LOCAL HAZARD MITIGATION PLAN



TOWN OF BRISTOL, VERMONT

2025

FEMA Approval Pending Adoption Date

Municipal Adoption Date:

FEMA Formal Approval Date:

U.S. Department of Homeland Security
FEMA Region 1
220 Binney Street
Cambridge, MA 02142

FEMA

September 24, 2025

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

Dear Stephanie Smith:

As outlined in the FEMA-State Agreements for FEMA-4744-DR-VT, FEMA-4720-DR-VT, FEMA-4695-DR-VT, FEMA-4621-DR-VT, FEMA-4532-DR-VT, and FEMA-4474-DR-VT, your office has been delegated the authority to review and approve local mitigation plans under the Program Administration by States Pilot Program. Our Agency has been notified that your office completed its review of the *Local Hazard Mitigation Plan Town of Bristol, Vermont 2025* effective **September 24, 2025** through **September 23, 2030** in accordance with the planning requirements of the Robert T. Stafford Relief and Emergency Assistance Act (Stafford Act), as amended; the National Flood Insurance Act of 1968, as amended; the National Dam Safety Program Act, as amended; and Title 44 Code of Federal Regulations (CFR) Part 201.

Mitigation plans may include additional content to meet Element H: Additional State Requirements or content the local government included beyond applicable FEMA mitigation planning requirements. FEMA approval does not include the review or approval of content that exceeds these applicable FEMA mitigation planning requirements.

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

The plan must be updated and resubmitted to the FEMA Region 1 Mitigation Division for approval every five years to remain eligible for FEMA mitigation grant funding.

Thank you for your continued commitment and dedication to risk reduction demonstrated by preparing and adopting a strategy for reducing disaster losses. Should you have any questions, please contact Alexis Meehan at (202) 394-6439 or alexis.meehan@fema.dhs.gov.

Sincerely,

Christopher Markesich
Floodplain Management and Insurance Branch Chief
Mitigation Division | DHS, FEMA Region 1

cc: Caroline Paske, State Hazard Mitigation Planner, VEM
Matthew Hand, State Hazard Mitigation Planner, VEM
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Key Partners	
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VT Department of Health	Addison County Regional Planning Commission
Green Mountain Power	Agency of Natural Resources – Department of Environmental Conservation National Flood Insurance
Otter Creek Clean Water Service Provider	

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1 INTRODUCTION

Mitigation planning provides an opportunity for local government to lessen the impact of the next natural disaster. The impact of probable, but unpredictable natural events can be reduced through community planning and action. The goal of this Plan is to advance and prioritize mitigation investments to reduce risks posed by natural hazards and to increase the Town of Bristol resilience to damages from natural hazard impacts.

Hazard Mitigation is any sustained policy or action that reduces or eliminates long-term risk to people and property from the effects of natural hazards. FEMA and state agencies have come to recognize that it is less expensive to prevent disasters than to repeatedly repair damage after a disaster has struck. This plan recognizes that opportunities exist for communities to identify mitigation strategies and measures during all the other phases of Emergency Management: Preparedness, Response and Recovery. While the hazards can never be completely eliminated, it is possible to identify what the hazards are, where their impacts are most severe, and identify local actions and policies that can be implemented to reduce or eliminate the severity of the impacts.

2 PURPOSE

The purpose of this Plan is to assist the Town in identifying all natural hazards facing the community, ranking them according to local vulnerabilities, and developing strategies to reduce risks from those hazards. Once adopted, this Plan is not legally binding; instead, it outlines goals and actions to prevent future loss of life and property. The intent is to create a both short term 5- year pathway of actions while thinking more long term resilience to mitigating hazards within the community. The benefits of mitigation planning include:

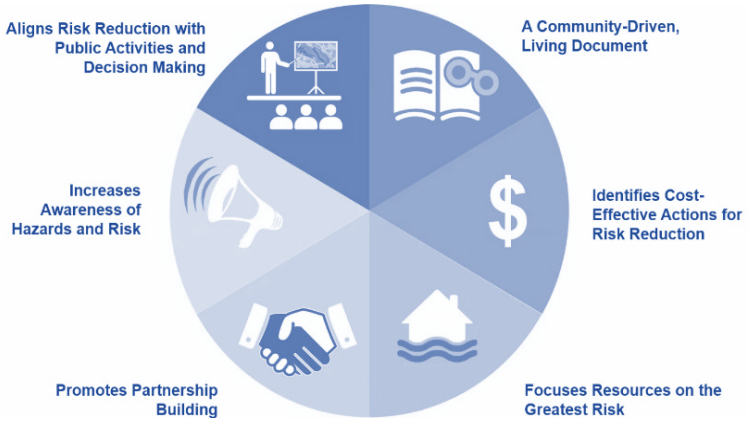


Figure 1- Source: FEMA LHMP Skill Share Workshop 2021

3 COMMUNITY PROFILE

Land Use – Development Patterns

Bristol from its inception has enjoyed a full range of uses of its land: agricultural, residential, commercial (retail and office), manufacturing, timber harvesting and the extraction of sand, soil, gravel and rock. The concentration of commercial facilities and some manufacturing has traditionally been in and around the Village. This is also where the largest concentration of residential development has occurred. The surrounding area outside of the Village area has been designated as a rural planning area and conservation planning area. Bristol is the third largest center of employment in Addison County after Middlebury and Vergennes. Between 2010 and 2017, Bristol's local economy added 30 business establishments (21%) and the number of people working in town increased by 97 (7.6%)

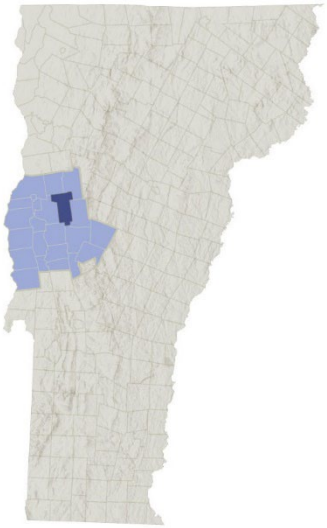


Figure 2 – State Map locating Bristol

Land Features

The Town of Bristol is located at the foot of the Green Mountains and as such has a topography that ranges from steep to relatively flat as the town extends out onto the bed of the Champlain Valley. The town covers approximately 26,860 acres of which 5,338 or 20% is owned by the Green Mountain National Forest.

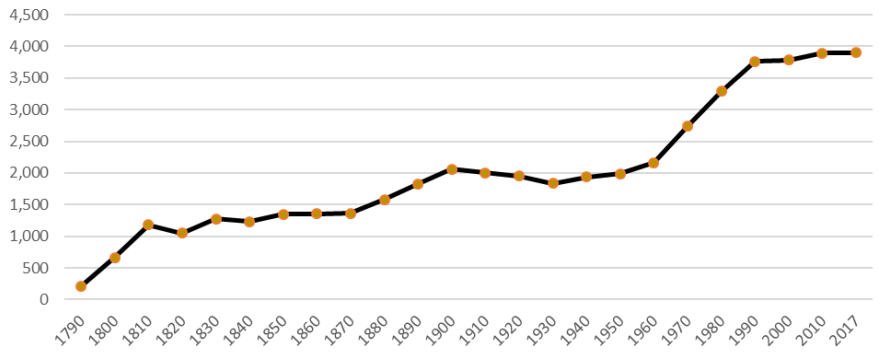
Demographics and Growth Potential

Bristol experienced dramatic growth from 1960 to 1990, but the rate of growth essentially plateaued from 1990 to 2010. The 2020 census indicated a decrease of 2.9% from 3,907 to 3,782. However during COVID 19 in 2020 the Town actually saw an influx of urban refugees. This influx has led to a sharp increase in housing development in the last five years in and outside of the village area.

Even though the household number has dropped to 1,638 the housing has increased from 1,600 units in 2016 to 1,762, as of the 2020 Census. A little more than two-thirds (69%) of the housing units in Bristol are single-family, approximately 22% are multi-family units and 9% are mobile homes. Nearly all new residential construction has occurred in the downtown area since 2000. More than 30% of housing units were built before 1939. Bristol has seen an increase in the desire for the aging population to move into the village resulting in more renovation activity than new construction.

Table 1 – Census History

Source: US Census Bureau



Precipitation and Water Features

Based on National Weather Service's precipitation records for nearby Burlington, VT, the summer months of June, July and August receive the greatest amount of rain. The Bristol Flood Map indicates where flooding risk is highest. Generally, any rain events in excess of 2.5" in a 24-hour period are likely to result in some flash flooding.

Bristol has numerous scenic water features, including the New Haven River which meanders through the center of the town and its many tributaries. Winona Lake to the north along with Norton Brook and numerous other streams.

Bristol has several significant Class II wetlands that includes marshes surrounding Bristol Pond aka Lake Winona, North Gilmore Ponds, east and southeast of Bristol cliffs. The watershed center where Norton Brook flows into the Little Otter Creek and the area around Sycamore Park.

Water and Wastewater

The Bristol Water System is classified and permitted as a groundwater system, operating under the State water system, ID#5002. Water is supplied by New Haven Spring gravity fed, an approved groundwater source. Processed and then Water is pumped from the source up to the reservoir tank located on Mountain Terrace Extension, the access road at the east end of roadway. Water is distributed to the households and businesses in the Bristol Water District via a gravity fed system.

This water system serves 695 connections and provides exceptional water pressure and volume, invaluable for fire suppression. Most Bristol residents outside of the Village area have private wells and springs that serve individual houses. There is a small Town-operated septic system that supports a portion of the commercial blocks downtown. Bristol's remaining residents are served by individual on-site septic systems. Storm water is an ongoing concern for many residents due to a limited village storm water system capacity and an outflow that directly discharges onto the banks of the New Haven River.

Transportation

Bristol is 42.2 square miles in size with primary access via VT Route 17 bisecting the Town and Village east/west or VT Route 116 running generally north/south. Bristol has 13.336 miles of State highway running through the town that the Vermont Agency of Transportation (VTrans) maintains. The 2022 VTrans Town Highway Data indicates Bristol owns and maintains 36.595 miles of roads: 1.225 of Class 1; 11.090 of Class 2; 24.28 of Class 3 excluding Class 4 roads.

According to the Town's 2017 road erosion inventory, 54% of Bristol's Road mileage is hydrologically connected - meaning it is within 100 feet of a water resource (i.e., stream, wetland, lake, or pond). Proximity to water resources can make these sections of road more vulnerable to flooding and fluvial erosion.

According to the Town's 2023 bridge inventory, Bristol has a total of 13 municipal bridges s. The town long structures (bridges > 20' in length) are inspected every two years by VTrans through the Town Highway Bridge Program. Bristol has 361 culverts in the municipal road right-of-way; all were inventoried in 2019 by Addison County Regional Planning Commission and have been updated as work has been done on them. Several culverts are listed in urgent of poor condition and should be considered for replacement and/or upgrade in accordance with Town Road and Bridge Standards. The local road network is maintained by the 4 employees of the Public Works Department that operates on a budget of approximately $126,958.

Electric Utility Distribution

In Bristol, power is provided by Green Mountain Power through a 12.5KW line that is slated to be upgraded to 34.5KW within the next 20 years.

There are three commercial solar fields owned by Acorn Energy that are subscriber systems which could be impacted by various hazards high wind/ hail event.

Table 2 - Green Mountain Power Average Annual Outage Data for Bristol

Average Annual Outage Data(2019-2023)	
Average number of outages per customer per year	1.27 times per year
Total outage duration per customer	2.84 hours per year
Average length of each outage	3.62 hours per year

Public Safety

The Bristol Fire Department is staffed by 32 firefighters that fill various functions within the Department to include but not limited to: Firefighter, Exterior Firefighter, Pumping Apparatus Driver/Operator, and Fire Officer. The Fire Department currently has three pumper trucks, rescue truck and tanker trucker. The officers and firefighters of the Bristol Fire Department operate under the direction of the Fire Chief who reports to the Selectboard through the Town Administrator. The Fire Chief always has control of the fire department for day-to-day operations and when it is called to service. The fire department responds to on average 130 calls a year for motor vehicle crashes, smoke/CO alarm, fire, hazardous condition, service calls and medical assists.

Law Enforcement by the Bristol Police Department is in a designated Police District and is provided by 4 full time and 3 part time officers. The district is limited to an area of approximately 1 square mile around the central business district. Vermont State Police is the primary agency, and the Addison County Sheriff's Department support the remainder of the Town of Bristol.

The Bristol Rescue Squad Inc. is a private non-profit EMS agency providing primary 24/7 9-1-1 EMS response to the entirety of the towns of Bristol and Lincoln, along with portions of Monkton, New Haven and Starksboro. Bristol Rescue Squad is a combination paid/volunteer agency who responded to 1,034 calls in 2023, 936 in 2022, 770, in 2021 and 777 in 2020. Bristol Rescue currently operates two Type 1 Ambulances and one Type 2 ambulance at the Advanced EMT (AEMT) level. In addition to 9-1-1 response and transports services, the Bristol Rescue Squad provides Interfacility transportation between healthcare facilities and from healthcare facilities to a patient's residence.

The nearest hospital services are provided by Porter Medical Center, a satellite of the UVM Health Network, which is a 45-bed community hospital located 10 miles away in Middlebury. The nearest Level I Trauma center is located 25 miles north in Burlington, VT.

The Bristol Fire Department (BFD) leases space on a large radio communication tower in a building located at 569 Monkton Road in Bristol for its repeater and antenna. The Town's current 5-year lease agreement with InSight Towers is financially unsustainable in the long-term. This does not include the physical space required to house the repeater system. The Town of Bristol owns a small concrete building at the base of that tower which houses both the BFD and Bristol Rescue Squad repeaters. This building does not have a heat or backup power source. Rescue has a separate lease agreement with InSight Towers to attach their

antenna to the tower. The BFD has been exploring long-term sustainable options for relocating the communications facilities. Working with their two-way radio communications equipment vendor, the BFD came up with a design that called for a 100-foot antenna behind the Fire Station and total project cost of approximately $130,000. However, the current UDR provisions do not allow a tower in that district, the project lacks funding, and there may be some FCC procedures that need to be met.

Emergency Management

The Town uses a Local Emergency Management Plan (LEMP) to guide its response to larger incidents. The LEMP identifies the Emergency Management Director (EMD) as the Town Administrator along with a volunteer as Deputy EMD, who are also the Emergency Management Planners. The LEMP designates Holley Hall as the primary emergency operations center (EOC) with the Bristol Fire Station as a secondary EOC Mount Abraham Union High School (MAUHS) is designated as the primary shelter while Bristol Elementary School is designated as an alternate shelter. Though not listed in the LEMP, Holley Hall and the Lawrence Memorial Library have also been identified as warming or cooling centers. The MAUHS parking lot has been identified as a potential Community Point of Distribution (C-POD) in the event Federal supplies need to be distributed in the area.

Critical Facilities

The planning committee identified a number of critical facilities in Bristol. These facilities provide important services to the community, such as basic government functions, water and power services, and schools. Some of these facilities can also serve additional roles during an emergency situation, including as a shelter for displaced residents, a staging area for emergency response and recovery activities, or a location for important City administration functions. This also includes Blaises Riverside manufactured home community. Damage to these facilities can impair response and recovery operations and may lead to a disruption of vital services for Bristol residents. Bristol has 3 dams, 2 of which are low hazard, and one has significant hazard potential, all are privately owned. The Town is aware of the significant hazard dam and it is believed the private non-profit that owns it is seeking grant money to have it removed. See Figure 3 for more details.

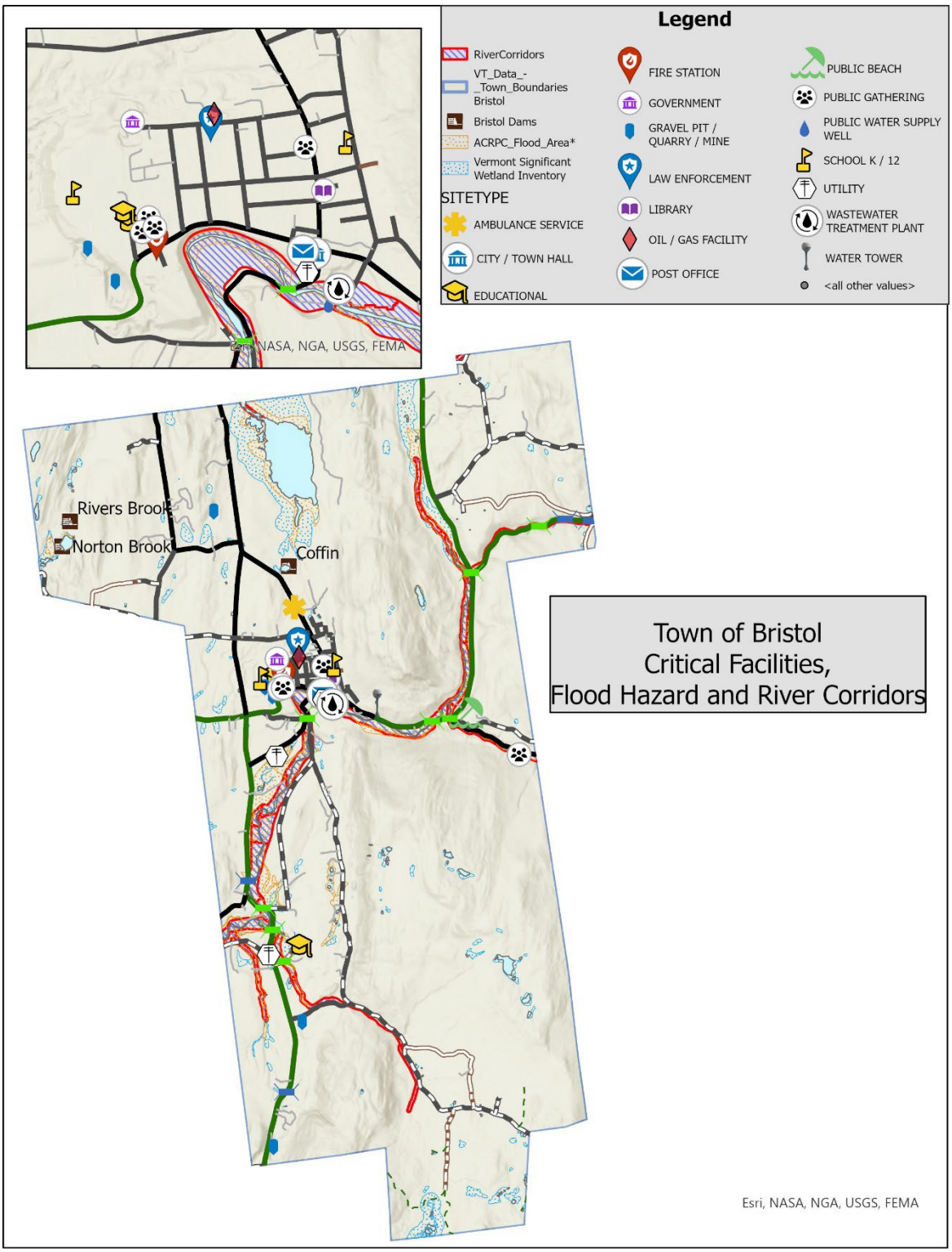


Figure 3 - Bristol Critical Facilities and Flood Hazard Areas

4 PLANNING PROCESS

Plan Developers

The Town Administrator assembled a Hazard Mitigation Planning Committee to participate in updating the Plan. Team members included the: Town Administrator, Road Foreman, members of the Selectboard, Fire Chief, Planning Commission, Conservation Commission, Rescue Squad, Citizen Liaison, Water Operations and Addison County Regional Planning Commission.

SEAM Solutions assisted the Town with this Plan update. FEMA Building Resilient Infrastructure and Communities (BRIC) funds supported this process.

Plan Development Process

The 2025 Local Hazard Plan is an update to the 2018 single jurisdiction mitigation plan. A summary of the process taken to develop the 2023 update is provided in **Table 3**.

Table 3 – Plan Development Timeline and Process

March 20, 2024 – Kick off meeting. Discussed current plan status; planning process; update to plan sections; outreach strategy. Committee meetings were held online but not made available to the public
April 11, 2024 – Plan update announcement was posted on the Town's **website**, physically posted at the Town Office along with the Town's social media pages.
April 17, 2024 – Planning Committee working meeting - Discussed public outreach strategy, identify community stakeholders, reviewed and made updates to the Introduction, Purpose and Community Profile, compiled information to identify critical facilities.
June 19, 2024 – Planning Committee working meeting – reviewed dam information, reviewed critical facilities list identified by the Town and map that identifies the critical facilities, river corridor and FEMA flood hazard area.
July 17, 2024 – Planning Committee working meeting – Discussed the impact of the remnants of Beryl on the community and identified the need to submit a draft. Started to identify and rank hazards and their risk to the Town.
July 22, 2024 – Planning Committee working meeting - Finished ranking hazards, reviewed mitigation goals, strategies and actions from the 2018 plan for completeness, identified prior actions that should be included in the 2024 plan.
July 29, 2024 – Planning Committee working meeting - Discussed community capabilities and areas for improvement for administrative and technical, planning and regulatory, outreach and education. Identified mitigation action opportunities.
August 21, 2024 – Continued to identify mitigation actions and supporting elements (timeline, cost, responsibility, etc.). Prioritize mitigation actions and add any if there are gaps.
August 28, 2024 – Reviewed plan edits and identified further edits needed.
September 4, 2024 – Discussed outreach process and presenting draft to the Selectboard.
September 9, 2024 - Presented at Selectboard meeting with members of the public present. Productive discussion with Selectboard, no comment from the public.
September 17, 2024 – Draft plan presented at the Planning Commission meeting. No comments received.
September 19, 2024 – Submitted draft plan to VEM/FEMA for their review and comment.
October 16, 2024 - Presented draft plan to surrounding communities including Starksboro, Monkton, Lincoln, and New Haven. The plan was also distributed to the Town's LHMP committee members, EMD, Addison County Regional Planning Commission, Addison Housing Works, VTrans, ANR, Mount

Abraham Unified School District, Mountain Community Health, Age Well Vermont, Tri-Valley Transit, Addison County United Way, Addison County Home Health, Champlain Valley Office of Economic Development, Porter Hospital, Acorn Vermont, Green Mountain Access, Comcast, Waitsfield / Champlain Valley Telecom, and St. Ambrose Catholic Church. Tri-Valley provided information on services they provide.
February 13, 2025 – Met with team lead to review edits received on 1/30/2025 and requested changes.
April 3, 2025 – Sent revised draft plan to the Town Administrator and EMD for review. No revisions requested
April 15, 2025 – Sent revised draft plan the LHMP Planning Committee members for 14-day review period. No comments were received.
May 14, 2025 – Submitted revised draft of the plan to VEM/FEMA based on comments received 1/30/2025.
July 16, 2025 – Submitted revised draft plan to VEM/FEMA base on comments received 6/23/2025.
August 17, 2025 – Submitted revised draft plan to VEM/FEMA base on comments received 8/12/2025.

In addition to the local knowledge of Planning Team members and other relevant parties, several existing plans, studies, reports, and technical information were utilized in the preparation of this Plan. A summary of these is provided in Table 4.

Table 4 – Existing Plans, Studies Reports and Technical Information

2020 Town Plan Referenced to develop the Community Profile, Capabilities, Integrating into Existing Plans and Procedures, Mitigation Strategy Updates – Changes Since 2018 Plan in Section 6.
2024 Local Emergency Management Plan Primarily used to identify local organizations that support vulnerable populations to ensure these organizations are invited to participate in the plan update along with updating the Section 3.
2020 Bristol Unified Development Regulations Referenced to develop the Community Profile, Capabilities, Integrating into Existing Plans and Procedures, Mitigation Strategy Updates – Changes Since 2018 Plan in Section 6.
Stormwater Master Plan 2019 - Referenced to develop Community Capabilities, Integrating into Existing Plans and Procedures, Mitigation Strategy Updates in Section 6 and Changes Since 2018 Plan in Section 4.
2019-2023 Green Mountain Power Outage Data Used to develop Table 2 in the Community Profile Section and identify potential vulnerabilities.
2020 US Census Data Used to develop the Demographics and Growth Potential information in Section 3.
2020 Unified Development Regulations Referenced to develop Community Capabilities, Integrating into Existing Plans and Procedures, Mitigation Strategy Updates in Section 6 and Changes Since 2018 Plan in Section 4.
2021 American Community Survey Five-Year Estimate Used to develop the Demographics and Growth Potential information in Section 3.
2023 State of Vermont Hazard Mitigation Plan Primarily referenced to develop the risk assessment and profiles in Section 5.
2023 FEMA Local Mitigation Planning Handbook Used to ensure plan meets the Federal mitigation planning requirements, including those for addressing climate change.

2023 FEMA Hazard Mitigation Assistance Program Policy Guide Used to ensure plan meets the Federal mitigation planning requirements, including those for addressing climate change.
2021 Vermont Climate Assessment Referenced to develop the flood risk profile in Section 5.
FEMA NFIP Insurance Reports Used to determine how many structures are insured and describe NFIP compliance in Section 6. NOTE: Due to FEMA Region I concerns related to personally identifiable information (PII), NFIP repetitive loss and severe repetitive loss information is unavailable for this plan update.
2013 FEMA Mitigation Ideas Used to develop mitigation actions to address impacts from severe winter storms, high winds and floods.
2019 Road Erosion Inventory Referenced to develop the risk profile in Section 5 and mitigation actions to address floods in Section 6.
VTrans Transportation Resilience Planning Tool Referenced to develop the risk profile in Section 5 and mitigation actions to address floods in Section 6.
Vermont Dam Inventory (VDI) Referenced to develop the risk profile in Section 5 and mitigation actions to address floods in Section 6.
National Oceanic and Atmospheric (NOAA) National Climatic Data Center's Storm Events Database Referenced to develop the risk profile and hazard history in Section 5.
FEMA Disaster Declarations for Vermont Referenced to develop the risk profile and hazard history in Section 5.
OpenFEMA Dataset: Public Assistance Funded Project Summaries for Vermont Referenced to develop the risk profile and hazard history in Section 5.
Vermont Department of Health Referenced to develop the risk profile in Section 5.
Vermont Agency of Natural of Resources Referenced to develop the risk profile in Section 5.
Vermont Agency of Natural of Resources Watershed Projects Referenced to identifying completed and develop mitigation actions to address floods in Section 6

Changes since the 2018 Plan

The 2018 local hazard mitigation planning effort analyzed both natural and man-made hazards based on frequency, warning time, geographic impact, property damage and committee concern to derive at an overall vulnerability score. The committee identified the hazards as either high or low risk. Flash flood; landslide/rockslide; earthquake; wildfire; invasive species; hazmat spill/ or structure fire were prioritized as a high risk/vulnerability to the community. While the Earthquake ranked high in 2018, the Town did not believe that the risk was large enough to require town building retrofits at that time. This prioritization remains the case in the updated plan and the Earthquake risk scoring and rank was corrected to reflect this assessment of risk to assets.

While the Town pursued the implementation of the mitigation strategies identified in the 2018 Plan, they also looked for opportunities to incorporate recommendations and information from the 2018 Plan into other plans, programs, and procedures. The Town successfully incorporated elements of the Plan in the updates to the Town Plan and Unified Development Regulations.

The Bristol Town Plan, updated in 2020, provides a vision for how Bristol should grow and develop. All Regulations governing land use in the Town of Bristol stem from the Bristol Town Plan and should serve to implement the visions contained in it. The Regulations should work in concert to provide a clear, fair and efficient administrative process to guide and control development.

The new Plan contains a flood resilience plan that identifies Flood Hazard and Fluvial (River) Erosion Hazard areas along with land use policies and policies that support the goal of mitigation risks to public safety, critical infrastructure, historic structures and municipal investments posed by flooding and fluvial erosion.

The Unified Development Regulations (these "Regulations"), also updated in 2020, constitute the primary regulatory tool by which the Town of Bristol implements the vision in its Town Plan. They include Bristol's Zoning Regulations, Subdivision Regulations, the Flood Hazard Area Regulations and the Downtown Design Review criteria for the area encompassing Bristol's Downtown Designation. For any given application, only a portion of these Regulations will apply. These Regulations are intended to be comprehensive and are organized to clarify the review process before the Zoning Administrator, Development Review Board or Downtown Design Review Committee.

In addition, Bristol made significant progress in completing other mitigation actions identified in the 2018 Plan – see **Appendix B**. Bristol developed the towns first capital improvement plan, conserved land near the Saunders River Access/Paul Fuller River to prevent development in the floodplain. Eagle Park had repetitive inundation flooding due to the railings causing debris hang ups so the platform and railings are now removable.

The Town also undertook many infrastructure projects such as improving stormwater capacity in Mountain Street area, while other projects are still in progress. The Town started utilizing VTAlert as a way to get information out regarding the water district.

Bristol is on a major gravel bed that causes water lines to leak and break causing undermining and flooding issues under and around the roads. So, the waterlines installed in 1905 are in the midst of being replaced to help mitigate future damage.

As described in the Community Profile above, Bristol's population has started to increase during Covid-19 after seeing a decline after peaking in 1990 and plateauing for the 20 years, however the Town Plan would like to seek expansion of housing options including affordable housing but would need partnerships to build out public water and sewer utilities. The Town is in the process of amending its UDRs to provide for increased housing density and opportunities for the accessory dwelling units (ADUs) in response to the high demand for housing in Bristol. These amendments will be presented to voters at the November 2024 election

Changes in the Unified Development Regulations (UDRs), population, and development since 2018 have not made Bristol more vulnerable to natural hazards and, therefore, are not the primary drivers for a shift in the Town's mitigation priorities in 2025. Rather, changing weather conditions most influenced the Town's current mitigation strategy.

Climate Change

The 2023 Vermont State Hazard Mitigation Plan states "Warming temperatures, shrinking winters and increasing incidence of intense storm events are beginning to have a significant impact on Vermont's economy, people and environment and require immediate attention across all planning efforts." Accordingly, and as a guiding principle of this Plan, we have aimed to recognize and include the impacts of climate change throughout Plan development, most notably reflected in the hazard profiles and mitigation actions. Both direct and indirect impacts of climate change are addressed within pertinent hazard profiles, as well as the potential for compounding impacts.

Bristol's Town Plan recognizes with climate change models predicting increased precipitation and stronger storms, many communities now find themselves and their infrastructure increasingly vulnerable to natural disasters like flooding. The Town of Bristol has already been proactive in protecting its community with flood hazard area regulations for future development and substantial improvements. The Town considered the effects of future conditions, like climate change, on the type, location, and range of intensities of identified hazards when they conducted the risk assessment in 2024.

The primary mitigation goal in the 2023 Plan is to increase the Town's resilience to natural hazards by advancing mitigation investment to reduce or avoid long-term risk to people, homes, neighborhoods, the local economy, cultural and historic resources, ecosystems, and Community Lifelines.

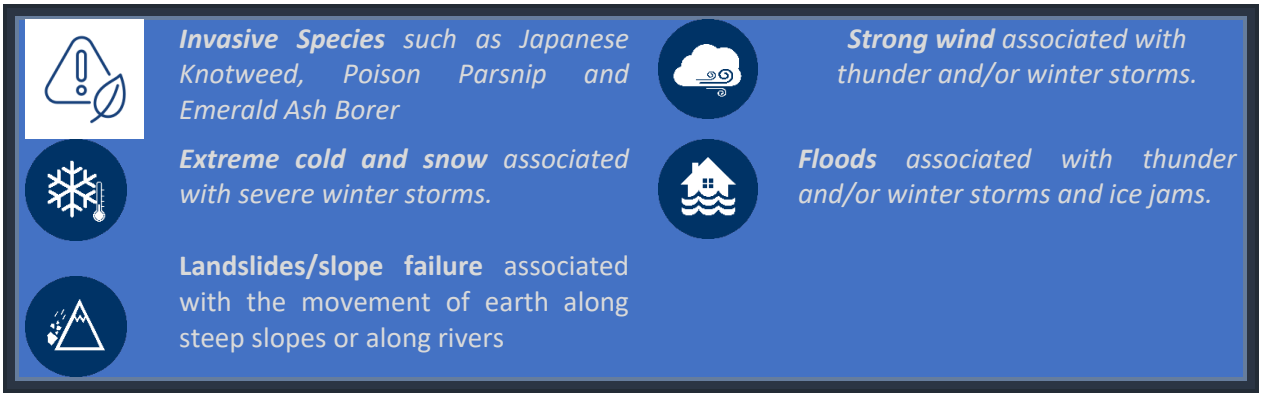
5 HAZARD IDENTIFICATION AND RISK ASSESSMENT

Local Vulnerabilities and Risk Assessment

To be consistent with the approach to hazard assessment in the 2023 State Hazard Mitigation Plan, the Hazard Mitigation Planning Committee conducted an initial analysis of known natural hazard events to determine their probability of occurring in the future and their potential impacts on the people, infrastructure, the environment, and local economy.

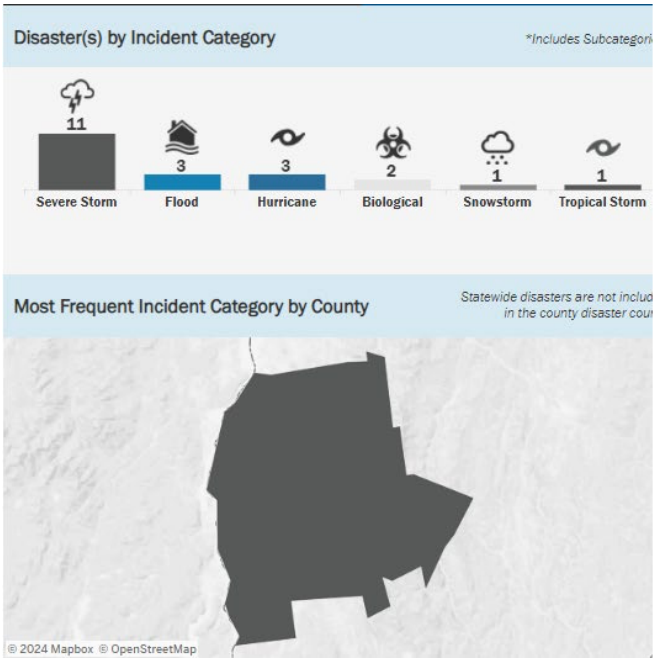
This assessment considered the effects of future conditions, like climate change, on the type, location, and range of intensities of identified hazards.

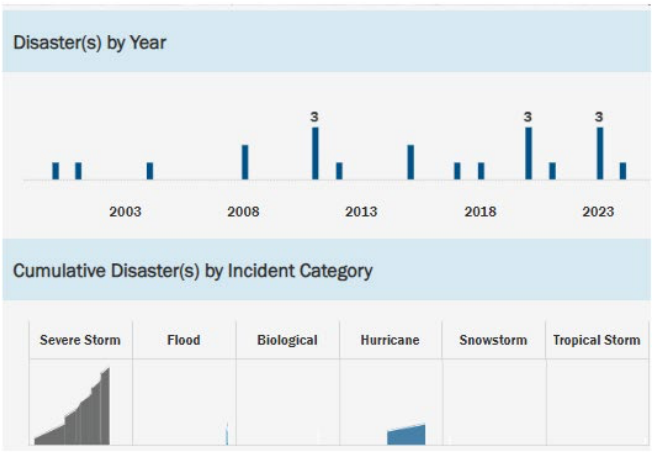
The ranking results are presented (in bold and darker blue in **Table 5** and reflect the following **highest risk hazard impacts** that the Town believes they are most vulnerable to:



Each of the **highest risk hazard impacts** are profiled in this section. Lower risk hazard impacts do not justify mitigation due to a low probability of occurrence and/or low impact.

Hail was decided by the planning team to be outside of the realm of justification within our region for mitigation actions. Hail being that the historic record of damage being primarily minimal and cosmetic to vehicles. While hazardous material spills and structure fires do affect Bristol, the committee chose not to profile these hazards as they tend to be a more short term, isolated hazards and are better suited to as possible response annexes in the Local Emergency Management Plan.





Date	Description	Dec. #	County Estimates	Bristol
7/6/1973	Storms, Flooding, Landslides	DR397	$ Unavailable	Unknown
8/5/1976	Storms, High Winds, Flooding	DR518	$ Unavailable	Unknown
9/6/1977	Drought	EM3053	$ Unavailable	Unknown
8/4-5/1989	Severe Storms, Flooding	DR840	$ 31,033	$5,862.00
4/24-5/26/1993	Flooding, Heavy Rain, Snowfall	DR990	$ 17,639	Unknown
1/19-2/2/1996	Storms, Flooding	DR1101	$ 130,529	$4,506.00
1/6-16/1998	Ice Storms	DR1201	$ 662,388	$48,327.00
7/17-8/17/1998	Severe Storms and Flooding	DR1228	$2,146,484	$299,713.00
7/14-18/2000	Severe Storms and Flooding	DR1336	$738,127.27	$0.00
3/5-7/2001	**Snowstorm**	**EM3167**	**$ 138,333.08**	**$7,214.67**
8/12-9/12/2004	**Severe Storms and Flooding**	**DR1559**	**$430,551.00**	**$92,000**
6/14-17/2008	Severe Storms and Flooding	DR1778	$1,114,515.70	$0.00
7/21-8/12/2008	**Severe Storms and Flooding**	**DR1790**	**$2,273,481.42**	**$31,540.68**
4/23-5/9/2011	Severe Storms and Flooding	DR1995	$384,416.53	$0.00
8/26-9/2/2011	Hurricane Irene	EM3338	$ Unavailable	$0.00
8/27-9/2/2011	**Tropical Storm Irene**	**DR4022**	**$1,175,911.2**	**$44,342.92**
5/29/2012	Storm, Tornado & Flooding	DR4066	$172,847.70	$0.00
12/9-13/2014	**Severe Winter Storm**	**DR4207**	**$184,715.05**	**$43,267.17**
6/9/2015	Severe Storm/Flooding	DR4232	$893,310.63	$0.00
6/29-7/1/2017	Severe Storm/Flooding	DR4330	$814,381	$0.00
10/29-30/2017	**Severe Storm/Flooding**	**DR4356**	**$87,053**	**$11,726**
10/31-11/1/2019	**Severe Storm/Flooding**	**DR4474**	**$4,289,207**	**$316,121**

1/20/-5/11/2023	Pandemic	DR4532	$2,949,377	$4,200
7/7-7/21/2023	Severe Storm/Flooding, Landslides and Mudslides	DR4720	$2,100,817 obl. as of 5/7/25	$123,203 obl.
7/9-7/11/2024	Severe Storm/Flooding, Landslides and Mudslides	DR4810	$15,581 obl.	$12,178 obl.

Figure 4 - FEMA Declarations in Addison County

Table 5 - Community Hazard Risk Assessment

Hazard Impact	Probability	Potential Impact					Score	Rank
		Infrastructure	Life	Economy	Environment	Average		
Invasive Species	**4**	**2**	**1**	**2.5**	**3.5**	**3.25**	**13**	**1**
Wind	**3.5**	**3**	**2**	**2.5**	**3**	**3.5**	**12.25**	**2**
Snow	**3.5**	**3**	**1**	**2.5**	**1.5**	**2.875**	**10.063**	**3**
Flash Flooding - Road Erosion	**3**	**3**	**1**	**2.5**	**3.5**	**3.25**	**9.75**	**4**
Fluvial Erosion	**3**	**2**	**1**	**2**	**3.5**	**2.875**	**8.625**	**5**
Landslide/slope failure	**3**	**2.5**	**1**	**2**	**3**	**2.875**	**8.625**	**5**
Cold	**3**	**3**	**2**	**2.5**	**1**	**2.875**	**8.625**	**5**
Heat	3	2.5	2.5	1	2	2.75	8.25	6
Inundation Flooding	3	2	1	2.5	2	2.625	7.875	7
Wildfire	2	3	3	3	3	3.5	7	8
Infectious Disease	2	1	4	3	2	3	6	9
Drought	2	1.5	1	2	2	2.125	4.25	10
Ice	1.5	3	1.5	2.5	2	2.625	3.9375	11
Earthquake	1	2	2	2	2	2.25	2.25	12
Hail	1	1	1	1	1	1.25	1.25	13

*Score = Probability x Average Potential Impact

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

Highest Risk Hazard Profiles

Invasive Species

Hazard Description: Invasive species are non-native organisms that, when introduced to an area, cause harm to the environment, economy, or human health. These species can outcompete native species, disrupt ecosystems, and cause significant ecological and economic damage. Invasive species can be plants, animals, fungi, or microorganisms. They often have high reproductive rates, few natural predators in their new environment, and the ability to thrive in a wide range of conditions.

Hazard Extent: The extent of impact can vary from localized infestations to widespread ecological disruption. Damages range from skin blistering and scarring in the case of poison parsnip, to the devastating effect the Asian Longhorn Beetle (ALB) or Emerald Ash Borer (EAB) could have on Bristol's Forest products industry and village landscape**.**

Hazard Location: All ecosystems in Bristol, including forests, wetlands, agricultural lands, and waterways, are susceptible to invasion by non-native species.

Hazard History: Invasive species are becoming a widespread problem throughout Bristol and the rest of Vermont. Damages range from skin blistering and scarring in the case of poison parsnip, to the devastating effect the Asian Longhorn Beetle (ALB) or Emerald Ash Borer (EAB) could have on Bristol's Forest products industry and village landscape**.**
The Bristol Hazard Mitigation Committee (BHMC) pointed out that much of the spread of unwanted invasive plants is along roadsides and has entered the town via state highways. Flying insect invasives will be far more widespread due to the mobility of these pests and could strike anywhere in the community where their hosts live (Ash for Emerald Ash Borer and Maple for Asian Longhorned Beetle). From small woodlots to large-tract forests, all forested land is susceptible.

Widespread establishment of Wild or Poison Parsnip (*Pastinaca sativa*) along roadsides and/or open fields can effectively remove those areas for recreational purposes through much of the summer months. Once contracted, many are quite hesitant to venture far from cleared paths and given the non-developed nature of much of Vermont's attraction for tourists, could heavily impact future visits.

Ash trees are the source for hardwood that can bend and withstand considerable stress. Historically, ash has been the source for axe handles, hockey sticks and baseball bats. It is a component of timber harvesting in Vermont and provides that industry with a moneymaking product. Spread of the Emerald Ash Borer (*Agrilus planipennis*) (EAB) into Vermont's forests would have a significant impact on timber values. The Emerald Ash Borer Strategic Plan Committee was established in 2020 a year after the first detected tree with EAB by the Selectboard with the mission to update and broaden the 2014 street tree inventory to identify the location and condition of all ash trees on public properties, including along neighborhood streets, within public parks, and along roadways. This committee also identified locations, established priorities and timelines for removal of ash trees

A third invasive of immediate concern to Vermont is the Asian Longhorned Beetle (*Anoplophora glabripennis*) (ALB) which attacks and kills maple trees. Vermont is famous for its maple syrup and is the largest producer of maple products in the United States. Widespread loss of maple trees could result in the collapse of this iconic industry and a severe impact to the state's economy.

Other invasives include Purple Loosestrife, Japanese Knotweed, Rock Snot and many others which all have a detrimental impact on the state's native populations and the state's ecological balance.

The most noticeable impact of invasives in Vermont began when a load of elm lumber was imported into this country from Europe in the early 1900s. Embedded in this load were spores of what we now call Dutch elm disease. At the time, the elm was the most popular street tree in the US due to its hardiness in many types of conditions. The loss of these trees which were liberally planted as shade trees in many village greens and along roadsides had an extreme impact both aesthetically and due to the loss of shade, in the overall use of electricity in summer months. Now, elms are uncommon in most of the northeast and the disease continues to spread westward.

Other examples include the importation of gypsy moth in an attempt to create locally grown silk, the spread of zebra mussels which threaten water intakes on infested water bodies and the unintentional importation of the Norway Rat in ships holds with early colonists. Each of these has had its own impacts on the economy and ecological stability of the US and Vermont.

Town Vulnerability:

People: People may be injured or made ill by invasive species events (e.g., blisters from poison parsnip

Built environment: Invasive species may cause overgrowth or damage to various built environments, such as, powerlines and culverts. The damage can be minor to catastrophic.

Natural environment: Invasive species can wipe out an entire local ecosystem, causing complete devastation to the local natural environment. Bodies of water may become uninhabitable, and forests can see complete devastation.

Economy: Invasive species can impact the tourism industry with the closure of outdoor recreation trails.

Potential Future Impacts:

Climate Change: Warmer temperatures and altered precipitation patterns can create more favorable conditions for invasive species to thrive and expand their range. Species that were previously limited by cold temperatures may be able to establish populations in new areas, including higher elevations and latitudes. Climate change can influence the distribution and abundance of vectors (e.g., mosquitoes, ticks) that transmit invasive species and vector-borne diseases. Warmer temperatures and changes in precipitation patterns can expand the geographic range of these vectors, increasing the risk of invasive species introductions and disease transmission. Invasive species themselves can contribute to climate change through various mechanisms, such as altering carbon cycling, disrupting ecosystem services, and promoting changes in land cover and vegetation dynamics. These feedback loops can further exacerbate the impacts of climate change on ecosystems.

Change in Land Use/Development: Increased recreational use or development in forest reserve districts can lead to habitat modification, fragmentation of natural habitats, altered disturbance regimes, changes in hydrology and drainage and loss of native biodiversity.

Change in Demographics: Bristol's population demographics are not expected to change significantly in the next five years, though an increase in the average age of the population may increase the vulnerabilities of the population.



Strong Wind

Hazard Description: Wind hazards include high winds from thunderstorms, hurricanes, tropical storms, and winter storms. These winds can cause damage to buildings, power lines,

trees, and other infrastructure. Wind events can vary in intensity, duration, and geographic extent. They often accompany other severe weather conditions such as heavy rain, snow, or ice.

Hazard Extent: FEMA's National Risk Index defines Strong Wind as damaging winds that exceed 58 mph. Strong Wind poses a threat to lives, property, and vital utilities primarily because of flying debris or downed trees and power lines. Addison County has seen winds as high as 86 mph. However, on average the winds events range on the low end of what FEMA considers strong winds. From 1997 to 2022 wind events have caused more than $345,000**.**

Hazard Location: Several wind events have come from other directions, mainly the south and in winter the traditional nor'easter. With its location at the intersection of the Champlain Valley and the Green Mountains, winds from the SSW tend to be compressed against the mountains causing locally higher winds than are experienced in other areas of the region. Fortunately for Bristol, these same geographic conditions tend to break potential tornadic wind patterns.

Town Vulnerability: Downed trees within the road right-of-way are the root cause of many power outages. Roads that pass through dense wooded areas are prone to downed trees, which can lead to fallen power lines. Strong wind events with associated power outages can have a short-term impact on the local economy due to business closures. Environmental impacts such as the Emerald Ash can have an impact on the health of trees that can become vulnerable to strong winds. A committee and plan, cited in the invasive species section was established, for the removal of vulnerable trees. The potential risk to public and private woodlots and impacts on the local economy have not been quantified.
Power outages are the main reason for disrupting communications, which are crucial in times of crisis. Telecommunications are also needed for warning systems before a disaster, as well as for response during and recovery after. During a disaster, municipal response is managed by the local Emergency Operations Center (EOC), this would include all communications – from phone calls to internet browsing and 2-way radio. The Fire Department's repeater also goes down when there is a loss of power hindering communications if there are responding to an event.

Potential Future Impacts: The entire Addison County region has been experiencing an increased frequency of microbursts, straight line winds and reported tornadoes. The severity of all types of weather events usually comes with a component of high winds. Climate change predictions would indicate that this type of wind event will continue to increase over the next few decades.

Climate Change: Climate change has significant effects on weather patterns and atmospheric dynamics, which in turn influence wind events. These changes can alter the frequency, intensity, and geographic distribution of wind-related hazards.

Change in Land Use/Development: No changes to asset impacts due to wind events as a result of development or land use changes could be identified.

Change in Demographics: Bristol's population demographics are not expected to change significantly in the next five years, though an increase in the average age of the population may increase the vulnerabilities of the population.

Hazard History: The table below identifies a history of occurrences within Addison County as data specific to Bristol was not available.

Strong Wind

These are the most up to date significant events impacting Addison County and associated costs. Federal Declarations are depicted in bold and specific to Bristol.

Wind Events:

8/21/1997: 46mph; $10,000
11/1/1997: 50mph; $10,000
1/23/1998: 62mph; $15,000
2/18/1998: 63mph; $40,000
11/10/1998: unk; $5,000
9/17/1999: 52mph; $75,000
3/28/2000: 68mph; $75,000
2/10/2001: unk; $10,000
3/10/2002: unk; $30,000
9/19/2003: 60 mph
11/13/2003: 40 mph
12/11/2003: 53 mph
11/28/2004: 57 mph
9/29/2005: 40 mph
1/18/2006: 63 mph
2/17/2006: 43 mph
10/28/2006: 69 mph
12/16/2007: 57 mph
12/09/2009: 85 mph
1/25/2010: 57 mph
2/26/2010: 57 mph
12/1/2010: 70 mph
12/12/2010: 57 mph
4/16/2011: 57 mph
10/29/2011: 57 mph
12/21/2012: 61 mph
4/1/2018: 64 mph
4/16/2018: 64 mph
12/23/2022: 60 mph
1/10/2024: 57 mph
1/13/2024: 57 mph

Tornadoes
6/9/1965: F1; $25,000
3/26/2021: EF1; $75,000
7/18/2022: EF0; unk



Extreme Cold and Snow

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

Hazard Extent: Severe Snowstorms in Bristol may bring over 6 inches of snow in less than 24 hours, that will require removal from roads and other community assets that may be vulnerable to the weight of snow. Severe snowstorms may reduce visibility due to falling snow and associated strong winds. Winter Storm Stella dropped over 20 inches in one day. A snowstorm or sequence resulting in 60 inches could cause roof failures, especially in older or unrenovated buildings.

National Weather Service warnings include:

- Winter Storm Warning: Heavy snowstorm predicted within 24 hours
- Blizzard Warning: Sustained wind and snow with gusts ≥35 mph for ≥3 hours
- Heavy Snow Warning: Accumulations of over 6 inches in 24 hours

In the region, extreme cold can still be an issue. Historic cold extremes in Bristol have reached as low as -35° F, with wind chill values dropping below -50° F during severe Artic outbreaks, as documented in NOAA regional data.

Hazard Location: Snow and cold can occur townwide. The heaviest snowfalls in the state occur along the western slopes of the Green Mountains, including Bristol. Blowing snow can close roads, especially steep segments. Infrastructure is potentially highly impacted by snow accumulation and cold.

Town Vulnerability:

People: Snow and cold weather events can cause injuries or fatalities to people who do not shelter-in-place, or who do not have adequate shelter. Delayed sheltering-in-place can be caused by no-noticed events, or by individuals who do not heed the warning. The elderly, the homeless, residents with special needs and those without proper transportation may potentially be impacted more than other residents.

Built environment: Snow and cold weather events can cause damage to town and private property, including buildings (roof collapse), blocked egress routes, blocked evacuation routes, frozen pipes, and downed powerlines.

Natural environment: Snow and cold weather events can cause damage to the environment with downed trees.

Economy: Snow and cold weather events can cause economic impacts to the town. Impacts include disruption or closure of impacted businesses, and recovery costs, including employee overtime, time and equipment spent on the repairs.

Potential Future Impacts:

Climate Change: Climate change significantly affects weather patterns, including the frequency, intensity, and geographic distribution of extreme cold events. These changes can increase frequency and intensity of snow and ice storms, change snowfall patterns, lead to more ice accumulation, and reduce snowpack.

Change in Land Use/Development: No changes to asset impacts due to snow and extreme cold events as a result of development or land use changes could be identified.

Change in Demographics: Bristol's population demographics are not expected to change significantly in the next five years, though an increase in the average age of the population may increase the vulnerabilities of the population.

Hazard History:

Extreme Cold and Snow

These are the most up to date significant events impacting Addison County and associated costs. Federal Declarations are depicted in bold and specific to Bristol.

County Wide Extreme Cold Events

1/25/2007: 6": snow -11° F -25° to -40° windchill
3/6/2007 -8° F -20° to -40° windchill
3/9/2007 -18° F
1/14/2009 -20° F
1/7/2015 -15° to -30° -25° to -40° windchill
1/11/2022 -6° F -25° to -35° windchill
1/14/2022 -10° F -25° to -40° windchill
2/3/2023 -11° F -25° to -40° windchill

Snow Events

12/1/1997: 9-12"; $10,000
3/21/1998: 12-15"; $10,000
1/25/2000: 14"; $15,000
1/30/2000: 12"; $15,000
2/13/2000: 12"; $10,000
2/18/2000: 10.5"; $10,000
4/9/2000: 11.5"; $30,000
12/31/2000: 8-19"; $20,000
3/5/2001: DR3167 15-30"; $5,411
3/22/2001: 8-25"; $50,000
3/30/2001: 5.5-16"; $50,000
1/31/2002: 10"; $10,000
3/26/2002: 12"; $20,000
11/17/2002: 6-10"; $5,000
12/25/2002: 8"; $10,000
1/4/2003: 18"; $40,000
3/30/2003: 8"; $10,000
4/5/2003: 11"; $10,000
2/14/2007: 15"-25"
2/5/2014: 5"–12"
2/13/2014: 6"-10"
12/9/2014: DR4207 16"-20"; $32,450
3/14/2017: 26"



Floods

Hazard Description: Floods (fluvial erosion, inundation, dam failure) can damage or destroy property; disable utilities; destroy or make impassable roads and bridges; destroy crops and agricultural lands; cause disruption to emergency services; and result in fatalities**.**

People may be stranded in their homes for a time without power, heat, or communication or they may be unable to reach their homes. Long-term collateral dangers include the outbreak of disease, loss of livestock, broken sewer lines or wash out of septic and wastewater systems causing water supply pollution, downed power lines, loss of fuel storage tanks, fires, and release of hazardous materials.

As noted in the 2023 State Hazard Mitigation Plan and 2021 Vermont Climate Assessment, the most common recurring hazard event impacting Vermont communities is flooding. There are two types of flooding: inundation and fluvial erosion. Inundation is when water rises onto low lying land. Fluvial erosion is a sudden, violent flood which often entails stream bank erosion and known as flash flooding along roadways.

While inundation-related flood loss can be a significant component of flood disasters, the more common mode of damage in Vermont is fluvial erosion, often associated with physical adjustment of stream channel dimensions and location during flood events. These dynamic and often catastrophic adjustments are due to bed and bank erosion of naturally occurring unstable stream banks, debris and ice jams, or structural failure of or flow diversion by human-made structures**.**

Bristol's moderate to steep terrain, when combined with heavy rainfall are conditions conducive to flash flooding throughout town. The New Haven River transitions from a steep fast flowing stream north and east of town to a much lesser gradient just south of the village. It is prone to flash flooding all along this route depending on the amount of rainfall and flows upstream in Lincoln. The only area of town where inundation flooding may be more common than flash flooding is along the north-south valley of the New Haven River on the flats south of town along Rte. 116. Based on the results of overlaying the FIRM flood maps with the location of the E911 points, thirty-four E911 locations in the town are vulnerable to potential flooding. These locations include 27 single family homes, 3 mobile homes, 2 camps, 1 commercial establishment and 1 utility substation located on Hewett Road. The estimated loss for damage to these properties ranges between $5-7 million.

Hazard Extent: Based on National Weather Service's precipitation records for nearby Burlington, VT, the summer months of June, July, and August receive the greatest amount of rain. The Bristol Flood Map indicates where flooding risk is highest. Generally, any rain in excess of 2.5" in a 24-hour period are likely to result in some flash flooding. Rain in excess of 3-4" can cause floods in multiple locations with considerable damage to town roads. Single 24-hour storm totals exceeded 6" in both 1927 and 2011, the two "watershed" events which resulted in statewide devastation. Due to its sitting near the river, there is also a possibility of contamination of the spring that supports the water distribution system in the village.

Flash flood and related erosive failure risks are associated almost entirely with the instability of the New Haven River along its entire route through town along with other small tributaries and beaver ponds. Flash floods identified as a primary risk in Bristol generally also produce major erosion events as riverbanks and road bases along the river are destabilized. Infrastructure at risk of erosive damage is generally located along the river between the Lincoln Town line and the A Johnson lumber mill located south of the village area. This stretch of river includes portions of River Road and VT Route 116 east of town, both of which have experienced major damages over the past 20 years.

Hazard Location: Geomorphic assessments conducted since the 1998 flood of record have identified multiple locations where infrastructure and private homes are at risk due to channel migration and flooding as shown in the following table:

Table 6 – Locations at risk due to channel migration

Reach	***Town***	***Structure***	***Description/Identified Vulnerability***
M10	*Bristol*	*Residence, Left Bank*	*One residence on Cove Rd is positioned mid-way along the reach at the southern boundary of the historic channel migration zone and could be*

			subject to future erosion hazards if the channel migrates to the south. (avg. house value $200,0000
M11	*Bristol*	*Route 116*	*A series of 90-degree meander bends in the reach has resulted in low-to-moderate flows directed nearly perpendicular to Route 116 armoring along right bank at the upstream extent and mid-reach. (Continued expansion of meanders could adversely affect State Rte. #116 in this area)*
M11	*Bristol*	*residence, RB*	*A residence on S 116 Rd along right bank has experienced erosion and inundation hazards in past floods, including the 1998 and 2004 flood and impacts to outbuildings in 2011 and 2019 (avg. House value $200,000)*
M12, M13	*Bristol*	*Lumber Mill, RB*	*This mill located at 995 S 116 Rd was constructed on the historic floodplain decades ago and is susceptible to erosion and inundation hazards during flood events and impacts also occurred in 1938,1970, 1998, 2011 and 2019 (Total Mill value $1,758,900) possible new mitigation strategies with change in business ownership*
M13	*Bristol*	*residence*	*Residential properties along Hewitt Rd and Cold Spring Road, and power substation on Hewitt Rd*
M14	*Bristol*	*Residence*	*Residential properties along Lower Notch Rd and Carlstrom Rd*
M14	*Bristol*	*Town Septic System, RB*	*Erosive action could put the town septic system at risk during high volume flooding events. (replacement cost: $1,500,000)*
M14	*Bristol*	*Residences, Commercial properties along High RB*	*These structures are potentially susceptible to both mass failure of the West Street bank above (Top-Down) in 2004 or from erosion of the toe of the slope below. Bottom up mass failures after 1938 flood. (Total values; $1,434,000)*
M14	*Bristol*	*Mill, LB*	*44 South St potentially susceptible to mass failure from RB failure of West Street above and from erosion of LB during flood event. (Total Mill value $695,000)*
M14	*Bristol*	*South Street, Notch Road LB*	*Erosive action could put these town roads at risk during high volume flooding events. (Repair Costs $350,000)*
M15	*Bristol*	*residences, RB*	*The newly constructed home and Blaises Trailer Park homes along the right bank are at imminent risk from streambank erosion and failures in this actively adjusting reach. Other homes and businesses in the Rockydale development are also at risk. (Total at risk property values $308,000)*
M15	*Bristol*	*Route 17 / 116*	*Route 17 / 116 is highly susceptible to failures from streambank erosion particularly mid-way along the reach. (State owned highway failed in this area during the 1998 flood event)*
M15	*Bristo*	*residence*	*Residential properties along RB: 15, 87, 95, 125 Basin Street; 7, 79, 81, 83 Drake Smith Rd; 91 East St*
M16	*Bristol*	*Lincoln Rd*	*Lincoln Road has seen repetitive damages in historic (1927, 1938, 1970s, 1998) and more recent floods (2019, 2023, 2024) including*

			bottom up failures (from river erosion) and top-down failures (from stormwater-related landslides) (e.g., Briggs Hill Road failures)
M16	*Bristol*	*potential infrastructure*	*The downstream 750 feet of reach M16 near the confluence with Baldwin Brook is a highly adjusting sub reach of river channel subject to braiding flows and lateral channel migration. Future development and placement of infrastructure in this area should be minimized. (Currently largely undeveloped)*
M17	*Bristol*	*Eagle Park*	*Town-owned Eagle Park has seen repetitive damages to Universal Fishing Platform from inundation and erosion (e.g., 2011, 2019)*

Flash flood events have also occurred at higher elevations or other locations where minor streams or tributaries swell and inundate culverts or ditches causing damage to roads, driveways, and private properties. Despite stormwater improvements in the area in 2010, increased water runoff from the wooded hillside at the north end of Mountain Street across from the Elementary School, for example, has resulted in flood damage to properties on Mountain and Spring Streets many times.

Potential Future Impacts: Whether the current climate change trend is the direct result of human activity or due to other circumstances, it is impossible to not see it happening. While FEMA has only existed for the past half century, the increase in disaster declarations in Vermont has been noticeable. As one committee member identified, we had five, 700yr storms in a 10yr period. Observing and predicting a rising trend in larger and more severe storms is not a stretch. Following an extended period of calmer/drier weather from the 1950s through the 1980s, this current trend is even more obvious, and it is likely to continue on into the future.

Climate Change: Climate change has profound effects on weather patterns, precipitation, and temperature, all of which significantly impact fluvial erosion and flooding. Increased river flows, earlier and rapid snowmelt, more severe storms, vegetation loss and soil saturation, as a result of climate change, may impact fluvial erosion and flooding event frequency and intensity.

Change in Land Use/Development: The town has adopted flood hazard area regulations and participates in the national flood insurance program. Bristol's regulations prohibit new structures in the Special Flood Hazard Area. Therefore change in development and land use is not expected to increase impacts of fluvial erosion, inundation flooding or flooding on current or future assets.

Change in Demographics: Bristol's population demographics are not expected to change significantly in the next five years, though an increase in the average age of the population may increase the vulnerabilities of the population.

Vulnerability Summary: The Town of Bristol's topography and location along the western slopes of the Green Mountains practically guarantees the likelihood of flash flooding events.

Built Environment: The most damages to date have occurred to the town highway infrastructure in the form of washouts and culvert failures. Fortunately, a progressive road crew monitors trends and proactively installs culverts and repairs ditching in anticipation of ever worsening rainfall/flooding events. Fortunately, the community understands this vulnerability and supports the road crew's efforts to prepare against future risk.

People: Fluvial erosion and flooding events can cause injuries or fatalities to people who do not evacuate in time. Delayed evacuation can be caused by no-noticed events, or by individuals who

are hesitant to leave their houses. The elderly, the homeless, residents with special needs and those without proper transportation may potentially be impacted more than other residents.

Natural environment: Fluvial erosion and flooding events can cause damage to the environment and fragile ecosystems. Vulnerabilities and impacts include algae blooms (harmful to the environment, and toxic to animals/people), transportation of invasive species, soil and bank erosion, and pollution.

Economy: Fluvial erosion and flooding events can cause major economic impacts to the town. Impacts include disruption or closure of impacted businesses, homelessness due to house damage, and recovery costs, including employee overtime, time and equipment spent on the repairs.

Hazard History: The committee identified several storms in Bristol where damage was great enough to warrant federal assistance. In late June of 1998, Bristol was the recipient of a chain of successive rainstorms. Once the ground was saturated, the remainder flowed into streams in torrents. The nearby Town of Lincoln was entirely cut off from the rest of the state and Bristol also experienced major damage. The damage resulted in disaster declaration DR1228 which caused over $2 million in damages in Addison County alone. This same storm flooded several mobile homes that had slowly creeped into a floodplain and resulted in one of the first major mitigation buyouts in the state.

In 2004, a stalled summer storm dropped large amounts of rain onto South Mountain and Deer Leap causing flooding to residences and businesses in the downtown area as well as inflicting damage to town and state highways. The 2004 storm caused over $70,000 in damage to the Town of Bristol, much of which was reimbursed through State and Federal sources.

In 2008 a single storm concentrated its rain on the towns of Bristol and Nearby New Haven, causing localized flash flooding resulting in DR1790. 2011 saw another banner year for flooding/flash flooding in Bristol. Tropical Storm Irene DR-4022 alone contributed to damages of over $44,000 in town. There have been no flash flooding events large enough to warrant federal assistance in Bristol since 2011.

Flood Hazard History

These are the most up to date significant events impacting Bristol. Federal Declarations are depicted in bold. Damages are to Addison County Bristol damages

4/23/2004 DR1559	**$ 73,684**
9/12/2008 DR1790	**$ 23,655**
9/1/2011 DR4022	**$ 39,908**
1/2/2018 DR4356	**$ 9,381**
9/29/2005 DR4474	**$252,898**
7/14/2023 DR4720	**$ 88,170**
7/10/2024 DR 4810	**$9,134 to date**

Recorded County Wide Damages

4/1/1998	$10,000
4/23/2001	$5,000
5/1/2001	$1,000
4/13/2002	$20,000
5/19/2006	$25,000
6/26/2006	$15,000
6/15/2009	$25,000
10/1/2010	$50,000
4/26/2011	$250,000



1/11/2014	$2,000
6/9/2015	$250,000
7/19/2015	$2,500
2/25/2016	$1,000
2/25/2017	$30,000



Landslide/Rockslide Hazards

Hazard Description: Landslide is the sliding of a large mass of rock, earth, or debris, down a sloped section of land. Landslides can be caused by rain storms, fires, alternate freezing or thawing and/or by the steepening of slopes by erosion or human modification. In Bristol, landslides tend to occur or are exacerbated by fluvial erosion as most of the landslides occur on or near a stream bank, or during extreme wet conditions in areas of clay substrate.

Landslide/Rockslide hazards occur in the Town of Bristol as the result of glacial deposits and how both roads and rivers interact with these deposits. The Town is located at the transition between the steep sloped Green Mountains and the flatter Champlain Valley. This transition area contains large gravel deposits which are easily erodible and subject to mass failure. The more densely settled village portion of the Town of Bristol is located on the surface of one such deposit.

Hazard Extent: Landslides can affect localized areas or larger regions, depending on the size and scale of the landslide event. Historically landslides in Bristol have been small at ~0.1 of an acre or less.

Hazard Location: A 2016 study of landslide potential conducted by the Vermont Geological Survey, indicates 6 major areas where there is a moderate to high risk. Four of these areas coincide with the fluvial erosion risk encountered along streams flowing out of the higher elevations in town. Three of these streams are also bordered by town roads, Drake Woods Rd. (Rte. 17), Lincoln Rd., and the Lower Notch Rd., all known locally as areas at risk. An additional at-risk area follows along West St (Rte. 116) east of town below Deer Leap which was washed away by the force of the river in 1998. In each of these examples the risks also include land sliding into the road from above. In the village of Bristol, perched on top of an alluvial fan, landslide/erosion risks associated with nearby rivers can equally be the result of waterlogged soils breaking away from the escarpment and erosion from the river below.

The remaining two moderate to high-risk areas exist at the outer edges of the village to the south and west. The western risk area is located behind the high school where gravel mining operations have helped to create a steep gravel bank which is at risk of failure. The last area follows along south of West Street behind the Village Cree-Mee stand and several houses. Both are of concern as the built environment is currently perched at the top of what could be a 90ft drop should there be a mass failure.

While erosion and rockslides are guaranteed along steep streams, the extent of a channel's lateral movement due to erosion is relatively unpredictable. In one example, for reach M10 of the New Haven River at Sycamore Park, historic aerial photographs dated 1942, 1963, and 1974 indicated 60-year channel migration zones with widths up to 950 feet.

The most recent large-scale channel migration event in this area occurred as a result of 1998 flooding. Multiple mobile homes had been placed on floodplain in the Sycamore Park area before floodplains were effectively managed. During this flood event, the river channel migrated and flooded the entire area resulting in multiple rescues. These homes became some of the first FEMA buyouts in the state.

Failure of either of the high gravel banks at the edge of the village could result in losses of up to 30-50 feet at the top of the bank. Unfortunately, the high school, several homes and businesses, and portions of West St (Rtes. 116 & 17) are located within possible risk locations and would be lost should the gravel bank fail.

In recent years three more locations have been identified in the areas of Briggs Hill Road down towards Lincoln Road, Upper Notch Road and even though the area below Main St/West St/VT RTE 116 in the village has had stabilization projects, it could still potentially turn into a major vulnerability for the village.

Hazard History: Each flood event of the past 20 years has resulted in erosion of riverbanks, some more than others. As previously identified, the landmark flooding of 1998 was the worst in recent memory. Bristol's location at the transition of the New Haven River from steep topography to gradual slope has resulted in 4 disaster declarations in the past 20 years. Each of these, while considered mainly flood events, have also had a component of erosion associated with them. DR1228 in 1998, DR1559 in 2004, DR1790 in 2008 an DR4022 in 2011 have each impacted the community.



A history of landslides prior to 1998 was not available but certain locations in town show clear historic landslide activity. Deer Leap along Route 116 east of town shows what is likely a continuing slide. Researchers also note scars from past mass failures on the slope that follows West St.

Town Vulnerability: The inherent instability associated with erosion of gravel deposits is and will be of great concern to the Town of Bristol into the future. Actions of water courses, especially the New Haven River, will likely continue to move them laterally, putting riverside homes and infrastructure at risk. Additionally, the value of the underlying gravel makes it attractive to continue removing this resource by landowners. When gravel removal excavates the base of these gravel deposits, the gravel bank, itself, becomes potentially unstable. Increases in the value of gravel and the frequency of severe rain events will both point to greater risks in the future.

Adding to the naturally occurring erosion along the toe of the slope south of West St. are multiple outflows from storm drainage. While the steep bank, on one hand, is a great place to deposit stormwaters, major outflows such as those associated with heavy rains may be serving to slowly erode the bank and making it more susceptible to mass failure.

People: Residents living in or near steep slopes may face increased risks of property damage and loss of life. Landslides can impact hikers and other people engaged in outdoor recreation.

Built environment: Transportation networks, utilities, buildings, and critical infrastructure located in landslide-prone areas may be exposed to damage or disruption during landslide events.

Natural environment: Landslides can have ecological impacts, including habitat destruction, soil erosion, sedimentation of waterways, and loss of biodiversity in affected areas.

Economy: Landslides can damage or destroy buildings, roads, bridges, utilities, and other infrastructure in their path, leading to economic losses and disruption of services.

Potential Future Impacts: Bristol has existed in its current location for over 200 years and during that period, has experienced the effects of landslide and erosion events. It is reasonable to expect that trend will continue, especially with predicted increases in storm severity. This trend would continue whether the area had been settled or not. The community's vulnerability to this hazard continues to be of high concern to the town.

Climate Change: Climate change may lead to increased frequency and intensity of flooding events, fluvial erosion, rain/snow events and changes to material's strength through weathering, resulting in a higher probability of future landslides.

Change in Land Use/Development: Increased recreational use or development in landslide or fluvial erosion prone areas may lead to increased impacts of landslides.

Change in Demographics: Bristol's population demographics are not expected to change significantly in the next five years, though an increase in the average age of the population may increase the vulnerabilities of the population.

Heat

Hazard Description: Heat hazards result from prolonged periods of high temperatures, often accompanied by high humidity levels. Heatwaves can pose significant risks to human health, infrastructure, agriculture, and ecosystems. Heatwaves are characterized by extended periods of unusually hot weather, with daytime temperatures exceeding normal seasonal averages and limited relief during the nighttime hours.

Consecutive days of hot weather with warm overnight temperatures further increase the risk of experiencing severe heat-related health impacts. Risk also depends on the "normal" level of heat experienced in an area – places that are relatively cooler will typically experience health impacts at lower heat index values than a place that is relatively warmer.

Hazard Extent: Heat advisories, watches, and warnings are issued by the National Weather Service and local authorities to alert residents to the risks of impending heatwaves. Bristol may experience a heat advisory, watch of warning, however given historical data, it's likely that Bristol would be issued with a heat advisory.

Epidemiological analyses completed by the Vermont Department of Health indicate that Vermonters are five times as likely to visit the emergency department for heat-related illnesses when the heat index reaches the 80s, 10 times as likely when the heat index reaches the low 90s, and over 20 times as likely when the heat index reaches the upper 90s or hotter. These risks are greatly modified by how acclimated a person is to hot weather – the risk for heat-related health impacts is higher early in the heat season, and lower if it has been consistently hot over the past week or more.

Hazard Location: All areas of Bristol, Addison County and statewide are susceptible to extreme heat events.

Hazard History: June of 2024 saw forecasted heat index of 102. Below are the 4 heat related listing from the SHMP of 2023.

Eastern Addison 8/1/2006 Heat
Eastern Addison 8/2/2006 Heat
Eastern Addison 3/17/2012 Heat – caused $450,000 in crop damage across Addison County

Town Vulnerability:

People: Older adults, people with chronic health conditions, and people with disabilities are at particularly high risk, especially if they live in housing without air conditioning or are unhoused and cannot access cooling facilities and other support resources. The unhoused may not be or feel welcomed at cooling centers, sleep in hot tents, and carry heavy loads of their possessions in the heat. There is increasing risk to multiday heat events in Bristol with a greater increase in heat warning. With there being at least 1 multiday heat advisory on average per year.

Built environment: Heat events can cause a strain on the town's electrical system, leading to brown or blackout events.

Natural environment: Heat events can increase the occurrences of droughts and wildfires.

Economy: Heat events can cause economic impacts to the town. Impacts include disruption or closure of impacted businesses and the costs to operate a cooling shelter.

Potential Future Impacts: Heat warnings are becoming increasingly more prevalent due to our shifting climate. Vermont has been seeing an increase in 90+ degree temperature days. This trend is expected to continue. Most of our housing stock and individuals are well adapted to dealing with cold temperatures, but the quick swings to higher temperatures do not allow for acclimation, and many of our structures are designed to retain, rather than shed, heat.

Climate Change: Climate change has the potential to increase extreme heat occurrences, therefore there is an increased likelihood of future drought events, both in frequency and magnitude.

Change in Land Use/Development: No changes to asset impacts due to extreme heat and drought events because of development or land use changes could be identified.

Change in Demographics: Bristol's population demographics are not expected to change significantly in the next five years, though an increase in the average age of the population may increase the vulnerabilities of the population

Wildfire

Hazard Description: Wildfires are uncontrolled fires that spread rapidly through vegetation, forests, grasslands, and other flammable materials. Wildfire may be a result of natural causes (lightning, volcanic eruptions), human activities (arson, campfires, machinery sparks), and weather conditions (high temperatures, drought, strong winds).

Hazard Extent: Wildfires in Vermont can spread quickly through dense forests, particularly in dry conditions. Wildfires can last from several hours to several days depending on conditions and response efforts. There is a higher risk of wildfires during late spring, summer, and early fall when vegetation is driest. The National Weather Service (NWS) issues a "Red Flag Warning" when conditions are conducive for wildfires. A Red Flag Warning means warm temperatures, very low humidities, and stronger

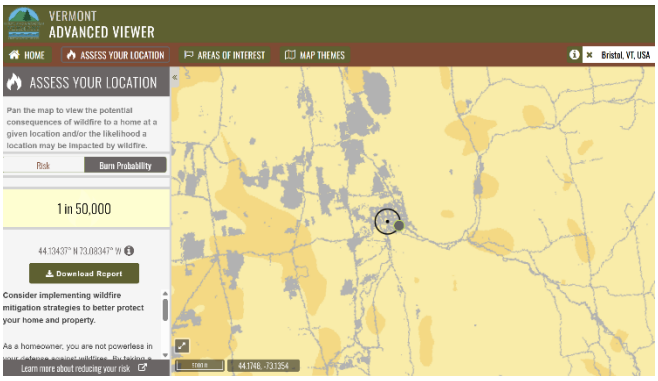


Figure 5 - Northeast-Midwest Wildfire Risk Map for Bristol

winds are expected to combine to produce an increased risk of fire danger. The risk map in Figure 5 identifies the probability in and around Bristol that are at risk to burn is low. NOAA's Storm Events Database shows one wildfire in Windham and Bennington Counties in 2002, with not deaths, injuries or noted

damage. The Vermont State Hazard Mitigation Plan and the Vermont Forest and Parks annual report, last done in 2017 indicate any major wildfires have occurred in Vermont in the last 50 years.

Hazard Location: Throughout Bristol, there are large tracks of forested land in the southwest portion of Town that could be at risk during sustained dry periods. times when dry hazardous conditions exist.

Hazard History: There have only been small, isolated wildfires within the last 50 years within Addison County, but statewide closures of public lands have occurred three times in that period of time due to extreme fire danger.

Probability of Future Events

Wildfire events in Bristol are considered Occasional, defined as a 1% to 10% probability of occurrence per year, or at least one chance in the next 100 years. Although Bristol has not experienced major wildfire events recently, increasing periods of drought and regional trends in fire weather raise the likelihood.

Expected townwide intensities range from: Small ground fires during dry leaf-litter seasons to potential moderate canopy fires during extended drought conditions.

With climate variability and predicted increases in dry weather during spring and fall, wildfire probability is expected to rise. Extended droughts may increase the frequency and intensity of future events, especially given the dense forest cover and topography.

Vulnerability Summary

- All structures are within forested areas, many along narrow, tree-lined roads.
- Emergency response may be delayed due to limited road access.
- Campers at Green Mountain Family Campground may require assisted evacuation.
- Accumulated debris and deadfall during drought conditions increases fuel load.

Mitigation Measures

- Continue tree trimming and debris clearing on town rights-of-way.
- Encourage defensible space around structures.
- Provide community wildfire education via Conservation Commission events.
- Train fire department on forest fire response and interagency coordination with GMNF.
- Monitor drought and fire risk via Vermont's Fire Danger Rating system.

Infectious Disease

Hazard Description: Infectious disease outbreaks refer to the occurrence of cases of disease more than what is normally expected in a population or geographic area. These diseases are typically caused by bacteria, viruses, fungi, or parasites.

Hazard Extent: Outbreaks can last from days to years, influenced by factors such as the nature of the pathogen, public health response, and population immunity. Some diseases have seasonal patterns (e.g., influenza in winter, vector-borne diseases in warmer months).

Hazard Location: Infectious disease outbreaks can occur anywhere in Bristol. Recently, Bristol, as did the entire United States, saw direct impacts from the COVID-19 pandemic.

Hazard History: Per the State Hazard Mitigation Plan, the following disease outbreak events have occurred in Vermont:

1918, 1957, 1968 – Pandemic Influenza
2009 – H1N1 strain
2015 – Sika virus
2020 – COVID-19

Town Vulnerability:

People: People with disabilities, access and functional needs may be most vulnerable to disease outbreak events. A disease outbreak event can impact any person.

Built environment: A disease outbreak can cause a strain on local health care facilities. Additionally, facilities may need to be modified to respond to the crisis (e.g., school turned into a triage center).

Natural environment: Infectious disease outbreak events can originate from local environments (e.g., farms, lakes, etc.) and mitigative measures may need to be taken to prevent future spread (e.g., treatment of a body of water).

Economy: Infectious disease outbreak events can cause economic impacts to the town. Impacts include disruption or closure of impacted businesses, and costs to operate immunization clinics.

Potential Future Impacts:

Climate Change: Climate change has the potential to increase the frequency and intensity of disease outbreak events through various mechanisms. Temperature changes may increase vector-borne disease and pathogen survival. Extreme weather events (e.g., hurricanes) can disrupt infrastructure, leading to breakdowns in sanitation, clean water supply, and healthcare services. Climate-induced displacement and migration can lead to overcrowded living conditions, which can facilitate the spread of infectious diseases.

Change in Land

Use/Development: No changes to asset impacts due to infectious disease outbreak events because of development or land use changes could be identified.

Change in Demographics: Bristol's population demographics are not expected to change significantly in the next five years, though an increase in the average age of the population may increase the vulnerabilities of the population.

Drought

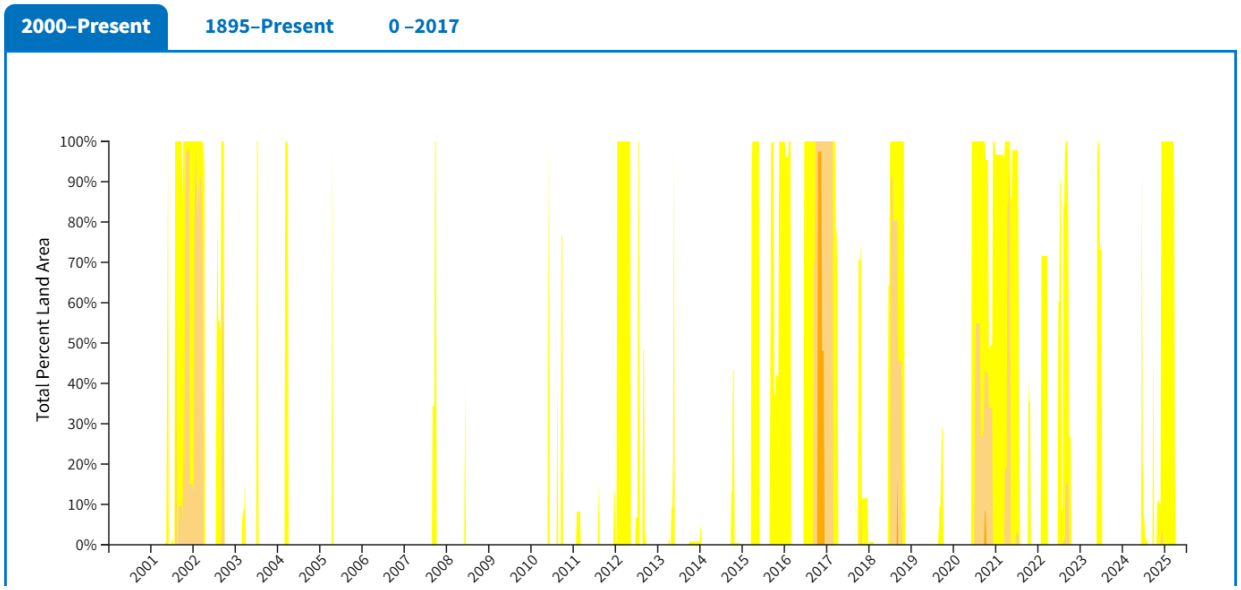
Hazard Description: Taking from the 2023 State Hazard Mitigation Plan "Drought is a deficiency of moisture that results in adverse impacts on people, animals, or vegetation over a sizeable area (NOAA National Weather Service) or a period of abnormally dry weather sufficiently long enough to cause a serious hydrological imbalance (American Meteorological Society)."

Droughts in the Northeast tend to be, what are referred to as "flash" droughts, defined as rapid onset of intense dry periods that can follow periods of normal or above normal precipitation. These may last from 2-6 months, and can have profound impacts within the region, on agricultural losses, shortages of water supply and very low stream flows. This pendulum often swings from a dry year to a wet year.

Hazard Extent: Droughts can affect large geographic regions, including urban and rural areas, agricultural lands, forests, and waterways. Drought severity is often categorized based on indicators such as precipitation deficits, soil moisture levels, streamflow, and water storage reservoir levels. Severe droughts can lead to significant water shortages, ecological disturbances, and socio-economic impacts. Severe droughts can result in reduced water availability for drinking, irrigation, and industrial uses, leading to economic losses, environmental degradation, and social disruption.

Hazard Location: All areas of Bristol, Orange County and the State are susceptible to drought events.

Hazard History: There have been 3 instances of D2 (Severe Drought) level droughts in Addison County Vt since 2000. One longer event in 2016 and then two short events in 2018 and 2020.



Category	Description	Possible Impacts
D0	Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures Coming out of drought: some lingering water deficits pastures or crops not fully recovered
D1	Moderate Drought	Some damage to crops, pastures Streams, reservoirs, or wells low, some water shortages developing or imminent Voluntary water-use restrictions requested
D2	Severe Drought	Crop or pasture losses likely Water shortages common Water restrictions imposed
D3	Extreme Drought	Major crop/pasture losses Widespread water shortages or restrictions
D4	Exceptional Drought	Exceptional and widespread crop/pasture losses Shortages of water in reservoirs, streams, and wells creating water emergencies

Town Vulnerability:

People: Droughts can cause issues to homeowner's wells, leading to compromised drinking water, which could result in health issues.

Built environment: Droughts are not likely to cause new well or replace well parts.

Natural environment: Droughts can cause minor to catastrophic issues for the natural environment. Local wild plants and crops may be lost during a prolonged drought event. Additionally, a drought can lead to streams and groundwater being depleted, which impacts wild and domesticated animals.

Economy: Droughts can impact the tourism industry, with depleted streams or areas for water activity. Additionally, droughts may impact 'leaf peeping season.'

Potential Future Impacts:

Climate Change: Climate change has the potential to increase extreme heat occurrences, therefore there is an increased likelihood of future drought events, both in frequency and magnitude.

Change in Land Use/Development: No changes to asset impacts due to drought events because of development or land use changes could be identified.

Change in Demographics: Bristol's population demographics are not expected to change significantly in the next five years, though an increase in the average age of the population may increase the vulnerabilities of the population.

Ice

Hazard Description: Ice events include ice storms, freezing rain, sleet, and ice accumulation on surfaces. Ice accumulation occurs when rain falls through a layer of subfreezing air near the surface, causing it to freeze on contact with surfaces. Sleet involves small ice pellets that bounce upon hitting the ground, while freezing rain creates a glaze of ice. Snow hazards include heavy snowfall, blizzards, and snowdrifts. Snow events vary in intensity and duration, from light snowfalls to severe blizzards with high winds and significant accumulation. With the almost annual occurrence of a significant snow, the probability of ice has dropped significantly over the years, however, if it were to occur the town feels an impact most on the infrastructure of the community. The town is able to keep the roads open and treated for most storms and any loss of power is usually limited to hours.

Hazard Extent: Ice accumulation can range from a light glaze (less than 0.25 inches) to significant buildup (greater than 0.50 inches). Severe ice storms can lead to widespread damage.

Hazard Location: All areas of Bristol can be affected by ice events.

Hazard History: Even in 1998 when a severe ice storm hit much of northern Vermont, fortunately, the Town of Bristol was spared the brunt of the damage due to micro-climate differences from its neighboring communities.

Probability of Future Events

Ice events in Bristol are considered Unlikely to Occasional, defined as a <1% to 10% probability of occurrence per year, or at least one chance in the next 100 years. Although Bristol has not experienced ice, with climate variability and predicted increase in the frequency of winter storms, ice events could be expected. Winter storms and higher temperatures may increase the frequency of future events.

Potential Future Impacts:

Climate Change: Climate change significantly affects weather patterns, including the frequency, intensity, and geographic distribution of ice events. These changes can increase frequency and intensity of ice storms lead to more ice accumulation, and reduce snowpack.

Change in Land Use/Development: No changes to asset impacts due to ice events as a result of development or land use changes could be identified.

Change in Demographics: Bristols's population demographics are not expected to change significantly in the next five years, though an increase in the average age of the population may increase the vulnerabilities of the population.

Vulnerability Summary

- Utilities within forested areas, many along narrow, tree-lined roads.
- Emergency response may be delayed due to limited road access.
- Accumulation on tree limbs could cause them to break off and fall impacting tree/forest health.

Mitigation Measures

- Continue tree trimming and debris clearing on town rights-of-way.
- Encourage defensible space around structures.
- Provide community education via Conservation Commission events.

Earthquake

Hazard Description: According to the USGS, an earthquake occurs when two blocks of the Earth suddenly slip past one another along what is called a fault or fault plane. As the two blocks slide, stored energy is released producing radiating seismic waves that result in an earthquake. The location below the Earth's surface where the earthquake starts is called the hypocenter, and the location directly above it on the surface of the Earth is called the epicenter.

In the 2018 plan, earthquakes were rated as a high hazard since the state is classified as an area with moderate seismic activity, the lack of residential building codes and older brick buildings within the village business district are vulnerable. The hazard ranking for warning time and geographic impacts and property damage were rather high. While the Earthquake ranked high in 2018, the Town did not believe that the risk was large enough to require town building retrofits at that time. This prioritization remains the case in the updated plan and the Earthquake risk scoring and rank was corrected to reflect this assessment of risk to assets.

In the 2025 plan, earthquakes were decided by the planning team to be outside of the realm of justification within our region for mitigation actions. Earthquakes even though experienced also are historically small in Vermont do occur but were deemed to be of minimal threat and with no building codes basically impossible for a town to develop effective mitigation strategies.

Hazard Extent: Bristol has felt earthquakes originating in New York and Quebec ranging from 5.0 to 5.5 on the Richter Scale.

Hazard Location: Earthquakes can occur anywhere in Bristol, Addison County or in the State of Vermont.

Hazard History: Sixty-four known or possible earthquakes have been centered in Vermont since 1843 *(Ebel et al. 1995).* The two strongest recorded quakes measured in Vermont were of a magnitude 4.1 on the Richter scale. One was centered in Swanton and occurred on July 6, 1943, and the second occurred in 1962 in nearby Middlebury. The Swanton quake caused little damage, but the Middlebury quake did result in broken windows, cracked plaster and falling objects *(VEM, 1995).*

Earthquakes centered outside the state have also occasionally been felt in Vermont. Twin quakes of 5.5 occurred in New Hampshire in 1940. In 1988, an earthquake with a magnitude 6.2 on the Richter scale took place in Saguenay, Quebec and caused shaking in the northern two thirds of Vermont (*Ebel et al. 1995).*

In May 2001 and again in the summer of 2010, earthquakes in the 5.0-5.5 range have been felt in Bristol with epicenters in New York and Quebec respectively.

Probability of Future Events
The USGS database shows there is a 2.26% probability of an earthquake measuring 5.0 or above within 31 miles of the Town of Bristol in the next 50 years.

Vulnerability Summary

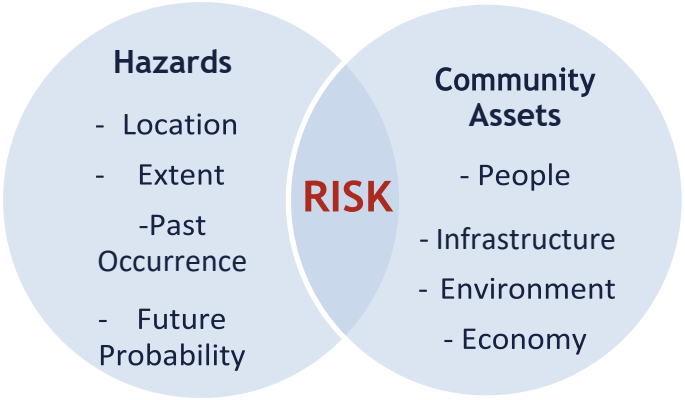
- Buildings are vulnerable to damage due to the age of many in the area and the lack of statewide residential building codes
- Emergency response may be delayed due to the structure debris in the roadways.
- People within buildings are vulnerable to injury from damaged buildings

Potential Future Impacts:
Climate Change: Climate change primarily affects atmospheric and oceanic processes, but there is emerging evidence suggesting that it can indirectly influence seismic activity, including earthquakes. It is not currently possible to predict when or where an earthquake may occur.
Change in Land Use/Development: No changes to asset impacts due to earthquakes as a result of development or land use changes could be identified.

Change in Demographics: Bristol's population demographics are not expected to change significantly in the next five years, though an increase in the average age of the population may increase the vulnerabilities of the population.

Mitigation Measures

- Conduct seismic analyses of critical infrastructure
- Consider retrofitting existing structures for seismic activity
- New structures may have structural components for seismic activity



- -NOAA 2022 Vermont Climate summary

The Hazard Identification and Risk Assessment is the foundation for the Mitigation Strategy to reduce future risk.

Vulnerability Summary	
Invasive Species **Vulnerable Assets:** highway infrastructure; power and telecommunication systems, trees; **Location:** Town and region wide **Extent:** Acres of tree loss; acres of inundation **Past Occurrence:** 1900s Dutch Elm, 2017 Emerald Ash borer, hemlock wolly adelgid in 2007; Japanese knotweed 1900s **Future Probability:** 75% probability in a year	**Wind** **Vulnerable Assets:** people (especially older adults, children, and sick); highway infrastructure; power and telecommunication systems, trees; public water systems; buildings; local businesses **Location**: Town and region wide; Town Office, School **Extent**: up to 68 mph **Past Occurrence**: $100,000 regional damage **Future Probability**: 75% probability in a year
Extreme Cold and Snow **Vulnerable Assets:** people (especially older adults, children, and sick); highway infrastructure; public water and wastewater systems; trees; local businesses; power and telecommunication systems **Location:** Town-wide; various daycare facilities listed in the LEMP, The Evergreens Private Senior Care Home; Blaises Riverside, Maple Ridge, Lauritsen, Kountry Trailer manufactured home communities; Upper Notch Rd, Briggs Hill Rd, Meehan Rd **Extent:** 15-20+ days below zero; up to 26" of snow; up to 2" of ice **Past Occurrence:** See history table; >$400,000 Regionally **Future Probability:** 75% probability in a year	**Floods** **Vulnerable Assets:** people (especially older adults, children, and sick); highway infrastructure; buildings; public water and wastewater systems; dams; local businesses; power and telecommunication systems **Location:** Inundation Flooding: along New Haven River,Norton Brook, and Winona Lake; Blaises Riverside manufactured home community Flash Flooding: Lower notch road and VT 116 ability to respond Fluvial Erosion spots – see Table 6 **Extent**:±5" rain; extent data for fluvial erosion unavailable **Past Occurrence**: See history table; $252,898 locally / $3.6 Million Regionally **Future Probability**:<75% probability in a year
Landslide/Slope Failure **Vulnerable Assets:** people (especially older adults, children, and sick); highway infrastructure; buildings; public water and wastewater systems; waterways; dams; local businesses; power and telecommunication systems **Location:** Briggs Hill Rd, Upper Notch Rd, see Table 6 for further roads along streams that are vulnerable **Extent**: extent data for landslides is unavailable **Past Occurrence**: 2024, 2018, 2019, 1998 **Future Probability**:>10% but <75% probability in a year	

6 HAZARD MITIGATION STRATEGY

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

Mitigation Goals

The Hazard Mitigation Planning Team identified the following as the community's primary mitigation goal:

The Town of Bristol has identified that its goals for hazard mitigation are to reduce and/or avoid all long and short-term vulnerabilities to the hazards by protecting the health and safety of the public; protect existing and new properties and structures; Reduce impacts to residents and local industry and provide for the outdoor recreational safety of the public. By Increasing the Town of Bristol's resilience to natural hazards in advancing mitigation investment to reduce or avoid long-term risk to people, homes, neighborhoods, the local economy, cultural and historic resources, ecosystems, and Community Lifelines such as transportation, water, sewer, energy, and communications.

See Community Survey Results in **Appendix C** for which assets survey respondents' thought were most important to protect against potential future severe weather impacts.

Community Lifelines

Community Lifelines enable the continuous operation of critical government and business functions and are essential to human health and safety or economic security. The goal of the lifeline concept is to focus response efforts on stabilizing or re-establishing these most fundamental services during and after a disaster. Mitigating lifelines should reduce cascading impacts across government and business functions and lessen system-wide damage.



1. Law Enforcement
2. Fire Service
3. Search & Rescue
4. Government Service
5. Community Safety



1. Highway/Road/Motor Vehicle
2. Mass Transit
3. Railway
4. Aviation
5. Maritime



1. Medical Care
2. Public Health
3. Patient Movement
4. Medical Supply Chain
5. Fatality Management



1. Infrastructure
2. Responder Communications
3. Alerts, Warnings, & Messages
4. Finance
5. 911 & Dispatch







1. Food 2. Water 3. Shelter 4. Agriculture	1. Power Grid 2. Fuel	1. Facilities HAZMAT, Pollutants, Contaminants

Community Capabilities

Administrative and Technical

This capability refers to the Town's staff and their skills and tools that can be used for mitigation planning and to implement actions.

In addition to the Emergency Management staff described in Section 3, municipal staff that can be used for mitigation planning and to implement specific mitigation actions include: Town Treasurer, Town Clerk, Assistant Town Clerk, Planning and Zoning Administrator, Recreation Director, and Public Works Foreman.

In addition to paid staff, there is a 5-member Selectboard, 9-member Planning Commission, 7-member Energy Committee, Fire Warden, Town Health Officer, 9-member Conservation Commission, and Constable.

To augment local resources, the Town has formal and informal Fire and Public Works mutual aid agreements for emergency response. Technical support is available through the Addison County Regional Planning Commission (ACRPC) in the areas of land use planning, emergency management, transportation, GIS mapping, and grant writing. Technical support is also available through the State ANR for floodplain bylaw administration and VTrans Districts for hydraulic analyses.

Strengths community with a family atmosphere committed small core of volunteers involved in several committees and groups strong interdepartmental communication and cooperation

Areas for Improvement potential candidates for volunteering is limited small pool of volunteers creates burn out and limited time commitments. Separate EMD and Town Administrator roles. Fill Emergency Management Coordinator position.

Planning and Regulatory

These capabilities are the plans, policies, codes, and ordinances that prevent and reduce the impacts of hazards. Examples of planning capabilities that can either enable or inhibit mitigation include land use plans, capital improvement programs, transportation plans, stormwater management plans, disaster recovery and reconstruction plans, and emergency preparedness and response plans. Examples of regulatory capabilities include the enforcement of zoning ordinances, subdivision regulations, and building codes3 that regulate how and where land is developed, and structures are built.

Bristol does not have any local building codes. Vermont has adopted statewide codes for commercial building fire safety and energy standards. The energy code also applies to residential buildings. Codes enforced by Vermont's Division of Fire Safety are the 2015 National Fire Protection Association (NFPA) 1 Fire Code; 2015 NFPA 101 Life Safety.

Town Plan: 2020-2028
Description: A framework and guide for how future growth and development should proceed.

Relationship to Natural Hazard Mitigation Planning: Includes goals and policies related to flood resilience and land use.

Zoning Ordinance with Flood Hazard Area and River Corridor Overlay District Requirements: June 2021
Description: Provides for orderly community growth promoting the health, safety, and general welfare of the community.

Relationship to Natural Hazard Mitigation Planning: Establish site plan review requirements and zoning districts, including Flood Hazard and River Corridor Overlay Districts, with specific standards for proposed development. Requirements are designed to prevent overdevelopment; to mitigate negative impacts to the natural and human environment; minimize effects to the historical and aesthetic character of the community; and ensure design and construction of development in flood and other hazard areas are accomplished in a manner that minimizes or eliminates the potential for flood loss or damage to life and property.

Road and Bridge Standards: July 2019
Description: Provide minimum codes and standards for construction, repair, maintenance of town roads and bridges.

Relationship to Natural Hazard Mitigation Planning: Standards include management practices and are designed to ensure travel safety, minimize damage to road infrastructure during flood events, and enhance water quality protections.

Road Erosion Inventory Report: 2019
Description: Prioritizes those infrastructure projects necessary to improve transportation network resiliency and water quality.

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

Local Emergency Management Plan: April 2024
Description: Establishes lines of responsibility and procedures to be implemented during a disaster and identifies high risk populations, hazard sites, and available resources.

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

Capital Improvement Plan
Description: Implement capital improvement plan for improved planning and budgeting of town's transportation network and assets

Strengths plans and regulations in place are being executed; keep plans and regulations up to date strong local partners in implementing plans; Draft CIP does integrate other plans

Areas for Improvement
Review plans and identify areas for integration; Planning commission considering fluvial erosion hazard areas

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

Bristol's 2024-2025 town budget is $3,425,371 with $912,544 to fund the Highway/Public Works Department, $340,912 to fund the Fire Department, and $572,000 allocated to several capital improvement funds. The $626,628 Police Department is derived from a Police District property tax, fees for services, and grants. In addition to property tax revenues, the Town also collects separate fees for various services and aggressively seeks grants. Application fees for services,

Strengths well-funded budgets; Town just developed its first CIP – statutory adoption in process; A robust Designated Downtown.

Areas for Improvement Continue to develop budgets based on the Capital Improvement Plan

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

Conservation Commission invasive hazards -Invasive species outreach and education

Residents to adopt mitigation actions to protect personal property

- activities intended to inform and remind people about hazardous areas and the measures to avoid potential damage and injury. Examples are: Outreach projects, Real estate disclosure, Technical assistance, Community education programs.
- Annual report for fire department outreach
    - Smoke detector installations
    - Drives for volunteers to join
    - Website and social media for burn permits and fire prevention
- FD does an annual community day
- Town office also uses social media for public outreach

Strengths multiple programs/organizations are already in place in the community particularly strong online and social media presence

Areas for Improvement better coordination needed to help implement future mitigation activities leverage communication tools

National Flood Insurance Program
The Town joined the National Flood Insurance Program (NFIP) in 1986. The effective date of the current Flood Insurance Rate Map (FIRM) is August 28, 2008.

The Town of Bristol is a member in good standing of the National Flood Insurance Program. There are 8 structures in town that have policies under the NFIP. These structures represent $1,447,900 in total coverage in the community. A total of $26,096.36 has been paid out to NFIP policy owners since 1978. Due to FEMA Region I concerns related to personally identifiable information (PII), NFIP repetitive loss and severe repetitive loss information is unavailable for this plan update.

The Town of Bristol has adopted floodplain regulations within the Unified Development Regulations (UDR) which are administered by the Planning & Zoning Administrator along with the NFIP compliance through permit review requirements in the UDR. All zoning applications are reviewed against a map that has the FIRM superimposed over the zoning districts. The regulations also require administering Substantial Improvement and Substantial Damage (SI/SD) requirements in accordance with FEMA P-758 SI/SD Desk

Reference, May 2010: in accordance with 24 V.S.A. § 1972 and 24 V.S.A. § 4461 and shall be used to determine the appropriate development standards for repair and rebuilding.

The Town of Bristol has been active in mitigating some of its hazards by utilizing available FEMA mitigation funds to complete buyouts of at-risk residences. Following the 1998 flooding, multiple homes were purchased in the "Tin City" area, removed, and the space converted into "Sycamore Park," which serves as an education and recreation area for the town.

The Town of Bristol has also adopted road and bridge standards as recommended by VT Agency of Transportation (VTrans). These documents address road and bridge construction standards designed to mitigate local traffic issues and are particularly designed to mitigate potential damage due to flooding and flash flooding. The standards address culvert sizing, ditch treatments and driveway access to reduce flood caused erosion.

The Town supports continued compliance with the NFIP and would support Community Rating System (CRS) improvements where the benefits to the town's residents would outweigh the costs of additional administration and compliance. The Town also supports buyouts where this solution is economically feasible and supported by the landowners.

State Incentives for Flood Mitigation
Vermont's Emergency Relief Assistance Funding (ERAF) provides state funding to match FEMA Public Assistance after federally declared disasters. Eligible public costs are generally reimbursed by FEMA at 75% with a 7.5% State match. The State will increase its match to 12.5% or 17.5% if communities take steps to reduce flood risk as described below.

12.5% funding for communities that have adopted four (4) mitigation measures:
1) NFIP participation;
2) Town Road and Bridge Standards;
3) Local Emergency Plan; and
4) Local Hazard Mitigation Plan.

17.5% funding for communities that also participate in FEMA's Community Rating System OR adopt Fluvial Erosion Hazard or other river corridor protection bylaw that meets or exceeds the Vermont ANR model regulations.

Bristol's current ERAF rate is 7.5%. Upon adoption of the 2025 Local Hazard Mitigation Plan, ERAF Rate Actions 1-4 will be up to date and therefore their ERAF rate will increase to 12.5%.

Hazard Mitigation Action Identification

The Hazard Mitigation Planning Team discussed the mitigation strategy, reviewed projects from the 2018 Plan, and identified possible new actions from the following categories for each of the highest risk natural hazards identified in Section 5.
Local Plans & Regulations These actions include government authorities, policies, or codes that influence the way land and buildings are developed and built.

Structure & Infrastructure Projects These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This applies to public or private structures as well as critical facilities.

Natural Systems Protection These actions minimize damage and losses and preserve or restore the functions of natural systems.

Outreach & Education Programs These actions inform and educate the public about hazards and potential ways to mitigate them. Although this type of action reduces risk less directly than structure projects or regulation, it is an important foundation. Greater awareness is more likely to lead to community support for direct actions.

Local Plans & Regulations Examples

Integrate Mitigation into Capital Improvement Programs: Incorporate risk assessment and hazard mitigation principles into capital planning.

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

Develop a Road Right-of-Way Vegetation Management Plan: Identify community priorities and plan of action for site-specific tree and roadside forest management to increase roadside resilience.

Improve Flood Resilience with a Flood Study: The aim of a flood study is to define existing flood behavior for a particular catchment, river, or creek. The study helps inform building, land use planning, community awareness and disaster management.

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

Manage Development in Erosion Hazard Areas: The intent of River Corridor Bylaws is to allow for wise use of property within river corridors that minimizes potential damage to existing structures and development from flood-related erosion.

Structure & Infrastructure Project Examples

Protect Power Lines: Protect power lines by 1) inspecting and maintaining hazardous trees in the road right-of-way and 2) burying power lines.

Protect Critical Roadways: Use snow fences or living snow fences (e.g., rows of trees) to limit blowing and drifting of snow.

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

Remove Existing Structures from Flood Hazard Areas: FEMA policy encourages the removal of structures from flood-prone areas to minimize future flood losses and preserve lands subject to repetitive flooding.

Improve Stormwater Drainage Capacity: Minimize flooding and fluvial erosion by 1) increasing drainage/absorption capacities with green stormwater management practices; 2) increasing dimensions of undersized drainage culverts in flood-prone areas; 3) stabilizing outfalls with riprap and other slope stabilization techniques; and 4) re-establishing roadside ditches.

Conduct Regular Maintenance for Drainage Systems: Help drainage systems and flood control structures function properly with 1) routine cleaning and repair; 2) cleaning debris from support bracing underneath low-lying bridges; and 3) inspecting bridges and identifying if any repairs are needed to maintain integrity or prevent scour.

Protect Infrastructure and Critical Facilities: Minimize infrastructure losses and protect critical facilities from flooding by 1) elevating roads above base flood elevation to maintain dry access; 2) armoring streambanks near roadways to prevent washouts; 3) rerouting a stream away from a vulnerable roadway; and 4) floodproofing facilities.

Natural Systems Protection Examples

Protect and Restore Natural Flood Mitigation Features: Natural conditions can provide floodplain protection, riparian buffers, groundwater infiltration, and other ecosystem services that mitigate flooding. Preserving such functionality is important. Examples include 1) adding riparian buffers; 2) stabilizing stream banks; 3) removing berms; 4) minimizing impervious area development; 5) restore floodplain; and 6) restore incision areas.

Outreach & Education Program Examples

Educate Residents about Extreme Winter Weather: Winter storms create a higher risk of car accidents, hypothermia, frostbite, carbon monoxide poisoning, and heart attacks from overexertion. Educational outreach can help minimize these risks.

Assist Vulnerable Populations: Measures can be taken to protect vulnerable populations from natural hazards, such as 1) organizing outreach and 2) establishing and promoting accessible heating or cooling centers in the community.

Mitigation Action Evaluation

For each mitigation action identified, the Planning Team evaluated its potential benefits and/or likelihood of successful implementation. Actions were evaluated against a range of criteria, including a planning level assessment of whether the costs are reasonable compared to the probable benefits. Results of this evaluation are presented in **Table 7**.

Mitigation Action Evaluation and Prioritization

After careful evaluation, the Planning Team agreed on a list of actions that support the Mitigation Goals of this Plan and are acceptable and practical for the community to implement.

For the selected actions, the Planning Team then 1) assigned a responsible party to lead the completion of each action; 2) identified potential grant funding; 3) defined a timeframe for implementation; and ranked each action's priority (high, medium, low).

Natural hazards pose a unique threat to the Town's vulnerable populations. Data has shown that underserved and marginalized populations tend to live in at-risk hazard-prone areas or in homes with substandard construction. The data also suggests that this segment of the community is less likely to fully recover after a disaster.4 When ranking an action's priority, those that directly benefit a vulnerable population were ranked high.

Table 7 – Mitigation Actions Evaluation

Mitigation Actions	Life Safety	Prop Protect	Tech	Political	Admin	Other Obj	Benefit Score	Est Cost	C/B
Local Plans & Regulations									
Recommended for Implementation									
Integrate Mitigation into Capital Improvement	1	1	1	1	1	1	6	1	Yes
Update Road Erosion and Culvert Inventories	1	1	1	1	1	1	6	1	Yes
Plan for Road Right-of-Way Vegetation and General Tree Management	1	1	1	1	0	1	5	1	Yes
Town office roof is slate and on the national registry – implement better maintenance practices – snow/wind/ice	1	1	1	1	1	1	6	1	yes
USGS study for FEMA update the flood hazard area for the New Haven River	1	1	1	1	1	1	6	N/A	Yes
Adopt Flood Hazard Area and/or River Corridor Bylaws	1	1	1	1	1	1	6	1	Yes
New Haven River Study	1	1	1	1	1	1	6	2	Yes
Explore alternatives to replace west end of Briggs Hill Rd	1	1	1	1	1	1	6	3	Yes
Harvey Rd class 4 bridge upgrade to class 3	1	1	1	1	1	1	6	3	Yes
New public works facility design	1	1	1	1	1	1	6	3	Yes
identify plan for future gravel source	1	1	1	1	1	1	6	1	Yes
Bank Stabilization Scoping Study	1	1	1	1	0	1	5	1	Yes
Structure & Infrastructure Projects									
Recommended for Implementation									
Protect Power Lines and Roads by Inspecting and Removing Hazardous Trees in Road ROW	1	1	1	1	1	1	6	1	Yes
Communications Tower for Fire Department	1	1	1	1	1	1	6	2	Yes
Increase Drainage/Absorption Capacities with Green Stormwater Management Practices	1	1	1	1	1	1	6	1	Yes
Install/Re-establish Roadside Ditches	1	1	1	1	1	1	6	1	Yes
Routinely Clean and Repair Stormwater Infrastructure- Basin Street	1	1	1	1	1	1	6	1	Yes
Implement Capital Improvement Plan projects	1	1	1	1	1	1	6		Yes

New public works facility	1	1	1	1	1	1	6	3	Yes
Waterline upgrade pressurizing for replacing 1905 waterlines over the next 6 years - insuring hydrants are pressurized potential undermining and sinkholes	1	1	1	1	1	1	6	3	Yes
Install Back-up Power at Critical Facilities	1	1	1	1	1	1	6	2	Yes
Town office roof is slate and on the national registry – implement better maintenance practices – snow/wind/ice	1	1	1	1	1	1	6	2	Yes
Natural Systems Protection									
Recommended for Implementation									
Implement natural systems projects from New Haven River Study	1	1	1	1	1	1	6	3	Yes
Explore or consider Buyouts Near river and VT 116 near sycamore park/At the bottom Basin St abandoned home (98 and TS 11)/Rockydale area including - the mobile home park	1	1	1	-1	1	1	4	3	Yes
Outreach & Education Programs									
Recommended for Implementation									
Practices for town properties that private homeowners could implement	1	1	1	1	1	1	6	1	Yes
VTalert	1	1	1	1	1	1	6	1	Yes

Table 7 Evaluation Criteria:
Life Safety –Will the action be effective at protecting lives and preventing injuries?
Property Protection –Will the action be effective at eliminating or reducing damage to structures and infrastructure?
Technical – Is the action a long-term, technically feasible solution?
Political – Is there overall public support/political will for the action?
Administrative – Does the community have the administrative capacity to implement the action?
Other Community Objectives – Does the action advance other community objectives, such as capital improvements, economic development, benefit a vulnerable population, environmental quality, or open space preservation?
Rank each of the above criteria in Table 5 with a -1, 0, or 1 using the following table:
1 = Highly effective or feasible
0 = Neutral
-1 = Ineffective or not feasible
Estimated Cost – 1 = less than $50,000; 2 = $50,000 to $100,000; 3 = more than $100,000
C/B – Are the costs reasonable compared to the probable benefits? Yes or No

Table 8: Mitigation Action Plan

Integrate and Implement Mitigation into Capital Improvement: The Town is in the process of creating a Capital Improvement plan, the natural next step is to ensure this plan integrates with the LHMP mitigation activities.

Addressed Hazards: Floods; Landslide/Rockslide
Type of project: Local Plans & Regulations
Community Lifelines Targeted: Safety & Security ; Transportation
Area of Impact: Town wide CIP projects
Lead Party: Planning Commission
Grant Funding Source: Town General Operating Budget; VTrans Grants; VEM Hazard Mitigation
Partnerships: None
Project Timeframe: Complete integration by 2025; Construction ongoing 2025-2029
Prioritization: High

Update Road Erosion and Culvert Inventories: These inventories were completed in 2017 and 2022 and serve as the basis for asset management and should be kept up-to-date annually, with a full reassessment every 5 years.

Addressed Hazards: Floods; Landslide/Rockslide
Type of project: Local Plans & Regulations
Community Lifelines Targeted: Safety & Security ; Transportation
Area of Impact: Town wide road network and culverts
Lead Party: Public Works Department
Grant Funding Source: Town Public Works Department Fund; VTrans Grants; VEM Hazard Mitigation
Partnerships: None
Project Timeframe: Complete by 2027
Prioritization: Medium

Road Right-of-Way (ROW) Vegetation Management and General Tree Plan: Hazard trees in the road ROW can contribute to power and communication outages as well as debris in the roadway during winter storms and wind events. This hazard is exacerbated by the possibility of Emerald Ash Borer infestation. To increase roadside resilience, Bristol will develop a plan to 1) identify community priorities and 2) define a plan of action for site-specific tree and roadside forest management.

Addressed Hazards: Wind; Extreme Cold and Snow; Ice; Wildfire; Drought
Type of project: Local Plans & Regulations
Community Lifelines Targeted: Energy; Communications; Transportation
Area of Impact: Town wide road network
Lead Party: Tree Committee
Grant Funding Source: Town General Operating Budget
Partnerships: None
Project Timeframe: Complete by 2026
Prioritization: Medium

Town Office Slate Roof Maintenance Plan and Implementation: The Town Office is on the National Registry of Historic buildings and therefore must maintain the building in such a way to meet the criteria.

The Town needs to develop and implement a plan to maintain the slate roof and keep it resilient to the effects of wind and cold.

Addressed Hazards: Wind; Extreme Cold and Snow; Ice
Type of project: Local Plans & Regulations
Community Lifelines Targeted: Safety & Security
Area of Impact: Town Office
Lead Party: Recreation Department
Grant Funding Source: Town General Operating Budget; National Registry Grants
Partnerships: None
Project Timeframe: Complete by 2026
Prioritization: Medium

USGS Study for FEMA Update of Flood Hazard Area: The Town is considering amending the zoning bylaws and would like access to the latest FEMA flood maps for the amendments being proposed.

Addressed Hazards: Floods; Landslid/Rockslide
Type of project: Local Plans & Regulations
Community Lifelines Targeted: Safety & Security; Transportation
Area of Impact: Townwide development
Lead Party: FEMA/USGS
Grant Funding Source: N/A – FEMA funded
Partnerships: ACRPC; VCGI; VEM
Project Timeframe: Completion anticipated January 1, 2027
Prioritization: High

Adopt Flood Hazard Area/River Corridor Bylaws: Act 121 requires ANR to update river corridor maps and requires towns with existing flood hazard bylaws to update them to the new standards that will be released by the state by 1 January 2028. (page 25). The Town will review and consider adopting River Corridors

Addressed Hazards: Floods; Landslide/Rockslide
Type of project: Local Plans & Regulations
Community Lifelines Targeted: Safety & Security; Transportation
Area of Impact: Townwide flood prone areas and river corridors
Lead Party: Planning Commission (LEAD)/Selectboard
Grant Funding Source: Town General Operating Budget
Partnerships: ANR; ACRPC
Project Timeframe: 2028
Prioritization: Medium

New Haven River Study and Implementation: Grant from ACRPC to study 1 mile New Haven River downstream of Hewitt Rd. Develop natural systems projects to improve water quality and flood resiliency – lead to specific strategies - alternatives analysis to include FP restoration/buyouts/berm removals restoration and conservation.

Addressed Hazards: Floods; Landslide/Rockslide
Type of project: Local Plans & Regulations; Natural Systems Protection
Community Lifelines Targeted: Safety & Security; Transportation
Area of Impact: New Haven River corridor
Lead Party: Conservation Commission

Grant Funding Source: Grant through ACRPC
Partnerships: ACRPC
Project Timeframe: 2026 complete study; implementation 2028
Prioritization: Medium

Identify Plan for Future Gravel Source: Like many Towns in Vermont, Bristol will lose their source of gravel within a few years. The Town will initiate the planning process to identify future gravel sources to ensure their resiliency to road damage after flash flood events.

Addressed Hazards: Floods; Landslide/Rockslide
Type of project: Local Plans & Regulations
Community Lifelines Targeted: Safety & Security; Transportation
Area of Impact: Townwide road network
Lead Party: Public Works Department; Selectboard (LEAD)
Grant Funding Source: Town General Operating Budget
Partnerships: ACRPC; ANR
Project Timeframe: 2028
Prioritization: Medium

Protect Power Lines and Roads by Inspection and Removing Hazardous Trees in Road ROW:

Addressed Hazards: Wind; Extreme Cold and Snow; Ice; Wildfire; Drought
Type of project: Structure & Infrastructure
Community Lifelines Targeted: Safety & Security; Transportation
Area of Impact: Townwide road network
Lead Party: Public Works Department
Grant Funding Source: Town Public Works Department Fund
Partnerships: Green Mountain Power
Project Timeframe: Annually 2025-2029
Prioritization: High

Increase Drainage/Absorption Capacities with Green Stormwater Management Practices: Green infrastructure uses vegetation, soils, and other elements and practices to restore some of the natural processes required to manage stormwater. Bristol has identified the following projects.

Addressed Hazards: Floods: Landslide/Rockslide
Type of project: Structure & Infrastructure
Community Lifelines Targeted: Safety & Security; Transportation
Area of Impact: Munsill Ave; Basin St
Lead Party: Public Works Department
Grant Funding Source: Town Capital Roads reserve; downtown transportation grant, VTrans transportation alternatives, clean water/stormwater management grants
Partnerships: VTrans; ACRPC
Project Timeframe: 2027
Prioritization: Medium

Install/Re-establish Roadside Ditches: Properly installed and stabilized roadside ditches are critical to protect the integrity of the road. Bristol has an extensive network of ditches, with only 56 road segments

with ditches that must be improved to current municipal Road Standards. Of these, 14 are very high priority, 17 high priority, and 25 moderate priority.

Addressed Hazards: Floods; Landslide/Rockslide
Type of project: Structure & Infrastructure
Community Lifelines Targeted: Safety & Security; Transportation
Area of Impact: See MRGP Road Erosion Inventory for non-compliant road segments
Lead Party: Public Works Department
Grant Funding Source: Town Public Works Department Fund; VTrans Grants
Partnerships: ANR Municipal Roads Program
Project Timeframe: See MRGP Improvement Schedule
Prioritization: High

Communications Tower for Fire Department: Install a communications tower for the fire department radio. Contingent on finding a location if the current zoning height ordinance does not change. This tower is needed to aid in communications during response and recovery to hazards is more efficient and effective to potentially reduce the extent of damages and ensure communication and documentation is collected and distributed consistently.

Addressed Hazards: Invasive Species; Wind; Extreme Cold and Snow; Floods; Landslide/Rockslide; Heat; Wildfire; Infectious Disease; Drought; Ice; Earthquake
Type of project: Structure & Infrastructure
Community Lifelines Targeted: Safety & Security; Communication
Area of Impact: Town wide
Lead Party: Fire Department
Grant Funding Source: Town General Operating Budget; VEM/Homeland Security grant
Partnerships: None
Project Timeframe: 2026
Prioritization: High

Routinely Clean and Repair Stormwater Infrastructure: Regular maintenance is one of the most effective ways to mitigate the impacts of floods. Routine cleaning and repairs of catch basins, ditches, and culverts will be done according to the Highway Department's maintenance schedule and the Municipal Roads General Permit (MRGP).

Addressed Hazards: Floods
Type of project: Structure & Infrastructure
Community Lifelines Targeted: Safety & Security; Transportation
Area of Impact: Town wide catch basins, road network, and culverts
Lead Party: Public Works Department
Grant Funding Source: Town Public Works Department Fund
Partnerships: ANR Municipal Roads Program
Project Timeframe: Annually 2025-2029
Prioritization: Medium

Harvey Rd class 4 bridge upgrade to class 3 Scoping Study and Design:

Addressed Hazards: Floods
Type of project: Local Plans & Regulation
Community Lifelines Targeted: Safety & Security; Transportation
Area of Impact: Harvey Road bridge

Lead Party: Public Works Department/Selectboard (LEAD)
Grant Funding Source: VTrans grant; Town General Operating Budget
Partnerships: ACRPC
Project Timeframe: 2025
Prioritization: Medium

New public Works Facility Design and Construction:

Addressed Hazards: Invasive Species; Wind; Extreme Cold and Snow; Floods; Landslide/Rockslide; Heat; Wildfire; Infectious Disease; Drought; Ice; Earthquake
Type of project: Structure & Infrastructure
Community Lifelines Targeted: Safety & Security; Transportation
Area of Impact: Accessibility to Townwide road network, culverts and bridges
Lead Party: Public Works Department/Selectboard (LEAD)
Grant Funding Source: Town bond; VTrans; congressional earmarks; northern border region grants; Town General Operating Budget
Partnerships: None
Project Timeframe: Design 2025; Construction 2026
Prioritization: High

Waterline upgrade pressurizing for replacing 1905 waterlines: All the Town's waterlines are in the process of being replaced to reduce the current leaks that are occurring and leading to washouts and undermine the roads.

Addressed Hazards: Floods
Type of project: Structure & Infrastructure
Community Lifelines Targeted: Safety & Security; Transportation
Area of Impact: Townwide road network
Lead Party: Water Operator; Town Administrator (LEAD); Selectboard
Grant Funding Source: DWSRF; Northern Border; congressional earmarks; Town General Operating Budget
Partnerships: None
Project Timeframe: Ongoing; Completion in 2030
Prioritization: High

Explore alternatives to replace the west end of Briggs Hill Rd: The road has been subject to numerous washouts over the years and the Town would like to study alternative route options to reduce the risk of further damage by flash flooding.

Addressed Hazards: Floods; Landslide/Rockslide
Type of project: Local Plans & Regulation
Community Lifelines Targeted: Safety & Security; Transportation
Area of Impact: Briggs Hill Rd
Lead Party: Public Works Department; Selectboard (LEAD)
Grant Funding Source: Town General Operating Budget
Partnerships: None
Project Timeframe: 2025
Prioritization: Medium

Home Buyouts: Explore or consider Buyouts Near river and VT 116 near Sycamore Park/At the bottom Basin St abandoned home (98 and TS 11)/Rockydale area including - the mobile home park

Addressed Hazards: Floods
Type of project: Natural Systems Protection
Community Lifelines Targeted: Safety & Security; Food, Water, Shelter
Area of Impact: Homes near Sycamore Park on VT 116 and Rockydale area
Lead Party: Town Administrator (LEAD)/Selectboard
Grant Funding Source: Town General Operating Budget and FEMA Mitigation funds
Partnerships: ACRPC; VEM Mitigation and Recovery Sections
Project Timeframe: 2024-2026
Prioritization: High

Practices for town properties that private homeowners could implement : Conservation Commission preparing practices for town properties that private homeowners could implement including snow removal and vegetation management

Addressed Hazards: Invasive Species; Wind; Extreme Cold and Snow; Floods; Landslide/Rockslide; Heat; Wildfire; Infectious Disease; Drought; Ice; Earthquake
Type of project: Outreach & Education Programs
Community Lifelines Targeted: Safety & Security
Area of Impact: Townwide Residents
Lead Party: Selectboard; Tree Committee (LEAD); Conservation Commission
Grant Funding Source: Town General Operating Budget
Partnerships: None
Project Timeframe: Ongoing annually 2025-2030
Prioritization: Medium

Implement VTAlert: Implement VTAlert as an efficient mode of community outreach by providing educational information, early warnings, and event monitoring updates in an efficient manner to residents. This includes training of municipal staff and outreach to encourage residents to sign up.

Addressed Hazards: Invasive Species; Wind; Extreme Cold and Snow; Floods; Landslide/Rockslide; Heat; Wildfire; Infectious Disease; Drought; Ice; Earthquake
Type of project: Outreach & Education Programs
Community Lifelines Targeted: Safety & Security; Communications; Transportation; Food, Water, Shelter
Area of Impact: Townwide
Lead Party: Selectboard; Town Administrator (LEAD)
Grant Funding Source: Town General Operating Budget
Project Timeframe: 2025
Prioritization: High

Install Back-up Power at Critical Facilities: Generators (standby or portable) are emergency equipment that provide a secondary source of power to a facility. The library is cited to become a warming and cooling facility if the grant through the Department of Libraries is awarded. Upgrades to the library included internet, improved air circulation along with the aid of a Homeland Security grant for generator will make this viable.

Addressed Hazards: Invasive Species; Wind; Extreme Cold and Snow; Floods; Landslide/Rockslide; Heat; Wildfire; Infectious Disease; Drought; Ice; Earthquake

Type of project: Structure & Infrastructure
Community Lifelines Targeted: Energy; Food, Water, Shelter
Area of Impact: Town Library
Lead Party: Town Administrator (LEAD)/Selectboard
Grant Funding Source: Homeland Security; Town General Operating Budget
Partnerships: Department of Libraries; VEM
Project Timeframe: Renovations in 2028
Prioritization: Medium

Bank Stabilization Scoping Study: Support a study of options for additional bank stabilization West of Mount Abraham Union High School.

Addressed Hazards: Floods; Landslide/Rockslide
Type of project: Local Plans & Regulation
Community Lifelines Targeted: Safety & Security; Transportation
Area of Impact: Slope west of Mount Abraham Union High School
Lead Party: Selectboard (LEAD) /Town Administrator
Grant Funding Source: Town General Operating Budget and apply for state grants
Partnerships: None
Project Timeframe: 2029
Prioritization: Medium

Integrating Into Existing Plans and Procedures

For Bristol to succeed in reducing long-term risk, information from this Plan should be integrated throughout government operations. When activities are connected, they can not only reduce risk and increase resilience, but also accomplish other objectives such as environmental protection, economic development, financial stability, and land use planning.

There are several ways the Town can achieve integration into existing plans and procedures to support risk-informed community planning. They can include the community's primary mitigation goal as stated on page 30, information from the risk assessment, and mitigation actions as follows:

- Funding for mitigation actions can be prioritized in the annual budget process.
- The mitigation goal and risk assessment information can support the Town's interest in expanding local capacity to enforce State building codes as part of the development review process.
- The mitigation goal and risk assessment information can be incorporated into the next Town Plan update (Land Use and Flood Resilience chapters in particular) to help steer growth and redevelopment away from high-risk locations.
- The mitigation goal and risk assessment information can be incorporated into future zoning ordinance updates.
- Several flood-related mitigation actions for increasing road resiliency can be implemented under the existing Municipal Road General Permit (8273-9040) for controlling stormwater discharges from town roads.

7 PLAN MAINTENANCE

This Plan is dynamic. To ensure it remains current and relevant, it should be annually evaluated and monitored and updated every five years, in accordance with FEMA guidelines in effect at the time.

Annual Evaluation and Monitoring

Within 12 months of FEMA Final Approval, the Plan will be annually evaluated and monitored as follows:



1. The Selectboard will assemble a Review/Update Committee to evaluate the effectiveness of the Plan in meeting the stated goals. Things to consider during this evaluation:

- What disasters has the town (or region) experienced?
- Should the list of highest risk natural hazard impacts be modified?
- Are new data sources, maps, plans, or reports available? If so, what have they revealed, and should the information be incorporated into this plan?
- Has development in the region occurred and could it create or reduce risk?
- Has the town adopted new policies or regulations that could be incorporated into this plan?
- Have elements of this plan been incorporated into new plans, reports, policies, or regulations?
- Are there different or additional community capabilities available for mitigation implementation?

2. Next, the Review/Update Committee will monitor mitigation action progress. Things to consider:

- Is the mitigation strategy being implemented as anticipated?
- Were the cost and timeline estimates accurate?
- Should new mitigation actions be added?
- Should proposed actions be revised or removed?
- Are there new funding sources to consider?

The status (e.g., in progress, complete) of each action should be recorded in **Table 9**. If the status is "in progress" note whether the action is on schedule. If not, describe any problems, delays, or adverse conditions that will impair the ability to complete the action.

3. The Selectboard will seek public comment from the whole community on plan implementation. Things to consider:

- Are there any new stakeholders to include?
- What public outreach activities have occurred?
- How can public involvement be improved?

4. Based on input received, the mitigation strategy and/or actions will be modified, if needed.

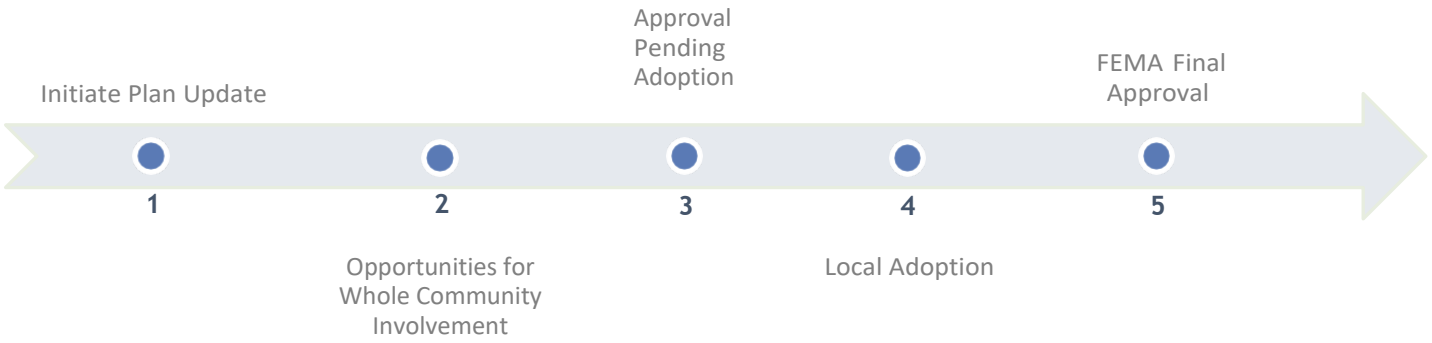
5. A report (or record in the form of meeting minutes) of the annual evaluation and monitoring will be made available to the public.

Table 9: Mitigation Action Status

Mitigation Action	2025	2026	2027	2028	2029
Local Plans & Regulations					
Structure & Infrastructure Projects					
Natural Systems Protection					
Outreach & Education Programs					

5-Year Updates

This Plan will be updated at a minimum every five (5) years as follows:



1. Currently, funding to assist municipalities in paying for planning services to update the Local Hazard Mitigation Plan through FEMA is unknown. The Town of Bristol should contact Vermont Emergency Management (VEM) to apply for any available funding grants in 2028 – approximately 2 years before the Plan expires.

   Once funding is secured and the grant agreement between the Town and State is in place, the Town Manager can issue a request for proposals (RFP) to procure planning services in accordance with the grant agreement. The RFP should be issued approximately 14 months before the Plan expires.

   Once a consultant is procured, the Plan update can begin with a kick-off meeting including the consultant and local hazard mitigation planning team. The kick-off meeting should be scheduled approximately 12 months before the Plan expires. The Town should allot approximately 8 months for the Plan update process.

2. Opportunities for Whole Community involvement throughout the Plan update process need to be factored into the schedule. These opportunities may include a community survey, planning workshop, and public meetings at critical milestones agreed to at the project kick-off meeting.

3. Once the local hazard mitigation planning team has prepared a final draft, they can seek authorization from the Selectboard to submit the Plan for VEM/FEMA approval. Plan approval is accomplished in two steps – the first is Approval Pending Adoption. The Town should submit for Approval Pending Adoption approximately 4 months before the Plan expires to allow for time to respond to any review comments received from VEM/FEMA.

4. Once the Town receives Approval Pending Adoption, the Selectboard should adopt the Plan as soon as their next regular meeting.

5. Once adopted, the Town can submit the Plan for VEM/FEMA Final Approval. The Town should submit for Final Approval approximately 1 month before the Plan expires to ensure there is no gap in coverage between updates. The plan will expire 5 years from the FEMA Final Approval.

Town of Bristol
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(802) 453-2410
townadmin@bristolvt.org
www.bristolvt.org

TOWN OF BRISTOL
Local Hazard Mitigation Plan Update Announcement

The Town of Bristol is looking for the public's assistance in identifying local hazards to aid in updating our Local Hazard Mitigation Plan (LHMP).

As mandated by the Disaster Mitigation Act of 2000, all municipalities are required to complete a Local Hazard Mitigation Plan every five (5) years in order to qualify for FEMA funding should a disaster occur. The purpose of the plan is to identify threats and hazards such as flooding, winter storms, power failures, windstorms, landslides, pandemics, cyber-attacks etc., and then determine appropriate mitigation efforts that can aid municipalities in reducing risk and recovery from such natural, technological, and human-caused hazards.

The Town of Bristol has begun the plan update process and is looking for input from Bristol residents, business owners, and property owners to help identify hazards that impact our community. Please contact Town Administrator Valerie Capels at (802) 453-2410 ext. 1 or townadmin@bristolvt.org with any input or questions. The current Local Hazard Mitigation Plan can be reviewed at the Town Office, Lawrence Memorial Library, and on the Bristol Web site at www.bristolvt.org.

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Agendas & Minutes
- FY 2024/2025 Meetings
- FY 2023/2024 Meetings
- FY 2022/2023 Meetings

Boards, Commissions, & Committees
- ARPA Funding Advisory Committee
- Bicycle Pedestrian Advisory Committee
- Board of Civil Authority
- Conservation Commission
- Design Review Commission
- Development Review Board
- Emerald Ash Borer Committee
- Energy Committee
- Equipment Committee
- Equity Committee
- Planning Commission
- Revolving Loan Fund Committee
- Selectboard
  - Declaration of Inclusion
  - 2020-2021 Calendar
  - 2021-2022 Calendar
  - Current/Future/Completed Goals
- Solid Waste Advisory Committee

Town Departments

● Local Hazard Mitigation Plan Update Announcement

APRIL 11, 2024

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No comments

Categories: News, Uncategorized
Tags: Hazard Mitigation Plan, Public Outreach

Outlook

RE: Notice of Town of Bristol Local Hazards Mitigation Plan 2024 Update

From Bristol Town Administrator <townadmin@bristolvt.org>
Date Thu 10/17/2024 3:45 PM
To Bill Cunningham <bcunningham@trivalleytransit.org>
Cc Stephanie Magnan <steph.magnan@seamsolutionsvermont.com>

Thank you, Bill, for your valuable feedback!

Very much appreciated,

--Valerie

Valerie Capels, Town Administrator
& Emergency Management Director
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From: Bill Cunningham <bcunningham@trivalleytransit.org>
Sent: Thursday, October 17, 2024 3:41 PM
To: Bristol Town Administrator <townadmin@bristolvt.org>; Starksboro Town Administrator <townadmin@starksborovt.org>; townadministrator@monktonvt.com; Patricia Waugh <townadmin@lincolnvermont.org>; Elise Shanbacker <elise@addisonhousingworks.org>; andy.weis@mausd.org; Cota, Jim <Jim.Cota@vermont.gov>; Adam Lougee <alougee@acrpc.org>; Andrew L'Roe <alroe@acrpc.org>; Town Clerk <townclerk@starksborovt.org>; Patrick Reen <Patrick.Reen@mausd.org>; Jim Kirby <jkirby@mchvt.org>; rondendas@gmail.com; BMcKean@agewellvt.org; helena@unitedwayaddisoncounty.org; 'Mark Demers' <mdemers@cvoeo.org>; dwesley@achhh.org; lindsey@acornvt.org; MConrad@achhh.org; sgillett@portermedical.org; Allison Pouliot <ajp2329vt@gmail.com>; Cecil Foster <cecil@gmavt.net>; Pierce@comcast.com; Kris Merchant <kmerchant@corp.wcvt.com>; Pam Kingman <newhavenclerk@gmavt.net>; Mike Winslow <mwinslow@acrpc.org>; Stephanie Davison <sdavison@cvoeo.org>; kathy05443@gmail.com; stambrose@vermontcatholic.org; townclerk@monktonvt.com; Sally Ober <clerk@lincolnvermont.org>
Cc: Stephanie Magnan <steph.magnan@seamsolutionsvermont.com>; Bristol Clerk <clerk@bristolvt.org>; Assistant <assistant@bristolvt.org>; Town of Bristol <town@bristolvt.org>; Kevin Hanson <khanson.pc@gmail.com>; Will Elwell <welwell@bristolrescuevt.org>; Grant Admin <grantadmin@bristolvt.org>; Michael Leyden <mikeleyden@hotmail.com>; Kristen Underwood <southmountain@gmavt.net>; Chanin Hill <chill@gmavt.net>; Eric Cota <bristolhighway@gmavt.net>; peeker@gmavt.net; Joel Bouvier <joelbouvier@yahoo.com>; pcoffey@gmavt.net; Zoning <zoning@bristolvt.org>; fbc.bristol.vt@gmail.com;

jenni.utter@mausd.org; bill.huggett@mausd.org
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Bill Cunningham

Bill Cunningham
Regional Director, Addison Office

TRI VALLEY TRANSIT
FORMERLY ACTR & STAGECOACH

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From: Bristol Town Administrator <townadmin@bristolvt.org>
Sent: Wednesday, October 16, 2024 5:02 PM
To: Starksboro Town Administrator <townadmin@starksborovt.org>; townadministrator@monktonvt.com; Patricia Waugh <townadmin@lincolnvermont.org>; Elise Shanbacker <elise@addisonhousingworks.org>; andy.weis@mausd.org; Cota, Jim <Jim.Cota@vermont.gov>; Adam Lougee <alougee@acrpc.org>; Andrew L'Roe <alroe@acrpc.org>; Town Clerk <townclerk@starksborovt.org>; Patrick Reen <Patrick.Reen@mausd.org>; Jim Kirby <jkirby@mchvt.org>; rondendas@gmail.com; BMcKean@agewellvt.org; helena@unitedwayaddisoncounty.org; Bill Cunningham <bcunningham@trivalleytransit.org>; 'Mark Demers' <mdemers@cvoeo.org>; dwesley@achhh.org; lindsey@acornvt.org; MConrad@achhh.org; sgillett@portermedical.org; Allison Pouliot <ajp2329vt@gmail.com>; Cecil Foster <cecil@gmavt.net>; Pierce@comcast.com; Kris Merchant <kmerchant@corp.wcvt.com>; Pam Kingman <newhavenclerk@gmavt.net>; Mike Winslow <mwinslow@acrpc.org>; Stephanie Davison <sdavison@cvoeo.org>; kathy05443@gmail.com; stambrose@vermontcatholic.org; townclerk@monktonvt.com; Sally Ober <clerk@lincolnvermont.org>
Cc: Stephanie Magnan <steph.magnan@seamsolutionsvermont.com>; Bristol Clerk <clerk@bristolvt.org>; Assistant <assistant@bristolvt.org>; Town of Bristol <town@bristolvt.org>; Kevin Hanson <khanson.pc@gmail.com>; Will Elwell <welwell@bristolrescuevt.org>; Grant Admin <grantadmin@bristolvt.org>; Michael Leyden <mikeleyden@hotmail.com>; Kristen Underwood <southmountain@gmavt.net>; Chanin Hill <chill@gmavt.net>; Eric Cota <bristolhighway@gmavt.net>; peeker@gmavt.net; Joel Bouvier

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Subject: Notice of Town of Bristol Local Hazards Mitigation Plan 2024 Update

To Bristol area hazard mitigation stakeholders and other interested persons:

Attached for your awareness and review is a draft updated 2024 Local Hazard Mitigation Plan the Town of Bristol has submitted to the State Department of Public Safety Vermont Emergency Management (VEM) and the Federal Emergency Management Agency (FEMA) for their review. Although the draft has been submitted, it is still a work in progress. We expect to receive feedback from VEM and/or FEMA that may prompt additional updates.

You are receiving a copy of this proposed draft because you, your town, or your organization may be an interested party or stakeholder.

If you have questions or comments about the proposed plan, please do not hesitate to contact me at townadmin@bristolvt.org or (802) 453-2410 ext. 1.

Thank you,

--Valerie

Valerie Capels, Town Administrator
& Emergency Management Director
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Outlook

Re: Notice of Town of Bristol Local Hazards Mitigation Plan 2024 Update

From Stephanie Magnan <steph.magnan@seamsolutionsvermont.com>
Date Sat 11/2/2024 2:13 PM
To townadmin <townadmin@bristolvt.org>

Good afternoon Valerie,
I hope all is well with you.
I'm just checking in to see if you've received any other feedback on the draft plan.
Also, was this notice published anywhere else by chance?

Best regards,
Steph

Stephanie Magnan
166 Mitchell Rd
Barre, VT 05641
(802) 793-3484
steph.magnan@seamsolutionsvermont.com
https://www.seamsolutionsvermont.com/

From: Bristol Town Administrator <townadmin@bristolvt.org>
Sent: Thursday, October 17, 2024 3:45 PM
To: Bill Cunningham <bcunningham@trivalleytransit.org>
Cc: Stephanie Magnan <steph.magnan@seamsolutionsvermont.com>
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Valerie Capels, Town Administrator
& Emergency Management Director

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APPENDIX B – Past Mitigation Actions Updates

Flood/Flash Flood

The Town supports continued enrollment in the NFIP to allow residents the option of purchasing flood insurance on their properties. As a part of continued compliance, the Town supports participation in NFIP training for the Zoning Administrator when offered by the State or NFIP.

Estimated cost: $200-$300
Source of Funds: Town General Fund Planning and Zoning budget
Responsibility: Town Zoning Administrator
Timeframe: 2018 to 2025 and ongoing
Current Project Status as of January 2018: Ongoing, ZA has attended quarterly ZA roundtables which include all aspects of zoning administration including NFIP

2024 Update – Ongoing and included

The following specific projects have been identified which will serve to mitigate the effects of flooding and/or flash flooding in the Town of Bristol:

- Protect the village spring from contamination due to flooding. A feasibility study and/or engineering will be needed prior to implementation.
  Estimated cost: $5,000- $10,000
  Source of Funds: Water Department budget
  Responsibility: Town Administrator and Water Dept
  Timeframe: Q3 2021-Q3 2022
  Current Project Status as of January 2018: No action since 2012. Funds have not been available

  2024 - Ongoing need identified a need for a feasibility study for protecting the spring in the next 3 years . Included in Capital Improvement Plan.

The following stormwater projects are planned concurrently with a West St/Main St. paving project scheduled for 2020.

- Improve storm water capacity on Mountain Terrace and East Street to limit basement flooding
  Estimated cost: $208,000
  Source of Funds: HMGP, PDM-C
  Responsibility: Town Administrator, highway dept and selectboard
  Timeframe: Q3 2020 (tentative based on funding)
  Current Project Status as of January 2018: (See general stormwater progress following)

  2024 Update - COMPLETED

- Expand storm water capacity in the Mountain Street/ Crescent Street area to meet a minimum 10-year flooding event.
  Estimated cost: $364,000
  Source of Funds: HMGP, PDM-C
  Responsibility: Town Administrator, highway dept and selectboard
  Timeframe: Q3 2020 (tentative based on funding)

Current Project Status as of January 2018: (see general stormwater progress following)

2024 Update - Continue into next plan under stormwater infrastructure

- Replace and upgrade storm water system along Spring Street and North Street to prevent flooding damage to the elementary school during heavy rain events.

  Estimated cost: $1,330,000
  Source of Funds: HMGP, PDM-C
  Responsibility: Town Administrator, highway dept and selectboard
  Timeframe: Q3 2020 (tentative based on funding)
  Current Project Status as of January 2018:
  Portions of the previous three projects have been completed as well as a 2017 rebuild of stormwater infrastructure on West St.

  A stormwater infrastructure mapping project was conducted in 2015 which identified multiple areas of concern in Bristol's village center. The Town has applied for funding to create a stormwater master plan which will identify priority areas and provide 30% design for 5-10 of those locations. Utilizing "Green Infrastructure" techniques, projects will be designed to reduce direct flow into surface waters. Projects will reduce stormwater surges and nutrients flowing into the New Haven River.

  2024 Update – In Progress and is part of new plan under Stormwater infrastructure

  2019: Bristol completed a Stormwater Master Plan: https://anrweb.vt.gov/PUBDOCS/DEC/STORMWATER/Town%20Reports%20and%20Maps/Bristol/Bristol%20SWMP_2019.pdf

Replace South St. Bridge with more flood resistant span when needed

Estimated cost: $1,200,000
Source of Funds: State bridge/culvert grant program
Responsibility: Town Administrator, highway dept and selectboard
Timeframe: 2019-2030, as funding allows
Current Project Status as of January 2018: Bridge was replaced with a more flood resistant structure in 2016

2024 Update - Completed – was not removed in 2018 update

Landslide/Erosion Hazard

The Town supports adoption of a Fluvial Erosion Hazard Overlay district in its zoning bylaw rewrite.

Estimated cost: $2,000 as part of an overall rewrite
Source of funds: Municipal planning grants.
Responsibility: Joint Selectboard and Planning Commission
Timeframe: 2020-2023, once studies are finalized
Current Project Status as of 2018: The recently adopted town plan (March 2017) reaffirms the town's support for this project and the town has requested State ANR support in determining the potential

boundaries of the river's corridor in advance of any ordinance adoption. Final determination of language and locations to be determined

2024 Update - Add to new plan as modify zoning bylaws

Note: State of Vermont guidance has been adjusted since major flooding statewide in 2011. Fluvial Erosion Hazard Zones have been replaced by River Corridors sized and located so as to protect the area needed for future meandering.

The Town also supports the following specific projects which are intended to limit erosion hazards in known locations:

- Stabilize the intersection of Basin Street where it meets East St./Rte. 17
  Estimated cost: $5,000- $10,000
  Source of Funds: Village water budget
  Responsibility: Town Administrator and water dept
  Timeframe: Q2 2020 or as repaving occurs
  Current Project Status as of 2018: No action taken

  2024 Update included as part of stormwater projects - Over $1M estimated now see notes above – stabilization issues have grown

  Stormwater and relocation – VTrans and downtown funds and stormwater grant

- Explore options for river bank stabilization along West Street behind existing structures especially behind the Merchants Bank.
  Estimated cost: $15,000
  Source of Funds: State ERG grants, town highway funds, cooperative private funding
  Responsibility: Town Administrator and water dept
  Timeframe: 2020-2023
  Current Project Status as of 2018: Ongoing, A stormwater infrastructure mapping project was conducted in 2015 which identified multiple areas of concern in Bristol's village center. The Town is currently applying for funding to create a stormwater master plan which will identify priority areas and provide 30% design for 5-10 of those locations. Utilizing "Green Infrastructure" techniques, projects will be designed to reduce direct flow into surface waters. Projects will reduce stormwater surges and nutrients flowing into the New Haven River.

  2024 Update – In Progress and included under Natural Systems Projects

  Some has been done, slope failure from a culvert- slope was armored
  Slope failure behind west St properties – Halloween 2019 – finished 2020-21
  NRCS watershed program fund – armored at the toe

- Support a study of options for additional bank stabilization West of Mount Abraham Union High School.
  Estimated cost: $5,000- $10,000
  Source of Funds: UHSD budget

Responsibility: UHS School Board and Superintendent
Timeframe: Q2 2018 or following passage of bond.
Current Project Status as of 2018: No Action Taken. Proposed as part of a High School bond as of March 2018.

2024 Update – ***Carried forward to the 2025 Plan***

- Explore options for bank/ditch stabilization along Upper Notch Road.
  Estimated cost: $70,000
  Source of Funds: BBR, Town Highway funds, stormwater pollution grants
  Responsibility: Town Administrator and highway dept
  Timeframe: 2019-2023 as funding allows
  Current Project Status as of 2018: Stabilization completed Fall 2017

  2024 Update - Ongoing as part of MRGP program

Earthquake

While recognizing the potential for severe damage in the region, the Town does not believe the risks associated with earthquake are large enough to require any town building retrofits at this time.

No local action necessary-cost $0
Current Project Status as of 2018: No Change

2024 Update -No action will be identified as not considered a hazard to the Town

The Town believes it is the responsibility of private homeowners to be ready for earthquakes. The town generally believes that building construction standards are the responsibility of each private homeowner.

No local action necessary-cost $0
Current Project Status as of 2018: No Change

2024 Update -No action will be identified as not considered a hazard to the Town

Wildfire

The Town supports the fire warden system requiring outdoor burn permits prior to any outdoor burning.

Estimated cost: None
Source of funds: Town General Fund
Responsibility: Joint Selectboard and Fire Warden
Timeframe: Annually
Current Project Status as of 2018: Ongoing

The Town believes it is the homeowner's responsibility to mitigate their susceptibility to wildfire through "firewise" practices.

No local action necessary-cost $0
Current Project Status as of 2018: No change

2024 Update -No action will be identified as not considered a hazard to the Town

Invasive Species

The Town encourages residents to be observant of invasive species and eliminate them early in their cycle, if at all possible.

Estimated cost: None
Source of funds: Town General Fund
Responsibility: Bristol Conservation Commission (educational outreach)
Timeframe: Ongoing

2024 Update -included as plan for invasive species

The Town instructs the Highway Dept. to follow best practices when conducting summer mowing in an effort to control spread of noxious weeds along roadsides.

Estimated cost: Additional time from road crew
Source of funds: Town General Fund
Responsibility: Joint Selectboard and highway dept.
Timeframe: Ongoing

2024 Update --included as plan for invasive species

The Town encourages residents to take the "Forest Pest First Detector Program" when offered by VT ANR. Graduates will be prepared to recruit other volunteers to be "First Detectors as well.

Estimated cost: None
Source of funds: Town General Fund
Responsibility: Town Tree Warden.
Timeframe: Ongoing

2024 Update - Ongoing removal of ash trees with appropriate resistant species and locations and plan developed Bristol Emerald Ash Management Plan

forest and parks tree removal grants almost annually included in Structure & Infrastructure project or removal of hazardous trees

Hazardous Materials and Highway Transport Accidents

The Town has identified the following high-risk locations on its highway system and supports mitigation of the hazard in any future construction/reconstruction activities:

- Implement Better Back Roads low cost safety improvements at intersection of Burpee Road and Monkton Road to reduce the likelihood and severity of motor vehicle accidents.

  Estimated cost: $5,000- $10,000

  Source of Funds: HMGP, BBR, Town Highway Funds

  Responsibility: Town Administrator and highway dept

  Timeframe: 2018-2020

  Current Project Status as of 2018: Study was completed in 2015 and recommended actions including appropriate signage was installed.

  2024 Update - Study completed

- Explore possible Plank Road/Burpee Road intersection improvements (signage, painting, 4-way stop?) to reduce numbers of accidents.

  Estimated cost: $2-3,000
  Source of Funds: State/local highway funds
  Responsibility: Town Administrator and highway dept
  Timeframe: 2018-2020
  Current Project Status as of 2018: No actions other than as recommended above have been undertaken.

  2024 Update – Not relevant to the current hazards identified but will be incorporated into the Capital Improvement plan

- Work with State transportation personnel to realign the intersection of River Road with Rte. 116 as part of the bridge replacement on Rte. 116 in this area.

  Estimated cost: $10,000
  Source of Funds: State Highway Funds
  Responsibility: Town Administrator and highway dept
  Timeframe: Dependent on state bridge replacement schedule
  Current Project Status as of 2018: Route #116 bridge was replaced in 2015. Some improvements to the 116/River Rd. intersection were installed as part of the project.

  2024 Update - Completed

- Support a feasibility/design study to address the intersection of Briggs Hill Rd, Lincoln Rd. and State Rte. 116 including possible abandonment of Lincoln Road in favor of Briggs Hill Road improvements

  Estimated cost: $15,000- $20,000

  Source of Funds: State Highway Funds

  Responsibility: Town Administrator and highway dept

Timeframe: 1-5 years

Current Project Status as of 2018: No progress to date. – Low public support

2024 Update - Study was completed

- Support designs that would reduce accidents at the traffic light at Rte. 116/17 and North/South Streets.
  Estimated cost: $5,000- $10,000
  Source of Funds: State Highway Funds
  Responsibility: Town Administrator and highway dept
  Timeframe: 2019-2021
  Current Project Status as of 2018: Bump outs, turning lanes, pedestrian crossings installed in 2016

  2024 Update - Completed

- A study exploring a realignment of Plank Road at the Waterworks property should be conducted in conjunction with New Haven to review the feasibility of eliminating the two sharp curves.
  Estimated cost: $10,000,
  Source of funds: Town highway budget or Regional Planning funds
  Responsibility: Joint Town Highway Dep. and Selectboard
  Timeframe: 0-3 years
  Current Project Status as of 2018: No action to date. Concerns about wetlands permitting have reduced enthusiasm for this project.

  2024 Update ***Lost relevance - remove***

Structure Fire

The Town supports efforts by the fire department to install dry hydrants throughout town not served by the village water supply.

Estimated cost: None additional beyond annual FD support
Source of funds: Federal Rural fire protection grants and town FD funds
Responsibility: BFD
Timeframe: Annually dependent on grant awards
Current Project Status as of 2018: New Hydrant installed south on Rte. 116 at picnic pull-off, hydrant repaired in Upper Notch, 2 more installations scheduled for Q3 2018

2024 Update - Completed

The Town supports efforts by the fire department to improve its ISO rating through testing and training activities.

Estimated cost: None additional beyond annual FD support
Source of funds: Federal Rural fire protection grants and town FD funds
Responsibility: BFD
Timeframe: 1-3 years

Current Project Status as of 2018: Department supported reevaluation in 2013 resulted in 5X rating

2024 Update - Completed

The Town is exploring the feasibility and/or need for sprinkler system as part of a current Town buildings energy conservation project.

Estimated cost: $10,000 as part of an overall project
Source of funds: Town Funds
Responsibility: Joint Selectboard and Energy Committee
Timeframe: 0-3 years
Current Project Status as of 2018: Renovation did not include sprinklers due to costs associated with historic preservation.

Additional Mitigation Projects from Bristol's 2012 hazard mitigation plan reflecting changes to community concerns

Drought

The Town supports recent changes to state rules which require a potable water supply and septic plans prior to development and supports groundwater protection efforts around both public and private water supplies.

No local action necessary-cost $0
Current Project Status as of 2018: No action needed

2024 Update - Completed- ongoing as state rules change

Widespread Power Failure

Green Mountain Power (GMP) the utility servicing the Town of Bristol has ongoing programs of line clearing and relocation to ensure outages are kept to a minimum. The town balances its support for these efforts with residents' desires to keep the beauty of tree-lined streets and roads.

No local action necessary-cost $0
Current Project Status as of 2018: Green Mountain Power (GMP) continues its efforts to mitigate future line damage.

2024 Update - Ongoing as part of Removing hazardous trees

High Winds

The town generally supports limiting damages due to high winds by removing dead and dying trees within the town right-of-way that could fall during a high wind event.

Estimated cost: $5,000 annual cost
Source of funds: Town highway budget.
Responsibility: Joint Town Highway Dept and Selectboard
Timeframe: Annual maintenance task

Current Project Status as of 2018: Ongoing task

2024 Update - Ongoing as part of Removing hazardous trees

2023 wind storm had an impact on the town highway budget -estimated cost needs to be increased to $10k

Lightning

The Town feels the risk to private residences of lightning strike should be borne by each resident on their own.

No local action necessary-cost $0
Current Project Status as of 2018: No change

2024 Update - Not relevant to current hazard list

Winter Storm/Ice Storm

The Town supports the installation of snow fence when and where it can mitigate drifting on town highways.

Estimated cost: $2,000 annually
Source of funds: Town Highway Funds
Responsibility: Town Highway Dept.
Timeframe: Annual treatments in fall
Current Project Status as of 2018: Town explored the feasibility of this action and has removed it from this project list.

2024 Update - REMOVE – not *needed as current storms are not creating the same drifting effects as 5 years ago*

The Town supports ongoing efforts by power companies to mitigate power outages due to ice storms by pruning and tree removal activities.

No local action necessary-cost $0
Current Project Status as of 2018: Green Mountain Power continues its efforts to trim and remove trees which threaten power lines.

2024 Update - Ongoing

Dam Failure

The Town of Bristol does not generally address dam failure mitigation in its day-to-day activities, leaving the protection of the public up to State dam safety inspectors.

No local action necessary-cost $0
Current Project Status as of 2018: No Change

2024 Update - Remove - Bristol's dams are not considered high hazard

The Town Planning Commission is considering writing of water impoundment construction standards into its zoning regulations. The intent of such standards would be to limit the volume of water which could be stored in a man-made impoundment and therefore limit risk.

Estimated cost: $2,000 as part of an overall rewrite
Source of funds: Municipal planning grants.
Responsibility: Joint Selectboard and Planning Commission
Timeframe: 0-3 years
Current Project Status as of 2018: Rewrite is ongoing

2024 Update - Remove - zoning regulations point to Environmental Protection Rules, Chapter 22 governing Stormwater permitting effective March 15, 2019 as it may be amended. Applicants shall demonstrate compliance with all applicable State of Vermont Stormwater permitting requirements for both construction and development and Section 514 of these regulations.

Meeting Notes
Bristol – LHMP Kickoff Meeting
March 20, 2024

Participants:
Valerie Capels – Town Administrator
Eric Cota – Public Works Foreman
Peeker Heffernan – Selectboard
Joel Bouvier – Selectboard
Brett LaRose – Fire Chief
Chanin Hill – Planning Commission
Kristen Underwood – Conservation Commission
Will Elwell – EMS
Michael Leyden – Citizen Liaison
Jill Marsano – Water Operator
Andrew L'Roe**/Deron Rixon** - ACRPC
Steph Magnan – Consultant

Agenda Items:

- Introductions
- Set meeting schedule
    - Ask about Zoom vs Teams
    - Onsite/**virtua**l/hybrid
    - **3rd Wednesday at 10 am**
    - **Send out reoccurring Teams**

- Public Outreach
    - Public announcements – being inclusive as possible (vulnerable population)
        - Send template of draft language
        - Social media
        - Paper copies available
    - Community stakeholders –
        - Churches
        - Cares program - SOV can register to be put on the list (registration form that can be filled out manually and sent in) – work with Drs office to have them hand out the form
        - Meals on wheels
        - Food shelf Food shelf = Saint Ambrose Rectory/Bristol Have-A-Heart Community Food Shelf - Food Distribution Center
        - … circle back
- Outline of activities
    - Review (template of state plan outline)

        - Introduction
        - Purpose
        - Community Profile
            - Land use – water- waste water -transportation – electric distribution
            - Public safety – emergency management
    - Identify critical facilities
    - Identify Hazards (any additions in new state plan)
        - Potential impact
        - Hazard history
    - Review past plan actions
    - Identify capabilities and vulnerabilities
    - Plan integration -
    - Identify hazard mitigation
        - Strategies – programs – projects – activities
    - Identify and prioritize actions
    - Plan maintenance

Tasks Generate and who they are assigned to:

Steph

- Send out reoccurring calendar invites for the 3rd Wednesday of the month at 10 am
- Send announcement language
- Start updating Introduction/Purpose/ Community Profile
- Create draft critical infrastructure map with flood hazard information
- Send out tasks to individuals

Valerie

- LHMP plan update announcement – using multiple ways to get information dispersed

Brett

- Update Fire Department section

Will

- Update EMS Department section

Bruce Nason

- Update Police Department section

Discussion Items:

See Intro_Purpose_Community_Profile document

Further meeting discussion:

- Review and discuss Introduction/Purpose/ Community Profile
- Identify critical facilities

Future Meetings:

Next meeting April 17th @ 10am

Meeting Notes
Bristol – LHMP Meeting
April 17, 2024

Participants:
Valerie Capels – Town Administrator
Eric Cota – Public Works Foreman
Peeker Heffernan – Selectboard
Joel Bouvier – Selectboard
Brett LaRose – Fire Chief
Chanin Hill – Planning Commission
Kristen Underwood – Conservation Commission
Will Elwell – EMS
Michael Leyden – Citizen Liaison
Jill Marsano – Water Operator
Andrew L'Roe/Deron Rixon - ACRPC
Steph Magnan – Consultant

Agenda Items:

- Public Outreach
    - Public announcements – being inclusive as possible (vulnerable population)
        - Any feedback? None received
    - Public outreach Opportunities – surveys/meetings
        - Warming/cooling areas
            - Formalizing these centers – staffing for it
            - Coordinate with rec center (manage the 2 halls)/school and library
                - Possibly use the FD as a cooling center
                - Holley hall (has back up power and working heat pumps) and Howden hall
        - EMD sends out notifications and training opportunities
        - Vulnerable populations is an area for improvement – wellness checks
        - Pro-active ahead of a known event to get the information out
            - Town office answering service to get info out
            - Health Dept tracks cooling centers and warming
        - Cares program forms drop off at Drs office/library
            - Quarterly notification of this opportunity FPF/other means
        - VTAlert – another push to get folks to sign up for notifications – ie water issues
            - Assistance signing up with EMD
    - Community stakeholders –
        - Churches
        - Cares program - SOV can register to be put on the list (registration form that can be filled out manually and sent in) – work with Drs office to have them hand out the form
        - Meals on wheels

        - Food shelf Food shelf = Saint Ambrose Rectory/Bristol Have-A-Heart Community Food Shelf - Food Distribution Center
        - Five town partnership – rec dept related
- Outline of activities
    - Updates to:
        - Community Profile
            - Land use – water- waste water -transportation – electric distribution
            - **Fire**/PD/**EMS –** waiting on PD info
            - GMP update – sent to Ken Couture 4/14
    - Discuss critical facilities list and map
        - Get more info on the sig hazard dam
        - 1 south street instead of 2 west st
        - Send link to edit facility spreadsheet to Valerie
        - Khris perley – zoning and permitting – reach out and ask about flood insurance
            - Community rating system
            - Planning opportunities to reach out
    - Identify Hazards (any additions in new state plan)
        - Potential impact
        - Hazard history

Tasks Generate and who they are assigned to:
Send questionnaire

Discussion Items:
Valerie – hand out CARES program signup information
Steph – Draft Intro/Purpose/Community Profile
- More info on the dams
- Info on NFIP (flood insurance program)
- Edits to critical infrastructure – add digitized FIRM layer from RPC
- Send facility spreadsheet to Valerie
- Send hazard ranking spreadsheet

Future Meetings:
Next meeting May 15th @ 10am

Meeting Notes
Bristol – LHMP Meeting
June 19, 2024 @ 10:00am

Participants:
Valerie Capels – Town Administrator
Eric Cota – Public Works Foreman
Peeker Heffernan – Selectboard
Joel Bouvier – Selectboard
Brett LaRose – Fire Chief

Chanin Hill – Planning Commission
Kristen Underwood – Conservation Commission
Will Elwell – EMS
Michael Leyden – Citizen Liaison
Jill Marsano – Water Operator
Andrew L'Roe/Deron Rixon - ACRPC
Steph Magnan – Consultant

Agenda Items:

- Public Outreach
  - Public outreach Opportunities – surveys/meetings
    - Sent out a notification and did receive feedback
    - Acknowledgement received from ….
      - Task – Valerie -send acknowledgement of plan update
      - Task - Steph - Send template of questionnaire
  - Community stakeholders – Send notification of LHMP update
    - Churches
    - Cares program - SOV can register to be put on the list (registration form that can be filled out manually and sent in) – work with Drs office to have them hand out the form
    - Meals on wheels
    - Food shelf Food shelf = Saint Ambrose Rectory/Bristol Have-A-Heart Community Food Shelf - Food Distribution Center
    - Five town partnership – rec dept related
      - Task – Steph will reach out to these stakeholders
- Outline of activities
  - Updates to:
    - Community Profile
      - Land use – water- waste water -transportation – electric distribution
        - Task - Valerie – reach out to Kris about housing numbers
      - Fire/PD/EMS – Received all updates
      - GMP update – sent to Ken Couture 4/14,6/11- received info 6/13
  - Discuss critical facilities list and map
    - Meeting today (6/19) with Kyle Medash and Asa Brayton ANR – Regional floodplain Managers – to discuss the monitoring of the effectiveness of floodplain management and enforcement
      - Valerie will provide follow-up from this meeting
    - Add Historical society – public gathering
    - Dam information – because there are no dams that are high – changed use and owners – Dave Brynn Vt family forest POC – Steph will follow up
    - 1 South St instead of 2 West St **- FIXED**
    - Send link to edit facility spreadsheet to Valerie - **DONE**
    - Kris perley – zoning and permitting – **DONE** – NEED to follow up
      - reach out and ask about flood insurance
      - Community rating system

        - Planning opportunities to reach out
    - Identify Hazards
        - Hazard ranking
        - Potential impact
        - Hazard history

Tasks Generate and who they are assigned to:
Steph

- Follow up with :
    - Kris Perlee
    - Dave Brynn
    - **Valerie provided information**
- Add Historical Society building to critical infrastructure list
- Dam - Add language from past plan – no change as there are no high risk dams in the town
- Reach out to Community Stakeholders listed above - **Done**
- Send questionnaire template to Valerie - **Done**

Valerie

- Send feedback from announcement
- Provide follow up from today's meeting with Floodplain Managers

Discussion Items:
Fire Department was opened as a cooling center – Touchbase with Brett
Flood hazard areas - update in process

Future Meetings:
Next meeting July 17th @ 10am

Meeting Agenda
Bristol – LHMP Meeting
July 17, 2024 @ 10:00am

Participants:
Valerie Capels – Town Administrator
Eric Cota – Public Works Foreman
Peeker Heffernan – Selectboard
Joel Bouvier – Selectboard
Brett LaRose – Fire Chief
Chanin Hill – Planning Commission
Kristen Underwood – Conservation Commission
Will Elwell – EMS
Michael Leyden – Citizen Liaison
Jill Marsano – Water Operator
Andrew L'Roe/Deron Rixon - ACRPC

Steph Magnan – Consultant

Agenda Items:

- Damages from Beryl
  - Briggs Hill – additional erosion across Lincoln Road, which is below Briggs Hill
  - First damaged last year, emergency stabilization
  - Engineer team working on it
- Public Outreach
  - Public outreach Opportunities
    - surveys/meetings
    - Posted at the library and town office
    - Another social media –
    - LEMP has a list of vulnerable populations -names - contact?
  - FPF, FB, social media , 211, - no feedback on communication
  - Shelter was not opened
- Outline of activities
  - UPDATE TO : Meeting today (6/19) with Kyle Medash and Asa Brayton ANR – Regional floodplain Managers – to discuss the monitoring of the effectiveness of floodplain management and enforcement
    - ANR was supposed to send a follow-up meeting – educational opportunity with zoning and floodplain manager
- Identify Hazards
  - Hazard ranking
  - Regularly knocks out power to fire department repeater system at the tower in Bristol.
  - Events has an impact on FD budget

  Hazard

  Description of what the hazard is

  Previous Occurrences

  Extent and Location

  Probability, Impact and Vulnerability

- Discuss how to incorporate
  - Climate Change
  - Equitable Outcomes

Tasks Generate and who they are assigned to:

Discussion Items:

Future Meetings:

Next meeting July 22 @ 1pm
July 29 @ 1pm

Meeting Agenda
Bristol – LHMP Meeting
July 22, 2024 @ 1:00pm

Participants:
Valerie Capels – Town Administrator
Eric Cota – Public Works Foreman
Peeker Heffernan – Selectboard
Joel Bouvier – Selectboard
Brett LaRose – Fire Chief
Chanin Hill – Planning Commission
Kristen Underwood – Conservation Commission
Will Elwell – EMS
Michael Leyden – Citizen Liaison
Jill Marsano – Water Operator
Andrew L'Roe/Deron Rixon - ACRPC
Steph Magnan – Consultant

Agenda Items:

- Public Outreach
    - Public outreach Opportunities

- UPDATE TO : Meeting today (6/19) with Kyle Medash and Asa Brayton ANR – Regional floodplain Managers – to discuss the monitoring of the effectiveness of floodplain management and enforcement
        - ANR was supposed to send a follow-up meeting – educational opportunity with zoning and floodplain manager – any update?
- Hazard Ranking
        - Finish ranking
        - Any last adjustments
        - Talk with Brett LaRose about wildfires and all the parts

- 2018 LHMP Mitigation Goals – Strategies – Actions
    - Review and make any edits to the goals and strategies
    - Review list of actions for completeness – relevance – inclusion in new plan
    - Need for flash flood insurance and is the state going to address this at some point
    - Stormwater management
    - Under Flood section: Town has also conserved riverside lands (e.g., Saunders River Access/ Paul Fuller river easement) to prevent development in the floodplain.

- What are the community capabilities in town have when it comes to (Strengths and Areas for Improvement) Examples included
    - Administrative & Technical

        - staff/EMS services/Mutual Aid/RPC and VTrans relationships.
        - Need for more volunteers
    - Planning and Regulatory
        - plans, policies, codes, ordinances ie Town Plan, zoning, LEMP, roads and bridge standard, REI, etc.
        - Need for a permanent zoning administrator.
    - Outreach and Education
        - outreach and education opportunities both town run and other community organizations, social media, bulletins, etc.
        - Need for better organization or outreach opportunities, leverage tools of private and nonprofits.
- NFIP Compliance - zoning administrator enforce? Is there an outreach program, does the town participate in State/FEMA training opportunities?

- 2024 Mitigation Action Identification
    - Local Plans and Regulations
    - Structure and Infrastructure Projects
    - Natural Systems Protection
    - Outreach and Education Programs

- Evaluate and Prioritize Mitigation Actions
    - See tab on hazard ranking spreadsheet

- Discuss how to incorporate
    - Climate Change
    - Equitable Outcomes

Tasks Generate and who they are assigned to:

Discussion Items:

Future Meetings:
Next meeting July 29 @ 10am

Meeting Agenda
Bristol – LHMP Meeting
July 29, 2024 @ 10:00am

Participants:
Valerie Capels – Town Administrator
Eric Cota – Public Works Foreman
Peeker Heffernan – Selectboard
Joel Bouvier – Selectboard
Brett LaRose – Fire Chief
Chanin Hill – Planning Commission

Kristen Underwood – Conservation Commission
Will Elwell – EMS
Michael Leyden – Citizen Liaison
Jill Marsano – Water Operator
Andrew L'Roe/Deron Rixon - ACRPC
Steph Magnan – Consultant

Agenda Items:

- Public Outreach
    - Public outreach Opportunities

- UPDATE TO : Meeting today (6/19) with Kyle Medash and Asa Brayton ANR – Regional floodplain Managers – to discuss the monitoring of the effectiveness of floodplain management and enforcement
        - ANR was supposed to send a follow-up meeting – educational opportunity with zoning and floodplain manager – any update?
- Hazard Ranking
        - Any last adjustments

- What are the community capabilities in town have when it comes to (Strengths and Areas for Improvement) Examples included
    - Administrative & Technical
        - staff/EMS services/Mutual Aid/RPC and VTrans relationships.
            - Good relationships with surrounding town garages
        - Sheltering protocols and develop plan and roles
        - SB should consider EMD should be separate from Town administrator based on capabilities and experiences
    - Planning and Regulatory
        - plans, policies, codes, ordinances ie Town Plan, zoning, LEMP, roads and bridge standard, REI, etc.
            - By-laws of the Conservation Commission (2018) has endorsed river corridors- proceed in ways that are acceptable through town purchases of properties – phased in 2028 state regulations (Rob Evans) – if towns already have river corridors does it have to comply to 2028 regulations (Kristen will ask)
            - Conservation reserve fund managed by the SB base n Conservation guidance
            - Zoning Regulations (2017) – Design Review Commission/Development Review Board
            - Emerald Ash Borer Strategic Committee (2021)
            - Energy Committee – cost reduction, conservation and global
            - Equipment Committee
            - Equity Committee (2021)
            - Planning Commission
                - Town Plan 2020 – 2028

        - River corridor adoption (waitsfield)
    - Current part time position could justify ¾ to full time with benefits with increased capacity and opportunities in planning (pro active around riversided properties)
    - **Develop COOP
  - Outreach and Education
    - outreach and education opportunities both town run and other community organizations, social media, bulletins, etc. FPF, VTAlert,FB and IG and town website
    - Need for better organization or outreach opportunities, leverage tools of private and nonprofits.
      - Increase opportunities for using and training of VTAlert both for users and consumers – VEM administrators training – new full time planner
      - Waze – increase useage
- NFIP Compliance - zoning administrator enforce? Is there an outreach program, does the town participate in State/FEMA training opportunities?
  - 4 properties have insurance (ERAF)
  - New legislation – requires sellers to divulge flooding information
  - Hard for a municipality to support NFIP outreach opportunities – getting a grant for this along with other outreach opportunities such as educating residents what a low lying areas are

*increase in housing – burden on resources – potential groundwater impacts – zoning changes? Or a community water system

- 2024 Mitigation Action Identification
- Look at current plan for snow - beef up historic roofs
- Update snow removal plan – accessibility between sidewalk and road
- Improve shelter preparations and notifying community that they are available
  - Local Plans and Regulations
    - Adopt river corridors?
    - General tree plans in addition to emerald ash borer
    - Conservation commission identified in town plan to address invasive species (p 131 of town plan)
  - Structure and Infrastructure Projects
    - MRGP – improving ditching and culverts
    - Drainage projects – the village Pine st not connected to stormwater system
      - Infiltration school st – look at last meeting notes
    - Harvey rd class 4 bridge
    - 4.7acre purchase for new public works ** possible addition -current site is on a landfill
    - Trimming and removing trees potential impact of public properties, row and parks
    - Town office roof is slate and on the national registry – implement better maintenance practices – snow/wind/ice
  - Natural Systems Protection
    - Grant from RPC 1 mile new haven river downstream of hewitt - natural systems projects improve water quality and flood resiliency – lead to specific strategies – bug Andrew- SLR was awarded project

        - Locations would be prime areas for buyout
            - Near river and vt 116 near sycamore pare
            - At the bottom Basin st abandoned home (98 and TS 11) state buyout eligible
            - Kristen may provide more
            - Rockydale area including - the
    - Outreach and Education Programs
        - Consider implementing town invasive species practices for private homeowners
        - Snow removal plan outreach
        - VTalert – notification of residents – landlines included

- **Evaluate and Prioritize Mitigation Actions**
    - **See tab on hazard ranking spreadsheet**

- Discuss how to incorporate
    - Climate Change
    - Equitable Outcomes
- List of people it should be distributed to
    - Vulnerable list contacts (LEMP)
    - Vtrans
    - ANR – river management
    - Selectboard will be having a meeting to review and public hearing

Tasks Generate and who they are assigned to:
Valerie - FEMA disaster estimate from last year's flooding
Steph – to send new review tool
Kristen – to follow up on new phased regulations (2028) if town develops own prior do they still need to comply with state

Discussion Items:

Future Meetings:
Next meeting – draft to be sent out the week of August 5th

Meeting Agenda
Bristol – LHMP Meeting
August 21, 2024 @ 10:00am

Participants:
Valerie Capels – Town Administrator
Eric Cota – Public Works Foreman

Peeker Heffernan – Selectboard
Joel Bouvier – Selectboard
Brett LaRose – Fire Chief
Chanin Hill – Planning Commission
Kristen Underwood – Conservation Commission
Will Elwell – EMS
Michael Leyden – Citizen Liaison
Jill Marsano – Water Operator
Andrew L'Roe/Deron Rixon - ACRPC
Steph Magnan – Consultant

Agenda Items:

- Public Outreach
    - Public outreach Opportunities
        - *Whole Community stakeholders include:*
        - *1) local and regional agencies involved in hazard mitigation;*
        - *2) entities with authority to regulate development;*
        - *3) neighboring towns;*
        - *4) representatives of business, schools/academia, and other private organizations that sustain community lifelines; and*
        - *5) representatives of nonprofit organizations that work directly with or provide support to vulnerable populations.*

- 2024 Mitigation Action Identification
    - Identify gaps
    - Prioritize (tab in hazards spreadsheet)
    - Timeline
    - Cost
    - Responsible entity
    - Funding sources
- Look at current plan for snow - beef up historic roofs
- Update snow removal plan – accessibility between sidewalk and road
- Improve shelter preparations and notifying community that they are available
    - Local Plans and Regulations
        - Adopt river corridors?
        - General tree plans in addition to emerald ash borer
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Discussion Items:

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APPENDIX D – Certificate of Adoption

CERTIFICATE OF ADOPTION

Town of Bristol, Vermont Selectboard

A Resolution Adopting the Local Hazard Mitigation Plan-Town of Bristol, Vermont-2025

WHEREAS the Town of Bristol Selectboard recognizes the threat that natural hazards pose to people and property within the Town of Bristol; and

WHEREAS the Town of Bristol Selectboard has prepared a natural hazard mitigation plan, hereby known as the Local Hazard Mitigation Plan-Town of Bristol, Vermont-2025 in accordance with federal laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and the National Dam Safety Program Act, as amended; and

WHEREAS the Local Hazard Mitigation Plan-Town of Bristol, Vermont-2025 identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in the Town of Bristol from the impacts of future hazards and disasters; and

WHEREAS adoption by the Town of Bristol Selectboard demonstrates its commitment to hazard mitigation and achieving the goals outlined in the Local Hazard Mitigation Plan-Town of Bristol, Vermont-2025.

NOW THEREFORE, BE IT RESOLVED BY THE TOWN OF BRISTOL, VERMONT, THAT:

Section 1. In accordance with 24 VSA §872, the Town of Bristol Selectboard adopts the Local Hazard Mitigation Plan-Town of Bristol, Vermont-2025. While content related to the Town of Town of Bristol may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the Town of Bristol to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

ADOPTED by a vote of_____ in favor and____ against, and____ abstaining, this 22nd day of Sept, 2025.

By:_____(print name) John Heffernan
Selectboard Chair

ATTEST: By:_____(print name) Michelle Perlee