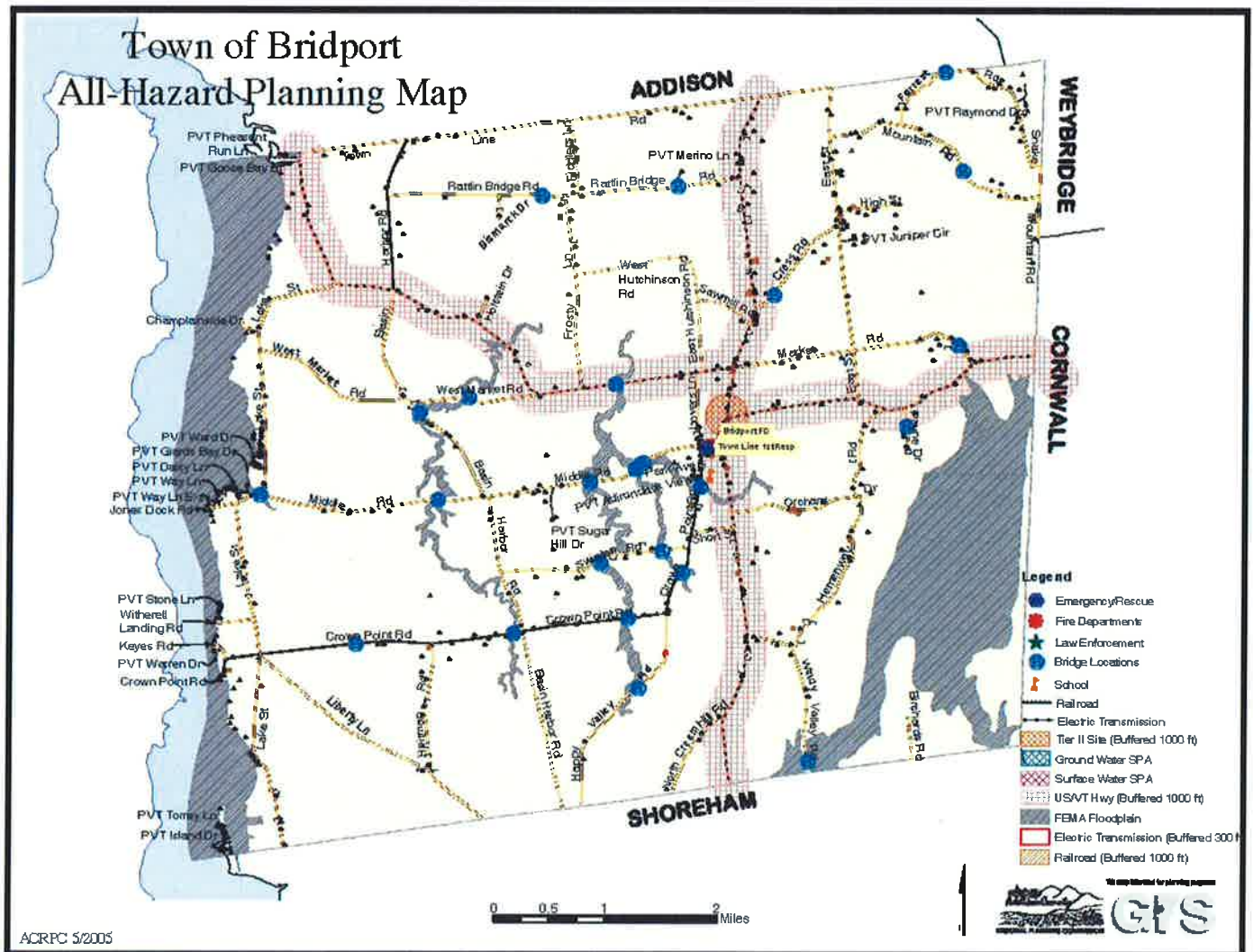


Town of Bridport, Vermont



Single Jurisdiction All-Hazards Mitigation Plan

Final Plan Adopted:

1/12/2016

Bridport, Vermont Single Jurisdiction All-Hazards Mitigation Plan

Table of Contents:

1. Planning Process.....	Page 3
1.1 Current Plan Development Process	
1.2 Opportunities for Public Comment	
1.3 Opportunities for Additional Comment	
1.4 Extent of Review	
2. Community Background.....	Page 6
2.1 Local Maps	
Bridport Road Names	
Local Services, Facilities and Infrastructure	
Bridport Population Density	
3. Existing Adopted Plans Which Support Hazard Mitigation.....	Page 9
3.1 Bridport LEOP	
3.2 Bridport Town Plan Policy Statements	
3.3 Addison County Regional Plan Goals	
3.4 State of Vermont Hazard Mitigation Plan Goals	
4. Community Risk Assessment.....	Page 11
4.1 Local Areas of Concern Map	
4.2 Risk Prioritization Results	
4.3 Hazard Type, Location, Extent and Vulnerability	
5. Community Mitigation Strategies.....	Page 38
5.1 Hazard Mitigation Goals	
5.2 Ongoing Mitigation Strategies by Hazard Type	
5.3 Proposed Mitigation Actions and Projects by Hazard Type	
5.4 Project Prioritization Process	
6. Plan Maintenance Procedures.....	Page 49
6.1 Plan Review/Update Process	
6.2 Programs, Initiatives and Projects Review	
6.3 Post-Disaster Review Procedures	
7. Plan Adoption Resolution.....	Page 52
Annex A Regional Maps.....	Page 53
Addison Region Hazardous Materials Locations	
Addison Region Watersheds	
Addison Region Average Annual Daily Traffic	
Addison Region Dam Locations	
Addison Region Bridge Locations	
Annex B Local Documents.....	Page 58
Town Road and Bridge Standards Adoption	
Meeting Minutes	
Plan Comments	
Annex C Common Mitigation Measures by Hazard Type.....	Page 64
Annex D External Mitigation Project Funding Opportunities.....	Page 73

1. Planning Process

1.1 Current Plan Development Process

The Town of Bridport Selectboard Chair indicated an interest in working through the process of creating an All-Hazards Mitigation Plan in early 2012 following damaging flooding from Tropical Storm Irene. The Town's interest was used in developing a background narrative to support inclusion in a FEMA Pre-Disaster Mitigation request sponsored by the Northwest Regional Planning Commission (NWRPC). Following an extensive review and contracting process, ACRPC was authorized by NWRPC to begin the planning process in late 2013. The town Selectboard met on August 12, 2013 at its regular meeting and authorized its support for this planning process through a resolution of the board. In April of 2014 ACRPC was requested by the Northwest Regional Planning Commission, the grant administrator, to stop all work until contract wording could be clarified. As of May 2014, ACRPC was given the go ahead by NWRPC to continue the process of developing a plan.

An initial draft single jurisdiction plan was prepared by staff of the Addison County Regional Planning Commission (ACRPC) converting a previous draft annex of an earlier 2002 regional plan into a single jurisdiction plan.

The following residents were appointed by the Bridport Selectboard on 9/9/2013 to a mitigation planning committee:

Sue Walker -	Selectboard member
Mark Pumiglia -	Planning Commission
Dusty Huestis-	Bridport Road Foreman and Volunteer Fire Department
Ed Payne -	Bridport Zoning Administrator
Steve Huestis -	Selectboard member

The draft plan was submitted to the mitigation planning committee on 9/27/2013 for initial review and edits. The committee met 10/15/2013 to review the draft plan and complete a Hazard Inventory and Risk Assessment for the Town of Bridport. The committee met again on 11/5/2013 to identify possible mitigation projects and suggest additional edits to the draft plan. ACRPC Staff met with the Bridport Road Crew (Dusty Huestis, Dale Stone) on 2/7/2014 to identify highway-related issues and potential highway projects. The committee continued to suggest changes via e-mail to confirm suggested revisions and corrections to the initial draft plan.

Input on the draft plan was requested from town residents during open meetings of the town Planning Commission and the Town Selectboard where copies of the draft plan were available for review. An initial draft plan was submitted to staff at the Northwest Regional Planning Commission for review and suggestions on 6/30/2014.

Based on comments from this public process, the draft plan was further edited and the draft plan was submitted to the State of Vermont Hazard Mitigation Officer for state review on 7/10/2014. Due to extensive recommendations given for another plan in process, the draft plan was extensively reworked in January of 2015, submitted to DEMHS for further review and finally, submitted to the Federal Emergency Management Agency (FEMA) on 3/2/2015 for comments and preliminary approval. Comments were received back from FEMA reviewers on 6/8/2015

Changes were made to the draft plan based on FEMA recommendations and an updated draft was completed on 7/6/2015. Upon completion of this draft, the plan was further circulated to the Town Selectboard and hazard mitigation committee for their approval. Upon Selectboard approval, the final plan was submitted to FEMA Region I for their Approval Pending Adoption (APA) status, which was received on 12/8/2015.

The APA plan was adopted by the Bridport Selectboard on 1/12/2016. The final adopted plan was then forwarded to FEMA Region I for confirmation. Final FEMA approval was received on _____.

1.2 Opportunities for public comment/input

Multiple opportunities for public comment were made available during the planning process:

- A plan review/update committee was appointed on 9/9/2013 by the Town Selectboard.
- The plan was made available in the Town Offices for public comment while in draft form and input was requested (no comments).
- Meetings of both the Town Selectboard and the Town Planning Commission were open for public comment throughout the planning and draft phases of this plan (no comments received).

1.3 Opportunities for additional comments

Additional opportunities for regional and state-level comments in the draft stage were provided throughout the planning process.

- A copy of the draft plan was provided to the State Hazard Mitigation Officer Ray Doherty for comments which were received on 7/10/2014.
- A substantially completed draft was submitted to the State of Vermont Agency of Natural Resources staff for comment on 6/26/2014.
- A final draft of the plan was approved by the Bridport Selectboard in a publicly warned meeting on 2/24/2015 for submission to FEMA.
- An updated copy was sent to Ray Doherty for submission to FEMA on 2/26/2015.
- FEMA Region 1 staff received a draft for comment on 3/2/2015
- A copy of the draft plan was posted on the ACRPC website www.acrpc.org for regional review and notice was given during monthly meetings of ACRPC as to its availability. No comments were received.
- The December 2014 ACRPC newsletter included an article announcing that the draft plan was available for public review and comments were requested. The draft was posted on 1/5/2015.
- A running draft was posted in the ACRPC office from October 2013 through June 2015 for public review and comments (no comments received)
- The bordering towns of Addison, Shoreham, Cornwall and Weybridge were informed of the availability of the plan on the ACRPC website on 2/6/2015 and input was requested. No comments.

1.4 Extent of review

Throughout the planning process all sections of an earlier regional plan were reviewed for accuracy. Recently completed studies and newly developed data were included in the document. Information from the following documents and sources were incorporated into this plan either as data or to inform the committee's prioritization process:

- 2014 Local Emergency Operations Plan (previously identified high hazard areas and vulnerable populations)
- January 2011 Town Plan (support for the committee's prioritization process and section 2 narrative.)

- 2011 Addison County Regional Plan (transportation section used to identify high accident locations)
- 2013 State of VT Hazard Mitigation Plan (provided a listing of statewide hazard concerns)
- Recently declared disasters
- 2012 Report of the State Fire Marshall (provided data to inform structure and wild fire risks)
- www.fema.gov (provided official data on declared disasters)
- The Vermont Weather Book by David Ludlum (provided historic accounts of disasters for Section 4.3)
- National Climatic Data Center website (provided information for Section 4.3)
- FEMA Snow Load Safety Guide (informed Section 4.3)
- FEMA FIRMS dated 8/15/1979 (incorporated into maps and section 4.3)
- FEMA Flood Insurance Study from February 1979 (Used to determine the FEMA flood elevations for Lake Champlain in Bridport, Section 4.3)
- VT Center for Geographic Information data layers (incorporated into map products)
- LEPC #8 Tier II reports (incorporated into Section 4.3)
- Bridport Annual Town Reports 1980-2013 (informed FEMA reimbursements in table #1)
- The Shoreline Stabilization Handbook for Lake Champlain and other Inland Lakes (informed erosion extent in Section 4.3)

2. Community Background

The Town of Bridport, Vermont was chartered in 1761 and its development in the early years focused on the use of Lake Champlain as a transportation venue. Subsequent development of rich farmland away from the lake led to the development of a more traditional village center around the current intersection of VT Rte 22A and Middle Road. Bridport village or “The Corners” is a civic and government center to the town and contains the Town Offices, Grange, Post Office, churches and a town green. Within this tight central core were also housed the school and town garage until more recent construction of a centralized school and new town garage complex to the south of the village center. In modern times, the significance of Lake Champlain as a recreation resource has resulted in a resurgence of residences along the shoreline.

VT Route 22A passes through Bridport’s village center from north to south and divides the town with 1/3 east of the highway and 1/3 west. VT State Rte 125 further divides the town north and south with 1/3 north of Rte 125 and 1/3 south of the highway.

Since recording a low of 653 residents in the 1960 census, Bridport’s population has nearly doubled to its 2010 census level of 1218 creating an average population density of 28 people per square mile. More densely populated areas in town include the village area and clusters of shoreline properties. Most recent trends indicate that the population seems to be leveling out with the majority of new residents due to a rise in births over deaths rather than any rapid in-migration.

According to the 2010 census, there are 612 housing units in Bridport, a number that has nearly tripled since the census began recording housing units in 1940. Of those units, 368 were owner-occupied, 117 were renter occupied and 127 were considered vacant. 89 of the units were seasonal use only and were considered as part of the vacant number. There has been a recent trend toward conversion of seasonal homes into year-round homes which is being monitored carefully by the town planning commission to ensure public safety in the form of clean waters and adequate services are maintained. In Bridport, most year-round homes are single-family wood structures (87.5%), a little more than 11% are mobile homes and less than 2% are multi-family homes.

Bridport has a workforce of just under 900 workers and 70% of them work outside of the town in nearby communities. The town is quite dependent upon the income generated from these workers and from the Agricultural economy as there are limited other economic opportunities within the town. Green Mountain Power is the sole provider of electrical power and landline telephone service is provided by Champlain Valley Telecom. Cellular reception is available in most areas of town but is very limited in some areas due to the limited number of towers. To date, cellular phone companies have focused on serving the Route 22A corridor. Residents of Bridport are served by the Tri-Town water district for their potable water needs and provide for their own sewage needs through individual on-site septic systems. Changes to the State of Vermont’s septic regulations have severely limited the ability to dispose of wastewater due to the native heavy clay soils and are impacting development opportunities in the town. Alternative wastewater systems are still on the horizon but have yet to be approved for use. In addition, lakeshore camps and residences have always struggled between the need to safely dispose of septic and potentially destabilizing the lakeshore.

The Town of Bridport has emergency medical service (EMS) coverage through the volunteer Townline First Response Squad which partners with the Middlebury Regional EMS for transport services. Patients are generally transported to either Porter Medical Center (10 miles) or Fletcher-Allen Hospital (38 miles). The Bridport Volunteer Fire Department provides fire coverage throughout town with assistance through mutual aid from surrounding communities. In 2012, the fire department responded to 13 Fires and/or motor vehicle accidents. Poorly constructed driveways and private roads sometimes hinder response, particularly along the

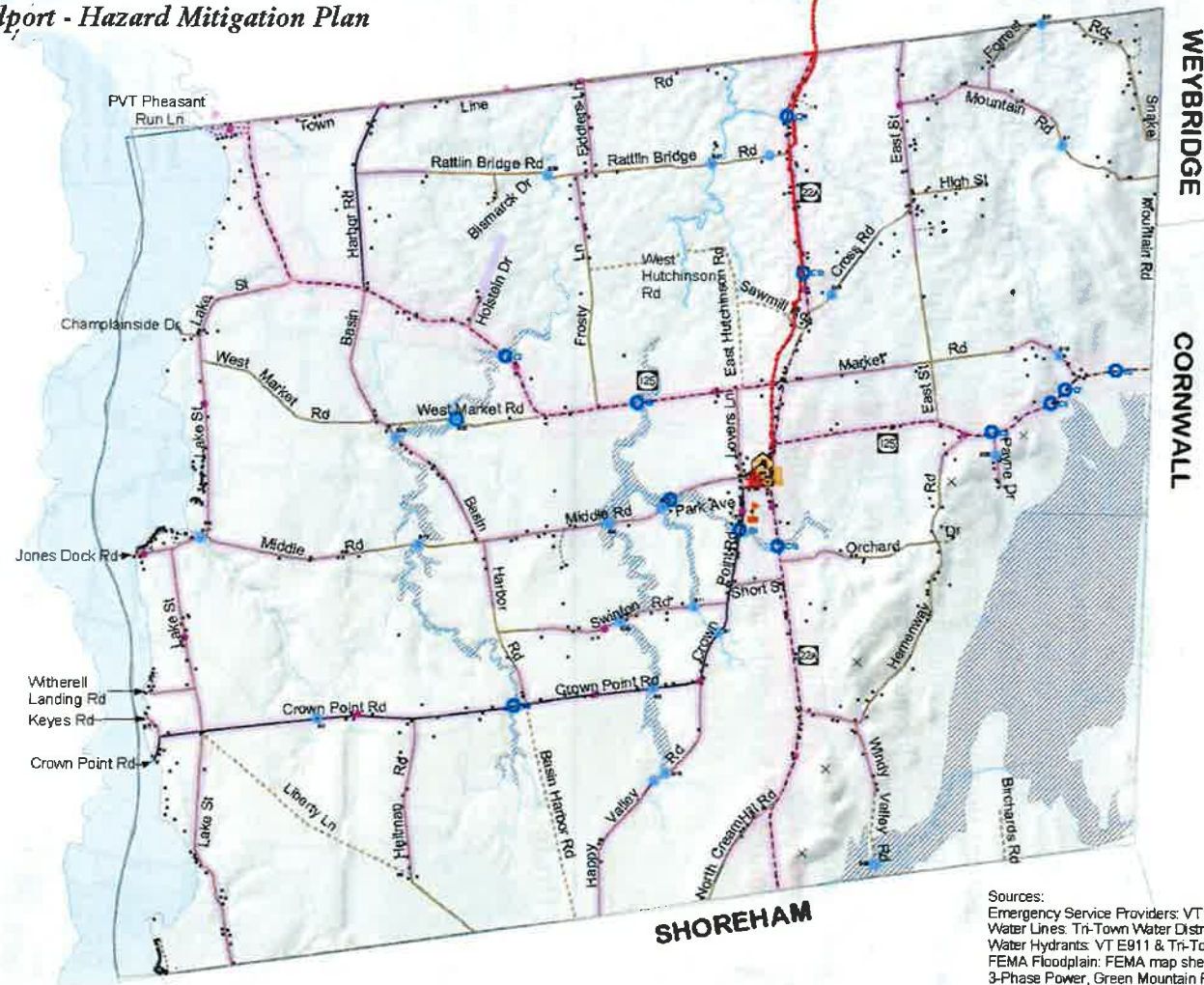
The Town has an appointed Emergency Management Coordinator and uses a Local Emergency Operations Plan (LEOP) to coordinate response to larger incidents. The LEOP identifies the Town Office as its primary emergency operations center. It also identifies the Town Garage as a secondary EOC which, along with the Bridport Central School is one of the two town-owned buildings served with back up generators. Four potential emergency shelters are identified in the LEOP as the Bridport Central School, the Community Hall, St. Bernadett's Parish Hall and the Congregational Church Vestry. The LEOP also identifies its highest hazard areas as any east-west roads, all of which are prone to drifting snow in winter months.

2.1 Local Maps



Local Services, Facilities and Infrastructure

Town of Bridport - Hazard Mitigation Plan



Sources:
Emergency Service Providers: VT E911, 2013
Water Lines: Tri-Town Water District
Water Hydrants: VT E911 & Tri-Town data
FEMA Floodplain: FEMA map sheets digitized under contract to ACRPC
3-Phase Power: Green Mountain Power, 2014.

- | | | | |
|---------------------------------------|---------------------------|-----------------------------------|-------------------|
| ★ State Police, Sheriff (not shown) | 🏠 Bridport Town Office | 🔴 Overhead 3-Phase Power | 🌉 Local Bridges |
| 🔥 Bridport Fire Dept | 🎓 Bridport Central School | 💧 Hydrant | 🌉 State Bridges |
| 🚑 Middlebury Area Vol Amb (not shown) | 🏛️ Bridport Town Hall | 💧 Tri-Town Water District Service | 🌊 FEMA Floodplain |
| | 🚗 Bridport Town Garage | 🛣️ US/VT Hwy (Buffered 1000 ft) | |



ACRPC 11/2014

3. Existing Adopted Plans which support Hazard Mitigation

The following plans pre-date this plan and are used to illustrate how the community, the Addison region and the State of Vermont have incorporated mitigation into standard planning mechanisms. As the Bridport Selectboard, Planning Commission and Emergency Manager continue to work on annual or 5 year updates of these plans, the Town of Bridport All Hazards Mitigation Plan will be able to provide needed information for those planning processes.

3.1 Bridport Local Emergency Operations Plan (High Hazard and Vulnerable Sites)

- *All east/west roads- Drifting Snow*

3.2 Bridport Town Plan (2011) Policy statements which support Hazard Mitigation

- *Continue to support high quality fire and rescue services in town and ensure that new development is constructed in a manner that will allow adequate access for emergency responders.*
- *Encourage projects, including improvements to the town's water system and installation of dry hydrants, which would increase the effectiveness of the fire department in its ability to extinguish fires.*
- *To provide and maintain a transportation system that is safe, efficient and affordable*
- *Continue to work with the State to slow traffic and increase safety through Bridport's village center.*
- *Review the town's current standards for private roads and codify them as necessary to ensure that emergency access is possible for all properties on these roads.*
- *To maintain and, where necessary, improve the quality of Bridport's ground and surface waters and wetlands.*

3.3 Addison County Regional Planning Commission Regional Plan (2011) Goals that support Hazard Mitigation

- *Work to restore and maintain stream equilibrium by developing and implementing river corridor plans.*
- *Reduce flooding and related damages through appropriate mitigation techniques.*
- *Encourage watershed based cooperation and educate towns and the general public about water quality and stream dynamics*
- *Provide communities the support they need to be proactive in reducing flood and erosion hazards by adopting appropriate zoning regulations to limit development in hazardous areas.*
- *Encourage proper maintenance and sizing of bridges, culverts and other structures to accommodate flow from storm events and to mitigate flood hazards.*
- *Reduce the loss of life and injury resulting from all hazards.*
- *Mitigate financial losses incurred by municipal, residential, industrial, agricultural and commercial establishments due to disasters.*
- *Reduce the damage to public infrastructure resulting from all hazards.*
- *Recognize the connections between land use, storm-water, road design/ maintenance and the effects from disasters.*
- *Ensure that mitigation measures are sympathetic to the natural features of the region's rivers, streams and other surface waters; historic resources; character of neighborhoods; and the capacity of the community to implement them.*
- *Encourage hazard mitigation planning as a part of the Municipal Planning Process.*

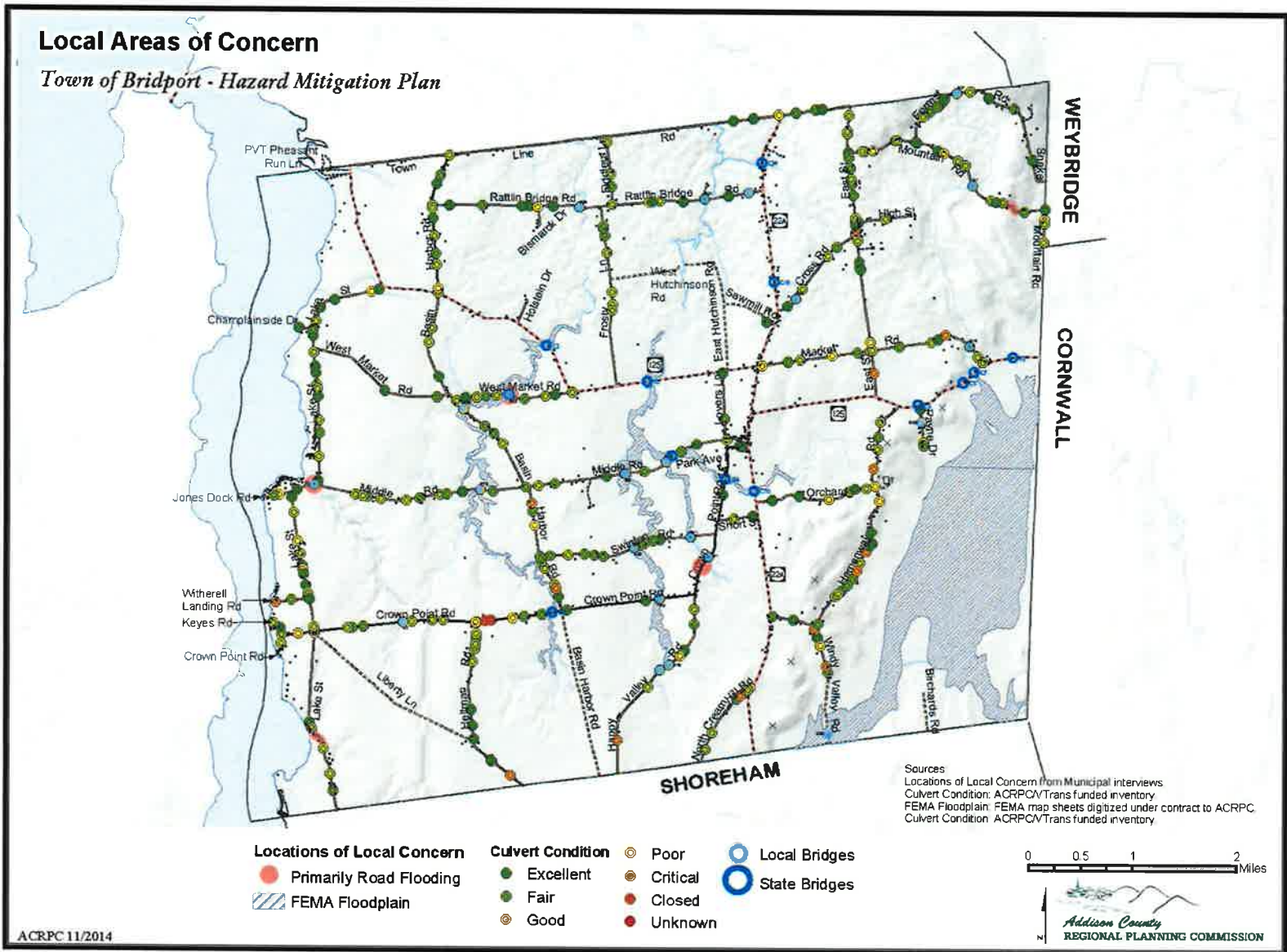
- *Encourage municipalities and landowners to consider VT Agency of Natural Resources riparian guidelines for habitat and flood protection.*

3.4 State of Vermont Hazard Mitigation Plan (2013) Hazard Mitigation Goals

- *Ensure that current and proposed legislation and regulatory policies require effective hazard mitigation practices throughout the State.*
- *Ensure that grant-related funding processes allow for expedient and effective mitigation actions to take place at the municipal and State level.*
- *Provide timely and accurate technical assistance that supports hazard mitigation activities to regional and local jurisdictions as well as private sector partners.*
- *Identify state-level risks and vulnerabilities and protect or harden state infrastructure against hazards.*
- *Conduct hazard assessments, mapping and data collection projects to increase knowledge about both the hazards facing Vermont and the most effective mitigation actions for minimizing public exposure to hazards.*

4. Community Risk Assessment

4.1 Local Areas of Concern Map



4.2 Risk Prioritization Process

The Town of Bridport's Hazard Mitigation Planning Committee identified the following hazards in its hazard inventory– Drought, Power Failure, Flooding, Lightning, High Winds, Landslide, HazMat Spill, Structure Fire, Wildfire, and Winter Storm. Additional hazards listed on the State hazard inventory were dam failure, ice Jams and extreme temperatures. These were not evaluated in the Bridport HIRA because there is no history of ice jam damage in town, no dams listed on the state dam inventory database, and extreme temperatures are a commonplace enough occurrence that the committee felt evaluation of them was unnecessary. The committee completed a Hazard Inventory and Risk Assessment (See Bridport, VT HI/RA) which resulted in the following hazards being identified as being High Priority– Winter Storm/Ice Storm, and Widespread Power Failure. The committee scored High Wind, Flood/Flash Flood, HazMat Spill/Transportation Accident, Landslide/Erosion of the lakeshore, and Structure Fire as its highest scoring hazards of medium priority, followed quickly by Lightning and Wildfire.

Bridport, VT. Hazard Inventory/Risk Assessment

Hazard Type	Probability	Warning	Geo graphic Impacts	Property Damage	Vulnerability
Drought	2	1	1	1	5 – (1)
Widespread Power Failure	3	4	3	2	12 – (3)
Flooding/Flash Flood	3	3	2	2	10 – (2)
Lightning	4	3	1	1	9 – (2)
High Winds	3	3	2	2	10 – (2)
Landslide/Erosion	3	4	1	2	10 – (2)
HazMat/Transportation Accident	3	4	1	2	10 – (2)
Structure Fire	4	4	1	1	10 – (2)
Wildfire	3	4	1	1	9 – (2)
Winter Storm/Ice Storm	4	2	4	2	12 – (3)
Earthquake	2	4	1	1	8- (1)

Probability: Frequency of Occurrence

- | | |
|------------------|------------------------------------|
| 1= Unlikely | <1% in a given year |
| 2= Occasionally | 1%-10% probability in a given year |
| 3= Likely | >10% but <100% in any given year |
| 4= Highly Likely | 100% probability in a given year |

Warning: Time available to give notice to the majority of the population

- 1= More than 12 hours
2= 6-12 Hours
3= 3-6 hours
4= <3 hours (minimal)

Geographic Impacts: How much of the population is expected to be impacted

- | | |
|------------------------------------|--|
| 1= Isolated Locations/neighborhood | <20% of population impacted |
| 2= Moderate impact | >20% and <75% of population impacted |
| 3= Community-wide | >75% of population impacted within community |
| 4= Region-wide | Level 2 & 3 impacts in surrounding communities |

Property Damage: Severity of damages and disruption

- | | |
|---------------|---|
| 1= Negligible | Isolated property damage, minimal disruption to infrastructure |
| 2= Minor | Isolated moderate to severe property damage, brief disruption to infrastructure |
| 3= Moderate | Severe damages at neighborhood level, temporary closure of infrastructure |
| 4= Major | Severe damages town-wide, temporary to long-term closure of infrastructure |

Vulnerability: Total score of Probability, Warning, Geographic Impact, and Property Damage

- | | |
|---------------------------------|---|
| 1= Low Priority | ≤ 8 total score, low cost –no cost mitigation projects only |
| 2= Medium Priority | >8 and ≤10 total score |
| 3= High Priority | >10 and ≤12 total score |
| 4= Regional/State-wide Priority | >12 total score |

Declared Disasters by County 2003-2013

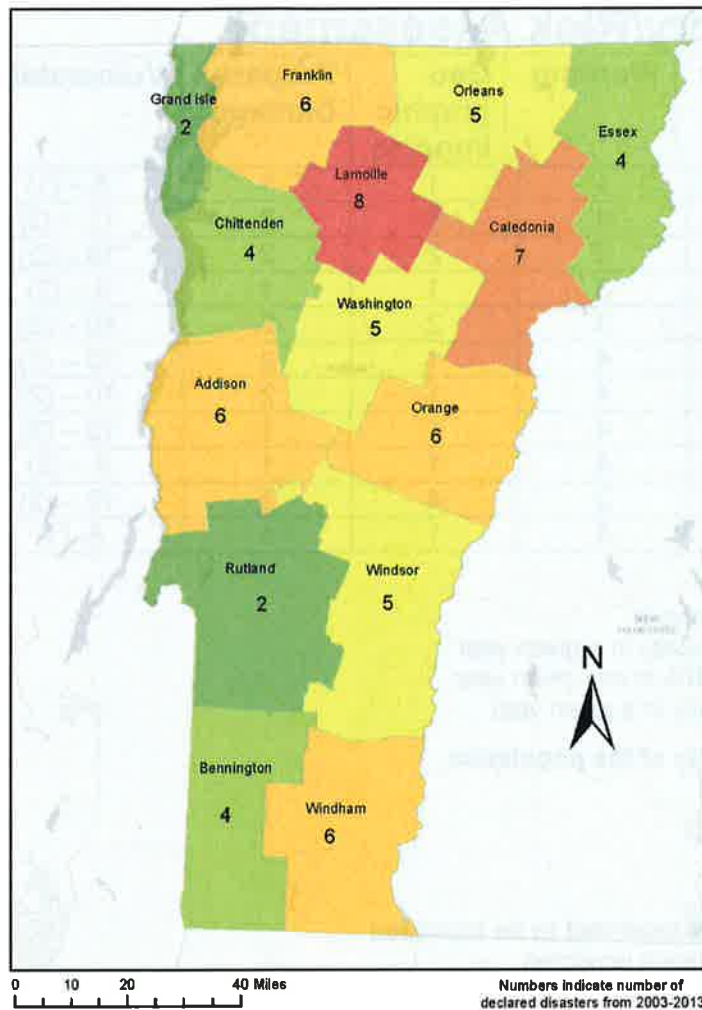


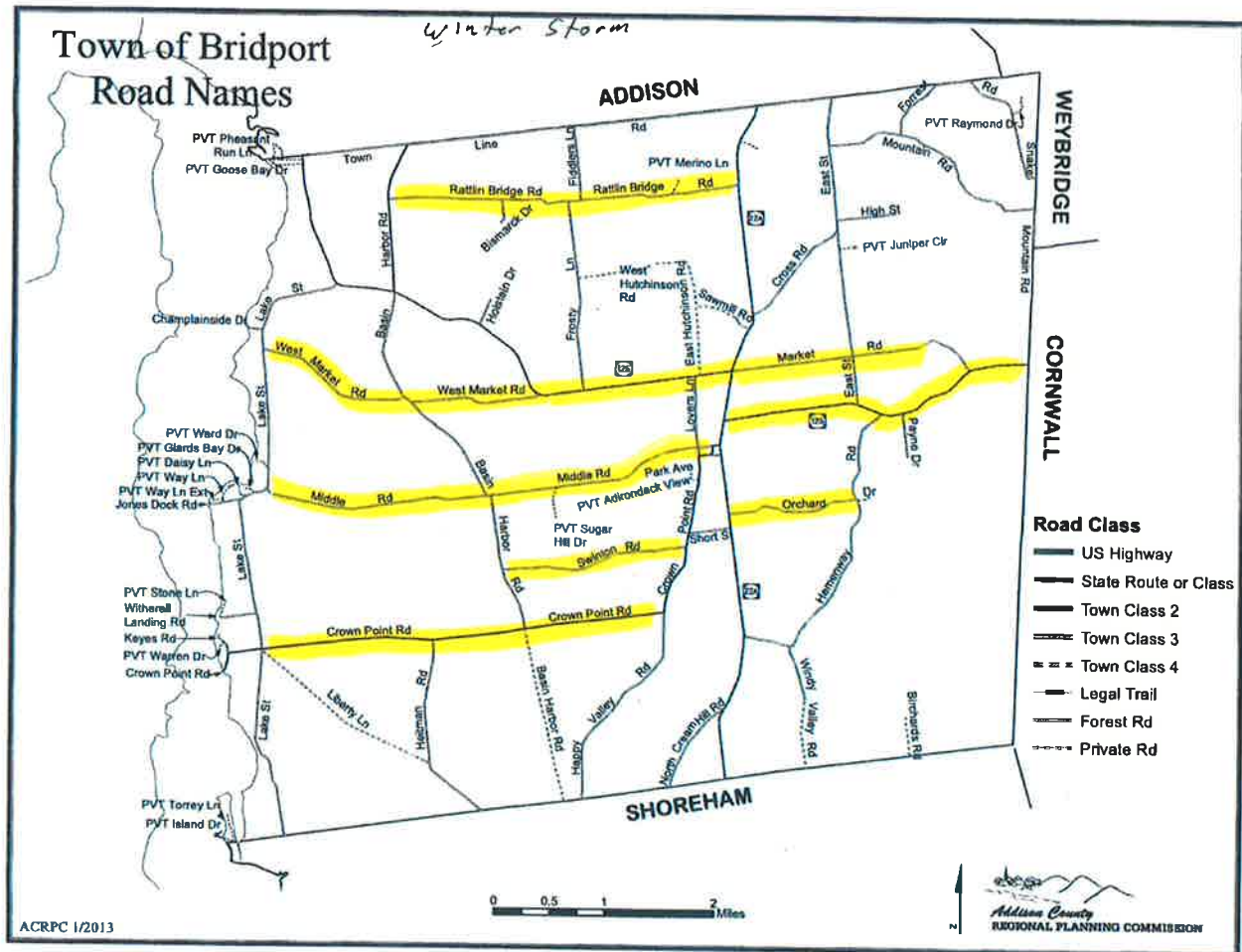
Table #1 Federally declared disasters affecting Addison County

Year	Date	Description	Dec. #	County Cost	Bridport
1973	7/6/1973	Severe Storms, Flooding, Landslides	DR397	\$ Unavailable	\$ Unavailable
1976	8/5/1976	Severe Storms, High Winds, Flooding	DR518	\$ Unavailable	\$ Unavailable
1977	9/6/1977	Drought	EM3053	\$ Unavailable	\$ Unavailable
1989	8/4-5/1989	Severe Storms, Flooding	DR840	\$ 31,033	\$ Unavailable
1993	4/24-5/26/1993	Flooding, Heavy Rain, Snowfall	DR990	\$ 17,639	\$ Unavailable
1996	1/19-2/2/1996	Storms, Flooding	DR1101	\$ 130,529	\$ Unavailable
1998	1/6-16/1998	Ice Storms	DR1201	\$ 662,388	\$ Unavailable
1998	7/17-8/17/1998	Severe Storms and Flooding	DR1228	\$2,146,484	\$ Unavailable
2000	7/14-18/2000	Severe Storms and Flooding	DR1336	\$ 744,075	\$ Unavailable
2001	3/5-7/2001	Snowstorm	EM3167	\$ Unavailable	\$ 8,187.00
2004	8/12-9/12/2004	Severe Storms and Flooding	DR1559	\$ 365,661	\$ 54,000.00
2008	6/14-17/2008	Severe Storms and Flooding	DR1778	\$ 486,850	\$ Unavailable
2008	7/21-8/12/2008	Severe Storms and Flooding	DR1790	\$ 438,900	\$ 179,100.00
2011	4/23-5/9/2011	Severe Storms and Flooding	DR1995	\$ Unavailable	\$ Unavailable
2011	8/26-9/2/2011	Hurricane Irene	EM3338	\$ Unavailable	\$ Unavailable
2011	8/27-9/2/2011	Tropical Storm Irene	DR4022	\$ Unavailable	\$ 539,534.00
2012	5/29/2012	Severe Storm, Tornado and Flooding	DR4066	\$ Unavailable	\$ Unavailable

4.3 Hazard Type, Location, Extent, Previous Occurrences, Future Probability and Vulnerability

The following hazard types have been identified, evaluated and prioritized in a risk assessment exercise conducted with the Bridport hazard mitigation committee. The matrix in 4.2 shows the results of that evaluation process for the Town of Bridport. The following hazard types are listed in their order of priority with highest vulnerability described first.

- **Winter Storm/Ice Storm – (Vulnerability 12- High Priority) –**



Results of Bridport Hazard Mitigation Committee exercise

Location: Severe winter storms are common throughout Vermont and can occur geographically in any part of Bridport. As in much of the Champlain Valley, the prevailing winds are either from the south or the north. Due to these winds, blowing and drifting snow impacts east/west roads the most.

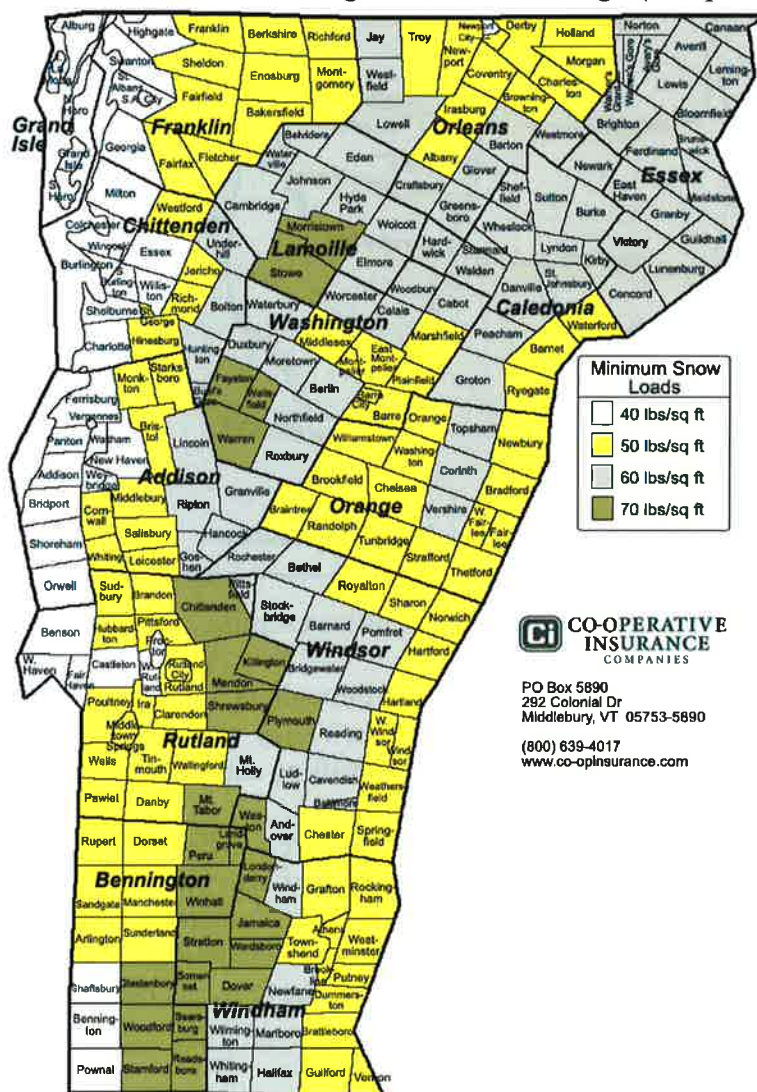
In the Town of Bridport, interviews with the road crew indicate that the most common issues associated with winter storms are the combination of heavy snowfall and high wind. These two circumstances combine to create widespread drifting along most east/west roads in town. Specifically mentioned were Crown Point Road, Middle Road, Swinton Road, eastern Market Street and Orchard Drive. Swinton Road in particular was identified due to recent rapid development along this relatively short road.

Another issue identified was the occurrence of freezing culverts following mid-winter warm spells. These lead to road washouts when water-filled ditches bypass frozen culverts. Many of the culverts susceptible to freezing are those that are found at the entrances to private driveways which were constructed with an eye to lowering costs for the homeowner rather than built with the town highway network in mind.

Extent: When conditions are predicted, the National Weather Service issues warnings ranging from a Winter Storm Warning (heavy snowstorm predicted within 24 hours) to Blizzard Warning (sustained wind and snow with gusts up to 35 mph for at least 3 hours) to Heavy Snow Warning (accumulations of over 6 inches in a 24 hour period).

Construction standards for snow load (see map) indicate that structures in the Town of Bridport should be built to withstand loads of 40 pounds per square foot. This would indicate an average depth of snow of 32 inches or 8 inches of ice on a square foot of roof surface. At that point, design standards would be exceeded and the structure runs the risk of collapse. Given this standard, a snowstorm which dumped 32 inches of snow or 8 inches of ice would likely result in a few collapsed roofs, especially on structures which are not built to these standards.

Minimum Snow Loads for Estimating Construction Design (Bridport=40lb/sq ft)



Previous Occurrences: The National Climatic Data Center reports that the Addison Region has experienced 2 major Ice Storm events over the past 25 years. The highest recorded damages were incurred during the 1998 Ice Storm (DR-1201) which impacted most of the northeastern US and resulted in \$750,000 in damages to Addison County properties. The Town of Bridport was not spared. Power outages continued for several days as remote power lines were accessed by off-road vehicles. P/A reimbursement for damages associated with this storm topped \$23,000.

NCDC records indicate that the Addison Region also experienced 123 winter storm events over the past 25 years. The worst storms resulted in \$100,000 in damages in both 2010 and 2005. During the period an estimated \$1,743,000 in cumulative property damages and \$10,000 in crop damages were incurred. The Town of Bridport recorded limited damages during most of these events though residents were impacted by loss of power and the occasional downed tree or branches in the road.

In March of 2001, the so-called “Town Meeting Day” snow event (Emergency Declaration #EM3167) caused reduced ability for residents to travel to the voting booth due to hazardous conditions. The Town was reimbursed \$8,187 to cover some of the costs of keeping roads open on Town Meeting Day and the meeting itself was rescheduled to a later date due to the inability of voters to attend.

As recently as February 2007, a significant snowstorm coupled with high wind nearly crippled much of Vermont including the Addison County region which suffered a reported \$237,000 in damages. This “Valentines’ Day Blizzard” stressed the resources of most local communities, including the Town of Bridport, to capacity but did not ultimately result in a federal declaration.

As recently as December of 2014, a storm dropping extremely heavy snow toppled trees which, in turn dropped power lines. In some areas of town residents were without power for several days. Preliminary damage estimates from the Town of Bridport indicate approximately \$10,000 in debris cleanup expenses were incurred by the Town.

Future Probability: The late 1960’s saw record breaking snowfalls in Vermont and locals remember being able to drive snow machines over the tops of wire fences. These record years were followed by the 1970’s and 80’s with below average snows. The number and severity of winter storms have been increasing since the late 1980’s establishing a cyclical pattern. If the current trend continues, it is likely there will be a continued increase in severe winter storms that will impact the Town of Bridport in the future.

Vulnerability Summary: With a regular occurrence of a significant snow or ice storm, the town feels the impact of a winter storm most on the transportation infrastructure of the community. The town is able to keep the roads open and treated for most storms and rarely has lost the ability to keep up with a winter storm due to the Town’s high preparedness level and ongoing mitigation actions. Fortunately, the regular occurrence of winter storms also causes most residents to maintain a high level of preparedness for winter storms.

As population growth and housing expands along remote road corridors such as Swinton Road, increasing dependency on local roads by the new homeowners requires changes in winter maintenance. New driveway culvert policies are limiting the installation of freeze-prone culverts and as old culverts fail, larger ones are being installed. The town has, thus far, been able to keep up with the increased demands on its services during winter, through additional hires and equipment purchases.

Without that preparedness level, the community vulnerability to Winter Storm/Ice Storm scores 12. A score of 12 would be considered HIGH based on a high probability with a high percentage of the population impacted.

- **Widespread Power Failure – (Vulnerability 12- High Priority)**

Location: Based on local knowledge, power outages are a common event throughout the Town of Bridport. There seems to be no particular pattern to where an outage may hit but outages often mimic the areas of high wind or where trees have not been adequately pruned or removed.

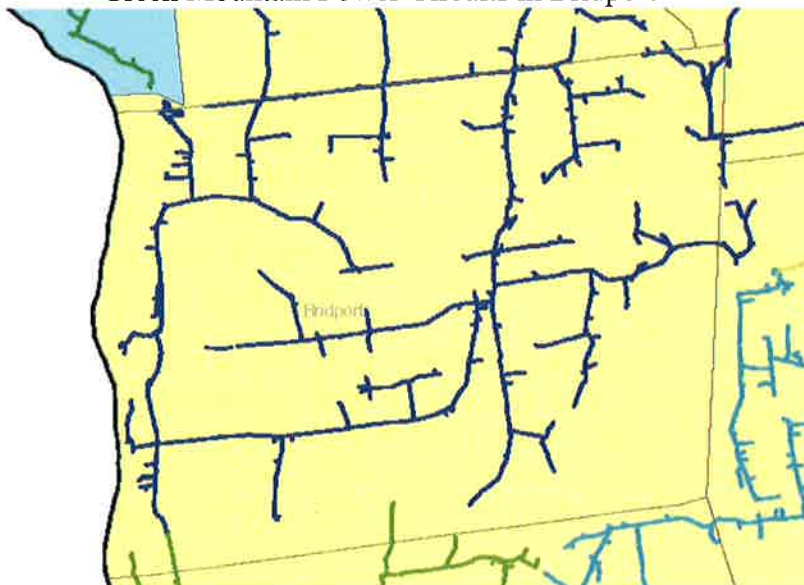
Extent: Depending on the cause of the failure, a widespread outage could last for days or even weeks. In the case of either a failing national grid or downed power lines throughout the northeast, outages could even be longer. When outages occur due to impacts from natural events, they tend to include either the entire town or large areas served by the same line.

Previous occurrences: In 1998 a severe ice storm hit northern Vermont and much of the Addison region. No community in the region was spared damage associated with downed power lines. Power outages continued for several days as remote power lines originally laid out by Rural Electrification in the 1930s and 1940s were accessed by off-road vehicles. In December 2014 a power outage of several days duration caused by heavy snow impacted much of Vermont including the Town of Bridport.

Future probability: Subsequent to the ice storm of 1998, power companies have re-routed many remote lines onto town highway rights of way and increased annual pruning efforts. Frequency of occurrence and length of outage duration have been reduced thereby also reducing the overall impact impacts to residents. If these and similar efforts continue, a reasonable person would predict fewer power outages of shorter duration. The effect of these improvements to infrastructure may be cancelled out by the general increase in the types of storms which lead to power outages.

Vulnerability summary: During summer months, localized power outages caused by severe summer storms mostly cause inconveniences to residents unless extended outages impact a family's frozen food supply or their ability to pump water from wells. Extended outages during winter months coupled with extreme cold have periodically resulted in more extensive damage associated with freezing pipes.

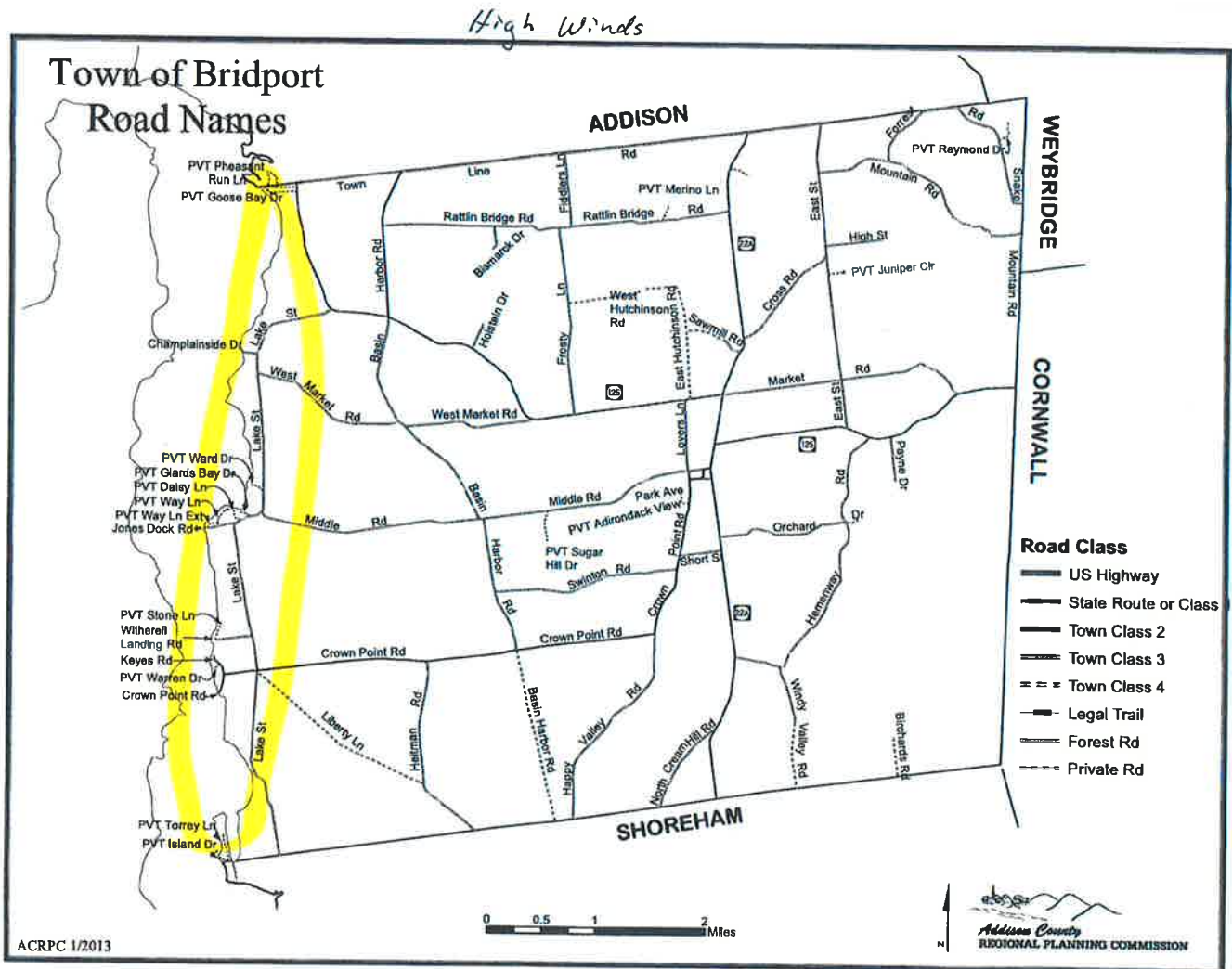
Green Mountain Power Circuits in Bridport



Mitigation activities by power companies have included re-routing many of the remote lines onto town highway rights of way and an increase in pruning effort. This has resulted in a less vulnerable power system but, given the results from the recent storm, there is still a long way to go.

The community vulnerability to Winter Storm/Ice Storm scores 12. A score of 12 would be considered HIGH based on a high probability with a high percentage of the population impacted. Widespread power outages have been extensively mitigated in the past few years effectively reducing the community's vulnerability. Actual vulnerability could be considered MODERATE based on impacts to infrastructure, health, and environment.

- **High Winds - (Vulnerability 10- Medium Priority)**



Results of Bridport Hazard Mitigation Committee exercise

Location: Damages due to high winds are rare in Bridport and are dependent on the location of the wind gusts and/or cyclonic wind. While these weather events generally cannot be precisely located, the prevailing winds are generally from the north or south. The Lake Champlain shoreline is at a

slightly higher risk of damage due to high winds because of the long, unobstructed fetch which also produces wave action. The entire Town of Bridport is at risk of high wind damage depending on where the winds strike.

Beaufort Wind Scale

MPH	Beaufort #	Description	Effects
0-1	0	Calm	Calm; Smoke rises straight up
1-3	1	Light Air	Wind motion causes smoke to drift slowly
4-7	2	Slight Breeze	Leaves rustle, wind is felt on exposed skin
8-12	3	Gentle Breeze	Leaves and small twigs in constant motion
13-18	4	Moderate Breeze	Small branches move; dust and loose paper raised
19-24	5	Fresh Breeze	Small trees sway;
25-31	6	Strong Breeze	Large branches sway; overhead wires “whistle”
32-38	7	Near Gale	Whole trees in motion; walking into wind takes effort
39-46	8	Gale	Twigs break off trees; cars veer on the road
47-54	9	Severe Gale	Branches break; Light structural damages
55-63	10	Whole Gale	Trees blown over; considerable structural damage
64-73	11	Storm	Widespread structural damages
74+	12	Hurricane	Considerable and widespread damage to structures

Extent: High winds come in many forms in Addison County and are included in damages associated with Hurricane, Tornado, Wind-shear and Hail Storms. The National Weather Service issues a wind advisory for sustained strong winds of 31 to 39 mph (Beaufort #7) or gusts of 46 to 57 mph. Winds of greater than 58 mph trigger a High Wind Warning.

Often, thunderstorms are accompanied by hail which generally results in minor property damages but can have a large effect on agricultural crops like apples and corn.

Remnants of hurricanes striking Vermont are uncommon and bring not only heavy rain but high winds as well. Similarly, tornadoes are known to occur and have been reported in the Addison Region. Tornadoes are less common than hail storms and high winds, but have occurred throughout Vermont.

The worst case high wind event could uproot trees, tear roofing from structures and collapse old or poorly constructed buildings. The loss of power and land line phone service is also possible during these events due to downed power lines caused by the falling trees.

Past Occurrences: NCDC records indicate The Addison Region has experienced 34 High Wind events and 35 Strong Wind events over the past 25 years resulting in \$1,451,000 in cumulative property damage and \$25,000 in crop damages. No information was found that would corroborate specific wind damage in the Town of Bridport.

In June of 2005 and in July of 2003, locally developing lines of thunderstorms resulted in a combined total of over \$150,000 in damages to communities in Addison County. Another high wind event occurred in 2007 to the south of Addison County which resulted in a so-called Nor-icane. This storm became a presidentially declared event (DR 1698) and resulted in over \$1,000,000 in reported damages. A total of 108 Thunderstorm wind events have been recorded in the Addison Region over the past 25 years with the highest recorded winds of 65knots in July of 2012. Within the 25 year record a total of \$1,433,000 in cumulative property damages due to high wind events were recorded.

The largest recorded hail size in the past 25 years was 2" in diameter in New Haven in December of 2012.

Since 1953 40 tornadoes have been recorded in the State ranging from F1 to F2 on the Fujita Scale. These storms killed 9 people and caused over \$8.4 million dollars in estimated property damage. Addison County experienced two of those storms. In June of 1965, a twister touched down resulting in \$37,000 in damage and one death. Another in 1983 struck the northern portion of the county and resulted in crop losses exceeding \$500,000. On May 27, 2014 a tornado was reported to have touched down in the Addison region. The storm was reported by observers in the towns of Bridport and Cornwall.



Storm Damage from 5/27/14 reported tornado in Bridport and Cornwall, Vermont

Future Probability: Over the past 15-20 years there has been an observable increase in the severity and frequency of storms in Bridport. 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. The current cycle would also predict an increase in both tropical storms and tornados.

Beyond damage to private residences, impacts to power lines caused by falling and/or uprooted trees tend to be felt by all residents of Bridport. Recent extensive tree removal to protect power lines may possibly have increased wind speed as an unintended consequence though no specific observations were noted by committee members.

The community vulnerability to High Winds scored 10. A score of 10 would be considered a medium priority for the town based on a medium probability and warning with a relatively low overall impact.

Town of Bridport

Flooding/slides

ADDISON

WYBRIDGE

CORNWALL

SHOREHAM

Road Class

- US Highway
- State Route or Class
- Town Class 2
- Town Class 3
- Town Class 4
- Legal Trail
- Forest Rd
- Private Rd

0 0.5 1 2 Miles

Adirondack County REGIONAL PLANNING COMMISSION

Location: The Town of Bridport is most susceptible to flooding, along the shore of Lake Champlain where camps and private residences are clustered along the lake. The primary areas of concentration for these structures are at low elevations of Lake Street, Torrey Lane, and Crown Point Road. These structures were often built prior to current zoning regulations which would have mitigated some of the flooding risk if built today. Other areas of mapped inundation flooding, including a large area along the Lemon Fair have never been developed and are currently protected, in some measure, by the town's current floodplain regulations.

Flash flooding is possible anywhere in town and damages due to flash flooding are generally to the town's highway infrastructure. Past impacts have been seen on West Market Road, Swinton Road, Crown Point Road, Mountain Road, Middle Road and Lake Street in particular have been impacted by flash-type flooding in recent years.

Extent: FIRM flood maps, digitized in 2006 by ACRPC and E911 points as documented by the State E911 database were compared digitally and where the two sets of data intersect, there are 5 single-family residences, and 13 Camp/Bungalows in the town that are shown to be vulnerable to potential flooding. Three of these properties are currently insured through the NFIP down from a high of 5 in 2013 when total insured values were close to \$900,000.

Based on field observations by the Bridport Zoning Administrator, only 5 Camp/Bungalows would actually lie within the area of the mapped Base Flood Elevation. The discrepancy comes from error within the digitization process used when ACRPC originally scanned and converted paper maps to GIS format. The estimated value of these structures is \$368,100. This represents 0.3% of the grand list. In recent years, the town has been faced with the conversion of some of these camps to year-round residences. While not increasing the number of structures, these conversions do increase the potential losses were they to be flooded. While local flood regulations address substantial improvements, much of this work is done piecemeal and never triggers in-depth review.

Past Occurrences: The Addison Region has experienced 21 flooding events over the past 25 years with reportable damages. The Town of Bridport has been impacted by 4 of these presidentially declared disasters in the past 10 years (August/September 2004, July/August 2008, April/May 2011 and September 2011) as a result of flooding. A review of annual reports from the Town of Bridport show a total of almost \$800,000 in FEMA reimbursements from these events.

In August of 2008, strong storm cells hit Bridport and much of Addison County, resulting in a federal disaster declaration. In Bridport, Crown Point Road and Swinton Road experienced culvert washouts as well as washouts along Hemenway Road and Mountain Road. Almost \$180,000 was reimbursed by FEMA and the State of Vermont over a period of three years to cover expenses associated with this storm.

In the spring of 2011, a quick snow melt followed by weeks of spring rains resulted in a new record height for Lake Champlain at 103ft above sea level. This exceeded the elevation for a projected 500 year flood in Bridport. Throughout the lakeshore in Vermont and New York, camps were hit with the high flood waters.

In late summer of 2011, the Tropical Storm remnants of Hurricane Irene caused devastating flooding in much of Vermont. Damages associated with TS Irene in the Town of Bridport included closure of

Lake Street and Middle Road for extended periods of time until repairs could be made. In particular, a previously scheduled replacement of an undersized culvert on Lake Street was delayed and a design recommended by the State of VT was not implemented due to the unwillingness of FEMA to fund the mitigation with section 406 funds. Over \$490,000 in reimbursements were received for the Lake Street culvert alone. As of this writing, in 2014, final reimbursements have still not been received for all of Irene's damages.

Future Probability: Since the desirability of a "home on the water" is quite high, pressure to develop additional lands within floodplains is increasing. While current long-term residents of Bridport generally know better than to build on a floodplain that floods every few years, newcomers to town could view these locations as desirable. Given the poor quality of the FIRMs serving the Town of Bridport, it is not hard to imagine the incremental process of filling in the natural floodplain to elevate new homes. While these new homes would be considered safe from flooding, the impacts of lands both upstream and downstream would likely put additional infrastructure at risk.

Climate experts infer that residents of lakeshore properties should be prepared for more frequent and higher flood elevations in the future.

Within the Town of Bridport the lands surrounding the Lemon Fair and Dead Creek are textbook examples of natural floodplain which has been left relatively undeveloped. Due to the availability of other lands much more suitable to development in town, these floodplains will likely continue to function well into the future.

Vulnerability Summary: The Town of Bridport, in its historic development patterns, is relatively flood-safe. Only camps and residences along Lake Champlain are currently at risk for flooding. With property values high along the shores of Lake Champlain, new buyers can no longer afford to own a camp on the lake useable only during summer months. These owners often turn toward a complete rebuild or renovation performed over time to accommodate a year-round residence. Even though owners may not actually live in the former camp year-round, these improvements allow for a three season extension of the summer season and increase the value of these properties as well as any losses associated with flooding.

Limitations for development in floodplains provided by base NFIP standards tend to subsidize growth in a mapped floodplain and may not sufficiently address the hazards associated with proximity to the lake. Further limitations that address erosion hazards should be considered.

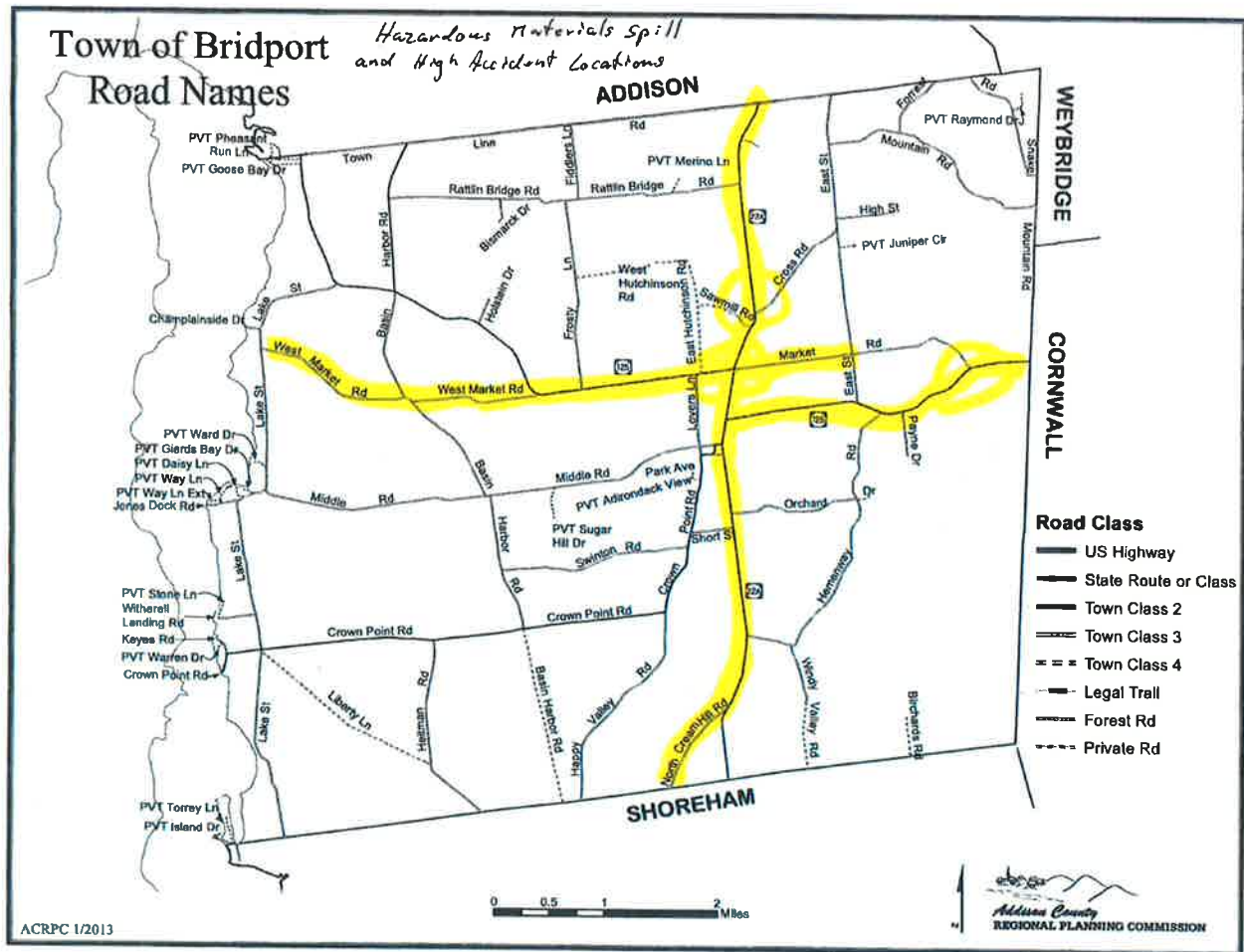
The community vulnerability to Flooding scored 10. A score of 10 would be considered a medium priority for the town based on a medium probability and warning with a relatively low overall impact.

- **Hazardous Materials & Highway/Transport Accidents – (Vulnerability 10- Medium Priority)**
Location: There are two sites in town that have sufficient types and/or quantities of hazardous materials to require Tier II reporting.
 - Boise's Citgo 2953 Rte 22A
 - Mike's Fuels Rte 22A

The Town also recognizes certain locations along town and state highways are high accident locations(HAL) as identified through local knowledge, police reports and VTrans reports. These HALs occur in the Town of Bridport at three primary locations:

- The intersection of Rte #22A, Rte #125, and Market Road
- The intersection of Rte #125 and Market Road
- The intersection of Rte #22A and Rte 125 just north of the village center

These locations are at higher risk for hazardous material spills due to their HAL status.



Results of Bridport Hazard Mitigation Committee exercise

Extent: Based on a recommended public safety evacuation distance from the 2012 Emergency Response Guidebook, a 1000-foot circle has been drawn around the Tier II sites. Of the 734 buildings (E911 locations) in Bridport, there are 6 Single-Family residences, 1 multi-family residence, 3 commercial facilities, 1 lodging establishment, 1 Government building and the school or 1.7% of the structures in town that might be impacted based within the identified 1,000 foot hazard circles.

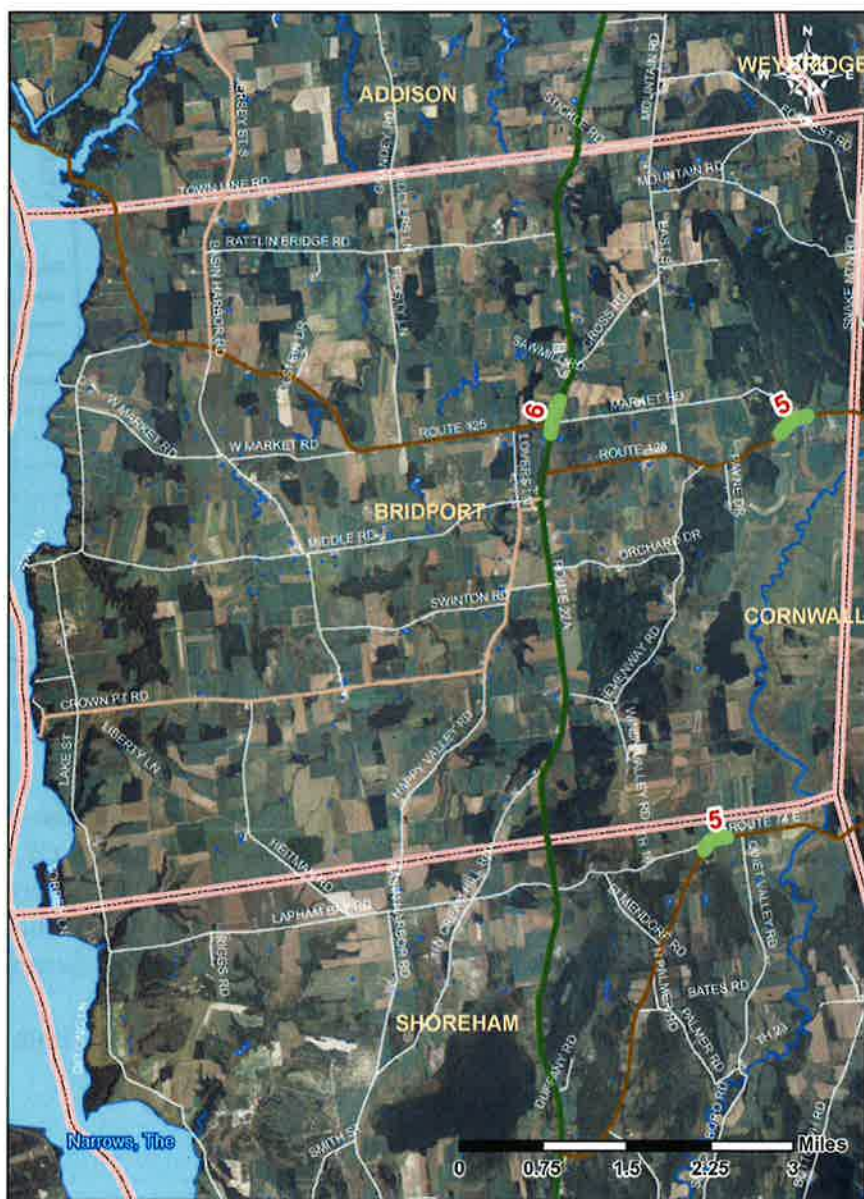
Essential facilities which could be impacted by a large hazardous material spill within the Town of Bridport are:

- Bridport Fire Station
- Bridport Town Office
- Bridport Central School
- Bridport Post Office
- Bridport Masonic Hall

Previous Occurrences: Minor non-reportable releases of propane have occurred, primarily during product transfer between storage tanks and delivery truck. In 2004, a tractor/trailer combination truck left Route #22A northbound and spilled a considerable quantity of fuel oil. Response required mobilization of the county hazmat team and resulted in loss of firefighting gear as well as environmental clean-up costs.

The HAL status of the intersections along Route 22A and Route #125 indicate multiple accidents at these locations. The intersection between Route 22A, Market Road and Route #125 saw 6 reported accidents in the period between 2006 and 2010.

Bridport ~ High Crash Locations : 2006-2010



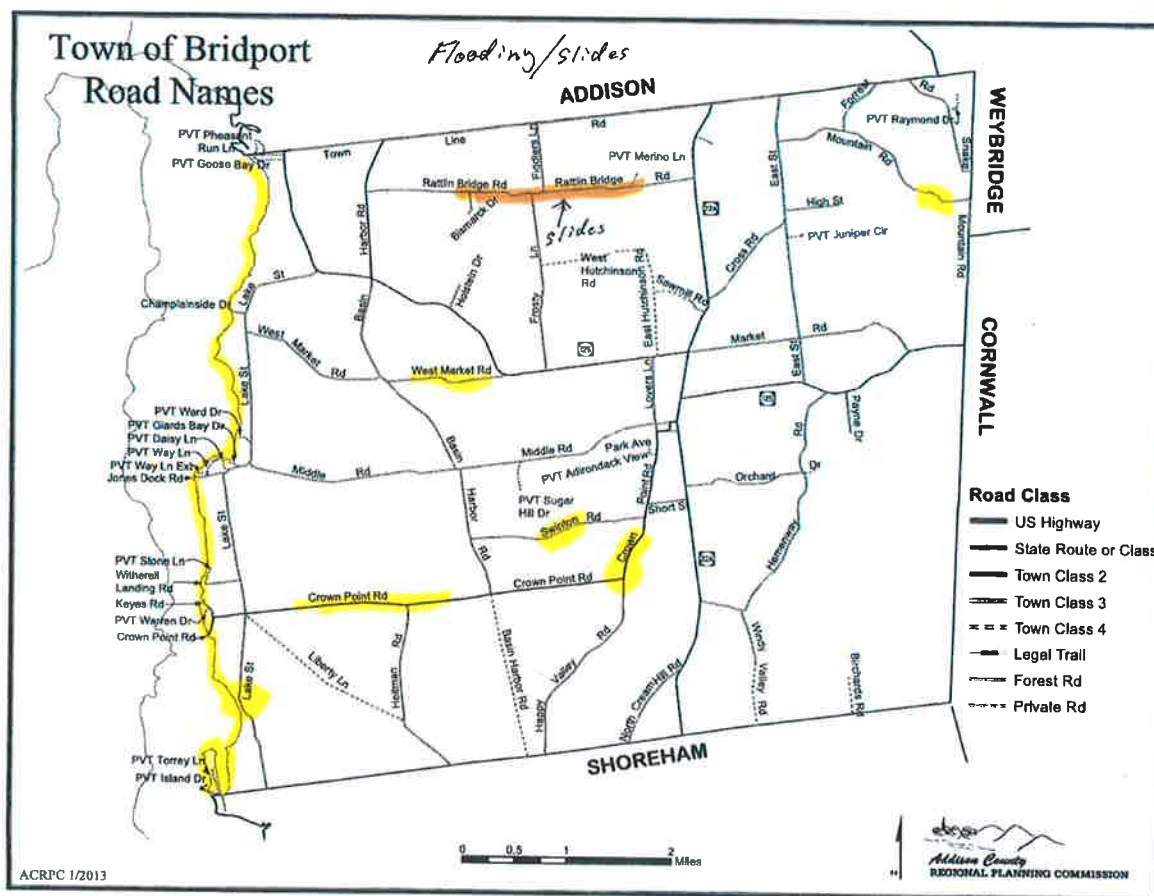
Future Probability: Route #22a is a primary route for carrying petroleum products between New York ports and the Burlington area. As demand continues to grow for these products, increased truck traffic along this route would indicate an increase in risk as well.

Vulnerability Summary: Route #22A is the primary north/south route for petroleum products on the western side of the state. A 2010 study conducted by the Addison County Local Emergency Planning Committee indicated that approximately 70% of hazardous material transported along Route 22A was petroleum based flammable liquid. An additional observable quantity of liquid nitrogen was also seen as a result of the study and over 10% of trucks were carrying some hazardous material.

Mike's Fuels, located in the village area, was identified by members of the fire department for the creation of an unnecessary potential hazard due to the recent installation of a 30,000 gallon Propane tank in close proximity to the village area. With another tank of equal size having been permitted at the same location at the same time, the hazardous material footprint for this facility has expanded dramatically in recent years.

The community vulnerability to a HazMat/Transportation incident scored 10. A score of 10 would be considered a medium priority for the town based on a medium probability with limited warning and a relatively low overall impact.

- **Landslide/Erosion Hazard – (Vulnerability 10- Medium Priority)**



Location:

Landslide/erosion issues in the Town of Bridport are generally limited to erosive actions of high water on riverbanks in town, a currently stabilized slump on Rattlin Bridge Road and on the occasional slumping of the shoreline along Lake Champlain.

Extent:

The shoreline of Lake Champlain in the Town of Bridport is made up largely of unconsolidated clay-based material. Current weather trends include increased frequency and severity of rain. That, combined with the unintentional actions of camp owners along the shore, and the base of clay can result in relatively large-scale slumps. When these slumps occur in developed areas, entire camps can find themselves at the bottom of a bank closer to the water than was ever planned. If not destroyed by the slide, camps may have difficulty finding enough space left at the top of a bank to reset. With camp values over \$100,000, the loss of several due to landslide could result in over one million dollars in uninsured damages.

Town highways are at risk in some areas to landslide/slump actions as well. Recently, Rattlin Bridge Road was being slowly displaced laterally due to uncontrolled water seepage into the clay. Loss of even 100 yards of town highway due to slump would have a negative impact the towns road budget.

Past Occurrences:

In the recent past, Rattlin Bridge Road was impacted by a slump which is believed to have been caused by the plugging of an old culvert and subsequent saturation of upslope soils. Camps along Giards Bay have also experienced settling of their foundations over time. While no major slumps were identified in interviews, the current shoreline along Lake Champlain is pockmarked with historic slumps. Elsewhere along the Lake Champlain shoreline, where soils are similar to those in Bridport, more recent examples include a 100ft slump which occurred in the Town of Colchester in the late 1960's. This slump ended up jutting out into Lake Champlain carrying a camp with it. The camp needed to be dragged up approximately 60 feet to get back to its original elevation.

Future Probability:

Due to the relatively flat terrain within the Town of Bridport, the catastrophic erosion and channel migration seen in mountain towns along river corridors is uncommon. Geomorphic assessment protocols used in the mountains are relatively ineffective at predicting future channel migration on the floor of the former Champlain Sea. Fortunately, areas surrounding Dead Creek, and the Lemon Fair still perform the wetland/floodplain functions as they have for thousands of years. The generally wet nature of the soils and their tendency to flood on an annual basis has kept most development at bay.

Poorly constructed driveways contribute to erosion hazards of their own when heavy rains wash gravel from uphill driveways into town ditches and onto town roads. As roadside ditches fill with gravel, they no longer retain their water carrying capacity and can result in road washouts during even relatively minor storms.

The increasing value placed on Lakeside property is starting to increase development pressure along the shoreline. Recent Vermont regulations were created to help reduce the impacts of this increased development. Some areas along Bridport's shore have already been developed in tight clusters of camps. When converted to year-round residences, water is added to the soils from leachfields. An increase in impervious surface is another byproduct of these conversions. These, together, increase the likelihood of future slumping.

Vulnerability Summary:

Much of the most erosion susceptible property in the Town of Bridport lies along the shores of Lake Champlain where the ancient lake bed clay deposits meet the current lake shore. Camps and newly built year-round homes have been constructed along unstable bluffs overlooking Goose Bay, and Giard's Bay, in particular. The use of these residences can result in a slow saturation and resultant increase in slide risk of the native clay soils. In addition, the desire to see the lake view from structures located along lakeside bluffs tempts landowners to clear natural vegetation which has historically helped to stabilize those bluffs. Town road accesses to the lake have experienced deterioration from erosion in recent years at Witherell Landing, Champlainside, and the end of Crown Point Road.

Increased concern about potential landslide and observed toe-of-slope erosion often results in a landowner "protecting" their shoreline via expensive rip-rap treatments. Unfortunately, while these treatments tend to temporarily protect one property, they also divert the erosive forces of wave movements further along the shore to the neighboring properties who then, in turn, must find a way to protect their own lands. The resultant protection cycle of costs escalates far beyond what would have been lost had the shores been left to react naturally over the course of decades.

The community vulnerability to Landslide scored 10. A score of 10 would be considered a medium priority for the town based on a medium probability and warning with overall impacts limited to small areas.

- **Structure Fire – (Vulnerability 10- Medium Priority)**

Location:

There are wood frame structures susceptible to structure fire scattered throughout the Town of Bridport with the highest concentration being camp groups along the shore of Giard's Bay. These camps are generally accessed by private drives and roads along Lake Street and Jones Dock Road. A secondary concentration is located on Torrey Island at the southeast corner of town. These are accessed by a private road which was built across a Torrey farm pasture. One last grouping is one located around the traditional village center (the "corners"). Most of these were built before modern fire-resistant construction materials and methods were developed. Particularly along the lake, these summer residences, prior to current zoning, were built close together to take advantage of lakeshore access, thus making them more vulnerable to a wind-spread multiple structure fire.

Extent:

The communities greatest risk for structure fire would be when a combination of circumstances were to happen at the same time. An example of these factors could be a structure fire in the Jones Dock Road area where traditional growth patterns of small seasonal camps have resulted in close-packed individual structures accessed via narrow and poorly constructed driveways. The combination of tightly packed structures and poor access for fire equipment is at its highest risk during winter months. The combination of snow, unplowed driveways, and reduced numbers of residents during the off season could lead to a fire getting out of control and spreading to nearby structures before the fire department could even get close enough to access the incident.

Past Occurrences:

Responses by the Bridport Volunteer Fire Department for automobile accidents and structure fires over the past 10 years have remained relatively stable with an average of 17 per year. Closer inspection however, indicates a definite increase in responses between the first five years of the sample (avg. 14/year), and the last five years (avg. 25 /year).

Bridport Volunteer Fire Dept. Annual Fire and Motor Vehicle Responses

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Avg.
# of responses	11	13	17	11	16	37	16	15	13	21	17
# new residences	25	7	5	16	8	3	1	2	6	5	8

Future Probability:

The Town of Bridport has issued an average of 8 building permits per year over the past 10 years for either the construction of new residences or replacement of old residences. While this is not a huge increase, a surprising number fell into the category of replacement residence. These are probably either replaced camps or replaced mobile homes, both of which can add to the fire risk when located along the lakeshore.

Vulnerability summary:

Over the past 20 years, prices for these summer camps have skyrocketed mostly due to the value of the land they sit on. The increased purchase costs of these properties drives a slow conversion from seasonal to more expensive year-round residences because owners feel a need to get more use out of them. The pre-existing small lot size converted to year-round homes increases the per acre value and increases the potential losses from wind driven fire. This new development has not had a huge impact on fire risk, however, due to improved construction methods.

Unfortunately, risks to firefighters continue to escalate as newer construction materials often produce a dangerous combination of gasses when burned. Increased numbers of houses and poorly constructed driveways do impact the fire department's ability to respond. Narrow and steep driveways not negotiable by fire equipment were identified particularly in the Forest Road area. While a landowner may have saved money in constructing these driveways, a much higher cost is associated with a structure fire at a location with limited access as well as an additional risk to volunteer firefighters who respond.

The community vulnerability to Structure Fire scored 10. A score of 10 would be considered a medium priority for the town based on a high probability with only a short warning but with a relatively low overall impact.

- **Lightning – (Vulnerability 9- Medium Priority)**

Location:

Severe storms which include lightning along with wind and rain events are a common occurrence in Bridport during summer months. While unpredictable, lightning tends to be drawn to high and pointed places. Town buildings are located at the height of land in Bridport village (Town Hall, Grange Building, Fire Station, etc.) and are therefore more highly susceptible to lightning strike than most residential structures.

Extent:

Lightning strikes in western Addison County, Vermont averaged between 4-6 strikes per square kilometer each year based on data collected by NASA satellites between 1995 and 2002. Within the Town of Bridport, these numbers would extrapolate into between 480 and 720 lightning strikes per year.

Lightning strikes routinely cause fires to trees along ridge tops in Vermont and less commonly start fires in structures. Fires associated with lightning strikes to inhabited buildings occur fewer than once every five years on average. More common is loss of power and damage to electronic equipment in homes where there has been a proximity strike. Anecdotally, there are multiple reports each year of electronic equipment unprotected by surge suppressors which are damaged by lightning strikes. Generally, these homeowners file insurance claims for damages and total annual damages in the entire community likely do not exceed \$10,000.

Previous Occurrences:

Relatively little information has been recorded of recent significant lightning strikes. However, a lightning strike killed Bridport resident Cyrus Stone, outside his house in 1910. Given the estimated numbers of lightning strikes in Bridport, it is certain that there have been strikes on homes and barns resulting in fires. Another common strike location is at a power line transformer.

Future Probability:

It is unlikely that lightning strikes will be reduced over the next few decades, however, If predicted increases in storm numbers and severity are true, increased numbers of lightning strikes would be expected. As newer buildings are built with fire resistant materials the likelihood of fire due to lightning is reduced.

Vulnerability Summary:

Bridport's susceptibility to lightning strike seems to be relatively stable. While historically, buildings may have been protected from lightning-caused fires by a lightning rod system, these seem to have fallen out of favor in recent years. During that same time period, an increase in fire protection capability has allowed the community to keep their perceived risk at a constant level.

The highest risk area for lightning strikes with the highest resultant damage to the public infrastructure continues to be where multiple public buildings are clustered on the height of land in the traditional village center. Loss, due to fire caused by lightning or electrical surge could be quite disruptive to the community if it were the town office, grange, or church.

The community vulnerability to Lightning scored 9. A score of 9 would be considered a medium priority for the town based on a high probability and limited warning but with a relatively low overall impact.

Wildfire – (Vulnerability 9- Medium Priority)

Location:

Wildfire can occur almost anywhere throughout the Town of Bridport. Generally, two different wildfire fuels can be found within the boundaries of the town. The forested areas of town, are characterized by fuels found in the duff layer (leaves, fallen branches, etc.). Non forested areas of Bridport have a fuel base of dried grasses and shrubs. Recent development in forested areas of town has resulted in homes nestled into woodlands creating an urban/wildfire interface risk. In open agricultural areas, the risk is from controlled burns in fields that can get out of control and result in a running fire through dry grasses.

Extent:

Springtime burning of open fields has been a longstanding historic practice thought to improve field fertility. Every few years, these get out of control due to either poor planning or unexpected winds. Generally, this type of wildfire is limited to a few acres and poses limited threats to structures lying close to the fuel source in the path of the fire. Fires in the forest tend to be smaller, usually limited to under an acre in size. These are generally mitigated by hardwood tree species and cover on the forest floor. Lakeside camps can sit among trees with a deep duff layer comprised primarily of leaves and/or needles. These camps also traditionally have open fires as part of the summer camping experience. The combination of these factors can lead to a higher fire risk in these areas.

A fast traveling wild-fire, whether through dry hayfields or through a dry bed of forest duff could easily lead to structure fires, especially in outbuildings. During an extremely dry spring, an out-of – control fire such as this could tax the local fire department and its mutual aid partners.

Past Occurrences:

In the century prior to 1920, wildfires enveloped large tracts of the New England forests in large part due to the logging activity and wood burning locomotives of the time. No current records of wildfire activity have been found for the Town of Bridport. However, the State Agency of Natural Resources keeps track of fires in the entire state. Most wildfires are never reported to State forestry officials and are therefore not shown in their annual reports. Based on the period between 2001 and 2010 the fires which were reported averaged just under 120 fires which burned a total of 215 acres.

Vermont Wildfire Statistics

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
# fires	189	100	101	86	221	118	81	115	95	88
# Acres	295	146	95	250	547	254	180	138	164	84
Ave. Size	1.56	1.46	.95	2.91	2.48	2.15	2.22	1.20	1.73	.95

Addison County Wildfire Statistics

Year	2006	2007	2008	2009	2010
# fires	2	4	6	10	1
# Acres	.5	9	10	4.5	1.2

Within the past 50 years, forests have been closed to recreation state-wide 3 times due to extreme fire conditions. While these incidents have not resulted in large-scale damage in the Town of Bridport, the conditions existed for widespread forest fires. In addition, an unusually dry spring will often result in a no-burn proclamation most recently seen in 2009.

Future Probability:

The combinations of factors which lead to widespread wildfires usually coincide with extended droughty conditions. Periodic droughts occur every 30-40 years in Vermont and based on observed patterns, would be next expected in the decade between 2020 and 2030. During this period additional risk for wildfire would exist and an increase in wildfires would also be expected.

Vulnerability Summary:

With an active agricultural base, much of the Town of Bridport is either open land or lands recently abandoned and growing up to shrubs. Consequently, many structures within this area border on areas with a high fuel load of grasses and shrubs.

Similarly, forested areas of town and along the lakeshore would fall within the traditional urban/wildfire interface. This increased risk for forest fire due to proximity is moderated by the so-called “Teflon Forest” conditions of the Northeastern US. While moisture levels generally tend to be higher than in the fire-plagued western forests, scattered periods of drought can increase fire danger levels to *Extreme* particularly during spring and fall seasons when dry leaves cover much of the forest floor.

Increased development within the urban/wildfire interface continues throughout the state and Bridport has not escaped that trend. It is becoming increasingly important that residences and essential facilities be constructed with an eye toward wildfire resistance by establishing no-burn zones around structures.

With a community vulnerability score of 9, wildfire is considered a MEDIUM PRIORITY based on a high likelihood of occurrence yet with a low overall impact to the community.

- **Earthquake – (Vulnerability 8- Low Priority) –**

Location:

As surprising as it is to some residents, all of Vermont, including the Town of Bridport, is classified as an area with “moderate” seismic activity. This can be compared to the west coast of the U.S., which is classified as “very high” and the north-central states classified as “very low.” Located in the Champlain Valley, Bridport is at moderately higher risk than some other areas of Vermont.

Extent:

Based on information provided by the Vermont Geological Survey, Department of Environmental Conservation, Agency of Natural Resources, HAZUS outputs for the region are summarized as follows:

The Middlebury Once-in-500 year earthquake (5.7 magnitude) could cause significant damage in Addison County. The Goodnow, NY Once-in-500 year earthquake (6.6 magnitude) could cause shaking just above the lower limit for building damage. The Montreal, Quebec (6.8 magnitude) and the Tamworth, NH (6.2 magnitude) Once-in-500 year earthquakes probably would not cause damage in Addison County. Only the loss data from the Middlebury and Goodnow events are shown below:

Middlebury Scenario:

- Building damage – HAZUS estimates that over 1600 buildings will receive at least moderate damage. This is a little more than 13% of the total number of buildings in the county. (13% of buildings in Bridport would be 95 buildings). HAZUS also estimates that all essential facilities (hospital, schools, police stations and fire stations will receive at least moderate damage. A total of .8% or 6 structures would be predicted to be substantially damaged. An estimated 4-5 families would be displaced from their homes and may need temporary shelter in Bridport.
- Transportation & utility systems – HAZUS estimates minimal disruption of the transportation and utility systems. However, over 9000 households in the region are expected to be without electrical power for up to three days.
- Casualties – Minimal casualties are also expected with less than twenty-five requiring medical attention and less than three needing hospitalization in the region.

- Economic loss – Direct building losses are estimated at > \$83 million and business interruption losses are expected to be as much as \$105 million. HAZUS estimates that although there was minimal damage to the transportation system the loss would still be close to \$15 million. Approximately \$4.4 million would be needed to repair damaged communications systems.

Goodnow Scenario:

- Building damage – HAZUS estimates that over 600 buildings will receive at least moderate damage. This is a little more than 5% of the total number of buildings in the county. (5% of buildings in Bridport would be 37) HAZUS also estimate that all essential facilities (hospital, schools, police stations and fire stations will receive at least moderate damage. 2-3 families are predicted to be displaced from their homes and will need temporary shelter.
- Transportation & utility systems – HAZUS estimates minimal disruption of the transportation and utility systems. However, over 4000 households are expected to be without electrical power for up to three days in the region.
- Casualties – Minimal casualties are also expected with less than six requiring medical attention and only one needing hospitalization.
- Economic loss – Direct building losses are estimated at > \$17 million and business interruption losses are expected to be as much as \$24 million. HAZUS estimates that although there was minimal damage to the transportation system the loss would still be close to \$3.6 million. Approximately \$0.9 million would be needed to repair damaged communications systems.

Previous Occurrences:

Sixty-three known or possible earthquakes have been centered in Vermont since 1843 (*Ebel, et al 1995*). The two strongest recorded quakes measured in Vermont were of a magnitude 4.1 on the Richter scale. One was centered in Swanton and occurred on July 6, 1943, and the second occurred in 1962 in nearby Middlebury. The Swanton quake caused little damage, but the Middlebury quake did result in broken windows, cracked plaster and falling objects (*VEM, 1995*).

Earthquakes centered outside the state have also occasionally been felt in Vermont. Twin quakes of 5.5 occurred in New Hampshire in 1940. In 1988, an earthquake with a magnitude 6.2 on the Richter scale took place in Saguenay, Quebec and caused shaking in the northern two thirds of Vermont (*Ebel, et al 1995*).

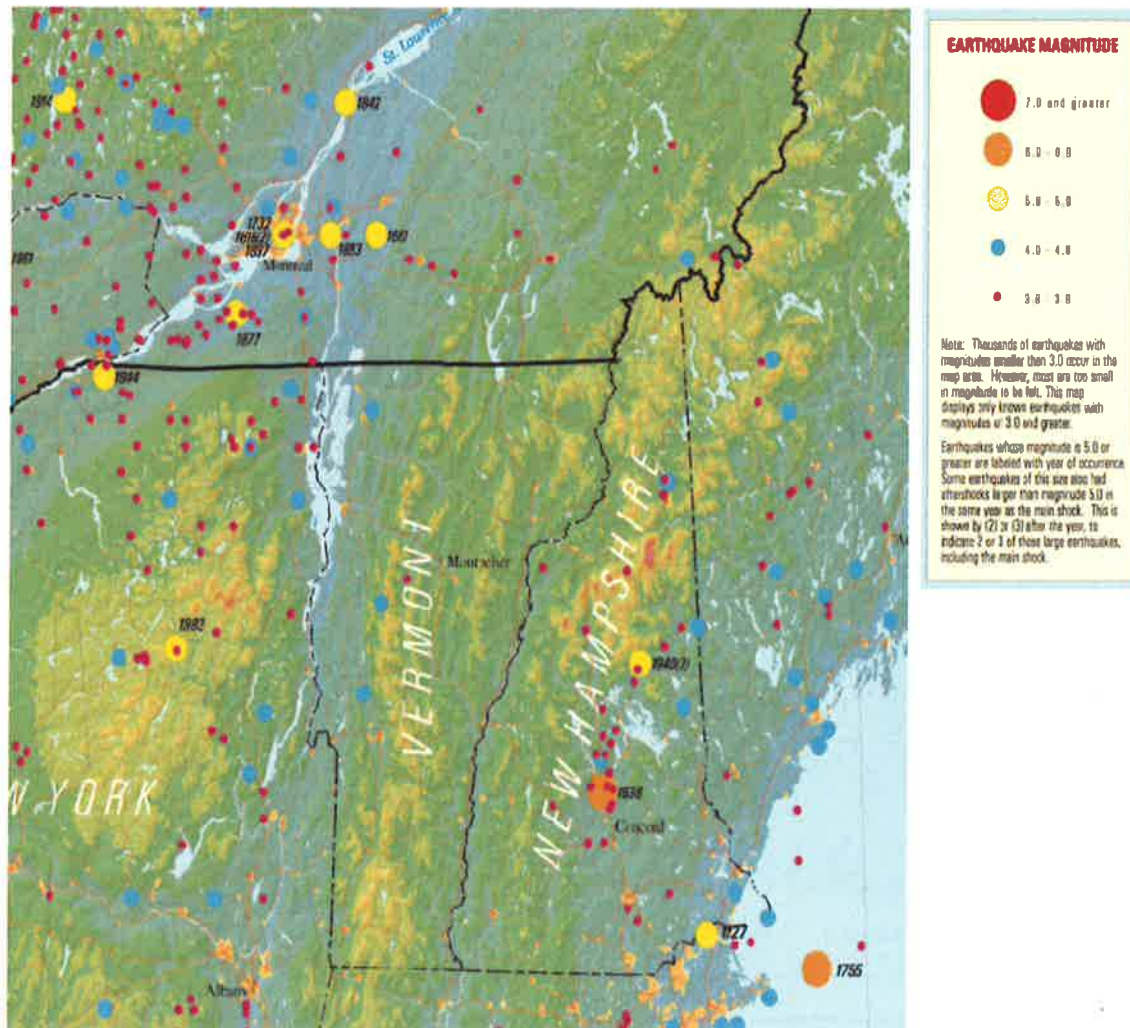
In May 2001 and again in the summer of 2010, earthquakes in the 5.0-5.5 range have been felt in Bridport with epicenters in New York and Quebec respectively.

Future Probability: The USGS database shows there is a 2.26% probability of an earthquake measuring 5.0 or above within 31 miles of the Town of Bridport in the next 50 years.

Vulnerability Summary: The Bridport Hazard Mitigation Committee scored Earthquake hazard a risk score of 14 resulting in a vulnerability score of 3. Residents of the community do not generally consider earthquake to be a high enough risk to require preparing for one. This results in little or no preparedness should an earthquake occur.

The community vulnerability to Earthquake scored 8. A score of 8 would be considered a low priority for the town based on a low probability with no advance warning but with a relatively low overall impact.

Regional Historical Earthquake Records



- **Drought – (Vulnerability 5 - Low Priority)**

Location:

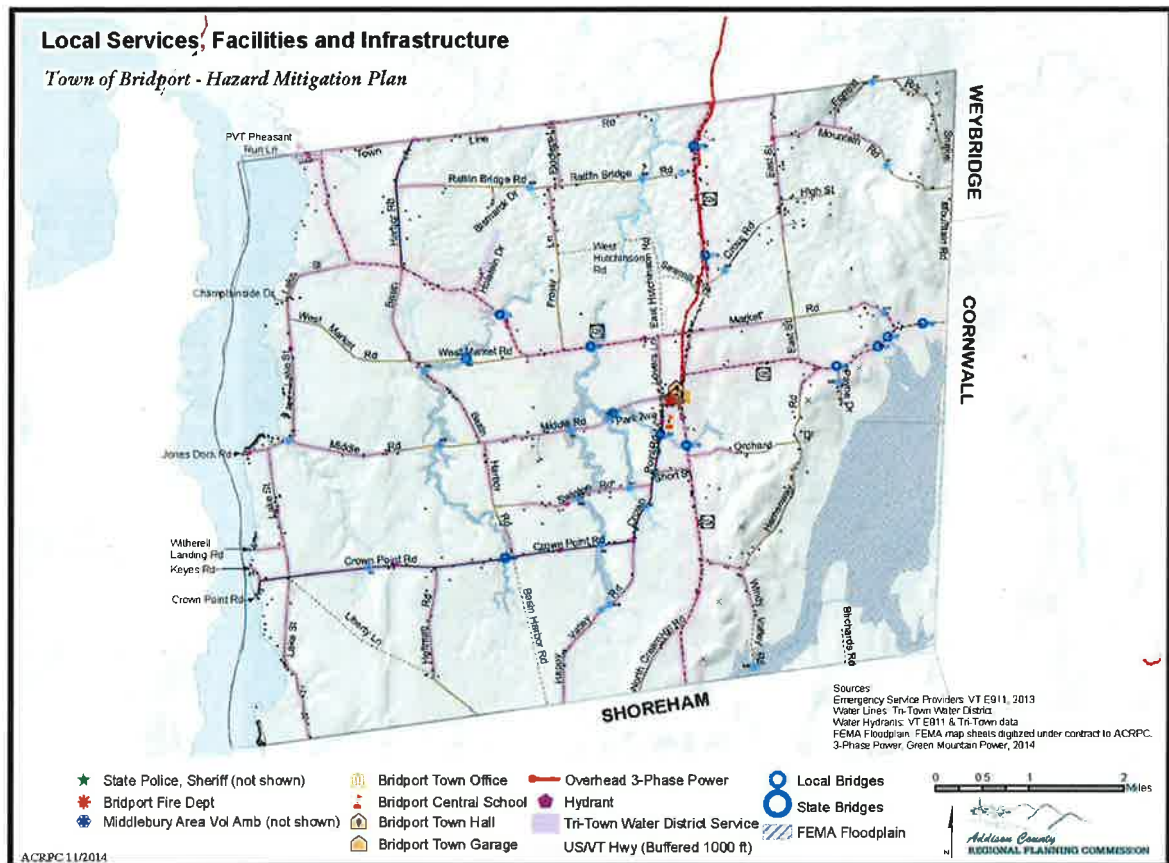
Drought, due to lack of rain resulting in a receding water table is generally a regional issue due to its widespread nature. Most of the Town of Bridport receives its water supply from Lake Champlain via the Tri-Town Water District and residents are, therefore less susceptible to drought conditions.

Palmer Drought Index Table

≥ 4	3. -3.99	2-2.99	1-1.99	.5-.99	.49 -.49	-.5 -.99	-1 -1.99	-2 -2.99	-3 -3.99	≤-4
Extremely Wet	Very Wet	Moderately Wet	Slightly Wet	Incipient Wet Spell	Near Normal	Incipient Dry Spell	Mild Drought	Moderate Drought	Severe Drought	Extreme Drought

Extent:

Four types of drought are identified in the State of Vermont's Hazard Mitigation Plan: meteorological, agricultural, hydrological and socioeconomic. Local knowledge indicates dry spells are periodic in nature and would be considered severe about every 10 years on the average. The residents served by Tri Town Water would probably not be impacted during a droughty period but farm crops throughout Bridport could be.



Local infrastructure map identifying the extent of the Tri-Town Water service area

Previous Occurrences:

An extended drought period in the region during the 1960s saw the development of several community-owned water systems in communities along Lake Champlain. The Town of Bridport at that time entered into a multi-town water district along with the Towns of Addison and Shoreham. The Tri-Town Water District was formed which resulted in a water access and treatment plant located on the shore of Lake Champlain in the Town of Addison and an extensive system of water lines which serve along public roads in each of these towns. No direct costs to the town due to drought have been recorded in the period since the creation of the Tri-Town Water District.

Future Probability:

Historical records show periods of moderate to severe drought impact Vermont every 30 -40 years with the last occurring during the 1990s. Were this pattern to continue, a moderate to severe drought would be expected sometime in the decade between 2020 and 2030.

Vulnerability Summary:

With a high likelihood that the region will experience a moderate to severe drought in the next decade, a now ageing infrastructure, and increased demands due to future residential growth, could require widespread upgrades to the existing infrastructure. These costs would need to be borne by the residents of the water district. The needs of local dairy farms for milk and crop production could also severely impact the efficacy of the existing system were a major drought to occur.

Since agriculture is the largest economic engine in Bridport, an extended drought which caused reduced crop production could have widespread impacts.

The community vulnerability to Drought scored 5. A score of 5 would be considered a low priority for the town based on the existence of a robust water system with redundant equipment.

5. Community Mitigation Strategies

5.1 Hazard Mitigation Goals by Hazard Type

Each hazard type identified in Section 4 “Community Risk Assessment” can be mitigated dependent on the willingness to do so at the local, state or federal level. For example, the mitigation of flood damage is basically a simple fix- don’t allow anything in the floodplain that can’t afford to be lost and when it is lost, don’t replace it. This would include all forms of infrastructure whether it be homes, highways, dams or croplands. Unfortunately, political will can rarely stand up to the simplicity of mitigation.

The Town of Bridport has identified that its goals for hazard mitigation are to reduce and/or avoid all long and short term vulnerabilities to the hazards identified in section 4.3. In doing so, it also recognizes that political will and lack of funding stand in the way of many mitigation projects. The town particularly supports local residents’ efforts to mitigate their personal risks. The Town also supports projects that lead to a positive benefit vs. cost evaluation and which the voters find affordable.

Identified Hazard	Primary Mitigation Goal
Winter Storm/Ice Storm	Ensure that essential services can function during disaster
Widespread Power Failure	Ensure that essential services can function during disaster
High Winds	Ensure that essential services can function during disaster
Flood/Flash Flood	Reduce loss of infrastructure due to flash flooding and Protect existing floodplain from development
Haz Mat and Transportation Accidents	Ensure that highway improvements result in safer conditions
Landslide/Erosion	Reduce loss of infrastructure due to erosion
Structure Fire	Protect the health and safety of the public
Lightning	Protect the health and safety of the public
Wildfire	Protect the health and safety of the public
Earthquake	Protect existing and new properties and structures
Drought	Protect existing and new properties and structures

5.2 Authorities, Policies, Programs, Resources (and the ability to expand upon these)

Authorities of Town Officials:

Selectboard: The Selectboard is responsible for the basic administration of the town. They take care of roads, make appointments to other boards and commissions, and authorize expenditures of voted budgets. The selectboard may enact ordinances and rules in many areas including traffic regulation, regulating nuisances, managing solid waste, dogs and recreation, and establishing bike paths.

Planning Commission: The Planning Commission is responsible for long range planning in a town particularly as it relates to future land uses. They prepare a municipal plan and zoning bylaws which are adopted by the Selectboard. Planning Commission members are appointed by the Selectboard.

Zoning Administrator: The Zoning Administrator (ZA) is appointed by the town’s Selectboard with consideration given to the recommendation of the planning commission. Their responsibilities include administration and enforcement of a town’s zoning bylaws, The ZA and usually also serve as the administrator of town floodplain regulations.

Tree Warden: The Town Tree Warden is responsible for the shade and ornamental trees within the town rights-of-way. They oversee tree health and removal when necessary. The tree warden is appointed by the Selectboard.

Fire Warden: The Town Forest Fire Warden has the responsibility for suppression of wildland fires, regulating open burning in the town by issuing burn permits, and wildfire education/prevention. The Town Fire Warden is appointed by the state Commissioner of Forests, Parks and Recreation with approval by the town's Selectboard.

Health Officer: The Town Health Officer is the executive officer of the local Board of Health. A local board of health may make and enforce rules and regulations...relating to the prevention, removal, or destruction of public health hazards and the mitigation of public health risks. The Town Health Officer is appointed by the Commissioner of Health with approval by the local Selectboard. They take direction from the state Department of Health in investigation and enforcement of public health issues.

Emergency Manager or Coordinator: By default, a towns Selectboard chair is the town's emergency management director (EMD) unless one is appointed. Many communities retain the authorities of an EMD within the Selectboard and appoint an emergency coordinator instead. The emergency manager is responsible for the organization, administration and operation of the local emergency management organization. Emergency managers prepare local emergency operations plans, coordinate a local emergency management group and perform emergency management functions at the local level.

Current policies, programs, resources and the ability to expand on these for identified hazards:

Winter Storm/Ice Storm

Mitigation activities by power companies have re-routed many of the remote lines along town highways since a 1998 ice storm and an increased pruning effort has reduced the impact of a similar event would it happen today. Where affordable, the burying of power lines is encouraged throughout town to help mitigate the most common effect of winter storms in Bridport

The Town of Bridport generally mitigates its winter storm risk through preparedness activities in the form of appropriately sized equipment and training. In the event of an extended power outage during extremely cold weather, the Town has identified the Bridport Central School as a designated warming shelter equipped with a back-up power source. The periodic cutting of brush along town highways also mitigates the effects of large winter storm events by reducing their ability to act as snow fence dropping windblown snow into the town highway system. In past years, the annual installation of snow fence helped mitigate the drifting found along the town's east/west roads. This practice, however, fell out of favor as labor became more expensive and storage in the summer of wooden slat snow fencing became an issue.

During interviews, the town highway crew expressed an interest in revisiting the installation of snow fence. Recent fencing design can now allow a single man to install in one day what formerly took two men several days and storage of the new and lighter fencing could now occur easily in second floor storage areas. In particular, the road crew noted snow drifting as an issue on Rattlin Bridge Road, Crown Point Road and Middle Road.

Widespread Power Failure

Many private residences have back-up power sources and essential Town facilities like the Bridport Central School and Town Garage have been retrofitted in recent years.

As population growth and housing expands along remote road corridors, increasing reliance on dependable power by the new homeowners requires changes in line maintenance. Green Mountain Power (GMP), the utility servicing the Town of Bridport has ongoing programs of line clearing and relocation to ensure outages are kept to a minimum. In addition, recent improvements to the transmission system in northwest Vermont have provided redundant transmission systems to bring electric power to the region.

The Town of Bridport supports development of a robust and redundant local electric generation and transmission system for its residents and recommends the burying of power lines. This support is limited to that which can prove that the benefit to local residents outweighs the financial costs and the societal costs associated with industrial generation and visual degradation of the local landscape by aboveground transmission lines.

High Winds

Residents of the Town generally do not recognize high wind as a hazard which can be mitigated with the exception of the effects previously discussed under widespread power failure.

Newly constructed buildings may have tie downs between roof and side walls but no building codes exist within the community that require construction to any particular standard.

Where high wind hazards have been recognized, it is usually a function of damage that might be caused if a tree were to be blown over and its effect on a residents' home. For this reason, some trees are removed from the landscape to reduce their vulnerability to high wind events. Within the village area, the town's Tree Warden supervises maintenance and removal activities of trees on town property. The Town of Bridport supports removal of dead and hazardous trees in the state right-of-way to mitigate the hazards associated with their falling either on town highways or on power lines. Along town rights of way, however, hazard tree removal is performed by the town road crew without the involvement of the town Tree Warden. The Town is considering whether a more active tree warden or the appointment of a member of the road crew as a deputy tree warden would result in a safer roadside. Specific locations where trees are a hazard were identified by the road crew as along Hemmenway and Forest Roads.

Flood/Flash Flood

The Town has been a member in good standing of the NFIP for over 30 years. There are no identified "Repetitive Loss" properties located in Bridport. Five flood insurance policies are in effect for residences in the town which are insured for just under \$900,000. The anticipated changes to flood insurance brought on by the Biggert-Waters Act will eventually cause premiums on structures within the floodplain to skyrocket. These increased insurance costs may encourage buyouts and elevation projects that have previously been considered too expensive by homeowners historically benefitted by subsidized flood insurance.

Bridport's zoning regulations prohibit all new construction and substantial improvements to existing residences within the mapped floodplain with the exception of certain open space uses which do not impact the flood carrying capacity of the floodplain. Utilizing an early template which exempts "camps" from review is recognized as a gap in current zoning regulations. It is believed that the local

term “camp” referring to a seasonal home was not the original intent of the template which probably referred to something more akin to a tenting site for camping. It is unknown whether the cost of elevating a structure will trigger the substantial improvement clause of the current regulations.

The Town of Bridport adopted the 2013 edition of road and bridge standards as recommended by VT AOT on 2/11/2013. This document addresses road and bridge construction standards designed to mitigate local infrastructure issues and are particularly designed to mitigate potential damages due to flooding and flash flooding. The standards address culvert sizing, ditch treatments and driveway access to reduce flood-caused erosion. The road and bridge standards template is attached as Annex F of this mitigation plan.

The Town supports continued compliance with the NFIP and would support Community Rating System (CRS) improvements if the benefits to the town’s residents would outweigh the costs of additional administration and compliance.

Hazardous Materials and Highway Transport Accidents

Representatives from the Town of Bridport are active members of the Local Emergency Planning Committee in planning for hazardous materials incidents. The Town mitigates risk to local responders by reporting its Tier II facilities as required at both the state and local levels.

The Bridport Volunteer Fire Department generally has its members trained to respond at the operations level to hazardous materials spills within their response territory. In light of the recent installation of propane tanks in proximity to the village, some fire department members feel an increased involvement in zoning decisions is warranted.

The Town zoning bylaws sections 521 and 522 specifically limit storage of flammable liquids above ground and within specified distances of schools, hospitals, libraries, and religious institutions. In addition, Town zoning bylaws limit storage of hazardous materials in the mapped floodplain.

The Town of Bridport was one of the study subjects for “Traffic Calming and Non-Vehicular Routes for five Addison County Towns” produced in 1997. Since the completion of this study, Bridport has installed additional lighting at the entrance to the school. Unfortunately, since the main route for hazardous materials in town is a State highway, many other recommendations are not within the Town’s power to implement. The study, in 1997, recommended a roundabout at the intersection of Rtes 125 and 22A which is one of the three high accident locations in town. While not supported by either VTrans or many of the citizens of Bridport, the Selectboard is considering revisiting the issue and looking at the recommendations with a new understanding of the situation.

A representative from the town sits on the local Transportation Advisory Committee, a regional group whose purpose is to prioritize potential transportation related projects within the region. This group rates High Accident Locations (HAL) highly in prioritizing projects to mitigate the risks associated with these locations by changing alignments, added signage and reduced speeds.

Landslide/Erosion Hazard

Unfortunately, the relatively short lives (compared to geologic time) of property owners lead many toward the belief that riverbanks and shorelines have always been stable and that channel migration and shoreline erosion can be prevented by human actions rather than understanding how human actions can, instead, increase the speed of the forces of nature. Action by the State legislature in 2014 resulted in adoption of the Shoreline Protection Act. This act should serve to reduce landslide risk

along the shores of Lake Champlain by limiting removal of natural vegetation and extending the lands governed by state permits.

The Town planning commission, in its 2011 rewrite of the Bridport Town Plan identified erosion of the Lake Champlain shoreline as a hazard which is specifically being increased due to riprap treatments along the toe of the slope and wholesale removal of woody plants and trees. “The best long-term solution to slow the rate of shoreline erosion is retaining and planting woody shoreline vegetation.”

The Town of Bridport supports mitigation of shoreland landslides through natural slope stabilization and is active in its educational support of this concept. Copies of “The Shoreline Stabilization Handbook” first created through a Project Impact funded grant are made available to shoreline landowners who are thinking about treatments to their lands. In addition, Town Zoning Bylaws limit clear cutting of trees within 100 feet of the shoreline except for a single 12 foot view corridor unless prior approval has been sought from the Zoning Board of Adjustment.

Erosion hazards along Streams and Creeks in town are limited due to the slow winding nature of these waterways in Bridport. The State Agency of Natural Resources recently released a “river corridor” layer for mapping which shows the amount of space along rivers and streams required to accommodate stream movement over time. The Town supports evaluating whether adoption of an overlay district similar to that which regulates floodplains would be effective in reducing this hazard in the community.

Structure Fire

The Town of Bridport’s subdivision regulations help to mitigate the effects of structure fire by requiring adequate water storage facilities within new subdivisions. The Town Plan also speaks to the need for improved and well maintained emergency access to residences.

The Town supports the Bridport Volunteer Fire Department with a grant equal to over half of the annual budget for the department. This all-volunteer organization makes up the remainder of its operating budget through generous support from townspeople in the form of donations and support at fundraising events.

The Town also supports revisiting its current driveway standards as a way of mitigating both the access problems associated with structure fires and those associated with erosion’s impact on the town infrastructure.

Actions identified under the Drought hazard would also mitigate structure fire and wildfire risk in future developments.

Lightning

The town has mitigated potential damage to Town-owned structures due to lightning strike by installing lightning rods to channel the electrical energy directly to ground rather than through a structure’s electrical system.

Most of the larger, privately owned farm structures in vulnerable locations have similarly installed lightning rod systems to protect them from lightening strike with the encouragement from insurance companies and extension agents.

The Town has no adopted building standards which would require this action and feels the risk to private residences should be borne by each resident on their own.

Wildfire

The Bridport annual Town Report includes a report from the Town Fire Wardens which includes an educational message which encourages getting a permit for outdoor burning and warns that fines will be levied if burn permit has not been requested prior to the fire. Two active fire wardens add to the mitigation value of this message.

The town has no guidelines in place for home construction that would limit the risk to wildfire in Bridport. Actions taken as described above should limit the setting of uncontrolled outdoor fires and should result in an overall limited risk. In addition, adequate water storage facilities required as an impact assessment should mitigate future fire risk in future developments.

Earthquake

Despite the probability of an earthquake within the next 50 years, most town residents do not even attempt to mitigate its hazard.

As in most communities in Vermont, no building codes exist in the town which would serve to mitigate the impacts of an earthquake. The Town of Bridport has not identified earthquake as a hazard it feels is imminent enough to justify much in the way of mitigation actions.

Making educational materials on earthquake hazards available would allow reasonable decisions to be made during new construction.

Drought

Agricultural activities highly dependent on water such as fruit and vegetable crops can be severely impacted by lack of rain. In the Town of Bridport, the Tri-Town Water District provides potable water to all residents and farms. Most of these businesses have mitigated the effects of periodic droughts in the past by providing irrigation systems fed by farm ponds and depend on the public water supply to fill in when needed. However, whether enough capacity exists to supply irrigation needs during a severe drought, is unknown. An alternative for farms, dependent on crops and highly impacted by low water supplies may be to become dependent on a USDA disaster declaration to find relief.

Reduced water supplies also impact the community's fire fighting capabilities. The public water supply is available but its use for firefighting purposes does impact all users to some extent. Thus, in some areas, the fire department is dependent on surface water supplies for much of its fire fighting water supply. The department is installing dry hydrants in deep water ponds and streams to make access easier as housing continues to expand into areas not served by Tri-Town.

As a mitigation measure shared with structure fire and wildfire, larger subdivisions may need to be required to provide fire ponds as part of an impact assessment.

The town supports drought mitigation in its support of the Tri-Town Water District including the recent creation of an emergency tie in to the neighboring Vergennes/Panton Water District. This inter-water district connection allows either district to be temporarily fed from the other in case of a system failure.

5.3 Project Prioritization process

Projects and actions included in Section 5.2 are conducted by the Town of Bridport or regional and State agencies where noted. The Town encourages its residents to adopt mitigation actions which could protect their personal property by making educational materials available to residents. Many of these potential actions are contained in Annex C as mitigation measures for individuals. Mitigation actions identified in Section 5.4, however, are considered the jurisdiction's priority mitigation actions. The town has the following priorities for choosing mitigation projects: Life safety and the safety of its residents, keeping local roads and bridges open to ensure access for emergency vehicles, and protecting critical infrastructure facilities in the town. The 5.4 actions/projects are constantly evaluated for benefit to the community, estimated project costs and political will to implement and will be implemented as those factors indicate. The actions identified in Section 5.4 under each hazard have passed a preliminary evaluation utilizing those general concepts by the hazard mitigation committee, and are listed in their order of priority. Before undertaking these projects, they will additionally be prioritized based on their feasibility and a benefit vs. cost review. A minimum C/B result of 1.0 will be required prior to any request for federal mitigation funds. Annex D identifies only some of the available programs which can help to fund some of these actions/projects. All projects in section 5.4 will be reviewed for progress following any local disaster declaration and will be considered annually as part of overall town budgeting.

5.4 Proposed Mitigation Actions and Projects by Hazard Type

In developing the following list of proposed mitigation actions and projects, care was taken to include only those projects which could be considered reasonable and feasible based primarily on cost and political willingness. The town will maximize 406 mitigation opportunities whenever possible when making repairs to P/A eligible damages during a declared disaster.

Each project in this action plan includes an estimated cost, possible funding sources, the lead person or agency responsible for completion of the project, societal benefits of the action and an estimated timeframe for project completion. Timeframes are estimates of start and finish of projects and of start only where the action is a policy change.

Winter Storm/Ice Storm

The Town has historically mitigated the effects of winter storms/ice storms through annual funding of the highway crew and its equipment. In funding this, an eye is always kept open for new approaches and equipment options.

The Town will support efforts by Green Mountain Power to mitigate power outages due to ice storms via pruning and tree removal activities. The Town's support will be in the form of granting permissions to the power company for work in the town right-of-way when requested unless such access will adversely impact scenic corridors and residents desires to keep the beauty of tree-lined streets and roads.

Estimated cost: \$0

Potential Benefits: Reduced numbers and duration of power outages

Source of Funds: None needed

Responsibility: Selectboard

Timeframe: Q3, 2015-Q2, 2020

The Town intends to begin testing the value of snow fencing along east/west roads to mitigate the effects of drifting snow in these areas.

Purchase and installation of snow fence at test locations-cost \$1,000 or less

Source of funds: Annual town highway budget

Potential Benefits: Reduced snow drifting to gain better access to residents during severe storms

Responsibility: Selectboard, Road Commissioner, Highway Foreman

Timeframe: Q4, 2016 – Q2, 2020

Widespread Power Failure

The town has identified granting of right-of-way access to Green Mountain Power to allow tree pruning and other line maintenance in its review of Winter Storm/Ice Storm. These actions will also serve to mitigate some of the impacts of summer storms.

The Town will investigate the costs and possible funding sources to allow installation of a back-up generator for the Town Office.

Estimated cost: \$7,500

Source of funds: Town general fund or grant sources

Potential benefits: Preservation of town documents, availability for use as a warming shelter

Responsibility: Town Selectboard

Timeframe: Q4, 2015-Q4, 2016

High Winds

The Town will limit damages due to high winds by removing dead and dying trees within the town right-of-way that could fall during a high wind event.

Estimated cost: \$5,000 annual cost

Source of funds: Town highway budget.

Potential benefits: Eliminating risk of falling dead trees due to high wind

Responsibility: Joint Town Highway Dept, Tree Warden and Selectboard

Timeframe: Q1, 2016 – Q4, 2020

Flood/Flash Flood

The Town will fund attendance by the Zoning Administrator at NFIP trainings when offered locally.

Estimated cost: \$200-\$300

Source of Funds: Town General Fund Planning and Zoning budget

Potential benefits: Reduced likelihood of floodplain development

Responsibility: Town Zoning Administrator/ACRPC

Timeframe: Q1, 2016 – Q4, 2020

The Town will evaluate the benefit vs. cost for entry into the Community Rating System of the NFIP

Estimated cost: Negligible

Source of funds: Town general fund.

Potential Benefits: reduced flood insurance cost to residents

Responsibility: Joint, planning commission, Zoning Administrator and Selectboard

Timeframe: Q3, 2016 – Q1, 2017

The Town will include additional flood resiliency language in the next rewrite of the Town Plan.

Estimated cost: \$2,000 as part of an overall rewrite

Source of funds: Municipal planning grants.

Potential benefits: Effective language in Town Plan will allow for effective floodplain regs

Responsibility: Joint Selectboard and Planning Commission
Timeframe: At next Plan rewrite 2016

The Town will evaluate the adoption of more stringent floodplain/river corridor regulations by the Town Planning Commission in its next zoning update.

Estimated cost: \$200-\$300

Source of Funds: Town General Fund Planning and Zoning budget

Potential Benefits: reduced flood risks

Responsibility: Town Planning Commission

Timeframe: Following Town Plan Update – Q2 2017-Q4, 2020

The following specific road projects have been identified which will serve to mitigate the effects of flooding and/or flash flooding in the road network system to be implemented as funding allows. All identified culvert and bridge replacements are subject to the State of Vermont's stream alteration permit and the codes and standards adopted by the Town of Bridport.

- Stone Line ditches according to the town's road plan when work is being completed on any road.

Estimated cost: Varies dependent on project

Source of funds: Town highway budget.

Potential benefits: Reduced ditch erosion along roads

Responsibility: Joint Town Highway Dept and Selectboard

Timeframe: Q2, 2016 - Q3, 2020

- Replace culverts on Crown Point Road, Middle Road and Rattlin Bridge Road per Road and Bridge Standards with larger sizes if called for following hydraulic review.

Estimated cost: Varies dependent on project

Source of funds: Town highway budget.

Potential benefits: Reduce susceptibility to wash-outs

Responsibility: Joint Town Highway Dept and Selectboard

Timeframe: As culverts fail and/or need replacement.

Hazardous Materials and Highway Transport Accidents

The Town Planning Commission will review current zoning standards for storage of hazardous materials as part of next zoning regulation review/update.

Estimated cost: Negligible, as part of zoning rewrites

Source of funds: Town General Fund

Potential Benefits: Reduced conflicts between residential uses and HazMat storage

Responsibility: Planning Commission, Fire Department, Selectboard

Timeframe: Following Town Plan Update – Q2 2017-Q4, 2020

The Town Planning Commission will request increased input/review from the fire department on applications.

Estimated cost: Negligible, Time only

Source of funds: Town General Fund

Potential Benefits: Increased knowledge base for reviews

Responsibility: Planning Commission, Fire Department, Selectboard

Timeframe: Q1, 2016 – Q4, 2020

The Town will create and adopt driveway and curb cut standards that ensure safe access on and off the town highway system, safe access for emergency vehicles and to mitigate impacts of poor driveway design on town infrastructure.

Estimated cost: Negligible

Source of funds: Town General Fund

Potential Benefits: Improved access to all residences, reduced damages to town roads.

Responsibility: Joint Selectboard, Highway Dept, Fire Dept. and Planning Commission

Timeframe: Q3, 2016 – Q2, 2017

The Town has identified the following high risk locations on its highway system. The Town Selectboard will request improvements which support mitigation of the hazards in any future construction/reconstruction activities by VTrans.

- The intersection of Rte 22A, Rte 125 and Market Road
Estimated cost: None to Town
Source of funds: State/Federal highway funds.
Potential Benefits: Reduced risk of accident at the intersection
Responsibility: Joint Selectboard and State AOT
Timeframe: Q1, 2016
- The intersection of Rte 125 and Market Road.
Estimated cost: None to town
Source of funds: State highway budget.
Potential Benefits: Reduced risk of accident at the intersection
Responsibility: Joint Selectboard and State AOT
Timeframe: Q1, 2016
- The intersection of Rte 125 and Rte 22A north of the village.
Estimated cost: None to town
Source of funds: State highway budget.
Potential Benefits: Reduced risk of accident at the intersection
Responsibility: Joint Selectboard and State AOT
Timeframe: Q1, 2016

The Town will request additional evaluation of Route 22A for safety improvements between Short Street and Route 125 East.

Estimated cost: None to town

Source of funds: State highway budget.

Potential Benefits: Reduced risk of accident at the intersection

Responsibility: Joint Selectboard and State AOT

Timeframe: Q1, 2016

The Town will identify and eliminate “Y” intersections within the town highway system wherever practical in favor of “T” intersections.

Estimated cost: Negligible, if done as part of road rebuilding projects

Source of funds: Town General Fund

Potential benefits: reduced risk of accident at these intersections

Responsibility: Joint Selectboard, Highway Dept

Timeframe: As highway renovations occur

Landslide/Erosion Hazard

The Town planning commission will evaluate the regulation of development including setbacks and tree clearing in its Shoreland Planned Residential District at its next zoning regulation rewrite with an eye toward erosion and landslide mitigation.

Estimated cost: Negligible as part of a regular rewrite

Source of funds: Town general fund.

Potential Benefits: Reduced erosion and landslide risk

Responsibility: Joint, planning commission, Zoning Administrator and Selectboard

Timeframe: Following Town Plan Update – Q2 2017-Q4, 2020

The Town planning commission will evaluate ANR River Corridor maps and explore the need for adoption of a River Corridor overlay district in its zoning regulations.

Estimated cost: Negligible as part of a regular rewrite

Source of funds: Town general fund.

Potential Benefits: Access additional State funds for disasters, reduce risks of fluvial erosion

Responsibility: Joint, planning commission, Zoning Administrator and Selectboard

Timeframe: Following Town Plan Update – Q2 2017-Q4, 2020

Structure Fire

The Town planning commission will improve current driveway standards in its next zoning bylaw rewrite to support basic accessibility for emergency vehicles to all structures in town.

Estimated cost: \$2,000 as part of an overall rewrite

Source of funds: Municipal planning grants.

Potential Benefits: Improved vehicular access, reduce conflict with town highways

Responsibility: Joint Selectboard and Planning Commission

Timeframe: Following Town Plan Update – Q2 2017-Q4, 2020

Lightning

The Town feels the risk to private residences of lightning strike should be borne by each resident on their own. The Town will make lightning mitigation information available to homeowners at the Town Office.

Estimated cost: None to town

Source of funds: Government Printing Office

Potential Benefits: Increased awareness by residents

Responsibility: Town Clerk/ACRPC

Timeframe: Q4, 2015

Wildfire

The Town Fire Warden will require outdoor burn permits prior to any outdoor burning.

Estimated cost: None

Source of funds: Town General Fund

Potential Benefits: Reduced occurrence of wildfire

Responsibility: Joint Selectboard and Fire warden

Timeframe: Q2, 2016

The Town believes it is the homeowner's responsibility to mitigate their susceptibility to wildfire through "firewise" practices. The town will support education in this area by providing educational materials in the town office.

Estimated cost: None to town

Source of funds: Government printing office

Potential Benefits: Increased awareness by residents

Responsibility: Town Clerk/ACRPC

Timeframe: Q4, 2015

Earthquake

The Town believes it is the responsibility of private homeowners to be ready for earthquakes. The town generally believes that building construction standards are the responsibility of each private homeowner. The Town also does not believe the risks associated with earthquake are large enough to require any town building retrofits at this time.

The Town feels education is the key to preparing private homes for an earthquake and will make earthquake education materials available at the town office when available.

Estimated cost: None to town

Source of funds: Government Printing Office

Potential Benefits: Increased awareness by residents

Responsibility: Town Clerk/ACRPC

Timeframe: Q4, 2015

Drought

The town believes the State of Vermont's new water/wastewater rules will likely help mitigate the impacts of future droughts. No new action is needed at this time.

6. Plan Maintenance Procedures

Any Hazard Mitigation Plan is dynamic and should not be fixed. To ensure that the plan remains current and relevant, it is important that it be updated periodically. The plan will be updated at a minimum every five years in accordance with the following procedure:

6.1 Plan Review and Update Process (5 year cycle)

1. The Bridport Selectboard assembles a Review/Update Committee to include government officials and interested public.
2. The Committee will discuss the process to determine if any modifications or additions are needed due to changing conditions since the last update occurred. Data needs will be reviewed, data sources identified and responsibility for collecting/updating information will be assigned to members.
3. Other Town plans (Emergency Operations Plan, Town Plan, Road Plan, etc) will be reviewed to ensure a common mitigation thread still exists throughout.
4. A draft update will be prepared based on these evaluation criteria:
 - Changes in community and government processes, which are hazard-related and have occurred since the last review.

- Progress in implementation of plan initiatives and projects.
 - Effectiveness of previously implemented initiatives and projects.
 - Evaluation of unanticipated challenges or opportunities that may have occurred between the date of adoption and the date of the report.
 - Evaluation of hazard-related public policies, initiatives and projects.
 - Review and discussion of the effectiveness of public and private sector coordination and cooperation.
5. The public will be invited to review and give input on drafts as they are produced.
 6. Selectboard members will have an opportunity to review the draft update. Consensus will be reached on any changes to the draft.
 7. The Selectboard will notify and schedule a public meeting to ensure adequate public input.
 8. The Selectboard will recommend incorporation of community comments into the draft update.

6.2 Programs, Initiatives and Projects Review

Although the plan should be reviewed in its entirety every five years as described above, the Town will monitor and evaluate its programs, initiatives and projects annually as the town budget is created. This will ensure that progress will be reviewed and projects either added or removed from the towns work plan based on changing local needs and priorities. In creation of the municipal plan by the planning commission, concepts, goals and strategies from this plan will be used to inform the development of that plan and will be incorporated into that plan when appropriate.

6.3 Post-Disaster Review Procedures

Should a declared disaster occur, a special evaluation process will occur in accordance with the following procedures:

1. Within six (6) months of a declared emergency event, the Town will initiate a post disaster review and assessment of actions.
2. This post disaster review and assessment will document the facts of the event and assess whether existing Hazard Mitigation Plans effectively addressed the hazard.
3. A report of the review and assessment will be created by a Review/Update Committee.
4. The committee will make a determination whether the plan needs to be amended. If the committee determines that NO modification of the plan is needed, then the report is distributed.
5. If the committee determines that modification of the plan IS needed, then the committee drafts an amended plan based on its recommendations and forwards to the Selectboard for public input.

6. Following completion of a public input process, further amendments may be made and a final plan delivered to the Selectboard for adoption.
7. The Selectboard adopts the amended plan.

7. Plan Adoption Resolution

RESOLUTION

Selectperson SUE WALKER, offers the following resolution and moves its adoption. Seconded by Selectperson SUE STOCKER.

RESOLVE: That in order to provide for sustained actions to reduce or eliminate long-term risk to people and property from hazards and their effects in the Town of Bridport, VT, the Town Selectboard deems it advisable and in the best interests of the community to adopt the attached Town of Bridport, Vermont Single Jurisdiction All-Hazards Mitigation Plan. In adopting this plan, the Selectboard instructs all community departments to follow the recommendations contained in this plan.

PASSED AND ADOPTED THIS 12 DAY OF January, 2016

Thomas A. Barrett, Chairperson

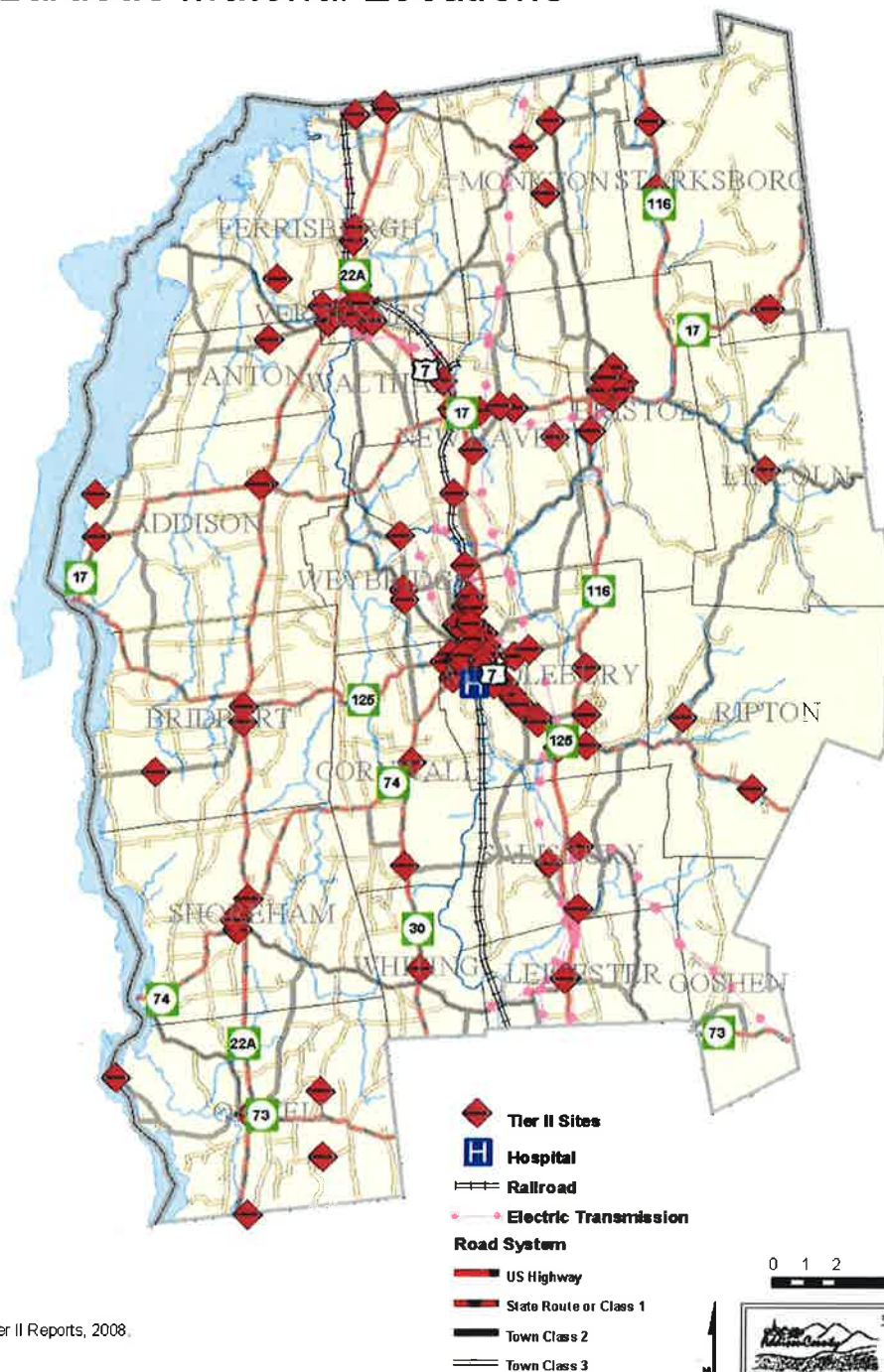
Town of Bridport, VT

ATTEST:

Valerie Boudreau
Town/City/Village Clerk

Annex A Regional Maps

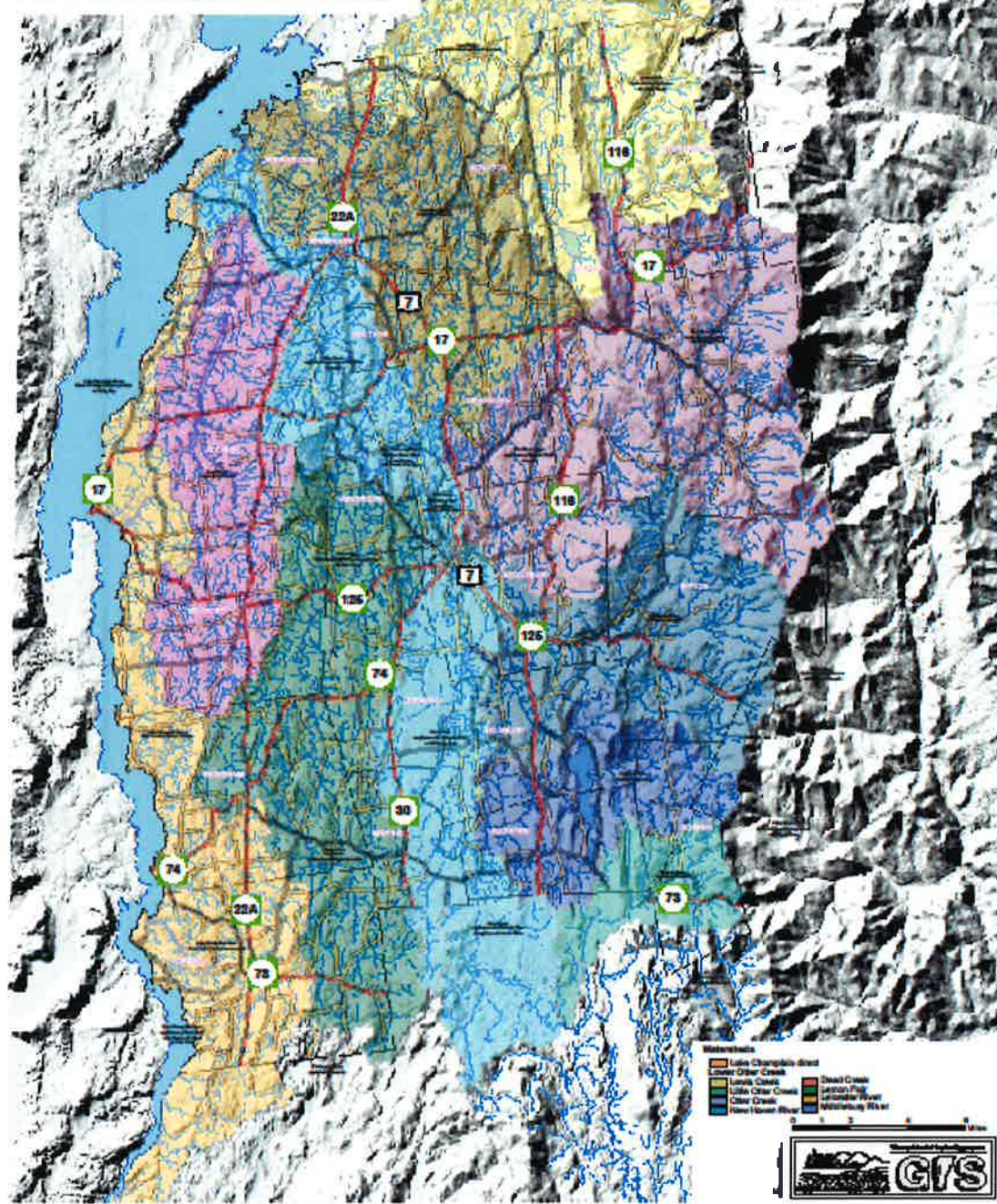
Addison Region *Hazardous Material Locations*



Source:
EPCRA Tier II Reports, 2008.

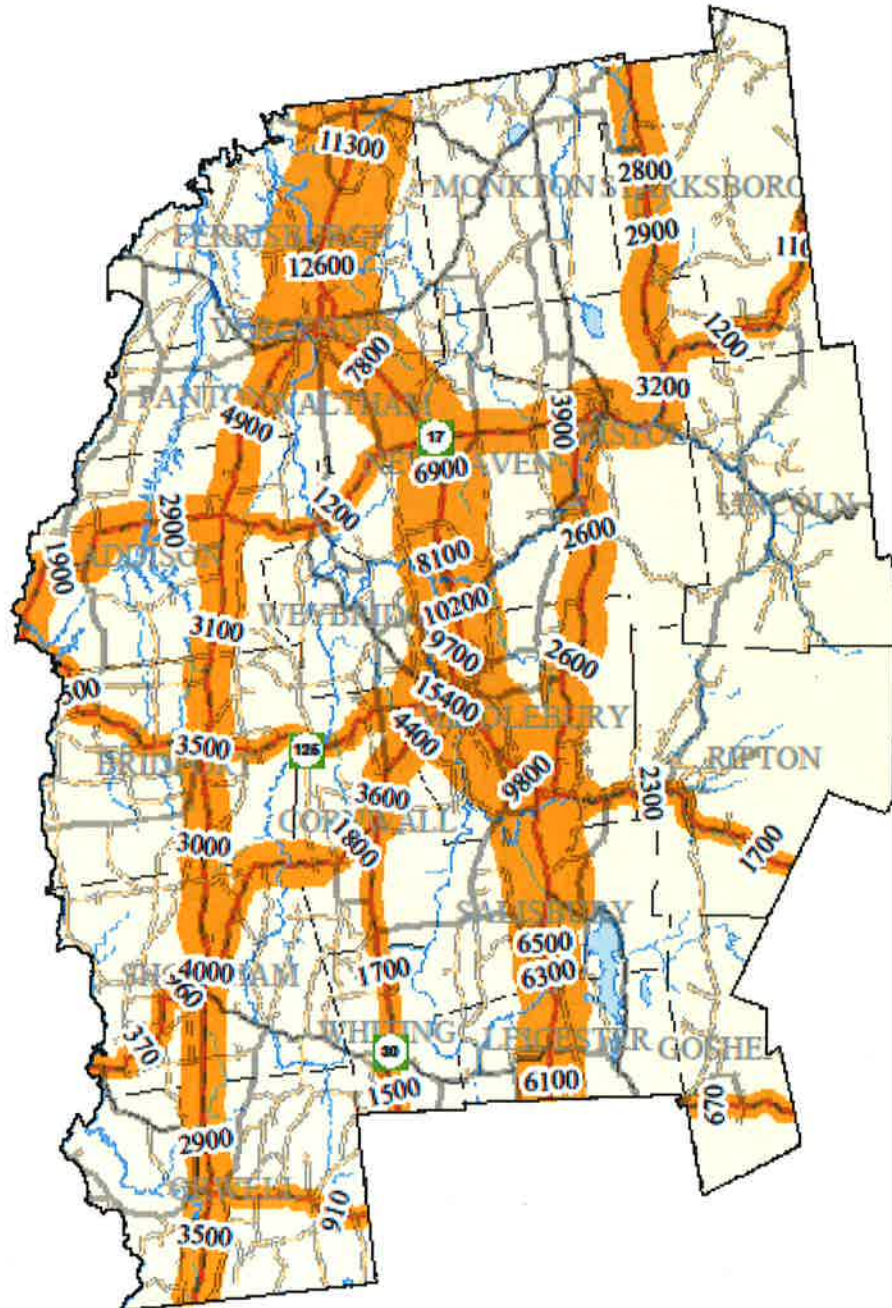
ACRPC 7/09

Addison Region Watersheds
Lower Otter Creek Basin Sub-Watersheds
 with
Lower Lake Champlain Direct Drainage



Addison Region

Average Annual Daily Traffic 2002



Source:
Vermont Agency of Transportation, 2007.

ADDPC 7/08

0 1 2 4 6 Miles



Addison Region Dam Locations



Source:
Vermont Dept Env Conservation, 2008

High - A dam where failure or mis-operation will probably cause loss of human life.

Significant - A dam where failure or mis-operation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of life facilities.

Low - A dam where failure or mis-operation results in no probable loss of human life and low economic and/or environmental loss. Losses are principally limited to the owner's property.

Dam Locations

Hazard Class

- High
- Significant
- Low
- Not Classed

Railroad

Electric Transmission

Road System

- US Highway
- State Route or Class 1
- Town Class 2
- Town Class 3

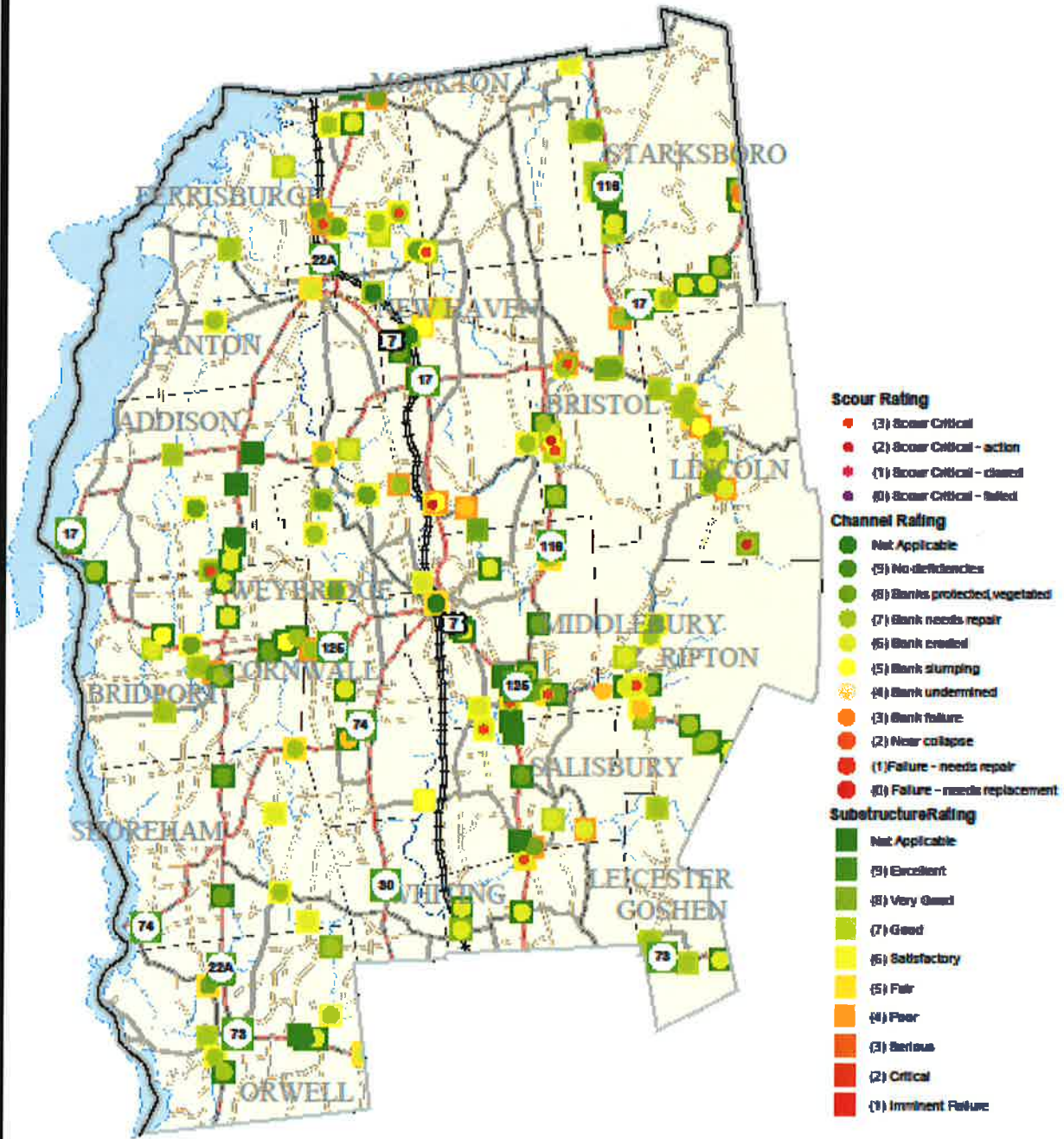
0 1 2 4 6 Miles



ADPC 1108

Addison Region

Bridge Locations with fluvial associated ratings



Source:
Vermont Agency of Transportation, 2008
(State Long, State Short and Town Long bridges
shown)

ACBPG 24

0 1 2 4 6
Miles



Annex B
Local Documents:
Local Road and Bridge Standards

January 23, 2013

TOWN ROAD AND BRIDGE STANDARDS
TOWN OF Bridport, VERMONT

The Town of Bridport hereby adopts the following Town Road and Bridge Standards which shall apply to the construction, repair, and maintenance of all town roads and bridges.

The standards listed here are considered minimum and apply to construction projects and repair and maintenance activities. 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 by minimizing sediment delivery to surface waters and/or wetlands.

The select board reserves the right to modify the standards for a particular project or repair or maintenance activities where, because of unique physical circumstances or conditions, there is no possibility that the project or activities can be completed in strict conformance with these provisions. Any modifications to the standards must be done in a manner that serves the underlying intent of the management practice, be it public safety, flood hazard avoidance, or water quality protection. Fiscal reasons are not a basis for modification of the standards. Questions about modifications to the standards should be directed to the VTrans District Office.

Municipalities must comply with all applicable state and federal approvals, permits and duly adopted standards when undertaking road and bridge activities and projects.

Any new road regulated by and/or to be conveyed to the municipality shall be constructed according to the minimums of these standards. If any federal and/or state funding is involved in a project, the VTrans district office must be notified prior to any field changes taking place that would alter the original scope of work.

Roadways

- All new or substantially reconstructed gravel roads shall have at least a 12-inches thick processed gravel sub-base, with an additional 3 inches (minimum) top course of crushed gravel.
- All new or substantially reconstructed paved roads shall have at least a 15 inches thick processed gravel sub-base.
- All roadways shall be graded so water does not remain on the road surface. For roadways that are not super-elevated, this generally means a 2-4% ($\frac{1}{4}$ " - $\frac{1}{2}$ " per ft) crown for gravel roads and a 1-2% ($\frac{1}{8}$ " - $\frac{1}{4}$ " per ft) crown for paved roads to promote sheeting of water.
- Proper grading techniques for gravel roadways must be used to avoid creating a ridge or berm between the crown and the ditch.
- Any berm along the roadway shoulder that prevents the proper sheeting of water must be removed.

Ditches and Slopes

Soil exposed during ditch and slope construction, repair or maintenance must be treated immediately following the operation and temporary erosion prevention and sediment control practices must be installed and maintained during construction activities and until the ditch or slope is permanently stabilized.

The following are minimum erosion control measures. Careful attention must be given to areas vulnerable to erosion and immediately adjacent or discharging to surface waters and/or roadway drainage facilities:

- Seed and mulch all ditches with grades less than 5% when undertaking projects or repairs or maintenance activities that result in exposed soil. Vegetation must be established and monitored. If vegetation is not established within 10 days of placement, install biodegradable non-welded matting with seed.
- Stone line all new or reconstructed ditches or whenever soils are disturbed by maintenance activities with grades equal to and greater than 5%; alternatively, install stone check dams. The check dams must meet criteria outlined in the "*Standards and Specifications for Check Dams*," from the *Vermont Standards and Specifications for Erosion Prevention and Sediment Control*. Specifically, dams must be placed so that the crest of the downstream check dam is at the same elevation as the base of the upstream dam.
- Create parabolic (wide "U" shaped) ditches when constructing new or substantially reconstructing ditches, rather than narrow "V" shaped ditches wherever lateral space allows. Ditches with gradual side slopes (maximum of 1:2, vertical to horizontal ratio) and a wide bottom (at least 2 feet) are preferred. Use biodegradable, non-welded matting to stabilize side-slopes where slopes are greater than 1:2 and less than 1:1 ½; apply seed and mulch to any raw or exposed side-slope if slopes are less than 1:2.
- All ditches must be turned out to avoid direct outlet into surface waters. There must be adequate outlet protection at the end of the turnout, either a structural (rock) or vegetative filtering area.
- If in the best professional engineering judgment of the VTrans Operations Division, there is a cost effective ditch treatment that will meet the intent of the management practices described above, but represents a departure from these standards, the municipality may implement the more cost effective ditch treatment alternative with the professional recommendation submitted in written form by VTrans prior to the municipality executing the work.
- When constructing new or substantially reconstructing side slopes, use appropriately sized stone armament on slopes that are 1:1 ½ or greater. If perennial streams are affected by the toe of slope the project must conform to the statewide Stream Alteration standards.

Culverts and Bridges

- Replacement of existing culverts and any new culvert must have a minimum culvert diameter of 18 inches.
- Replacement of existing bridges and culverts and any new bridges and culverts must be designed in accordance with the VTrans Hydraulics Manual, and, in the case of perennial streams, conform to the statewide Stream Alteration standards.
- All new driveway culverts must have a minimum diameter of 15 inches.
- When installing or replacing culverts, use appropriate techniques such as headwalls and wingwalls, where there is erosion or undermining or where it is expected to occur.
- Install a splash pad or plunge pool at the outlet of new or repaired drainage culverts where there is erosion or where erosion may occur. Splash pads and plunge pools are not appropriate for use in streams supporting aquatic life.

Guardrails

When roadway, culvert, bridge, or retaining wall construction or reconstruction projects result in hazards such as foreslopes, drop offs, or fixed obstacles within the designated clear-zone, a roadside barrier such as guardrail must be installed. The most current version of the AASHTO Roadside Design Guide will govern the analysis of the hazard and the subsequent treatment of that hazard.

Access Management

The town must have a process in place, formal or informal, to review all new drive accesses and development roads where they intersect Town roads, as authorized under 19 V.S.A. Section 1111. Towns may reference VTrans A-76 Standards for Town & Development Roads and B-71 Standards for Residential and Commercial Drives; and the VTrans Access Management Program Guidelines for other design standards and specifications.

Training

Town highway maintenance crews must collectively attend a minimum total of 6 hours of training per year on best road management practices. The town must keep documentation of their attendance for a period of three years.

Passed and adopted by the Selectboard of the Town of Bodport, State of Vermont on 2-11, 2013

Select Board:

Leonard A. Bennett Margaret Lundblad
Earl Anderson _____
Stephen Hueston _____

Hazard Committee Meeting Minutes

Town of Bridport Hazard Mitigation Planning Committee Meeting 10/15/13

Members Present: Steve Huestis, Sue Warner, Ed Payne, Mark Pumiglia

1. Meeting started at 10:00 am at the Bridport Town Office with a brief description of hazard mitigation and what the process is of creating a hazard mitigation plan. Tim explained the process of bringing together a committee of interested townspeople and officials and having them identify their risks to hazards and what they can do to help mitigate those hazards.
2. The committee was each handed out a hazard inventory and risk assessment worksheet and Tim led them through the process of identifying hazards that the town faces and what the impacts of those hazards might be within the town both to people and to property. Committee identified Drought, Power failure, Flooding, High Winds, Landslide, Lightning, HazMat Spill, Structure Fire, Wildfire, Winter Storm and Earthquake as hazards that might impact the town in one way or another. After final scoring, five hazards were identified as those which would most impact the community based on the worksheet criteria. In order of concern from highest to lowest these five hazards ranked: Winter Storm (1), High Winds (2), Power Failure (2), Flooding (3) and HazMat Spill (3). The worksheet is attached.
3. The committee was next given a series of town maps labeled with the different types of hazards and members were asked to identify the areas of town most susceptible to that hazard. Members identified the lakeshore as being particularly susceptible to high winds and flooding. East-West roads were identified as being most at risk in flooding and winter storm events. Power failures were so widespread and common that no areas of town seemed more at risk than others and finally a significant hazmat spill would likely occur on State highways 22A and 125.
4. Other comments by the committee included that drought was, at one point a hazard until the mid 1960's when the Tri-Town Waterworks was built. Members remembered national guard water buffalos being set up at intersections in town during the worst of the droughts of the 1960's.
5. Green Mountain Power has utilized Vaillancourt to trim tree branches and take down trees which could fall on their power lines during a high wind or snow event. That action seems to have limited the overall impacts due to lessening the occurrences of power loss in the past few years.
6. The town has both an active Tree Warden and Fire Warden in the community which helps lessen the risks of wildfire and identifies dead trees for removal by the town road crew.
7. Meeting adjourned 11:30

Town of Bridport
Hazard Mitigation Planning Committee Meeting
11/5/13

Members Present: Ed Payne- Zoning Administrator, Mark Pumiglia- Planning Commission

1. Meeting was called to order at 10:00 am at the Bridport Town Office.
2. The committee members were given the task of identifying possible mitigation actions for each of the hazards identified in the last planning meeting. Tim started off the discussion by identifying several road policies that could be strengthened and/or updated by the Selectboard and planning commission. These included:

- Having a curb cut policy that would ensure that driveway access was only allowable following review to ensure the location was safe. This would include evaluating pre-existing cuts that had initially been created as part of farm access to fields. Many of these might be reasonable as long as the road is being accessed by a tractor but might be very hazardous when entering via automobile.
- Generally addressing driveway standards so that emergency responders are not put at risk responding to a call by a poorly constructed driveway or private road.
- Eliminating “Y” intersections and converting them to “T”s”. This encourages a full stop at the intersection rather than a roll through. Many of these were created long before the advent of the automobile.

Committee members identified the following projects that would help mitigate future risks:

- The practice of clearing trees from power lines by Green Mountain Power
- Identifying and removing hazardous trees by the town tree warden including support to the tree warden from the Selectboard
- Recommending that all new structures including farm buildings be built to withstand projected snow loads.
- Provide a back-up power source to the town offices so that they may continue to function during power outages.
- Increase the required setbacks from the lakeshore for all new construction to lessen the risks of flooding and land subsidence.
- Limit the number or percentage of trees which may be cut along the lakeshore to ensure the stability of the banks.

Other mitigation projects were deferred to the road commissioner who will be meeting with Tim in the future.

3. Meeting adjourned at 11:00

Tim continued to work with Ed to identify structure which had been identified as being within the FEMA floodplain based in the digital rendition of the maps and what their assessed values were.

Address	Total Assessed Value	Improvements Value
4948 Lake Street	\$147,300	\$35,300
4894 Lake Street	\$166,200	\$69,700
4896 Lake Street	(structure has been removed)	
4868 Lake Street	\$253,600	\$148,400
737 Torrey Lane	\$103,000	\$62,400
5894-5897 Crown Point Rd.	\$102,300	\$52,300
Town of Bridport total acreage	26,993.74 Acres	
Town Grand List	\$1,315,150.50 in 651 parcels	

Town of Bridport
Hazard Mitigation Planning Committee Meeting
12/10/13

Members Present: Mark Pumiglia, Sue Warner, Steve Huestis

1. Meeting was called to order at 10:00 am at the Bridport Town Office.
2. In an informal discussion, committee members assisted Tim in the identification of past disaster expenditures that had been reimbursed by FEMA and/or the state as follows:

2001 Town Meeting Day Blizzard.....\$8,187.00
2005 Summer Storm.....\$54,900.00
2007 Valentines Day Blizzard.....None reimbursed
2008 Flood Damage.....\$179,100.00 reimbursed over 3 years
2011 Blizzard.....None reimbursed
2011 Slide on Rattlin Bridge Road.....None reimbursed
2011 Tropical Storm Irene.....\$535,000.00 over 3 years (town had to borrow \$300,000)
Total since 2001\$781,921.00

3. Committee members brainstormed possible funding sources for road improvements: High Risk Rural Roads Program, Better back Roads Program

Town of Bridport
Hazard Mitigation Planning Committee Meeting
2/7/14

Interview with Dusty Huestis and Dale Stone at the Town garage to identify hazards and where culverts will need to be replaced in the next few years that are probably currently undersized.

- 1@ East End of Rattlin Bridge Road
- 2 on Crown Point Road above Middle Road replace 18" with 24"
- Snow drifting at Crown Point Road/Middle Road, Swinton Road, Orchard Road. All could be candidates for snow fencing.
- Dead and dying trees along Hemmenway Road and Forrest Road
- Lake flooding in areas all along Lake Street
- Land subsidence along lakeshore at east end of Crown Point Road, along Goose Bay, Where Giards Bay meets Lake Street and at the end of Witherell Landing Road.

It is town policy that landowners install culverts for their own curb cuts to specs identified in the highway codes and standards. When time comes for replacement the landowner pays for the culvert which is installed by the town.

Other common issues throughout the road system:

- Undersized driveway culverts overtopping and taking out the town road.
- Poorly constructed driveways that intersect with the town highway system from a higher elevation causing gravel to be washed into the town road.

As a firefighter in the local department, Dusty was particularly concerned that the town allowed installation of a 30,000gal propane tank adjacent to the town center and another is going to be proposed for the same location. He feels zoning should be looked at to make sure that does not happen again in the future.

Annex C

Common Mitigation Measures by Hazard Type

Mitigation measures for “all-hazards” have been adapted from a flood mitigation approach developed by French Wetmore, of Wetmore and Associates in Park Forest, Illinois, into six categories:

- Prevention – measures intended to keep a hazard risk problem from becoming worse. They ensure that future development does not increase hazard losses. Examples would include: Planning and Zoning, Open space preservation, Land Development regulations, Storm water management.
- Property Protection – measures used to modify buildings, or their surroundings, subject to hazard risk rather than prevent the hazard from occurring. Examples are: Acquisition of vulnerable properties, Relocation from hazard prone areas, Rebuild or modify structures to reduce damage by future hazard events, Flood-proofing of flood-prone buildings.
- Natural Resource Protection – measures intended to reduce the intensity of hazard effects as well as improve the quality of the environment and wildlife habitats. Erosion and sediment control and Wetlands protection are examples.
- Emergency Services – measures that protect people before and after a hazard event. That would include: Warning, Response, Critical facilities protection, Health and safety maintenance.
- Structural Projects – measures that involve construction of man-made structures to control hazards. Some examples would include: dams, reservoirs, debris basins, channel modifications, storm sewers, elevated roadways.
- Public Information – activities intended to inform and remind people about hazardous areas and the measures to avoid potential damage and injury. Examples are: Outreach projects, Real estate disclosure, Technical assistance, Community education programs.

The following suggested Mitigation Measures were taken from the website of the Northeast States Emergency Consortium (NSEC).

ALL HAZARDS

- Map vulnerable areas and distribute information about the hazard mitigation strategy and projects.
- Provide information to contractors and homeowners on the risks of building in hazard-prone areas.
- Develop a list of techniques for homeowner self-inspection and implementation of mitigation activities.
- Organize and conduct professional training opportunities regarding natural hazards and hazard mitigation.
- Distribute NOAA weather radios.
- Develop sound land use planning based on known hazards.
- Enforce effective building codes and local ordinances.
- Increase public awareness of community hazards.
- Provide sites that are as free as possible from risk to natural hazards for commercial and industrial activities.
- Consider conservation of open space by acquisition of repetitive loss structures.
- Consider conservation of open space by acquisition of areas identified as “vulnerable or at risk”
- Ensure a balance between residential growth, conservation of environmental resources through a detailed analysis of the risks and vulnerability to natural hazards.
- Conduct joint planning and sharing of resources across regions, communities, and states.
- Establish a hazard mitigation council.

- For future proposed development design guidelines, incorporate hazard mitigation provisions, including improved maps.
- Consider adding a "safe room" requirement for all new buildings.
- Establish incentives to encourage business owners and homeowners to retrofit buildings with hazard - resistant features.
- Teach disaster and hazard awareness in schools.

FLOOD

Flood Hazard Mitigation Measures for Communities:

- Developing and enforcing all-hazards building codes,
- Adopting incentives to encourage mitigation
- Developing administrative structures to support the implementation of mitigation programs
- Mitigation should be incorporated into future land use plans through riparian corridor protection, limiting flood hazard area development, and other measures.
- Developing and conducting public information campaigns on hazard mitigation should be a priority.
- Participate in the National Flood Insurance Program (NFIP).
- Conduct watershed geomorphic assessments.
- Encourage riparian corridor protection.

Flood Hazard Mitigation Measures for Individuals:

How to Protect Your Property:

- Keep insurance policies, documents, and other valuables in a safe-deposit box. You may need quick, easy access to these documents. Keep them in a safe place less likely to be damaged during a flood.
- Avoid building in a floodplain. Some communities do not permit building in known floodplains. If there are no restrictions, and you are building in a floodplain, take precautions, making it less likely your home will be damaged during a flood.
- Raise your furnace, water heater, and electric panel to higher floors or the attic if they are in areas of your home that may be flooded. Raising this equipment will prevent damage. An undamaged water heater may be your best source of fresh water after a flood.
- Install check valves in building sewer traps to prevent flood water from backing up into the drains of your home. As a last resort, when floods threaten, use large corks or stoppers to plug showers, tubs, or basins.
- Seal walls in basements with waterproofing compounds to avoid seepage through cracks.
- Consult with a construction professional for further information if these and other damage reduction measures can be taken. Check local building codes and ordinances for safety requirements.
- Contact your local emergency management office for more information on mitigation options to further reduce potential flood damage. Your local emergency management office may be able to provide additional resources and information on ways to reduce potential damage.

HAZARDOUS MATERIALS

Hazardous Material Hazard Mitigation Measures for Communities:

FEMA's National Mitigation Action Plan suggests that state and local mitigation plans include the following:

- Developing and enforcing all-hazards building codes,
- Adopting incentives to encourage mitigation
- Developing administrative structures to support the implementation of mitigation programs
- Mitigation should be incorporated into land use management plans.
- Developing and conducting public information campaigns on hazard mitigation should be a priority.

Natural hazard events have often triggered technological hazards such as ruptured pipelines and building fires, clearly linking the natural and technological risks. Accordingly, the National Mitigation Strategy, as an all-hazards strategy, will build upon existing programs that mitigate technological hazards, and focus on the critical importance of coordination among efforts to mitigate hazards, regardless of the source of the risk.

- Recognize the dangers posed by hazardous materials.
- Identify places where hazardous materials are likely to be encountered.
- Understand when a hazard may exist.
- Contact the appropriate persons or agencies to give or receive specific hazardous materials information.
- Identify procedures to minimize personal and community exposure to hazardous materials.

Hazardous materials events can and do occur as independent events. Natural hazard events, however, have often triggered technological hazards such as ruptured pipelines and building fires, clearly linking the natural and technological risks. Accordingly, the National Mitigation Strategy, as an all-hazards strategy, will build upon existing programs that mitigate technological hazards, and focus on the critical importance of coordination among efforts to mitigate hazards, regardless of the source of the risk.

Communities can and should:

- Recognize and identify the dangers posed by hazardous materials in the community.
- Identify industries and other locations places where hazardous materials are stored and used.
- Develop a community hazardous materials emergency plan.
- Develop an early warning and notification system.
- Work with local businesses and industry to Identify procedures to minimize personal and community exposure to hazardous materials.

Hazardous Materials Hazard Mitigation Measures for Individuals: Individual and families should develop a personal plan of what to do in case of a hazardous materials accident.

How to Plan for a Hazardous Materials Incident:

- Learn to detect the presence of a hazardous material.
- Many hazardous materials do not have a taste or an odor. Some materials can be detected because they cause physical reactions such as watering eyes or nausea. Some hazardous materials exist beneath the surface of the ground and can be recognized by an oil or foam-like appearance.
- Contact your Local Emergency Planning Committee (LEPC) or local emergency management office for information about hazardous materials and community response plans.
- Find out evacuation plans for your workplace and your children's schools.

- Be ready to evacuate. Plan several evacuation routes out of the area.
- Ask about industry and community warning systems.
- Have disaster supplies on hand.
- Flashlight and extra batteries
- Portable, battery-operated radio and extra batteries
- First aid kit and manual
- Emergency food and water
- Non-electric can opener
- Essential medicines
- Cash and credit cards
- Sturdy shoes
- Develop an emergency communication plan. In case family members are separated from one another during a hazardous materials accident (this is a real possibility during the day when adults are at work and children are at school), develop a plan for reuniting after the disaster. Ask an out-of-state relative or friend to serve as the "family contact." After a disaster, it's often easier to call long distance. Make sure everyone knows the name, address and phone number of the contact person.

STRUCTURE FIRE

Fire Hazard Mitigation Measures for Communities:

FEMA's National Mitigation Action Plan suggests that state and local mitigation plans include the following:

- Developing and enforcing all-hazards building codes,
- Adopting driveway and water supply standards for new development.
- Adopting incentives to encourage mitigation
- Developing administrative structures to support the implementation of mitigation programs
- Mitigation should be incorporated into land use management plans.
- Developing and conducting public information campaigns on hazard mitigation should be a priority.

The United States Fire Administration (USFA) serves as the national focus on reducing fire deaths, injuries, and property losses. In 1974, Congress passed the Federal Fire Prevention and Control Act which established the USFA and the fire research program at the National Institute of Standards and Technology (NIST). The USFA works to involve the public and private sector to reduce losses through public education, arson detection and control, technology and research, fire data collection and analysis and fire service training and education. NIST performs and supports research on all aspects of fire with the aim of providing scientific and technical knowledge applicable to the prevention and control of fires.

Fire Hazard Mitigation Measures for Individuals:

How to Protect Your Property:

- Keep lawns trimmed, leaves raked, and the roof and rain-gutters free from debris such as dead limbs and leaves.
- Stack firewood at least 30 feet away from your home.
- Store flammable materials, liquids and solvents in metal containers outside the home at least 30 feet away from structures and wooden fences.
- Create defensible space by thinning trees and brush within 30 feet around your home.

- Landscape your property with fire resistant plants and vegetation to prevent fire from spreading quickly.
- Post home address signs that are clearly visible from the road.
- Provide emergency vehicle access with properly constructed driveways and roadways, at least 12 feet wide with adequate turnaround space.
- Make sure water sources, such as hydrants and ponds, are accessible to the fire department.
- Burning yard waste is a fire hazard. Check with your local fire agency on a non-emergency number for fire permit requirements and restricted burning times.
- Use fire resistant, protective roofing and materials like stone, brick and metal to protect your home. Avoid using wood materials that offer the least fire protection.
- Cover all exterior vents, attics and eaves with metal mesh screens no larger than 6 millimeters.
- Install multipane windows, tempered safety glass or fireproof shutters to protect large windows from radiant heat.
- Use fire-resistant draperies for added window protection.
- Have chimneys, wood stoves and all home heating systems inspected and cleaned annually by a certified specialist.
- Fire Alarm Safety requires checking on or installing fire alarms in your home.
- Residential sprinklers have become more cost effective for homes. Currently, they protect few homes.

How to Prepare for a Fire Emergency:

- Know how to contact fire emergency services in your area.
- Plan ahead. Make sure you and your family are prepared for a fire emergency.
- Develop and practice escape and evacuation plans with your family.
- Install smoke alarms on every level of your home. Test them monthly and change the batteries at least once a year. Consider installing the new long-life smoke alarms.

WINTER STORM

Winter Storm Hazard Mitigation Measures for Communities:

FEMA's National Mitigation Action Plan suggests that state and local mitigation plans include the following:

- Developing and enforcing all-hazards building codes,
- Adopting incentives to encourage mitigation
- Developing administrative structures to support the implementation of mitigation programs
- Mitigation should be incorporated into land use management plans.
- Developing and conducting public information campaigns on hazard mitigation should be a priority.

In addition, FEMA recommends the following actions to further protect communities from the effects of Winter Storms:

- Building code development and enforcement of snow loads
- Develop a storm water management plan for snowmelt
- Assuring adequate supplies of sand and salt
- Maintaining snow removal equipment so that it is ready to be deployed
- Retrofitting public buildings to withstand snowloads and prevent roof collapse
- Clearing roofs of excessive snow accumulations

- Develop a winter storm plan or annex to the local emergency management plan
- Develop a capability to monitor weather forecasts, conditions and warnings issued by the National Weather Service
- Identify appropriate shelters for people who may need to evacuate due to loss of electricity, heat or coastal flooding due to storm surge
- Assure that critical facilities such as police and fire stations and schools are accessible and equipped
- Clearing streets and roads of snow to assure the passage of public safety vehicles and general traffic.

Winter Storm Hazard Mitigation Measures For Individuals:

How to Protect Your Property:

- Make sure your home is properly insulated. If necessary, insulate walls and attic. This will help you to conserve electricity and reduce your home's power demands for heat. Caulk and weather-strip doors and windowsills to keep cold air out, allowing the inside temperature to stay warmer longer.
- Install storm windows or cover windows with plastic from the inside. This will provide an extra layer of insulation, keeping more cold air out.
- To keep pipes from freezing:
 - Wrap pipes in insulation or layers of old newspapers.
 - Cover the newspapers with plastic to keep out moisture.
 - Let faucets drip a little to avoid freezing.
 - Know how to shut off water valves.
- If the pipes freeze, remove any insulation or layers of newspapers and wrap pipes in rags. Completely open all faucets and pour hot water over the pipes, starting where they were most exposed to the cold (or where the cold was most likely to penetrate). A hand-held hair dryer, used with caution to prevent overheating, also works well.
- Consider storing sufficient heating fuel. Regular fuel sources may be cut off. Be cautious of fire hazards when storing any type of fuel.
- Before winter, be sure you install and check smoke alarms.
- Consider keeping safe emergency heating equipment:
 - Fireplace with ample supply of wood.
 - Small, well-vented wood, coal, or camp stove with fuel.
 - Portable space heater or kerosene heater. Check with your local fire department on the legality of using kerosene heaters in your community. Use only the correct fuel for your unit and follow the manufacturer's instructions. Refuel outdoors only, and only when cool. Keep your kerosene heater at least three feet away from furniture and other flammable objects.
- When using alternative heat from a fireplace, wood stove, space heater, etc., use fire safeguards and ventilate properly. Fire hazard is greatly increased in the winter because alternate heating sources are used without following proper safety precautions.
- Install snow fences in rural areas to reduce drifting in roads and paths, which could block access to homes, barns, and animals' feed and water.
- If you live in a flood-prone area, consider purchasing flood insurance to cover possible flood damage that may occur during the spring thaw. Homeowners' policies do not cover damage from floods. Ask your insurance agent about the National Flood Insurance Program if you are at risk.

How to Plan for a Winter Storm:

- Understand the hazards of wind chill, which combines the cooling effect of wind and cold temperatures on exposed skin. As the wind increases, heat is carried away from a person's body at an accelerated

rate, driving down the body temperature. "Wind chill" is a calculation of how cold it feels when the effects of wind speed and temperature are combined. A strong wind combined with a temperature of just below freezing can have the same effect as a still air temperature about 35 degrees colder.

- Service snow removal equipment before winter storm season. Equipment should be available for use if needed. Maintain it in good working order.
- Keep your car's gas tank full for emergency use and to keep the fuel line from freezing.
- Get training. Take an American Red Cross first aid course to learn how to treat exposure to the cold, frostbite, and hypothermia.
- Discuss with your family what to do if a winter storm WATCH or WARNING is issued. Designate one household member as the winter storm preparedness leader. Have him or her discuss what to do if a winter storm watch or warning is issued. Have another household member state what he or she would do if caught outside or in a vehicle during a winter storm. Everyone should know what to do in case all family members are not together. Discussing winter storms ahead of time helps reduce fear and lets everyone know how to respond during a winter storm.

HIGH WINDS

High Wind Hazard Mitigation Measures for Communities:

FEMA's National Mitigation Action Plan suggests that state and local mitigation plans include the following:

- Developing and enforcing all-hazards building codes,
- Adopting incentives to encourage mitigation
- Developing administrative structures to support the implementation of mitigation programs
- Mitigation should be incorporated into land use management plans.
- Developing and conducting public information campaigns on hazard mitigation should be a priority.

FEMA also suggests that communities further reduce their vulnerability to hurricanes through the adoption and enforcement of wind- and flood-resistant building codes. Sound land-use planning can also ensure that structures are not built in the highest hazard areas.

High Wind Hazard Mitigation Measures for Individuals:

- Make a list of items to bring inside in the event of a storm. A list will help you remember anything that can be broken or picked up by strong winds. High winds, often in excess of 40 miles per hour, can turn unanchored items into missiles, causing damage or injury when they hit.
- Keep trees and shrubbery trimmed. Make trees more wind resistant by removing diseased or damaged limbs, then strategically remove branches so that wind can blow through. High winds frequently break weak limbs and hurl them at great speed, causing damage when they hit property. Debris collection services may not be operating just before a storm, so it is best to do this well in advance of approaching storms.
- Remove any debris or loose items in your yard. High winds can pick up anything unsecured, creating damage to property when the debris hits.
- Install protection to the outside areas of sliding glass doors. Glass doors are as vulnerable as windows to breakage by wind-driven objects.
- If you live in a flood plain or are prone to flooding, also follow flood preparedness precautions. Nor'easters and severe thunderstorms can bring great amounts of rain and frequently cause floods.

EARTHQUAKE

Earthquake Hazard Mitigation Measures for Communities:

FEMA's National Mitigation Action Plan suggests that state and local mitigation plans include the following:

- Developing and enforcing all-hazards building codes,
- Adopting incentives to encourage mitigation
- Developing administrative structures to support the implementation of mitigation programs
- Mitigation should be incorporated into land use management plans.
- Developing and conducting public information campaigns on hazard mitigation should be a priority.

FEMA's Earthquake Program has four basic goals directly related to the mitigation of hazards caused by earthquakes. They are to:

- Promote Understanding of Earthquakes and Their Effects.
- Work to Better Identify Earthquake Risk.
- Improve Earthquake-Resistant Design and Construction Techniques.
- Encourage the use of Earthquake-Safe Policies and Planning Practices.

Earthquake Hazard Mitigation Measures for Individuals

How to Protect Your Property:

- Bolt bookcases, china cabinets, and other tall furniture to wall studs. Brace or anchor high or top-heavy objects. During an earthquake, these items can fall over, causing damage or injury.
- Secure items that might fall (televisions, books, computers, etc.). Falling items can cause damage or injury.
- Install strong latches or bolts on cabinets. The contents of cabinets can shift during the shaking of an earthquake. Latches will prevent cabinets from flying open and contents from falling out.
- Move large or heavy objects and fragile items (glass or china) to lower shelves. There will be less damage and less chance of injury if these items are on lower shelves.
- Store breakable items such as bottled foods, glass, and china in low, closed cabinets with latches. Latches will help keep contents of cabinets inside.
- Store weed killers, pesticides, and flammable products securely in closed cabinets with latches, on bottom shelves. Chemical products will be less likely to create hazardous situations from lower, confined locations.
- Hang heavy items, such as pictures and mirrors, away from beds, couches, and anywhere people sit. Earthquakes can knock things off walls, causing damage or injury.
- Brace overhead light fixtures. During earthquakes, overhead light fixtures are the most common items to fall, causing damage or injury.
- Strap the water heater to wall studs. The water heater may be your best source of drinkable water following an earthquake. Protect it from damage and leaks.
- Bolt down any gas appliances. After an earthquake, broken gas lines frequently create fire hazards.
- Install flexible pipe fittings to avoid gas or water leaks. Flexible fittings will be less likely to break.
- Repair any deep cracks in ceilings or foundations. Get expert advice if there are signs of structural defects. Earthquakes can turn cracks into ruptures and make smaller problems bigger.

- Check to see if your house is bolted to its foundation. Homes bolted to their foundations are less likely to be severely damaged during earthquakes. Homes that are not bolted have been known to slide off their foundations, and many have been destroyed because they are uninhabitable.
- Consider having your building evaluated by a professional structural design engineer. Ask about home repair and strengthening tips for exterior features, such as porches, front and back decks, sliding glass doors, canopies, carports, and garage doors. Learn about additional ways you can protect your home. A professional can give you advice on how to reduce potential damage.
- Follow local seismic building standards and safe land use codes that regulate land use along fault lines. Some municipalities, counties, and states have enacted codes and standards to protect property and occupants. Learn about your area's codes before construction.

How to Plan for an Earthquake:

- Pick "safe places" in each room of your home. A safe place could be under a sturdy table or desk or against an interior wall away from windows, bookcases, or tall furniture that could fall on you. The shorter the distance to move to safety, the less likely you will be injured. Injury statistics show that persons moving more than 10 feet during an earthquake's shaking are most likely to experience injury.
- Practice drop, cover, and hold-on in each safe place. Drop under a sturdy desk or table, hold on, and protect your eyes by pressing your face against your arm. Practicing will make these actions an automatic response. When an earthquake or other disaster occurs, many people hesitate, trying to remember what they are supposed to do. Responding quickly and automatically may help protect you from injury.
- Practice drop, cover, and hold-on at least twice a year. Frequent practice will help reinforce safe behavior.
- Talk with your insurance agent. Different areas have different requirements for earthquake protection. Study locations of active faults, and if you are at risk, consider purchasing earthquake insurance.
- Inform guests, babysitters, and caregivers of your plan. Everyone in your home should know what to do if an earthquake occurs. Assure yourself that others will respond properly even if you are not at home during the earthquake.
- Get training. Take a first aid class from your local Red Cross chapter. Get training on how to use a fire extinguisher from your local fire department. Keep your training current. Training will help you to keep calm and know what to do when an earthquake occurs.
- Discuss earthquakes with your family. Everyone should know what to do in case all family members are not together. Discussing earthquakes ahead of time helps reduce fear and anxiety and lets everyone know how to respond.

Annex D

External Mitigation Project Funding Sources

Federal

FEMA

- **Pre-Disaster Mitigation Program.** FEMA's Pre-Disaster Mitigation Competitive (PDM-C) Grant Program provides funds to states, territories, and federally recognized tribes for pre-disaster mitigation activities. The grant program is administered by FEMA for pre-disaster mitigation planning and projects primarily addressing natural hazards. Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations.
- **Hazard Mitigation Grant Program.** The Hazard Mitigation Grant Program (Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act) is activated during Presidential Disaster Declarations to assist in identifying mitigation projects, and funding these projects on a 75% Federal/25% non-Federal cost share basis. Mitigation program funding is based on 15% of the federal funds expended for the Infrastructure and Individual Assistance Programs. The HMGP supports other program activities, i.e. participation the NFIP and a current Hazard Mitigation Plan are required for recipients of HMGP funds.
- **Section 406 Hazard Mitigation.** Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act provides funding to mitigate certain projects as they are being repaired as part of overall disaster assistance to a community. Under Section 406, if it can be shown to be cost effective to mitigate a Public Assistance eligible project as part of the repair, FEMA may fund the mitigation as part of the overall project cost.
- **National Flood Insurance Program (NFIP).** The National Flood Insurance Program (NFIP) makes federally subsidized flood insurance available to property owners in locations agreeing to participate in the NFIP. If communities enter the NFIP, they are required to adopt floodplain ordinances meeting criteria established by FEMA. These criteria include: requiring permits for development within designated floodplains; review development plans and subdivision proposals to determine whether proposed sites will be reasonably safe from flooding; require protection of water supply and sewage systems to minimize infiltration of floodwater; obtain, review, and utilize all base flood elevation data; and assure the maintenance of flood carrying capacities within all watercourses.
- **The Community Rating System.** An element of the NFIP, is designed to promote the availability of flood insurance, reduce future flood damages, and ensure the accurate rating of flood insurance policies. Participating communities may receive credit for proven mitigation measures, thus reducing the cost of flood insurance within their jurisdictions.
- **The Infrastructure Program (Section 406 of the Stafford Act).** Authorizes funding for the repair, restoration, or replacement of damaged facilities belonging to public and private non-profit entities, and for other associated expenses, including emergency protective measures and debris removal. The Infrastructure Program also authorizes funding for appropriate cost-effective hazard mitigation related to damaged public facilities.

- **The National Inventory of Dams (US Army Corps of Engineers project).** Identifies high-hazard dams and encourages the development of warning systems and emergency plans for many of these facilities.
- **Hazardous Materials Program.** FEMA's mission under this program is to provide technical and financial assistance to States and local jurisdictions and to coordinate with public and private sector entities to develop, implement, and evaluate HAZMAT emergency preparedness programs. FEMA supports State and local agencies in the design, implementation, and evaluation of HAZMAT-related training and planning exercises, and cooperates with the U.S. Department of Transportation in the maintenance of electronic bulletin boards to provide the latest information on HAZMAT planning, training, exercises, and conferences.
- **US Fire Administration (USFA).** Through the USFA, FEMA administers a nationwide program to enhance fire prevention and control activities and to reduce significantly the loss of life and property caused by fires. Programs are carried out by: National Fire Academy; Office of Fire Prevention and Arson Control; Office of Firefighter Health and Safety; Office of Fire Data and Analysis; Office of Federal Fire Policy and Coordination; Office of National Emergency Training Center Operations and Support, and Office of Educational Technology.
- **Flood Mitigation Assistance (FMA).** The Flood Mitigation Assistance (FMA) program provides funds for projects to reduce or eliminate risk of flood damage to buildings that are insured under the (NFIP) on an annual basis.

There are three types of FMA grants available to Applicants:

- Planning Grants - *to prepare flood mitigation plans*
- Project Grants - *to implement measures to reduce flood losses, such as elevation, acquisition or relocation of NFIP-insured structures*
- Management Cost Grants - *for the grantee to help administer the FMA program and activities*

The Emergency Planning and Community Right-to-Know Act of 1986 imposed upon state and local governments planning and preparedness requirements for emergencies involving the release of hazardous materials. The role of the federal government in response to an emergency involving the release of hazardous materials is to support local and state emergency operations. Activation of the federal Regional Response Team (RRT) provides access to federal resources not available at the state and local levels. An on scene coordinator is designated to manage federal resources and support. The national warning and communications center for emergencies involving the release of hazardous materials is manned 24 hours a day, and is located at the U.S. Coast Guard headquarters in Washington, D.C.

The National Weather Service provides meteorological and hydrologic services that include weather and hydrologic warnings, forecasts, and related information. The primary mission of the NWS is to save lives and reduce property damage through timely issuances of tornado and flood warnings and river stage forecasts. To cope with dangerous weather, the NWS interacts with emergency services personnel throughout the state by: issuance of tornado and flash flood watches or warnings for those areas in which a threat is posed; issuance of flood watches and warnings for major streams and rivers within the state. Addison County is within the coverage area of the NWS office in Burlington but also may receive information from the Albany, NY office.

The U.S. Army Corps of Engineers undertake a broad range of civil works projects to develop, manage, and conserve the nation's water resources. No work may be undertaken without authorization and funding from Congress, either from specific legislation or continuing authorities. Projects **are** planned to serve as many purposes as are feasible and to protect or improve the environment as much as possible. The Corps is involved in developing and implementing plans for flood control, navigation, hydropower, recreation, and water supply. The Corps has authority for emergency operations, bank protection, permit administration, and technical assistance. Corps of Engineers assistance includes:

- Studies and Projects
- Discretionary Authority to implement certain types of water resources projects without specific Congressional approval. These projects are typically limited in cost and duration, and include:
 - Section 14 - Emergency Stream bank Protection of Public Facilities, limitation of \$500,000 per project.
 - Section 107 - Small Navigation Projects, usually for port facilities and navigation channels. Work on channels usually improves stream flow and aids flood control efforts.
 - Section 205 - Small Flood Control Projects, not to exceed \$5 million. Funds may be used for projects such as upgrading flood protection structures and channelization of streams.
 - Floodplain Technical Assistance, to include:
 - Conducting floodplain mapping surveys to provide either first-time mapping of an area or to correct older floodplain maps;
 - Conducting flood studies in cooperation with FEMA to determine actual flood levels for settlement of flood insurance claims;
 - Providing technical advice regarding proposed floodplain ordinances and building codes.
- Emergency operations to respond to flood emergencies, to include flood fighting, constructing advance temporary measures in anticipation of imminent flood, and the repair of damaged flood control works after the flood event.
- Permit authority, the Corps has the authority to issue Permits to cover construction excavation and other related work in or over navigable waterways; and Permits covering the discharge of fill material in all waters of the United States and adjacent wetlands.

Department of Housing and Urban Development

- Community Development Block Grant Program. Funds are provided as grants to units of local government. Local governments can use the funds to: construct flood and drainage facilities; finance rehabilitation projects that include flood proofing, elevation, purchase of flood insurance, etc.; finance acquisition and relocation of homes to remove them from the floodplains.
- Rental Rehabilitation Program. Funds to rehabilitate rental properties can be used for flood proofing and repair to flood damage.
- Section 312 Loan Program. Provides funds to rehabilitate both residential and non-residential properties, including flood repair and flood proofing.

Department of Agriculture Natural Resource Conservation Service (NRCS) can provide technical assistance in the conservation, development, and productive use of water resources. In addition, the NRCS monitors use of prime farmland.

- **Watershed Protection and Flood Prevention.** Technical and financial assistance to local entities to plan and install works of improvement for watershed protection, flood prevention, agricultural water management, and other approved purposes.
- **Resource Conservation and Development.** Technical and financial assistance to local entities to plan and install works of improvement for watershed protection, flood prevention, agricultural water management, and other approved purposes.
- **Emergency Watershed Protection.** Provides assistance to reduce hazards to life and property in watersheds damaged by severe natural events. NRCS can provide 100% of the cost of exigency situations, and 80% of the cost for non-exigency situations, if funds are available.
- **Conservation Technical Assistance.** Provided to land users to control erosion, sediment, and to reduce upstream flooding.
- **River Basin Surveys and Investigations.** Includes Conservation River Basin Studies to assist in solving existing problems or meeting existing or projected needs, and Floodplain Management Studies to provide information and assistance for reducing future flood damages. Financial assistance is provided by sponsors.

U.S. Geological Survey (USGS) provides certain hazard studies and recommendations. A portion of the mission of the USGS is to collect and analyze data on the quantity of surface water through a network of gauging stations. The data is used in preparing flood frequency reports to evaluate the severity of floods. This data is useful in flood hazard mitigation studies, establishing flood prone areas, and potential flood heights near hydraulic structures.

Economic Development Administration was established to generate new jobs, to help protect existing jobs, and to stimulate commercial and industrial growth in economically distressed areas of the United States.

Small Business Administration (SBA) Disaster Assistance Programs provide loans to businesses and individuals affected by presidential and SBA disaster declarations. The program provides direct loans to businesses to repair or replace uninsured disaster damage to property owned by the business, including real estate, machinery, and equipment, inventory and supplies. Businesses of any size are eligible. Non-profit organizations are also eligible. Assistance to individuals comes in the form of low-interest loans for repair or replacing damaged real and personal property. The SBA administers the Disaster Assistance Programs.

State

Agency of Administration

- **Emergency Relief and Assistance Fund (ERAF)** The ERAF was created following disastrous flooding in 1998 and was created so that the State of Vermont would have funding to assist municipalities in covering the 25% local share following a federally declared disaster. Communities who are active in mitigation efforts (including current hazard mitigation plans, adopted codes and standards, membership in the NFIP and others) are rewarded with a higher level of state funded reimbursement.

VTrans

- **Town Highway Grants Program.** State aid grants for highways are made annually to the governing body based on the number of Class 1,2 or 3 miles in the Municipality. The General Assembly appropriates a lump sum annually for this purpose (19 V.S.A. Section 306(a)). Distribution is made quarterly, with no application required. There is no requirement that State funds be matched with local funds, other than a requirement that municipalities expend no less than \$300 per mile of local tax revenues of their highways (19 V.S.A. Section 307).
- **Town Highway Bridge Program.** State assistance for major rehabilitation or reconstruction of bridges with a span of six feet or more on class 1, 2 or 3 town highways is made available by the Secretary of Transportation from annual appropriations for that purpose (19 V.S.A. Section 306(b)). State assistance amounts are not limited for any one project. The State assistance requires 10 percent participation or match of total project cost with town funds for replacement projects and 5% for rehabilitation projects. The local match is capped at the amount raised by a municipal tax rate of \$0.50 on the Grand List (19 V.S.A. Section 309(a)).
- **Town Highway Structures Program.** State grants for bridges, culverts and retaining walls that are part of the municipalities highway (Class 1, 2 or 3) infrastructure are made by the Secretary of Transportation from annual appropriations for the purpose. State grant amounts are limited to \$150,000 for any one project. State funds are required to be matched, as follows:
 - By at least 20% of the total project cost, or
 - By at least 10% of the total project cost providing that town has adopted Town Highway codes and standards and the town has conducted a highway infrastructure study (not less than three years old), which identifies all town culverts, bridges and identified road problems.
- **Town Highway Class 2 Roadway Program.** State grants to provide for the preservation of any Class 2 highways by providing grants for resurfacing or reconstruction are made by the Secretary of Transportation or his/her designee from annual appropriations for that purpose. State grants are limited to \$150,000 for any one project and there are match requirements for the town similar to the Town Highway Structures Program.
- **Town Road & Bridge Standards.** As a result of legislative action relating to the Town Aid programs an incentive program was created providing additional funding to towns meeting two requirements:
 - Adopted codes and standards.
 - Conducted a network infrastructure study.

Agency of Natural Resources

- **Ecosystem Restoration Grant Program.** As part of a governor's initiative to improve water quality in Lake Champlain, Funds have been allocated to assist in clean-up. Funds from this source have paid for a large portion of recent geomorphic studies in the Addison region as well as supporting the development of Fluvial Erosion Hazard Zones. Additionally, funds have been allocated to purchase development rights in hazardous locations.

Department of Public Safety, Division of Emergency Management

- Local Emergency Management Director Program. A continuing program of training for local emergency management directors to provide a consistent base of knowledge to understand their roles and responsibilities in Emergency Management.
- Generator Grant Program. VEM allocates funds from FEMA EMPG to allow towns to purchase back-up power sources for emergency shelters for continued use in the event of a power failure.

Regional

The Addison County Regional Planning Commission (ACRPC) provides assistance to local governments concerning planning for future land use, business, transportation, emergency management and population.

In addition to the specific programs mentioned below, ACRPC has identified Municipal Development Plans and Capital Improvement Plans as appropriate local planning mechanisms suitable for incorporating many of the provisions of this plan. These plans, by statute, need to be updated on a 5 year rotation. In Addison County, each municipality adopts these new or updated plans according to their own timetable and therefore, each is at a different place in the planning and adoption process. At the time of each rewrite, ACRPC generally assists local planning commissioners and will encourage inclusion of appropriate provisions of this plan into any new document.

ACRPC annually sets aside funds from its transportation planning activities to be administered by the Transportation Advisory Committee (TAC). Proposals are entertained each year to fund planning projects for transportation projects. One effective ongoing program is a local culvert survey and upgrade program, which funds updates of culvert surveys for 2-3 towns annually. TAC grants have funded several mitigation studies in the past including:

- Route 125 relocation study
- Bakers Bridge mitigation study

ACRPC assists community mitigation projects and planning through utilization of:

- FEMA PDM-C planning grants
- FEMA HMGP planning grants
- FEMA HMGP project grants
- Federal Emergency Planning Grants

Acknowledgements:

The creation of this plan is the result of many, many efforts to create hazard mitigation plans for communities in the State of Vermont. We have borrowed liberally from other adopted plans from throughout the state sometimes basic concepts and design, and at other times duplication of wording and illustrations.

ACRPC wants to thank specifically all other Regional Planning Commissions and their collective staff for the collaborative efforts that have resulted in this and many other plans statewide. Additional thanks for many of the same reasons need to go out to all the state agencies that are equally committed to mitigating the risks we face in Vermont.

Special thanks to the State of Vermont's Division of Emergency Management and Homeland Security and especially Ray Doherty the State Hazard Mitigation Officer (SHMO) and Misha Bailey in the mitigation division.

Lastly, the volunteers from the Town of Bridport who have spent countless hours living and working with the hazards identified in this plan; for caring enough about their community to spend even more hours to bring that experience into this document.

Thank you to:

Leonard Barrett-	Bridport Selectboard Chair/EMD
Steve Huestis -	Bridport Selectboard
Sue Walker -	Bridport Selectboard
Mark Pumiglia –	Bridport Planning Commission
Ed Payne -	Bridport Zoning Administrator
Dusty Huestis-	Bridport Road Foreman and Volunteer Fire Department
Dale Stone-	Bridport Road Crew

