ottauquechee River.
10/31/2018	Fuel Oil found in Underground Tank	301 The Lane	Removal of an underground storage tank released petroleum into the soil. The nearby groundwater was tested for contaminants.
09/14/2018	Alleged Fuel Oil Dumping	Route 4	Caller alleges that a fuel oil company had been dumping oil in the Ottauquechee River.
08/24/2017	Anti-freeze, Diesel, Hydraulic Oil, and Motor oil Spill	50 Golf Avenue	A dump truck was found in a pond, releasing an unknown quantity of anti-freeze, diesel, hydraulic oil, and motor oil. It was noted that the pond fed into Keldon Brook, which may feed into the Ottauquechee River
02/08/2016	Anti-freeze and Motor Oil Spill	1205 West Woodstock Road	A passenger car crashed into a brook feeding into the Ottauquechee River. Approximately 4-5 quarts of motor oil and possibly antifreeze was released into the brook.
01/25/2016	Diesel Spill	Route 4/Bridges Road	80 gallons of diesel fuel spilled approximately 100 feet along the roadway after a car collided with a tractor trailer. Approximately 5 gallons of fuel went down the bank into the Ottauquechee River.
08/01/2014	Fuel Oil Vapors	Route 106.	Complaint of fuel oil vapor odors coming from the area around the bridge along Route 106 .
05/12/2014	Hydraulic Equipment Failure	403 East Woodstock Road	Equipment failure at Taftsville Station Hydroelectric Dam released 3-3.5 gallons of Hydraulic Oil, some of which entered the tailrace.
09/07/2011	Water Main Break	Ottauquechee River	A water main running under the Ottauquechee River washed away in the wake of TS Irene, requiring a new hose to be installed to carry the supply to residents over the river along the Elm Street Bridge. The sewer lines were also washed out. This incident in particular was extremely problematic for residents town-wide. A boil notice was initiated as a result of this incident.
04/15/2010	Diesel Spill	Woodstock Waste Water Plant	AST was being filled for a generator. Person responsible for overseeing the plant was distracted, and fuel subsequently went out vent and sprayed the building and ground.
03/08/2002	Unspecified Spill	Woodstock Inn	Sheen noticed on brook, likely a spill flushed down by rain.
11/27/1998	Unspecified Spill	Kedron Valley Inn	An UST leaked into a nearby brook, releasing 270 gallons. River was boomed, and tank removed.
01/25/1997	Unspecified Spill	Woodstock Waste Water Plant	Release from an unknown source.
10/24/1991	Petroleum Spill	Thompson's Garage, Rt. 12	Petroleum taste detected in water supply, with Thompson's Garage as a possible contamination source. This was a private water supply.
05/15/1985	Unspecified HAZMAT	Ottauquechee River	80 gallons (or other measurement) of a hazardous material was dumped into the Ottauquechee River
04/2/1985	Diesel Spill	Ottauquechee River	An unspecified amount of diesel was discharged into the Ottauquechee River.
06/13/1978	Oil Spill	Riding Stables	200 gallons of oil used to suppress dust on roads spilled, and washed into nearby brook during rains.

The Village of Woodstock has a closed water system that is run by a private water company, the Woodstock Aqueduct Company, which was founded in 1886. The main wells are located along Route 12N, and are connected to pipes that are then connected to residents. As a consequence, if a break

happens in a pipe anywhere along the line, there is a contamination threat. Unlike a number of other towns in the region, Woodstock does not take water from the river or other local waterbodies.

When a water supply contamination issues occurs in Woodstock, it can be catastrophic in instances that require the water supply be shut off when an event like a well collapse occurs, for example. If water service is not completely cut off for the town, residents retain water access to running water but may be forced to boil water to make it potable. Following Tropical Storm Irene, many municipalities were put under a boil water notice, affecting a total of 16,590 people in Vermont. Woodstock was one of a number of towns with large public water systems that was affected by Boil Water Notices, according to the Vermont Agency of Natural Resources.

The Wellhead Protection Plan enumerates potential sources of contamination for the Town's water supply, denotes actions that have been taken to minimize the risk of groundwater contamination, and creates a Source Protection Area. This Area operates similar to a zoning district overlay, and prohibits certain activities that may contaminate the wellhead area, such as using herbicides. Property owners located in the vicinity of Woodstock Aqueduct Company wells are informed of that fact, and offered assistance in the ways they can help minimize contamination into the groundwater supply. The list of hazardous materials spills, particularly on or near Routes 4, 12 and 106 demonstrates the threat of contamination facing the Town's municipal supplies from the Ottauquechee River.

Private well contamination also threatens those residents and business owners who are not located in the Village of Woodstock, and maintain their own well for drinking water. As private wells are not required to develop a Wellhead Protection Plan or Source Protection Area, the activities nearby a property owner's well are not necessarily regulated. While an individual property owner may only be affected by his or her well-being contaminated by a small contamination source, a hazardous material spill may impact multiple wells. The list of hazardous material spills in the Town and Village of Woodstock demonstrates the ease with which private wells could be contaminated, even with a few gallons of hazardous material.

It is important to note that groundwater supplies can also become contaminated by bacteria from a number of sources. These sources may include: a poorly designed leach field, a ruptured septic tank, or over-application or improper storage of manure or fertilizer.

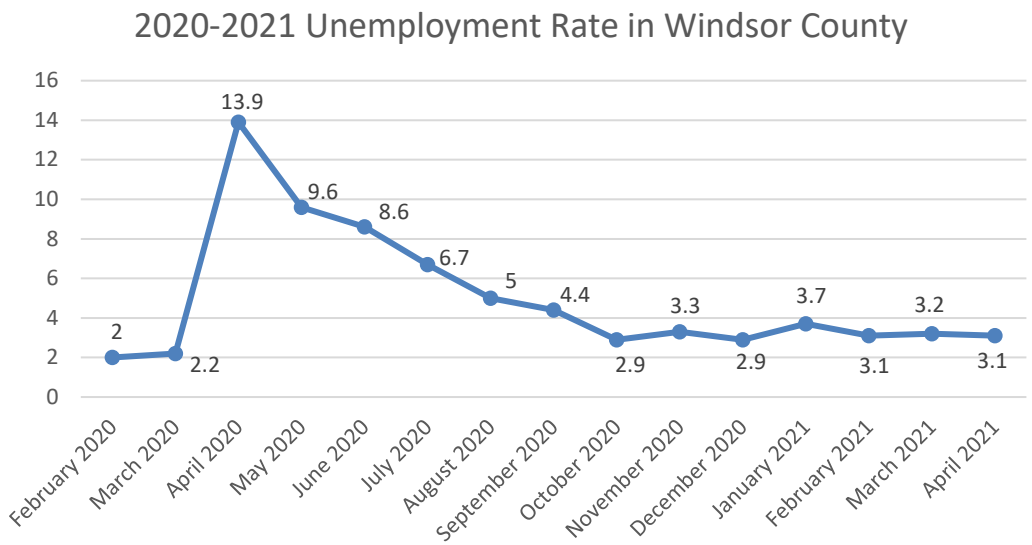
5. Pandemic

While not an entirely new hazard, recent events related to COVID-19 (the illness caused by a novel coronavirus) has made pandemics of particular concern for the town and the state. The scale and complexity of COVID-19 has not been seen in this country since the 1918 Spanish Flu. With a major pandemic, the hazard to Woodstock is its effect on individuals, vulnerable populations, the medical system, and the economy.

On March 25, 2020, Governor Scott enacted a "Stay Home, Stay Safe" order that essentially closed all but essential businesses, required companies to work from home if they can, and to reduce trips outside the

home to limit human-to-human contact. On April 10, 2020, this order was extended to last until May 15, 2020, and as of the writing of this plan restrictions on travel and businesses are being lessened as case activity remains very low and medical capacity is much more than needed at the moment.

There have been significant economic impacts to this order, including Windsor County's unemployment rate spiking from 2.2% to 13.9% and severe drops in tax revenue. These impacts did diminish to an extent, as evident in Figure 11 below. As of the writing of this plan, the health impacts have not been as severe as anticipated, likely due to the orders for isolation, but there have been over 1,000 cases in the state and 55 deaths.



2020-2021 Unemployment Rate in Windsor County, VT. Source: U.S. Bureau of Labor Statistics

As of the writing of this plan, the health impacts have not been as severe as anticipated, likely due to the orders for isolation, but there have been over 24,295 cases of Covid-19 and 256 incidents of Covid-19 related deaths in the State of Vermont.

COVID-19 has made it clear that in major pandemics that affect most of the population, the current medical system is largely inadequate to handle a surge of caseloads and hospitalizations. Vulnerable populations, such as nursing homes and prisons, have been particularly hard hit due to close living quarters. While not completely overwhelmed at the time of this writing, the VA Medical Center has expressed that they would be maxed out if a majority of patients who are eligible for care contract the disease. Risk and Vulnerability Assessment. Since this situation is currently ongoing, there are no specific lists or dollar amounts that explain the impact COVID-19 is having on the town, or on the region/state.

The following table includes a list of past pandemics as identified by the Center for Disease Control and Prevention.

History of Occurrences:

Year of Outbreak	Pandemic
2019	Covid-19 (Coronavirus)
2009	(H1N1)pdm09 (Swine Flu)
1968	H3N2 Virus (Hong Kong Flu)
1957-1958	H2N2 Virus (Asian Flu)
1918	H1N1 (Spanish Flu)

Populations that are currently high risk for pandemics include nursing homes, elderly housing, school populations, individuals 60 and over, and individuals with pre-existing health conditions.

VI. Mitigation

A. Mitigation Goals

1. To reduce long-term impacts and losses of the natural hazard of severe weather.
2. To reduce long-term impacts and losses of the hazard of a hazardous material spill.
3. To reduce long-term impacts and losses of the hazards of structural fire(s) and wildfire(s).
4. To reduce long-term impacts and losses of the hazard of water supply contamination.
5. To reduce long-term impacts and losses of the hazard of pandemic.

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

- Increase fire safety in Woodstock (p.20).
- Provide ample high quality water supplies (p. 21).
- Minimize pollution from wastewater (p. 21).
- Coordinate future construction densities with public sewage treatment capacities (p. 21).
- Educate the public of the need for emergency training (p. 22).
- Consider how new developments (e.g., housing, transportation, infrastructure, policies, zoning, road construction, water treatment plants) impact health (p. 48).
- Maintain or improve groundwater and surface water quality for public and aquatic health and related recreational benefits (p. 82).
- Provide greater safety and reduce hazards and accidents (p. 104).
- Uncontrolled access compromises the safety and efficiency of our public highways. Promote access management to preserve the safety and mobility for the traveling public (p. 105).

The Woodstock Town and Village Master Plan was updated and adopted on 09/17/2019, and it has an 8 year lifespan.

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, the need for Woodstock Town and/or Village 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 (which include economic, political, environmental, technical, social, administrative, and legal criteria). A range of mitigation strategies were vetted by the committee, and those that were determined to be feasible included in the table below.

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

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

The following strategies will be incorporated into the Town and Village of Woodstock's long-term land use and development planning documents. In addition, the Town and Village will review and incorporate elements of this Multi-Jurisdictional 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 Multi-Jurisdictional Hazard Mitigation Plan into the master plan, zoning regulations and flood hazard/FEH bylaws will also be considered after declared or local disasters. The Town and Village shall also consider reviewing any future TRORC planning documents for ideas on future mitigation projects and hazard areas. For the purposes of implementing actions, the Village has jurisdiction to do so within the Village boundaries, and yet some actions may require coordination with the Town of Woodstock. Individuals and organizations bolded in the following table are primarily responsible for each corresponding action, followed by other individuals and organizations with supporting roles.

Mitigation Actions	Town or Village?	Local Leadership	Prioritization	Possible Resources	Time Frame
All Hazards					
Ensure that Woodstocks Local Emergency Management Plan (LEMP) is kept up-to-date.	*Town and Village*	**Town Manager**	High	Local resources; TRORC; VEM	Annually by May 1
Develop a policy on effective communication of hazards to town departments and residents of Woodstock.	*Town and Village*	**Town Manager**; Selectboard; Village Trustees	Medium	Local Resources	2022-2023
Develop a methodology the Town can use for consistently documenting infrastructure damage after weather events.	*Town and Village*	**Road Foreman**	High	Local resources; TRORC	2022-2023
Meet with VEM regarding setting up VT Alert in Woodstock.	*Town and Village*	**Fire Chief**; Police Chief; EMD (Town Manager)	Low	Local resources; VEM	2022-2023
Develop an educational program for Woodstock residents regarding mitigation actions homeowners and renters can undertake to lessen risks to their lives and properties.	*Town and Village*	**EMD (Town Manager)**, Health Officer, Fire Department	Low	Local resources; TRORC	2 years after date of Plan Approval, then annually
The Town, Police, EMD, and the Fire Department should work closely together to address safety issues related to hazards.	*Town and Village*	**Town Manager**; Selectboard; Police; EMS; Fire Department	Low - Medium	Local resources	2023-2025
Fund a dedicated staff position for hazard mitigation and risk assessment at the town or regional level that can provide services to the Town and Village.	*Town and Village*	**Municipal Manager**	Low	Local resources	2025
Fire Hazards (Structure and Wildfire / Brushfires)					
Develop a pre-plan program for significant structures in the Town and Village of Woodstock. For each significant structure, develop a pre-fire plan and tour the structure	*Town and Village*	**Woodstock Fire Chief**	Medium	Local resources (FD)	2023-2024

Mitigation Actions	Town or Village?	Local Leadership	Prioritization	Possible Resources	Time Frame
to familiarize FD members with the layout of the structure.					
Seek funding to draft a Community Wildfire Protection Plan (assesses and maps the community wildfire risk, discusses the ability to respond and recommends actions to reduce wildfire risk).	*Town*	**Woodstock Fire Chief**	Low	Local resources; Vermont Rural Protection Task Fore	2023-2024
Develop a public education program to educate residents about wildfire/brushfire risks and how to minimize the occurrence of wildfire/brushfire.	*Town*	**Woodstock Fire Chief**	Medium	Local resources (FD)	2022-2024
Develop a program to receive training and practice using brushfire/forestry equipment.	*Town*	**Woodstock Fire Chief**	High	Local resources (FD)	2022-2026
Complete a comprehensive survey of potential dry hydrant sites to determine the need for additional sites and potential location, and install dry hydrants.	*Town and Village*	**Woodstock Fire Chief**	Medium	Local resources (FD)	2022-2026
Develop an enducational program for residents on how to obtain an outdoor burn permit and how to safely conduct an outdoor burn.	*Town and Village*	**Woodstock Fire Chief**	Medium	Local resources (FD)	2022-2023
Hazardous Material Spill					
Work with Tier II Facilities in Woodstock to properly plan for hazardous material incidents.	*Town and Village*	**Woodstock Fire Chief**	Medium	Local resources	2022-2023
Determine areas of Woodstock that have a high volume of hazardous materials (such as transportation routes or Tier II facilities) and plan for potential incidents.	*Town and Village*	**Woodstock Fire Chief**	Medium	Local resources	2022-2023

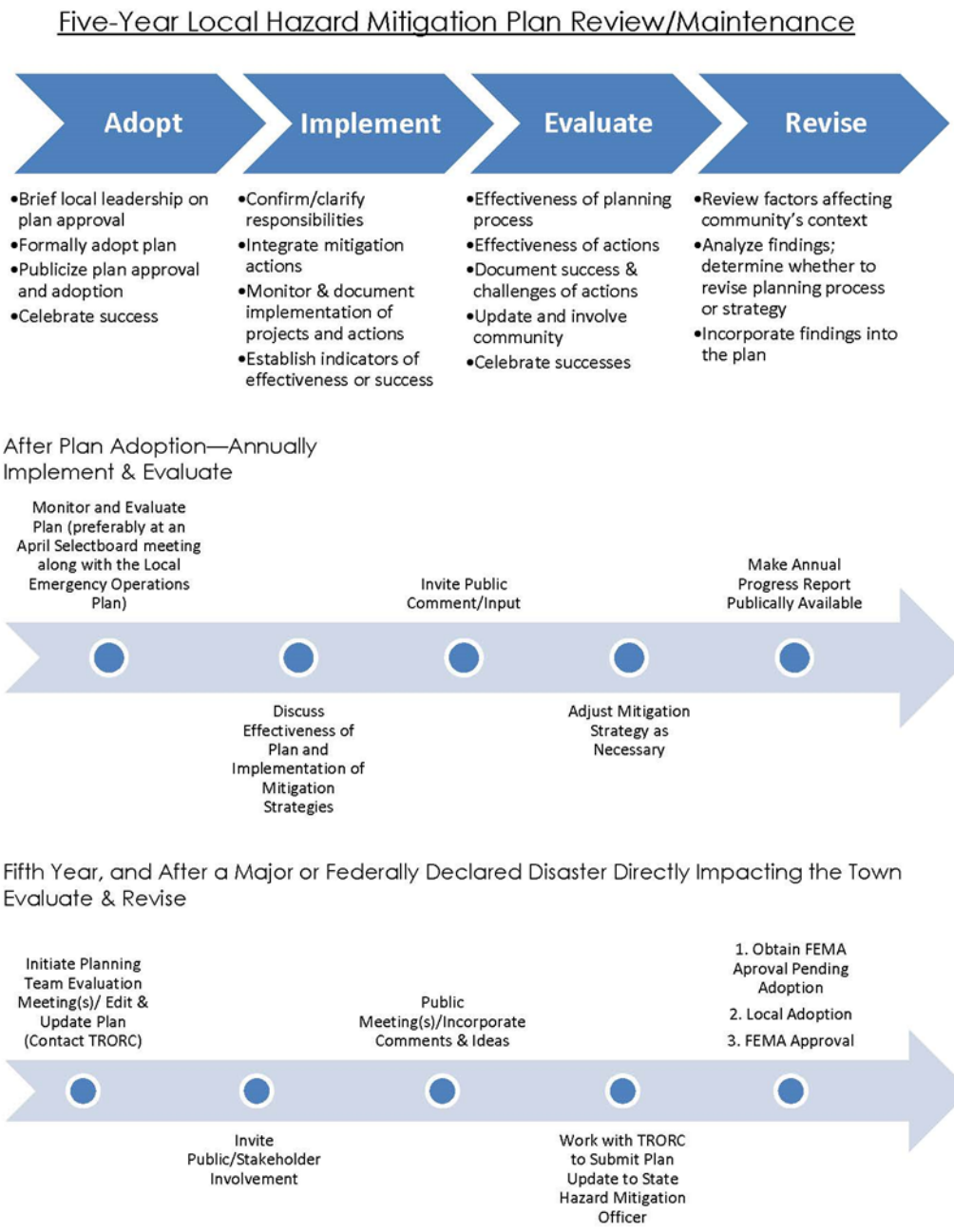
Mitigation Actions	Town or Village?	Local Leadership	Prioritization	Possible Resources	Time Frame
Severe Weather (Thunderstroms, Cold/Heat, Ice/Snow, Flooding, Wind, Hurricanes/Tropical Storms, Hail, etc.)					
Update the Woodstock Road Erosion Inventory in order to properly identify and mitigate high erosion areas in town.	*Town and Village*	**Road Foreman**	High	Local resources; Vtrans	2024-2025
Identify frequently flooded roads and bridges.	*Town and Village*	**Road Foreman** and Town Manager	Medium	Local resources	2022-2023
Develop a plan for communicating shelter information to residents and especially to populations that are vulnerable to extreme temperatures.	*Town and Village*	**EMD (Town Manager)**; American Red Cross	High	Local resources; VEM	2022-2024
Work with Green Mountain Power to identify vulnerable power lines and other infrastructure in Woodstock.	*Town and Village*	**Road Foreman**; Tree Warden	High	Local resources	2022-2023
Remove, where necessary, trees and brush from rivers/streams that pose an imminent threat to public safety and property; inspect periodically to reduce risk of flooding	Town	**Highway Superintendent**/Municipal Manager	Low-High	Local resources; Vermont DEC's River Management Section	2022-2026
Develop an educational program for private landowners on hazard trees and safety issues associated with them.	*Town and Village*	**Road Foreman**; Conservation Commission	Low-Medium	Local resources	2022-2023
Adopt fluvial erosion hazard (FEH)/river corridor regulations where feasible to incorporate VT ANR's river corridor maps.	*Town and Village*	**Town Planner**; Planning Commission	Low	Local resources; TRORC	2023-2025
As part of Town Plan updates, determine if revising and strengthening the Town's flood hazard	*Town and Village*	**Town Planner**; Planning Commission	Low	Local resources; TRORC	2023-2024

Mitigation Actions	Town or Village?	Local Leadership	Prioritization	Possible Resources	Time Frame
regulations contained within the Town's Zoning Bylaws is necessary to remain compliant with federal and state law and reduce risks.					
Water / Wastewater Contamination					
Apply for funding to upgrade the South Woodstock wastewater treatment plant.	*Town*	***Wastewater Dept.;*** *Selectboard; Town Manager*	High	Local resources; USDA; unknown	2022-2024
Conduct an assessment of current conditions of all wastewater treatment facilities in Woodstock. Create a Capital Budget and Program for the improvement of these systems.	*Town and Village*	***Wastewater Dept.***	*Low-Medium*	*Unknown*	2023-2025
Pandemic					
Create a stockpile of Personal Protection Equipment (PPE) for town employees.	*Town and Village*	***Town Manager***	*High*	*Local resources*	2021-2022
Create a town working group to identify additional food and shelter needs in the community.	*Town and Village*	***Town Manager***	*Medium-High*	*Local resources*	2022-2023
Develop a group of volunteers that are available to deliver food and other essentials to individuals who are under quarantine.	*Town and Village*	***Town Manager***	*Medium*	*Local resources*	2022-2023
Assist the Woodstock Community Foundation with funding to continue assistance to those suffering from the effects of COVID.	*Town and Village*	***Town Manager***	*Low*	*Local resources*	2023-2024
Develop a social distancing policy for municipal buildings.	*Town and Village*	***Town Manager***	*Medium*	*Local resources*	2022-2023
Send CDC and Vermont Department of Health information to residents and	*Town and Village*	***Town Manager***	*Medium*	*Local resources*	2022-2023

Mitigation Actions	Town or Village?	Local Leadership	Prioritization	Possible Resources	Time Frame
businesses on how to properly sanitize surfaces and wash hands.					

Appendices

Appendix A: Five Year Review and Maintenance Plan



Appendix B: Town of Woodstock List of Priority Culverts for Improvement/Repair

Town of Woodstock Poor Culvert Condition Priorities 2014

Culvert No.	RDFLNAME	STR_TYPE	STR_MAT	CONDITION	CUL_WIDTH	CUL_HEIGHT	CUL_LEN	CONDCOMMNT	TIER
15	CHURCH HILL RD	ROUND	STEEL CORRUGATED	CRITICAL	15	15	40	needs to be defined better	High
15	COX DISTRICT RD	ROUND	STEEL CORRUGATED	CRITICAL	48	48	25		High
1	DARLING RD	ROUND	STEEL CORRUGATED	CRITICAL	15	15	40	outlet plugged	High
11	DUNHAM HILL RD	ROUND	PLASTIC CORRUGATED	CRITICAL	18	18	40	outlet plugged, no receiving swale	High
12	DUNHAM HILL RD	ROUND	STEEL CORRUGATED	CRITICAL	12	12	25		High
1	GROVE HILL RD	BOX	STONE	POOR	24	24	25	stone header falling in	High
14	HAPPY VALLEY RD	ROUND	STEEL CORRUGATED	Critical	15	15	30	stone header	High
15	HAPPY VALLEY RD	BOX	STONE	Critical	24	12	25	stone header	High
16	HAPPY VALLEY RD	ROUND	PLASTIC CORRUGATED	Critical	12	12	30	stone header	High
17	HAPPY VALLEY RD	ROUND	PVC	Critical	8	8	30	stone header	High
18	HAPPY VALLEY RD	ROUND	PLASTIC CORRUGATED	Critical	15	15	35	stone header	High
19	HAPPY VALLEY RD	ROUND	PLASTIC CORRUGATED	Critical	15	15	40	stone header	High
9	MECAWEE RD	ROUND	STEEL CORRUGATED	POOR	12	12	40	spring only	High
5	BROWN HILL RD	DROP INLET	MIXED	CRITICAL	0	0	0	cannot find incoming pipe or outlet	Med
1	BRIDGES RD	ROUND	STEEL CORRUGATED	POOR	12	12	30	off side of road, rusted out	Med
10	BRIDGES RD	ROUND	STEEL CORRUGATED	CRITICAL	15	15	35	inlet mostly clogged 2nd plastic pipe	Med
5	CHURCH HILL RD	ROUND	STEEL CORRUGATED	CRITICAL	15	15	40	stone header	Med
21	CHURCH HILL RD	ROUND	PLASTIC CORRUGATED	POOR	15	15	35	no reciving swale	Med
36	CHURCH HILL RD	ROUND	STEEL CORRUGATED	CRITICAL	15	15	40		Med
9	CURTIS HOLLOW RD	ROUND	STEEL CORRUGATED	POOR	12	12	35		Med
4	DARLING RD	ROUND	STEEL CORRUGATED	POOR	18	18	20	crushed stone header	Med
3	DENSMORE HILL RD	ROUND	PLASTIC CORRUGATED	CRITICAL	24	24	40	sediment at inlet	Med
1	FLETCHER HILL RD	ROUND	STEEL CORRUGATED	POOR	8	8	35	plugged	Med
6	FLETCHER HILL RD	ROUND	PLASTIC CORRUGATED	CRITICAL	15	15	40		Med
25	FLETCHER HILL RD	ROUND	PLASTIC CORRUGATED	CRITICAL	18	18	70	outlet not found	Med
4	FLETCHER SCHOOLHOUSE RD	ROUND	STEEL CORRUGATED	CRITICAL	12	12	30	plugged	Med
6	FLETCHER SCHOOLHOUSE RD	ROUND	STEEL CORRUGATED	POOR	15	15	40		Med
9	FLETCHER SCHOOLHOUSE RD	ROUND	STEEL CORRUGATED	POOR	12	12	30	concrete header	Med
3	HOADLEY RD	ROUND	STEEL CORRUGATED	POOR	12	12	20		Med
3	LARRY CURTIS RD	ROUND	STEEL CORRUGATED	POOR	0	0	0	can't find outlet	Med
36	LONG HILL RD	ROUND	PLASTIC CORRUGATED	CRITICAL	15	15	27	sediment plugged	Med
10	MECAWEE RD	ROUND	STEEL CORRUGATED	POOR	12	12	40		Med
14	MECAWEE RD	ROUND	STEEL CORRUGATED	POOR	18	18	32	top caving	Med
22	NOAH WOOD RD	ROUND	STEEL CORRUGATED	POOR	12	12	50		Med
4	PETERKIN HILL RD	ROUND	STEEL CORRUGATED	CRITICAL	12	12	30		Med
3	RANDALL RD	ROUND	STEEL CORRUGATED	POOR	12	12	28	plugged both sides	Med
2	REEVES RD	ROUND	STEEL CORRUGATED	CRITICAL	15	15	20		Med
2	STIMETS RD	ROUND	STEEL CORRUGATED	POOR	12	12	35		Med
2	THE LANE	ROUND	STEEL CORRUGATED	POOR	8	8	20		Med
4	THE LANE	ROUND	STEEL CORRUGATED	POOR	12	12	20		Med
1	TOWN FARM RD	ROUND	PLASTIC CORRUGATED	POOR	15	15	45	sediment outlet	Med
1	VALLEY VIEW RD	DROP INLET	STEEL CORRUGATED	POOR	15	15	25		Med
3	WYMAN LN	ROUND	PLASTIC CORRUGATED	CRITICAL	6	6	35	plugged	Med
40	FLETCHER HILL RD	ROUND	STEEL CORRUGATED	POOR	18	18	30	3/4 plugged	Low
2	BENEDICT RD	ROUND	STEEL CORRUGATED	CRITICAL	12	12	25	inlet needs cleaning	Low
1	BISCUIT HOLLOW RD	ROUND	STEEL CORRUGATED	POOR	15	15	22	inlet needs cleaning	Low
3	BISCUIT HOLLOW RD	ROUND	STEEL CORRUGATED	POOR	15	15	35	inlet needs cleaning	Low
1	BROWN HILL RD	ROUND	PLASTIC CORRUGATED	CRITICAL	18	18	45	inlet plugged	Low
4	BROWN HILL RD	ROUND	PLASTIC SMOOTH	CRITICAL	15	15	45	inlet needs cleaning	Low
5	BRYANT RD	ROUND	STEEL CORRUGATED	CRITICAL	12	12	25	inlet plugged	Low
6	BRYANT RD	ROUND	STEEL CORRUGATED	CRITICAL	12	12	20	inlet plugged	Low
2	CALENDAR HILL RD	ROUND	STEEL CORRUGATED	CRITICAL	18	18	40	outlet filled	Low
3	CALENDAR HILL RD	ROUND	STEEL CORRUGATED	POOR	15	15	40	inlet plugged	Low
4	CALENDAR HILL RD	ROUND	PLASTIC CORRUGATED	CRITICAL	15	15	35	inlet plugged	Low
9	CARLTON HILL RD	ROUND	PLASTIC SMOOTH	POOR	4	4	65		Low
17	CARLTON HILL RD	ROUND	STEEL CORRUGATED	POOR	15	15	30		Low

16	CHURCH HILL RD	ROUND	PLASTIC CORRUGATED	CRITICAL	18	18	40	stone header outlet plugged	Low
20	CHURCH HILL RD	ROUND	STEEL CORRUGATED	POOR	18	18	35		Low
23	CHURCH HILL RD	ROUND	STEEL CORRUGATED	POOR	15	15	30		Low
30	CHURCH HILL RD	ROUND	STEEL CORRUGATED	POOR	15	15	30		Low
32	CHURCH HILL RD	ROUND	STEEL CORRUGATED	POOR	18	18	30		Low
4	CURTIS HOLLOW RD	ROUND	PLASTIC CORRUGATED	POOR	15	15	85		Low
8	DUNHAM HILL RD	ROUND	STEEL CORRUGATED	UNKNOWN	15	15	40		Low
23	DUNHAM HILL RD	ROUND	STEEL CORRUGATED	CRITICAL	12	12	35	inlet plugged perched	Low
2	E HILL RD	ROUND	STEEL CORRUGATED	POOR	18	18	40		Low
33	FLETCHER HILL RD	ROUND	PLASTIC CORRUGATED	POOR	18	18	50	half full sediment	Low
15	FLETCHER SCHOOLHOUSE RD	ROUND	STEEL CORRUGATED	CRITICAL	18	18	30	inlet needs cleaning	Low
22	FLETCHER SCHOOLHOUSE RD	ROUND	STEEL CORRUGATED	CRITICAL	12	12	40	completely plugged	Low
6	FOLDING HILLS RD	ROUND	STEEL CORRUGATED	CRITICAL	12	12	25	inlet needs cleaning	Low
6	GARVIN HILL RD	ROUND	STEEL CORRUGATED	CRITICAL	15	15	40	outlet needs cleaning	Low
4	GRASSY LN	ROUND	STEEL CORRUGATED	POOR	12	12	25	needs cleaning	Low
2	GREENE RD	ROUND	PLASTIC CORRUGATED	CRITICAL	15	15	20	inlet plugged	Low
10	GROVE HILL RD	ROUND	PLASTIC CORRUGATED	POOR	15	15	70	stone header sedementation	Low
1	HOADLEY RD	ROUND	PLASTIC CORRUGATED	CRITICAL	12	12	20	inlet needs cleaning	Low
1	KENDALL RD	ROUND	STEEL CORRUGATED	POOR	15	15	45		Low
1	LONG HILL RD	BOX	STONE	POOR	18	18	30	stone header	Low
3	MECAWEE RD	ROUND	PLASTIC CORRUGATED	UNKNOWN	0	0	0		Low
8	MECAWEE RD	ROUND	PLASTIC CORRUGATED	POOR	24	24	42	curved plugged	Low
1	MORGAN HILL RD	UNKNOWN	UNKNOWN	POOR	0	0	110	drop inlet	Low
7	MORGAN HILL RD	ROUND	PLASTIC CORRUGATED	CRITICAL	18	18	40	stone header outlet needs cleaning	Low
11	MORGAN HILL RD	ROUND	PLASTIC CORRUGATED	CRITICAL	15	15	40	filled	Low
12	N BRIDGEWATER RD	ROUND	STEEL CORRUGATED	CRITICAL	12	12	40	inlet needs cleaning	Low
15	N BRIDGEWATER RD	ROUND	PLASTIC CORRUGATED	POOR	18	18	50	stone header	Low
5	NOAH WOOD RD	ROUND	PLASTIC CORRUGATED	CRITICAL	18	18	40	filled	Low
6	NOAH WOOD RD	ROUND	STEEL CORRUGATED	CRITICAL	15	15	40	filled	Low
4	OLD RIVER RD	UNKNOWN	UNKNOWN	CRITICAL	0	0	0	not found	Low
13	OLD RIVER RD	ROUND	STEEL CORRUGATED	POOR	15	15	30		Low
14	PROSPER RD	ROUND	STEEL CORRUGATED	POOR	18	18	30	inlet needs cleaning	Low
16	PROSPER RD	ROUND	STEEL CORRUGATED	CRITICAL	12	12	25	outlet needs cleaning sediment	Low
12	RANDALL RD	ROUND	STEEL CORRUGATED	CRITICAL	18	18	40		Low
1	REEVES RD	ROUND	STEEL CORRUGATED	CRITICAL	18	18	30		Low
11	RIVERSIDE PARK RD	ROUND	PLASTIC CORRUGATED	POOR	15	15	30	inlet needs cleaning	Low
5	THE LANE	ROUND	PLASTIC CORRUGATED	CRITICAL	12	12	20	inlet plugged	Low
7	THE LANE	ROUND	STEEL CORRUGATED	POOR	15	15	20	outlet needs cleaning	Low
8	THE LANE	ROUND	STEEL CORRUGATED	POOR	15	15	20	outlet needs cleaning	Low
3	WESTERDALE RD	ROUND	STEEL CORRUGATED	CRITICAL	18	18	40	completely plugged needs cleaning	Low
13	WESTERDALE RD	ROUND	STEEL CORRUGATED	POOR	18	18	45	inlet needs cleaning	Low

13 high priority culverts
30 med priority culverts
54 low priority culverts
97 priority culvert projects

Appendix C: Village of Woodstock List of Priority Culverts for Improvement/Repair

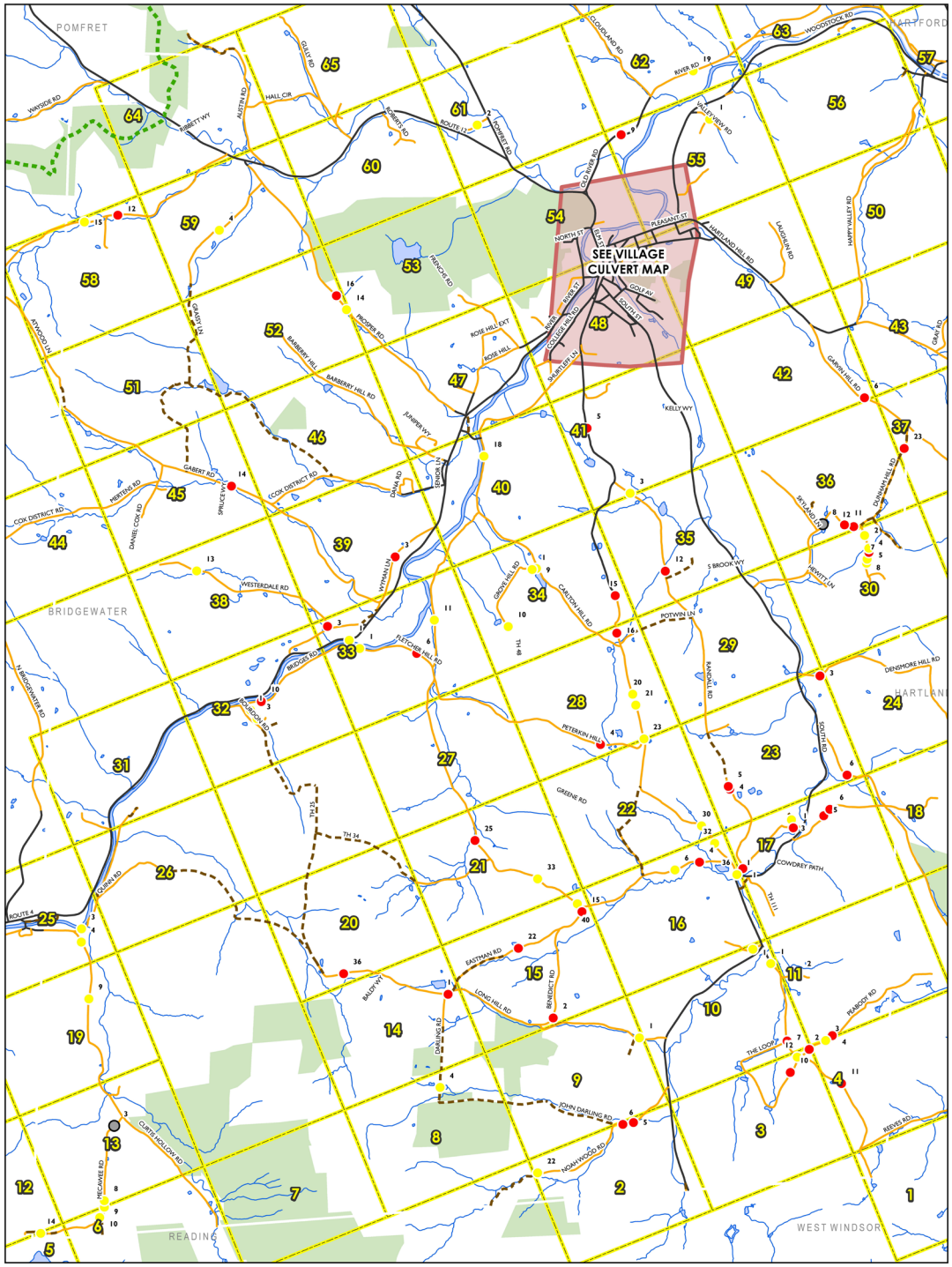
Village of Woodstock Poor Culvert Condition Priorities 2014

Culvert No.	RDFLNAME	STR_TYPE	STR_MAT	CONDITION	CUL_WIDTH	CUL_HEIGHT	CUL_LEN	CONDCOMMNT	TIER
5	CHARLES ST	DI	STEEL	POOR	12	12	40	83 plugged	High
1	COLLEGE HILL RD	CULVERT	PLASTIC	CRITICAL	12	12	70	999 drop inlet outlet not found	High
3	COLLEGE HILL RD	CULVERT	PVC PIPE	POOR	8	8	100	outlet not found	High
1	HIGHLAND AVE EXT	CULVERT	STEEL	CRITICAL	12	12	35	old filled needs attention	High
3	LINCOLN ST	CULVERT	PVC PIPE	CRITICAL	12	12	40	filled, inlet not found	High
3	SLAYTON TER	CULVERT	STEEL	POOR	12	12	50		High
1	SCHOOL ST	DI	PVC PIPE	CRITICAL	8	8	18	150	Med
2	SCHOOL ST	DI	STEEL	CRITICAL	12	12	100	149	Med
2	SWAIN ST	DI	STEEL	POOR	12	12	60	153	Med
2	BORDER LN	CULVERT	PLASTIC	POOR	15	15	35		Low
15	GOLF AVE	DI	STEEL	POOR	15	15	35	139	Low
1	PINE ST	CULVERT	STEEL	POOR	18	18	50	stone header	Low
1	SLAYTON TER	CULVERT	STEEL	POOR	15	15	30		Low

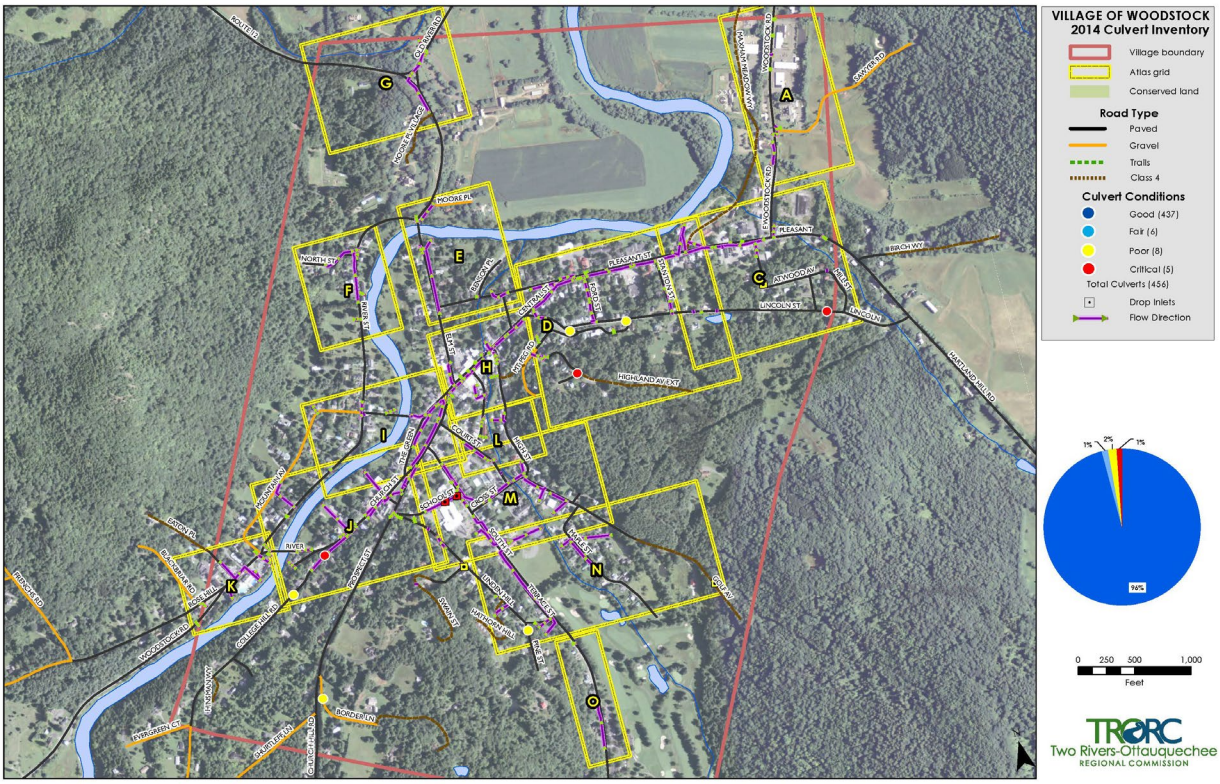
6 high priority culverts
3 med priority culverts
4 low priority culverts
13 priority culvert projects

Attachments

Attachment A: Town of Woodstock Priority Culverts Overview Map



Attachment B: Village of Woodstock Priority Culverts Overview Map



Attachment C: Map of the Town and Village of Woodstock