Fair Haven, Vermont
Local Hazard Mitigation Plan

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Prepared by the Fair Haven Hazard Mitigation Committee:

Joe Gunter, Town Manager/Emergency Management Director

Jim Heller, Emergency Management Coordinator/Fire Chief/Public Works Administrative Assistant/ Wastewater Department Assistant Operator

Other Key Partners:

Rutland Regional Planning Commission

Poultney Mettowee Natural Resources Conservation District

Western Vermont Floodplain Manager

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1 Introduction

The impact of expected, but unpredictable natural events can be reduced through community planning. The goal of this Plan is to provide a natural hazards local mitigation strategy that makes Fair Haven (the Town) more disaster resistant.

Hazard Mitigation is any sustained action that reduces or eliminates long-term risk to people and property from natural hazards and their effects. 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 communities have opportunities to identify mitigation strategies and measures during all the other phases of Emergency Management – Preparedness, Response and Recovery. Hazards cannot be eliminated, but it is possible to determine what the hazards are, where the hazards are most severe, and identify local actions that can be taken to reduce the severity of the hazard.

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 identifying strategies to reduce risks from vulnerabilities of highest concern. Once adopted, this Plan is not legally binding; instead, it outlines goals and actions to prevent future loss of life and property.

The benefits of mitigation planning include:

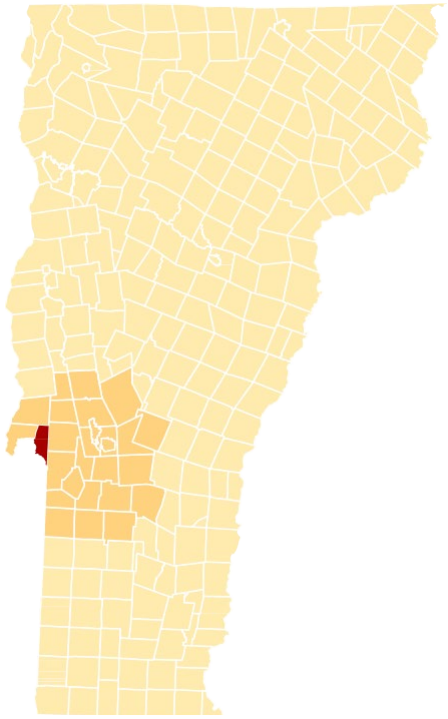
- Identifying actions for risk reduction that are agreed upon by stakeholders and the public;
- Focusing resources on the greatest risks and vulnerabilities;
- Increasing education and awareness of threats and hazards, as well as their risks;
- Communicating priorities to State and Federal officials; and
- Aligning risk reduction with other community objectives.

Furthermore, the Town seeks to be in accordance with the strategies, goals, and objectives of the 2018 State Hazard Mitigation Plan.

3 Community Profile

Land Use and Development Patterns

Fair Haven is situated at the southern end of the Champlain Valley in western Rutland County. The Fair Haven landscape is dominated by foothills and is bisected by the Castleton River. Topographically, the Town runs from a high point of 947 feet elevation to a low of about 285 feet.



Fair Haven is approximately 35% forested and supports a diversity of natural communities such as Northern hardwoods ecosystem, and silver-maple dominated floodplain areas.

The center of town has several attractive community features including the Town green, unique homes, churches, Town library, grade school, and Municipal Building. On the eastern edge of the green stands the commercial downtown, with banks, stores, offices, and apartments, all with historical architectural interest and value. Commercial development in Fair Haven was directly tied to waterfalls on the Castleton River. In more recent times the main commercial area moved slightly north to the top of the hill overlooking the falls and is now surrounded by residential neighborhoods. Approximately 72% of the Town's residences are in the central village.

Streets to the residential areas radiate from the Town green, the layout of the lots, streets and houses create several distinct neighborhoods. The design of the residential area is conducive to walking downtown, to church, and to the grade school.

Open landscape consisting of mainly family farms and slate quarries remain outside the residential center. Dairy farms and other agricultural operations compliment the rural character outside of Town. Over the last century, secondary commercial and industrial areas have also sprung up in these areas. Recently the outlying areas along the Town's main roads and junctions have continued to grow.

Slate is the most significant natural resource in Fair Haven and has played a role in its development. Slate quarries were and are active, as the slate enterprises of the late-1800's continue to be of economic importance.

With the completion of US Route 4 in 1970, Fair Haven became more accessible. Following the construction of US Route 4, the area around Exit 2 has become a major commercial area, providing restaurants, deli's, gas and other services to residents as well as visitors passing through.

Demographics and Growth Potential

The 2016 American Community Survey Five-Year Estimates prepared by the U.S. Census Bureau shows an estimated population of 2,652 for Fair Haven, and 1,264 housing units. Of the population included in the survey, 27% were 19 or under, and 21% were 65 or over, with a median age of 41.3 years, comparable to Vermont's median age of 42. Fair Haven's population has been declining since 2000. Lack of employment is most likely the case for the decrease. Significant growth is not anticipated within the foreseeable future.

Precipitation and Water Features

Precipitation in Fair Haven is typical of the rest of the region. Average precipitation is 41 inches of rain; the most rain falls during the 31 days centered around June 12. Average snowfall is 68 inches; the most snow falls during the 31 days centered around January 28.

The junctions of the Poultney River, Castleton River, and Mud Brook converge in Town. All three waterbodies have FEMA designated floodplains. Except for the extreme southwest corner of the Town, the Fair Haven landscape is contained with the Poultney River watershed. Inman Pond and its watershed are protected and used as the Town's drinking water reservoir.

Water and Sewer Supply

The village is served by a municipal water system that was upgraded in 1982. Inman Pond serves approximately 970 structures. The Town also maintains two 500,000 gallon water towers for use in the provision of water, totaling a treated water storage capacity of 1 million gallons. Approximately 180,000 gallons are processed daily, equaling 18% of the total storage capacity. The municipal water system can provide water for 468 days without rain before its reserves are depleted.

To protect the water supply, and regulate water hookups, user responsibility, and inspection authorities of the Town, the Water System Service/Source Protection Area ordinance has been adopted by the Town. This ordinance fulfills the state requirement for a source protection plan. A 2002 ordinance also allocates future hookups depending on use, consumption and other criteria.

Weaknesses in the reliability of the municipal water system are associated with the lengthy distance between the supply and the users. There is approximately 2 miles of below ground water pipes connecting Inman Pond with the village. A midrange earthquake could easily disturb this piping system and disrupt water service to the village. Other water supplies in town are maintained privately by homeowners' associations and individual homeowners.

A municipal sewer system services the same area as the municipal water system. This system has been expanded along Airport Road to cover the remainder of the homes in the service area. Approximately 130,000 gallons are treated per day, which is 26% of the plant's capacity.

Sewer service is also provided by force main from the Welcome Center on Airport Road, Camera Slate/YorkMont Auto on South Main Street, and the National Guard Armory on Airport Road to the Town sewer system.

Transportation

Many transportation routes of regional and state significance pass through Fair Haven. The Town's location at the "gateway" to Vermont means that Fair Haven receives almost all the traffic moving from New York and other western states to destinations throughout Vermont. There are approximately 40 miles of roadway in Fair Haven, 65% of which are town maintained, 30% are state maintained and the remaining 5% are maintained privately. Including interstate bridges, Fair Haven has a total of 13 bridges in its highway network, as well as many large culverts. Twelve have a span of 20 feet or more; 1 is less than 20 feet. Of this total, 8 are on the state system. Under current Federal regulations, any bridge 20 feet or over is eligible for Federal funding assistance.

VT Route 22A is one of the State's core transportation corridors moving traffic north-south along the western side of the state. VT Route 22A makes its way through the commercial district in the center of the village. US Route 4, the major east-west route across the central part of the state also passes through Fair Haven. Three exits off US Route 4 provide access to the Town. Exit 1 and 2 are used by local and out-of-town traffic and brings much transient business to the area. Exit 3 is mostly used by local traffic. VT Route 22A connects Fair Haven to Poultney and New York state, and is an especially important long-distance road as it travels north to Burlington.

Vermont Railway tracks run through the center of Town as well. These tracks provide both freight and passenger services.

Electric Utility Distribution System

Electric service to approximately 1,424 customers is provided by Green Mountain Power via three circuits: FH-J26; FH-J28; and HY-G25. Average annual outage statistics between 2014 and 2018 are summarized in Table 1.

Table 1: Power Outage Summary

Average Annual (2014-2018)	FH-J26	FH-J28
Avg # of times a customer was without power	0.6	1.0
Avg length of an outage in hours	1.8	2.8
# of hours the typical customer was without power	1.1	2.7
2018 only		
Avg # of times a customer was without power	2.5	1.2
Avg length of an outage in hours	1.1	0.4
# of hours the typical customer was without power	2.7	0.5

The longest power outage affecting the greatest number of customers between 2015 and 2018 was 8.60 hours long and impacted 18 customers. During this same time period, there was a 56.64 hour long outage, but it only impacted four customers.

It is worth noting most the Town's critical facilities are on the same circuit – FH-J26.

Emergency Management

The Fair Haven Fire Department is a municipal department under the direction of a Chief and two Assistant Chiefs. In addition to fire suppression, the Department provides vehicle extrication, and is trained to the Hazardous Materials Operations level. The firehouse is in the Municipal Building, with three apparatus bays and an upstairs meeting room.

Apparatus include an Engine-Rescue, a Pumper-Tanker, and a brush truck. The department provides mutual aid assistance to surrounding communities, in both Rutland County, VT and Washington County, NY. A hydrant system serves the village area. The Town's water and sewer ordinance regulates the minimum size (8") of new water pipes servicing new development. This is to ensure that there is an adequate water supply for fighting fires in the vicinity.

The Fair Haven Police Department has four full-time Police Officers. It is also staffed by seven part-time officers and a part- time administrative assistant.

Fair Haven Rescue Squad, Inc. (FHRS) provides ambulance service to Fair Haven and the surrounding towns of Hubbardton, West Haven, and Low Hampton, NY. The FHRS is staffed by paid employees. The population served is approximately 5,100. FHRS is licensed at the Paramedic Level by the Vermont Department of Health. FHRS is a member of Vermont Ambulance District #10. Per county mutual aid agreement, FHRS provides coverage to towns served by Poultney VT Rescue Squad, Inc., Skenesborough NY EMS, Granville NY Rescue Squad, Inc., and Regional Ambulance Service in Rutland, VT. These services also provide mutual aid coverage to Fair Haven Rescue when FHRS is on a call, or there is a mass casualty incident. Air ambulances are also available from Dartmouth-Hitchcock Medical Center, and the Albany Medical Center. Six landing zones have been identified in the FHRS coverage area. The FHRS currently has three ambulances.

Fair Haven's Emergency Services do not share a common dispatch center. The Fire Department is dispatched via the Washington County NY Communication Center in Fort Edward, NY, while the Police Department and Fair Haven Rescue are both dispatched via the Vermont State Police facility in Westminster, VT. Inter-agency communications interoperability, with each other and with outside mutual-aid agencies, is provided using county- and state-wide common radio frequencies (Rutland County/Washington County Fireground channels, HEAR 1-2 EMS channels, VCOMM V-TAC/U-TAC channels), and via cellular technology.

Emergency Management Planning

The Town Manager is the Emergency Management Director (EMD). The EMD has an appointed Emergency Management Coordinator (EMC). Both work with others in town to keep the Local Emergency Plan up-to-date as well as to coordinate with nearby towns and regional emergency planning efforts.

Table 2: Plan Development Process

August 2018: RRPC staff first discuss updating this Plan with the Fair Haven Emergency Management Director.

September 26, 2018: Hazard Mitigation Committee kick-off meeting. Discussed the status of the current plan, the plan development process, potential hazards, and next steps.

October 2018: Committee reviewed and provided updates to the community profile and storm history.

December 13, 2018: Hazard Mitigation Committee meeting. Discussed storm history and began discussing local vulnerabilities and community capabilities.

January 23, 2019: Hazard Mitigation Committee meeting. Re-visited some aspects of the planning process. Continued work on hazard identification, risk assessment, and community capabilities.

January 24, 2019: Public notice posted on RRPC and Town social media that the Town is engaging in hazard mitigation planning and updating their LHMP. Emailed notice to Selectboard/Planning Commission chairs and Town Clerks in the neighboring towns of Benson, Castleton, Poultney, and West Haven. Name and contact information provided in notices for more information.

February 20, 2019: Hazard Mitigation Committee meeting. Completed work on hazard identification, risk assessment, mitigation goals, community capabilities, and changes since the 2009 plan. This meeting was publicly warned on the RRPC website and posted in the Town Office – no public comment received.

March 20, 2019: Hazard Mitigation Committee meeting. Began work on mitigation actions. This meeting was publicly warned on the RRPC website and posted in the Town Office – no public comment received.

May 2, 2019: Hazard Mitigation Committee meeting. Completed work on mitigation actions. This meeting was publicly warned by posting in the Town Office – no public comment received.

June 5, 2019: Draft Plan approved by Hazard Mitigation Committee.

4 Planning Process

Plan Developers

Steffanie Bourque, an Emergency Management Planner at the Rutland Regional Planning Commission (RRPC) assisted the Town with updating its Local Hazard Mitigation Plan. Hazard Mitigation Grant Program funds from FEMA supported this process.

The Hazard Mitigation Committee members who assisted with the update include the Town Manager/EMD and EMC. It should be noted the EMC also serves as the Town's Fire Chief and has been employed as a full-time staff member in the Highway and Wastewater Departments for the past 30+ years. Given his other significant municipal roles and institutional knowledge, the Town felt justified in limiting the Committee membership.

Plan Development Process

The 2019 Fair Haven Local Hazard Mitigation Plan is the first single jurisdiction mitigation plan drafted for the Town. Previously, the Town had a town-specific Annex in the 2009 Rutland County, VT Hazard Mitigation Plan.

This Plan has been reconstructed as a single jurisdiction, stand-alone Fair Haven Local Hazard Mitigation Plan that will be submitted for individual approval to FEMA. As such, several sections have been added or updated to include all necessary information. A summary of the process taken to develop this Plan is provided in **Table 2**.

In addition to the local knowledge of Committee 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.**

June 10, 2019: Draft Plan shared with local and neighboring Selectboards / Planning Commissions / Town Clerks in Benson, Castleton, Poultney, and West Haven for input and posted on the RRPC and Town websites and at the town office for a 14-day public comment period. Name and contact information provided in notices for more information.

June 25, 2019: No public comments received during the public comment period.

June 26, 2019: Draft Plan submitted to VEM for review.

July 8, 2019: Incorporated VEM comments into Draft Plan.

Changes Since the 2009 Plan

Recent development in Town over the past decade has included the construction of single family homes. In a typical year, the Town will see two to three new residential houses built – and they have always been built outside of the floodplain. Fair Haven sees a few commercial developments each year. This development has not made the Town more vulnerable, since development has not occurred in flood zones or other hazardous areas.

There has been some change in the Town's mitigation priorities between this Plan update and the 2009 plan. In 2009, transportation accidents, power outages, and downtown fires were the Town's highest risk hazards.

Although transportation accidents (particularly along Routes 22A/4A through downtown) and downtown fires remain high risk, low frequency hazards; they are not natural hazards and are therefore no longer addressed in this Plan.

As described below in Section 5, power outages associated with thunder and/or winter storms remain a concern. Especially if a power outage coincided with a large scale sheltering event.

Hazard mitigation actions from 2009 are presented in Appendix C. The Hazard Mitigation Committee reviewed these actions and reported on the status of each.

Table 3: Existing Plans, Studies, Reports & Technical Information Utilized in Plan Update

2019 Local Emergency Management Plan

2019 FEMA NFIP Insurance Reports

2018 State of Vermont Hazard Mitigation Plan

2018-2014 Green Mountain Power Outage Data

2017 South Lake Champlain Tactical Basin Plan

2016 Fair Haven Town Plan

2016 American Community Survey Five-Year Estimate

2013 Stormwater Infrastructure Mapping Study

2010 Zoning & Flood Hazard Area Regulations

2009 Rutland Region All Hazards Mitigation Plan

National Oceanic and Atmospheric (NOAA) National Climatic Data Center's Storm Events Database

National Weather Service (Burlington, VT) Recent Weather Event Summaries

FEMA Disaster Declarations for Vermont

OpenFEMA Dataset: Public Assistance Funded Project Summaries for Vermont

U.S. Geological Survey National Water Information System- Stream Gage Data

"Climate Variability and Socioeconomic Consequences of Vermont's Natural Hazards: A Historical Perspective" by Lesley-Ann Dupigny-Giroux, 2002, Vermont History 70: 19-39.

Rutland Herald Archives

FEMA Flood Insurance Rate Maps

Relevant Stream Geomorphic Assessments and/or River Corridor Plans

5 Hazard Identification and Risk Assessment

Local Vulnerabilities and Risk Assessment

One of the most significant changes from the 2009 Plan is the way hazards are assessed. To be consistent with the approach to hazard assessment in the 2018 State Hazard Mitigation Plan, the Hazard Mitigation Committee conducted an initial analysis of known natural hazards to determine their probability of occurring in the future.

The Committee then ranked the hazard impacts associated with the known natural hazards based on the probability of occurrence and potential impact to life, the economy, infrastructure, and the environment. The ranking results are presented in **Table 4**.

After engaging in discussions, the Town identified the following "high risk hazards" that they believe their community is most vulnerable to:

- Rain/Thunder Storms with associated fluvial erosion, inundation flooding, high winds, and/or hail.
- Winter Storms with associated extreme cold, snow, ice, and high winds.

Each of these "high risk hazards" (orange in **Table 4**) are further discussed in this section and depicted in the Local Hazards and Vulnerabilities Map in **Appendix B**.

The "low risk hazards" that are considered to have a lower probability of occurrence and lesser potential impact are not discussed. For information on these hazards, consult the State Hazard Mitigation Plan.

Table 4: Community Hazard Risk Assessment

Hazard Event	Hazard Impacts	Probability	Potential Impact					Score
			Life	Economy	Infrastructure	Environment	Average	
Thunderstorm Tropical Storm/Hurricane Landslide Ice Jam Tornado	Fluvial Erosion	4	3	3	4	3	3.25	13.00
	Inundation Flooding	4	3	3	4	3	3.25	13.00
	Wind/Hail	4	2	2	2	2	2.00	8.00
Winter Storm	Cold/Snow/ Ice/Wind	4	3	2	3	2	2.50	10.00
Drought	Heat	3	3	2	1	3	2.25	6.75
	Drought	3	3	2	1	2	2.00	6.00
Wildfire	Wildfire	2	3	3	3	2	2.75	5.50
Earthquake	Earthquake	2	3	3	3	2	2.75	5.50
*Score = Probability x Average Potential Impact								

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

High Risk Hazard Profiles

Inundation Flooding and Fluvial Erosion

Flooding is the overflowing of rivers, streams, drains and lakes due to excessive rain, rapid snow melt or ice as well as overflow of banks caused by sudden high water flow due to breaching of dams (both human-made and natural dams caused by beavers or debris build-up). Flooding of land adjoining the normal course of a stream or river is a natural occurrence. If these floodplain areas were left in their natural state, floods likely would not cause significant damage.

Floods can damage or destroy public and private property, disable utilities, make roads and bridges impassable, destroy crops and agricultural lands, cause disruption to emergency services, and result in fatalities. People may be stranded in their homes for a time without power or heat or they may be unable to reach their homes. Long-term collateral dangers include the outbreak of disease, loss of livestock, broken sewer lines or wash out of septic systems causing water supply pollution, downed power lines, loss of fuel storage tanks, fires and release of hazardous materials.

While inundation-related flood loss is a significant component of flood disasters, the more common mode of damage in Vermont is associated with fluvial erosion, streambed and streambank erosion, often associated with physical adjustment of stream channel dimensions and location during flood events. These dynamic and oftentimes catastrophic adjustments are due to bed and bank erosion, debris and ice jams, or structural failure of or flow diversion by human- made structures. An ice jam occurs when the ice layer on top of a river breaks into large chunks which float downstream and cause obstructions (State HMP 2018). The Town does not have a high incidence or high probability of ice jams.

As noted in the State Hazard Mitigation Plan, "Flooding is the most common recurring hazard event in Vermont" (2018: 55). Several major flooding events have affected the state in recent years, resulting in multiple Presidential Disaster Declarations. From 2003 to 2010, Rutland County experienced roughly $1.4 million in property damages due to flood events.

The worst flooding event in recent years came in August of 2011 from Tropical Storm Irene, which dropped up to 10-11 inches of rain in some areas of Rutland County. Irene caused 2 deaths and $55,000,000 in reported property damage and $2.5 million in crop damage in Rutland County. Although the storm was technically a tropical storm, the effects of the storms are profiled in this flooding section, since the storm brought only large rainfall and flooding to the Town, not the high winds typically associated with tropical storms. This caused most streams and rivers to flood in addition to severe fluvial erosion.

From 2012 to 2018, Rutland County experienced approximately $2.5 million in property damage; with $1.9 million due to flash flood event in July 2017.

In Fair Haven, the Poultney and Castleton Rivers flood regularly, but historically little damage is sustained during flooding events. As shown on the Local Hazards and Vulnerabilities Map in Appendix B, the downtown is well out of the floodplain. However, there are many (+/-40) structures in Town (with many along River, Cottage, Depot, and Maple Streets) that are in the Special Flood Hazard Area – including a Green Mountain Power substation, the Town Garage, and a municipal wastewater pump station. Four (4) structures are covered by flood insurance. According to FEMA, there are no repetitive loss properties.

Fair Haven DPW Storage Garage on Maple Street, just southwest of the Town Garage.

Flash flooding events periodically wash out sections of Bigelow Road, Inman Pond Road, Airport Road, and Brooklyn Heights.

Numerous rivers and streams in Fair Haven have undergone Stream Geomorphic Assessment (SGA), and River Corridor Management Plans have been developed for the Poultney River and the Castleton River. These studies and plans are vital in determining river and stream alterations, which affect water flows and could potentially lead to future flood damage. The SGAs and River Corridor Plans suggest potential remediation actions that can be taken to reduce the risk of future flood damage including, planting stream buffers, stabilizing stream banks, removing berms, removing structures and restoring incision areas.

Severe Wind/Hail

Severe thunderstorms can produce high winds, lightning, flooding, rains, large hail, and even tornadoes. Thunderstorm winds are generally short in duration, involving straight-line winds and/or gusts in excess of 50 mph. Thunderstorm winds can cause power outages, transportation and economic disruptions, significant property damage, and pose a high risk of injuries and loss of life. From 2004 to 2010, for thunderstorms that caused more than $200,000 in damage, Rutland County experienced nearly $2 million in property damage. From 2011 to 2018, thunderstorms resulted in $2.1 million in property damage in Rutland County, with $525,000 due to a high wind event in May 2017.

Hail is a form of precipitation composed of spherical lumps of ice. Known as hailstones, these ice balls typically range from 5–50 mm in diameter on average, with much larger hailstones forming in severe thunderstorms. The size of hailstones is a direct function of the severity and size of the thunderstorm that produces it. Much of the hail activity in Rutland County is scattered and varies in intensity, and the resulting damage usually takes form in uprooted trees, downed power lines, and crop damage.

Fair Haven is vulnerable to a power outage caused by a thunder/wind storm, should a wind event knock down trees and or powerlines. Violent windstorms are possible here; Fair Haven is susceptible to high directional winds. Many storms with high winds result in downed trees, damaged phone and power lines. Should a thunderstorm affect the power lines, power disruption could affect all or many of the public buildings/critical facilities. A power outage in Fair Haven could severely handicap the Town's ability to communicate during the event. A power shortage of longer than 4 hours may disable the emergency communication systems. While there are cell phones available for almost all Town departments, when fully charged they provide approximately 8 hours of service.

The only Town facility with backup power is the water treatment plant, which ensures the water processing facilities can continue to operate. The Municipal Building, police station, fire department, and one of the local shelters are faced with lack of heat and electricity. If a power outage coincided with a large scale sheltering event, the Town could be faced with a serious situation. The Town has installed a backup generator at the grade school shelter.

Extreme Cold/Snow/Ice/Wind

In the Rutland Region, most winter weather events occur between the months of December and March. Throughout the season, winter weather events can include snowstorms, mixed precipitation events of sleet and freezing rain, blizzards, glaze, extreme cold, the occasional ice storm, or a combination of any of the above. Events can also be associated with high winds or flooding, increasing the potential hazard.

The costs of these storms come in the form of power outages due to heavy snow or ice accumulations, damaged trees, school closings and traffic accidents. From 2002 to 2010, Rutland County experienced $1.1 million in property and crop damage from winter storms. From 2011 to 2018, Rutland County experienced $1.3 million in property damage, with $300,000 due to a 10" to 20" heavy, wet snowfall across the county on December 9, 2014.

There have been four winter storm-related federally declared Disasters in the county (the ice storm of January 1998 – DR 1201; severe winter storms in December 2000 and 2014 – DR 1358 and DR 4207, respectively; and severe storm and flooding in April 2007 – DR 1698). Historically, the winter storm of December 1969 brought record snowfall amounts and snowdrifts to Vermont, and later freezing rain caused prolonged power outages (Dipugny-Giroux 2002:26).

Fair Haven is about as vulnerable to the impacts of winter storms as it is to flooding. Typically, towns' vulnerability to snow and ice storms are power outages and loss of road accessibility. As previously described, the Town could be vulnerable to a power outage caused by ice/wet snow accumulation on power lines or trees falling on power lines due to weight of ice accumulation in a storm, especially if the outage coincided with a large scale sheltering event.

Snow accumulation has not made the Town vulnerable to loss of road accessibility. The Town's fleet of snow plows has ensured that roads are accessible, even in major snow accumulation events.

It is worth noting that Fair Haven narrowly escaped ice storms in January 1998 and January 2007. These were crippling events with historic impacts and long duration power outages.

High Risk Hazard History

Note: These are the most up to date significant events impacting Fair Haven.

Inundation Flooding and Fluvial Erosion

6.25-7.11.2013: DR4140 with 1.9" rain from 7.1-7.5; 1.1" rain on 7.7; 0.95" rain on 7.8: $420,000 regional damage
8.28.2011: DR4022 Tropical Storm Irene with 5.4" rain: $73,373 local damage ($51,312 Individual / $1,693 Public / $20,368 NFIP)
10.7.2005: 3.6" rain: no reported impact
12.16.2000: 3+" rain: no reported impact
9.16.1999: DR1307 Tropical Storm Floyd with 5+" rain, 50 mph winds: downed trees/power lines: impact unknown

Severe Wind/Hail

10.30.2017: 40-50 mph wind gusts: downed trees/power lines, commercial building on Main Street partial wall collapse: $100,000 regional damage
5.18.2017: ¾" hail: no reported impact
8.5.2014: ¾" hail and 50 mph winds: downed trees and branches on Swamp Road: $1,000 local damage
12.1.2010: 50 mph winds: downed trees, 90 minute power outage: $100,000 regional damage
7.21.2010: 50 mph winds: downed trees: $10,000 local damage
8.16.2007: 60 mph winds: no reported impact
7.21.2003: 50 mph winds: downed trees, 5 hour 40 min power outage: $25,000 regional damage
7.10.2001: 1" hail: building and tree damage: $25,000 local damage

Extreme Cold/Snow/Ice/Wind

3.7.2018: 10" snow: $20,000 regional damage
3.14.2017: 12-22" snow: $25,000 regional damage
2.1.2015: Record cold month with 15 to 20+ days below zero: no reported impact
1.7-1.8.2015: 0 to 10 degrees with winds of 15-30 mph creating wind chills colder than -20 to -30: no reported impact
12.9.2014: DR4207 with 9" wet snow: schools closed for 2-3 days and power outage at water treatment facility: $100,000 regional damage
3.12-13.2014: 16-18" snow and wind gusts to 35-40 mph: schools closed for 2 days: $35,000 regional damage
12.29.2012: Snowfall rate of 1-2" per hour with accumulations of 9": $20,000 regional damage
2.23.2010: 18" snow: $300,000 regional damage
12.11.2008: 5" snow with sleet and freezing rain resulting in up to 0.5" ice: no reported impact
4.15-16.2007: DR1698 "Nor'icane" with 3" snow and rain with 60 to 80 mph winds: downed tree on Swamp Road: $1,000,000 regional damage
2.14.2007: 29" snow: $12,000 local damage

Vulnerability Summary

Inundation Flooding and Fluvial Erosion

Location[1]: Town-wide; River Street, Cottage Street, Depot Street, Maple Street, Bigelow Road, Greene Road, Swamp Road, Inman Pond Road, Brooklyn Heights, Airport Road, Town Highway #14

Vulnerable Assets[1]: Houses, roads, bridges, culverts, municipal garage, wastewater pump station, power substation

Extent: 5+" of rain; extent data for fluvial erosion is unavailable

Impact: $73,373 (local) / $420,000 (regional)
"Higher than I've ever seen it before…" *comments from B. Stockwell regarding impact from Tropical Storm Irene*

Probability: Highly Likely

Severe Wind/Hail

Location[1]: Town-wide

Vulnerable Assets[1]: Houses, commercial downtown buildings, trees, power lines

Extent: 1" hail and 60 mph winds

Impact: $25,000 (local) / $100,000 (regional)

Probability: Highly Likely

Extreme Cold/Snow/Ice/Wind

Location[1]: Town-wide

Vulnerable Assets[1]: Houses, trees, power lines, culverts, water/sewer mains

Extent: Up to 30" of snow, up to 0.5" of ice, 80 mph winds, 15 to 20+ days below zero

Impact: $12,000 (local) / $1,000,000 (regional)

Probability: Highly Likely

[1] See **Appendix B:** Local Hazards and Vulnerabilities Map

6 Hazard Mitigation Strategy

The high risk 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 lessen vulnerabilities from potential hazards.

Mitigation Goals

The Hazard Mitigation Committee discussed mitigation goals and identified the following as the community's main mitigation goals:

- Reduce or avoid long-term vulnerabilities to identified hazards;
- Reduce the loss of life and injury resulting from these hazards;
- Mitigate financial losses incurred by municipal, residential, industrial, agricultural and commercial establishments due to disasters;
- Reduce the damage to public infrastructure resulting from these hazards;
- Encourage hazard mitigation planning as a part of the municipal planning process;
- Encourage the adoption and implementation of existing mitigation resources, such as River Corridor Plans and Fluvial Erosion Hazard Maps, if available;
- Recognize the connections between land use, stormwater, road design, maintenance, and the effects from disasters;
- Ensure that mitigation measures are sympathetic to the natural features of community rivers, streams, and other surface waters; historic resources; character of neighborhoods; and the capacity of the community to implement them.

Community Capabilities

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. Fair Haven's mitigation capabilities that reduce hazard impacts or that could be used to implement hazard mitigation activities are listed below.

Administrative and Technical

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: a full-time Town Manager with two full-time administrative assistants; a full-time Town Clerk/Treasurer; a part-time Zoning/Floodplain Administrator; a full-time Superintendent of Public Works with three full-time and two part-time Highway Department employees, two full-time Water Department employees, and two full-time and one part-time Wastewater Department employees.

In addition to paid staff, there is a 5-member Selectboard and Planning Commission.

To augment local resources, the Town has formal mutual aid agreements for emergency response – fire, EMS, and police and informal (verbal) agreements for public works. Technical support is available through the RRPC in the areas of land use planning, emergency management, transportation, GIS mapping, and grant writing. Technical support is available through the State for floodplain administration.

Strengths: Staff are trained on hazards and mitigation. Coordination between departments is effective. The Public Works Department has excellent recording keeping systems in place dating back several decades.

Areas for Improvement: Maintenance programs to reduce risk could be more robust, particularly that for cleaning out the stormwater collection system.

Planning and Regulatory

Planning and regulatory 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 comprehensive land use plans, capital improvement programs, transportation plans, small area development 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 codes that regulate how and where land is developed, and structures are built.

Strengths: Existing land use ordinances are effective at reducing hazard impacts and they are adequately administered and enforced; codes and standards are adequately administered and enforced; elements of hazard mitigation are included in other local plans.

Areas for Improvement: Protect river corridors from new encroachment (River Corridor Bylaws); capital planning; and continuity of operations planning.

Land Use Bylaws and Flood Hazard Area Regulations: Adopted March 19, 2010

Description: The Land Use Bylaws provide for orderly community growth and the Flood Hazard Area Regulations apply to all areas in the Town identified as areas of special flood hazard.
Relationship to Natural Hazard Mitigation Planning: Land Use Bylaws establish site plan review requirements and a Flood Hazard Area District. The Flood Hazard Area Regulations are designed to: 1) maintain the flood water carrying capacity of all flood-prone areas in the Town and 2) ensure that any structures or uses permitted within these areas are properly protected from flood hazards.

Road and Bridge Standards: Adopted on February 18, 2013

Description: Minimum codes and standards which apply to the construction, repair, and maintenance of all town roads and bridges.
Relationship to Natural Hazard Mitigation Planning: The standards include management practices and are designed to ensure the safety of the traveling public, minimize damage to road infrastructure during flood events, and enhance water quality protections.

Fire Department ISO Rating: Issued in 2017

Description: The Fair Haven Fire Department's ISO rating is 5/5X. This rating is a score from 1 to 10 that indicates how well-protected the community is by the local fire department.
Relationship to Natural Hazard Mitigation Planning: Everyone wants to keep family, home, and business safe from fires. The ISO rating is a measure of the effectiveness of a community's fire services.

Municipal Plan: Adopted on June 28, 2016

Description: A framework for defining and attaining community aspirations through public investments, land use regulations, and other implementation programs.
Relationship to Natural Hazard Mitigation Planning: The Utility and Facility Plan and Flood Resiliency Plan sections include specific goals and policies related to natural hazards.

Local Emergency Management Plan: Last adopted on April 23, 2019

Description: Establishes lines of responsibility during a disaster as well as high risk populations, hazard sites, procedures, and resources.
Relationship to Natural Hazard Mitigation Planning: The LEMP 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.

Stormwater Infrastructure Mapping Study: April 2013

Description: Developed up to date municipal drainage system maps and established locations for BMP stormwater retrofit sites.
Relationship to Natural Hazard Mitigation Planning: Assist with emergency preparedness for large rainfall and spring snowmelt runoff events and identified several structural projects to improve the stormwater drainage system capacity.

Road Stormwater Management Plan: December 2018

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.

Financial

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

Fair Haven's current annual budget is approximately $2.2 million, with $501,000 to fund the Highway Department. In addition to property tax revenues, the Town collects fees for water and sewer services. Although the Town has not done so in the past, it is eligible to incur debt through general obligation bonds to fund mitigation actions.

Strengths: Dedicated reserve funds that can be used to fund mitigation actions.

Areas for Improvement: Capital improvement planning and budgeting for the reserve funds; maximizing grant opportunities (CDBG, FEMA and State funding programs).

Education and Outreach

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

- The municipal water department issues an annual Consumer Confidence Report with information regarding responsible water use.
- The municipal fire department is actively involved in presenting fire safety programs in the schools.
- A district safety committee works on safety related school plans/programs.
- Fair Haven Concerned is a grassroots organization to help prevent homelessness and hunger in the community. This organization supports the local emergency shelters.
- The Poultney Mettowee Conservation District provides educational outreach, technical assistance, and financial support to communities and landowners to protect healthy soil and clean water and preserve the ecological integrity and economic vitality of communities. One of their current project areas is stormwater mitigation.

Strengths: Multiple programs/organizations are already in place in the community.

Areas for Improvement: Better coordination is needed to help implement future mitigation activities.

National Flood Insurance Program Compliance

Fair Haven joined the National Flood Insurance Program (NFIP) in 1984. The Zoning Administrative Officer enforces NFIP compliance through permit review requirements in zoning and FHA regulations. Fair Haven's regulations:

1. Require any new residential construction within the 100 year floodplain to have the lowest floor, including the basement, elevated above the 100 year flood elevation. The community must maintain a record of all lowest floor elevations or the elevations to which buildings in flood hazard areas have been flood proofed;
2. Allow non-residential structures to be elevated or dry flood proofed; and
3. Require anchoring of manufactured homes in flood prone areas.

The Town has discussed the following as possible actions it could take to continue NFIP compliance:

1. Provide information to residents on safe building initiatives and the availability of flood insurance;
2. Adopt river corridor protection language in the flood hazard regulations bylaw; and
3. Work with the RRPC to ensure that floodplain and river corridor maps are kept up to date.

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 the State matching 7.5%. The State will increase its match to 12.5% or 17.5% of the total cost if communities take steps to reduce flood risk.

12.5% funding for eligible 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 eligible communities that also:

1. Participate in FEMA's Community Rating System (CRS); OR
2. Adopt Fluvial Erosion Hazard (FEH) or other river corridor/floodplain protection bylaw that meets or exceeds the Vermont Agency of Natural Resources FEH model regulations and scoping guidelines.

Mitigation Action Identification

The Hazard Mitigation Committee discussed the mitigation strategy, reviewed projects from the 2009 Plan, and identified possible new actions from the following categories for each of the high risk natural hazards identified in Section 5:

1. Local Plans and Regulations: These actions include government authorities, policies, or codes that influence the way land and buildings are developed and built.
2. Structure and 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 and infrastructure. Many of these types of actions are projects eligible for funding through the FEMA Hazard Mitigation Assistance Program.
3. Natural Systems Protection: These are actions that minimize damage and losses and preserve or restore the functions of natural systems.
4. Education and Awareness Programs: These are actions to inform and educate the public about hazards and potential ways to mitigate them. Although this type of mitigation reduces risk less directly than structural projects or regulation, it is an important foundation. A greater understanding and awareness of hazards and risk is more likely to lead to direct actions.

Local Plans and Regulations

Integrate Mitigation into Capital Improvement Programs: Hazard mitigation can be included in capital improvement programs by incorporating risk assessment and hazard mitigation principles into the capital planning efforts.

Manage Development in Erosion Hazard Areas: The intent of River Corridor Bylaws is to 1) allow for wise use of property within river corridors that minimizes potential damage to existing structures and development from flood-related erosion, 2) discourage encroachments in undeveloped river corridors and 3) reasonably promote and encourage infill and redevelopment of designated centers that are within river corridors.

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

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

Structure and Infrastructure Projects

Remove Existing Structures from Flood Hazard Areas: Communities may remove structures from flood-prone areas to minimize future flood losses and preserve lands subject to repetitive flooding.

Improve Stormwater Drainage Capacity: Improving the stormwater drainage capacity can help to minimize inundation flooding and fluvial erosion by: 1) increasing drainage/absorption capacities with low impact development practices; 2) increasing dimensions of 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: Regular maintenance will help drainage systems and flood control structures continue to function properly. Techniques include: 1) routinely cleaning and repairing stormwater infrastructure – culverts, catch basins, and drain lines; 2) routinely cleaning debris from support bracing underneath low-lying bridges; and 3) inspecting bridges and identifying if any repairs or retrofits are needed to prevent scour.

Protect Infrastructure and Critical Facilities: Mitigation techniques can be implemented to help minimize losses to infrastructure and protect critical facilities from flood events by: 1) elevating roads above the base flood elevation to maintain dry access and 2) floodproofing critical facilities (as was done to the wastewater pump station off River Street).

Protect Power Lines: Power lines can be protected from the impacts of natural hazards by: 1) incorporating inspection and maintenance of hazardous trees within the road right-of-way into the drainage system maintenance process and 2) burying power lines.

Retrofit Critical Facilities: Critical facilities can be protected from the impacts of high winds and winter storms. Techniques include: 1) retrofitting critical facilities 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.

Natural Systems Protection

Protect and Restore Natural Flood Mitigation Features: Natural resources provide floodplain protection, riparian buffers, and other ecosystem services that mitigate flooding. It is important to preserve such functionality. Possible projects include: 1) establishing vegetative buffers in riparian areas; 2) stabilizing stream banks; 3) removing berms; and 4) restore incision areas.

Education and Awareness Programs

Educate Property Owners About Freezing Pipes: Extreme cold may cause water pipes to freeze and burst, which can cause flooding inside a building. Education and Awareness Programs for property owners may include: 1) educating building owners on how to protect their pipes, including locating water pipes on the inside of building insulation or keeping them out of attics, crawl spaces, and vulnerable outside walls and 2) informing homeowners that letting a faucet drip during extreme cold weather can prevent the buildup of excessive pressure in the pipeline and avoid bursting.

Assist Vulnerable Populations: Measures could be taken to ensure vulnerable populations are adequately protected from the impacts of natural hazards, such as: 1) organizing outreach and 2) establishing and promoting accessible heating or cooling centers in the community.

Mitigation Action Evaluation and Prioritization

For each mitigation action identified, the Hazard Mitigation Committee evaluated its potential benefits and/or likelihood of successful implementation. Each action was evaluated against a broad 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 5.

Mitigation Action Implementation

After careful evaluation and prioritization, the Committee agreed upon a list of actions that are acceptable and practical for the community to implement. Those actions without overall public support/political will were not selected for implementation. Those actions whose costs were not reasonable compared to the probable benefits were also not selected.

For the selected actions, the Committee then 1) assigned a responsible party to lead the implementation of each action; 2) identified potential funding mechanisms; and 3) developed a timeframe for implementing each action. This action plan is presented in Table 6.

Note that the Town will make every effort to maximize use of future Public Assistance Section 406 Mitigation opportunities when available during federally declared disasters.

Table 5: Mitigation Action Evaluation and Prioritization

Mitigation Action	Life Safety	Prop Protect	Tech	Political	Admin	Other Obj	Benefit Score	Est Cost	C/B
Local Plans and Regulations									
Integrate Mitigation into Capital Improvement Programs	1	1	1	1	1	1	6	1	Yes
Improve Stormwater Management Planning by Completing a Stormwater Management Plan	1	1	1	1	1	1	6	1	Yes
Plan for and Maintain Adequate Road and Debris Clearing Capabilities	1	1	1	1	1	1	6	2	Yes
Manage Development in Erosion Hazard Areas by Adopting River Corridor Bylaws	0	0	1	-1	1	0	1	1	Yes
Structure and Infrastructure Projects									
Protect Power Lines by Inspecting and Maintaining Hazardous Trees in Road ROW	1	1	1	1	1	1	6	1	Yes
Increase Dimension of Drainage Culverts in Flood-Prone Areas	1	1	1	1	1	1	6	2	Yes
Stabilize Outfalls	1	1	1	1	1	1	6	2	Yes
Re-establish Roadside Ditches	1	1	1	1	1	1	6	2	Yes
Routinely Clean and Repair Stormwater Infrastructure	1	1	1	1	1	1	6	2	Yes
Review VTrans Bridge Inspection Reports [1] and Plan for Identified Repairs to Prevent Scour	1	1	1	1	1	1	6	2	Yes
Install Back-up Generators or Quick Connect Wiring at Critical Facilities	1	1	1	1	1	1	6	2	Yes
Remove Existing Structures from Flood-Prone Areas	1	1	1	1	1	1	6	3	Yes
Increase Drainage/Absorption Capacities with Low Impact Development Practices	0	1	1	1	1	1	5	1	Yes
Elevate Roads Above Base Flood Elevation to Maintain Dry Access	1	1	1	-1	1	1	5	3	No
Bury Power Lines	1	1	1	-1	1	-1	2	3	No
Routinely Clear Debris from Support Bracing Underneath Low-Lying Bridges	No low-lying bridges, so the Committee did not evaluate this action.								
Floodproof Critical Facilities	No critical facilities that require floodproofing, so the Committee did not evaluate this action. The one municipal wastewater pump station that is vulnerable to flooding has already been floodproofed.								
Retrofit Critical Facilities to Strengthen Structural Frames to Withstand Wind and Snow Loads	No critical facilities that require retrofitting, so the Committee did not evaluate this action.								
Anchor Roof-Mounted Mechanical Equipment on Critical Facilities	No critical facilities with roof-mounted mechanical equipment, so the Committee did not evaluate this action.								
Natural Systems Protection									
Conduct a Study to Evaluate Need for Stream Bank Stabilization Measures on Stream Segment between Main and Adams Streets	1	1	1	1	1	1	6	1	Yes
Conduct a Study to Evaluate the Need for Vegetative Buffers in Riparian Areas	0	0	1	0	1	1	3	1	Yes
Remove Berms	No known berms, so the Committee did not evaluate this action.								
Restore Incision Areas	No known incision areas, so the Committee did not evaluate this action.								
Education and Awareness Programs									
Educate Property Owners about Freezing Pipes	The Town Water Department already does this.								
Assist Vulnerable Populations	The Town already has a system in place to assist vulnerable populations – see 2019 Local Emergency Management Plan.								

[1] VTrans inspects all bridges in the state every two years. Bridge inspection reports are available on the VTrans website.

Evaluation Criteria:
Life Safety – How effective will the action be at protecting lives and preventing injuries?
Property Protection – How effective will the action be at eliminating or reducing damage to structures and infrastructure?
Technical – Is the mitigation 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, 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 $75,000; 2 = $75,000 to $500,000; 3 = more than $500,000
C/B – Are the costs reasonable compared to the probable benefits?

Table 6: Mitigation Action Implementation

Mitigation Action	Lead Party	Potential Funding	Timeframe
Local Plans and Regulations			
Integrate Mitigation into Capital Improvement Programs	Town Manager	Town General Fund	Ongoing
Improve Stormwater Management Planning by Completing a Stormwater Management Plan	Town Manager	Town General Fund	1/1/20 – 12/31/21
Plan for and Maintain Adequate Road and Debris Clearing Capabilities	Town Manager & DPW Supervisor	Town General Fund; DPW Reserve Fund	Ongoing
Examine Town Plan and ensure identified hazard areas and needed strategies are addressed	Planning Commission	Town General Fund; Municipal Planning Grant	At next Town Plan update in 2024
Examine zoning regulations and ensure identified hazard areas are addressed	Planning Commission	Town General Fund; Municipal Planning Grant	1/1/20 – 12/31/21
Manage Development in Erosion Hazard Areas by Adopting River Corridor Bylaws	This action was not selected for implementation because it lacks political support.		
Structure and Infrastructure Projects			
Protect Power Lines by Inspecting and Maintaining Hazardous Trees in Road ROW	DPW Supervisor	Town General Fund	Ongoing
Increase Dimension of Drainage Culverts in Flood-Prone Areas: (1) Bigelow Road – 2 culverts (2) Scotch Hill Road – 1 culvert	DPW Supervisor	Town General Fund; VTrans Grant; FEMA HMGP/PDM	(1) 6/1/19 – 10/31/20 (2) 1/1/20 – 12/31/25
Stabilize Outfalls: (1) See 2013 Stormwater Infrastructure Study	DPW Supervisor	Town General Fund; VTrans Grant; FEMA HMGP/PDM	1/1/20 – 12/31/25
Re-establish Roadside Ditches: (1) See 2018 Road Stormwater Management Plan	DPW Supervisor	Town General Fund; VTrans Grant; FEMA HMGP/PDM	In accordance with Municipal Roads General Permit
Routinely Clean and Repair Stormwater Infrastructure	DPW Supervisor	Town General Fund	Annually or as needed
Install Back-up Generators or Quick Connect Wiring at Critical Facilities: (1) Alternate Local Shelter – High School (2) Primary EOC – Town Office	Town Manager	Town General Fund; FEMA HMGP/PDM	(1) 1/1/25 – 12/31/30 (2) 1/1/20 – 12/31/25
Remove Existing Structures from Flood-Prone Areas: (1) Town Garage	Town Manager & DPW Supervisor	Town General Fund; FEMA FMA	Planning has begun; complete by 12/31/24
Increase Drainage/Absorption Capacities with Low Impact Development Practices: (1) See 2013 Stormwater Infrastructure Study	DPW Supervisor	Town General Fund; VTrans Grant; FEMA HMGP/PDM	1/1/20 – 12/31/25
Review VTrans Bridge Inspection Reports and Plan for Identified Repairs to Prevent Scour: (1) Bridge #00001 Route 4A (Main Street) (2) Bridge #00001 River Street (3) Bridge #00004 Adams Street (4) Bridge #00006 West Street	DPW Supervisor	Town General Fund; VTrans Grant	6/1/19 – 12/31/19
Elevate Roads Above Base Flood Elevation to Maintain Dry Access	This action was not selected for implementation because the costs are not reasonable compared to the probable benefits.		
Bury Power Lines	This action was not selected for implementation because it lacks political support.		
Natural Systems Protection			
Conduct a Study to Evaluate Need for Stream Bank Stabilization Measures on Stream Segment between Main and Adams Streets	Town Manager & Poultney Mettowee Conservation District	Town General Fund; VTrans Grant	1/1/20 – 12/31/23
Conduct a Study to Evaluate the Need for Vegetative Buffers in Riparian Areas	Town Manager & Poultney Mettowee Conservation District	Town General Fund; Ecosystem Restoration Grant	1/1/20 – 12/31/23
Education and Awareness Programs			
The Town is unaware of any potential education and awareness program needs at this time.			

Process for Incorporating Plan Requirements into Other Planning Mechanisms

For Fair Haven to succeed in reducing long-term risks, the information and recommendations of this Plan should be integrated throughout government operations.

The following are specific examples of how the Town will incorporate this Plan into other plans, programs and procedures:

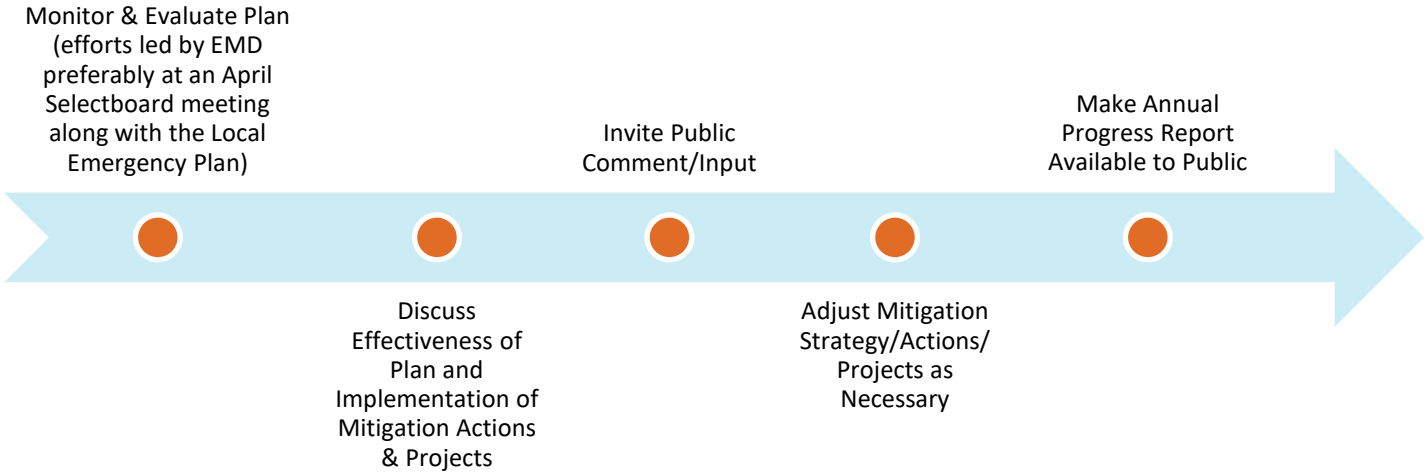
- The Town Manager will work with the DPW Supervisor and Selectboard to incorporate risk assessment and hazard mitigation goals into the capital planning efforts.
- The Town Manager will integrate the data, analysis, and maps from the risk assessment into the Stormwater Management Plan, which will be completed in 2021.
- The Planning Commission will integrate the hazard mitigation goals for disaster resiliency into the goals and objectives of the next Town Plan update in 2024.
- The Planning Commission will consider the data, analysis, and maps from the risk assessment in the next review of the local zoning and flood hazard area regulations in 2021.
- The DPW Supervisor will implement several mitigation infrastructure projects (e.g., increase dimension of drainage culverts in flood-prone areas, stabilize outfalls, re-establish/stabilize roadside ditches, increase drainage/absorption capacities with LID practices) through existing plans (2013 Stormwater Infrastructure Study, 2018 Road Stormwater Management Plan), which already have community support.

7 Plan Maintenance

This Plan is dynamic. To ensure the Plan remains current and relevant, it is important it be monitored, evaluated, and updated periodically.

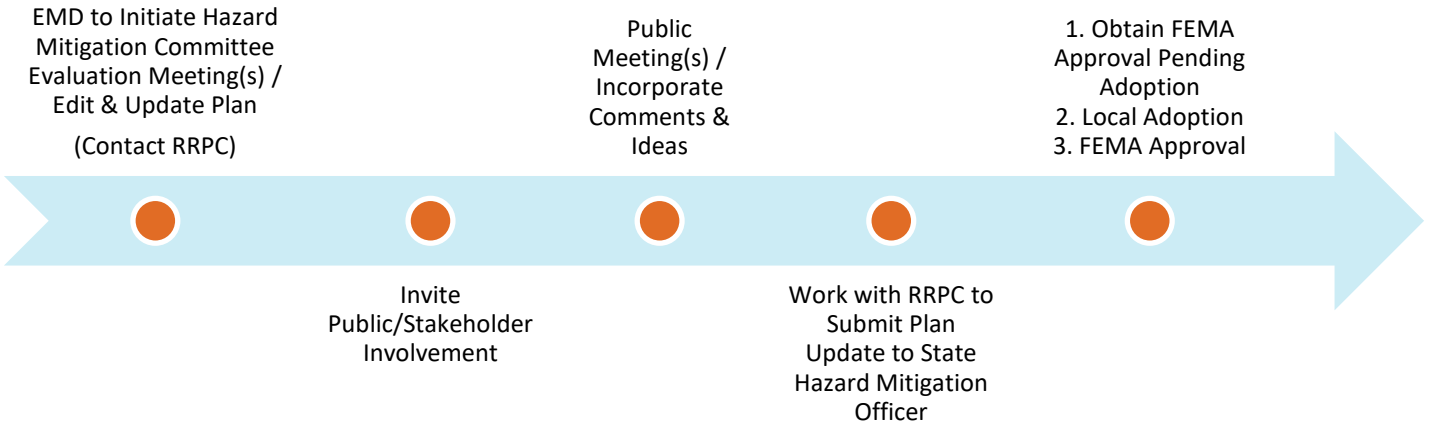
Monitoring and Evaluation

This Plan will be monitored and evaluated annually in accordance with the following process:



Updating

This Plan will be updated at a minimum every five (5) years in accordance with the following process:



CERTIFICATE OF ADOPTION
TOWN OF Fair Haven, Vermont Selectboard
A RESOLUTION ADOPTING THE Fair Haven, Vermont 2019 Local Hazard Mitigation Plan

WHEREAS, the Town of Fair Haven has historically experienced severe damage from natural hazards and it continues to be vulnerable to the effects of the hazards profiled in the **2019 Fair Haven, Vermont Local Hazard Mitigation Plan,** which result in loss of property and life, economic hardship, and threats to public health and safety; and

WHEREAS, the Town of Fair Haven has developed and received conditional approval from the Federal Emergency Management Agency (FEMA) for its **2019 Fair Haven, Vermont Local Hazard Mitigation Plan (Plan)** under the requirements of 44 CFR 201.6; and

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

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

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

RESOLVED by Town of Fair Haven Selectboard:

1. The **2019 Fair Haven, Vermont Local Hazard Mitigation Plan** is hereby adopted as an official plan of the Town of Fair Haven;

2. The respective officials identified in the mitigation action plan of the **Plan** are hereby directed to pursue implementation of the recommended actions assigned to them;

3. Future revisions and **Plan** maintenance required by 44 CFR 201.6 and FEMA are hereby adopted as part of this resolution for a period of five (5) years from the date of this resolution; and

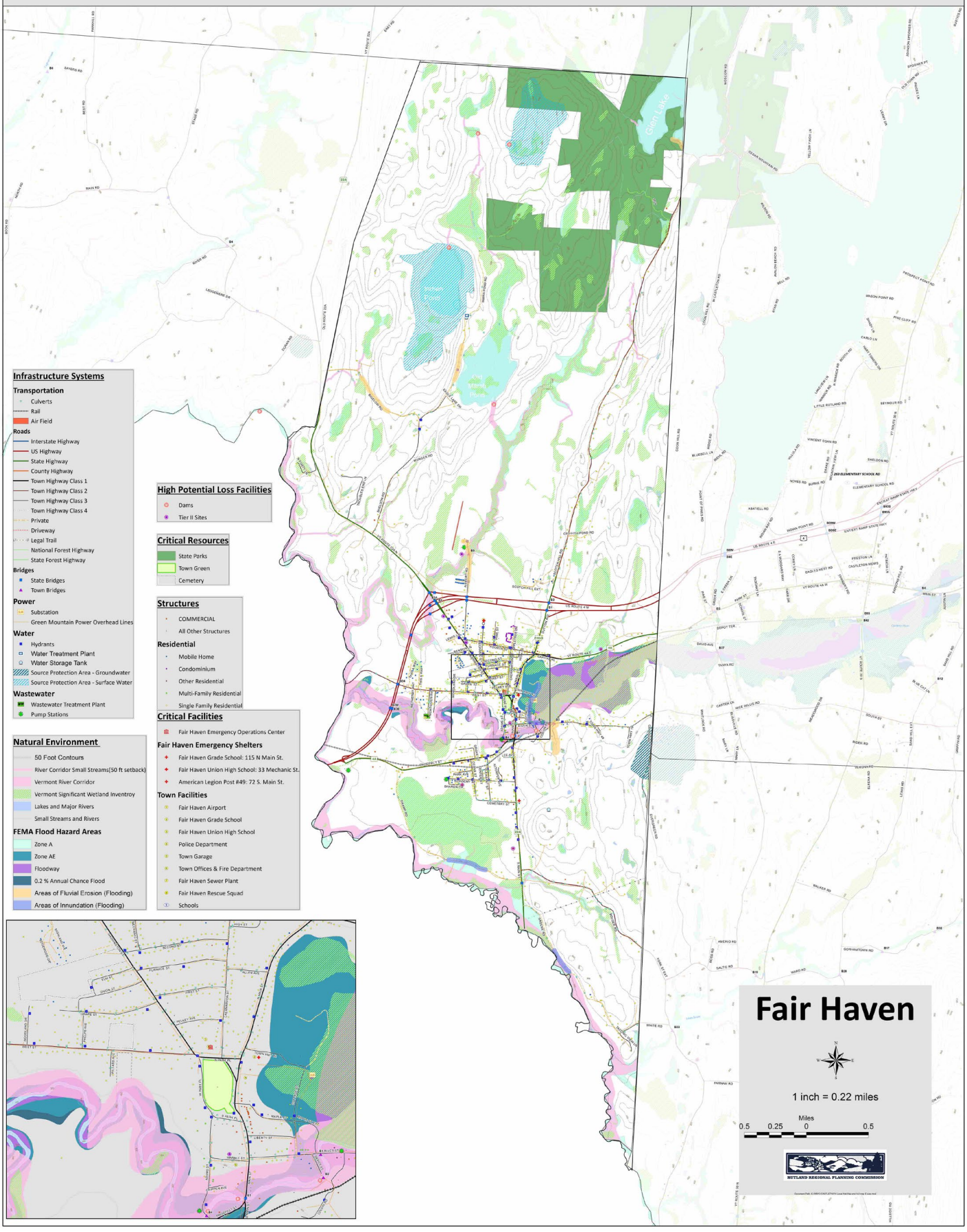
4. An annual report on the process of the implementation elements of the Plan will be presented to the Selectboard by the Emergency Management Director or Coordinator.

IN WITNESS WHEREOF, the undersigned have affixed their signature and the corporate seal of the Town of Fair Haven this 13th day of August 2019.

Selectboard Chair

ATTEST
Town Clerk
Assistant

Local Natural Hazards and Vulnerabilities Map



Mitigation Action	Who is Responsible	Approx. Time Frame & Potential Funding Sources	2019 Status Update
Acquire 2 portable 3-phase emergency generators of sufficient size to operate emergency shelters, Emergency operations centers, DPW, Rescue Squad and possible an Emergency Medical Center at the Rescue Squad building.	Emergency Management Personnel	• Med-term • HSU funding	One (1) shelter at the Fair Haven Grade School now has emergency backup power. Provision of emergency backup power at critical facilities remains a priority.
Wire emergency operations center and emergency shelters to more quickly and easily install a standby generator, equip essential public safety, communications or transportation elements of the infrastructure (e.g. water systems, communication systems, warning systems etc.) with redundant service	Emergency Management Personnel	• Med-term • HSU funds	Still pending fund. This remains a priority.
Work with High School to create plan for responding to chemical emergencies associated with accident on Route 4	School officials, Police Department, Fire Department, VEM personnel	• Med-Term • Local and State Resources	District Safety Committee has been formed. This remains an all-hazards priority, not a natural hazards priority and therefore is no longer addressed in this plan.
Increase capacity to fight large fires by addressing leaks and undersized waterlines, especially the mains along North Main, Canaveron Street and other major mains through the Village.	Department of Public Works	• Med-term • Local Resources	Water main upgrades completed on West St. in 2010, and on Capital Hill, Dutton Ave., Liberty St., Maple St., Mechanic St., Pine St., Fourth St., N. Main St. in 2017. The bulk of this project is complete. Remaining improvements are an all-hazards priority, not a natural hazards priority and therefore are no longer addressed in this plan.
Continue to assess the adequacy of available fire apparatus and trained personnel for the types of fire risks in the town	Fire Department	• Ongoing • Local Resources • Federal Resources	Shortage of personnel still an issue – nationwide problem. This remains an all-hazards priority, not a natural hazards priority and therefore is no longer addressed in this plan.
Incorporate proposed strategies into Annual Budget and Capital Improvement Plan	Selectboard	• Short-Term	This remains a priority.
Examine current Town Plan and ensure that identified hazard areas and needed strategies are addressed	Planning Commission / Selectboard	• Med-term	This remains a priority.
Examine current zoning and ensure that identified hazard areas are addressed.	Planning Commission / Selectboard	• Med-term • Municipal Planning Grant	This remains a priority.
Prepare and implement fire safety educational programs for town residents	Fire Department	• Short Term • Local Resources	Lack of daytime manpower a problem; difficult to maintain programs at current level. This remains an all-hazards priority, not a natural hazards priority and therefore is no longer addressed in this plan.
Develop plans for delivery of essential services and materials to residents in the event of isolation due to access/egress blockage	Emergency Management Personnel	• Med-Term • Local Resources	This is no longer a community priority.

Note: In the table above, time frames are defined as follows: short term equals 6 months to one year. Medium term equals 1-3 years. Long term equals 4+ years