LOCAL HAZARD MITIGATION PLAN

TOWN OF GUILDHALL, VERMONT

2025

FEMA Approval Pending Adoption Date

Municipal Adoption Date:

FEMA Formal Approval Date:

Prepared by the Guildhall Local Hazard Mitigation Planning Committee	
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Technical Assistance by SEAM Solutions LLC

Key Partners	
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Table of Contents

1 INTRODUCTION

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

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

2 PURPOSE

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

Figure 1- FEMA LHMP Skill Share Workshop 2021

3 COMMUNITY PROFILE

Land Use – Land Features - Development Patterns

Guildhall is a rural community located in the northern Connecticut River Valley, 35 miles east of St. Johnsbury in the southern part of Essex County. It is square in shape, six miles on a side, except for the irregularity of the river, and encompasses 23,043 acres, of which about ninety percent is mountainous forest land rising to a height of 2,753 feet at Stone Mountain. The remainder, lying along the Connecticut River on its eastern flank is relatively flat and used for agriculture and residences. The elevation there ranges around 850 feet above mean sea level.

In the center of the village is an area of great historic charm, architectural merit and scenic beauty; it includes the Guildhall Common, Court House Hill Cemetery, the Guild Hall, the Essex County Courthouse and Eben Judd Justice Center, Meeting House formerly Community Church, the former Colonel E. C. Benton Summer Home, the Guildhall Public Library/ Masonic Building, Guildhall Village General Store, Veteran's Memorial, the fountain located on the triangle, Historic Guildhall Sign and the river portage trail on the site of the old dam.

The north side of Route 102 to the west of the existing village and behind Court House Hill and coming back out on 102 south of Mason's and recreation and public facilities seems the most suitable for residential expansion. These areas have convenient access to the village center and can be serviced easily by municipal water, power and phone lines, have good soil conditions, and development can be set back from the main highway and encourage the feeling of a compact village.

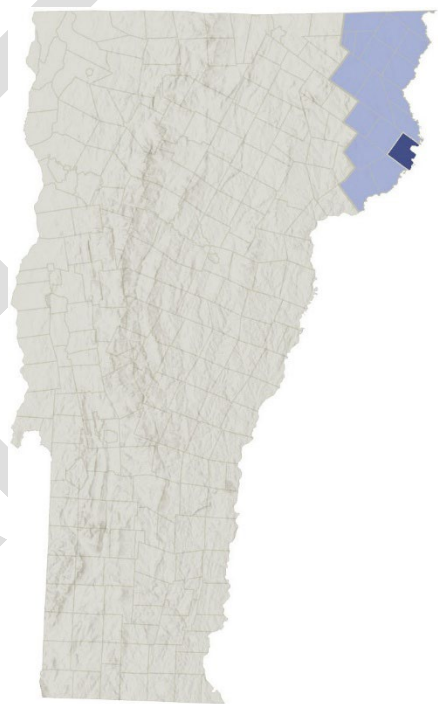


Figure 2 - State map locating Guildhall

Agricultural open space accounts for about 8% of the total land area and is some of the best agricultural land in Essex County. Five full time commercial farms are currently utilizing these lands for a variety of crops and pasture land. Industrial uses account for less than 1% of the land area and consist of the Carroll Concrete, Inc. gravel operation and the Beattie Enterprise gravel pit at the end of town highway #5, Breault Road, and a right-of-way for the Portland Pipe Line. Commercial use is presently limited to State Line Auto, Matthew & Heather Linehan Potato, one law office and a therapeutic riding center. There are approximately 105 permanent homes in Guildhall, with 20% of this total concentrated in the Village and the rest relatively evenly distributed throughout town along existing roads, especially Route 102, the North Road and Fellows Road. Residential use occupies 5% of the land areas. There are two categories of seasonal uses -1) second homes of which there are eight (two in the Village and the rest throughout town) and 2) hunting or wilderness camps. Seasonal uses total about 1% of the land area. Public/ Semi-public uses include only the Common, three acres at the school, a fifty-acre town forest, four cemeteries, and the area around several public buildings probably totaling about 0.25% of the total land area. Streets, utilities and the like utilize perhaps 3%. Forestry/conservation ion areas comprise 81% of the total land area, a great deal being owned and managed by wood products industries.

This area is defined as the only built-up area in Guildhall, with predominantly single-family dwellings and public buildings and uses which should continue to be such. About a third of the buildings in Guildhall are in this area. This is the community's nucleus and in view of restrictions imposed in other areas of town by natural features and many practical considerations, should be the basis for future growth. Most existing lots are small in size (average 1 acre), and the compact nature of the village gives it its distinction and should be preserved.

Demographics and Growth Potential

The population of Guildhall is 262 individuals. The median age is 45.6 years, lower than the county median age of 51.6 years. Guildhall has experienced some in-migration, with approximately 11.8% of residents having moved to Guildhall from another state in the past year (2022 ACS 5-year estimates). New residents and housing development have placed pressure on the municipality to ensure that all dwellings are meeting the zoning regulations and the water and wastewater requirements set by the State of Vermont. The Town is additionally seeking ways for the community to connect.

Income sources and occupations are varied and many people receive a fixed income from the government. No one employer is predominant, although agriculture is very important as an in-town occupation. Industries presently being carried on in town are farming, lumbering, quarrying, maple products production and numerous home industries. There are two trucking businesses, and a few other local businesses specializing in potatoes, concrete, dairy farming, and small retail. Forestry is of regional importance and occupies approximately 80% of the land area. Public service, business/self-employment, industry, trades, and retail /commercial rate high as out-of-town employment primarily concentrated in Northumberland and Lancaster, New Hampshire. A number of professional people in town also serve on a regional basis.

Precipitation and Water Features

Average annual precipitation is 41 inches of rain; with July being the wettest month. Average annual snowfall is 79 inches; with January being the snowiest month.

Guildhall is part of the Upper Connecticut watershed. Major water courses in the town include the Connecticut River and Cutler Mill Brook with several lesser streams, but no major stationary water bodies. There are also many flat, swampy areas within the town boundaries making up 7.5% of the land cover.

Water and Wastewater

The Northumberland chlorinated water system serves the community. Approximately 50 households are served by this source of water.

There exists no public sewage system and there is no need foreseen for one. Soils are adequate within the village area, if proper lot sizes are maintained, so that private septic systems can be installed by individual owners, based on current State Wastewater Regulations of the State of Vermont.

The main trunk of the present municipal water system services this area, but lot sizes must be large enough for on-site sewage disposal. The area is generally defined as extending from the Hawkins hydrant on Route 102 to the hydrant in front of the Silver-Allen residence. This main trunk is 2.5 miles. There is 0.75 miles off the main trunk to the school.

Transportation

Road maintenance work is contracted locally. The town has virtually no equipment and has limited storage area.

There are twenty-five miles of highways in Guildhall of which 1.1 (Route 2) is rural minor arterial, 7.8 (Route 102) is rural major collector and 4 miles (T.H. #l), Granby Road and Route 102 from the triangle to the bridge) of rural minor collectors, the rest being local roads. These four categories follow basically the four administrative classifications for Guildhall's roads. Vermont Routes 2 and 102 are paved. A portion of the Granby Road is paved; the rest are gravel roads, maintained in accordance with State Standards.

There is no public transportation available in Guildhall. However, Rural Transportation Services has offered intermittent service in the past by contacting them directly. Airports are located in Lyndonville, Vermont and Whitefield and Berlin, New Hampshire.

Public Utilities

The public utilities available to Guildhall are electricity, Internet (cable, satellite, fiber-optic) and telephone. Installation of natural gas lines is not economically feasible resulting in a dependence on propane, fuel oil or wood for heating. More recently there has been a larger influx of heat pumps for heating and cooling purposes. Vermont Electric Coop supplies power to most of the town with the southern fringe areas supplied by Green Mountain Power. Constant attention is required to ensure that existing equipment is maintained and upgraded so that the power available keeps up with the increasing demand.

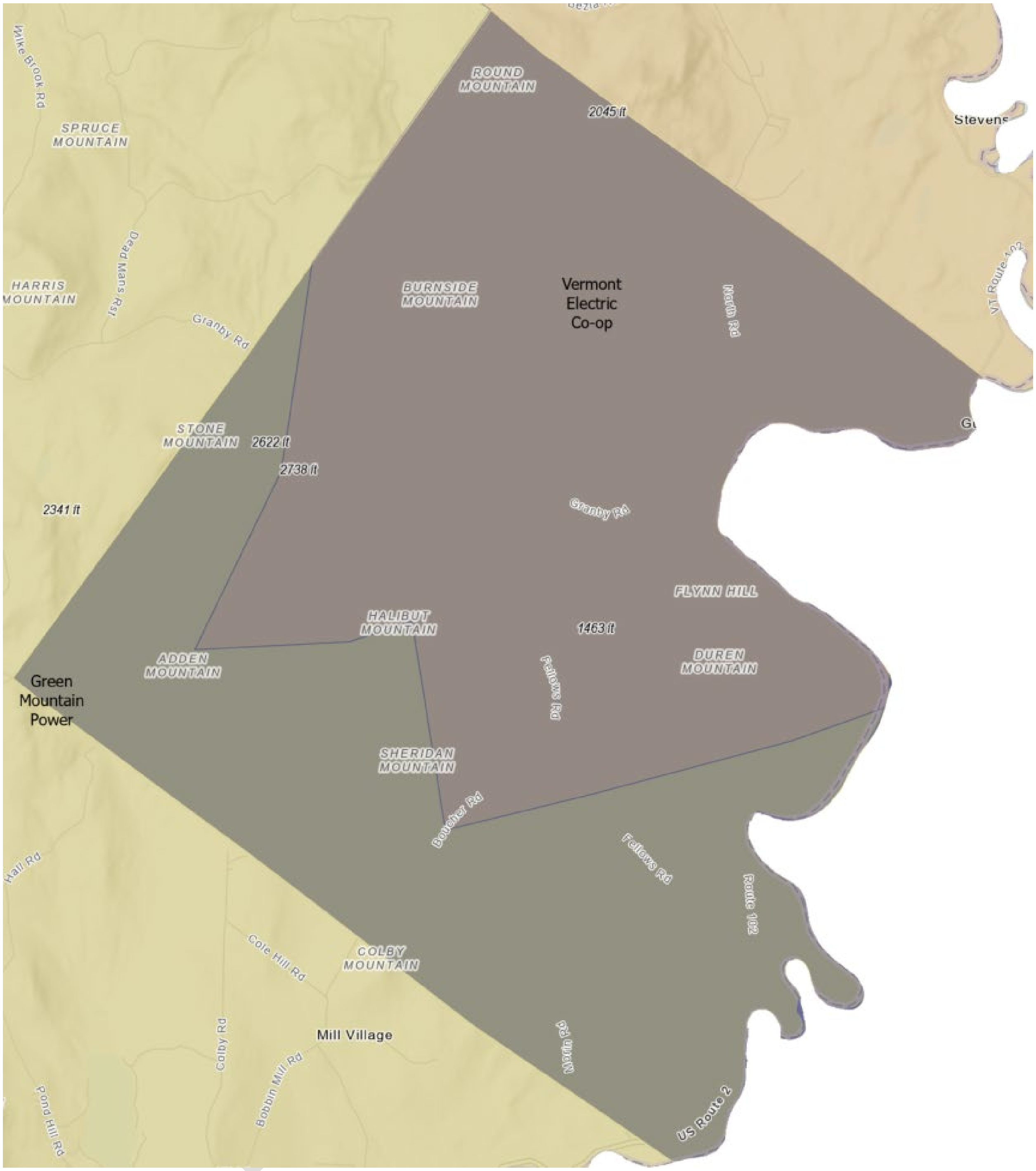


Figure 3 - Electric utility boundaries

Electric Utility Distribution

Average Annual Outage Data (2020-2024) for the 108 meters on Vermont Electric Coop	
Average number of outages per customer per year	11 times per year
Total outage duration per customer	1.20 hours per year
Average length of each outage	18.57 hours per year

Average Annual Outage Data (2019-2023) for the 43 meters on Green Mountain Power	
Average number of outages per customer per year	7.14 times per year
Total outage duration per customer	2.75 hours per year
Average length of each outage	19.61 hours per year

Table 1 - Electric outage history for GMP and VEC

Public Safety

Current police service consists of the Essex County Sheriff's Department and Vermont State Police.

Fire protection and ambulance services are contracted with Lancaster, New Hampshire, which has a well-trained and equipped department and has good access to most of the populated parts of Guildhall. This is considered a very good arrangement, as it provides better protection than the town would otherwise be able to afford, and response time is about 15 minutes. Indian Pumps are used in fighting local brush fires. The town has hydrants in the village area and three dry hydrants strategically located throughout town.

Health services are available from a number of sources including Weeks Medical Center a critical access hospital in Lancaster, New Hampshire which is State and Medicare accredited general hospital. The practicing medical staff of Weeks Medical Center serves the area via offices in Lancaster, Groveton and Whitefield and North Stratford. There is also a Medicare approved nursing home and Rehabilitation Center in Lancaster and the Caledonia Home Health Care Agency which provides the mechanism to receive home health care based on the referral system. The town appropriates monies on an annual basis to Caledonia Home Health and in addition clients pay for services according to a sliding scale formula.

Emergency Management

There is identified shelter for Guildhall but the shelters would most likely not be sufficient in a flood situation because they are in/near the floodplain and access to them would be limited. There are no municipal generators that could be used for power outages. The plan is to install a generator in the Guildhall.

Critical Infrastructure

The planning committee identified several critical facilities in Guildhall. These facilities provide important services to the community, such as basic government functions, water and power services, and schools. Some of these facilities can also serve additional roles during an emergency, including as a shelter for displaced residents, a staging area for emergency response and recovery activities, or a location for important Town administration functions. Damage to these facilities can impair response and recovery operations and may lead to a disruption of vital services for Guildhall's residents.

Dams

According to the Vermont Dam Inventory (VDI), Guildhall had one dam in town, Wyoming dam that was removed. However, the Murphy Dam, located on Lake Francis in Pittsburg, NH is of concern to the Town. The New Hampshire Department of Environmental Services (NHDES) Dam Bureau last inspected the Murphy Dam in 2022 and is currently under contract with an engineering consultant to review and update the entire plan, including detailed dam failure modeling and corresponding maps that depict the areas downstream that are likely to be inundated under the various failure scenarios. This update (final) is anticipated to be completed sometime in 2026. The Town intends to stay in contact with NHDES to receive Emergency Action Plan updates. See **Figure 3** for locations.

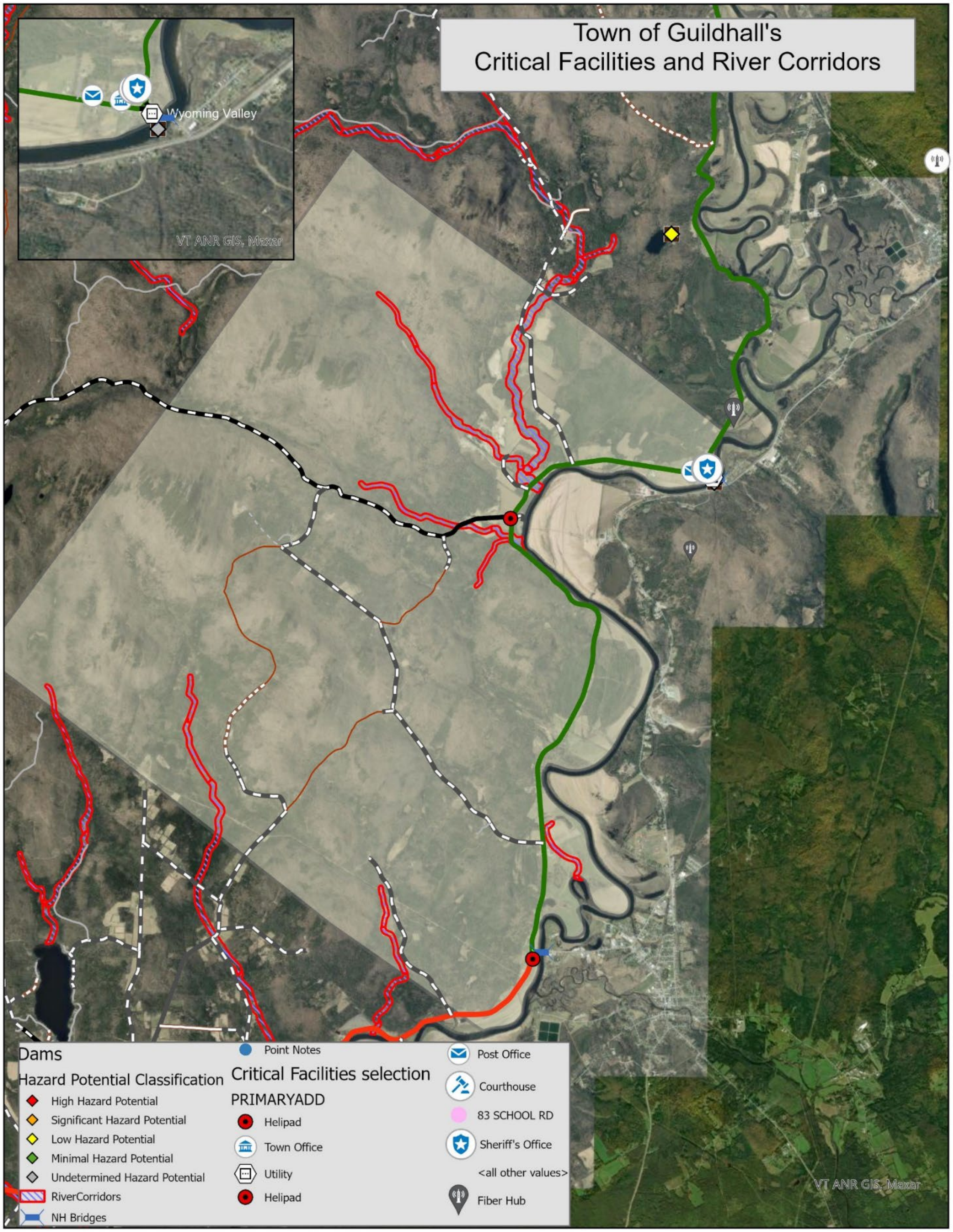


Figure 4 - Critical Facilities and river corridor map

4 PLANNING PROCESS

Plan Developers

The Town Administrator assembled a Hazard Mitigation Planning Committee to participate in updating the Plan. Committee members included the: Members of the Selectboard, Town Clerk, Road Foreman, the Health Officer, Fire Warden and the Town's Administrative Assistant to the Selectboard also participated in Plan development.

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

Plan Development Process

The 2025 Local Hazard Mitigation Plan is an update to the first single jurisdiction 2005 plan written for the Town by Northeastern Vermont Development Association (NVDA).

June 25, 2024 – Consultant met with Town Clerk to discuss project approach and next steps, including review the 2022 draft plan.
September 2, 2024 – Consultant did a cursory review of the 2022 plan and provided feedback via FEMA Review Tool.
January 14, 2025 - Announcement and survey posted on the Town's website and made available at the Town Office, post office and courthouse.
April 3, 2025/May 29, 2025 – Sent outreach email to surrounding towns, including NH, VTrans district office, VTANR Regional Floodplain Manager, VTDEC Regional River Engineer, NVDA, Essex North Supervisory Union, Northeast Kingdom Council on Aging, Northeast Kingdom Chamber of Commerce, VT Health Department Regional Office, VT State Police St. Johnsbury Commander, Green Mountain Power and Vermont Electric Co-op. A message sent on the Northern Counties Health Care, Gilman Senior Center and Rural Community Transit websites. The Essex County Sheriff's office was contacted by the Town's EMD. Response from Northumberland, NH noting the water line that feeds Guildhall is on the bridge
May 6, 2025 – Kick off meeting. Discussed current plan status; planning process; update to plan sections; outreach strategy; identify critical facilities. Committee meetings were held in person and not made available to the public.
June 4, 2025 – Reviewed the list of critical facilities, discussing the Murphy dam upstream in ; identified and ranked hazards; reviewed the communities' capabilities and areas for improvement; updated list of past plan actions; discussed plan integration with other town plans; identified future mitigation actions, prioritized them along with other action elements needed.
September 9, 2025 – Met with LHMP Committee to review draft plan and make edits based on comments.
TBD – Publish draft for public review
TBD – Present draft at Selectboard meeting for public notification, review and input
TBD – Submit draft to VEM/FEMA for review

Table 2 - Plan Development Timeline and Process

In addition to the local knowledge of Planning Team members and other relevant parties, several existing plans, studies, reports, and technical information were utilized in the preparation of this Plan. A summary of these is provided in Table 3.

Table 3 - Existing plans, studies, reports and technical information

Existing Plans, Studies, Reports and Technical Information
2024 Town Plan Referenced to develop the Community Profile, Capabilities, Integrating into Existing Plans and Procedures, Mitigation Strategy Updates – Changes Since 2017 Plan in Section 6.
2025 Local Emergency Management Plan Primarily used to identify local organizations that support vulnerable populations to ensure these organizations are invited to participate in the plan update along with updating Section 3.
2013 Town of Guildhall, Vermont Zoning Bylaws Referenced to develop Community Capabilities, Integrating into Existing Plans and Procedures, Mitigation Strategy Updates in Section 6
2015 NVDA Regional Plan Amended July 2023 Used to ensure the town plan and hazard mitigation elements align with the regional vision.
Green Mountain Power Outage Data Used to develop Table 2 in the Community Profile Section and identify potential vulnerabilities.
2020 US Census Data Used to develop the Demographics and Growth Potential information in Section 3.
2021 American Community Survey Five-Year Estimate Used to develop the Demographics and Growth Potential information in Section 3.
2023 State of Vermont Hazard Mitigation Plan Primarily referenced to develop the risk assessment and profiles in Section 5.
2023 FEMA Local Mitigation Planning Handbook Used to ensure plan meets the Federal mitigation planning requirements, including those for addressing climate change.
2023 FEMA Hazard Mitigation Assistance Program Policy Guide Used to ensure plan meets the Federal mitigation planning requirements, including those for addressing climate change.
2021 Vermont Climate Assessment Referenced to develop the flood risk profile in Section 5.
FEMA NFIP Insurance Reports Used to determine how many structures are insured and describe NFIP compliance in Section 6. NOTE: Due to FEMA Region I concerns related to personally identifiable information (PII), NFIP repetitive loss and severe repetitive loss information is unavailable for this plan update.
2017 FEMA Region I Mitigation Ideas for Natural Hazards Used to develop mitigation actions to address impacts from severe winter storms, high winds and floods.
2019 Road Erosion Inventory Referenced to develop the risk profile in Section 5 and mitigation actions to address floods in Section 6.
VTrans Transportation Resilience Planning Tool Referenced to develop the risk profile in Section 5 and mitigation actions to address floods in Section 6.
Vermont Dam Inventory (VDI) Referenced to develop the risk profile in Section 5 and mitigation actions to address floods in Section 6.
National Oceanic and Atmospheric (NOAA) National Climatic Data Center's Storm Events Database Referenced to develop the risk profile and hazard history in Section 5.
FEMA Disaster Declarations for Vermont Referenced to develop the risk profile and hazard history in Section 5.
OpenFEMA Dataset: Public Assistance Funded Project Summaries for Vermont Referenced to develop the risk profile and hazard history in Section 5.
Vermont Department of Health Referenced to develop the risk profile in Section 5.
Vermont Agency of Natural of Resources Referenced to develop the risk profile in Section 5.
Vermont Agency of Natural of Resources Watershed Projects Referenced to identifying completed and develop mitigation actions to address floods in Section 6

Changes since the 2017 Plan

The 2025 local hazard mitigation plan aligns with the hazards recognized in the 2023 State Hazard Mitigation Plan. The 2005 local hazard mitigation planning effort analyzed both natural and man-made hazards and the risk they posed to the Town of Guildhall. The risk assessment resulted in the categorization of High, Medium, and Low risk level hazards. Floods, flash floods, hazardous materials, power failure, winter storm/ice, high winds, dam failure, drought, and highway incidents were ranked as the community's Medium to High risk natural hazards. The two actions proposed in 2005 focused on mitigating risks from flooding, severe weather and hazardous material incidents.

As the Town has sought to implement the 2005 mitigation strategy, they have looked for opportunities to incorporate information and recommendations from the 2005 Plan into other plans, programs, and procedures.

The Guildhall Town Plan, adopted in 2024, serves as the Town's framework and guide for reaching community goals, including those for how future growth and development should proceed. It includes flood resilience and land use policies and actions to support the goal of mitigating risks to public safety, critical infrastructure, historic structures, and municipal investments posed by flooding and fluvial erosion.

The Town Plan is the basis for local land use controls such as those in Guildhall's Zoning Bylaws, adopted in 1985 and amended in 2013. Guildhall's Zoning Bylaws includes Flood Hazard Area to ensure the selection, design, creation, and use of development in these hazard areas is reasonably safe and accomplished in a manner that is consistent with public wellbeing, does not impair stream equilibrium, flood plain services, or the stream corridor.

Guildhall has made some progress in completing or deferring the five mitigation actions identified in the 2005 Plan – see **Appendix B**. The current committee and Selectboard recognizes the importance to the community in developing actionable and practical mitigation actions for the next 5 years.

The Town is proud to report that they adopted the Road and Bridge Standards in 2019 which makes the town eligible for a higher state match along with aiding the town in upgrading and maintaining their transportation infrastructure, making it more resilient to flash flooding. They continue to maintain trees within the Town's Right-of-Way to reduce the risk of trees and limbs falling on power lines and causing power outages.

Even though the population has been decreasing over the years, the changes in population and development since 2005 have not made Guildhall more vulnerable to natural hazards and therefore are not the primary drivers for a shift in the Town's mitigation priorities in 2025. Rather changing weather conditions and natural hazards most influenced the Town's current mitigation strategy.

According to the FEMA Hazard Mitigation Assistance Program and Policy Guide, "Climate change is increasing the frequency, duration, and intensity of storms, floods, fires, and extreme temperatures across the nation. Local communities are feeling the impacts of climate change now, and these multi-hazard trends are expected to continue to increase in severity over the next century."

As a result, Guildhall considered the effects of future conditions, like climate change, on the type, location, and range of intensities of identified hazards when they conducted the risk assessment in 2025. The 2005 hazard risk assessment reflected not only hazards, but hazard events that could potentially relate to multiple hazards in this current plan such as widespread power failure. The highest risk hazard impacts that the Town believes they are most vulnerable to have shifted somewhat since the 2005 Plan, mainly due to focusing on natural hazards.

The primary mitigation goal in the 2025 Plan is increasing the Town's resilience to natural hazards by advancing mitigation investment to reduce or avoid long-term risk to people, homes, neighborhoods, the local economy, cultural and historic resources, ecosystems, and Community Lifelines.

When evaluating mitigation actions, the Town selected actions that support the appropriate mitigation goal and are acceptable and practical for the community to implement. Actions that directly benefit a vulnerable population were assigned a high prioritization score – see **Table 8**.

5 HAZARD IDENTIFICATION AND RISK ASSESSMENT

Local Vulnerabilities and Risk Assessment

To be consistent with the approach to hazard assessment in the 2023 State Hazard Mitigation Plan (SHMP), the Hazard Mitigation Planning Committee conducted an initial analysis of known natural hazard events that have occurred in the past to determine their probability of occurring in the future and their potential impacts on the people, infrastructure, environment, and local economy. Reviewing both the Appendix to Section 4 of the SHMP and NOAAs Storm Event Database for the Town of Guildhall aided in determining that the State's high-ranking hazards such as Inundation Flooding and Heat have not historically had an impact in the area and therefore rated them as lower risk hazards. The Town does recognize, however, that this could change in the coming five years if climate change continues its current path.

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

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

- ***Ice*** *associated with ice storms, freezing rain, sleet, and ice accumulation on surfaces*
- ***Strong wind*** *associated with thunderstorms, hurricanes, tropical storms, and winter storms*
- ***Infectious Disease*** *associated with cases of disease in excess of what is normally expected*
- **Landslide/Slope Failure** *is the sliding of a large mass of rock, earth, or debris, down a sloped section of land*
- ***Fluvial Erosion and Flash Floods*** *associated with thunder and/or winter storms and ice jams*
- ***Heat*** *associated with prolonged periods of high temperatures, often accompanied by high humidity levels*

Each of the **highest risk hazard impacts** are profiled in this section. Lower risk hazard impacts do not justify mitigation due to a low probability of occurrence and/or low impact and are not profiled in this Plan. See the State Hazard Mitigation Plan for information on the lower risk hazards.

Hail and Earthquakes were decided by the planning team to be outside of the realm of justification within our region for mitigation actions. Hail being that the historic record of damage being primarily minimal and to vehicles. Earthquakes even though experienced also are historically small in Vermont do occur but were deemed to be of minimal threat and with no building codes basically impossible for a town to develop effective mitigation strategies. See the State Hazard Mitigation Plan for information on these and other lower risk hazards.

Table 4 - Federally declared disasters affecting Essex County and Guildhall

Federally Declared Disasters in Essex County					
Year	**Date**	**Description**	**Dec. #**	**County Est.**	**Guildhall**
1995	8/16/1995	Heavy Rains and Flooding	DR1063	Unk	Unk
1998	7/1/1998	Severe Storms	DR1228	Unk	Unk
1999	11/12/1999	Tropical Storm Floyd	DR1307	$ 2,657	$ 0.00
2002	**7/12/2002**	**Severe Storms and Flooding**	**DR1428**	**$ 359,646**	**$331,538**
2007	**5/4/2007**	**Severe Storms, High Winds, Flooding**	**DR1698**	**$ 54,598**	**$11,345**
2008	9/15/2008	Severe storms and flooding	DR1790	$ 34,529	$ 0.00
2011	6/15/2011	Severe Storm/Wind	DR1995	$ 391,202	$ 0.00
2011	**7/8/2011**	**Severe Storms and Flooding**	**DR4001**	**$ 786,430**	**$ 39,267**
2011	9/1/2011	Tropical Storm Irene	DR4022	$ 52,197	$ 0.00
2013	6/13/2013	Severe Storms and Flooding	DR 4120	$ 147,746	$ 0.00
2014	1/29/2014	Severe Winter Storms	DR4163	Unk	Unk
2014	6/11/2014	Severe Storms and Flooding	DR4178	$ 131,570	$ 0.00
2015	2/3/2015	Severe Winter Storms	DR4207	Unk	Unk
2017	1/2/2018	Severe Storms and Flooding	DR4356	Unk	Unk
2019	6/14/2019	Severe Storms and Flooding	DR4445	$ 28,459	$ 0.00
2020	1/17/2020	Severe Storms and Flooding	DR4474	Unk	Unk
2020	4/8/2020	COVID-19	DR4532	Unk	Unk
2022	12/22/2022	Severe Storms and Flooding	DR4695	Unk	Unk

2023	7/14/2023	Severe Storms, Flooding, Landslides, and Mudslides	DR4720	$ 109.718	$ 0.00
2024	3/2/2024	Severe Storms and Flooding	DR4762	$ 27,669	$ 0.00
2024	8/20/2024	Severe Storm, Flooding, Landslides, and Mudslides	DR 4810	$383,109	$0.00

**Public Assistance money listed is reflective of the Federal portion only*

2025 Hazard Assessment								
Hazard Impact	Probability	Potential Impact					Score	Rank
		Infrastructure	Life	Economy	Environment	Average		
Ice	4	4	4	2	3	3.25	13	1
Infectious Disease	3	1	4	4	1	2.5	7.5	2
Fluvial Erosion/Flash Flooding	4	2	1	3	1	1.75	7	3
Wind	3.5	3	1	2	2	2	7	3
Landslide/slope failure	4	2	1	3	1	1.75	7	3
Heat	4	4	1	1	1	1.75	7	3
Drought	3	1	1	3	2	1.75	5.25	4
Snow	4	2	1	1	1	1.25	5	5
Cold	4	2	1	1	1	1.25	5	5
Inundation Flooding	4	1	1	1	1	1	4	6
Wildfire	1	2	2	2	3	2.25	2.25	7
Invasive Species	2	1	1	1	1	1	2	8
Hail	1	1	1	1	1	1	1	9
Earthquake	1	1	1	1	1	1	1	9

Table 5 -Community Hazard Risk Assessment

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

Ice

Hazard Description: Ice events include ice storms, freezing rain, sleet, and ice accumulation on surfaces. Ice accumulation occurs when rain falls through a layer of subfreezing air near the surface, causing it to freeze on contact with surfaces. Sleet involves small ice pellets that bounce upon hitting the ground, while freezing rain creates a glaze of ice.

Hazard Extent: Ice events can occur several times each winter season. Ice accumulation can range from a light glaze (less than 0.25 inches in the 2013 storm) to significant buildup (up to 0.75 inches in the 1998 storm). Severe ice storms can lead to widespread tree and structure damage and can lead to multiple day power outages.

Hazard Location: All areas of Guildhall can be affected by ice events, particularly higher elevations, and exposed locations.

Hazard History: The Ice Storm of 1998 which heavily impacted the region caused widespread power outages and transportation disruptions with the largest recorded accumulation between 1 and 2 inches. Anecdotally there have also been smaller events not listed in the 2023 Vermont State Hazard Mitigation Plan Disaster History that have caused minor disruptions in the Town.

Probability of Future Events and Potential Impacts

With the almost annual occurrence of significant snow, the probability of ice has dropped significantly over the years, however, if it were to occur the town feels an impact most on the infrastructure of the community. The town is able to keep the roads open and treated for most storms and any loss of power is usually limited to hours.

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

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

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

Town Vulnerability

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

Built environment: Ice storms events can cause damage to town and private property, including buildings, blocked egress routes, blocked evacuation routes (caused by falling trees), downed powerlines, and roads. These impacts could cause disruption of the transportation system to and from the community and county.

Natural environment: Accumulation on tree limbs could cause them to break off and fall impacting overall tree or forest health.
Economy: Ice events can cause economic impacts to the town. Impacts include disruption or closure of impacted businesses, and recovery costs, including employee overtime, time and equipment spent on the repairs.

Infectious Disease

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

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

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

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

1918, 1957, 1968 – Pandemic Influenza

2009 – H1N1 strain

2015 – Sika virus

2020 – COVID-19

Town Vulnerability:
People: People with disabilities, access and functional needs may be most vulnerable to disease outbreak events. A disease outbreak event can impact any person.
Built environment: A disease outbreak can cause a strain on local health care facilities. Additionally, facilities may need to be modified to respond to the crisis (e.g., school turned into a triage center).
Natural environment: Infectious disease outbreak events has the potential to originate from local environments (e.g., farms, lakes, etc.) and mitigative measures may need to be taken to prevent future spread (e.g., treatment of a body of water).
Economy: Infectious disease outbreak events can cause economic impacts to the town. Impacts include disruption or closure of impacted businesses, and costs to operate immunization clinics.

Potential Future Impacts:
Climate Change: Climate change has the potential to increase the frequency and intensity of disease outbreak events through various mechanisms. Temperature changes may increase vector-borne disease and pathogen survival. Extreme weather events (e.g., hurricanes) can disrupt infrastructure, leading to breakdowns in sanitation, clean water supply, and healthcare

services. Climate-induced displacement and migration can lead to overcrowded living conditions, which can facilitate the spread of infectious diseases.

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

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

Floods

Hazard Description: Fluvial erosion and inundation flooding are related processes where riverbanks and streambeds are eroded by flowing water, and areas are submerged due to overflow. Fluvial erosion leads to the loss of land and damage to structures, while inundation flooding results from water exceeding the river's capacity and flooding adjacent areas. These hazards are often interconnected. Erosion can weaken banks, making areas more susceptible to flooding. Eroded materials and debris are then deposited in lower lying areas. Inundation flooding can occur rapidly during heavy rainfall, snowmelt, or dam releases, or more slowly in cases of prolonged rainfall and due to beaver activity.

Hazard Extent: Summer downpours and remnants of tropical storms can drop several inches of rain within a short period, having the effect of concentrating flood waters into small and narrow areas, particularly in steeper geographic regions. According to NCDC statistics, the Essex Region has experienced 13 flash flood everts over the past 25 years. In June of 2002 a wave of low pressure tracking eastward along a strong stationary frontal boundary produced rainfall amounts ranging from 3"-5" in the Passumpsic Rivier Basin and the runoff resulted in significant flooding. Guildhall had over $360,000 in public assistance eligible damage.

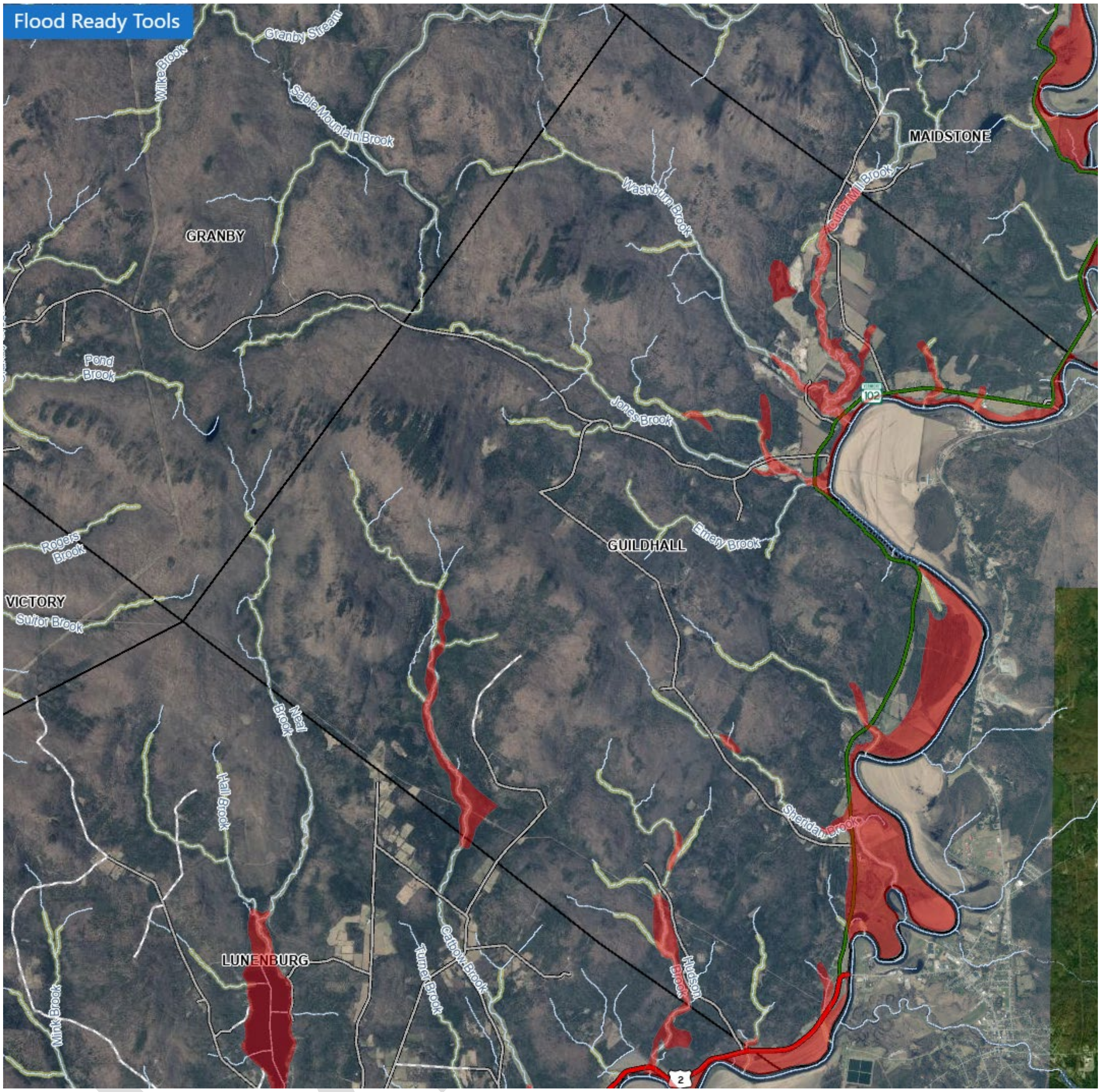


Figure 5 - Existing SFHA and ANR river corridors

Hazard Location: In Guildhall, the combination of heavy rainfall and moderate to steep terrain conducive to flash flooding only occurs in the steeper areas and affects roads such as Fellows Road, Town Highway 8, and Granby Road. Guildhall has many areas with steep slopes in upper watershed areas where minimal alteration of vegetative cover through logging or changing drainage patterns through building roads may significantly increase the likelihood of flash floods. Areas around Connecticut River are susceptible to inundation flooding especially along Vermont Route 102.

Hazard History: The Town of Guildhall has been fortunate to have only been affected by three disasters in the last 25 years resulting in almost $390,000 in damage. These events occurred in June 2002, April 2007 and May of 2011. The NOAA Storm Events database has recorded 12 flash flood events in the last 30 years.

7/15/1997 - $500,000 damage	1/8/1998 - $5,000 damage	3/31/1998 - $100,000 damage
4/1/1998 - $5,000 damage	6/17/1998 - $10,000 damage	8/13/2000 - $5,000 damage
7/12/2004 - $300,000 damage	4/27/2011 - $250,000 damage	5/26/2011 - $750,000 damage
6/19/2017 - $7,000 damage	7/10/2023 - $197M statewide damage	7/11/2024 - $23M statewide damage

Future Probability and Potential Impacts: With the increased frequency of heavy rains experienced in the past 25 years, conditions for flash flooding would appear to be increasing as well. Climatologists agree that the predicted slow rise in temperatures worldwide can be expected to result in more heavy precipitation events associated with flash flooding.

> **Climate Change:** Climate change has profound effects on weather patterns, precipitation, and temperature, all of which significantly impact fluvial erosion and flooding. Increased river flows, earlier and rapid snowmelt, more severe storms, vegetation loss and soil saturation, as a result of climate change, may impact fluvial erosion and flooding event frequency and intensity.
>
> **Change in Land Use/Development:** The town has adopted inundation hazard area regulations and participates in the national flood insurance program.
>
> **Change in Demographics**: Guildhall's population demographics are not expected to change significantly in the next five years, though an increase in the average age of the population may increase the vulnerabilities of the population.

Town Vulnerability: The Town of Guildhall, in its historic development patterns, is relatively flood safe. Mostly residences near the Connecticut River are currently potentially at risk of. The bigger risk is damage to the Class 2 and 3 roads that traverse the town.

While many roads are through low lying areas, Guildhall's program of progressive highway maintenance has reduced its overall vulnerability over the past few years as crews are routinely planning for increasing flood events. That maintenance spared Guildhall from extensive damage during the recent 2023 and 2024 storms and will serve the town well in the future.

> **People:** Fluvial erosion and flooding events can cause injuries or fatalities to people who do not evacuate in time. Delayed evacuation can be caused by no-noticed events, or by individuals who are hesitant to leave their houses. The elderly, the homeless, residents with special needs and those without proper transportation may potentially be impacted more than other residents.
>
> **Built environment:** Fluvial erosion and flooding events can cause damage to town and private property, including roads, culverts, driveways, bridges, wells, sewage facilities/septic systems, and buildings.
>
> **Natural environment:** Fluvial erosion and flooding events can cause damage to the environment and fragile ecosystems. Vulnerabilities and impacts include algae blooms (harmful to the environment, and toxic to animals/people), transportation of invasive species, soil and bank erosion, and pollution.

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

Strong Wind

Hazard Description: Wind hazards include high winds from thunderstorms, hurricanes, tropical storms, and winter storms. These winds can cause damage to buildings, power lines, trees, and other infrastructure. Wind events can vary in intensity, duration, and geographic extent. They often accompany other severe weather conditions such as heavy rain, snow, or ice. Wind in Vermont typically flows from west to east and is most significant on mountain peaks.

Hazard Extent: Strong wind can occur alone, such as during straight-line wind events, or it can accompany other natural hazards, including severe thunder and/or winter storms. FEMA's National Risk Index defines Strong Wind as damaging winds that exceed 58 mph. Strong Wind poses a threat to lives, property, and vital utilities primarily because of flying debris or downed trees and power lines. The loss of power and land line phone service is also probable during these events due to downed lines caused by falling trees. Essex County has seen winds around 70 mph over the years.

Hazard Location: Wind events occur town wide in Guildhall and surrounding areas. For Guildhall, the geographic conditions tend to break potential tornadic wind patterns.

Hazard History: NCDC records indicate the Essex Region has experienced 6 High Wind events and over 27 Strong Wind events over the past 25 years resulting in over $250,000 in cumulative property damage. No official information was found that would corroborate specific wind damage in the Town of Guildhall. Several wind events have come from other directions, mainly the south and in winter the traditional nor'easter. While Guildhall has managed to avoid many of the larger events, localized strong winds have resulted in occasional loss of roofs on lesser maintained structures but are susceptible to high directional winds town wide.

Future Probability and Potential Impact: Over the past 15-20 years there has been an observable increase in the severity and frequency of storms in Guildhall. Extremes in warming and cooling which we have seen in recent years lead to high winds as convective forces meet cooling forces. It is probable that in the future, we will not see a lessening in winds or wind producing storms. Climatologists almost unanimously predict an increase in both tropical storms and tornados due to the current global climate changes.

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

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

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

Town Vulnerability: High winds usually result in damage to trees, which in turn lead to power outages. Localized strong winds have also resulted in occasional damage to roof panels and loss of shingles. Often, residents do not consider wind impacts when renovating or building. Beyond damage to private residences, impacts to power lines caused by falling and/or uprooted trees tend to affect all residents of Guildhall.

> **People:** Wind events can cause injuries or fatalities to people who do not shelter-in-place in time, or who do not have adequate shelter. Delayed sheltering-in-place can be caused by no-noticed events, or by individuals who do not heed the warning. The elderly, the homeless, residents with special needs and those without proper transportation may potentially be impacted more than other residents.
>
> **Built environment:** Wind events can cause damage to town and private property, including buildings (windows and roofs), downed road signs, utility poles and power lines and overturned vehicles.
>
> **Natural environment:** Wind events can cause damage to the environment with downed trees, and uprooted trees and plants.
>
> **Economy:** Wind events can cause major economic impacts to the town. Impacts include disruption or closure of impacted businesses, homelessness due to house damage, and recovery costs, including employee overtime, time and equipment spent on the repairs.

Landslide/Slope Failure

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

Landslides have three major causes: geology, morphology, and human activity. Geology refers to characteristics of the material itself. The earth or rock might be weak or fractured, or different layers may have different strengths and stiffness.

Morphology refers to the structure of the land. For example, slopes that lose their vegetation to fire or drought are more vulnerable to landslides. Vegetation holds soil in place, and without the root systems of trees, bushes, and other plants, the land is more likely to slide away. Human activity, such as agriculture and construction, can increase the risk of landslides. Irrigation, deforestation, excavation, and water leakage are some of the common activities that can help destabilize, or weaken, a slope.

Hazard History/Location: The Town of Guildhall has no official landslide locations according to the Vermont Agency of Natural Resources Landslide map that was last updated in 2020. Land and roads along the Connecticut River are vulnerable to fluvial erosion causing slope failures.

Hazard Extent: Total damages for landslides are not tracked well within the State of Vermont since often landslides are in association with Fluvial Erosion the damages are often lumped together there. With the increase in precipitation trends due to climate change the risk from landslides is increasing. This can be addressed through land use regulations and mitigation of surface runoff from human actions and development. Historically slope failures in Guildhall have been small, but again there is no official data at either the local or state level.

Town Vulnerability:

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

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

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

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

Potential Future Impacts:

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

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

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

Extreme Heat

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

Hazard Extent: Guildhall and the surrounding region have experienced heatwaves in the past, with notable events leading to heat-related illnesses, increased energy demand, and stress on infrastructure. Heat advisories, watches, and warnings are issued by the National Weather Service and local authorities to alert residents to the risks of impending heatwaves. Guildhall may experience a heat advisory, watch or warning, however given historical data, it's likely that Guildhall would be issued with a heat advisory.

Hazard Location: All areas of Vermont are susceptible to heat hazards, with urban areas typically experiencing higher temperatures due to the urban heat island effect.

Hazard History: Consecutive days of hot weather with warm overnight temperatures further increase the risk of experiencing severe heat-related health impacts. Risk also depends on the “normal” level of heat experienced in an area – places that are relatively cooler will typically experience health impacts at lower heat index values than a place that is relatively warmer. Below are the 3 heat related listings from the SHMP of 2023.

Essex 8/1/2006 Heat
Essex 3/17/2012 Heat – caused $500,000 in crop damage across Essex County
Essex 7/1/2018 Heat

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

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

People: Heat events can cause injuries or fatalities to people who do not head advisories. People, especially those will disabilities, access, and functional needs, may be more susceptible to heat related injuries, such as heat stroke.
Built environment: Heat events can cause a strain on the town’s electrical system, leading to brown or blackout events. Extreme heat can also cause thermal expansion of concrete and steel and swelling on connection bridges.
Natural environment: Heat events can increase the occurrences of droughts and wildfires, which may impact maple sugaring and other crops.
Economy: Heat events can cause economic impacts to the town. Impacts include disruption or closure of impacted businesses and the costs to operate a cooling shelter.

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

Climate Change: Although extreme heat events are relatively uncommon in Guildhall and in Vermont, climate change may have the potential to increase extreme heat occurrences. The average annual temperature in Vermont and across the United States continues to rise. The rise in ground surface temperatures and greenhouse gases will continue to future extreme heat events.

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

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

Drought

Hazard Description: Drought is a prolonged period of abnormally dry weather characterized by a deficiency in precipitation, resulting in water scarcity and environmental stress. Droughts can have significant impacts on agriculture, water resources, ecosystems, and socio-economic systems. Droughts manifest gradually and can vary in duration, intensity, and spatial extent. They may be triggered by natural climate variability, such as atmospheric circulation patterns, or exacerbated by human activities, such as land use changes and water management practices. Heat hazards result from prolonged periods of high temperatures, often accompanied by high humidity levels. Heatwaves can pose significant risks to human health, infrastructure, agriculture, and ecosystems. Heatwaves are characterized by extended periods of unusually hot weather, with daytime temperatures exceeding normal seasonal averages and limited relief during the nighttime hours.

Hazard Extent: Droughts can affect large geographic regions, including urban and rural areas, agricultural lands, forests, and waterways. Drought severity is often categorized based on indicators such as precipitation deficits, soil moisture levels, streamflow, and water storage reservoir levels. Severe droughts can lead to significant water shortages, ecological disturbances, and socio-economic impacts. Severe droughts can result in reduced water availability for drinking, irrigation, and industrial uses, leading to economic losses, environmental degradation, and social disruption. Guildhall and the surrounding region have experienced heatwaves in the past, with notable events leading to heat-related illnesses, increased energy demand, and stress on infrastructure. Heat advisories, watches, and warnings are issued by the National Weather Service and local authorities to alert residents to the risks of impending heatwaves. Guildhall may experience a heat advisory, watch warning, however given historical data, it's likely that Guildhall would be issued with a heat advisory. As mentioned earlier in the community profile the Town does not have a water system, every building has a self-reliant water source.

Hazard Location: All areas of Guildhall and the surrounding region are susceptible to drought and extreme heat events.

Hazard History: Per the 2023 Vermont State Hazard Mitigation Plan: "The droughts in the mid-1960s were the most severe in Vermont. Every county in the state experienced Exceptional Drought (D4) conditions in May of 1965. Since the 1960s Vermont has experienced several less severe periods of drought.

There were two declared statewide droughts in June and July 1995. The drought persisted through the summer of 1995, and a third, more severe drought affected Southern Vermont in August of that year.

According to the US Drought Monitor, Essex County has recently experienced the longest period of dry/drought conditions in decades Figure 5. All of Orleans County experienced a minimum of abnormally dry conditions (DO) from July 7, 2020 through March 28, 2022.

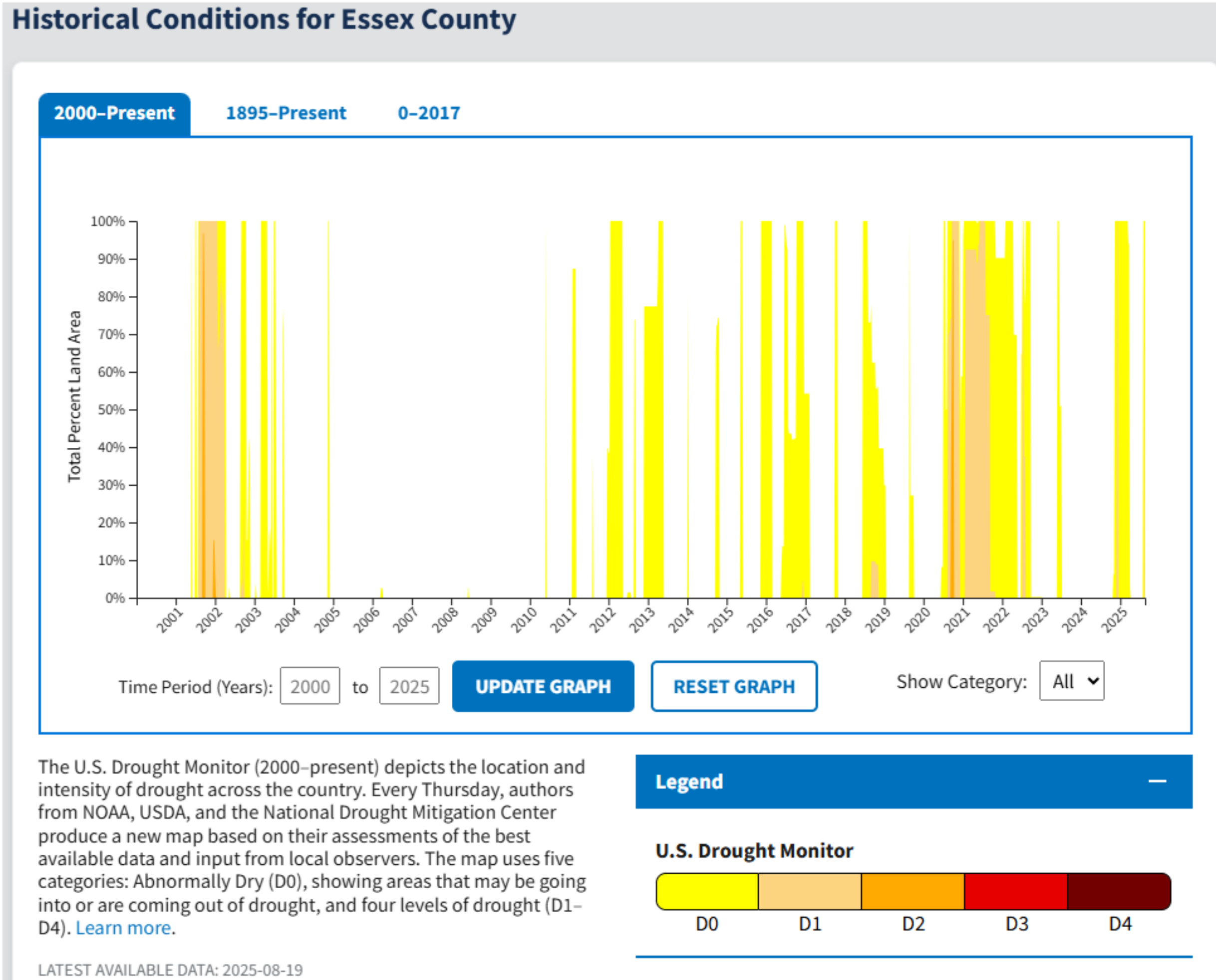


Table 6 - Essex County drought history

Town Vulnerability:

Built environment: Droughts can potentially result in loss of access to potable water when springs or drilled wells dry up.

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

Economy: Droughts can impact the tourism industry, with depleted streams or areas for water activity or during foliage season.

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

Potential Future Impacts:

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

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

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

Snow

Hazard Description: Snow hazards include heavy snowfall, blizzards, and snowdrifts. Snow events vary in intensity and duration, from light snowfalls to severe blizzards with high winds and significant accumulation.

Hazard Extent Severe Snowstorms in Guildhall has the potential of bringing over 6 inches of snow in less than 24 hours, especially in higher sections of town along Bald and Long ponds and nor'easters type events, that will require removal from roads and other community assets that may be vulnerable to the weight of snow. Severe snowstorms may reduce visibility due to falling snow and associated strong winds.

National Weather Service warnings include:

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

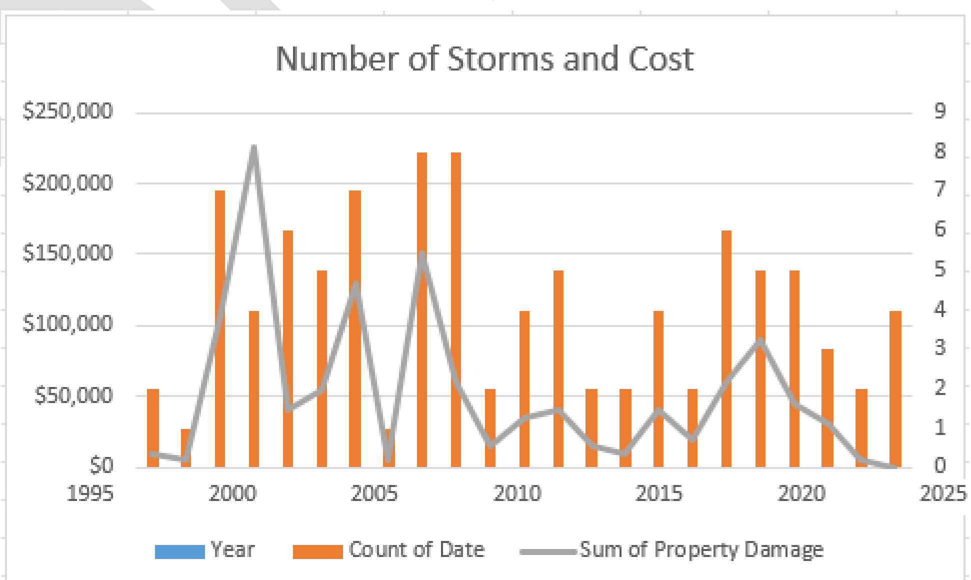
Hazard Location: Townwide. Blowing snow can close roads, especially steep segments. Infrastructure is highly impacted by snow accumulation.

Hazard History: During the Valentine's Day Storm of 2007, Essex County saw snow accumulations from 19 to 31 inches of snow fall.

Previous Occurrences

Since 1996, Essex County has seen over 125 winter events, none were categorized as blizzards and seven were categorized as Heavy Snow and the remaining; winter storm or weather.

Table 7 - Essex County snow storm events and damages



Probability of Future Events and Impacts

Severe snowstorms in Guildhall are classified as Occasionally: 1% but 10% probability per year. Since 2010, Guildhall has experienced only two snowstorms with more than 10 inches of accumulation within 24 hours. The range of intensities townwide includes: 6 to 18 inches of snow within 24 to 48 hours. The Town feels very comfortable handling these snow events and there have been very limited disruptions.

While historical data show an increase in the frequency of extreme snowstorms in the eastern United States during the 20th century, recent research suggests that climate change may lead to a decline in blizzard frequency in the coming decades due to warming temperatures and changing atmospheric conditions. Increased winter precipitation in the form of rain is anticipated to pose increased risk to assets in Guildhall. In recent years the winter season has been starting later and finishing sooner. Although there are no guarantees of this continuing this change has been very noticeable.

> **Climate Change:** Climate change significantly affects weather patterns, including the frequency, intensity, and geographic distribution of ice and snow events. These changes can increase frequency and intensity of snow and ice storms, change snowfall patterns, lead to more ice accumulation, and reduce snowpack.
>
> **Change in Land Use/Development:** No changes to asset impacts due to ice and snow events as a result of development or land use changes could be identified.
>
> **Change in Demographics:** Guildhall's population demographics are not expected to change significantly in the next five years, though an increase in the average age of the population may increase the vulnerabilities of the population.

Town Vulnerability:

> **People:** Snow events can cause injuries or fatalities to people who do not shelter-in-place, or who do not have adequate shelter. Delayed sheltering-in-place can be caused by no-noticed events, or by individuals who do not heed the warning. The elderly, the homeless, residents with special needs and those without proper transportation may potentially be impacted more than other residents. Power outages can affect heat access, especially for elderly or medically vulnerable. Emergency operations may be disrupted due to blocked roads.
>
> **Built environment:** Snow events can cause damage to town and private property, including buildings (roof collapse), blocked egress routes, blocked evacuation routes, frozen pipes, and downed powerlines. Barns, sheds, and flat-roofed buildings at risk of roof collapse. Older buildings have been retrofitted, but some vulnerability remains.
>
> **Natural environment:** Snow events can cause damage to the environment with downed trees. Steep roads may become impassable.
>
> **Economy:** Snow events can cause economic impacts to the town. Impacts include disruption or closure of impacted businesses, and recovery costs, including employee overtime, time and equipment spent on the repairs.

Extreme Cold

Hazard Description: Cold temperature hazards result from prolonged periods of frigid weather, often accompanied by snowfall, ice accumulation, and strong winds. Cold snaps and extreme cold events can pose significant risks to human health, infrastructure, agriculture, and ecosystems. Cold temperature hazards are characterized by below-freezing temperatures, with daytime highs and nighttime lows falling well below normal seasonal averages.

Hazard Extent: In the region, extreme cold can still be an issue. Historic cold extremes in Essex County have reached as low as -32° F, with wind chill values dropping below -50° F during severe Arctic outbreaks, as documented in NOAA regional data. These conditions pose risks of frostbite within minutes, freezing of uninsulated water lines, and have historically resulted in school closures and increased emergency heating needs in Essex County. If it is a long-lasting cold without snow cover, frost can migrate deep into the ground freezing pipes and heaving roadways. Most of this would be dealt with by the town either through their utility contracts or by the town road crew in keeping the transportation infrastructure in usable condition. Loss of power during one of these cold snaps may require use of the town shelter and is planned for in the town Local Emergency Management Plan.

Hazard Location: Guildhall and surrounding areas are susceptible to cold temperature hazards, with higher elevations typically experiencing colder temperatures and more severe winter conditions.

Hazard History: Below are the 7 cold related listing from the SHMP of 2023.

Essex 1/25/2007 Cold
Essex 3/6/2007 Cold
Essex 3/9/2007 Cold
Essex 1/14/2009 Cold
Essex 1/7/2015 Cold
Essex 1/11/2022 Cold
Essex 1/14/2022 Cold

Town Vulnerability:

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

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

Natural environment: Cold weather events can cause damage to the environment with downed trees.

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

Potential Future Impacts:

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

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

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

Wildfire

Hazard Description: Wildfires are uncontrolled fires that spread rapidly through vegetation, forests, grasslands, and other flammable materials. Wildfire may be a result of natural causes (lightning, volcanic eruptions), human activities (arson, campfires, machinery sparks), and weather conditions (high temperatures, drought, strong winds). While Guildhall benefits from the relatively moist conditions of Northeastern forests, drought periods in spring and fall elevate wildfire risk. Leaf litter and dry brush in these seasons increase fuel load, and wind can cause rapid fire to spread.

Hazard Extent: Wildfires in Vermont can spread quickly through dense forests, particularly in dry conditions. Wildfires can last from several hours to several days depending on conditions and response efforts. There is a higher risk of wildfires during late spring, summer, and early fall when vegetation is driest. The National Weather Service (NWS) issues a "Red Flag Warning" when conditions are conducive for wildfires. A Red Flag Warning means warm temperatures, very low humidities, and stronger winds are expected to combine to produce an increased risk of fire danger. Extent due to a lack of recent historical occurrences, extent data is unavailable for Guildhall.

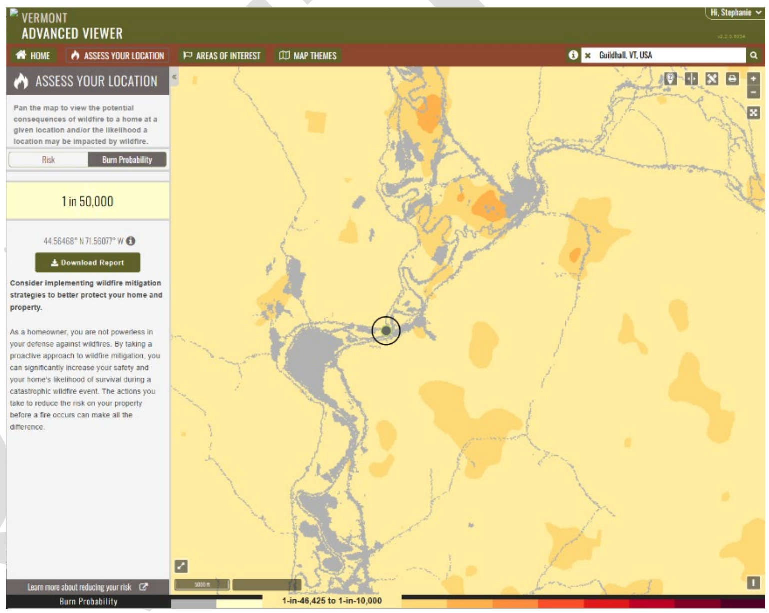


Figure 6 - Northeast and Midwest wildfire risk explorer

Hazard Location: Townwide. With 81% forest cover, all developed areas in Guildhall fall within the wildland-urban interface. Homes along forested roads and remote cabins are particularly vulnerable.

Hazard History: No major fires reported in Guildhall in the last 75 years, but statewide closures of public lands have occurred three times in that period of time due to extreme fire danger. Forest closures have occurred three times statewide in the past 50 years due to extreme fire risk.

Probability of Future Events and Impacts

Wildfire events are considered Unlikely in Guildhall, defined as a <1% probability of occurrence per year. Although Guildhall has not experienced major wildfire events, increasing periods of drought and regional trends in fire weather raise the likelihood.

Expected townwide intensities range from small ground fires during dry leaf-litter seasons to potential moderate canopy fires during extended drought conditions. With climate variability and predicted increases in dry weather during spring and fall, wildfire probability is expected to rise. Extended droughts may increase the frequency and intensity of future events, especially given the dense forest cover and topography.

Climate Change: Climate change has the potential to increase the frequency and intensity of wildfires due to rising temperatures and changing precipitation patterns.

Change in Land Use/Development: Development within the Forest Reserve District could increase assets vulnerable to wildfire, however no known development is anticipated.

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

Town Vulnerability

People: Wildfire events can cause injuries or fatalities to people who do not evacuate in time. Delayed evacuation can be caused by no-noticed events, or by individuals who do not heed the warning. The elderly, the homeless, residents with special needs and those without proper transportation may potentially be impacted more than other residents. Emergency response may be delayed due to limited road access.

Built environment: Wildfire events can cause damage to town and private property, including buildings (burn damage), blocked egress routes, blocked evacuation routes, and loss of electrical power. All structures are within forested areas, many along narrow, tree-lined roads.

Natural environment: Wildfire events can cause damage to the environment with acres of forests and farmlands being burned. Accumulated debris and deadfall during drought conditions increases fuel load.

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

Invasive Species

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

Hazard Location: Invasive species are a rare problem throughout Guildhall, Essex County unlike many towns in Vermont. Damages range from skin blistering and scarring in the case of poison parsnip, to the devastating effect the Asian Longhorn Beetle could have on Vermont's famous maple sugar industry.

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

Ash trees are the source for hardwood that can bend and withstand considerable stress. Historically, ash has been the source for axe handles, hockey sticks and baseball bats. It is a component of timber harvesting in Vermont and provides that industry with a moneymaking product. Spread of the Emerald Ash Borer (*Agrilus planipennis*) (EAB) into Vermont's forests would have a significant impact on timber values.

A third invasive of immediate concern to Vermont is the Asian Longhorned Beetle (*Anoplophora glabripennis*) (ALB) which attacks and kills maple trees. Vermont is famous for its maple syrup and is the largest producer of maple products in the United States.

Widespread loss of maple trees could result in the collapse of this iconic industry and a severe impact to the state's economy.

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

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

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

Town Vulnerability:

People: People may be infected or made ill by invasive species events (e.g., coming in contact with poison parsnip resulting in blisters).

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

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

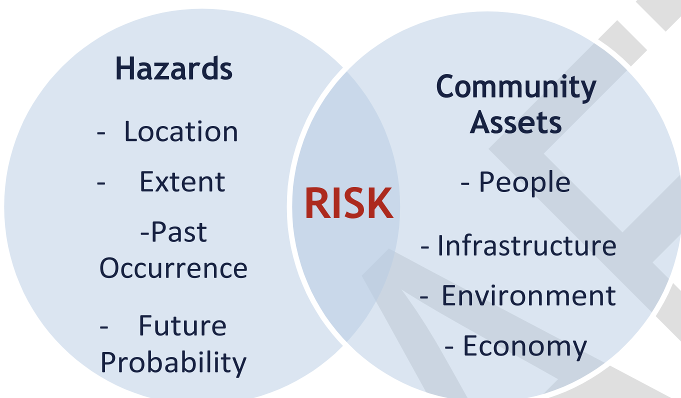
Economy: Invasive species can impact the tourism industry with the closure of local bodies of waters and outdoor recreation trails.

Potential Future Impacts:

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

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

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



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

6 HAZARD MITIGATION STRATEGY

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

Mitigation Goals

The Hazard Mitigation Planning Committee identified the following as the community's primary goals:

Protect the health and safety of the public, protect existing floodplain areas from development, reduce loss of infrastructure due to flash flooding, ensure that essential services can function during disaster by making the infrastructure more resilient, and ensure that current and future highway improvement results in safer conditions. This can be accomplished by:

Increase the Town of Guildhall's resilience to natural hazards by advancing mitigation investment to reduce or avoid long-term risk to people, homes, neighborhoods, the local economy, cultural and historic

resources, ecosystems, and Community Lifelines such as transportation, water, sewer, energy, and communications.

Community Lifelines

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

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

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

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

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

1. Food
2. Water
3. Shelter
4. Agriculture

1. Power Grid
2. Fuel

1. Facilities HAZMAT, Pollutants, Contaminants

Community Capabilities and areas for improvement

Each community has a unique set of capabilities, including authorities, programs, staff, funding, and other resources available to accomplish mitigation and reduce long-term vulnerability. Guildhall's mitigation capabilities that reduce hazard impacts or that could be used to implement hazard mitigation activities are listed below. The Town recognizes and is very cognizant that various areas in the town are in of protection.

Administrative and Technical

This capability refers to the Town's staff and their skills and tools that can be used for mitigation planning and to implement actions. In addition to the Emergency Management staff described in Section 3, municipal staff that can be used for mitigation planning and to implement specific mitigation actions include: Town Treasurer, Town Clerk and Office Assistant.

In addition to paid staff, there is a 3-member Selectboard, 6-member Planning and Zoning and historic district Commission, Fire Warden, Town Health Officer, and Constable.

To augment local resources, the Town has formal contract agreements for emergency response – fire and public works. Technical support is available through the NVDA in the areas of land use planning, emergency management, transportation, GIS mapping, and grant writing. Technical support is also available through the State ANR for floodplain bylaw administration and VTrans Districts for hydraulic analyses.

Strengths Community with a family atmosphere committed small core of volunteers involved in several committees and groups strong interdepartmental communication and cooperation. The Town collaborates with the Treasurers and Town Clerks organizations to stay up to date on legislative actions. The Town contracts with a national level IT consultant to protect their systems from viruses and ransomware.

Areas for Improvement potential candidates for volunteering are limited and small pool of volunteers creates burn out and limited time commitments. There needs to be increased communication with the legislature to understand the burden that legislative action has on smaller towns.

Planning and Regulatory

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

Town Plan: 2024-2032
Description: A framework and guide for how future growth and development should proceed.

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

Town of Guildhall, Vermont – Zoning Bylaw: Adopted March 5, 1985 – Amended September 10, 2013 – to be updated in 2026 (ACCD Grant)
Description: Provides for orderly community growth promoting the health, safety, and general welfare of the community.

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

Road and Bridge Standards: February 2020 and approved every year as the Town applies for grants
Description: Provide minimum codes and standards for construction, repair, and maintenance of town roads and bridges.

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

Road Erosion Inventory Report: 2019 updated 2024 and redo in 2027 (Sam Mayne) and available to do 2027 via NVDA
Description: Prioritizes those infrastructure projects necessary to improve transportation network resiliency and water quality.

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

Local Emergency Management Plan: April 2025
Description: Establishes lines of responsibility and procedures to be implemented during a disaster and identifies high risk populations, hazard sites, and available resources.

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

Strengths plans and regulations in place are being executed; keep plans and regulations up to date strong local partners in implementing plans ; ensure plans are integrated appropriately

Areas for Improvement fire meter 6” bypass now to get a good pressure now
Will be up to specs – backflow check valve from Northumberland – USDA specs – prevent backflow
All brand new meters, 11 hydrants

Financial

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

Guildhall’s 2025-2026 town budget is $352,122.49, with $84,163.59 to fund the Highway Department. Mainly supported by property tax revenues and other small fee services. Along with state and federal grants the town apply for and the VTrans road certificate mileage dollars.

Strengths maximizing grant opportunities available and the ability to have a fiscally minded well-funded budget that the community members are engaged in developing. Guildhall and the surrounding towns share resources such as co-owning a hydro seeder instead of individually purchasing for each town. Guildhall has built up reserve funds that can be utilized during emergency events.

Areas for Improvement Consider the possibility of impact fees for new development through zoning bylaw updates– may consider seeking village /downtown determination for tax credits

Education and Outreach

Guildhall has several outreach and education opportunities that could be used to implement mitigation activities and communicate hazard related information:

- Town website
- Postings at the Town Office, post office and court office
- Sign board out front of the Town Office

Strengths programs/organizations are already in place in the community to get information out, even with lacking internet capability. Town officials and volunteers take advantage of training opportunities that various entities have to offer such as VEC, NVDA, VLCT, VTrans, and ANR, that are supportive of small communities.

Areas for Improvement better coordination needed to help implement future mitigation activities. Guildhall town government and its residents need access to faster internet in order to take advantage of the many opportunities to push information via online such as social media and VTAlert.

National Flood Insurance Program

The Town joined the National Flood Insurance Program (NFIP) in 1991. The effective date of the current Flood Insurance Rate Map (FIRM) is also 1991. The administration of the zoning bylaws and the NFIP in Guildhall is the responsibility of the town's zoning administrative officer who reviews all applications and refers to the planning commission as appropriate.

Guildhall's regulations outline detailed minimum standards for development in flood hazard areas defined as FEMA Special Flood Hazard Areas and Floodway Areas. The regulations also require administering Substantial Improvement and Substantial Damage (SI/SD) requirements in accordance with FEMA P-758 SI/SD Desk Reference, May 2010: in accordance with 24 V.S.A. § 1972 and 24 V.S.A. § 4461 and shall be used to determine the appropriate development standards for repair and rebuilding.

The Town discussed the following as possible actions to continue NFIP compliance:
1) Prepare, distribute, or make available NFIP insurance explanatory pamphlets or booklets.
2) Participate in NFIP training offered by the State and/or FEMA.
3) Establish mutual aid agreements with neighboring communities to address administering the NFIP following a major storm.

State Incentives for Flood Mitigation

Vermont's Emergency Relief Assistance Funding (ERAF) provides state funding to match FEMA Public Assistance after federally declared disasters. Eligible public costs are generally reimbursed by FEMA at 75% with a 7.5% State match. The State will increase its match to 12.5% or 17.5% if communities take steps to reduce flood risk as described below.
12.5% funding for communities that have adopted four (4) mitigation measures:
1) NFIP participation;
2) Town Road and Bridge Standards;
3) Local Emergency Plan; and
4) Local Hazard Mitigation Plan.

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

Guildhall's current ERAF rate is 17.5%. Upon adoption of the 2025 Local Hazard Mitigation Plan, because both the LHMP and in process of adopting River Corridor Bylaws.

Mitigation Action Identification

The Hazard Mitigation Planning Team discussed the mitigation strategy, reviewed projects from the 2005 Plan, and identified possible new actions from the following categories for each of the highest risk natural hazards identified in Section 5.

Local Plans & Regulations These actions include government authorities, policies, or codes that influence the way land and buildings are developed and built.

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

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

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

Local Plans & Regulations Examples

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

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

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

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

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

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

Structure & Infrastructure Project Examples

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

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

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

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

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

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

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

Natural Systems Protection Examples

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

Outreach & Education Program Examples

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

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

Mitigation Action Evaluation

For each mitigation action identified, the Planning Team evaluated its potential benefits and/or likelihood of successful implementation. Actions were evaluated against a range of criteria, including a planning level assessment of whether the costs are reasonable compared to the probable benefits. Results of this evaluation are presented in **Table 6**.

See Community Survey Results in **Appendix D** for which category of mitigation actions survey respondents wanted the Town to prioritize.

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

Actions without overall public support/political will were not selected for implementation. Actions whose costs were not reasonable compared to probable benefits were also not selected.

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

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

The action plan is presented in **Table 7**

Table 8 - Mitigation actions evaluation and prioritization

Mitigation Actions	Life Safety	Prop Protect	Tech	Political	Admin	Other Obj	Benefit Score	C/B	Hazard Type	Area of Impact	Lead Party	Funding Source	Est Cost	Time	Priority
Local Plans & Regulations															
Recommended for Implementation															
Consider purchasing a generator for the town office	1	1	1	0	1	1	5	Y	Ice; Fluvial Erosion/Flash Flooding; Wind; Landslide/Slope Failure; Heat; Snow; Cold; Inundation Flooding; Wildfire	Townwide	Selectboard Chair	FEMA/VEM Grant / Town General Fund	1	2027	Low
Complete re-inventory of hydrologically connected roads (MRGP)	1	1	1	1	1	1	6	Y	Fluvial Erosion/Flash Flooding; Inundation Flooding	Hydrologically connected town roads	Road Commissioner	VTrans Grant/ Town Road Budget	1	2027	High
Conduct hydrologic study of Fellows Rd	1	1	1	1	1	1	6	Y	Fluvial Erosion/Flash Flooding; Inundatio	Fellows Rd	Road Commissioner	VTrans Grant/ Town Road Budget	1	2028	Medium

Mitigation Actions	Life Safety	Prop Protect	Tech	Political	Admin	Other Obj	Benefit Score	C/B	Hazard Type	Area of Impact	Lead Party	Funding Source	Est Cost	Time	Priority
									n Flooding						
Along with general update of the zoning bylaws also review new state flood plain regulations (Act 121) and ensure town regulations conform or exceed statewide river corridor standard	1	1	1	1	1	1	6	Y	Fluvial Erosion/Flash Flooding; Inundation Flooding	Townwide	Zoning Administrator	Town General Fund / Volunteer Time	1	2026	High
The Town will receive updated and digitized FIRMs from FEMA to support their flood mitigation efforts, 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	1	1	1	1	1	1	6	Y	Fluvial Erosion/Flash Flooding; Inundation Flooding	Townwide	Zoning Administrator	Town General Fund / Volunteer Time	1	2026	High
Consider creating proactive measures for the Emerald Ash Borer	1	1	1	1	1	1	6	Y	Invasive Species	Townwide	Tree Warden	Town General Fund / Volunt	1	2027	Low

Mitigation Actions	Life Safety	Prop Protect	Tech	Political	Admin	Other Obj	Benefit Score	C/B	Hazard Type	Area of Impact	Lead Party	Funding Source	Est Cost	Time	Priority
												eer Time			
Consider working with power companies to discuss how networks work and develop redundant system or upgrade to main power coming into town	1	1	1	1	1	1	6	Y	Ice; Wind; Snow; Cold	Townwide	Town Clerk	Town General Fund	1	2026	Medium
Consider working with Meals on Wheels and/or Visiting Nurses to understand vulnerable population and develop plan during emergencies	1	1	1	1	1	1	6	Y	Ice; Infectious Disease; Fluvial Erosion/Flash Flooding; Wind; Landslide/Slope Failure; Heat; Drought; Snow; Cold; Inundation Flooding; Wildfire	Townwide	EMD	Town General Fund / Volunteer Time	1	2026	High

Mitigation Actions	Life Safety	Prop Protect	Tech	Political	Admin	Other Obj	Benefit Score	C/B	Hazard Type	Area of Impact	Lead Party	Funding Source	Est Cost	Time	Priority
Consider implementing COOP or COG	1	1	1	1	1	1	6	Y	Ice; Infectious Disease; Fluvial Erosion/Flash Flooding; Wind; Landslide/Slope Failure; Heat; Drought; Snow; Cold; Inundation Flooding; Wildfire	Townwide	Town Clerk	Town General Fund	1	2027	Low
Work with Red Cross on shelter pre-agreement	1	1	1	1	1	1	6	Y	Ice; Infectious Disease; Fluvial Erosion/Flash Flooding; Wind; Landslide/Slope Failure; Heat; Drought; Snow; Cold;	Townwide	EMD	Town General Fund / Volunteer Time	1	2027	Low

Mitigation Actions	Life Safety	Prop Protect	Tech	Political	Admin	Other Obj	Benefit Score	C/B	Hazard Type	Area of Impact	Lead Party	Funding Source	Est Cost	Time	Priority
									Inundation Flooding; Wildfire						
Consider impact fees for new development towards upgrading roads and culverts	1	1	1	1	1	1	6	Y	Fluvial Erosion/Flash Flooding; Inundation Flooding	Townwide	Planning Commission Chair	Town General Fund / Volunteer Time	1	2029	Medium
Collaborate with internet providers and VT Public Service Department to get high speed internet built out for the community	1	1	1	1	1	1	6	Y	Ice; Infectious Disease; Fluvial Erosion/Flash Flooding; Wind; Landslide/Slope Failure; Heat; Drought; Snow; Cold; Inundation	Townwide	Town Clerk	Town General Fund	1	2026	High

Mitigation Actions	Life Safety	Prop Protect	Tech	Political	Admin	Other Obj	Benefit Score	C/B	Hazard Type	Area of Impact	Lead Party	Funding Source	Est Cost	Time	Priority
									Flooding; Wildfire; Invasive Species						
Implement iWorQ system - a public works management system	1	1	1	1	1	1	6	Y	Ice; Fluvial Erosion/Flash Flooding; Wind; Landslide/Slope Failure; Snow; Inundation Flooding; Wildfire; Invasive Species	Townwide	Road Commissioner	Town Road Fund	1	2026	High

Mitigation Actions	Life Safety	Prop Protect	Tech	Political	Admin	Other Obj	Benefit Score	C/B	Hazard Type	Area of Impact	Lead Party	Funding Source	Est Cost	Time	Priority
Consider Crawford Cemetery relocation to mitigate risk of loss due to landslide/fluvial erosion	1	1	1	1	1	1	6	Y	Fluvial Erosion/Flash Flooding; Landslide/Slope Failure; Inundation Flooding	Crawford Cemetery/ Connecticut River	Selectboard Chair	Town General Fund / Volunteer Time	1	2029	Medium

Not Recommended for Implementation

Structure & Infrastructure Projects

Recommended for Implementation

Mitigation Actions	Life Safety	Prop Protect	Tech	Political	Admin	Other Obj	Benefit Score	C/B	Hazard Type	Area of Impact	Lead Party	Funding Source	Est Cost	Time	Priority
Replace culvert on Birch Hill over Jones Brook	1	1	1	1	1	1	6	Y	Fluvial Erosion/Flash Flooding; Inundation Flooding	Birch Hill	Road Commissioner	VTrans Grant / Town Road Fund	2	2027	High
Upgrade MRGP road segments on Granby Rd to be compliant	1	1	1	1	1	1	6	Y	Fluvial Erosion/Flash Flooding; Inundation Flooding	Granby Rd	Road Commissioner	VTrans Grant / Town Road Fund	1	2026	High

Mitigation Actions	Life Safety	Prop Protect	Tech	Political	Admin	Other Obj	Benefit Score	C/B	Hazard Type	Area of Impact	Lead Party	Funding Source	Est Cost	Time	Priority
Lamont Rd upgrades to include ditching, culvert upgrades and gravel	1	1	1	1	1	1	6	Y	Fluvial Erosion/Flash Flooding; Inundation Flooding	Lamont Rd	Road Commissioner	VTrans Grant / Town Road Fund	1	2029	High
Fellows Rd upgrades to include ditching, culvert upgrades and gravel	1	1	1	1	1	1	6	Y	Fluvial Erosion/Flash Flooding; Inundation Flooding	Fellows Rd	Road Commissioner	VTrans Grant / Town Road Fund	1	2029	High
Consider proactive measures for the Emerald Ash Borer	1	1	1	1	1	1	6	Y	Invasive Species	Townwide	Tree Warden	Town General Fund / Volunteer Time	1	2028	Medium
Trim hazardous trees within town ROW	1	1	1	1	1	1	6	Y	Ice; Wind; Drought; Snow; Wildfire	Townwide roads	Road Commissioner	Town Road Fund	1	2026	Medium
Stormwater ditching along town owned roads MRGP	1	1	1	1	1	1	6	Y	Fluvial Erosion/Flash Flooding; Inundation Flooding	Townwide roads	Road Commissioner	VTrans Grant / Town Road Fund	1	2026 and annually	High

Mitigation Actions	Life Safety	Prop Protect	Tech	Political	Admin	Other Obj	Benefit Score	C/B	Hazard Type	Area of Impact	Lead Party	Funding Source	Est Cost	Time	Priority
Not Recommended for Implementation															
Natural Systems Protection															
Recommended for Implementation															
Identify natural flood protection assets and explore conducting a scoping study of higher priority assets for better river corridor planning and floodplain restoration	1	1	1	1	1	1	6	Y	Fluvial Erosion/Flash Flooding; Inundation Flooding	Townwide	Planning Commission Chair	Town General Fund / Volunteer Time	1	2029	Low
Along with general update of the zoning bylaws also review new state flood plain regulations (Act 121) and ensure town regulations conform or exceed statewide river corridor standard	1	1	1	1	1	1	6	Y	Fluvial Erosion/Flash Flooding; Inundation Flooding	Townwide	Zoning Administrator	Town General Fund / Volunteer Time	1	2026	High
Connecticut River joint Commission and Nature Conserve to plant trees along Connecticut River	1	1	1	1	1	1	6	Y	Fluvial Erosion/Flash Flooding; Landslide /Slope Failure; Inundation Flooding	Connecticut River	Connecticut River Joint Commission - River Bend Subcommittee Chair	Volunteer Time / Vermont LaRosa Partnership	1	2026 and annually	Medium

Mitigation Actions	Life Safety	Prop Protect	Tech	Political	Admin	Other Obj	Benefit Score	C/B	Hazard Type	Area of Impact	Lead Party	Funding Source	Est Cost	Time	Priority
Not Recommended for Implementation															
Outreach & Education Programs															
Recommended for Implementation															
Outreach to property owners on best practices of tree trimming on private property and educate about spotting the Emerald Ash Borer	1	1	1	1	1	1	6	Y	Invasive Species	Townwide Property Owners	Tree Warden	Town General Fund / Volunteer Time	1	2026	Medium
Consider adopting VTAlert once high speed internet is established throughout community	1	1	1	1	1	1	6	Y	Ice; Infectious Disease; Fluvial Erosion/Flash Flooding; Wind; Landslide/Slope Failure; Heat; Drought; Snow; Cold; Inundation Flooding; Wildfire;	Townwide	Town Clerk	Town General Fund	1	2027	Medium

Mitigation Actions	Life Safety	Prop Protect	Tech	Political	Admin	Other Obj	Benefit Score	C/B	Hazard Type	Area of Impact	Lead Party	Funding Source	Est Cost	Time	Priority
									Invasive Species						
Not Recommended for Implementation															

Table 6 Evaluation Criteria:

Life Safety –Will the action be effective at protecting lives and preventing injuries?

Property Protection –Will the action be effective at eliminating or reducing damage to structures and infrastructure?

Technical – Is the action a long-term, technically feasible solution?

Political – Is there overall public support/political will for the action?

Administrative – Does the community have the administrative capacity to implement the action?

Other Community Objectives – Does the action advance other community objectives, such as capital improvements, economic development, benefit a vulnerable population, environmental quality, or open space preservation?

Rank each of the above criteria in Table 5 with a -1, 0, or 1 using the following table:

1 = Highly effective or feasible

0 = Neutral

-1 = Ineffective or not feasible

Estimated Cost – 1 = less than $50,000; 2 = $50,000 to $100,000; 3 = more than $100,000

C/B – Are the costs reasonable compared to the probable benefits? Yes or No

7 PLAN MAINTENANCE

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

Annual Evaluation and Monitoring

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

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

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

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

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

The status (e.g., in progress, complete) of each action should be recorded in Table 8. If the status is "in progress" note whether the action is on schedule. If not, describe any problems, delays, or adverse conditions that will impair the ability to complete the action.

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

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

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

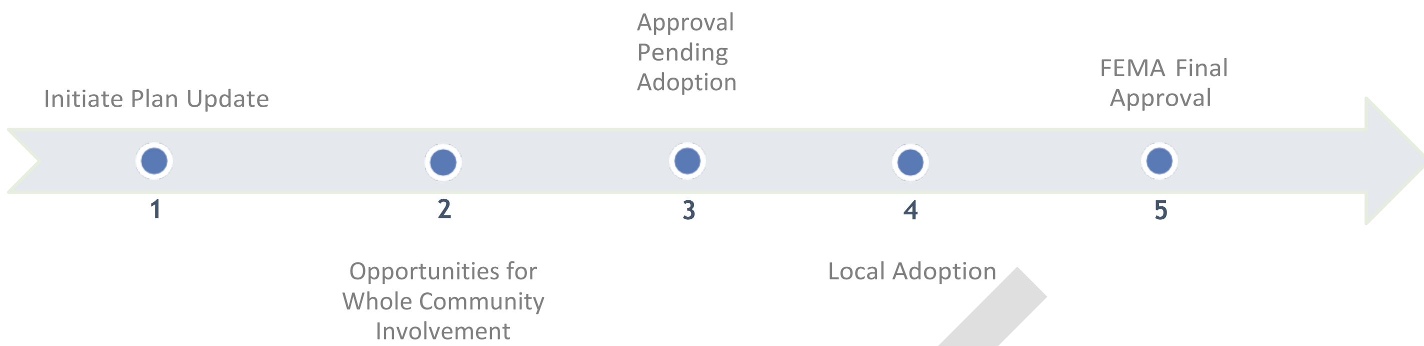
5. A report (or record in the form of meeting minutes) of the annual evaluation and monitoring will be made available to the public.

Table 9: Mitigation Action Status

Mitigation Action	2024	2025	2026	2027	2028
Local Plans & Regulations					
Structure & Infrastructure Projects					
Natural Systems Protection					
Outreach & Education Programs					

5-Year Updates

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



1. Currently, funding to assist municipalities in paying for planning services to update the Local Hazard Mitigation Plan is available through FEMA's Building Resilient Infrastructure and Communities (BRIC) grant program. If using this grant, Guildhall should contact Vermont Emergency Management (VEM) to apply for funding in 2027 – approximately 2 years before the Plan expires.

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

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

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

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

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

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

APPENDIX A – Community Outreach

APPENDIX B – Past Mitigation Actions Updates

Table 3-B Mitigation Projects by Priority Project/Priority	Mitigation Action	Who is Responsible	Time Frame and Potential Funding	Initial Implementation Steps
Culvert upgrades on Fellows Rd. and Granby Rd. HIGH	One new culvert is needed on each road to prevent future washouts. A cost estimate of $100,000 has been provided by a hydraulic study.	The Selectboard and Road Commissioner	2005/6 HMGP, PDM-C, FMA, Bridge and Culvert Program	Seek appropriate grant source, obtain cost estimate and apply for funding. 2015 Completed Granby Rd Completed and ongoing - Carried forward to current plan
Generator - HIGH	A generator is needed for emergency backup power at the potential shelters.	The Selectboard and Local emergency Management Coordinator	2005/6 HMGP, PDM-C, FMA Generator at the court house – which has been identified as a back up Local groups (MRC) Homeland Security	Seek appropriate grant source, obtain cost estimate and apply for funding. At the time the Town did not perceive the need because most people were self sufficient or have their own generator but has been carried forward for re-consideration
Rescue Boat	The village area is in the floodplain with potential access points closed off in flooding	The Selectboard and Local emergency Management Coordinator	2005/6 HMGP, PDM-C, FMA	Seek appropriate grant source, obtain cost estimate and apply for funding. Removed - State has since developed a swift water team

Shelter Pre-Agreement	Guildhall local officials are interested in developing a Red Cross Pre-Agreement.	The Selectboard and Local emergency Management Coordinator	2005/6 - free	Contact the local VT Red Cross office – 1-800-660-9130, Tim Stetson Red Cross re-organized possible agreement with MRC - carried forward for re-consideration
GIS mapping of NFIP areas	Identify flood areas with vulnerable structures consistent with Vermont GIS mapping effort.	Northeastern Vermont Development Association	2006/7 – FEMA FMA funds, HMGP or EMPG funds	Coordinated statewide NFIP mapping effort for all towns. In process – carried forward

APPENDIX C – Meetings Agendas and Notes

APPENDIX D – Certificate of Adoption

CERTIFICATE OF ADOPTION
Town of Guildhall,
Vermont Selectboard
A Resolution Adopting the LOCAL HAZARD MITIGATION PLAN TOWN OF GUILDHALL, VERMONT 2025

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

WHEREAS the Town of Guildhall Selectboard has prepared a natural hazard mitigation plan, hereby known as the LOCAL HAZARD MITIGATION PLAN TOWN OF GUILDHALL, VERMONT 2025 in accordance with federal laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and the National Dam Safety Program Act, as amended; and

WHEREAS the LOCAL HAZARD MITIGATION PLAN TOWN OF GUILDHALL, VERMONT 2025 identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in the Town of Guildhall from the impacts of future hazards and disasters; and

WHEREAS adoption by the Town of Guildhall Selectboard demonstrates its commitment to hazard mitigation and achieving the goals outlined in the LOCAL HAZARD MITIGATION PLAN TOWN OF GUILDHALL, VERMONT 2025.

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

Section 1. In accordance with 24 VSA §872, the TOWN OF GUILDHALL Selectboard adopts the LOCAL HAZARD MITIGATION PLAN TOWN OF GUILDHALL, VERMONT 2025. While content related to the Town of Guildhall may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the Town of Guildhall to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

ADOPTED by a vote of______ in favor and_____ against, and_____ abstaining, this day of________, 2025.

By:____(print name)
Selectboard Chair

ATTEST: By:____ (print name)