

***Town of Braintree, Vermont
2025 Local Hazard Mitigation Plan***

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

Date of Town Adoption: 10/07/2025

Date of Final Approval by FEMA: 10/13/2025



FEMA

October 14, 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 *Town of Braintree, Vermont 2025 Local Hazard Mitigation Plan* effective **October 13, 2025** through **October 12, 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 Braintree, 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.

Stephanie A. Smith, Hazard Mitigation Section Chief | State Hazard Mitigation Officer
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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 J MARKESICH Digitally signed by CHRISTOPHER J MARKESICH
Date: 2025.10.15 10:40:55 -04'00'

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
Richard Verville, Mitigation Division Director, DHS, FEMA Region 1
Alexis Meehan, Community Planner, DHS, FEMA Region 1

CERTIFICATE OF ADOPTION

10/07/2025

TOWN OF Braintree, Vermont Selectboard

A RESOLUTION ADOPTING THE Town of Braintree, Vermont 2025 Local Hazard Mitigation Plan

WHEREAS, the Town of Braintree has historically experienced severe damage from natural hazards and it continues to be vulnerable to the effects of the hazards profiled in the **Town of Braintree, Vermont 2025 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 Braintree has developed and received conditional approval from Vermont Emergency Management (VEM) for its **Town of Braintree, Vermont 2025 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 Braintree; and

WHEREAS, the **Plan** recommends several hazard mitigation actions (projects) that will provide mitigation for specific natural hazards that impact the Town of Braintree 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 Braintree eligible for funding to alleviate the impacts of future hazards; now therefore be it

RESOLVED by Town of Braintree Selectboard:

1. The **Town of Braintree, Vermont 2025 Local Hazard Mitigation Plan** is hereby adopted as an official plan of the Town of Braintree;
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 Braintree this 7 day of October 2025.

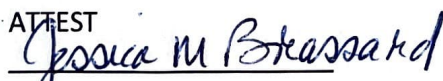


Selectboard Chair



Selectboard Member

ATTEST



Town Clerk

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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 Local Hazard Mitigation Plan (hereafter referred to simply as the Plan) seeks to provide an all-hazards mitigation strategy that will make the community of Braintree more disaster resistant.

“Mitigation” is defined as any sustained action that reduces or eliminates long-term risk to people and property from natural and human-caused hazards and their effects. Previous Federal Emergency Management Agency (FEMA), State and Regional Project Impact efforts have demonstrated that it is less expensive to anticipate disasters than to repeatedly ignore a threat until the damage has already been done. While hazards cannot be eliminated entirely, it is possible to identify prospective hazards, anticipate which might be the most severe, and recognize local actions that can be taken ahead-of-time to reduce the damage. These actions, also known as ‘hazard mitigation strategies’ can (1) avert the hazards through redirecting impacts by means of a structure or land treatment, (2) adapt to the hazard by modifying structures or standards or, (3) avoid the hazard through improved public education, relocation/removal of buildings in the flood zone, or ensuring development is disaster resistant.

II. Purpose of the Plan

The purpose of this Plan is to assist Braintree in identifying all hazards facing the town, ranking them, and identifying strategies to reduce long-term vulnerabilities from known priority hazards.

Implementation of this plan will make our community more resistant to harm and damages in the future and will reduce public costs.

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

The 2014 Braintree Local Hazard Mitigation Plan was the first stand-alone mitigation plan drafted for the Town. Previously, the Town had a town-specific 2009 Annex in the Regional Pre-Disaster Mitigation Plan. This new plan updates the 2020 plan, adding new information to make the plan stronger and more useful for the Braintree town officials and residents who will implement the hazard mitigation strategies in the future.

III. Community Profile

The Town of Braintree, Vermont is situated in the northwest corner of Orange County and comprises a total land area of approximately 22,700 acres or 35.5 square miles. Braintree is bounded by six towns (Randolph, Rochester, Granville, Roxbury, Brookfield, and Bethel), and is located in the northern part of the Two Rivers-Ottawaquechee Regional Commission's planning area. Although Braintree is predominantly a rural-residential town, it abuts the Town of Randolph, which serves as the commercial hub for the area.

Braintree's population is decreasing. In 2020, the population of Braintree was 1,207, a decrease from 1,246 residents in the year 2010 (U.S. Census). The decrease in population is reflected in housing unit decline. According to the U.S. Census, there were 459 housing units in Braintree in 2020, compared to 600 in 2010. This amounted to a decrease of 141 units (or 24%) over the ten-year period. In terms of housing types, 89% of Braintree's housing units are owner-occupied. Only 11% are rented, and even fewer (4%) are multi-family homes.

As is the case in most Vermont towns, the bulk of Braintree's housing units are comprised of single-family homes. Braintree also has a fairly high percentage of mobile homes (23.8%), most of which are located in the Mobile Acres mobile home park, which is located just outside of the 500-year floodplain. The increase in housing units is likely due in part to the neighboring commercial center, Randolph, which lies along Interstate 89 and is home to several large employers. Braintree will probably continue to experience pressure to grow in the future.

With regard to services, the Town of Braintree lies within the service area of Green Mountain Power, which supplies electrical power to all sections of the town. Internet access can be obtained in various ways throughout the town, including landline/dial-up, cable, DSL, satellite, cellular internet, and fiber. For many years, most users relied on dial-up or satellite. In 2016 East Central Fiber (ECFiber), through a grant from the State of Vermont, built a business loop through the center of Braintree, bringing true high-speed internet to many, but not all, residents. In 2019, ECFiber installed line optical fiber internet service throughout the town of Braintree. Braintree does not have a cellular tower that services the residents of the town, and, as a result, cell reception is quite poor and, in some areas, non-existent. The advent of town-wide ECFiber service does create the option for virtually all homeowners to have a localized cell phone hotspot around their homes. This means the cell-phone-only families can use their cell phones when at home, alleviating much of the issue of not having a cell tower that services Braintree homes.

Braintree has sufficient fire protection services that are available to all residents thanks to a contractual agreement, paid annually, with the Town of Randolph. Randolph has three satellite fire stations that are staffed by volunteer firefighters, with the Randolph Village Fire Department being the closest to Braintree, and the first to respond to an emergency in that area. When necessary, the Randolph Village Fire Department can call up additional firefighters from its other satellite stations, and there are at least 40 more volunteers available at other area departments.

With respect to law enforcement, a Constable is elected each year at the Braintree Town Meeting. The Constable and Town residents may call upon the Vermont State Police (Troop D) for assistance, which has its station in Royalton.

Emergency medical services are provided under an annual contract with the Town by the White River Valley Ambulance, Inc., which is located in nearby Bethel. This non-profit ambulance/rescue service is jointly owned by Braintree and nine other towns, and currently has a fleet of three ambulances. The Randolph Fire Department has a rescue truck with extrication equipment used for assisting injured people. The closest hospital is Gifford Medical Center, which is located in Randolph Village, and medivac

services are available either by ambulance or through the Dartmouth Hitchcock Advanced Response Team (DHART) helicopter, which is based at Dartmouth Hitchcock Medical Center in Lebanon, New Hampshire.

IV. The Planning Process

A. Plan Developers

Geena Baber, a Planner at Two Rivers-Ottawaquechee Regional Commission (TRORC), assisted the Town of Braintree with updating its Hazard Mitigation Plan. Committee members who assisted with revisions include:

Name	Role/Organization	How Participation Was Solicited
Megan O'Toole	Braintree Emergency Management Director, Selectboard Chair	On 8/14/2024, TRORC staff sent an introductory email to the Selectboard Chair, which included a suggestion of potential members for the LHMP committee. On 8/20/2024, the Selectboard discussed the members, and the first meeting was scheduled for 9/26/2024. Geena Baber attended that meeting, followed by subsequent meetings to revise and update the LHMP. See below for more meeting-specific details.
Janice Russel	E911 Coordinator, Town Administrator Assistant	
Loren Bent	Fire Warden, Selectboard member	
Daniel Burson	Road Commissioner	
Dylan Pratt	Road Foreman	
Andrew Bent	Regional Management Emergency Committee	
Stephen Brassard	Constable	
Jackson Evans	Planning Commission member, Lister Chair	

B. Plan Development Process

The 2025 Braintree Hazard Mitigation Plan is an update to the single jurisdiction Hazard Mitigation Plan adopted by the Town in 2020. The changes in this Plan include:

- **General**
 - Data updates: new hazard incidents, emergency declarations, census data, structure and property vulnerability, and the Town's existing hazard mitigation efforts and resources;
 - Hazards have been reevaluated to reflect changes in the hazard ranking system used by the Vermont Division of Emergency Management;
 - Discussions on the ability of the Town to expand or improve upon existing mitigation actions, including how both development and mitigation work has impacted vulnerabilities within Braintree;
- **Hazards Analysis**
 - Wildfire, Flash Flood/Flood/Fluvial Erosion, Severe Weather, and Ice Storm/Heavy Snow are still on the list of "top hazards," which reflects the local officials' belief that the Town is still vulnerable to these hazards.

- Agricultural Slurry Tank/Pond Breach was determined to be an insignificant threat to the Town to warrant inclusion in the plan.
- Stakeholders re-added “Structural Fire” as one of the top hazards, reflecting their increased prioritization since the 2014 Plan.
- Mud Season is now included under Severe Weather in the Plan.
- Wildfire is added as one of the “top hazards”.
- The map of the Town of Braintree depicting NFIP designated floodway and 100-year floodplain has been updated.

The following represent the avenues taken to draft the Braintree Hazard Mitigation Plan:

- **Activities** ***Note: The meetings with an asterisk were publicized and open to the public.*
 - *09/26/2024: TRORC staff met with the Braintree LHMP committee to introduce the plan update process, respond to any questions, and engage in a ranking exercise to determine “top hazards” in the Town. The plan development timeline and public outreach strategies were discussed. This meeting was open to the public and notice of the meeting was posted on the town website. No members of the public attended the meeting and no comments were received.
 - *10/21/2024: TRORC staff met with Braintree LHMP committee to discuss data needs and draft new hazard mitigation strategies/actions. The meeting was open to the public, and a notice was posted on the town website and on the town Facebook page on 10/18/2024. TRORC staff included the notice on the October TRORC newsletter, submitted 10/17/2024. The meeting was also noticed in the White River Valley Herald¹ in the October 10 edition. TRORC staff reached out to several local service organizations via email, describing the LHMP process and inviting the organizations to participate. Contact information was provided in the notice to allow interested community members to learn more about and participate in the planning process. No comments from these organizations were received. One member of the public attended the meeting, and one comment was received about an issue regarding a culvert on private property.
 - *11/18/2024: Stakeholders met to review a draft of the plan and discuss mitigation strategies/actions. TRORC staff met with the Braintree LHMP committee. Five members of the committee attended. At the meeting, the hazard mitigation strategies were reviewed, along with the results of the hazard mitigation plan survey that was sent out to the public. The meeting and link to the public survey was published on the Town website on 11/8/2024. No members of the public attended the meeting. No comments were received at the meeting. No survey results were reviewed as it lacked responses.

¹ The White River Valley Herald is a local weekly newspaper with approximately 4,000 printed copies weekly in Windsor and Orange Counties. The Herald is a highly visible way to reach representatives of local and regional agencies, businesses, schools, and other private organizations.

- 12/6/2024: LHMP committee posted the survey on Front Porch Forum² to garner more responses.
 - *12/17/2024: The LMHP committee presented the draft 2025 Braintree LHMP to the Selectboard at the Braintree Selectboard meeting. Members of the public attended the meeting. Survey results were discussed. No comments were received from the public.
 - 12/18/2024: Draft provided to the Selectboard Chair or Administrative Official of neighboring municipalities (Granville, Hancock, Rochester, Bethel, Randolph, Brookfield, Roxbury): no comments were received.
 - 06/23/2025: TRORC staff met with members of the LHMP Committee to review and revise the draft plan. This meeting included updates to the Hazard Assessment Table and discussion of community lifelines in Braintree.
 - 07/02/2025: TRORC staff sent the draft LHMP to CV Oil and Dead River Propane for comment. No comments were received.
 - 09/17/2025: TRORC staff sent the draft LHMP to White River Valley Ambulance for comment. Comment was received on 09/25/25 indicating the information is accurate and they do not propose any additions to the draft Plan.
 - **Local Hazard Mitigation Plan Survey:** A survey was prepared and distributed through outreach on the Town website, Facebook, the TRORC newsletter, and word-of-mouth from the HMP Committee. The survey asked a range of questions pertaining to natural hazards in Braintree, community assets, potential mitigation actions, and ways to keep the public notified as the process continues. A total of 41 responses were received. The committee discussed the responses at the 12/17 Selectboard meeting. The survey responses have been provided in Appendix B.
- **Review of existing plans, studies, reports, and technical information (44 CFR 201.6(b)(3))**
 - Vermont State Hazard Mitigation Plan, 2023
 - This Plan was referenced for knowledge of the state’s hazard mitigation planning processes and description of top hazards for the State of Vermont.
 - Braintree Hazard Mitigation Plan (Adopted 5/19/2020, Approved 6/1/2020)
 - This Plan was referenced extensively during the plan development process, especially in regard to the worst threats and mitigation action strategies identified in 2020.
 - Braintree Town Plan (Adopted 9/5/2023)
 - The Town Plan provided TRORC’s staff with background information on the community, as well as more detail on their emergency services.
 - Braintree Vermont Unified Bylaw (Adopted 3/4/2010)
 - The bylaw provided TRORC staff with information about existing regulations within the Town’s Floodplain Overlay District.

² The Braintree Facebook page, website, and the Braintree Front Porch Forum are all public-facing and visible to many residents and representatives of local businesses, schools/academia, and private organizations that sustain community lifelines.

- US Census Bureau, 2020 and 2022 Census and ACS demographic data.
 - US Census data accessed for general demographic information for Braintree.
- 2024 Report of the State Fire Marshal
 - Accessed for state structure fire data.
- The FEMA Insurance Rate Maps (FIRMs) for Braintree is dated July 15, 1985. These maps were used to identify Special Flood Hazard Areas (SFHAs) for flood vulnerability assessment. There is no Flood Insurance Study (FIS) available for Braintree.

C. Status Update on Mitigation Actions Identified in 2020

The following table outlines the mitigation actions that were proposed in Braintree's 2020 Local Hazard Mitigation Plan. Participants in the plan update process reviewed these actions and reported on the status of each in the table. Actions related to long-term mitigation of natural hazards are also noted.

Mitigation/Preparedness Action	Who (Leadership)	When (Timeframe)	How (Funding/ Support)	2025 – Status of Mitigation Actions
ALL HAZARDS				
<i>Ensure that the Town's LEMP is up to date</i>	Selectboard	Yearly	With TRORC assistance	Completed. Braintree updates this document annually. Their most recent LEMP was updated and then adopted on 4/7/2024 by the Braintree Selectboard.
<i>Maintain Railroad Emergency Pre-Plan and ensure that it is kept up to date.</i>	Emergency Management Director	Year 5 of planning period	Local resources	Not complete. The HMP committee has no knowledge of the plan's existence and do not want to pursue it for future iteration of the LHMP.
HAZARDOUS MATERIAL SPILL				
<i>Maintain Railroad Emergency Pre-Plan and ensure that it is kept up to date.</i>	Emergency Management Director	Yearly	Local resources	Not complete. The HMP committee determined that this strategy could not be feasibly undertaken by the

Mitigation/Preparedness Action	Who (Leadership)	When (Timeframe)	How (Funding/ Support)	2025 – Status of Mitigation Actions
				Town. This action will not carry over into the 2025 Plan.
<i>Develop an all-wheel drive emergency evacuation route for Mobile Acres (between School Street Extension and Mobile Acres bridge)</i>	Emergency Management Director and Selectboard.	Years 2-4 of planning period	Local resources or a grant, and volunteer assistance from the Rochester/Randolph Area Sports Trails Alliance	Not complete. The Committee wishes to take this out of the Action Status Update for future iteration of the LHMP.
<i>Revise the Town Plan and Bylaw to prevent any future development that requires the construction of additional railroad crossings in Town.</i>	Planning Commission	Town Plan: Year 1 of the planning period Bylaw: Years 2 to 4 of the planning period	Local resources, state Municipal Planning Grant	Not complete. The Committee wishes to take this out of the Action Status Update for future iteration of the LHMP.
<i>Enhance preparedness by training a person to coordinate shelters and purchasing animal kennels and food for Town Hall shelter.</i>	Selectboard, Emergency Management Director	Years 1-2 of planning period	Local resources	Not complete. The HMP committee determined that this strategy could not be feasibly undertaken by the town. This action will not carry over into the 2025 Plan.
<i>Continuing public education.</i>	Emergency Management Director	Yearly	Local resources	Not complete. Public education about hazardous material spill is not an active priority for the Town and will not carry over into the 2025 Plan.

Mitigation/Preparedness Action	Who (Leadership)	When (Timeframe)	How (Funding/ Support)	2025 – Status of Mitigation Actions
WILDFIRE				
<i>If and when opportunities arise, develop additional dry hydrant sites in rural locations, including in East and West Braintree.</i>	Braintree Rep to Randolph Fire Advisory Committee	Years 1-5 of planning period	Local resources, George Aiken Resource Conservation & Development grants	Completed. The town has exhausted their options. No additional hydrants have been installed because there are no available sites.
<i>Assess and map community's overall vulnerability to wildfire. Determine water supply of sites and means of accessing areas vulnerable to wildfire.</i>	Planning Commission	Years 2-4 of planning period	Local resources, Vermont Rural Fire Protection Task Force	Not complete. This action will not carry over to the 2025 LHMP.
FLOOD / FLUVIAL EROSION; SEVERE WEATHER; HURRICANE/ TROPICAL STORM				
<i>The area of West Braintree experienced severe flooding during Irene. The Town intends to prevent increase in development density in West Braintree to reduce exposure to flood risk. Although it is a historic village area, the Town does not plan to pursue village designation, nor does it plan to encourage denser settlement.</i>	Planning Commission	Years 2-4 of the planning period.	State Municipal Planning Grant	Not Complete. The Town encourages development density and believes this action does not match the Town's current beliefs. This action will not carry over to the 2025 Plan.
<i>Create and maintain with neighboring communities mutual aid agreements for road crews.</i>	Selectboard, Road Foreman	Years 3 to 5 of the planning period	Local resources	Completed yearly.

Mitigation/Preparedness Action	Who (Leadership)	When (Timeframe)	How (Funding/ Support)	2025 – Status of Mitigation Actions
<i>Educate Town residents about the National Flood Insurance Program's Preferred Risk Policy by including a notice in the Town Report.</i>	Planning Commission	Year 1 of planning period.	TRORC staff to develop case studies of where this policy has benefitted homeowners, Planning Commission members' time	Ongoing. This action occurs on an ongoing basis. This action will continue in the plan update.
<i>Upgrade culvert on Duclos Road.</i>	Selectboard, Road Foreman	Years 1-2 of planning period	Local resources, Better Roads grant program, Hazard Mitigation Grant Program (HMGP), or Pre-Disaster Mitigation (Competitive) grant program (PDM-C)	Not complete. While most culverts on Duclos Road have been updated, one culvert (#5) is in poor condition. This action will continue in the plan update.
<i>Upgrade the culverts on Riford Brook Road.</i>	Selectboard, Road Foreman	Years 2-3 of planning period	Local resources, Better Roads grant program, Hazard Mitigation Grant Program (HMGP), or Pre-Disaster Mitigation (Competitive) grant program (PDM-C)	Completed/ongoing. The culverts on Riford Brook Road have been upgraded; however, three culverts (#27, #29, and #25) need new stone splash pad. This action will carry over to the 2025 Plan, as maintaining and inspecting town culverts and bridges is important.

Mitigation/Preparedness Action	Who (Leadership)	When (Timeframe)	How (Funding/ Support)	2025 – Status of Mitigation Actions
<i>Upgrade Culverts 17 and 18 on Thayer Brook Road (close together and washed out during Tropical Storm Irene).</i>	Selectboard, Road Foreman	Years 2-3 of planning period	Local resources, Better Roads grant program, Hazard Mitigation Grant Program (HMGP), or Pre-Disaster Mitigation (Competitive) grant program (PDM-C)	Completed. Culverts #17 and #18 are in good condition as of September 2023.
HAZARDOUS MATERIAL SPILL				
<i>Develop an all-wheel drive emergency evacuation route for Mobile Acres (between School Street Extension and Mobile Acres bridge)</i>	Emergency Management Director and Selectboard.	Years 2-4 of planning period	Local resources or a grant, and volunteer assistance from the Rochester/Randolph Area Sports Trails Alliance	Not Complete. This action will not carry over to the 2025 Plan.
ICE STORM / HEAVY SNOW				
<i>Clear and maintain town road rights-of-way, and work with local utilities to ensure that utility corridors are cleared and maintained.</i>	Road Commissioner, Selectboard	Yearly	Local resources	Completed.
<i>Plan for, budget and maintain roads for safe winter travel.</i>	Road Commissioner, Selectboard	Yearly, during budget discussions.	Local resources	Completed.

Mitigation/Preparedness Action	Who (Leadership)	When (Timeframe)	How (Funding/ Support)	2025 – Status of Mitigation Actions
<i>Develop a sustainable plan for communicating shelter information to populations that are vulnerable to extreme temperatures.</i>	Emergency Management Team	Years 2 to 4 of the Planning period.	Local resources	Ongoing. This action will continue in the plan update.
<i>Develop a plan for transporting vulnerable populations to shelters.</i>	Emergency Management Team	Years 2 to 4 of the Planning period.	Local Resources	Ongoing. This action occurs on an ongoing basis. This action will continue in the plan update.

This 2025 Local Hazard Mitigation Plan reflects the evolution of the Town’s priorities since 2020. The “top hazards” identified in this Plan and in the 2020 Plan are largely the same, but two significant changes should be noted. Firstly, the members who participated in the 2025 planning process decided to add Structural Fire to the “top hazards” list because while its impacts are spatially limited (in other words, relatively few people are impacted), it carries the potential for significant property damage and human casualties. While the hazard retains a high hazard ranking (see section V(A) of this Plan), the stakeholders felt it was necessary to analyze structural fire and develop specific mitigation strategies specific to structural fire. The second significant change to the “top hazards” list is the addition of Mud Season under “Severe Weather”. This is due to mud season (the 6-week period between snowmelt and Memorial Day) causing severe road issues for Braintree’s inhabitants. With nearly 85% of Braintree’s roads are unpaved,³ the LHMP committee believe mud season poses a high risk for commuters and individuals in need of emergency assistance.

There is relatively minimal development occurring in the Town of Braintree. According to the Braintree Zoning Administrator, there are an estimated 5-10 new residential dwellings permitted per year, a very small number considering there were 653 total housing units in the 2020 Census. From 2010 to 2020 there was an increase of 53 overall housing units. While total housing units has increased, the total population has not. This is indicative of an increase in seasonal housing or second homes.

There has been little commercial development since 2017. More recently, significant residential development has occurred along Route 12A between the Randolph town line and Mobile Acres Mobile Home Park. This area is being considered as a viable new village area and is being referred to as “South Braintree”. There are no plans for large-scale development on the horizon. The area has a low

³ To see the breakdown of paved and unpaved roads: <https://vtrans.vermont.gov/planning/maps/stats>.

vulnerability to future flooding due to large floodplain areas along the White River. Recent development has not changed current hazard vulnerabilities in Braintree.

This 2025 Plan update also includes some changes to mitigation strategies. The 2025 Plan includes strategies for protecting populations that are most vulnerable during winter storms and for restricting development in flood-prone areas, and the continuation of strategies carried over from the previous plan.

Braintree’s Unified Bylaw, which was adopted in 2010, prohibits all new development, including all non-residential and residential structures, in the special flood hazard area and in the fluvial erosion hazard area (i.e., river corridor). In accordance with this bylaw, no new structures have been built within the special flood hazard area or river corridor in Braintree since the adoption of the 2020 Local Hazard Mitigation Plan. Moreover, none of the development permitted since 2020 has encroached upon the 500-year floodplain. This suggests that the vulnerability of Braintree to flooding and fluvial erosion has not significantly increased since 2020 . However, it should be noted that structures outside of the mapped special flood hazard area and river corridors could still be vulnerable to fluvial erosion if they are located near a steep, upland stream.

D. Town Capabilities for Implementing Mitigation Strategies

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

	Type of Existing Authority / Policy / Program / Action	Resources: Staffing & Funding	Ability to Expand/Improve on
Community Preparedness Activities	Program—Annual update of Braintree’s Local Emergency Management Plan (LEMP) Current version was updated and formally approved on 5/7/2024.	Volunteer time from the Emergency Management Director; assistance from TRORC. Funding from Vermont DEMHS.	This document is reviewed and updated each year to ensure that the contact information of emergency response personnel is up to date. This information is then sent to Vermont Emergency Management for their records. The current program works well, no need to expand or improve on.
	Program—Emergency Management Team This group coordinates emergency response and communications as well as some preparedness efforts.	The Town budget includes an annual allotment for emergency management efforts. Team is currently composed of 10 local volunteers and meets quarterly.	Town effort exceeds efforts in similar sized towns in Vermont for participation within the local emergency planning committee (LEPC 12). No need to expand or improve on.

	Type of Existing Authority / Policy / Program / Action	Resources: Staffing & Funding	Ability to Expand/Improve on
	Program—Shelter Coordination The Town is organizing a community team to oversee preparation, maintenance, and operation of emergency shelter the elementary school. ⁴ The School District has approved the use of the elementary school as a shelter.	Staffing will come from Town volunteers.	This is a one-time action. There is no need to expand on it at this time.
	Program—VT EM Trailer A Vermont emergency management trailer was sited at the Randolph Village Fire Station in 2019. During emergencies, this trailer will serve as a mobile hospital for residents of Braintree and surrounding communities.	The trailer is owned and staffed by the state.	The Town will coordinate with the Fire Department to tow the trailer. There is no need to expand on it currently.
Insurance Programs	Authority / Program—Participation in National Flood Insurance Program (NFIP).	The Town of Braintree’s Zoning Administrator enforces the Floodplain Overlay District provisions of the Bylaw. Assistance is provided by TRORC and Vermont ANR. Funding comes from local resources, i.e., the annual budget.	The Town’s current Flood Insurance Rate Map (FIRM) is dated 9/27/1985. The Unified Bylaw (adopted 3/4/2010) is kept up to date and regulates development in Fluvial Erosion Hazard Areas and Special Flood Hazard Areas. New FEMA FIRM maps are expected to roll out in the next several years and will be automatically adopted by the current flood regulations. The Town has the authority and intends to consider strengthening the Flood Bylaw in the next planning cycle.
Land Use Planning / Building Codes	Policy / Program—Braintree Town Plan (revised and adopted on 9/5/2023).	Volunteer time from the Planning Commission, and assistance from TRORC and state agencies on specific subject matter. Funding comes from Municipal Planning Grants.	The Town 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.
	Completed Authority— Braintree Zoning Regulations Bylaw Adopted on 3/4/2010, includes a “Flood Hazard Zones”.	Volunteer time from the Planning Commission, and assistance from TRORC.	During the Town Plan review/update period, the Zoning Ordinance is also

⁴ Braintree residents also have access to Randolph Union High School, which is a certified Red Cross Shelter.

	Type of Existing Authority / Policy / Program / Action	Resources: Staffing & Funding	Ability to Expand/Improve on
		Funding from Municipal Planning Grants.	reviewed and updated if needed.
	Vermont has adopted statewide residential and commercial building codes for safety and energy standards. Building codes are enforced by Vermont's Division of Fire Safety. Residential and Commercial Building Energy Standards are building energy codes that apply to all new residential and commercial construction in the State.	Braintree does not enforce a local building code; however, the Zoning Administrator is required to provide a copy of the RBES and CBES to zoning permit applicants.	The Town has limited financial and staff capacity to enact and enforce building codes. Building codes are enforced at the state level by the Vermont Division of Fire Safety.
Hazard Control & Protection of Critical Infrastructure & Facilities	Policy/Program—Braintree Hazard Mitigation Plan Adopted on 05/19/2020.	Volunteer time from Town officials; assistance from TRORC and Vermont DEMHS. Funding from FEMA; Vermont DEMHS; TRORC.	The 2025 Braintree Local Hazard Mitigation Plan will replace the 2020 Plan. Future iterations of the Town's LHMP will be updated by the Town at least every five years.
	Program—Town road network inventory and capital budget planning.	Staff time from the Town Road Foreman; and assistance from TRORC. Funding from VTrans Better Backroad grant program.	The Town currently has a road inventory and a capital budget fund to maintain and repair town roads.
	Program—Culvert inventory.	Staff time from Town Road Foreman; assistance from TRORC. Funding from VTrans; local personnel time and funding.	The Braintree Road Foreman routinely updates the status of culverts in Town and maintains a comprehensive inventory of culverts online (VT Culverts) ⁵ . The most recent culvert inventory was undertaken in 2023.
Education/ Public Outreach	Ongoing Action— the Randolph Fire Department distributes fire prevention fliers at the school.	Time from the Volunteer Fire Department in and funding from Fire Department budget.	This action is ongoing annually and it has been carried over into the 2025 Plan.
	Ongoing Action— the Town places emergency-related information in the Annual Report and on the Town's website.	Staff time from Town Office personnel and funding from the Town's budget.	This action is ongoing annually and has been carried over into the 2025 Plan.
	Ongoing Action: Distribution of educational materials to the public	Braintree Emergency Management Team	The Braintree Emergency Preparation Brochure should be

⁵For more information about the status of Vermont culverts: <https://www.vtculverts.org/>.

	Type of Existing Authority / Policy / Program / Action	Resources: Staffing & Funding	Ability to Expand/Improve on
	The following resources are being distributed: • Braintree Emergency Preparation Brochure • Preparedness flier (Prepared by Braintree Emergency Management Team)		updated. Emergency Management Team is capable of updating and improving the existing brochures. New opportunities will always be sought to distribute brochures.

E. Plan Maintenance

This Plan (the Braintree Local Hazard Mitigation Plan) will be regularly monitored, updated, and evaluated by discussing its effectiveness and incorporating any necessary revisions. An effective plan advances its goals and leads to successful implementation of the strategies identified by the Town. Monitoring and evaluation of the Local Hazard Mitigation Plan will consist of thorough analysis of whether the Plan's vulnerabilities analyses are still valid, the status of mitigation and preparedness strategies, whether strategies are being implemented according to the time frames included in tables in this Plan, and whether previously identified strategies are still appropriate for the Town (considering effectiveness of implemented projects or actions, as well as changes in Town priorities, capabilities, and vulnerabilities). Updating the Plan will entail incorporating new data and analyses of challenges, opportunities, and progress; making the Plan consistent with changes to the Town Plan or Bylaw; revising strategies or developing new strategies as needed; and identifying the next steps required to implement the Plan's strategies. The plan can be amended in between 5-year updates without formal re-adoption during regularly scheduled Selectboard meetings.

Braintree's Emergency Management Director will be the principal point of contact and will take primary responsibility for the monitoring, evaluation, and update process described here. He or she will bring the Plan's maintenance activities to the Selectboard's agenda and discussions. The Two Rivers-Ottauquechee Regional Commission (TRORC) will help with Plan updates if assistance is requested by the Town of Braintree and if funding is available. If TRORC is unable to assist the Town, then Braintree's Town Clerk, Administrative Assistant, or Selectboard will update the Plan, or the Selectboard may appoint a committee of interested citizens (including the current local Emergency Management Director) to draft changes.

The process of evaluating and updating the plan will include continued public participation through public notices posted on the municipal website, notice within the Town Office, notice in *The Herald of Randolph* and the TRORC newsletter, and inviting the public to the scheduled Selectboard (or specially scheduled) meeting. Additional stakeholders shall be invited to the meeting, such as White River Valley Ambulance, Inc. and Braintree Elementary School. These efforts will be coordinated by the Town

Administrative Assistant. Comments from local officials and the public will be incorporated into the plan when relevant.

Monitoring, evaluation, and updates will take place as follows:

- **Annually:** The Plan will be monitored and evaluated annually at the May Selectboard meeting, along with the review of the Town's Local Emergency Management Plan (LEMP). 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 any revisions that should be incorporated into the Plan. Updates may be made annually as needed or reserved for the 5-year update process (see below).
- **Within 3 months of every federal disaster declaration:** The Selectboard and the Town's Emergency Management Director will be responsible for undertaking the plan maintenance process following a disaster declaration.
- **Every 5 years when the plan expires:** The plan maintenance process will begin at least one year before the Plan expires and shall be informed by the Town's annual and post-disaster monitoring, evaluation, and update efforts.

Braintree will also work to integrate mitigation planning with the Town's long-term land use and development planning documents. The Town will reference and draw from the Local Hazard Mitigation Plan when working on Town Plan amendments or changes to the Town's bylaw. 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 will help the town to comply with the new community flood resiliency requirement for town plans adopted after July 2014. 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. In performing this analysis, we are then able to prioritize actions that are designed to mitigate the effects of each of these disaster types and ultimately make Braintree a safer place.

It is important that we learn from the past in order to avoid the same disasters and their outcomes. Disasters that have occurred within the Town of Braintree, 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 Braintree might not have been impacted by a specific hazard in the past, this does not necessarily mean it will never be affected in the 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 we believe can be expected, or are at least possible, in the central Vermont area. We have considered factors such as frequency of occurrence, warning time and potential community impact to rank each and determine which hazards pose the greatest threats to life and property in Braintree.⁶ Community stakeholders selected a subset that they consider to be “top hazards” (bolded in the table, below) and wished to spotlight with discussion and mitigation strategies throughout the rest of this Plan. It should be noted that hazards assigned with the same “Hazard Score” are not in order and their placement in the table should not be assumed to reflect their potential to create hazards for the town.

⁶ The ranking methodology used in this Plan (see Appendix A) is similar to that which is used by Vermont Emergency Management in the state hazard mitigation plan, though changes were made to reflect the more limited geographical scope of this analysis, which is focused on a small, rural town rather than the entire State of Vermont.

Table: 2024 Hazard Assessment							
	Probability	Potential Impact					
Hazard Impacts		Infrastructure	Life	Economy	Environment	Average:	Score:
Fluvial Erosion	4	3	3	3	2	2.75	11
Severe Weather*	4	3	2	3	2	2.5	10
Wildfire	3	3	3	3	4	3.25	9.75
Ice Storm/Heavy Snow	4	2	3	2	2	2.25	9
Lightning	3	3	3	2	3	2.75	8.25
Mud Season	4	3	1	1	2	1.75	7
Flood/Flash Flood	3	3	2	2	2	2.25	6.75
Structural Fire	3	3	2	2	2	2.25	6.75
High Wind	3	2	3	2	2	2.25	6.75
Extreme Cold	3	2	3	2	1	2	6
Invasive Species	4	2	1	1	2	1.5	6
Extreme Heat	3	3	1	1	2	1.75	5.25
Landslides	2	2	1	3	4	2.5	5
Infectious Disease	2	1	4	3	1	2.25	4.5
Hazardous Material Spill	2	2	3	2	2	2.25	4.5
Hurricane/Tropical Storm	3	2	1	1	2	1.5	4.5
Ice Jams	2	2	2	2	3	2.25	4.5
Hail Storm	2	1	2	3	1	1.75	3.5
Drought	2	1	3	1	2	1.75	3.5
Earthquake	1	4	4	2	2	3	3
Avalanche	1	4	3	2	3	3	3
Tornado	1	3	3	3	2	2.75	2.75
Water Contamination	1	3	3	3	2	2.75	2.75
Dam Failure	1	2	1	1	2	1.5	1.5

**includes Thunderstorm, Lightning, High Winds, Hail, and Mud Season*

See Appendix A to view the Hazard Ranking Methodology that was used by the Hazard Mitigation Committee in determining the ranking in the preceding table. The LHMP team discussed the results of the hazard ranking activity and decided to focus on hazards that scored highest in probability of occurrence and potential impact.

Hazards were prioritized based on the results of the hazard ranking activity, with those highest in probability of occurrence and potential impact included as priority hazards within this Plan. For the purposes of this Plan, inundation flooding, flash flooding and fluvial erosion are combined into one hazard profile for analysis, due to their overlapping events and potential impacts. Ice Storm and Heavy Snow, Wildfire, and Severe Weather were top hazards in the 2020 Plan and remain top hazards in the 2025 Plan update. High wind location, impact, occurrence and extent information is detailed in the

severe weather section, as this hazard tends to occur frequently during severe storm events. Severe weather is not a single hazard (i.e. only high winds or only hail), but is typically a combination of hazards that, when occurring in combination, can be more impactful than the occurrence of each individual hazard separately.

Hazardous Material Spill was analyzed as a “Top Hazard” in the previous Plan, but is not examined in depth here because its impacts are spatially limited. While hail is included in Severe Weather, hail is individually omitted as a top hazard since, while it can and has occurred, there are no anticipated damages that would require recovery dollars from hail events alone. Damage from hail is primarily limited to very minor damage to vehicles or structures, and occasional damage to crops. Furthermore, hail is ranked as a low priority in the 2023 State Hazard Mitigation Plan based on risk assessment. Other hazards not detailed in this Plan as a result of low probability and/or small potential impact include dam failure, extreme cold, invasive species, landslides, extreme heat, infectious disease, ice jams, drought, hurricane/tropical storm, water contamination, earthquake, avalanche and tornado. For definitions and descriptions of hazards not profiled in this Plan, see the Vermont State Hazard Mitigation Plan.

After engaging in discussions using their best available knowledge, the Town of Braintree identified the following “top hazards” which they believe their community is most vulnerable to, based on high frequency of occurrence and significant potential impacts:⁷

- Flash Flood/Flood/Fluvial Erosion
- Severe Weather/High Wind
- Wildfire
- Ice Storm/Heavy Snow
- Structural Fire

Each of these “top hazards” will be discussed in the following sections. Within each section, previous occurrences of each hazard will be listed, including the County-wide FEMA Disaster Declarations (DR-#), where applicable. Federally declared disaster information from 2019-2024 is provided below. Hazards information was gathered from:

- Local sources (e.g., town history book)
- The Spatial Hazard Events and Losses Database for the United States (SHELDUS) 1960-2020
- Special Reports produced by the National Weather Service in Burlington, Vermont
- FEMA’s listings of Disaster Declarations by year
- National Fire Incident Reporting System data

All Federally Declared Disasters, Orange County VT, 2019 - 2024

Declaration Date	DR #	Disaster
06-14-2019	DR 4445	Severe Storm/Flooding (Event Date: April 15)
01-17-2020	DR 4474	Severe Storm/Flooding (October 31-November 1 2019)
03-13-2020	EM 3437	Covid-19 Pandemic
04-08-2020	DR 4352	Covid-19 Pandemic
08-22-2021	EM 3567	Tropical Storm Henri
03-20-2023	DR 4695	Severe Storm/Flooding (December 22-24 2022 Event)

07-10-2023	EM 3595	Flooding
07-14-2023	DR 4720	July 2023 Flood Event
03-02-2024	DR 4762	December 2023 Flood Event
08-08-2024	EM 3609	Tropical Depression Debby
08-20-2024	DR 4810	July 2024 Flood Event

Each section also includes a description of the hazard and a summary matrix with the following information (please see each hazard profile for a hazard-specific matrix):

Hazard	Location	Vulnerability	Extent	Observed Impact	Likelihood/Probability
Type of hazard	General areas in community that may be vulnerable to the hazard.	Community structures systems, populations, or other assets as defined by the community that are susceptible to damage and loss from hazard events.	General details about the strength or magnitude of the most notable event(s).	Dollar value or percentage of damages.	<u>Occasionally</u>: 1–10% probability of occurrence per year, or at least one chance in next 100 years <u>Likely</u>: >10% but <100% probability per year, at least 1 chance in next 10 years <u>Highly Likely</u>: >100% probability in a year

B. Hazard Profiles For “Top Hazards”

1. Flash Flood/Flood/Fluvial Erosion

Flooding is one of the worst threats to Braintree’s residents and infrastructure. Past instances of flooding in Braintree have included rain and/or snowmelt events that cause flooding in the major rivers’ floodplains and intense rainstorms over a small area that cause localized flash-flooding. Both kinds of events can be worsened by the build-up of ice or debris, which can contribute to the failure of important infrastructure (such as culverts, bridges, and dams).

The worst flood disaster to hit the Town of Braintree, as well as the overarching region and the State of Vermont, occurred on November 3, 1927. This event was caused by nearly 10 inches of heavy rain from the remnants of a tropical storm that fell on frozen ground. Eighty-four Vermonters, including the Lieutenant Governor, were killed. The flooding in the White River valley was particularly violent, with an estimated 120,000 to 140,000 cubic feet/second (cfs) flowing out of the White River at West Hartford, Vermont. Like many towns in the region, the Town of Braintree received heavy precipitation; Riford Brook took out all eight bridges along its course and the small hamlet of Peth was essentially wiped out.

Two recent flood that devastated the region and the state are: Tropical Storm Irene, which occurred on August 28, 2011, and the July 2023 event, which occurred intermittently throughout July in 2023.

During Tropical Storm Irene, record flooding was reported across the state and was responsible for several deaths, and hundreds of 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. The flooding caused by Tropical Storm Irene is considered to be the second greatest natural disaster in 20th and 21st century Vermont, second only to the Flood of 1927.

The Town of Braintree suffered major damage to property and infrastructure during Tropical Storm Irene (also referred to as “Irene”), although no lives were lost. It is estimated that Irene dropped 6-7 inches of rain over the Town of Braintree in a very short span of time, and 5-7 inches across the county. It is thought that the flooding that occurred as a result of the storm was close to being or was a full-fledged 500-year flood. Many of Braintree’s roads and culverts were damaged by the storm, including parts of: VT Route 12A, Riford Brook Road, Thresher Road, Thayer Brook Road, Rochester Hollow Road, Bear Hill Road and West Street. The damage for the Town of Braintree totaled \$2.2 million, while the county-wide damage for Orange County totaled over \$5 million. Following the flood damage, the State of Vermont and FEMA have been coordinating on the home buy-out process across the state. There were two houses washed away by flood waters during Irene, but only one home buy-out occurred in Braintree, located on Thayer Brook Road. At the time of this plan update, there were no repetitive loss properties in Braintree on FEMA’s NFIP list.

Comparatively, the July 2023 flooding was catastrophic due to factors such as the frequency and intensity of rainfalls, which restricted soil saturation and overwhelmed drainage systems and rivers. Between July 9 and July 12, 2023, Vermont experienced 3 to 9 inches of rainfall within 48 hours, resulting in devastating flooding and damages amounting to millions of dollars. The heavy rainfall led several rivers to reach record-high levels, even surpassing records in some counties during Irene. From July 16th to the 17th, Braintree experienced 2.5 inches of rainfall over two days, and on July 21st, there was a total of 1.66 inches. During the flooding event, Route 12A, several homes in Braintree Village, and small bridges (such as on Braintree Hill Road) were significantly flooded, destroyed, or washed out. The damage for the Town of Braintree totaled \$2 million, while the county-wide damage for Orange County totaled over \$6 million. A total of five homes were bought out in coordination with TRORC, FEMA, and the State of Vermont.

Fluvial erosion is also a significant concern in Braintree, especially along Riford Brook, Thayer Brook, and the Third Branch of the White River. Channelization and other development within the river corridor have exacerbated the challenges posed by this hazard. The migration of river channels may necessitate revision of floodplain maps. Braintree is susceptible to landslides primarily associated with fluvial erosion and along steep streambanks and slopes. Braintree’s steep terrain poses a risk of slope failure during heavy rains or snowmelt. Road embankments, steep hillsides, and buildings near eroding slopes may be vulnerable. Landslides could isolate residents or damage infrastructure. According to the Vermont Geological Survey’s Orange County Landslide Inventory, there are 27 known areas of past slope failure and mapped landslide hazards within the Town. These are typically linked to erosive forces near watercourses such as Riford Brook and Thayer Brook.

Unfortunately, flooding is very common across the region, with many events impacting the Town of Braintree specifically. Flooding is one of the worst threats to Braintree’s residents and infrastructure. The following list indicates the history of occurrence with regard to this hazard in Orange County (given the small population of Braintree, town-specific data is limited); an asterisk “*” denotes the few instances in which town-specific data is available, and federal disaster numbers are listed where appropriate.

History of Occurrences:

Date	Event	Location	Extent
12/18/2023-12/19/32023 DR-4762	Severe Storm, Flooding	Statewide	Extent and impacts are still being evaluated. Between 4”-7” of precipitation across the state over several days caused heavy flooding in Central Vermont. There are no available data on the size of the land area that was impacted by flooding or fluvial erosion.
07/9/2023- 07/11/2023 DR-4720	Flood, Flash Flood	Statewide	Extent and impacts are still being evaluated. Between 6”-12” of precipitation across the state over several days caused heavy flooding in Central Vermont. There are no available data on the size of the land area that was impacted by flooding or fluvial erosion.
04/15/2019 (DR-4445)*	Flooding	County- wide	Minimal damage in Braintree, damages scattered throughout Town. Many roads were washed out and reduced to one lane. Roughly \$30,000 to \$40,000 total damages.
06/25/2013 - 07/11/2013 (DR-4140)	Flash flooding & flooding	County- wide	Route 12A in nearby Randolph Village was closed. In Braintree, Lemery Road and West Street sustained severe damage. There are no available data on the size of the land area that was impacted by flooding or fluvial erosion.
08/28/2011* (DR 4022 VT for period of 8/26/2011 – 9/2/2011)	Severe Flash Flooding	Braintree, county- wide	5-7” of rain across region, significant damage to roads/culverts. \$2,228,085.22 in damage total for Braintree according to FEMA’s Public Assistance database (captures at least 70% of total damage). There are no available data on the size of the land area that was impacted by flooding or fluvial erosion.
5/26/2011 – 5/27/2011 (DR 4001 VT)	Flash & riverine flooding	County- wide	3-5+” of rain county-wide. There are no available data on the size of the land area that was impacted by flooding or fluvial erosion.
7/21/2008 - 8/12/2008 (DR 1790 VT)	Flooding	County- wide	There are no available data on the size of the land area that was impacted by flooding or fluvial erosion.
7/9/2007 - 7/11/2007 (DR 1715 VT)	Flooding	County- wide	Over 6 inches of rainfall in nearby Randolph Center. Many Randolph roads were flooded, including Routes 12 and 14. Braintree-specific data could not be found. There are no available data on the size of the land area that was impacted by flooding or fluvial erosion.
4/15/2007 - 4/21/2007 (DR 1698 VT)	Flooding	County- wide	Snowfall in valleys 4-7” throughout the county; 13” fell in nearby Randolph. There are no available data on the size of the land area that was impacted by flooding or fluvial erosion.
1/18/2006 – 1/19/2006	Flooding	County- wide	1.5 to 2.5” of rain, augmenting snowmelt. There are no available data on the size of the land area that was impacted by flooding or fluvial erosion.

Date	Event	Location	Extent
7/21/2003 - 8/18/2003 (DR 1488 VT)	Flooding	County-wide	There are no available data on the size of the land area that was impacted by flooding or fluvial erosion.
4/14/2002*	Flooding	County-wide	Snowmelt was compounded by 1-3" of rain across the area. Gravel road washouts were reported in Braintree. There are no available data on the size of the land area that was impacted by flooding or fluvial erosion.
7/14/2000 - 7/18/2000 (DR 1336 VT)	Flooding	County-wide	There are no available data on the size of the land area that was impacted by flooding or fluvial erosion.
9/16/1999 - 9/21/1999 (DR 1307 VT)	Flooding	County-wide	There are no available data on the size of the land area that was impacted by flooding or fluvial erosion.
6/27/1998*	Flash flood	Braintree, county-wide	4-8" of rain; 75% of roads damaged in town. Available data are insufficient to determine the exact size of the land area that was impacted by flooding or fluvial erosion.
6/17/1998 - 7/13/1998 (DR 1228 VT)	Flooding	County-wide	There are no available data on the size of the land area that was impacted by flooding or fluvial erosion.
1/19/1996 – 1/20/1996	Flooding	County-wide	There are no available data on the size of the land area that was impacted by flooding or fluvial erosion.
6/6/1984 – 6/8/1984 (DR 712 VT)	Flooding	County-wide	There are no available data on the size of the land area that was impacted by flooding or fluvial erosion.
8/5/1976 (DR 518 VT)	Flooding	County-wide	There are no available data on the size of the land area that was impacted by flooding or fluvial erosion.
7/6/1973 (DR-397 VT)	Flooding	County-wide	There are no available data on the size of the land area that was impacted by flooding or fluvial erosion.
6/28/1973 - 6/30/1973	Flooding	Braintree, county-wide	8.53" reported in nearby Rochester, Vermont. Braintree-specific data could not be found. There are no available data on the size of the land area that was impacted by flooding or fluvial erosion.
11/2/1927 – 11/4/1927* ("The 1927 Flood")	Flash flooding	Braintree, county-wide	4-9" of rain, Riford Brook took out all 8 bridges along its course: roads severely damaged. There are no available data on the size of the land area that was impacted by flooding or fluvial erosion.

Given its history, the Town of Braintree has become very proactive. The Floodplain Overlay District prohibits new structures in the federally mapped 100-year floodplain and in the state-mapped fluvial erosion hazard zone (i.e., river corridor), and it places restrictions on other types of activities within those areas. The Floodplain Overlay District also specifies land, area, and structural requirements for development. In all districts, the town bylaw has set a 50-foot stream buffer for structure development and a 35-foot buffer for ground disturbance, except for bridge or culvert construction or permitted bank stabilization. These buffers seek to protect the fragile riparian habitat, improve or maintain water quality, and prevent soil erosion.

There are 4 residential and 3 non-residential buildings, 1 railway crossing, 1 communication tower, and a 130-unit campground located in the 500-year floodplain.⁸ Excluding the railroad crossing,

⁸ The 500-year floodplain was chosen as a basis for this analysis to demonstrate the number of Braintree properties that are or may be vulnerable to flooding. In addition, the flooding that occurred as a result of Tropical

communication tower, and temporary structures in the campground, damages would amount to \$1,418,900 if all properties were destroyed in a severe flooding event. There are no critical facilities located in the 100-year or 500-year floodplain areas, and no development projects are currently planned in those areas.

A railway crossing, a communication tower, 25 residential structures, 1 commercial structure with a residence, 14 non-residential structures, and a 130-unit campground are located in the river corridor where there is heightened risk from fluvial erosion. No critical facilities are located in the river corridor. Additional work to reinforce riverbanks is necessary, but the town believes bank stabilization on state roads is the responsibility of the state.

It is important to consider the exposure of vulnerable populations, especially children, the elderly, and low-income households, to flood risk. Across Vermont, most child and elder care facilities are not registered with the State. There is one registered family childcare home in Town, and the Orange Southwest School District serves as a licensed provider of early education and afterschool programming at the Elementary School. None of the registered or licensed childcare facilities are located within the river corridor or 500-year floodplain. There are no registered elder care facilities in the Town of Braintree. Finally, most low-income housing is not registered with the State, but the state does maintain a list of mobile home parks. There is one mobile home park in Braintree, Mobile Acres Mobile Home Park. It is not located in the 500-year floodplain. One of the homes is located within the river corridor, where there is heightened risk of fluvial erosion.

It should be noted that the state's river corridor maps and FEMA's floodplain maps may not identify all properties that are at risk of flooding or erosive damage. FEMA has only mapped floodplains in some areas of the Town, and in those areas, FEMA focused exclusively on the Third Branch mainstem and Ayers Brook. The state's river corridor maps include more areas but, like FEMA's maps, they do not include all the land lying within the 500-year floodplain. Moreover, recent studies have shown that the majority of flooding in Vermont is occurring along upland streams, as well as along road drainage systems that fail to convey the amount of water they are receiving. Because they are not identified on FEMA's maps, these areas are often not recognized as being flood prone and property owners in these areas are not typically required to have flood insurance (DHCA, 1998). While small, mountainous streams may not be mapped by FEMA in NFIP FIRMs (Flood Insurance Rate Maps), flooding along these streams is possible, and should be expected and planned for. Flash flooding in these reaches can be very erosive, causing damage to road infrastructure and to topographic features including stream beds and the sides of hills and mountains. The presence of undersized or blocked culverts can lead to further erosion and stream bank/mountainside undercutting. Furthermore, precipitation trend analysis suggests that climate change is increasing the intensity and frequency of local storms, making it all the more important to plan for potential flood and fluvial erosion impacts in areas not accounted for by the state's river corridor maps and FEMA's floodplain maps.

Storm Irene is considered to be greater than a 100-year flood. Therefore, in order to be more forward-looking, the potential damage to structures in the 500-year floodplain is documented in this plan.

There are many structures in Braintree that are located along smaller streams that are prone to flooding. As these streams do not have federally mapped floodplains or state-mapped river corridor boundaries, they are not subject to the development regulations of Braintree's Floodplain Overlay District.

Following a significant damage event (whether it be from flooding or other hazard), the Administrative Officer (AO) is required to make Substantial Improvement or Substantial Damage determinations for damaged structures in the Special Flood Hazard Area. This will involve the AO reviewing the damaged property as soon as possible following the event, and determining the estimated cost of work, along with the structure's market value. The AO has several options available for estimating damage, including FEMA's Substantial Damage Estimator Tool and qualified estimates made by town officials, contractors or engineers. The AO may request technical assistance from VT ANR and the Regional Floodplain Managers on how best to evaluate for substantial damage, as not all events will require the same approach. If a structure is determined to have been substantially damaged (no matter the cause), it is required to be brought into compliance with Braintree's Unified Bylaw. The AO is required to maintain a record of all Substantial Improvement/Substantial Damage determinations.

Along with a culvert inventory, the Town should also consider maintaining a formal maintenance and inspection plan. This plan would include grading and shaping all gravel roads and patching potholes, as well as inspection of guard rails, culverts and bridges, and brush cut sections along the highway and roadway as needed. Included in the summer duties would be resurfacing gravel roads per gravel plan as well as ditching and culvert replacement. Preparation for summer maintenance of Town properties, sweep village and development sidewalks, mowing and checking storm drainage systems. The highway department would prepare for the winter months in September by stockpiling winter sand/salt/gravel.

Hazard	Location	Vulnerability	Extent	Observed Impact	Likelihood/Probability
Flash Flood/ Flood/ Fluvial Erosion	VT Route 12A (including West Braintree village), Riford Brook Road, Thresher Road, Thayer Brook Road, Rochester Hollow Road, Bear Hill Road, West Street, Farnsworth Brook Road, East Braintree village in the vicinity of Ayers Brook, and other small, steep streams throughout the Town.	Culverts, bridges, road infrastructure. There are 4 residential and 3 non-residential buildings in the 500-year floodplain. 25 residential structures, 1 commercial structure with a residence, 14 non-residential structures, and a 130-unit campground are located in the fluvial erosion hazard area. Culverts, bridges, homes and other development near waterways may be vulnerable to landslide, especially following heavy rains or as a result of riverine	Tropical Storm Irene- 5-7" across county (6-7" in Braintree). 27 documented slides in Braintree on the ANR Landslides database. Most slides are between 100-1000' in area. One landslide above Mobile Acres has been remediated. No detailed	From TS Irene: \$2,228,085.22 for Braintree from FEMA's Public Assistance database. Impacts from landslides may include blocked access roads, isolated residents, damage to structures and infrastructure. No local data on past	Highly likely

		scour and bank undercutting. Landslides could also isolate residents.	information on this available.	impacts is available.	
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2. Severe Weather (Thunderstorm, Lightning, High Winds, Hail, Mud Season)

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 a regular annual occurrence in at least some part of the state. Most of these events had hail measuring 0.75 inches, but many had hail at least 1.5 inches in size. The largest hail during the period was 3-inch hail that fell in Chittenden County in 1968. 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 that which hit the region on July 6, 1999, downing hundreds of large trees in a few minutes.

In Braintree, severe weather is quite common, typically in the late spring and summer months when the region experiences higher temperatures. Mud season poses a risk on residents who commute and emergency responders who use Braintree's unpaved roads. Severe thunderstorms tend to bring other hazards such as high winds, hail, and lightning, and flooding, and these hazards are often experienced in combinations that create many unique weather and emergency management situations. Over the years, Braintree 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 damage data could not be found, but the "Remarks" section of NCEI Database helps to illuminate the impact strong winds can have on Braintree. Sizeable hail has also accompanied storms moving through the Town and region. It should be assumed that extreme severe weather events will continue to occur, despite general warming trends we are beginning to experience due to climate change.

The following list indicates the history of occurrence with regard to this hazard in Orange County (given the small population of Braintree, town-specific data is limited); an asterisk "*" denotes the instances in which town-specific data is available, and federal disaster numbers are listed when appropriate. In an attempt to capture the individual hazards that may arise, and the different circumstances caused by the hazards in concert, the separate hazards are documented in the table below.

History of Occurrences:

Severe Weather Date	Event					Location	Extent
	Thunderstorm/severe storm	Flooding	Hail	High Winds	Lightning		
12/18/2023-12/19/32023 DR-4762		✓				Braintree, State-wide	Extent and impacts are still being evaluated. Between 4"-7" of precipitation across the state over several days caused heavy flooding in Central Vermont. There are no available data on the size of the land area that was impacted by flooding or fluvial erosion.
9/5/2017*	✓			✓		East Braintree	Downed trees. Estimated wind gust of 50 mph in E. Braintree. No available data on the size of the land area that was impacted.
6/29/2017 - 7/1/2017 (DR-4330)*	✓	✓		✓		Braintree Hill, county-wide	Flash flooding, road damage, downed trees, no available data on the size of the land area that was impacted.
7/23/2016*	✓			✓		Braintree Hill, county-wide	Numerous downed trees and power lines. Estimated wind gust of 55 mph at Braintree Hill. No available data on the size of the land area that was impacted.
9/11/2013*	✓			✓		Braintree Hill, county-wide	Downed trees and power lines on Flint Rd. Estimated wind gust of 50 mph at Braintree Hill. No available data on the size of the land area that was impacted.
06/25/2013—07/11/2013 (DR 4140)	✓	✓				County-wide	No available data on the size of the land area that was impacted.
5/26/2011 - 5/27/2011 (DR 4001 VT)	✓	✓	✓	✓		County-wide	No available data on the size of the land

Severe Weather Date	Event					Location	Extent
	Thunderstorm/ severe storm	Flooding	Hail	High Winds	Lightning		
							area that was impacted.
07/21/2010*	✓		✓	✓		Braintree Hill, county-wide	Quarter-sized hail. No available data on the size of the land area that was impacted.
7/10/2010*			✓			Braintree, county-wide	0.5-1" hail. No available data on the size of the land area that was impacted.
7/21/2008 - 8/12/2008 (DR 1790 VT)	✓	✓	✓			County-wide	No available data on the size of the land area that was impacted.
7/9/2007 - 7/11/2007* (DR 1715 VT)		✓	✓	✓		Braintree, County wide	Downed trees/wind damage. Estimated wind gust of 50 mph. No available data on the size of the land area that was impacted.
4/15/2007 – 4/21/2007 (DR 1698 VT)		✓		✓		County-wide	No available data on the size of the land area that was impacted.
7/21/2003 – 8/18/2003 (DR 1488 VT)		✓				County-wide	No available data on the size of the land area that was impacted.
6/29/2003*	✓				✓	Braintree, county-wide	Numerous lightning strikes, a few tree fires resulted. No available data on the size of the land area that was impacted.
7/4/2002*	✓			✓		Braintree, county-wide	Downed trees, wind damage. No available data on the size of the land area that was impacted.
7/10/2001*	✓			✓		Braintree, county-wide	Multiple downed trees. No available data on the size of the land area that was impacted.
7/14/2000 – 7/18/2000 (DR 1336)	✓	✓				County-wide, especially	Locally heavy rain. No available data on the

Severe Weather Date	Event					Location	Extent
	Thunderstorm/severe storm	Flooding	Hail	High Winds	Lightning		
						west portion	size of the land area that was impacted.
6/17/1998	✓	✓				County-wide	Flash flooding. No available data on the size of the land area that was impacted.
1/19/1996 – 2/2/1996 (DR 1101 VT)		✓		✓		County wide	No available data on the size of the land area that was impacted.
6/27/1994*	✓		✓	✓		East Braintree, Braintree	Numerous downed, snapped, uprooted trees. Up to golf-ball sized hail in nearby Randolph. No available data on the size of the land area that was impacted.
8/6/1989	✓			✓		County-wide	No available data on the size of the land area that was impacted.
6/6/1984 – 6/8/1984 (DR 712 VT)	✓	✓				County-wide	No available data on the size of the land area that was impacted.
8/5/1976 (DR 518 VT)	✓	✓		✓		County-wide	No available data on the size of the land area that was impacted.
7/6/1973 (DR 397 VT)		✓				County-wide	Severe storms; landslides. No available data on the size of the land area that was impacted.

The main hazard caused by severe weather throughout the Town is flooding and rampaging waters in the narrow hollows coming off the hills. Prior to the flooding from Tropical Storm Irene, the spring of 2011 was particularly wet, and a pre-Memorial Day storm caused widespread flooding throughout Orange County. The roads and other infrastructure damaged during this flood event included the following locations: VT Route 12A, Riford Brook Road, Thresher Road, Thayer Brook Road, Bear Hill Road and Rochester Hollow Road.

The Town of Braintree has received high wind events in the past, and the entire Town is at risk of damage from them. Thankfully, the damage caused by high winds has been relatively minimal, though there is limited impact data available. Often, power outages occur as a result of trees and tree limbs

falling on power lines. Furthermore, fallen trees and utility lines can present emergency access and communication challenges as roads or driveways can become blocked, and loss of power can disrupt communication, including internet and cell service. Falling trees as a result of high wind events can also be a health and safety risk for those employed in outdoor roles or professions. Power outages resulting from strong winds can leave residents dependent on electric-based medical equipment vulnerable, as they may not have an alternative power source to keep medical devices running.

Braintree maintains a list of culverts and culvert conditions and has been working to upgrade culverts since 2009. A number of the steel culverts have been replaced with plastic culverts.

Hazard	Location	Vulnerability	Extent	Observed Impact	Likelihood/Probability
Severe Weather	Town-wide for wind, hail, high winds, lightning and thunderstorm impacts; for flooding: VT Route 12A, Riford Brook Road, Thresher Road, Thayer Brook Road, Bear Hill Road and Rochester Hollow Road	Town and private buildings, and utilities, and unhoused residents are at risk from direct wind damage, falling trees, and lightning strikes.	Thunderstorm / Severe Storm: During Tropical Storm Irene, 3-7" of rainfall across Vermont. 6-7" in Braintree. Flooding: More than 5" of rain lead to flooding during TS Irene. Over half a million dollars in estimated damage for Braintree. Hail: 1" in diameter has been reported. Hail can damage structures, vehicles, and other infrastructure. High Winds: During severe storms, wind gusts of up to 60 mph have been reported. Strong winds can down trees and damage power lines, homes, and other structures. Lightning: Lightning can damage structures and down trees. Lightning can be life-threatening for those outside during severe storms.	From TS Irene: \$2,228,085.22 for Braintree from FEMA's Public Assistance database.	Highly likely

****Note:** The main hazard caused by severe weather is typically (though not always) flooding, accompanied by rushing water washing away infrastructure. In addition, flooding is often the most expensive hazard caused by severe weather. Therefore, the Extent and Impact categories for Severe Weather will reflect the data reported in the Flash Flood/Flood/Fluvial Erosion, as it represents the higher limits of damage caused by severe weather.

3. Wildfire

Wildfire may be sparked by natural or human activities. Lightning is one of two main natural causes of wildfire. However, across the United States, approximately 90 percent of wildfires are started by humans. According to FEMA, there are three types of wildfires that can consume natural landscapes and man-made structures and features: surface fire, ground fire, and crown fire. Surface fires are slow moving across the forest floor, and, as a result, kill and damage trees. Ground fires are usually caused by

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 **Wildfire**.

lightning strikes and burn on or below the forest floor. Crown fires, so called for their location in the crown of trees, effortlessly spread through treetops, often aided by wind.

The Vermont landscape is especially vulnerable to wildfire during the period of time in early spring when all the snow has melted, vegetation has not begun to develop leaves, and the land and vegetation are very dry and/or dead. During mud season, many of the roads in Braintree are impassable to heavy vehicles, complicating emergency services' access to the scene of a wildfire. Delayed access increases the risk and level of damage to structures. As climate change progresses, the risk of wildfire and length of mud season are likely to increase.

The following occurrences were drawn from local knowledge and from the National Fire Incident Reporting System. These reports were supported with research of news stories, where possible (indicated with an asterisk*).

History of Occurrences:

Date	Event	Location	Extent
5/5/2023	Wildfire Smoke	Wildfire Air Quality Alert from widespread wildfires in Alberta, Nova Scotia, Quebec and eastern Ontario	Extent data unavailable
5/20/2017	Brush Fire	Thresher Road	Extent data unavailable
10/1/2013	Brush Fire	Bent Hill Road	Extent data unavailable
05/04/2013	Wildfire	Route 12A, West Braintree	2-3 acres scorched
04/28/2013	Wildfire	2.5 miles up Braintree Mountain Road (nearby Braintree/Granville town line)	Approximately 5 acres
4/27/2013	Grass Fire	Route 12A	Extent data unavailable
7/12/2012	Brush Fire	Route 12A	Extent data unavailable
4/04/2010	Brush Fire	Farnsworth Brook	Extent data unavailable
07/28/2007*	Wildfire	Several miles up Braintree Mountain Road	Approximately 10-15 acres
8/24/2003	Wildfire	Route 12A	Extent data unavailable
6/29/2003	Wildfire	Duclos Road	Extent data unavailable
4/22/2002	Grass Fire	Route 12A / Duclos Road	Extent data unavailable
1/25/2002	Brush Fire	Battles Brook	Extent data unavailable

Dry hydrant sites have increased from 1 to 4 since the adoption of the 2009 Hazard Mitigation Plan. Dry hydrants are located on Braintree Road, VT Route 12A, Thresher Road, and Allen Bent Road. No additional sites are available at this point in time. Some forest areas exist where ground-based

firefighting efforts would be very difficult, due to their remoteness. This creates the potential for wildfire to impact private land and property and any logging operations occurring at the time of the wildfire. A wildfire would likely impact or result in the damage of wildlife habitat and recreational lands used for hunting, hiking, mountain biking, back country skiing, and ATV and snowmobiling trails (maintained by VAST, Vermont Association of Snow Travelers).

Much of Braintree is vulnerable to wildfire, as land is mostly rural and is mainly or partially forested. The Town of Braintree does not include any state- or federally owned forest land; all forested land is held privately. Notably, the railroad corridor is prone to brush fires in the summer, as sparks from the tracks can set dry grasses alight. Also of concern is the large number of dead trees left over from the January 1998 ice storm that devastated and felled millions of trees over much of northern New England, northern New York and Canada. Dead wood deposits can fuel wildfire in the Town.

Hazard	Location	Vulnerability	Extent	Observed Impact	Likelihood/Probability
Wildfire	Most of Braintree, especially areas surrounding the New England Central Railroad, powerlines, and Braintree Mountain Road.	Private property, town buildings, utility infrastructure	Extent of damage has been minimal but all that is needed are the right conditions to experience a more damaging wildfire, especially because most of the Town is forested.	Unknown—data gap.	Highly likely

4. Ice Storm/Heavy Snow

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, downed trees and power lines, road closings, car accidents, 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 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.

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 **Ice Storm/Heavy Snow**.

Severe winter storms include a blizzard on February 15-17 in 1958, which 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. A string of storms in March 2001 hit the state, beginning with 15-30 inches on March 5-6th (later declared a federal disaster), 10-30

inches on the 22nd, and 10-20 inches on the 30th. Recent years have seen wet snowstorms that have leveled trees and caused widespread power outages.

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, there were no fatalities in Vermont, unlike Quebec where 3 million people lost power and 28 were killed. The Town of Braintree was impacted by this ice storm.

Over the past few winters, Braintree has received numerous snowstorms that have dropped significant amounts of snow over a day or two-day period. As a result of climate change, Vermont is expected to receive less snow, but the snow that does fall will be denser, increasing the risk of power outages. Moreover, the frequency and intensity of winter storms will increase. The following table documents the occurrence of ice storms / heavy snow (more than 6 inches of accumulation) in the Town of Braintree and in Orange County. Given the small population of Braintree, town-specific extent data is generally not available. In a few instances, an asterisk “*” denotes the instances in which town-specific extent data is available. Federal disaster numbers are listed when appropriate.

History of Occurrences:

Date	Event	Location	Extent
1/24/24-1/25/24	Winter Storm	County-wide	0.25 inches of ice accumulation, creating dangerous road conditions across the County.
1/16/24	Winter Storm	County-wide	3-7 inches of snow across the County.
1/9/24-1/10/24	Winter Storm	County-wide	6+ inches of heavy snow and wind caused 80,000 power outages and \$1 million damage throughout Vermont.
12/3/23	Winter Storm	County-wide	6-10 inches of wet, heavy snow. Power outage and travel disruptions reported across County.
1/23/23	Winter Storm	County-wide	5-10 inches of snow reported across south central Vermont.
2/18/22	Winter Storm	County-wide	1-2 inches of snow, 0.25+ inches of ice accumulation created hazardous travel in southeastern VT. Power outage reported throughout the Region.
4/16/21	Winter Storm	County-wide	1-3 inches of snow throughout east-central Vermont.
2/16/21	Winter Storm	County-wide	3-6 inches of snow and sleet, paved roads were icy condition and unfit to drive on.
2/2/21	Winter Storm	County-wide	5 to 12 inches of wet snow reported southern Green Mountains and lower Connecticut Valley.
12/17/20	Winter Storm	County-wide	3 to 6 inches just north from there across southern Addison and Orange counties. Nor’easter development.
1/18/20-1/19/20	Winter Storm	County-wide	4 to 7 inches of snow in central and southern Vermont.
12/29/19-12/30/19	Winter Storm	County-wide	1 to 3 inches of wet snow, freezing rain accumulated 1/3 inch across southern Vermont’s four counties.
3/21/19 – 3/23/19	Winter Storm	County-wide	7 to 14 inches of heavy, wet snow across the County. Widespread power outages.

2/12/19 – 2/13/19	Winter Storm	County-wide	6 to 15 inches of accumulation, mixed with freezing rain, across the region.
1/19/19 – 1/20/19*	Winter Storm	County-wide	16 inches reported in Braintree.
1/8/19 – 1/10/19	Winter Storm	County-wide	6 to 10 inches of heavy, wet snow across the County. 6 inches reported in nearby Brookfield. Scattered power outages.
11/26/18 – 11/27/18	Winter Storm	County-wide	6 to 12 inches of heavy, wet snow across the County. 9 inches reported in nearby Brookfield. Power outages reported across the region.
3/13/18 – 3/14/18	Winter Storm	County-wide	10 to 27 inches of accumulation across the County. 18 inches reported in nearby Chelsea.
3/7/18 – 3/9/18	Winter Storm	County-wide	9 to 15 inches of accumulation across the County.
2/7/18	Winter Storm	County-wide	6 to 10 inches of accumulation across the County.
12/22/17	Winter Storm	County-wide	6 to 10 inches of accumulation across the County.
12/12/17	Winter Storm	County-wide	6 to 12 inches of accumulation across the County.
3/31/17 – 4/1/17*	Winter Storm	County-wide	12 inches of heavy, wet snow reported in Braintree. Scattered power outages across the region.
3/14/17 – 3/15/17	Winter Storm	County-wide	12 to 18 inches of accumulation across the County.
2/12/17 – 2/13/17	Winter Storm	County-wide	6 to 12 inches of accumulation reported across the County. 11 inches reported in nearby Chelsea.
12/29/16	Winter Storm	County-wide	6 to 12 inches of accumulation reported across the County.
2/2/15*	Winter Storm	County-wide	8 inches reported in Braintree.
12/9/2014-12/12/2014 (DR-4207)*	Severe Winter Storm	County-wide	18 inches of heavy, wet snow reported in Braintree. Widespread power outages throughout the County.
11/26/14 – 11/27/14*	Winter Storm	County-wide	12 inches reported in Braintree
3/12/14 – 3/13/14*	Winter Storm	County-wide	16 inches reported in Braintree.
2/13/14 – 2/14/14	Heavy Snow	County-wide	12 to 18 inches reported across Orange County.
2/5/14	Heavy Snow	County-wide	8 to 12 inches reported across Orange County.
12/29/13 – 12/30/13	Winter Storm	County-wide	5 to 10 inches of wet, heavy snow across the County.
12/14/13 – 12/15/13	Winter Storm	County-wide	10 to 15 inches of accumulation across the County.
3/19/13 – 3/20/13	Winter Storm	County-wide	6 to 12 inches reported across the County
2/8/13 – 2/9/13	Winter Storm	County-wide	6 to 15 inches reported across the County
11/23/11 – 11/24/11	Winter Storm	County-wide	5 to 10 inches of heavy, wet snow mixed with rain and sleet, across the County. 9 inches reported in nearby Chelsea.
3/6/11-3/7/11	Winter Storm	County-wide	6 to 12 inches of accumulation and ¼ inch of ice across the County.
2/25/11	Winter Storm	County-wide	6 to 10 inches of accumulation across the County
2/5/11	Winter Storm	County-wide	8 inches reported in nearby Brookfield. Heavy snow mixed with sleet and freezing rain.
2/2/11	Winter Storm	County-wide	10 to 15 inches of accumulation across the County.
1/12/11	Winter Storm	County-wide	10 inches reported in nearby Brookfield
12/26/10-12/27/10	Winter Storm	County-wide	8 inches reported in nearby Brookfield. Some power outages reported in the region.

2/23/10– 2/24/10	Winter Storm	County-wide	26 inches reported in nearby Brookfield. Heavy, wet snow caused widespread power outages across the region.
2/22/09 – 2/23/09	Winter Storm	County-wide	10 to 18 inches of accumulation across the region.
1/28/09*	Winter Storm	County-wide	17 inches reported in Braintree.
12/21/08	Winter Storm	County-wide	18 inches reported in nearby Randolph Center.
12/19/08 – 12/20/08	Winter Storm	County-wide	10 inches reported in nearby Chelsea.
12/11/08 – 12/18/08 (DR-1816)	Winter Storm	County-wide	From December 11 th to 12 th , 5 to 9 inches of snow, sleet, and ice fell across the region. Power outages were reported in the region. An additional 3 to 6 inches fell on December 17 th .
3/1/08	Winter Storm	County-wide	8 inches reported in nearby Brookfield.
2/26/08 – 2/27/08	Winter Storm	County-wide	13 inches reported in nearby Brookfield.
2/12/08 – 2/13/08	Winter Storm	County-wide	Snow and sleet accumulations of 6 to 10 inches across the region.
12/16/07 – 12/17/07	Winter Storm	County-wide	18 inches reported in nearby Brookfield.
12/2/07 – 12/3/07	Winter Storm	County-wide	14 inches reported in nearby Brookfield.
4/4/07 – 4/5/07	Winter Storm	County-wide	12 inches reported in nearby Brookfield. Some power outages reported in the region.
3/16/07 – 3/17/07	Winter Storm	County-wide	10 inches reported in nearby Brookfield.
3/2/07	Winter Storm	County-wide	11 inches reported in nearby Brookfield.
2/14/07	Heavy Snow	County-wide	19 inches of accumulation in nearby Chelsea.
4/4/06 – 4/5/06	Winter Storm	County-wide	7 inches of heavy, wet snow reported in nearby Brookfield. Power outages reported across the region.
2/25/06	Winter Storm	County-wide	10 inches of accumulation reported in nearby Brookfield.
3/11/05 – 3/12/05	Winter Storm	County-wide	Up to 9 inches in Orange County.
3/1/05 – 3/2/05	Winter Storm	County-wide	Between 8 and 10 inches across the region.
2/10/05	Winter Storm	County-wide	Between 8 and 12 inches of accumulation across the region. Power outages reported.
12/14/03 – 12/15/03	Winter Storm	County-wide	Between 10 and 20 inches of accumulation across Orange County.
12/6/03 – 12/7/03	Winter Storm	County-wide	Between 12 and 20 inches of accumulation across Orange County.
4/3/03 – 4/5/03	Winter Storm	County-wide	7.2 inches reported in nearby Chelsea. Heavy snow mixed with sleet and freezing rain.
2/17/03 – 2/18/03	Winter Storm	County-wide	6-12 inches of accumulation across the region.
1/4/03	Winter Storm	County-wide	13 inches reported in nearby Brookfield.
12/25/02 – 12/26/02	Winter Storm	County-wide	10 to 20 inches of accumulation across the region.
11/17/02 – 11/18/02	Winter Storm	County-wide	Heavy and wet snow. Accumulations of 6-10 inches across the region. Some power outages in Orange County.
3/20/02	Winter Storm	County-wide	Heavy and wet snow; 10 inches reported in nearby Brookfield.
1/31/02 – 2/1/02	Winter Storm	County-wide	Snowstorm with 1/4" ice on top of the snow. 7 inches of snow reported in nearby Chelsea.
3/30/01	Winter Storm	County-wide	Heavy and wet snow, with power outages. 19 inches reported in nearby Brookfield.

3/22/01 – 3/23/01	Winter Storm	County-wide	Heavy and wet snow, with power outages. 23 inches reported in nearby Brookfield.
3/5/01 – 3/7/01 (EM-3167)	Snowstorm	County-wide	15 inches reported in nearby Chelsea.
2/5/01 – 2/6/01	Winter Storm	County-wide	12 inches reported in nearby Chelsea.
12/30/00 – 12/31/00	Winter Storm	County-wide	7 inches reported in nearby Brookfield.
12/16/00 – 12/18/00 (DR-1358)	Severe Winter Storm	County-wide	Freezing rain and ice accumulation.
1/30/00 – 1/31/00	Winter Storm	County-wide	8 inches reported in nearby Brookfield.
1/25/00 – 1/26/00	Winter Storm	County-wide	10 inches reported in nearby Randolph.
3/6/99	Winter Storm	County-wide	Accumulations of 7 to 17 inches across the region. 20 inches reported in nearby Bethel.
1/27/99 – 1/29/99	Winter Weather	County-wide	7.5 inches reported in nearby Chelsea.
1/8/99 – 1/9/99	Winter Storm	County-wide	9 inches of snow reported in nearby Brookfield.
3/21/98 – 3/22/98	Heavy Snow	County-wide	Heavy snow accumulations of 14 inches reported in nearby Brookfield. Brief power outages.
3/14/98	Heavy Snow	County-wide	Heavy snow accumulations of 10 inches reported in nearby Brookfield.
2/24/98 – 2/25/98	Winter Storm	County-wide	Heavy snow accumulations of 9 inches reported in nearby Brookfield.
1/23/98	Winter Storm	County-wide	Snow and ice accumulations of 13 inches reported in nearby Brookfield.
1/15/98	Winter Storm	County-wide	9 inches of snow reported in nearby Brookfield.
1/6/98 – 1/16/98 (DR-1201)	Ice Storms	County-wide	Ice accumulations of ¾ of an inch or less. Tens of thousands of trees damaged across the region. Widespread power outages.
12/29/97 – 12/30/97	Winter Storm	County-wide	Heavy snow and sleet. 6-8 inches of accumulation reported in nearby Brookfield.
11/14/97	Winter Storm	County-wide	7.5 inches reported in nearby Chelsea.
3/31/97	Winter Storm	County-wide	8-14 inches of heavy wet snow across the county.
3/5/1997 – 3/6/97	Winter Storm	County-wide	Heavy wet snow downed powerlines across Orange County. 18 inches reported in nearby Brookfield.
1/9/97 – 1/10/97	Winter Storm	County-wide	10 inches reported in nearby Brookfield.
12/7/96 – 12/8/96	Winter Storm	County-wide	Heavy, wet snowfall. 16 inches reported in nearby Chelsea. Large number of power outages across the region.
3/7/96 – 3/8/96	Winter Storm	County-wide	Accumulation of 6-12 inches across the region, with 12 inches reported in nearby Brookfield.
1/12/96 – 1/13/96	Winter Storm	County-wide	9 inches of snow fell in Chelsea.
1/3/96	Winter Storm	County-wide	A foot or more of snow fell across Orange County. Widespread power outages reported in Central and Southern Vermont.

The Town of Braintree is no stranger to winter weather and the hazards that it brings. With heavy/wet snow or ice, electricity may be knocked out for a few hours or days. The utility company currently serving the Town of Braintree, Green Mountain Power, has followed a regular tree-trimming schedule.

Heavy/wet snow or large quantities of snow may also leave structures vulnerable to roof collapse. Roof collapse occurs when the structural components of a roof can no longer hold the weight of snow. Flat roofs are most vulnerable to collapse because they do not drain well and the snow on the roof soaks up water like a sponge, increasing the weight that the roof must bear. More common, it seems, is the collapse of barns commonly used for livestock sheltering and other agricultural purposes.

Unfortunately, livestock in the barn are often killed and equipment stored in the barn may be damaged or ruined. It is difficult to determine whether a residential structure or a barn would be rebuilt after a roof collapse, because the decision to rebuild would likely depend on the extent of damage. The collapse of a barn roof is likely to be a total loss, and the collapse of a house roof may be a 50% loss.

In general, winter weather is most hazardous to travelers. Icy and snow-covered roads present multiple examples of dangerous driving conditions and situations. In Braintree, the mountainous terrain, steep slopes, and remoteness of some roads further complicate travel. The Town relies on Travel Advisories issued by the State of Vermont Department of Emergency Management Homeland Security and the National Weather Service to alert residents of dangerous travel weather. Despite this, it is difficult to prohibit people from driving during winter weather events. As a result, emergency services personnel must always be prepared to help stranded drivers or to those who have been in an accident.

Hazard	Location	Vulnerability	Extent	Observed Impact	Likelihood/Probability
Ice Storm / Heavy Snow	Town wide	The entire Town is vulnerable, including road infrastructure, town and privately owned buildings, utility infrastructure.	Snowfall has varied, from a few inches to over a foot or more. Heavy snow and wind downed trees and power lines. Snow/ice contributed to hazardous driving conditions. Extreme cold: -50 degrees was recorded in Bloomfield, Vermont in December 1933. Minimum temperature is regularly in the negative twenties in nearby Corinth. No local data is available. Snowfall: The superstorm of 1993 dropped approximately 22 inches of snow in the Braintree area. Ice Storm: The ice storm of 1998 brought ¾ inch of ice, widespread power outages (several thousand without power in Orange County), and damaged tens of thousands of trees throughout Vermont. No local data is available.	For roof collapse: monetary damages will depend on each structure but collapse of barn roof is often a total loss. This does not include the loss of livestock. Collapse of a house roof may be at a 50% loss. For car crashes due to poor driving conditions: minimal damage to vehicle to totaled vehicle. Health impacts could vary significantly.	Highly likely

5. Structural Fire

Vermont has one of the highest per capita death rates from fire in the nation. This is, in fact, the deadliest form of disaster throughout the state. According to the 2021 Report of the State Fire Marshal, there were 1,460 total incidents throughout the State, with 51.5% of fire incidents due to structure fire. There were 8 fatalities because of fire in 2021, and total fire damage was over \$19 million dollars.

The elderly and young children are most vulnerable and at greatest risk of fire death. Between 2011 and 2021 there were three child fatalities and 36 senior fatalities. Across the State, nearly 45% of fire-related fatalities in the last 10 years were seniors (66+), and 26% of fatalities were between 51 and 65 years. In Braintree, approximately 22% of the population is over the age of 65, so a large percentage of residents are in a higher risk category for vulnerability to structural fire.

Structure fires may occur at any point and are typically initiated within a single fuel object. Smoke produced by the burning object forms a smoke plume and rises, creating a layer of smoke while also transporting heat to the smoke layer. Fire then spreads quickly by radiation from the flames, or from the smoke layer. Once other objects are engulfed, more smoke plumes are formed, and heat radiates to other objects. Fire burns and moves across different materials depending on the material's composition, orientation, surface-to-mass ratio, and air supply in the structure/room.

The Town of Braintree is quite rural in nature, and it consists of primarily single-family residences that are spread out across Town. Some growth is structured around main roads, such as Route 12A, Riford Brook Road, Thresher Road, Thayer Brook Road. However much of it is also relatively difficult to access in a quick and timely manner by fire departments. A review of the fires listed in the "History of Occurrences" chart below demonstrates the potential for structures located in the rural Town of Braintree to be completely or severely destroyed by fire.

The following occurrences were reported by the Committee or obtained from local sources. It is reasonable to assume that more structural fires have occurred in the period of time between the entries listed below, and that such fires have caused varying extents of property damage.

History of Occurrences:

Date	Event	Location	Extent and Impacts
12/14/2022	Fuel burner/boiler	200 Sesame Street	Estimated dollar losses and values: \$6,000.
05/21/2022	Building fires	157 Summit Road	Generator back of a truck caught on fire, gas tank beside it melted, causing house attached to gas station to catch on fire. Crawl space had fire.

			Estimated dollar losses and values: \$1,000.
03/24/2021	Building fires	3118 Braintree Hill Road	Flame rekindled same house
03/23/2021	Building fires	3118 Braintree Hill	Flames on back of house. FD worked to extinguish fire, interruptions to water supply. FD cleared without incident. Estimated dollar losses and values: 210,000.
1/23/2021	Building fires	106 Willow Brook Road	Responded to trailer fire. Upon arrival residents evacuated. Male adult on roof attempting to extinguish fire. RCFD provided mutual aid. FD extinguished fire and performed salvage/overhaul. Fire contained to bathroom area. Advised residents to stay somewhere else until repaired, including an electrician. Heat and water sill working, other breakers shut off. Loss of \$3,500.

As noted, recognized fire protection problems for the community include the following: development in areas distant from the village center of the Town, development on class 3 and 4 roads, distance from water sources (rivers, hydrants and/or fire ponds), inaccessibility to fires that may spread from the forest, and inadequate snow removal (for building access).

Hazard	Location	Vulnerability	Extent	Observed Impact	Likelihood/Probability
Structural Fire	Town-wide	All housing, municipal buildings, retail/commercial sites. Older structures are at higher risk. Lower income residents may also be at	Depends on the location and severity of the fire. Extent can be limited to a portion of a structure, or it can spread across multiple structures, especially in	Varies depending on the location and extent of the fire.	Occasionally

Hazard	Location	Vulnerability	Extent	Observed Impact	Likelihood/ Probability
		higher risk as safety upgrades may be too costly.	areas where development is concentrated such as downtown Braintree.		

VI. Mitigation

A. Mitigation Goals

1. To reduce or avoid long-term vulnerabilities to the following priority hazards:
 - a. Flash Flood / Flood / Fluvial Erosion
 - b. Severe Weather
 - c. Wildfire
 - d. Ice Storm / Heavy Snow
 - e. Structural Fire
2. To reduce or avoid long-term vulnerabilities to all other hazards that could impact the Town of Braintree.

B. Excerpted Town Plan Goals & Objectives Supporting Local Hazard Mitigation

- Remove existing residential dwellings in the 100-year flood plain which are threatened by the projected greater frequency of more tempestuous major rainstorms. (Overarching Goals, p.7)
- Remove existing residential dwellings in the 100-year flood plain which are threatened by the projected greater frequency of more tempestuous major rainstorms. (Overarching Policies, p.8)
- Ensure the public's access to high quality social and emergency services in coordination with neighboring towns. (Overarching Goals, p.14)
- Increase the number of dry hydrants and fire protection ponds in Braintree. (Overarching Goals, p.14)
- Supporting intermunicipal partnerships of social and emergency services, including public transportation, shall be a priority of the Selectboard, subject to the approval of the voters. (Overarching Policies, p.14)
- Encourage the removal and/or relocation of at-risk residential properties from Special Flood Hazard Areas to reduce loss of life and property. (Land Use Goals, p.24)
- Fund the maintenance and resilience of Braintree's rural highways for emergency vehicle access in snow and mud. (Transportation Goals, p.37)
- Continued participation in the Mountain Alliance for the management of solid waste and with the Randolph Fire Department and the White River Valley Ambulance Service for emergency services. (Utility and Community Facility Goals, p.37)

The Braintree Town Plan was recently updated and adopted on September 5, 2023, and has a 5-year lifespan.

C. Hazard Mitigation Strategies: Programs, Projects & Activities

Vermont's 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 aid and resources to towns interested in pursuing hazard mitigation projects.

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, Braintree's need to address the issue, the cost of implementing the strategy, and the availability of potential funding. The cost of the strategy was evaluated in relation to its benefit as outlined in the STAPLEE guidelines.

Strategies given a "High" prioritization indicate they are 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.

Estimated costs are also accounted for in mitigation strategy considerations. Potential costs are given a range, and are presented as "high", "medium", or "low" in the mitigation strategies table. The cost range is the following:

Low = less than \$50,000

Medium = \$50,000-\$100,000

High = more than \$100,000

The Town of Braintree understands that, to apply for FEMA funding for mitigation projects, a project must meet more formal FEMA benefit cost criteria. The Town must have a FEMA-approved Hazard Mitigation Plan as well.

The following strategies will be incorporated into the Town of Braintree's long-term land use and development planning documents. In addition, the Town will review and incorporate elements of this Local Hazard Mitigation Plan into updates for the municipal 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 municipal plan, zoning regulations and flood hazard/FEH bylaws will also be considered after declared or local disasters. The Town will also consider reviewing any future TRORC planning documents for ideas on future mitigation projects and hazard areas. Where specified under Possible Resources in the table below, local resources may include volunteer time, in-kind staff time, and local funding. Where more than one local leader is given, the primary lead is given in bold.

Hazard Mitigation Actions	Benefit	Cost	Local Leadership	Prioritization (Mitigation Plan Status)	Possible Resources	Time Frame
All Hazards						
<i>Promote the active use of the Code Red communication system, called iPAWS or Integrated Public Alert and Warning System. (Mitigation)</i>	This action will assist in alerting residents to hazards when they occur.	Low	Emergency Director	High	Local resources	Spring 2025-Fall 2025
<i>Ensure that the Town's LEMP is up to date.</i>	The document outlines chain-of-command and emergency contact information	Low	Emergency Director	High	TRORC assistance	Spring 2025-Fall 2025
<i>Enhance preparedness by training a person to coordinate shelters and purchasing animal kennels and food for Town Hall shelter.</i>	Selectboard, Emergency Management Director	Low	Selectboard, volunteers	Medium	Local resources	Fall 2025-spring 2026
Flash Flood/Flood/Fluvial Erosion						
<i>Review the structural integrity of culverts, bridges, and roads. Schedule for any upgrades or modifications if necessary.</i>	Maintenance and repair of infrastructure will prevent damage to buildings and infrastructure.	High	Selectboard/ Road Commissioner	High	Hazard Mitigation Grant Funding, VEM, TRORC, local resources	Summer 2025-Fall 2025
<i>Add new stone splash pads for culverts #27, #29, and #5 on Riford Brook Road.</i>	Maintenance and repair of infrastructure will prevent damage to buildings and infrastructure.	Medium	Selectboard, Road Commissioner	High	Local resources, Better Roads grant program, Hazard Mitigation Grant Program (HMGP), or Pre-Disaster Mitigation (Competitive) grant program (PDM-C)	Summer 2025-Summer 2026
<i>Develop a schedule and a 10-year capital budgeting</i>	Maintenance and repair of	Low	Selectboard/ Road Foreman	high	MPG, Grant, TRORC	Fall 2026-Summer 2027

Hazard Mitigation Actions	Benefit	Cost	Local Leadership	Prioritization (Mitigation Plan Status)	Possible Resources	Time Frame
<i>program for road and bridge maintenance.</i>	infrastructure will prevent damage to buildings and infrastructure.				assistance, local resources	
<i>Consider adopting river corridor regulations. (Mitigation)</i>	This action will incorporate VT ANR's river corridor maps, helping residents and planners know what land is necessary for riparian functions and to prevent the threat to current and future development.	Low	Selectboard/ Planning Commission	Low	ANR; MPG; local resources	Summer2026 – Fall 2026
<i>Review the Special Flood Hazard Area regulations to consider incorporating higher standards and minimize development in flood zones.</i>	Adopting higher flood regulation standards will better protect future development from flood risk.	Low	Planning Commission	Medium	VT DEC, TRORC, Local Resources	Winter 2025 – Fall 2026
<i>Support projects to protect or restore riparian areas, including riparian plantings. (Mitigation)</i>	Incorporating riparian plantings and floodplain restoration projects in strategic areas can provide areas for flood storage, helping to alleviate peak flood flows and reduce the loss of property during a flood.	Low	Selectboard/ Planning Commission	Medium	Upper Valley Land Trust; Upper Valley Trout Unlimited; local resources	Fall 2027 – Spring 2028
<i>Keep up to date with Vermont Road and Bridge Standards. (Mitigation)</i>	This action will help Braintree design structures that mitigate flood damage to Town Infrastructure.	Low	Road Commissioner/ Selectboard	High	Local resources	Update at town level when updated by the State.
Ice Storm/Heavy Snow						
<i>Clear and maintain town road rights-of-way. (Mitigation)</i>	Ensuring town roads are maintained and free of obstructions reduces damage from storm events and improves safety.	Moderate	Road Commissioner/ Selectboard	High	Local resources	Occurs annually, every winter.

Hazard Mitigation Actions	Benefit	Cost	Local Leadership	Prioritization (Mitigation Plan Status)	Possible Resources	Time Frame
<i>Encourage utilities that serve Braintree to maintain utility corridors. (Mitigation)</i>	Routine maintenance of utility corridors helps prevent damage to utilities and town infrastructure and minimizes utility outages during storm events.	Low	Emergency Management Director	High	Utility Providers; local resources	Ongoing
<i>Develop a sustainable plan for communicating shelter information to populations that are vulnerable to extreme temperatures.</i>	These measures can help prevent loss of life and better prepare residents for future.	Low	Emergency Management Director	Medium	Local resources	Ongoing
Severe Weather (Thunderstorm, Lightning, High Winds, Hail, Mud Season)						
<i>Encourage residents and commuters in neighboring communities to work from home in the advent of severe weather.</i>	These measures can help prevent loss of life and better prepare residents for future.	Low	Emergency Management Director	High	Local resources	Ongoing
<i>Develop a process for documenting and assessing wind-related damage and losses.</i>	Tracking wind damage and losses can better inform future mitigation actions and help prevent damage in future wind events.	Low	Emergency Management Director , Road Foreman	Medium	Local Resources, Public Utilities, TRORC (following declared disasters)	Fall 2025 – Spring 2026
Structural Fire						
<i>Encourage businesses located in Braintree Village to utilize tax benefits from Braintree Village designation to install sprinkler systems. (Mitigation)</i>	This action will reduce the loss of life and infrastructure in the event of a block fire. Reduces future costs associated with structure fire.	Low	Selectboard, Planning Commission, Emergency Management Director	Medium	Local resources; private investment; HMGP Grant Program	Fall 2025- Spring 2026
Wildfire						
<i>Increase tree plantings around buildings and parking lots and along town streets in village areas.</i>	Trees can help reduce the intensity of wildfires by blocking the wind and breaking up fuel sources.	Low	Road Foreman and Conservation Commission	Low	Local resources	Spring 2027 – Fall 2027

Hazard Mitigation Actions	Benefit	Cost	Local Leadership	Prioritization (Mitigation Plan Status)	Possible Resources	Time Frame
<i>Publicize information brochures available on the town website and listserv to inform residents of the risks of high heat and strategies and resources available during wildfire.</i>	Public knowledge around the risks of high heat events can better prepare residents and mitigate health impacts.	Low	Selectboard, Health Officer, Emergency Director	Medium	Local resources, VEM	Information publicized as needed prior to wildfire events.
<i>Keep a stockpile of N95 respirators and/or blue surgical masks in the Town Office in case of a severe wildfire.</i>	Masks can help protect residents' lungs from wildfire smoke.	Medium	Emergency Director	Low	Local resources	Spring 2025-Fall2025

Ongoing Actions to Support Mitigation and Preparedness Actions	Local Leadership	Prioritization (Mitigation Plan Status)**	Possible Resources*	Time Frame
All Hazards				
<i>Ensure that Braintree's Local Emergency Management Plan (LEMP) is kept up-to-date and identifies vulnerable areas and references this Plan. (Preparedness)</i>	Emergency Management Director/ Selectboard	High	Vermont Division of Emergency Management and Homeland Security (VT DEMHS); TRORC; local resources	Yearly
<i>Alert residents to upcoming hazards, bad weather, and potentially treacherous travel conditions by posting the VTrans Live Update Road Condition webpage on the Town Website. These resources will be used to give residents important information about upcoming hazards and potentially treacherous travel conditions. This town-wide notification system will reduce the loss of life during a hazard. (Preparedness)</i>	Emergency Management Director / Selectboard, Fire Department	High	Vermont Division of Emergency Management and Homeland Security (VT DEMHS); TRORC; local resources	Publicize as needed prior to hazardous events
<i>Continue to consistently document infrastructure</i>	Road Foreman/ Town Clerk	Medium	TRORC; local resources; National	Ongoing

Ongoing Actions to Support Mitigation and Preparedness Actions	Local Leadership	Prioritization (Mitigation Plan Status)**	Possible Resources*	Time Frame
<i>damage after weather events. (Preparedness)</i>			Weather Service; VTrans	
<i>Have an emergency management display on election day and town meeting to provide educational outreach to residents on emergency management. (Preparedness)</i>	Emergency Management Director	Medium	Local resources	Annually
<i>Continue to submit Emergency management, public safety commission, highway, fire department, fast squad, and police chief reports in the annual Town Report. (Preparedness)</i>	Selectboard	High	Local resources	Ongoing
<i>Request that VEM provide a training in ICS for town employees. Making ICS training available for many town employees better prepares the Town to respond following emergency incidents.</i>	Emergency Management Director	Medium	VEM, Local Resources	Spring of 2025
<i>Maintain highway and fire mutual aid agreements. (Preparedness)</i>	Highway/Fire Department	High	Local resources and with assistance from TRORC	Yearly
<i>Distribute Vermont Division of Emergency Management & Homeland Security: Family Emergency Preparedness booklet at Town Meeting Day and Election Day. (Preparedness)</i>	Selectboard/ Emergency Management Director	High	Local resources	Ongoing and occurs yearly
<i>Require Braintree employees to become Incident Command System (ICS) 100 and 200 certified. (Preparedness).</i>	Emergency Management Director	High	Local Resources	Ongoing
<i>Ensure Red Cross shelters are stocked with cots, blankets, and MRE (Meals Ready to Eat) (Preparedness)</i>	Emergency Management Director	High	Vermont Division of Emergency Management and Homeland Security (VT DEMHS); VT Alert; local resources	Yearly

Ongoing Actions to Support Mitigation and Preparedness Actions	Local Leadership	Prioritization (Mitigation Plan Status)**	Possible Resources*	Time Frame
Flash Flood/Flood/Fluvial Erosion				
<i>Plan for, budget, and maintain roads for safe winter travel. (Preparedness)</i>	Selectboard	High	Local resources	Ongoing and occurs yearly.
<i>Continue efforts throughout Town to maintain and improve ditching in rights-of-way of Town maintained roads. (Mitigation).</i>	Road Foreman	High	Local Resources; Better Roads Grant Program	Ongoing
<i>Educate Town residents about the National Flood Insurance Program's Preferred Risk Policy by including a notice in the Town Report.</i>	Planning Commission	High	Local resources	Ongoing
<i>Upgrade culvert #5 on Duclos Road.</i>	Selectboard, Road Foreman	Medium	Local resources, Better Roads grant program, Hazard Mitigation Grant Program (HMGP), or Pre-Disaster Mitigation (Competitive) grant program (PDM-C)	Summer 2025-Summer 2026
<i>Add new stone splash pads for culverts #27, #29, and #5 on Riford Brook Road.</i>	Selectboard, Road Foreman	Medium	Local resources, Better Roads grant program, Hazard Mitigation Grant Program (HMGP), or Pre-Disaster Mitigation (Competitive) grant program (PDM-C)	Summer 2025-Summer 2026
Severe Weather (Thunderstorm, Lightning, High Winds, Hail, Mud Season)				
<i>Publicize on social platforms encouraging residents and commuters in neighboring communities to work from home in the advent of severe weather.</i>	Emergency Management Director	High	Local Resources	Information publicized as needed prior to wildfire events.
Ice Storm/Heavy Snow				

Ongoing Actions to Support Mitigation and Preparedness Actions	Local Leadership	Prioritization (Mitigation Plan Status)**	Possible Resources*	Time Frame
<i>Update and maintain existing list of populations that are vulnerable to extreme cold and other hazards. Call and visit vulnerable residents, if necessary, in the event that a hazard occurs. By maintaining this list, the health of vulnerable populations will be protected. (Preparedness)</i>	Selectboard, Emergency Management Director	Medium	Local resources	Ongoing and occurs yearly.
<i>Distribute safe winter driving informational materials to residents by means of Braintree listserv. Safe winter driving mitigates the loss to human health. (Preparedness)</i>	Selectboard, Town Clerk	Low	Local Resources	Occurs yearly.

Appendices

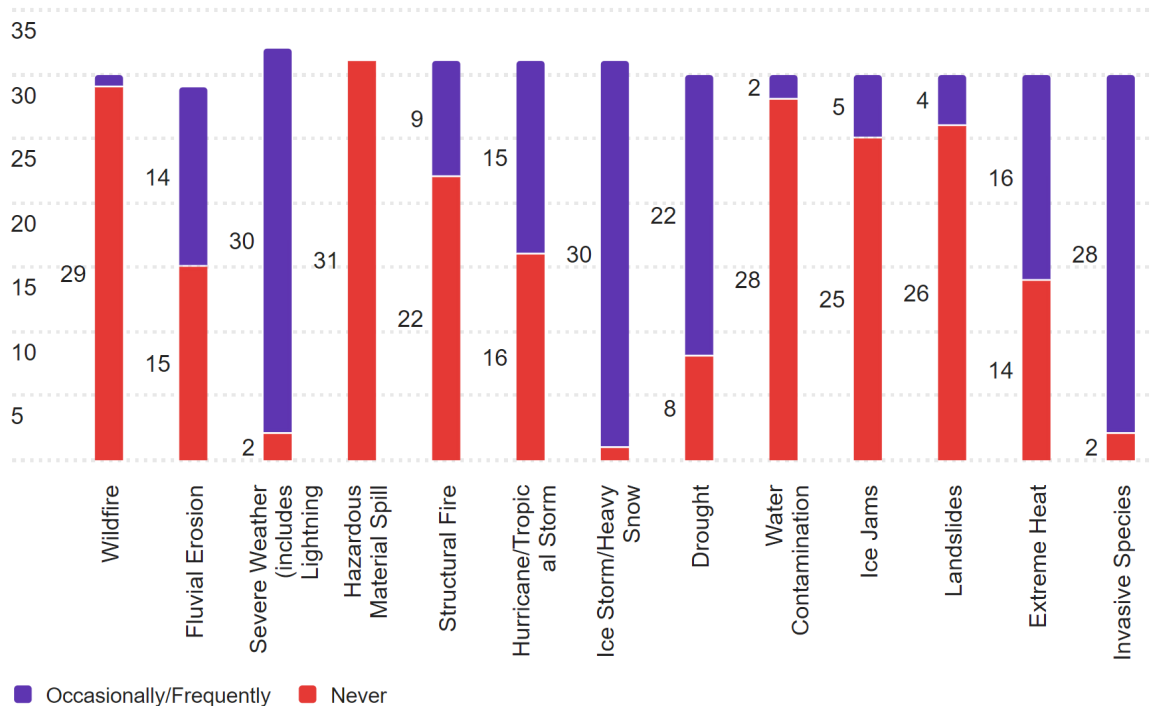
Appendix A: Hazard Ranking Methodology

Score	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: Less than 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% through 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: between 10% to 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% or greater probability in a year	Major: severe property and environmental damage on a community or regional scale, multiple injuries or fatalities, significant economic impact

Appendix B: Survey Responses and Data

From November 8 thru December 17, a Qualtrics survey containing 14 questions—modeled after the Vermont Emergency Management Survey⁹--was published and posted on the Town website Facebook, TRORC newsletter, and word-of-mouth from the HMP committee. The survey was for Braintree residents and commuters only, and the first question was aimed at screening the responders. In total, 41 responses were submitted. The results give insight into the priorities, concerns, and proposed actions of the Town of Braintree residents for hazard mitigation planning.

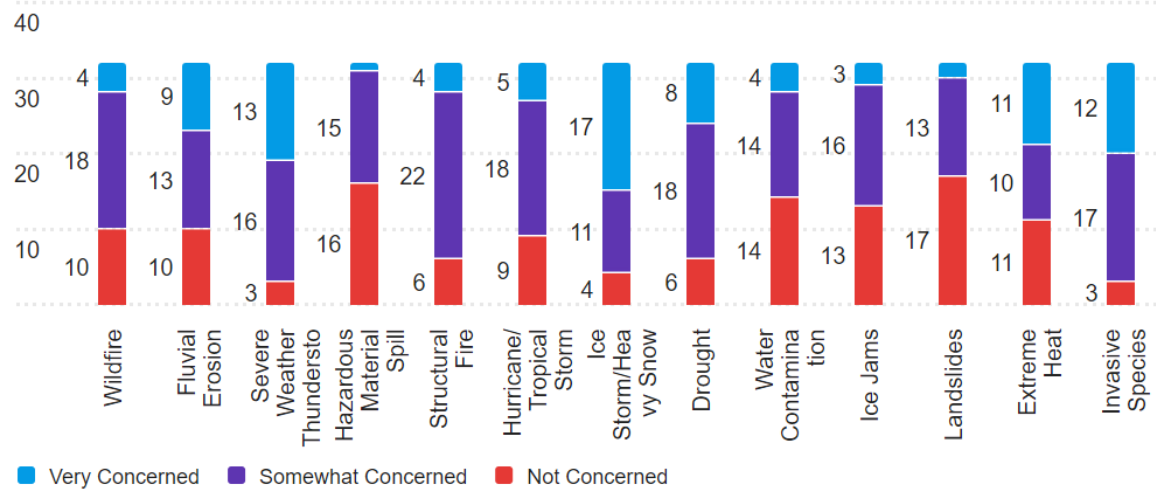
Q4 - Within the past 5 years, have you experienced or observed any of these natural hazards in Braintree? (Check all that apply)



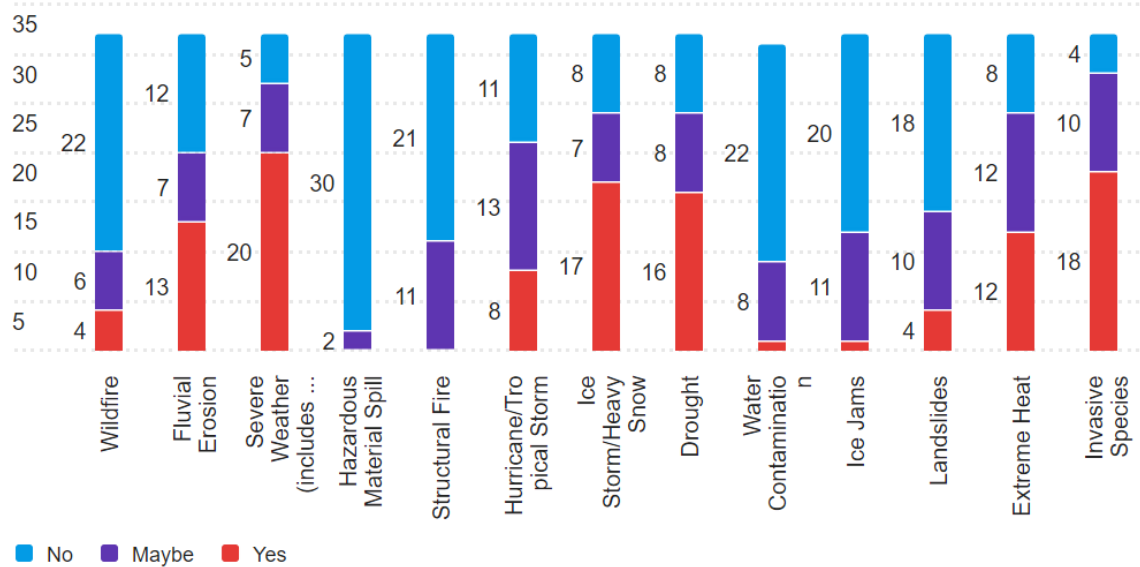
⁹ Microsoft Forms Community Survey Template can be found here:

<https://forms.office.com/Pages/ShareFormPage.aspx?id=O5O0IK26PEOcAnDtzhVZxt6SF5VJRpVApzROy0AJ9kdUM0xNN1hLQkxLSEc3QVFZMFVUSTQ2OE5QMC4u&sharetoken=b0pSQHlrkY2jYs2IKPyc>

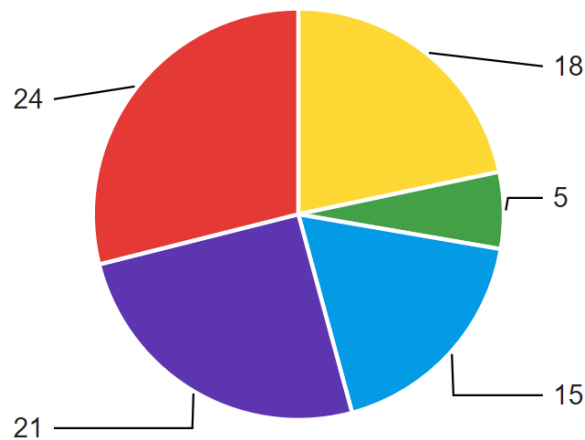
Q5 - How concerned are you about the following natural hazards impacting the health and safety of you and your community?



Q6 - Over the last 10 years, have you noticed an increase or decrease in the occurrences or intensity of any of the following hazards?



Q7 - What types of mitigation actions would you like to see the community prioritize? - Selected Choice

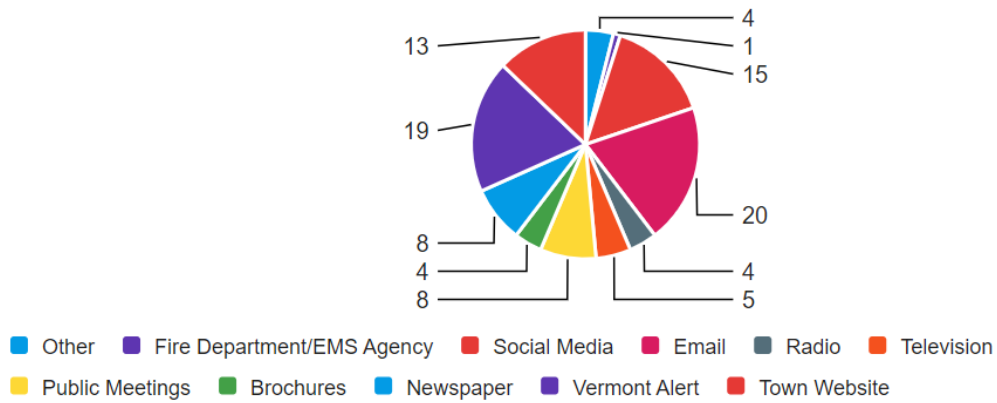


- Education and Awareness Programs (e.g. sending out information flood mitigation ...)
- Other (specify)
- Local Plans and Regulations (e.g. adoption of River Corridor bylaws, updating yo...)
- Natural Systems Protection (e.g. streambank restoration)
- Structure and Infrastructure Projects (e.g. culvert upsizing, bridge replacement)

Q12 - How prepared do you feel the Town of Braintree is for impacts of natural hazard events?

Field	Choice Count
Not prepared	2
Somewhat prepared	25
Adequately prepared	5

Q13 - Information about natural disaster impacts and natural disaster preparedness can be communicated to the public in various ways. Of the communication methods listed below, identify the top three (3) methods that would be most effective in helping you prepare your home to withstand natural hazards. - Selected Choice



Q14 - Anything else you would like to provide for consideration and incorporation into the Braintree Local Hazard Mitigation Plan?

Anything else you would like to provide for consideration and incorporation into the Braintree Local Hazard Mitigation Plan?

Thanks for thinking about this

No, thank you.

Concerned that the size of rock used to mitigate mud season and icy roads is not small enough. I have experienced punctured car tires.

Better oversight of local burning permitting (fulltime and available Fire Marshall), special attention for roads during Mud Season that are impacted by school buses, local businesses with heavy truck traffic

No

No thank you

Mud season

No

In the plan, incorporate evacuation and shelter plans. As well as notification plans in case of impending emergency.

I believe that Braintree needs to commit to further upgrading road materials. This includes investing in longer term solutions to road pack, drainage and analysis of current materials used on the roads.

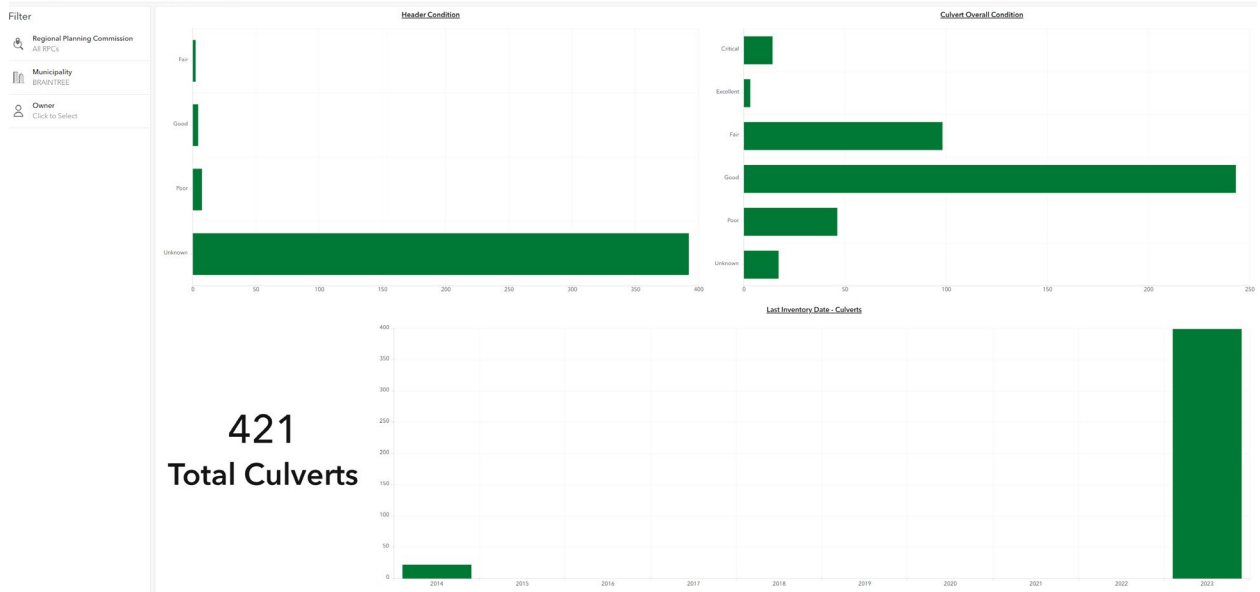
No

Our road crew must be encountering more difficult maintenance situations. How are we supporting the rigors of the job?

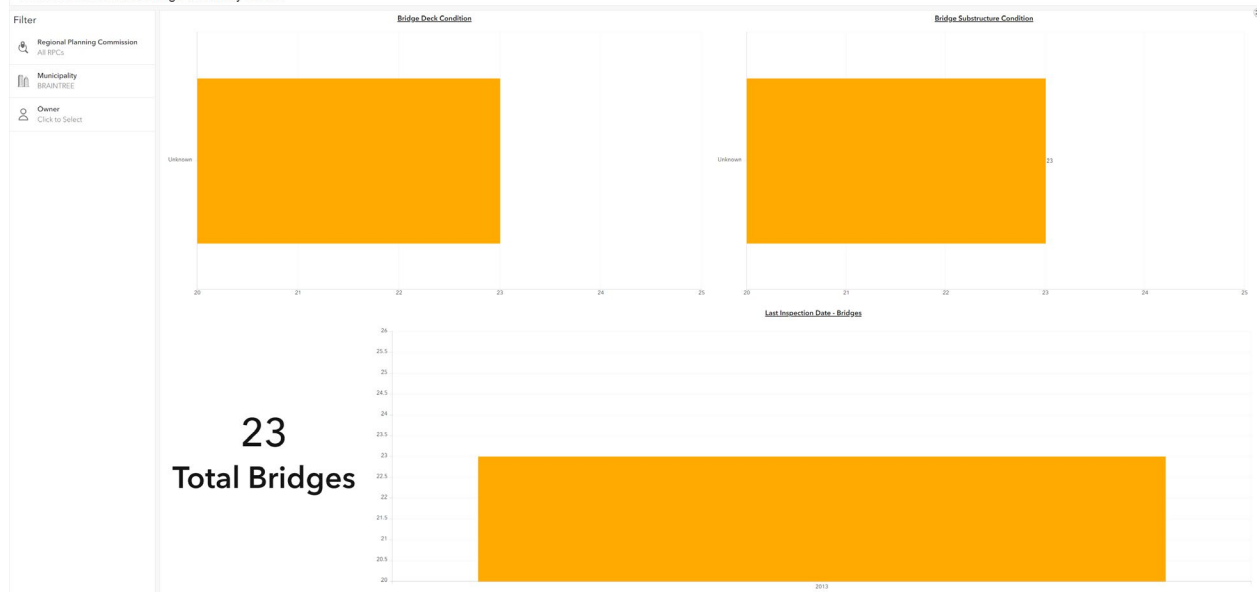
No

Appendix C: Bridge and Culvert Inventory

Vermont Culvert and Bridge Inventory Status



Vermont Culvert and Bridge Inventory Status



Appendix D: Public Meeting Notices

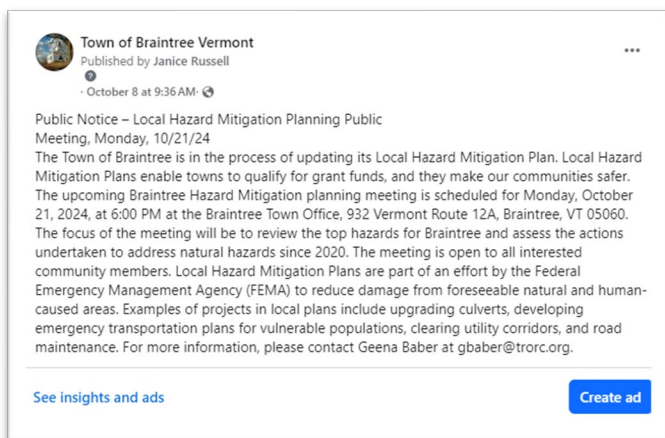


Figure 1: Public notice on Town of Braintree Facebook, published 10/8/2024. Figure 2: Public notice on Town of Braintree website, published 11/1/2024.

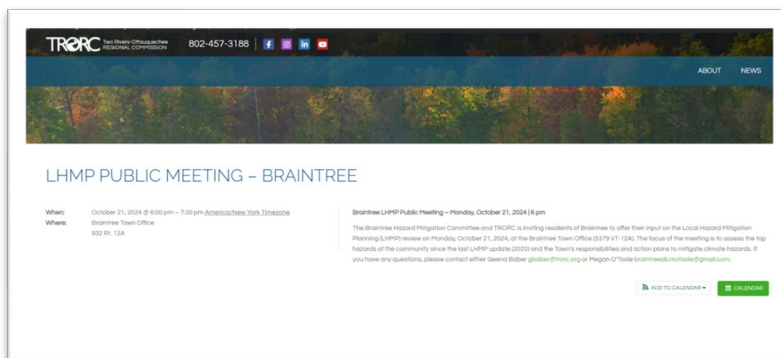


Figure 3: Public notice on Town of Braintree website, published 10/8/2024. Figure 4: Braintree LHMP public meeting announcement on TRORC website, Published 10/10/2024.

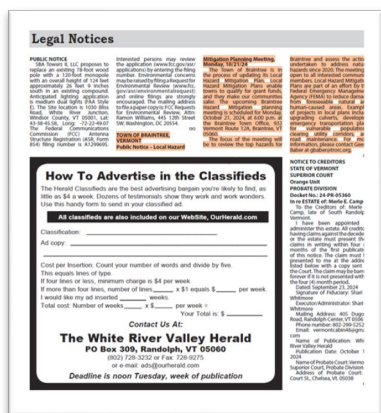


Figure 5: Tear sheet from The White River Valley Herald, published 10/10/2024.

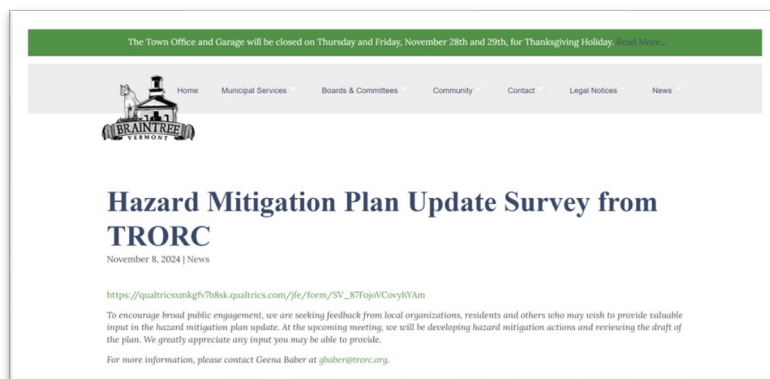


Figure 6: Survey published on Town of Braintree website, published 11/8/2024.

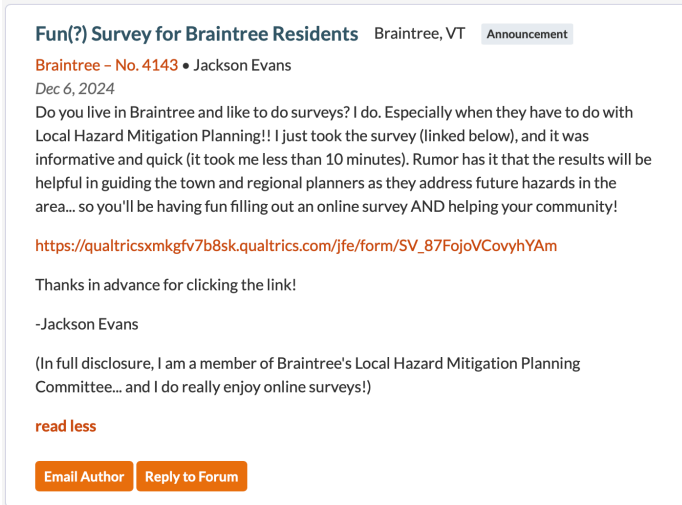


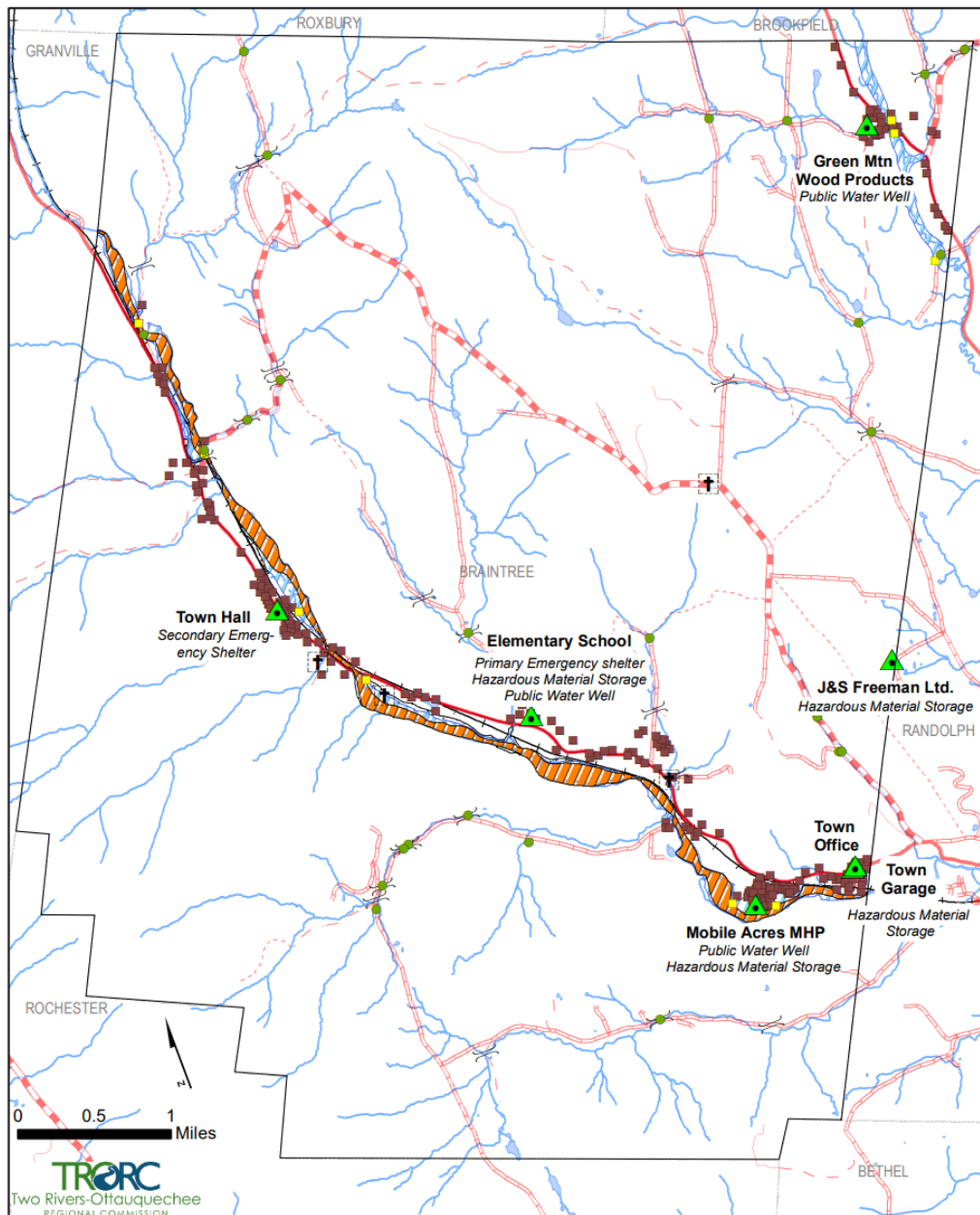
Figure 7: Front Porch Forum post on LHMP survey by Jackson Evans, published 12/6/2024.



Figure 8: Survey published on Town of Braintree Facebook, published 11/8/2024.

Attachment

Attachment A: Map of Braintree



Hazard Mitigation Plan Map Braintree, VT

- TH Class 1
- TH Class 2
- TH Class 3
- TH Class 4

- Legal Trail
- Private
- State Highway
- Railroad

- Critical Stream Crossing
- Cemetery
- Bridge
- Critical Facility
- e911 in Floodplain
- e911 within 1000' of major transportation corridor

- 500-Year Floodplain
- 100-Year Floodplain
- Floodway