Town of Newbury and Village of Wells River, Vermont

2022 Multi-Jurisdictional Local Hazard Mitigation Plan

Prepared by the Two Rivers-Ottauquechee Regional Commission, Town of Newbury, and the Village of Wells River

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Date of Town Adoption:

Date of Village Adoption:

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Date of Final Approval by FEMA:

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I. Introduction

Natural and human-caused hazards may affect a community at any time. Natural hazard events cannot be stopped; however, their impact on human life and property can be reduced through community planning. Accordingly, this Multi-Jurisdictional Hazard Mitigation Plan (hereafter referred to simply as the Plan) seeks to provide an all-hazards mitigation strategy that will make the community of Newbury 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, land treatment, or land use pattern change (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 Newbury in identifying all hazards facing the town, ranking them according to local vulnerabilities, and identifying strategies to reduce risks from vulnerabilities of highest concern. 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 Newbury and Village of Wells River seek to be in accordance with the strategies, goals, and objectives of the State Hazard Mitigation Plan.

The 2022 Newbury and Wells River Multi-Jurisdictional Hazard Mitigation Plan continues to be a standalone mitigation plan developed for the Town of Newbury and the Village of Wells River. In 2012 the Town and Village had a Newbury-specific Annex in the Regional (multi-jurisdiction) Pre-Disaster Mitigation Plan.

Old assumptions have been challenged throughout, and new information has been added to make the plan stronger and more useful for the Newbury town officials and residents who will implement the hazard mitigation strategies in the future.

III. Community Profile

Newbury is located in the northeast corner of Orange County. It borders the Connecticut River and Haverhill, New Hampshire to the east, the Town of Bradford to the south, the Wells River and the Town of Ryegate to the north, and the Town of Topsham to the west. The Town contains the villages of Newbury Village and Wells River. However, the Village of Wells River is a separate municipal entity with its own system of government. Newbury Village is a state designated Village Center, whose state designation enables businesses to qualify for tax credits. In 2020, Newbury's population was 2,293, and grew by 4.4% from 2010. The town's historical population height was 2,984 in 1850. Between 2000 and 2020, the population grew by 13%.

According to Vermont Housing data, there were 1,345 housing units, 1,004 occupied and 341 vacant, in Newbury in 2020, a decrease of 1.9% from 2010. In 2020, 332 units, or 24.7% of the Town's housing stock is comprised of units for seasonal, recreational, or occasional use. While 5.7% of Newbury's housing units were built in the two decades from 2000 to 2020, 17.6% of Newbury residences were built prior to 1939, according to the 2020 American Community Survey 5-Year estimates. Very few housing units were built in the decade between 2010 and 2020.

The Town lies within the service area of Green Mountain Power and Washington Electric Co-op. Green Mountain Power supplies electrical power to the majority of the Town, especially those residents of town located along the main roads in Newbury. Washington Electric Coop supplies electricity to two small northwest and southwest portions of the Town located, and predominately serves residents located off the main roads.

Newbury Village and Wells River Village both have municipally owned water systems. The Newbury Village Water System consists of an infiltration system on the north side of Moore Hill Road. The storage reservoir has a capacity of 350,000 gallons. In 2022, the Village's daily use was approximately 34,000 gallons a day. Increasing the water supply is a priority for Newbury. The Wells River water system utilizes groundwater, and its storage reservoir has a capacity 285,000 gallons.

Newbury has a paid call fire department with three fire stations. The first is located just off the Newbury Village green. The second is located in Wells River Village at the north end of the Village; and, the third is located in West Newbury just south of the Post Office. Newbury is a member of the Twin State Mutual Aid System. The Town of Newbury purchased a new fire engine in 2017 for use by the Wells River Fire Department. Newbury Village's most recent fire truck was purchased in 2002.

Newbury Emergency Medical Services (EMS) provides Basic Life Support (BLS) to the residents of Newbury. Woodsville Ambulance Service provides Advanced Life Support (ALS) to Newbury from Woodsville, New Hampshire.

Wells River Village has a contract with the Vermont State Police, and the Town of Newbury has a contract with the Orange County Sheriff's department. The state police barracks is located in Bradford, Vermont, eight miles south of Newbury Village. Newbury also has one constable.

IV. The Planning Process

A. Plan Developers

Sydney Steinle, a Planner at the Two Rivers- Ottauquechee Regional Commission (TRORC), assisted the Town of Newbury and Village of Wells River with updating its Local Hazard Mitigation Plan. Committee members who assisted with the revisions include:

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

Name	Role/Organization	How Participation Was Solicited
Alma Roystan	Newbury Selectboard Chair	TRORC staff reached out to the Newbury Selectboard (Alma Roystan, Jeff McKelvey, Joe Parsons), the Town Emergency Services Director (Jeff Marin) and the Town Clerk (Nikki Tomlinson). TRORC staff coordinated with Newbury town officials to set up an introductory meeting. The first meeting was scheduled for 08/04/2022. Kevin Geiger and Sydney Steinle of TRORC's staff attended that meeting. Three more meetings were held, in which participants developed and revised the LHMP. See below for more meeting- specific details.
Robert Beaulieu	Newbury Road Foreman	
Jeff McKelvey	Newbury Selectboard	
Jeff Morin	Emergency Management Director / Newbury Fire Department	
Jean Welch	Wells River Trustee	

Additional Participants in the Process:

- Village of Wells River Trustees

B. Plan Development Process

The 2022 Newbury and Wells River Hazard Mitigation Plan is an update to the 2016 multi-jurisdictional plan. The 2016 Plan was a standalone multi-jurisdictional Plan that incorporated the Town of Newbury and Village of Wells River. It was drafted by Two Rivers- Ottauquechee Regional Commission. The Town of Newbury and Village of Wells River Multi-Jurisdictional Local Hazard Mitigation Plan was approved by FEMA on June 9, 2017. The Plan expired on June 9, 2022.

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

The 2022 iteration of the Plan continues to be a multi-jurisdictional plan incorporating the Town of Newbury and Village of Wells River. The Plan will be submitted for individual approval to FEMA. Several sections have been updated to include all necessary information.

The changes to this Plan include:

- **General**
  - Data updates: 2016 Mitigation Strategies Status Update chart, Existing Hazard Mitigation Programs, Projects & Activities, Plan Maintenance, new hazard incidents, emergency declarations, Census data, and American Community Survey data
  - Hazards have been evaluated with the hazard ranking system used by the Vermont Division of Emergency Management and Homeland Security.
- **Hazards Analysis**
  - Hazardous Material Spills, Flash Flood/Flood/Fluvial Erosion, Severe Summer Weather, and Extreme Cold/Snow/Ice Storm remain on the list of "top hazards," which reflect the local officials' belief that the Town is still vulnerable to these hazards;
  - Structural Fire has been added to the list of "top hazards," which reflects the intention/priorities of local officials to expand their analysis of hazards that the Town is or may be vulnerable to in the next five years;
  - For each hazard, a location/vulnerability/extent/impact/likelihood table has been updated to summarize the hazard description.
- **Maps**
  - A map of the Town of Newbury and Village of Wells River depicting critical facilities, town infrastructure, and the NFIP designated floodway, the 100-year and 500-year floodplain is available in the Attachments.

The following represent the avenues taken to draft the Newbury and Wells River Local Hazard Mitigation Plan:

- **Activities and Public participation and involvement (44 CFR 201.6(b)(1))**

***Note: The meetings listed below were public sessions (the agenda was posted prior to the meeting).*

  - 08/04/2022: Kevin Geiger and Sydney Steinle met with Newbury and Wells River LHMP committee members to introduce the update/plan development process and set the next meeting. Explained to the committee what the next steps in the process are (draft plan,

and then schedule a meeting to review and discuss it).

- 8/25/2022: Sydney Steinle met with Newbury and Wells River Hazard Mitigation Committee to formally rank hazards to determine the "Top Hazards" in the Town that expose our greatest vulnerabilities. Committee also reviewed previous hazard mitigation strategies identified in the 2016 Plan. Committee discussed Community Outreach. No comments from the public were received.
- 09/08/2022: Sydney Steinle met with the Newbury and Wells River Hazard Mitigation Committee to review town capabilities for implementing mitigation strategies. The Committee also discussed and developed hazard mitigation strategies for each hazard identified in the Plan. No comments from the public were received.
- 09/18 and 9/22/22: A notice was sent to the Journal Opinion (9/19, ran 9/21), Bridge Weekly Sho-Case (9/16, ran 9/21), and Valley News (9/21, ran 9/22), alerting recipients that Newbury was engaging in hazard mitigation planning and updating their Local Hazard Mitigation Plan. Meeting and contact information were provided in the notice to allow those interested in Newbury and Wells River's efforts to attend the meeting or receive more information.

  The Journal Opinion is Newbury's paper of record and has many subscribers in Newbury/Wells River, the Bridge Weekly Sho-Case is a popular free locally distributed paper, and the Valley News has many subscribers in the area as well.
  - One Newbury resident requested more information but provided no further comment.
- 09/29/2022: Sydney Steinle met with the Newbury and Wells River Hazard Mitigation Committee to discuss first draft. The entire draft was reviewed in detail, with TRORC staff making note of any comments or errors. No comments from the public were received.
- 10/21/2022: TRORC staff, Sydney Steinle, sent the revised draft Plan to Town Clerk to post on the Town website. Contact information was provided to give interested parties the opportunity to review, comment, and provide input on the Plan.
- 10/21/2022: A description of LHMP planning activities and a link to the draft plan was included in the Two Rivers- Ottauquechee Regional Commission's October newsletter. Contact information was provided to give interested parties the opportunity to review, comment, and provide input on the Plan.

- **Governmental participation and involvement** *(44 CFR 201.6(b)(2)*)
  - August 18, 2022: Newbury Selectboard Chair, Alma Roystan, also an LHMP committee member, provided the Newbury Selectboard with updates on LHMP progress and date and time for next meeting.
  - August 31, 2022: Newbury Selectboard Chair, Alma Roystan, also an LHMP committee member, provided the Newbury Selectboard with updates on LHMP progress and date and time for next meeting.
  - September 14, 2022: Newbury Selectboard Chair, Alma Roystan, also an LHMP committee member, provided the Newbury Selectboard with updates on LHMP progress and date and time for next meeting.
  - October 21, 2022: Revised draft sent to the Selectboard Chair, Alma Royston,

LHMP committee member, for distribution to the Selectboard, and provided contact information for receiving comments via email.

- October 21, 2022: Revised draft sent to Planning Commission Chair, Larry Scott, and PC member Frank Tegethoff, with contact information for receiving comments via email.
- October 21, 2022: Sent revised draft to Village of Wells River Trustees to provide the opportunity to review, comment, and provide input on the Plan. Contact information for receiving comments via email was provided.
- November XX, 2022: Sent revised final draft to Division of Emergency Management and Homeland Security.

  Note: Town officials were given the opportunity to review, provide feedback and approve the changes that were made through the Plan revision and FEMA review process.

- **Neighboring community participation and involvement** *(44 CFR 201.6(b)(2)*)
  - September 2022: Posted a notice in three local papers alerting the public to the hazard mitigation planning process that was taking place. Contact information was provided in the notice to allow those interested in Newbury's efforts to receive more information and attend upcoming meetings. One resident requested more information.
    - Bridge Weekly Sho-Case— ran 09/21/2022
    - Valley News—ran 09/22/2022
    - Journal Opinion— ran 09/21/2022
  - October 21, 2022: Sent revised draft to neighboring towns' Selectboards for comment and provided contact information for receiving comments via email.
    - Towns of: Ryegate, Bradford, Corinth, and Topsham.
- **Review of existing plans, studies, reports, and technical information** (*44 CFR 201.6(b)(3)*)
  - State of Vermont Hazard Mitigation Plan, 2018
  - Newbury Hazard Mitigation Plan (Adopted 05/18/2017)
    - This Plan was referenced extensively during the plan development process, especially in regard to the worst threats and mitigation action strategies identified in 2016.
  - Newbury Town Plan (Adopted- 08/19/2015)
    - The Town Plan provided TRORC's staff with background information on the community, as well as more detail on their emergency services.
  - Newbury, Vermont Zoning Bylaw (Adopted- 10/11/2017)
    - The Zoning Bylaws were referenced for general knowledge and for Newbury's Flood Hazard Regulations.
  - Newbury Local Emergency Operations Plan (LEOP) (Adopted- 04/15/2015)
    - The Newbury LEOP was referenced for general knowledge regarding the Town's emergency operations.

This section of the Plan satisfies 44 CFR 201.6(b)(3) (or, A4.a and A4.b of FEMA's Local Mitigation Plan Review Guide, 2011).

C. Status Update on Mitigation Actions Identified in 2016

The following table outlines the mitigation actions that were proposed in Newbury's 2016 All-Hazard Pre-Disaster Mitigation Plan for both the Town of Newbury and the Village of Wells River, adopted 05/18/2017 by the Town of Newbury and 06/08/2017 by the Village of Wells River.

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

Participants in the new Plan update process reviewed these actions and reported on the status of each. Actions related to long-term mitigation of natural hazards are so noted.

Hazard Mitigation Actions	Local Leadership	Prioritization	Possible Resources	Time Frame	2022 – Status of Mitigation Actions
ALL HAZARDS					
Upgrade new dry hydrants on North Road and Fulton to protect town infrastructure from structural fires.	Newbury Fire Department	Medium (Action #10 of 10 in 2012 plan)	TRORC; local resources; National Weather Service; VTrans	Summer 2019-Fall 2019	Dry hydrant not added on North Road because there is pond access. Dry hydrant added on Fulton, but it's no longer being maintained as it did not prove to be useful.
PRIORITY HAZARD 1 - Hazardous Material Spill					
Develop Interstate-91 access points on Cole Road and Leighton Hill Road to ensure quicker access for emergency personnel in the event of a hazard occurring on the interstate. Quicker access will help reduce the loss of life in the event of a hazard on the interstate.	Newbury Fire Department	Medium (Action 9 of 10 in 2012 Plan)	Vermont Division of Emergency Management and Homeland Security; VTRANS	Summer 2020-Fall 2020	Not completed, expensive in terms of land/easement through land. Wouldn't have an impact on most spills that would happen on the interstate

PRIORITY HAZARD 2 - Flash Flood/Flood/ Fluvial Erosion/ Severe Summer Weather					
Replace three stone culverts on Swamp Road that are in poor condition and are structurally unsound. Upgraded culverts appropriately handle the hydraulic capacity of streams and therefore protect town infrastructure from flooding.	Selectboard	Medium (Action #6 of 10 in 2012 Plan)	VTrans; local resources; HMGP Repetitive Loss Grant	Summer 2020-Fall 2020	Not completed because of a lack of funds. This is still on list of projects to do. It keeps getting superseded by other, more pressing projects.
Conduct a road erosion inventory to document erosion sections on Town road infrastructure to prepare for Municipal Roads General Permit and to improve infrastructure to ensure long term mitigation of damage to town owned property from flood waters.	Selectboard	High	VTrans; local resources	Summer 2018-Fall 2018	Completed at the end of 2020.
PRIORITY HAZARD 3 – Flash Flood/Flood/Fluvial Erosion					
Develop a schedule and capital budgeting program to replace undersized culverts. Upgraded culverts appropriately handle the hydraulic capacity of streams and therefore protect town infrastructure from flooding.	Selectboard/ Road Foreman	High (Action #6 of 10 in 2012 Plan)	TRORC; local resources	Fall 2018-Spring 2019	No capital budgeting scheme. Everything done is done when it needs to be per schedule or need.

Update Newbury's flood hazard area regulations to ensure that they are compliant and consistent with state and federal guidelines and statutes	Planning Commission	High (Action #7 of 10 in 2012 Plan)	Municipal Planning Grant; TRORC; local resources	Fall 2017-Fall 2018	Will be updating 2023
Upgrade culvert in poor condition on Peach Brook Road. Upgraded culverts appropriately handle the hydraulic capacity of streams and therefore protect town infrastructure from flooding.	Selectboard	Low (Action #6 of 10 in 2012 Plan)	VTrans Structures grants; Better Roads Grants; FEMA HMGP/PDM	Fall 2022-Fall 2023	A wing wall was poured underneath on the downstream side to prevent further erosion.
Upgrade four culverts in poor condition on Moore Hill Road. Upgraded culverts appropriately handle the hydraulic capacity of streams and therefore protect town infrastructure from flooding.	Selectboard	Medium (Action #6 of 10 in 2012 Plan)	VTrans Structures grants; Better Roads Grants; FEMA HMGP/PDM grants; local resources	Fall 2019-Fall 2020	Two of four are complete. Others are still on list of projects to do.
Upgrade culvert in poor condition on Wallace Hill Road. Upgraded culverts appropriately handle the hydraulic capacity of streams and therefore protect town infrastructure from flooding.	Selectboard	Medium (Action #6 of 10 in 2012 Plan)	VTrans Structures grants; Better Roads Grants; FEMA HMGP/PDM grants; local resources	Fall 2020-Fall 2021	Upgraded some smaller culverts on Wallace Hill Road.
Upgrade culvert in poor condition on North Road. Upgraded culverts appropriately handle the hydraulic capacity of streams and therefore protect town infrastructure from flooding.	Selectboard	Medium (Action #6 of 10 in 2012 Plan)	VTrans Structures grants; Better Roads Grants; FEMA HMGP/PDM grants; local resources	Fall 2020-Fall 2021	Upgraded some culverts on North Road.

Upgrade culvert in poor condition on Jefferson Hill. Upgraded culverts appropriately handle the hydraulic capacity of streams and therefore protect town infrastructure from flooding.	Selectboard	Medium (Action #6 of 10 in 2012 Plan)	VTrans Structures grants; Better Roads Grants; FEMA HMGP/PDM grants; local resources	Fall 2019-Fall 2020	Upgraded some culverts on Jefferson Hill.
Upgrade culvert in poor condition on Corey Hill Road. Upgraded culverts appropriately handle the hydraulic capacity of streams and therefore protect town infrastructure from flooding.	Selectboard	Medium (Action #6 of 10 in 2012 Plan)	VTrans Structures grants; Better Roads Grants; FEMA HMGP/PDM grants; local resources	Fall 2019-Fall 2020	Upgraded some culverts on Corey Hill Road.
Upgrade culvert in poor condition on Cole Road. Upgraded culverts appropriately handle the hydraulic capacity of streams and therefore protect town infrastructure from flooding.	Selectboard	Medium (Action #6 of 10 in 2012 Plan)	VTrans Structures grants; Better Roads Grants; FEMA HMGP/PDM grants; local resources	Fall 2019-Fall 2020	Upgraded some culverts on Cole Road.
Upgrade squashed culvert on Snake Road upgrade to Bridge. Appropriately sized structures properly handle the hydraulic capacity of streams and protect the integrity of town infrastructure from flooding.	Selectboard	Low (Action #6 of 10 in 2012 Plan)	VTrans Structures grants; Better Roads Grants; FEMA HMGP/PDM grants; local resources	Fall 2022-Fall 2023	Yes, it failed in 2020 and was then upgraded.

Support projects to protect or restore, including riparian planting, strategic areas of floodplain to provide areas for flood storage, which will help alleviate peak flood flows and reduce the loss of property during a flood.	Selectboard/ Planning Commission	Medium	Upper Valley Land Trust; Upper Valley Trout Unlimited; local resources	Spring 2021-Fall 2021	Did some restoration work on Wells River's bank including riparian planting and wibble wobbles
Keep up-to-date with Vermont Road and Bridge Standards, which will help Newbury and Wells River design structures that mitigate flood damage.	Road foreman/ Selectboard	High	Local resources	Spring 2018-Summer 2018 (or when they are updated in Vtrans	Yes, yearly
Request an updated flood map from FEMA, which will more accurately represent frequently flooded areas and will allow the town to properly monitor and restrict the construction of infrastructure in areas that are vulnerable to flooding and severe weather.	Town Zoning Administrator	Medium (identified in 2009 Plan)	Local resources; FEMA	Fall 2020-Winter 2021	Information was requested.
Extreme Cold/Snow/ Ice Storm					
Clear and maintain town road rights-of-way to protect town infrastructure.	Highway Department/Selectboard	Medium (Identified in 2009 Plan).	Local resources	Summer 2020-Fall 2020	Yearly
Encourage Green Mountain Power to clear and maintain utility corridors, which will protect town and utility infrastructure.	Emergency Management Coordinator	High	Green Mountain Power; local resources	Fall 2017-Fall 2018	Yes, we communicate and they handle their own clearing and maintenance.

Invasive Species/Infestation					
Formalize road crew best practices for seasonal mowing. Mechanical control methods will reduce the spread of invasive species.	Road Foreman, Conservation Commission	Medium (new)	Local Resources.	Summer 2019-Fall 2019	Not completed. Road crews are contracted, which decreases the Town's ability to control what road crew does and how they're trained.

2016 actions labeled as "Preparedness"

Hazard Preparedness Actions	Local Leadership	Prioritization	Possible Resources*	Time Frame	2022 – Status of Preparedness Actions
ALL HAZARDS					
Ensure that Newbury's Local Emergency Operations Plan (LEOP) is kept up-to-date and identifies vulnerable areas and references this Plan.	Emergency Management Coordinator/ Selectboard	High (Action #1 and #3 of 10 in 2012 plan)	Vermont Division of Emergency Management and Homeland Security (VT DEMHS); TRORC; local resources	Yearly	This document is kept updated and will continue to be updated for the foreseeable future.
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.	Emergency Management Coordinator/ Selectboard	High	Vermont Division of Emergency Management and Homeland Security (VT DEMHS); TRORC; local resources	Continuously	As most people are alerted about weather conditions through multiple modes of communication including by TV, radio, and cellphone, the Town no longer posts road conditions on the website.

Develop a methodology to consistently document infrastructure damage after weather events.	Road Foreman/ Town Clerk	Medium	TRORC; local resources; National Weather Service; VTrans	Fall 2018	The Town follows the most current FEMA recommendations at time of disaster for documenting infrastructure damage and costs and will continue to do so.
Maintain highway and fire mutual aid agreements.	Highway/Fire Department	High (Action #5 of 10 in 2012 Plan)	Local resources and with assistance from TRORC	Yearly	Fire Mutual Aid agreements are reviewed and renewed yearly. Highway mutual aid agreements are reviewed and renewed every 3 years.
Ensure Red Cross Shelters, Blue Mountain Union School and Newbury Elementary School, are stocked with cots, blankets, and MRE (Meals Ready to Eat)	Emergency Management Coordinator	High	Vermont Division of Emergency Management and Homeland Security (VT DEMHS); VT Alert; local resources	Yearly	Supplies are stored at the Mustard Seed and would be moved to the Red Cross Shelters in an emergency.
Move supplies (cots, blankets, and MREs) from Mustard Seed thrift shop to Red Cross shelters	Emergency Management Coordinator	Medium	Local resources	Fall 2017	Did not complete. Supplies are stored at Mustard Seed. In case of an emergency it will not be far to move the supplies if needed.
Continuously stock gear to help contain small spills when they occur (booms, absorbent materials, etc.).	Newbury Fire Department	High	Newbury Fire Department resources	Yearly	Stock is maintained and replenished as it is used or expires.

Maintain existing dry hydrants, by checking, servicing, flushing, and opening them annually. Proper maintenance of hydrants will reduce the loss of life and infrastructure from structure fires.	Fire Chief/Fire Department	High	Local resources	Ongoing and occurs yearly	Dry hydrants are maintained on an ongoing basis as problems arise or on an annual basis.
Enlist statewide fire education trailer for use at Newbury Elementary and at community events, which will help residents identify fire hazards in their homes.	Fire Chief/Fire Department	Medium	Local Resources, Vermont Division of Public Safety: Division of Fire Safety	Ongoing	The fire education trailer is brought to Newbury Elementary and to community events to help students and other residents learn what to do in the case of a structure fire.
Distribute fire prevention fliers at the school to protect young residents from loss of life during fires.	Fire Chief/Fire Department	High	Local resources	Ongoing, occurs once per year in the fall.	Completed, fire prevention fliers are distributed semi-annually.
PRIORITY HAZARD 1 - Hazardous Material Spill					
Ensure that all emergency response and management personnel continue to receive HAZMAT Awareness training at a minimum.	Newbury Fire Department	High (Action #8 of 10 in 2012 Plan).	Newbury Fire Department resources	Yearly	Emergency response and management staff continue to receive HAZMAT Awareness training annually.
PRIORITY HAZARD 2 - Flash Flood/Flood/ Fluvial Erosion/ Severe Summer Weather					
Plan for, budget, and maintain roads for safe winter travel.	Selectboard	High (Action #6 of 10 in 2012 Plan).	Local resources	Ongoing and occurs yearly.	Yes, this is done annually.

PRIORITY HAZARD 3 - Extreme Cold/Snow/Ice Storm					
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.	Selectboard, Emergency Management Coordinator	Medium	Local resources	Ongoing and occurs yearly.	The EMD is aware of those on home oxygen or who are critically ill. When extreme weather is forecast, EMD contacts residents on home oxygen to make sure they have batteries and extra oxygen. The EMD also contacts those who are critically ill.
Develop a periodic program to clear tree limbs and maintain town road rights-of-way, and work with local utilities to ensure that utility corridors are cleared and maintained.	Selectboard	High (new)	Green Mountain Power; Washington Electric; local resources	1 year from date of Plan Approval	Completed. The Town works with local utilities to ensure that utility corridors are cleared and maintained.
Invasive Species/Infestation					
Road crew and volunteer efforts will coordinate to schedule mechanical control events to eradicate invasive species.	Road Foreman, Conservation Commission	Medium	Local Resources	Every summer	Not completed. It was difficult to draw volunteers. This will be attempted again in the future.

The 2022 Newbury Local Hazard Mitigation Plan reflects several changes in the Village of Wells River and the Town of Newbury's vulnerabilities and priorities to address different hazards priorities since the 2016 Plan. This 2022 Plan and the 2016 Plan both recognize and detail Flash Flooding, Hazardous Material Spills, Extreme Cold/Snow/Ice, Invasive Species, and Severe Summer Weather, that pose the greatest risk to health and property in the Town of Newbury and the Village of Wells River. However, this 2016 Plan also addresses Structure Fire, which also presents a risk to health and property in the Town. The 2016 Plan did not detail these hazards. The 2022 Plan identifies more detailed hazard mitigation strategies to reduce the risk to health and property as a result of the hazards that post the greatest risk to the Town of Newbury and Village of Wells River. However, mitigation actions identified in the 2016 Plan the previous chart that were not specifically completed were carried over into this 2022 Plan.

There is relatively minimal development occurring in the Town of Newbury and the Village of Wells River. From 2010 to 2020 there was a decrease of 33 housing units. This decrease in housing units contrasts with the gain of nearly 80 people between 2010 to 2020. The development pattern for commercial development tends to be within the Village of Wells River. There are no plans for large-scale development in the future. New development in the Village of Wells River is vulnerable to flooding and fluvial erosion due to the proximity to surface water, actively eroding streambanks, and river bends of Wells River. Most new development outside of the Village of Wells River has not changed the Town's vulnerability to flooding or fluvial erosion.

Depending on the location, specific new development in the Newbury may be vulnerable to flood or fluvial erosion hazard. Fortunately, the town's slow growth rate and interest in pursuing options for reducing flood risks help reduce these risks. The Town's Zoning Bylaw, which includes the Flood Hazard Overlay District, regulates new development within the Special Flood Hazard Area, and helps reduce threats to structures built near flood hazards. No new development is or will be permitted in mapped flood hazard areas, which are specifically vulnerable to flooding. However, the areas vulnerable to flood hazards and fluvial erosion hazards are not necessarily analogous. Therefore, the Town's Flood Hazard Overlay District may not protect new development from fluvial erosion hazards. The desire to focus development and growth within the Village of Wells River in the face of vulnerability to flooding represents not only a land use challenge, but also design and character challenge as this area is also a historic district. These challenges are currently being experienced in towns throughout Vermont.

D. Town Capabilities for Implementing the Mitigation Strategy (Existing Hazard Mitigation Programs, Projects & Activities)

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

The Town of Newbury and Village of Wells River are 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 Newbury's Local Emergency Operations Plan (LEOP). Last updated and approved on 04/13/2016.	Newbury Selectboard; Volunteer time from the Emergency Management Director/ Coordinator; assistance from TRORC. Funding from Vermont DEMHS.	This document is reviewed and updated each year by the Newbury Selectboard to ensure that the contact information of emergency response personnel is up-to-date. This information is then sent to Two Rivers- Ottauquechee Regional Planning Commission and Vermont Emergency Management for their records. Current program works well, no need to expand or improve on.
	Program—Participation in LEPC #12	Volunteer time from Emergency Management Director/Coordinator and sometimes the Fire Chief. Funding from LEPC #12 and assistance from TRORC.	The Town's current participation in the LEPC #12 is satisfactory. Therefore, there is currently no need to expand or improve on this program.
	Action— Designation of Red Cross Shelter Shelters designated at Blue Mountain Union School and Newbury Elementary School.	Staff/volunteer time from the Town Clerk, Emergency Management Director/ Coordinator. Funding from American Red Cross.	This is a one-time action. These shelters remain designated. There is no need to expand on it at this time.
Insurance Programs	Authority/ Program— participation in National Flood Insurance Program (NFIP) [Note: This section of the Plan satisfies the requirements of 44 CFR 201.6(c)(3)(ii).]	Assistance from TRORC and Vermont ANR. Funding from local resources— annual town budget.	The Town's initial Flood Insurance Rate Map (FIRM) was dated 12/10/76. The Town's current Flood Insurance Rate Map (FIRM) was dated 07/21/99. The Town continues its participation in the NFIP by administering and enforcing its "Flood Hazard Overlay" zoning district. The Town of Newbury adopted its most current Zoning Bylaw (which includes its "Flood Hazard Overlay District") on 06/18/2012. This zoning district prohibits new buildings in the floodway and regulates new construction in the Special Flood Hazard Area. The Town employs an NFIP Administrator, Dennis Marquise that enforces the "Flood Hazard Overlay District" based on the 05/17/1990 FIRMs. The town has the authority and intends to consider strengthening the Flood Bylaw in the next planning cycle.

Land Use Planning	Policy/Program— Newbury Municipal Plan Adopted on 08/19/2015, includes a "Flood plains and Flood Resiliency" section under the "Natural, Cultural, Scenic, and Historic Resources" chapter.	Volunteer time from Planning Commission, and assistance from TRORC and other state agencies on specific subject matter. Funding 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 statue.
	Newbury Unified Bylaw Adopted on 10/11/2017	Volunteer time from the Planning Commission, and assistance from TRORC. Funding from Municipal Planning Grants.	The Town reviewed the zoning and subdivision bylaws and decided to combine them into a unified document. This review and update included updating the flood hazard overlay district. This process was completed in 2017.
Hazard Control & Protection of Critical Infrastructure & Facilities	Policy/Program—Town of Newbury and Village of Wells River Hazard Mitigation Plan Town of Newbury adopted on 5/18/2017 Village of Wells River adopted on 6/7/2022	Volunteer time from Town officials; assistance from TRORC and Vermont DEMHS. Funding from FEMA; Vermont DEMHS; TRORC.	The 2022 Newbury Local Hazard Mitigation Plan will replace the 2016 Plan. The 2022 LHMP has evolved from the 2016 Plan and has greatly expanded and improved upon it. Future iterations of the Town's LHMP will be updated by the Town at least every five years.
	Program—Town-wide Class III road inventory and capital budget planning	Staff time from the Town Road Foreman; and assistance from TRORC. Funding from VTrans' Better Road grant program.	The Town does not currently have a Class III road inventory. This action has been carried over into this Plan.
	Program— Culvert inventory.	Staff time from Town Road Foreman; assistance from TRORC. Funding from VTrans; local personnel time and funding.	The Town conducted a comprehensive culvert inventory on all town-maintained roads in 2016. The inventory furthers Newbury's culvert improvement program, and is used to seek funding for implementation projects. The full inventory will feature georeferenced culvert locations and a prioritized list of mitigation improvement projects. In 2022, the process was made more user-friendly and staff have been trained on how to update the inventory. Updates shall occur annually.
	Ongoing Action— the Fire Department distributes fire prevention fliers at the school	Time from the Volunteer Fire Department and funding from Fire Department budget.	Newbury Village conducts a fire awareness program at the elementary school on the first day of school.
	Ongoing Action— the Town places emergency-related information in the Annual Report	Staff time from Town Office personnel and funding from the Town's budget.	This is an ongoing action and there is no need to expand upon it at this time.

E. Plan Maintenance

This Plan (the Newbury and Wells River Multi-Jurisdictional Local Hazard Mitigation Plan) will be updated and evaluated by discussing its effectiveness and making note to incorporate any necessary revisions in the update process. This update and evaluation will occur annually at an April Selectboard meeting along with the annual review of the Local Emergency Operations Plan (LEOP). At this meeting, the Selectboard will monitor the implementation of the hazard mitigation and preparedness strategies outlined in this Plan by noting those that have been completed, and identifying the next steps required to implement the Plan's remaining strategies. Comments from local officials and the public will be incorporated when relevant. This meeting will constitute an opportunity for the public and other town officials to hear about the town's progress in implementing mitigation strategies and to give input on future activities and Plan revisions. The public will be given the opportunity to comment at this meeting. Evaluation of the Local Hazard Mitigation Plan will consist of a thorough analysis of the status of mitigation and preparedness strategies and whether they are being implemented according to the time frames included in tables in this Plan. The Town of Newbury and Village of Wells River will evaluate the status of mitigation strategies to assess that goals of the Local Hazard Mitigation Plan are being met. Adherence to the mitigation, preparedness, and ongoing strategy implementation tables included in this Plan will constitute the degree of effectiveness of the Plan. The Town will also evaluate the status of vulnerabilities detailed in this Plan to evaluate their validity. The update of the Plan will bring up to date materials that have become outdated due to the passage of time. Newbury'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.

Updates and evaluation of this Plan by the Selectboard and the local Emergency Coordinator/Director will also occur within three months after every federal disaster declaration directly impacting the Town of Newbury and Village of Wells River. The Town will monitor, evaluate and update this Local Hazard Mitigation Plan at an April Selectboard meeting and after every federally declared disaster directly impacting the Town according to the graphic in Appendix B. The Town shall reference the Local Hazard Mitigation Plan when working on Town Plan amendments or changes to the Town's bylaws.

This section of the Plan satisfies 44 CFR and 201.6(c)(4)(i), 201.6(c)(4)(ii), and 201.6(c)(4)(iii).

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

The process of evaluating and updating the plan will include continued public participation through public notices posted on the municipal website (if active), notice within the municipal building, notice in one or more area newspapers, and notice on the TRORC newsletter and blog, inviting the public to the scheduled Selectboard (or specially scheduled) meeting. The public will be given the opportunity to comment during this process. Additional stakeholders may be invited to the meeting these include: local businesses and non-profit organizations based in the Town, VTrans, and the Vermont Agency of Natural Resources (VT ANR). VT ANR can provide assistance with NFIP outreach activities in the community, models for stricter floodplain zoning regulations, delineation of River Corridor areas, and other applicable initiatives. These efforts will be coordinated by the Selectboard and the Town Clerk.

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

Newbury shall also continue to incorporate mitigation planning into their long-term land use and development planning documents. 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 needed to be identified, and strategies and recommendations provided to mitigate risks to public safety, critical infrastructure, historic structures and public investments. This Local Hazard Mitigation Plan will help the town continue to comply with the community flood resiliency requirement for town plans adopted after July 2014. The Town of Newbury added a flood resiliency element to their Town Plan when it was updated August 19, 2015. This element will be maintained in their 2023 Town Plan update.

The Town should review and incorporate elements of the Local Hazard Mitigation Plan into updates for the municipal plan, zoning regulations, and River Corridor bylaws. The Town shall also consider reviewing any future TRORC planning documents for ideas on future mitigation projects and hazard areas. During the Municipal Plan update process, the planning commission will review and consider incorporating mitigation actions and priorities described in this Local Hazard Mitigation Plan into Newbury's Municipal Plan. Mitigation strategies will directly influence goals, policies, and recommendations in future updates to the Newbury Town Plan. The incorporation of the goals and strategies listed in the Local Hazard Mitigation Plan into the municipal plan, zoning regulations, flood hazard bylaws, and River Corridor bylaws will also be considered after declared or local disasters.

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, given the town's vulnerabilities?
- 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 Newbury a safer place.

It is important that we learn from the past to avoid the same disasters and their outcomes. Disasters that have occurred within the Town of Newbury, the Village of Wells River, and 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 Newbury 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 Newbury.[1] The worst threats (bolded in the table, below) are then followed-up with discussion and mitigation strategies throughout the rest of this Plan.[2] It should be noted that hazards

[1] The ranking methodology used in this Plan (see Appendix A) is closely modeled on that which is used by the Vermont Division of Emergency Management & Homeland Security (VDEMHS). The only changes made were intended 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 (which is the focus of VDEMHS). Those hazards which were not found to pose the greatest threats to Newbury – including Drought, Avalanche, Radon, Extreme Heat, Tornadoes, Hailstorms, Wildfire, Ice Jams, Landslides/Mudslides/Rockslides, Water Supply Contamination, and Earthquakes – were not addressed in this Plan due to low probability of impact and scarce community resources (time and money). For these hazards, please review the Vermont State Hazard Mitigation Plan. The changes made were intended 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 (which is the focus of VDEMHS).

[2] It's important to note that those hazards which were not found to pose the greatest threats may still occur in Newbury's future; however, they are not the focus of this Plan.

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.

Hazard	Frequency of Occurrence	Warning Time	Potential Impact	Hazard Score
Flash Flood/Flood/Fluvial Erosion	**3**	**4**	**3**	**10**
Hazardous Material Spill	**3**	**4**	**3**	**10**
Structural Fire	**4**	**4**	**2**	**10**
Extreme Cold/Snow/Ice Storm	**3**	**1**	**4**	**8**
Invasive Species/Infestation	**4**	**1**	**2**	**7**
Severe Summer Weather (Thunderstorm, Lightning, High Wind, Hail, and Flooding) *Note: We have defined 'Severe Weather' to include Thunderstorms, Lightning, High Wind, Hail, and Flooding, Hurricanes/ Tropical Storms	**3**	**2**	**2**	**7**
Landslides/Mudslides/Rockslides	1	4	1	6
Dam Failure	1	3	1	5
Earthquake	0	4	1	5
Hurricanes/Tropical Storms	1	1	3	5
Infectious Disease	2	1	2	5
Tornado	0	4	1	5
Water Supply Contamination	1	2	2	5
Drought	1	1	1	3
Extreme Heat	1	1	1	3
Tsunami	0	1	1	2

The Newbury LHMP committee discussed the results of the hazard ranking activity and decided to focus on hazards that had the potential to impact the Town on a town-wide scale and/or are ***Likely*** or ***Highly Likely*** to occur. Severe Summer Weather (Thunderstorms, Lightning, High Wind, Hail, and Flooding) and Hurricanes/Tropical Storms were combined because of their general overlap in season and overlap in hazard types. The LHMP committee decided not to address dam failure because it is highly unlikely to occur. Due to low probability of impact, small potential impact, and scarce community resources (time and money), the mitigation committee chose not to detail the following hazards in this LHMP: extreme heat, drought, water supply contamination, ice jams, earthquakes, avalanche, radon, dam failure, tornadoes, wildfires/brushfires, and landslides/mudslides/rockslides. Refer to Appendix A for definitions of the hazard ranking terms used in the above chart.

After engaging in discussions using their best available knowledge, the Newbury and Wells River Hazard Mitigation Committee identified the following "top hazards" (based on frequency of occurrence and potential impact) that they believe their community is most vulnerable to:

- Flash Flood/Flood/Fluvial Erosion
- Hazardous Material Spills
- Structural Fire
- Extreme Cold/Snow/Ice Storm
- Invasive Species
- Severe Summer Weather

The impact of a loss of services is a common element of the hazards discussed in this Plan. These include not only large-scale services such as the loss of transportation and communication ability, but also the loss of services more directly associated with basic needs such as water, food preparation, and heat. Loss of power for an extended period of time has the potential to greatly impact households who are entirely reliant on a functional power supply in order to prepare food, heat the household, and ensure that the water supply is available. While many residences in Newbury utilize a variety of methods to ensure these basic needs, it is important to be aware that a number of households rely on electricity alone for all of these functions. In addition to the plans described in the Newbury LEOP, it is important to reinforce the need for adequate generators in this Plan, so that the town is prepared to ameliorate the effects of a sustained power loss in Newbury. Included in this would be an adequate supply of fuel for these generators.

A further focus that is important to address in this Plan includes the awareness of the population demographics of Newbury. This includes a comprehensive idea regarding the number of individuals in the town who may require assistance in the event of a severe weather incident. Age and ability should be factors taken into account, and as discussed in the LEOP, there should be individuals responsible for creating and updating such a list, including members of the ambulance service, town offices, the health officer, and service officer.

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. Hazards information was gathered from local sources (ex., town history book), the National Climatic Data Center's (NCDC's) Storm Events Database, the Spatial Hazard Events and Losses Database for the United States (SHELDUS) 1960-2020, and Special Reports produced by the National Weather Service in Burlington, Vermont. This section also includes a description of each "top hazard" and a hazard matrix that will also include 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.	The strength or magnitude and details of the most notable event(s).	Financial impact from an event and/or the number of structures that are impacted.	Occasionally: 1–10% probability of occurrence per year, or at least one chance in next 100 years Likely: >10% but <100% probability per year, at least 1 chance in next 10 years Highly Likely: 100% probable in a year

B. Hazard Profiles for Hazards Posing Highest Vulnerabilities

1. Flash Flood/Flood/Fluvial Erosion

The most frequent form of flooding in the State of Vermont, the Town of Newbury, and the Village of Wells River is riverine flooding, or overbank flooding, which occurs to rivers when they receive more rain or snowmelt from their watershed than they typically experience. Flooding causes the inundation of land that is normally dry. Overbank flooding is experienced more frequently in mountainous and hilly areas where water moves with higher velocities. Flash floods occur when severe storms drop high amounts of rainfall in short periods of time. Flash floods occur more frequently in areas with steep slopes and narrow stream valleys. Riverine erosion is the gradual wearing away of land masses by rivers and streams. River channels are constantly changing. As rivers flow and water moves downstream, water exerts energy upon riverbanks and causes erosion.

Flooding is one of the worst threats to Newbury's residents and infrastructure. Past instances of flooding in Newbury 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-

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 **Flash Flood/Flood/Fluvial Erosion**.

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 Newbury, Village of Wells River, as well as the overarching region and the State of Vermont, occurred on November 3, 1927. This event was caused by up to 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 Newbury and Village of Wells River received heavy precipitation, seeing roughly 7-8 inches of rainfall over the storm period.

A more recent flooding event that devastated the region and the state was the result of Tropical Storm Irene, which occurred on August 28, 2011. Record flooding was reported across the state and was responsible for several deaths, as well as 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 a week. Despite the damage wrought, 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 Newbury suffered some damage to property and infrastructure during Tropical Storm Irene, and no lives were lost. It is estimated that Tropical Storm Irene dropped 6.79 inches of rain over the Town of Newbury and Village of Wells River in a very short span of time, some of the highest precipitation totals in Orange County (which averaged 5-7+ inches over its land area). The county-wide damage for Orange County totaled $5 million. The Town of Newbury and Village of Wells River received relatively low damage during Tropical Storm Irene (approximately $49,074 according to FEMA's Public Assistance database). Newbury received minimal damage compared with neighboring communities; however several roads received damage, including Swamp Road in the western part of Town, Forest Trail, and Urquhart Road.

Unfortunately, flooding is very common across the region, with many events impacting the Town of Newbury specifically, and Newbury has been hit hard by other flooding events that pre-date Tropical Storm Irene. As such, flooding is one of the worst threats to Newbury's and Wells River'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 Newbury, town-specific data is limited); an asterisk "*" denotes the instances in which town-specific data is available, and federal disaster numbers are listed where appropriate. No specific extent data was available for fluvial regarding number of acres of land lost or amount of fill that was used to compensate for fluvial erosion after flooding during each event in Newbury.

History of Occurrences:

Date	Event	Location	Extent and Impacts
Period from 2/25/2017 to 2/26/2017	Flooding	South Newbury; County	Rainfall and snowmelt combined to create river rises, breaking up ice cover and leading to ice jams. Ice jam flooding closed roads, and river flooding mainly had minor impacts. Newbury reported $10,000 in property damage.
Period from 04/15/2014 to 04/16/2014	Flooding	Newbury; County	Flooding from heavy rainfall and snowmelt closed state highways in Orange County and damaged unpaved secondary roads. In Newbury, Route 5 was flooded by the Connecticut River. Newbury reported $300,000 in property damage.
Period from 06/25/2013—07/11/2013 (DR-4140)*	Severe Storms, Fluvial erosion, and Flooding	County-; region-wide	Severe storms caused flooding and fluvial erosion throughout the region, causing damage to some infrastructure and facilities. During this period, Newbury received 4.69 inches of precipitation. There were outages that occurred in Newbury during the disaster period, but all were shorter than 1 hour and affected 22 people or less. The most widespread outage affected 73 Green Mountain Power customers for 1.12 hours. No damage was claimed in the Town of Newbury.
08/28/2011 (DR-4022, TS Irene)*	Tropical Storm	Newbury, Wells River, County-wide	Widespread rainfall amounts of 3-5 inches occurred across Vermont with 5 to 7+ inches across much of southern, central Vermont. Devastating flash flooding and fluvial erosion occurred across much of central and southern Vermont mountain valleys with substantial and some record-breaking flood stages on larger rivers. This flood event will likely rank second to the November 1927 flood in the scope of meteorological and hydrological conditions/impacts as well as loss of life (84 in 1927), but likely first in monetary damage (approx. $500. million statewide vs $350. million (1927 in 2010 dollars). There were nearly 2400 roads, 800 homes/businesses, 300 bridges and a half dozen railroad tracks destroyed or damaged from the flooding and fluvial erosion caused by Irene. Wells River Village experienced widespread flooding and was completely isolated. According to spotter's reports, Newbury received over 5.7" of rain in 24 hours and 6.79 inches of rain in 48 hours. $49,074.88 in damage total for Newbury according to FEMA's Public Assistance database (captures at least 70% of total damage). Power outages were minimal in Newbury with only several isolated incidents that affected singular power customers at a time.
9/30/2010-10/1/2010*	Flooding and fluvial erosion	Newbury, Wells River, County-wide	An area of low pressure and a pocket of tropical moisture associated with the remnants of Tropical Storm Nicole caused heavy rain in Vermont on September 30 and October 1, 2010. A beaver dam burst on Wallace Hill in Wells River Village. Newbury experienced 3.75 inches of rain in 24 hours, and experienced 5 inches in 48 hours. Route 5 closed at Meadow. Widespread outages occurred in Newbury on 10/2 and affected 381 Green Mountain Power customers for an hour.
07/21/2010*	Flash Flooding	Newbury; Wells River; County-wide	Several storms strengthened into super cells that produced widespread wind damage to trees, power poles and structures as well as large hail in excess of golf ball size in diameter. Very heavy localized rains caused some temporary problems in many communities. 2.43 inches of precipitation was experienced in Newbury. On 7/22 4 Green Mountain Power customers lost power for 2.5 hours. On 7/31 507 Green Mountain Power customers lost power for .8 hours.

Date	Event	Location	Extent and Impacts
08/21/2009	Flash Flooding	Newbury; Wells River; County-wide	Thunderstorms produced torrential downpours in nearby Chelsea, who experienced significant damage on several roads due to flash flooding. Damage was not as severe in Newbury, which received 1.26 inches in precipitation. On 8/19, 200 Green Mountain Power customers lost power for 1.18 hours.
08/07/2008* (Part of DR-1790 VT)	Flash Flooding and fluvial erosion	Newbury; Wells River; County-wide	Thunderstorms with heavy rainfall in a moist atmosphere moved through central and southern Vermont during the afternoon and evening hours. Newbury reported $34,000 in damage. Newbury received 2.6 inches of rain in 24 hours with an additional 1.22 inches of rain in the previous 24 hours. No significant power outages occurred.
9/12/2003	Flooding and fluvial erosion	Newbury; County-wide	Newbury experienced $1,697 in damages.
06/28/1973—06/30/1973 (DR-397)	Flooding and fluvial erosion	County-wide	Rainfall as much as 6 inches in 24 hours in some locations. State declared disaster area. 3 deaths occurred and $64 million in damage occurred in Vermont.
11/02/1927—11/04/1927 (“Flood of 1927”)	Flooding	County-wide	Considered to be on of VT’s most devastating events, the flood took our 1285 bridges, miles of roads and railways, and countless homes and buildings. 84 people were killed, including Lt. Gov. S. Hollister Jackson. Rainfall totaled 4-9” statewide, following a month with 150% the normal amount of rain.

There are several locations in Newbury that are specifically vulnerable to flooding. Wells River Village is extremely vulnerable. There are many existing properties that are very close to fast flowing surface water, and there are several instances of actively eroding streambanks that border portions of the Village. The area features the juncture of two major State Highways, Route 5 and Route 302, making the area especially vulnerable to flooding hazards.

As part of its Zoning Regulations, the Town of Newbury has a Flood Hazard Overlay Zoning District that limits development within areas of potential flooding. The Flood Hazard Overlay District prohibits development in the Floodway. Restricted development in the special flood hazard area is permitted. See the Newbury Zoning Regulations for specific details. The Newbury Zoning Regulations were adopted on June 18, 2012, and the Planning Commission is currently updating them.

There are 47 total properties that are located within the special flood hazard areas, 16 of which are in Wells River Village. These consist of 36 single-family residences, 2 multi-family residences, 1 lodging facility, 5 camps, 2 commercial properties, and 1 mobile home. If all of these properties were destroyed in a flood, the resulting damage would equal approximately $6,496,810. Newbury has mapped Special Flood Hazard Areas along the

Connecticut River, Peach Brook, Scott Brook, Halls Brook and lake, the Wells River, and an unnamed stream that traverses Newbury Village.

Across Vermont, most child and elder care facilities are not registered with the State. Most child day care in Newbury is likely private in-home care, but there are also five licensed childcare providers. Newbury childcare providers include Blue Mountain Union School, Central Vermont Head Start, Watch Them Grown Newbury, Seeing Terrific Young Learners Engage After School, and Bright Beginnings Children's Center. None of these facilities are located within the mapped special flood hazard area or the mapped ANR River Corridor. However, the Blue Mountain Union School and the Bright Beginnings Children's Center are both located within .05 miles of the Wells River and are at moderate risk of flood damage. Finally, low-income housing is not registered with the State. There are currently no mobile home parks located in Newbury that are registered with the state, but there is a low-income housing unit north of the village.

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. These areas are often not recognized as being flood prone, and property owners in these areas are not typically required to have flood insurance. It should be noted that, 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 extremely 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. Newbury has mapped River Corridor Areas[3] for Halls Brook, Scott Brook, the Wells River, and small portions of Levi Brook, Hedgehog Brook, and Meadow Brook.

Flooding events are highly likely to occur in the future in Newbury. Precipitation trend analysis suggests that intense, local storms are occurring more frequently and will continue to do so in the future. More localized severe weather storms will occur in the Town of Newbury, which will be high intensity and will likely result in increased flooding.

According to the Vermont Agency of Natural Resources' mapped River Corridor Area, there are 57 total properties that are within the mapped River Corridor but are *not* located in the Special Flood Hazard Area. These consist of 32 single-family residences, 1 multi-family residences, 2 other residential structures, 2 government buildings (the post office and the Wells River Welcome Center), the Wells River Volunteer Fire Station, 4 mobile homes, 2 camps, and 13 commercial structures. Commercial

[3] River corridors encompass an area around the present channel for fluvial erosion, channel evolution and down-valley meander migration are most likely to occur. River corridor widths are calculated to represent the narrowest band of valley bottom and riparian land to accommodate the least erosive channel and floodplain geometry (i.e. equilibrium conditions) that would be created and maintained naturally within a given valley setting. Vermont DEC Flood Hazard Area and River Corridor Protection Procedures; Draft October 06, 2014; pages 6-7.

structures include Dads 4 by tool & Supply, Wells River Chevrolet, Placey Associates, the Wells River Motel, the Happy Hour Restaurant, Gateway Sports, and the Wells River Savings Bank.

Newbury engaged in a comprehensive culvert inventory in summer of 2016. Maintaining this culvert inventory will help the Town to determine the status of its culverts and bridges, and will help prioritize which culverts are in need of repair, upsize, and upgrade.

Hazard	Location	Vulnerability	Extent	Observed Impact	Likelihood/ Probability
Flash Flood/ Flood/ Fluvial Erosion	Wells River Village; sections and properties along Route 302 that border the Wells River; Route 5; Wallace Hill Road; Swamp Road	Culverts, bridges, road infrastructure, public and private infrastructure. There are 47 total properties that are located within the special flood hazard areas. These consist of 36 single-family residences, 2 multi-family residences, 1 lodging facility, 5 camps, 2 commercial properties, and 1 mobile home. If all of these properties were destroyed in a flood, the resulting damage would equal approximately $6,496,810.	Tropical Storm Irene—4-7" across county (5.7" in Newbury).	$49,074.88 in damage total for Newbury according to FEMA's Public Assistance database (captures at least 70% of total damage).	Likely

2. Hazardous Material Spill

Hazardous materials include any biological, chemical, or physical substances that can harm human beings or the environment. [4] These materials can be released in a variety of different ways to varying degrees of severity. When hazardous materials are released, response is required in order to minimize the extent of contamination and to reduce the impact on human health and property.

Based on available VT Tier II data, there are 9 sites in town that have sufficient types and/or quantities of hazardous materials to require reporting. Newbury Village is predominantly located along Vermont Route 5, and the Village of Wells River inhabits the juncture of Route 5 and Route 302. The Wells River flows through the Village of Wells River therefore presenting a risk to contamination in the

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 **Hazardous Materials Spill**.

[4] Tufts University. (2016). *Hazardous materials spill.* Office of Emergency Management. Retrieved from http://emergency.tufts.edu/guide/hazardous-spill/

event of spill. A railroad parallels Route 5 and the Connecticut River throughout the Town. Interstate 91 runs through the Newbury lengthwise from North to South. There are 32 critical facilities in the Town of Newbury, including five hazardous material storage facilities.

There are 645 residential and 93 commercial, industrial or public buildings within 1,000 feet of a potential HAZMAT spill on major roads, such as Route 5, Route 302, Interstate 91, and all railroads. This includes the Newbury Town Office, The Blue Mountain School, Newbury Elementary School, the Newbury Fire Department, and the Wells River Fire Department. In the event that 5% of these structures were involved in a HAZMAT incident, the estimated damage would be $93,341,820.

It should also be noted that the State of Vermont currently has one fully-trained HAZMAT response team, with vehicles located in Essex Junction, Brandon, and Windsor. The HAZMAT crew chief is available within minutes of a call for the team but on-scene response would be a matter of hours. In the event of a serious accident in Town, there would be little time for evacuation and response would be difficult.

The following data was retrieved from the Vermont Department of Environmental Conservation's Spill List and by searching the archives of local newspapers. The table above is used to illustrate the ease with which trucks and the day-to-day activities in the Town have the potential to create a hazardous material spill and dangerous conditions for emergency responders and town residents.

History of Occurrences:

Date	Event	Location	Extent and Impacts
7/15/2022	Diesel Spill	US-5 from Wells River Village to Newbury Crossing	Diesel release onto roadway totaling 2 gallons.
11/23/2021	Motor Oil Spill	1967 Wallace Hill Rd	Improper disposal of 2 gallons of motor oil.
11/1/2021	Gasoline Spill	Route 302 - Wells River	Fuel dispenser/dispensing release of 2 Gallons of gasoline.
10/21/2021	Waste Oil Spill	I-91 MM125	Improper disposal of 55 Gallons of waste oil.
4/12/2021	Diesel Spill	2886 VT Route 302	Fuel dispenser/dispensing release of 5-10 Gallons of diesel.
10/31/2020	Gasoline Spill	2886 Route 302	Fuel dispenser/dispensing release of 2.5 Gallons of gasoline.
9/23/2020	Hydraulic Oil Spill	Route 302	Vehicle collision released 75 Gallons of hydraulic oil.
6/24/2020	Manure Spill	Intersection of Bible Hill Rd and Route 5	Liquid manure totaling 200-300 Gallons was spilled.
3/13/2019	Hydraulic Oil Spill	251 Leete Hill Road	Hydraulic line blew on a truck, releasing 2 Gallons of hydraulic oil.
2/27/2019	Diesel Spill	2886 US RT 302 (Wells River)	2 gallons of diesel was spilled due to customer inattention to pump equipment.

6/4/2018	Kerosene Spill	188 Dempsey Lane	Property owner discovered leaking AST, 2 Gallons of kerosene spilt.
5/29/2017	MODF Spill	4285 Route 5	A vehicle struck a GMP power pole, bringing down the transformer and spilling 1 gallon of MODF (mineral oil dielectric fluid).
2/19/2015	Waste Oil Spill	Newbury Service Center 24 Cross Street	A town water line froze and displaced waste oil. Less than 15 gallons of oil were released.
2/6/2014	Hydraulic Oil	Route 302	A hose failed on a Vermont Agency of Transportation truck while it was in transit. 8 gallons of oil were leaked and were not recovered.
9/22/2014	Hydraulic Oil	1149 Wallace Hill road	A Green Mountain Power truck's hose blew and released 2 gallons of hydraulic oil. GMP captured and disposed of 2 drums of soil.
1/10/2013	Diesel Spill	1-91 Northbound	A tractor trailer jackknifed and slid into median. Four gallons of oil were spilled.
7/7/2012	Gasoline Spill	745 Snake Road	A hose failed on a residential storage tank that resulted in 200 gallons of spilled gasoline
11/26/2010	Hazardous Material Spill	I-91 Southbound	A Vermont Agency of Transportation plow truck spilled 15 gallons of material due to a failed hydraulic line.
12/27/2010	Hazardous Material Spill	Route 302	A Vermont Agency of Transportation plow truck spilled 35 gallons of material on snow and pavement.
12/10/2009	Diesel Spill	Route 302	The saddle tank on a tractor trailer belonging to Lake Champlain Oil leaked 8 gallons of oil.
10/29/2008	Diesel Spill	I-91 North	2 gallons of oil leaked from a truck that was travelling on the interstate.
10/12/2006	Heating Oil	824 Perini Road	500 gallons of oil were leaked from a storage tank on a private residence.
9/13/2001	Diesel Spill	Route 302	Leak from a moving truck resulted in 20 gallons of leaked diesel oil.
11/3/1996	Diesel Spill	Route 302	A ruptured fuel line resulted in 50 gallons of leaked oil. Contaminated soil was contained, stockpiled, and covered.
3/23/1994	Hazardous Material Spill	Swamp Road	A truck accident resulted in a 26 gallon gasoline spill.
11/23/1994	Diesel Spill	I-91 Northbound	A major truck accident on the interstate resulted in 150 gallons of spilled oil.
8/20/1992	Hazardous Materials Accident	Route 5	A truck accident resulted in the release of 1,500 gallons of material.

While only a small number of large hazardous material spills have occurred in the Town of Newbury, the potential for a major spill exists. Interstate 91 runs through the town, which provides a significant hazardous material spill threat. Compounding the risk and hindering the ability for emergency response personnel to respond, there are no interstate exits in Newbury and minimal access points. Major state highways in Newbury include Route 5 and Route 302, and these routes experience considerable truck traffic. A truck accident and a resulting hazardous material spill could be exceedingly disastrous for the Town and its residents as these two routes intersect in the Village of Wells River. These routes serve as the main thoroughfares for trucks and other motor vehicles transporting a wide-range of goods, including a wide range of hazardous materials, within the confines of Newbury. Route 5 follows the Connecticut River through Newbury, and, as a result, additional water contamination issues could be created if a hazardous material spill were to occur along either of these major routes.

A railroad track runs through the Town of Newbury, through the Village of Wells River, and along the Connecticut River. The Railroad typically transports propane and fuel oil, and if an accident occurred

involving the railroad, the Town of Newbury and the Village of Wells River would be especially vulnerable. The railroad also houses a storage yard in a parcel that abuts Wells River Village and Route 5 where is stores fuel and propane tanks. This storage yard is near the population and commercial center as well as the major truck routes of 302 and 5. Although an accident is highly unlikely, its potential effect on the Town of Newbury and the Village of Wells River is large.

A hazardous material spill in the Newbury, in addition to impacting residents, businesses and surface waters, may also impact the water supply. There are two major public water supplies in Newbury: Wells River Water System which services 490 people and the Newbury Village Water System which services 480 people. Contamination of the water sources is possible from hazardous material spills.
In order to prepare for hazardous material spills in Newbury, most members of the Newbury Fire Department are trained to the HAZMAT Awareness level.

Hazard	**Location**	**Vulnerability**	**Extent**	**Impact**	**Likelihood/ Probability**
Hazardous Materials Spill	Village of Wells River, Town of Newbury, Vermont	Road infrastructure, nearby structures (the Newbury Town Office, The Blue Mountain School, Newbury Elementary School, the Newbury Fire Department, and the Wells River Fire Department, the Wells River, and the Connecticut River	Initially, local impacts only; but depending on material spilled, extent of damage may be greater (ex. into groundwater).	There are 645 residential and 93 commercial, industrial or public buildings within 1,000 feet of a potential HAZMAT spill on major roads (Vermont Interstate-91, Route 5, and 5% of these structures were involved in a HAZMAT incident, the estimated damage would be $93,341,820.	Likely

3. Structural Fire

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 **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. In 2019, there were 909 reported structure fires in the state, resulting in 4 fatalities and an estimated $21.5 million dollars in damage. Although there have been requirements for smoke detectors in rental housing for over 20 years, and requirements for smoke detectors in single-family dwellings since 1994, there was only one building involved in the fatal fires in 2000 that had evidence of working smoke alarms. Newbury Town is estimated to have had 147 structure fires between 2002 and 2018. Of those structure fires, approximately 52 occurred in Wells River Village.

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 following occurrences were reported by the LHM Planning Team 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.

Date	Event	Location	Extent and Impacts
7/18/2022	Structure Fire	74 Main St. Wells River	Historic 1870s schoolhouse was damaged after owner caught building on fire while removing paint with a heat gun. Major damage done to roof and second floor, first floor received mainly water damage. Fire did not spread to surrounding buildings. No injuries or fatalities. Building had been assessed at $174,000
11/21/2020	Structure Fire	61 Beaver Ln, Newbury	House was a total loss, no other structures significantly affected.
9/3/2018	Structure Fire	Near 4991 Main St S, Newbury	A 2-story shed caught fire next to the 1840s Newbury Village Store. The shed was a total loss, but the store only suffered minor damage.
6/14/1913	Multi-Structure Fire	Newbury Village	Newbury's Village Center lost over 25 structures

Hazard	Location	Vulnerability	Extent	Impact	Likelihood/ Probability
Structure Fire	Village of Wells Riveer; Town-wide	Public and privately owned structures.	Depends on fire location and conditions.	Depends on fire. Some structures have had the potential for a serious fire (chimney fires), some structures have sustained only minor damage, and some have been severely or completely destroyed.	Very likely

4. Extreme Cold/Snow/Ice Storm

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

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 **Extreme Cold/ Snow/ Ice Storm**.

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 nearby 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 toppled trees and caused widespread power outages.

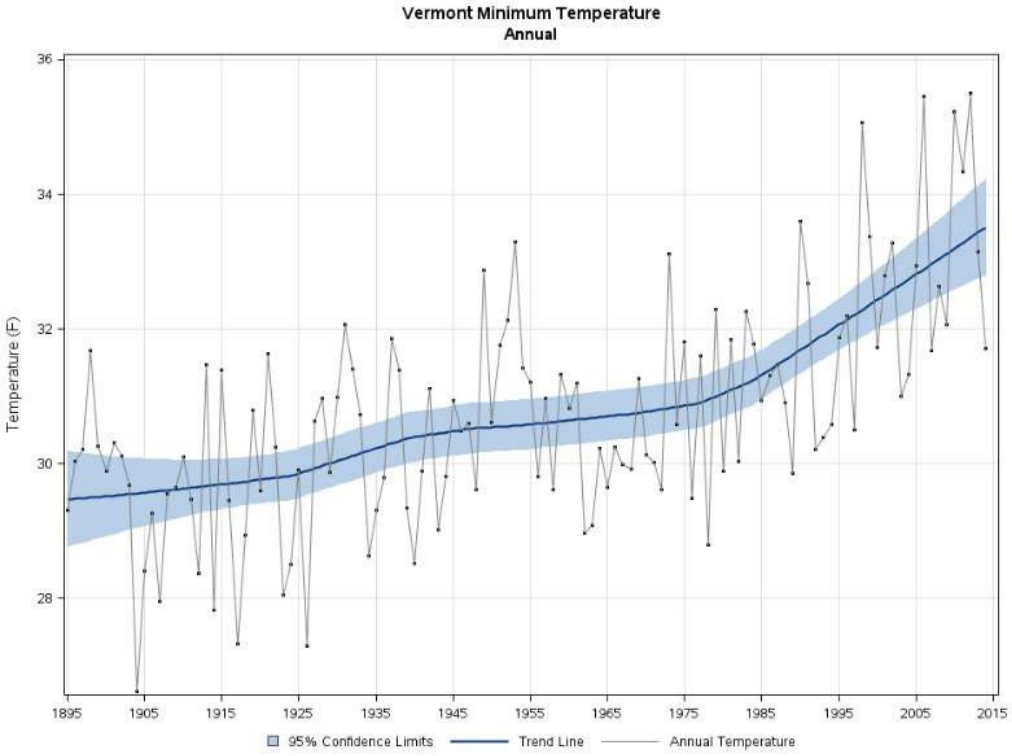
The worst winter storm in terms of damage to hit the state recently was not a snowstorm, but an ice storm. In January of 1998, just the right combination of precipitation and temperature led to more than three inches of ice in spots, closing roads, downing power lines, and snapping thousands of trees. 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 Newbury was impacted by this ice storm.

The most recent severe winter storm to hit Vermont began on December 9th, 2014, and lasted until December 11th, 2014. During this period of time, much of the state of Vermont was hit was heavy, wet snow that ranged from accumulation totals anywhere from a few inches to almost two feet along parts of the Green Mountains. The heavy, wet snow stuck to tree limbs and power lines which led to widespread power outages and significant damage to the state's power infrastructure. Over 100,000 customers were without power statewide, some for multiple days, and the damage to power infrastructure caused by the storm surpassed that which was incurred as a result of the 1998 ice storm or Tropical Storm Irene. In addition to damage to power infrastructure, towns hit by the storm had significant amounts of debris clean up and removal to contend with in the spring of 2015.

Over the past few winters, Newbury has received numerous snowstorms that have dropped significant amounts of snow over a day or two-day period. However, the details of these events and the damage they caused are overshadowed by winter weather events of the past. This is not to say such extreme events will not repeat themselves. It should be assumed that extreme winter weather events will occur at some point in the future. The following table documents the occurrence of extreme cold/snow/ice storms in the Town of Newbury, Village of Wells River, and in Orange County.

ICE DAMAGE INDEX	DAMAGE AND IMPACT DESCRIPTIONS
0	Minimal risk of damage to exposed utility systems; no alerts or advisories needed for crews, few outages.
1	Some isolated or localized utility interruptions are possible, typically lasting only a few hours. Roads and bridges may become slick and hazardous.
2	Scattered utility interruptions expected, typically lasting 12 to 24 hours. Roads and travel conditions may be extremely hazardous due to ice accumulation.
3	Numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasting 1 – 5 days.
4	Prolonged & widespread utility interruptions with extensive damage to main distribution feeder lines & some high voltage transmission lines/structures. Outages lasting 5 – 10 days.
5	Catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed.

(Sperry-Piltz Ice Accumulation Index (SPIA), 2009).



History of Occurrences:

Date	Event	Location	Extent and Impacts
Period from 12/09/2014—12/12/2014 (DR-4207 VT)	Snow/ Winter Storm	Newbury; Wells River; County-; region-wide	A powerful prolonged heavy, wet snow event from December 9th through December 11th. Snowfall totals ranged from a few inches to almost 2' near Warren, VT. The snow to liquid ratios ranged from 5-7" of snow to 1" of rain, which lead to the snow sticking to trees and power lines. Approximately 6 inches of snow and 1.89 inches of ice fell in neighboring Corinth. But significant power outages did not occur.
Period from 03/12/2014—03/13/2014	Snow Storm	County-; Wells River; region-wide	A major snowstorm with near blizzard conditions at times impacted portions of northern New York on March 12th and lingered into the morning hours of March 13th. Numerous motor vehicle accidents, school and business closures resulted due to the storm on both March 12th and 13th. Snowfall totals across Orange county were generally 15 to 20+ inches. Significant power outages did not occur in Newbury. Nearby Corinth received 16.2 inches of snow and 1.46 inches of ice.
Period from 02/13/2014—02/14/2014	Winter Storm	County-; region-wide	A Winter storm, responsible for record ice and snow across the southeast United States on February 12th, moved and redeveloped off the southeast United states coastline on February 13th. Snowfall across Orange county was 12 to 18 inches. Neighboring Corinth received 17.6 inches of snow and 1.32 inches of ice. 470 Green Mountain Power customers lost power for 2 hours.
02/05/2014	Snow Storm	County-; region-wide	Snowfall was at its peak during both the morning and afternoon/evening commutes causing hazardous travel. Eight to twelve inches of snow fell across Orange county. Neighboring Corinth received 11.5 inches of snow and .7 inches of ice. Significant power outages did not occur in Newbury.
Period from 12/29/2014-12/30/2014	Winter Storm	County-; region-wide	Snow mixed with rain developed across southern Vermont during the late afternoon and changed to snow during the evening hours of December 29th. A wet, heavy 5 to 10 inches of snow fell across Orange county. 7.8 inches of snow and .72 inches of ice fell in neighboring Corinth. 11 GMP power customers lost power for 5.88 hours.
Period from 12/14/2013-12/15/2013	Snow Storm	County-; region-wide	This was the first widespread snowfall of the 2013-14 winter season. The typical impacts associated with this storm were the numerous vehicle accidents, especially being the first storm of the season. Newbury received A widespread 10 to 15 inches of snow fell across Orange county, and neighboring Corinth received 10 inches. No power outages occurred in Newbury.
2/19/2011	Cold Front; Strong Winds	County; region-wide	A strong cold front associated with a powerful storm across Canada moved across Vermont the night of February 18th into the early morning of February 19th. Strong west to northwest winds of 20 to 30 mph and gusts of 40-50 mph caused numerous power outages. 576 Green Mountain Power customers in Newbury lost power for 1.43 hours.
12/1/2010	Ice Storm	Newbury; Wells River	Sleet and frozen rain precipitation caused significant power outages in Newbury. 1.5 inches of sleep/frozen rain precipitation occurred. 285 Green Mountain Customers lost power for 1.9 hours, 205 GMP customers lost power for 4.38 hours, and 408 GMP customers lost power for 3.92 hours.
Period from 11/27/2009-11/28/2009	Winter Storm	County; region-wide	A strong area of low pressure combined with a cold upper atmospheric low moved across Vermont causing snow and strong gusty winds. Heavy snowfall occurred on the eastern slope of the Green Mountains and wind gusted at over 40 mph. Newbury did not experience heavy precipitation, but strong winds caused power outages. 507 Green Mountain Power customers lost power for 1.27 hours, 202 GMP customers lost power for 3.3 hours, and 107 GMP customers lost power for 6 hours.

Period from 2/22/2009-2/23/2009	Winter Storm	County; region-wide	Light snow overspread Vermont during the morning of February 22nd and became moderate to heavy across much of central and eastern Vermont during the evening hours to early morning on 2/23. Snowfall totals ranged from 10 to 18 inches in central and eastern Vermont. The nearby Town of Corinth received 13 inches of snow. 7 Green Mountain Power customers lost power for 1 hour.
Period from 02/26/2008-02/28/2008	Snow Storm	County-wide; statewide	Snow overspread over Vermont during the morning of February 26th and continued through the afternoon hours of the 27th before tapering to scattered snow showers in the evening. Storm totals ranged from 3 to 6 inches in the St. Lawrence River Valley, 5 to 10 inches across northern New York and 6 to 12 inches across Vermont with the heaviest along those favored northwest slopes of the northern Green Mountains as well as some higher elevations in south central Vermont. 10 inches were reported in the neighboring town of Corinth. Newbury did not experience significant power outages.
02/01/2008	"Mixed" Winter Storm	County-wide; statewide	This storm system transported a great deal of moisture and milder air above a surface that had a cold, dry airmass established across the region. This resulted in a significant wintery mix of snow, sleet, and freezing rain across north central and northeast Vermont. Snow began late morning February 12 in Vermont and changed to sleet and freezing rain during the afternoon and continued into the night. The precipitation turned back to snow shower during the night and continued into the morning of February 2nd. Snowfall reports were generally 2 to 5 inches with localized amounts up to 7 inches. In addition, one quarter to one half of ice accumulation (accretion) occurred as well. Finally, strong south to southeast winds around 3000 feet and above transferred to a few hilltops along the western slopes and produced wind gusts in excess of 50 mph. Numerous reports of motor vehicle accidents throughout the region. Neighboring Corinth received 3.5 inches of new snow and about 1.2 inches of ice/sleet. Significant power outages did not occur in Newbury.
12/31/2007	Snow Storm	County-wide; statewide	Snow began to overspread New York and Vermont around Midnight Monday (31st) with snowfall rates rapidly increasing to near an inch per hour at times, but this was a quick-hit storm with steady accumulating snowfall ending across much of Vermont and northern New York by mid-morning. The storm contributed to Burlington's 4th snowiest December. 6 inches were reported in neighboring Town of Corinth. 1 Green Mountain Power customer in Newbury lost power for 1 hour.
Period from 12/16/2007-12/17/2007	Snow Storm with Freezing Rain	County-wide; statewide	Snowfall totals from this pre-winter storm ranged from 6 to 12 inches in southern Vermont, where a prolonged period of sleet and/or freezing rain occurred, to a rather uniform 12 to 18 inches across the rest of Vermont and northern New York. 9.1 inches of snow and 1.07 inches of rain/sleet were reported in neighboring Corinth. Significant power outages did not occur in Newbury.
Period from 04/15/2007-04/16/2007	Winter / Snow Storm	County-wide; statewide	A powerful Nor'easter drifted east of New England and caused a mixture of snow and rain over Vermont. The storm started a mixture in the morning on the 15th and changed over to snow in the afternoon, continuing into mid-morning on the 16th. Snowfall totals were generally 4 to 7 inches in the valleys with locally up to a foot along the east-facing slopes of the higher elevations of the Green Mountains. This was a heavy, wet snow that caused numerous power outages, as well as extremely slick and treacherous roads that resulted in numerous vehicle accidents. 7.5 inches of snow and .73 of rain/sleet occurred in neighboring Corinth. 12 Green Mountain Power Customers lost power for 70 hours.
Period from 04/04/2007-04/05/2007	Snow Storm	County-wide; statewide	Rain mixed with and then changed to sleet and snow across Vermont during the afternoon of the 4th and continued through midday on the 5th. Combined snow and sleet accumulations ranged from 4 to 12 inches with the higher amounts in the higher elevations. This caused some hazardous travel as well as some scattered power outages due to fallen tree limbs and branches. Significant power outages did not occur in Newbury. 7.58 inches of precipitation were reported in nearby Chelsea.

03/17/2007	Snow Storm	County-wide; statewide	Heavy snow started in southern Vermont by late evening and reached the rest of the region by Midnight Saturday (17th) with snowfall rates of 1 to 2 inches per hour at times. 10 inches of snow were reported in neighboring Corinth. Significant power outages did not occur in Newbury.
02/14/2007	Snow Storm	County-wide; statewide	Low pressure developed over the central Appalachians and pushed north into Vermont at around midnight on the 14th. Snow fell through the night into the morning and was very heavy at times, and continued into the afternoon and evening. Snowfall rates as heavy as 2 to 4 inches per hour and brisk winds of 15 to 25 mph caused whiteout conditions, blowing and drifting snows, and impassible roads. Snowfall totals ranged from 15 to 25 inches in the Connecticut River valley. 19 inches were reported in neighboring Chelsea. 138 Green Mountain Power customers lost power for 1.2 hours.
12/15/2003	Snow Storm	County-wide; statewide	Snow developed Sunday afternoon, December 14th, and became heavy Sunday night into Monday morning, December 15th. 10 inches were reported in nearby Chelsea. Power outage data was not available for this event.
01/03/2003	Snow Storm	County-; state-wide	A storm system over Virginia Friday morning (1/3/03) moved to coastal New Jersey Friday evening and then to near Cape Cod Saturday morning (1/4/03). Snow spread across the area late Friday afternoon, and became heavy at times late Friday night into Saturday morning. 8.2 inches were reported on 1/4 and another 3.3 inches were reported on 1/5 in nearby Chelsea. Power outage data was not available for this event.

The Town of Newbury and Village of Wells River are no stranger to winter weather and the hazards that it brings. Depending on the event, though especially with heavy, wet snow or ice, and sometimes in combination with high winds, electricity may be knocked out for a few hours or days. The utility company currently serving the Town of Newbury and Village of Wells River, Green Mountain Power and Washington Electric Coop, have followed a regular tree-trimming schedule. Newbury town officials believe this is satisfactory to mitigate damage and the power outages caused by downed trees and tree limbs during a heavy, wet snow or ice event. In the event of an extended power outage, the Town would open its emergency shelter. More often, those without power would seek accommodations with friends or relatives.

Another complication of falling utility poles is the potential loss of the telephone line. If the landlines are impacted, the possibility presents itself that there is no reliable means of communication in the affected parts of Town as cell reception can be spotty. If the power is out, an internet connection is unlikely to be available.

There is a wide variance in Town between precipitation patterns and weather, and this different is most evident during winter. There is a high elevation difference between the western portion of town, where hills ranging from 900 feet to 1,700 feet in elevation contrast with parts of Town near the Connecticut River. Often, the western portion of Town will receive higher levels of snow than those sections near the Connecticut River. The western part of Town also has pockets of residential housing that may remain without power for long durations, as well, with some houses remaining powerless for up to 8 hours. There are two Green Mountain Power substations in Newbury Village and Wells River.

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 Newbury, 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 provide assistance to stranded drivers or to those who have been in an accident.

Hazard	**Location**	**Vulnerability**	**Extent**	**Observed Impact**	**Likelihood/ Probability**
Extreme Cold/ Snow/ Ice Storm	Village of Wells River; Town-wide	The entire Town is vulnerable, including road infrastructure, town and privately owned buildings, utility infrastructure.	Snow fall 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.	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 a 50% loss. For car crashes due to poor driving conditions, minimal damage to vehicle to totaled vehicle and operator injury. Health impacts could vary significantly.	Likely

5. Invasive Species

Invasive species are biota that is non-native to a given area that may cause widespread ecosystem or economic harm to a Town. They may be an organism, plant, insect, or animal that encroaches upon, displaces, diseases, or even kills native species. Invasive species may also pose risks to human health upon contact. Planning for and mitigating the effects of existing invasive species and anticipated encroachment, whether from new forms of plant disease, plant species, or insects or animals, is critical to the future health of our landscapes, our wildlife communities, and our local economies (especially agriculture and silviculture). Managing the impacts of invasive terrestrial plant species, insects, or other forms of disease would necessitate funding that is many orders of magnitude more than is currently available to tackle invasive species and infestation issues. However, preparedness through vigilance for the problem species near Vermont's borders is one tactic that effectively employed to combat the rampant spread of known problems outside our borders.

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 **Invasive Species/Infestation**.

The State of Vermont divides invasive species into two camps: Class A and Class B. Class A species are those that are listed on the Federal Noxious Weed List but are not currently known to be present within the confines of Vermont (see 7 C.F.R. 360.200). Class B species, in contrast, are known to occur within state boundaries and are deemed a treat to residents and the environment.[5]

Invasive species do not, by their nature, have boundaries. This concept was clearly demonstrated during Tropical Storm Irene, when floodwaters uprooted Japanese knotweed plants along Vermont's waterways. Years later, the fight to eradicate the knotweed has become even more protracted as it spreads along streambanks and areas beyond, choking out native plant communities and destabilizing banks.

What is known is that invasive species are already present in Newbury, although the precise location and extent of proliferation and/or damage is not always easily defined, given not all pockets of infestation are necessarily mapped or otherwise accounted for. For the purposes of this Plan, the LHMP Committee has agreed to focus on the invasive species and infestation hazards that are terrestrial plants or insect pests that the Newbury is most concerned with. Below is a table of species that currently do—or are anticipated to—adversely impact the community's natural environment, and, by extension, public health, economy, infrastructure, and private property:

[5] See http://agriculture.vermont.gov/plant_pest/plant_weed/invasive_noxious_weeds/noxious_we eds_list

Hazard Types

Species	Present in Town and/or Village?	Extent of Impact	Removal/Prevention Method
Wild Chervil (*Anthriscus sylverstris)*	✓	Wild chervil is most commonly found along roads, but will spread into fields and their shaded fringes. Seeds are easily spread by mowers and wind over great distances. The plant's sap can burn skin. The plant's white flowers bloom in May and June.	Treatment of this plant is easiest before it establishes a root system. Mowing the plants early prior to the plants going to seed can reduce their spread. Do not mow after June when the plant has seeded, and clean equipment after using to prevent spread. Eradication is difficult, and would likely require grazing, pulling, tilling, or native replanting. Successful herbicide treatments have not yet been determined.
Garlic mustard (*Alliaria petiolate*)	✓	Garlic mustard is an edible weed that tends to grow along roadsides, particularly in the shade. It spreads when either seeds or plant pieces are sown into the ground. Garlic mustard has not yet been observed in Newbury, but is extensive throughout Vermont.	Because of its methods of spreading, it is not advisable that garlic mustard be mowed. Rather, pulling the plant by hand is best practice. Glyphosate herbicide can also be used (although this may risk watershed contamination).
Wild parsnip (*Pastinaca sativa)*	✓	Wild parsnip is a heavily toxic plant specimen that has photoreactive sap that causes severe burns to exposed skin. It does not tend to grow well in shaded areas, and also does not tend to grow in dense stands. The plant flowers in late spring to early summer.	Because of the plant's noxious properties, eradication can be a delicate process. Manual pulling should be done with thick gloves and long sleeves. Early mowing before the plant seeds in early July can reduce the spread. Mowing should be repeated once per year for three to five years. Gloyphosate chemical foliar low volume spraying can be used as a control in late summer (mid-July).
Giant Hogweed (*Heracleum mantegazziam)*	✓	Giant hogweed is a noxious weed that has cropped up in some places in the region. Similar to wild parsnip in appearance, it is also a phototoxic plant, causing painful, scarring blisters. The plant flowers in late spring to early summer.	Removal of giant hogweed plants is the same as wild parsnip (see above). Extreme care must be taken with this plant, too, to avoid any contact with skin or risk injury.

Species	Present in Town and/or Village?	Extent of Impact	Removal/Prevention Method
Japanese Knotweed (*Polygonum cuspidatum)*	✓	Japanese knotweed is one of the most widely spread invasive species in the region, most commonly cropping up along river edges in direct sunlight. The plant rhizomes root and spread easily, and are hard to eradicate once established. Ditch maintenance and traveling down waterways are two main ways the plant spreads. Its lacy white flowers bloom in August.	Repeated mowing or cutting, using loppers or a lawn mower once per month over the plant's growing season (spring through fall) may be the best way to eradicate knotweed plants. Eradication must continue every year for about five years. A drip technique chemical control, using glyphosate concentrate application on plant stems in August, can be combined with mechanical cutting. Pulled stems should be contained in bags to rot for one year. If bagging is not possible, then plants should be stockpiled and covered with a tarp for decomposition. Do not replant native plant species until knotweed has been fully eradicated.
Goutweed *(Aegopodium podagraria)*	✓	Goutweed invades fields, river edges, and floodplains. It proliferates quickly by means of underground rhizomes, and has established itself in villages and settled areas in Newbury. The plant's white flowers bloom in July.	New infestations should be treated quickly either before root systems become established or after leaf-out (late summer). Entire plants, including stems, roots, and rhizomes, should be removed and bagged or at least a week before disposing in a landfill. Do not compost plant material because it will reseed. For large infestations, cover with a large plastic tarp and secure edges with sandbags. Glyphosate chemical control can also be used in foliar spraying after plant has leafed out.
Glossy and Common Buckthorn *(Frangula alnus) (Rhamnus cathartica)*	✓	Buckthorn grows in two similar varieties, and can drastically change the composition of forested areas. Buckthorn has red berries, which are easily visible in fall and act as an innutritious laxative to animals. Buckthorn increases the nitrogen content in soil and has a longer growing season than native plants, which changes habitat suitability for native plant species. Buckthorn has established itself in many forested areas in Newbury.	Mechanical buckthorn control can consist of hand pulling small plants (including roots) or cutting stumps of larger, woodier plants at any time of the year. Glyphosate can also be applied to stumps within one hour. Larger plants may require a weed wrench. Plants may be burned after uprooting.

Species	Present in Town and/or Village?	Extent of Impact	Removal/Prevention Method
Purple Loosestrife (*Lythrum salicaria)*	✓	Purple loosestrife proliferates in damp areas, like wet roadsides and swamp/wetland areas. It is a growing concern in fields and roadsides. Once established, it quickly spreads and squeezes out native plants, impacting wildlife habitat in the process.	Smaller infestations of purple loosestrife can be mowed or pulled by hand and burned or disposed of in a landfill. Removing flower heads prior to seeding can help prevent spread. Biocontrol (the use of natural enemies to control an infestation, such as beetles that do not pose harm to agriculture or other key species) has proven a success in many Vermont towns.
Barberry (*Berberis vulgaris)*	✓	Barberry grows and spreads rapidly and can quickly form dense stands in the habitats it invades. It crowds out native shrubs and other plants. Deer avoid eating barberry, which helps it out compete native vegetation. Barberry stands are also linked to increased rates of Lyme disease. Higher densities of deer ticks and deer mice, the larval host of these ticks, have been found under barberry compared to native shrubs.	Mechanical removal is quite effective in controlling barberry infestations due to the plants' shallow root systems. Plants can be pulled throughout the year whenever the ground is soft enough. Small plants can be hand pulled, but use caution to avoid the spines. Larger plants can be removed using a weed wrench or shovel. If a plant or infestation is too large for easy removal, mowing before seed production can limit population growth. Herbicides have also been found effective in controlling barberry populations either by applying them to cut stumps or spraying on leaves. For large infestations or populations near sensitive areas like waterbodies and wetlands, a professional should be contacted for chemical treatment.
Honeysuckle (*Lonicera morrowii, Lonicera tatarica, Lonicera maackii, Lonicera x bella*)	✓	Honeysuckle outcompetes native trees and shrubs. By leafing out earlier and retaining leaves later, honeysuckle has a competitive advantage and easily forms dense thickets. This reduces the amount of sunlight reaching the forest floor, decreasing the abundance of native vegetation. This competition can inhibit forest regeneration. Honeysuckle also threatens bird populations. Songbirds that usually nest in native shrubs will	Mechanical removal by cutting or pulling plants can be effective. Pull honeysuckle by hand or by using a weed wrench. Plants can be pulled whenever the ground is soft enough and regrowth should be pulled twice a year for multiple years. Cut honeysuckle multiple times throughout the growing season. The cut and cover method can also be effective. Cut plants in the fall or winter and cover the stumps with burlap or thick plastic and tie tightly with rope or twine. Check sites periodically for new growth.

		also nest in honeysuckle. However, honeysuckle has thicker stems than native shrubs, which allows predators like raccoons and skunks to more easily access nests, resulting in increased predation. Honeysuckle berries are also readily eaten by birds, which also contributes to the plants' prolific spread. These berries, however, do not provide a high-fat, nutrient-rich diet required by migratory birds for their long flights.	Large infestations of honeysuckle are most effectively treated chemically. Herbicide is typically applied to cut stumps or sprayed on leaves in the fall. For large infestations or growth in sensitive areas, contact a professional for chemical application.
Smooth Bedstraw (*Galium mollugo*)	✓	A pernicious plant in hayfields, bedstraw can take over and also fouls haying gear. It seems to like fields that are more acidic or have poor soils. There are other varieties of bedstraw as well, but smooth bedstraw seems to be the main concern.	Regular mowing/grazing will help avoid it becoming established, but once present concentrated grazing, tillage, or herbicide may be the only options. Seed is short lived so breaking the seed cycle is important. As with other invasives, mowing after seed set only increases the infestation.
Common Reed (*Phragmites australis*)	✓	Common reed is a tall, graceful grass that can reach heights of 10 to 12 feet. It grows in dense patches most commonly found in gravelly to sand substrate in wetlands, roadside ditches, and lakeshores.	Hand-cut individual stems at the end of July when most of the plant's food reserves are in the aerial portion of the plant before the flowers produce seed. Plants should be cut below the lowest leaf, leaving a 6 inch or shorter stump. Some patches may be too large to cut by hand, but repeated cutting of the perimeter of a stand can prevent vegetative expansion. Mow large stands of common reed annually between July and September to reduce plant vigor and stem density. As with other invasives, mowing after seed set only increases the infestation.
Hemlock Woolly Adelgid (HWA) (*Adelges tsugae)*		HWAs prey on deciduous eastern hemlock trees, and originate from southern Japan. Hemlocks desiccate, lose needles, and fail to generate new growth, severely weakening, if not outright killing, trees. Hemlocks are the third most prevalent tree in Vermont, and are critical for stream bank armoring and serving as a shelter and food source for wildlife.	HWAs have been confirmed in Windham and Bennington Counties (as of 2012, per the USDA).[6] As of 2012, they were not present in any counties adjacent to Orange County. No identification has been made in Orange County of the HWA egg sacs that are found on branches and hatch in the spring, feeding on tree sap. Vigilance is needed to keep an eye on HWA spread, and insecticide treatments may help contain it.

Asian Longhorned Beetle (ALB) (*Anoplophora glabripennis)*		Large stands of deciduous trees are target species of the beetle. These trees are especially critical to the health of our forests, slopes, carbon sequestration, and the local economy (e.g., sugar maples). According to the Forest Service, if ALBs became established across the U.S., they could kill a third of all urban trees at a compensatory cost of $669 billion and decimate the maple sugaring industry.[7]	The beetle has been identified in nearby states, namely Massachusetts. Vigilance for signs of presence around hardwood trees (sawdust at base of tree, oozing from bark) can alert their presence in the tree, and can prompt containment efforts. Uninfected host tree species may be treated with insecticide after the winter thaw in a quarantine area to prevent spread.

Species	**Present in Town and/or Village?**	**Extent of Impact**	**Removal/Prevention Method**
Emerald Ash Borer (EAB) (*Agrilus planipennis)*		Seven-percent of trees (around 150 million trees) in Vermont are ash, making virtually every community vulnerable to ash stand decline. Damaged trees can pose a hazard, particularly in close proximity to sidewalks, roadways, and private property. EABs generally infiltrate new host areas when they are transported in firewood and other wood products.	EAB colony establishment can take years to be visible on trees, but makes trees brittle and weak. Bare bark exposed by woodpeckers reveals intricate pathways created by the EAB. Infestations are located in all surrounding states and Quebec. Preventing the importation of firewood from outside of Vermont is one key tactic to stop the spread. Quarantine efforts have been met with mixed success, and biological and microbial control agents may prove effective containment methods.

[6] See http://na.fs.fed.us/fhp/hwa/maps/2012.pdf
[7] See http://www.nrs.fs.fed.us/pubs/1983

While this Plan does not provide a complete listing of all invasive species—plant, animal, insect or otherwise—those presented are the most prolific and destructive or are areas of major concern to Newbury residents, municipal officials, and Vermont Agency of Natural Resources staff. Inactivity in addressing current invasive species threats will drastically compound the cost and physical effort put toward eradication efforts in the future. With proliferation trends of invasive species being extensive, Newbury residents can expect to see widespread growth of known species and range expansion of insect species that are not yet in the Town but are anticipated.

Invasive species control requires a three-pronged approach of vigilance, preventing further spread of a target species, and eradication. Towns, like Newbury, need to be appraised on the invasive species threat that are at their borders so that they can keep an eye out for and work to prevent encroachment. Persistent management of species, such as wild chervil, through practices that prevent the spread of the seeds, rhizomes, or other means of growth is a lower cost means of containment. Complete eradication is a multi-year, resource intensive process that, like preventing spread, can employ both hard and soft tactics, such as herbicide spreading (hard tactic) or animal grazing (soft tactic).

Hazard	Location	Vulnerability	Extent	Observed Impact	Likelihood/ Probability
Invasive Species/ Infestation	Town-wide, although dependent on host plant for insect pests, or soils/ available sunlight for plant infestation	The entire Town is susceptible to invasive species proliferation, depending on the species and place-dependent characteristics that allow for growth and spread of problem species.	At present, none of the species identified in the Town have had more than a negligible impact on health of residents or property. If left unchecked, invasives may crowd out native plant and wildlife species dramatically and, in some case, can pose physical harm to residents.	Insect pests can ravage local silvicultural operations, value-added market product production (e.g., maple syrup industry), and tourism (seasonal leaf peepers). Invasive plants and insects may destroy/ crowd out key native species and habitat, and some cause physical harm	Highly Likely

6. Severe Summer Weather

Severe Summer Weather consists of thunderstorms, lightning, high winds, hail, flooding, and hurricanes/tropical storms. Often it consists of multiple events that combine to create hazardous conditions that pose a threat to communities in the State of Vermont the Town of Newbury, and Village of Wells River. Severe weather can be incredibly unpredictable. More common than hurricanes or tropical storms are severe thunderstorms (usually in the summer), which can cause flooding as noted above, and are associated with lightning, high winds, hail and tornadoes. Hailstorms have occurred in Vermont, usually during the summer months. While local in nature, these storms are especially significant to area farmers, who can lose entire fields of crops in a single hailstorm. Large hail is also capable of property damage. 382 hail events were recorded between 1950 and 2008 in the state, making hail an annual occurrence in some part of the state. Most of these events had hail measuring .75 inches, but many had hail at least 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 hit the region on July 6, 1999, downing hundreds of large trees in a few minutes.

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

In Newbury and Wells River, severe weather is quite common, typically in the late spring and summer months when the region experiences high temperatures. Severe thunderstorms tend to bring other hazards such as high winds, hail, lightning, and flooding, and these hazards are often experienced in combinations which create many unique weather and emergency management situations. Over the years, Newbury has been hit with high winds that have downed and uprooted numerous trees and knocked out electricity to residents in the Town. Town specific wind data could not be found, but the "Remarks" section of NCDC Database helps to illuminate the impact strong winds can have on Newbury. Sizeable hail has also accompanied storms moving through the Town and region.

The following list indicates the history of occurrence with regard to this hazard in Orange County (given

that small population of Newbury, town-specific data is limited); an asterisk "*" denotes the few 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.

Beaufort Wind Chart – Estimating Winds Speeds

Beaufort Number	MPH Range	MPH Average	Terminology	Description
0	0	0	Calm	Calm. Smoke rises vertically.
1	1-3	2	Light air	Wind motion visible in smoke.
2	4-7	6	Light breeze	Wind felt on exposed skin. Leaves rustle.
3	8-12	11	Gentle breeze	Leaves and smaller twigs in constant motion.
4	13-18	15	Moderate breeze	Dust and loose paper is raised. Small branches begin to move.
5	19-24	22	Fresh breeze	Smaller trees sway.
6	25-31	27	Strong breeze	Large branches in motion. Whistling heard in overhead wires. Umbrella use becomes difficult.
7	32-38	35	Near gale	Whole trees in motion. Some difficulty when walking into the wind.
8	39-46	42	Gale	Twigs broken from trees. Cars veer on road.
9	47-54	50	**Severe gale**	**Light structure damage.**
10	55-63	60	**Storm**	**Trees uprooted. Considerable structural damage.**
11	64-73	70	**Violent storm**	**Widespread structural damage.**
12	74-95	90	**Hurricane**	**Considerable and widespread damage to structures.**

Webpage: http://www.weather.gov/iwx
Twitter: @nwsiwx
Facebook: NWSNorthernIndiana

History of Occurrences:

Severe Summer Weather Date	Event					Location	Extent
	Thunderstorm / Severe Storm	Flooding	Hail	High Winds	Lightning		
9/15/2021	✓			✓		Newbury, Wells River	Trees and powerlines down across Route 5 between Newbury and Bradford after a cold front moved through an unstable air mass. Some of the resulting storms intensified, delivering isolated and scattered wind damage to trees and utility lines. $10,000 in damage was reported. Specific outage data was unavailable for this event.
6/25/2013-7/11/2013* (DR-4140 VT)	✓	✓	✓	✓		County-wide	Severe storms over a nearly one-month period. Rains caused flooding in the region, winds downed trees, power outages were reported. On 6/24, 73 Green Mountain Power (GMP) customers lost power for 1.12 hours. Another outage occurred on 7/3, when 58 GMP customers were affected for less than 1 hour. Overall during the disaster period, Newbury received 7.94 inches of rain.
9/11/2013*	✓			✓	✓	Newbury, Wells River; County-wide	A weak area of low pressure embedded in an unseasonably warm and unstable air mass resulted in thunderstorms that moved across Vermont. Trees were downed around Halls Lake with some structural damage occurring to camps and homes. Newbury received 1.86 inches of rain in 96 hours. Widespread power outages occurred, on 9/11, 9/12, and 9/13. On 9/11 564 total GMP customers lost power, 471 of which lost power for 5.13 hours. On 9/12 107 GMP customers lost power for 21 hours. On 9/13 20 GMP customers lost power for less than 1 hour.
6/2/2013	✓		✓	✓		Newbury, Wells River, County-wide	Thunderstorms with pockets of damaging winds and large hail. At its peak, roughly 20k customers lost power. Newbury received .61 inches of rain in 24 hours. 26 GMP customers lost power for 2.65 hours.

7/4/2012*	✓			✓	✓	Newbury, Wells River; County-wide	A moderately strong upper level disturbance ahead of a surface cold front moved through Vermont on July 4. Storm caused widespread wind damage and frequent lighting. Several trees were downed along Route 5. Newbury received .3 inches of rain in 24 hours. 72 GMP customers lost power for 2.35 to 3.68 hours.
8/28/2011 (DR-4022 VT)	✓	✓		✓		County-wide	Tropical Storm Irene prompted wide-spread, devastating flooding throughout the region. Newbury received 6.79 inches of rain in 48 hours. Newbury had $49,074.88 in damages. Only minimal power outages occurred in Newbury with isolated incidents affecting singular GMP customers for durations ranging from one hour to 7 hours.
06/09/2011	✓		✓	✓		County-wide	Scattered thunderstorms and a few isolated reports of damaging winds and large hail were reported. Widespread power outages occurred in Newbury, in which 377 GMP customers were affected for 1.14 hours. .33 inches of rain fell in Newbury.
05/26/2011-05/27/2011 (DR-4001 VT)	✓	✓		✓		County-wide	Region struck by severe storms and flooding. Minimal damage occurred in Newbury. Newbury received .3 inches of rain in 24 hours. 10 GMP customers were affected in
07/21/2010	✓		✓	✓		Newbury, Wells River; County-wide	Thunderstorms hit the area along with high winds, developing into supercells that caused widespread damage to trees, power poles and structures. Also, golf ball-sized hail. Thunderstorm winds damaged a farm along Rt. 5, including flattening one barn and severely damaging others. No significant precipitation and power outages occurred in Newbury.
5/31/2009	✓		✓	✓		County-wide	40-55mph wind gusts and hail caused fallen trees and power outages in the region. 508 GMP customers lost power for 6.23 hours, and 54 GMP customers lost power for durations longer than 10 hours. Newbury received 1.21 inches of rain in 24 hours.

7/21/2008-8/12/2008 (DR-1790 VT)*	✓			✓		County-wide	Thunderstorms with heavy rainfall in a moist atmosphere moved through central and southern Vermont during the afternoon and evening hours. Newbury reported $34,000 in damage. Newbury received 2.6 inches of rain in 24 hours with an additional 1.22 inches of rain in the previous 24 hours. No significant power outages occurred.
07/09/2007-07/11/2007 (DR-1715 VT)	✓		✓	✓	✓	Wells River; Newbury; county-wide	An area of low pressure moved across Canada and south to Vermont causing thunderstorms, hail, winds, and lighting. Newbury experienced 1.65 inches of rain in 24 hours, but significant power outages did not occur.
8/30/2007	✓		✓	✓		Newbury; Wells River; County-wide	A cold front moved through a warm and unstable airmass across southern and eastern Vermont. A few widely scattered thunderstorms moved across the region with nickel sized hail in Wells River. 18 GMP customers lost power for 1.65 hours, but 11 GMP customers lost power for longer durations with some outages lasting 38 hours.
04/15/2007-04/21/2007 (DR-1698 VT)	✓	✓		✓		County-wide	Severe storms and flooding impacted Orange and surrounding counties. 7.5 inches of wet heavy snow mixed with warming temperatures led to flooding. 12 GMP customers in Newbury lost power for 70 hours.
7/18/2006	✓			✓		County-wide	A strong mid-level atmospheric disturbance moved into a marginally unstable airmass across Vermont to cause severe thunderstorms. The thunderstorm knocked down trees along Interstate 91 in Newbury. 26 GMP customers lost power for 1.43 hours. Specific precipitation data was unavailable for this event.
8/2/2006	✓			✓	✓	County-wide	A mid-atmospheric disturbance moved into a very warm, humid and unstable airmass across Vermont during the afternoon of the 2nd, which lead to the development of scattered thunderstorms. Some of these thunderstorms were locally severe and produced damaging winds that knocked down trees, powerlines and a tree on a mobile home along Route 5 in Newbury. 49 GMP customers lost power for an hour while another 45 GMP customers lost power for 4.3

							hours. Specific precipitation data was unavailable for this event.
07/21/2003-08/18/2003 (DR-1488 VT)	✓	✓		✓		County-wide	Severe storms and flooding impacted Orange and surrounding counties. Specific precipitation and outage data was unavailable for this event.
07/14/2000-07/18/2000	✓	✓		✓		County-wide	Severe storms and flooding impacted Orange and surrounding counties.
8/30/2007	✓		✓	✓		Newbury; Wells River; County-wide	A cold front moved through a warm and unstable airmass across southern and eastern Vermont. A few widely scattered thunderstorms moved across the region with nickel sized hail in Wells River. 18 GMP customers lost power for 1.65 hours, but 11 GMP customers lost power for longer durations with some outages lasting 38 hours.
04/15/2007-04/21/2007 (DR-1698 VT)	✓	✓		✓		County-wide	Severe storms and flooding impacted Orange and surrounding counties. 7.5 inches of wet heavy snow mixed with warming temperatures led to flooding. 12 GMP customers in Newbury lost power for 70 hours.
7/18/2006	✓			✓		County-wide	A strong mid-level atmospheric disturbance moved into a marginally unstable airmass across Vermont to cause severe thunderstorms. The thunderstorm knocked down trees along Interstate 91 in Newbury. 26 GMP customers lost power for 1.43 hours. Specific precipitation data was unavailable for this event.
8/2/2006	✓			✓	✓	County-wide	A mid-atmospheric disturbance moved into a very warm, humid and unstable airmass across Vermont during the afternoon of the 2nd, which lead to the development of scattered thunderstorms. Some of these thunderstorms were locally severe and produced damaging winds that knocked down trees, powerlines and a tree on a mobile home along Route 5 in Newbury. 49 GMP customers lost power for an hour while another 45 GMP customers lost power for 4.3 hours. Specific precipitation data was unavailable for this event.

07/21/2003-08/18/2003 (DR-1488 VT)	✓	✓		✓		County-wide	Severe storms and flooding impacted Orange and surrounding counties. Specific precipitation and outage data was unavailable for this event.
07/14/2000-07/18/2000 (DR-1336 VT)	✓	✓		✓		County-wide	Severe storms and flooding impacted Orange and surrounding counties. Specific precipitation and outage data was unavailable for this event.
9/16/1999-9/21/1999 (DR-1307 VT)	✓	✓		✓		County-wide	Tropical Storm Floyd's rains and winds caused road and culvert washouts. Specific precipitation and outage data was unavailable for this event.
7/6/1973 (DR-397 VT)		✓		✓		County-wide	One of the largest flood events of the 20th century in VT. Landslides reported in the region.
11/3/1927	✓	✓				County-wide	"Great Flood of 1927." Worst recorded flood in VT. The White River crested at a record of 29.30 feet.

The Town of Newbury is very prone to strong winds, particularly microburst events that sweep through the region. Power outages are the most common occurrence in the wake of such wind events, usually occurring as a result of tree limbs falling on local power lines.

The other main hazard caused by severe weather throughout the Town is flooding. The most recent major flooding event to occur in the region was in the summer of 2013. Severe storms brought heavy rain and strong winds over a three-week period in late June and early to mid-July. The flooding was widespread and severe enough for a federal Disaster Declaration, DR-4140 VT, to be issued for Orange and other counties in Vermont. The Town of Newbury and Village of Wells River were impacted by this event, and sustained power outages and heavy rainfall

There are 2,616 acres of floodplain in Newbury, with no mapped floodway. Six percent of the Town is the floodplain. There are 47 total properties that are located within the special flood hazard areas. These consist of 36 single-family residences, 2 multi-family residences, 1 lodging facility, 5 camps, 2 commercial properties, and 1 mobile home. If all of these properties were destroyed in a flood, the resulting damage would equal approximately $6,496,810.

The Town has not yet undergone a comprehensive culvert inventory, but received a Better Roads grant from the Vermont Agency of Transportation in 2016 to conduct one. This inventory will help the Town to

identify and prioritize culverts to upgrade and upsize. This work to upgrade culverts will help to lessen the adverse impacts of flooding events that are often attributable to severe storms. There are a number of existing culverts the Town intends to upgrade in the near future. There are no repetitive loss structures in the Town of Newbury on FEMA's NFIP list.

Hazard	Location	Vulnerability	Extent	Observed Impact	Likelihood/ Probability
Severe Weather	Village of Wells River and Town-Wide for wind, hail, high winds, lightning and thunderstorm impacts. The following areas are regularly or sometimes impacted by flooding: Wells River Village; sections and properties along Route 302 that border the Wells River; Route 5; Wallace Hill Road; Swamp Road.	Town and private buildings, and utilities; culverts, bridges, road infrastructure. There are 47 total properties that are located within the special flood hazard areas. These consist of 36 single-family residences, 2 multi-family residences, 1 lodging facility, 5 camps, 2 commercial properties, and 1 mobile home. If all of these properties were destroyed in a flood, the resulting damage would equal approximately $6,496,810.	During Tropical Storm Irene- 5-6" of rainfall in Newbury.	$49,074.88 in damage total for Newbury according to FEMA's Public Assistance database (captures at least 70% of total damage).	Highly likely

C. Vulnerability Summary

As a result of the above profile of hazards, the town believes the following vulnerabilities to be of highest concern because of their potentially severe consequences and potential likelihood:

- **Flooding**: One of the worst threats, flooding impacts roads and the village, especially facilities for children, elders, and low-income housing. Under-sized bridges and culverts factor into the threat, as do outdated flood hazard mapping for Orange County. Furthermore, flood hazard mapping (Special Flood Hazard Areas) does not adequately encompass all areas that could be flooded, thus potentially making some residents too complacent in regard to the threat. There are numerous homes, public facilities, and commercial facilities are located in the 500 year floodplain and could be impaired in a major flooding event. Vulnerable structures to flooding and severe weather include Wells River Motel, the Catamount Quill Studio, Dads 4 by Tool & Supply, Placey Associates, Wells River Chevy, Happy Hour Restraint, Gateway Sports, Wells River Savings Bank, Wells River Welcome Center, the Post Office, the Wells River Volunteer Fire Station, and many residential structures, which are located within the mapped Vermont River Corridor. The Village of Wells River is especially vulnerable to flooding and fluvial erosion and is the location of several actively failing streambanks.
- **Hazardous Materials**: A truck traffic accident on Route 302, Route 5, and Interstate 91, especially at the intersection of Route 5 and Route 302, could cause a major spill. A railroad accident could also present a major spill and hazard to Newbury and the Village of Wells River.
- **Structure Fire:** Structure fires routinely cause property damage and pose hazards to residents of Newbury and Wells River.
- **Extreme Cold/Snow/Ice Storm:** Lack of access to power and telecommunication services throughout the Town could severely impede response efforts and could be especially harmful to vulnerable populations (e.g., the elderly and disabled).
- **Invasive Species**: Native biota and habitats could be severely damaged, if not destroyed. Invasive species pose a rise to the many agricultural and silvicultural businesses that currently thrive in the Town.
- **Severe Summer Weather**: Damage to public and private property and municipal infrastructure can be extensive during severe weather events. Prolonged power outages and downed cellular communications can greatly hamper public and business services for indeterminate periods of time. There are numerous homes, public facilities, and commercial facilities are located in the 500 year floodplain and could be impaired in a major severe weather event. Vulnerable structures to flooding and severe weather include the Wells River Motel, Catamount Quill Studio, Dads 4 by Tool & Supply, Placey Associates, Wells River Chevy, Happy Hour Restraint, Gateway Sports, Wells River Savings Bank, Wells River Welcome Center, the Post Office, the Wells River Volunteer Fire Station, and many residential structures, which are located within the mapped Vermont River Corridor. The Village of Wells River is especially vulnerable to flooding and fluvial erosion, and is the location of several actively failing streambanks.

VI. Mitigation

A. Mitigation Goals

- To reduce injury and losses, including loss of life and to infrastructure, structures and businesses, from the natural hazard of flash flooding, flooding and fluvial erosion.
- To reduce injury and losses, including loss of life and to infrastructure, structures and businesses, from the hazard of hazardous material spill(s).
- To reduce injury and losses, including loss of life and to infrastructure, structures and businesses, from the natural hazard of structural fire(s).
- To reduce injury and losses, including loss of life and to infrastructure, structures and businesses, from the natural hazard of extreme cold/snow/ice storm(s).
- To reduce injury and losses, including loss of life and to infrastructure, structures and businesses, from the natural hazard of severe summer weather events.

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

- Plan development so as to maintain the historic settlement pattern of Newbury's town center, villages, hamlets, and surrounding rural countryside (p. 5).
- Provide Newbury with a strong and diverse economy that provides rewarding job opportunities while maintaining high environmental standards (p. 5).
- Protect and preserve important natural and historic features of Newbury (p. 6).
- Preserve the quality of air, water, wildlife and land resources in Newbury (p. 6).
- Provide for the wise and efficient use of Newbury's natural resources including lands used in solid waste disposal and earth resources extraction; and facilitate proper site restoration and preservation of the aesthetic qualities of the area (p. 6).
- Plan for, finance, and provide an efficient system of public facilities/utilities to meet future community needs (p. 6).
- Provide for safe, convenient, economic and energy efficient transportation systems that respect the integrity of the natural environment (p. 6).
- Enhance and maintain the use of flood hazard areas as open space, greenways, noncommercial recreation, and/or agricultural land (p. 15).
- Ensure no net loss of flood storage capacity in an effort to minimize potential negative impacts. These impacts include the loss of life and property, disruption of commerce, and demand for extraordinary public services and expenditures that result from flood damage (p. 15).
- The preferred uses for flood hazard areas shall be for open space, greenbelts, pastureland, recreational and agricultural uses.
- Any land use activity (filling or removal of earth or rock) within flood hazard areas which would result in net loss of flood storage or increased or diverted flood levels or increased risk to adjacent areas shall be prohibited.
- Utilities or facilities serving existing development (e.g. water lines, electrical service, waste disposal systems, roads, and bridges) may be located within these areas only when off-site options are not feasible and provided that these utilities or facilities meet the flood proofing requirements in Newbury's Zoning Regulations.

- The Town shall maintain its membership in the National Flood Insurance Program.
- The Town shall recognize that upland areas adjacent to unstable rivers and to steep streams may be at risk of erosion during floods.
- No new structural development (except development exempted by state law, such as agriculture) shall occur in the Flood Hazard Area.
- Ensure the safety and protection of the citizens of Newbury (p. 44).

The Newbury Municipal Plan was updated and adopted on 08/19/2015 and has an 8-year lifespan. It will be updated in 2023.

C. Hazard Mitigation Strategies: Programs, Projects & Activities

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

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 provide assistance 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, Newbury'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 (includes economic, political, environmental, technical, social, administrative, and legal criteria). A range of mitigation strategies was vetted by the committee, and those that were determined to be feasible are included in the table below.

Strategies given a "High" prioritization indicate 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.

The Town of Newbury and Village of Wells River understand that, in order to apply for FEMA funding for mitigation projects, a project must meet more formal FEMA benefit cost criteria. A project seeking FEMA funds would undergo a full benefit-cost assessment in the FEMA-approved format. The Town must have a FEMA-approved Local Hazard Mitigation Plan as well.

The following strategies will be incorporated into the Town of Newbury's and Wells River'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 shall also consider reviewing any future TRORC planning documents for ideas on future mitigation projects and hazard areas.

Hazard Mitigation Actions	Local Leadership	Prioritization	Possible Resources*	Time Frame
All Hazards				
Ensure that Newbury's Local Emergency Operations Plan (LEOP) is kept up-to-date and identifies vulnerable areas and references this Plan.	Emergency Management Coordinator/ Selectboard	High	Vermont Division of Emergency Management and Homeland Security (VT DEMHS); TRORC; local resources	Yearly
Maintain highway mutual aid agreements.	Highway	High	Local resources and with assistance from TRORC	Every 3 years
Maintain fire mutual aid agreements.	Fire Department	High	Local resources and with assistance from TRORC	Yearly
Ensure local store of emergency supplies is stocked with cots, blankets, and MRE (Meals Ready to Eat).	Emergency Management Coordinator	High	Vermont Division of Emergency Management and Homeland Security (VT DEMHS); VT Alert; local resources	Yearly
Move supplies (cots, blankets, and MREs) from Mustard Seed thrift shop to Red Cross shelters in case of an emergency.	Emergency Management Coordinator	High	Local resources	If needed
Continue to work with the Regional Planning Commission and state officials to maintain up-to-date hazard data, maps, and assessments; and to identify the most at-risk critical facilities and evaluate potential mitigation techniques.	Selectboard, EMD	High	Vermont Division of Emergency Management and Homeland Security (VT DEMHS); TRORC; local resources	Annually

Replace three stone culverts on Swamp Road that are in poor condition and are structurally unsound. *Upgraded culverts appropriately handle the hydraulic capacity of streams and therefore protect town infrastructure from flooding.*	Selectboard	Medium	VTrans; local resources; HMGP Repetitive Loss Grant	Summer 2023-Fall 2024
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.*	Emergency Management Coordinator/ Selectboard	Medium	Vermont Division of Emergency Management and Homeland Security (VT DEMHS); TRORC; local resources	Continuously
Develop a methodology based on FEMA recommendations to consistently document infrastructure damage after weather events.	Road Foreman/ Town Clerk	Medium	TRORC; local resources; National Weather Service; VTrans	As new FEMA recommendations are released
Flash Flood/Flood/ Fluvial Erosion				
Adhere to the terms of the Municipal Roads General Permit to improve infrastructure to ensure long term mitigation of damage to town owned property from flood waters.	Selectboard, Highway Foreman	High	Local Resources, GIA, VTrans	Annually

Conduct a road erosion inventory to document erosion sections on Town road infrastructure to prepare for Municipal Roads General Permit and to improve infrastructure to ensure long term mitigation of damage to town owned property from flood waters.	Selectboard, Highway Foreman	High	Local Resources, GIA, VTrans, Two Rivers	Summer 2027
Keep up-to-date with Vermont Road and Bridge Standards, which will help Newbury and Wells River design structures that mitigate flood damage.	Road foreman/ Selectboard	High	Local resources	Spring 2023- Summer 2029 (or when they are updated by VTrans)
Replace culvert in poor condition on Leighton Hill Road. *Upgraded culverts appropriately handle the hydraulic capacity of streams and therefore protect town infrastructure from flooding.*	Selectboard, Highway Foreman	Medium	VTrans Structures grants, local resources	Spring/Summer 2023
Replace large culvert/bridge (#39) on Rogers Hill. *Upgraded culverts appropriately handle the hydraulic capacity of streams and therefore protect town infrastructure from flooding.*	Selectboard, Highway Foreman	Medium	VTrans Structures grants, local resources	2023-2024
Support projects to protect or restore, including riparian planting, strategic areas of floodplain to provide areas for flood storage, which will help alleviate peak flood flows and reduce the loss of property during a flood.	Selectboard/ Planning Commission	Medium	Upper Valley Land Trust; Upper Valley Trout Unlimited; local resources	Spring 2021- Fall 2021
Consider prohibiting the removal of natural vegetation along streambanks.	Selectboard, Conservation Commission	Low	Local resources, TRORC	2024

Riparian vegetation improves stream floodplains and also reduces the damaging effects of stream channel erosion on town and private infrastructure.				
Hazardous Material Spills				
Continuously check and stock gear to help contain small spills when they occur (booms, absorbent materials, etc.).	Newbury Fire Department	High	Newbury Fire Department resources	Yearly
Inspect spill containment and traffic control equipment after every spill or annually to ensure that adequate stock of mitigants is maintained.	Newbury and Wells River Fire Departments, EMS	Medium	VTrans, local resources	Annually
Ensure that all emergency response and management personnel continue to receive HAZMAT Awareness training at a minimum.	Newbury Fire Department	High	Newbury Fire Department resources	Yearly
Formalize Spill Containment Policy currently followed by EMD and Fire Department.	EMD, Selectboard	Medium	Local resources	Winter 2023-Spring 2024
Review Spill Containment Policy and LHMP for utility after a spill event to ensure that the policies and plans meet the needs of the Fire Departments, First Responders, and Road Crew.	EMD, selectboard	Medium	Local resources, TRORC	Annually
Structural Fire				
Distribute fire prevention fliers at the school to protect young residents from loss of life during fires.	Fire Chief/Fire Department	High	Local resources	Annually in fall
Add dry hydrants where needed to mitigate the effect of structural fires	Fire Department, EMD	Medium	TRORC; local resources; National Weather Service; VTrans	Summer 2023-Fall 2023

Enlist statewide fire education trailer for use at Newbury Elementary and at community events, which will help residents identify fire hazards in their homes.	Fire Chief/Fire Department	Medium	Local Resources, Vermont Division of Public Safety: Division of Fire Safety	Annually
Extreme Cold/Snow/ Ice Storm				
Work with utility companies to clear and maintain utility corridors, which will protect town and utility infrastructure.	EMD	High	Utility companies; local resources	Annually in fall/winter
Plan for, budget, and maintain roads for safe winter travel.	Selectboard	High	Local resources	Ongoing and occurs yearly
Maintain town road rights-of-way to protect town infrastructure.	Highway Department/ Selectboard	Medium	Local resources	Annual
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.*	Selectboard, Emergency Management Coordinator	Medium	Local resources	Ongoing and occurs yearly.
Invasive Species/ Infestation				
Formalize Invasive Species Management best practices for seasonal mowing. *Formalizing mechanical control method best practices will increase the likelihood of the practices being implemented.*	Road Foreman, Conservation Commission	Medium	Local Resources	Summer 2025-Fall 2025

Communicate Invasive Species Management best practices with contracted road crews. Implementing mechanical control method best practices will reduce the spread of invasive species.	Road Foreman, Conservation Commission	Medium	Local Resources	Bi-Annually (twice a year)
Develop and distribute invasive species informational materials to residents, such as through the Town website, listing in the Town Report, or mailed with tax bills.	Conservation Commission	Medium	Local resources, TRORC	Annually
Road crew and volunteer efforts will coordinate to schedule mechanical control events to eradicate invasive species.	Road Foreman, Conservation Commission	Medium	Local Resources	Every summer
Severe Summer Weather				
Develop a periodic program to clear tree limbs and maintain town road rights-of-way, and work with local utilities to ensure that utility corridors are cleared and maintained. *This will reduce vulnerability to power outages should there be a severe wind event.*	Selectboard	High	Green Mountain Power; Washington Electric; local resources	1 year from date of Plan Approval

*Depending on the mitigation action, local resources may include the following: personnel/staff time; volunteer time; budget line items, donations, cash from capital campaigns, among others.

Appendices

Appendix A: Hazard Ranking Methodology

Frequency of Occurrence Probability	Warning Time Amount of time generally given to alert people to hazard	Potential Impact Note: Severity of damage and disruption generally correlates with magnitude (extent) of event
1 = *Unlikely* <1% probability of occurrence in the next 100 years 2 = *Occasionally* 1–10% probability of occurrence per year, or at least one chance in next 100 years 3 = *Likely* >10% but <100% probability per year, at least 1 chance in next 10 years 4 = *Highly Likely* 100% probable in a year	1 = More than 12 hours 2 = 6–12 hours 3 = 3–6 hours 4 = None–Minimal	1 = *Negligible* Isolated occurrences of minor property damage, minor disruption of critical facilities and infrastructure, and potential for minor injuries 2 = *Minor* Isolated occurrences of moderate to severe property damage, brief disruption of critical facilities and infrastructure, and potential for injuries 3 = *Moderate* Severe property damage on a neighborhood scale, temporary shutdown of critical facilities, and/or injuries or fatalities 4 = *Major* Severe property damage on a metropolitan or regional scale, shutdown of critical facilities, and/or multiple injuries or fatalities

Appendix B: Critical Stream Crossings

Critical crossings group one includes stream crossing structures on town highways that cross third order streams or larger. Headwater streams generally include first through third order. Third order was included as these headwater streams will have larger drainage areas and may have larger structures that are more difficult to replace and have a larger impact on the road network. Most of these are bridges.

Road Name	Latitude	Longitude	State Id	Bridge~~/~~ (B) Culvert (C)	Bank full Width (Feet)	Town Highway Code
TYLER FARM RD	44.06047306	-72.12264492	B66	B	2	1
TYLER FARM RD	44.05988835	-72.10216987	B13	B	0	1
TYLER FARM RD	44.04860764	-72.08667378	87	C	10	1
SWAMP RD	44.15527828	-72.16795104	B5	B	0	2
SWAMP RD	44.17855191	-72.14621264	B10	B	6	2
SWAMP RD	44.14364536	-72.17439907	412	C	2	2
SWAMP RD	44.15915953	-72.16626497	429	C	13	2
SWAMP RD	44.11212046	-72.19270336	364	C	7	2
FISH POND RD	44.11143194	-72.12803344	B45	B	0	25
BOLTONVILLE RD	44.17062864	-72.09962561	B15	B	40	3
SCOTCH HOLLOW RD	44.09974812	-72.11261301	B62	B	18	4
SCOTCH HOLLOW RD	44.12577058	-72.14212967	B35	B	22	4
SCOTCH HOLLOW RD	44.0999879	-72.11402819	B60	B	0	4
BOWEN RD	44.11226584	-72.1861264	B25	B	0	41
BOWEN RD	44.07630628	-72.20327065	273	C	11	41
DARLING RD	44.08914854	-72.19560849	332	C	6	42
GAHN RD	44.09213703	-72.1901345	337	C	6	43
HALLS LAKE RD	44.09909712	-72.11685419	B68	B	23	49
PEACH BROOK RD	44.08480348	-72.09987796	B63	B	21	50
PEACH BROOK RD	44.07390991	72.09522702	B65	B	11	50
PEACH BROOK RD	44.05232408	-72.09276825	B16	B	21	50
MOORE HILL RD	44.06584719	-72.09617287	B6	B	11	56
TUCKER MTN RD	44.0697681	-72.13977176	B82	B	13	58
TUCKER MTN RD	44.09525275	-72.13867266	B29	B	0	6
FULTON RD	44.06120567	-72.1836793	B37	B	19	62
UPPER ROGERS RD	44.05918643	-72.12412738	B52	B	5	67
UPPER ROGERS RD	44.05793803	-72.12659705	B39	B	0	67
DOE HILL RD	44.04635383	-72.08150484	75	C	4	84
CESARI RD	44.1770747	-72.14873432	B64	B	14	9

Critical crossings group two includes significantly undersized structures, all culverts, which were identified from the ANR-DEC stream geomorphic assessment survey with openness ratios less than 50%. This measure refers to when structure's width is less than half of the streambank full width. Several of these structures may have been damaged during TS Irene or other events and may have been replaced. The town, at some point, should look at these sites and assess their status and need for repair/upgrades.

Road Name	Latitude	Longitude	AOP	Length	Height	Width	Material	Bankfull Width	Openness Ratio
BAILEY POND RD	44.1716	-72.13981	Gray	24	12	24	Stone	25	0.08
BAILEY POND RD	44.17378	-72.14284	Red	30	41	41	Steel Corrugated	34	0.39
BALDWIN RD	44.13136	-72.0455	Gray	30	24	48	Plastic Corrugated	31.7	0.27
BIBLE HILL RD	44.1567	-72.05726	Red	32	18	18	Steel Corrugated	12.5	0.07
BIBLE HILL RD	44.16038	-72.06596	Red	30	18	18	Plastic Corrugated	25	0.08
BIBLE HILL RD	44.15607	-72.05466	Green	75	48	48	Steel Corrugated	40	0.21
BOWEN RD	44.09158	-72.19051	Red	30	18	18	Steel Corrugated	23.8	0.08
BOWEN RD	44.09418	-72.18776	Red	40	24	24	Steel Corrugated	26	0.1
BOWEN RD	44.07687	-72.20132	Gray	35	24	24	Steel Corrugated	54.1	0.11
BOWEN RD	44.08815	-72.1972	Gray	34	24	24	Steel Corrugated	40	0.12
BOWEN RD	44.09211	-72.18995	Gray	42	42	42	Steel Corrugated	37.6	0.29
BOWEN RD	44.09294	-72.18935	Gray	40	42	42	Steel Corrugated	37.6	0.31
COLE RD	44.05165	-72.11407	Gray	30	24	24	Plastic Corrugated	25	0.13
COREY HILL RD	44.13542	-72.17302	Gray	30	14	14	Steel Corrugated	20	0.05
DICKEY RD	44.06186	-72.17877	Red	26	36	36	Steel Corrugated	51.7	0.35
FISH POND RD	44.12	-72.12483	Red	24	24	24	Steel Corrugated	40	0.17
FISH POND RD	44.11943	-72.12491	Gray	27	24	28	Steel Corrugated	16.4	0.17
FULLER RD	44.11226	-72.18637	Gray	78	72	67	Steel Corrugated	31.8	0.43
GOLF LINKS RD	44.16285	-72.078	Red	20	30	30	Steel Corrugated	14.7	0.31
JEFFERSON HILL RD	44.1634	-72.13086	Red	25	42	42	Concrete	26.9	0.49
LEIGHTON HILL RD	44.15326	-72.08877	Gray	30	30	30	Steel Corrugated	31.3	0.21
LEIGHTON HILL RD	44.10156	-72.11119	Red	20	36	36	Steel Corrugated	20	0.45

Road Name	Latitude	Longitude	AOP	Length	Height	Width	Material	Bankfull Width	Openness Ratio
MOORE HILL RD	44.06584	-72.07611	Gray	38	36	36	Steel Corrugated	44.8	0.24
NEWBURY CENTER RD	44.11619	-72.137	Gray	32	16	16	Steel Corrugated	18.6	0.05
NEWBURY CENTER RD	44.1166	-72.13813	Red	32	17	17	Steel Corrugated	15.6	0.06
NORTH RD	44.07497	-72.12918	Red	60	24	24	Steel Corrugated	33.3	0.07
NORTH RD	44.07952	-72.1308	Red	30	24	24	Plastic Corrugated	23.5	0.13
NORTH RD	44.08842	-72.13539	Gray	25	24	24	Steel Corrugated	20	0.16
O'GORMAN RD	44.04339	-72.12688	Gray	25	37	37	Steel Corrugated	29.5	0.38
PEACH BROOK RD	44.06171	-72.09297	Gray	35	14	14	Steel Corrugated	12	0.04
PEACH BROOK RD	44.05946	-72.09348	Red	35	17	17	Steel Corrugated	0	0.06
PEACH BROOK RD	44.06149	-72.09267	Gray	32	18	18	Steel Corrugated	21.4	0.07
PEACH BROOK RD	44.06112	-72.09309	Red	20	24	24	Plastic Corrugated	28.6	0.2
ROUND BARN RD	44.12886	-72.04707	Gray	60	60	60	Concrete	41.7	0.42
SCOTCH HOLLOW RD	44.11672	-72.13733	Red	39	16	16	Steel Corrugated	16.2	0.04
SCOTCH HOLLOW RD	44.11767	-72.13784	Red	22	17	17	Steel Corrugated	20	0.09
SCOTCH HOLLOW RD	44.17502	-72.11906	Gray	78	36	36	Steel Corrugated	27.3	0.12
SCOTCH HOLLOW RD	44.0926	-72.09303	Red	70	36	36	Plastic Corrugated	75	0.13
SCOTCH HOLLOW RD	44.09262	-72.09309	Gray	45	36	36	Plastic Corrugated	27.3	0.2
SCOTCH HOLLOW RD	44.11263	-72.13281	Red	30	30	30	Steel Corrugated	27.8	0.21
SCOTCH HOLLOW RD	44.11312	-72.13313	Gray	27	29	29	Steel Corrugated	34.3	0.21
SCOTCH HOLLOW RD	44.0995	-72.11139	Gray	42	36	36	Concrete	25	0.21
SCOTCH HOLLOW RD	44.09944	-72.11134	Gray	38	36	36	Plastic Corrugated	60	0.24
SCOTCH HOLLOW RD	44.12195	-72.14055	Red	26	36	36	Steel Corrugated	30	0.35
SCOTCH HOLLOW RD	44.09227	-72.07684	Gray	109	84	84	Steel Corrugated	50	0.45
SCOTCH HOLLOW RD	44.08501	-72.06965	Red	110	96	79	Steel Corrugated	37.3	0.48
SCOTCH HOLLOW RD	44.08667	-72.07121	Red	93	72	92	Steel Corrugated	36.2	0.5
SNAKE RD	44.04995	-72.09175	Gray	0	48	48	Steel Corrugated	0	0
SNAKE RD	44.0599	-72.10232	Red	0	108	192	Steel Corrugated	72.7	0

Road Name	Latitude	Longitude	AOP	Length	Height	Width	Material	Bankfull Width	Openness Ratio
SNAKE RD	44.06372	-72.11845	Gray	30	12	12	Plastic Corrugated	25	0.03
SNAKE RD	44.06368	-72.11822	Gray	20	12	12	Steel Corrugated	25	0.05
SNAKE RD	44.0499	-72.09158	Red	50	48	48	Steel Corrugated	30.8	0.32
SWAMP RD	44.12308	-72.18089	Gray	35	12	26	Steel Corrugated	17.9	0.06
SWAMP RD	44.16893	-72.16194	Gray	35	18	18	Plastic Corrugated	20	0.06
SWAMP RD	44.12499	-72.18056	Gray	26	18	18	Steel Corrugated	23.1	0.09
SWAMP RD	44.11677	-72.18447	N/A	26	36	36	Arches & Slabs	47.6	0.35
TOPSHAM RD	44.1367	-72.17904	Red	28	18	18	Plastic Smooth	37.5	0.08
TOPSHAM RD	44.13712	-72.17526	Gray	32	23	23	Plastic Corrugated	31.7	0.11
TOPSHAM RD	44.13521	-72.18154	Red	40	36	36	Steel Corrugated	37.5	0.22
TOPSHAM RD	44.13748	-72.17598	Gray	30	43	43	Tank	36	0.43
TUCKER MTN RD	44.06873	-72.13603	Gray	41	18	18	Steel Corrugated	13.6	0.05
TUCKER MTN RD	44.06837	-72.13469	Gray	49	24	24	Steel Corrugated	25	0.08
TUCKER MTN RD	44.07013	-72.14197	Gray	41	22	24	Steel Corrugated	22.2	0.09
TYLER FARM RD	44.04644	-72.12051	Gray	40	18	18	Plastic Corrugated	21.4	0.06
UPPER ROGERS RD	44.05097	-72.15435	Gray	30	18	18	Plastic Smooth	18.8	0.08
UPPER ROGERS RD	44.05112	-72.15467	Red	30	18	18	Plastic Smooth	21.4	0.08
UPPER ROGERS RD	44.04849	-72.13993	Gray	40	24	24	Steel Corrugated	25	0.1
UPPER ROGERS RD	44.04918	-72.14835	Gray	24	30	30	Steel Corrugated	50	0.26
URQUHART RD	44.07553	-72.14302	N/A	25	24	24	Steel Corrugated	26.7	0.16
WALLACE HILL RD	44.09312	-72.07687	Red	80	36	36	Plastic Smooth	100	0.11
WALLACE HILL RD	44.12028	-72.07551	Red	40	36	36	Plastic Corrugated	26.1	0.22
WALLACE HILL RD	44.10803	-72.07684	Gray	30	37	37	Steel Corrugated	41.3	0.32
WRIGHTS MOUNTAIN RD	44.05213	-72.15656	Orange	20	36	36	Steel Corrugated	30	0.45

Appendix C: Five-Year Review and Maintenance Plan

Five-Year Local Hazard Mitigation Plan Review/Maintenance

Adopt

- Brief local leadership on plan approval
- Formally adopt plan
- Publicize plan approval and adoption
- Celebrate success

Implement

- Confirm/clarify responsibilities
- Integrate mitigation actions
- Monitor & document implementation of projects and actions
- Estblish indicators of effectiveness or success

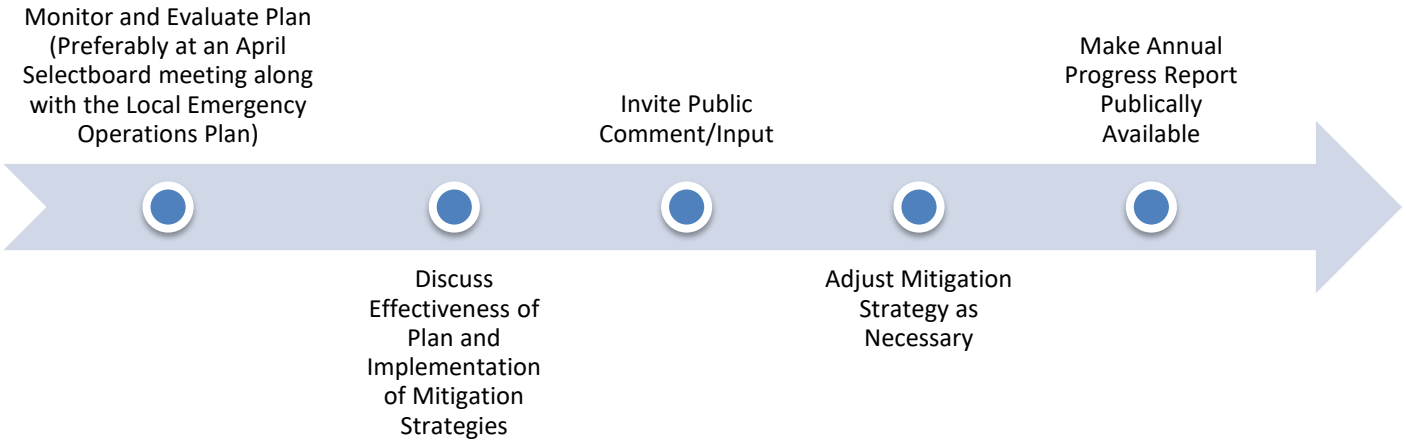
Evaluate

- Effectiveness of planning process
- Effectiveness of actions
- Document success & challenges of actions
- Update and involve community
- Celebrate successes

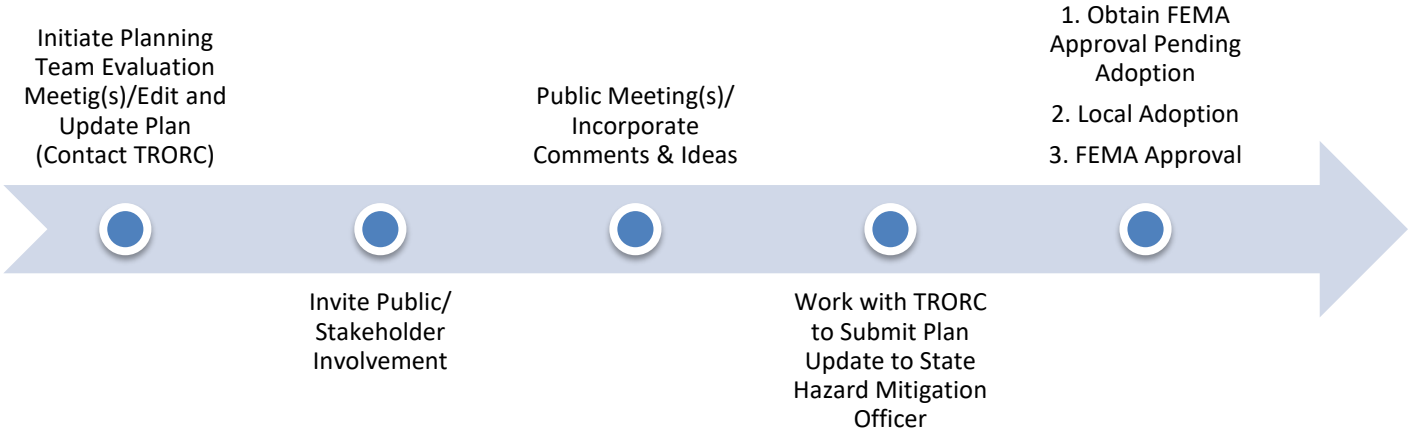
Revise

- Review factors affecting community's context
- Analyze findings; determine whether to revise planning process or strategy
- Incorporate findings into the plan

After Plan Adoption—Annually
Implement & Evaluate



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



Attachments

Attachment A: Map of the Town of Newbury and Village of Wells River