

Town of Plymouth, Vermont
Local Hazard Mitigation Plan

Adopted: 11/21/2022

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Approved: 01/12/2023

Prepared by the Two Rivers-Ottawaquechee Regional Commission and the Town of
Plymouth



FEMA

January 18, 2023

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

Dear Stephanie Smith:

As outlined in the FEMA-State Agreements for 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 Town of Plymouth, Vermont Local Hazard Mitigation Plan and approved it effective **January 12, 2023** through **January 11, 2028** in accordance with the planning requirements of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), as amended, the National Flood Insurance Act of 1968, as amended, and Title 44 Code of Federal Regulations (CFR) Part 201.

With this plan approval, the jurisdiction is eligible to apply to 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 the eligibility requirements for FEMA funding; even eligible mitigation activities or projects are not automatically approved.

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

Thank you for your continued commitment and dedication to risk reduction demonstrated by preparing and adopting a strategy for reducing future disaster losses. Should you have any questions, please contact Sean Loughlin at (617) 832-4780 or Sean.Loughlin@fema.dhs.gov.

Sincerely,

DEAN J SAVRAMIS Digitally signed by DEAN J SAVRAMIS
Date: 2023.01.20 19:32:03 -05'00'

Dean Savramis
Mitigation Division Director
DHS, FEMA Region I

DS:sl

cc: Brian McWalters, State Hazard Mitigation Planner, VEM
Caroline Paske, State Hazard Mitigation Planner, VEM
Ben Rose, Recovery and Mitigation Section Chief, VEM

CERTIFICATE OF ADOPTION

<<11/21/2022 >>

TOWN OF Plymouth, Vermont Selectboard

A RESOLUTION ADOPTING THE PLYMOUTH, Vermont 2022 Local Hazard Mitigation Plan

WHEREAS, the Town of Plymouth has historically experienced severe damage from natural hazards and it continues to be vulnerable to the effects of the hazards profiled in the **2022 Plymouth, Vermont Local Hazard Mitigation Plan**, which result in loss of property and life, economic hardship, and threats to public health and safety; and

WHEREAS, the Town of Plymouth has developed and received conditional approval from Vermont Emergency Management (VEM) for its **2022 Plymouth, Vermont Local Hazard Mitigation Plan (Plan)** under the requirements of 44 CFR 201.6; and

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

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

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

RESOLVED by Town of Plymouth Selectboard:

1. The **2022 Plymouth, Vermont Local Hazard Mitigation Plan** is hereby adopted as an official plan of the Town of Plymouth;
2. The respective officials identified in the mitigation action plan of the **Plan** are hereby directed to pursue implementation of the recommended actions assigned to them;
3. Future revisions and **Plan** maintenance required by 44 CFR 201.6 and FEMA are hereby adopted as part of this resolution for a period of five (5) years from the date of this resolution; and
4. An annual report on the process of the implementation elements of the Plan will be presented to the Selectboard by the Emergency Management Director or Coordinator.

IN WITNESS WHEREOF, the undersigned have affixed their signature and the corporate seal of the Town of Plymouth this 21st day of November 2022.

ATTEST B.H. Grandtombard Town Clerk



[Signature]
Selectboard Chair

[Signature]
Selectboard Member

Rich [Signature]
Selectboard member

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I. Introduction

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

Mitigation planning is only one of four phases of emergency management. Preparedness, response, and recovery are the other cycle phases. At any one time, a community may be in multiple phases of emergency management. It is important to distinguish between these four phases, especially between mitigation and preparedness. Mitigation is often confused with preparedness, and vice versa. Below are descriptions of each of the four phases of emergency management:



- **Mitigation:** Preventing future emergencies or minimizing their effects
 - Includes any activities that prevent an emergency, reduce the chance of an emergency happening, or reduce the damaging effects of unavoidable emergencies.
 - Buying flood and fire insurance for your home is a mitigation activity.
 - Mitigation activities take place before and after emergencies.
- **Preparedness:** Preparing to handle an emergency
 - Includes plans or preparations made to save lives and to help response and rescue operations. Training and proper equipment are preparation
 - Evacuation plans and stocking food and water are both examples of preparedness.
 - Preparedness activities take place before an emergency occurs.
- **Response:** Responding safely to an emergency
 - Includes actions taken to save lives and prevent further property damage in an emergency. Response is putting your preparedness plans into action.
 - Rescuing people from flooding or putting out a fire are both response activities.
 - Response activities take place during an emergency.
- **Recovery:** Recovering from an emergency
 - Includes actions taken to return to a normal, preferably incorporating mitigation actions to create an even safer situation following an emergency.
 - Recovery includes getting financial assistance to help pay for the repairs.
 - Rebuilding damaged roads or providing loans to businesses are both recovery activities.
 - Recovery activities take place after an emergency.

II. Purpose of the Plan

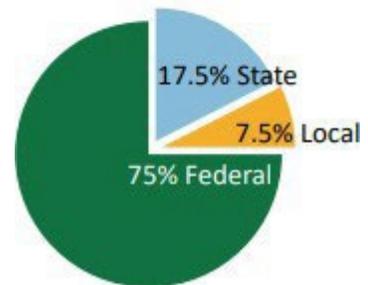
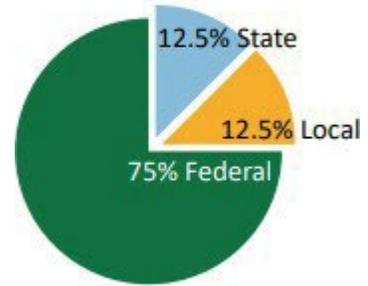
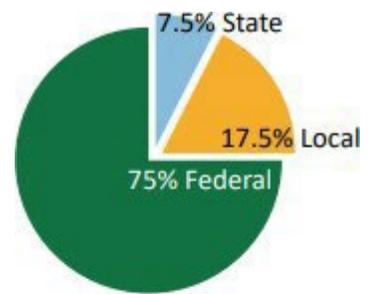
The purpose of this Plan is to assist Plymouth in identifying all hazards facing the town, rank them according to probability and impact and identify strategies to reduce risks from known priority hazards. This Plan seeks to conform with the strategies, goals, and objectives of the State Hazard Mitigation

Plan. This Plan is an update of the 2015 Plymouth Local Hazard Mitigation Plan. This Plan has been reorganized and new sections were added:

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

New information has been added to make the plan stronger and more useful for the Plymouth town officials and residents who will implement the hazard mitigation strategies in the future.

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



The Plan additionally serves as an important financial incentive during federally declared disasters. In October 2014, the state enacted new Emergency Relief and Assistance Fund (ERAF) rules that provide additional state matching funds for federal disaster relief under FEMA’s Public Assistance Program (FEMA typically requires a 25% match). To qualify, municipalities must have taken four actions: (1) Adopt updated road standards; (2) Participate in the National Flood Insurance Program (NFIP) by adopting flood hazard area regulations; (3) Annually adopt a local emergency management plan; and (4) Have a FEMA-approved Local Hazard Mitigation Plan. Under ERAF, there is a financial incentive that allows the town to lessen their financial burden during federally declared disasters. By taking these actions, the state will contribute half (12.5%) of the required 25% match on federal disasters.

A fifth incentive that not many communities in Vermont take advantage of is to adopt either a River Corridor bylaw or participate in the Community Rating System (CRS). River Corridor bylaws regulate lands mapped by the State of Vermont that are usually beyond the FEMA-mapped flood zone, with the concern being erosion that can undermine structures. CRS is a complicated administrative process with a simple premise – that taking additional flood prevention steps will lessen flood damages. Communities in the CRS enjoy lower flood insurance rates. Having either of the fifth actions will lower the financial burden under the ERAF rule to only a 7.5% match for the town. At the time of this writing, the town is financially responsible for 17.5% on the dollar in federally declared disasters due to the expiration of the local hazard mitigation plan. Every percent saved in a million-dollar disaster is \$10,000.

Separately, in 2014, state planning law (24 V.S.A. Chapter 117) required that all updated municipal comprehensive plans must include a “flood resilience” element, addressing both flooding and fluvial erosion hazards. This requirement was met with the adoption of Plymouth’s Town Plan in 2019.

III. Community Profile

The Town of Plymouth encompasses nearly 46 square miles. It consists of two physiographic areas separated by the north-south running valley formed by the Black River. To the west of this valley are a section of the Green Mountains, characterized by steep slopes and rugged terrain. To the east are intermountain valleys and low foothills, containing only a few peaks above 2,000 feet. Most of the town's commercial/retail establishments are local or tourist in nature and are located on or near the state highways.

According to the 2020 U.S. Census Reports, Plymouth’s total population is 641. There is very little commercial or industrial development in Plymouth. Some of the existing non-residential developments in Plymouth include the Echo Lake Inn, Salt Ash Inn, Good Commons, Inn at Waters Edge, the Calvin Coolidge State Park, Plymouth State Park, Calvin Coolidge Historic Site and Plymouth Artisan Cheese. All of these are located on Route 100 or Route 100A. These establishments are relatively small, and there are no known plans of their expansion. In addition, there are two summer camps (with some winter activities), Farm and Wilderness and Bethany Birches.

Plymouth has no local electrical generation, present or foreseen. Power needs are supplied by Green Mountain Power and Ludlow Electric from generating plants in surrounding communities. Various power transmission lines feed necessary power requirements to both residences and businesses

The Fire Department is a volunteer organization funded in part by Town taxes and by fund raising activities, which include annual solicited and unsolicited donations from taxpayers, and barbecues. No members are paid for any time rendered. The Fire Department Station, located in the Town Offices Building on Route 100, contains one tanker truck, one pumper truck, and a utility truck.

The Plymouth First Response Team is composed of volunteers who respond to vehicle accidents and other medical emergencies prior to the arrival of an ambulance. The Plymouth First Response Team is licensed at the advanced EMT level. Ambulance service is provided from Ludlow and Woodstock, both of which are licensed at the Paramedic level. The closest hospitals are the Springfield Hospital and the Rutland Regional Medical Center, located in Springfield and Rutland, respectively. Medivac services are available by the Dartmouth Health Advance Response Team (DHART) helicopter.

IV. The Planning Process

A. Plan Developers

Steven Bauer, Senior Planner at the Two Rivers-Ottawaquechee Regional Commission (TRORC), assisted the Town of Plymouth with updating their Hazard Mitigation Plan. The planning process involved representatives from the Town. The committee members who assisted with the revisions include:

- Al Poirier, EMD
- Sue Poirier, Head of First Response Team
- Larry Lynds, Road Foreman
- Kirk Turner, Fire Chief
- Frank Vetere, Town Health Officer
- Rick Kaminski, Selectboard Member

This section of the Plan satisfies 44 CFR 201.6(b)(1) and 201.6(c)(1) (or, A3.a and A3.b of FEMA's Local Mitigation Plan Review Guide, 2011).

How Participation Was Solicited

On December 13, 2021, TRORC sent an email to Emergency Management Director, Al Poirier. In this email, TRORC's staff requested the names and contact information of potential committee members to assist with revising Plymouth's HMP. Al Poirier responded with a list of individuals in the Town that would be qualified and wanted to participate. TRORC staff continued to meet with the update committee until the

Hazard Mitigation Plan was adopted by the Selectboard.

B. Plan Development Process

The 2009 Plymouth Annex was originally part of the 2008 multijurisdictional Regional Hazard Mitigation Plan drafted by TRORC and approved by FEMA on September 30, 2008. The 2015 Plan was an update of the 2008 Plan, which FEMA approved on September 25, 2015. In 2015, the Plan was reconstructed as a stand-alone Hazard Mitigation Plan. In the following sections, you can find the summary of changes and of the planning process for the 2015 Local Hazard Mitigation Plan Adopted Plan, and a thorough description of the changes and planning process for the 2022 Plan.

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

Summary of 2022 Changes, Additions, and Planning Process

The changes to the 2022 Plan focused on redefining known hazards and developing new mitigation strategies. New sections on the plan development process, updates to the mitigation strategies, existing hazard mitigation programs, projects, activities, maps, and plan maintenance were added. The Plan updates relevant data. Plymouth's top hazards continue to be severe weather related. The planning committee, with TRORC's consultation, used the Vermont Emergency Management ranking system to rate the hazards. Three meetings were held with committee members and/ or selectboard on:

- Tuesday, January 25, 2022
- Tuesday, March 15, 2022
- Monday, May 16, 2022

These meetings consisted of publicly warned hazard mitigation committee meetings and selectboard meetings.

While the 2015 Plymouth Hazard Mitigation Plan provided a good basis for the 2022 Plan, there were several sections that needed updates based on public meetings. Below is a list of significant changes made to this Plan:

- General
 - Data updates: new hazard incidents, new federal emergency declarations, and census data.
 - Reevaluation of hazards using the VEM hazard ranking system.
 - Maps were updated to reflect new state data layers.
- Hazard Analysis
 - Based on a hazard ranking exercise conducted at a public meeting held on January 25, 2022. The following hazards were identified

as being the ‘top hazards’ in Plymouth:

- (1) **Flooding (Flash flood/ fluvial erosion)**
- (2) **Winter Storms (Ice storms/Snowstorms)**
- (3) **Thunderstorms**
- (4) **High Winds**
- (5) **Extreme Temperatures (Extreme Hot and Cold)**

- Each of these hazards were thoroughly analyzed by the Town of Plymouth to include location, vulnerability, extent, impact, and likelihood.
- Top hazards that were present in the 2015 Plan but removed for the 2022 Plan were Hurricane/Tropical Storm and Landslide/Mudslide. These hazards merged under other Severe Weather-related hazards for this Plan.
- **Mitigation Strategies**
 - A public meeting was held on March 15, 2022, with the committee to develop mitigation strategies for this 2022 Plan.
 - Mitigation strategies that were completed since the 2015 Plan were removed from the 2022 mitigation strategy table. A table was also created that showed all mitigation strategies from the 2015 plan and if they were completed or not.

The 2015 Plan process was an immersive process taken on by the committee and TRORC since it acted as an entirely new Plan (as it was an annex before). For the 2022 Plan, a similarly immersive process was conducted with the committee to gather as much public feedback as possible. Below is a thorough description of each public meeting that was held for this iteration of the Plan.

- **Tuesday, January 25, 2022**
 - **Summary:** A public meeting was notified and held at the Plymouth Town Offices to kick- off the planning process and to complete a hazard ranking process.
 - **Major outcomes:** TRORC staff did a brief presentation on the LHMP planning process and the importance of identifying and mitigating hazards in a hazard mitigation plan. The LHMP Committee then identified several hazards that were a threat to Plymouth and ranked these hazards by their overall impact. While the meeting was open to the public, no members of the public were in attendance.
 - **Notifications:** Notifications were made on the TRORC website.
- **March 15, 2022**
 - **Summary:** A second public meeting was held at the Plymouth

- Town Offices to discuss previously identified mitigation actions and develop new actions.
- Major outcomes: The committee informed TRORC staff of what mitigation actions identified in the 2015 LHMP were complete and which actions were still in progress. TRORC Staff and the committee then coordinated to develop new mitigation actions to address the top five hazards identified on January 25, 2022. While the meeting was open to the public, no members of the public were in attendance.
- Notifications: Notifications were made on the TRORC website, in the Valley News, and the Vermont Standard.
- May 16, 2022
 - Summary: A public meeting was notified and held at the Plymouth Town Offices to review the final draft of the mitigation plan.
 - Major outcomes: Members of the Plymouth Selectboard held a meeting to review the final draft of the mitigation plan. TRORC led the Selectboard through the Plan and what revisions were made. Questions from the officials and public included how this mitigation plan interacts with FEMA and other funding sources that the town could access, and on the historical occurrences of the top hazards that the committee selected for this plan. A draft of the plan was available for public review and comment at the meeting.
 - Notifications: Notifications were made on the Town website, TRORC website, and in the Vermont standard.
- August 24, 2022
 - Summary: A core team meeting was held to discuss the feedback from the Plan Review and to make revisions.
 - Major outcomes: Members of the Plymouth LHMP committee discussed changes in priorities from the 2015 Plan, as well as town-specific vulnerabilities for each hazard.

A final draft of the 2022 Plymouth Hazard Mitigation Plan was sent to bordering communities via email on to as for feedback. These communities include Bridgewater, Stockbridge, Killington, Mendon, Shrewsbury, Mount Holly, Ludlow, Cavendish, and Reading. The Plan was sent to either the Selectboard Chair or Town Manager of those respective communities. No comments on the draft plan were received. The paragraph below shows the message that was emailed out to these communities:

Dear Town Official,

On behalf of the Town of Plymouth, per 44 CFR 201.6 Local Mitigation Plans Requirement §201.6(b)(2), jurisdictions that are updating or creating a Local Hazard

*Mitigation Plan are required to send a draft of the plan to all neighboring communities for comment. The Plymouth Hazard Mitigation Plan is attached for your review. Any comments on this plan must be emailed back to me by **DATE** for consideration.*

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

- State of Vermont Hazard Mitigation Plan, 2018
- Town of Plymouth Hazard Mitigation Plan (Adopted September 25, 2015)
 - This plan was referenced extensively during the update / development process, especially regarding the worst threats and mitigation action strategies identified in 2015.
- Plymouth Town Plan (Adopted September 10, 2019)
 - This plan provided TRORC's staff with background information on the community, as well as more detail on their emergency services.
- Plymouth's Local Emergency Management Plan (LEMP) (Last Adopted April 4, 2022)
 - This Plan was referenced for general information about Plymouth's emergency operations.
- Additional data sources are mentioned in the *Hazard Identification* section of this Plan.
 - For Severe Weather: information was collected from the National Centers for Environmental Information and FEMA Database of Declared Disasters and the National Centers for Environmental Information.
 - For Hazardous Material Spills: information was collected from the Vermont Department of Environmental Conservation's Spill List
 - For Fire: information was provided by the Plymouth Fire Department
 - For Water/Wastewater Contamination: information was collected from the Vermont Department of Environmental Conservation's Spill List
 - For Pandemic: information was collected from the Center for Disease Control and Prevention and the U.S. Bureau of Labor Statistics

C. Status Update on Mitigation Actions Identified in 2015

The table in this section outlines the mitigation actions from the 2015 Plymouth Hazard Mitigation Plan. Participants in this 2022 Plan reviewed these actions and reported on the status of each strategy.

Hazard(s) Mitigated	Mitigation and Preparedness Actions	Local Leadership	Prioritization	Possible Resources*	Time Frame	Completed since 2015?
All Hazards	<i>Ensure that Plymouth's Local Emergency Operations Plan (LEOP) is kept up to date.</i>	Emergency Management Director	High	Local Resources	A year after Plan Approval	<input checked="" type="checkbox"/> Completed. The Local Emergency Management Plan (LEMP) replaced the LEOP. The LEMP was adopted on 4/4/2022.
	<i>Maintain the Town's Plymouth Press to disseminate emergency information (ex. weather-and road condition- related information) during emergency operations or when the Town's Emergency Operations Center (EOC) has been activated.</i>	EMD in conjunction with Community Center Coordinator	High	Local resources	As needed	Completed. This is an ongoing task.

	<i>Continue to monitor state-issued weather information and disseminate to community if necessary.</i>	Emergency Management Director	High	Local resources	Daily	Completed. This is an ongoing task.
Severe Weather/ Flash Flood/ Flood/ Fluvial Erosion/ Hurricane/ Tropical Storm	<i>Improve culverts determined to be of a "High Priority" in the Town's 2013 Better Backroads culvert inventory to improve the flow of floodwaters (see red section in Appendix C). Depending on the specific culvert project, the improvement may involve maintenance (i.e. cleaning) but for culverts that are undersized, a new culvert with increased dimensions will replace the old one.</i>	Road Foreman in coordination with the Selectboard	High	Local resources; Better Backroads grants; HMGP and PDM grants; Class II VT State Roads grants	1-2 years after Plan Approval	Completed. This is an ongoing task. Road Foreman will continue to inventory and apply maintain replaced culverts

Severe Weather/ Flash Flood/ Flood/ Fluvial Erosion/ Hurricane/ Tropical Storm	<p><i>Improve culverts determined to be of a “Medium Priority” in the Town’s 2013 Better Backroads culvert inventory to improve the flow of floodwaters (see yellow section in Appendix B). Depending on the specific culvert project, the improvement may involve maintenance (i.e. cleaning) but for culverts that are undersized, a new culvert with increased dimensions will replace the old one. (Mitigation)</i></p>	<p>Road Foreman in coordination with the Selectboard</p>	<p>Medium (new)</p>	<p>Local resources; Better Backroads grants; HMGP and PDM grants; Class II VT State Roads grants</p>	<p>2-4 years after Plan Approval</p>	<p>Completed. This is an ongoing task. Road Foreman will continue to inventory and apply maintain replaced culverts</p>
	<p><i>Improve culverts determined to be of a “Low Priority” in the Town’s 2013 Better Backroads culvert inventory to improve the flow of floodwaters (see green section in Appendix B). Depending on the specific culvert project, the improvement may involve maintenance (i.e. cleaning) but for culverts that are undersized, a new culvert with increased dimensions will replace the old one. (Mitigation)</i></p>	<p>Road Foreman in coordination with the Selectboard</p>	<p>Low (new)</p>	<p>Local resources; Better Backroads grants; HMGP and PDM grants; Class II VT State Roads grants</p>	<p>3-5 years after Plan Approval</p>	<p>Completed. This is an ongoing task. Road Foreman will continue to inventory and apply maintain replaced culverts</p>

Severe Weather/ Flash Flood/ Flood/ Fluvial Erosion/ Hurricane/ Tropical Storm	<i>Incorporate and use the State of Vermont's river corridor (fluvial erosion) maps for hazard mitigation mapping and planning purposes. (Mitigation)</i>	Planning Commission & Selectboard	Medium	Local resources	2-4 years after Plan Approval	<input checked="" type="checkbox"/> Complete d. See Plymouth Zoning Ordinance Sec. 2.4.2 and the 2019 Plymouth Town Plan
	<i>Promote and support floodplain restoration projects on private property, such as the work currently being done on the Flaster property. (Mitigation)</i>	Selectboard & Planning Commission	Medium (new)	Local resources	2-4 years after Plan Approval	Not Completed. The Flaster project is scheduled for Summer 2022. Efforts continued.
	Mitigation and Preparedness Actions	Local Leadership	Prioritization	Possible Resources*	Time Frame	Completed since 2015?
	<i>Periodically clear and maintain town road rights-of-way, and work with local utilities to ensure that utility corridors are cleared and maintained. (Mitigation)</i>	Road Foreman	High	Local resources	1 year after plan Approval	Completed. This is an ongoing task. GMP and Ludlow Electric have been proactive in clearing.

	<i>Install “living snow fences” (i.e., trees, shrubs) on Kingdom Road and as needed to reduce blowing and snow drift over critical road segments. (Mitigation)</i>	Selectboard	low (new)	Local resources	4-5 years after Plan Approval	Not Completed. Deem non-essential and conflicts with private property.
	<i>Plan for, budget, and maintain town roads for safe winter travel.</i>	Selectboard	High	Local resources	year after plan Approval	Completed. This is an ongoing task.
Extreme Cold/Snow/ Ice Storm	<i>Plan for, budget, and maintain town roads for safe winter travel.</i>	Selectboard	High	Local resources	year after plan Approval	Completed. This is an ongoing task.
	Mitigation and Preparedness Actions	Local Leadership	Prioritization	Possible Resources*	Time Frame	Completed since 2015?

	<i>Plan for the enlargement of the Town's salt storage facility (will allow the Town to store more salt on-site and minimize the chance of shortage).</i>	Selectboard	Medium	Local resources	2-4 years after Plan Approval	Not Completed. Should complete in the next 2-4 years
	<i>Complete an inventory of high-risk areas and of locations where critical facilities, buildings and infrastructure are vulnerable to landslides/mudslides/rockslides.</i> (Mitigation)	Emergency Management Director & Road Foreman	High (new)	Local resources, assistance from TRORC	1-2 years after Plan Approval	Not Completed. Should complete in the next 2-4 years
Landslide/ Mudslide/ Rockslide	<i>Install water bars on the Class 4 section of TH-20 (Old Kingdom Road) to prevent future landslides.</i> (Mitigation)	Road Foreman	High (new)	Local resources; Better Backroads grants		Completed.
	<i>Stabilize banks on Kingdom Road.</i> (Mitigation)	Road Foreman	Low (new)	Local resources; Better Backroads grants	4-5 years after Plan Approval	Homeowner refused to allow any mitigation.
	<i>Develop a flyer discussing chimney fires and how to help prevent them.</i>	Fire Department	High	Local Resources	1 year after Plan Approval	Not Completed. Should be completed and posted within 6 months
	<i>Develop a flyer discussing smoke and CO alarms.</i>	Fire Department	High	Local Resources	1-2 years after Plan Approval	Not Completed. Should be completed within 6 months

	Mitigation and Preparedness Actions	Local Leadership	Prioritization	Possible Resources*	Time Frame	Completed since 2015?
Structure Fire	<i>Develop and present an education piece for residents on wild land fires and how to landscape and help protect their home.</i>	Fire Department	Medium	Local resources	2 years after Plan Approval	Not Completed. Should be completed and posted within 6 months
	<i>Install dry hydrants to improve the fire-fighting capabilities in Plymouth, including on Hale Hollow and in the library foot bridge. (Mitigation)</i>	Fire Department	Medium	Local resources	2-4 years after Plan Approval	Hale Hollow completed. Library foot bridge could not be done. Over 13' in elevation.
	<i>Upgrade equipment as needed, or as equipment budgets allow.</i>	Fire Department	Medium	Local resources	2-4 years after Plan Approval	This is an ongoing task and need

D. Existing Hazard Mitigation Programs, Projects & Activities

The Town of Plymouth is engaged in the following hazard mitigation programs, projects, and activities:

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

	Type of Existing Authority / Policy / Program / Action	Resources: Staffing & Funding	Ability to Expand/Improve on
Community Preparedness Activities	Program—Annual update of Plymouth’s Local Emergency Management Plan (LEMP). Last updated and approved on 4/4/2022.	Updated by the Emergency Management Director, assistance from TRORC and funding from Vermont Emergency Management.	Current program works well, no need to expand or improve on. The LEMP is reviewed and updated each year.
	Program— Participation/attendance in the Regional Emergency Management Committee.	Staff/volunteer time from the Plymouth Fire Department; meetings convened by TRORC. Funding from Vermont Emergency Management.	This is a new concept created by Vermont Emergency Management that will require the EMD and a member of Fire/EMS to be representatives of the Town. Representatives will need to be elected by the Selectboard with regular attendance at quarterly meetings

	<p>Program— Identify populations that are vulnerable during town wide emergencies and plan to assist them, if necessary, when it occurs.</p>	<p>Volunteer and staff time from EMD, Health Officer, First Response Team. Funding from local budgets.</p>	<p>by the two representatives. Current program works well, no need to expand or improve on.</p>
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	Type of Existing Authority / Policy / Program / Action	Resources: Staffing & Funding	Ability to Expand/Improve on
Insurance Programs	<p>Authority/ Program—participation in National Flood Insurance Program (NFIP)</p> <p>The Town participates in the NFIP through their enforcement of the “Flood Hazard District” overlay district, which was adopted 05/20/2013. They are kept up-to-date and regulate new development in the Special Flood Hazard Area (SFHA).</p> <p>[Note: This section of the Plan satisfies the requirements of 44 CFR 201.6(c)(3)(ii).]</p>	<p>The Selectboard serves as the NFIP Administrator for both entities. Assistance from TRORC and Vermont ANR. Funding from local resources—annual budget.</p>	<p>The Town’s initial Flood Hazard Boundary Map was identified on 8/9/74. The Town’s initial Flood Insurance Rate Map (FIRM) was dated 12/15/78. The Town’s initial Flood Hazard Boundary Map was identified on 09/13/74. Flood Insurance Study (FIS) has been updated, and the current effective date for all is 09/28/07.</p>
Land Use Planning	<p>Policy/Program— Plymouth Town Plan.</p> <p>Adopted on 9/10/2019</p>	<p>Staff time, volunteer time from Planning Commission, and assistance from TRORC and other state agencies on specific subject matter. Funding from Municipal Planning Grants and local budget.</p>	<p>The Plan is updated every eight years, as required by statute. The Planning Commission may expand or improve on any section it deems necessary, or that is required by changes in state statute.</p>
	<p>Completed Authority— Plymouth Zoning Regulations</p>	<p>Volunteer time from the Planning Commission; /Town Selectboard, and assistance from TRORC. Funding from Municipal Planning Grants, and local budgets.</p>	<p>During the Town Plan review/update period, the Zoning Regulations are also reviewed and updated if needed.</p>
Hazard Control & Protection of Critical Infrastructure & Facilities	<p>Policy/Program—Plymouth Hazard Mitigation Plan</p> <p>Last approved on 08/04/2015</p>	<p>Updated with paid and volunteer time from local officials and assistance from TRORC and Vermont Emergency Management. Funding from VEM/FEMA.</p>	<p>The 2022 Plymouth Hazard Mitigation Plan will replace the 2015 Plan. The 2022 HMP has evolved from the 2015 Plan and has greatly expanded and improved upon it. Future iterations of the Town’s LHMP will be updated by the Town at least every five years.</p>
	<p>Program—culvert inventory completed in fall 2013 for the Town</p> <p>This inventory includes georeferenced locations and attributes for all culverts/drop inlets in Plymouth. The Town and received the culvert inventory and specific priority projects were identified for both entities.</p>	<p>Staff time from Plymouth Road Foreman and assistance from TRORC. Funding from Better roads grant; local personnel time.</p>	<p>The Town is currently using the culvert inventory to further its culvert improvement program and seeking funding through various sources for implementation projects. The culvert inventory will need to be updated using assistance from TRORC in 2023.</p>
	Type of Existing Authority / Policy / Program / Action	Resources: Staffing & Funding	Ability to Expand/Improve on

	Ongoing Action— Plan for, budget and maintain roads for safe winter travel.	Volunteer and staff time from Road Foreman, Selectboard, and EMD. Funding from local budgets.	Current program works well, no need to expand or improve on.
	Ongoing Action— Clear and maintain town road rights-of-way, and work with local utilities to request that utility corridors are cleared and maintained, as needed. Identify hazard trees in town rights-of-way (and those at risk at damaging other public infrastructure) and remove them to mitigate damage from severe wind storms.	Staff time from Road Foreman. Funding from town resources.	Current program works well, no need to expand or improve on.
	Ongoing Action— Remove, where necessary, trees and brush from rivers/streams that pose an imminent threat to public safety and property; inspect periodically to reduce risk of flooding. Approval from ANR is needed.	Road Foreman with assistance and funding from Local resources; Vermont DEC’s River Management Section.	Current program works well, no need to expand or improve on.
Education/ Public Outreach	Ongoing Action/Program—Town posts tips continually on Facebook, Twitter, and the Town website regarding safety and road closures.	Staff time from Administration personnel and emergency services personnel. Funding from local budgets.	This is an ongoing action/program, and currently works well so there is no need to expand/improve on it currently.

Changes in Town Priorities and Vulnerabilities since the 2015 Plan

This 2022 Local Hazard Mitigation Plan reflects the evolution of the Town’s priorities since 2015. Some of the “top hazards” identified in the 2015 Plan have been retained in this plan, but there have also been some significant changes. Structural Fire was a top hazard for Plymouth in 2015 but is not examined at length in this Plan since the committee determined structure fires to be rare occurrences. Landslides, Mudslides and Rockslides have also been removed from the “Top Hazards” list. The committee determined that, while this hazard could occur, it would likely be the result of fluvial erosion and flooding, which was of greater concern to the committee. Added to the top hazards are Extreme Heat (combined with Extreme Cold to form the Extreme Temperatures hazard) and High Winds. Extreme cold is of concern to the Town, given the possibility of power outages and the challenge this hazard could place on emergency response. The committee indicated that high winds are of concern, as they can cause downed trees and power lines, and can make emergency response more difficult. As Plymouth is a small town, there has been no major development in recent years that would impact the town’s ability to respond to hazards.

E. Plan Maintenance

This Plan will be updated and evaluated annually, by discussing its effectiveness and making note to incorporate any necessary revisions in the update process. At a March or April 2023 Selectboard meeting, the Selectboard, will monitor the implementation of the hazard mitigation strategies outlined in this Plan, by noting those that have been completed, are in the process of completion, or any issues with initiating the activity. Any comments from local officials and the public will be incorporated when relevant. This meeting will constitute an opportunity for the public and other town officials to hear about the town's progress in implementing mitigation strategies and to give input on future activities and Plan revisions. The public will be given the opportunity to comment at this meeting, and the comments will be incorporated when relevant.

The local Emergency Coordinator/Director will lead in monitoring and updating this plan. Updates and evaluation of this Plan by the Selectboard and the local Emergency Coordinator/Director will also occur within three months after every federal disaster declaration directly impacting the Town of Plymouth. The Town will monitor, evaluate, and update this Local Hazard Mitigation Plan at a March or April Selectboard meeting and after every federally declared disaster directly impacting the Town. The Town shall reference the Local Hazard Mitigation Plan when working on Town Plan amendments or changes to the Town's bylaws.

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

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

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

Plymouth shall also incorporate mitigation planning into their long-term land use and development planning documents. The 2019 Plymouth Town Plan references the 2015 Plymouth LHMP. The 2013 Vermont Legislature passed a law requiring all towns to incorporate flood resiliency elements into their town plans as of July 2014. To do so, flood hazard and fluvial erosion hazards will be identified, and strategies and recommendations will be provided to mitigate risks to public safety, critical infrastructure, historic structures and public investments. This Local Hazard Mitigation Plan assisted the Town when the Town Plan was updated and adopted in 2019 when a new flood resilience element was added.

It is also recommended that the Town review and incorporate elements of the Hazard Mitigation Plan into updates for the Town plan, zoning regulations, and flood hazard/ fluvial erosion hazards (FEH) bylaws. The incorporation of the goals and strategies listed in the Local Hazard Mitigation Plan into the Town plan, zoning regulations and flood hazard/FEH bylaws will also be considered after declared or local disasters. The Town shall also consider reviewing any future TRORC planning documents for ideas on future mitigation projects and hazard areas.

V. Community Vulnerability by Hazard

A. Hazard Identification

Mitigation efforts must be grounded in the rational evaluation of hazards to the area and the risks these hazards pose. This is done through a process, which in essence asks and answers three basic questions:

- What bad things can happen?
- How likely are they to occur?
- How bad could they be?

This process, which is laid out in the table (below), is an attempt to inventory the known hazards, establish the likelihood of them occurring in the future, and then assess the community's potential vulnerability to each. By performing this analysis, we can prioritize actions that are designed to mitigate the effects of each of these disaster types and ultimately make Plymouth a safer place.

It is important that we learn from the past to avoid the same disasters and their outcomes. Disasters that have occurred within the Town of Plymouth, the larger region, and the State of Vermont can give us good information about what types of disasters we can expect in the future and what kinds of damage they might cause. However, while this historical data can inform our perspective of what might happen in the future, it is by no means a prophecy. While Plymouth might not have been impacted by a specific hazard in the past, this does not necessarily mean it will never affect its future. Indeed, the advance of climate change means that old weather patterns may not hold. For instance, in recent years, Vermonters have seen an increase in the number and severity of storms, especially rainfall events. Armed with historical data and a healthy respect for climate change and the unknown, we have tried our best to identify hazards and prepare for the future.

The following table reflects the hazards that the team believes can be expected, or are at least possible, in the central Vermont area. In the 2022 Plan, it was decided to model the hazard ranking off the 2018 Vermont State Hazard Mitigation Plan to simplify the process. The table below shows the ranking criteria that was used.

Hazard Assessment Ranking Criteria		
	Frequency of Occurrence: Probability of a plausibly significant event.	Potential Impact: Severity and extent of damage and disruption to population, property, environment, and the economy.
1	Unlikely: 1% probability of occurrence per year	Negligible: isolated occurrences of minor property and environmental damage, potential for minor injuries, minor economic disruption.
2	Occasionally: 1-10% probability of occurrence per year, or at least one chance in next 100 years	Minor: isolated occurrences of moderate to severe property and environmental damage, potential for injuries, minor economic disruption
3	Likely: >10% by <75% probability per year, at least 1 chance in next 10 years.	Moderate: severe property and environmental damage on a community scale, injuries or fatalities, short-term economic impact
4	Highly Likely: .75% probability in a year	Major: severe property and environmental damage on a community or regional scale, multiple injuries or fatalities, significant economic impact

Using this ranking criterion, the table shows a list of hazards that may affect Plymouth in the future, along with their ranking on which hazards are most likely to be severe. Out of this table, a list of five hazards that are believed to be the worst threats (bolded in the table, below) are then followed-up with discussion and mitigation strategies throughout the rest of this Plan.

Table 1: Hazard Assessment							
Hazards	Probability	Potential Impact					Score
		Infrastructure	Life	Economy	Environment	Average	
<i>Thunderstorms</i>	4	3	1	2	2	2	8
<i>Extreme Cold and Heat</i>	4	2	2	1	2	1.75	7
<i>Ice Storm</i>	2	4	2	4	2	3	6
<i>Snowstorm</i>	4	2	1	2	1	1.5	6
<i>Floods / Flash Floods / Fluvial Erosion</i>	3	4	2	3	2	2.75	8.25
<i>High Winds</i>	4	3	1	2	2	2	8
<i>Hurricanes / Tropical Storms</i>	2	4	2	3	2	2.75	5.5
<i>Hail</i>	2	3	1	2	1	1.75	3.5

Table 1: Hazard Assessment							
Hazards	Probability	Potential Impact					Score
		Infrastructure	Life	Economy	Environment	Average	
<i>Hazardous Materials Incidents</i>	2	2	1	1	3	1.75	3.5
<i>Water & Wastewater Contamination</i>	1	3	2	2	4	2.75	2.75
<i>Pandemic</i>	1	1	3	2	1	1.75	1.75
<i>Fire Hazards (Structure, Wildfires, Brushfires)</i>	2	3	2	2	1	2	4
Erosion	2	3	1	1	2	1.75	3.5
Landslides	2	4	2	2	3	2.75	5.5
Invasive Species	2	2	1	2	2	1.75	3.5
Drought	2	3	1	2	3	2.25	4.5
Dam Failure	1	2	2	2	2	2	2
Traffic	3	2	2	1	2	1.75	5.25
ATV/ Snowmobile	2	1	2	1	2	1.5	3
Carbon Dioxide Poisoning	1	1	3	1	1	1.5	1.5
Carbon Monoxide Poisoning	1	1	4	2	1	2	2
Active Shooter	1	1	3	2	1	2	2
Earthquakes	1	1	1	1	1	1	1
Tornado	1	1	1	1	1	1	1
Tsunami (Vermont is landlocked)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Volcano (Vermont has no active volcanoes)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

The Town of Plymouth identified the following “top hazards,” which they believe their community is most vulnerable to in terms of potential consequences and likelihood (listed in anticipated frequency of occurrence):

- (1) Flooding (Flash flood/ fluvial erosion)**
- (2) Winter Storms (Ice storms/Snowstorms)**
- (3) Thunderstorms**
- (4) High Winds**
- (5) Extreme Temperatures (Extreme Hot and Cold)**

Each of these “top hazards” will be discussed in the following sections. Data for these hazards were gathered from several federal resources and are often only available at the county level. As such, information specific to Windsor County was used to identify and evaluate the type, frequency, and relative impact within According to were nineteen declared major Windsor County and 2020 –

one every three not all impacted directly. As Federal Declaration majority of disasters was or other types of storms. Most one that has declared for, pandemic coronavirus).

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

Source: FEMA.

Omission Rationale

The following hazards listed on the Hazard Identification are not further discussed in the 2022 Plymouth LHMP. Some of these hazards were identified by the committee members at the meeting held on January 15,

2022. Several other of these hazards were discussed in the 2018 Vermont State Hazard Mitigation Plan, where the reader can find a more detailed description and information.

- **Erosion (other):** This hazard event refers to non-fluvial erosion, such as soil runoff and loss from hillsides, agricultural fields, and roads. While it is common for erosion to occur in the Town of Plymouth, there is little data regularly available for the extent of erosion that occurs, thus it is not covered significantly in this plan.
- **Landslides:** Landslides are identified as a hazard in the 2018 Vermont State Hazard Mitigation Plan. While it can potentially have devastating impacts on infrastructure, its occurrence in Plymouth is not as frequent as many other hazards identified in this plan, thus it is not discussed further.
- **Invasive Species:** Invasive species are a hazard identified in the 2018 Vermont State Hazard Mitigation Plan. Invasive species have a presence in Plymouth; however, the effects that they have on life, the economy, and infrastructure are far less impactful than various other hazards identified in this plan, thus this hazard is not explored further.
- **Drought:** Drought is identified as a hazard in the 2018 Vermont State Hazard Mitigation Plan. A drought is unlikely to occur in the Town of Plymouth, and thus it is not discussed further in this LHMP.
- **Carbon Monoxide Poisoning:** Carbon monoxide poisoning was identified as a potential hazard by the committee. While this hazard can lead to loss of life, the occurrence of carbon monoxide poisoning is rare (since the introduction of carbon monoxide detectors) and is often in conjunction with other hazards, such as power outages caused by severe weather. This hazard is not discussed further in this LHMP.
- **Active Shooter:** The possibility for the event of an active shooter was identified as a potential hazard by the committee. The likelihood of this event occurring is low, and thus it is not discussed further in this LHMP.
- **Dam Failure:** While there are multiple dams located in and around the Town of Plymouth, the possibility of a dam failure is low, and thus this hazard is not discussed further in this LHMP.
- **Earthquakes:** Earthquakes are a hazard identified in the 2018 Vermont State Hazard Mitigation Plan. They rarely occur in Plymouth and their effects have typically been minor, thus they are not discussed further in this LHMP.
- **Tornados:** Like earthquakes, tornados are not a common occurrence in this region, and thus are not discussed further in this LHMP.
- **Tsunami:** Vermont is a landlocked state, which makes the probability of a tsunami at zero This hazard is not explored further in this LHMP.
- **Volcano:** Because there are no active volcanos in Vermont or nearby, this hazard is not discussed further in this LHMP.

B. Hazard Profiles for “Top Hazards”

The Hazard Profiles below are addressed in order of their anticipated frequency of occurrence, as determined by Town officials using the best available local knowledge.

1. Flooding (Flash floods/ Fluvial Erosion)

According to the 2018 State Hazard Mitigation Plan, fluvial erosion is the number one hazard that threatens Vermont. The most devastating flooding in recent history was the result of Tropical Storm Irene, which occurred on August 28, 2011. Record flooding was reported across the state and was responsible for several deaths, and millions of dollars of home, road, and infrastructure damage. Due to the strong winds, 50,000 Vermont residents were initially without power, and many did not have electricity restored to their homes and businesses for over one week. Despite the damage wrought, the flooding caused by Tropical Storm Irene is the second greatest natural disaster in 20th and 21st century Vermont, second only to the Flood of 1927.

Specific vulnerabilities to flooding include properties adjacent to streams and rivers, as well as town utilities and infrastructure. As seen during Irene, flooding can wash out and damage roads, carry away homes, and isolate individuals and entire communities for days or weeks. Plymouth has done a lot recently to mitigate the impacts of flooding on the town. Culverts have been upgraded, and rock has been added along Route 100A to control fluvial erosion, and the Emergency Management Director maintains a list of at-risk populations to be checked on during emergency events. Despite this work, many areas in town still remain vulnerable to flooding. Many homes and structures along Scott Terrace and Kingdom Road were damaged during Hurricane Irene. Structures located below Great Roaring Brook and Money Brook are also at risk of flooding. The committee estimates that most roads in Plymouth, especially dirt roads, are at risk of damage from flood events, and that of the over 60 roads in town, an estimated 50 were damaged during Hurricane Irene.

As previously indicated, Plymouth has flood hazard regulations that are integrated into its Zoning Bylaws. The Town’s Flood Hazard District protects a special flood hazard area designated on the Federal Insurance Administration’s Flood Insurance Rate Maps. The purpose of this specifically designated overlay district is meant to “lessen or avoid the hazards or damage to property” that may result from flooding along the banks of the Black River, Ottauquechee River, and their tributaries. All development in the floodway areas is prohibited. Development standards for properties in floodway fringe areas (which includes special flood hazard areas that are outside of the floodway) must strictly conform to criteria outlined in the zoning bylaws that ensure existing and new structures are constructed to withstand the impacts of flood events. There are currently 39 buildings in the Special Flood Hazard Area (SFHA) in Plymouth. Approximately 15% of these properties have flood insurance in effect.¹ There is one repetitive loss property, a commercial structure, located in Plymouth.

Specific data pertaining to the extent and impact of fluvial erosion was not readily available, this data is therefore not provided in the History of Occurrences below.

History of Occurrences:

Date	Event	Location	Extent
Period of 06/25/2013—07/11/2013 (DR 4140 VT)	Flooding	County, region wide	Town specific data unavailable.

08/28/2011* (DR 4022 VT for period of 08/26/2011 – 09/02/2011)	Severe Flash Flooding	Plymouth, County, region wide	5-7" of rain across region, 6-7" in Plymouth. Significant damage to state and local roads/culverts/bridges. \$1,591,621.06 in damages in the Town of Plymouth, according to FEMA's Public Assistance database.
05/26/2011 – 05/27/2011 (DR 4001 VT)	Flash & riverine flooding	County wide	3-5+” of rain county-wide
10/01/2010	Flooding	County wide	Heavy rain, including moisture associated with the dissipated remnants of Tropical Storm Nicole, spread into Vermont and produced four to five inches of rain. \$1.9 million dollars of public assistance.
07/21/2008 – 08/12/2008 (DR 1790 VT)	Flooding	County wide	Town specific data unavailable.
07/09/2007 – 07/11/2007 (DR 1715VT)	Flash flooding	County-wide	Town specific data unavailable.
05/15/2006	Flooding	County wide	Town specific data unavailable.
04/04/2000	Flooding	County wide	Steady rain combined with melting mountain snows.
06/27/1998	Flash flooding	County, region wide	3-6” of rain.
08/09/1976- 08/10/1976	Flash flooding	Plymouth	Extensive flooding. Hurricane Belle brought intense rains to much of State. Damage to Kingdom Road, and Hale Hollow Road.
Date	Event	Location	Extent
07/06/1973 (DR-397 VT)	Flash flooding	Plymouth, County-wide	Damage to Kingdom Road, Hale Hollow Road, Apple Hill Road, Vermont Route 100A, Route 100 at Money Brook. 5-8” County-wide. Rainfall as much as 6 inches in 24 hours in some locations. State declared disaster area. Deaths, 3; damage, \$64 million.
11/02/1927 – 11/04/1927* ("The Great Flood of 1927")	Flash flooding	Plymouth, County-wide	4-9” of rain across the region. Approximately 8” in Plymouth.

2. Winter Storms (Ice Storms/ Snowstorms)

Winter storms are a regular occurrence in Vermont. However, severe winter storms can cause serious damage, including collapse of buildings due to overloading with snow or ice, brutal wind chills, downed trees and power lines and stranded vehicles. During such storms, residents 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 due to cold and overexertion. While snow removal from the transportation system is standard fare in Vermont winters, extreme snow or ice can close rail and road systems, further jeopardizing any stranded persons that are in danger of freezing or needing medical assistance.

Severe winter storms included a blizzard on February 15-17 in 1958 that dumped over 30 inches and resulted in 26 deaths in New England. On December 26-27 in 1969, another blizzard left 18-36 inches of snow in northwestern Vermont and a whopping 45 inches in Waitsfield. Governor Dean Davis declared a state disaster. Drifts of snow from that storm piled up to 30 feet in places. Very recently, a string of storms in March 2001 hit the state, beginning with 15-30 inches on March 5-6 (later declared a federal disaster), 10-30 inches on the 22nd and 10-20 inches on the 30th. Brookfield received nearly 50 inches

of snow from these storms.

The worst winter storm in terms of damage to hit the state recently was not a snowstorm, but an ice storm. In January of 1998, just the right combination of precipitation and temperature led to more than three inches of ice in spots, closing roads, downing power lines, and snapping thousands of trees. This storm was estimated as a 200–500-year event. Power was out up to 10 days in some areas and 700,000 acres in of forest were damaged in Vermont. Amazingly, we had no fatalities, unlike Quebec where 3 million people lost power and 28 were killed.

Specific vulnerabilities to winter storms include town infrastructure and utilities, elderly and populations, and those who need to travel during a winter storm event. Winter storms can bring strong wind and heavy snow, and can cause damage to roads and power lines, leading to power loss and potentially loss of heat to homes and businesses. Travelers are at particular risk, as visibility is often greatly reduced during storm events, and the roads may be covered with ice or snow, or trees may be downed, making any vehicle travel hazardous. Several areas of town at particular risk for this hazard include Kingdom Road, Lynds Hill Road, Roundtop Road, and Route 100A. These roads have areas of steep slope or sharp curves that make winter travel dangerous during winter storm events. Loss of electricity is a major concern, though most Plymouth residents are well-prepared for winter weather. The committee estimates that about 25% of residents have access to a generator, and that most households have woodstoves and are thus less reliant on electricity for their heating needs. Of particular concern is the challenge winter storms can place on communication if the power were to go out. This could impact the ability of emergency workers to coordinate their efforts or to communicate with vulnerable residents.

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

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

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

3. Thunderstorms

More common than hurricanes or tropical storms are severe thunderstorms (usually in the summer), which can cause flooding as noted above, and are associated with lightning, high winds, hail, and tornadoes. Hailstorms have occurred in Vermont, usually during the summer months. While local in nature, these storms are especially significant to area farmers, who can lose entire fields of crops in a single hailstorm. Large hail is also capable of property damage. 382 hail events were recorded between 1950 and 2008 in the state, making hail an annual occurrence in some part of the state. Most of these events had hail measuring .75 inches, but many had hail at least

This section of the Plan satisfies the requirements of 44 CFR 201.6(c)(2)(i), 201.6(c)(2)(ii), and 201.6(c)(2)(iii) for **Severe Weather (Thunderstorm, Lightning, High Winds, Hail, Flooding).**

1.5 inches in size. The largest hail during the period was 3-inch hail that fell in Chittenden County in 1968 (NCDC). Tennis ball-sized hail was reported in the town of Chittenden during a storm in the summer of 2001. Thunderstorms can generate high winds, such as hit the region on July 6, 1999, downing hundreds of large trees in a few minutes.

In Plymouth, severe weather is quite common, typically in the late spring and summer months when the region experiences high temperatures. Severe thunderstorms tend to bring other hazards such as high winds, hail, and lightning, and flooding. These hazards are often experienced in combinations which create many unique weather and emergency management situations. High winds can cause downed trees and power lines, resulting in a loss of power. Downed trees on roads can disrupt traffic flow, make the roads dangerous, and impede the work of road crews and emergency services. In combination with a high heat event this could pose significant risk to the elderly and other at-risk populations. Hail can cause significant damage to agricultural crops, while flooding can impact residents and property in flood-prone areas around streams and in low-lying areas.

The following list indicates the history of occurrence of major thunderstorms in Windsor County. Federal disaster numbers are listed when appropriate. Damage estimates will only be provided when the weather event is only listed for the Town of Plymouth, and if that data is available.

History of Occurrences:

Severe Weather Date	Event Characteristics					Location	Extent
	Thunderstorm/severe storm	Flooding	Hail	High Wind	Lightning		
Period of 06/25/2013—07/11/2013 (DR-4140)	✓	✓				County-wide	Damage varied county-wide; widespread slight to moderate damage.
09/08/2012	✓			✓		County-wide	Town specific data unavailable.
07/17/2012	✓			✓		County-wide	Town specific data unavailable.
Severe Weather Date	Event Characteristics					Location	Extent
	Thunderstorm/severe storm	Flooding	Hail	High Wind	Lightning		
08/28/2011 (DR 4022 VT for period of 08/26/2011 – 09/2/2011)	✓	✓				Plymouth, County-wide	Tropical Storm Irene. 6-7” of rain in Plymouth. Severe damage to state and town road infrastructure including Kingdom Road, Hale Hollow Road, Patch Brook Road, Round Top Road, Grandview Lodge Road, Frog City Road, Dublin Road. \$1,591,621.06 in town-wide damages (captures at least 70% of total damage costs).

08/21/2011	✓		✓	✓		County-wide	Town specific data unavailable.
07/06/2011	✓			✓	✓	Plymouth, County-wide	Trees down along Routes 100 and 100A. Wind at 50 knots, property damage \$5,000. 15,000+ customers in Vermont lost power.
05/26/2011 - 05/27/2011 (DR 4001 VT)		✓				County/region-wide	Town specific data unavailable.
05/09/2009	✓			✓		County-wide	Town specific data unavailable.
08/07/2008 (DR-1719)	✓	✓				County-wide	Town specific data unavailable.
08/16/2007	✓			✓		County, region-wide	These storms produced 60-80mph straight-line winds in Rutland County (to the west of Windsor County).
07/11/2007 (DR-1715)	✓	✓				County-wide	Town specific data unavailable.
06/19/2007	✓			✓		County-wide	Town specific data unavailable.
07/15/2002			✓			Plymouth	A few of the storms were severe with large hail.
07/09/2001	✓			✓		Plymouth	Trees and power lines blown down in Plymouth.
7/6/1973 (DR 397 VT)	✓	✓				Plymouth, County-wide	Severe storms; landslides in region. Damage to Hale Hollow Road, Patch Brook Road, Frog City Road, Dublin Road, and Lynds Hill Road. 5-8" County-wide. Rainfall as much as 6 inches in 24 hours in some locations. State declared disaster area. Deaths, 3; damage, \$64 million.
Severe Weather Date	Event Characteristics					Location	Extent
	Thunderstorm/severe storm	Flooding	Hail	High Wind	Lightning		
11/3/1927-11/4/1927 ("The Great Flood of 1927")	✓	✓				Plymouth, County/region-wide	Approximately 8" of rain fell in the Town of Plymouth and surrounding areas.

4. High Winds

Over the years, Plymouth has been hit with high winds that have downed and uprooted numerous trees and knocked out electricity to residents in the Town. Town specific wind data could not be easily found, but the "Remarks" section of NCDC Database helps to illuminate the impact strong winds can have on Plymouth. Wind is the result of differences in atmospheric pressure, and moves from an area of high

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

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

Specific vulnerabilities to high winds include primarily town infrastructure and utilities. High winds can cause power outages through downed trees or power lines. Damage to property and vehicles can also occur as a result of high speed winds. Plymouth is most at risk to high winds in the higher elevation areas, though the entire town can be impacted by this hazard. A concern for the committee is the impact of high winds on roads and town infrastructure, and the ability of the town to clear roads and relieve infrastructure following a high wind event.

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

5. Extreme Temperatures (Extreme Hot and Cold)

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

stroke.

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

Specific vulnerabilities to extreme temperatures include utilities, residents, and environmental stress. Extreme temperatures, whether extreme heat or extreme cold, can lead to power outages, putting residents at risk of temperature-related illnesses. Extreme heat can put greater stress on trees, plants, wildlife, and agricultural crops. The combination with other factors, such as little or no rain, can lead to drought or wildfire conditions, further increasing risk to life and the environment. One concern raised by the hazard mitigation committee is the town's ability to respond to compounding hazards during an extreme temperature event. For instance, many Plymouth residents use wood stoves for heat in the winter, which can pose a fire risk. A structure fire during an extreme cold event would be very challenging for emergency services to respond to. Likewise for extreme heat, responding to a fire or another hazard could put responders at risk to heat-specific illnesses.

VI. Mitigation

A. Mitigation Goals

1. To reduce injury and losses from the natural hazard of flash flood/flood/fluvial erosion.
2. To reduce injury and losses from the natural hazard of extreme snow/ice storms.
3. To reduce injury and losses from the natural hazard of thunderstorms.
4. To reduce injury and losses from the natural hazard of high winds.
5. To reduce injury and losses from the natural hazard of extreme cold.

B. Town Plan Goals & Objectives Supporting Local Hazard Mitigation

- To provide a pleasant, safe, and convenient environment for the people of the town, including residential areas suited to their varied needs, business, and consumer services to meet their wants, increased opportunities for employment within the town, and the proper level of public services such as fire protection, utilities, and recreation. (Page 1).
- It is a policy of the town to preserve floodplains and associated risk areas in a state where they can handle flood flows without damage to property. (Page 16).
- To improve the quality of Plymouth's transportation and road systems to promote safety and maintain the scenic quality of roads wherever possible. (Page 18).
- In general, all buildings, utilities, and facilities should be maintained on a regular schedule

with energy conservation measures instituted to ensure that we are not postponing repairs today that will be more costly in the future. (Page 31).

The Plymouth Town Plan was adopted on September 10, 2019 and has a 5-year lifespan.

C. Hazard Mitigation Strategies: Programs, Projects & Activities

Vermont Division of Emergency Management & Homeland Security encourages a collaborative approach to achieving mitigation at the local level through partnerships with Vermont Agency of Natural Resources, VTrans, Vermont Agency of Commerce and Community Development, Regional Planning Commissions, FEMA Region 1, and others. That said, these agencies and organizations can work together to provide guidance and resources to towns interested in pursuing hazard mitigation projects.

This section of the Plan satisfies the requirements of 44 CFR 201.6(c)(3)(ii), 201.6(c)(3)(iii) and 201.6(c)(3)(iv).

With each mitigation strategy, general details about the following are provided: local leadership, possible resources, implementation tools, and prioritization. The prioritization category is based upon the economic impact of the action, Plymouth’s need to address the issue, the cost of implementing the strategy, and the availability of funding. The cost of the strategy was evaluated in relation to its benefit as outlined in the STAPLEE guidelines (includes economic, political, environmental, technical, social, administrative, and legal criteria). A range of mitigation strategies was vetted by the committee, and those that were determined to be feasible are included in the table below.

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

The Town of Plymouth understands that to apply for FEMA funding for mitigation projects that a project must meet FEMA benefit-cost criteria, and a project seeking FEMA funds will undergo a full benefit-cost assessment in the FEMA-approved format. The Town must have a FEMA approved Hazard Mitigation Plan as well.

Mitigation Actions	Local Leadership	Prioritization	Possible Resources	Time Frame
All Hazards				
<i>Ensure that Plymouth’s Local Emergency Management Plan (LEMP) is kept up to date.</i>	EMD ; Fire Chief; First Response Coordinator	High	Local resources; TRORC; VEM	Annually

<i>Develop a policy for effective communication of hazards to town departments and residents.</i>	EMD; Fire Chief; First Response Coordinator	Medium	Local Resources	2022-2023
<i>Develop a process for recording infrastructure damages after weather events.</i>	Road Foreman	High	Local resources; TRORC	2022-2023
<i>Meet with VEM regarding setting up VT Alert in Plymouth.</i>	Fire Chief; Police Chief; EMD	Low	Local resources; VEM	2022-2023
<i>Develop an educational program that informs residents on actions they can take to mitigate risks to their lives and properties.</i>	EMD; Health Officer, Fire Department	Low	Local resources; TRORC	2 years after date of Plan Approval, then annually
<i>The Town, EMD, and the Fire Department should work closely together to address safety issues related to hazards.</i>	EMD; Selectboard; EMS; Fire Department	Low - Medium	Local resources	2023-2025

Flooding

<i>Update the Plymouth Road Erosion Inventory to identify and mitigate high erosion areas in town.</i>	Road Foreman	High	Local resources; Vtrans	2024-2025
<i>Maintain and update town bridge and culvert inventories. Regularly inspect and maintain town bridges and culverts; identify which need mitigation.</i>	Road Foreman	High; but varies by location.	Local resources; TRORC; Better Backroads grants;	1-5 years from date of Plan approval

Mitigation Actions	Local Leadership	Prioritization	Possible Resources	Time Frame
<i>Identify frequently flooded roads and bridges.</i>	Road Foreman	Medium	Local resources	2022-2023
<i>Remove, where necessary, trees and brush from rivers/streams that pose an imminent threat to public safety and property; inspect periodically to reduce risk of flooding</i>	Road Foreman (with approval from ANR)	Low-High	Local resources; Vermont DEC's River Management Section	2022-2026
<i>Adopt fluvial erosion hazard (FEH)/river corridor regulations where feasible to incorporate VT ANR's river corridor maps.</i>	Planning Commission	Low	Local resources; TRORC	2023-2025
<i>As part of Town Plan updates, review the Town's flood hazard regulations contained within the Town's Zoning Bylaws to remain compliant with federal and state law and reduce risks.</i>	Planning Commission	Low	Local resources; TRORC	2023-2024

<i>Draft land use policies that protect natural resources in floodplain areas, riparian buffers and other ecosystem services that mitigate flooding (e.g., riverbanks, wetlands, farms, forested areas, and open spaces.</i>	Planning Commission	Low	Local resources; TRORC	2023-2024
Ice storms/ Snowstorms				
<i>Work with Green Mountain Power and Ludlow Electric to identify vulnerable power lines and other infrastructure in Plymouth.</i>	Road Foreman	High	Local resources	2022-2023
Thunderstorms				
<i>Install lightning protection devices and methods, such as lightning rods and grounding, on communications infrastructure and other critical facilities.</i>	Select Board	Low	Local resources	2022-2023
<i>Installing and maintaining surge protection on critical Town electronic equipment.</i>	Select Board	Low	Local resources	2022-2023
High Winds				
<i>Work with Green Mountain Power and Ludlow Electric to identify vulnerable power lines and other infrastructure.</i>	Road Foreman	High	Local resources	2022-2023
<i>Regularly inspect, manage, and clear hazardous trees within utility corridor, road</i>	Road Foreman	Medium	Local resources	2022-2023
Mitigation Actions	Local Leadership	Prioritization	Possible Resources	Time Frame
<i>rights of way and around public buildings.</i>				
Extreme Hot and Cold				
<i>Develop a plan for communicating shelter information to residents and especially to populations that are vulnerable to extreme temperatures.</i>	EMD	High	Local resources; VEM	2022-2024
<i>Identify residents who may be especially vulnerable during heat waves or extreme cold spells; provide or arrange for temporary heating or cooling centers.</i>	EMD	High	Local resources	2022-2023

<i>Provide information on available weatherization and heating assistance programs, and how to protect pipes from freezing.</i>	EMD	High	Local resources; VEM	2022-2023
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Appendices

Appendix A: Critical Stream Crossings

Critical crossings in the table below includes stream crossing structures on town highways that cross third order streams or larger. Headwater streams generally include first through third order. Third order was included as these headwater streams will have larger drainage areas and may have larger structures that are more difficult to replace and have a larger impact on the road network. Most of these are bridges. Structures that have a “Y” in the “AOTSTRUCT” column are state-owned.

RDFLNAME	STRUCT_NUM	CATEGORY	STRUCTYPE	STRC_LBL	AOTCLASS	X_COORD	Y_COORD	AOTSTRUCT
HALE HOLLOW RD	101412003114121	B	TL	B31	0	-72.6652	43.5576	
HALE HOLLOW RD	401412001914121	B	TS	B19	3	-72.6591	43.5499	Y
APPLE HILL RD	101412003214121	B	TL	B32	0	-72.6578	43.5473	
GRIFFIN ROAD	101412004114121	B	TL	B41	0	-72.6563	43.5383	
HALE HOLLOW RD	401412002014121	B	TS	B20	3	-72.657	43.5367	Y
HALE HOLLOW RD	101412003814121	B	TL	B38	0	-72.6634	43.5341	
HALE HOLLOW RD	101412003714121	B	TL	B37	0	-72.6728	43.5345	
HALE HOLLOW RD	401412003614121	B	TS	B36	3	-72.6772	43.5265	Y
PINE LEE RD	401412001414121	B	TS	B14	3	-72.7165	43.5442	Y
RICKS RD	401412002214121	B	TS	B22	3	-72.7449	43.5387	Y
PAILLE RD	401412004814121	B	TS	B48	3	-72.7354	43.5259	Y
DEAD END RD	101412003414121	B	TL	B34	0	-72.7403	43.5297	
MCDONALD RD	101412003514121	B	TL	B35	0	-72.7441	43.5374	
FROG CITY RD	401412002314121	B	TS	B23	3	-72.7246	43.5011	Y
FROG CITY RD	101412003314121	B	TL	B33	0	-72.7242	43.5022	
BILLINGS RD	101412004014121	B	TL	B40	0	-72.7121	43.4998	
SCOUT CAMP RD	101412004614121	B	TL	B46	0	-72.7065	43.4951	
KINGDOM RD	101412003914121	B	TL	B39	0	-72.7034	43.4651	

Appendix B: Culvert Prioritization List from Plymouth's Better Backroads Culvert Inventory

Town of Plymouth Culvert Replacement Priorities

	Road	Culvert No.	width	height	length	Material	Type	Condition	Priority
1	BRADLEY HILL RD	6	15	15	34	Steel Corrugated	Round	Poor	High
2	CHAPMAN RD	4	15	15	40	Steel Corrugated	Round	Critical	High
3	DUBLIN RD	18	15	15	40	Steel Corrugated	Round	Closed	High
4	FARM & WILDERNESS RD	2	18	18	28	Steel Corrugated	Round	Poor	High
5	FARM & WILDERNESS RD	9	24	24	50	Steel Corrugated	Round	Critical	High
6	HALE HOLLOW RD	40	12	12	20	Steel Corrugated	Round	Critical	High
7	ROUND TOP RD	5	15	15	35	Steel Corrugated	Round	Critical	High
8	SCOUT CAMP RD	20	15	15	29	Steel Corrugated	Round	Poor	High
9	SCOUT CAMP RD	23	15	15	30	Steel Corrugated	Round	Poor	High
10	SCOUT CAMP RD	24	12	12	30	Steel Corrugated	Round	Poor	High
11	SCOUT CAMP RD	25	15	15	44	Steel Corrugated	Round	Critical	High
12	SCOUT CAMP RD	26	15	15	30	Steel Corrugated	Round	Closed	High
13	SCOUT CAMP RD	27	15	15	30	Steel Corrugated	Round	Closed	High
14	BUSWELL POND RD	1	15	15	34	Steel Corrugated	Round	Poor	Med
15	BUSWELL POND RD	4	15	15	40	Steel Corrugated	Round	Poor	Med
16	COOLIDGE FARM RD	1	12	12	20	Steel Corrugated	Round	Poor	Med
17	CROWN POINT RD	2	15	15	30	Steel Corrugated	Round	Poor	Med
18	CROWN POINT RD	7	18	18	36	Steel Corrugated	Round	Poor	Med
19	DUBLIN RD	5	15	15	40	Steel Corrugated	Round	Poor	Med
20	KINGDOM RD	2	12	12	29	Steel Corrugated	Round	Poor	Med
21	KINGDOM RD	3	12	12	33	Steel Corrugated	Round	Poor	Med
22	LYNDS HILL RD	42	15	15	20	Steel Corrugated	Round	Poor	Med
23	LYNDS HILL RD	43	15	15	30	Steel Corrugated	Round	Poor	Med
24	MESSER HILL RD	17	15	15	35	Steel Corrugated	Round	Poor	Med
25	MESSER HILL RD	21	18	18	40	Steel Corrugated	Round	Poor	Med
26	COLBY POND RD	1	18	18	27	Steel Corrugated	Round	Poor	Low

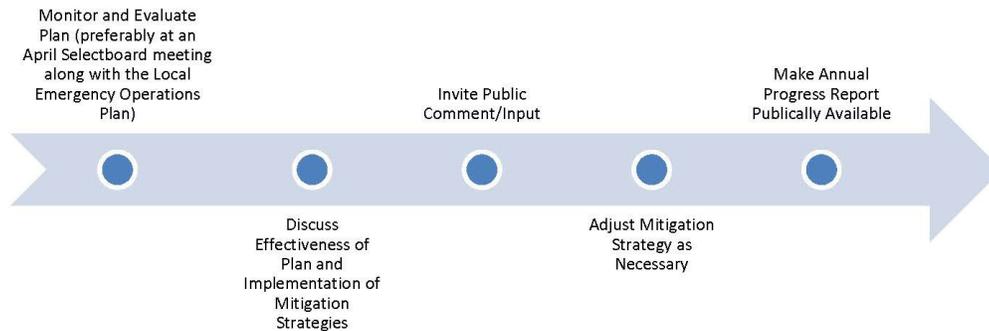
27	COLBY POND RD	2	18	18	26	Steel Corrugated	Round	Poor	Low
28	DIX HILL RD	6	18	18	40	Steel Corrugated	Round	Poor	Low
29	HALE HOLLOW RD	3	15	15	40	Steel Corrugated	Round	Poor	Low
30	HALE HOLLOW RD	26	15	15	40	Steel Corrugated	Round	Poor	Low
31	HALE HOLLOW RD	33	15	15	20	Steel Corrugated	Round	Poor	Low
32	HALE HOLLOW RD	36	12	12	20	Steel Corrugated	Round	Poor	Low
33	HALE HOLLOW RD	42	12	12	20	Steel Corrugated	Round	Poor	Low
34	HAWK SPUR RD	1	18	18	40	Steel Corrugated	Round	Poor	Low
35	PATCH BROOK RD	33	15	15	30	Steel Corrugated	Round	Poor	Low
36	REGGIES RD	15	12	12	25	Steel Corrugated	Round	Poor	Low
37	ROUND TOP RD	2	15	15	58	Steel Corrugated	Round	Poor	Low
38	ROUND TOP RD	4	15	15	24	Steel Corrugated	Round	Poor	Low
39	ROUND TOP SPUR RD	2	15	15	31	Steel Corrugated	Round	Poor	Low
40	UPPER ROUND TOP RD	7	18	18	41	Steel Corrugated	Round	Poor	Low
41	WEAVER HILL RD	3	15	15	40	Steel Corrugated	Round	Poor	Low
42	WEAVER HILL RD	4	18	18	40	Steel Corrugated	Round	Poor	Low

Appendix C: Five Year Review and Maintenance Plan

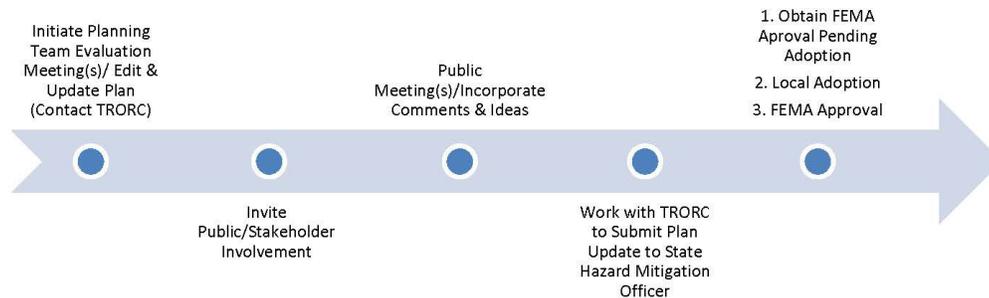
Five-Year Local Hazard Mitigation Plan Review/Maintenance



After Plan Adoption—Annually Implement & Evaluate

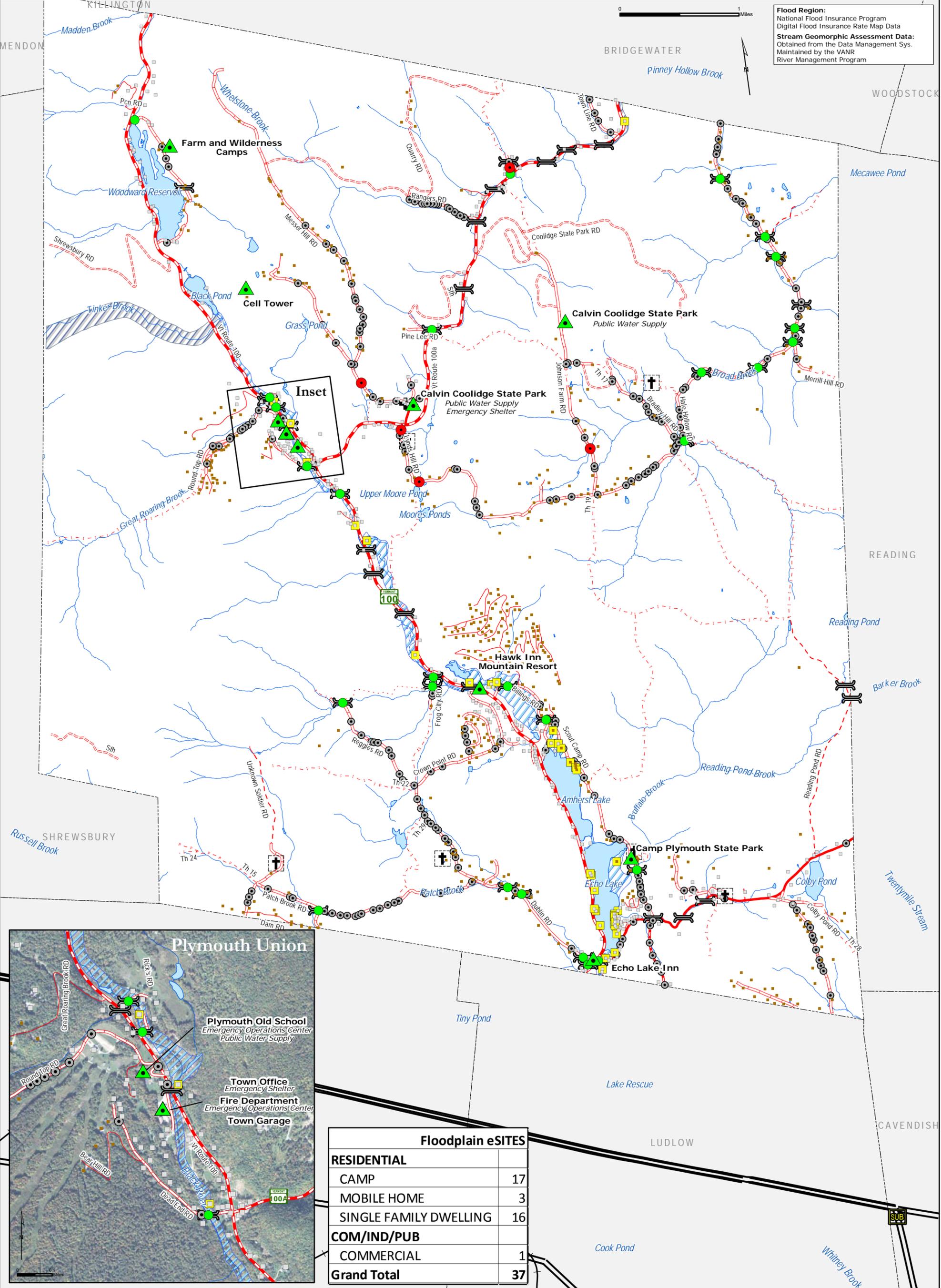


Fifth Year, and After a Major or Federally Declared Disaster Directly Impacting the Town Evaluate & Revise

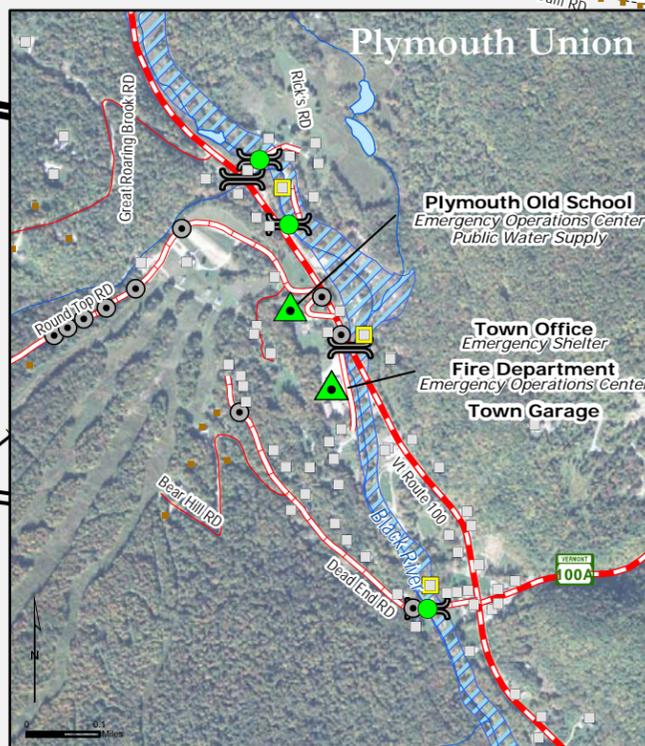


Attachments

Attachment A: Map of Plymouth



Flood Region:
 National Flood Insurance Program
 Digital Flood Insurance Rate Map Data
Stream Geomorphic Assessment Data:
 Obtained from the Data Management Sys.
 Maintained by the VANR
 River Management Program



Floodplain eSITES	
RESIDENTIAL	
CAMP	17
MOBILE HOME	3
SINGLE FAMILY DWELLING	16
COM/IND/PUB	
COMMERCIAL	1
Grand Total	37

**Hazard Mitigation Plan
 Essential Services Map
 Plymouth, Vermont**

<ul style="list-style-type: none"> TH cls 1 (village VT rt) TH cls 2 TH cls 2 gravel TH cls 3 TH cls 3 gravel TH cls 4 impassable VT forest hwy trail 	<ul style="list-style-type: none"> private VT route US route US interstate TH cls 4 gravel TH cls 4 primitive Railroad Major Electric Transmission 	<ul style="list-style-type: none"> Critical Facility Critical Stream Crossing Church Cemetery Significantly Undersized Structure Culvert Under 18" Wide Bridge Electric Substation 	<ul style="list-style-type: none"> e911 in Floodplain e911 Within 1000' of Major Route e911 Address Floodway 100 Year 100 Year, No BFE 500 Year
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TWO RIVERS-OTTAUQUECHEE REGIONAL COMMISSION
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 128 King Farm Rd
 Woodstock, VT 05091
 802-457-3188
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