Town of Panton, Vermont



Single Jurisdiction All-Hazards Mitigation Plan

Final Plan Adoption Date: 1/10/2018 *FEMA Approval Date: 1/19/2018*

Table of Contents

Planning Process 3
Background/Local Maps 6
Existing Adopted Plans Which Support Hazard Mitigation 16
Risk Assessment 18
Mitigation Strategies 34
Plan Maintenance Procedures 41
Plan Adoption Resolution 43
Annex A - Regional Maps 44
Annex B – Local Documents 46
Annex C – Common Mitigation Hazards By Hazard Type 54
Annex D – External Mitigation Project Funding Opportunities 65
Acknowledgements 74

1. Planning Process

1.1. Current Plan Development Process

The Town of Panton Selectboard passed a motion confirming their intent to work through the process of writing an All-Hazards Mitigation Plan at a meeting of the Town Selectboard on 10/22/2013 and again on 3/11/2014. At its meeting on 5/12/2016, the Panton planning commission agreed with the actions of the Selectboard, including working with a town mitigation committee as part of its rewrite of the Panton Municipal Plan. Two planning commission members, Howard Hall and Mary Rudd volunteered at that time to join the hazard mitigation committee. At the confirmation of funding availability, the Selectboard further showed their support of the plan by appointing the following residents of Panton to a mitigation planning committee:

Howard Hall – Panton Selectboard, Emergency Management Director and Planning Commission

Mary Rudd – Panton Planning Commission

Richard Cloutier – Panton Road Foreman

The committee met 6/7/2016 to complete a hazards inventory and risk assessment matrix and to flesh out locations where hazards are known to the community. Following the 6/7 meeting, a draft Town of Panton, VT Hazard Mitigation Plan was created by staff at the Addison County Regional Planning Commission (ACRPC) and circulated to committee members. The committee met again on 7/26/2016 to identify potential mitigation projects associated with the hazards identified. At that meeting a copy of the draft hazard mitigation plan was provided for the town office along with a comment sheet so residents visiting the office could review and make comments.

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. The town also made the plan available on its website www.pantonvt.us to reach a broader distribution. A copy of the draft plan was sent via e-mail to the surrounding towns of Addison, Vergennes, Ferrisburgh and Waltham town clerks for distribution to appropriate town officials on 8/29/2016 with a request for review and edits. No comments were received.

Based on comments from the complete public process, the draft plan was further edited and forwarded to Vermont's State Hazard Mitigation Officer for comments and preliminary approval. Suggested edits were identified by the SHMO on 9/20/2016. Appropriate edits were made and the draft plan received tentative selectboard approval before being sent back to the SHMO for a second review before being passed on to FEMA reviewers. Comments were received back from FEMA reviewers on 6/9/2017.

Changes were made to the draft plan based on FEMA recommendations and an updated draft was completed on 6/14/2017. Upon completion of this draft, the plan was returned to FEMA for Approval Pending Adoption (APA) status. Upon receipt of the FEMA APA, the resulting document was adopted by the Panton Selectboard on January 10, 2018 and then forwarded to FEMA Region I for approval on January 19, 2018.

1.2. Opportunities for Public Comment

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

- A planning committee was appointed from volunteers and town officers at an open meeting of the Town Selectboard.
- A copy of the draft plan was made available along with a comment sheet at the Town Office on 7/26/2016. The Town Clerk was asked to encourage the public to read and comment on the draft plan. (No comments received)
- 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 Comment

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 posted on the ACRPC website www.acrpc.org for regional review and notice was given during the September 2016 ACRPC full commission meeting as to its availability. Commissioners were asked to review and pass along comments to Tim Bouton at ACRPC. No comments received.
- The September 2016 ACRPC newsletter included an announcement that a draft plan was available for public review and comment. That draft was posted in the ACRPC office and was available for public input during normal business hours with a comment sheet attached. No comments received.
- The neighboring Town Clerks of Ferrisburgh, Addison, Panton and the City of Vergennes were notified of the posting via e-mail on 8/29/2016. The clerks were instructed to share the notice with the select boards, planning commissions and the general public. Comments were requested to be sent to Tim Bouton at ACRPC. No comments were received but interest was shown by the Waltham Selectboard in developing their own LHMP.
- A copy of the draft plan was provided to the State Hazard Mitigation Office for comments on 8/29/2016 which were received on 9/20/2016
- An updated copy was sent to DEMHS for submission to FEMA on 4/17/2017
- FEMA Region 1 staff was sent a draft for comment on 4/18/2017
- FEMA reviewers returned the draft plan 6/9/2017 for further edits which were completed and the edited plan sent back.

1.4. Extent of Review

Throughout the plan development process information from the following documents and sources were incorporated into the plan either as data or to inform the committee's prioritization process:

- 2017 Local Emergency Operations Plan (previously identified high hazard and vulnerable sites)
- 2011 Panton Town Plan (support for the committee's prioritization process and section 2 narrative)
- 2016 Draft Panton Town Plan (updated data and goals from the 2011 plan)
- 2016 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)
- 2013 Report of the State Fire Marshall (provided data to inform structure and wild fire risks)
- Federal Emergency Management Agency, 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 9/18/1986 (incorporated into maps)
- VT Center for Geographic Information data layers (incorporated into map products)
- LEPC #8 Tier II reports (reviewed for Section 4.3)
- Town of Panton Grand List for 2015 (utilized to determine value of identified properties)
- Panton Annual Town Reports 1980-2015

2. Local Background/Maps

2.1. Community Background

Panton consists of 14, 272 acres, or about 22 square miles and is bordered on the West by Lake Champlain; on the East by Otter Creek and the City of Vergennes. Panton is primarily an open landscape of pasture and cropland punctuated with corridors of forest land and remnant woodlands or woodlots.

Panton's position on the Champlain valley floor substantially influences its climate. The western section of the town is only five miles from the eastern foothills (elevation 1000-2000' above sea-level) of the Adirondacks, and the eastern height of land is within 20 miles of the Green Mountains. Panton is bordered on the west by a deep section of the lake (120 to over 200 feet deep in sections), which is typically 3 to 5 miles wide at this point.

The moderating influence of the Lake's warmer temperatures in fall keeps the valley floor more temperate, extending the growing season to over 150 days, which is almost a month longer than that of the upland areas of the state and spans from April to October in some years, adding to the areas' appeal as an agricultural setting. The United States Department of Agriculture Hardiness Zone Map (the map on which plant hardiness ratings are base) has put Panton in Zone 5, which has an average annual minimum temperature of between 15-20 degrees Fahrenheit.

The Green Mountains to the east induce orthographic cooling, creating frequent cloud cover in the region and often signal weather changes associated with changing frontal systems of low and high pressure.

There are two major stream systems in Panton: Dead Creek and Otter Creek. The bulk of Panton lands are in the Otter Creek Drainage Basin, which drains a total of 936 square miles in Vermont. The Dead Creek area is considered a significant deep rush and cattail marsh system

With the road network relatively unchanged since the early 1900's, any and all growth has occurred almost exclusively along these routes, creating linear development patterns, almost exclusively residential in character. There are 305 housing units in Panton, including eight seasonal homes. There is a campground, farm store, general store, and several home occupations.

There is overwhelming support in Panton for maintaining its rural residential and agricultural pattern of development and the integrity of its existing natural resources, particularly lands along Dead Creek and Otter Creek. While the pattern of residential development will continue along the road network, it is envisioned that future development that is more creative may allow "back lot" and clustered type of residential development, which will preserve the rural character, open spaces, and viable farm land. Area for more intensive development via smaller lot size is a consideration that the town should address, particularly as pressures increase in the future. The Planned Development Ordinance and the subdivision regulations both encourage/support clustered and innovative development patterns.

There is one village center in Panton, where the Town Hall, Baptist Church, general store and gas station is located. It is the only Commercial Zone in the town. A state-owned wildlife

conservation area, known as the Dead Creek Wildlife Management Area extends along Dead Creek from the south and comprises 205 acres of land. There are two private air strips.

The mountains to the west create a rain (moisture) shadow that keeps precipitation levels among the lowest in Vermont. Panton, fortunately, has municipal water service, as part of the Vergennes Panton Water District, with the water pumping facility located in Arnold Bay. The Vergennes-Panton Water District was established and began operation in 1972 with the construction of the Arnold Bay Treatment Plant in Panton. This facility serves the bulk of Panton, all of Vergennes and smaller sections of Addison, Ferrisburgh, New Haven and Waltham. It was last upgraded in 2010. The water district relies on Lake Champlain for its supply, so volume is not a concern. Water quality is an issue and of particular concern is the zebra mussel influx, which threatens intake pipes.

The Vergennes-Panton Water District maintains several main distribution lines, with neighborhoods and other specific end users extending the lines as private system extensions. The Vergennes-Panton and Tri-Town lines are interconnected to allow them to serve as back-up systems for each other in an emergency situation.

A potential groundwater protection area exists in Panton constituting the entire shore land area adjacent to Lake Champlain that is considered a recharge area due to the presence of groundwater flows towards the Lake itself. A default wellhead protection area is also located in a 3000' radius centered on the Arnold Bay Water Plant intake location. Another source water protection area is located in the southeast section of the town in the Otter Creek watershed.

Over the past 20 years, Panton has experienced trends in the makeup of its population similar to those in communities throughout Vermont. The population is aging; in Panton, the median age increased from 28.5 in 1980 to 41.6 in 2000 to 44.7 in 2010.

In 1940, the first year the Census Bureau counted housing units, there were 99 homes in Panton. In 2010, there were 305 housing units, of which 277 were year-round dwellings (90.1%), 203 were occupied by owners (66.5%), 64 were occupied by renters (20.1%). There were 38 vacant units of which 28 were seasonal or occasional use housing units.

In 2010 the average year-round home in Panton was assessed at nearly $138,000. In 2015 only two home sales were recorded with a median sales price of $86,250. The median housing unit value in 2000 was $124,700 and $253,395 in 2013. Of the 206 owner-occupied buildings, 199 consisted of 1 unit, 3 buildings contained 2 units, and 4 were mobile homes.

In 1959 the five municipalities of Panton, Vergennes, Ferrisburgh, Waltham and Addison formed the Union High School District #5, or the Addison Northwest Supervisory District. Panton students in grades 7 through 12 then began attending the Union High School.

In 1967 Panton was operating the only one-room school remaining in the supervisory district when the town decided to close the West School and send its students to Addison or Vergennes.

The district has recently begun the process of converting this into a district governed by a single board rather than the current system of multiple boards, one for each school.

Panton does own some land and facilities. However, as a small rural community the town relies on its neighbors and the state for many services. The demands for these services vary from year to year, but remain relatively small because of the town's population.

The town has an agreement with the Vergennes Fire Department for fire protection throughout Panton. Response to Panton fires has always been timely and effective. Panton residents serve on the VFD. Panton also has a Fire Warden who issues permits for burning and promotes adherence to State Fire Regulations and accepted safety practices.

Panton is served by and regularly supports the Vergennes Area Rescue Squad, which provides rescue coverage to eight communities in Addison County. Panton residents volunteer with the Rescue Squad. Panton residents use the Porter Medical Center in Middlebury for medical and emergency services, as well as Fletcher Allen Health Care in Burlington.

The Vermont State Police are the main law enforcement entity for Panton. The State Police Headquarters for this region is located on Route 7 in New Haven. Due to the low crime rate in town, there is relatively little activity involving law enforcement. There is occasional police presence for traffic safety enforcement.

The Addison County Sheriff's Department does contract with towns to provide various law enforcement services, particularly in the enforcement of posted speed limits. This is an option the town may want to consider as travel increases, in particular on Panton Road. As 22A is a state highway, that route is under State Police jurisdiction.

Panton has an appointed Emergency Management Director (EMD) to ensure the town is prepared for potential disasters or emergencies. Due to the limited capacity to deal with a disaster in the town of Panton, assistance would be expected from outside sources in much the same way that fire, rescue and police services are provided.

Panton Town Hall and two locations in Vergennes have been designated as evacuation centers, and the town office as an emergency operations center. Panton's emergency plans indicate that flooding or a winter storm would be the most likely disaster the town would face.

The historic Town Hall, located on Jersey Street just south of Panton Four Corners is the municipal facility for the town and contains meeting spaces, a large hall, and the Town Clerk's Office. It sits on a half-acre of land and there is a shed to the rear of the property.

Panton has a modest road network with a total of 27 miles of roads in Panton. Route 22A, which is a Class 1 highway, is the major state route running north to south on the eastern side of town. There are 24 miles of Class 2 and 3 roads, and 2.8 miles of Class 4 roads in town. There are also a number of private roads in Panton. The Town Garage, which is located on Panton Road on a six-acre lot, was built in 2004 and should serve the town well into the future.

Green Mountain Power Co. provides electrical distribution for the Town of Panton. There are no large-scale electricity generation facilities in Panton, and no major transmission lines travel through the town. Green Mountain Power recently upgraded the electric distribution lines and poles along Panton Road, relocating the above ground infrastructure to the south side of the roadway with taller structures. This reconstruction addressed drainage problems as the poles were being undermined by the stormwater runoff flowing through the existing ditch. They

currently are proposing a large-scale solar PV generating installation which will utilize this upgrade as well as provide additional reliability to the town offices.

There are no in-ground fuel distribution systems in Panton. Local distribution by trucks owned by local and regional suppliers of oil and gas products provides fuel to residential, commercial and agricultural users in the town.

Local wired phone service in Panton is provided by Champlain Valley Telecom. There is a central switching center located on Panton Road near Panton Four Corners, operated by Champlain Valley Telecom. Wireless phone service in Panton is spotty with the eastern side of town, near Route 22A having somewhat better coverage.

High-speed internet access is available in most locations in town through Champlain Valley Telecom's DSL (digital subscriber line) service. Since there is no cable television infrastructure in Panton, provision of high-speed access over cable is not an alternative.

Five distinct areas within the town have been identified with concomitant guidelines for future planning in these areas. These Future Land Use Areas include:

1) Ridgelands Area represents the higher ground of Panton that contains a pattern of woodlands and forests, meadows and croplands, and incremental residential development.

2) Shorelands Area represents the lakeshore of West Panton. Limited future development is envisioned for this area, although several large parcels could be subdivided in the future. Eroding clay banks along the lakeshore is one notable issue, although long stretches have been artificially stabilized with rip rap, constructed sea walls and gabions.

3) Village Commercial Area is one location in town where additional density may be considered in the future, although the availability of suitable soils to accommodate septic systems could be an issue. The village commercial planning area represents the historic settlement of “Panton Four Corners” and includes the Town Hall, a church and the village store.

4) Rural Residential - Agricultural Area is characterized by extensive parcels of croplands and farmsteads, open spaces with some small sections of woodlots, and scattered low density residences along the roads of the area. The minimum lot size for much of this area is currently 10 acres, with some small areas of 5-acre zoning. The primary long-term land use desired in this area is ongoing large- and small-scale agriculture interspersed with low density development.

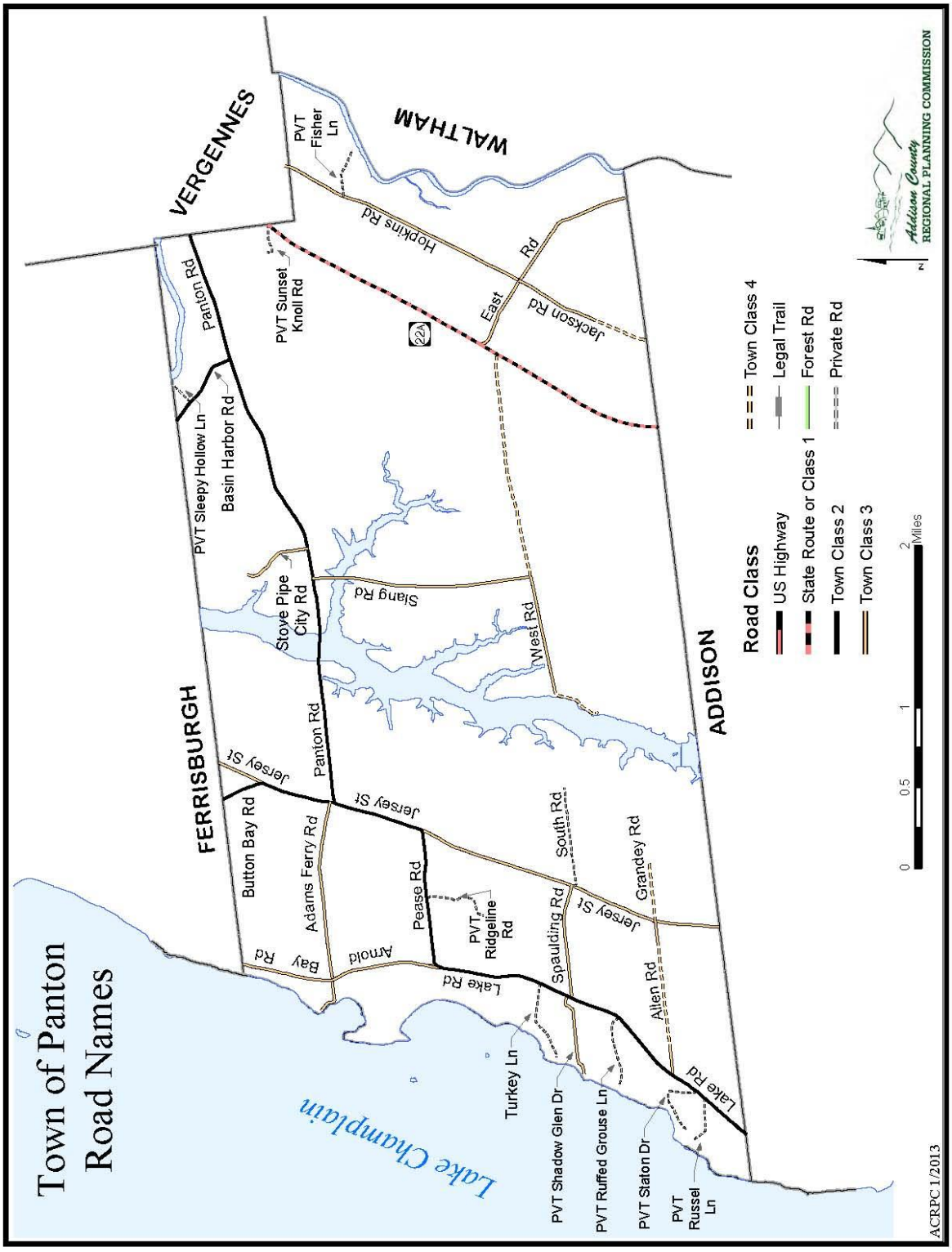
5) Floodplains or the Floodplain Area represents Federally determined floodplain zones surrounding Dead Creek and Otter Creek. These areas are limited in size and contain constraints for development and thus will remain sparsely developed. The Town is a member in good standing of the National Flood Insurance Program since 1986 and as such has adopted zoning by-laws designating Flood Hazard Areas including associated regulations for administering those areas. In Panton, those floodplain regulations are administered by the Zoning Administrator as part of their regular duties. The Vermont Floodready Website indicates that there are potentially 4 buildings currently in the FEMA mapped floodplain. None

of these is being insured through the NFIP and therefore there are no repetitive loss structures located in the Town of Panton.

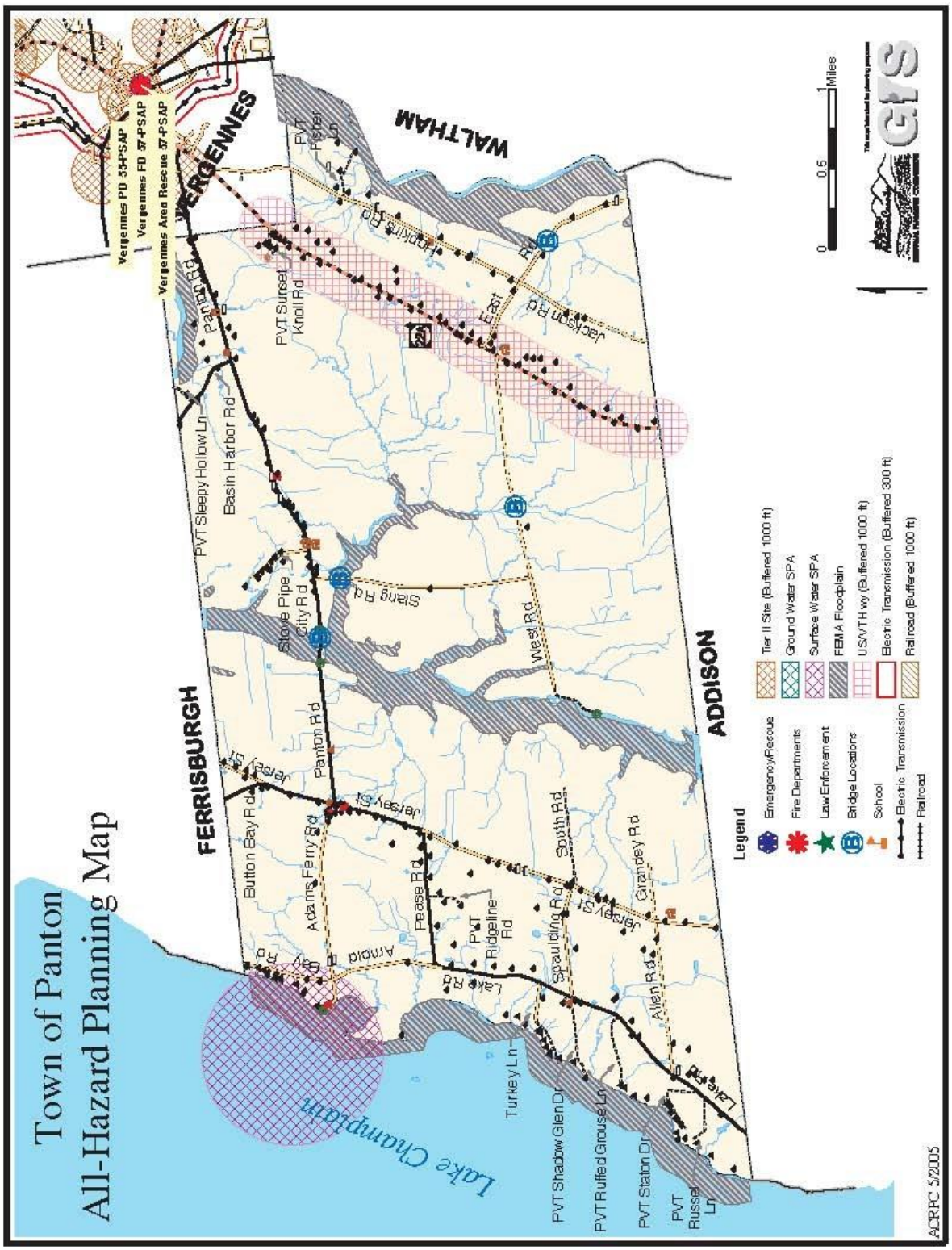
Fortunately, much of the mapped floodplain is associated with large areas of wetlands bordering Dead Creek and Otter Creek. The availability of alternate sites has thus far discouraged development along these low-lying areas due to difficulties in disposing of septage and the costs of complying with floodplain regulations.

2.2. Community Maps

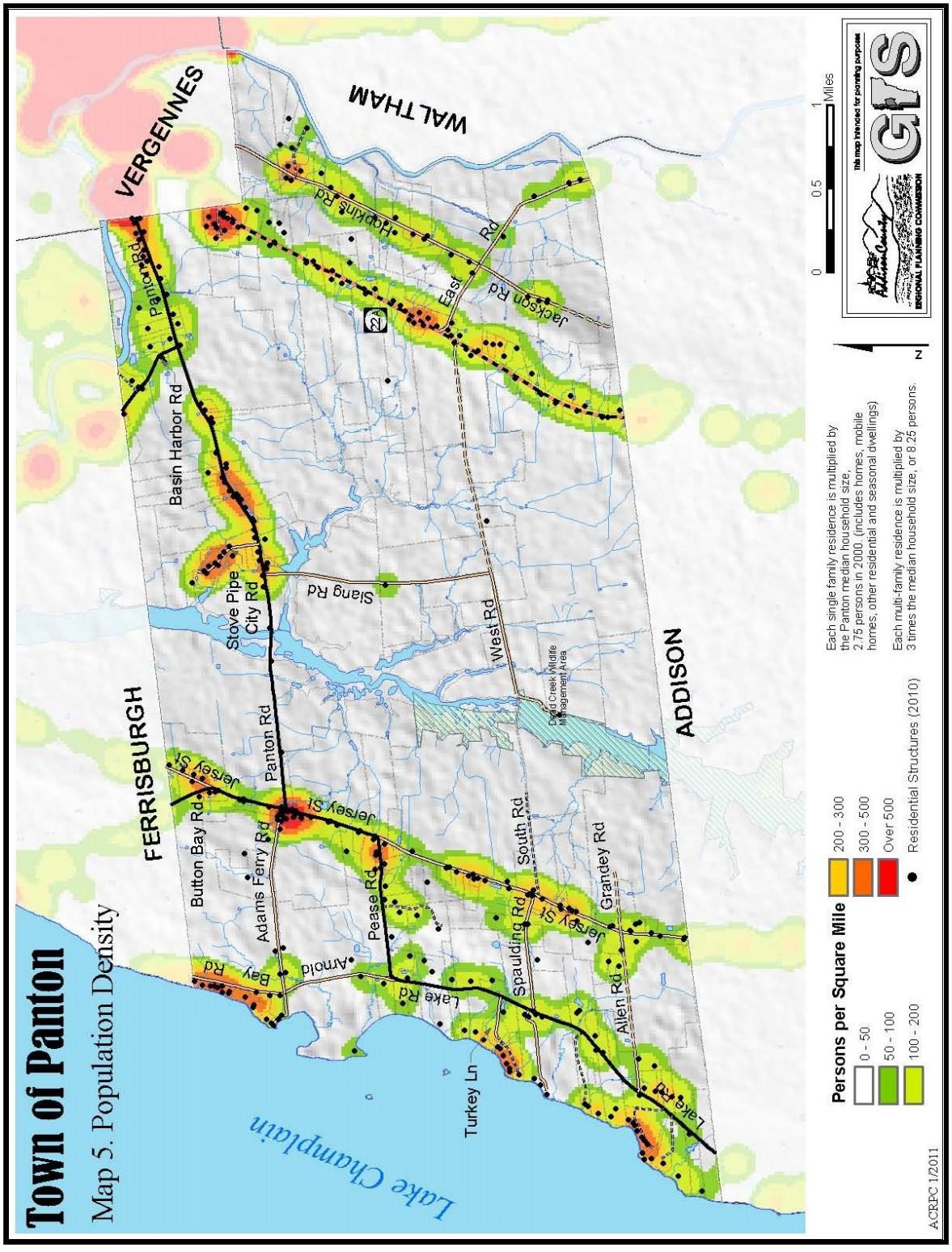
2.2.1. Road Names



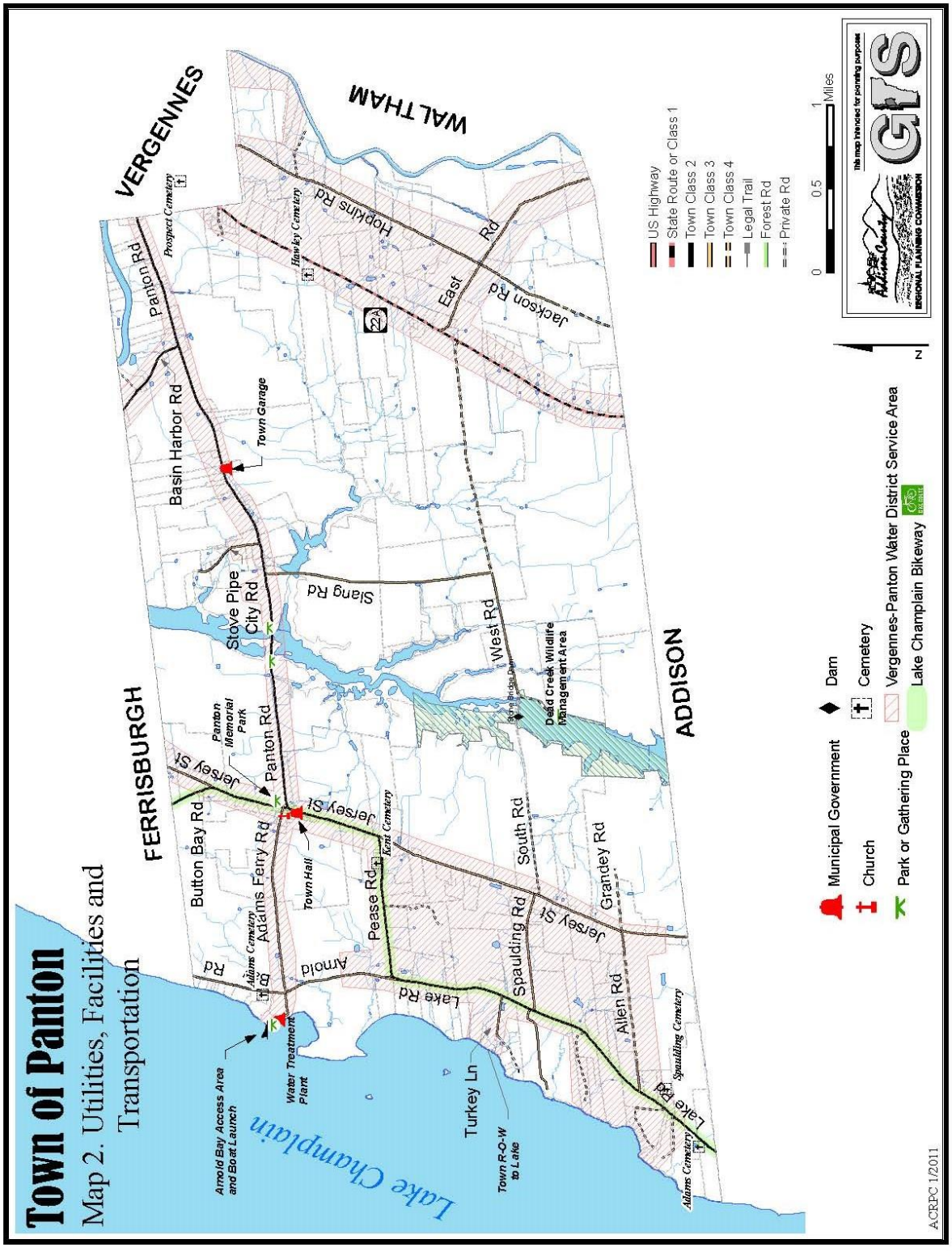
2.2.2. All-Hazards Planning



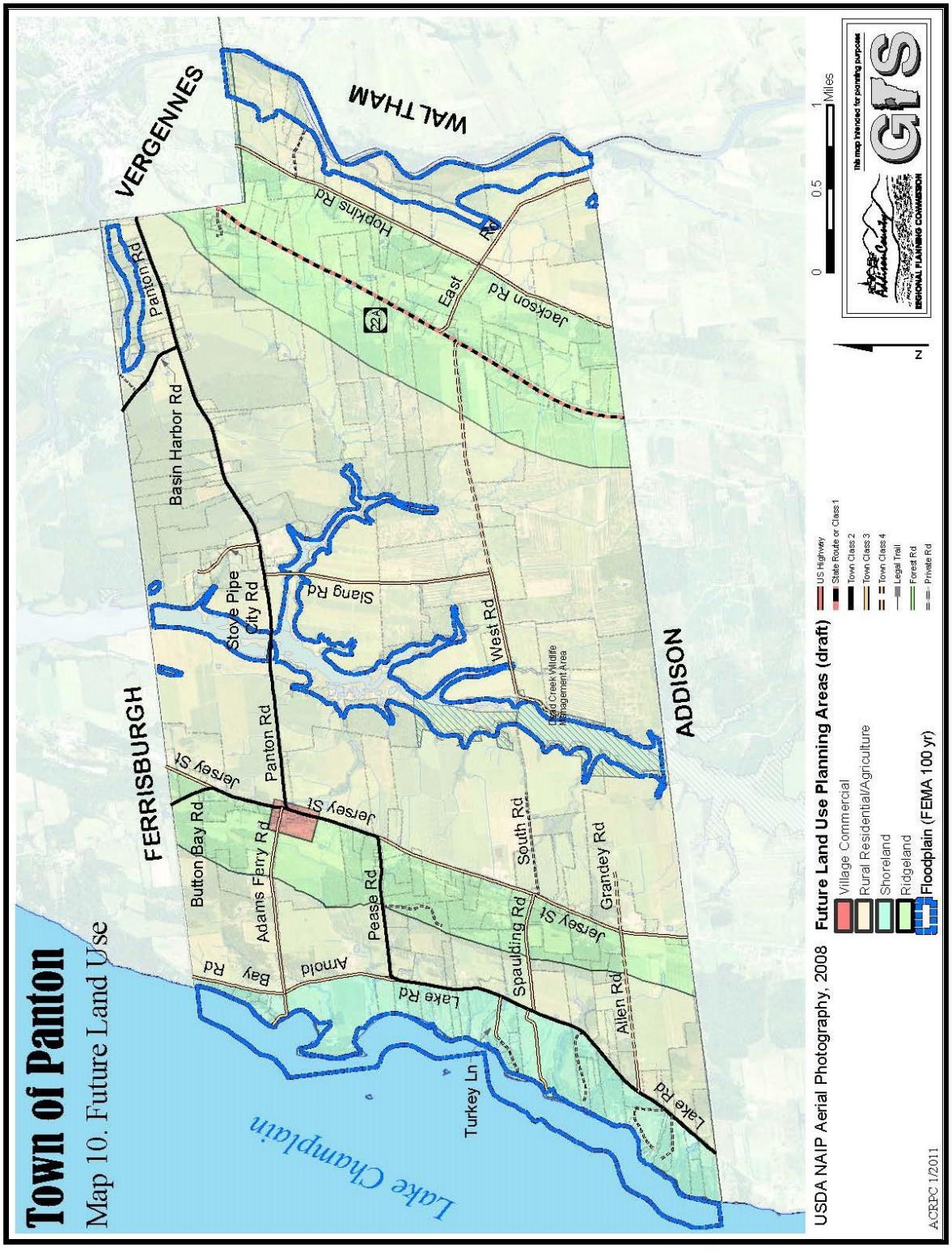
2.2.3. Population Density



2.2.4. Community Facilities



2.2.5. Future Land Use



3. Existing Adopted Plans Which Support Hazard Mitigation

3.1. 2016 Town Emergency Operations Plan (High Hazard Sites Identified)

- *Road (Flooding) - West Road*
- *Road (Flooding) – Arnold Bay Road*
- *Road (Flooding) – Slang Road*

3.2. 2011 Town Land Use Plan

- *Housing: The Town's residents will have safe, healthy, and efficient housing that is within their means.*
- *Economy: Maintain the necessary infrastructure to support the reasonable economic development of the town.*
- *Community Facilities and Services: Encourage safe and appropriate access to new residences for fire and rescue services.*
- *Community Facilities and Services: …Our drinking water comes from Lake Champlain and therefore, the town should support activities, policies and land uses which protect rather than degrades water quality.*
- *Transportation: Encourage safe and efficient travel for all modes of transportation (including walking and biking) throughout the Town of Panton on our local and state highways.*
- *Transportation: Review highway signs in Panton and change as needed.*
- *Recreation: Promote safety and access for walkers and cyclists along Panton's roadways.*
- *Recreation: Improve water quality through measures such as phosphorus reduction, erosion prevention, and control of Zebra Mussels, Eurasian Milfoil, and other invasive species.*
- *Natural Resources and Environment: Protect and enhance water quality both in groundwater and surface water.*
- *Natural Resources and Environment: Discourage improper disposal of hazardous waste and participate in the Solid Waste District's hazardous waste programs.*
- *Current and Future Land Use: Promote safe, sensible, appropriate development patterns whenever and wherever possible, limiting strain on town services and expenditures. Locate several areas where more densely clustered, well planned, residential development could occur.*

3.3. 2016 Addison County Regional Planning Commission Regional Plan 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.*

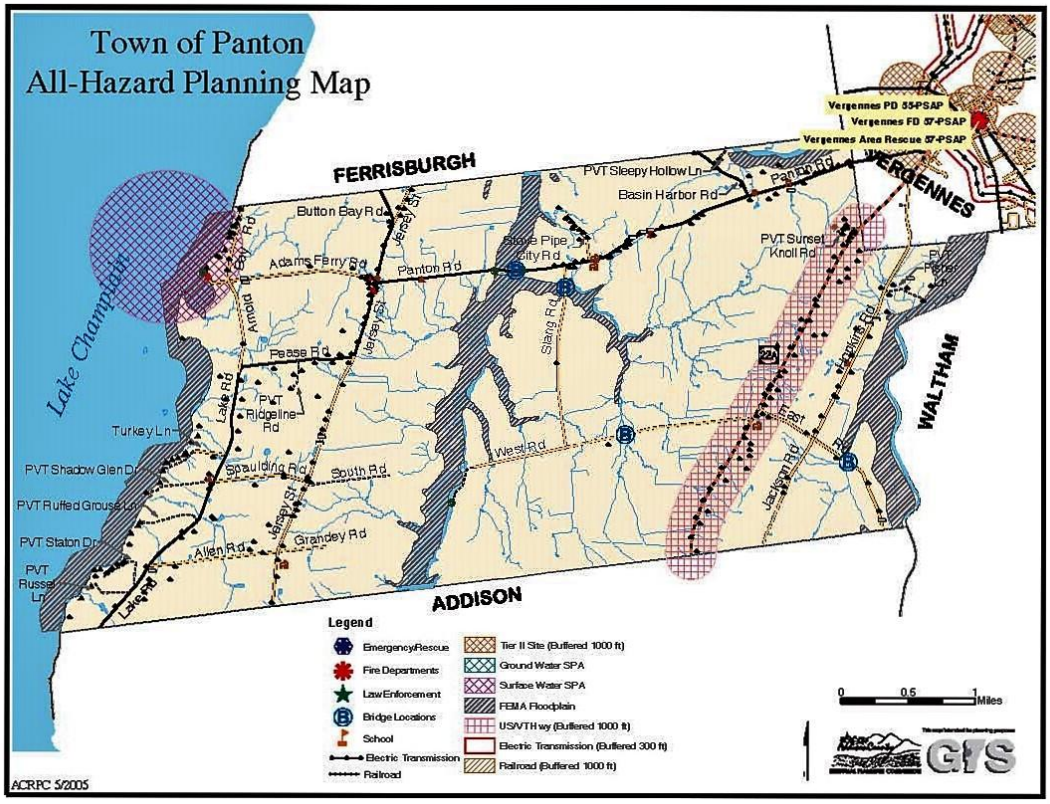
- *Reduce the loss of life and injury resulting from all hazards.*
- *Mitigate financial losses incurred by municipal, residential, industrial, agricultural and commercial establishments due to disasters.*
- *Reduce the damage to public infrastructure resulting from all hazards.*
- *Recognize the connections 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. 2013 State of Vermont Hazard Mitigation Plan 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 All-Hazards Planning Map



4.2. Risk Prioritization Process/Results

The Town of Panton's Hazard Mitigation Planning Committee reviewed the following hazards in its Hazard Inventory/Risk Assessment –Flash Flood, Inundation Flooding, Dam Failure, Ice Jam, Severe Snow, Ice Storm, High Winds, Lightning Strike, Hail, Tornado, Drought, Wildfire, Landslide/Subsidance, Earthquake, Infectious Disease, Insect-borne Illness, Invasive Species, Extreme Temperatures, HazMat Spill, Highway Accident, and Structure Fire. The State of Vermont's 2013 hazard mitigation plan also identifies hurricanes, tropical storms, severe storms and fluvial erosion as hazards which impact all jurisdictions of the state. Of these four additional hazards, the first three have been discounted. The committee felt that these three differed from each other only in their severity. The actual effects on people and infrastructure caused by these hazards is in the common results of flooding, lightning and high wind. The fourth state identified hazard, fluvial erosion, is generally not applicable to the Town of Panton. Lacking much elevational change, the two waterways in town, Dead Creek and Otter Creek behave more like estuaries of Lake Champlain with an almost imperceptible current. Of the hazards reviewed, the committee identified 5 hazards which scored the highest vulnerability. In terms of overall vulnerability, the committee scored the following hazards as their highest: Highway Accident, Ice Storm, Lightning Strike, Earthquake, HazMat Spill.

Hazard Inventory/Risk Assessment Parameters

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

Level of Committee Concern

1= Low level of Concern	Not worth spending a lot of time with
2= Moderate Level of concern	Could happen, but mitigation costs are high and benefits are low
3= High Level of Concern	Worth exploring more, developing mitigation projects for
4= Extreme Concerns	Town is generally mitigating as much as they can, really need assistance.

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

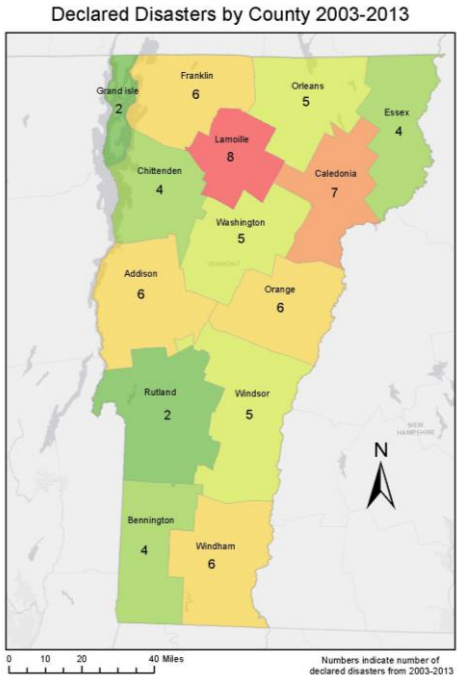
1= Low Priority	≤ 8 total score, low cost –no cost mitigation projects only
2= Medium Priority	>8 and ≤10 total score
3= High Priority	>10 and ≤12 total score
4= Regional/State-wide Priority	>12 total score

Town of Panton Risk Assessment 6/7/2016

Hazard	Damage Type	Probability	Warning	Geographic Impacts	Property Damage	Committee Concern	Vulnerability
Flash Flood	Water or Erosion	1	4	1	1	1	8/1
Inundation Flooding	Water Damage	2	1	1	1	1	6/1
Dam Failure	Water or Erosion	1	1	1	1	1	5/1
Ice Jam	Water Damage	1	3	1	1	1	7/1
Severe Snow	Closed Roads	3	1	2	1	1	8/1
Ice Storm	Power Outage or Fire	2	1	4	3	2	12/3
High Winds	Power Outage	2	3	1	2	1	9/2
Lightning Strike	Fire	4	4	1	1	1	11/3
Hail	Crop or Property Damage	2	3	1	1	1	8/1
Tornado	Power Outage or Structural Damage	1	4	1	1	1	8/1
Drought	No Drinking Water/ Crop Loss	1	1	1	1	1	4/1
Wildfire	Structure Fire	2	4	1	1	1	9/2
Earthquake	Property Damage	1	4	2	3	1	11/3
Infectious Disease	Health Risk	2	1	4	1	1	9/2
Insect-Borne Illness	Health Risk	3	1	1	1	3	9/2
Invasive Species	Ecological Damage	4	1	1	1	2	9/2
Extreme Temperature	Health Risk/ Structure Damage	2	1	1	1	1	6/1
HazMat Spill	Health Risk/ Contamination	2	4	1	2	2	11/3
Highway Accident	Human Injury	4	4	1	1	2	12/3
Structure Fire	Property Damage/Injury	2	4	1	1	1	9/2
Landslide/ Rockslide	Property or Infrastructure	1	2	1	1	1	6/1

Table #1: Federally declared disasters affecting Addison County

Year	Date	Description	Dec. #	County Est.	Panton
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	$ 31,033.00	$ Unavailable
1993	4/24-5/26/1993	Flooding, Heavy Rain, Snowfall	DR990	$ 17,639.00	$ Unavailable
1996	1/19-2/2/1996	Storms, Flooding	DR1101	$ 130,529.00	$ Unavailable
1998	1/6-16/1998	Ice Storms	DR1201	$ 662,388.00	$ Unavailable
1998	7/17-8/17/1998	Severe Storms and Flooding	DR1228	$ 2,146,484.00	$ Unavailable
2000	7/14-18/2000	Severe Storms and Flooding	DR1336	$ 738,127.27	$ 0.00
2001	3/5-7/2001	Snowstorm	EM3167	$ 138,333.08	$ 2,542.55
2004	8/12-9/12/2004	Severe Storms and Flooding	DR1559	$ 430,551.00	$ 0.00
2008	6/14-17/2008	Severe Storms and Flooding	DR1778	$ 1,114,515.70	$ 0.00
2008	7/21-8/12/2008	Severe Storms and Flooding	DR1790	$ 2,273,481.42	$ 0.00
2011	4/23-5/9/2011	Severe Storms and Flooding	DR1995	$ 384,416.53	$ 38,001.87
2011	8/26-9/2/2011	Hurricane Irene	EM3338	$ Unavailable	$ 0.00
2011	8/27-9/2/2011	Tropical Storm Irene	DR4022	$ 1,175,911.20	$ 0.00
2012	5/29/2012	Severe Storm, Tornado,Flooding	DR4066	$ 172,847.70	$ 0.00
2014	2/9-13/2014	Severe Winter Storm	DR4207	$ 184,715.05	$ 0.00
2015	6/9/2015	Severe Storm and Flooding	DR4232	$ 893,310.63	$ 0.00



4.3 Hazard Type, Location, Extent, Previous Occurrences, Future Probability and Vulnerability (44CFR 201.6 (c)(2)(i), 44CFR 201.6(c)(2)(iii))

The following Hazard types have been identified, evaluated and listed in order of priority as identified by the Panton Hazard Mitigation Committee as shown in their risk assessment. The Town of Panton Risk Assessment is a visual representation of that evaluation process for the Town of Panton. Other hazards identified in Vermont's hazard mitigation plan did not rise to the level of concern by the local planning committee. The following hazard types are listed in their order of priority with highest perceived vulnerability described first.

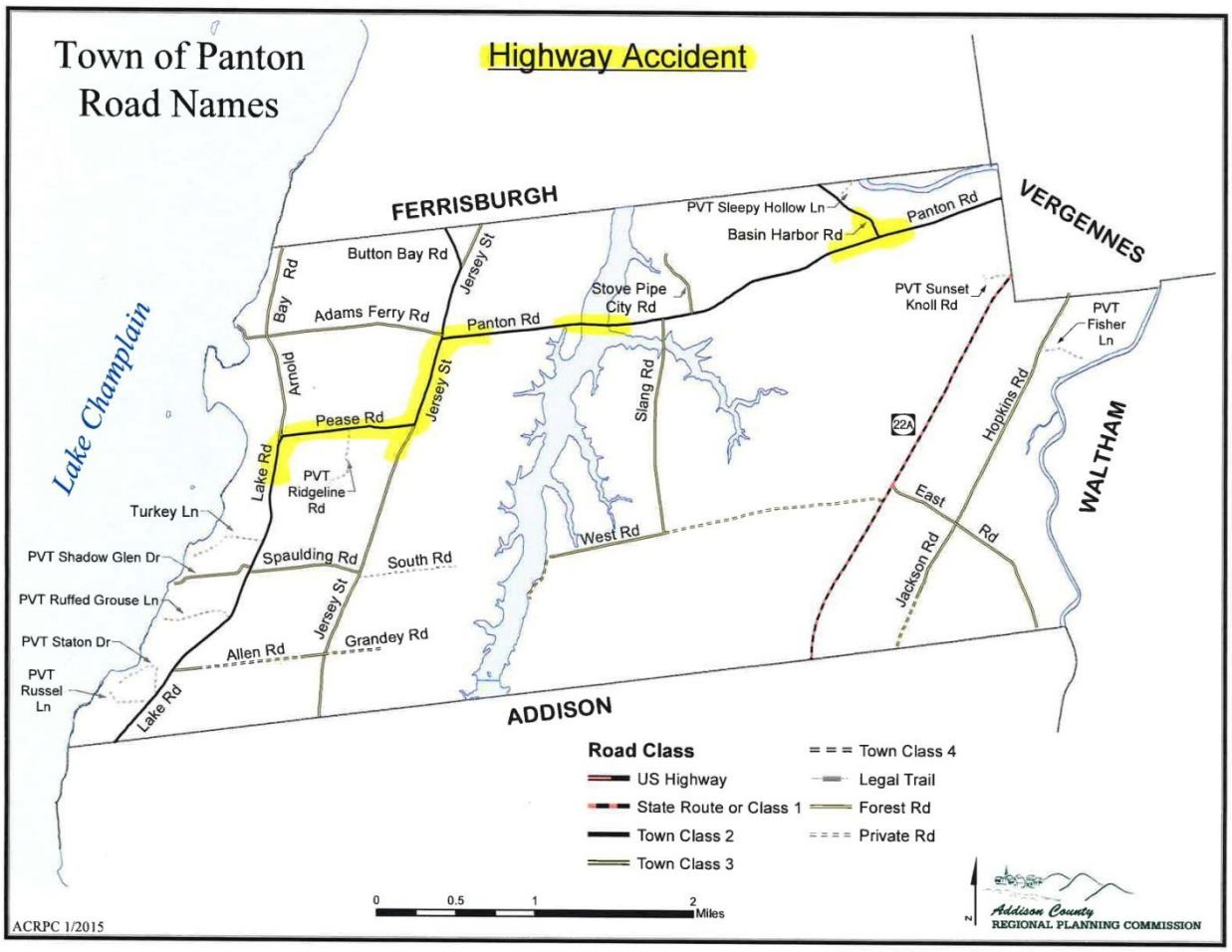
4.3.1 Highway Accident (Vulnerability Score 12)

Location: Highway accidents are possible along all highways in town but are particularly noticeable along State Route 22A as it passes through the eastern portion of Panton. This highway has an Average Annual Daily Traffic (AADT) count of 5,100 trips per day through Panton and is one of the highest use highways in the Addison Region. Rte. 22A is the preferred truck route along western Vermont to access Chittenden County to the north because of its relatively straight path and the lack of congestion along much of the route. A bout a mile north of the Panton/Vergennes line, Rte. 22A joins the highly travelled US Rte. 7. Just prior to the Vergennes line, the wide open farm fields begin to rapidly give way to a more densely packed area. It is in this transition zone that many accidents occur as speeding vehicles need to rapidly reduce speeds through the city of Vergennes.

Panton Road and Lake Road are the most heavily travelled town roads and experience their share of highway accidents as well though the frequency is much lower. The committee specifically identified the intersection of Panton Road and Basin Harbor Road as well as where the Panton Road crosses Dead Creek as particularly noticeable accident locations. In addition, several 90-degree turns are the site of accidents as the main flow of traffic follows Panton Road to Jersey Street, to Pease Road and onto Lake Road. Each of these intersections pose a high risk to drivers unaware of the path this traffic route takes.

Extent: Truck Traffic on Rte. 22A poses the highest risk in town due, in large part to the cargo being carried. The majority of gasoline and fuel oil delivered to northwestern Vermont by truck travels Route 22A from Albany N.Y. to Burlington and points north. A worst-case scenario of a truck rollover involved with other vehicles could result in fires, environmental damage, and road closure for multiple days.

Previous Occurrences: Records of past accidents are not readily available for the Town of Panton as their emergency response services (Fire, Police and Rescue) are all contracted from outside of the community. Local memory, however, recalls several fatal accidents on Panton roads.



Highway Accident Problem Areas Identified by the Panton Hazard Mitigation Committee

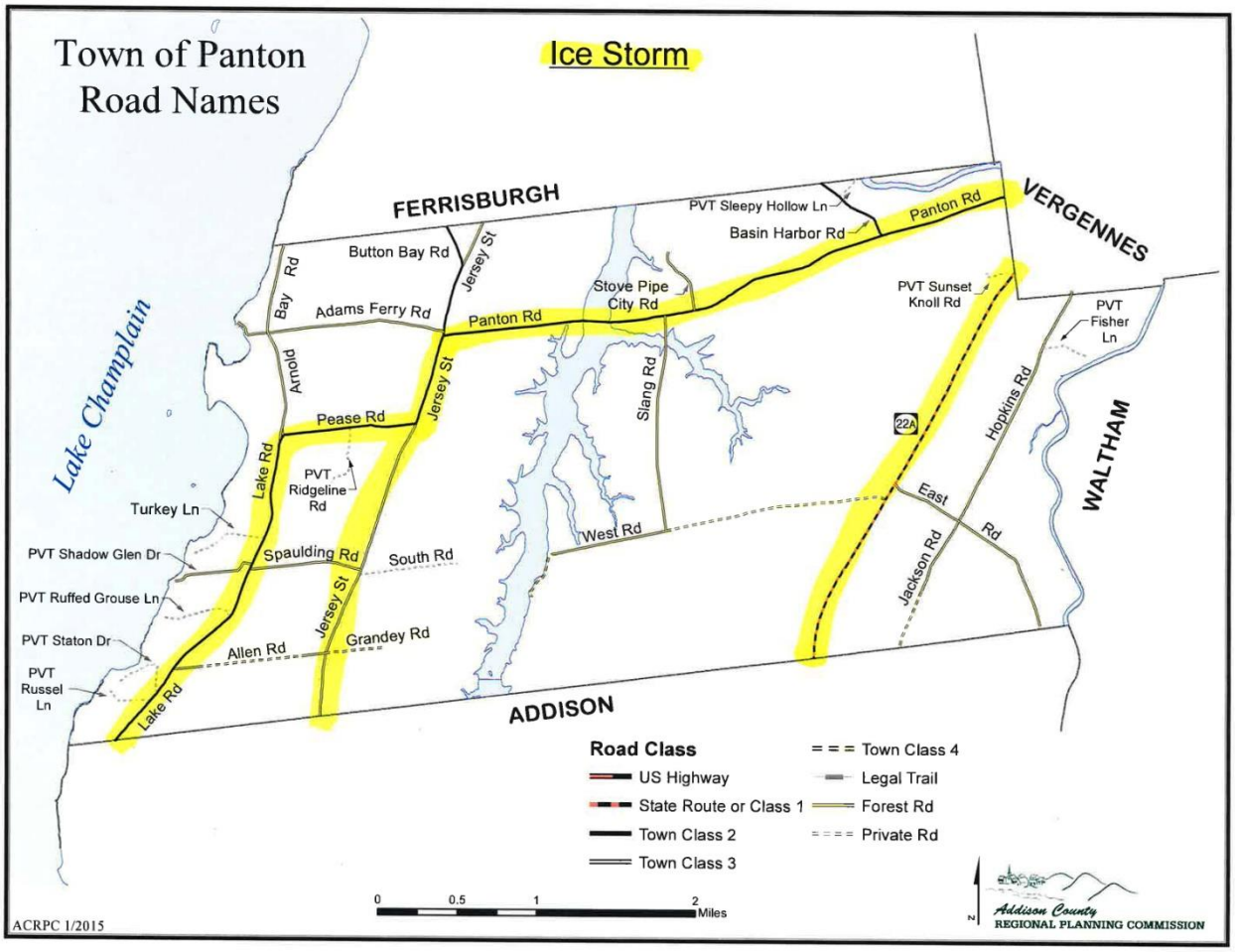
Future Probability: Increases in truck traffic seem inevitable as long as the population demands ever more product. A lessening in fuel use is the goal of the State of Vermont energy plan but thus far, the majority of efforts have focused on increasing electric production rather than reduction of energy usage.

Vulnerability: Until major overhauls of sections of highway can be completed, Panton will need to continue to rely on signage and enforcement of speed limits to keep the numbers of accidents in check.

With an overall vulnerability score of 3, Highway accidents must be considered a HIGH priority. Due to the risk to life and property represented by this hazard the Town expends considerable resources attempting to make its roads as safe as possible within a restricted budget.

4.3.2 Ice Storm (Vulnerability Score 12)

Location: Severe ice storms are common throughout Vermont and can occur geographically in any part of Panton. Located in the Champlain Valley, Panton is at greater risk for more widespread Ice. Generally, ice storms strike within a particular elevation band depending on temperatures with higher elevations experiencing snow and lower elevations experiencing rain. As a town with a gently rolling topography at the foothills of the Green Mountains, Panton can easily fall into just such a band or may be spared entirely due to its proximity to Lake Champlain. The committee specifically identified Pease Rd, East Rd, Arnold Bay Rd. and Spaulding Rd. as areas where downed trees frequently cause power loss.



Ice Storm Problem Areas Identified by the Panton Hazard Mitigation Committee

Extent: Because Ice storms are extremely temperature and elevation dependent, they are notoriously difficult to predict. When conditions conducive to ice build-up are predicted, the National Weather Service issues a Winter Storm Warning with emphasis on ice accumulation. The Panton hazard mitigation committee identified the ice storm of 1998 as the worst that had occurred in the region which saw accumulations of up to ¾ inch and loss of power for up to 2.5 weeks.
Fortunately, the residents of Panton were largely spared the effects of this storm.

The Sperry-Piltz Ice Accumulation Index rates ice storms from 0 to 5 depending on amount of ice buildup and accompanying wind speeds. Storms of ¼ inch and less with winds under 15mph rate a "0" and are termed "Nuisance" storms with ice buildup on windshields and an occasional downed tree branch. A "5" rating, on the other hand, can be the result of as little as ½ inch of ice with 35 mph winds or any accumulations over 1.5 inches. A category 5 ice storm would be labeled "Catastrophic" and would likely result in massive failures of both distribution and transmission lines. Indices at the scale of 1-3 range from scattered outages lasting hours to widespread outages lasting 1-5 days.

5

The Sperry-Piltz Ice Accumulation Index, or "SPIA Index" – Copyright, February, 2009

ICE DAMAGE INDEX	* AVERAGE NWS ICE AMOUNT (in inches) *Revised-October, 2011	WIND (mph)	DAMAGE AND IMPACT DESCRIPTIONS
0	< 0.25	< 15	Minimal risk of damage to exposed utility systems; no alerts or advisories needed for crews, few outages.
1	0.10 – 0.25	15 - 25	Some isolated or localized utility interruptions are possible, typically lasting only a few hours. Roads and bridges may become slick and hazardous.
	0.25 – 0.50	> 15	
2	0.10 – 0.25	25 - 35	Scattered utility interruptions expected, typically lasting 12 to 24 hours. Roads and travel conditions may be extremely hazardous due to ice accumulation.
	0.25 – 0.50	15 - 25	
	0.50 – 0.75	< 15	
3	0.10 – 0.25	> = 35	Numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasting 1 – 5 days.
	0.25 – 0.50	25 - 35	
	0.50 – 0.75	15 - 25	
	0.75 – 1.00	< 15	
4	0.25 – 0.50	> = 35	Prolonged & widespread utility interruptions with extensive damage to main distribution feeder lines & some high voltage transmission lines/structures. Outages lasting 5 – 10 days.
	0.50 – 0.75	25 - 35	
	0.75 – 1.00	15 - 25	
	1.00 – 1.50	< 15	
5	0.50 – 0.75	> = 35	Catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed.
	0.75 – 1.00	> = 25	
	1.00 – 1.50	> = 15	
	> 1.50	Any	

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 which impacted most of the northeastern US and resulted in $750,000 in damages to Addison County properties. During the same 25-year period an estimated $850,000 in total property damages were recorded in the region. The major impacts within the Town of Panton are generally limited to residents impacted by loss of power and the occasional downed tree or branches in the road. Loss of power to the town hall and garage are of concern due to the frequency of losses at these locations.

Future Probability: Warmer temperatures such as might be anticipated with climate change would result in less snow and a higher likelihood of ice in winter. Other predictions indicate that climate change will bring colder winters that might increase ice storms in early spring and late fall. In both cases, storms are predicted to increase in severity which would make category 0-1 storms less frequent and 2-5 storms a higher possibility.

Vulnerability Summary: The Town of Panton is a rural community with one major highway. Power company policy is to repair the simplest fixes which impact the highest populations as the highest priority. The tree-lined rural roads so popular with tourists add additional risk of ice laden trees falling on power lines and resulting in widespread power failures. The combination of these two circumstances points to a high risk of extended power failures due to ice storm throughout the Town of Panton.

Fortunately, negotiations with Green Mountain Power are set to create an artificial "Island" out of the Town of Panton with a large-scale solar array providing power to the grid and large-scale batteries capable of providing additional power should the main connections to the regional grid fail.

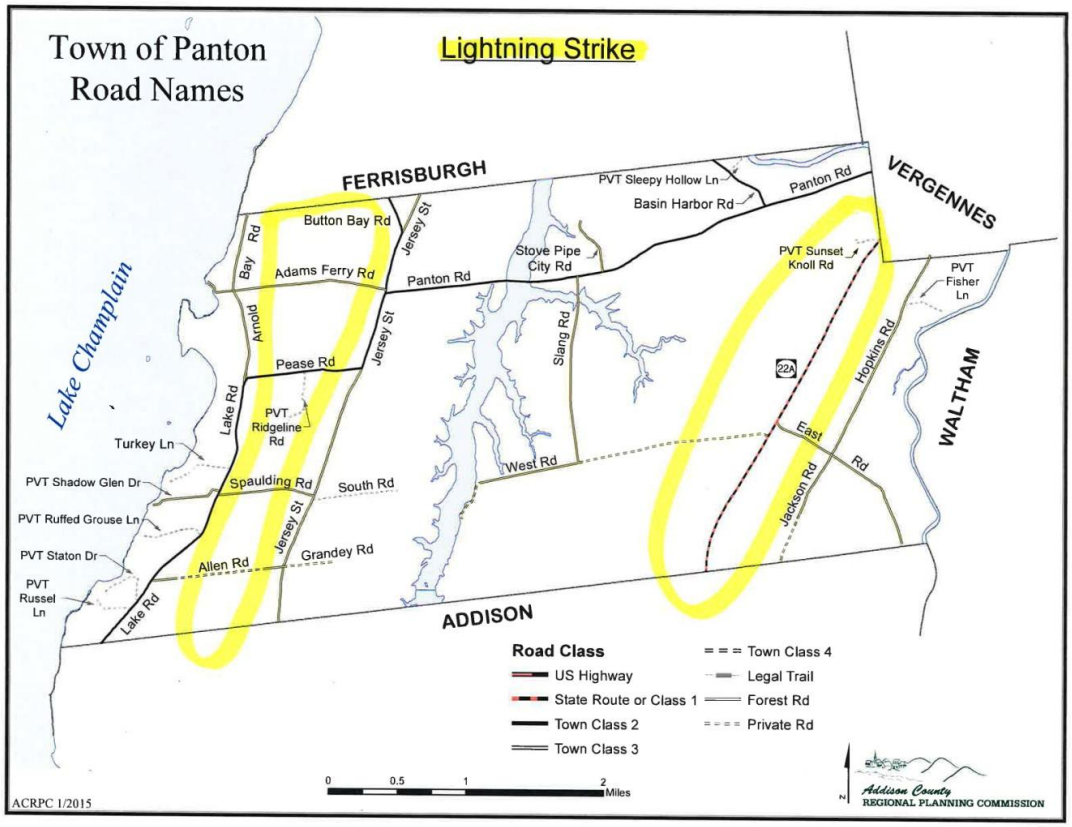
The community vulnerability rating for Ice Storm and accompanying widespread power outage is 3 and would be considered a HIGH PRIORITY. Widespread power outages have been extensively mitigated by service providers in the past few years following the disastrous Ice Storm of 1998 effectively reducing the community's vulnerability. When combined with projected improvements and "islanding", the community's vulnerability is set to be reduced in the near future.

4.3.3 Lightning Strike (Vulnerability Score 11)

Location: Severe storms which include lightning along with wind and rain events are a common occurrence in Panton during summer months. While unpredictable, lightning tends to be drawn to exposed areas of higher elevation or where there are sudden increases in elevation. Areas where elevation and ledge have resulted in more frequent lightning strikes are located along Rte. 22A and the north-south ridge that runs between Jersey Street and Lake Road. Committee members living near the Lake Road ridge recounted multiple storms with several lightning strikes each.

Extent:
Lightning strikes in western Addison County, Vermont average between 4-6 strikes per square kilometer each year based on data collected by NASA satellites between 1995 and 2002. Within the Town of Panton, these numbers would extrapolate into between 225 and 350 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.



Lightning Strike Problem Areas Identified by the Panton Hazard Mitigation Committee

Previous Occurrences:
Relatively little information has been recorded of recent significant lightning strikes. Given the estimated numbers of lightning strikes in Panton, 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. Statewide, the National Lightning Safety Institute recorded 3 known fatalities due to lightning in the period from 1990-2003.

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 however, is reduced.

Vulnerability Summary:
Panton'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.

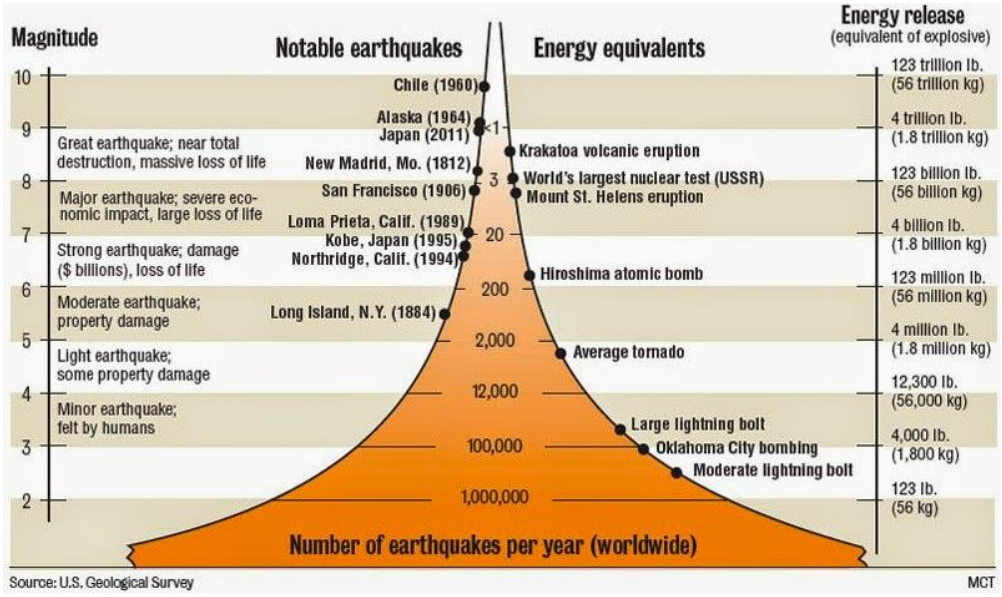
The highest risk area for lightning strikes with the highest resultant damage to the public infrastructure is where public buildings are scattered along Jersey Street in the traditional village center. Loss, due to fire caused by lightning or electrical surge could be quite disruptive to the community if it were to strike either the Town Hall or church located in this area.

The community risk rating for Lightning Strike is 3 and would be considered HIGH PRIORITY.

4.3.4 Earthquake (Vulnerability Score 11)

Location: Surprising as it is to some, all of Vermont, including the Town of Panton, 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, Panton is at higher risk for earthquake 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 Panton would be 40). HAZUS also estimates that all essential facilities in the region (hospital, schools, police stations and fire stations) will receive at least moderate damage. 3 families would be predicted to be displaced from their homes and will need temporary shelter in Panton.

- 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.

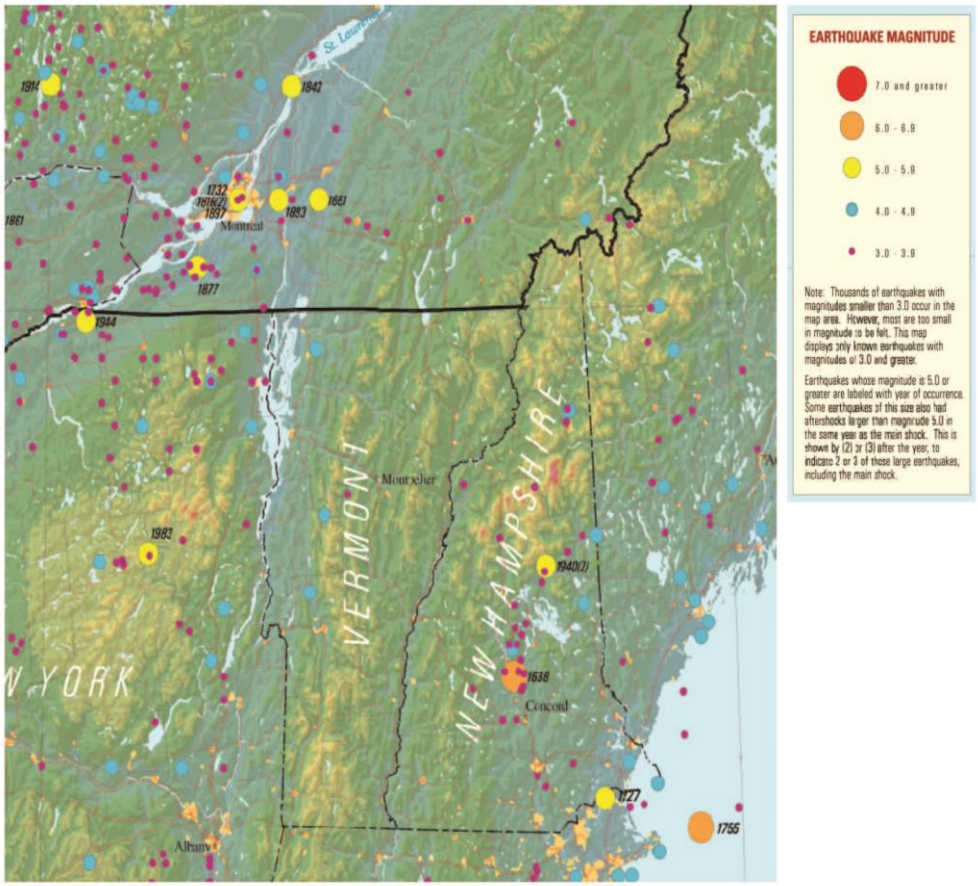
Goodnow Scenario:

- 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 Panton would be 15) HAZUS also estimate that all essential facilities in the region (hospital, schools, police stations and fire stations) will receive at least moderate damage. 1 family is predicted to be displaced from their house 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.



Regional Historical Earthquake Records

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 Cornwall 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 Panton in the next 50 years.

Vulnerability Summary: The Panton Hazard Mitigation Committee scored Earthquake hazard a risk score of 11 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. With a community vulnerability score of 3, earthquakes would be considered HIGH PRIORITY based on a low probability of a significant event in any given year but with a high overall impact to infrastructure should a significant event occur.

4.3.5 HazMat Spill (Vulnerability Score 11)

Location: There are no sites in town that have sufficient types and/or quantities of hazardous materials to require Tier II reporting, however, several local farms likely store fuels in excess of the quantities which require reporting.

Highway accidents, however, could result in a release of hazardous materials and accident locations of concern to the committee are identified in the section on Highway Accidents. Generally, with the constant movement of petroleum in the form of home heating oil, any location along a town highway or at a residence could be the site of a spill either as a result of an accident or during delivery. As previously mentioned, Rte. 22A is a major route for fuel and gasoline transport along the western part of Vermont.

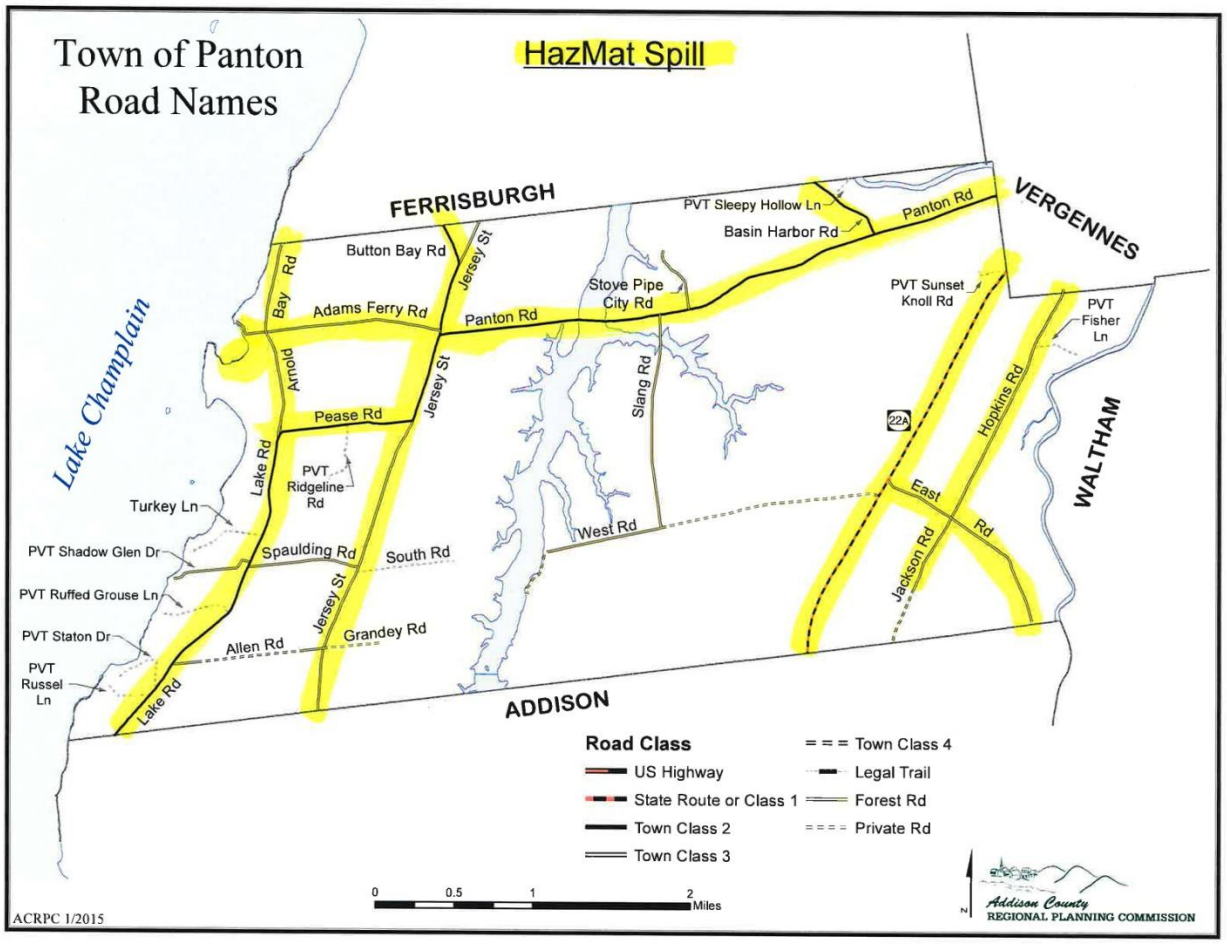
Extent: A 1000-foot buffer was superimposed over state highways and all class 1 and 2 town roads that represent a possible impact area should a large hazardous material spill occur on these highways. Based on this analysis, there are 61

structures that could be impacted should an incident with a vehicle carrying HAZMAT occur.

Essential facilities which could be impacted by such a spill within the Town of Panton are:

- Panton Town Hall/Office
- Vergennes/Panton Water District Pumping Station

Previous Occurrences: No major incidents involving large-scale hazardous materials spills in Panton could be recalled by mitigation committee members, however, numerous incidents have occurred elsewhere in the region.



HazMat Spill Locations as Identified by the Panton Hazard Mitigation Committee

Future Probability: With ever-increasing numbers of trucks on Vermont's highways which were built originally for horse and buggy, a large-scale hazardous material spill is inevitable. Where and when are the only questions. Both the Panton highway crew and the Vermont Agency of Transportation are

committed to improving highway safety but the task continues to be overwhelming.

A fixed site hazardous materials storage location is unlikely to be established in Panton in the near future. With adequate industrial space available in nearby Vergennes, it is likely that any future needs for such a facility will be accommodated there.

Vulnerability Summary: Route 22A in Panton is used by many trucks headed north/south carrying hazardous materials as their payload. While the Vergennes Fire Department has training in hazardous materials, the entire State of Vermont is highly dependent on the limited resources of the State's HazMat team. Fortunately, highway safety is improving both in alignments of the highways themselves and in safer vehicle designs.

The community risk rating for a Large-Scale Hazardous Materials Incident is 3 and would be considered HIGH PRIORITY.

5 Community Mitigation Strategies

5.1 Hazard Mitigation Goals by Hazard Type

Each hazard type profiled in Section 4.3 "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 Panton 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 can afford.

Identified Hazard	Primary Mitigation Goal
Highway Accidents	Ensure that highway improvements result in safer conditions
Ice Storm	Ensure that essential services can function during disaster
Lightning	Protect the health and safety of the public
Earthquake	Protect existing and new properties and structures
Hazardous Materials Spill	Protect the health and safety of the public

5.2 Authorities, Policies, Programs, Resources (and the ability to expand upon these) 44CFR 201.6(c)(3)

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 and resilience. 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.

Town Service Officer: The Town Service Officer's responsibilities are to coordinate aid for residents needing assistance during hours when State offices are closed. In many towns, this office has become redundant as State agencies have developed 24/7 emergency assistance programs.

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:

Highway Accident

A representative from the town sits on the local Transportation Advisory Committee (TAC), a regional group whose purpose is to prioritize potential transportation related projects within the region. The TAC rates high crash locations highly in prioritizing projects to mitigate the risks associated with these locations by changing alignments, adding signage and reducing speeds.

The community is also a participant in the VTrans High Risk Rural Roads program, having originally applied in 2012. The State Agency of Transportation conducted a safety analysis of most of the locations identified by the mitigation committee and the town is currently waiting for its improvements. Recently the program changed titles and is now the Systemic Local Road Safety (SLRS) program. This reorganization has caused some delays in implementation much to the dismay of the town.

Ice Storm

Many private residences have back-up power sources and essential Town facilities like the Town Office and Town Garage either have been retrofitted in recent years or are scheduled to be fitted with back-up power. Recent negotiations with Green Mountain Power have resulted in an MOU which will make the town facilities far more resilient in the face of a power outage caused by ice accumulation.

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 Panton, has an ongoing program of line clearing and relocation to ensure outages are kept to a minimum. In addition, planned improvements to the micro-grid in Panton addressed in the town's MOU should result in a redundant system far more resistant to failure than has been previously.

The Town of Panton supports continued development of a robust and redundant local electric generation and transmission system for its residents. This support is limited to that which can prove that the benefit to local residents outweighs the societal costs associated with industrial generation and transmission degradation of the local landscape.

The ability to expand on the town's activities is generally related to the availability of funds. Fortunately for Panton, their MOU with GMP will allow for better resilience within the town at comparatively little cost to the town.

Lightning Strike

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 the structure's electrical system.

Most of the larger privately-owned structures in vulnerable locations have similarly installed lightning rod systems to protect them from lightning strike with the encouragement from insurance companies and extension agents. The Town has no adopted building standards which would require this action but feels the risk to private residences should be borne by each resident on their own.

Making educational materials available in the town office will assist residents in their ability to mitigate the effects of lightning in their homes.

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 Panton 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.

Hazardous Materials Spill

In its efforts to make a safer highway system throughout town, it is also attempting to mitigate the likelihood of a significant hazardous materials spill. Appropriate signage and adequate warning will not only reduce the number of highway accidents but will also serve to reduce the probability of future hazmat spills.

A major push toward Electric Heat Pumps as envisioned by the town and GMP should also reduce the quantity of petroleum traveling on town highways and delivered to homes, thereby also reducing the risk of spills.

5.3 Project Prioritization Process

Projects and actions included in Section 5.2 are conducted by the Town of Panton, GMP 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. These actions/projects are constantly evaluated for benefit to the community, estimated project cost 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 by Hazard Type - 44CFR 201.6(c)(3)(ii)

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, potential benefits, the lead person or agency responsible for completion of the project and an estimated start and end timeframe for project completion. Timeframes are an estimate only and are dependent upon funding and the political will to complete.



<u>Highway Accident</u> –

Request Evaluation of hazardous road locations through the Systemic Local Road Safety Program (SLRS)
Estimated cost to Town: $500.00 (road commissioner's salary expenses)
Source of funds: Town highway budget
Responsibility: Joint Road Commissioner and Selectboard
Timeframe: Q3 2012 – Q3 2019
Benefits: Reduced hazards on sections of town roads

Lower Speed Limits on Lake St. and Pease Rd.
Estimated cost to Town: $1,500.00 (Traffic Engineering Study & signage cost)
Source of funds: Town highway budget
Responsibility: Joint Road Commissioner and Selectboard
Timeframe: Q2 2017 – Q3 2019
Benefits: Reduced hazards on sections of town roads

Additional Sheriff's patrols on East Rd (shortcut to Middlebury)
Estimated cost to Town: Revenue Neutral (cost of patrols vs. fines levied)
Source of funds: Town General Fund
Responsibility: Selectboard
Timeframe: Q2 2017 – ongoing
Benefits: Reduced speeding hazard on East Road

Ice Storm -

Provide a source of Back-up Power to the Town Hall (either Battery or Generator) to allow for continued function of town government in the event of a power failure.
Estimated cost to Town: Town Support of GMP Solar Farm
Source of funds: GMP
Responsibility: Town Selectboard & Green Mountain Power
Timeframe: Q2 2017 – Q4 2017
Benefits: Makes Town Hall available as emergency shelter and allows operation of Town office during an outage.

Manage vegetation in the ROW to allow space for heavy/wet snow and ice events. Managed ROW vegetation reduces the likelihood of trees falling on power lines causing power outages.
Estimated cost: $3,000 annual cost
Source of funds: Town highway budget
Responsibility: Joint Road Commissioner and Selectboard
Timeframe: Q3 2017 start
Benefits: Reduce impacts due to ice on roads and power lines

Negotiate with Green Mountain Power to create the "islanding effect" via back up batteries and new distribution line when constructing their 5mw solar array in Panton. This will prevent the effects of a power outage by supplying solar power via battery.
Estimated cost: None to town
Source of funds: GMP solar array construction funds
Responsibility: Selectboard
Timeframe: Q3 2016 start
Benefits: Reduce likelihood of power loss and provide back-up capability at town hall

Lightning strike -

Install Lightning Protection Devices on Town-owned Buildings (Town Hall and Town Garage) to mitigate potential lightning strikes
Estimated cost to Town: $4,000
Source of funds: ½ Town Highway Funds, ½ Town General Fund
Responsibility: Selectboard
Timeframe: Q2, 2018- Q3, 2020
Benefits: Reduced fire hazard to town-owned buildings

The Town believes it is the homeowner's responsibility to mitigate their susceptibility to lightning. The town will support education in this area by providing educational materials in the town office available for distribution with zoning permit applications.
Estimated cost: None to Town
Source of funds: Government Printing Office
Responsibility: Town Clerk/ ACRPC
Timeframe: Q3 2016 start- ongoing
Benefits: Reduced property damages to residents

Earthquake -

The Town feels that though damages could be widespread in the event of an earthquake, the probability of a damaging event is so low that most treatments to Town-owned properties would not be cost effective.

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 available for distribution with zoning permit applications.
Estimated cost to Town: None to Town
Source of funds: Government Printing Office
Responsibility: Town Clerk/ACRPC
Timeframe: Q3 2016 start- Ongoing
Benefits: Reduced property damages due to earthquake

Hazardous Materials Spills -

Encouraging conversion to alternate heating sources to reduce overall transport of fuels
Estimated cost to Town: Town Support of GMP Solar Farm
Source of funds: GMP's Community Energy & Efficiency Development Fund (CEED)
Responsibility: Town Selectboard & Green Mountain Power
Timeframe: Q2 2017 – Q4 2017
Benefits: Increased energy efficiency of current housing stock and reduced transport of Hazardous Materials (Fuels) over town highways.

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/Update Process (5-year cycle) 44CFR 201.6 (c)(4)(i) and 44CFR 201.6 (c)(4)(iii)

1. The Panton 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 will be reviewed and updated in its entirety at least every five years as described above, the Town will monitor and evaluate its goals, strategies and actions/projects annually as the town budget is created. A town budget is created by the Selectboard of a town in publicly noticed meetings utilizing budget requests from town committees and the citizenry. This will ensure that progress will be reviewed and actions/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 the existing Hazard Mitigation Plan 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 their 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

TOWN OF PANTON, VERMONT SELECTBOARD ADOPTION RESOLUTION

WHEREAS, the Town of Panton has occasionally experienced severe damage from natural hazards and it continues to be vulnerable to the effects of the hazards profiled in the **Town of Panton, Vermont Single Jurisdiction All-Hazards Mitigation Plan (Plan),** which can result in loss of property and life, economic hardship, and threats to public health and safety; and

WHEREAS, the Town of Panton has developed the **Plan** and received conditional approval from the Federal Emergency Management Agency (FEMA); and

WHEREAS, the **Plan** identifies specific hazard mitigation strategies, and plan maintenance procedures applicable to the Town of Panton; and

WHEREAS, the **Plan** identifies actions and/or projects intended to provide mitigation for specific natural hazards that impact the Town of Panton; and

WHEREAS, adoption of this **Plan** will make the Town of Panton eligible for additional funding to help alleviate the impacts of future hazards;

Now, therefore, be it RESOLVED by Town of Panton Selectboard:

1. The **Town of Panton, Vermont Single Jurisdiction All-Hazards Mitigation Plan** is hereby adopted as an official plan of the Town of Panton, Vermont;

2. The respective Town officers identified in the action plan are hereby directed to pursue implementation of the recommended actions assigned to them.

3. Support agencies within the Town of Panton are also requested to implement actions assigned to them within this plan;

4. Plan maintenance procedures described in Section 6 of this plan are also adopted as part of this resolution

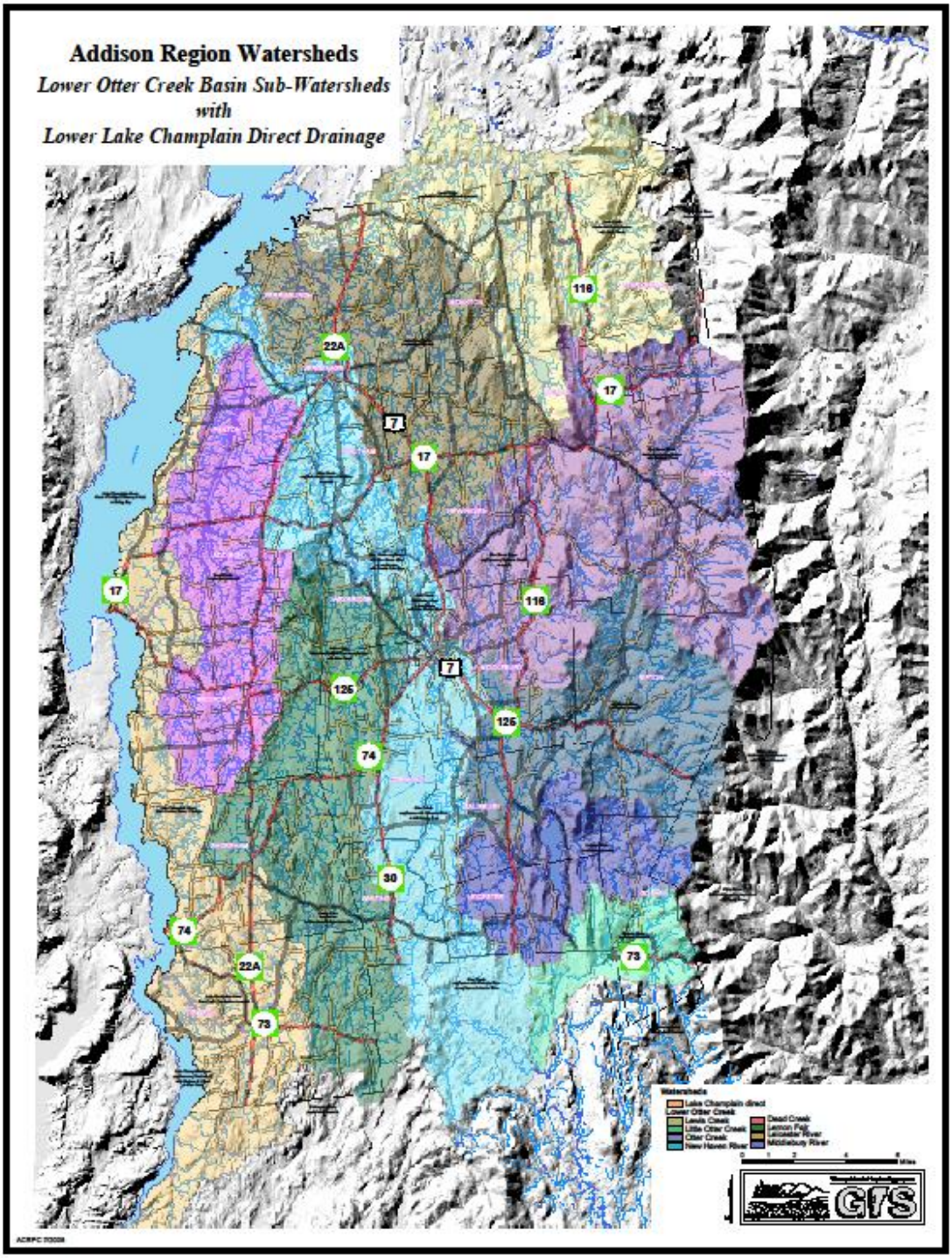
IN WITHNESS WHEREOF, the undersigned have affixed their signatures for the Town of Panton, this 10th day of January 2018.

Selectboard Chair | Selectboard Member | Selectboard Member

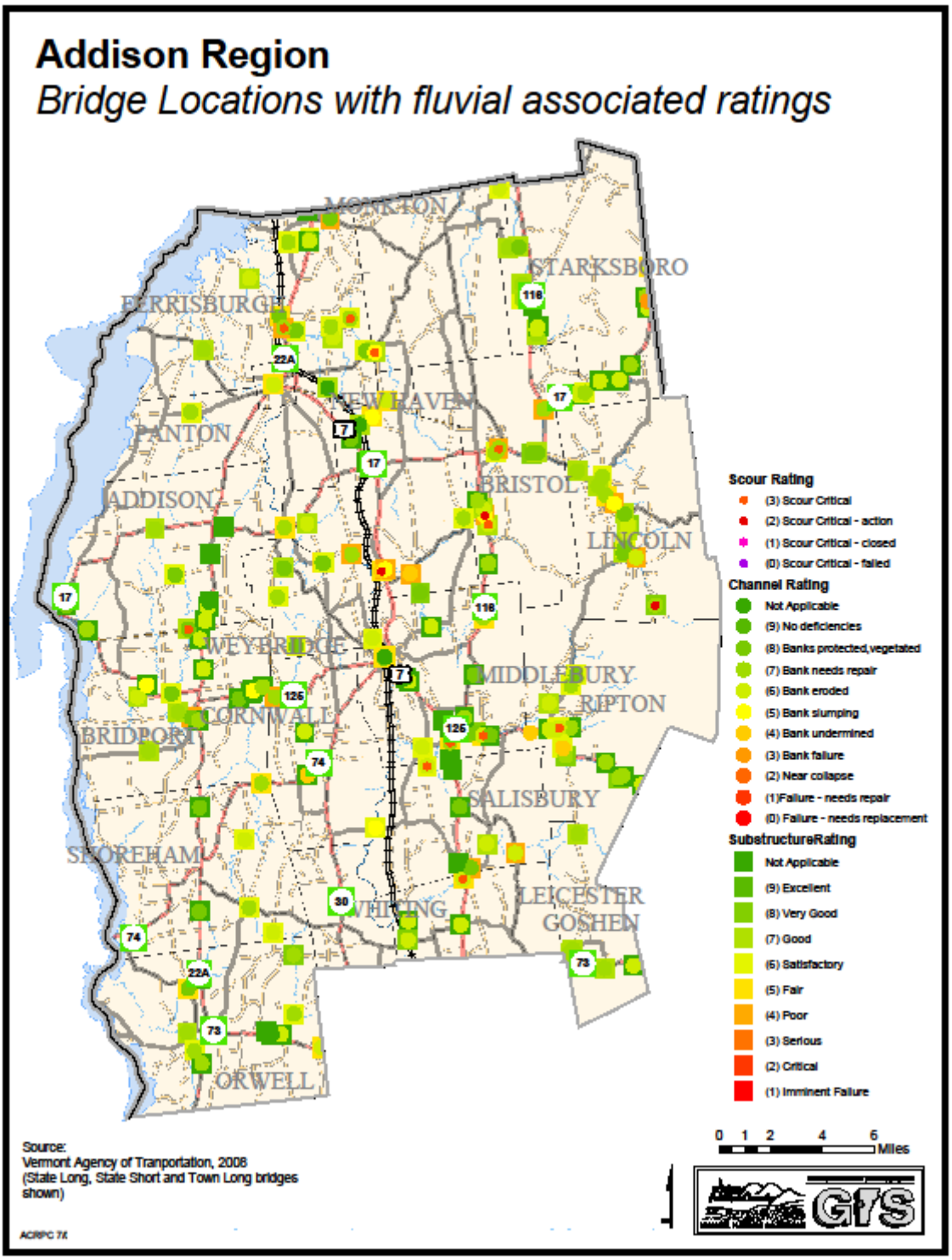
ATTEST: Pamela Correia
Town Clerk

Annex A - Regional Maps

Addison Region Watersheds



Addison Region



Annex B – Local Documents

Panton Road and Bridge Standards

January 23, 2013

TOWN ROAD AND BRIDGE STANDARDS
TOWN OF Panton, VERMONT

The Town of Panton 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 a15 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% ($^1/_4$" - $^1/_2$" per ft) crown for gravel roads and a 1-2% ($^1/_8$" - $^1/_4$" 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:

1

- 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 1:1½ 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 Barton **, State of Vermont on** 1/28 **, 2014.**

Select Board: _____

Certification of Compliance
for
Town Road and Bridge Standards
and
Network Inventory

We, the Legislative Body of the Municipality of Town of Panton certify that we have reviewed, understand and comply with the Town Road and Bridge Standards / Public Works Specifications and Standards passed and adopted by the Selectboard / City Council / Village Board of Trustees on _____, 20____.

We further certify that our adopted standards ☑do ☐do not meet or exceed the minimum requirements included in the January 23, 2013 VTrans template.

We further certify that we ☑do ☐do not have an up-to-date highway network inventory which identifies location, size, deficiencies/condition of roads, bridges, causeways, culverts and highway-related retaining walls on class 1, 2, and 3 town highways, and estimated cost of repair.

Date: 3/22/16

(Duly Authorized Administrator)

For a summary of your community's road and bridge information please visit: tinyurl.com/rdsinfo

Panton Commitment to Mitigation Planning

October
~~November~~ ___2013
Tim Bouton
Addison County Regional Planning Commission
14 Seminary Street
Middlebury, VT 05753

Dear Tim,

At its meeting on ~~November~~ October 22, 2013, the Selectboard of the Town of Panton voted to support the application of the Addison County Regional Planning Commission for planning funds from the FEMA Hazard Mitigation Grant Program (HMGP). The application, if funded, will support the development of a FEMA-approved Hazard Mitigation Plan for the Town of Panton.

Once completed, and approved by FEMA, the resultant plan will be adopted by the Selectboard as a single jurisdiction all hazards mitigation plan. We are looking forward working with you and fully support this effort to better provide for the safety of our residents into the future.

Yours,

John H. Vistcup, Chair, select board

For the Town of Panton, Selectboard

Panton re-affirmation of planning

Road Foreman Report –Descaling is being done on the frames of the equipment to remove the rust and then they will be painted.
The garage doors have been a big expense this year. The furnace has been out twice in the last couple of weeks due to the blower motor.
Nancy Morgan has inquired about Hawley Cemetery. John Viskup told her the road crew were going to cut the brush and would put up a fence this Spring.
The 2010 truck has been a problem. Rick Cloutier has gotten Charlesbois to warranty the emissions. He has not received a bill on the hydraulics which still has not been fixed. He is waiting to see what they will do for a pump. The cost of the pump is approximately $3500.
Financials were reviewed.

Tim Bouton/ACRPC/Hazard Mitigation Planning – Tim Bouton passed out a handout that addresses the Emergency Relief and Assistance Fund (ERAF). At a previous meeting, the Select Board had gone over the 4 things that needed to be done to receive the 12.5% from the State and addressed who would do what, with Tim Bouton assisting with the development of the Hazard Mitigation Plan. There is a 5th step that would increase the contribution to 17.5% total. Millie Archer has been called to find out more about 5 Protect River Corridors. Beth Tarollo asked Tim Bouton if this was something that he could help with. He said he was still trying to get information because here in Addison County we have the unique situation of having the Champlain Valley. Most of the river corridors that have been studied up until now come down out of the mountains. Once Dead Creek or even Otter Creek is reach through the Champlain Valley it is a different story. To Tim Bouton's knowledge the State has not developed these proposed river corridors. What they will do is identify a certain distance from the corridor (Creek). In Panton most residents do not exist in the flood plan but their backyards may abut the flood plan area of the Creeks. A Community Rating System (CRA) is being studied which would be another possibility. This would be to protect river corridors from new encroachment and/or protect flood hazard areas from new encroachment and participate in the FEMA CRA. Tim Bouton will assist in this last step. Sometimes what is done, is the width of the river/creek is used and multiplied by 3 and this distance is designated the flood plan area.
Tim's main focus at this meeting is to help navigate the Hazard Mitigation Plan. FEMA needs documentation of everything for their records. It needs to be documented that Panton is committed to establishing a Hazard Mitigation Plan.
John Viskup, Select Board Chair made a motion that the Selectboard of the Town of Panton is committed to mitigating natural hazards within our community and joins the Addison County Regional Planning Commission in creating a hazard mitigation plan for the Town of Panton. Beth Tarallo so moved. Wendy Knight 2nd. All approved.
The Select Board will need to appoint residents to serve on a Panton Hazard Mitigation Committee, which should consist of members of the Select Board, Road Foreman, Planning Commission, Emergency Manager, other Town Officer and interested citizens. Tim will put together a description of hazards that exist in the Town. The committee will then meet and go through the hazards and prioritizes what they feel is the most important and on down to least important. Then Tim Bouton will write about each of the hazards and past history which he will get from residents. The next step would be to identify a plan of what would be done to fix each of the hazards if there was no monetary constraint on doing the projects. If these projects are identified in the plan, even if they are expensive, because they were

Thank you for participating in our ongoing efforts to help Addison County communities prepare for natural and/or man-made emergencies. Because available funding sources often require non-federal matches to the dollars our region is receiving, we need to document your time and expenses in lieu of hard dollars. We appreciate the time and effort you are volunteering. Thanks for your assistance.

1. Incident Name (Meeting/Course)	2. Operational period Date: Time:	3. Check-In (Meeting/Course)Location	Check-In List ICS 211-P
Panton Haz Mit Mtg	6/7 10am	Panton Town Hall	

4. Name	5. Town or Agency	6. Position?	7. Volunteer? (Y/N)	8. Mileage? (to & from)	9. Hrs. contributed (include travel)
Howard Hall	Panton ~~Selectboard~~	Selectboard	Y		
Mary Rudd	Panton	Planning Commist	Y		
Tim Bouton	ACRPC				

Page _____ of _____

10. Prepared by: Date/Time

Initial Mitigation Committee Meeting Sign-in

Thank you for participating in our ongoing efforts to help Addison County communities prepare for natural and/or man-made emergencies. Because available funding sources often require non-federal matches to the dollars our region is receiving, we need to document your time and expenses in lieu of hard dollars. We appreciate the time and effort you are volunteering. Thanks for your assistance.

1. Incident Name (Meeting/Course)	2. Operational period Date: Time:	3. Check-In (Meeting/Course)Location	Check-In List ICS 211-P
Panton Haz Mit Mtg	7/26 10PM	Panton Town Hall	

4. Name	5. Town or Agency	6. Position?	7. Volunteer? (Y/N)	8. Mileage? (to & from)	9. Hrs. contributed (include travel)
Howard Hall	Panton	Selectboard	Y		
Mary Rudd	Panton	Planning Comm'n	Y		
Rick Clouture	Panton	Road Foreman	Y		
Tim Bouton	ACRPC		N		

Page _____ of _____	10. Prepared by:	Date/Time

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 pan 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 Opportunities

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.

- **Disaster Preparedness Improvement Grants.** Under the Disaster Preparedness Improvement Grants (Section 201 of the Stafford Act), FEMA provides up to 50% matching funds to states annually to improve or update their disaster assistance plans and capabilities. States can use these funds to: implement measures in a Hazard Mitigation Plan; develop pre-disaster Hazard Mitigation Plans; expand an existing Hazard Mitigation Plan; develop hazard specific annexes; or develop administrative plans for the implementation of the Hazard Mitigation Grant Program.

- **Hazard Mitigation Technical Assistance Program Contract.** HMTAP was established to provide FEMA with response capability for various post-disaster mitigation opportunities. The contractor has the capability to: (1) evaluate construction science techniques and practices, including build codes; (2) prepare environmental assessments or impact statements and historic preservation reviews

and assessments; (3) conduct biological assessments and surveys, (4) conduct surveys, assessments, and reviews of other areas of impact such as water quality and wetland delineation; (5) conduct benefit/cost, social science, and public administration assessments; (6) conduct post-event assessments to identify mitigation opportunities; (7) Provide post-disaster land surveying, mapping services and cost estimates using GIS, GPS, and remote sensing; (8) Perform floodplain analyses; (9) conduct hazard identification and risk assessment to confirm accuracy and specific actions or methodologies needed for disaster areas; (10) document estimated flood elevations to guide reconstruction and to compute flood frequency; and (11) provide training for benefit/cost analysis, retrofit options, the Hazard Mitigation Grant Program, and National Environmental Policy Act.

- **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 Individual Assistance Loss Prevention Program.** Available to provide eligible owner- occupants, who sustained damage and received Disaster Housing Minimal Repair Funds, the opportunity to participate in a voluntary program where additional 100% federal funds are made available to break the damage-rebuild-damage cycle and help homeowners reduce or eliminate losses from future weather-related damage.

- **The Individual and Family Grant (IFG) Minimization Program.** Available to provide IFG-eligible owner- occupants the opportunity to participate in a voluntary program where additional state and federal funds are made available to break the damage-rebuild-damage cycle, and help reduce or eliminate losses from future weather-related damage. In addition, FEMA's 800 series provides funding for low cost mitigation measures.

- **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 municipality's 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 Management 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 Lauren Oats the State Hazard Mitigation Officer (SHMO) and Stephanie Smith in the mitigation division.

Lastly, thanks to the volunteers from the Town of Panton who have spent countless hours living and working with these hazards.

Thank you for caring enough about your community to spend even more hours to bring that collective experience into this document.

Thank you to:

Howard Hall	Panton Selectboard/Planning Commission
Mary Rudd	Panton Planning Commission
Rick Clouture	Panton Road Foreman