Town of Norton
Local Hazard Mitigation Plan

Prepared by:
The Town of Norton and
Northeastern Vermont Development Association

Adopted by the Norton Selectboard on February 14, 2023

CERTIFICATE OF LOCAL ADOPTION

Town of Norton, Essex County, Vermont

A Resolution Adopting the Town of Norton Local Hazard Mitigation Plan.

WHEREAS, the Town of Norton, in Essex County has worked with its residents and stakeholders to identify its hazards and vulnerabilities, analyze past and potential future losses due to natural and human-caused hazards, and identify strategies for mitigating future losses; and
WHEREAS, the Town of Norton Local Hazard Mitigation Plan contains recommendations, potential actions and future projects to mitigate damage from disasters in the community; and
WHEREAS, the Town of Norton and the respective officials will pursue implementation of the strategy and follow the maintenance process described in this plan to assure that the plan stays up to date and compliant; and…
WHEREAS, a meeting was held on February 14, 2023 by the Town of Norton Selectboard to formally approve and adopt the Town of Norton Local Hazard Mitigation Plan.

NOW, THEREFORE BE IT RESOLVED that the Town of Norton in Essex County adopts this Town of Norton Local Hazard Mitigation Plan.

02/14/2023
Date

Selectboard Chair

Selectboard member

Selectboard member

Attested to by Town Clerk

Contents

1. INTRODUCTION AND PURPOSE

1.1 Purpose and Scope of the Plan

The purpose of the 2022 Town of Norton Local Hazard Mitigation Plan is to identify all hazards facing the community as a whole, and to identify policies and actions that can be implemented to reduce risk and future losses from the identified natural hazards. This includes modifying structures, such as culverts, so they can better withstand natural hazards, and avoiding development in identified hazardous areas. The mitigation actions identified in this plan are intended to reduce or eliminate long-term risks to hazards. It is recognized that it is less expensive to prevent damage from disasters than to get caught in a cycle of repetitive repair after a disaster has struck.

In order for the Town of Norton to continue to be eligible for grant funding of mitigation projects, the Plan must be reviewed, revised and re-submitted to FEMA for approval every five (5) years.

1.2 Hazard Mitigation

The 2018 Vermont State Hazard Mitigation Plan (SHMP) defines hazard mitigation as "any sustained action that reduces or eliminates long-term risk to people and property from natural hazards and their effects."

The 2018 Vermont SHMP was developed to help the State of Vermont and local governments identify all natural hazards facing communities in the state and establish actions that reduce risk. This plan will reference data and mitigation strategies included in the State Plan where relevant.

1.3 Hazard Mitigation Planning Required by the Disaster Mitigation Act of 2000

Hazard mitigation planning is the process that analyzes a community's risk from natural hazards, coordinates available resources, and implements actions to reduce risks. Per *44 CFR Part 201: Hazard Mitigation Planning,* this planning process establishes criteria for State and local hazard mitigation planning authorized by Section 322 of the Stafford Act as amended by Section 104 of the *Disaster Mitigation Act of 2000.*

FEMA requires state and local governments to develop and adopt hazard mitigation plans as a condition for receiving certain types of non-emergency disaster assistance, including funding for mitigation projects. Jurisdictions must update their hazard mitigation plans and re-submit them for FEMA approval every five years to maintain eligibility.

FEMA's "Building Resilient Infrastructure and Communities" (BRIC) is a new FEMA pre-disaster hazard mitigation program that replaces the existing Pre-Disaster Mitigation (PDM) program and is a result of amendments made to Section 203 of the Stafford Act by Section 1234 of the Disaster Recovery Reform Act of 2018 (DRRA). The BRIC program will support states and local communities as they undertake hazard mitigation projects reducing the risks they face from disasters and natural hazards.

FEMA recently released a new policy (FP-108-024-02: Ecosystem Service Benefits in Benefit-Cost Analysis for FEMA's Mitigation Programs Policy) that allows for ecosystem service benefits to be

included in a mitigation project's Benefit-Cost Analysis regardless of the Benefit-Cost Ratio (BCR). Previous policy limited the use of these benefits to projects meeting a .75 BCR.

With this new policy, ecosystem service benefits can be used for all project types eligible under the Hazard Mitigation Assistance (HMA) programs that support the incorporation of ecosystem service benefits and result in the improvement of the natural environment.

1.4 Eligibility for State and Federal Funds

Having a locally adopted, FEMA-approved Local Hazard Mitigation Plan makes the Town of Norton eligible for Flood Mitigation Assistance Grant Program (FMA) funds, Hazard Mitigation Grant Program (HMGP) project grants, and Pre-Disaster Mitigation program funding, as noted above.

Since October 14th, 2014, a community that lacks a Local Hazard Mitigation Plan gets less matching funds from the State of Vermont under the Emergency Relief Assistance Fund (ERAF) when FEMA Public Assistance grants are awarded after a Presidentially-declared emergency. While 75% of the project cost is covered by federal funds, and the default rate for State contribution towards non-federal match dropped to 7.5% in 2014, requiring municipalities to cover the other 17.5% for Public Assistance projects. However, municipalities that take the following proactive measures are awarded 12.5% State match:

1. Participate in the National Flood Insurance Program (NFIP),
2. Adopt Town Road and Bridge Standards that meet or exceed the VTrans 2013 template,
3. Adopt a Local Emergency Operations Plan annually, and
4. Submit a Local Hazard Mitigation Plan to Vermont Emergency Management (VEM) for review.

Municipalities that wish to further decrease their cost share to 7.5%, with a 17.5% State match, must also meet one of the following criteria:
5. Adoption of ANR's River Corridor bylaws, or
6. Enrollment in the Community Rating System (CRS).

Norton currently regulates River Corridors under Section 205.04 of its local zoning regulation, so the preparation and submission of a Local Hazard Mitigation Plan to VEM will make Norton eligible for a 17.5% State match under the ERAF program.

The 2018 State Mitigation plan notes that a significant advancement in hazard mitigation initiatives has been the revision of Vermont's Stream Alteration General Permit (SAGP), and FEMA's subsequent recognition of the new general permit as "codes and standards" for purposes of future Public Assistance (PA) repairs. Beginning with the Vermont Disaster Declaration DR-4330 in the summer of 2017, structure replacements that fall under the jurisdiction of and meet the standards of the SAGP are presumed to be PA-eligible and do not require approval by FEMA prior to construction. This significant improvement allows Vermont to more quickly and appropriately address vulnerable infrastructure in a sustainable way during the immediate response and recovery phase following a disaster.

1.5 Local Hazard Mitigation Plan Goals

This Local Hazard Mitigation Plan establishes the following general goals for the town and its residents:

1) Reduce at a minimum, and prevent to the maximum extent possible, the loss of life and injury resulting from all hazards.

2) Mitigate financial losses and environmental degradation incurred by municipal, educational, residential, commercial, industrial and agricultural establishments due to various hazards.

3) Maintain and increase awareness amongst the town's residents and businesses of the damages caused by previous and potential future hazard events as identified specifically in this Local Hazard Mitigation Plan.

4) Recognize the relationship between the relative frequency and severity of disaster events and the design, development, use and maintenance of infrastructure such as roads and storm water management.

5) Maintain existing municipal plans and programs, adherence to state standards and ordinances that directly or indirectly support hazard mitigation.

1.6 Integration into Town Planning

The proposed mitigation actions in this Plan will provide a basis for town budgeting decisions, will help the Town be better prepared for future disasters, and will ease the receipt of post-disaster state and federal funding because the list of mitigation actions is already identified. The Municipal Plan for the Town of Norton was updated and adopted in the summer of 2019. This Hazard Mitigation Plan is consistent with the goals and strategies of the Municipal Plan, in particular those articulated in the Flood Resilience, Land Use, and Community Utilities and Facilities sections.

1.7 Community Overview

Norton Town, Essex County
Area: 39.1 Square Miles
Chartered: September 6, 1781 by the Vermont Legislature.
Coordinates: Latitude: 44.97 N, Longitude: 71.82 W
Altitude: 1260

Norton is located in northern Essex County, adjacent to the Canadian border. It is bordered on the east by Averill (Unified Towns and Gores), on the north by Quebec, on the west by Holland, and on the south by Warner's Grant, Warren Gore & Avery's Gore (Unified Towns and Gores). It is located approximately 15 miles north of Island Pond in the Town of Brighton, and eight miles south of Coaticook, PQ. The northern tip of Norton Pond is in Norton. There is an international border crossing into the Province of Quebec along VT Route 114, a short distance from the Town offices. The main route through Norton is VT Route 114 which runs south to north and then continues to the east when reaching the US/Canadian border. Norton is located approximately 9 miles west of the New Hampshire border at the Connecticut River.

Norton is within the Coaticook River watershed, which is part of the larger St. Francis River Watershed. It is within Vermont Planning Basin #17. The Coaticook River originates at the outlet of Norton Pond and flows northeasterly for over six miles passing into Canada. Tributaries in the U.S. include Station Brook, Sutton Brook, Davis Brook, Gaudette Brook, Moser Meadow Brook, Number 5 and Number 6 Brooks, and Averill Stream which drains Great and Little Averill ponds.

1.7.1 Public Lands, Facilities, and Services

Approximately 85% of Norton's land area is forested and owned by large timber interests and the State of Vermont, primarily hardwood with an occasional stand of softwood. Lands in State ownership include the Averill Mountain Wildlife Management Area, comprising 510 acres; the Bill Sladyk Wildlife Management Area, comprising 3,644 acres; and Black Turn Brook State Forest, comprising 593 acres. In addition, the State holds a non-fee interest (conservation easements) on 10,927 acres of privately-owned land in the Kingdom State Forest that lie within Norton.

Norton's Town-owned facilities consist of the Norton Town Office, which also serves as the emergency shelter, located on VT RT 114 E; the Town Garage and Salt Shed, located on VT Route 114 S; and the Town Transfer Station/Recycling Center, located on VT Route 114 S. The U.S. Post Office leases space in a privately owned building on VT Route 114 S.

Law enforcement in Norton is provided by the Vermont State Police, the Essex County Sheriff's Department, and federal law enforcement agencies such as the U.S Department of Homeland Security. The Office of Field Operations, U.S. Customs and Border Protection is located in Norton.

Although Norton has a fire warden, it does not have its own volunteer fire department. Fire services are provided through a contractual arrangement with the Beecher Falls Fire Company in the Town of Canaan to the east.

Norton receives ambulance and/or EMT service from 45th Parallel EMS, Inc., based in Colebrook, NH. The Town pays Northern Border for dispatch services.

Norton does not have any public water or wastewater systems.

Norton maintains a Local Emergency Management Plan (LEMP) which is updated every year. Norton is part of the Local Emergency Planning Commission (LEPC) #10, which covers 32 communities in Essex and Orleans counties.

1.7.2 Population and Housing

According to the American Community Survey's (ACS) 5-Year Estimates (2016-2020) Norton's population was 153. The median age was 56.5, with those 65 and older making up 22% of the population.

According to the ACS estimates, 78% of the population aged 5 and up spoke only English, 20.2% spoke "Other Indo-European languages," and 1.8% spoke "Asian and Pacific Islander languages." Local knowledge indicates the "Other Indo-European language" spoken at home is French, as a sizeable percentage of the local population identify their ancestry as French or French Canadian.

According to the 2020 Decennial Census, there were 197 housing units in 2020, 76 of which were occupied and 121 of which were vacant. Of the occupied units, the vast majority were owner-occupied

and were single-family, detached units. Norton has many seasonal homes, which account for the high number of vacant units. According to housingdata.org, the median sale price of a primary residence in Norton in 2021 was $262,500.

1.7.3 Income and Employment

Norton's estimated median household income according to the American Community Survey's 5 year estimates (2016-2020) was $44,688. The poverty rate was 3.7%. The estimated percentage of the population aged 16 and up participating in the labor force was 64.2%. It is noted that there are large margins of error on these statistics due to the very low population count. March 2022 data from the VT Department of Labor indicates an unemployment rate of 4.3% in Norton.

Norton has a convenience store, a restaurant (Chez Pidgeon), a commercial dairy farm, a self-storage business (Henry Road), A1 Compliance (for trucking industry) on VT Rt 147, JJ Busing Company (school buses) on VT 114, and the Devost Sugarhouse, Inc.

There is an important international rail crossing from Norton into Quebec, which is valuable to the development of commercial/industrial uses in Town.

Identified opportunities for economic development in Norton include revitalization of village centers, providing lifestyle opportunities for the aging population (e.g., assisted living); cross-border business development; value-added agricultural product development; and new tourism markets based on natural local assets.

Features which draw tourists to Norton include natural, historic, and recreational resources. Many of the tourists that visit the region come from Quebec, and the closing of the borders due to the COVID-19 pandemic has impacted tourism throughout the NEK region.

The Norton Border Station has been determined eligible for listing on the National Register of Historic Places.

The Grand Trunk Railroad, which came to Norton in the mid-nineteenth century, is important to the history of the development of town. While passenger service was stopped over 50 years ago, the railroad is still an important freight route, now operated by the St. Lawrence and Atlantic Railroad.

Other historic and scenic resources in Norton include two historic cemeteries, Gray Farm, views along the Gore Mountain hiking trail, and views along the shores of Norton Pond and Averill Pond.

Significant trails within the Kingdom State Forest include those maintained by the Vermont Association of Snow Travelers (VAST), the trail to Gore Mountain, which marks the northern boundary of the Nulhagen River Basin; and the Brousseau Mountain trail which leads to a dramatic lookout over Little Averill Lake and a nesting area for Peregrine falcons. There is also a network of trails that exists in the portion of the Kingdom State Forest on the west side of the railroad tracks.

Although there is a convenience store in Norton, residents rely primarily on the towns of Canaan, Island Pond, West Stewartstown (NH) and Coaticook, Quebec for most basic goods and services. VT Route 114 is the primary road linking Norton to these neighboring communities.

1.7.4 Governance and Regulations

The Town of Norton is governed by a three-member Select Board. The Select Board is responsible for adopting the Municipal Plan and zoning bylaws that are prepared by the Norton Planning Commission. There is an active Planning Commission that has completed an update to the Town Plan, which was adopted by the Town on July 11, 2019. The Town Plan is a guidance document, rather than a regulatory document.

Land development that exceeds thresholds established in State statute triggers Act 250 development review and/or other State permits such as wetlands, stream encroachment, or stormwater permits. The State Department of Environmental Conservation issues permits for potable water supplies and wastewater systems for all residential development in town.

The Town of Norton has locally-adopted zoning bylaws which include flood hazard regulations, and is a member of the National Flood Insurance Program (NFIP). Norton's flood hazard regulations regulate the FEMA-mapped flood hazard areas and the State-mapped River Corridors, which were updated in 2019 and are viewable on the Flood Ready Atlas here: https://floodready.vermont.gov/assessment/vt_floodready_atlas#atlas.

The Town of Norton has adopted the State Road and Bridge Standards, and has an up-to-date Local Emergency Management Plan. The Town is served by Vermont Agency of Transportation (VTRANS) Maintenance District #10.

Existing Structures in the Mapped Flood Hazard Areas

The Flood Insurance Rate Map (FIRM) for Norton was prepared in 1975. Based on a review of the FIRM and the location of existing E-911 addresses in Town, there appear to be 18 E-911 addresses, both residential and commercial, within the FEMA-mapped flood hazard area.

Much of the area within the State River Corridors is within the Kingdom State Forest and the Black Turn Brook State Forest, so potential impacts due to future land development are somewhat limited. Based on the location of E-911 addresses in Town, two (2) addresses located in the FEMA flood hazard area are also located within the mapped Coaticook River Corridor. In addition, there are three (3) mapped E-911 addresses within the Averill Creek River Corridor.

Portions of both State Route 114 and the St. Lawrence & Atlantic Railroad cross lands in the FEMA-mapped flood hazard area and the State-mapped River Corridors. Portions of Gagnon Road, Nelson Road and Baumann Road (all Town Roads) cross both the FEMA-mapped flood hazard area and State River Corridors. The section of Averill Lake Road near its intersection with Rt. 114 E crosses the Averill Creek River Corridor.

The Nelson Road Bridge, which crosses the Coaticook River and provides access to an active dairy, was repaired in the summer of 2017.

1.8 PLANNING PROCESS

1.8.1 Development of Plan

This Local Hazard Mitigation Plan is the first developed for the Town of Norton.

In late July of 2015, NVDA was awarded a grant from the State of Vermont Department of Emergency Management and Homeland Security (DEMHS) for the development of Local Hazard Mitigation Plans for a number of municipalities in the Northeast Kingdom.

After working on a comprehensive update to the Municipal Plan in 2019, the town of Norton elected to begin work on creating this hazard mitigation plan. In the summer of 2020, the Selectboard Chair of the Town of Norton signed a Memorandum of Understanding with NVDA, which outlined the respective responsibilities of NVDA and municipal officials in developing the LHMP for the Town.

Irene Nagle, staff planner at NVDA, began information gathering for the Norton Local Hazard Mitigation Plan, using information from the recently updated Town Plan. Due to the COVID-19 pandemic, a kickoff meeting with the Hazard Mitigation Planning Team was delayed until January 2021, when a virtual meeting was held. An online survey was created later that month to gather information from the community on hazards and impacts, and to inform residents of the hazard mitigation planning process. The survey web address was provided in the public notice for the February 3 public meeting published in the News and Sentinel, the newspaper of record, and on the email-based Front Porch Forum. The survey garnered only 5 responses, a response rate of 3%.

A Local Hazard Mitigation Planning team was assembled, consisting of members of the Planning Commission, members of the Selectboard, the Town Clerk, the Town Road Foreman, and other town officials. It is noted that due to Norton's low population, town officials wear several hats.

Norton Hazard Mitigation Planning Team		
Name	**Position**	**Contact**
Irene Nagle	Planner, NVDA	inagle@nvda.net
Gina Vigneault	Town Clerk, Emergency Management Director, Lister, Treasurer	townofnorton@myfairpoint.net
Betsy Fontaine	Assistant Town Clerk, Lister, Assistant Treasurer	townofnorton@gmail.com
Christopher Fletcher	Selectboard Chair, Road Foreman	C_fletcher@myfairpoint.net
Tonilyn Fletcher	Planning Commission member	Via townofnorton@myfairpoint.net
Suzanne Isabelle	Planning Commission member	Via townofnorton@myfairpoint.net
Daniel Keenan	Planning Commission member, Selectboard Member	(802)822-5443
Jocelyn (Jody) Gordon	Planning Commission Member, Auditor	townofnorton@myfairpoint.net
Franklin Henry	Selectboard Member	townofnorton@myfairpoint.net
Other contacts		
Heather Johnson	District Manager, Essex County Natural Resource Conservation District; Upper CT River Cooperative Invasive Species Management Area (CISMA)	802-424-5353, essexnrcd@gmail.com
Eric Pope	VT Agency of Transportation	Eric.Pope@vermont.gov
Carolyn Royce	Norton Town Health Officer	Via townofnorton@myfairpoint.net
Elizabeth Spinney	Invasive Plant Coordinator, VT Department of Forests, Parks and Recreation	802-477-2134, Elizabeth.Spinney@vermont.gov

The first virtual public meeting held on January 13, 2021 was attended by Betsy Fontaine, Gina Vigneault, Suzanne Isabelle, Franklin Henry, Jocelyn (Jody) Gordon, Daniel Keenan, Tonilyn Fletcher, Christopher Fletcher & Irene Nagle (NVDA). Irene Nagle presented an overview of the hazard mitigation planning process and the benefits of having a local, FEMA-approved hazard mitigation plan.

A second virtual public meeting was held on February 3, 2021. The meeting was advertised in the paper of record, the News & Sentinel, and on the email-based Front Porch Forum. In attendance at the meeting were Suzanne Isabelle, Irene Nagle, Gina Vigneault, Tonilyn Fletcher, Christopher Fletcher, Betsy Fontaine, and Jocelyn (Jody) Gordon. During the meeting, participants reviewed the list of critical facilities in Norton, and reviewed a list of natural hazards, rating their likelihood of occurring and the impact they would have on the community. Meeting attendees shared stories of past occurrences of damage due to flooding, thunderstorms, and winter storms. The results of that meeting formed the basis for the risk assessment and the vulnerability assessment in sections 3 and 4 of this plan.

A third public meeting, also noticed, was held on February 17th, 2021 at which potential mitigation strategies were discussed. In attendance at that meeting were Betsy Fontaine, Jocelyn (Jody) Gordon, Irene Nagle, Gina Vigneault, Toni Fletcher and Christopher Fletcher. A follow up meeting was held on March 18, 2021 with Betsy Fontaine, Jocelyn (Jody) Gordon, Irene Nagle, Gina Vigneault, Toni Fletcher, Christopher Fletcher, Suzanne Isabelle, and Dan Keenan to assess the cost and benefits of each proposed action. Other than members of the hazard mitigation team, Norton Selectboard and Norton Planning Commission, no members of the public attended any of the aforementioned public meetings. The results of these public meetings set the framework for section 5 of this Plan – Mitigation Strategy.

In addition to the outreach and public meetings noted above which were held early in the process of developing the plan, the completed draft plan was posted on the NVDA website on November 4, 2022, with instructions to contact Irene Nagle, NVDA Planner, with any comments by November 18, 2022. Emails were also sent to the Town Clerks and Planning Commission Chairs of the adjoining municipalities with an invitation to provide comment to Irene Nagle by November 18th: the Unified Towns and Gores of Essex County (UTG), Holland, and Canaan. No comments were submitted.

The draft Plan was prepared using data sources that included:

- The results of the survey and comments provided at public meetings
- Input of the Norton Town Road Foreman regarding problem culverts and vulnerable stretches of road
- 2018 Vermont State Hazard Mitigation Plan (provided key guidance language and definitions throughout the plan).
- Vermont Agency of Natural Resources (ANR) and the Vermont Department of Transportation (VTrans) (Provided key policy recommendations on environmental conservation, climate change and fluvial erosion data, and road and stormwater infrastructure).
- Vermont Department of Environmental Conservation (DEC) (provided river corridor data)
- FEMA Open Source (data.gov) Data for Disaster History and PA funding (provided comprehensive declared disaster by year and type as well as project descriptions and cost per event).
- Essex County Natural Resource Conservation District
- VT Departs of Forests, Parks and Recreation
- VermontInvasives.org

Using the above data sources, the planning team worked with NVDA to create the Plan.

2. HAZARD IDENTIFICATION

The planning team looked at natural hazards identified in the State hazard mitigation plan, and for each considered prior history, current trends and available data in order to select (profile) hazards that are most likely to impact Norton and for which local mitigation actions could be developed.

The 2018 State of Vermont Hazard Mitigation Plan identified the following natural and technological hazards, and ranked them according to vulnerability. The table below is from the State's Hazard Mitigation Plan

Table 3: Hazard Assessment

Hazard Impacts	Probability	Potential Impact					Score*:
		Infrastructure	Life	Economy	Environment	Average:	
Fluvial Erosion	4	4	3	4	4	3.75	15
Inundation Flooding	4	4	3	4	2	3.25	13
Ice	3	3	3	3	2	2	8.25
Snow	4	1	3	2	1	1.75	7
Wind	4	2	2	1	1	1.5	6
Heat	3	1	3	2	2	2	6
Cold	3	1	3	2	2	2	6
Drought	3	1	2	2	3	2	6
Landslides	3	3	2	1	2	2	6
Wildfire	2	3	3	3	2	2.75	5.5
Earthquake	2	3	3	3	2	2.75	5.5
Invasive Species	2	1	1	2	3	1.75	3.5
Infectious Disease Outbreak	2	1	3	2	1	1.75	3.5
Hail	3	1	1	1	1	1	3

*Score = Probability x Average Potential Impact

While it is understood that FEMA will only reimburse the town for disasters caused by natural hazards, considerations for other the categories can increase resilience to a natural disaster. Technological hazards are distinct from natural hazards primarily in that they originate from human activity. In contrast, while the risks presented by natural hazards may be increased or decreased as a result of human activity, they are not inherently human-caused.

Technological and social hazards often occur as a secondary consequence of a natural disaster, and become vulnerabilities. For example, loss of telecommunications or electrical service can be the result of a natural hazard such as high winds or heavy snowfall.

While recognizing them as potential vulnerabilities, the Town decided not to profile man-made/ technological hazards for the purposes of this plan.

The Town has reviewed information for all natural hazards identified in the State Hazard Mitigation Plan, and has divided them into "profiled" and "non-profiled" hazards. In order to determine which hazards should be profiled, the planning team reviewed a "Hazards Checklist" (see Table 3.2 in Section 3. Risk assessment). Based on this exercise, the following hazards were chosen to be profiled because they had both a medium or high probability of occurring, and posed a moderate to major impact if they did occur:

High:

- **Flooding/Stream Bank Erosion**
- **High Winds**
- **Extreme Cold**
- **Infectious Disease Outbreak.**

Moderate:

- **Snow/Ice**
- **Drought, and**
- **Invasive Species.**

The Hazard Mitigation Planning Team identified Heat, Landslides, Wildfire, Earthquake and Hail as low probability and low impact in Norton. Accordingly, and due to a lack of resources and capacity in the Town, these hazards will not be discussed in detail in this plan. For a detailed description of these hazards, the reader can consult the Vermont State Hazard Mitigation Plan.

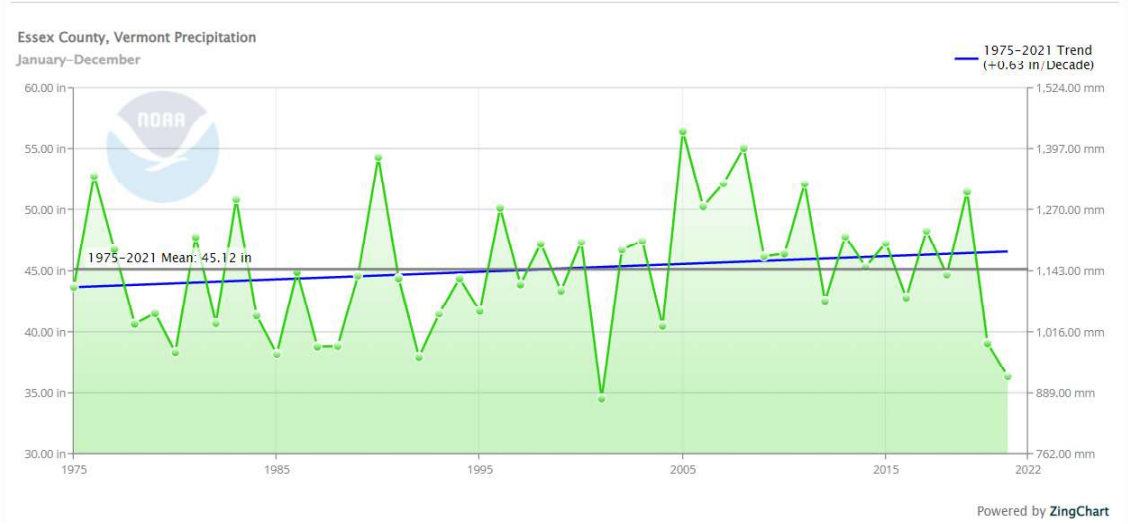
In profiling hazards, incidents in Essex County and in Norton as documented in FEMA's dataset of emergency and disaster declarations, and storm events documented in the National Atmospheric and Oceanic Administration (NOAA) database were examined. For invasive species, information was gathered from State data sources, including the Basin Plans. For infectious disease outbreak, the latest information on the COVID-19 pandemic was utilized.

2.1 Natural Hazards

2.1.1 Climate Change:

From 1962 to 2006, each five-year period resulted in 0-6 Major Disaster Declarations in Vermont. From 2007-2011, there were 11. It is commonly accepted that weather extremes are becoming more commonplace in Vermont. Since 2011, record setting snow, rain and cold have been experienced in the state. While projections of the effects of climate change vary, it is generally predicted that Vermont will have warmer temperatures year-round, with wetter winters and drier summers. An increase in the size and frequency of storms is also predicted. Thus, climate change in the next century will likely increase the chance of weather-related hazards occurring. An increase in precipitation may also result in increased flooding and fluvial erosion. In Essex County, annual precipitation from 1975 to 2021 has been increasing by .63 inches per decade. (see graph below).

Drier summers may increase the chance of drought and wildfire. A warmer climate may also result in the influx of diseases and pests that cold winters previously prevented.



Source: NOAA National Centers for Environmental information, Climate at a Glance: County Time Series, published July 2021 https://www.ncdc.noaa.gov/cag/

In 2013, the Vermont Agency of Natural Resources (ANR) released the Climate Change Adaptation Framework which addresses climate change exposures, vulnerability-specific elements within each of the natural resource sectors, and ongoing and proposed actions that can be or have been taken to prepare for the expected changes. The VT Agency of Transportation has also recognized that climate change can have impacts transportation infrastructure, and has planned accordingly.

2.1.2 Disaster History

There have been 19 disasters and 1 emergency declared in Essex County from 1973 through 2020, the most recent being the Covid-19 Pandemic which affected all counties of Vermont. Incident types in Essex County have been Flood, Severe Storms, Hurricane, and Severe Ice Storm. Table 2.1 lists hazard events, with the one affecting Norton (for which a project was funded) shown in bold.

Table 2.1:
Summary of Disasters (DR) and Emergency Declarations (EM) in Essex County

Disaster Number	Declaration Date	Disaster Type	Incident Type	Title
397	1973-07-06	DR	Flood	SEVERE STORMS, FLOODING, & LANDSLIDES
840	1989-09-11	DR	Flood	SEVERE STORMS & FLOODING
1063	1995-08-16	DR	Severe Storm(s)	EXCESSIVE RAINFALL, FLOODING
1228	1998-06-30	DR	Severe Storm(s)	SEVERE STORMS AND FLOODING
1307	1999-11-10	DR	Severe Storm(s)	TROPICAL STORM FLOYD
1428	2002-07-12	DR	Severe Storm(s)	SEVERE STORMS AND FLOODING
1698	2007-05-04	DR	Severe Storm(s)	SEVERE STORMS AND FLOODING
1790	2008-09-12	DR	Severe Storm(s)	SEVERE STORMS AND FLOODING
1995	**2011-06-15**	**DR**	**Severe Storm(s)**	**SEVERE STORMS AND FLOODING**
4001	2011-07-08	DR	Severe Storm(s)	SEVERE STORMS AND FLOODING
3338	2011-08-29	EM	Hurricane	HURRICANE IRENE
4022	2011-09-01	DR	Hurricane	TROPICAL STORM IRENE
4120	2013-06-13	DR	Flood	SEVERE STORMS AND FLOODING

4163	2014-01-29	DR	Severe Ice Storm	SEVERE WINTER STORMS
4178	2014-06-11	DR	Flood	SEVERE STORMS AND FLOODING
4207	2015-02-03	DR	Severe Storm(s)	SEVERE WINTER STORM
4356	2018-01-02	DR	Severe Storm(s)	SEVERE STORM AND FLOODING
4445	2019-06-14	DR	Flood	SEVERE STORMS AND FLOODING
4474	2020-01-17	DR	Severe Storm(s)	SEVERE STORM AND FLOODING
4532	2020-04-08	DR		COVID-19 PANDEMIC

Source: Data.gov, FEMA Declarations Data Set

The following discussion on natural hazards is based upon information from several sources, but specific extent data for Norton was limited. However, extent data available for Essex County and nearby towns can be used to capture the extent of natural hazard events for Norton. General descriptions are based upon the 2018 Vermont State Hazard Mitigation Plan.

2.1.3 Profiled Hazards

According to National Oceanic and Atmospheric Administration (NOAA) Storm Events Database Data, in Essex County from January 1996 to the end of February 2021, a total of 396 weather "events" in 18 different categories were reported, resulting in a total of 5.687M in property damage, and 760K in crop damage. These numbers do not appear to be inflation adjusted.

The categories* of weather events that were reported most frequently in Essex County during this period was "Winter Weather" (132 events) and "Winter Storm" (106 events) which resulted in at total of $1.81M in property damage, 10K in crop damage, and 1 death. The weather events that had the highest cost of damage was "Flash Flood" and "Flood" which had only 20 reported events, but which caused a total estimated property damage of $2.633M, Crop Damage of $200K, and a total of 3 reported injuries.

* The categories of weather events used by NOAA do not always comport with the title of events used by FEMA disaster declarations

Flooding and Fluvial Erosion Hazards

Flooding is the most common recurring hazard event in the state of Vermont. The State Hazard Mitigation Plan identifies three main types of flooding that occur in Vermont: flooding from rain or snow melt, flash flooding, and urban flooding.

Flooding has also been known to occur as a result of ice jams in rivers adjoining developed towns and cities. These events may result in widespread damage in major river floodplains or localized flash flooding caused by unusually large rainstorms over a small area. The effects of all types of events can be worsened by ice or debris dams, beaver dams and the failure of infrastructure (especially culverts).

Winter and spring thaws, occasionally exacerbated by ice jams, are another significant source of flooding, especially when coupled with high rain levels. Much of this flooding is flash flooding, occurring within hours of a rainstorm or other event. Flash flooding, as opposed to flooding with a gradual onset, causes the largest amount of damage to property and infrastructure. Floods cause two major types of damage: water damage from inundation and erosion damage to property and infrastructure. The 2018

Vermont Hazard Mitigation Plan states that "fluvial erosion and inundation flooding continue to be the first and second most significant natural hazards in Vermont, respectively."

The *2018 Vermont State All-Hazards Mitigation Plan* contains the following discussion of fluvial erosion:

*"*Data indicate that greater than 75% of flood damages in Vermont, measured in dollars, are associated with fluvial erosion, not inundation. These events may result in widespread damage in major rivers' floodplains or localized flash flooding caused by unusually large rainstorms over a small area. The effects of both inundation flooding and fluvial erosion can be exacerbated by ice or debris dams, the failure of infrastructure (often as a result of undersized culverts), the failure of dams, continued encroachments in floodplains and river corridors, and the stream channelization required to protect those encroachments.*."*

In April of 2011 in Norton, flooding caused the lower portion of Gaudette Road to wash out. The culvert that conveys water under Gaudette Road at this location was replaced with a larger one in 2015. In addition to this event, which was covered under Disaster Declaration 1995, there were a number of other flooding events as recorded in the NOAA storm events database.

From January 1996 to the end of February 2021 in Essex County, the NOAA lists 11 Flash Flood events resulting in $1.937M in damage and three injuries; 10 Flood events resulting in $701.00K in property damage and $200.00K in crop damage; and five Heavy Rain events, none of which resulted recorded damage. The following events effected Norton or directly adjacent towns specifically:

March 31, 1998: Flash Flood event resulting in $100K of property damage. Narrative: *Unseasonably warm weather resulted in dramatic snowmelt with rapid rises on rivers the last few days of March. In addition, showers and thunderstorms with heavy downpours moved across the area on the 30th enhancing runoff into streams and rivers. During the early morning hours of the 31st, flooding occurred between Island Pond and Norton. A train derailed about 7 miles north of Island Pond, Vermont at approximately 5:45 AM with 2 injuries resulting. There were a number of extensive road washouts between Island Pond and Norton, Vermont. A tractor trailer drove into one washed out section of road and the driver was injured. Field flooding also occurred on the Moose River. Flooding in the county continued through the end of the month.*

April 27, 2011: Flash Flood event caused by heavy rain/snow melt resulting in property damage of 250.00K. Narrative: *Snowmelt from an above normal snowpack and daytime high temperatures in the 50s and 60s on the 25th and 26th, combined with rainfall of a half to one inch early on the 26th to set the stage for a significant flood event across the region. Late in the day on the 26th into the early morning hours of the 27th thunderstorms repeatedly moved over central and northern Vermont, dumping over two inches of rain into already saturated soils and swollen rivers and streams. Flash flooding during the overnight hours late on the 26th quickly transitioned into river flooding by the morning of April 27. Runoff from heavy rain and snowmelt caused flash flooding across Essex County VT. Numerous roads and culverts were washed out, including portions of route 102 in Lemington and Canaan. In Beecher Falls, several homes were flooded and the fire station was flooded by 6 feet of water.*

August 28-29, 2011: Flood event caused by heavy rain resulting in property damage of $300.00K and crop damage of $200.00K. Narrative: *Tropical Storm Irene moved across southeast New York and southwest New England during the morning hours of August 28th and then proceeded to track north along the Connecticut River Valley in Vermont during the afternoon and evening.*
Strong to damaging winds in excess of 60 mph was observed within several miles of Lake Champlain in northwest Vermont as well as exposed higher terrain in southern Vermont and wind gusts approaching

50 mph downed trees elsewhere in Vermont during the afternoon hours… Heavy rainfall from Tropical Storm Irene caused flooding across Essex County VT. Creeks and streams were overwhelmed.

April 15, 2014: Flood event caused by heavy rain/snow melt resulting in $50K in property damage. Narrative: *Snowmelt from a late season snowpack combined with heavy rain produced widespread flooding across northern and central Vermont. Four to six inches of water was released from the snowpack over April 10 to 15 when daytime highs reached the 60s and 70s, and overnight lows remained well above freezing. Rivers were brought to near bankfull or minor flood levels from snowmelt alone. Rain developed along and ahead of a cold front on April 15, and forced rivers out of their banks. Freezing temperatures returned by the morning of April 16, which slowed or halted the runoff, and flooding gradually subsided. Flooding caused by heavy rain and snowmelt washed out gravel roads and culverts in Averill.*

June 19, 2017: Flash Flood resulting in property damage of $7.00K. Narrative: *Thunderstorms with very heavy rainfall developed in humid conditions as a weak surface front moved through Vermont. Thunderstorms with very heavy rainfall repeatedly moved over the same area in mountainous terrain. Runoff from three to four inches of rain produced flash flooding which washed out a portion of Canaan Hill Road in Averill VT.*

The impacts of extreme rainfall events on the capacity of roadways were analyzed in the 2015 report, *A Risk-Based Flood-Planning Strategy for Vermont's Roadway Network* prepared on behalf of the University of Vermont Transportation Research Center. The report provides estimates of road capacity disruption under three point-estimate capacity disruption categories (2%, 7.5%, and 13.5%). For Essex County, the probability that the intensity of a rain event will result in approximately a 2%, 7.5%, or 13.5% roadway capacity reduction are, respectively 27.6%, 69.8% and 2.6%. For example, assuming that a rainfall event occurs in Essex County, there is nearly a 70% chance that the intensity of the event will reduce capacity on the roadways by about 7.5%.

Fluvial Erosion

Erosion occurs on a consistent, but small-scale, basis within the riparian corridor of Norton's streams. This is a part of normal natural processes and as such is necessary for the proper functioning of the ecosystem of these waterways. However, fluvial erosion on a large scale can damage stream banks and undercut infrastructure such as roads, bridges and culverts as well as agricultural land and structures, causing severe damage. Fluvial erosion on a large scale can cause stream bank collapses, which are generally classified as landslides.

It is noted that extent data for fluvial erosion is unavailable because it is beyond the capacity of the Town to track after flooding events.

High Winds

The National Oceanic and Atmospheric Administration (NOAA) lists three type of wind events that effect Essex County: "Strong Wind," "High Wind," and "Thunderstorm Wind."

Strong Wind is defined as non-convective winds gusting less than 50 knots (58 mph), or sustained winds less than 35 knots (40 mph).

High Wind is defined by NOAA as sustained non-convective winds of 35 knots or greater lasting for 1 hour or longer, or winds (sustained or gusts) of 50 knots for any duration, on a widespread or localized basis.

Thunderstorm Wind is defined by NOAA as winds, arising from convection (occurring within 30 minutes of lightning being observed or detected), with speeds of at least 50 knots, or winds of any speed (non-severe thunderstorm winds below 50 knots) producing a fatality, injury or damage. Downbursts and microbursts are included in "Thunderstorm Wind" events.

As noted in the State Hazard Mitigation Plan, thunderstorms and associated hazards can occur anywhere in Vermont at any time of the year; however, spring and summer are the most common times for severe thunderstorms. The State Plan also notes that severe summer thunderstorm winds occur more frequently than any other natural hazard incident within Vermont.

Severe thunderstorms are described in the State Plan as follows:

> "Severe thunderstorms are capable of producing high winds (including downdrafts), large hail, lightning, flooding, rains, and tornadoes. Thunderstorm winds are generally short in duration, involving straight-line winds and/or gusts in excess of 50 mph. Thunderstorm winds tend to affect areas of Vermont with significant tree stands as well as areas with exposed property and infrastructure and aboveground utilities. Thunderstorm winds can cause power outages, transportation and economic disruptions, and significant property damage, and pose a high risk of injuries and loss of life…"

According to the NOAA *Storm Events Database*, throughout Essex County from January 1, 1996 through the end of February 2021 there were a total of 90 wind events causing $1M in damage: 19 "Strong Wind" events, causing a total of $273.5K in property damage; 10 "High Wind" events causing a total of $250K in property damage; and 61 "Thunderstorm Wind" events causing $476.5K in property damage.

The highest level of magnitude recorded in Essex County during this period was 78 knots (about 90 mph) in Canaan on May 9, 2000. Canaan borders the northeast tip of Norton.

Some notable event descriptions for wind events during this period that affected Norton in particular are as follows:

July 28, 1997: Thunderstorm Wind event resulting in trees blown down and $5K in property damage

July 5, 1999: Thunderstorm Wind event resulting in $10K in property damage. Narrative: *A mesoscale convective complex consisting of a cluster of thunderstorms moved across northern New York and northern Vermont during the early morning hours of Monday, July 5th. These storms blew down numerous trees and power lines as they moved across Essex county Vermont. The towns of Norton, Canaan, Island Pond and Lunenburg reported a good deal of tree damage.*

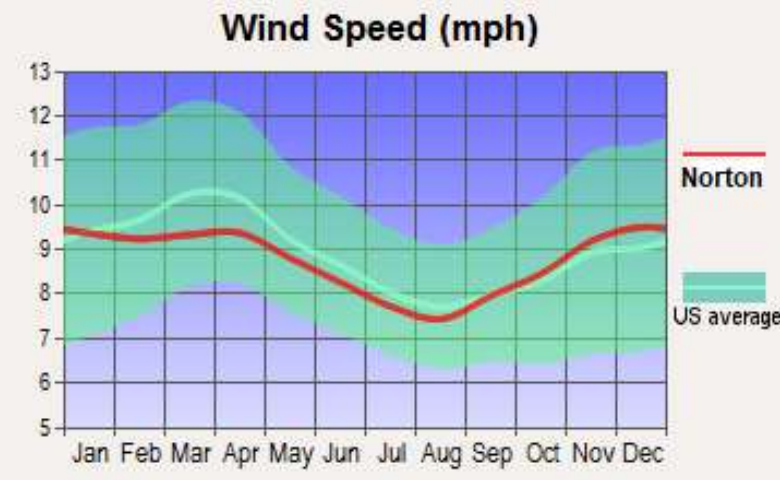
July 8, 2003: Thunderstorm Wind event resulting in $1K in damage. Narrative: *A cold front moving into a warm and humid airmass triggered late afternoon thunderstorms. A few of the storms across northeast Vermont were severe. In the towns of Norton and Averill, thunderstorm winds blew down tree limbs.*

July 18, 2016: Thunderstorm Wind event resulting in $10K in property damage. Narrative: *Several rounds of thunderstorms developed ahead of a cold front across northern NY and then moved into VT and intensified during afternoon of July 18th. There were several reports of wind damage with these storms, mainly trees and utility lines. Several trees downed by thunderstorm winds.*

August 6, 2018: Thunderstorm Wind Event resulting in $5K in property damage. Narrative*: A weak surface trough moved along the International border with Canada during the evening of August 6th. Most of the thunderstorms remained north of the border, but one storm just passed south of the border*

bringing some damaging winds that downed trees in Norton, VT. US Customs reports several trees down along Highway 114 south of Norton.

Figure 2.1
Average Wind Speed in Norton, VT



Source: http://www.city-data.com/city/Norton-Vermont.html

Transportation route access and electric power supply are at risk during a major wind event.

It is noted that *average* wind speeds in Norton range from a high of 9.5 mph in December/January to a low of 7.5 mph in August (see Figure 2.1). This would be described as a light to gentle breeze according to the Beaufort Scale.

The Beaufort Scale (see Table 2.2) was created in 1805 to help sailors estimate the winds via visual observations. The scale starts with 0 and goes to a force of 12. The Beaufort scale is still used today to estimate wind strengths.

Table 2.2: Beaufort Scale

Force	Speed (mph)	Speed (knots)	Description	Specifications for use at sea Specifications for use on land
0	0-1	0-1	Calm	Sea like a mirror. Calm; smoke rises vertically.
1	1-3	1-3	Light Air	Ripples with the appearance of scales are formed, but without foam crests. Direction of wind shown by smoke drift, but not by wind vanes.
2	4-7	4-6	Light Breeze	Small wavelets, still short, but more pronounced. Crests have a glassy appearance and do not break. Wind felt on face; leaves rustle; ordinary vanes moved by wind.
3	8-12	7-10	Gentle Breeze	Large wavelets. Crests begin to break. Foam of glassy appearance. Perhaps scattered white horses. Leaves and small twigs in constant motion; wind extends light flag.
4	13-18	11-16	Moderate Breeze	Small waves, becoming larger; fairly frequent white horses. Raises dust and loose paper; small branches are moved.
5	19-24	17-21	Fresh Breeze	Moderate waves, taking a more pronounced long form; many white horses are formed. Small trees in leaf begin to sway; crested wavelets form on inland waters.
6	25-31	22-27	Strong Breeze	Large waves begin to form; the white foam crests are more extensive everywhere. Large branches in motion; whistling heard in telegraph wires; umbrellas used with difficulty.
7	32-38	28-33	Near Gale	Sea heaps up and white foam from breaking waves begins to be blown in streaks along the direction of the wind.

				Whole trees in motion; inconvenience felt when walking against the wind.
8	39-46	34-40	Gale	Moderately high waves of greater length; edges of crests begin to break into spindrift. The foam is blown in well-marked streaks along the direction of the wind. Breaks twigs off trees; generally impedes progress.
9	47-54	41-47	Severe Gale	High waves. Dense streaks of foam along the direction of the wind. Crests of waves begin to topple, tumble and roll over. Spray may affect visibility Slight structural damage occurs (chimney-pots and slates removed)
10	55-63	48-55	Storm	Very high waves with long overhanging crests. The resulting foam, in great patches, is blown in dense white streaks along the direction of the wind. On the whole the surface of the sea takes on a white appearance. The tumbling of the sea becomes heavy and shock-like. Visibility affected. Seldom experienced inland; trees uprooted; considerable structural damage occurs.
11	64-72	56-63	Violent Storm	Exceptionally high waves (small and medium-size ships might be for a time lost to view behind the waves). The sea is completely covered with long white patches of foam lying along the direction of the wind. Everywhere the edges of the wave crests are blown into froth. Visibility affected. Very rarely experienced; accompanied by wide-spread damage.
12	72-83	64-71	Hurricane	The air is filled with foam and spray. Sea completely white with driving spray; visibility very seriously affected.

Snow and Ice

Winter storms impact the entire planning area. According to the *2018 Vermont State All-Hazards Mitigation Plan*:

"Severe winter storms develop through the combination of multiple meteorological factors. In Vermont and the northeastern United States, these factors include the moisture content of the air, direction of airflow, collision of warm air masses coming up from the Gulf Coast, and cold air moving southward from the Arctic. Significant accumulations of ice can cause hazardous conditions for travel, weigh down trees and power lines, and cause power outages. Freezing rain can also be combined with snowfall, hiding ice accumulation and further hindering travel, or with mixed precipitation and potentially ice jams or flooding."
Figure 2.2 and 2.3 depicts average snowfall and in Norton (source city-data.com.)

NOAA defines "Winter Weather" is defined as a winter precipitation event that causes a death, injury, or a significant impact to commerce or transportation, but does not meet locally/regionally defined warning criteria.

"Winter Storm" is defined as a winter weather event that has more than one significant hazard (i.e., heavy snow and blowing snow; snow and ice; snow and sleet; sleet and ice; or snow, sleet and ice) and meets or exceeds locally/ regionally defined 12 and/or 24 hour warning criteria for at least one of the precipitation elements.

"Heavy Snow" is defined as snow accumulation meeting or exceeding locally/regionally defined 12 and/or 24 hour warning criteria.

"Ice Storm" as ice accretion meeting or exceeding locally/regionally defined warning criteria, typically 1/4 or 1/2 inch or more.

According to the NOAA Database, from January 1 1996 to December 31, 2022 in Essex County there were 137 "Winter Weather" events resulting in 578K in damage; 110 "Winter Storm" events resulting in 1.255M in property damage, 10K in crop damage, and 1 death; seven "Heavy Snow" events resulting in 136K in property damage; and one "Ice Storm" event, resulting in 80K in property damage.

According to the NOAA database, a "Winter Storm" event involving heavy snow that resulted in the one death and 75K in property damage occurred on February 5th-6th, 2001. In Norton, a barn roof collapsed. **16 inches** of snow fell during this event:

"A storm system developed off the coast of Virginia early Monday, February 5, 2001 and moved northeast. It moved across extreme southeast coastal New England late Monday night and into the Gulf of Maine early Tuesday, February 6th. Steady snow spread across the area by the afternoon of Monday, February 5th and continued overnight and was heavy at times. The snow tapered off to flurries Tuesday morning, February 6th. A woman was killed in an automobile accident with a snowplow near the Village of Lunenburg. Otherwise there were some accidents reported. A barn roof collapsed near the Town of Norton, apparently due to the weight of the snow after the storm ended. Across the county, generally 12 to 16 inches of snow fell, with Island Pond reporting 16 inches."

An Ice Storm event on January 7-9th, 1998 in Essex County resulted in ice accumulation of **¾ inches or less**, and resulted in $80K in property damage:

"Ice accumulations during this event were generally 3/4 of an inch or less. The impact on the region ranged from ice accumulations damaging tens of thousands of trees. Downed power lines resulted from the weight of the ice with several thousands with out power. Farmers who lost electricity were unable to milk cows with loss of income and damage to cows. Automobile travel was negatively impacted with a number of roads closed due to ice and fallen trees. There were numerous traffic accidents.

INDIRECT injuries were reported due to carbon monoxide poisoning while improperly using generators. Falling tree limbs and other debris was a significant hazard during and following the storm."

Extreme Cold

NOAA defines "Extreme Cold/Wind Chill" as "a period of extremely low temperatures or wind chill temperatures reaching or exceeding locally/regionally defined warning criteria (typical value around -35 degrees F or colder).

According to the NOAA database, five events were reported between between January 1996 and December 2021 in Essex County. No documentation of injury, death, crop damage or property damage was reported, although the event narratives describe impacts.

Events documented in late January and early March of 2007 recorded a low of -35 degrees in Island Pond, which is in Essex County south of Norton; and wind chill readings of -25 to -40 degrees.

The greatest magnitude of cold was documented on January 14-18th in 2009, as described in the narrative on the NOAA site:

"An arctic cold front moved across Vermont during the early morning hours of January 14th which delivered some of the coldest temperatures across the region in several years. As the arctic front passed across northern Vermont, temperatures dropped over 20 degrees within several hours. Temperatures averaged 20 to 25 degrees below normal values, which were already at climatological winter minimums. Daytime maximum temperatures ranged from single digits above and below zero during this stretch while nighttime minimums were 10 to 30 below zero with isolated readings colder than 40 below zero at times… Some observed minimum temperatures for January 16th included: 42 degrees below zero in Island Pond (Essex county)… These extremely cold temperatures led to numerous cold weather related problems including numerous dead vehicle batteries and broken home/business water pipes."

Drought

The 2018 Vermont State Hazard Mitigation Plan defines drought as a "water shortage with reference to a specified need for water in a conceptual supply and demand relationship." The severity of a drought depends on the duration, intensity, and geographic extent of the water shortage, as well as the demands on the area's water supply.

The USDA rates droughts from D0–D4, depending on the severity of the drought, the amount of time it will take for vegetation to return to normal levels, and the possible effects of the drought on vegetation and water supply. According to the US Drought Monitor (https://droughtmonitor.unl.edu/), drought at levels D0 through D3 have occurred in the past in Vermont.

Droughts can be caused by a decrease in a supply of water, an increase in the demand on a supply of water, or a combination of the two. According to information available on the "Climate Toolbox" (https://climatetoolbox.org/tool/Historical-Water-Watcher) different demands give rise to different types of drought, including:

- meteorological drought—a period of dry weather due to reduced precipitation.
- hydrological drought—a period of low water supplies, either in surface or subsurface supplies, especially in streams, reservoirs, and groundwater levels.
- agricultural drought—circumstances when agricultural plants do not have enough water to achieve the growth needed for quality crop production and yields.
- ecological drought—a deficiency in surface water supplies (including changes in natural and managed hydrology) that creates multiple stresses across ecosystems.
- snow drought—a period of abnormally low snowpack.
- flash drought—a marked deficiency in water experienced over a particularly short time period (usually on the order of a few days up to 2 weeks) during an important period of water demand.

As noted in the State Plan, drought is difficult to monitor and assess because it develops slowly and covers extensive areas, as opposed to other disasters that have rapid onsets and obvious destruction.

NOAA's instruction for inclusion of events in the Storm Event database advises that for locations east of the Rocky Mountains, drought events should be included in Storm Data for classification of Severe (D2) or higher. According to the NOAA Storm Events database, only two Counties in Vermont had a recorded instance of "drought" from January 1996 to January 2022: Bennington and Windham experienced drought in 1996 after an April with unusually low rainfall. This, combined with high winds, led to brush fires.

However, although not recorded in the NOAA database, Norton residents have recalled instances when private wells ran dry or had diminished water quality due to low rainfall.

NOAA maintains a drought information database at https://www.drought.gov/ and data can be searched at the local level. This site provides information on various "Drought Indicators," which are variables used to describe drought conditions (e.g., precipitation, temperature, streamflow, groundwater and reservoir levels, soil moisture, and snowpack).

Infectious Disease Outbreak

The FEMA 2020 National Preparedness Report notes, "The COVID-19 pandemic resulted in the first ever Stafford Act major disaster declaration of all 50 states, five territories, and the District of Columbia for a naturally occurring infectious disease."

In March of 2020, by Executive Order No. 01-20, the Governor declared a State of Emergency for Vermont, and restrictions to protect public health were enacted.

While a variety of measures were recommended by the Center for Disease Control and the Vermont Department of Health to help curb the spread of disease, including frequent hand-washing, wearing masks, and keeping a distance of 6 feet from other persons, vaccination was identified as the best way to keep from getting and spreading COVID-19. In Vermont, the vaccine was first made available to residents and staff of long term care facilities in December 2020, and then to those 75 and older in mid-January 2021. Availability of the vaccine continued to expand to successively younger age groups.

The Vermont State of Emergency was extended for over a year until all restrictions were lifted on June 14 of 2021, at which time the benchmark of an 80% vaccination rate for the eligible population of Vermont was reached.

The Vermont Department of Health has been tracking statistics on COVID-19 within the State and developed a page on its website devoted to COVID-19 information. From March 7, 2020 until January 24, 2023, there were a total of 1,457 reported COVID cases in Essex County. For the period ending October 15, 2022, a total of 2,346 individuals in Essex County completed the vaccination series for COVID. Case counts are no longer available for individual towns, but at the county level here: https://geodata.vermont.gov/datasets/VCGI::vt-covid-19-cases-by-county

The Centers for Disease Control and Prevention (CDC) provides direction on how to mitigate the impacts of the COVID-19 pandemic and slow the spread. The CDC website includes a page entitled "Implementation of Mitigation Strategies for Communities with Local COVID-19 Transmission" https://www.cdc.gov/coronavirus/2019-ncov/community/community-mitigation.html

While these were developed specifically in response to the COVID-19 Pandemic, they can be utilized to reduce the spread of other similar infectious diseases.

Invasive Species

Invasive species are defined as plants, insects, and other organisms that were either accidentally or intentionally introduced from other places, and that can negatively impact agriculture, recreation, forestry, human heath, the environment, and the economy. About 85% of Norton is forested and these lands are a significant resource for regional forest-based industries. The forests in Norton are also an

important recreational resource and have been identified as an opportunity for local economic development.

According to Vermont Invasives.org, “Non-native, invasive terrestrial plants are one of the greatest threats to the health of Northeastern forests. They negatively impact forest regeneration, forest structure, ecosystem function, recreation and wildlife habitat, are costly to manage, and can be harmful to human health.”

This site also identifies three non-native insects which currently threaten Vermont: the emerald ash borer (EAB), Asian longhorned beetle (ALB) and hemlock wooly adelgid (HWA). These three pests threaten more than 14 different species of trees in Vermont including maple, elm, horsechestnut, willow, ash, poplar, European mountain ash, hackberry, and hemlock.

A forest pest that is native but nonetheless destructive is the forest tent caterpillar (FTC), an insect that feeds on hardwoods. The Department of Forests, Parks and Recreation (VT FPR) monitors forest tent caterpillar and the Vermont Natural Resources Atlas maps the extent of infestations of this insect. An aerial survey in 2016 mapped at least 24,500 acres of FTC defoliation. Heaviest defoliation occurred in Essex, Lamoille, Orleans and Caledonia counties. Forest tent caterpillars are especially of concern to maple syrup producers. Technical advice for land managers, sugar bush owners, arborists and home owners is available from VT FPR through the Orleans County Forester or VT FPR’s Forest Biology Lab at 802-879-5687.

Another pest in the region is the balsam wooly adelgid (BWA). The Vermont Department of Forests, Parks, and Recreation issued an information sheet on this forest pest in 2016 which includes a description of management options.

3. RISK ASSESSMENT

3.1 Natural Hazard Events

The process of risk assessment for Norton began with a review of the 2018 State of Vermont Hazard Mitigation Plan. The State Plan notes:

"Risk assessment measures the potential loss of life, personal injury, economic injury, and property damage resulting from natural hazards by assessing the vulnerability of people, buildings, and infrastructure to natural and technological disasters."

The Hazard Mitigation Planning team assessed the hazards that were likely to impact Norton, and discussed probability, impact, risk level and history, coming up with the list of hazards to profile (included in Section 2).

Although past events in Essex County have not resulted in high-cost projects for Norton (the town received a Public Assistance grant under declared disaster #1995, for a "roads and bridges" project costing $2,548) changes in weather patterns could change that trend.

3.2 Local Risk Assessment

A "Hazards Checklist and History" was completed as a group by attendees at the February 3, 2021 public meeting, and the results of this preliminary assessment are shown in Table 3.2. The "History" column relies on local memory of events and supplements data gathered from NOAA and FEMA included in section 2 of this document.

Natural Hazards	**Probability** Likelihood of it happening in any given year **1.UNLIKELY**:<1% chance per **2.OCCASIONALLY**: 1-10% (at least once in next 100 years) year **3.MED:** >10% - <75% (at least once in next ten years) **4.HIGH**: 75% +	**Impact** Damage, injuries, disruption **1. NEGLIGIBLE** **2. MINOR** **3. MODERATE** **4. MAJOR**: severe damage town-wide, multiple injuries/fatalities, critical facilities shutdown	**Risk Level** Based on probability, impact, and warning time **LOW** **MODERATE** **HIGH**	**History: When, where, extent and impact, if known**
Flooding/Stream Bank Erosion	3	4	High	2011; 2009 flash flood, culvert on VT State Rt. 114.
Earthquake	2	1	Low	June 1976 (Canaan), strong tremor. possibly 1973 as well.
Snow (including ice)	4	2-3	Moderate	Has damaged buildings in Norton
High Winds	4	3	High	Past wind events have taken down trees and cut power
Landslide/Rockslide	1	1	Low	
Extreme Heat (87+)	3	1	Low	July of 2018, in the 90s.
Extreme Cold (25 below)	3	4	High	Structure fires as a result of heating system overload, chimney fire in the early 1990s.
Hail	2	2	Low	
Drought	2	3	Moderate	There have been droughts where private wells have come close to running dry, restrictions on water usage.
Wildfire	1	1	Low	

Infectious Disease Outbreak	2	4	High	Many businesses suffered due to closing of border and restrictions on interstate travel. High percentage of older residents susceptible to disease.
Invasive Species (animals, insects or vegetation)	3-4	3	Moderate	Tent caterpillars affecting trees; Wild Parsnip grows on side of road and burns skin. White hickory tussock moth caterpillars (white furry) have been encountered and cause burns. Wild Turkeys pose a road hazard.

Based on this exercise, the planning team decided to profile in detail the hazards that posed the greatest risk to Norton (rated high and moderate), and to develop mitigation measures for those hazards. The hazards that were felt to present the highest risk to people and property in Norton were Flooding/Stream Bank Erosion, High Winds, Extreme Cold, and Infectious Disease Outbreak. The hazards that posed a moderate risk were Ice, Snow, Drought, and Invasive Species. The Hazard Mitigation Planning Committee did not profile man-made, or "technological" hazards.

4. ASSESSING VULNERABILITY

4.1 Populations at Risk

Vulnerability refers to the potential impact of a specific loss related to an identified risk. In Norton, vulnerable, or "at-risk" populations would include the elderly and homebound. Low income residents are also at risk of hazards such as extreme cold, since they may not have the means to adequately insulate their homes or pay for fuel.

The rural aspect of Norton increases vulnerability of those who may contract an infectious disease due to long distance to medical facilities and interruptions to supply lines. Emergency response personnel are also vulnerable.

All residents are potential at risk in the event of a drought, since there is no public water system serving Norton and all rely on private wells.

The Norton Town Road foreman provided information on past problem areas of the Town's road infrastructure, including Baumann Road, Gaudette Road, State Route 114, and the Nelson Road Bridge. Critical facilities are identified on the map included in the appendix.

Existing Structures in the Mapped Flood Hazard Areas

The Flood Insurance Rate Map (FIRM) for Norton was prepared in 1975. According to the "Flood Hazard Summary Report" for Norton (https://floodready.vermont.gov/) there are 21 E-911 structures within the mapped Special Flood Hazard Area (SFHA) in Norton, which represents about nine percent of all structures in Town. Five percent of the structures in the SFHA are insured. Norton regulates the development of land within the SFHA, and is a member of the National Flood Insurance Program. It is noted that since the Flood Insurance Rate Maps (FIRM) for Norton are not digitized, it cannot be accurately geo-referenced on the map, and numbers of structures within the SFHA are estimates.

The State of Vermont Agency of Natural Resources (ANR) has mapped "River Corridors" throughout the State. The River Corridors, as defined by ANR, "encompass the area of land surrounding a river that provides for the meandering, floodplain, and the riparian functions necessary to restore and maintain the naturally stable or least erosive form of a river thereby minimizing erosion hazards over time." Since lands within and immediately abutting a river corridor are at higher risk to fluvial erosion, the State recommends that development within mapped River Corridors be avoided, and that a 50 foot setback be maintained from smaller streams.

River Corridors have been mapped by the State for Norton, as shown on the map included in the appendix to this document. This provides an indication of areas that are vulnerable to fluvial erosion. Much of the area within the State River Corridors is within the Kingdom State Forest and the Black Turn Brook State Forest, so potential impacts due to future land development are somewhat limited. Based on the location of E-911 addresses in Town, two (2) addresses located in the FEMA flood hazard area are also located within the mapped Coaticook River Corridor. In addition, there are three (3) mapped E-911 addresses within the Averill Creek River Corridor.

Portions of both State Route 114 and the St. Lawrence & Atlantic Railroad cross lands in the FEMA-mapped flood hazard area and the State-mapped River Corridors. Portions of Gagnon Road, Nelson Road and Baumann Road (all Town Roads) cross both the FEMA-mapped flood hazard area and State River Corridors. The section of Averill Lake Road near its intersection with Rt. 114 E crosses the Averill Creek River Corridor.

The Nelson Road Bridge, which crosses the Coaticook River and provides access to an active dairy, was repaired in the summer of 2017.

The Town undertook a culvert inventory which was completed in 2018 and entered on the state database. Regular updating of this inventory will help the town keep track of culverts that need replacement. As noted previously, Norton has elected to include the State-mapped river corridors in the area regulated by their local flood hazard regulations.

Norton has no reported NFIP repetitive loss properties.

4.2 Critical Assets and Infrastructure

Critical facilities are structures critical to the operation of the community and the local economy, which may include historic structures.

Critical facilities/assets within the Town of Norton that are important to protect during hazard events are listed in Table 4.1., along with the estimated replacement cost, if relevant.

Table 4.1
Critical Facilities in Norton

Asset / Critical Infrastructure	Location	Ownership	Estimated Value ($)	Comments
Norton Town Office (also emergency shelter)	12 VT Route 114 E.	Town	516,900	Provides critical town functions
Town Transfer Station	249 VT Route 114 S.	Town	60,300	Provides critical town functions
Town Garage/Salt Shed	472 VT Route 114 S.	Town	157,800	Provides critical town functions
U.S. Post Office	445 VT Route 114 S.	Private	38,700	Provides critical town functions
St. Lawrence & Atlantic Railroad	From southern municipal boundary to Canadian border	Private	unknown	Critical to regional economy
Norton Country Store (currently closed)	540 VT Route 114 S	Private	73,700	Critical to providing basic necessities, and gas in area served by VT 114 S
Lake View Store	4531 VT Route 114 E	Private	99,000	Critical to providing basic necessities in area served by VT 114 E
VT RT 114	VT RT 114 S and E		NA	Critical for transportation in and out of town.
Baumann Road	Town Road at Baumann Road.	Town/Private	NA	Critical for access to residences and commercial dairy farm. Private road section causing erosion problems at location of culvert.
Nelson Road Bridge	Nelson Road	Town	NA	Critical for access to commercial

				dairy farm and residences.
Norton Port of Entry	VT RT 114 at Border	Federal Government	unknown	Critical to local/regional tourist economy
Dams on Great Averill Pond and Norton Pond		Coaticook Power Company.	unknown	Upgrades in the summer of 2020
Consolidated Communications equipment building	VT RT 114	Consolidated Communications	unknown	Critical for communication.

The Vermont Statewide Highway Flood Vulnerability and Risk Map

The Vermont Agency of Transportation has developed a vulnerable and risk map for state highways, that is intended to provide a reliable estimate that can support emergency preparedness, capital programming and hazard mitigation planning. The statewide assessment also provides a metric for use in the project selection and prioritization process. The limitation is that small bridges and culverts on town highways are not included in this assessment -- data on those structure are inventoried at the town level and entered on www.vtculverts.org.

Transportation *criticality* metrics quantify the importance of a road segment in the network related to general travel and emergency services accessibility. The *flood vulnerability* and *transportation criticality* metrics are combined to develop a *risk score*, which can help prioritize the need for mitigation. Maps showing flood vulnerability, criticality of the road infrastructure, and flood risk for main transportation routes and associated infrastructure in Norton is shown below in Figures 4.1 through 4.3.

Figure 4.1 Highway Flood Vulnerability

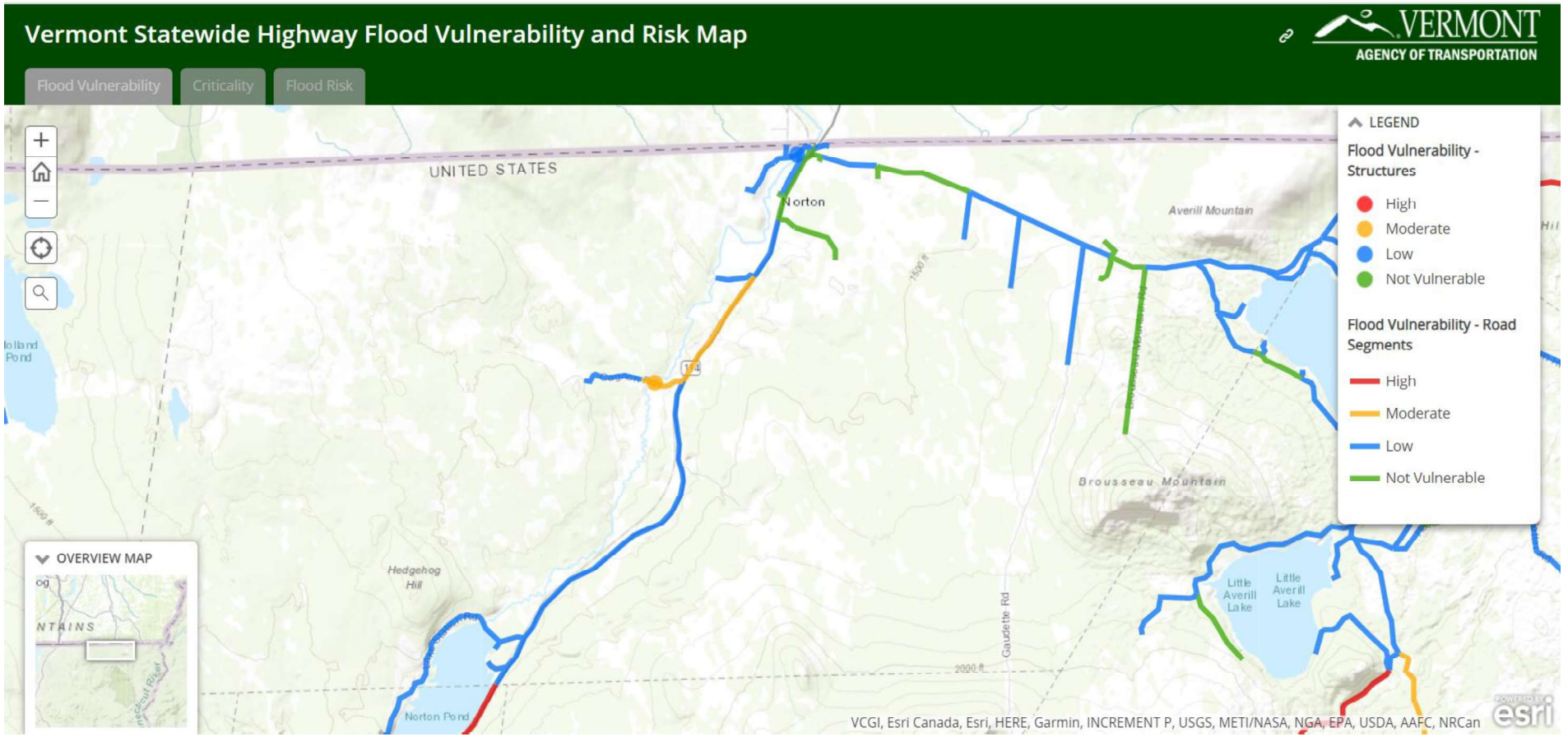


Figure 4.2 Highway Criticality

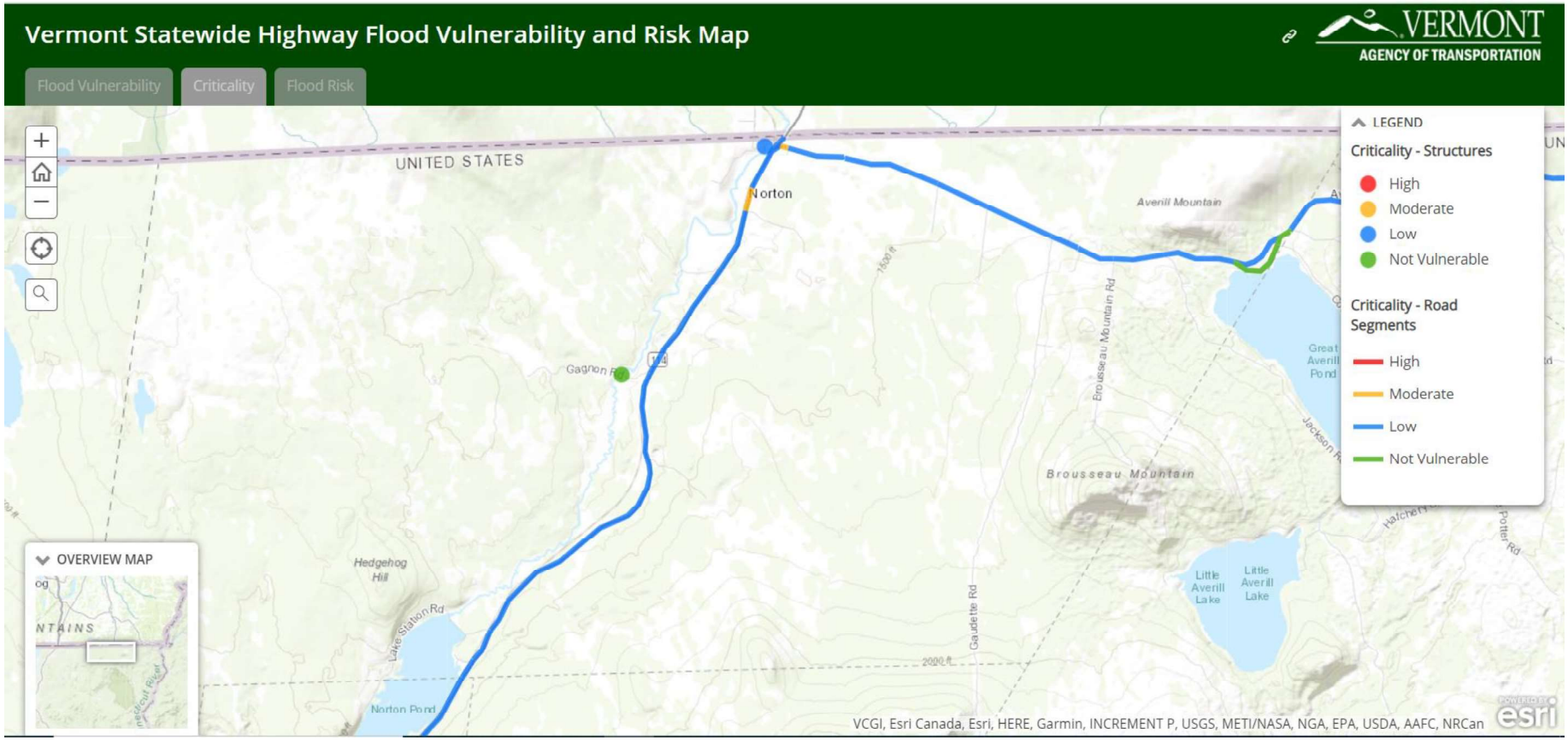
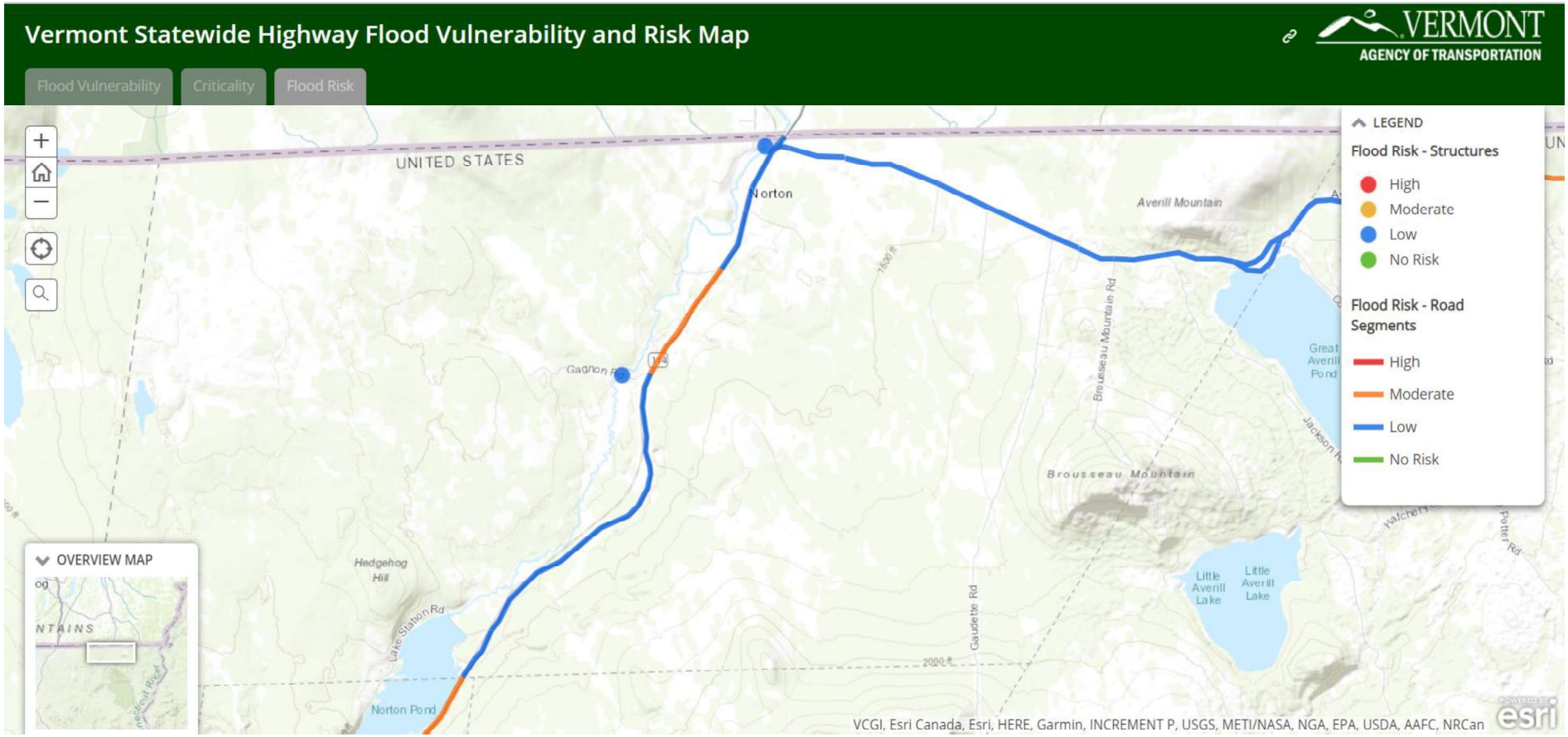


Figure 4.3 Highway Flood Risk



5. MITIGATION STRATEGY

5.1 Evaluation of Mitigation Actions

At the public meeting on February 17, 2021 several mitigation strategies were evaluated using an evaluation matrix. This evaluation helped to prioritize actions. The hazard type which was addressed by each action appears in the first column, followed by the proposed mitigation action. The following criteria were considered in the matrix:

- What is the likelihood of securing funding for the action?
- Does the action protect threatened infrastructure and is it environmentally sound?
- Can the action be implemented quickly?
- Is the action socially and politically acceptable?
- Is the action technically feasible?
- Is the action administratively realistic given the capabilities of responsible parties?
- Does the action offer reasonable benefit compared to its cost of implementation?

Each criteria was rated on a scale of 1 to 5, 1 being "poor" and 5 being "excellent." The results are shown on Table 5.1. Some of the mitigation actions that were identified as having the highest benefit, were also the most costly or were deemed to have low social/political acceptance, resulting in a lower overall rating.

Table 5.1
Evaluation of Mitigation Actions
1= Poor 2= Below Average or unknown 3= Average 4= Above Average 5= Excellent

Hazard Type	Mitigation Action	Funding potential	Protection value/ Environmental Advantage	Time to implement	Social and Political acceptance	Technical Feasibility	Admin. Feasibility	Benefit to cost	Total Score
Flooding/Stream Bank Erosion	Undertake repair projects to correct road erosion problems and/or replace undersized culverts to avoid washouts	**5**	**5**	**3**	**5**	**5**	**3**	**4**	**4.3**
	Partner with VT DEC and other organizations to facilitate restoration projects in river corridors where erosion has occurred.	**2**	**5**	**2**	**3**	**4**	**3**	**4**	**3.3**
	Educate property owners in River Corridors and Flood Hazard Areas of Norton's flood hazard regulations before development projects are proposed.	**5**	**3**	**5**	**3**	**5**	**5**	**4**	**4.3**
	Continue to update culverts and bridges on vtculverts.org	**5**	**5**	**4**	**5**	**4**	**4**	**5**	**4.6**
High Winds	Increase public awareness of severe wind by providing information on property maintenance and building retrofits. (To be included in an information sheet sent out yearly on multiple hazards.)	**5**	**3**	**4**	**5**	**4**	**4**	**5**	**4.3**

Hazard Type	Mitigation Action	Funding potential	Protection value/ Environmental Advantage	Time to implement	Social and Political acceptance	Technical Feasibility	Admin. Feasibility	Benefit to cost	Total Score
	Encourage use of natural protection using landscape and vegetation as wind buffers.	**5**	**3**	**4**	**5**	**4**	**4**	**5**	**4.3**
Extreme Cold	Increase public awareness of available weatherization and heating assistance programs, how to protect pipes from freezing, and how to guard against carbon monoxide poisoning. (To be included in an information sheet sent out yearly on multiple hazards.)	**5**	**3**	**4**	**5**	**4**	**4**	**5**	**4.3**
	Test performance of emergency generator on a regular basis	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Infectious Disease Outbreaks	Partner with the VT Department of Health and the Orleans/Essex Visiting Nurse Association to disseminate information regarding treatments, testing, and vaccines to the community, particularly the elderly and homebound. Provide public education via town mailings or Front Porch Forum regarding safety measures to curb the spread	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**

Hazard Type	Mitigation Action	Funding potential	Protection value/ Environmental Advantage	Time to implement	Social and Political acceptance	Technical Feasibility	Admin. Feasibility	Benefit to cost	Total Score
	Provide personal protective equipment at town properties to help curb the spread	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Snow & Ice	Develop plans for safe and effective snow plowing, assure roads are plowable before winter, and identify alternative support mechanisms for snow removal when local capacity is overwhelmed	**5**	**5**	**4**	**5**	**5**	**5**	**5**	**4.9**
	Develop a local warning notification system by email and/or text (request that residents provide contact numbers or emails in periodic mailings)	**1**	**3**	**2**	**3**	**2**	**2**	**2**	**2**
Drought	Disseminate information to residents regarding places to get private well water tested	**5**	**3**	**3**	**5**	**5**	**3**	**4**	**4**
	Disseminate information to residents on water conservation practices	**5**	**3**	**3**	**5**	**5**	**3**	**4**	**4**
Invasive Species	Disseminate information provided by Essex County NRCD; UVM Extension; the	**5**	**3**	**3**	**5**	**5**	**3**	**4**	**4**

	VT Department of Forests, Parks and Recreation; and VT DEC to educate residents on identifying invasive plants and insects and ways to curb their spread.								
	Partner with DEC and Essex County NRCD on riparian buffer restoration programs	**2**	**5**	**2**	**3**	**4**	**3**	**4**	**3.3**

5.2 Capabilities

The Town of Norton has a very low year-round population, and limited paid staff. The Town employs a Town Clerk, Assistant Town Clerk, and contracts a road crew when needed. The Town Clerk and Assistant Town Clerk have limited hours. Norton has zoning bylaws that include regulation of both FEMA-mapped Special Flood Hazard Areas and State River Corridors. Norton is a member of the NFIP. The Zoning Administrator receives a stipend.

Potential for expansion of the communities' existing capabilities include:

- Ongoing training of the Town road commissioner
- Desktop emergency training exercises coordinated by the Town Emergency Management Director (EMD) and the Emergency Management Specialist at NVDA
- The update and digitization (at the federal level) of the FIRM, which will provide more accurate information as the basis for the Town's flood hazard Regulations
- Undertake available training for the Zoning Administrator for administering the local flood hazard regulations

Table 5.2 lists each mitigation action, along with the party or parties that would have the capability of implementing the action, and time-frame. The lead for each mitigation action is shown in **bold**, with supporting entities also indicated. Source of funding, if relevant, is also noted. The estimated cost is noted as a 1 if low (under $5,000); 2 if medium ($5,000 to $10,000); or 3 if high (over $10,000).

For time frame, 1 would be within the next 12 months, 2 would 1 to 2 years, 3 would be 2+ years, or ongoing.

Table 5.2 Mitigation Actions -- Capabilities, Costs and Timeframes					
Hazard Type	**Mitigation Action**	**Responsible Party**	**Estimated Cost**	**Funding Source**	**Time-frame**
Flooding/Stream Bank Erosion	Undertake repair projects to correct road erosion problems and/or replace undersized culverts to avoid washouts	**Road Commissioner** /Selectboard	2	Better Roads/ Other VTrans grants/Norton Emergency Roads Fund	ongoing
	Partner with VT DEC and other organizations to facilitate restoration projects in river corridors where erosion has occurred.	**Road Commissioner** to coordinate with DEC/other organizations	1	Grants available through conservation organizations	1
	Educate property owners in River Corridors and Flood Hazard Areas of Norton's flood hazard regulations – before development projects are proposed.	**Zoning Administrator**	1	Town Budget	1
	Continue to update culverts and bridges on vtculverts.org	**Town Road Commissioner**	1	Town Budget	ongoing
High Winds	Increase public awareness of severe wind by providing information on property maintenance and building retrofits. (To be included in an information sheet sent out yearly on multiple hazards.)	**Town Clerk** working with the Selectboard	1	Town Budget	1
	Encourage use of natural protection using landscape and vegetation as wind buffers.	**DRB** when reviewing applications for conditional uses, site plans or subdivisions	1	Town Budget	ongoing
Extreme Cold	Increase public awareness of available weatherization and heating assistance programs, how to protect pipes from freezing, and how to guard against carbon monoxide poisoning. (To be included in an information sheet sent out yearly on	**Town Clerk** working with the Selectboard	1	Town Budget	1

	multiple hazards.)				
	Test performance of emergency generator on a regular basis	**Town Clerk**	1	Town Budget	ongoing
Infectious Disease Outbreaks	Partner with the VT Department of Health and the Orleans/Essex Visiting Nurse Association to disseminate information of treatments, testing, and vaccines to the community, particularly the elderly and homebound.	**Town Clerk** and Town Health Officer	1	Town Budget	Ongoing as needed
	Provide personal protective equipment at town properties to help curb the spread	Town Clerk	1	Private, State and Federal grants	Ongoing as needed
	Provide public education via town mailings or internet postings (e.g. Front Porch Forum) regarding safety measures to curb the spread	**Town Clerk**/Selectboard	1	Town Budget	1
Snow & Ice	Develop plans for safe and effective snow plowing, assure roads are plowable before winter, and identify alternative support mechanisms for snow removal when local capacity is overwhelmed	**Town Road Commissioner** and Selectboard	1	Town Budget	1
	Develop a local warning notification system by email and/or text (request that residents provide contact numbers or emails in periodic mailings)	Town Clerk	1	Town Budget	1
Drought	Disseminate information to residents regarding places to get private well water tested	**Town Clerk** working with the Selectboard	1	Town Budget	1
	Disseminate information to residents on water conservation practices	**Town Clerk** working with the Selectboard	1	Town Budget	1
Invasive Species	Disseminate information provided by Essex County NRCD; UVM Extension; the VT Department of Forests, Parks and Recreation; and VT DEC to educate residents on identifying invasive plants and insects and ways to curb their spread.	**Town Clerk** working with the Selectboard	1	Town Budget	1
	Partner with DEC and Essex County NRCD on	**Essex County NRCD,**	1	Grants available	1

	riparian buffer restoration programs	Town Clerk to coordinate with DEC/other organizations		through conservation organizations	

5.3 Implementation and Monitoring of Mitigation Strategies

5.3.1 Public Involvement Following Plan Approval

After the Plan has received approval from FEMA and has been adopted by the Town, the Town Selectboard will provide a summary in the Annual Town Report regarding any progress to date on mitigation actions in the Plan, any changed conditions, and an evaluation of the plan to assess whether it is still effectively promoting Norton's hazard mitigation goals. At Town Meeting every March, the public will have the opportunity to ask questions and provide comments on the mitigation strategy.

5.3.2 Project Lead and Monitoring Process

Once the Plan is approved by FEMA, the calendar will begin for annual review of the mitigation plan.

The Norton Planning Commission is the project lead and will work in conjunction with the Road Foreman, the Town Clerk, and the Selectboard to complete the yearly progress report included in the Annual Town Report. The Town Clerk will assure that all road improvement projects are tracked in collaboration with the Road Foreman.

5.3.3 Plan Update Process

The Plan update will be led by the Planning Commission. The Planning Commission may elect to acquire the assistance of the Northeastern Vermont Development Association or a consultant to update the plan following a declared disaster and/or the next five-year planning cycle. The process of updating the Hazard Mitigation Plan will begin one year prior to its expiration. The update process will begin with a review of the annual progress reports, and will include an update of data on population and development. Any changes in vulnerability will also be documented. The Planning Commission will seek public involvement through methods similar to those used in the development of this Plan: online resident survey, direct emails to adjacent Town officials, announcements in the local newspaper, and public meetings.

Appendix:

- Public Meeting notice
- Community Survey
- Norton Local Emergency Management Plan, 2021
- Norton Plan and Bylaws: http://www.nvda.net/norton.php
- Sources of information on mitigation for various hazards:
  - https://www.fema.gov/sites/default/files/2020-06/fema-mitigation-ideas_02-13-2013.pdf
  - https://www.fema.gov/emergency-managers/risk/hazard-mitigation-planning/best-practices

Local Hazard Mitigation Planning Meeting, Norton

Wednesday February 3, 2021 6:30 PM

The Town of Norton is holding a public meeting to discuss its Local Hazard Mitigation Plan. The meeting can be attended through Zoom:

https://us02web.zoom.us/j/85394424020?pwd=L2ViN2VqSHdYQVc5am91ak1QSVdzQT09

Meeting ID: 853 9442 4020

Passcode: 061310

Or call in by phone: 1-929-205-6099

Hazard mitigation planning is the process used by state and local leaders to understand risks from natural hazards and develop long-term strategies that will reduce the impacts of future events on people, property, and the environment.

A survey has been prepared to solicit public input on the natural hazards that residents are concerned about or have experienced first-hand. Members of the community are invited to complete the Norton Hazard Mitigation Community Survey online, which can be accessed at:

https://survey.zohopublic.com/zs/OwBU3G

The information provided will help the hazard mitigation planning team better understand local hazard concerns and can lead to mitigation activities that should help lessen the impacts of future disasters.

The Hazard Mitigation Plan will identify and assess Norton's natural hazard risks (such as snow and ice storms, high winds, extreme cold and infectious disease) and determine how best to minimize those risks. At the meeting, participants will learn about the process of developing the Hazard Mitigation Plan and have an opportunity to give feedback regarding natural hazards and their impacts. Meeting participants will have the chance to voice their concerns as well as their ideas for mitigating risks.

The Vermont Division of Emergency Management and Homeland Security will review and approve the Hazard Mitigation Plan. Once approved, the plan will make the Town eligible for funding that may be used to mitigate risks associated with natural hazards.

For questions regarding the project, please contact Irene Nagle at NVDA, inagle@nvda.net or 802-424-1423.

Norton Hazard Mitigation Survey (1)

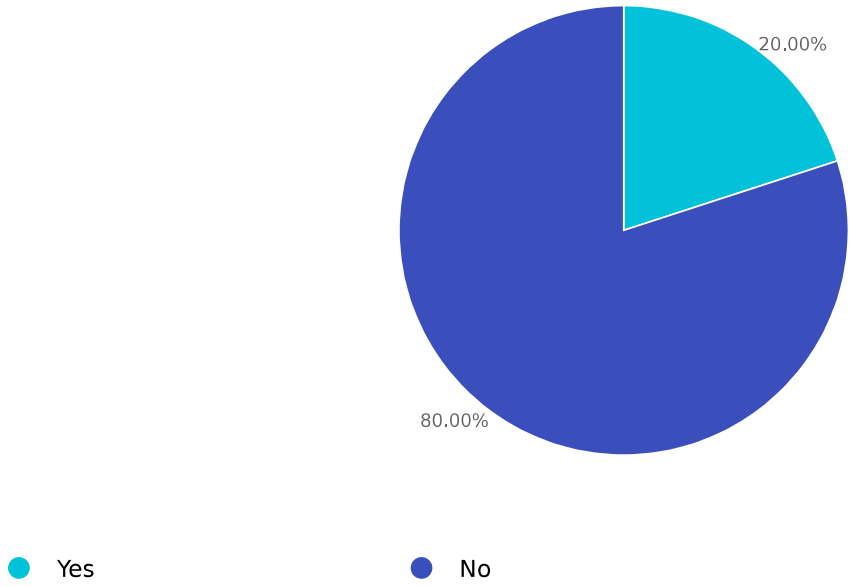
5 Completed Responses

0 Partial Responses

Q1

Have you ever been impacted, physically or financially, by a natural disaster in Norton?

Answered: 5 Skipped: 0

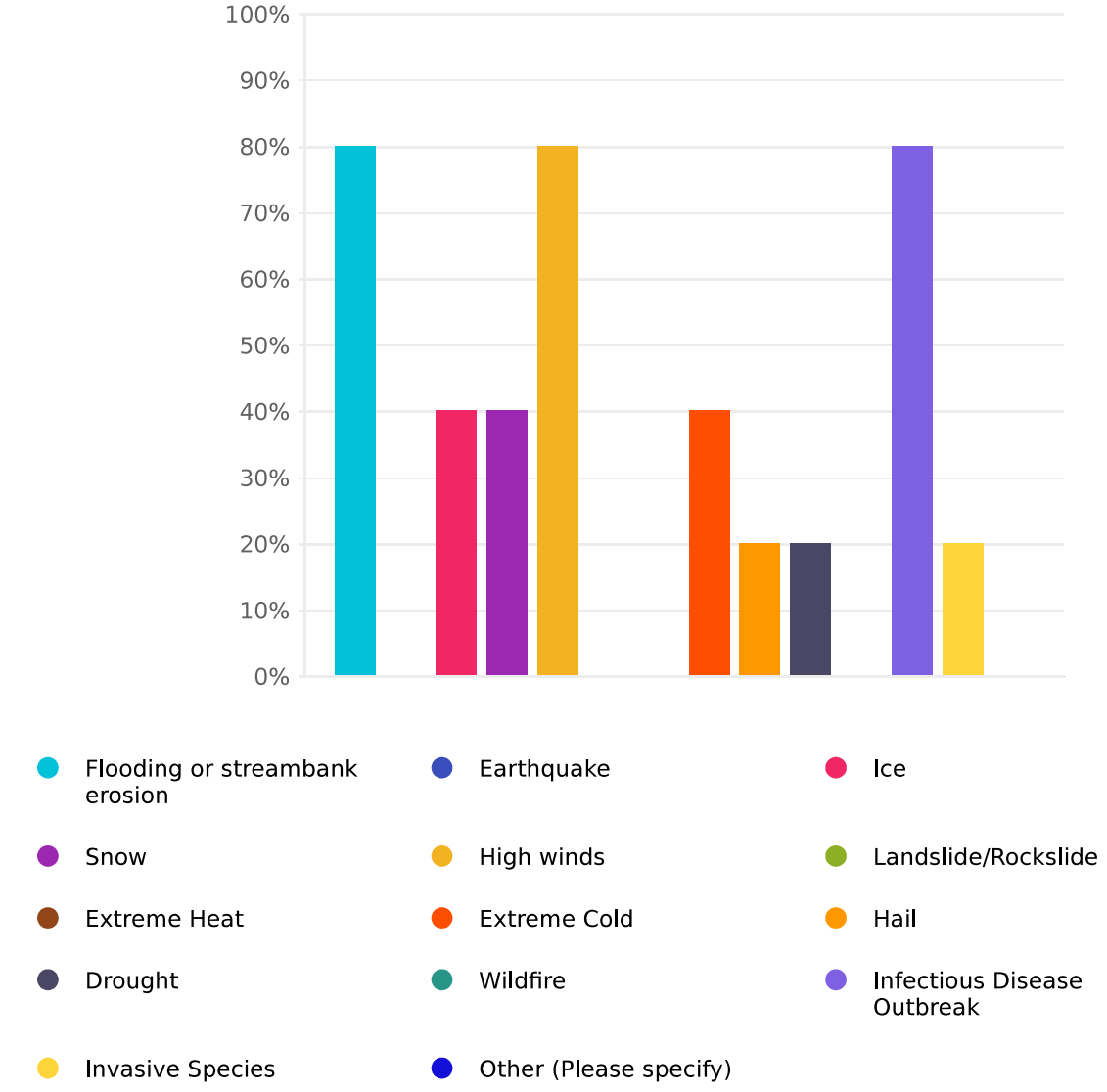


Choices	Response percent	Response count
Yes	20.00%	1
No	80.00%	4

Q2

What hazards have you experienced in Norton? (check all that apply)

Answered: 5 Skipped: 0

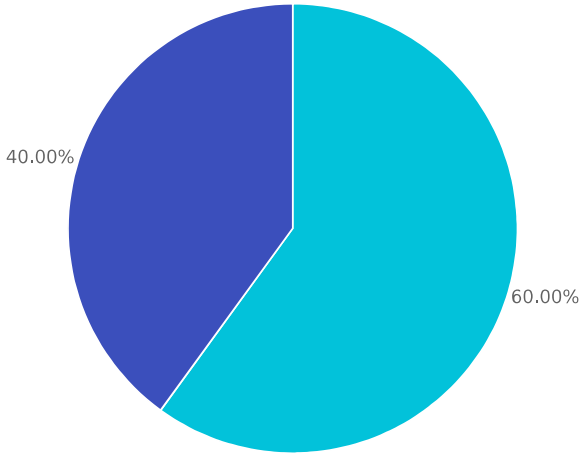


Choices	Response percent	Response count
Flooding or streambank erosion	80.00%	4
Earthquake	0.00%	0
Ice	40.00%	2
Snow	40.00%	2
High winds	80.00%	4
Landslide/Rockslide	0.00%	0
Extreme Heat	0.00%	0
Extreme Cold	40.00%	2
Hail	20.00%	1
Drought	20.00%	1
Wildfire	0.00%	0
Infectious Disease Outbreak	80.00%	4
Invasive Species	20.00%	1
Other (Please specify) No Responses	0.00%	0

Q3

Have you ever been unable to travel due to impassable roads in severe weather?

Answered: 5 Skipped: 0



Choices	Response percent	Response count
Yes	60.00%	3
No	40.00%	2

Q4

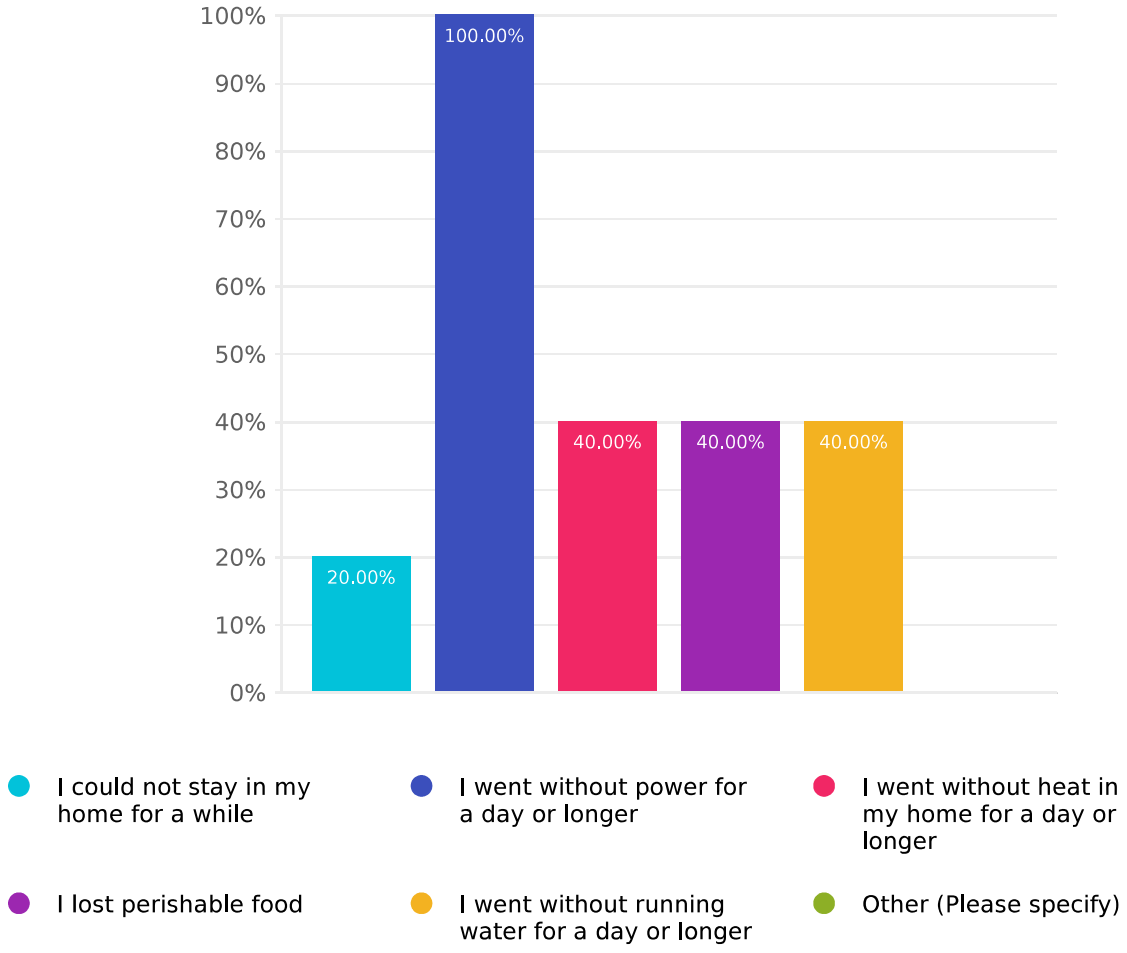
If so, which roads?

Answered: 3 Skipped: 2

Q5

Regarding previous extreme weather events or natural disasters in Norton, which of the following statements are true for you? (check all that apply)

Answered: 5 Skipped: 0

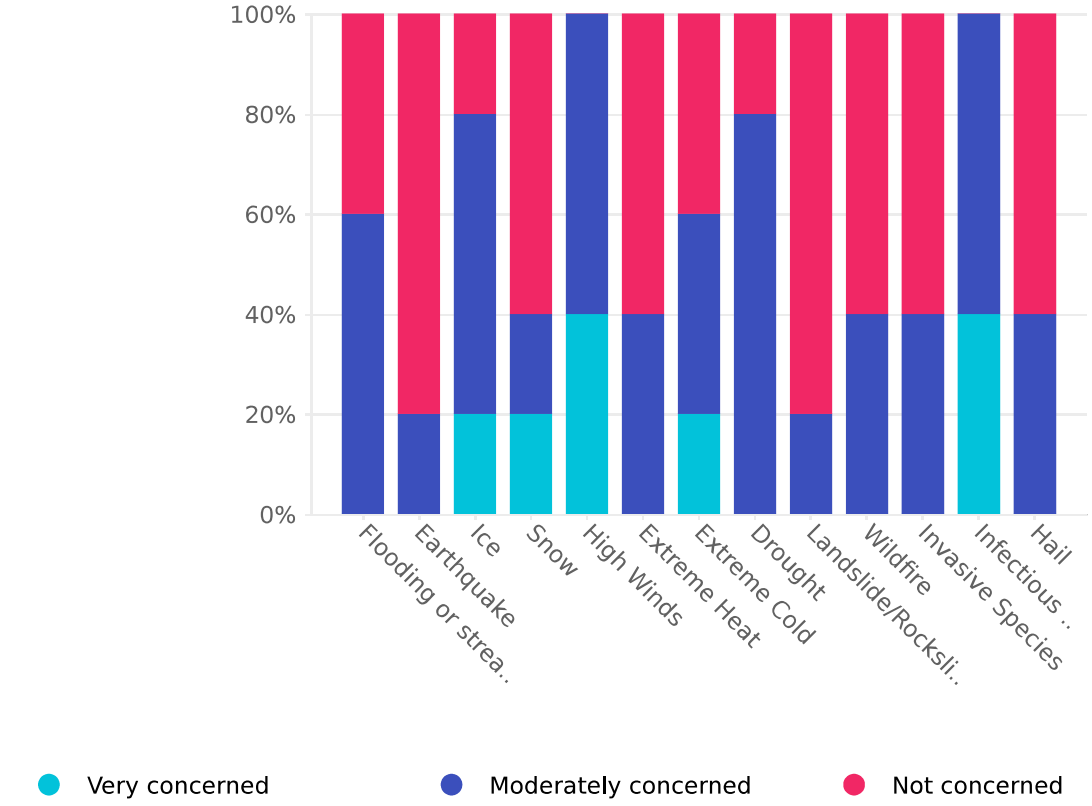


Choices	Response percent	Response count
I could not stay in my home for a while	20.00%	1
I went without power for a day or longer	100.00%	5
I went without heat in my home for a day or longer	40.00%	2
I lost perishable food	40.00%	2
I went without running water for a day or longer	40.00%	2
Other (Please specify) No Responses	0.00%	0

Q6

How concerned are you about the following hazards?

Answered: 5 Skipped: 0

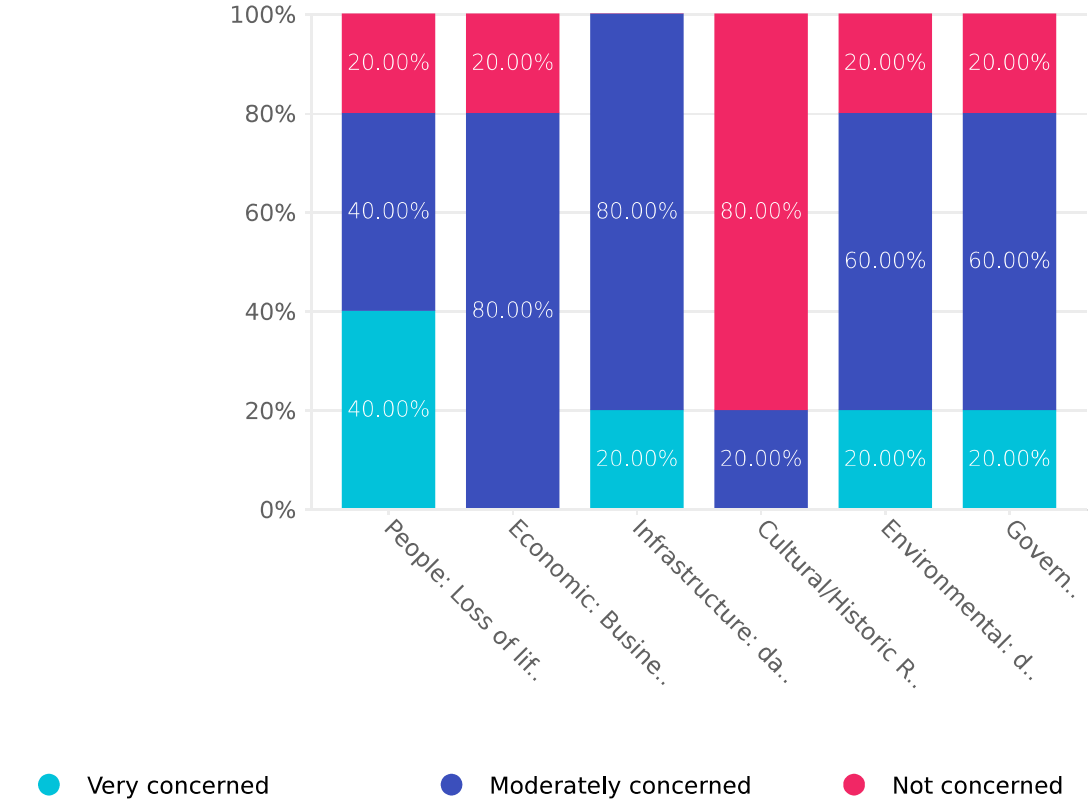


Row	Very concerned	Moderately concerned	Not concerned	Response count
Flooding or streambank erosion	0.00% (0)	60.00% (3)	40.00% (2)	5
Earthquake	0.00% (0)	20.00% (1)	80.00% (4)	5
Ice	20.00% (1)	60.00% (3)	20.00% (1)	5
Snow	20.00% (1)	20.00% (1)	60.00% (3)	5
High Winds	40.00% (2)	60.00% (3)	0.00% (0)	5
Extreme Heat	0.00% (0)	40.00% (2)	60.00% (3)	5
Extreme Cold	20.00% (1)	40.00% (2)	40.00% (2)	5
Drought	0.00% (0)	80.00% (4)	20.00% (1)	5
Landslide/Rockslide	0.00% (0)	20.00% (1)	80.00% (4)	5
Wildfire	0.00% (0)	40.00% (2)	60.00% (3)	5
Invasive Species	0.00% (0)	40.00% (2)	60.00% (3)	5
Infectious Disease Outbreak	40.00% (2)	60.00% (3)	0.00% (0)	5
Hail	0.00% (0)	40.00% (2)	60.00% (3)	5
Any additional comments? No Responses				0

Q7

How concerned are you about the potential damage from natural hazards in Norton?

Answered: 5 Skipped: 0

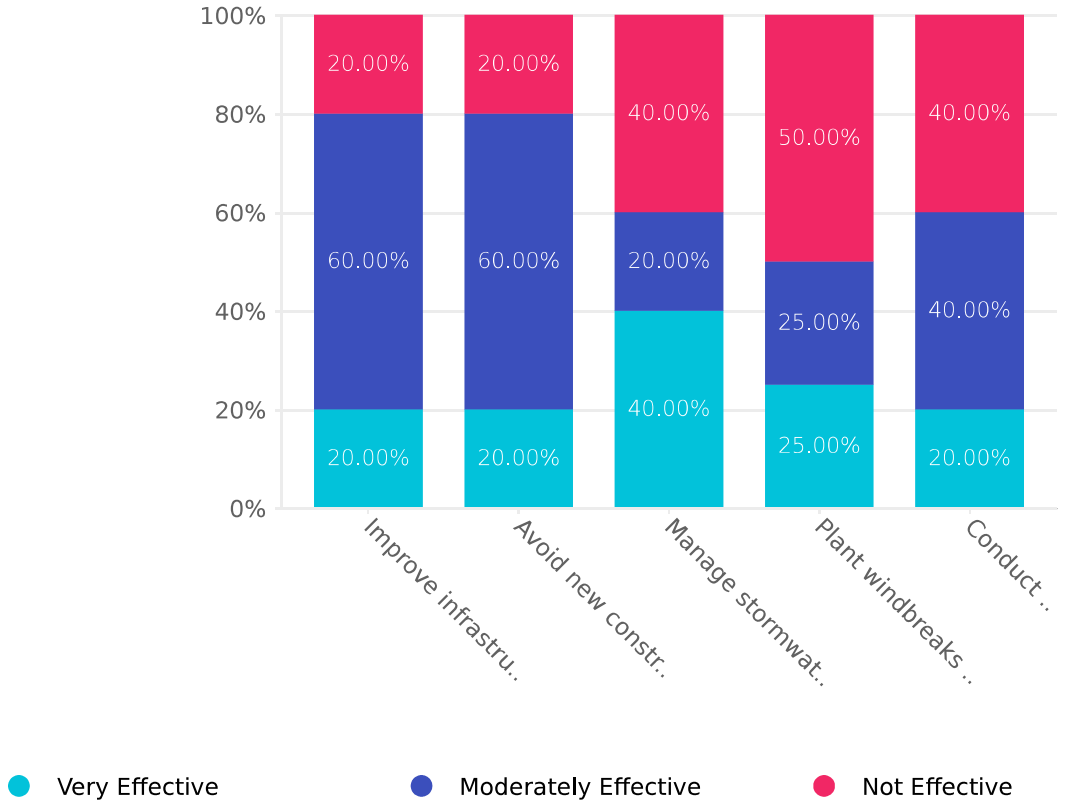


Row	Very concerned	Moderately concerned	Not concerned	Response count
People: Loss of life or injury	40.00% (2)	40.00% (2)	20.00% (1)	5
Economic: Business interruption, crop damage, equipment damage	0.00% (0)	80.00% (4)	20.00% (1)	5
Infrastructure: damage to roads, bridges, utilities	20.00% (1)	80.00% (4)	0.00% (0)	5
Cultural/Historic Resources	0.00% (0)	20.00% (1)	80.00% (4)	5
Environmental: damage to trees, contamination of surface waters	20.00% (1)	60.00% (3)	20.00% (1)	5
Governance: impeded ability to provide municipal services	20.00% (1)	60.00% (3)	20.00% (1)	5
Any additional comments?				1

Q8

In your opinion, how effective would the following hazard mitigation strategies be in Norton?

Answered: 5 Skipped: 0

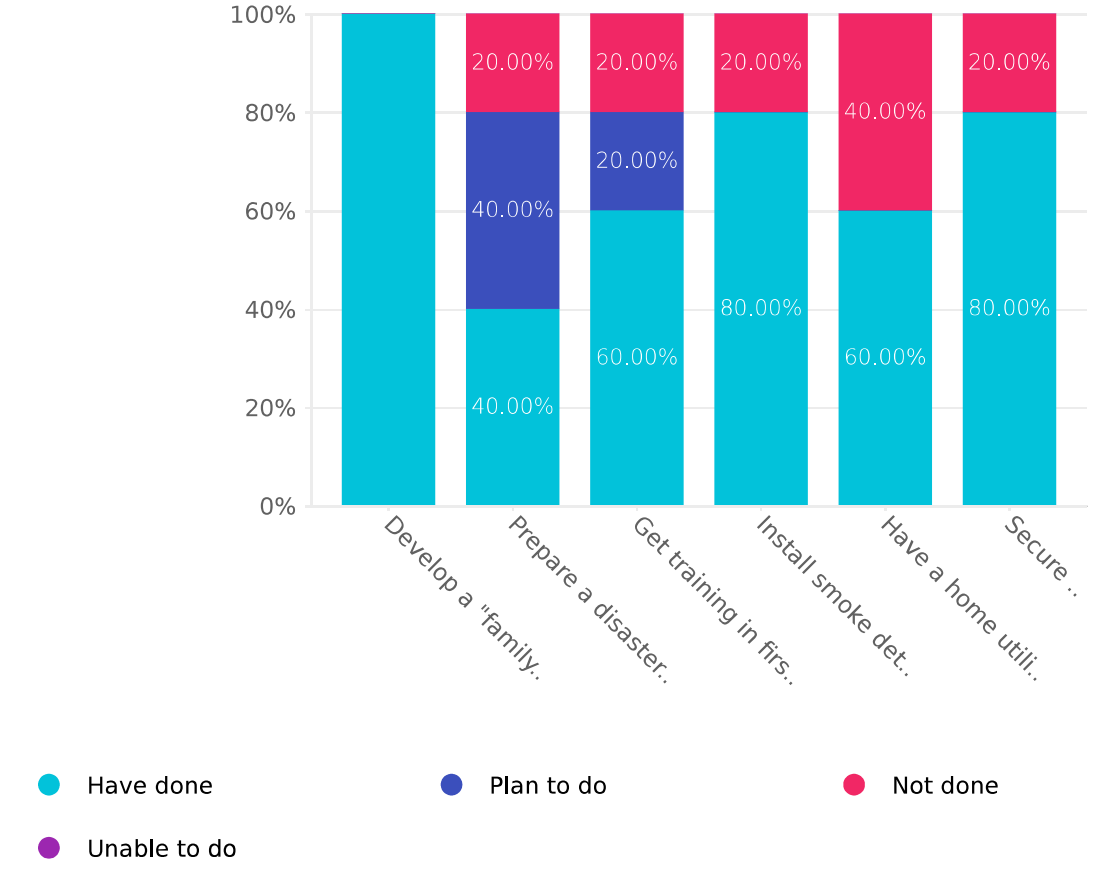


Row	Very Effective	Moderately Effective	Not Effective	Response count
Improve infrastructure (e.g. upgrades to culverts, roads, and bridges)	20.00% (1)	60.00% (3)	20.00% (1)	5
Avoid new construction in areas subject to flooding and erosion	20.00% (1)	60.00% (3)	20.00% (1)	5
Manage stormwater runoff from new development	40.00% (2)	20.00% (1)	40.00% (2)	5
Plant windbreaks to protect structures from wind damage	25.00% (1)	25.00% (1)	50.00% (2)	4
Conduct education and awareness programs	20.00% (1)	40.00% (2)	40.00% (2)	5
Any additional comments?				1

Q9

What you have done to prepare for a disaster?

Answered: 5 Skipped: 0

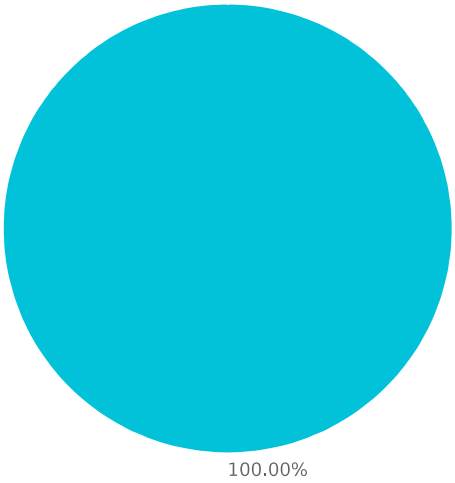


Row	Have done	Plan to do	Not done	Unable to do	Response count
Develop a "family emergency plan" (where to go, what to do in the event of an emergency)	100.00% (5)	0.00% (0)	0.00% (0)	0.00% (0)	5
Prepare a disaster supply kit	40.00% (2)	40.00% (2)	20.00% (1)	0.00% (0)	5
Get training in first aid or CPR	60.00% (3)	20.00% (1)	20.00% (1)	0.00% (0)	5
Install smoke detectors and carbon monoxide detectors in each level of home	80.00% (4)	0.00% (0)	20.00% (1)	0.00% (0)	5
Have a home utility shutoff procedure in the event of a disaster	60.00% (3)	0.00% (0)	40.00% (2)	0.00% (0)	5
Secure access to a backup generator for temporary power	80.00% (4)	0.00% (0)	20.00% (1)	0.00% (0)	5
Any additional comments?					1

Q10

Do you know where your nearest emergency shelter is?

Answered: 5 Skipped: 0

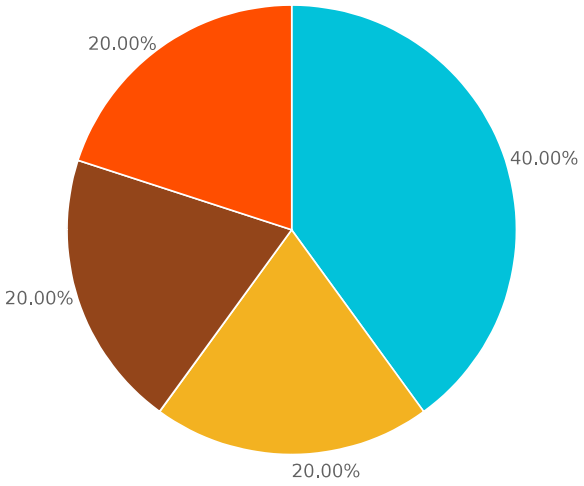


Choices	Response percent	Response count
Yes	100.00%	5
No	0.00%	0

Q11

What is the BEST way for you to get information about making your home and community more resistant to natural hazards? (choose one)

Answered: 5 Skipped: 0



- Phone call
- Newspaper
- Television
- Radio
- Mail
- Email
- Text message
- Public workshop
- Front Porch Forum
- Social media
- Other (Please specify)

Choices	Response percent	Response count
Phone call	40.00%	2
Newspaper	0.00%	0
Television	0.00%	0
Radio	0.00%	0
Mail	20.00%	1
Email	0.00%	0
Text message	20.00%	1
Public workshop	20.00%	1
Front Porch Forum	0.00%	0
Social media	0.00%	0
Other (Please specify) No Responses	0.00%	0

Contact

Thank you for completing the survey. If you would like to receive updates on the hazard mitigation planning process in Norton, please provide the contact information below.

Q12

First Name, Last Name, Phone, Email

Answered: 3 Skipped: 2

Field label	Response percent	Response count
First Name	100.00%	3 Responses
Last Name	100.00%	3 Responses
Phone	100.00%	3 Responses
Email	100.00%	3 Responses

Local Emergency Management Plan Municipal Adoption Form

Town/City of Norton
PO Box 33
Norton, **VT** 05907

The Local Emergency Management Plan (LEMP) must be (re)adopted annually, after town meeting day, and submitted to the appropriate Regional Planning Commission (RPC) by May 1st.

At a warned public meeting (regular selectboard/city council meeting), the municipality adopted the Local Emergency Management Plan (LEMP) on the date shown at right.

At a warned public meeting (regular selectboard/city council meeting), the municipality adopted the National Incident Management System (NIMS) on the date shown at right.

If Vermont Emergency Management needs to contact municipal leaders to determine status and support requirements during an emergency, the Emergency Management Director (EMD) and two other local Points Of Contact (POCs) who should have authoritative local information are listed at right.

☐ Mark this block if a readopted plan has no changes since the previous year.

Municipality	Norton
LEMP Adoption Date	03/09/2021
NIMS Adoption Date	05/12/2015
EMD Name	Gina Vigneault
Position	EMD
Primary Phone	802-822-5205
Alternate Phone	802-822-9935
Email	townofnorton@gmail.com
POC 2 Name	Christopher Fletcher
Position	Select Board Chair
Primary Phone	802-822-5268
Alternate Phone	802-323-3134
Email	c_fletcher@myfairpoint.net
POC 3 Name	Betsy Fontaine
Position	Assistant Town Clerk
Primary Phone	802-822-5562
Alternate Phone	802-822-9935
Email	townofnorton@gmail.com

I hereby certify that the LEMP meets Vermont National Incident Management System (NIMS) requirements and current LEMP Implementation Guidance as on page 2:

Signed* _____

Christopher Fletcher
Printed Name; certifying individual must have taken, at a minimum, ICS402 or ICS100/IS-100 training

I hereby attest that the municipality has adopted NIMS and the LEMP as stated above:

Signed* _____

Christopher Fletcher
Printed Name, Selectboard / council member

Once completed, send adoption form (2 pages) and copy of Local Emergency Management Plan to Regional Planning Commission.

*A typed name is acceptable as an electronic signature if it represents an act of that person in accordance with 9 V.S.A. § 278.

Check boxes below indicating the plan has the required elements and, if not using a template, fill in page numbers to report completion of required elements.

2019 Version (Word): this 2-page form is used to report LEMP adoption. It replaces the 2018 version, which is obsolete.

Local Emergency Management Plan (LEMP)

Required Elements

Vermont Emergency Management (VEM) encourages municipalities to create and maintain optional LEMP annexes as required. Examples might include plans for specific incident types, shelters, evacuation, and volunteer management - see the VEM website for models, samples, and examples at: http://vem.vermont.gov

	Municipal Adoption	
☒	Municipal Adoption Form	
	Municipal adoption of National Incident Management System (NIMS)	☒
	Contact information for local authorities during an emergency	☒
	Certification that LEMP meets Vermont NIMS / Implementation Guidance	☒
	LEMP adoption by local selectboard / city council (annual)	☒
	LEMP Required Elements	**Page**
☒	Planners	
	List of people who wrote / maintain the LEMP	1
☒	Municipal Emergency Operations Center (EOC)	
	Activation authority	1
	EOC staff positions and duties (minimum 1)	1
	List of potential EOC staff members (minimum 1)	1
	Facility information for potential EOC locations (minimum 1)	1
☒	Resources	
	Emergency purchasing agent and spending limits (if any)	2
	List of municipal contracts that can be used during an emergency (if any)	2
	List of other local resources that could be used during an emergency (if any)	2
	National Incident Management System (NIMS) Typed Resource List	4
☒	Public Information and Warning	
	VT-Alert contact information	5
	Local website / social media information (if any)	5
	List of local media outlets (if any)	5
	Public notice sites for non-phone/Internet information	5
	Vermont 2-1-1 contact information	5
☒	Vulnerable Populations	
	List of organizations/facilities that serve local vulnerable populations	5
	Identification and monitoring process	5
☒	Shelters	
	Spontaneous and regional shelter information	6
	Opening information for local shelters (if any)	6
	Service information for local shelters (if any)	6
☒	Contact Information	
	Emergency Management personnel	7
	Response organizations	7
	Municipal officials / public works	7-8
	State, region, and adjacent municipality contacts	8

2019 Version (Word): this 2-page form is used to report LEMP adoption. It replaces the 2018 version, which is obsolete.

Municipality:_Norton_ Date Updated: _03/05/21__

Local Emergency Management Plan

1. Emergency Management (EM) planners

These are the people who wrote and/or maintain this plan.	
Gina Vigneault-Town Clerk	
Betsy Fontaine-Asst. Town Clerk	
Bruce Melendy-NVDA	

2. Municipal Emergency Operations Center (EOC)

The EOC is an organization that coordinates information, support, and response across the municipality for Incident Commanders and town officials. Its main functions are to maintain situational awareness for municipal leaders, coordinate resource and information requests, and provide public information.

Who, by position, can activate the EOC? EMD/Select Board	

Preferred EOC Positions and Duties	
EOC Director-Chris Fletcher	Supervises and directs all EOC activities coordinating municipal support and response
Betsy Fontaine	Staffs phones and radio
Gina Vigneault	Tracks and answers any Requests For Information (RFI)
Gina Vigneault	Tracks and coordinates any Requests For Support (RFS)
Dan Keenan	Produces and posts public information and press releases

Potential EOC Staff Members	
Name	*Notes / Contact Information*
Chris Fletcher	Select Board 802-822-5268(h) 802-323-3134 (cell)
Franklin Henry	Select Board 802-822-5249(h)
Dan Keenan	Select Board 802-822-5443(h) 802-723-9990(w)
Gina Vigneault	Town Clerk/Treasurer 802-822-5205(h) 802-822-9935(w)
Betsy Fontaine	Ass't Clerk/Ass't Treasurer 802-822-5562(h) 802-822-9935(w)
John Wood	603-252-5275 available Mid-May through September

Primary EOC Location	
Facility / Address:	Norton Town Hall
Phone Numbers:	802-822-9935 FAX 802-822-9965
Equipment/Notes:	Generator, Fax machine, mini fridge, microwave, internet, rest room

Alternate EOC Location	
Facility / Address:	
Phone Numbers:	
Equipment/Notes:	

3. Resources

Use municipal resources, mutual aid agreements, and local purchases first to get resources for response as needed and available.	
Purchasing agents for emergencies: Town Clerk/Assistant Town Clerk, Select Board, EMD, Road Commissioner	
Emergency spending limits:	$500.00

Businesses with Standing Municipal Contracts		
Type of Contract	*Name*	*Contact Info*
Plowing	Rosario Poulin	802-822-5547

Other Local Resources		
Type of Resources/Skills	*Name*	*Contact Info*
Heavy Equipment	Devost Sugarhouse, Inc	802-822-5259
Heavy Equipment	R & R Vigneault	802-822-5205
Heavy Equipment	Andre Gagnon	802-822-5580
Water/Food	Lake View Store	802-822-5708
Water/Food	Solomon's Store-W. Stewartstown NH	603-246-8822
Hot Food	Norton Restaurant/Chez Pidgeon	802-822-5258

State support that is usually at no cost to the municipality:

- Vermont Hazardous Material (HAZMAT) Response Team (VHMRT)
- Vermont Urban Search and Rescue (USAR, VT-TF1)
- Vermont State Police and Special Teams
- Community Emergency Response Teams (CERTs)
- Swiftwater Rescue Teams
- Regional Shelter Support
- State government agency expertise / services
- Federal response agency expertise

State support the municipality will normally eventually have to pay for:

- Supplies and equipment (including sandbags)
- VTrans Equipment and Personnel
- Vermont National Guard Support

The State Emergency Operations Center (SEOC, 800-347-0488) will help coordinate any state support

teams or other external resources that local responders may need.

National Incident Management System (NIMS) Typed Resources											
Type	**I**	**II**	**III**	**IV**	**Other**	**Type**	**I**	**II**	**III**	**IV**	**Other**
Critical Incident Stress Management Team						Hydraulic Excavator, Large Mass Excavation					
Mobile Communications Center						Hydraulic Excavator, Medium Mass Excavation					
Mobile Communications Unit						Hydraulic Excavator, Compact					
All-Terrain Vehicles						Road Sweeper					
Marine Vessels						Snow Blower, Loader Mounted					
Snowmobile						Track Dozer					
Public Safety Dive Team						Track Loader					
SWAT/Tactical Team						Trailer, Equipment Tag-Trailer					
Firefighting Brush Patrol Engine						Trailer, Dump					
Fire Engine (Pumper)						Trailer, Small Equipment					
Firefighting Crew Transport						Truck, On-Road Dump					
Aerial Fire Truck						Truck, Plow					
Foam Tender						Truck, Sewer Flusher					
Hand Crew						Truck, Tractor Trailer					
HAZMAT Entry Team						Water Pumps, De-Watering					
Engine Strike Team						Water Pumps, Drinking Water Supply - Auxiliary Pump					
Water Tender (Tanker)						Water Pumps, Water Distribution					
Fire Boat						Water Pumps, Wastewater					
Aerial Lift - Articulating Boom						Water Truck					
Aerial Lift - Self Propelled, Scissor, Rough Terrain						Wheel Dozer					
Aerial Lift - Telescopic Boom						Wheel Loader Backhoe					
Aerial Lift - Truck Mounted						Wheel Loader, Large					
Air Compressor						Wheel Loader, Medium					
Concrete Cutter/Multi-Processor for Hydraulic Excavator						Wheel Loader, Small					
Electronic Boards, Arrow						Wheel Loader, Skid Steer				1	
Electronic Boards, Variable Message Signs						Wheel Loader, Telescopic Handler					
Floodlights						Wood Chipper					
Generator						Wood Tub Grinder					
Grader											

Information about the NIMS Typed resources can be found at: https://rtlt.preptoolkit.org

4. Public Information and Warning

During a significant emergency, the Emergency Operations Center (EOC) and Incident Command Posts (ICPs) will coordinate and manage public information, both by producing accurate, timely reports and by tracking what is publicly reported to minimize confusion and help ensure a positive public response.	
VT-Alert message - State: Other VT-Alert managers:	Vermont Emergency Management: 800-347-0488
Important Local Websites / Social Media channels:	None
Local Newspaper, Radio, TV:	Newport Daily Express Newspaper, The News and Sentinel /WMOO FM 92 Radio/ WCAX TV
Public Notice locations:	Norton Town Hall/The News and Sentinel Newspaper/ Norton Post Office/Lake View Store
Vermont 2-1-1 is a United Ways of Vermont system that provides 24x7x365 information and referral services in cooperation with a large number of state and local government and community based entities. 2-1-1 collects and maintains a database of local resource information and is available to take calls from the general public to inform and instruct them in relation to emergency events, and to refer them to the appropriate response and recovery resource, if necessary.	
To provide information for 2-1-1	Dial 211 or (802) 652-4636

5. Vulnerable Populations

If necessary, the EOC may contact organizations and facilities, below, that serve vulnerable populations to identify residents who are at risk based on the emergency. If there are residents at risk or in danger, the EOC should monitor their status and if required coordinate support for them until their situation stabilizes.	
Name / Notes	*Contact Info*
CARE (Citizen Assistance Registration for Emergencies)	(Supporting PSAP)

6. Shelters

During some emergencies, the EOC will monitor or coordinate support for residents who are displaced due to property or infrastructure damage.	
Spontaneous Sheltering	
• Determine the approximate number of people who need sheltering • Call the State EOC / Watch Officer at 800-347-0488 and request support • Track the status of residents who need shelter until their situation stabilizes	
Regional Shelter	
Location / Address:	North Country Union High School, Veterans Avenue, Newport 802-334-7921
Opening Contact:	State EOC, 800-347-0488; American Red Cross, 802-660-9130
Phone Numbers:	
Primary Local Shelter	
Location / Address:	Norton Town Hall
Facility Contact(s):	Gina Vigneault/Betsy Fontaine
Phone Numbers:	802-822-5205/802-822-5562
Shelter Manager:	Gina Vigneault/Betsy Fontaine
Staff Requirements:	Minimum of 2
Services:	Warm/Cool-Y Overnight-Y
Notes:	Capacity: 50 Generator? Y Pets Allowed? Y
Alternate Local Shelter	
Location / Address:	
Facility Contact(s):	
Phone Numbers:	
Shelter Manager:	
Staff Requirements:	
Services:	Warm/Cool Overnight Food Prep Showers Healthcare
Notes:	Capacity: Generator? Y / N Pets Allowed? Y / N

Annexes (Optional, create and letter as needed)

See the Vermont Emergency Management (VEM) web site at http://vem.vermont.gov for samples and examples of annexes, such as: forms; delegations of authority; debris plans; incident-specific plans, checklists, and matrices; animal disaster references; etc.

Contact Information

Position	Name	Phone numbers - indicate Mobile, Home, Work			E-mail
		Primary	Alternate	Alternate	
Local Emergency Management Team					
EMD	Gina Vigneault	802-822-5205			townofnorton@gmail.com
EM Coordinator					
Local Response Organization Contacts					
Fire Chief	Steve Young, Beecher Falls Fire Dept.	802-266-8242	802-266-8963		sjayoung@localnet.com
Assistant/Deputy Fire Chief					
EMS Chief					
Chief of Police or Constable	Elias Emerson 1st Constable Roland Vigneault 2nd Constable	802-673-6892 802-822-5205			rolandginav6@yahoo.com
State Police or County Sheriff	VSP Derby/Essex County Sheriff's Dept.	802-334-8881 802-676-3500			
Local Dispatch Center	Northern Borders Dispatch, Colebrook NH	603-237-4487			dispatch@colebrooknh.org
Local Public Works Contacts					
Road Foreman					
Road Commissioner	Chris Fletcher	802-822-5268			c_fletcher@myfairpoint.net
Town Garage	Town of Norton	none			
Drinking Water Utility	none				
Wastewater Utility	none				
Municipal Government Contacts					
Town Administrator					
Town/City Manager					
Selectboard Chair	Christopher Fletcher	802-323-3134	802-822-5268		c_ fletcher@myfairpoint.net

Contact Information

Position	Name	Phone numbers - indicate Mobile, Home, Work			E-mail
		Primary	Alternate	Alternate	
Selectboard Alt	Franklin Henry	802-822-5249			
Selectboard Alt	Daniel Keenan	802-822-5443			
Town Clerk	Gina Vigneault	802-822-5205	802-822-9935		townofnorton@gmail.com
Town Treasurer / Finance	Gina Vigneault	802-822-5205	802-822-9935		townofnorton@gmail.com
Town Health Officer	Carolyn Royce	802-673-0910			carolyn1952royce@icom.com
Forest Fire Warden	Roland Vigneault	802-822-5205	802-535-1004		rolandginav6@yahoo.com
Animal Control Officer	Wayne Washburn	603-331-1688			
School Contact #1	Canaan School	802-266-8910			
School Contact #2	Colebrook NH School	603-237-5571			
School District Office	Essex North Supervisory Union	802-266-3330			
Other Contacts					

Contact Information

Position	Name	Phone numbers - indicate Mobile, Home, Work			E-mail
		Primary	Alternate	Alternate	