

# Town of Readsboro Local Hazard Mitigation Plan



Town Adopted December 6, 2023

FEMA Final Approved January 29, 2024

Prepared for the Town of Readsboro by  
the Windham Regional Commission



# Table of Contents

INTRODUCTION AND PURPOSE.....	1
WINDHAM REGION GEOGRAPHY.....	1
READSBORO GEOGRAPHY & TOWN PROFILE .....	2
Existing Land Use Map from 2015 READSBORO Town Plan.....	5
Proposed Land Use Map from 2015 READSBORO Town Plan .....	6
<b>PLANNING PROCESS</b>	
Documentation of the Plan Update Process .....	10
Input from Frontline Organizations, Neighboring Communities and the Public	11
Data Sources.....	13
Changes Since the 2014 Plan .....	14
<b>RISK ASSESSMENT</b>	
Methodology.....	14
Results .....	15
Identifying and Profiling Hazards .....	18
Flooding and Fluvial Erosion .....	18
Special Flood Hazard Area and River Corridor Mapping .....	27
Dam Failure.....	31
High Winds.....	33
Extreme Cold, Snow and Ice Events .....	41
Pandemic .....	44
<b>ASSESSING VULNERABILITY</b>	
Structures in the SFHA or River Corridor.....	46
Critical Facilities .....	47
Repetitive Loss Structures.....	47
Participation in and Compliance with the NFIP .....	48
<b>MITIGATION STRATEGY</b>	
Local Hazard Mitigation Goals for this Plan .....	50
Town Plan Policies and Recommendations that Support Mitigation.....	51
Past and Ongoing Mitigation and Maintenance Efforts .....	53
Identification of Mitigation Actions.....	56
Mitigation Categories.....	56
Cost-Benefit Analysis .....	57
Mitigation Actions Identified by the Hazard Mitigation Planning Participants...	59
Implementation of Mitigation Actions / Capabilities .....	65
Existing Planning Mechanisms / Integration .....	66
<b>PLAN MAINTENANCE PROCESS</b>	
Yearly Review and Plan Monitoring .....	69
Five-Year Update and Evaluation Process .....	69
Post Disaster Review/Update Procedure.....	71
Ongoing Public Participation.....	71
<b>APPENDIX.....</b>	<b>72</b>
Certificate of Adoption .....	73

## INTRODUCTION AND PURPOSE

**This Single Jurisdiction Hazard Mitigation Plan is an UPDATE to a Plan approved by the Federal Emergency Management Agency (FEMA) effective September 22, 2019.**

The purpose of this plan is to assist the Town of Readsboro in identifying all of the hazards facing the town and to identify new and continuing strategies to reduce long term risks from identified hazards.

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

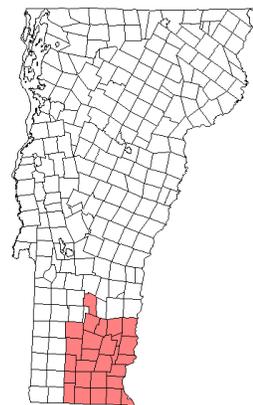
Hazard mitigation strategies and measures alter the hazard by: eliminating or reducing the frequency of occurrence; averting the hazard by redirecting the impact by means of a structure or land treatment; adapting to the hazard by modifying structures or standards; or avoiding the hazard by stopping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

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

## WINDHAM REGION GEOGRAPHY

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

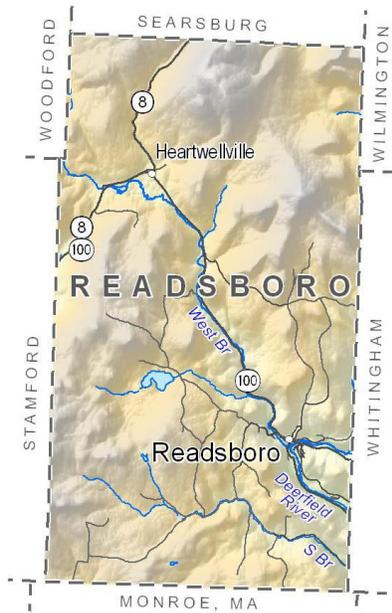
The Region's topography is relatively flat or gently rolling land in the Connecticut River valley in the east, while the western part of the region is characterized by the Green Mountain ridges and peaks with narrow



stream valleys. Stratton Mountain is the highest point in the region at 3,936 feet. The lowest point is along the Connecticut River in Vernon, at 200 feet.

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

## READSBORO GEOGRAPHY & TOWN PROFILE



The Town of Readsboro is located in the southeastern corner of Bennington County on the southern border of Vermont and the eastern border of Bennington County. The Town is bordered by: Searsburg, Woodford and Stamford in Bennington County, VT; Whitingham and Wilmington in Windham County, VT; and Monroe in Franklin County, MA. State Routes 100 and 8 are the main transportation routes serving Readsboro. The Town is located approximately 35 miles from Brattleboro and I-91, 24 miles from Bennington, 14 miles from Wilmington, and 17 miles from North Adams, MA, which are the closest employment and shopping areas to Readsboro. The Town is also somewhat removed from the Route 100 ski corridor, being approximately 25 miles from the Mt. Snow/Hermitage ski areas in Wilmington and Dover. Readsboro is somewhat off the beaten path and a distance from any large-scale development center.

The Town is located on the spine of the Green Mountains and as such the terrain is rugged and mountainous.

Approximately 36 percent of the land in Readsboro, in the northern portion of town, is part of the Green Mountain National Forest. The highest point in Readsboro is 3,119 feet above sea level.

The Village of Readsboro is located at the confluence of the West Branch of the Deerfield River and the mainstem of the Deerfield River. The South Branch of the Deerfield River flows through the southern part of the town. Route 100 follows the West Branch, making this river a visible and important part of the scenic landscape. Land use in Readsboro is characterized by large forested and rural areas. Compact settlement exists chiefly in Readsboro Village, which is served by municipal sewer and water. Another small settlement exists in Heartwellville. Both of these settlements are located in the Deerfield River Valley, which comes with the hazards of floodplain development.

The Town of Readsboro is geographically isolated from surrounding towns and feels far away from things. Being aware of their remote location they understand self-sufficiency and the importance of emergency planning. The closest healthcare facility, North Adams Hospital is 17 miles away. Additionally, even though it has recently improved with a newly installed cell tower at the Fire House, cell service is spotty in town forcing emergency communication to be dependent still on land lines or emergency radio. There is also a lack of Internet service in many places in town. Readsboro joined a Communications Union District to provide fiber optic internet to any location/home that is on the power grid and that will be in place in 2023-24. Police presence is provided on an as-needed basis by the Shaftsbury Barracks of the Vermont

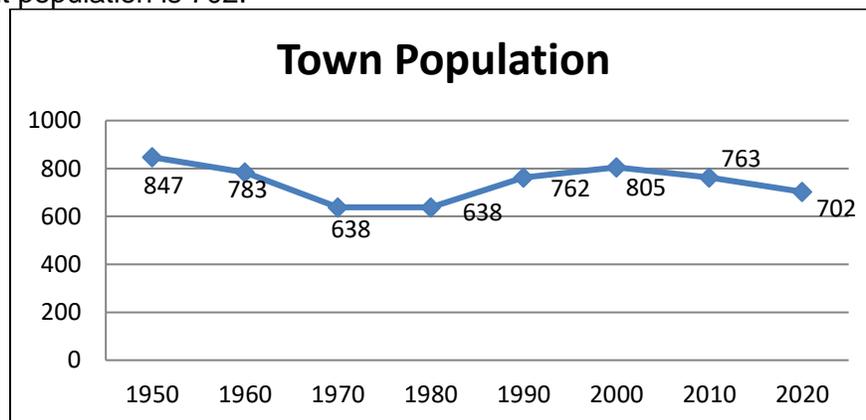
State Police. Because of the distance, response times is an issue for the Town. The Town does have limited presence of the Bennington County Sheriff on a contract basis for a limited number of hours.

Routes 8 and 100 are the main roadways leading in and out of Readsboro. If either were closed down, Readsboro is cut-off in one direction, particularly with Route 8 which connects to route 9 north of the Town. The town has many dead-end roads and people living on those roads would have no access in and out of their homes if their road were shut down in some locations. When the use of large construction vehicles or snow plows are necessary on dead-end roads, the issue of turning around at the end poses a problem because it impacts private properties. There are a number of vulnerable residents living in areas of Town that can be difficult to access depending on weather conditions.

Outside of the Village area, the Town is settled on steep slopes which experience intense runoff during rain events and spring snow melt that drains toward roads and the Rivers. Two branches of the Deerfield River merge in Readsboro village. The Village area functions as the center of civic and commercial activity in Readsboro. Lot sizes are varied in the Village. There is a diversity of densities in housing and commercial activities. While several single-family homes remain, many of the larger homes have been divided into apartments and several businesses have created apartments in their buildings. The combination of residential and commercial in close proximity have helped spur renewed investment and interest in the Village, though the declining population indicate there is not a lot of new residents coming in. A once bustling town has slowed over time.

### Development Trends and Town Vulnerability

Town population is shown on the graph below. Population has fallen since 2000, and from 1950. Current population is 702.



The majority of development in Readsboro has occurred as low-intensity residential development along Readsboro's secondary roads. Some small-scale commercial activity is interspersed, creating a mixed-use development pattern throughout the town. Commercial activities are generally categorized as some sort of home occupation. There is not a lot of development pressure or new development occurring in Readsboro. New development is difficult in Readsboro Village because there is very little developable land left. Most new development takes place outside the Village in rural residential defined settings on back roads in the hills and mountains.

Readsboro's population has been falling slightly since 2000 as shown in the above graph.

Unit Type	2000	2010	2020	% change 2010-2020	% change 2000-2020
owner occupied	229	274	241	-12%	5%
renter occupied	92	62	48	-23%	-48%
Seasonal	109	124	156	26%	43%
Vacant	36	36	54	50%	0%
total units	466	496	499	1%	7%
Avg household size	2.44	2.27	2.33	3%	-5%
Number of households	321	336	289	-14%	-10%

The table to the left shows the occupancy of Readsboro's housing along with trends in the total number of housing units from 2000 to 2020. Of note, vacant housing has substantially increased and seasonal housing has also increased. Overall, there was a 7 percent increase in housing units in Readsboro between 2000 and 2020. From 2010 to 2020, the

number of housing units in Readsboro is estimated to have increased from 496 to 499, equal to 1%, while total households were estimated to have decreased from 336 to 289, a 10% decrease<sup>1</sup>.

Approximately 31% of Readsboro's housing units are seasonal homes, some of which are also used for short term rentals. This goes to show the importance of tourism and how much the population can vary from mid-week to weekends. Readsboro does have zoning. The development pattern has not changed appreciably over the years, so the historic settlement pattern remains predominant. The only new development is residential, with little to no commercial development. The village is built out, and much of the housing is older housing. The village does have water and sewer infrastructure. There is a low-income retirement village in the village on Tunnel Steet.

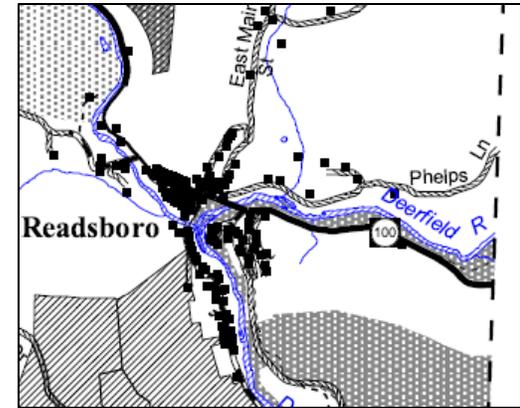
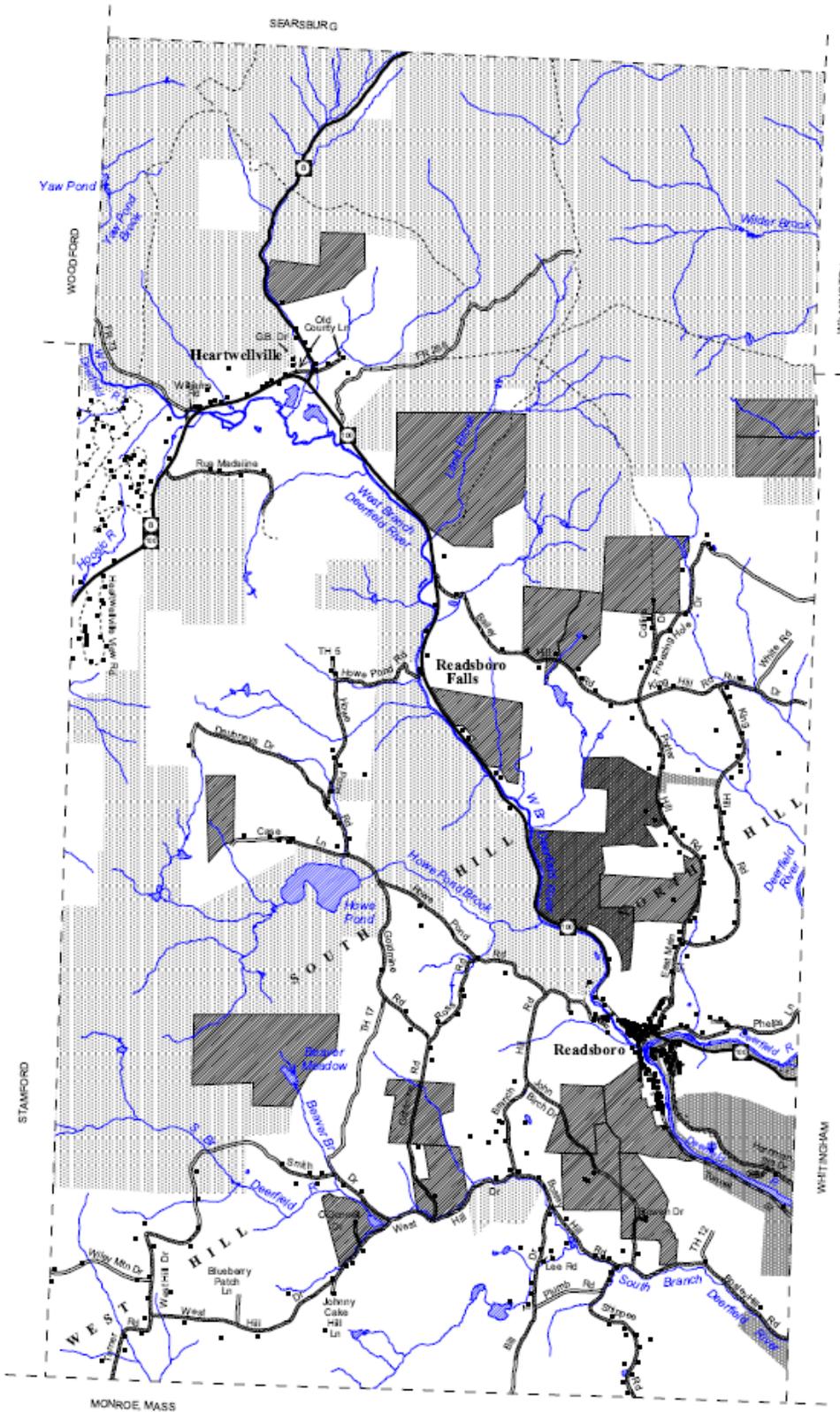
New development is mostly along back roads, with some concentration in Alpenwalds a private small lot housing development near Heartwellville. There have been 33 new homes constructed in Readsboro between 2000 and 2020. The new housing is primarily second homes. With proximity to both the Hermitage and Mount Snow, these are the primary draws for purchases of second homes in the town. The median household income in Readsboro is \$58,750 and 49% of households earn less than \$50,000 annually<sup>2</sup>. This significant portion of lower income households indicates the population of Readsboro is vulnerable to hazard events that would cause damage. This issue coupled with a lack of affordable housing in Vermont generally raises vulnerability for those living in hazard prone locations, especially if they lack flood insurance.

Some of the highest hazard areas associated with flash floods are Route 100 along the West Branch of the Deerfield River and residences along the South Branch of the Deerfield River. These areas have all seen damage and the town has been a part of one declared disaster, TS Irene. Areas of concern during flooding events are homes located along small brooks that are subject to flash flooding during quick heavy rain events. Beaver Brook and Howe Pond Brook in particular are of concern for quick rises during flooding events. Plan participants noted no particular housing or built environment concerns related to natural hazards.

<sup>1</sup> Town Plan update draft data provided by Readsboro Planning Commission Chair, Bartholomew Howes, email 5/3/2023.

<sup>2</sup> American Community Survey 2020 data.

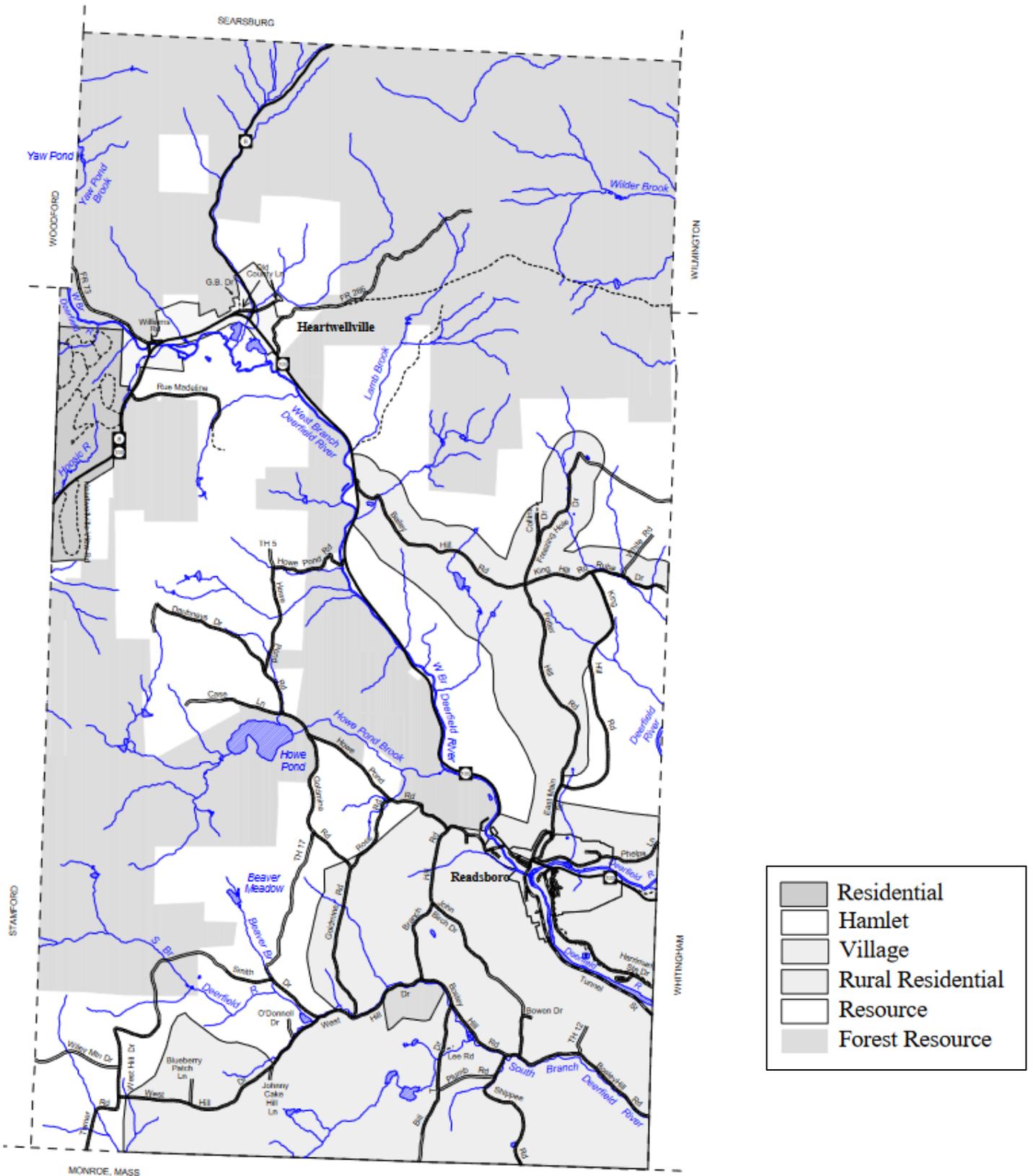
# Existing Land Use Map from the 2015 Readsboro Town Plan



The small squares are buildings. Notice the extreme cluster of development in Readsboro Village, which is also the confluence of the mainstem and the West Branch of the Deerfield River. Map is from the 2015 Readsboro Town Plan.

- Structure
- ▨ Land enrolled in Use Value Appraisal Program, 2004
- ▩ Private land with conservation easement
- ⋯ Public conservation land or open space

# Proposed Land Use Map from 2015 Readsboro Town Plan



## **Drinking Water and Sanitary Sewer**

Readsboro has a public drinking water supply from Howe Pond Reservoir. It serves only the Village of Readsboro and the fire hydrant system. The public water drinking supply watershed is a zone that has specific limitations meant to protect the underlying watershed. The town has a treatment plant for the drinking water.

The Town also has a public wastewater system that serves the Village. The system operates at 30% capacity. The town is in the midst of updating their water and sewer ordinances to address new users, system boundaries and capacity questions.

## **Transportation Network**

Readsboro is located off the beaten path, but does have two main roadways, Route 8 and Route 100. The Town is located to the southwest of Wilmington, the western most economic center of the region, and the various ski areas and bedroom communities to the north and east. Readsboro is fairly equidistant from both Bennington and Brattleboro. These areas are linked by Route 9, which is north of Readsboro, and Route 8 connects the town to Route 9. Route 8 runs south linking with Route 100 in the Heartwellville area of Readsboro, and Route 100 then goes south into Readsboro Village and then into the western side of Whitingham.

There are approximately .5 miles of Class 1, 2 miles of Class 2, and 33 miles of Class 3 roads in Readsboro. Approximately 26 miles, or 73%, of the overall road mileage is hydrologically connected, which means it is within 100 feet of a water resource (i.e., perennial/intermittent streams, wetlands, lakes or pond). Proximity to water resources can make these sections of road more vulnerable to flooding and fluvial erosion.

## **Emergency Services**

The Emergency Management Director (EMD) coordinates emergency planning, preparedness and response for hazard events affecting the Town. The Fire Chief, Road Foreman, and Emergency Management Director are the primary information collectors and coordinate as required for Town response needs. The primary Emergency Operations Center is the Fire Station, with alternates being the Town Office or Readsboro Central School.

The Readsboro Volunteer Fire Department serves the Town and is composed of 20 firefighters, including the Chief. The Department serves the entire town and has mutual aid agreements with surrounding towns. There is a firehouse in the Village. Southwest New Hampshire District Fire Mutual Aid serves as fire and EMS dispatch for the Department. As with many small-town fire departments in Vermont, getting new members is difficult. Members attend training courses sponsored by Vermont Fire Academy and the various mutual aid associations. The Fire Department, Town Garage and the Town Office all have interoperable radios and are able to communicate within town vehicles to those out and about, but their handheld radios are on the same bandwidth. This presents an issue in areas, especially where cell coverage is spotty.

Emergency medical response services are provided primarily by North Adams Rescue. Deerfield Valley Rescue is a non-profit organization funded through subscriptions and donations to provide numerous towns in the Deerfield Valley with ambulance service, medical care, transport to and from area hospitals and large regional hospitals. Police services are provided by the Bennington County Sheriff's Department with backup from the Vermont State Police.

The nearest hospitals are the Southwestern Vermont Medical Center, Berkshire Medical Center in Bennington, the North Adams ER, Berkshire Medical Center in Pittsfield, and Brattleboro Memorial Hospital. Readsboro’s primary designated emergency shelter is the Town Hall during the day and the Elementary School for overnight needs. These shelter options are in the same building and are served by a generator.

Green Mountain Power is the only electrical provider for Readsboro and Consolidated Communications provides land line phone service.

### Power Outage Statistics<sup>3</sup>

Green Mountain Power has provided outage data in late 2022 for this Plan update.

Looking at the “# of Hours the Typical Customer was Without Power Per Year” in 2018 as compared to 2022, 31.56 hours vs. 1.73 hours, respectively, our customers in Readsboro experienced 18x as many hours out between the two years. These are great examples of years in which Readsboro experienced a higher vs. lower frequency of severe weather.

Year	# of Electric Customers (As of 11/1/2022)	Customers Out	Customer Hours Out	Avg # of Times a Customer was Without Power Per Year	Avg Length of Outages in Hours Per Year	# of Hours the Typical Customer was Without Power Per Year	Comments
2016	568	2,425	6,332	4.27	2.61	11.15	
2017	568	943	3,818	1.66	4.05	6.72	
2018	568	2,751	17,924	4.84	6.52	31.56	
2019	568	2,087	16,279	3.67	7.80	28.66	
2020	568	2,119	5,361	3.73	2.53	9.44	
2021	568	1,170	4,230	2.06	3.62	7.45	
2016-2021	568	11,495	53,944	4.05	4.69	18.99	Yearly Average of Calendar Years 2016 - 2021
2022	568	499	981	0.88	1.97	1.73	2022

The types of events that are causing outages in Readsboro can be grouped into one of three broad categories:

- “Blue Sky” –beautiful days, no wind, clear blue skies. Typical outages include equipment failures, car pole accidents, animal contacts, and random dead trees falling and contacting our lines.
- “Major Storms” – A Major Storm is defined by the PUC and includes the most severe storms... think heavy wet snow, ice, regional wide severe wind events that affect a big swath of the state and restorations continue for at least 1.5 days and typically more. There are typically 1-2 Major Storms per year.
- “Non-Major Storms” – These are weather events that are being tracked by all the weather outlets (i.e. National Weather Service), but they do not rise to a full blown Major

<sup>3</sup> Data provided by Ken Couture of Green Mountain Power, email 11/2/2022.

Storm. Think summer evening thunderstorms and less severe wind, heavy wet snow and icing events. GMP typically has about 1-20 of these a year.

With the categories noted above, outages out from 2016 to 2021 have been broken out by the type of day (Blue Sky, Non-Major Storm, Major Storm).

Type of Day	# of Electric Customers (As of 11/1/2022)	Customers Out	Customer Hours Out	Avg # of Times a Customer was Without Power Per Year	Avg Length of Outages in Hours Per Year	# of Hours the Typical Customer was Without Power Per Year	Comments
Blue Sky	568	6,547	13,061	2.31	1.99	4.60	Yearly Average of Calendar Years 2016 - 2021
Non-Major Storm	568	3,897	25,790	1.37	6.62	9.08	Yearly Average of Calendar Years 2016 - 2021
Major Storm	568	1,051	15,094	0.37	14.36	5.31	Yearly Average of Calendar Years 2016 - 2021
Total	568	11,495	53,944	4.05	4.69	18.99	Yearly Average of Calendar Years 2016 - 2021

Type of Storm	Total Count of Events '16-'21	Combined Duration (Days) Total for '16 -'21	# of Hours the Typical Customer was Without Power Per Year	Percent of Total Days	Percent of Total Hours Out
Blue Sky		1,746.38	4.60	95.6%	24%
Non-Major Storm	33	50.90	9.08	2.8%	48%
Major Storm	7	28.72	5.31	1.6%	28%
	40	1,826.00	18.99	100.0%	100%

What the above chart shows is that 76% of the outages happen on 4.4% of the days in the year when we are experiencing some kind of severe weather.

## PLANNING PROCESS

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

### Documentation of the Plan Update Process

**This Single Jurisdiction Hazard Mitigation Plan is an UPDATE to a Plan approved by the Federal Emergency Management Agency (FEMA) effective September 22, 2014 and expired September 21, 2019.**

The Town began the plan update process in March 2021. It is important to keep in mind the context of the update process taking place during the Covid-19 pandemic. This pandemic meant that the update process was done remotely using a variety of virtual tools. Alyssa Sabetto, Senior Planner with the Windham Regional Commission (WRC) met with a group of planning participants or the 'Committee' at two virtual public meetings, as well as having subsequent conversations with numerous town officials. The Committee convened on March 10<sup>th</sup> and 24<sup>th</sup> via Zoom to provide input into the plan update. The Town Administrative Assistant and the Emergency Management Director (EMD) led the effort for the town, advertising for the meetings and inviting town officials, local business owners and members of the public. Advertisements were on the town website, the town Facebook page, and at the three designated physical posting locations. Each meeting lasted for a couple of hours and over the course of both meetings the group completed and discussed:

- **Update of the 2014 Readsboro Local Hazard Mitigation Plan**
  - Purpose
  - Process
  
- **Hazard assessment included:**
  - Discussion of hazard events that have occurred since the last Plan
  - Virtual hazard assessment survey using Google Forms
  - Discussion of meeting participant survey results
  - Discussion of online public survey results
  
- **Brief review of existing/expired Readsboro Local Hazard Mitigation Plan**
  - Decision on what hazards the updated Plan will address
  - Marking up of the online Vermont Natural Resources Atlas with local hazard notes
  
- **Mitigation Goals and Actions**
  - Review/edit 2014 Mitigation Goals
  - Brief review of the 2014 Mitigation Actions Table that the EMD/Town updated
  - Creation of an updated Mitigation Actions Table for the updated Plan
  - Identify current gaps and capabilities with implementation

- Identify any changes in hazard or action prioritization
- **Other Updates**
  - Discussion of recent mitigation work completed by the town
  - Discussion of development trends – new developments, upcoming developments
  - Overall resiliency concerns or ideas
  - Review of other elements and address questions that weren't discussed

The following people contributed to this Plan and constituted the hazard mitigation planning Committee:

- Joseph Berard - Selectboard Chair
- Karen Boisvert - Readsboro Administrative Assistant
- Raymond Eilers – Selectboard Member
- Jeremy Green - Readsboro Public Works Department rep.
- Bartholomew Howes – Readsboro Planning Commission Chair
- Andrew Massari - Readsboro Emergency Management Director, Readsboro Fire Department
- Omar Smith - Selectboard Member

WRC, through the work of Alyssa Sabetto, developed this Plan update to meet the current standards and guidelines of the latest FEMA *Local Mitigation Plan Review Tool*. Information from public meetings and follow-up information gathered in conversations with: Omar Smith, Bart Howes, Andrew Massari, Raymond Eilers and Karen Boisvert, was used to update the Plan. Local knowledge and the best available data on hazards and environmental characteristics was utilized. Plans, studies, reports and technical information referenced in this plan is listed and cited throughout, including at the end of each hazard profile.

The draft was presented for internal town review by the Committee and other town personnel and appointees on May 10, 2023. This internal town review period was from May 11-25. No comments were received. Alyssa then finalized the draft for public comment which took place June 22, 2023 through July 10, 2023.

### **Input from Frontline Organizations, Neighboring Communities and the Public**

Public comment was done by posting an electronic copy on the town website<sup>4</sup> and having hard copies available at the Town Office and the Readsboro Community Library. Flyers were posted at the three official posting locations around town advertising its availability for review and comment, and the comment period was noted at a Readsboro Selectboard meeting.

To satisfy FEMA outreach requirements related to community lifelines, the town developed a list of representatives of businesses, schools, private organizations, non-profit organizations and community-based organizations that act as frontline organizations working to sustain community lifelines or provide support to vulnerable populations. A reasonable attempt was made via email to engage these organizations with review of the draft Plan. FEMA requirements changed during the Plan development process so specific outreach to these organizations was not done prior in the update process. Direct outreach occurred via email for key organizations to offer comment on the draft.

---

<sup>4</sup> See appendix for posting.

### Organizations located within Readsboro

- Readsboro Elementary School – K-5 Elementary
- Readsboro Fire Department – Volunteer organization servicing Readsboro.
- Readsboro Community Library – Provides access to educational items and activities and serves as a gathering place for the community.
- Readsboro General Store – local grocery store and public gathering space
- Readsboro Apartments – provides housing for low-income seniors
- Great River Hydro – dam owner of upstream dams

### Organizations outside of Readsboro, providing services in Readsboro residents

- Green Mountain Power – Electric Utility. Consulted via email on loss of power statistics and other resiliency projects planned for Newfane.
- Twin Valley Middle/High School – Sending middle and high school
- Southwestern Vermont Medical Center & Berkshire Medical Center North Adams – Primary hospitals used by Newfane residents.
- Council on Aging for Southwestern, VT
- MOOver – Provides bus, van, taxi and volunteer rides for residents needing transport.
- Bennington Coalition for the Homeless – Servicing people who are facing a full continuum of housing and food insecurities.
- VNA and Hospice of Southwestern VT – Provides programs to homebound patients as well as dying and grieving community members.
- Southwestern Vermont Community Action (BROC) – Anti-poverty, community-based non-profit.
- Project Against Violent Encounters (PAVE) – Works to end physical, sexual and emotional violence against women.

No comments were received from the public during the two-week comment period. It was simultaneously distributed to the adjacent towns of: Whitingham, Wilmington, Searsburg, Woodford, and Stamford, VT, the Bennington County Regional Commission, and North Adams, MA for comment via email.<sup>5</sup> No comments were received back. The draft was then finalized for submittal to Vermont Emergency Management (VEM). This submittal, which occurred July 20, 2023 allows VEM to make suggested revisions and compliance comments on behalf of FEMA.

Making the Readsboro Hazard Mitigation Plan available for public comment included the following efforts:

- All of the meetings discussed in the above sections were advertised and open to the public.<sup>6</sup>
- Public survey about hazard concerns and mitigation action ideas was on Facebook for a couple of weeks to gather public input in advance of public meeting.
- The Hazard Mitigation Planning participants convened on March 10<sup>th</sup> and 24<sup>th</sup> of 2021 for two virtual public meetings to provide input into the plan update.
- Alyssa had follow-up calls with the Selectboard Chair, a Selectboard member, the Planning Commission Chair, the Emergency Management Director and the Administrative Assistant to gather details for the Plan.

---

<sup>5</sup> See appendix for email.

<sup>6</sup> See appendix for meeting flyer.

- A draft of the Plan was posted from June 22-July 10, 2023 on the town website for public comment.<sup>7</sup>
- Physical copies of the draft Plan were available for review in-person at the Town Office and the Community Library.
- Flyers were put up around town for public comment on the draft.<sup>8</sup>
- On June 22, 2023, an invitation was extended via email to neighboring towns and to community lifeline providers to provide a means and opportunity to review and comment on the draft Readsboro Local Hazard Mitigation Plan.<sup>9</sup> No comments were received. Inter-town and provider communication will repeat for future revisions of this Plan.

## Data Sources

Information was gathered for the updated Readsboro Local Hazard Mitigation Plan through a variety of sources listed below. This information was incorporated into the text throughout and used to update data points, charts and graphs. A summary of reviewed data sources is provided below and additional specific references are cited throughout this Plan.

- Local knowledge of the participating Newfane Planning Team and other relevant parties – community impacts, priorities, trends, and overall plan guidance
- Information from the 2014 Readsboro Local Hazard Mitigation Plan – past mitigation actions
- Floodready Vermont Community reports – NFIP participation data
- 2015 Readsboro Town Plan – community profile information
- 2016-2021 Green Mountain Power Outage Data
- 2018 State of Vermont Hazard Mitigation Plan – hazard profile information and extent data
- National Oceanic and Atmospheric (NOAA) National Climatic Data Center’s Storm Events Database – event information for hazard profiles
- FEMA Disaster Declarations for Vermont
- VT ANR Atlas – location of ANR defined River Corridor and FEMA Special Flood Hazard Area
- FEMA Flood Insurance Rate Maps (effective 12/2/2015) - location of Special Flood Hazard Area
- U.S. Geological Survey National Water Information System- Stream Gage Data
- WRC Local Liaison Reports of Storm Damage - impacts

---

<sup>7</sup> See appendix for posting.

<sup>8</sup> See appendix for flyer.

<sup>9</sup> See appendix for emails.

## Changes Since the 2014 Plan

As described in the Town Profile section of this Plan, the Town experienced a slight population decline between 2000 and 2020, and very little new development. There was no change to overall vulnerability of the Town.

Readsboro has made progress in completing the mitigation projects identified in the 2014 Plan and that is discussed in the Implementation section of this Plan. The town has carried over a few mitigation actions from the 2014 that were incomplete and still relevant. They have also identified new priorities based on events, such as significant flooding events and longer power outages that were experienced during the time between the last plan and this updated plan.

## RISK ASSESSMENT

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

### Methodology

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

The following table is the scale used to rank each hazard for frequency:

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

**Potential impact was considered and scored separately for impacts to infrastructure, life, economy and the environment.** This was done by vote ranking. Additionally, seasonal patterns that may exist are considered, what areas are likely to be affected most, the probable duration of the hazard, the speed of onset (amount of warning time, considered with existing warning systems).

**The combination of the frequency scores for each hazard and the impact ranking for each hazard related to infrastructure, life, economy and the environment, were together used to determine the overall hazard ranking score for each hazard.** A Google Form survey was completed between the two public meetings and the survey results are included below and in the appendix of this plan. These results were analyzed in real time with the Committee at the

second public meeting. Results were used to determine which hazards this Plan would profile. The Committee used the survey results to inform their discussion, however, local knowledge and the will to act did impact their profile choices.

## Results

While all hazards were considered by the Committee for inclusion in this plan, it is not feasible to study each in depth. For hazards that are not profiled in this plan, the reader is directed to the *Vermont State Hazard Mitigation Plan*. The rationale for not addressing all of the hazards is that Readsboro has a low level of risk associated with them. This plan will profile: High Winds, Extreme Cold, Ice and Snow Events, Pandemic, and Flooding/Fluvial Erosion. Fluvial erosion will be discussed in the flooding section, though the hazard assessment did not rank this hazard very high. Flooding is the most impactful hazard on a statewide level, so it is included and much of the damage to higher elevation towns is related to fluvial erosion from flooding. High winds should be considered to encompass hurricanes and tornados. The below tables show the results of the hazard frequency assessment where hazards were rated using the ranking criteria noted above and the scores were tallied:

<b>Frequency of Hazard Occurrence: Ranking by scores</b>	
<b>Frequency of Occurrence</b>	<b>Totals</b>
Damaging High Winds	25
Significant Snow Event	24
Below Normal Cold	24
Significant Ice Storm	21
Infectious Disease Outbreak / Pandemic	19
Significant Hail Event	16
Fluvial Erosion	14
Wildfire	14
Invasive Plant or Insect Species	14
Inundation Flooding	13
Above Normal High Heat	13
Landslide	12
Drought	11
Earthquake	7

The above frequency assessment result table highlights the chosen profiled hazards. As shown, the Town has not chosen to address all of the highest-ranking hazards; this is particular to 'below normal cold'. Below normal cold was considered for profiling but the Committee felt that because this is an endemic hazard that Readsboro is very accustomed to they did not wish to pursue mitigation actions beyond their existing warming shelter locations at this time. The frequency of very cold temperatures is a reality of a mountain town in Vermont. The Town relies on snow "hazards" as an economic driver connected with ski and snowmobile tourism, though excessive events are a hindrance at times. It is worth noting for the reader that "infectious disease/pandemic" scored fairly high on the frequency ranking which is likely due to the fact that the survey was taken in the midst of the Covid-19 pandemic. Hail, heat, wildfire and invasive plant or insect species scored somewhat high on the frequency ranking, indicating that these hazards may be rising in frequency and in future plan updates they may need to be addressed.

At this point, however, these hazards are seen by the Committee as rare enough that mitigation is not justified at the Town level.

The table below shows the results of the same hazards when surveyed separately from frequency and just in relation to their impacts to infrastructure, life, the economy and the natural environment. Respondents were asked to rank the top hazards of concern per topic and those rankings were tallied for the result. The chosen hazards are again highlighted in orange so that one can see clearly where they lie in the rankings. In this separate ranking, the chosen hazards are the top-ranking hazards for impact, with the exception of flooding and fluvial erosion. The rankings below show that high winds, ice storms and significant snow events are by far considered the most impactful natural hazards in Readsboro. Of interest is that inundation flooding scores higher in the rankings on impact than it did for frequency, and fluvial erosion scores much lower on the impact rankings than it did for frequency. My sense is that the difference between inundation flooding and fluvial erosion is not widely understood, and the more common feeling is that ‘flooding’ generally is seen as the issue, which in Vermont includes both fluvial erosion and inundation damage.

On the below table, I’ve highlighted in blue what are considered to be outlying impact scores. For infectious disease/pandemic, it scores surprisingly low in these rankings, considering the impacts of Covid-19. In the 2014 Readsboro LHMP, pandemic was not included in the hazard assessment, so a direct comparison cannot be made. However, in larger society, the awareness of humanity’s vulnerability to pandemic has been heightened due to the experience of Covid-19. Through this experience we see not only our physical vulnerability, but the vulnerability of everything in our society to the impacts of mass shutdowns required by pandemics. This realization will likely last generations, but like most hazard events, as the memory of the experience fades the preparation level for the next event will diminish if certain preparatory protocols are not kept in place. On a separate note, but again highlighted in blue in the below table are the rankings for wildfire, invasive plants and insects, high heat, and drought. These hazards scored low on the impact rankings, but they are hazards of rising concern in Vermont. The population generally is not yet feeling major impacts of these hazards frequently enough to be concerned about them. Wildfires don’t occur; there are sometimes brush fires but no town assets are vulnerable. Any desire of emergency personnel to bring more public awareness and attention to these hazards may require public education around risk. The town should consider mitigating for these growing hazards at the next plan update. For the remaining hazards, the risk is considered low.

Hazard	Impact of Hazard Occurrence to:				Ranked
	Infrastructure	Life	Economy	Environment	Totals
Damaging High Winds	7	7	6	7	27
Significant Ice Storm	6	6	6	7	25
Significant Snow Event	6	6	6	7	25
Below Normal Cold	2	3	3	2	10
Inundation Flooding	3	2	2	2	9
Wildfire	1	1	1	1	4
Infectious Disease Outbreak / Pandemic	0	1	2	0	3
Fluvial Erosion	2	0	0	0	2

Hazard	Impact of Hazard Occurrence to:				Ranked
	Infrastructure	Life	Economy	Environment	Totals
Invasive Plant or Insect Species	0	1	1	0	2
Above Normal High Heat	0	0	0	0	0
Drought	0	0	0	0	0
Landslide	0	0	0	0	0
Significant Hail Event	0	0	0	0	0
Earthquake	0	0	0	0	0

The below table combines the scores to provide an overall vulnerability ranking. Readsboro has chosen to profile and mitigate for their top four ranked hazards, as well as flooding/fluvial erosion.

Overall Vulnerability Ranking by Hazard	
Frequency of Occurrence	Totals
Damaging High Winds	52
Significant Snow Event	49
Significant Ice Storm	46
Below Normal Cold	34
Inundation Flooding	22
Infectious Disease Outbreak / Pandemic	22
Wildfire	18
Fluvial Erosion (addressed with flooding)	16
Significant Hail Event	16
Invasive Plant or Insect Species	16
Above Normal High Heat	13
Landslide	12
Drought	11
Earthquake	7

The natural hazards addressed in the 2014 Readsboro LHMP were Flooding/Fluvial Erosion, High Winds, Extreme Cold, Snow and Ice events, and, which remain the highest hazards of concern for this update, with the inclusion of extreme cold.

## Identifying and Profiling Hazards

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

### **Flooding and Fluvial Erosion**

#### *Flooding Description*

Flooding is the most widespread and destructive hazard in the United States. Flooding has also been the most common and costly hazard to affect Readsboro. Flooding can occur anytime of the year as a result of heavy rains, thunderstorms, tropical storms, hurricanes or Nor'easters. It can result from the overflow of major rivers and their smaller tributaries, or inadequate local drainage. Historically, floods have been a factor in over 80 percent of all federally declared disasters. People living in close proximity to bodies of water such as rivers, lakes, and streams are at greater risk from flooding than those not living in the floodplain. There is a 26 percent chance of experiencing a flood during the life of a 30-year mortgage compared to a 4 percent chance of a fire. Readsboro has an NFIP compliant floodplain ordinance, which gives residents access to discount flood insurance and enables the Town to regulate development within the Special Flood Hazard Area (SFHA). SFHAs are subject to inundation by the 1% annual chance flood (100-year flood). Maps of these areas can be found at the Town Office or online at the FEMA Map Service Center.<sup>10</sup>

#### *Fluvial Erosion Description*

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

Gravity and water power are the forces driving fluvial erosion. Factors that allow the force of gravity to overcome the resistance of earth material to erosion include: saturation by water, steepening of slopes by erosion or construction, alternate freezing or thawing, removal of trees and other vegetation and earthquake shaking. Major erosion events are typically associated with periods of heavy rainfall or rapid snow melt and tend to worsen the effects of flooding that often accompany these events. Associated issues in Readsboro are related to road cutting and bank erosion for the most part, areas where roads have been built between steep slopes on one side of the road, and slopes to a river or brook on the opposite side. Existing homes are dotted on the landscape along these roads which have existed for 200 years or more, so cannot be easily closed or relocated.

---

<sup>10</sup> <https://msc.fema.gov/portal>

The historic road network of many Vermont towns and villages typically follows waterways. This historic settlement pattern creates vulnerability for the road network, infrastructure and development within and along what are called River Corridors. River Corridor mapping was released by the Vermont Agency of Natural Resources in early December 2014; small stream mapping was released in January 2016. This mapping delineates fluvial erosion hazard areas and includes a 50-foot buffer beyond those designated areas. For small streams, a 50-foot buffer from top-of-bank on either side of the waterway constitutes the River Corridor. This mapping can assist municipalities in developing bylaws and effective mitigation strategies to regulate development within fluvial erosion hazard zones. Readsboro does not currently have a fluvial erosion bylaw.



Though not taken in Readsboro, this photo shows the real connection of river and road during TS Irene, as the river reclaims its floodplain, edging in on the road. Photo courtesy of [wilmingtonvtfloodrelief.com](http://wilmingtonvtfloodrelief.com).

Bends in the river are prone to movement as part of natural river processes, and their movements can be even more dramatic when manmade impacts and development upstream impinges on these natural stabilizing forces. The interaction of the natural and unnaturally dramatic forces of river movement, combined with the stationary location of the closely located roads is what leads to road damages during heavy weather events. Property owners outside of the FEMA floodplain can purchase flood insurance at a lesser expense, and it still covers damages resulting from fluvial erosion in events that damage multiple properties.

### *Impact of Flooding and Fluvial Erosion*

The Town of Readsboro is settled on steep slopes with intense run-off during rain events and snow melt that drains toward roads and the Deerfield River. Two branches of the Deerfield River merge in the village area. Some of the highest hazard areas associated with flash floods are Route 100 along the West Branch of the Deerfield River and residences along the South Branch of the Deerfield River. The South Branch of the Deerfield River rises on the east side of the Hoosac Range of mountains and flows rapidly for its entire length of 5.5 miles. Other important brooks include Lamb Brook and Howe Pond Brook. Howe

The dams that are upstream of Readsboro had a big impact on the two largest events, 1938 and Irene in 2011, and their existence did help mitigate flooding in Readsboro and downstream. – Omar Smith, Readsboro Selectboard and retired Great River Hydro staff



Fluvial erosion damage has caused a slump and damage to pavement on Bosley Hill Road in Readsboro. Photo courtesy of Omar Smith.

Pond is an important surface water resource in Readsboro. This 52-acre pond is the source of municipal drinking water.

While Readsboro on a map seems very vulnerable to flooding, the feeling of residents doesn't reflect that. With the upstream Harriman Dam close by in Whitingham, the Deerfield River is so controlled by the Dam that flooding is not considered a high hazard because of that control. The higher impact felt locally is roads near smaller tributary brooks and streams washing out roads and causing damage through fluvial erosion. The washouts are more on the rural dirt roads, not so much on the Deerfield or its West or South branches. Large scale flooding of the Deerfield River main branch is only deemed a risk in the event of a dam failure, and there are three upstream dams. Dam failure is addressed farther on in this Plan. There has been a lot of upsizing of culverts in recent years, but areas of concern remain. Beaver Brook and Howe Pond Brook could pose problems during flooding events. Potter Road, Howe Pond Road and Bosley Hill Road all experience regular fluvial erosion. Howe Pond Road culvert washout would cut off everything to the east, the rest of Howe Pond Road and Daubneys Drive.

A waterway that is constrained is unable to reach geomorphic equilibrium which increases flooding in that area and puts increased pressure and larger flood loads on upstream and downstream sections, as well as causing more flooding damage. A river is in geomorphic equilibrium when its water, energy, sediment, and debris are in balance. In this condition a river is neither building up sediment in the channel nor losing sediment from its bed. Importantly, a river in equilibrium has not become overly deep and can continue to overflow onto its floodplains. The water that spills onto the floodplain slows down, and the velocity of the water still in the channel does not become excessively powerful. Mitigation actions are intended to assist with achieving greater equilibrium which will also lessen or even eliminate flooding levels and damages to buildings and infrastructure. Historic development patterns limit or complicate mitigation in some areas.

Flash floods typically occur in high elevation drainage areas as a result of summer thunderstorm activity. Drainage ditches and culverts are the biggest concern for local flash flooding events.

Other areas of concern during flooding events are homes located along small brooks throughout town that are subject to rise during quick flash flooding events.

Ice jam flooding is not typical in Readsboro. There are no mapped ice jams in Readsboro. The Town does work with the dam owner Great River Hydro when flood events are warned to lower the Harriman Reservoir level to accommodate flood waters and protect the downtown from flooding. Great River Hydro also lowers the lake level every October before winter sets in in an effort to abate ice jams. The Town says that communication is effective with the dam owner.



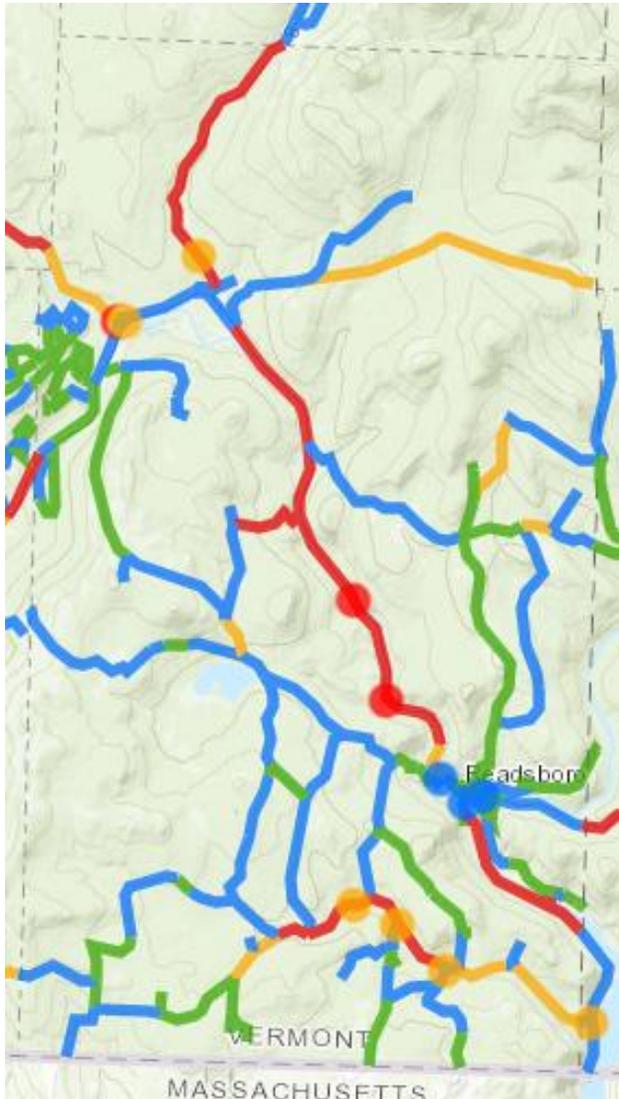
### **VTrans Highway Flood Vulnerability and Risk Mapping**

As part of the scope of work for the Transportation Resilience Planning Tool, the Vermont Department of Transportation has developed metrics to quantify the flood vulnerability and risk of bridges, culverts, and road embankments throughout the state.<sup>11</sup> Vulnerability assessments were completed for the following infrastructure:

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

Fluvial erosion has caused a slump and damage to pavement on Bosley Hill Road in Readsboro. Photo courtesy of Omar Smith.

<sup>11</sup> VTrans Statewide Highway Flood Vulnerability and Risk Website: <https://vtrans.vermont.gov/planning/transportation-resilience/statewide>



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

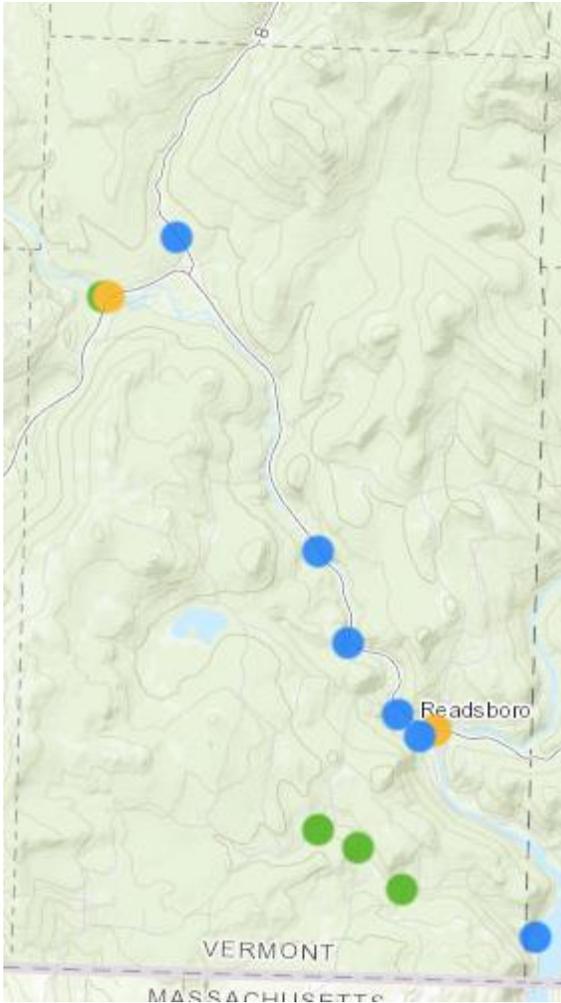
The vulnerability map shown here provides an analysis of the probability of inundation, erosion, or deposition and the potential severity of the damage to infrastructure or structure. The map identifies sections of Route 8, Route 100, Tunnel Street and West Hill Drive as being highly vulnerable road segments. The following structures are identified as highly vulnerable: (1) bridge on Williams Road near Camp Casino Road; (2 and 3) 2 bridges on Route 100 north of the village (see red dots on the map to the left).

**Flood Vulnerability - Structures**

- High
- Moderate
- Low
- Not Vulnerable

**Flood Vulnerability - Road Segments**

- High
- Moderate
- Low
- Not Vulnerable



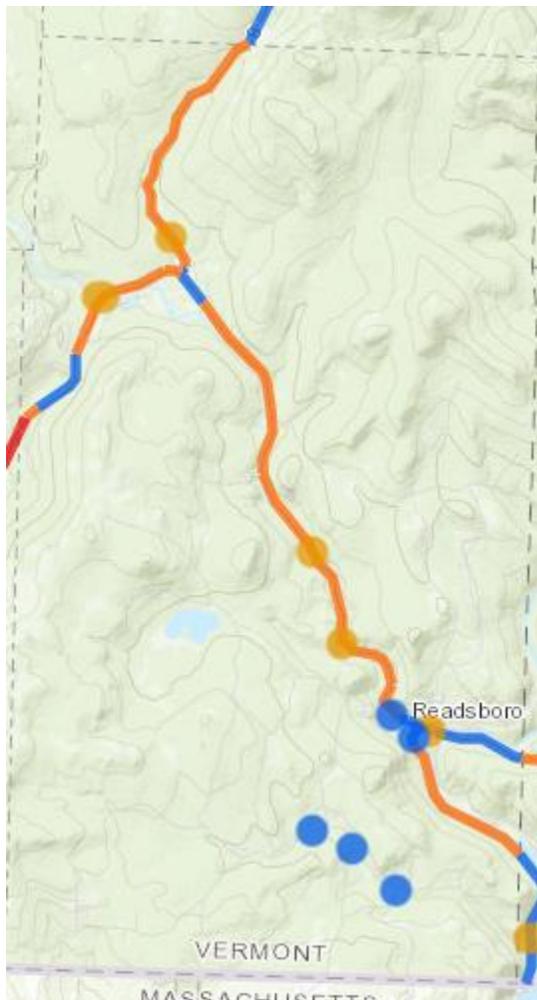
**Criticality - Structures**

- High
- Moderate
- Low
- Not Vulnerable

**Criticality - Road Segments**

- High
- Moderate
- Low
- Not Vulnerable

The transportation criticality map shown here to the left provides an analysis of the importance of a road segment in the network related to general travel and emergency services accessibility. No road segments are deemed highly critical within Readsboro, but several structures rank either low, moderate or not vulnerable.



The flood risk map shown here provides an analysis based on the average of generalized vulnerability and criticality. On an overall level, no road segments or structures in Readsboro are rated high risk for flood. Some of the main roads in town, however, including Route 8, segments of Route 100, and Tunnel Street rank as moderately at risk for flood damage, and 5 structures are also ranked as moderate, as shown on the map.

#### Flood Risk - Structures

- High
- Moderate
- Low
- No Risk

#### Flood Risk - Road Segments

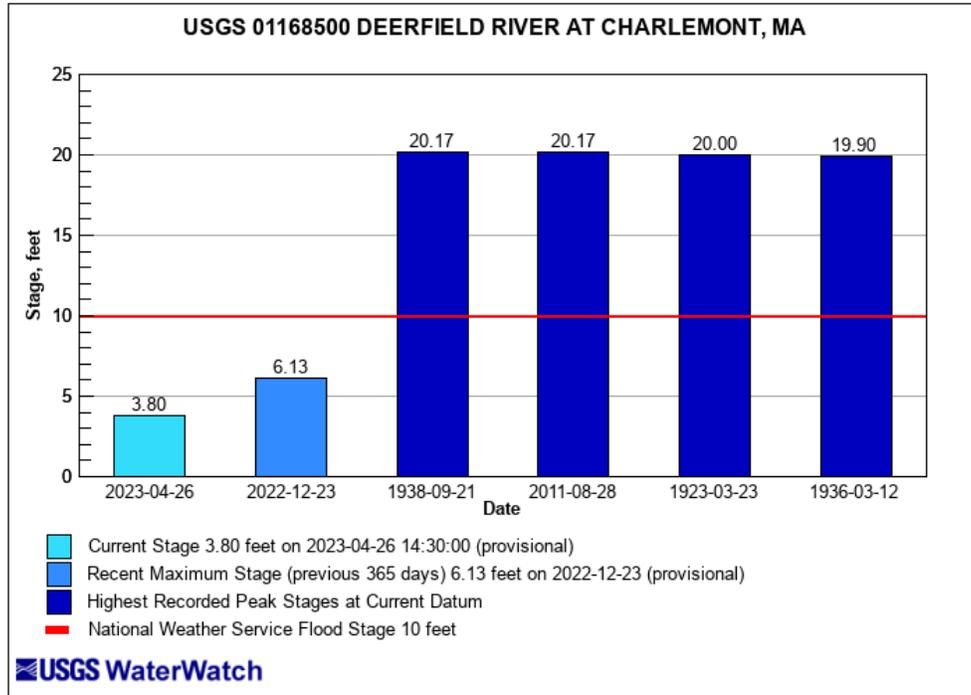
- High
- Moderate
- Low
- No Risk

### Extent for Flooding

The extent of a flood event can vary from a minor event due to a typical rain event or could be a major event as a result of rapid snow melt in spring, rain on frozen ground, or as a result of a tropical depression or storm. The extent of flooding is such that brooks may breach their banks and flow onto land and down roads.

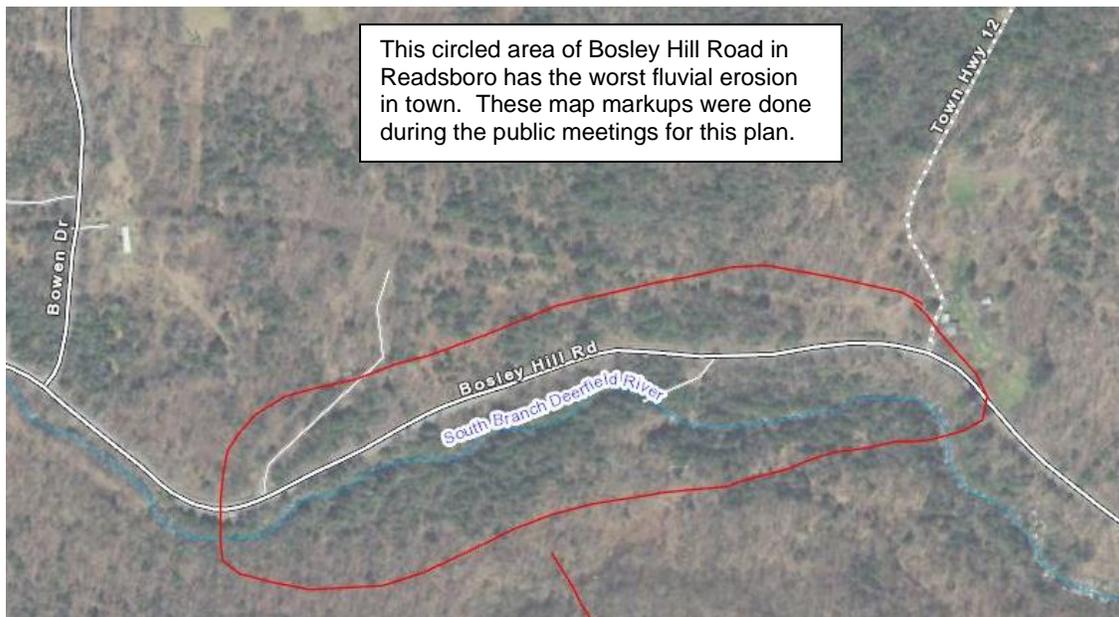
The highest recorded measurement on the Deerfield River at the nearest stream gauge to Readsboro (at Charlemont, MA) was 20.17 feet, which was measured on both September 21, 1938 and August 28, 2011 during TS Irene. According to the National Weather Service flood stage at that gauge is 10 feet.<sup>12</sup>

<sup>12</sup> USGS Stream gauge 01168500 Deerfield River at Charlemont, MA (108 years of record)  
[https://waterwatch.usgs.gov/index.php?id=wwchart\\_ftc&site\\_no=01168500](https://waterwatch.usgs.gov/index.php?id=wwchart_ftc&site_no=01168500).



Extent for Fluvial Erosion

Bosley Hill Road along the edge of the South Branch of the Deerfield is a continual concern for fluvial erosion as the bank supporting the road is collapsing and taking the road with it. This area of concern includes about 7.3 acres. The images here show this issue. Instances of fluvial erosion in Readsboro are primarily recurring and gradual events.



Probability of Flooding and Fluvial Erosion

Flooding is highly likely, as determined by the number of past events and the local knowledge of the Hazard Mitigation Planning Committee. There are events every year, especially during spring snow melt and late summer season rains. Flash flooding is a locally probable event, with flash floods typically occurring in summer months. Higher-elevation drainage areas and

streams are particularly susceptible to flash floods, which plan participants noted are more common. Floods are becoming more frequent and storms are getting stronger with climate change. This is leading to more frequent flood events that cause damages in the region.

Fluvial erosion is highly likely and exists in Readsboro, especially due to the damage caused by TS Irene in 2011, where fluvial erosion hazard flooding de-stabilized many steep-sloped areas and washed-out riparian zones next to roads and streams. Fluvial erosion is directly associated with flooding and large-scale rain events and spring snow melt. With areas of high elevation drainage, Readsboro is subject to flash flood events that erode stream banks and adjacent areas. There are events every year, especially during spring snow melt and late summer season rains.

Past Occurrences

There have been 18 Presidential Disaster Declarations in Bennington County since 1953, with 6 of those occurring since the last Plan update. Of these, 7 were severe storms, 5 were floods, 3 hurricanes, 1 snow event, 1 severe ice storm, and 2 are biological events (both relate to Covid-19 pandemic).<sup>13</sup>

Disaster Declarations for Bennington County, VT				
Disaster Number	Incident Begin Date	Incident End Date	Incident Type	Title
4621	9/29/2021	9/29/2021	Flood	SEVERE STORM AND FLOODING
3567	8/22/2021	8/22/2021	Hurricane	TROPICAL STORM HENRI
4532	4/8/2020	4/8/2020	Biological	COVID-19 PANDEMIC
3437	3/13/2020	3/13/2020	Biological	COVID-19
4445	6/14/2019	6/14/2019	Flood	SEVERE STORMS AND FLOODING
4330	8/16/2017	8/16/2017	Severe Storm	SEVERE STORMS AND FLOODING
4022	9/1/2011	9/1/2011	Hurricane	TROPICAL STORM IRENE
3338	8/29/2011	8/29/2011	Hurricane	HURRICANE IRENE
1816	1/14/2009	1/14/2009	Severe Ice Storm	SEVERE WINTER STORM
1698	5/4/2007	5/4/2007	Severe Storm	SEVERE STORMS AND FLOODING
1488	9/12/2003	9/12/2003	Severe Storm	SEVERE STORMS AND FLOODING
3167	4/10/2001	4/10/2001	Snowstorm	SNOW
1358	1/18/2001	1/18/2001	Severe Storm	SEVERE STORMS AND FLOODING
1336	7/27/2000	7/27/2000	Severe Storm	SEVERE STORMS AND FLOODING
1307	11/10/1999	11/10/1999	Severe Storm	TROPICAL STORM FLOYD
1101	2/13/1996	2/13/1996	Flood	ICE JAMS AND FLOODING
518	8/5/1976	8/5/1976	Flood	SEVERE STORMS, HIGH WINDS & FLOODING
397	7/6/1973	7/6/1973	Flood	SEVERE STORMS, FLOODING, & LANDSLIDES

<sup>13</sup> FEMA tool: Data Visualization: Disaster Declarations for States and Counties: Bennington County, VT <http://www.fema.gov/data-visualization-disaster-declarations-states-and-counties> Accessed 5/1/2023

Detail on specific flooding events that have caused monetary damage in Bennington County is included in the appendix of this plan.

#### Sources used

Local knowledge of areas of concern and impacts, information in 2014 Readsboro LHMP, National Oceanic and Atmospheric Climatic Database, Communications with Vermont Emergency Management, Discussions and emails with Readsboro Emergency Management Director and Administrative Assistant in May 2023, additional sources are directly cited.

#### Geographic Area of Hazard/Location/Occurrence of Fluvial Erosion and Flooding/Special Flood Hazard Area and River Corridor Mapping

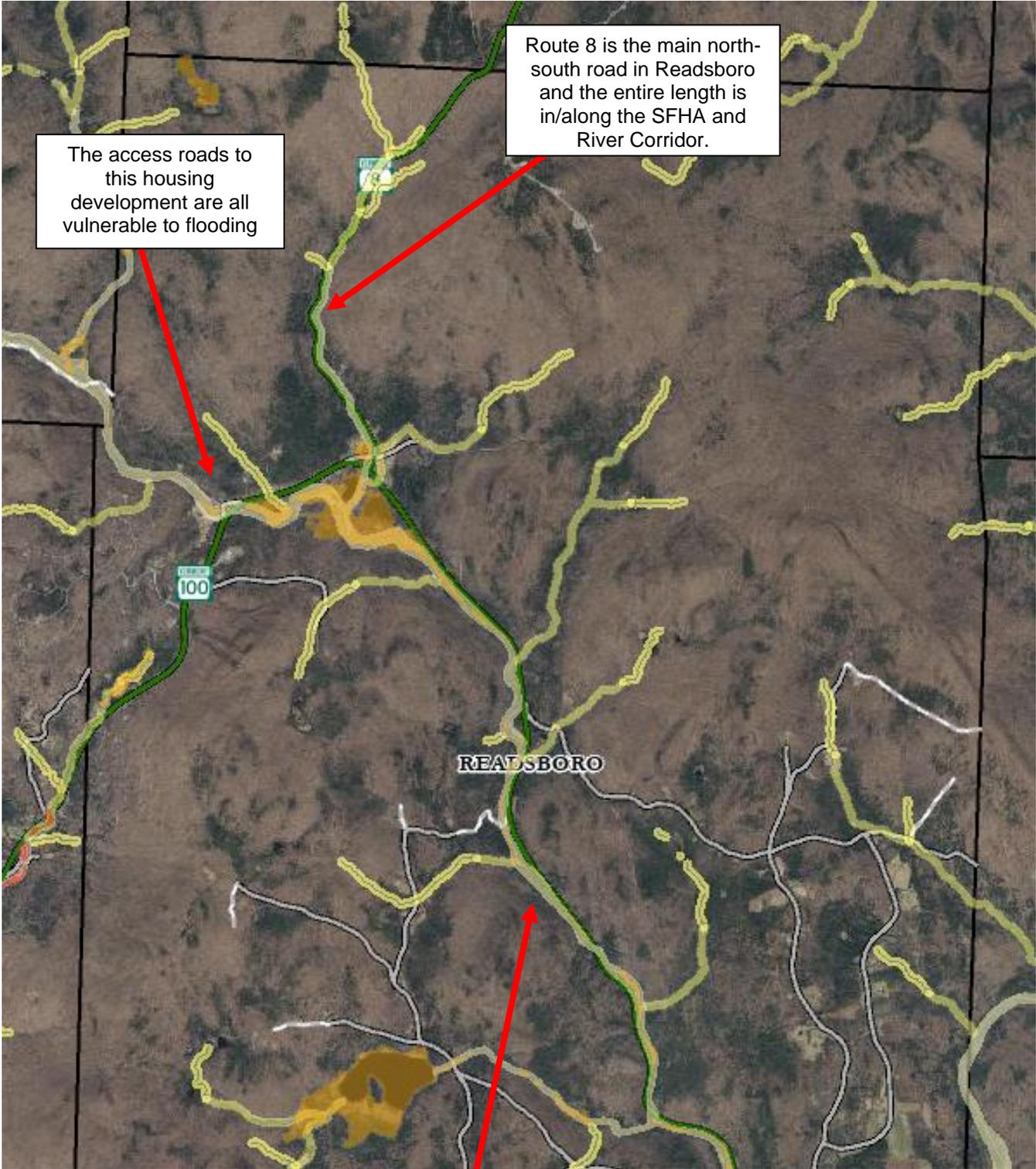
The river Corridor mapping (included in this plan) shows the ANR defined River Corridors, which are likely to have fluvial erosion. The map also points out some of the issues discussed in the text of particular problem spots. Mitigation projects on private land require the consent of the land owner to complete.

FEMA has mapped “A” zones in Readsboro. “A” zones do not have Base Flood Elevations determined. FEMA does not map fluvial erosion. The maps on the following pages were created using the Vermont Agency of Natural Resources ‘Natural Resources Atlas. The legend pertains to the accompanying maps. FEMA SFHA is shown in red. The floodplains shown in these maps are based on the FEMA Flood Insurance Rate Maps (FIRMs) available through the FEMA Map Service Center.<sup>14</sup> This map shows the River Corridors that Vermont Agency of Natural Resources (ANR) has mapped. The ANR defined River Corridor also includes a 50-foot setback requirement on all streams with a watershed between .5 and 2 square miles. Together the mapped area and the small stream buffers constitute the River Corridor. River Corridors encompass an area around the present channel where fluvial erosion, channel evolution and down-valley meander migration are most likely to occur.

The below map shows the Special Flood Hazard Areas (SFHAs) in orange (A zone) and the River Corridors in cream color. Within Readsboro, FEMA SFHA lies primarily only along the north branch of the Deerfield River north to the town line. River Corridor is along the north branch of the Deerfield River and scattered along many smaller streams throughout the Town.

---

<sup>14</sup> FEMA Map Service Center <https://msc.fema.gov/portal>

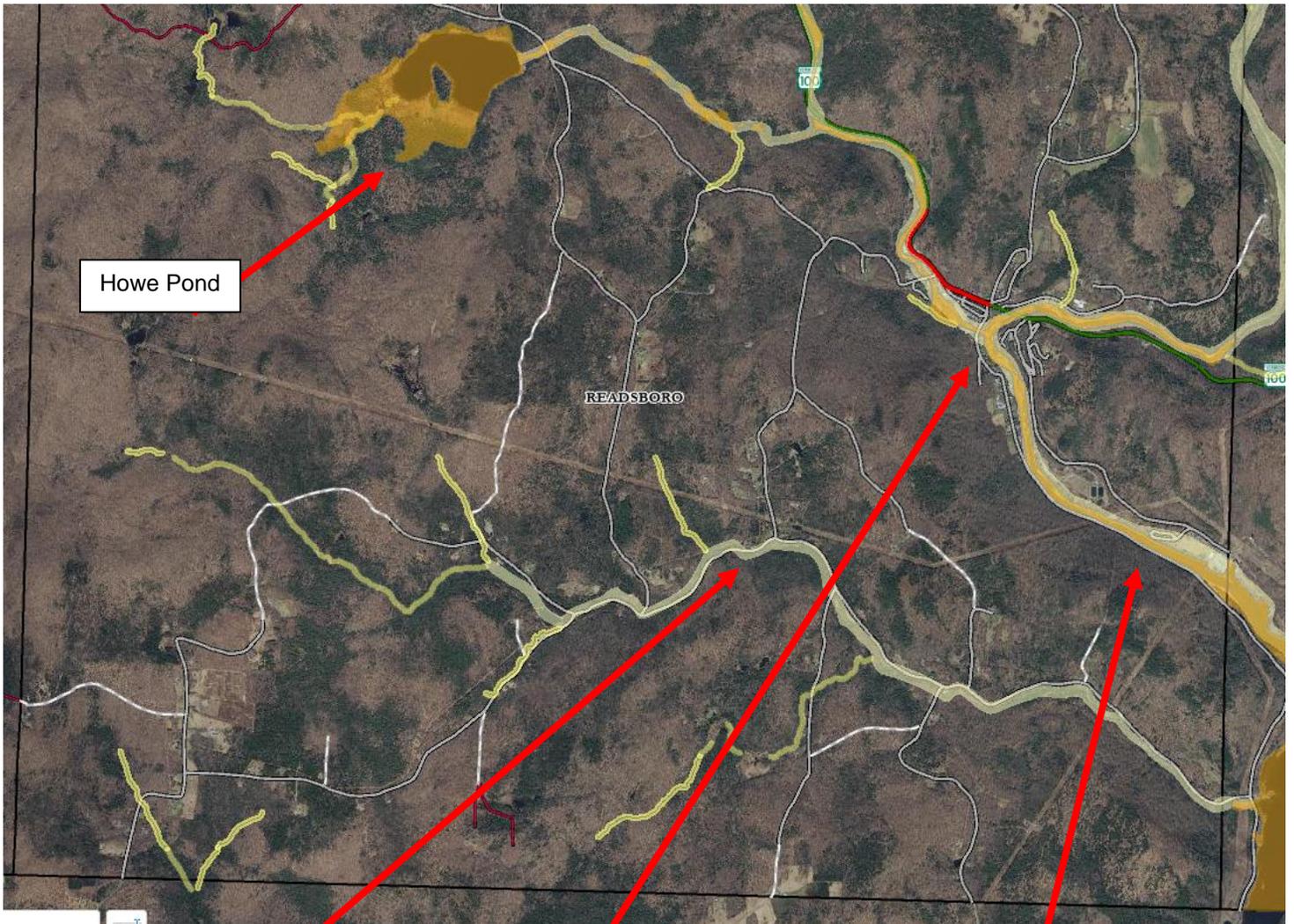


The access roads to this housing development are all vulnerable to flooding

Route 8 is the main north-south road in Readsboro and the entire length is in/along the SFHA and River Corridor.

Most of route 100 is in/along the SFHA and River Corridor meaning it is vulnerable to flooding and fluvial erosion

The below map shows the southern portion of Readsboro.



Howe Pond

Bosley Pond Road is entirely in the river corridor.

Readsboro Village is at the confluence where the West Branch of the Deerfield River enters the main stem of the Deerfield River and heads south to Massachusetts

Tunnel Street is entirely in/along the SFHA and River Corridor meaning it is vulnerable to flooding and fluvial erosion



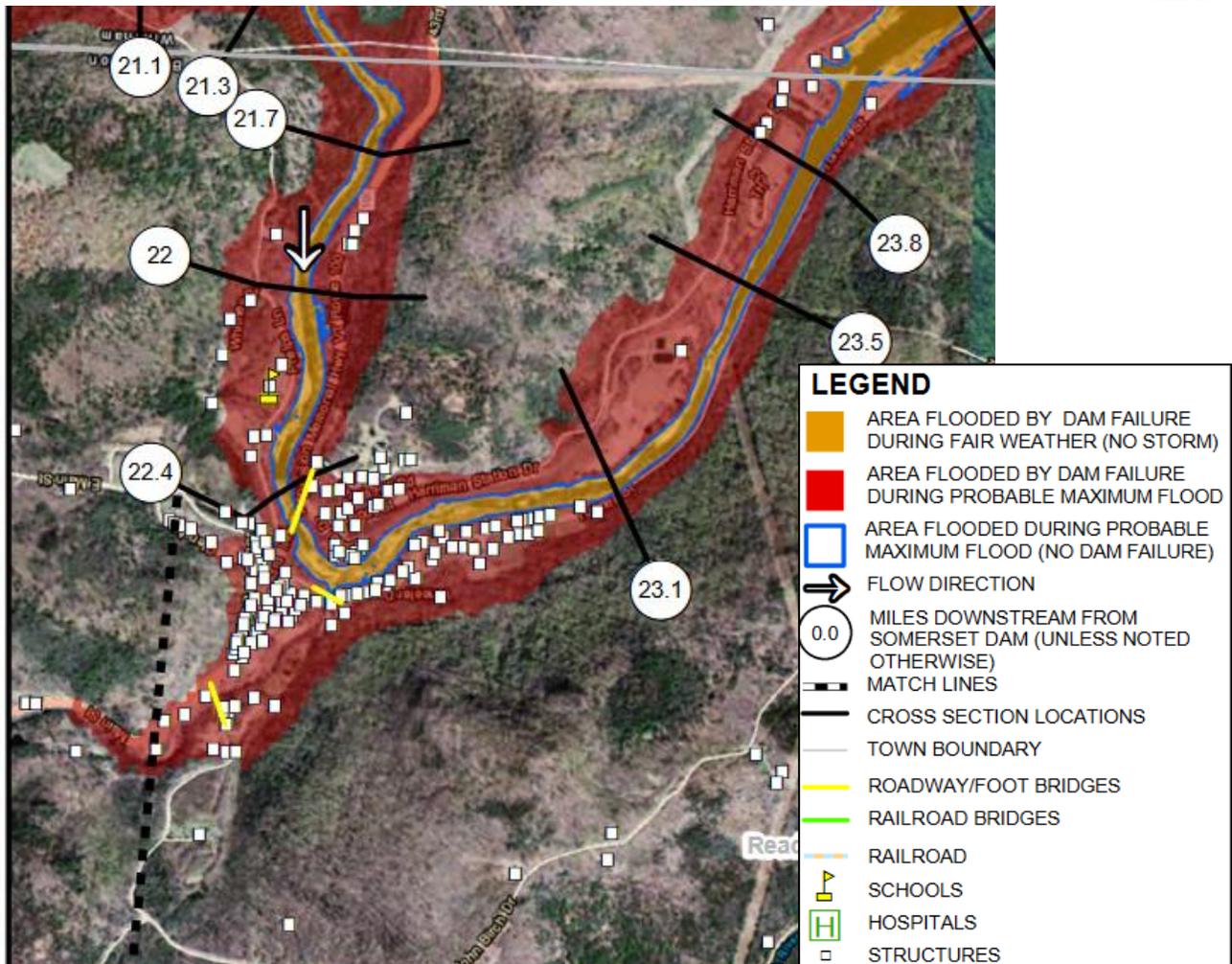
## Dam Failure

The Deerfield River has been developed extensively for hydropower. Under the current operating policy, water is diverted from the Harriman Dam in Whitingham to a Great River Hydro generating facility downstream in Whitingham, bypassing the Deerfield River in Readsboro. Readsboro Village is at risk in the event of failure of: Harriman Dam in Whitingham, Somerset Dam in Somerset, and the Searsburg Dam in Searsburg.

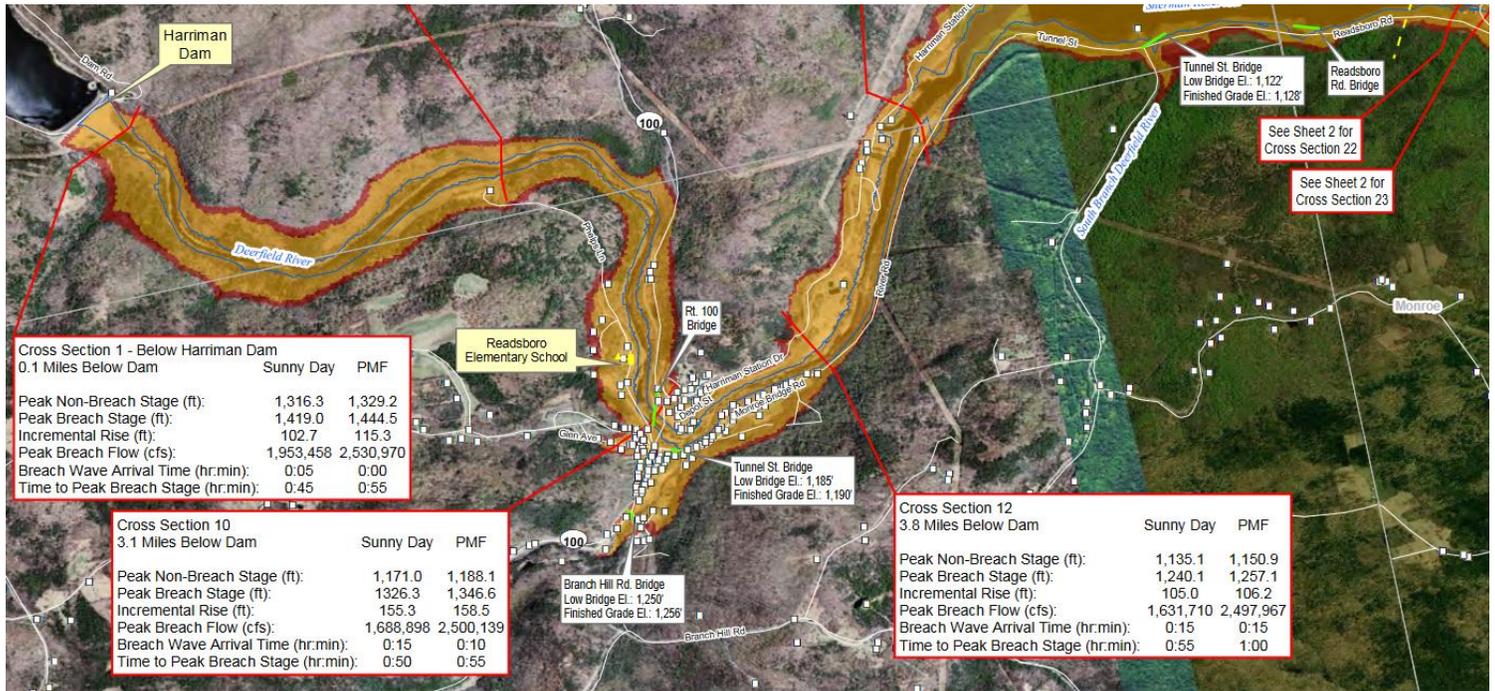
The below mapping is taken from the Great River Hydro Inundation mapping. The Searsburg Dam does not have mapping associated, so that is not shown here.

The Somerset Dam is farthest upstream from Readsboro. The mapping shows that it would take between 1 hour and 40 minutes to six hours and 15 minutes for waters to rise, depending on the scenario. Less flooding is associated with this Dam failure than with the failure of Harriman Dam, but are significant if the situation was a probable maximum flood (PMF).

HEC-RAS Cross Section 247294		
Distance Downstream of Somerset Dam (miles)	22.4	
	Wet	Fair
Leading Edge Arrival Time (hr:min)	1:40	1:50
Peak Flood Arrival Time (hr:min)	5:50	6:15
Maximum Water Level (ft)	1297.5	1180.4
Incremental Rise in Water Level (ft)	118.3	13.7
Maximum Flow (cfs)	3,258,500	32,700

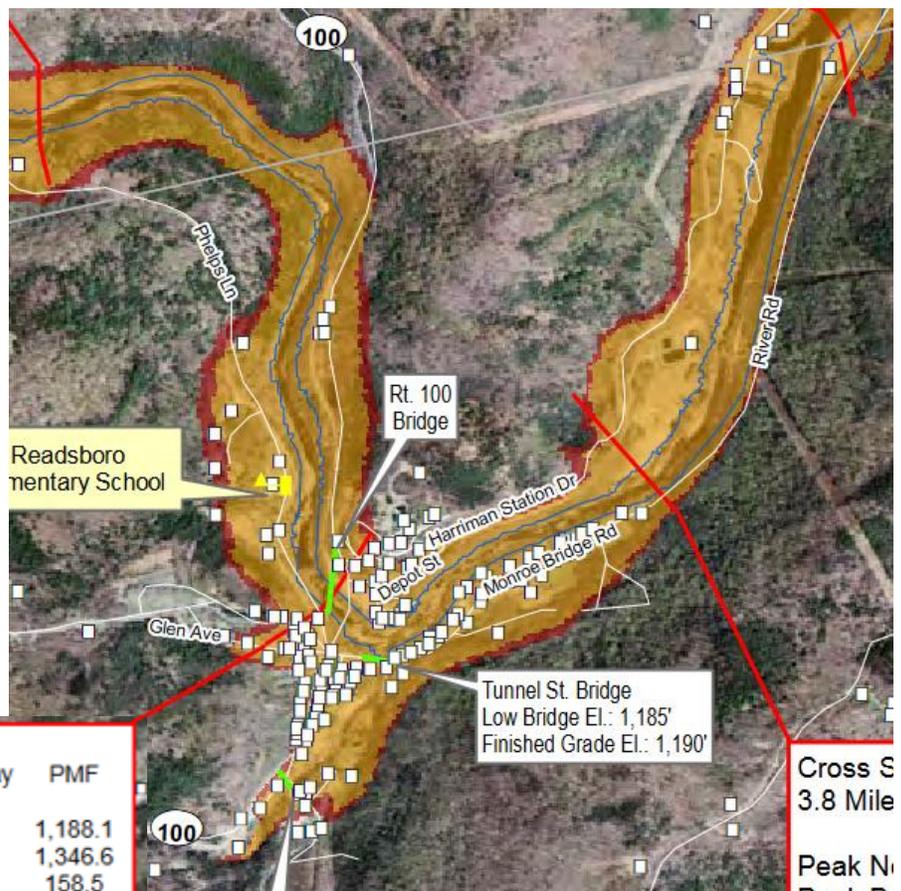


The failure of Harriman Dam would quickly overwhelm Readsboro village. Flooding would start within ten minutes and peak within an hour for the area shown to inundate. This is why communication is key with Great River Hydro, as well as public warning and evacuation prep.



Great River Hydro (GRH) has been working with the Town of Readsboro on notifications for dam emergencies and partnered with the Fire Department for a warning using their new siren. It has been tested a couple of times and it seems to work well. They sent postcard mailings to all box and rural routes within the town.

According to Matt Cole of GRH "GRH is pretty cozy with the Town of Readsboro and its EMD, Selectboard, and Fire Dept. as a result of this effort. GRH would like to do more evacuation planning for the school and the senior housing."



This is the verbiage included in a recent letter to residents before a siren test: *Great River Hydro, LLC has partnered with the Town of Readsboro Fire Department to provide Harriman Dam emergency notifications using the new fire siren there. Our goals are: (1) To Educate and create awareness to the community of messages/tones for a Harriman Dam emergency, (2) To Fulfill our Obligation under FERC to Promote public safety warnings/messages, and (3) To Cooperate with Local Emergency Management on evacuation plans/procedures.*

There is no practical evacuation plan for a dam failure scenario in Readsboro village. Further planning between the town and GRH is recommended and discussed in the mitigation actions of this Plan. Searsburg Dam is much smaller and if it failed it would be entirely contained with Harriman Reservoir.

#### Sources used

Great River Hydro online inundation mapping and Emergency Action Plan, available with access right, accessed 5/1/2023. Email with Matthew Cole, staff at Great River Hydro, communication dated March 10, 2021.

## **High Winds**

#### Description and Impact

High winds are fairly common in Vermont all across the state. High wind events that are sufficient enough to cause damage to property and taking down trees can occur at any time of year. High wind can damage roofs, uproot trees, break branches from trees and take down power lines anywhere in Town. High winds can be associated with thunderstorms, snowstorms, hurricanes, tropical storms, or just wind storms. High winds tend to sweep through the region after the passage of a weather front. The National Climatic Data Center data indicates that 86 high wind events have occurred in Bennington County since 1955, six of which involve tornadoes<sup>15</sup>.

Power outage is the risk primarily to do with high winds. Wind causes more trees on wires than ice, although ice does weaken or weigh down trees. Wind after ice causes real damage. Trees downed by high winds can block roads, and down power and communications lines. Mobile home parks and houses on ridge lines are at greater risk from wind damage. Blowing and accumulating snow is an issue of winds during winter months for the roadways in Readsboro. West Hill Drive, Freezing Hole Drive are particularly susceptible. This is because of open fields and higher elevation in these areas allowing snow to blow onto the roads. Most high winds events in Readsboro have resulted in minor damage from downed trees and power lines. There hasn't been public assistance for any wind damages in Readsboro.

#### Geographic Area of the Hazard

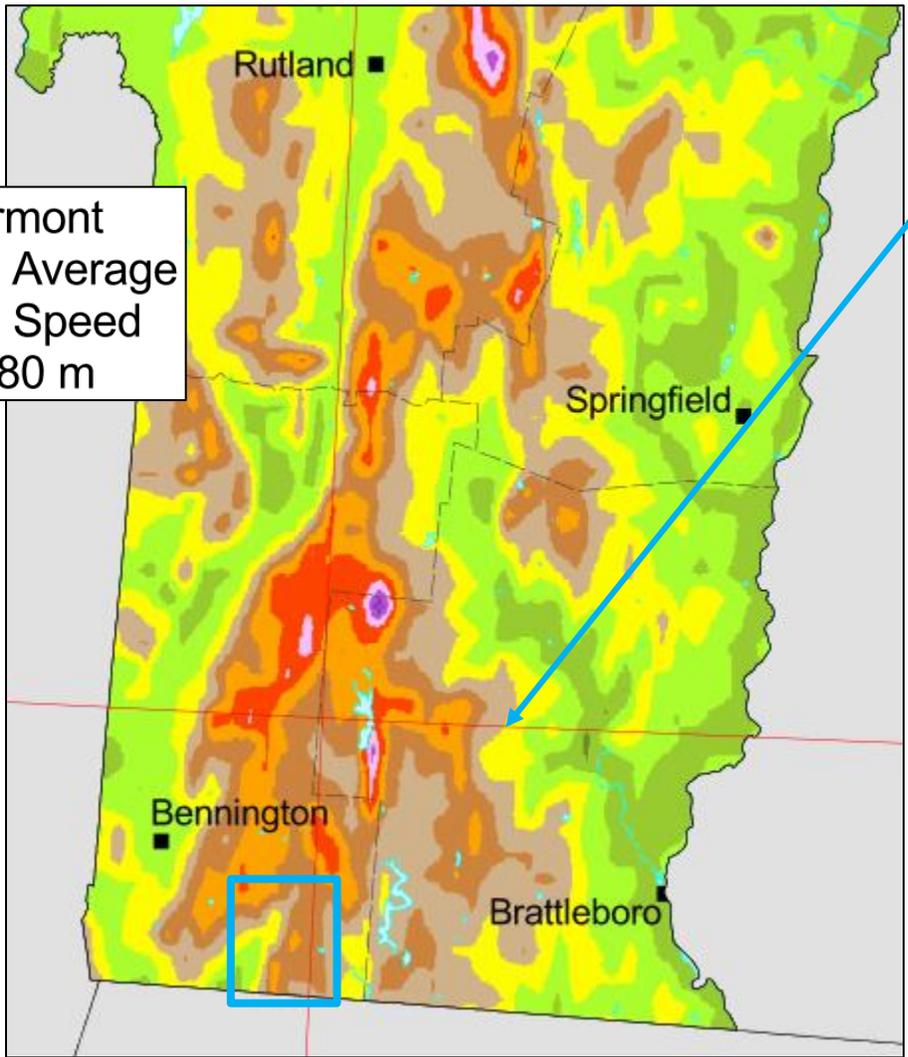
High wind events are not localized and can affect any part of the Town. Higher elevations are more susceptible. Readsboro has a mountainous rough topography, along with valleys where much of the settlement is located. Average wind speeds correspond with the highest elevations, though Plan participants noted that strong gusts do sweep through the valleys, as well. The map on the following page shows annual average wind speeds for southern Vermont south of Rutland. This gives an idea of wind speed in the town in comparison to its surroundings. The purple area to the north of the highlighted square is Stratton Mountain, which

---

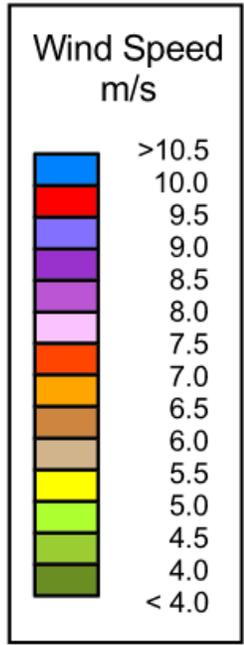
<sup>15</sup> NOAA storm event database accessed 5/1/2023.

gets particularly high winds and can serve as a point of reference or comparison to the highlighted square indicating Readsboro.

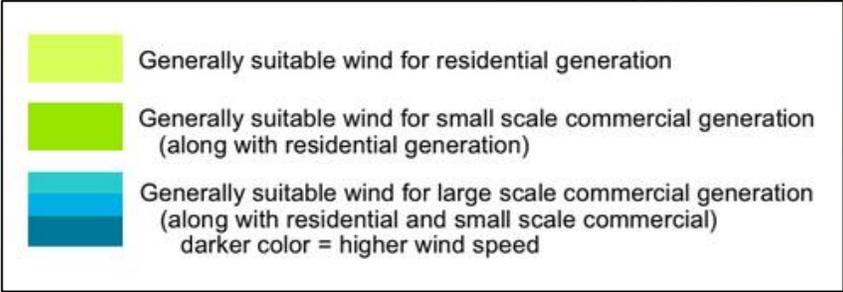
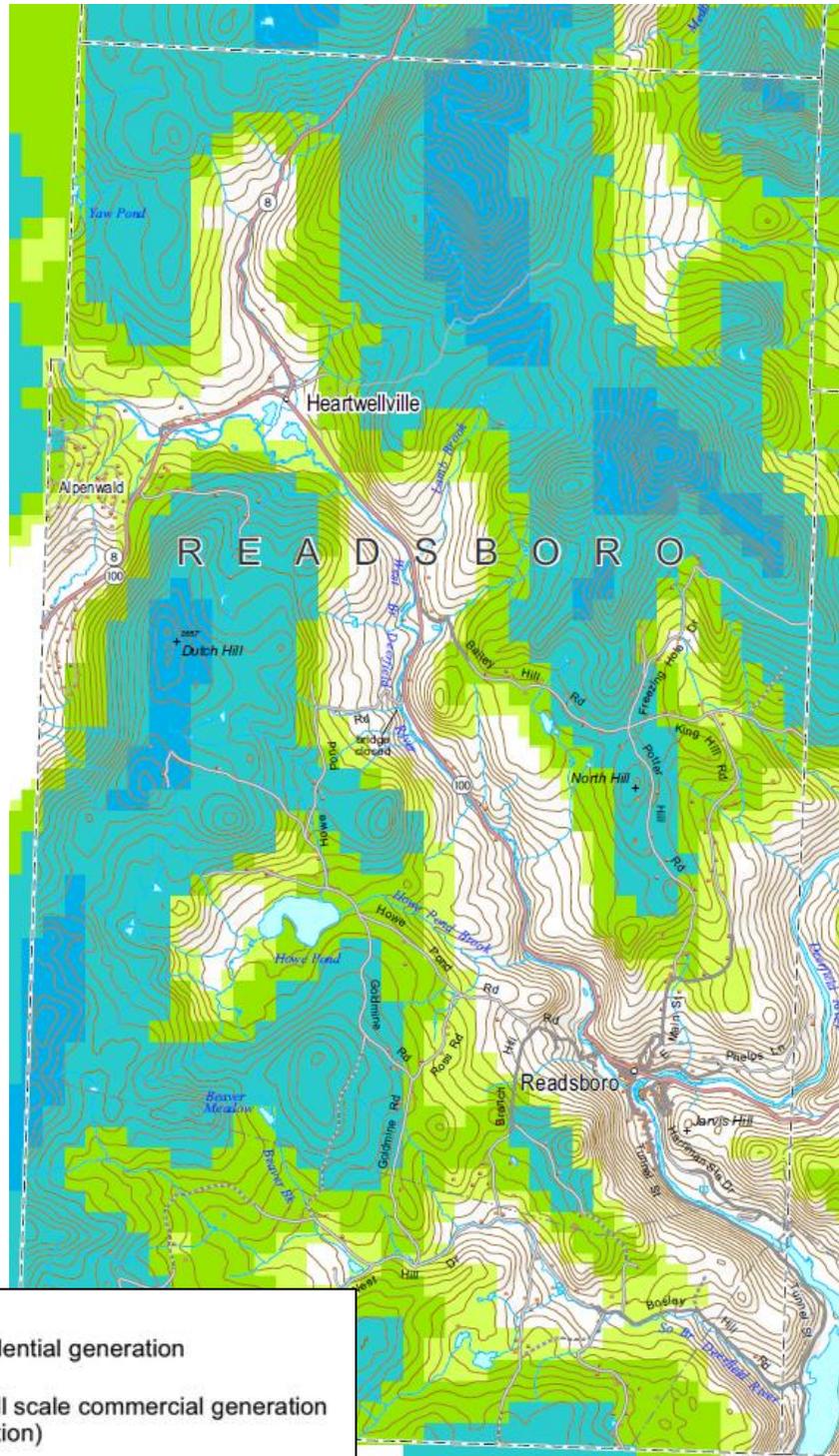
Vermont  
Annual Average  
Wind Speed  
at 80 m



This map from Energy.gov shows the Annual Average Wind Speed at 80 Meters. The highlighted square roughly encompasses the Town of Readsboro.



For a more localized look at wind speed, the below map shows wind power opportunity correlated only to wind speed<sup>16</sup>. The higher elevations in town, areas such as Dutch Hill and North Hill having the highest wind speeds in the Town. Dutch Hill is open for back country skiing.



<sup>16</sup> This map was developed by the Windham Regional Commission for use by the Town and Region in energy planning efforts. It is available online at: [https://drive.google.com/drive/u/1/folders/0B2c\\_6utSGstLZjMtSHFHU3JIRnM](https://drive.google.com/drive/u/1/folders/0B2c_6utSGstLZjMtSHFHU3JIRnM).

Extent

Winds are brought into the region mainly due to low pressure systems coming out of the Canadian zone, or high pressures coming off the Gulf Coast. High winds in large storms are typically in the 47-63 mph range and in 1938 there was an extreme 100 mph event.

Readsboro experiences a variety of wind events so the Beaufort scale is included here for reference<sup>17</sup>:

Force	Speed		Land Conditions
	knots	mph	
0	<1	<1	Calm, smoke rises vertically
1	1-3	1-3	Light air, direction of wind shown by smoke drift only
2	4-6	4-7	Light breeze, wind felt on face, leaves rustle, vanes moved by wind
3	7-10	8-12	Gentle breeze, leaves and small twigs in constant motion, wind extends light flag
4	11-16	13-18	Moderate breeze, raises dust, loose paper, small branches move
5	17-21	19-24	Fresh breeze, small trees in leaf begin to sway
6	22-27	25-31	Strong breeze, large branches in motion, umbrellas used with difficulty
7	28-33	32-38	Near gale, whole trees in motion, inconvenience felt walking against the wind
8	34-40	39-46	Gale, breaks twigs off trees, impedes progress
9	41-47	47-54	Strong gale, slight structural damage occurs
10	48-55	55-63	Storm, trees uprooted, considerable damage occurs
11	56-63	64-73	Violent storm, widespread damage
12	64+	74+	Hurricane, extreme destruction

The Enhanced Fujita Scale or EF Scale is used to assign a tornado a 'rating' based on estimated wind speeds and related damage. When tornado-related damage is surveyed, it is compared to a list of Damage Indicators and Degrees of Damage which help estimate better the range of wind speeds the tornado likely produced. From that, a rating (from EF0 to EF5) is assigned<sup>18</sup>. There have been EF1 tornados in Bennington County.

EF SCALE	
EF Rating	3 Second Gust (mph)
0	65-85
1	86-110
2	111-135
3	136-165
4	166-200
5	Over 200

<sup>17</sup> NCDC: Beaufort Scale for Land. <[https://www.ncdc.noaa.gov/sites/default/files/attachments/Land\\_Beaufort\\_Scale.pdf](https://www.ncdc.noaa.gov/sites/default/files/attachments/Land_Beaufort_Scale.pdf)>

<sup>18</sup> National Weather Service <<https://www.weather.gov/oun/efscale>>

### Probability

The Hazard Mitigation Plan participants ranked wind as being highly likely, or having a 100% probability of occurring within any given year. Wind storms of varying degrees are experienced every year, and climate change is creating more extreme events when high wind events do occur.

There are many trees in close proximity to roads, buildings and power lines throughout the town, though there are no specific areas susceptible to trees on wires. Parts of Route 8 and 100 is managed by GMP, but other parts are not managed by GMP because they don't have lines there. Consolidated Communications does no tree maintenance. The town road crew does tree and limb cleanup, but there is not a lot of preventative tree maintenance. There are areas where power lines go through the forest, so tree trimming is not practical. In Readsboro trees on power lines is an issue at times during and after wind events or ice and snow events, meaning power outages are a secondary effect and a hazard to vulnerable populations.

### Past Occurrences

There have been 86 high wind events in Bennington County since 1955 that are notated by the National Oceanic and Atmospheric Climatic Database as being High Wind, Strong Wind or Tornado events. There have been six recorded tornados in Bennington County since 1955.

December 12, 2022 - Strong westerly wind gusts occurred in the wake of a cold front across southern Vermont on December 1, 2022. Wind gusts peaked between 40 and 55 mph in portions of Bennington County.

August 4, 2020 - Tropical Storm Isaias tracked northeast from the eastern Carolinas across the mid-Hudson Valley and into New England. The center of the storm passed close to Albany, NY on August 4th. This storm brought tropical storm force winds and moderate to heavy rainfall to southern Vermont through the period. These winds caused the most damage across southern portions of the state, including Bennington and Windham counties, with several reports of downed trees and wires. Over 20,000 customers lost power.

November 1, 2019 – A strengthening low pressure system moving from Ohio to Lake Ontario drew anomalous warmth and moisture northward on Halloween, with temperatures surging into the 60s and 70s over western New England. Moderate rainfall and strong winds developed across the region as a result of this low-pressure system. Winds gusted as high as 53 miles per hour and up to two inches of rain fell in southern Vermont.

November 3, 2018 - A low pressure system rapidly strengthened as it moved from eastern New York to New Brunswick on November 3rd, resulting in strong winds across the region. Over 1,400 people lost power in Windham County. Gusts up to 45 mph were recorded.

May 4, 2018 - A powerful low-pressure system formed on May 4th, pushing a strong cold front across New York and New England. A line of thunderstorms developed along this front and pushed into southern Vermont in the evening, resulting in dozens of downed trees and wires. Over 2,500 customers lost power as a result of the storms. There was high wind and branches came down in the road all over town.

August 22, 2017 – Strong to severe thunderstorms developed along and ahead of a cold frontal boundary as it moved through eastern New York and western New England. Prior to convective initiation, a Tornado Watch (#461) was issued for the western Adirondacks and Mohawk Valley and a Severe Thunderstorm Watch (#463) was issued for much of eastern New York and

western New England. These storms resulted in reports of trees down across southern Vermont.

June 17, 2014 - A warm and humid air mass was in place during the late evening hours of Tuesday, June 17th into the early morning hours of Wednesday, June 18th. A strong cold front moved across the region from west to east right around midnight. Along and just ahead of this boundary, a line of severe thunderstorms in the form of a squall line raced from west to east across the area. These storms produced significant wind damage across eastern New York. The thunderstorms weakened somewhat as they reached the border with western New England as instability started to wane, but still caused damage to trees in a few locations. The threat for thunderstorms ended with the passage of the cold front by the late-night hours, as drier and less humid air worked into the region.

October 29, 2012 - Strong and gusty winds in association with Hurricane Sandy caused damage to trees and power lines across the region. Although not quite as widespread as areas across southeastern New York and New Jersey, power outages occurred throughout the region. Most of the outages in Vermont were primarily in the western part of the state. Wind gusts of 40 to 60 mph were common from the afternoon of the 29th until the early morning hours of the 30th. The highest wind gust in southern Vermont occurred in Woodford, where a wind gust to 58 mph was reported. Route 9 was closed to traffic due to power lines down in the road near the Molly Stark Motel just west of Brattleboro. Two trees were reported down on Interstate 91 in southern Vermont.

Aug. 28, 2011 - Tropical Storm Irene tracked north northeast across eastern New York and western New England during Sunday, August 28th, producing widespread flooding, and damaging winds across the region. Strong winds occurred across southern Vermont, with frequent wind gusts of approximately 30 mph in Grafton. The strongest winds occurred from the north to northeast during the morning hours, then from the west to northwest during Sunday evening. The combination of strong winds, and extremely saturated soil led to numerous downed trees and power lines across the region. This also resulted in widespread long duration power outages.

May 26, 2011 - A nearly stationary frontal boundary was draped across western and northern New York State as several waves of low pressure moved easterly along the boundary. In addition, a warm front lifted northeastward across southern Vermont during the morning hours of Thursday, May 26th. The passage of the warm front ushered in a warm, humid and unstable air mass. A large bowing segment of thunderstorms tracked east from the Catskills and Schoharie Valley of east central New York across western New England including southern Vermont during the late evening hours. There were numerous reports of wind damage and power outages.

July 20, 2008 - The interaction between a nearly stationary frontal boundary across central New York State and northern New England, and a very warm, moist and unstable air mass, led to the development of numerous showers and thunderstorms Sunday afternoon and evening on July 20th. Some of the thunderstorms were severe.

December 1, 2006 - A low pressure system developed along the trailing end of a cold front over the lower Mississippi Valley on Thursday, November 30th, before moving northeast and intensifying rapidly. The low reached the eastern Great Lakes by Friday morning, and then moved across northern New York State by Friday evening. |A strong cold front trailing from this

low swept across southern Vermont late Friday afternoon into the evening hours, preceded and accompanied by several lines of severe thunderstorms.

July 21, 2003 – tornado - A large upper air trough dug across the western Great Lakes on Monday, July 21. At the surface, a deep low-pressure area moved across the eastern Great Lakes, driving a warm front across New England during the evening hours. The air became very unstable in the warm air mass behind the front. A supercell, that originated in the Mid-Hudson Valley of New York and producing a long-lived significant tornado, spawned a second twister which touched down in the town of Pownal, Bennington County. The twister cut a swath longer than 25 miles and up 150 yards wide. After touching down in Pownal, the tornado moved northeast into the city of Bennington, then continued into the Green Mountain State Forest in extreme western Windham County where it caused significant forest damage. Most of the destruction was to trees. There was also some structural damages in Bennington County. A tree collapsed onto a house. Another massive pine slammed into a 100-year-old house's roof in Pownal. A steakhouse in the city of Bennington, suffered damage that closed it for a couple of days, including shattered windows and water damage due to an open roof. An awning had been blown from the deck of the structure, all the way across Route 7A. The owner was slammed against a wall while venturing outside on the open deck, with no injuries. During the height of the storm, power was knocked out to over 2,000 customers in extreme southern Vermont.

June 5, 2002- Thunderstorms, that initially developed in New York, and produced a macro burst in extreme eastern New York, moved into southern Vermont during the evening of the 5th. The storms spawned two tornados, one in Woodford Hollow, Bennington County and the other one near Wilmington, Windham County. The first touchdown, one-mile north from Route 9, produced a swath 150 yards wide and a path length of one-half mile. Many trees, as large as a foot in diameter, were either knocked over or ripped apart. Trees also fell on three automobiles. This tornado was assessed to be a F1 intensity, with winds estimated between 80 and 100 mph. The second tornado, 4 miles northeast of Wilmington, was even stronger despite a narrower swath of 50 yards. The path length was also about a half mile. This tornado, in addition to blowing some trees down, mostly destroyed a sturdy house on Haynes Road. The garage of the house was blown off its foundation. The family room was ripped off the end of the house, nearly killing the owner. Luckily the owner escaped without any injuries. However, antiques in the attic of the home, as well as numerous other possessions from throughout the house, were spread out for miles downwind, and a propane tank was missing. The winds with this tornado were estimated between 125 and 150 mph. non-tornadic thunderstorm winds blew some trees down in the town of Pownal. Lightning struck a home in North Bennington causing a very small fire with minimal damage to the structure of the house.

June 5, 2002 – tornado - Thunderstorms, that initially developed in New York, and produced a macroburst in extreme eastern New York, moved into southern Vermont during the evening of the 5th. The storms spawned two tornados, one in Woodford Hollow, Bennington County and the other one near Wilmington, Windham County. The first touchdown, one mile north from Route 9, produced a swath 150 yards wide and a path length of one-half mile. Many trees, as large as a foot in diameter, were either knocked over or ripped apart. Trees also fell on three automobiles. This tornado was assessed to be a F1 intensity, with winds estimated between 80 and 100 mph. The second tornado, 4 miles northeast of Wilmington, was even stronger despite a narrower swath of 50 yards. The path length was also about a half mile. This tornado, in addition to blowing some trees down, mostly destroyed a sturdy house on Haynes Road. The garage of the house was blown off its foundation. The family room was ripped off the end of the house, nearly killing the owner. Luckily the owner escaped without any injuries. However,

antiques in the attic of the home, as well as numerous other possessions from throughout the house, were spread out for miles downwind, and a propane tank was missing. The winds with this tornado were estimated between 125 and 150 mph. non-tornadic thunderstorm winds blew some trees down in the town of Pownal. Lightning struck a home in North Bennington causing a very small fire with minimal damage to the structure of the house.

Mar. 10, 2002 - The pressure gradient between deep low pressure over Ontario, and high pressure off the southeast coast, produced a strong southerly flow across southern Vermont on the evening of March 9. Then, a strong cold front moved across the region shortly after midnight, early on March 10th. A line of showers and embedded thunderstorms accompanied the front. Strong winds ahead of and along the front produced some damage across Windham County. Law enforcement personnel reported a large number of trees and power lines down throughout the county.

Nov. 27, 1997 - The passage of a cold front produced strong winds across southern Vermont during the early morning hours of November 27. Winds gusting to 40-50 miles an hour downed trees and power lines in Bennington and Windham Counties. Approximately 1,500 customers lost power for a six to eight-hour period.

Jul 20, 1996 - An unusually intense low-pressure system tracked across the northern Great Lakes to Quebec, Canada during July 19 and 20. The system generated strong northwest winds, which downed trees and power lines over parts of Windham County in southern Vermont.

Feb. 24, 1996 - A rapidly deepening low-pressure system moved from southern New Jersey northeast to northern Maine by the morning of February 25. This system brought damaging winds to southern Vermont including Bennington and Windham counties, which downed many trees across the area and produced scattered power outages.

Jan 19, 1996 - An intense area of low pressure located over the Mid-Atlantic Region on Friday morning January 19th produced damaging winds across southern Vermont. This storm was associated with a strong southerly flow which resulted in scattered reports of downed trees, limbs and power lines.

July 15, 1995 - A widespread severe weather outbreak hit Vermont during the morning hours of July 15th. A long lived squall line, known as a Derecho, crossed Vermont during the morning hours. Southern Vermont was hardest hit especially across Windham, Windsor, Rutland and Bennington Counties.

Sept. 21, 1938 - A hurricane Igor hit the region of Southeast Vermont, paralyzing it for weeks. As it was coming, packing winds over 100 miles an hour, authorities were unaware of the magnitude so no evacuation procedures were instituted and very few precautions were taken. As a result, over 600 people lost their lives and tens of thousands were left homeless. Wind, rain and flash flooding wiped out trees, church steeples and buildings, leaving behind nearly \$400 million in damage.

#### Sources used

Local town knowledge and records, National Oceanic and Atmospheric Climatic Database

## **Extreme Cold, Snow and Ice Events**

### **Description and Impact**

The Region has a long history of severe winter storms and blizzards and usually experiences at least one or two Nor'easters each year with varying degrees of severity. There have been 118 winter/ice storm or extreme cold events in Windham County since 1996.<sup>19</sup> A typical event begins as a low-pressure system that moves up the Atlantic Coast, into the Canadian Maritimes, dumping heavy snow across parts of Vermont. Snowfall accumulations are generally three to six inches in the valleys and 6 to 12 inches in the mountains. Winter storms and ice storms can cause power lines to fail, damage trees and impede access to homes and businesses. Readsboro is at risk for extreme winter events at a town-wide scale, though higher elevation areas usually experience the most severity.

Heavy wet snows of early fall and late spring, as well as ice storms, often result in loss of electric power, leaving people without adequate heating capability. The other threat from winter storms is downed trees, resulting in power failures and impassable roads or driveways. An ice storm crossed the region in December of 2008 causing widespread downed trees and power outages in Windham and Bennington Counties. The total cost of damages across the region surpassed the one-million-dollar threshold triggering a Presidential Disaster Declaration DR-1816. Readsboro did get hit hard in 2008 with lengthy power outages and tree damage. Damage across the region consisted of roads being blocked for short periods of time due to downed trees and utility lines. Thousands lost power for varying lengths of time and several shelters were opened in Bennington County. During the large snow event in March 2023, they did not get hit particularly hard compared to lower elevation towns because the snow is heavier at the lower elevations.

The primary concerns with winter weather events is power failure, damage to roofs, trees and power lines, and dangerous or impossible travel conditions.

Extended power outages are a concern of the town. Power failure is a common event in areas of Readsboro and a condition as a result of high winds and/or heavy snow or ice that can occur anywhere in town. Power failures are typically the result of power lines damaged by storm events. During ice storms the higher elevation locations in town as well as areas of concentrated development are most susceptible to power failures. Power failures may also result from disruptions in the New England or national power grid, as indicated by the widespread power outages in 2003. Dead or dying trees in close proximity to power lines pose a particular threat to power lines when ice loads are added.

Extreme cold can cause damage to buildings and infrastructure. Cold temperatures alter the chemical composition of mortar, grout, and adhesives used in building construction which over time can lead to unsecured components. Extreme cold can cause frozen pipes which can cause significant damage to buildings. Town buildings should be winterized, with pipes drained and water shut off, in the event an extreme cold event is forecast. All of the town owned buildings are susceptible to this.

- Town Office, Readsboro Village
- Fire Department, Readsboro Village
- Central School, Readsboro Village
- Town Garage, Readsboro Village
- Water Treatment Plant
- Sewage Treatment Plant

---

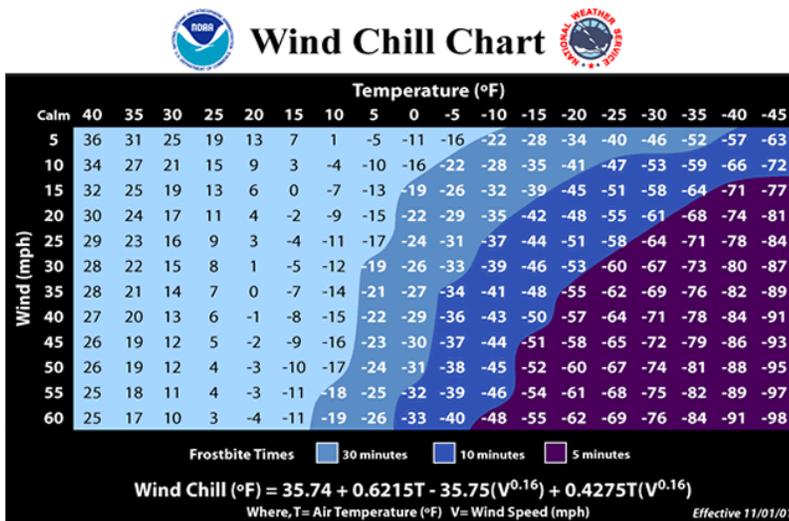
<sup>19</sup> National Climatic Data Center, 1996-2019 storm events database < <http://www.ncdc.noaa.gov/stormevents/>>

- Electrical Barn

Additionally, town highway and fire department vehicles are vulnerable to damage. Keeping them indoors and properly maintained can help to limit damage.

Extent

The severity or magnitude of winter storm to occur in southeast Vermont can range from moderate to very severe. The southeastern region of VT typically receives over 60 inches of snowfall per year, and most Vermonters are prepared to handle large amounts of snowfall. Readsboro experiences significant snow storms every year but according to the town they are manageable. The top-ranking snow event in Bennington County was 38” measured over 2 days in Peru on 3/14/1984<sup>20</sup>.



Extreme cold in Readsboro is impacted by both temperature and wind speed. The NOAA chart here highlights this connection and how long before frostbite sets in. Readsboro has experienced cold events as low as -30 degrees.

Probability

The Hazard Mitigation Planning Committee in Readsboro deem winter storms to be *likely* in any given year. Every winter there is at least one heavy winter weather event where people in town will lose power for a few days. Climate change is

causing snow to be warmer and thus heavier, leading to an increase in heavy wet snow events in the region. Readsboro’s elevation protects it from most of this impact thus far, according to residents, but this trend may eventually impact even higher elevations. While *extreme* snow, ice and cold events are not the norm in Readsboro, climate change causes more extreme weather patterns generally which could lead to more frequent extreme events.

Past Occurrences

The Region has a long history of severe winter storms and blizzards and usually experiences at least one or two Nor’easters each year with varying degrees of severity. The planning participants, and climate data, noted no extreme ice events since 2008. There have been three winter storms in recent history in Bennington County that were Disaster Declarations:

- Snowstorm (EM-1358) – December 16-18, 2001
- Snowstorm (3167) – April 10, 2001
- Winter Storm (DR-1816) – December 11-18, 2008

The following detail events listed in the National Climatic Data Center for all ice storms on record for Western Windham County for records dating back to 1996:

<sup>20</sup> NOAA Snowfall Extremes, gathered 4/27/23 <<https://www.ncei.noaa.gov/access/monitoring/snowfall-extremes/VT/2>>

March 13-15, 2023 - During the mid-March storm power was cut off for a couple of days for some people outside of the Village. During this 3–4-foot snow event, this exceeded the capacity of the road crew for a point in time and some roads were temporarily cut off before plowing.

December 23-4, 2022 - Two separate frontal systems merged to form a powerful winter storm over the Great Lakes from December 22 to December 24 bringing multiple hazards to the region including heavy rain, snow, strong winds and a very cold air mass in its wake. A widespread 1 to 3 inches of rain fell across the region. This led to some areas of minor flooding and some creeks/brooks to overflow their banks. Strong pre-frontal and post-frontal winds occurred across the region. A few gusts topped out between 50 and 60 mph, especially across Bennington County. Numerous power outages were reported across southern Vermont. A period of snow brought accumulations of 2 to 5 inches to mainly higher elevation areas as colder air built back into the region. This led to a chain up law to be activated along Vermont Route 9. As conditions worsened, a large number of slide offs, crashes and whiteout conditions led to Vermont Route 9 to close. In addition, Vermont Route 11 and Vermont Route 30 also closed for a time due to the poor weather conditions. The combination of much colder air and gusty winds led to wind chill values dropping to 15 to 20 degrees below zero.

January 29, 2022 - In the wake of a strong cold front, Arctic air invaded the area. This combined with increased winds resulted in below zero wind chills in Readsboro as low as -15F to -30F.

December 11-12, 2008 - A cold front moved across eastern New York and western New England on Wednesday, December 10th, ushering a cold air-mass into the region. A low-pressure system developed over the southeast states Wednesday and Wednesday night. This storm then headed northeast Thursday and Thursday night, December 11th, with precipitation spreading northward well in advance of the low. The low continued to track northeast, passing over the mid-Atlantic region late Thursday night, and over the New York City Metropolitan area and southern New England Friday morning, December 12th. The low then moved to the Canadian Maritimes Friday night. As the storm approached, warmer air moved in aloft, and with a cold air-mass remaining in place at the surface. This set the stage for a significant mixed precipitation event. The precipitation came down heavy at times, especially Thursday night. Hourly precipitation rates of one quarter to one third of an inch were reported for several hours in the form of freezing rain across much of the region. The precipitation changed back to snow before ending early Friday afternoon. Total ice accretion from freezing rain ranged from one half to three quarters of an inch, with the greatest amounts occurring across higher elevations of eastern Bennington and western Windham Counties. Some sleet and snow also were mixed in, with as much as 7 inches reported at Woodford. The ice storm resulted in widespread damage to trees and resultant power outages across southern Vermont, where an estimated 15,000 utility customers lost power. Many schools and businesses were shut down for several days due to the loss of power, and impassable roads from extensive fallen debris, resulting in significant economic and societal impacts. States of emergency were also declared across portions of southern Vermont. The hardest hit areas were across Bennington and much of Windham Counties. Bitterly cold temperatures followed in the wake of the storm Saturday and Sunday, compounding the power outages across the region. Numerous warming shelters were setup to assist those who were without power and heat.

This storm resulted in widespread downed trees and power outages in the region. The total cost of damages across the region crossed the one-million-dollar threshold which allowed for a Presidential Disaster Declaration DR-1816. Damage across the region mostly consisted of roads being blocked for short periods of time due to downed trees and utility lines. Thousands lost power for varying lengths of time and several shelters were opened in Windham County.

Compared to neighboring southern New Hampshire communities, Readsboro and Windham County fared relatively well from the damage inflicted by the ice storm.

March 18-21, 2008 - A strengthening low pressure system tracked northeast from the Ohio Valley on Tuesday March 18th, to a position along the Maine coast by Thursday morning on March 20th. The low then continued to intensify upon reaching the Canadian Maritimes by Friday morning on March 21st. This storm system initially brought a swath of light to moderate snowfall across southern Vermont from Tuesday into early Wednesday, with accumulations of 1 to 3 inches. The snow then changed to freezing rain across the higher elevations of southern Vermont during Wednesday and lasting into Wednesday night. This produced ice accumulation of one half of an inch, to locally up to an inch. The heavy accumulation of ice led to numerous downed trees and power lines, as well as power outages. The hardest hit areas were mainly confined to the highest elevations within western Windham County. As a cold northwest flow developed in the wake of this storm system, some lake enhanced snow bands developed Thursday night into Friday morning, which produced additional snowfall amounts of 4 to 9 inches, mainly across higher, west facing slopes in Bennington County.

March 4-5, 2008 - A strengthening low pressure system over the lower Ohio Valley on Tuesday March 4th tracked northeast into west central New York State by Wednesday morning on March 5th. The low then tracked northeast into the Canadian Maritimes by Thursday morning on March 6th. This storm system spread a swath of freezing rain and sleet across higher elevations of east central New York and portions of southern Vermont. The freezing rain and sleet developed late Tuesday evening, and continued through early Wednesday afternoon before tapering off. In southern Vermont, significant ice accumulations of one half, to locally up to one inch occurred in the higher elevations of western Windham County. Elsewhere, ice accumulations ranged from one quarter to less than one half of an inch, with the least occurring in lower elevations. The heavy ice accumulations across the higher elevations led to widespread downed tree limbs and wires, as well as power outages. Wilmington in southwest Windham County was particularly hard hit.

January 15-16, 2007 - A low pressure system over the mid-west moved east, reaching south central New York State around midday on Monday, January 15th, and then moved off the southern New England coast by Monday evening. Cold low-level air remained in place as precipitation overspread the region early Monday morning, producing a mix of freezing rain and some sleet. Significant icing occurred from the freezing rain during Monday, leading to widespread power outages from downed trees and tree limbs, and from power transformers which shorted out. Although the freezing rain tapered off Monday evening, strengthening winds in the wake of the storm continued to down tree limbs and exacerbate power outages across the region into Monday night. [This ice storm had a significant impact on travel and economy across the region.

## **Pandemic**

It should be noted that “infectious disease/pandemic” scored fairly high on the frequency ranking during this plan development. This is likely due in part to the fact that the survey was taken in the midst of the Covid-19 pandemic, and hence was a part of everyone’s immediate life at the time. A pandemic is an infectious that affects the entire planning area and the larger community outside the planning area. Assets that are impacted are primarily impacted are primarily people, especially older adults and those with underlying health conditions.

Preparations put in place for Covid-19 are in place should another pandemic strike. These preparations and this real world “practice” have improved the town’s ability to migrate to remote means should the need arise in the near or mid-future.

To cope with Covid-19, Readsboro public facilities had to quickly learn how to move to a remote work setting. There is still a hurdle with remote town operations, but with new fiber optic internet coming, that should assist with remote needs going forward. Unreliable communication capabilities made it difficult sometimes and the town should invest in technology to increase remote capacity. Training of town staff may be necessary to build comfort with new methods.

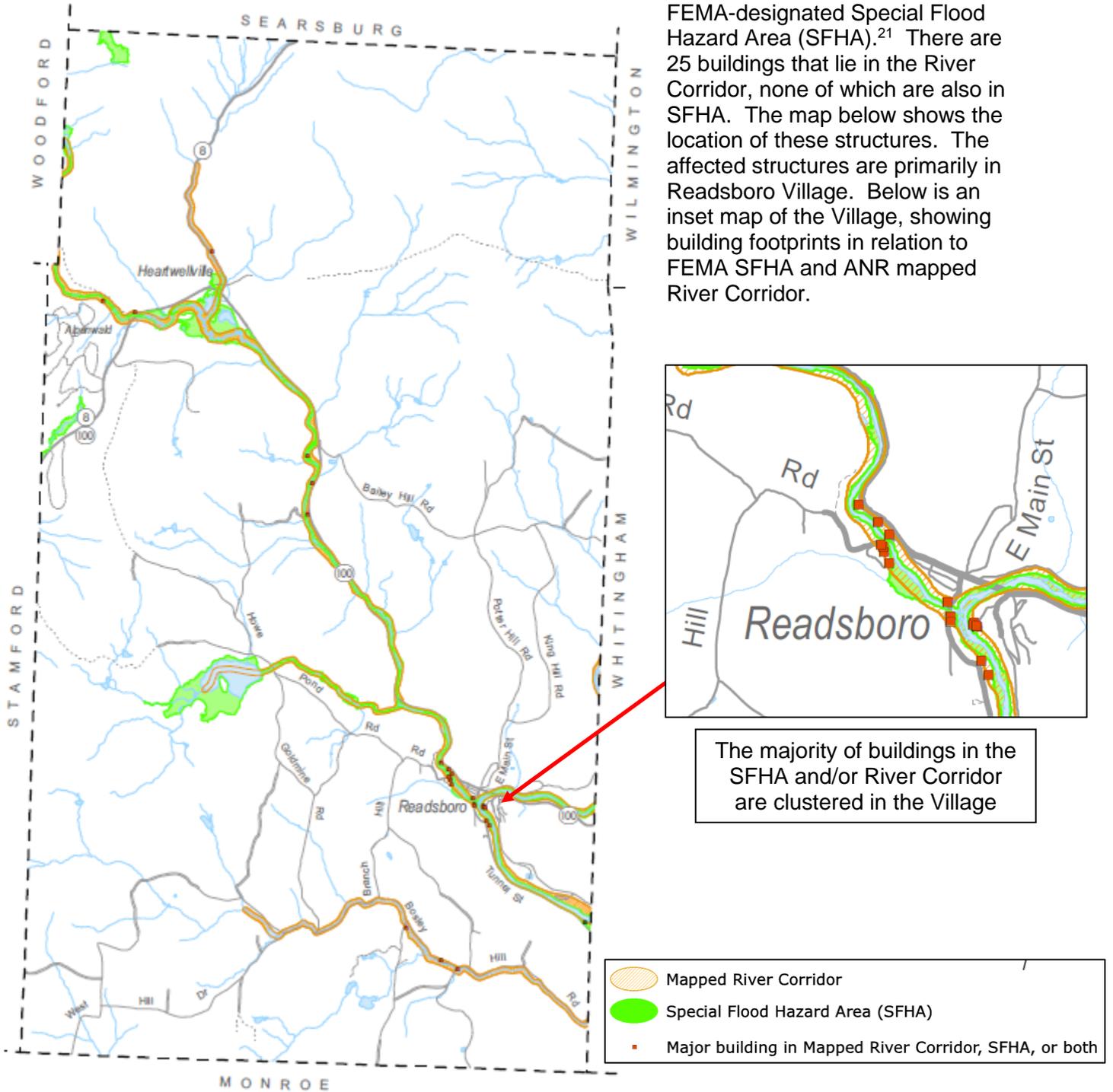
Taken from the 2022 Readsboro Local Emergency Management Plan:

*In the event that an infectious disease occurs, the Town of Readsboro and the Fire Department will provide PPE to all vulnerable residents as recommended by the CDC. If residents need to be evacuated from their homes and sheltered for an emergency during an infectious disease outbreak the Town of Readsboro and the Fire Department will follow all CDC recommendations.*

# ASSESSING VULNERABILITY

## Structures in the SFHA or River Corridor

There is one building within the FEMA-designated Special Flood Hazard Area (SFHA).<sup>21</sup> There are 25 buildings that lie in the River Corridor, none of which are also in SFHA. The map below shows the location of these structures. The affected structures are primarily in Readsboro Village. Below is an inset map of the Village, showing building footprints in relation to FEMA SFHA and ANR mapped River Corridor.



The majority of buildings in the SFHA and/or River Corridor are clustered in the Village

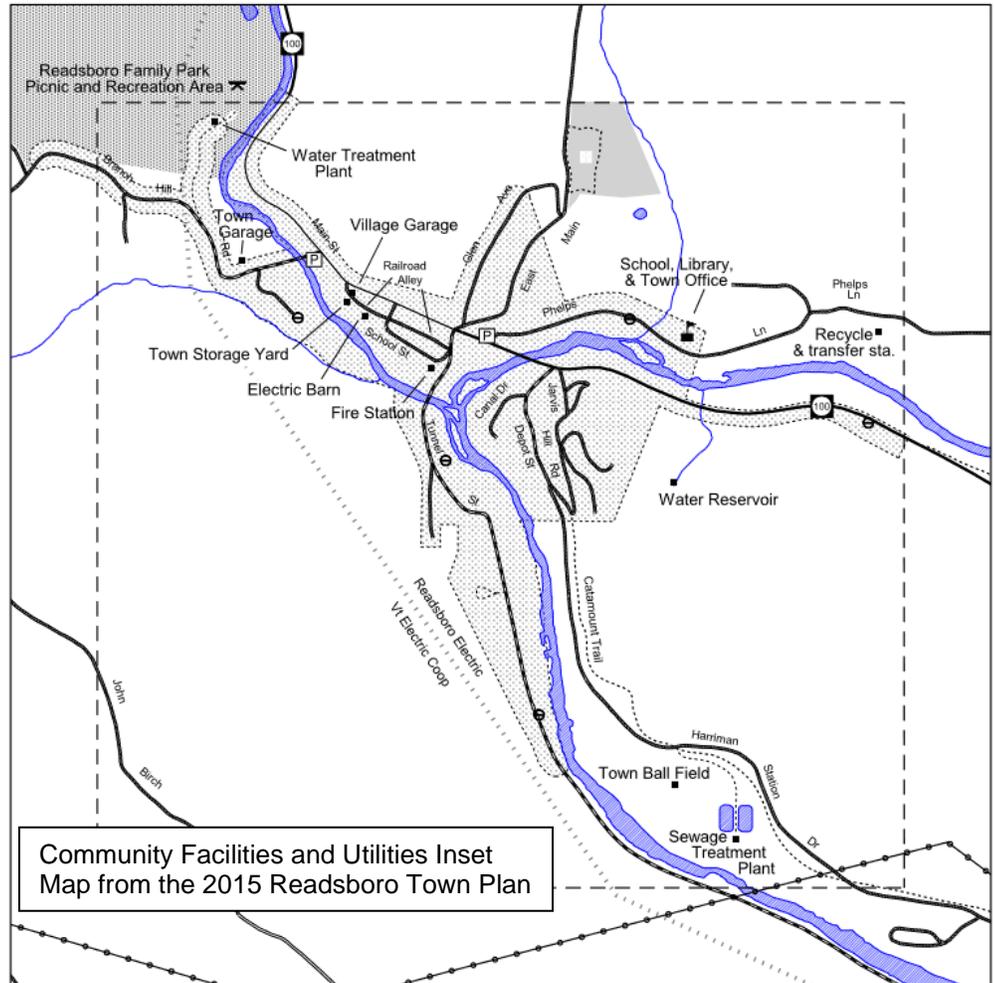
<sup>21</sup> GIS analysis done by WRC staff, Jeff Nugent, 7/19/2021.

Structures within SFHAs, that are under a mortgage, are required to purchase flood insurance. Readsboro's participation in the National Flood Insurance Program (NFIP) gives residents access to discount flood insurance through the National Flood Insurance Program. Flood insurance can still be purchased privately, however, it is more expensive. Development in SFHAs must meet additional construction standards as outlined in Readsboro's 2013 floodplain regulations.

### Critical Facilities

Below is a list of the most critical structures in Readsboro and they are all shown on the map, as well. None are within the SFHA. Critical facilities are considered vulnerable to any and all natural hazards facing the community and would be prioritized for restoration and mitigation in the event of any damage or outage.

- Town Office, Readsboro Village
- Fire Department, Readsboro Village
- Central School, Readsboro Village
- Town Garage, Readsboro Village
- Water Treatment Plant
- Sewage Treatment Plant
- Electrical Barn



### Repetitive Loss Structures

According to Vermont Emergency Management, Readsboro has 0 repetitive loss claims.<sup>22</sup> Information about what type of properties these claims pertained to was not available due to access rights issues that the State of Vermont is currently working on with FEMA. A repetitive loss structure is an NFIP-insured structure that has had at least 2 paid flood losses of more than

<sup>22</sup> Email communication with Caroline Massa of Vermont Emergency Management, dated 11/16/2022.

\$1,000 each in any 10-year period since 1978.<sup>23</sup> Severe repetitive loss (SRL) structures are NFIP-insured buildings that, on the basis of paid flood losses since 1978, meet either of the loss criteria described in the SRL section. SRL properties with policy effective dates of January 1, 2007 and later will be afforded coverage (new business or renewal) only through the NFIP Servicing Agent's Special Direct Facility (SDF) so that they can be considered for possible mitigation activities. An SRL property is defined as a residential property that is covered under an NFIP flood insurance policy and:

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

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

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

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

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

While the NFIP floodplain management criteria are administered by states and communities through their floodplain management regulations, FEMA's role is to provide technical assistance and to monitor communities for compliance with the minimum NFIP criteria. Readsboro joined the NFIP on September 27, 1985 and is a member in good standing (CID 500017). The latest

---

<sup>23</sup> <https://www.fema.gov/national-flood-insurance-program/definitions>

floodplain ordinance was adopted in May 2013. The latest Flood Insurance Rate Maps (FIRMs) and Flood Insurance Study (FIS) referred to in the development of this plan have an effective date of December 2, 2015.

The latest record indicates that there are no flood insurance policy holders in Readsboro.<sup>24</sup> There have been no NFIP claims filed in Readsboro since joining the NFIP.<sup>25</sup> Readsboro may want to do public outreach to encourage the purchase of flood insurance for people in the SFHA, River Corridor and the FEMA 500-year floodplain (Zone X on the FIRMs). Flood insurance is reasonably priced in these areas, and covers damage from fluvial erosion, as well as inundation flooding. Nearly 20% of flood insurance claims nationally are for flood damage to buildings located outside the SFHA. It should be noted that flood insurance does cover flooding damage resulting from dam failure and fluvial erosion.

The Floodplain Administrator reviews all development permit applications to determine if the property and/or building is located in any floodplain boundaries. If so, the Administrator reviews the application to ensure that all relevant regulations are proposed to be adhered to and does any needed inspections before working with the Development Review Board or issuing a permit. ANR has 30-days to review all applications in floodplain boundaries and may offer comment to the town. ANR review opportunity is required before the town can issue a permit, and serves as a second technical review of applications which can assist the town in deciding whether to issue or deny a permit. The town administers the NFIP minimum requirements related to substantial damage and substantial improvement thresholds.

The Town works with the elected officials, Windham Regional Commission, the state and FEMA to correct and prevent NFIP compliance issues through continuous communications, training and education. The NFIP is administered locally by the Zoning Administrator, who also fulfills the role of Floodplain Administrator.

---

<sup>24</sup> Expanded Community Report for Readsboro, accessed May 1, 2023.  
<https://anrweb.vermont.gov/DEC/FoFReports/SSRSReportViewer.aspx?RepName=ExpandedCommunityReport&Municipality=Readsboro>.

<sup>25</sup> NFIP Insurance Report, accessed May 1, 2023.  
[https://floodready.vermont.gov/sites/floodready/files/documents/cisrpt\\_NFIP%206.26.18.PDF](https://floodready.vermont.gov/sites/floodready/files/documents/cisrpt_NFIP%206.26.18.PDF)

## MITIGATION STRATEGY

### **Local Hazard Mitigation Goals for this Plan**

The below Hazard Mitigation Goals, which were contained in the prior Dover Local Hazard Mitigation Plan, were reviewed by the planning participants as part of the Plan update process. The participants unanimously felt that the overall goals outlined here remain the town's overall hazard mitigation goals. The fourth bullet was slightly updated with the name of the Local Emergency Management Plan replacing the prior name for this plan, and removing "Capital Improvement Plan", which Dover does not have. The Town also added the last bullet for this update, as they recognize the importance of having dedicated funding for hazard recovery. The reiterated and updated goals are:

- Reduce the loss of life and injury resulting from all hazards.
- Reduce the impact of hazards on the town's water bodies, natural resources, and historic resources.
- Reduce the economic impacts from hazard events.
  - Minimize disruption to the road network and maintain access
  - Mitigate financial losses incurred by municipal, residential, industrial, agricultural and commercial establishments due to disasters.
  - Ensure that community infrastructure is not significantly damaged by a hazard event.
- Encourage hazard mitigation planning to be incorporated into other community planning projects, such as the Town Plan and the Local Emergency Management Plan.
- Ensure that members of the general public continue to be part of the hazard mitigation planning process.
- Maintain capital reserve funds and capital funds to restore essential services after hazard events.

In addition to the above goals, there was one specific problem statements and goal listed in the 2014 Readsboro Local Hazard Mitigation Plan. Here again is the problem statement and goal (restated in the original language), along with the current status:

*Problem Statement:* There is inadequate documentation of incidents on infrastructure and homes as they occur any given year, due to natural hazards or man-made hazards.

*Goal:* Train town personnel to include; road crews and office staff to take time and realize the importance of establishing an administrative role to document maintenance, repairs, and improvements to infrastructure so that future funding can be identified and to mitigate future losses. The town has a database to track road and culvert maintenance, but it needs to invest in professional development so staff is trained to do the documentation.

*Current Status:* The Road Foreman has an iPad and technology to document damages. The Road Foreman has received training from WRC on how to use this new tool.

*2014 Plan notation:* Another pressing problem in Readsboro is the lack of back-up energy in the case of frequent power outages. During the ice storm of 2008, approximately half the population was without power. The generator at the fire house is over 30 years old and needs to be replaced. Strong winds have been increasing throughout the years, causing power outages as often as two or three times a year. All of the critical facilities in town need, at the very least, transfer switches installed. In the case of an emergency, facilities that would be used as shelter

include the Catholic Church and Central School. Other critical facilities include the Town Garage, General Store/gas station, and the apartments on Tunnel Street which house many elderly folks using oxygen machines. If transfer stations were installed in numerous facilities, it is possible the town could suffice with two new roving generators.

Current Status: The Fire Department and the School/town office have backup generators. Some, but not all of the wastewater sites, have backup power. The school plans to use the Catholic Church for evacuation needs, but there is no backup power there.

## **Town Plan Policies and Recommendations that Support Mitigation**

The 2015 Readsboro Town Plan presents an indirect focus on mitigation, which is highlighted by the number of policies and action items that relate to mitigation. I will mention them here, but not include the entire section that they are a part of:

**Emergency Services Goal 4: To ensure that Readsboro has sufficient emergency planning and disaster preparedness to help to reduce risk to life and health, the damage to public and private property and the environmental damage that often occurs as a result of a disasters.**

### **Policies:**

- 4.1. Require that all new public and private roads and driveways be properly constructed so that they do not contribute to the damage of Town or State roads from run-off.
- 4.2. Encourage the improvement of existing roads and design culverts and bridges to carry a 25-year flood event without damage.
- 4.3. Encourage the development and improvement of emergency evacuation plans.
- 4.4. Update the State Rapid Response Plan on an annual basis.
- 4.5. Continue in the National Flood Insurance Program.
- 4.6. Design and site all development so that it can be accessed by public safety response agencies.
- 4.7. Land subject to periodic inundation flooding and fluvial erosion hazards shall be limited to development which will not restrict, accelerate, or divert the flow of flooded waters and thereby endanger the health, safety, and welfare of the public during flooding.
- 4.8. It is the policy of the Town to protect floodplains, river corridors, land adjacent to streams, wetlands, and upland forests through adoption and administration of flood hazard area regulations governing development in designated Special Flood Hazard Areas and River Corridors, in order to reduce the risk of flood damage to infrastructure, improved property, people, and the environment.

### **Priorities for Action:**

- 4.1. Hold a community meeting on emergency preparedness.
- 4.2. Work to identify at-risk populations.
- 4.3. Work to protect the Town's historic assets from disasters.
- 4.4. Work with State and local emergency preparedness organizations.
- 4.5. Adopt an all-hazards pre-disaster mitigation plan.
- 4.6. Adopt the regional multi-jurisdictional pre-disaster mitigation plan.

- 4.7. Review 911 process and make sure records are maintained
- 4.8. Continue to participate in the National Flood Insurance Program.
- 4.9. Identify fluvial erosion hazard areas and add protections for them to the existing Inundation Hazard Area Regulation adopted in 2013.
- 4.10. Work to preserve forested areas at higher elevations to protect settled areas.

**Natural Resources Goal 1: Maintain and improve the quality of air, water, and land resources.**

**Policies:**

- 1.1. Retain watercourses, ponds, wetlands, and shorelines in a natural state to maintain their water quality and ecological, scenic, and recreational values.
- 1.2. Support surface water classification and management strategies that will effectively maintain or enhance existing water quality.
- 1.3. Protect public safety and private property from flood hazards by maintaining the natural functions of the town's floodplains.
- 1.4. Preserve the functions and prevent loss of Readsboro's wetlands.
- 1.5. Protect the aquifers and groundwater that are the sources of present and future drinking water supply.
- 1.6. Maintain the town's steep slopes in a manner that prevents erosion, changes to natural drainage patterns and loss of scenic character.
- 1.7. Encourage the preservation of primary agricultural soils and viable tracts of productive farmland.
- 1.8. Discourage uses and practices that generate air pollution.
- 1.9. Ensure the responsible extraction of gravel and sand resources so as to provide long-term benefits to the Town.
- 1.10. Incorporate River Corridor protection into Readsboro's Inundation Hazard Area Regulation.

**Priorities for Action:**

- 1.1. Implement stream and wetland setback requirements or overlay districts to prevent degradation of the riparian environment and water quality. Consideration should be given to restrictions on uses and the maintenance of natural vegetated buffers.
- 1.2. Participate in Deerfield River Basin Planning efforts.
- 1.3. Participate in and meet the requirements of the National Flood Insurance Program so that property owners are eligible for flood insurance.
- 1.4. Regulate development in order to prevent loss of life or property by prohibiting further significant development within identified floodways and floodplains.
- 1.5. Evaluate the functions of significant wetlands and educate landowners about their values.
- 1.6. Develop/implement wetland protection regulations.
- 1.7. Use the zoning bylaw to restrict development on slopes greater than 25 percent and minimize earth disturbance, grading, and clearing of vegetation on slopes over 15 percent.
- 1.8. Require all applicants for resource extraction operations prepare, submit, and implement erosion control, stormwater management, and site restoration plans.

- 1.9. Require all applicants for resource extraction operations to operate in a manner that avoids or minimizes impacts to natural, scenic and historic resources, public infrastructure and quality of life for nearby residents to the greatest extent feasible.
- 1.10. Acquire ANR River Corridor and River Corridor Protection Area maps for use in incorporating River Corridor protection into the Inundation Hazard Area Regulation.

### Past and Ongoing Mitigation and Maintenance Efforts

Below is an update on prior identified hazard mitigation projects that were listed in the 2014 Readsboro LHMP. The planning participants reviewed these actions and provided an update to WRC at the outset of the Plan update process. Current status is listed here in the last column, and prioritization changes are called out where applicable. It is noteworthy that a vast majority of the actions have been completed and the town did not change prioritization of any incomplete actions.

Hazard	Action	Responsible Party	Timeframe for Completion	Funding Source	Project Priority	Current Status
High Wind	Potentially Hazardous Tree Assessment – Remove dead or dangerous tree limbs near power lines	Road Foremen	Continual Basis - Annually	Highway Dept. Budget	Medium	completed on ongoing basis
Flooding	Anchoring of outdoor ancillary structures such as generators and heat tanks on buildings	Selectboard / Fire Department	2 years	General Town Funding	Medium	Complete
High Wind	Assess policies and actions in the Town Plan regarding building codes and practices related to impacts of high wind	Planning Commission	2 years	Town Funding or Municipal Planning Grant	Medium	Not completed; there is no building code other than a 35-foot building height limitation and the town does not desire additional restrictions.
Fire	Installation of 3 additional dry-hydrants to allow access to fire ponds and water sources.	Selectboard	2013	VT Rural Fire Protection Task Force Grant Funding	66% Complete	Complete
High Wind	Potentially Hazardous Tree Assessment – Remove dead or dangerous tree limbs near power lines	Road Foreman	Continual Basis - Annually	Highway Dept. Budget	Medium	completed on ongoing basis
All hazards	Community outreach and education to citizens teaching the importance of keeping emergency kits in cars, at home, staying safe during extreme cold, etc. Education to location of emergency shelter. Fire Dept. does system checks or resources prior to storms	Emergency Management Coordinator, 911 Coordinator, Selectboard, Planning Commission	2014	General Town Funding	Medium	Complete
Flooding	On January 5, 2012 the Town of Readsboro held a public meeting to educate townspeople of the NFIP program, providing information on building methods to reduce flood, wind, ice and snow load damage.	Emergency Management Coordinator, 911 Coordinator, Selectboard, Planning Commission	Continual Basis - Annually	Town Funding or Municipal Planning Grant	High	Complete
Flooding	Culvert upgrade at Rt. 8 and County Lane in Heartwellville	Selectboard, DPW	2014-15	HMGF Grant Funding or VTrans funding	Medium	Not completed and still a priority

Hazard	Action	Responsible Party	Timeframe for Completion	Funding Source	Project Priority	Current Status
Flooding	Embankment stabilization of washed-out river bank that exposed the bridge footing to bridge #31	Department of Public Works	2012	HMGP Grant Funding or Highway Dept. Budget	Complete	Complete
Flooding	Reinforcement of the retaining wall behind the Town Garage	Selectboard	2014	HMGP Grant Funding or Highway Dept. Budget	High	Complete
Flooding	Ruba Drive Culvert Repair Project	Town Administrator	2014	FEMA HMGP	High	Complete
Flooding	Flood Bylaws were updated and adopted in May 2013	Zoning Administrator and Planning Commission	2011-2013	Municipal Planning Grant	High	Last updated in 2013; Update is still a high priority action; NFIP map update is soon to be underway
Flooding	Acquisition/Buy Out - 62 School Street, Readsboro, VT 05350. Currently this parcel is owned by Barbara Keith. The total project cost is: \$ 146,768.00	Selectboard	2012/2013	Application submitted to HMGP Grant Funding under DR-4022	High	Complete
Flooding	Acquisition/Buy Out - 40 School Street, Readsboro, VT 05350. Currently this parcel is owned by Richard & Mary Lemaire. This property is not inhabited. The total project cost is: \$ 105,913.00	Selectboard	2012/2013	Application submitted to HMGP Grant Funding under DR-4022	High	Complete
Flooding	Acquisition/Buy Out - 42 School Street, Readsboro, VT 05350. Currently this parcel is owned by Rodney & Holly Caruso. This property is not inhabited. The total project cost is: \$ 118,343.00	Selectboard	2012-2014	Application submitted to HMGP Grant Funding under DR-4022	High	Complete
Fire	Phase One & Two: replace approx. 1,200 ft. of 6" water main with 12" water main to increase water flow for firefighting purposes	Selectboard	Funding approved 2013	Grant Funding/other sources	High	Complete
Public Safety	Sidewalk replacement project in Village, 4,016 Feet	Selectboard	2014 – 2016	VTrans	High	Complete
Flooding	Repair of Bridge #25, on Rt. 100	AOT	2016	AOT	High	Work Scheduled 2024, after bid was not accepted in 2022; Still a high priority action
Public Safety	Safe Routes to School – bulb out for traffic calming, safety for pedestrians going to school	Selectboard	2013	Safe Routes to School/Transportation Alternatives Grant	Medium	Complete
All hazards	Installation of Cell Tower in Town	Planning Commission, Selectboard	2014	VTel or AT&T	High	This was permitted by the VT Public Utility Commission in July 2021 under CPG # 21-1800-PET and was installed in 2021
All hazards	Installation of transfer switches on critical facilities: Fire Station, Catholic Church, Central School, Town Garage and Tunnel Street	Selectboard	2013-2014	General Town Funding	50% Completed / High	Complete
All hazards	Purchase of two new generators and mobile platforms for revolving usage.	Selectboard, Water and Sewer Dept	2013-2014	Red Cross Generator Grant Fund	Low	Complete

Hazard	Action	Responsible Party	Timeframe for Completion	Funding Source	Project Priority	Current Status
All hazards	Inventory of vulnerable populations, and locations plotted on map.	EMD	ongoing	General Town Funding	Medium	Complete
All hazards	Red Cross Shelter Initiative Training -Provides cots, blankets & pillows for emergency shelter.	EMD	2012	VEM	50% Completed	Complete
All hazards	Purchase of storage unit for emergency shelter items.	EMD	2012	VEM	High	Complete
All hazards	As an additional method of communication, IP Network Extenders have been added to the Town Offices and the Fire House to allow for 3G cell phone services within these locations	Selectboard	2012	General Town Budget	Completed	Verizon Only
All hazards	Town is in the process of becoming NIMS Compliant and adoption. Revising the American Red Cross Survey, Training Individuals on Red Cross Shelter procedures. Elected and Appointed Officials will have taken ICS 402. Highway Department will have taken NIMS ICS 100 and 200. All employees will have taken NIMS 100. In the process of creating a database that solicits voluntary information from residents to include special needs/aids/resources that residents need or may provide. Also researching alternate means of communication – cell phone and Internet service providers.	Selectboard	2013	General Town Budget	High	Complete

The town has also completed adding culverts with underdrainage on both Potter and Howe Pond Roads in preparation for paving.

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

1. Leaf removal, tree trimming and culvert/ditch cleaning are maintenance activities done every spring by the road crew. If ditches are being eroded, the crew may also stone line them.
2. The town manages a local emergency operations center (EOC) during disasters:
  - Primary: Fire Station, 122 School St, Readsboro Vt
  - Alternate: Town Office, 301 Phelps Lane, Readsboro Vt
  - Alternate: Readsboro Central School, 301 Phelps Lane, Readsboro Vt
3. The town maintains one emergency shelter at the Readsboro Elementary School, and it is capable of being an overnight shelter.

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

## Identification of Mitigation Actions

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

Mitigation actions are listed in priority order by hazard. Actions were prioritized by the plan participants. These are new actions so any shifts in prioritization of actions came out through the multi-year plan development process. The following criteria were used in establishing project priorities. The ranking of these criteria is largely based on the best available information and best judgment as many projects are not fully scoped out at this time. Prioritization was done during the meetings for the plan development in discussions among participants and guided by WRC's Emergency Planner. Actions relating to future development were considered, but the plan participants did not find them to be feasible at this time due to lack of political will/community support.

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

## Mitigation Categories

After accessing the status and relevancy of the mitigation actions from the previous plan, the Hazard Mitigation Committee began developing a new list of mitigation actions. To develop a new list of mitigation actions, the Hazard Mitigation Committee carefully reviewed the list of strategies in the Town Plan. They also considered the four mitigation action categories as defined by FEMA.

1. Local Plans and Regulations
2. Structure and Infrastructure Projects
3. Natural Systems Protection
4. Education and Awareness Programs

The following table, taken from the Local Mitigation Planning Handbook, clearly defines each of these mitigation types and provides examples for each.

Mitigation Action	Description of Category	Examples of Mitigation Actions
<p style="text-align: center;"><b>1</b></p> <p><b>Local Plans and Regulations</b></p>	<p>These actions include government authorities, policies, or codes that influence the way land and buildings are developed and built.</p>	<ul style="list-style-type: none"> <li>• Comprehensive plans</li> <li>• Land use ordinances</li> <li>• Building codes and enforcement</li> <li>• Capital improvement programs</li> <li>• Open space preservation</li> <li>• Stormwater management regulations and master plans</li> </ul>
<p style="text-align: center;"><b>2</b></p> <p><b>Structure and Infrastructure Projects</b></p>	<p>These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure.</p> <p>This type of action also involves projects to construct manmade structures to reduce the impact of hazards.</p>	<ul style="list-style-type: none"> <li>• Acquisitions and elevations of structures in flood prone areas</li> <li>• Utility undergrounding</li> <li>• Structural retrofits.</li> <li>• Floodwalls and retaining walls</li> <li>• Detention and retention structures</li> <li>• Culverts</li> <li>• Safe rooms</li> </ul>
<p style="text-align: center;"><b>3</b></p> <p><b>Natural Systems Protection</b></p>	<p>These are actions that minimize damage and losses and also preserve or restore the functions of natural systems.</p>	<ul style="list-style-type: none"> <li>• Sediment and erosion control</li> <li>• Stream corridor restoration</li> <li>• Forest management</li> <li>• Conservation easements</li> </ul>
<p style="text-align: center;"><b>4</b></p> <p><b>Education and Awareness Programs</b></p>	<p>These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. A greater understanding and awareness of hazards and risk among local officials, stakeholders, and the public is more likely to lead to direct actions.</p>	<ul style="list-style-type: none"> <li>• Radio or television spots</li> <li>• Websites with maps and information</li> <li>• Real estate disclosure</li> <li>• Mailings to residents in hazard-prone areas.</li> <li>• StormReady</li> <li>• Firewise Communities</li> </ul>

### Cost-Benefit Analysis

As part of public involvement discussions, there was a rough cost/benefit analysis done for each action listed in the table and those results are shown in the table. The below cost and benefits

tables address the priorities for the mitigation strategies that are stated in the Mitigation Actions Table. This was how the mitigation actions were assessed by the Hazard Mitigation Planning participants. Priority was assessed somewhat independently of cost/benefit and was based more on the perceived need of each action and availability of funding, versus what the action costs and benefits.

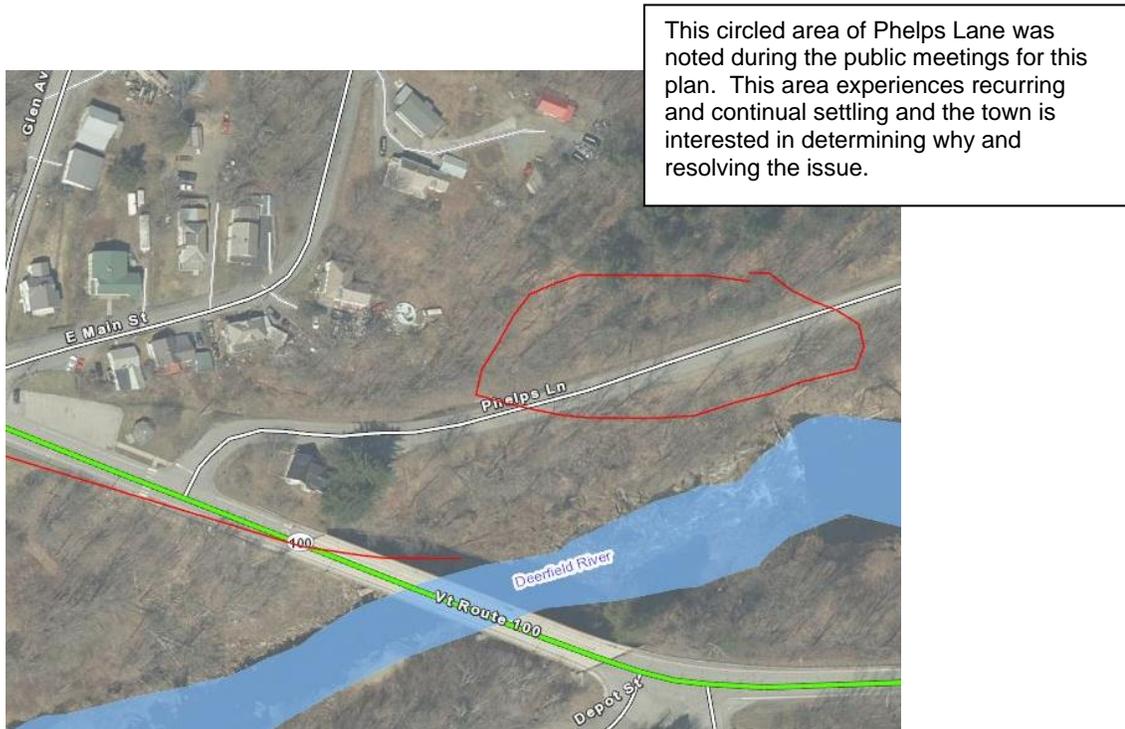
At the time of applying for FEMA’s PDM-C, FMA or HMGP grant programs, each project listed below will undergo full benefit-cost analysis (BCA) methodology, version 5.1 or higher to maximize savings. Whenever possible, Readsboro will utilize 406 mitigation funding.

**Cost Estimates**

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

**Benefit Estimates**

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



### Mitigation Actions Identified by the Hazard Mitigation Planning participants

HAZARD(S) ADDRESSED	ISSUE DETAIL	ACTION	RESPONSIBLE ENTITY	Start/Complete TIMELINE	POTENTIAL FUNDING	MITIGATION / PREPAREDNESS	PRIORITY	Notes / Status
Flooding / Fluvial Erosion	The bylaw was last updated in 2013. Did the update address SFHA??	Update the 2013 flood hazard bylaw to include River corridors.	<b>Zoning Administrator</b> and Planning Commission; assistance from WRC or ANR	2023--2025 (start at some point during this)	Municipal Planning Grant or Town Funds	Mitigation	High	The bylaw will need to be updated with coming new FEMA SFHA maps.
Flooding / Fluvial Erosion	Bridge 25 was deemed unsafe around 2014. If this bridge was closed it would be a major problem with a 35-mile detour.	Repair of Bridge #25 on Rt. 100	VTrans	2024 bid, construction in 2025 or after	VTrans	Mitigation	High	This will be rebid in 2024, after the state did not accept the one bid response in 2022.
Fluvial Erosion	A section of the river bank is failing along Bosley Hill Road and it's taking the Road with it, leading to continual fluvial erosion issue.	Engineered fix of the hillside to mitigate ongoing erosion issue; phase 1 engineering	VTrans, contractor, <b>road foreman</b> , selectboard	To be complete by end of 2023	VTrans grant funded	Mitigation	High	This scoping study is underway.
Fluvial Erosion	A section of the river bank is failing along Bosley Hill Road and it's taking the Road with it, leading to continual fluvial erosion issue.	Engineered fix of the hillside to mitigate ongoing erosion issue; phase 2 corrective action	VTrans, contractor, <b>road foreman</b> , selectboard	Apply for grant in 2024; complete work in 2025	VTrans stormwater mitigation grant	Mitigation	High	No one is stranded by this issue.
Flooding / Fluvial Erosion	Appropriate enforcement of the flood hazard bylaw is a town duty.	Training of the Floodplain Administrator (Zoning Administrator)	<b>Zoning Administrator</b> and Planning Commission; assistance from WRC or ANR	By summer 2025	Town funds	Preparedness / Mitigation	High	

HAZARD(S) ADDRESSED	ISSUE DETAIL	ACTION	RESPONSIBLE ENTITY	Start/Complete TIMELINE	POTENTIAL FUNDING	MITIGATION / PREPAREDNESS	PRIORITY	Notes / Status
Dam failure / Flooding		Meeting with GRH about evacuation planning for senior center, the school and emergency notifications	<b>Selectboard and EMD</b> with GRH	By year end 2024	Town funds and GRH	Preparedness / Mitigation	High	
Flooding / Fluvial Erosion	Erosion hazard from steep hillside across the river threatens this town owned structure. This slope damage is continuation of damage from TS Irene.	Demolition of old electric barn or "E" barn and site remediation.	Selectboard	Decision by 2025; grant application that year with WRC assistance	FRCF or HMGP	Mitigation	Medium	This is a town owned building. 2022 BDCC study said the building needs a new roof. Town salt/sand storage access road needs to be decided before this is finalized.
Flooding / Fluvial Erosion / All hazards	Settling on Phelps Road is happening over and over again. Hasn't made the road impassable but is a continual issue.	Phase 1 of fix - determination of the issue that is causing the settling.	Selectboard	Complete by 2028, after Bosley Hill Road	VTrans stormwater mitigation grant possibly	Mitigation	Medium	This road leads to the town office/EOC, and the Elementary School which serves as the town emergency shelter. The town is doing repairs continually.
Flooding / Fluvial Erosion / All hazards	Settling on Phelps Road is happening over and over again. Hasn't made the road impassable but is a continual issue.	Phase 2 - fix to be determined and completed.	Selectboard	Complete by 2028, after Bosley Hill Road	VTrans stormwater mitigation grant possibly	Mitigation	Medium	This road leads to the town office/EOC, and the Elementary School which serves as the town emergency shelter. The town is doing repairs continually.
Flooding / Fluvial Erosion	A large boiler tube on Goldmine Road needs replaced with a proper structure and upsized	Replacement of a large boiler tube on Goldmine Road with a box culvert	Contractor with town oversight	Within 10 years	VTrans Structures Grant	Mitigation	Medium	Plan is for hydraulic study to be done summer 2023

HAZARD(S) ADDRESSED	ISSUE DETAIL	ACTION	RESPONSIBLE ENTITY	Start/Complete TIMELINE	POTENTIAL FUNDING	MITIGATION / PREPAREDNESS	PRIORITY	Notes / Status
Flooding / Fluvial Erosion		Culvert upgrade at Rt. 8 and County Lane in Heartwellville	<b>Road Foreman,</b> Selectboard	2025	HMGP Grant Funding or VTrans funding	Mitigation	Medium	This is a carried over action from the prior plan. The Town had a plan to upsize this in the past, but it was rejected by VTrans.
Fluvial Erosion	Steep hills and narrow right of way with difficulty putting ditches in to control stormwater on Potter Hill and Howe Pond Roads. These roads are getting eroded on the edges regularly and are fairly populated roads.	Paving of Potter Hill and Howe Pond Roads to stop gradual and continual erosion with large rain events.	Contractor with town oversight	Howe Pond is a higher priority than Potter Hill; town would like these both done by 2028	Town funds because these are class 3 roads	Mitigation	Medium	Some drainage needed to be put in before paving can occur.
Flooding / Fluvial Erosion	Without bridge 21 in safe order for use, Case Lane, Daubneys Drive, and a portion of Howe Pond Road would be cut off entirely if this Howe Pond Road culvert went out.	Seek a hydraulic study for the culvert draining Howe Pond into Howe Pond Brook, under Howe Pond Road; this will give the town information to know if upsizing is necessary.	<b>Road Foreman</b> and Selectboard	This is a ways off at this point, but the town wants to keep in the radar	VTrans grant funded	Mitigation	Medium / Low	This is under consideration and a decision will be made later.
High Wind / Snow and Ice	Downed trees are a big source of power outages.	Support GMPs initiative to bring lines closer to the roadways; bury lines where possible.	GMP	Ongoing	GMP	Mitigation	High	GMP is doing this work throughout their territory and sets their own prioritization.
High Wind / Snow and Ice		Removal of 2-3 large oak trees that are threatening the road and pedestrians on Phelps Road.	<b>Tree Warden</b> and Road Crew	Timing to be determined after assessment by Tree Warden	Town funds	Mitigation	High	

HAZARD(S) ADDRESSED	ISSUE DETAIL	ACTION	RESPONSIBLE ENTITY	Start/Complete TIMELINE	POTENTIAL FUNDING	MITIGATION / PREPAREDNESS	PRIORITY	Notes / Status
Snow and Ice / Fluvial Erosion	Town garage was put on hold due to Covid-19. Town would like to relocate the garage near the gravel pit	Replace and relocate the town garage.	<b>Road Foreman</b> and Selectboard	Decision on timing to be made in 2023; Complete within 5 years	Town bond or grant	Mitigation	High	Town has their own gravel pit that will be exhausted in the next year or so. Town will then decide to use ballfield area to expand gravel pit or not.
Snow and Ice / Fluvial Erosion	With the relocation of the town garage, this action should be done. The access road that is vulnerable to erosion (near the E Barn) would no longer be needed.	Relocate the salt shed to the new location of the town garage	<b>Road Foreman</b> and Selectboard	Decision on timing to be made in 2023; Complete within 5 years	Town bond or grant	Mitigation	High	
Wind / Flooding / Ice and Snow	Not having snowmobile/ATV combo machines means the Fire Department has to reach out to other departments when they have off-road search or rescue need. Trail use is high in the town.	Purchase of snowmobile/ATV combo for Fire Department would increase response ability of the Department and save on response times.	Fire Department	Purchase within 3 years, by 2026	HMGP, depending on documented need	Preparedness	High / Medium	Town currently needs to get assistance from Wilmington or Whitingham when they have off road emergency. The Town feels underprepared for increased need with growing trail usage.
High Wind / Snow and Ice	Downed trees are a big source of power outages. Road crew should be aware and bring to the Road Foreman any tree needs noticed as they are doing their work.	Potentially hazardous tree assessment and proactive tree removal as determined by assessment.	<b>Tree Warden</b> and Road Crew	Start 2024	Town funds	Mitigation	Medium	

HAZARD(S) ADDRESSED	ISSUE DETAIL	ACTION	RESPONSIBLE ENTITY	Start/Complete TIMELINE	POTENTIAL FUNDING	MITIGATION / PREPAREDNESS	PRIORITY	Notes / Status
High Wind / Snow and Ice	Downed trees are a big source of power outages.	Training for Road crew on chainsaw safety to enable them to do proactive tree removal	Road Foreman and Crew; Tree Warden	Start 2024	Town funds	Mitigation	Medium	Contract services could also be sought to fulfill this action if needed.
Extreme cold	Town does not currently have assigned responsibility for winterizing town buildings/equipment	Incorporate winterizing (draining pipes and shutting water off, etc) into the training and job duties of town staff to support all town owned buildings	<b>Multiple assigned town staff;</b> job duty assignment by Selectboard	Winter 2023-24	Town funds	Mitigation and Preparedness	High	
Infectious Disease / Pandemic		Develop a COOP and sheltering plan specific to pandemic.	Emergency Management Director	By year end 2024	Town funds	Mitigation	Medium	
All Hazards	In consideration of the various impacts of long term power outages, pandemics and other hazard events, the Town should consider backup operational planning for multiple likely scenarios.	Develop a Continuity of Operations Plan (COOP) for town operations.	Emergency Management Director; Town Staff and Selectboard	By year end 2023	Town funds	Preparedness	High	
All Hazards	The town does not have a good technological set up for remote or hybrid meetings.	Equipment purchases for the town office to accommodate remote operation and participation. Staff may require some training.	Selectboard and town staff	By year end 2023	Town funds	Preparedness	High	The town needs to consider the equipment purchasing needs. Town could reach out to other towns or IT support vendors for suggestions on what to purchase.

HAZARD(S) ADDRESSED	ISSUE DETAIL	ACTION	RESPONSIBLE ENTITY	Start/Complete TIMELINE	POTENTIAL FUNDING	MITIGATION / PREPAREDNESS	PRIORITY	Notes / Status
All Hazards	There is some alerts set up by GRH, but town should coordinate to ensure that EMD understands what is in place.	Train EMD on VAlert and pre-program an alert specific to dam failure	Emergency Management Director; GRH	By summer 2024	Town funds	Preparedness / Mitigation	High	VEM can provide this training.
All Hazards	Concern is extended power outages. There is a plant and 4 pump stations. Number of generators needed is at least 3.	Generators for the wastewater plant and all wastewater pump station facilities	Wastewater Treatment plant operator and SB	Plan by mid-2024; complete by 2028	Grants and/or town funds	Preparedness / Mitigation	High	Planning will need to address funding and timing.
All Hazards	Improper use of generators can cause air contamination leading to a health emergency	Provide educational material at the town office on proper generator use	EMD	Winter 2023-24	Town funds	Preparedness / Mitigation	High	This could be a pamphlet and/or a town website posting.
All Hazard	The town is beginning the process of developing a new town garage to replace their existing two garages.	Incorporate into the design of a new town garage, a built-in generator.	Selectboard and Road Foreman	Construction planned for 2025 or 2026	Grants and/or Town Funds	Preparedness / Mitigation	High	The town currently utilizes portable generators; putting in a permanent generator would free up a portable generator for other uses during long term outages.
All Hazards		Develop a majority of the appendices of the LEMP to increase policy around disaster response.	Emergency Management Director coordination; SB and staff assistance	By year end 2025	Town funds	Preparedness / Mitigation	Medium	

Of note in terms of a past considered action - Bridge 21 on Howe Pond Road just off of Route 100 failed a VTrans safety inspection in 1989 and it was noted not safe and the town was asked to close it, which the town did. VTrans continued bridge inspections on the structure until 2009. The town was approached by VTrans with a 90% grant option to replace the bridge and a bond vote was held in 2010 to pay the 10% match to replace the bridge. The vote failed and the town thus chose not to fix the bridge for reuse. The bridge is still there and is considered unsafe and has large rocks blocking it off. There is still no political will to expend funds related to this bridge.

## Implementation of Mitigation Actions / Capabilities

Each town has both barriers and capabilities that will affect how they are able to carry out mitigation actions. These have been identified by planning participants as relevant to Readsboro:

### Barriers to Implementation:

1. Aging population with little in-migration of younger residents
2. Limited population base, though this also lowers risk. Large second home population creates two populations, weekend and non-weekend.
3. Readsboro does not currently regulate development in the River Corridor through its zoning, which limits control of this hazardous area.
4. Limited emergency response training for town staff and volunteers.
5. There is no Conservation Commission in town.
6. It takes so long to get hydraulic studies which lengthens time to decrease vulnerability.
7. Transportation projects can get drawn out for 2-3 years between getting an engineering study, getting engineering design work completed, and getting funded.
8. Boards are the same all the time and finding replacements or new members is difficult.
9. Readsboro Fire Department is small and volunteer.
10. Very limited grant writing capacity.
11. Financial capacity is limited and not growing. There is very little businesses in town.
12. Local Emergency Operations Center is not defined.

### Capabilities to build upon for implementation:

1. 4 full-time road crew staff
2. 1 full-time town wastewater staff
3. 5 part time town staff
4. Well-functioning fire department. Good number of volunteers on the force (20), but getting new volunteers is a struggle.
5. Selectboard with lots of local knowledge
6. Windham Regional Commission assistance when needed
7. Floodplain ordinance in place. Town could update floodplain ordinance to include River Corridors and/or more restrictive standards.
8. Development review board
9. Residents are generally the hearty and self-sufficient type

Recognizing that there is no place that doesn't have barriers to overcome in project implementation, Readsboro should focus on engaging around emergency management at the town level. There are a limited number of committed volunteers and staff who make this town function well. They are invested and plan to remain in the area. The Town has a hard time recruiting new volunteers. Readsboro is limited financially, and there has been a small drop in population. Readsboro is located along Routes 8 and 100, which are major travel corridors of the region, yet many residents live on back dirt roads that can be difficult to access during certain times of the year. This lends to a "do it yourself" mentality that serves Readsboro positively.

The town looks to and works closely with the Windham Regional Commission. They look to the Regional Plan policies for guidance on land use decisions which influence their town plan policies and goals. The town works closely with VT Department of Environmental Conservation Agency of Natural Resources and the Army Corps of Engineers when mitigating any work in streams or rivers. Additionally, the town adopts the latest VTrans Road Standards for

road/culvert/bridge improvement projects. With the support of these agencies and the Commission, Readsboro is capable of carrying out all of the mitigation actions outlined in this plan.

### **Existing Planning Mechanisms / Integration**

The following policies, programs and activities related to hazard mitigation are currently in place and/or being implemented in the Town of Readsboro. The Hazard Mitigation Planning participants analyzed these programs for their effectiveness and noted improvements needed. Readsboro uses all of the tools listed below to help plan for current and future activities with the town.

As Readsboro goes through the update process for the planning mechanisms outlined in the table below, they will look to the Hazard Mitigation Plan's Table of Actions and Risk and Vulnerability Assessments to help guide land use district decisions, and guide goals and policies for those districts. There is no timeframe for updating the below referenced plans and regulations, however, as each document is updated the hazard mitigation plan will be reviewed for incorporation. The goals of this hazard mitigation plan will be incorporated in the upcoming town plan update to ensure that emergency preparedness and mitigation planning efforts are included in the Town Plan, with particular attention to including the projects in the Mitigation Actions Table. This will assist with ensuring that this plan is utilized and project follow-through occurs.

The current 2015 Readsboro Town Plan did not incorporate the 2014 Readsboro Local Hazard Mitigation Plan, though there are policies that relate to mitigation. Going forward the Town will consider their current Hazard Mitigation Plan as the Town Plan and other planning and budgeting tools are updated. Town documents and their status are outlined in the below table:

## Plans and Studies

Capability	Description	Improvement Opportunity
<i>Town Plan</i>	Plan for coordinated town-wide planning for land use, municipal facilities, etc.	Town Plan was adopted in 2015. A more comprehensive integration of the Local Hazard Mitigation Plan should occur with updates of the Town Plan.
<i>Local Hazard Mitigation Plan (LHMP)</i>	Plan that identifies hazards in community and proposes actions to reduce or eliminate risk to people, property, and the natural environment.	None identified.
<i>Stormwater Plan</i>	Plan that identifies stormwater improvements for municipal roads.	Town received a General Permit to discharge stormwater from municipal roads
<i>Local Emergency Management Plan (LEMP)</i>	Municipal procedures for emergency response.	None identified.
<i>Invasive Species Management Plan</i>	Plan that provides guidance on effective management of invasive species.	This has not been done and should be completed.
<i>Culvert Inventory</i>	An inventory of the size, material, condition and location of culverts. Updated annually by Public Works Department.	None identified. Culvert Inventory last updated in 2018.
<i>School Emergency Response Protocol</i>	School procedures for emergency response	None identified

## Administrative Capacity and Capability

Capability	Description	Improvement Opportunity
<i>Emergency Management Director</i>	Prepares plans and procedures for responding to natural disasters other emergencies and leads response efforts.	None identified
<i>Planning Commission</i>	Municipal body responsible for planning for the community, including maintaining the town plan, zoning bylaws, and subdivision regulations.	More members would be good.
<i>Development Review Board</i>	Municipal body responsible for evaluating and deciding on proposed development.	It would be good if there were an alternate or two.
<i>Zoning Administrator</i>	Administrative officer responsible for administering zoning bylaws.	None identified.
<i>Tree Warden</i>	Responsible for trees on public property, including town properties, schools, and within public right-of-way.	None identified.
<i>Selectboard</i>	Legislative body of the town for all purposes required by the state.	None identified.
<i>Mutual Aid Agreements – Emergency Services</i>	Agreement for regional coordinated emergency services.	None identified. SWNH Dispatch for fire and rescue dispatch – written agreement/contract; State

		police for local backup; local dispatch
<i>Mutual Aid Agreements – Public Works</i>	Agreement for regional coordinated emergency highway maintenance services.	None identified. Recommended to formalize agreements with adjacent towns.
<i>VEM Training</i>	Training provided by state to ensure emergency responders are adequately prepared to respond to emergency incidents.	Identified as an action item in LHMP
<i>Highway Department</i>	Municipal department responsible for overseeing all aspects of municipal road network, including maintenance and construction.	None identified
<i>Town Clerk &amp; Treasurer</i>	Responsible for receiving and recording town archives, recording deeds, filing vital statistics information, running treasury.	None identified

### Financial Resources

<b>Capability</b>	<b>Description</b>	<b>Improvement Opportunity</b>
<i>Town Budget</i>	Annual municipal operating budget, approved at Town Meeting	Town has a grant matching fund. Town should consider a stipend for the EMD.
<i>Taxing Authority</i>	Ability to assess and collect property taxes.	None identified

### Zoning and Regulations

<b>Capability</b>	<b>Description</b>	<b>Improvement Opportunity</b>
<i>National Flood Insurance Program (NFIP)</i>	Provides ability for residents to acquire flood insurance.	None identified. Member in good standing (500017).
<i>SFHA bylaws</i>	Regulates development in FEMA identified SFHAs.	Date from 2013 and will need update soon in conjunction with upcoming map update. Consider including River Corridor regulations in next update.
<i>Zoning</i>	Regulates the development and division of land, standards for site access and utilities	None identified
<i>Building codes</i>	Codes for fire and building safety are in place for multifamily structures and are regulated by the Division of Fire Safety. There are also Statewide Standards for Energy Efficiency and Electrical Safety for buildings.	None identified.
<i>Road Standards</i>	Design and construction standards for roads and drainage systems.	None identified. State road and bridge standards adopted.
<i>Wetland Protections</i>	Protection of environment, water resources, wildlife, biota. Protected by 1990 Vermont Wetland Rules	None identified.

<i>River Corridor bylaws</i>	Regulates development in River Corridors as identified by Vermont ANR.	Consider including River Corridor bylaws in zoning bylaws.
<i>Sewage Regulations</i>	Regulates on-site sewage systems.	None identified. Governed by state sewage regulations; Town used to have local regulations but those were eliminated in 2007.

### Outreach and Education

Capability	Description	Improvement Opportunity
<i>Town Website</i>	Municipal website providing relevant information to residents and businesses about public meetings, resources, etc.	Provide additional information on emergency management and preparedness on town website. Also post the flood hazard bylaw.

## PLAN MAINTENANCE PROCESS

### Yearly Review and Plan Monitoring

Once the plan is approved and adopted, the Emergency Management Director, along with interested and appointed volunteers and stakeholders, will work with the Windham Regional Commission (WRC) or a private consultant to monitor, evaluate, and update the plan throughout the next 5-year cycle. The plan will be reviewed annually before Town Meeting Day at a Selectboard meeting along with the review of the town's Local Emergency Management Plan (LEMP). This meeting will allow town officials and the public to discuss the town's progress in implementing mitigation actions and determine if the town is interested in applying for grant funding for projects that can help mitigate future hazardous events; e.g., bridge and culvert replacements, road replacements and grading, as well as buying out any repetitive loss structures that may be in the Special Flood Hazard Area, and revise the plan as needed. In addition to tracking process in implementing the plan, the EMD will lead town officials in evaluating the effectiveness of the plan in meeting plan goals and reducing vulnerability. WRC will assist with this review if requested by the Town. Progress on actions will be kept track using a "mitigation action tracking table" or another monitoring tool of the Town's choice. There will be no changes to the plan unless deemed necessary by the Town, and if so, the post disaster review procedure will be followed.

### Five-Year Update and Evaluation Process

Hazard mitigation planning is dynamic with changes in land use, changes caused by events, and the effects of climate change. To ensure that the Town maintains a current and relevant LHMP, it is important that it undergo a major update periodically as required in 44 CFR § 201.6(c)(4)(i). This update process will be thorough and occur at least every five years, and will include a thorough evaluation, incorporate any new requirements that FEMA has set, and account for changes in the Town. To ensure funding for this comprehensive update, the Town should be applying for FEMA funding at the 2 ½ year point. Awarded grants can be put out to bid using the Town's procurement rules and a Consultant hired to assist with the following procedure<sup>26</sup>:

<sup>26</sup> Towns can also choose to use funding in-house to develop their LHMP without outside assistance.

1. The Emergency Management Director (EMD) will gather a team to serve as a Hazard Mitigation Planning Committee ('Committee'). Members should include such roles as: Selectboard members, Fire Chief and fire personnel, Zoning/Floodplain Administrator, Constable or Police Chief, Road Commissioner/Foreman, Planning Commission members, Town Health Officer, prominent business owners, longtime residents, impacted residents, and any interested stakeholders, etc.
2. The Consultant will guide the Committee through the update process. This update process will include advertised public meetings. The update will address:
  - Incorporating hazard events that have occurred since the last plan update.
  - Changes in community and government processes which impact hazard response.
  - Community growth and development trends and their impact on vulnerability.
  - Progress in implementation of plan actions and goals.
  - Incorporation of new mitigation actions and goals.
  - Discuss the effect of completed mitigation actions and their impact on vulnerability.
  - Evaluation of unanticipated challenges or opportunities and their effect on capabilities of the town.
  - Evaluation of hazard-related public policies, initiatives and projects.
  - How mitigation strategy has been incorporated into other planning mechanisms
  - The effectiveness of public and private sector coordination and cooperation.
  - Impacts of climate change on the locality.
3. From the information gathered along with data collected, the Consultant will prepare the updated draft in conformance with the latest *Local Mitigation Plan Review Tool* and *Local Mitigation Planning Policy Guide* developed by FEMA.
4. The Town will have a chance for an internal review of the draft Plan update and changes will be incorporated. Emphasis in plan updates will be put on critically looking at how the plan can become more effective at achieving actions and meeting goals.
5. The draft Plan will then be made available for public comment and advertised locally. The draft plan will simultaneously be distributed for review and comment to adjacent towns and entities serving vulnerable populations within the town or regionally. Comments will be addressed and a final draft Plan will be developed.
6. The final draft Plan will be provided to Vermont Emergency Management (VEM) for their review. Any received comments that need addressed for Plan compliance will be addressed and revised draft submitted back to VEM.
7. Once VEM designates the Plan 'approved pending adoption' the Consultant will inform the Town that the Plan is ready for adoption. The adopted Plan will be submitted by the to VEM and FEMA. FEMA will issue notice of 'final approval' and set the date that an updated LHMP needs to be final approved by in order to maintain having a compliant Plan in place.

## **Post-Disaster Review/Update Procedure**

Should a significant disaster event occur, a special review by the town's Committee should occur in regards to the LHMP and within 6-months of the event. This review will serve to document the facts of the event and assess whether completed mitigation actions effectively lessened town damages. Newly needed mitigation projects will be discussed and placed on the town's mitigation action tracking sheet to ensure they are considered for the next plan update and/or pursued prior. An 'After-Action Report' will be distributed to the Committee. The Report should note whether the Plan needs to be amended. If the committee determines that NO modification of the plan is needed, then the report is distributed to local communities. If the Committee determines that modification of the plan IS needed, then the Committee drafts an amended Plan based on the recommendations. VEM can be consulted for guidance during this process. The amended plan will need to be re-reviewed and adopted as in the Plan update process stated above.

## **Ongoing Public Participation**

Maintenance of this Plan and support on the implementation of the stated mitigation actions is a smooth process when there is continued participation of community members. To keep the public engaged in hazard mitigation efforts, the Town proposes to do the following:

- Provide engaging hazard mitigation information at Town Meeting, including education about individual and family resiliency measures.
- Yearly review and tracking of progress on mitigation actions using a tracking tool. This should be done at a Planning Commission or Selectboard public meeting and with the participation of Committee members that helped in Plan development.
- Post the Plan on the town website for public access and share pertinent hazard related information on the Town bulletin board, Town website, at the Readsboro General store notice board, the Post Office notice board, and in the Deerfield Valley News.

This Plan is a tool to promote hazard mitigation discussions with the goal of improving promoting action to increase the overall resiliency of Readsboro.

## APPENDIX

1. Adoption Certificate
2. Responses to Google Form Natural Hazard Assessment (7 responses)
3. Flood events from NOAA Storm Events Database that have caused financial loss in Bennington County. Listed in order of magnitude of financial loss.
4. Email sent to adjacent towns for public comment on the draft plan
5. Email sent to frontline organizations for public comment on the draft plan
6. Flyer advertising availability of Draft Hazard Mitigation Plan for public comment
7. Email sent 5/9/23 to town staff and Hazard Mitigation Planning Committee for review of the draft
8. March 10, 2021 Meeting agenda
9. March 24, 2021 Meeting agenda
10. Meeting flyer that was posted around town
11. Website advertisement for public comment on the draft plan, posted 6/22 – 7/10, 2023

**Certificate of Adoption**  
Town of Readsboro, VT

**A Resolution Adopting the  
*Town of Readsboro Local Hazard Mitigation Plan***

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

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

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

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

WHEREAS, the Town of Readsboro, VT will follow the Plan Maintenance Process outlined in herein to assure that the *Town of Readsboro Local Hazard Mitigation Plan* stays up to date and compliant; and

NOW, THEREFORE BE IT RESOLVED that the Town of Readsboro adopts the *Town of Readsboro Local Hazard Mitigation Plan*. While content related to the Town of Readsboro may require revisions to meet the plan approval, changes occurring after adoption will not require the Town of Readsboro to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

ADOPTED by a vote of \_\_\_\_ in favor and \_\_\_\_ against, and \_\_\_\_ abstaining, this \_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.  
month, year date

Selectboard

\_\_\_\_\_  
Raymond Eilers, Chair

\_\_\_\_\_  
Joseph Berard

\_\_\_\_\_  
Omar Smith

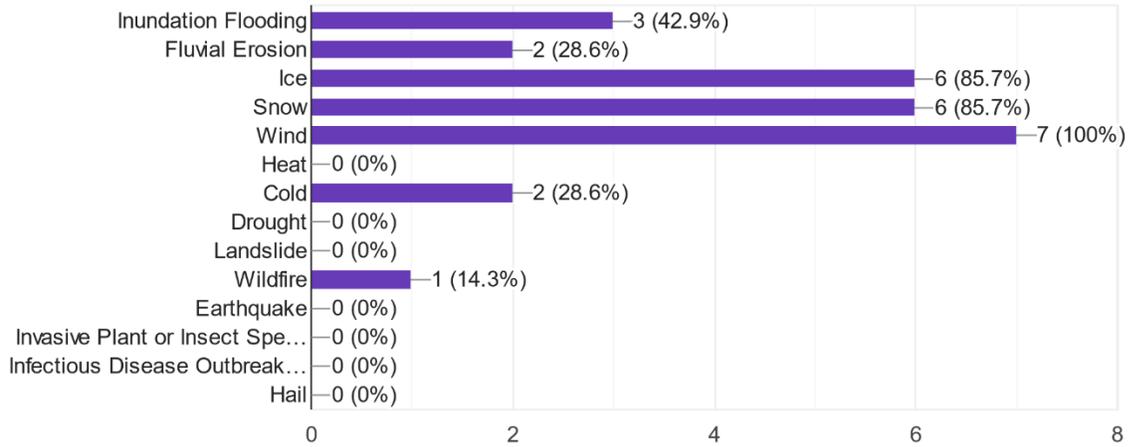
ATTEST

\_\_\_\_\_  
*Karen Boisvert, Administrative Assistant*

## 2. Responses to Google Form Natural Hazard Assessment (7 responses)

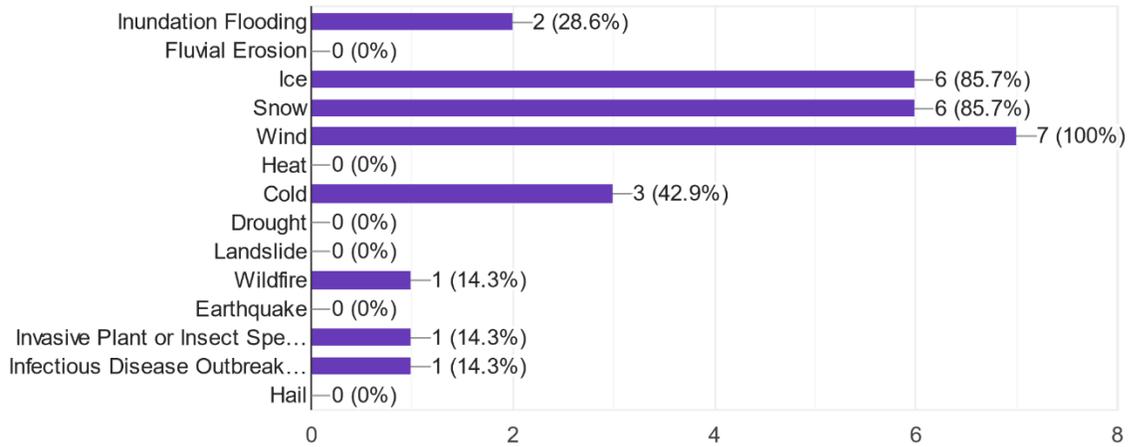
Select your top 3-4 hazards of concern related to infrastructure in your town.

7 responses



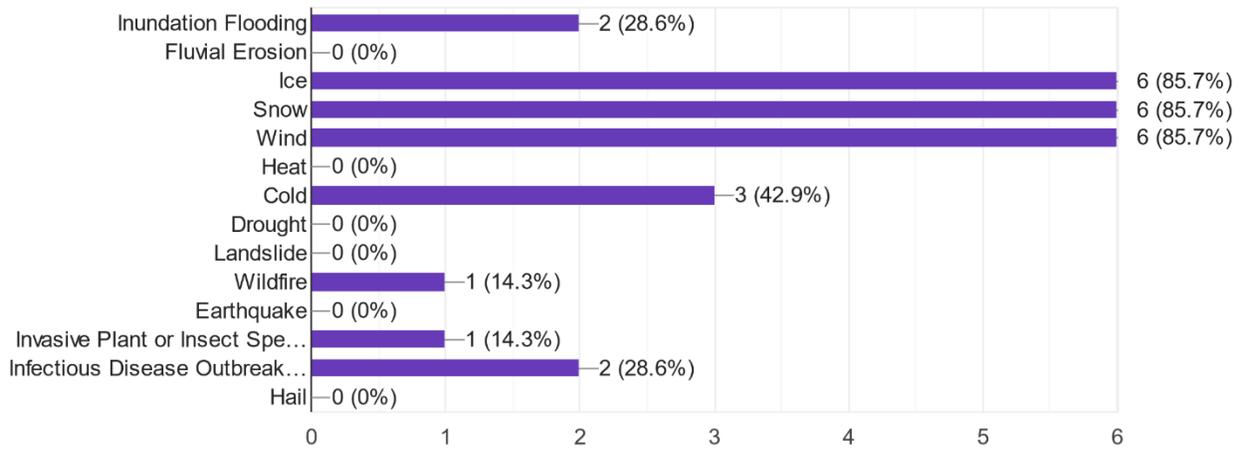
Select your top 3-4 hazards of concern related to life in your town.

7 responses



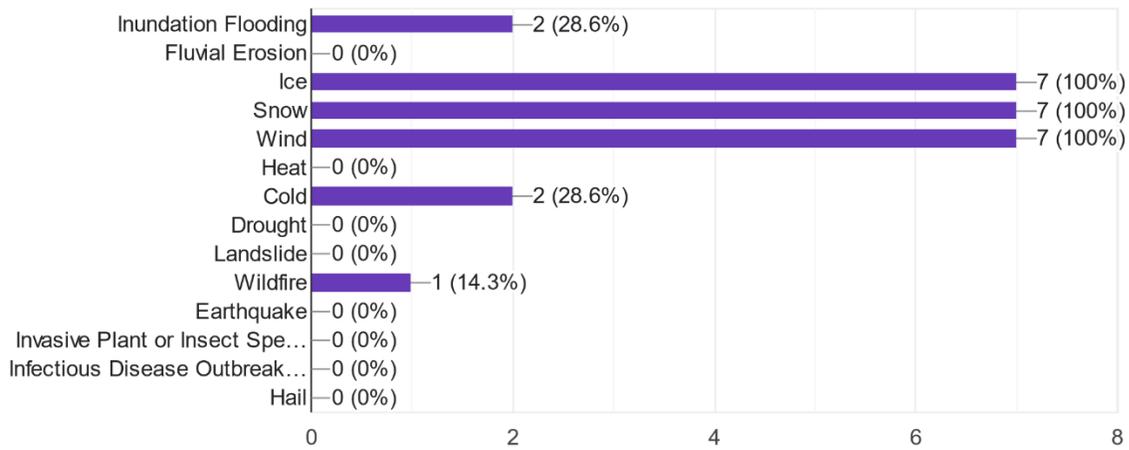
Select your top 3-4 hazards of concern related to the local economy in your town.

7 responses



Select your top 3-4 hazards of concern related to the natural environment in your town.

7 responses



3. Flood events from NOAA Storm Events Database that have caused financial loss in Bennington County. Listed in order of magnitude of financial loss:

Date Began	Event Type	Damage Amount	Flood Cause	Location	Event Narrative	Episode Narrative
7/29/2021	Flash Flood	200000	Heavy Rain	WEST RUPERT	<p>The Town of Sandgate suffered major impact from flash flooding. Culverts damaged portions of Sandgate Road, West Sandgate Road and Baldwin Brook. At West Sandgate Road, a six-foot culvert overflowed with the road partially gone along with gullies along other portions of the road. Portions of Hamilton Hollow Road were washed out and impassable. Lincoln Lane, Tate Hill Road and Chunks Brood Road suffered significant to severe damage. There was gully erosion along Woodcock Road. There was a stream bank failure, gully erosion and culvert failure along Wilcox Road. There was major gully erosion and one culvert failure along Southeast Corners Road. Some residential damage was also reported.</p>	<p>Bands of moderate to heavy rainfall set up across areas southern Vermont during the afternoon and evening hours on Thursday, July 29, 2021 north of a warm front and area of low pressure. Between 2 and 5 inches of rain fell across most areas which resulted in several reports of flash flooding. This rainfall ended a very wet month of July in which most areas picked up between 12 and 18 inches of rain. Nearly two dozen towns in southern Vermont were listed with either minor or major impact due to flooding, according to Vermont Emergency Management, with damage estimates ranging from less than \$10,000 to more than \$200,000 each. Numerous roads or culverts were closed or washed out. About 350 individuals were reported to be isolated individuals due to main road washouts around their home. President Biden approved a formal request for a Major Disaster declaration for Bennington and Windham counties as a result of the storms. Over \$5 million in damages to public infrastructure was identified by Vermont officials, including costs to repair public roads and bridges as well as debris removal.</p>

Date Began	Event Type	Damage Amount	Flood Cause	Location	Event Narrative	Episode Narrative
4/15/2019	Flood	100000	Heavy Rain	EAST DORSET	Flood waters washed out portions of Mad Tom Road and Upper and Lower Squirrel Hollow Roads. One lane on Route 7 near the General Store was closed due to flooding.	A low-pressure system and warm front brought heavy rainfall to the region during the morning hours of Monday, April 15th, 2019. This resulted in a few reports of flooding with some dirt roads washed out. A major disaster was declared by the President of the United States in Bennington County to assist in repairing the damaged roads.
1/24/2019	Flood	100000	Heavy Rain / Snow Melt	POWNALE	Floodwaters from the Hoosic River entered the Alta Gardens Trailer Park and prompted the evacuation of eight individuals. Four mobile homes sustained damage from the flooding, at least two of which saw major damage. Monetary damage amounts were estimated.	Following a heavy snowfall event on January 19-20 over southern Vermont, a strong low-pressure system tracking through southern Canada ushered in an unseasonably warm and moist airmass on January 24th. Temperatures surged into the 40s to mid-50s. Steady rainfall occurred during much of the 24th as a secondary low-pressure system developed over the Mid-Atlantic and tracked into southern New England. One four inches of rain was recorded over southern Vermont. The combination of the rainfall along with the mild temperatures melting some of the snow resulted in flooding over portions of the region along with minor to moderate river flooding on the Walloomsac River. Some flooding due to ice jams also occurred. Several roads were closed due to flooding, there was a mudslide on Route 7A near Manchester,

Date Began	Event Type	Damage Amount	Flood Cause	Location	Event Narrative	Episode Narrative
						and trailer parks were evacuated in Brattleboro and Pownal.
August 28, 2011	Tropical Storm Irene				<p>Readsboro experienced constant rain fall from this storm event that caused severe flooding. The river bottom in several areas of the Deerfield River were scoured and eroded, causing the embankments to calve off into the river. Rain-fall was in excess of 7 inches in a short period of time. This caused extensive damage to bridges, roads and the municipal water supply. Fluvial erosion had a huge impact on the river banks abutting private properties which are in danger of falling over a tall river embankment into the river during spring run-off of 2012. Currently residents of two homes are displaced due to damage. Other incidents that required attention were debris removal, unplugging culverts, un-passable roads, a broken water main adjacent to the Lions foot-bridge, retaining wall behind the Town Garage, damage to a water line on bridge #32, washed out river bank that exposed the bridge footing to bridge #31. This has directly placed this bridge in danger of failure. Road damages also occurred on Howe Pond Road, Goldmine Road, West Hill Drive,</p>	<p>Route 100 in Bennington County was closed due to flooding. Portions of Route 100 remained closed after the flood waters receded due to damage. Five houses on School Street in Readsboro with their backyards bordering the West Branch Deerfield River were declared unsafe to live in due to flooding.</p> <p>Route 9 was closed from Bennington to Brattleboro due to numerous reports of flooding. Portions of Route 9 remained closed after the flood waters receded due to damage. The Route 9 bridge in Woodford was reopened to traffic on September 9th, fully opening this main east-west connection across southern Vermont. Some portions of the road were dirt for a time afterwards between Marlboro and West Brattleboro. Strong winds also occurred across southern Vermont, with frequent wind gusts of 35 to 55 mph, along with locally stronger wind gusts exceeding 60 mph. The strongest winds occurred from the north to northeast during the morning hours, then from the west to northwest during Sunday evening. The combination of strong winds, and extremely</p>

Date Began	Event Type	Damage Amount	Flood Cause	Location	Event Narrative	Episode Narrative
					<p>Smith Drive, Bosley Hill Road, Branch Hill Road, Williams Road, Old County Lane, Bailey Hill Road, Ruba Drive, Freezing Hole Drive, Collins Drive, and Main Street. The town was cut off for a couple of days before transportation routes were reestablished.</p> <p>Three homes, located on the washed-out river bank of the Deerfield River, are uninhabitable and in eminent danger of destruction or falling into the river during the TS Irene event.</p> <p>62 School Street, Readsboro, VT 05350. Currently this parcel is owned by Barbara Keith. The total project cost is: \$ 146,768.00</p> <p>40 School Street, Readsboro, VT 05350. Currently this parcel is owned by Richard &amp; Mary Lemaire. This property is not inhabited. The total project cost is: \$ 105,913.00</p> <p>42 School Street, Readsboro, VT 05350. Currently this parcel is owned by Rodney &amp; Holly Caruso. This property is not inhabited. The total project cost is: \$ 118,343.00.</p>	<p>saturated soil led to numerous downed trees and power lines across the region. This also resulted in widespread long duration power outages. In particular, the approximate number of customers affected by power outages included: Windham County, 18000. President Obama raised the federal match share to 90% from 75% for TS Irene relief, therefore lowering the state and local shares by 7.5% each. Readsboro received \$1,480,654.34 from FEMA through declaration 4022.</p>

Date Began	Event Type	Damage Amount	Flood Cause	Location	Event Narrative	Episode Narrative
4/15-21/2007	Flooding				A flooding event occurred which was associated with flash floods and inundation flooding over a period of several days in the spring (April 15-21). Rain and snow caused damage to roads and utility lines across Windham County and Readsboro. Across the State nearly 3.6 million dollars was obligated as part of the FEMA Public Assistance Program.	
5/28/2002	Flash Flood	3000		POWNAL	Scattered thunderstorms developed along a quasi-stationary front on the afternoon of May 28. These storms were slow moving and contained torrential rainfall across southern Vermont. Rainfall amounts reached around 3 inches in a couple of hours in Bennington County. The result was localized flash flooding in Pownal. Routes 346 and sections of Route 7 were flooded in that town.	
12/17/2000	Flash Flood	11000		DORSET		A complex storm system began to evolve on Saturday December 16 across the Mississippi Valley. A surface low tracked north into the eastern Great Lakes by December 17. At the same time, the associated upper-level trough became negatively tilted as it moved toward the northeast on Sunday. This allowed for rapid deepening cyclogenesis. Unseasonably warm and moist air was

Date Began	Event Type	Damage Amount	Flood Cause	Location	Event Narrative	Episode Narrative
						<p>transported northward from the Gulf of Mexico. This scenario brought a record-breaking rainstorm to southern Vermont. Rainfall averaged 2-3 inches. Peru in Bennington County specifically receiving 3.21 inches and Ball Mountain in Windham county, 3.02 inches. The rain fell very heavily at times, up to an inch per hour. The rain, combined with snowmelt and frozen ground, lead to a significant runoff and flooding. Dorest in Bennington County reported street flooding. Also in Bennington County, Wright Creek at West Ruppert flooded onto a bridge.</p> <p>In Windham County, the Brimstone Creek flooded at Ames Hill. Route 30 and Route 9 were flooded in the city of Brattleboro. The Saxtons River flooded Route 121.</p>

Date Began	Event Type	Damage Amount	Flood Cause	Location	Event Narrative	Episode Narrative
7/16/2000	Flash Flood	100000		COUNTYWIDE		<p>A stalled frontal boundary across extreme southern Vermont interacted with a strong upper-level disturbance from July 15 into early July 16. The result was a slow-moving low-pressure area which formed over Virginia. This low pumped a deep layer of tropical air into the region and produced the second widespread heavy rainstorm of the summer. Two to four inches of widespread rain fell, with locally higher amounts across the higher terrain of Windham County. Specific amounts included 3.00 inches at Bennington and 5.17 inches at West Wardsboro, in Windham County. This rain produced enough runoff to cause the Battenkill to exceed the six-foot flood stage by about a foot at Arlington, Bennington County, a 47 year high. The swelled river flooded the Batten Kill Canoe company and adjacent river property. Also, the Deerfield River rose 6 feet above unofficial flood stage in Wilmington, Windham County. Several roads were reported under water.</p> <p>The widespread heavy rain event set the stage for more widespread flooding later Sunday. The air remained very moist and unstable in wake of the rainstorm. More thunderstorms erupted late in the day across southern Vermont.</p>

Date Began	Event Type	Damage Amount	Flood Cause	Location	Event Narrative	Episode Narrative
						<p>These storms moved very slowly, trained over the same region, and were further enhanced by the steep terrain. The thunderstorm rainfall, as well as the earlier rainstorm, dumped in excess of 8 inches locally at Newfane, Windham County. Since the ground was already saturated, the heavy rains from the thunderstorms produced flooding and flash flooding across the region. In Shaftsbury, Bennington County, Route 67 was washed out. U.S. Route 7 was closed due to flooding and rockslides. Numerous other roads were closed, some even washed out. In the city of Bennington, more roads were flooded or washed out.</p> <p>In Windham County, a five mile stretch of State Route 30 was closed due to flooding and residents were evacuated. Street flooding was reported at Brattleboro. Severe damage took place on South Wardsboro and Steep Way Roads. A home suffered mud damage as mud - laden water had flowed through the house.</p> <p>Lightning from a thunderstorm struck a man while he was jogging in the city of Bennington, injuring him.</p>

Date Began	Event Type	Damage Amount	Flood Cause	Location	Event Narrative	Episode Narrative
9/16/1999	Flash Flood	476000		COUNTYWIDE		<p>The remnants of Hurricane Floyd moved up the eastern seaboard on September 16 and during the early hours on September 17. The storm brought both high winds and heavy rainfall to Southern Vermont, which included a large swath of 3-to-6-inch amounts. Specific rainfall amounts included 2.91 inches in Bennington, 3.89 inches in Sunderland, 4.54 inches at Peru and 5.70 inches at Brattleboro. The rain produced significant flooding across the region, which proved destructive. Many smaller tributaries reached or exceeded bank full. Water from the Millbrook in Weathersfield washed away a portion of State Route 5. The World's Fair in Tunbridge was cancelled for the first time in many years.</p> <p>Winds from the passage of Floyd were estimated to have gusted to over 60 mph, especially over hill towns. The combination of the wind and very saturated ground, produce widespread downing of trees and power lines across much of Southern Vermont. A woman was injured on Tavern Hill in Putney, Windham County when a tree came crashing down on her Volvo, destroying the vehicle. Some trees fell on vehicles and houses. The rain and</p>

Date Began	Event Type	Damage Amount	Flood Cause	Location	Event Narrative	Episode Narrative
						wind produced power outages across the region. As many as 2,000 people lost power in Southern Vermont.
1/24/1999	Flash Flood	5000		Bennington County	The combination of rain and very mild temperatures produced rapid snow melt in southern Vermont. This runoff and ice jams triggered flooding on the upper Battenkill near Arlington and on the Walloomsac River near Bennington.	
3/29/1998	Flood	10000			Rapid snowmelt during the end of March caused flooding along the Battenkill in Bennington County. Widespread low land flooding occurred along route 313 near Arlington. The river crested at Arlington on April 1, with a reading of 6.35 feet. Flood stage at Arlington is 6 feet.	
1/8/1998	Flash Flood	80000		COUNTYWIDE	On January 8 and 9, mild weather along with significant rain and snowmelt resulted in small stream flooding across parts of Bennington County. The flooding small streams closed several roads throughout the county. Roads were closed in the Arlington area due to small stream flooding. The Walloomsac River crested nearly two feet above flood stage at Bennington. The Bennington Plaza and Paper Mill Village were hardest hit by the flooding Walloomsac River.	

Date Began	Event Type	Damage Amount	Flood Cause	Location	Event Narrative	Episode Narrative
12/2/1996	Flash Flood	20000		NORTH BENNINGTON		
7/13/1996	Flash Flood	9000		BENNINGTON		
5/11/1996	Flood	3000		Bennington County		A low-pressure system tracked across New York State and New England during May 10 and 11. On May 12 the system moved to the east coast and intensified, this prolonged the period of precipitation. Rainfall in excess of 2 inches fell during this period over much of western New England. This resulted in flooding along the Hoosic River in Bennington County.
5/1/1996	Flood	5000		Bennington County		Heavy rain on Tuesday evening April 30 caused the Walloomsac River in Bennington County to flood. Flooding occurred at Paper Mill Village northwest of Bennington.
4/24/1996	Flood	10000				Significant rains on Tuesday evening April 23 resulted in flooding along the Walloomsac and Battenkill Rivers in Bennington County. The Walloomsac River crested 1.5 feet over flood stage at North Bennington and the Battenkill crested 1 foot over flood stage at Arlington. The flooding resulted in several road closures but much of the flooding was minor.
1/19/1996	Flood	300000				An intense area of low pressure which was located over the Mid-Atlantic region on Friday morning January 19th produced unseasonably warm temperatures, high dewpoints and strong winds. This resulted in rapid melting of one

Date Began	Event Type	Damage Amount	Flood Cause	Location	Event Narrative	Episode Narrative
						<p>to three feet of snow. In addition to the rapid snowmelt one to three inches of rain fell as the system moved northeast along the coast. This resulted in numerous road washouts and the flooding of several homes across the county.</p>

1987 – Major flooding. NCDC detailed storm data only goes back to 1996.

VOLUME 74 NO. 21 USPS 663-406 1987 WEDNESDAY, APRIL 1, 1987 BRATTLEBORO, VERMONT 26 PAGES 38 CENTS

# Flooding rains down on valley

## Homes evacuated as rivers rise



**By CHRISTOPHER ROWLAND**

Heavy rains Tuesday caused the Whitehall Brook to swell up and spill over its banks in several West Brattleboro locations, forcing the evacuation of several trailers at the Mountain Home Park and sending sand-bag crews to the area.

The National Weather Service in Connecticut reported that the Connecticut River in southern Vermont was observed at 26.7 feet Tuesday night with the flood stage at 28 feet. The spokesman said the river is expected to crest at 35 feet this afternoon.

Power outages were reported throughout Windham County and in New Hampshire as strong winds combined with the rains. About 3,000 customers lost power in New Hampshire's Cheshire County, officials said.

Brattleboro fire crews smashed at Matrus Terrace off Western Avenue in an attempt to block rushing waters from occupying the West Brattleboro development.

Along the western end of Marlboro Road, the water swept across fields and into the street.

Fields behind the Fitness Barn, the Country Kitchen restaurant and the Brattleboro West shopping center were flooded. Across the brook, water flowed past and under several mobile homes at the Mountain Home Park.

The farmers' market near the Creamery Bridge on Western Avenue was under water.

Brooks and streams were running full all over Windham County and much of the state. A flood warning issued by the National Weather Service remained in effect until 8 p.m. and a Connecticut River flood alert was in effect until this morning.

At one point, the water in Whitehall Brook was crashing into the Meadowbrook Road bridge. However, the water began to subside at about 5 p.m. and the integrity of the bridge was not threatened, officials said.

"We'll be with it just as long as we have to," Brattleboro Fire Chief T. Howard Mattison said of the efforts to battle the floodwaters. The worst of the flooding had subsided by early Tuesday evening, Mattison said.

Fire crews were standing by to raise the brook around its rise, Mattison said.

"If we get more heavy rain, we'll be back out again," Mattison said.

The rain combined with strong winds caused numerous power outages throughout the county and in Hinsdale, N.H., electric company officials reported.

"There's some pretty big water problems over here," said Richard Lamberts of the New Hampshire Public Service Co.

Power was knocked out from Hinsdale to the Connecticut River, Lamberts said, affecting at least 1,000 customers alone.

David Miller of Central Vermont Public Service said power was out at times in West Dummerston, Guilford, Warrenton and along Ames Hill Road in Brattleboro.

High winds that blew over water-laden branches caused the outages, Miller said.

Green Mountain Power spokesman David Carstock said electricity cut in Rockingham, Westminster West and Dummerston Center. Power was off in parts of Putney early Tuesday morning.

"It doesn't sound too good right now, listening to the seaman," Carstock said. "If it keeps raining and having life it has been, we're going to be in for a night."

Officials said the mobile homes at

See FLOOD, Page 14

**HIGH WATER** — Sections of Windham were under water like much of the county Tuesday. Above, the south side of Route 9 along the Deerfield River was evacuated by late afternoon. During the day and into the evening, the town's police and highway departments were out continuously responding to related complaints and taking protective action.

*Sally Williams*

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

In 1973 there was an extreme rainfall event from June 28-30 that affected all areas of Vermont except the northwest section. Rainfall amounts as much as 6 inches in 24 hours in some locations. This was the largest rain event since the 1927 flood. Highway damage was extensive in the south-central, southeastern, and northeastern areas of the State. Three persons were killed in the 1973 flood, and damage was estimated at \$64 million. Sizable crop loss was reported, and damage to State highways was estimated to be \$10 million. The entire State was declared a disaster area.<sup>27</sup> After this event, there was extensive dredging, berming and windrowing in an attempt to control channel location and reduce future flood impacts.

<sup>27</sup> USGS "Vermont Floods and Droughts" information page <http://md.water.usgs.gov/publications/wsp-2375/vt/>. Accessed 4/3/15.

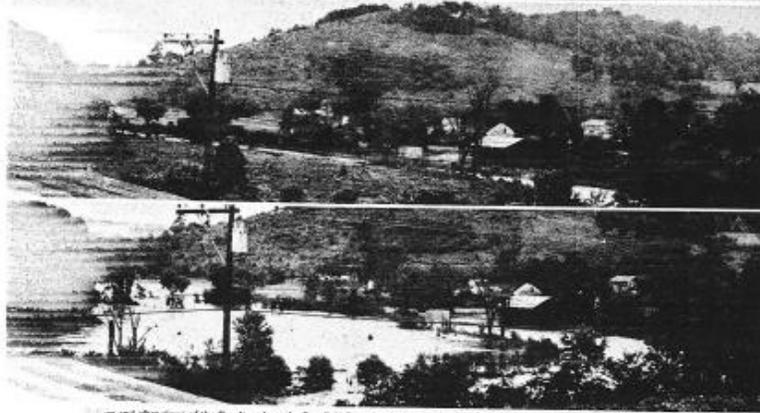
# THE FLOOD OF '73

....WHEN THE WATER WAS HIGH.....

Photographed by Lee Sheridan



Wilmington Firemen help Joseph Waters back from his Old Deerfield House, when he was trapped by fast rising water in the early hours of Saturday morning.



Before and after views of the flooding along the Deerfield River, with the view just north of the village of Wilmington. Photographed by Lee Sheridan.

The Spring Floods of 1938, which had an effect on all of New England, caused \$113 million in damage, killed 24 people and made 77,000 people homeless. During this flood alone, the main street of Hooksett, New Hampshire was 18 to 20 feet underwater. There was over 11 feet of flood water in the nearby Wilmington Town Hall filling the basement and damaging the Town Clerk's office and records.

The Vermont Flood of 1927 was the deadliest flooding event in the history of the State; eighty-four people were killed with over \$28 million in property damage.

1977 on 1927 Flood

# Woro Return

1-1  
71-4103  
VV  
NOV 3 1977  
VT 05303

Windsor County, Vermont and Southwestern New Hampshire

WINDSOR, VERMONT, SATURDAY, NOVEMBER 3, 1977 16 PAGES PLUS 8-PAGE INSERT & 12-PAGE TABLED IN 1977

## 50 Years Ago This Week

# The Flood of 1927 Overwhelmed Vermont

**By KIMBERLY PAGE**  
This week is the 50th anniversary of the arrival of a rain after a storm, the great flood of Nov. 2, 3 and 4, 1927. It was an era when a conservative Vermont, future Doolittle, sat quietly in the White House, the dark forest loomed, and the newspapers were filled with the accounts of the Great Flood of Vermont and New England.

In Windsor, the behavior was filled with the news of the burning of the Central Congregational Church on Oct. 27. It also carried the incongruously featuring Maurice Markham, "noted star of grand opera," possessing LUCKY SMITH cigarettes. Nine automobiles were destroyed for a total of about \$200, and another

seven from former stores were a few days from page leaders. "Five Big Vermont Acts," including "last moments, weeping, talking, shouting and good-byes," were listed at the Automobiles to the old town building South Street. Incidentally, the feature like that week was "The World of the Superhero." The *Laurie Thrasher* also offered vocabulary and his 7th's latest work. In Island Park, a football game was scheduled for Saturday, Nov. 4, between Swanton High School and Windford High School.

That game was never played. The flood of 1927 reduced Island Park's storage by half. Its contents are still visible in the Connecticut River at the corner end of the bridge in Montpelier, N.H.

In 1927, the Island had several buildings, including the Casino, where there was dancing... but no drinking or gambling in that time of prohibition.

**Windsor News**  
On Wednesday, Nov. 2, the *Ballroom* reported that the weather was a remarkable 71 degrees. The weekend November day is 69 years.

"Waters never receded more slowly on good 100-year-old Vermont than the disturbing the autumn of 1927," according to a contemporary book 1926, "The Flood—A Gathering of Reports and Pictures Which Tell Their Story Dramatically of the Great November Flood in Vermont," by Lester S. Johnson of White River.

Johnson wrote that the spring and summer of 1927 was a wet one, with more than average rain for good crops. The fall was brilliant and unusually warm, again with more than enough rain. In October, the average rainfall was 4.84 inches, whereas normal rainfall for that month is 2.49 inches, according to Johnson's account.

"As November arrived, the sun was out and pleasant, the soil everywhere had absorbed moisture and the streams were more than normally high," Johnson wrote.

**Windsor Flooding**  
The weather prediction for the Nov. 1 day of the Ballroom started a clear warning of a "typical disturbance over Virginia and the Carolina" that would "move northwest with increasing intensity."

It rained like a water, but it brought rain, not snow. During that evening of Nov. 1, a rain fell steadily and began to fall, according to Johnson's account. The flood had overflowed through the morning of Nov. 1.

"After a few hours the rain fell without ceasing or giving signs that it was about over. That was, and into the afternoon,



GREAT FLOOD of 1927 washed away most of Island Park in the Connecticut River, leaving the Casino, street, its damaged and its one last one down. When the waters receded, signs were carried marking highway's fall in "craters on the riverbank."

down over the heavy fall," Johnson wrote. The rainfall was estimated at an astounding 5.86 inches in some portions of Vermont, and at 4.84 inches in Montpelier over a 24-hour period.

"Over the already full banks, elevated and trees began to fall over their banks. The night of Nov. 3-4 was full of lightning and steady rainwater for Vermonters. Other New England states

suffered damage, but none so cruelly as Vermont, according to all accounts. The central portion of the state was the worst hit, where entire villages were isolated by washed bridges, washed out roads, and uprooted houses.

The flooding was chaotic, for most telephone lines went down, and traffic was chaotic. Many traps were sent on landback to cause damage to remote places.

Historical deaths were reportedly reported in Montpelier was in February was reported to have "lost of about during the flood. 'Miss Lucy' had dropped dead of fright in Belmont 'marble worker was in his death. Spicy Ridge in Center Water out."

Lt. Gen. J. William Jenks  
See FLOOD, Part



ROAD TO ISLAND PARK — The floodwaters of early November 1927 passed over the road in Island Park and washed most of it away.

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

Readsboro Local Hazard Mitigation Plan for review and comment

 Alyssa Sabetto <asabetto@windhamregional.org> Reply Reply All Forward ...

To 'Dara Zink'; 'Gig Zboray'; 'smoore@wilmingtonvt.us'; 'Jessica DeFrancesco'; 'Scott Tucker'; 'josiekil@yahoo.com'; 'woodfordvt@comcast.net'; 'keade@northadams-ma.gov' Thu 6/22/2023 10:35 AM

Bcc 'Alyssa Sabetto'; 'admin readsborovt.org'

 Readsboro\_2023 HMP for public comment.pdf 5 MB

Attached please find a draft of the updated Readsboro Local Hazard Mitigation Plan. The Windham Regional Commission has recently worked on updating this plan with the help of the town. It is now being sent to you as an opportunity for review and comment per FEMA requirements. Please share this draft with your town Planning Commission and Selectboard. **Please provide any comments back to the Windham Regional Commission by July 10, 2023.** Please use the contact information in my signature.

I would appreciate you letting me know that you have reviewed the draft, even if you do not have comment. I appreciate your time and assistance in this matter. If you have any questions, please let me know.

Thank you,

**Alyssa Sabetto, CFM**  
Senior Planner  
Windham Regional Commission

## 5. Email sent to frontline organizations for public comment on the draft plan

Readsboro Local Hazard Mitigation Plan for your review and comment

 Alyssa Sabetto <asabetto@windhamregional.org> Reply Reply All Forward ...

To 'Alyssa Sabetto' Thu 6/22/2023 11:52 AM

Bcc 'ROYER@READSBOROCENTRALSCHOOL.NET'; 'afiliault@readsborocentralschool.net'; 'andrew.massari@info@thmmanagement.com'; 'Couture, Ken'; 'mcole@greatriverhydro.com'; 'info@mooover.com'

 Readsboro\_2023 HMP for public comment.pdf 5 MB

Hello Community Lifeline Provider,

Windham Regional Commission has been working with the Town of Readsboro on updating their Local Hazard Mitigation Plan (LHMP). I am reaching out to you and your organization because you provide essential services (or community lifelines) for the Town of Readsboro, VT. The Town has created a Draft LHMP and it is now available for public review. Because of your organization's service for Readsboro, we would appreciate any comments or questions you might have about the Draft Plan.

The public comment period for this Draft Plan is open until July 10, 2023.  
A copy of the Readsboro draft LHMP is attached.

Since Hazard Mitigation Plans are likely new to you, here is a quick overview of what a LHMP is:

*A Hazard Mitigation Plan identifies natural hazards that affect a community, assesses risk and vulnerability to these hazards, and identifies priority mitigation actions to remove or limit vulnerability and create a more resilient community. The Plan must be updated and submitted to Vermont Emergency Management (VEM) and to the Federal Emergency Management Agency (FEMA) for approval every five years. Updating the Plan is required in order for the Town to remain eligible to receive FEMA grants.*

Thank you and please reach out to me if you have any questions or comments on the Plan.

Best,

**Alyssa Sabetto, CFM**  
Senior Planner  
Windham Regional Commission

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

## **Readsboro Local Hazard Mitigation Plan**

### **PUBLIC COMMENT PERIOD**

The draft Readsboro Local Hazard Mitigation Plan is now available for public review on the town website: [readsborovt.org](http://readsborovt.org)

Hard copies are available at the Town Office and the Community Library.



The Plan will be available for comment until  
July 10, 2023.

Anyone who would like to comment on the plan should contact Alyssa Sabetto at the Windham Regional Commission. She can be reached via phone at 802-257-4547 x113 or email at [asabetto@windhamregional.org](mailto:asabetto@windhamregional.org).

We encourage your review and participation!

7. Email sent 5/9/23 to town staff and Hazard Mitigation Planning Committee for review of the draft

Draft Readsboro Local Hazard Mitigation Plan for internal town comment until 5/24

 Alyssa Sabetto <asabetto@windhamregional.org>  
To: 'admin readsborovt.org'; rayeilers@myfairpoint.net; 'Omar Smith'; 'andrew massari'; dpw@readsborovt.org; natekurz@gmail.com

 Reply  Reply All  Forward  ...

Tue 5/9/2023 3:47 PM

 Readsboro 2023 HMP update town comment DRAFT.pdf  
4 MB

Hello Readsboro,

Attached is the first draft of the Readsboro Local Hazard Mitigation Plan update (finally!). **This draft is just being passed around at this point for internal town review and is not yet out for public comment. Please review the attached draft and provide comment back to me by May 24<sup>th</sup>.** I'll incorporate comments and then put the plan out for public comment. If you don't get the chance to comment during this internal opportunity, you can comment during the public opportunity. You can mark up the attached document and scan it back to me, call me with comments or email me back a list of comments. I'm not able to send in a word version, as the file is too large for email.

Please note that the **yellow highlighted** sections of the plan are *not yet completed* for Readsboro and are awaiting further information. They will be customized and un-highlighted as the process moves forward. There are also a few of the appendices that are not yet developed, but will be in the final plan.

Karen - If there are any town staff or plan development participants who are not getting this email that should, please forward it on to them.

Thank you,

**Alyssa Sabetto, CFM**  
*Senior Planner*

8. March 10, 2021 Meeting agenda

## AGENDA FOR MARCH 10<sup>TH</sup> MEETING

### **1. Update of the current Readsboro Local Hazard Mitigation Plan**

- Purpose
- Process

### **2. Hazards**

- Brief review of existing/expired Readsboro Local Hazard Mitigation Plan
- Discuss hazard events that have occurred since the last Plan
- Take online survey
- Discuss meeting participant survey results
- Decide what the updated Plan will address
- Mark up the Atlas with local hazard notes

### **3. What to think about for the next meeting scheduled for March 24<sup>th</sup>**

## 9. March 24, 2021 Meeting agenda

# AGENDA FOR MARCH 24<sup>TH</sup> MEETING

### 1. Brief review of decisions made on March 10<sup>th</sup> regarding hazards to address in the updated Plan

### 2. Mitigation Goals and Actions

- Review/edit Mitigation Goals
- Brief review of the current Mitigation Actions Table that the Town updated
- Create an updated Mitigation Actions Table for the updated Plan
- Identify gaps and capabilities with implementation

### 3. Other Updates

- Discuss recent mitigation work completed by the town
- Discuss development trends – new developments, upcoming developments
- Overall resiliency concerns or ideas
- Review of other elements and address questions that weren't discussed

### 4. Next Steps

10. Meeting flyer that was posted around town

# Update of the Readsboro Local Hazard Mitigation Plan Public Meeting Announcement



2 Meeting Dates: March 10<sup>th</sup> and March 24<sup>th</sup>, 2021

Time: 6:30-8:00 PM

Via Zoom

See Town website for meeting details

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

For more information contact  
Alyssa Sabetto at 802-257-4547 x113



11. Website advertisement for public comment on the draft plan, posted 6/22 – 7/10, 2023

