

Hubbardton, Vermont Local Hazard Mitigation Plan



**Road Embankment Stabilization Project on
Black Pond Road - 2019**



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1 Introduction

The impact of expected, but unpredictable natural events can be reduced through community planning. The goal of this Plan is to provide a natural hazards local mitigation strategy that makes Hubbardton (the Town) more disaster resistant.

Hazard Mitigation is any sustained action that reduces or eliminates long-term risk to people and property from natural hazards and their effects. FEMA and state agencies have come to recognize that it is less expensive to prevent disasters than to repeatedly repair damage after a disaster has struck. This Plan recognizes that communities have opportunities to identify mitigation strategies and measures during all 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 local actions that can be taken to reduce the severity of the hazard.

2 Purpose

The purpose of this Plan is to assist the Town in identifying all natural hazards facing the community, ranking them according to local vulnerabilities, and identifying strategies to reduce risks from vulnerabilities of highest concern. Once adopted, this Plan is not legally binding; instead, it outlines goals and actions to prevent future loss of life and property.

The benefits of mitigation planning include:

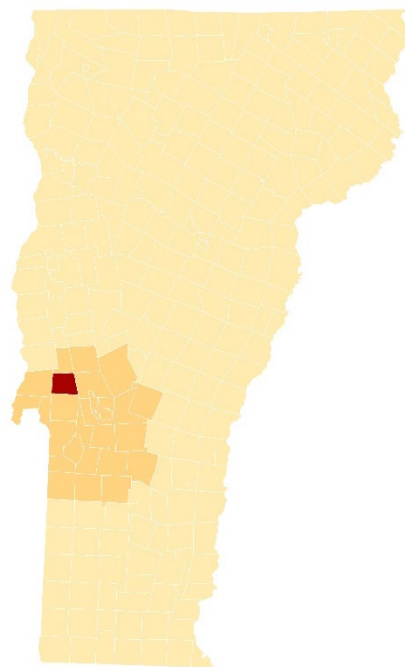
- Identifying actions for risk reduction that are agreed upon by stakeholders and the public;
- Focusing resources on the greatest risks and vulnerabilities;
- Increasing education and awareness of threats and hazards, as well as their risks;
- Communicating priorities to State and Federal officials; and
- Aligning risk reduction with other community objectives.

Furthermore, the Town seeks to be in accordance with the strategies, goals, and objectives of the 2018 State Hazard Mitigation Plan.

3 Community Profile

Land Use and Development Patterns

Hubbardton is in the northwestern corner of Rutland County. It is situated at the north end of the Taconic mountain range with elevations ranging from 400 to 1,500 feet.



Hubbardton’s hilly terrain is dotted with several streams, ponds, and lakes. The lakes and shoreland areas are an important part of the landscape and lifestyle in Hubbardton.

Residential structures are the primary development in Hubbardton. These include scattered rural residences as well as clusters of primary and seasonal homes around the lakes and ponds. While there are very few commercial or public buildings in Town, there are several home-based businesses and cottage industries, as well as some forestry activities.

Hubbardton is also home to a prominent Revolutionary War battlefield, a popular tourist attraction.

Demographics and Growth Potential

The 2017 American Community Survey Five-Year Estimates prepared by the U.S. Census Bureau shows an estimated population of 559 for Hubbardton, and 599 housing units. Of the population included in the survey, 18% were 19 or under, and 26% were 65 or over, with a median age of 54.4 years, significantly higher than Vermont’s median age of 42. Hubbardton’s population has been slowly declining since 2000. Significant growth is not anticipated within the near future.

Precipitation and Water Features

Precipitation in Hubbardton is typical of the rest of the region. Average precipitation is 41 inches of rain; with July being the wettest month. Average snowfall is 66 inches; with January being the snowiest month.

Surface waters are abundant in Hubbardton, accounting for 5% of the land area. The largest lakes are Lake Bomoseen and Lake Hortonia. Other smaller water bodies include Lake Beebe and Echo Lake and several ponds - Half Moon, Black, Austin, Bresee, Walker, Roach, Moscow, Mudd, Beaver Meadow, High, and Said. Many brooks and the Hubbardton River flow in and through the Town. These all are connected to the lakes and ponds. In addition, Hubbardton has 1,057 acres of Class Two wetlands. Flood hazard areas are designated on the Flood Insurance Rate Maps (FIRM) for Hubbardton.

Water and Sewer Supply

Hubbardton is a rural community. Water supply and sewage disposal are the responsibility of private landowners. Potable water is supplied by drilled or dug wells, springs, and lakes.

Sewage disposal is accomplished through on-site septic systems.

Transportation

Hubbardton is served by two types of transportation routes— state and town highways. Primary access to Hubbardton is afforded via VT Route 30, connecting Sudbury to the north, with Castleton to the south. Hortonia Road and Monument Hill Road are the major town roads roughly linking the eastern and western portions of the community. The local road network is maintained by the Town highway crew whose garage is located at 66 Hortonia Road.

Hubbardton has a total of 11 bridges and ±1,020 culverts. Two have a span of 20 feet or more; nine are less than 20 feet. One of the bridges in Hubbardton are part of the state system, that on VT Route 30.

Electric Utility Distribution System

Electric service to approximately 650 customers is provided by Green Mountain Power via three circuits. Average annual outage statistics between 2015 and 2019 are summarized in **Table 1**.

Table 1: Power Outage Summary

5-Year Average (2015-2019)	
Avg # of times a customer was without power	0.98
Avg length of an outage in hours	2.41
# of hours the typical customer was without power	2.37
2019 only	
Avg # of times a customer was without power	2.60
Avg length of an outage in hours	1.56
# of hours the typical customer was without power	4.07

The longest power outage affecting the greatest number of customers between 2015 and 2019 was 18.23 hours long and impacted 83 customers. During this same time period, there was a 22.44 hour long outage, but it only impacted 25 customers.

Emergency Management

Hubbardton has a well-equipped Volunteer Fire Department. It is also a member of the Rutland County Fire Mutual Aid system.

Fair Haven Volunteer Rescue Squad serves as Hubbardton’s ambulance service, this is supplemented by the Regional Ambulance Service as needed. Medical services are available at the Castleton Family Heath Center. The nearest hospital is the Rutland Regional Medical Center, within 30 minutes travel time from Hubbardton.

Law enforcement in Hubbardton is provided by an appointed constable with support from Vermont State Police as needed.

Emergency Management Planning

The Town has an appointed Emergency Management Director (EMD) who works with others in town to keep the Local Emergency Plan up-to-date as well as to coordinate with nearby towns and regional emergency planning efforts.

4 Planning Process

Plan Developers

Steffanie Bourque, an Emergency Management Planner at the Rutland Regional Planning Commission (RRPC) assisted the Town with updating its Local Hazard Mitigation Plan. Hazard Mitigation Grant Program funds from FEMA supported this process.

The Hazard Mitigation Planning Team members who assisted with the update include the Town Clerk, Road Commissioner, Selectboard Chair, and 1st Assistant Fire Chief.

Plan Development Process

The 2020 Hubbardton Local Hazard Mitigation Plan is the first single jurisdiction mitigation plan drafted for the Town. Previously, the Town had a town-specific Annex in the 2009 Rutland County, VT Hazard Mitigation Plan.

This Plan has been reconstructed as a single jurisdiction, stand-alone Hubbardton Local Hazard Mitigation Plan that will be submitted for individual approval to FEMA. As such, several sections have been added or updated to include all necessary information. A summary of the process taken to develop this Plan is provided in **Table 2**.

In addition to the local knowledge of Planning Team members and other relevant parties, several existing plans, studies, reports, and technical information were utilized in the preparation of this Plan. A summary of these is provided in **Table 3**.

Table 2: Plan Development Process

October 25, 2019: Hazard Mitigation Planning Team kick-off meeting. Planning Team members were confirmed. Discussed what a LHMP is; the benefits of hazard mitigation planning; current plan status; the planning process; outreach strategy; and plan sections.

November 7, 2019: Public notice posted on RRPC and Town social media and at the Town Hall that the Town is engaged in hazard mitigation planning and updating their LHMP. Emailed notice to officials in neighboring towns of Benson, Sudbury, Brandon, Pittsford, and Castleton. Name and contact information provided in notices for more information. No replies to public outreach.

November 15, 2019: Planning Team meeting - confirmed the plan purpose and completed work on the community profile and community hazard risk assessment. Began work on storm history and identifying vulnerable assets for highest risk hazards.

December 2, 2019: Working draft LHMP shared with Vermont Hazard Mitigation Planner for review and comment.

December 9, 2019: Working draft LHMP presented at joint public meeting of the Hubbardton Selectboard and Planning Commission to encourage input from local government and general public that could affect the plan's conclusions and better integrate with related Town initiatives. Draft LHMP received positive support from both Selectboard and Planning Commission – no additional input received from either local government or the general public.

January 7, 2020: Planning Team meeting – completed work on hazard identification and risk assessment. Began work on hazard mitigation strategy – confirmed mitigation goals; identified community capabilities; updated status of 2009 mitigation actions; and began developing mitigation actions.

February 11, 2020: Planning Team meeting – completed work on mitigation strategy; changes since the 2009 plan; and process for plan maintenance.

April 15, 2020: Complete draft LHMP shared with members of the Hubbardton Selectboard and Planning Commission for input from local government. Minor edits to the Community Profile were made.

Table 2: Plan Development Process (cont.)

April 22, 2020: Draft LHMP posted for 14-day public comment period on the RRPC website, Hubbardton Town Clerk and Fire Dept. Facebook pages, and shared by email with above mentioned neighboring towns and Poultney Mettowee Conservation District. No public comments were received.

May 8, 2020: Draft Plan submitted to VEM for Approval Pending Adoption.

Changes Since the 2009 Plan

There have been no significant land development changes in Hubbardton since 2009. Certainly nothing that would make the community more vulnerable to natural hazards.

Similarly, there has been little change in Hubbardton’s mitigation priorities between this Plan update and the 2009 plan. In 2009, floods and fluvial erosion, winter storms, and high winds were Hubbardton’s highest risk hazards. Hazard mitigation actions from 2009 are presented in **Appendix C**. The Hazard Mitigation Planning Team reviewed these actions and reported on the status of each.

Hubbardton has made significant progress in completing mitigation actions since 2009:

- They now have a Road Stormwater Management Plan, which is a customized, multi-year plan designed to stabilize the municipal road drainage system.
- In 2016, the Hubbardton Town Plan placed a development restriction on lands above 1300 feet in elevation.
- A Stormwater Master Plan for the Lake Bomoseen Watershed was completed in 2016, which identifies a range of projects to mitigate stormwater inputs to the lake.
- The Town is diligent about roadway maintenance and are systematically replacing culverts (upsizing them as necessary) on an annual basis.
- In 2019, the Town undertook a successful lakeshore stabilization project on Black Pond to stabilize a section of Black Pond Road (see Plan cover photo).
- The Town intends to employ the techniques learned through the 2019 stabilization project on a similar project on Breese Pond.

Table 3: Existing Plans, Studies, Reports & Technical Information

- 2020 FEMA NFIP Insurance Reports
- 2019 Local Emergency Management Plan
- 2019-2018 Zoning and Subdivision Regulations
- 2019-2015 Green Mountain Power Outage Data
- 2018 State of Vermont Hazard Mitigation Plan
- 2017 American Community Survey Five-Year Estimate
- 2016 Hubbardton Town Plan
- 2016 Lake Bomoseen Watershed, Castleton and Hubbardton Stormwater Master Plan
- 2009 Rutland Region All Hazards Mitigation Plan
- RRPC Local Liaison Reports of Storm Damages
- National Oceanic and Atmospheric (NOAA) National Climatic Data Center’s Storm Events Database
- FEMA Disaster Declarations for Vermont
- OpenFEMA Dataset: Public Assistance Funded Project Summaries for Vermont
- U.S. Geological Survey National Water Information System- Stream Gage Data
- “Climate Variability and Socioeconomic Consequences of Vermont’s Natural Hazards: A Historical Perspective” by Lesley-Ann Dupigny-Giroux, 2002, Vermont History 70: 19-39.
- Rutland Herald Archives
- FEMA Flood Insurance Rate Maps
- Relevant Stream Geomorphic Assessments and/or River Corridor Plans

5 Hazard Identification and Risk Assessment

After engaging in discussions, the Town identified the following “highest risk hazards” that they believe their community is most vulnerable to:

Local Vulnerabilities and Risk Assessment

One of the most significant changes from the 2009 Plan is the way hazards are assessed. To be consistent with the approach to hazard assessment in the 2018 State Hazard Mitigation Plan, the Hazard Mitigation Planning Team conducted an initial analysis of known natural hazards to determine their probability of occurring in the future.

The Planning Team then ranked the hazard impacts associated with the known natural hazards based on the probability of occurrence and potential impact to life, the economy, infrastructure, and the environment. The ranking results are presented in **Table 4**.

- Thunderstorms with associated flash flooding, fluvial erosion, inundation flooding, high winds, and/or hail.
- Winter Storms with associated extreme cold, snow, ice, and high winds.

Each of these “highest risk hazards” (**orange** in **Table 4**) are further discussed in this section and depicted in the Local Hazards and Vulnerabilities Map in **Appendix B**.

The “lower risk hazards” that are considered to have a low probability of occurrence and low potential impact are not discussed. For information on these hazards, consult the State Hazard Mitigation Plan.

Table 4: Community Hazard Risk Assessment

Hazard Event	Hazard Impacts	Probability	Potential Impact					Score
			Life	Economy	Infrastructure	Environment	Average	
Thunderstorm	Wind/Hail	4	3	2	2	2	2.25	9
Tropical Storm/Hurricane	Flash Flooding/Fluvial Erosion	4	2	2	2	2	2	8
Landslide	Inundation Flooding	4	1	1	1	1	1	4
Ice Jam	Cold/Snow/Ice/Wind	4	3	2	1	1	1.75	7
Tornado	Heat	1	1	1	1	1	1	1
Winter Storm	Drought	2	1	1	1	1	1	2
Drought	Wildfire	2	1	1	1	1	1	2
Wildfire	Earthquake	2	1	1	1	1	1	2
Earthquake	*Score = Probability x Average Potential Impact							

	Frequency of Occurrence: Probability of a plausibly significant event	Potential Impact: Severity and extent of damage and disruption to population, property, environment and the economy
1	Unlikely: <1% probability of occurrence per year	Negligible: isolated occurrences of minor property and environmental damage, potential for minor injuries, no to minimal economic disruption
2	Occasionally: 1–10% probability of occurrence per year, or at least one chance in next 100 years	Minor: isolated occurrences of moderate to severe property and environmental damage, potential for injuries, minor economic disruption
3	Likely: >10% but <75% probability per year, at least 1 chance in next 10 years	Moderate: severe property and environmental damage on a community scale, injuries or fatalities, short-term economic impact
4	Highly Likely: >75% probability in a year	Major: severe property and environmental damage on a community or regional scale, multiple injuries or fatalities, significant economic impact

High Risk Hazard Profiles

Inundation Flooding/Flash Flooding/Fluvial Erosion

As noted in the State Hazard Mitigation Plan, “Flooding is the most common recurring hazard event in Vermont” (2018: 55). There are two types of flooding that impact communities in Vermont: inundation and flash flooding. Inundation is when water rises onto low lying land. Flash flooding is a sudden, violent flood which often entails fluvial erosion (stream bank erosion).

Flooding of land adjoining the normal course of a stream or river is a natural occurrence. If these floodplain areas were left in their natural state, floods likely would not cause significant damage.

Floods can damage or destroy public and private property, disable utilities, make roads and bridges impassable, destroy crops and agricultural lands, cause disruption to emergency services, and result in fatalities. People may be stranded in their homes for a time without power or heat or they may be unable to reach their homes. Long-term collateral dangers include the outbreak of disease, loss of livestock, broken sewer lines or wash out of septic systems causing water supply pollution, downed power lines, loss of fuel storage tanks, fires and release of hazardous materials.

While inundation-related flood loss is a significant component of flood disasters, the more common mode of damage in Vermont is associated with fluvial erosion, often associated with physical adjustment of stream channel dimensions and location during flood events. These dynamic and oftentimes catastrophic adjustments are due to bed and bank erosion, debris and ice jams, or structural failure of or flow diversion by human-made structures. An ice jam occurs when the ice layer on top of a river breaks into large chunks which float downstream and cause obstructions (State HMP 2018). The Town does not have a high incidence or high probability of ice jams.

Several major flooding events have affected the state in recent years, resulting in multiple Presidential Disaster Declarations. From 2003 to 2010, Rutland County experienced roughly \$1.4 million in property damages due to flood events.

The worst flooding event in recent years came in August of 2011 from Tropical Storm Irene (DR4022), which dropped up to 10-11 inches of rain in some areas of Rutland County. Irene caused 2 deaths and \$55,000,000 in reported property damages and \$2.5 million in crop damages in Rutland County. Although the storm was technically a tropical storm, the effects of the storms are profiled in this flooding section, since the storm brought only large rainfall and flooding to the Town, not the high winds typically associated with tropical storms. This caused most streams and rivers to flood in addition to severe fluvial erosion.

From 2012 to 2019, Rutland County experienced approximately \$3.5 million in property damages; with \$1.9 million due to a flash flood event in July 2017 (DR4330) and \$1 million due to a flash flood event in April 2019 (DR4445).

In Hubbardton, flooding is a risk. Although damages from Tropical Storm Irene were minor compared to neighboring towns, it still resulted in nearly \$88,000 in impacts. In Hubbardton, damage due to flooding usually consists of impacts to roads and culverts. As shown on the Local Hazards and Vulnerabilities Map in **Appendix B**, areas prone to inundation flooding include Monument Hill Road (from Ganson Hill Road east to Hanley’s Corner), Woods Road, Black Pond Road (near Bresee and Black Ponds), and VT Route 30 (between Dikeman Road and Monument Hill Road).



Monument Hill Road Washout - 2011

Currently there are 11 structures in Town located in the Special Flood Hazard Area. These include camps as well as residential dwellings. According to FEMA, there are four flood insurance policies issued in Hubbardton. In total, these policies cover \$770,000 in value. There are no repetitive loss properties.

Flooding, especially flash flooding, can impact areas in Town that are located outside of designated floodplains, including along streams confined by narrow valleys. Flash flooding events periodically wash out sections of High Pond, Burns, St. John, and Frog Hollow Roads.



Ganson Hill Road E Washout - 2011

Additional problems are caused when beaver dams let go. Dam failure on a Roach Pond tributary back in the 1970s washed out sections of Hortonia Road. Since then, the Town has been diligent about monitoring and addressing beaver activity. In 2019, a dam on a Walker Pond tributary was removed and beaver were removed from Bresee Pond.

Much of Hubbardton lies within the Lake Bomoseen Watershed. The Lake Bomoseen Stormwater Master Plan was completed in 2016. This plan includes many projects that are designed to decrease stormwater flows and increase resiliency to floods – such as ditch erosion and runoff projects, shoreline revegetation or buffer projects, stream channel or bank erosion projects.

Severe Wind/Hail

Severe thunderstorms can produce high winds, lightning, flooding, rains, large hail, and even tornadoes. Thunderstorm winds are generally short in duration, involving straight-line winds and/or gusts in excess of 50 mph.

Thunderstorm winds can cause power outages, transportation and economic disruptions, significant property damage, and pose a high risk of injuries and loss of life. From 2004 to 2010, for thunderstorms that caused more than \$200,000 in damage, Rutland County experienced nearly \$2 million in property damage. From 2011 to 2019, thunderstorms resulted in just under \$2.2 million in property damage in Rutland County, with \$525,000 due to a high wind event in May 2017.

Hail is a form of precipitation composed of spherical lumps of ice. Known as hailstones, these ice balls typically range from 5–50 mm in diameter on average, with much larger hailstones forming in severe thunderstorms. The size of hailstones is a direct function of the severity and size of the thunderstorm that produces it. Much of the hail activity in Rutland County is scattered and varies in intensity, and the resulting damage usually takes form in uprooted trees, downed power lines, and crop damage.

Violent windstorms are possible here; Hubbardton is susceptible to high directional winds, particularly east of VT Route 30. Many storms with high winds result in downed trees, damaged phone and power lines. Power outages are commonplace in Hubbardton and as a result the following public buildings/critical facilities have been equipped with back-up power: Town Office (which also serves as the primary local emergency operations center and shelter); Town Garage; Fire Stations; and Congregational Church (which serves as the alternate local shelter).

A fatality due to a fallen tree occurred during a thunderstorm on July 23, 2016. A man standing on a private dock was struck by a falling tree limb during the storm.

Extreme Cold/Snow/Ice/Wind

In the Rutland Region, most winter weather events occur between the months of December and March. Throughout the season, winter weather events can include snowstorms, mixed precipitation events of sleet and freezing rain, blizzards, glaze, extreme cold, the occasional ice storm, or a combination of any of the above. Events can also be associated with high winds or flooding, increasing the potential hazard.

The costs of these storms come in the form of power outages due to heavy snow or ice accumulations, damaged trees, school closings and traffic accidents. From 2002 to 2010, Rutland County experienced \$1.1 million in property and crop damages from winter storms. From 2011 to 2019, Rutland County experienced \$1.5 million in property damage, with \$300,000 due to a 10" to 20" heavy, wet snowfall across the county on December 9, 2014.

There have been four winter storm-related federally declared Disasters in the county (the ice storm of January 1998 – DR 1201; severe winter storms in December 2000 and 2014 – DR 1358 and DR 4207, respectively; and severe storm and flooding in April 2007 – DR 1698). Historically, the winter storm of December 1969 brought record snowfall amounts and snowdrifts to Vermont, and later freezing rain caused prolonged power outages (Dipugny-Giroux 2002:26).

Typically, towns' vulnerability to snow and ice storms are power outages and loss of road accessibility. As previously described, the Town is prepared for a power outage caused by ice/wet snow accumulation on power lines or trees falling on powerlines due to weight of ice accumulation in a storm, especially if the outage coincided with a large scale sheltering event.

In general, snow accumulation has not made the Town vulnerable to loss of road accessibility. The Town's fleet of snowplows has ensured that roads are accessible, even in major snow accumulation events. Areas prone to drifting are known (Monument Hill and Hortonia Roads) and maintained accordingly.

High Risk Hazard History

Note: These are the most up to date significant events impacting Hubbardton. Federal declarations are depicted in **bold**.

Inundation Flooding/Flash Flooding/Fluvial Erosion

4.15.2019: **DR4445** 1-2" rain with significant snow melt: **\$5,000 local damage**

7.1.2017: **DR4330** 3-4" rain the previous 3-4 days with flash flooding on 7/1/17: **\$43,700 local damage**

6.25-7.11.2013: **DR4140** with heavy rain over multiple days: **no reported impact**

8.28.2011: **DR4022** Tropical Storm Irene with ±5" rain: **\$87,885 local damage** (\$0 Individual / \$87,855 Public)

7.29.2009: flash flood: \$75,000 regional damage

12.16.2000: **DR1358** 2-4" rain: **\$14,008 local damage**

9.16.1999: **DR1307** Tropical Storm Floyd with 4-5" rain: **no reported impact**

1.19.1996: **DR1101** snow melt/rain: **\$19,564 local damage**

Severe Wind/Hail

2.24.2019: 48 mph wind: \$25,000 regional damage

4.1.2018: 63 mph wind: \$50,000 regional damage

10.30.2017: 40 mph wind: \$100,000 regional damage

5.5.2017: 64 mph wind: \$500,000 regional damage

7.23.2016: 50 mph winds: 1 fatality; \$25,000 local damage

6.10.2008: 50 mph winds: \$10,000 local damage

8.16.2007: 60 mph winds: \$75,000 local damage

7.10.2007: Nickel-size hail: no reported local damage

6.29.2006: 50 mph winds: \$5,000 local damage

2.17.2006: 37 mph winds: \$50,000 regional damage

6.6.2005: 50 mph winds: \$5,000 local damage

Extreme Cold/Snow/Ice/Wind

2.1.2015: Record cold month with 15 to 20+ days below zero: **no reported impact**

1.7.2015: 0 to 10 degrees with winds of 15-30 mph creating wind chills colder than -20 to -30 below zero: **no reported impact**

12.9.2014: **DR4207** with 10-20" snow: **\$35,000 local damage**

3.12.2014: 8-24" snow and wind gusts to 35-40 mph: **\$35,000 regional damage**

12.29.2012: 12" snow: no reported impact

2.23.2010: 6-30" snow: \$100,000 regional damage

12.11.2008: 5" snow with sleet and freezing rain resulting in glaze coating of ice: \$50,000 regional damage

4.15-16.2007: **DR1698** "Nor'icane" with 3" snow and rain with winds of 60 to 80 mph: **\$1,000,000 regional damage**

2.14.2007: 18-30" snow: \$200,000 regional damage

12.6.2003: 12-18" snow: \$20,000 regional damage

3.5.2001: **EM3167** 20-30" snow: **\$6,500 local damage**

Vulnerability Summary

Inundation Flooding/Flash Flooding/Fluvial Erosion

Location¹: Monument Hill Road (from Ganson Hill Road east to Hanley's Corner); Woods Road; Black Pond Road (near Bresee and Black Ponds); VT Route 30 (between Dikeman Road and Monument Hill Road); High Pond Road; Burns Road; St. John Road; Frog Hollow Road; homes near Lake Bomoseen

Vulnerable Assets¹: Homes, roads, culverts

Extent: ±5" rain; extent data for fluvial erosion is unavailable

Impact: \$87,885 local damage

Probability: Highly Likely

Severe Wind/Hail

Location¹: Primarily east of VT Route 30

Vulnerable Assets¹: Houses, trees, power lines

Extent: Nickel-size hail and ±60 mph winds

Impact: 1 fatality and \$75,000 local damage

Probability: Highly Likely

Extreme Cold/Snow/Ice/Wind

Location¹: Town-wide; drifting on Monument Hill Road and Hortonia Road

Vulnerable Assets¹: Roads, culverts, trees, power lines

Extent: Up to 30" of snow, glaze coating of ice, 80 mph winds, 15 to 20+ days below zero

Impact: \$35,000 local damage

Probability: Highly Likely

¹ See **Appendix B:** Local Hazards and Vulnerabilities Map

6 Hazard Mitigation Strategy

The high risk hazards and vulnerabilities identified in the previous section of this Plan directly inform the hazard mitigation strategy outlined below, which the community will strive to accomplish over the coming years. The mitigation strategy chosen by the Town includes the most appropriate activities to lessen vulnerabilities from potential hazards.

Mitigation Goals

The Hazard Mitigation Planning Team discussed mitigation goals and identified the following as the community's main mitigation goals:

- Reduce or avoid long-term vulnerabilities to identified hazards;
- Reduce the loss of life and injury resulting from these hazards;
- Mitigate financial losses incurred by municipal, residential, industrial, agricultural and commercial establishments due to disasters;
- Reduce the damage to public infrastructure resulting from these hazards;
- Encourage hazard mitigation planning as a part of the municipal planning process;
- Encourage the adoption and implementation of existing mitigation resources, such as River Corridor Plans and Fluvial Erosion Hazard Maps, if available;
- Recognize the connections between land use, stormwater, road design, maintenance, and the effects from disasters;
- Ensure that mitigation measures are sympathetic to the natural features of community rivers, streams, and other surface waters; historic resources; character of neighborhoods; and the capacity of the community to implement them.

Community Capabilities

Each community has a unique set of capabilities, including authorities, programs, staff, funding, and other resources available to accomplish mitigation and reduce long-term vulnerability. Hubbardton's mitigation capabilities that reduce hazard impacts or that could be used to implement hazard mitigation activities are listed below.

Administrative and Technical

In addition to the Emergency Management staff described in Section 3, municipal staff that can be used for mitigation planning and to implement specific mitigation actions include the: Highway Department and Town Clerk.

In addition to paid staff, there is a 5-member Selectboard and 9-member Planning Commission.

To augment local resources, the Town has formal mutual aid agreements for emergency response – fire, EMS, police and public works. Technical support is available through the RRPC in the areas of land use planning, emergency management, transportation, GIS mapping, and grant writing. Technical support is available through the State for floodplain administration.

Strengths: Staff are trained on hazards and mitigation. Coordination between departments is effective. Excellent record keeping systems in place for Highway Department to document labor and material costs by location. Past success in securing grants for public infrastructure improvements. Established maintenance programs for cleaning culverts and roadside ditches as well as tree trimming within the road right-of-way.

Areas for Improvement: Few staff perform multiple functions – lack of redundancy makes the Town's administrative and technical capabilities vulnerable. Highway Department staff could benefit from training in online mapping and asset management resources – ANR Natural Resource Atlas, VTCulverts, MRGP Road Erosion Inventory Portal.

Planning and Regulatory

Planning and regulatory capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards. Examples of planning capabilities that can either enable or inhibit mitigation include land use plans, capital improvement programs, transportation plans, stormwater management plans, disaster recovery and reconstruction plans, and emergency preparedness and response plans. Examples of regulatory capabilities include the enforcement of zoning ordinances, subdivision regulations, and building codes that regulate how and where land is developed, and structures are built.

Strengths: Existing land use regulations are effective at reducing hazard impacts and they are adequately administered and enforced; codes and standards are adequately administered and enforced; elements of hazard mitigation are included in other local plans; completed stormwater master planning; have capital plans for equipment replacement, bridges, and buildings.

Areas for Improvement: Protect river corridors from new encroachment (River Corridor Bylaws); continuity of operations planning.

Land Use Bylaws: Adopted October 17, 1985, last Amended June 20, 2019

Description: Provide for orderly community growth.

Relationship to Natural Hazard Mitigation Planning: Establish a Flood Hazard Area District to maintain the flood water carrying capacity of all flood-prone areas in the Town and to ensure that any structures or uses permitted within these areas are properly protected from flood hazards.

Flood Hazard Area Regulations: Adopted June 20, 2019, included in the Land Use Bylaws

Description: Apply to all areas in the Town identified as areas of special flood hazard.

Relationship to Natural Hazard Mitigation Planning: Ensures the design and construction of development in flood and other hazard areas are accomplished in a manner that minimizes or eliminates the potential for flood loss or damage to life and property.

Road and Bridge Standards: Adopted on July 8, 2019

Description: Provide minimum codes and standards for the construction, repair, and maintenance of all town roads and bridges.

Relationship to Natural Hazard Mitigation Planning: The standards include management practices and are designed to ensure the safety of the traveling public, minimize damage to road infrastructure during flood events, and enhance water quality protections.

Fire Department ISO Rating: Issued in 2019

Description: The Hubbardton Fire Department's ISO rating is 9. This rating is a score from 1 to 10 that indicates how well-protected the community is by the local fire department.

Relationship to Natural Hazard Mitigation Planning: Everyone wants to keep family, home, and business safe from fires. The ISO rating is a measure of the effectiveness of a community's fire services.

Municipal Plan: Adopted October 24, 2016

Description: A framework for defining and attaining community aspirations through public investments, land use regulations, and other implementation programs.

Relationship to Natural Hazard Mitigation Planning: The Emergency Management and Flood Resilience sections of the Town Plan include specific goals and policies related to natural hazards.

Local Emergency Management Plan: Last adopted on July 22, 2019

Description: Establishes lines of responsibility during a disaster as well as high risk populations, hazard sites, procedures, and resources.

Relationship to Natural Hazard Mitigation Planning: The LEMP includes actions for tracking events and response actions including damage reports to facilitate funding requests during recovery. This type of information can be essential to preparing hazard mitigation project applications for FEMA funding.

Road Stormwater Management Plan: 2018

Description: Prioritizes those infrastructure projects necessary to improve transportation network resiliency and water quality.

Relationship to Natural Hazard Mitigation Planning: Improvements are designed to minimize or eliminate flood impacts on hydrologically-connected road segments.

Stormwater Master Plan – Lake Bomoseen Watershed, Castleton and Hubbardton, Vermont: December 2016

Description: Plan determined sources of sediment and nutrient flows to Lake Bomoseen and identified projects to mitigate these inputs.

Relationship to Natural Hazard Mitigation Planning: These projects are designed to reduce the movement of phosphorus to waterbodies; however, they have many other beneficial effects, such as decreasing stormwater flows to streams and increasing resilience to floods.

Financial

Financial capabilities are the resources that a community has access to or is eligible to use to fund mitigation actions.

Hubbardton’s current annual budget is approximately \$1,200,000, with \$638,000 to fund the Highway Department. Although the Town has not done so in the past, it is eligible to incur debt through general obligation bonds to fund mitigation actions.

Strengths: Maximize grant opportunities, especially through VTrans for transportation infrastructure projects; capital project accounts to fund capital plans; annual budgets are sufficient to meet operating needs.

Areas for Improvement: None currently.

Education and Outreach

Hubbardton has several education and outreach opportunities that could be used to implement mitigation activities and communicate hazard-related information:

- Senior Connections
- Girl Scouts
- Grange #290
- Snowmobile Club
- Liberty Church
- Congregational Church
- Historical Society
- Fire Department Booster Club

Strengths: Multiple programs/organizations are already in place in the community; have a social media presence with Town Clerk and Fire Department Facebook pages.

Areas for Improvement: Better coordination is needed with existing programs/organizations to help implement future mitigation actions.

National Flood Insurance Program Compliance

The Town joined the National Flood Insurance Program (NFIP) in 1990. The Zoning Administrator enforces NFIP compliance through permit review requirements in its zoning and FHA regulations. Hubbardton’s regulations:

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. The community must maintain a record of all lowest floor elevations or the elevations to which buildings in flood hazard areas have been flood proofed;
2. Allow non-residential structures to be elevated or dry flood proofed; and
3. Require anchoring of manufactured homes in flood prone areas.

The Town has discussed the following actions as possible actions the Town could take to continue NFIP compliance:

1. Provide information to residents on safe building initiatives and the availability of flood insurance;
2. Adopt river corridor protection language in the flood hazard regulations bylaw; and
3. Work with the RRPC to ensure that floodplain and river corridor maps are kept up to date.

State Incentives for Flood Mitigation

Vermont’s Emergency Relief Assistance Funding (ERAF) provides state funding to match FEMA Public Assistance after federally-declared disasters. Eligible public costs are generally reimbursed by FEMA at 75% with the State matching 7.5%. The State will increase its match to 12.5% or 17.5% of the total cost if communities take steps to reduce flood risk.

12.5% funding for eligible communities that have adopted four (4) mitigation measures:

1. NFIP participation;
2. Town Road and Bridge Standards;
3. Local Emergency Plan; AND
4. Local Hazard Mitigation Plan.

17.5% funding for eligible communities that also have:

1. FEMA’s Community Rating System (CRS) participation; OR
2. Fluvial Erosion Hazard (FEH) or other river corridor/floodplain protection bylaw that meets or exceeds the Vermont Agency of Natural Resources FEH model regulations and scoping guidelines.

Mitigation Action Identification

The Hazard Mitigation Planning Team discussed the mitigation strategy, reviewed projects from the 2009 Plan, and identified possible new actions from the following categories for each of the high risk natural hazards identified in Section 5:

1. Local Plans and Regulations: These actions include government authorities, policies, or codes that influence the way land and buildings are developed and built.
2. Structure and Infrastructure Projects: These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This applies to public or private structures as well as critical facilities and infrastructure. Many of these types of actions are projects eligible for funding through the FEMA Hazard Mitigation Assistance Program.
3. Natural Systems Protection: These are actions that minimize damage and losses and preserve or restore the functions of natural systems.
4. Education and Awareness Programs: These are actions to inform and educate the public about hazards and potential ways to mitigate them. Although this type of mitigation reduces risk less directly than structural projects or regulation, it is an important foundation. A greater understanding and awareness of hazards and risk is more likely to lead to direct actions.

Local Plans and Regulations

Integrate Mitigation into Capital Improvement Programs: Hazard mitigation can be included in capital improvement programs by incorporating risk assessment and hazard mitigation principles into the capital planning efforts.

Manage Development in Erosion Hazard Areas: The intent of River Corridor Bylaws is to 1) allow for wise use of property within river corridors that minimizes potential damage to existing structures and development from flood-related erosion, 2) discourage encroachments in undeveloped river corridors and 3) reasonably promote and encourage infill and redevelopment of designated centers that are within river corridors.

Improve Stormwater Management Planning: Rainwater and snowmelt can cause flooding and erosion in developed areas. A community-wide stormwater management plan can address stormwater runoff.

Reduce Impacts to Roadways: The leading cause of death during winter storms is from automobile or other transportation accidents, so it is important to plan for and maintain adequate road and debris clearing capabilities.

Structure and Infrastructure Projects

Remove Existing Structures from Flood Hazard Areas: Communities may remove structures from flood-prone areas to minimize future flood losses and preserve lands subject to repetitive flooding.

Improve Stormwater Drainage Capacity: Improving the stormwater drainage capacity can help to minimize inundation flooding and fluvial erosion by: 1) increasing drainage/absorption capacities with low impact development practices; 2) increasing dimensions of drainage culverts in flood-prone areas; 3) stabilizing outfalls with riprap and other slope stabilization techniques; and 4) re-establishing roadside ditches.

Conduct Regular Maintenance for Drainage Systems: Regular maintenance will help drainage systems and flood control structures continue to function properly. Techniques include: 1) routinely cleaning and repairing stormwater infrastructure – culverts, catch basins, and drain lines; 2) routinely cleaning debris from support bracing underneath low-lying bridges; and 3) inspecting bridges and identifying if any repairs or retrofits are needed to prevent scour.

Protect Infrastructure and Critical Facilities: Mitigation techniques can be implemented to help minimize losses to infrastructure and protect critical facilities from flood events by: 1) elevating roads above the base flood elevation to maintain dry access and 2) floodproofing critical facilities.

Protect Power Lines: Power lines can be protected from the impacts of natural hazards by: 1) incorporating inspection and maintenance of hazardous trees within the road right-of-way into the drainage system maintenance process and 2) burying power lines.

Retrofit Critical Facilities: Critical facilities can be protected from the impacts of high winds and winter storms. Techniques include: 1) retrofitting critical facilities to strengthen structural frames to withstand wind and snow loads; 2) anchoring roof-mounted mechanical equipment; and 3) installing back-up generators or quick connect wiring for a portable generator.

Natural Systems Protection

Protect and Restore Natural Flood Mitigation Features:

Natural resources provide floodplain protection, riparian buffers, and other ecosystem services that mitigate flooding. It is important to preserve such functionality. Possible projects include: 1) establishing vegetative buffers in riparian areas; 2) stabilizing stream banks; 3) removing berms; and 4) restore incision areas.

Education and Awareness Programs

Educate Property Owners About Freezing Pipes:

Extreme cold may cause water pipes to freeze and burst, which can cause flooding inside a building. Education and Awareness Programs for property owners may include: 1) educating building owners on how to protect their pipes, including locating water pipes on the inside of building insulation or keeping them out of attics, crawl spaces, and vulnerable outside walls and 2) informing homeowners that letting a faucet drip during extreme cold weather can prevent the buildup of excessive pressure in the pipeline and avoid bursting.

Assist Vulnerable Populations:

Measures could be taken to ensure vulnerable populations are adequately protected from the impacts of natural hazards, such as: 1) organizing outreach and 2) establishing and promoting accessible heating or cooling centers in the community.

Mitigation Action Evaluation and Prioritization

For each mitigation action identified, the Hazard Mitigation Planning Team evaluated its potential benefits and/or likelihood of successful implementation. Each action was evaluated against a broad range of criteria, including a planning level assessment of whether the costs are reasonable compared to the probable benefits. Results of this evaluation are presented in **Table 5**.

Mitigation Action Implementation

After careful evaluation and prioritization, the Planning Team agreed upon a list of actions that are acceptable and practical for the community to implement. Those actions without overall public support/political will were not selected for implementation. Those actions whose costs were not reasonable compared to the probable benefits were also not selected.

For the selected actions, the Planning Team then 1) assigned a responsible party to lead the implementation of each action; 2) identified potential funding mechanisms; and 3) developed a timeframe for implementing each action. This action plan is presented in **Table 6**.

Note that the Town will make every effort to maximize use of future Public Assistance Section 406 Mitigation opportunities when available during federally declared disasters.

Table 5: Mitigation Action Evaluation and Prioritization

Mitigation Action	Life Safety	Prop Protect	Tech	Political	Admin	Other Obj	Benefit Score	Est Cost	C/B
Local Plans and Regulations									
Integrate Mitigation into Capital Improvement Programs	1	1	1	1	1	1	6	1	Yes
Plan for and Maintain Adequate Road and Debris Clearing Capabilities	1	1	1	1	1	1	6	1	Yes
Manage Development in Erosion Hazard Areas by Adopting River Corridor Bylaws	1	1	1	0	1	1	5	1	Yes
Complete Road Erosion and Culvert Inventories and Develop Road Stormwater Management Plan	The Planning Team did not evaluate this action because the inventories and plan were completed in 2018.								
Improve Stormwater Management Planning by Completing a Stormwater Management Plan	The Planning Team did not evaluate this action because the Lake Bomoseen Watershed Stormwater Master Plan was completed in 2016.								
Structure and Infrastructure Projects									
Stabilize Outfalls	1	1	1	1	1	1	6	1	Yes
Re-establish Roadside Ditches	1	1	1	1	1	1	6	1	Yes
Routinely Clean and Repair Stormwater Infrastructure	1	1	1	1	1	1	6	1	Yes
Protect Power Lines by Inspecting and Removing Hazardous Trees in Road ROW	1	1	1	1	1	1	6	1	Yes
Increase Dimension of Culverts in Flood-Prone Areas	1	1	1	1	1	1	6	1	Yes
Elevate Roads Above Base Flood Elevation to Maintain Dry Access	1	1	1	1	1	1	6	1	Yes
Review VTrans Bridge Inspection Reports ¹ and Plan for Identified Repairs to Prevent Scour	1	1	1	1	1	1	6	2	Yes
Increase Drainage/Absorption Capacities with Low Impact Development Practices	0	1	1	1	1	1	5	1	Yes
Remove Existing Structures from Flood-Prone Areas	1	1	1	0	1	1	5	2	No
Bury Power Lines	1	1	1	0	1	1	5	3	No
Install Back-up Generators or Quick Connect Wiring at Critical Facilities	The Planning Team did not evaluate this action because all critical facilities have been equipped with back-up power.								
Routinely Clear Debris from Support Bracing Underneath Low-Lying Bridges	The Planning Team did not evaluate this action because there are no town-owned low-lying bridges with support bracing.								
Floodproof Critical Facilities	The Planning Team did not evaluate this action because there are no critical facilities that require floodproofing.								
Retrofit Critical Facilities to Strengthen Structural Frames to Withstand Wind and Snow Loads	The Planning Team did not evaluate this action because there are no critical facilities that require structural retrofits.								
Anchor Roof-Mounted Mechanical Equipment on Critical Facilities	The Planning Team did not evaluate this action because there are no critical facilities with roof-mounted mechanical equipment.								
Natural Systems Protection									
Stabilize Stream/Lakeshore Banks	1	1	1	1	1	1	6	1	Yes
Establish Vegetative Buffers in Riparian Areas	The Planning Team did not evaluate this action because there are no known projects currently.								
Remove Berms	The Planning Team did not evaluate this action because there are no known projects currently.								
Restore Incision Areas	The Planning Team did not evaluate this action because there are no known projects currently.								
Education and Awareness Programs									
Educate Property Owners about Freezing Pipes	The Planning Team did not evaluate this action because there is no municipal water service in Hubbardton.								
Assist Vulnerable Populations	1	1	1	1	1	1	6	1	Yes
Keep the Culverts and Ditches Clean Campaign	0	1	1	1	1	1	5	1	Yes

¹ VTrans inspects all bridges in the state every two years. Bridge inspection reports are available on the VTrans website.

Evaluation Criteria:

Life Safety – How effective will the action be at protecting lives and preventing injuries?

Property Protection – How effective will the action be at eliminating or reducing damage to structures and infrastructure?

Technical – Is the mitigation action a long-term, technically feasible solution?

Political – Is there overall public support/political will for the action?

Administrative – Does the community have the administrative capacity to implement the action?

Other Community Objectives – Does the action advance other community objectives, such as capital improvements, economic development, environmental quality, or open space preservation?

Rank each of the above criteria in Table 5 with a -1, 0, or 1 using the following table:

1= Highly effective or feasible

0 = Neutral

-1 = Ineffective or not feasible

Estimated Cost – 1 = less than \$75,000; 2 = \$75,000 to \$500,000; 3 = more than \$500,000

C/B – Are the costs reasonable compared to the probable benefits?

Table 6: Mitigation Action Implementation

Mitigation Action	Vulnerability	Lead Party	Potential Funding	Timeframe
Local Plans and Regulations				
Integrate Mitigation into Annual Budgets and Capital Improvement Programs	All High Risk Natural Hazards	Selectboard	Not Applicable	Annually, during budget preparation
Plan for and Maintain Adequate Road and Debris Clearing Capabilities	All High Risk Natural Hazards	Selectboard	Municipal Budget; Equipment Reserve Fund	Ongoing
Manage Development in Erosion Hazard Areas by Adopting River Corridor Bylaws	Fluvial Erosion	Planning Commission	Municipal Budget; Municipal Planning Grant	2023
Examine current Town Plan to Ensure Identified Hazard Areas are Addressed	All High Risk Natural Hazards	Planning Commission	Municipal Budget; Municipal Planning Grant	2024
Attend regular training sessions on floodplain management and flood regulations administration	Flooding	Zoning Administrator	Municipal Budget	Annually, as needed
Structure and Infrastructure Projects				
Encourage Green Mountain Power to fix problems with Middlebury power line	High Winds / Snow / Ice Storms	Selectboard	Not Applicable	Annually
Stabilize Outfalls: There are currently no identified outfalls stabilization projects. The Highway Department will monitor all outfalls and address as needed.	Flooding	Road Commissioner	Municipal Budget; VTrans Grant; ANR Water Quality Grant; FEMA HMGP/PDM	Ongoing, as needed
Re-establish Roadside Ditches: In addition to the ditch work identified in the 2018 Road Stormwater Management Plan, ditching is planned for the following in 2020: (1) Monument Hill Road (2) Woods Road (3) High Pond Road In addition to planned ditch work, the Highway Department inspects all ditches each spring for needed repairs.	Flooding	Road Commissioner	Municipal Budget; VTrans Grant; ANR Water Quality Grant; FEMA HMGP/PDM	See 2018 Road Stormwater Management Plan; 2020; annually, as needed
Routinely Clean and Repair Stormwater Infrastructure	Flooding	Road Commissioner	Municipal Budget; Municipal Budget; VTrans Grant; ANR Water Quality Grant; FEMA HMGP/PDM	Annually or as needed
Protect Power Lines and Road by Inspecting and Removing Hazardous Trees in Road ROW	High Winds / Snow / Ice Storms	Road Commissioner	Municipal Budget	Annually or as needed
Increase Dimension of Culverts in Flood-Prone Areas: (1) One culvert on St. John Road (2) One culvert on High Pond Road (3) Two culverts on Black Pond Road (4) Possibly a culvert on Ganson Hill Road East	Flooding	Road Commissioner	Municipal Budget; Municipal Budget; VTrans Grant; ANR Water Quality Grant	2020 - 2021

Mitigation Action	Vulnerability	Lead Party	Potential Funding	Timeframe
Elevate Roads Above Base Flood Elevation to Maintain Dry Access: (1) Black Pond Road is a gravel road. A ¼ mile of the road along Breese Pond will be elevated ±6 inches.	Flooding	Road Commissioner	Municipal Budget; VTrans Grant; ANR Water Quality Grant	2022-2023
Review VTrans Bridge Inspection Reports and Plan for Identified Repairs to Prevent Scour: (1) Bridge #7 - beginning in 2015, the inspection reports noted problems with the bridge abutments. The last report in 2019 noted the exposed backfill in a voided area at the base of abutment 1 is vulnerable to erosion during high water events. Replacement of this bridge is planned.	Flooding	Road Commissioner	Municipal Budget; VTrans Grant	2021-2022
Increase Drainage/Absorption Capacities with Low Impact Development Practices: There are currently no identified LID projects. The Highway Department will monitor the stormwater collection system for LID opportunities.	Flooding	Road Commissioner	Municipal Budget; VTrans Grant; ANR Water Quality Grant	Ongoing
Remove Existing Structures from Flood-Prone Areas	This action was not selected for implementation because the perceived benefits do not outweigh anticipated costs.			
Bury Power Lines	This action was not selected for implementation because the perceived benefits do not outweigh the anticipated costs.			
Natural Systems Protection				
Stream/Lakeshore Stabilization: (1) Breese Pond	Flooding	Road Commissioner	Municipal Budget; VTrans Grant; ANR Water Quality Grant; ANR Ecosystem Restoration Grant	2021-2022
Education and Awareness Programs				
Assist Vulnerable Populations	The Town is already working with identified vulnerable populations and regional social service agencies to meet the needs of vulnerable populations – see Hubbardton Local Emergency Management Plan.			
Keep the Culverts and Ditches Clean Campaign	Flooding	Selectboard	Municipal Budget	Annually in Town Report

Process for Incorporating Plan Requirements into Other Planning Mechanisms

For Hubbardton to succeed in reducing long-term risks, the information and recommendations of this Plan should be integrated throughout government operations.

The following are specific examples of how the Town will incorporate this Plan into other plans, programs and procedures:

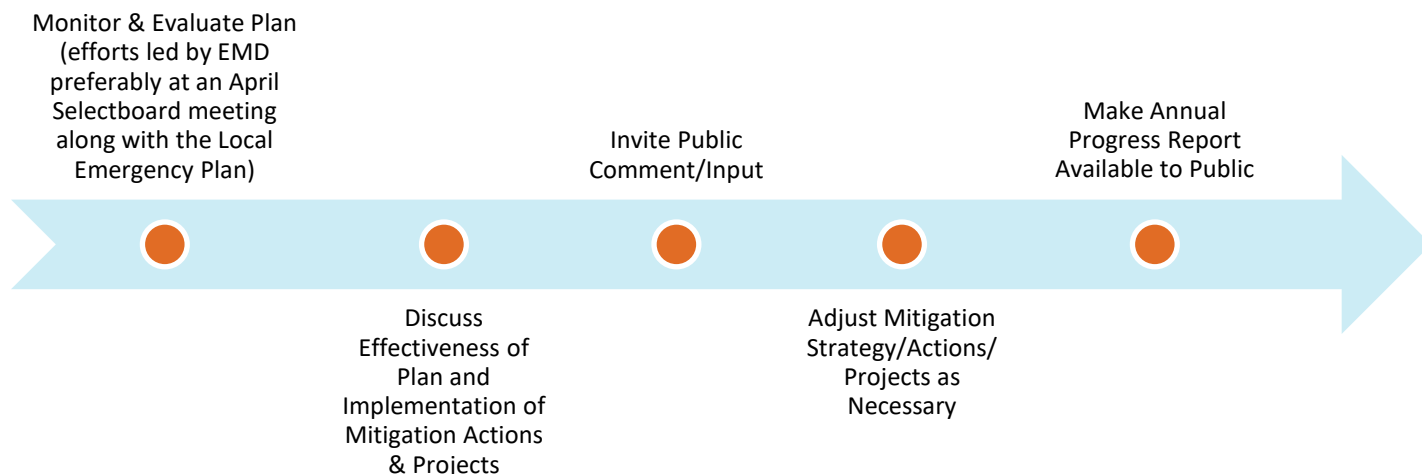
- The Selectboard will work with the Road Commissioner to incorporate risk assessment and hazard mitigation goals into the capital planning efforts.
- The Planning Commission will integrate the hazard mitigation goals for disaster resiliency into the goals and objectives of the next Town Plan update in 2024.
- The Planning Commission will consider the data, analysis, and maps from the risk assessment when they investigate adopting River Corridor Bylaws.
- The Road Commissioner will implement several mitigation infrastructure projects (e.g., increase dimension of drainage culverts in flood-prone areas, re-establish/stabilize roadside ditches) through existing plans (2018 Road Stormwater Management Plan), which already have community support.

7 Plan Maintenance

This Plan is dynamic. To ensure the Plan remains current and relevant, it is important it be monitored, evaluated, and updated periodically.

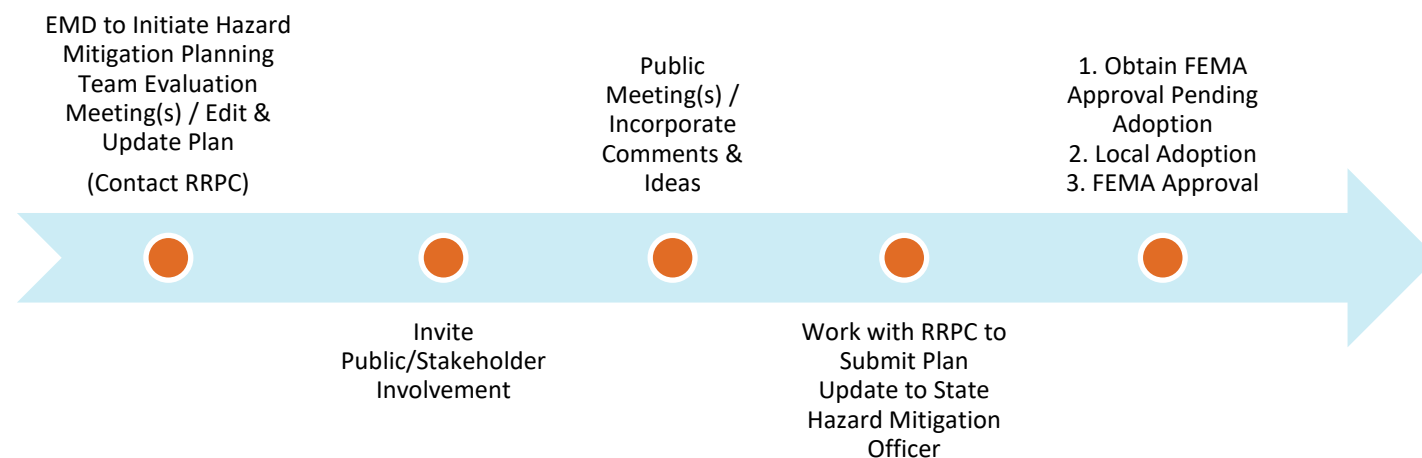
Monitoring and Evaluation

This Plan will be monitored and evaluated annually in accordance with the following process:



Updating

This Plan will be updated at a minimum every five (5) years in accordance with the following process:



CERTIFICATE OF ADOPTION
TOWN OF Hubbardton, Vermont Selectboard
A RESOLUTION ADOPTING THE Hubbardton, Vermont 2020 Local Hazard Mitigation Plan

WHEREAS, the Town of Hubbardton has historically experienced severe damage from natural hazards and it continues to be vulnerable to the effects of the hazards profiled in the **2020 Hubbardton, Vermont Local Hazard Mitigation Plan**, which result in loss of property and life, economic hardship, and threats to public health and safety; and

WHEREAS, the Town of Hubbardton has developed and received conditional approval from the Federal Emergency Management Agency (FEMA) for its **2020 Hubbardton, Vermont Local Hazard Mitigation Plan (Plan)** under the requirements of 44 CFR 201.6; and

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


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

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

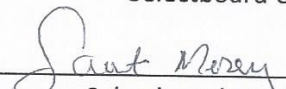
RESOLVED by Town of Hubbardton Selectboard:

1. The **2020 Hubbardton, Vermont Local Hazard Mitigation Plan** is hereby adopted as an official plan of the Town of Hubbardton;
2. The respective officials identified in the mitigation action plan of the **Plan** are hereby directed to pursue implementation of the recommended actions assigned to them;
3. Future revisions and **Plan** maintenance required by 44 CFR 201.6 and FEMA are hereby adopted as part of this resolution for a period of five (5) years from the date of this resolution; and
4. An annual report on the process of the implementation elements of the Plan will be presented to the Selectboard by the Emergency Management Director or Coordinator.

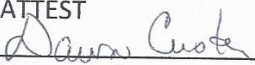
IN WITNESS WHEREOF, the undersigned have affixed their signature and the corporate seal of the Town of Hubbardton this 27th day of July 2020.



Selectboard Chair

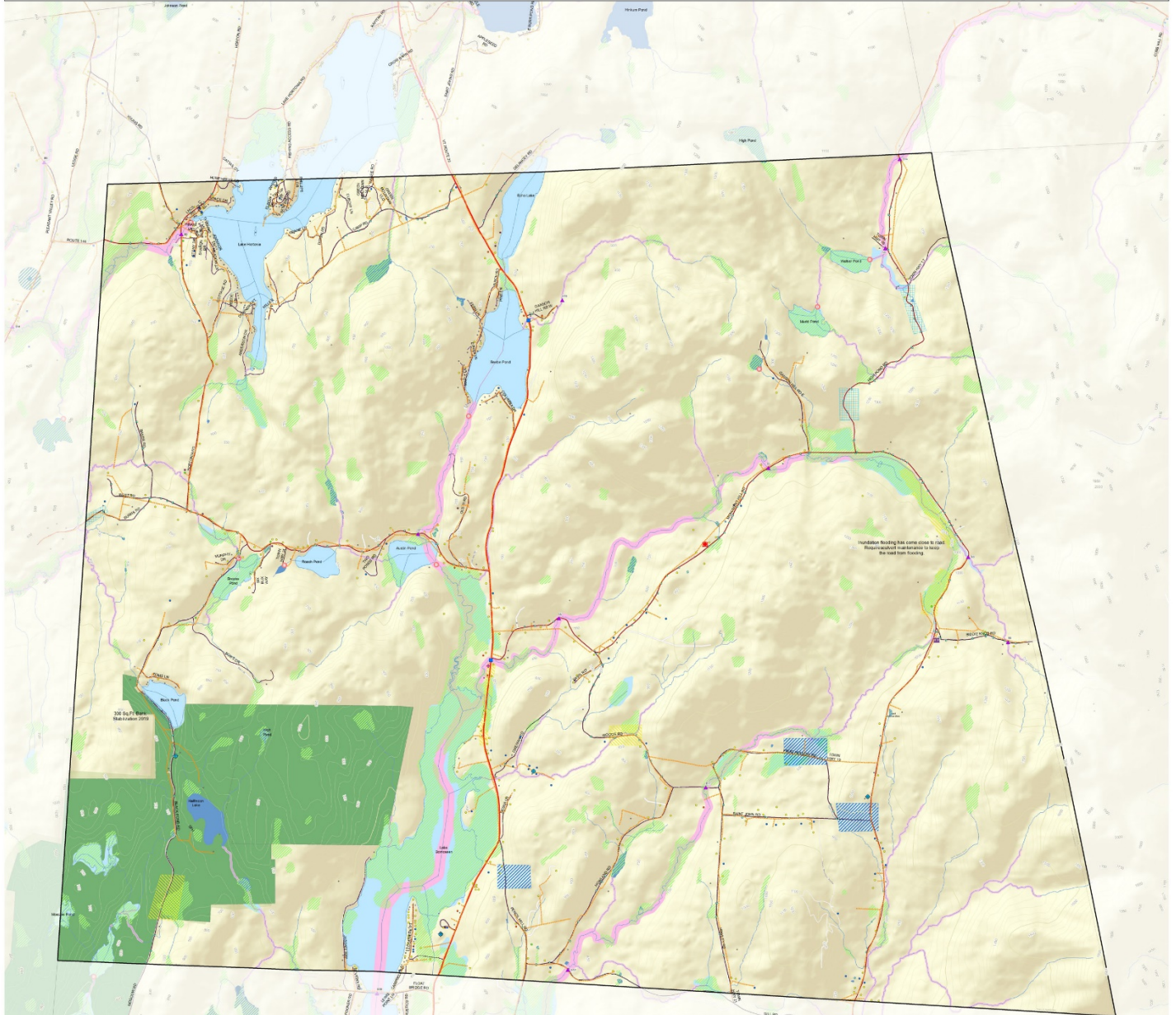


Selectboard Member

ATTEST


Town Clerk

Hubbardton, Vermont: Local Natural Hazards and Vulnerabilities Map



Infrastructure Systems

- well

Bridges

- State Bridges
- Town Bridges

Power

- Substation

Water

- Hydrants
- Green Mountain Power Overhead Lines

Transportation

- Hubbardton Culvert Inventory

Roads

- State Highway
- Town Highway Class 1
- Town Highway Class 2
- Town Highway Class 3
- Town Highway Class 4
- Private
- Source Protection Area - Groundwater
- Landfills

Local Concerns

- Storm Water Master Plan
- Fluvial Erosion
- Inundation
- Flash Flooding / Washouts
- Bank Stabilization

Snow Drifting
 Known snow drift issues all along Monument Hill and Hortonia Roads.

Cultural Resources

- Cemetery
- State Parks
- Town Green

Critical Facilities

Emergency Shelters

- Primary Shelter - Hubbardton Town Hall: 1831 Monument Hill Road
- Alternate Shelter - Hubbardton Congregational Church: 1985 VT Route 30

Emergency Operations Center

- Primary EOC - Hubbardton Town Office: 1831 Monument Hill Road
- Alternate EOC - Eastside Fire House: 4645 Monument Hill Road

Structures

- Commercial
- All Other Structures

Residential

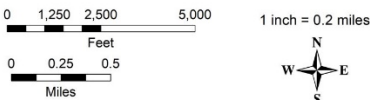
- Mobile Home
- Condominium
- Other Residential
- Multi-Family Residential
- Single Family Residential

High Potential Loss Facilities

- Dam
- Tier II Sites

Natural Resources

- Rivers and Streams
- Vermont Significant Wetland Inventory
- River Corridor Small Streams(50 ft setback)
- Vermont River Corridor
- Flood Hazard - FEMA Flood Zone A
- Lakes, Ponds, & Major Rivers
- RRLakes Maj Rivers



November 10, 2019



RRPC Path: D:\RRPC\HUBBRDTON\Hub Vulnerability Map 2019.mxd

Mitigation Action	Who is Responsible	Approx. Time Frame & Potential Funding Sources	2020 Status Update
Upgrade undersized culvert on High Pond Road	Road Commissioner	<ul style="list-style-type: none"> • Short-term • HMGP Funds • Town Highway Budget 	Complete
Install emergency power generators at key sites in town such as designated shelters, fire stations, and EOC locations	Selectboard; Emergency Management Director	<ul style="list-style-type: none"> • Med-term • HSU funds through VEM • Town Budget 	Complete
Attend regular training sessions on floodplain management and flood regulations administration	Zoning Administrator; Selectboard	<ul style="list-style-type: none"> • Med-term • Local funds 	This remains an ongoing priority.
Retrofit municipal buildings vulnerable to structural damage from wind and ice	Selectboard Chair	<ul style="list-style-type: none"> • Long-term • Town Budget 	No longer a priority.
Incorporate proposed strategies into Annual Budget and Capital Improvement Plan	Selectboard	<ul style="list-style-type: none"> • Short-Term • Local Resources 	This remains an ongoing priority.
Upgrade bridges 11 and 12 (on Hinkley Road and Frog Hollow Road).	Road Crew	<ul style="list-style-type: none"> • Long-term • State and Local Resources 	Complete
Increase speed patrols on Black Pond Road.	Selectboard	<ul style="list-style-type: none"> • Short-term • Local and State Resources 	This remains an all-hazards priority, not a natural hazards priority and therefore is no longer addressed in this plan.
Encourage CVPS [now Green Mountain Power] to fix problems with Middlebury power line.	Selectboard	<ul style="list-style-type: none"> • Short-term • No funds needed 	This remains a priority.
Examine current Town Plan and ensure that identified hazard areas and needed strategies are addressed	Planning Commission/ Selectboard	<ul style="list-style-type: none"> • Med-term • Municipal Planning Grant 	This remains an ongoing priority.
Gather information to identify people vulnerable in times of power loss (i.e. have medical equipment they rely on at home).	Emergency Management Team	<ul style="list-style-type: none"> • Short-term • Local Resources 	This remains an ongoing priority – addressed annually in LEMP.
Find a solution to the issue of erosion of Black Pond Rd	Road crew with Selectboard support	<ul style="list-style-type: none"> • Med-term • State and Local resources 	Some projects have been completed (see plan cover photo); others remain a priority.
Raise the Rte. 30 road section between Monument Hill Road and Dikeman Road (to address flood protection and visibility issues).	Selectboard	<ul style="list-style-type: none"> • Ongoing • State Resources, DOD Grant # 12.106 (Flood Control Projects) 	This remains a priority; however, this section of VT Route 30 is State-maintained.
Install a larger bridge at the intersection of High Pond Road and TH17.	Road Crew	<ul style="list-style-type: none"> • Long-term • State and Local Resources, DOD Grant # 12.106 (Flood Control Projects) 	No longer a priority.

Mitigation Action	Who is Responsible	Approx. Time Frame & Potential Funding Sources	2020 Status Update
Work toward a long-range solution to deal with water supply issues.	Town Health Officer, with support from planning commission and selectboard	<ul style="list-style-type: none"> • Med-term • Local and State Resources , USDA Grant # 10.760 (Water and Waste Disposal Systems...) 	No longer a community priority.
Work toward a long-range solution to deal with septic system issues (and potential associated water contamination issues) for lakeshore residences being converted to year-round houses.	Town Health Officer, with support from planning commission and Selectboard	<ul style="list-style-type: none"> • Med-term • Local and State Resources , USDA Grant # 10.760 (Water and Waste Disposal Systems...) 	No longer a community priority.

Note: In the table above, time frames are defined as follows: short term equals 6 months to one year. Medium term equals 1-3 years. Long term equals 4+ years