Town of Ferrisburgh, Vermont

Single Jurisdiction All-Hazards Mitigation Plan

Final Plan Adopted:

FEMA Approval Date:

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1. Planning Process

1.1 Current Plan Development Process

The Town of Ferrisburgh 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 9/17/2013. At their meeting on 6/17/2014 they further showed their support of the plan by appointing the following residents of Ferrisburgh to a mitigation planning committee:

Steve Gutowski – Ferrisburgh Selectboard Co-Chair
Jim Warden – Ferrisburgh Selectboard
Ted Marcy – Interested Citizen
Laura Fall – Interested Citizen
Bill Wager – Ferrisburgh Fire Chief
Tim Davis – Regional Planning Commission Delegate
Annie Cohn – Ferrisburgh Planning Commission
John Bull – Ferrisburgh Road Foreman
Steve Fleming – Vergennes Area Rescue Squad

On 10/23/2013 a town-wide Open House was held at the Ferrisburgh Grange Hall to gather information and input from members of the community with an eye toward town planning and mitigation. The meeting was attended by 25 town residents. At this open house, residents were asked to provide input and locations of known hazard areas in town which were included in this plan. An initial draft single jurisdiction plan was prepared by staff of the Addison County Regional Planning Commission (ACRPC) and submitted to the committee on 9/11/2014.

The committee met 9/11/2014 to complete a hazards inventory and risk assessment matrix, review draft plan language, and to flesh out locations where hazards are known to the community. Following the 9/11/2014 meeting, a copy of the draft was placed for public comment in the Town Office along with a sign in sheet for comments. The committee met again on 10/27/2014 to complete their review of the draft plan and to identify potential mitigation projects associated with the hazards identified. The committee continued to make suggested changes via e-mail and met again on 1/28/2016 to confirm suggested revisions and corrections to the initial draft plan.

Input on the draft plan was requested from town residents during open meetings of the town Planning Commission and the Town Selectboard where copies of the draft plan were available for review. The town also made the plan available on its website www.ferrisburgh.org to reach a broader distribution.

Based on comments from the public process, the draft plan was further edited and forwarded to Vermont's State Hazard Mitigation Officer on 2/26/2016 for comments and preliminary approval. Comments were received from the SHMO's office on 7/1/2016. Changes to the draft plan were made to address shortcomings identified by the SHMO, a revised copy was returned to the SHMO on XXXXX and notice was sent to surrounding towns for their review on XXXXX. The draft plan received selectboard approval on XXXXX before being sent to FEMA reviewers. Comments were received back from FEMA reviewers on XXXXX.

Changes were made to the draft plan based on FEMA recommendations and an updated draft was completed on XXXXX. Upon completion of this draft, the plan was further circulated to the Town Selectboard and

hazard mitigation committee for approval prior to being returned to FEMA for Approval Pending Adoption (APA) status. Upon receipt of the FEMA APA, the resulting document was adopted by the Ferrisburgh Selectboard on XXXXX. The final adopted plan was then forwarded to FEMA Region I for approval which was received on __/__/____.

1.2 Opportunities for public comment **44CFR 201.6(b)(1) and 44 CFR 201.6(c)(1)**

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

- Hazard mitigation and hazard identification were included as a station at a Town of Ferrisburgh Planning Commission open house on 10/23/2013. (resulted in open discussion of hazards and their locations in the community)
- A planning committee was appointed from volunteers at an open meeting of the Town Selectboard on 6/17/2014.
- The plan was made available on the Town website http://www.ferrisburghvt.org for public comment while in draft form. (No comments received)
- A copy of the draft plan was made available for public comment at the Town Office on 9/11/2014 and 1/29/2016 with a comment sheet. (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 comments **44CFR 201.6(b)(2)**

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 February 2016 ACRPC full commission meeting as to its availability. No comments received.
- The February 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 for review and comment. No comments received.
- A copy of the draft plan was provided to the State Hazard Mitigation Officer for comments which were received on 7/1/2016.
- An updated copy was sent to DEMHS for submission to FEMA on ?????
- FEMA Region 1 staff was sent a draft for comment on ?????
- A copy of the draft plan was posted on the ACRPC website www.acrpc.org for regional review and notice was given during monthly meetings of ACRPC requesting input.
- The bordering town clerks of Addison, New Haven, Monkton, Charlotte and the City of Vergennes were notified via e-mail of the posting on XXXX. The clerks were requested to notify their Selectboard members and Planning Commission members, and post the notice in the town office in public view. The e-mail requests that comments be sent to Tim Bouton at ACRPC. No comments received.

1.4 Extent of review **44 CFR 201.6(b)(3)**

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

- 2015 Basic Emergency Operations Plan (previously identified high hazard and vulnerable sites)
- 2014 Ferrisburgh Town Plan Draft (support for the committee's prioritization process and section 2 narrative)
- 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)
- 2012 Report of the State Fire Marshall (provided data to inform structure and wild fire risks)
- www.fema.gov (provided official data on declared disasters)
- The Vermont Weather Book by David Ludlum (provided historic accounts of disasters for Section 4.3
- National Climatic Data Center website (provided information for Section 4.3)
- FEMA Snow Load Safety Guide (informed Section 4.3)
- Town of Ferrisburgh Flood Insurance Study from 9/18/1986 (informed Section 4.3
- FEMA FIRMS dated 9/18/1986 (incorporated into maps and section 4.3)
- VT Center for Geographic Information data layers (incorporated into map products)
- LEPC #8 Tier II reports (incorporated into Section 4.3)
- Town of Ferrisburgh Grand List for 2014 (utilized to determine value of identified properties)
- www.healthvermont.gov (incorporated transmissible disease information into section 4.3)
- State of Vermont dam inventory database (incorporated into section 4.3)
- Ferrisburgh Annual Town Reports 1980-2014 (informed FEMA reimbursements in table #1)

2. Community Background

The Town of Ferrisburgh, Vermont, comprises roughly 61 square miles or 39,000 acres of land in the Lake Champlain Valley. It is ranked as Vermont's ninth largest town in area. Like much of the Champlain Valley, the town's landscape is generally flat to rolling, with few hilly areas, some fine forestlands and extensive areas of excellent, productive agricultural soils. Ferrisburgh is well watered by the Lewis, Little Otter, Dead and Otter Creeks; it also has large areas of ecologically significant wetlands. Ferrisburgh enjoys the longest shoreline frontage of any Vermont town bordering Lake Champlain, 21 miles.

The busy, north-south U.S. Route 7 highway corridor bisects the town. The communities of Burlington and Middlebury lie roughly 15 miles north and south, respectively. Ferrisburgh has two village centers, both located along Route 7. Ferrisburgh, located at the junction of Rte 7, Middlebrook Road and Little Chicago Road includes the Ferrisburgh Central School, US Post Office and Town offices located in the newly reconstructed Ferrisburgh Grange Hall. North Ferrisburgh, located primarily east of the junction of Rte 7, Old Hollow Road and Stage Road is a small hamlet originally developed around the Lewis Creek in an area known as Ferrisburgh Hollow. US Route 7 and VT Route 22A meet north of the City of Vergennes and the tracks of the Vermont Railway pass through Ferrisburgh north/south and cross US Rte 7 east of the City of Vergennes. Route 7 generally divides the Town East/West. Ferrisburgh has seen a steady increase in population from 1960 until now which is at the current level of 2775.

Some Vermont towns have a clear single town center defined by a densely developed village, often around the village green, and scattered settlement in the rural land around. Other towns are compact hill or mountain towns constrained by topography. Many rural towns, like Ferrisburgh have several centers. Ferrisburgh's settlement pattern reflects the flat land and transport corridors used by early settlers. The swampy wetlands associated with the Otter, Little Otter and Lewis Creeks have tended to restrict settlement. Settlement patterns show regularly scattered houses on non-swampy land along the shores of Lake Champlain, at ferry landings, up the navigable rivers, and along the main north-south road (Route 7).

In Ferrisburgh, most homes are single-family wood structures. Ferrisburgh not only houses year-round residents, but it has a high number of seasonal 'camps', most notably along the shores of Lake Champlain. Of the 1211 dwelling units in Ferrisburgh, a little more than 25% are lakeside camps and nearly 5% are mobile homes. During the 2005 to 2011 period, an average of 7.6 new house permits were issued in each year. Of the 1,374 employed Ferrisburgh residents, 13% worked in town; 14% worked in Burlington; 10% in Vergennes and 12% in Middlebury. In many ways, the current land use patterns experience relatively slow change over time. The rate of new home construction has, in recent years, dropped significantly from previous levels while house renovations and property values, especially on the lake have continued to increase. Most of the town is still a mix of wetland, forest and active farmland and many more acres have been set aside in permanent conservation easements making it likely that the overall land use pattern will continue its present trend.

Electrical power is provided throughout Ferrisburgh by Green Mountain Power. The Vermont Electric Power Company (VELCO), a private corporation owned by the power companies in the state, owns most of the bulk power transmission system in Vermont, including a 115 kV electric transmission line that runs through Ferrisburgh on a south-north route between New Haven and Burlington.

Many town residents, especially in North Ferrisburgh, including Greenbush Road, rely on drilled wells. A map of wellheads is available in the Town Clerk's Office. Some groundwater wells produce water containing nuisance substances such as iron, manganese, hardness minerals, hydrogen sulfide gas and

sulfate reducing or iron fixing bacteria. Well yields vary from plentiful to extremely low and highly problematic.

Other residents rely on a mix of groundwater and surface water in wells that are relatively shallow dug wells or springs. Such wells are susceptible to natural contamination and pollutants such as leaking petroleum or industrial tanks, road salt, failing septic systems and agricultural chemicals.

About half of all residences in Ferrisburgh, if not more, receive their drinking water via several private lines from the Vergennes-Panton Water District. This is surface water, from Lake Champlain, piped into the pumping station in Arnolds Bay from a deep water intake located a quarter mile offshore, and then, after treatment, distributed via various private lines throughout the southern, western and central areas of Ferrisburgh.

The Addison County Sheriff's Department provides Civil Process for the entire county. The Vermont State Police provide service for motor vehicle regulation and criminal law enforcement. Ferrisburgh also funds a sheriff patrol contract which amounted to over $9,000 in the 2010-2011 fiscal year.

There is a dedicated group of volunteers in the Ferrisburgh Fire Department with equipment housed in the 1993 Firehouse on Route 7 north of the Center. The annual budget, including fire station maintenance, for the 2010-2011 fiscal year was set at about $57,000 and was set to increase to about $62,000 for the 2011-2012 fiscal year. In 2011 they responded to 50 calls, 5 of which were fire related and 19 of which were considered hazardous condition calls. Ferrisburgh also contracts with the Vergennes Fire Department for services and in the 2010-2011 fiscal year allocated just over $48,000 for contract and extra services.

The Vergennes Area Rescue Squad (VARS), a local non-profit organization responds to calls in Ferrisburgh. VARS bills for its services, receives additional funding from towns serviced, and accepts donations. In the 2010-2011 fiscal year VARS was allocated nearly $11,000 by the town.

There are no medical facilities in Ferrisburgh, but many doctors, nurses and dentists are available a short distance north or south of town. Addison County Home Health and Hospice can make home visits, and the Community Health Services of Addison County has an Open Door Clinic in Middlebury.

The Town has identified the local fire chief as its Emergency Manager and uses a Local Emergency Operations Plan (LEOP) to coordinate response to larger incidents. The LEOP identifies the Town Office and Fire Station as emergency operations centers and the school, and Fire Station as community shelters. The BEOP also identifies high hazard areas and vulnerable sites primarily based on Flooding, HAZMAT and likely transportation incidents.

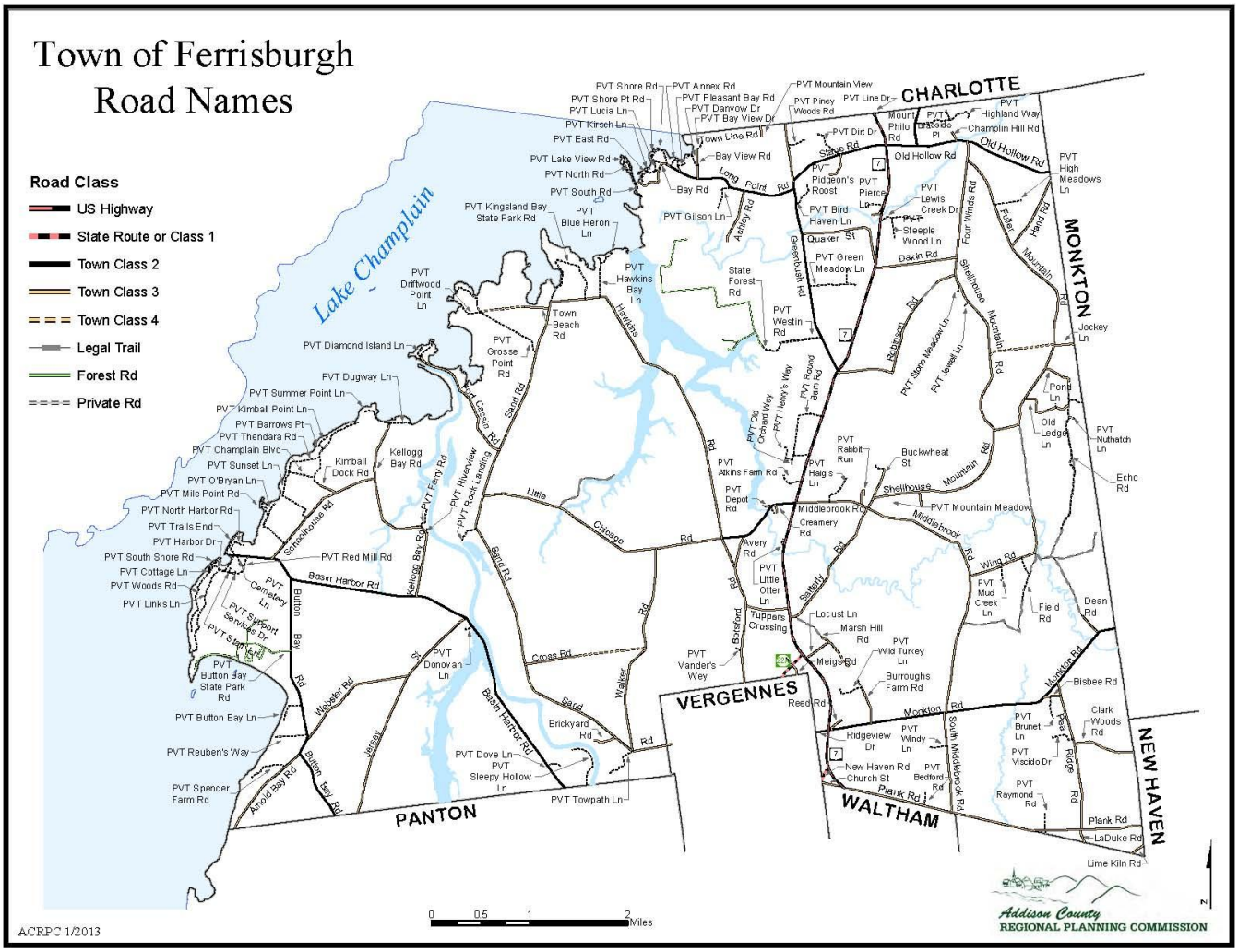
Ferrisburgh has its own Highway Department with a full-time Road Foreman and three additional employees. The department is responsible for summer maintenance, winter snow removal and maintenance, and reconstruction of town highway infrastructure. Ferrisburgh has a maintenance facility and various pieces of road maintenance and construction equipment.

Highway expenditures are the largest item within the town (non-school) budget. In the 2010-2011 fiscal year, this budget was approximately $799,000. About half of the budget pays for winter maintenance with small portions going toward bridge and highway construction.

The Town is a member of the National Flood Insurance Program and as such has adopted zoning by-laws designating Flood Hazard Areas including associated regulations for administering those areas. Fortunately, much of the mapped floodplain is associated with Lake Champlain flooding which backs up the Otter,

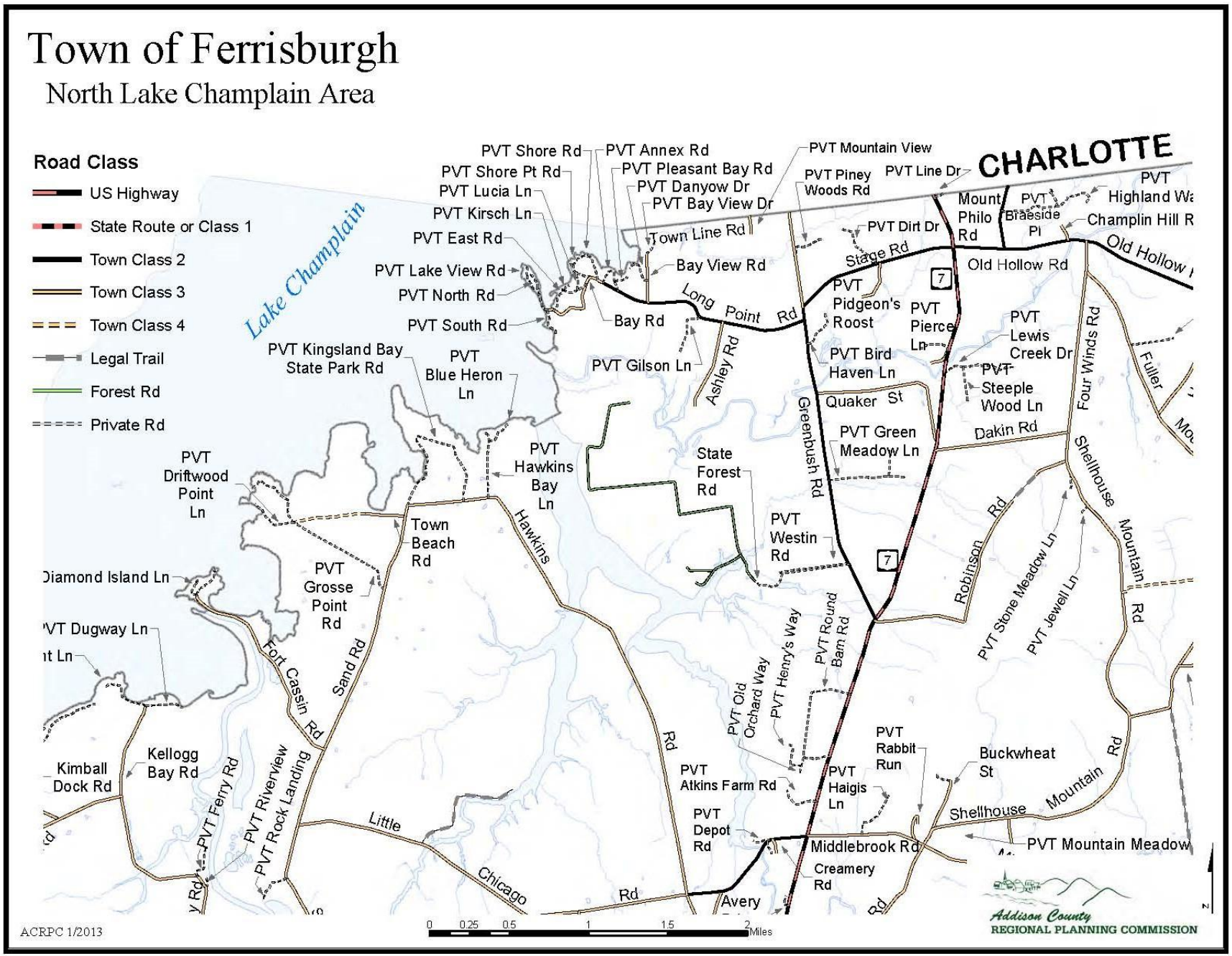
Lewis and Dead Creeks into wide floodplains. The frequency of Lake flooding has thus far discouraged development along these low lying areas due to difficulties in disposing of septage and the availability of alternate non-flooding sites in town.

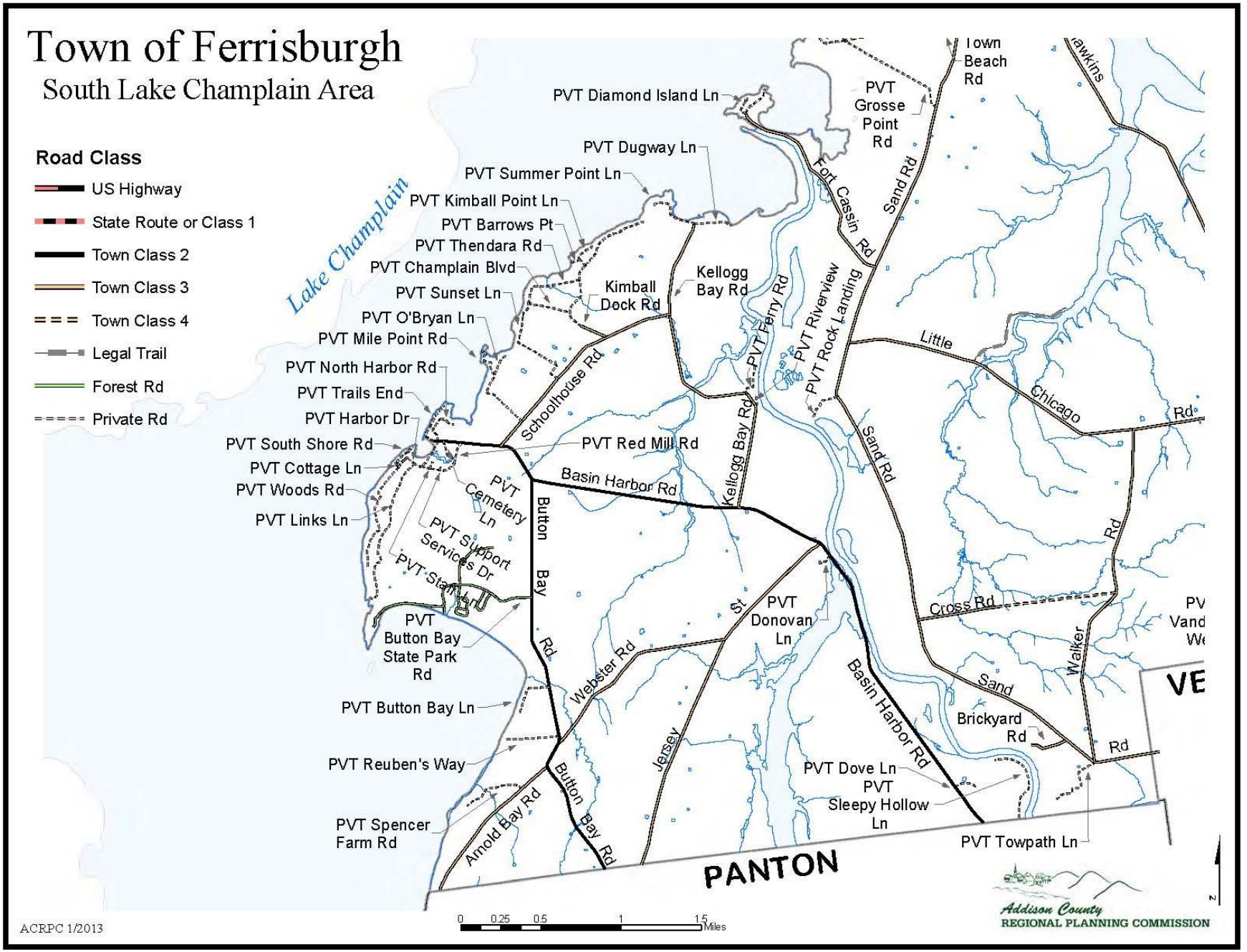
2.1 Local Maps

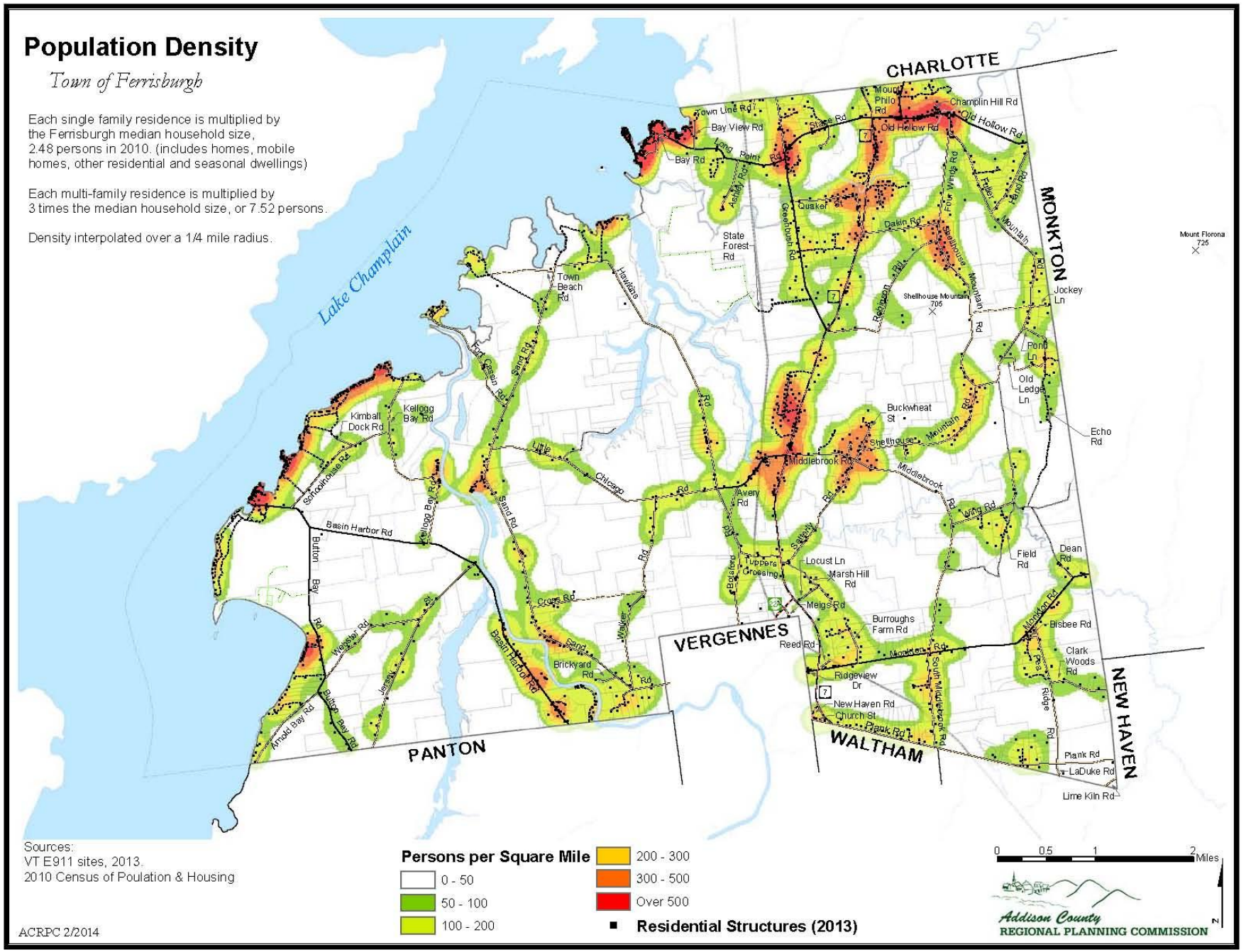


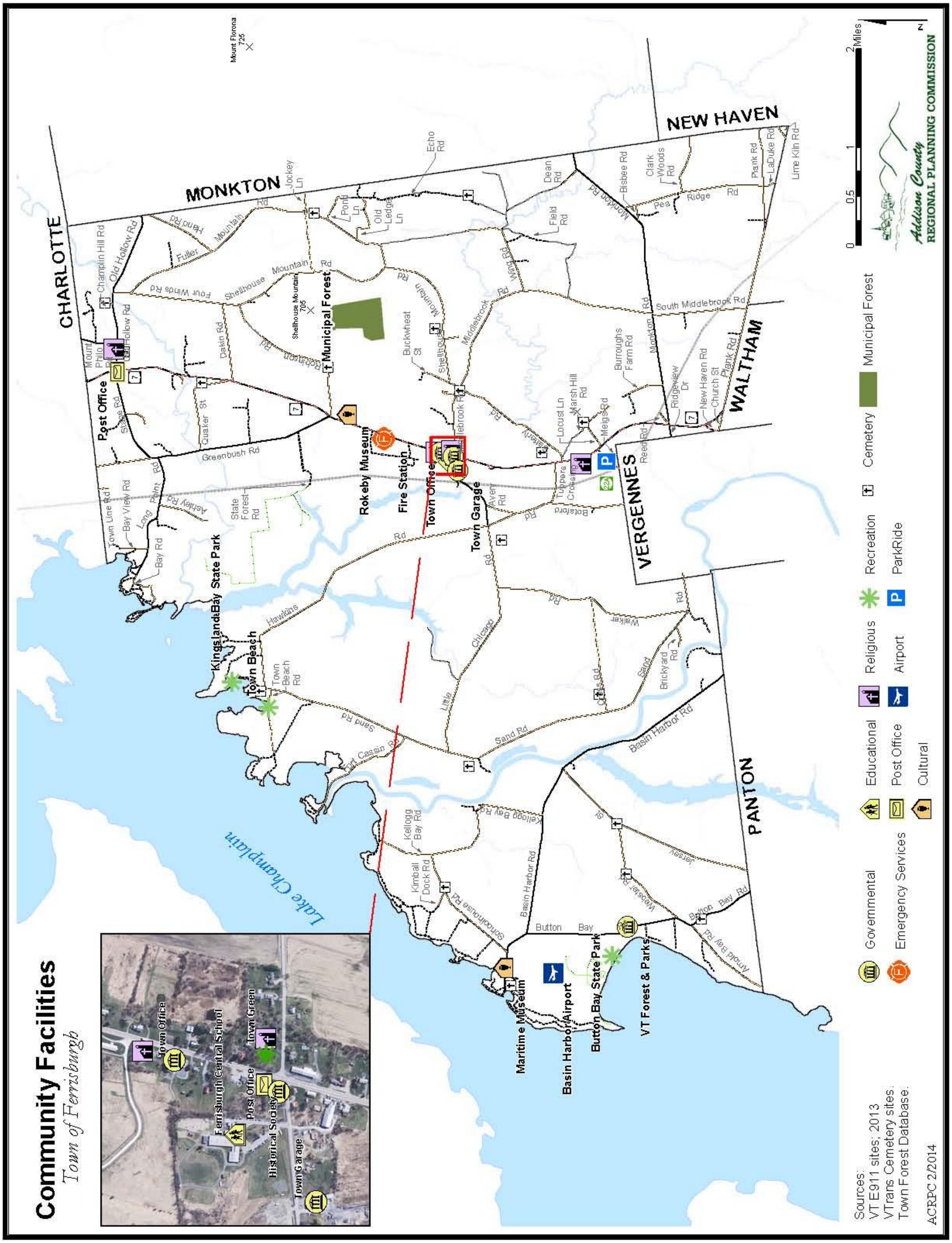
Town of Ferrisburgh

North Lake Champlain Area




Town of Ferrisburgh
South Lake Champlain Area
Road Class
US Highway
State Route or Class 1
Town Class 2
Town Class 3
Town Class 4
Legal Trail
Forest Rd
Private Rd
Lake Champlain
PVT Diamond Island Ln
PVT Dugway Ln
PVT Summer Point Ln
PVT Kimball Point Ln
PVT Barrows Pt
PVT Thendara Rd
PVT Champlain Blvd
PVT Sunset Ln
PVT O'Bryan Ln
PVT Mile Point Rd
PVT North Harbor Rd
PVT Trails End
PVT Harbor Dr
PVT South Shore Rd
PVT Cottage Ln
PVT Woods Rd
PVT Links Ln
PVT Cemetery Ln
PVT Support Services Dr
PVT Station Ln
PVT Button Bay State Park Rd
PVT Button Bay Ln
PVT Reuben's Way
PVT Spencer Farm Rd
Schoolhouse Rd
Kimball Dock Rd
Kellogg Bay Rd
PVT Red Mill Rd
Basin Harbor Rd
Button Bay Rd
Webster Rd
Arnold Bay Rd
Jersey St
PVT Donovan Ln
PVT Ferry Rd
PVT Riverview
PVT Rock Landing
Fort Cassin Rd
Sand Rd
PVT Grosse Point Rd
Town Beach Rd
Little Chicago Rd
Cross Rd
Walker Rd
Brickyard Rd
PVT Dove Ln
PVT Sleepy Hollow Ln
PVT Towpath Ln
PANTON
0 0.25 0.5 1 1.5 Miles
ACRPC 1/2013
Addison County
REGIONAL PLANNING COMMISSION


Population Density
Town of Ferrisburgh
Each single family residence is multiplied by the Ferrisburgh median household size, 2.48 persons in 2010. (includes homes, mobile homes, other residential and seasonal dwellings)
Each multi-family residence is multiplied by 3 times the median household size, or 7.52 persons.
Density interpolated over a 1/4 mile radius.
Lake Champlain
CHARLOTTE
MONKTON
VERGENNES
PANTON
WALTHAM
NEW HAVEN
Mount Florona 725
Shellhouse Mountain 705
Sources:
VT E911 sites, 2013.
2010 Census of Poulation & Housing
Persons per Square Mile
0 - 50
50 - 100
100 - 200
200 - 300
300 - 500
Over 500
Residential Structures (2013)
0 0.5 1 2 Miles
Addison County
REGIONAL PLANNING COMMISSION
ACRPC 2/2014



Community Facilities
Town of Ferrisburgh
CHARLOTTE
MONKTON
NEW HAVEN
WALTHAM
VERGENNES
PANTON
Lake Champlain
Post Office
Municipal Forest
Rokeby Museum
Fire Station
Town Office
Town Garage
Kingsland Bay State Park
Town Beach
Maritime Museum
Basin Harbor Airport
Button Bay State Park
VT Forest & Parks
Town Office
Town Green
Ferrisburgh Central School
Post Office
Historical Society
Town Garage
Governmental
Emergency Services
Educational
Post Office
Cultural
Religious
Airport
Recreation
ParkRide
Cemetery
Municipal Forest
Sources:
VT E911 sites; 2013
VTrans Cemetery sites.
Town Forest Database.
ACRPC 2/2014
Addison County
REGIONAL PLANNING COMMISSION
0 0.5 1 2 Miles

3 Existing Adopted Plans which support Hazard Mitigation

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

3.1 Ferrisburgh 2015 Local Emergency Operations Plan (Mitigation repairs identified)

- *Fort Cassin Road (Flooding)-Elevate with adequate pass-throughs*
- *Basin HarborRoad (Flooding) – Elevate with Armor*
- *Hawkins Road (Flooding) –Elevate*
- *Old Hollow Road (Ice Build-up/Flooding) – TBD*

3.2 Ferrisburgh Town Plan (Draft 2014) Goals that support Hazard Mitigation

- *To provide adequate and safe transportation facilities*
    1. *Maintain and improve town roads to high levels of safety, including increased pedestrian pathways and bicycle lanes where feasible.*
    2. *Work with the Agency of Transportation (AOT) to limit new highway accesses onto US Route 7.*
    3. *Work with AOT to ensure safety at road intersections, especially those that intersect with US Route 7.*
- *To plan to meet future needs for utilities, public facilities, and educational facilities.*
    4. *Support Ferrisburgh's Volunteer Fire Department and the Vergennes Area Rescue Squad.*

3.3 Ferrisburgh Town Plan (Draft 2014) Statements supporting Hazard Mitigation

- *Increased permanent residences, marinas and increased nutrient runoff all threaten wetland complexes. Wetlands have many important functions, including filtering pollutants, flood storage, providing habitat… It has been found that leaving wetlands intact and designing projects around them, rather than filling them in, or interrupting the wetland area with roads or culverts, is likely to be far more cost-effective over the long-term than trying to replicate the functions they provide elsewhere.*
- *Any development in flood hazard areas is not only a risk to itself, but has the potential to increase the severity of flooding downstream from its location. Flooding is a serious threat to public safety, structures and infrastructure, and the natural environment.*

3.4 Ferrisburgh Town Plan Policies which support Hazard Mitigation

- ***Floodplains, High Water Table and Stormwater Runoff***

1. Avoid development in flood hazard or flood prone areas, or those with regularly high water tables or hydric soils.
2. Ensure that all development permitted in floodplains, areas of high water table or hydric soils complies with all state and federal laws.

3. Continue Ferrisburgh's participation in the National Flood Insurance Program and maintain flood insurance maps.

4. Require adequate management of stormwater runoff from developed lands, parking areas, roads and driveways so that surface waters will not be negatively impacted by stormwater discharge.

5. Require that subdivisions provide an adequate stormwater drainage plan for the entire subdivision parcel.

- ***Streams, Headwaters and Shorelines***

1. Require a minimum 50-foot buffer of natural vegetation from the top of the banks of all streams, rivers and creeks.

2. Set all development along the Lake Champlain shore back at least 100 feet where feasible and require a buffer of natural vegetation be maintained along the shoreline.

3. Undertake a formal assessment of the effectiveness of buffers and develop further policies for riparian buffers.

4. Encourage further conservation of lands adjacent to surface waters.

5. Undertake road and bridge construction or repair in a manner that protects stream flow, reduces pollution from salt, herbicide and petroleum runoff and protects stream banks from erosion…

8. Recognize that bank stabilization is critical to preserve lakeshore character and reduce sedimentation and runoff carrying nutrients like phosphorus and pollutants into the lake; require development setbacks to prevent increased bank erosion and pollution; and consider use of site plan review for lakeshore district development proposals.

9. Support the continuation of and the participation by Ferrisburgh's landowners in programs sponsored by the Natural Resource Conservation Service to implement soil conservation and ecologically sound farm management practices.

- ***Wetlands***

2. Condition all filling of land, whether wetland or not, through a permit to prevent environmental damage.

3. Maintain a minimum 50-foot buffer of natural vegetation around all Class Two wetlands.

- ***Community Facilities and Services***

7. Work with the Volunteer fire Department and Rescue Services to maintain safety in town, including implementation of the 911 Emergency numbers.

8. Work with the state and county sheriff as needed for police services.

9. Develop a comprehensive town disaster plan in cooperation with appropriate state agencies, which include recommendations for town and homeowner preparedness and coordination of disaster management.

- ***Transportation***

1. Maintain an up-to-date inventory of roads, highway structures, bridges, buildings and

maintenance equipment to ensure that residents have a properly maintained highway system.

2. Limit the number of curb cuts when developing new roads or drives.

3. Support development of the Route 7 Corridor Management Plan by incorporating compatible access management provisions into the town's land use regulations.

4. Limit and control the number and location of access points onto state highways to ensure safety and the road's ability to serve projected increases in traffic.

5. Maintain safe sight distances for access to US Route 7 and other major intersections.

6. Work with the Agency of Transportation (AOT) to implement changes to US Route 7 in Ferrisburgh Center that will enhance the civic center of town and its associated school including: traffic calming, signalization of the Little Chicago Road intersection, road realignment of the four way crossroads, turning lanes, crosswalks and other appropriate techniques such as a roundabout on Route 7.

7. Work with AOT to implement changes to Route 7 at the intersections of Stage Road and Old Hollow Roads including: eliminating the large truck parking area associated with the Mobil Gas station that limits sight distance for traffic turning left onto Route 7 from Old Stage Road and from the Mobil station; signalization; and reduction of the speed limit in North Ferrisburgh.

8. Ask the Town Road Foreman, working with the AOT, to clearly identify intersections in town that are becoming potentially hazardous and begin to develop a long-term plan to maintain safety.

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

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

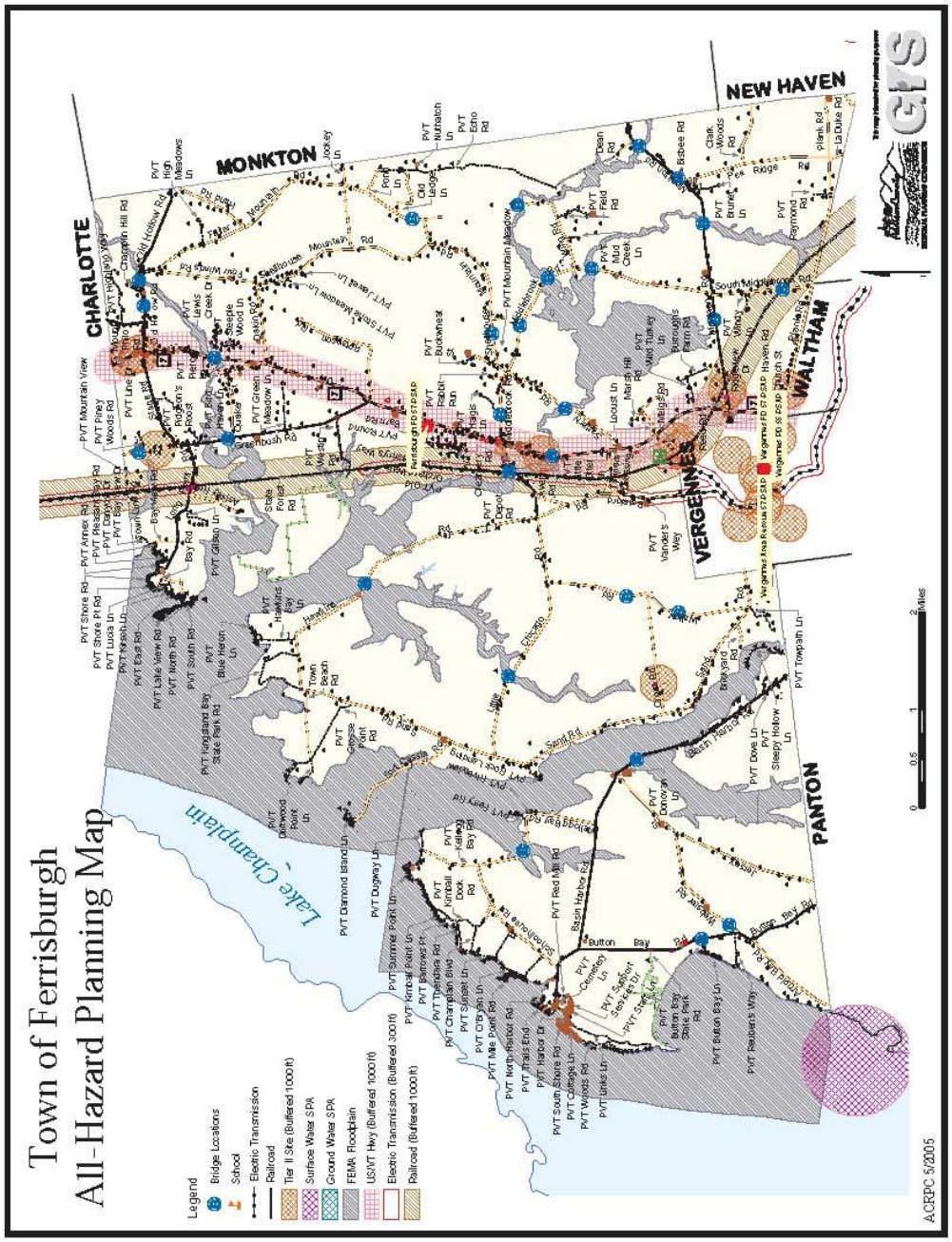
- *Encourage municipalities and landowners to consider VT Agency of Natural Resources riparian guidelines for habitat and flood protection.*

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

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

4. Community Risk Assessment

4.1 Ferrisburgh All-Hazards Planning Map



4.2 Risk Prioritization Results

The Town of Ferrisburgh's Hazard Mitigation Planning Committee reviewed the following hazards in its Hazard Inventory/Risk Assessment – Drought, Widespread Power Failure, Lake Flooding, Flash Floods, High Winds, Highway Accident/Hazardous Material Spill, Structure Fire, Wildfire, Winter Storm/Ice Storm, Earthquake, Rail Accident/Hazardous Materials Spill, Landslide, Dam Failure and Transmissible Illness. In review of these hazards, the committee decided to not evaluate Landslide as they could not identify any known landslide risk areas. In terms of overall vulnerability, the committee scored the

following hazards as their three highest: Transportation Accident/Hazardous Material Spill, Winter Storm/Ice Storm and Rail Accident/ Hazardous Material Spill.

Town of Ferrisburgh Risk Assessment

Hazard Type	Probability	Warning	Geographic Impacts	Property Damage	Vulnerability
Drought	2	1	1	1	5 – (1)
Widespread Power Failure	2	4	2	2	10 – (2)
Flash Flood	3	1	1	1	6 – (1)
High Winds	3	2	2	2	9 – (2)
Lake Flooding	3	1	1	2	7 – (1)
Lightning Strike	3	3	1	1	8 - (1)
Highway HazMat Accident	3	4	2	3	12 – (3)
Structure Fire	4	4	1	1	10 – (2)
Wildfire	3	1	1	1	6 – (1)
Winter Storm/Ice Storm	4	1	4	2	11 – (3)
Earthquake	3	4	1	1	9 – (2)
Transmissible Illness	2	1	2	3	8 – (1)
Rail HazMat Accident	3	4	2	3	12 – (3)
Dam Failure	1	2	1	2	6 – (3)

Probability: Frequency of Occurrence

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

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

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

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

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

Property Damage: Severity of damages and disruption

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

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

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

Declared Disasters by County 2003-2013

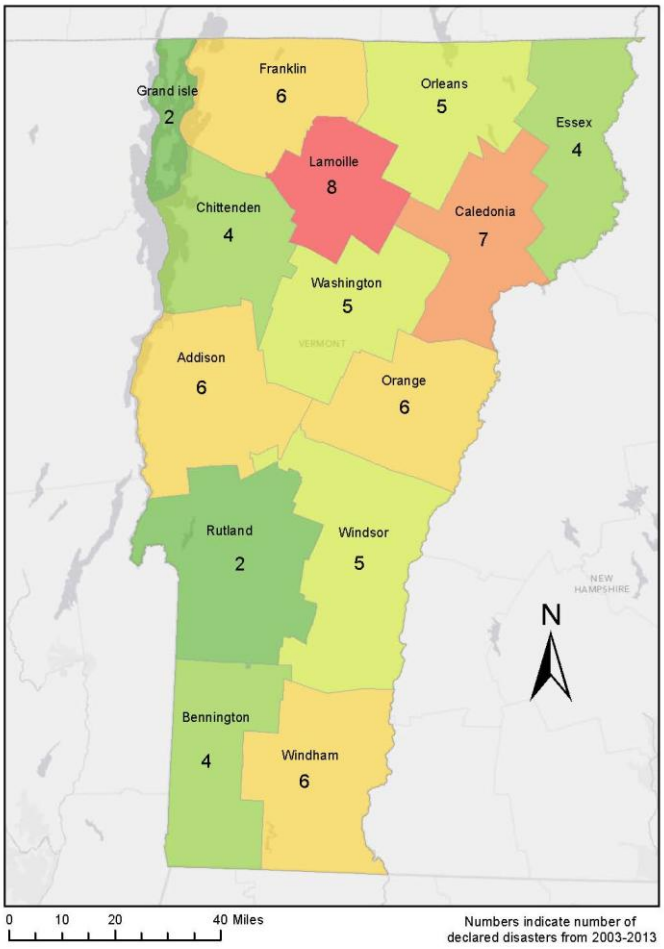


Table #1: Federally declared disasters affecting Addison County

Year	Date	Description	Dec. #	County Cost	Ferrisburgh
1973	7/6/1973	Severe Storms, Flooding, Landslides	DR397	$ Unavailable	$ Unavailable
1976	8/5/1976	Severe Storms, High Winds, Flooding	DR518	$ Unavailable	$ Unavailable
1977	9/6/1977	Drought	EM3053	$ Unavailable	$ Unavailable
1989	8/4-5/1989	Severe Storms, Flooding	DR840	$ 31,033	$ Unavailable
1993	4/24-5/26/1993	Flooding, Heavy Rain, Snowfall	DR990	$ 17,639	$ Unavailable
1996	1/19-2/2/1996	Storms, Flooding	DR1101	$ 130,529	$ Unavailable
1998	1/6-16/1998	Ice Storms	DR1201	$ 662,388	$ Unavailable
1998	7/17-8/17/1998	Severe Storms and Flooding	DR1228	$2,146,484	$ Unavailable
2000	7/14-18/2000	Severe Storms and Flooding	DR1336	$ 744,075	$ 10,687.00
2001	3/5-7/2001	Snowstorm	EM3167	$ Unavailable	$ 8,395.00
2004	8/12-9/12/2004	Severe Storms and Flooding	DR1559	$ 365,661	$ Unavailable
2008	6/14-17/2008	Severe Storms and Flooding	DR1778	$ 486,850	$ Unavailable
2008	7/21-8/12/2008	Severe Storms and Flooding	DR1790	$ 438,900	$ 67,000.00
2011	4/23-5/9/2011	Severe Storms and Flooding	DR1995	$ Unavailable	$ 201,111.85
2011	8/26-9/2/2011	Hurricane Irene	EM3338	$ Unavailable	$ Unavailable
2011	8/27-9/2/2011	Tropical Storm Irene	DR4022	$ Unavailable	$ Unavailable
2012	5/29/2012	Severe Storm, Tornado and Flooding	DR4066	$ Unavailable	$ Unavailable
2014	12/9-12/13/2014	Severe Winter Storm	DR4207	$ Unavailable	
2015	6/9/2015	Severe Storm and Flooding	DR4232	$ Unavailable	

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 Ferrisburgh Hazard Mitigation Committee as shown in their risk assessment. The Town of Ferrisburgh Risk Assessment is a visual representation of that evaluation process for the Town of Ferrisburgh. For purposes of mitigation planning, both highway and rail hazardous materials spills were considered as one hazard since they share common vulnerabilities and risks. 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 vulnerability described first.

- **Hazardous Materials/ Highway & Rail Transport Accidents** – (Risk Score 12)

  Fixed Facility HazMat Spill/Release
  Location: There are 6 sites in town that have sufficient types and/or quantities of hazardous materials to require Tier II reporting.

• J. A. Devos & Sons	2263 Greenbush Rd.	Diesel Fuel
• Fairpoint Vergennes (Ferrisburgh)	273 Monkton Rd.	Lead/Acid Batteries
• Ferrisburgh Plant (Blue Flame Gas)	7114 Rte#7	Propane, Methanol
• S.B. Collins Inc. Ferrisburgh Short Stop	6973 Route #7	Gasoline
• VELCO N. Ferrisburgh Substation	450 Long Point Rd.	Battery Acid, Sulfur Hexafluoride
• Verizon Wireless Ferrisburgh	Route #7	Sulfuric Acid
• Verizon Wireless Basin Harbor	1117 Schoolhouse Rd	Sulfuric Acid

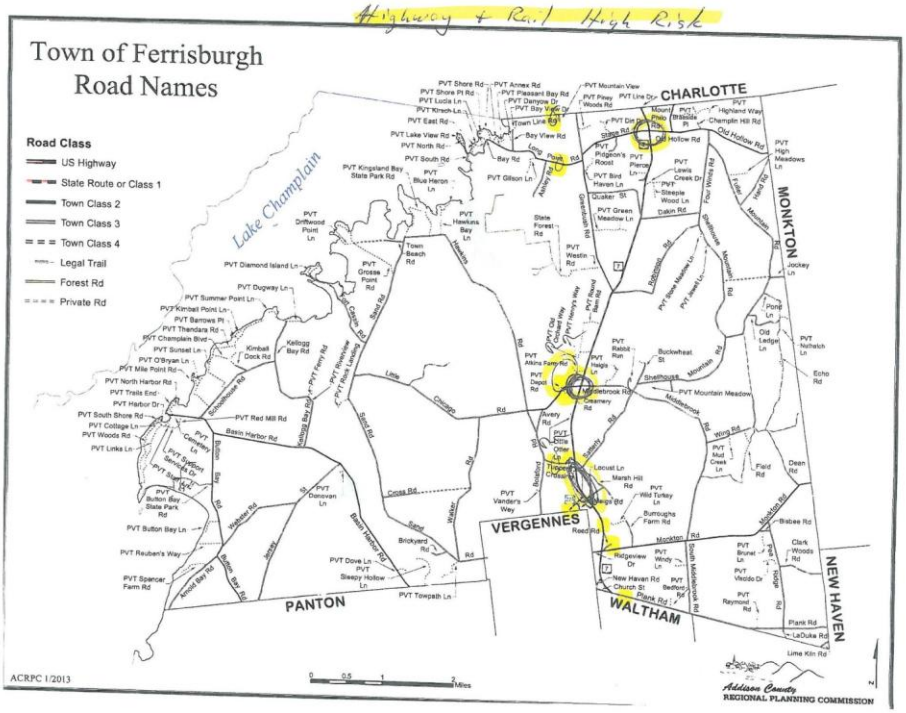
Extent: Based on the recommended Public Safety evacuation distance from the 2012 Emergency Response Guidebook, a 1000-foot circle has been drawn around those sites. Structures inside the circle are those that may need to be evacuated if an incident were to occur.

Of the approximately 1262 buildings (E911 locations) in Ferrisburgh, there are 80 residential, 22 commercial facilities, 1 Industrial facility, 2 cultural facilities, 1 educational facility, and 3 government facilities, or 9% of the structures in town that might be impacted based on this 1000 foot hazard circle.

Previous Occurrences: Minor spills of petroleum products are a regular occurrence at gas stations such as S.B. Collins Inc. in North Ferrisburgh. On rare occasion, low levels of propane are detected at the Blue Flame Gas plant usually released during the transfer process.

Future Probability: Prices of propane have risen to levels that drive customers to alternative fuels for heating such as natural gas or electric heat pumps. This may impact the amount of propane stored and transferred at the Blue Flame Gas facility in North Ferrisburgh. Increased numbers of vehicles on Rte #7 will drive an increased number of gas stations. These, in turn, increase the probability of fuel spills in the future.

Vulnerability Summary: Were there to be a large-scale release of propane from the Blue Flame Gas plant, gas could migrate into low lying areas, including the hamlet of North Ferrisburg and ignition could result in a severe explosion, destroying homes and businesses. If a large-scale leak of hydrochloric acid from the substation or phone facilities were to occur, there would be a health risk to persons in the immediate area of the plume. Hydrochloric acid could also contaminate soils, groundwater, and equipment. Fuels stored at gas stations and at the DeVoss Trucking facility, if spilled, could result in an immediate fire risk or long term environmental contamination.



High Accident risk locations identified by the Ferrisburgh Hazard Mitigation Committee

HazMat Transport Spill/Release

Location: The Town recognizes certain locations along town and state highways are high crash locations(HCL). Three HCLs have been identified in the Town of Ferrisburgh through police and VTrans reports:

From 2003-2007:

- 24 reported accidents at the intersection of Rte #7/ Hollow Road and Stage Road.
- 11 accidents reported between the intersection of Rte #7/Monkton Road and the VT Railway Crossing of Rte #7 to the north.

From 2006-2010:

- 5 accidents were reported on Monkton Road at the eastern border of town.

In addition to these known HALs, the town is host to the Vermont Railway which has rail crossings in 9 locations, 8 of which are at-grade crossings:

- Plank Road
- Monkton Road
- Reed Road
- Route #7
- Kayhart Crossing (Overhead Crossing)
- Tuppers Crossing
- Little Chicago Road
- Long Point Road
- Town Line Road

Extent: Along Rte 7 and other class I and II roads, there 265 structures that could be impacted should an incident with a vehicle carrying HAZMAT occur.

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

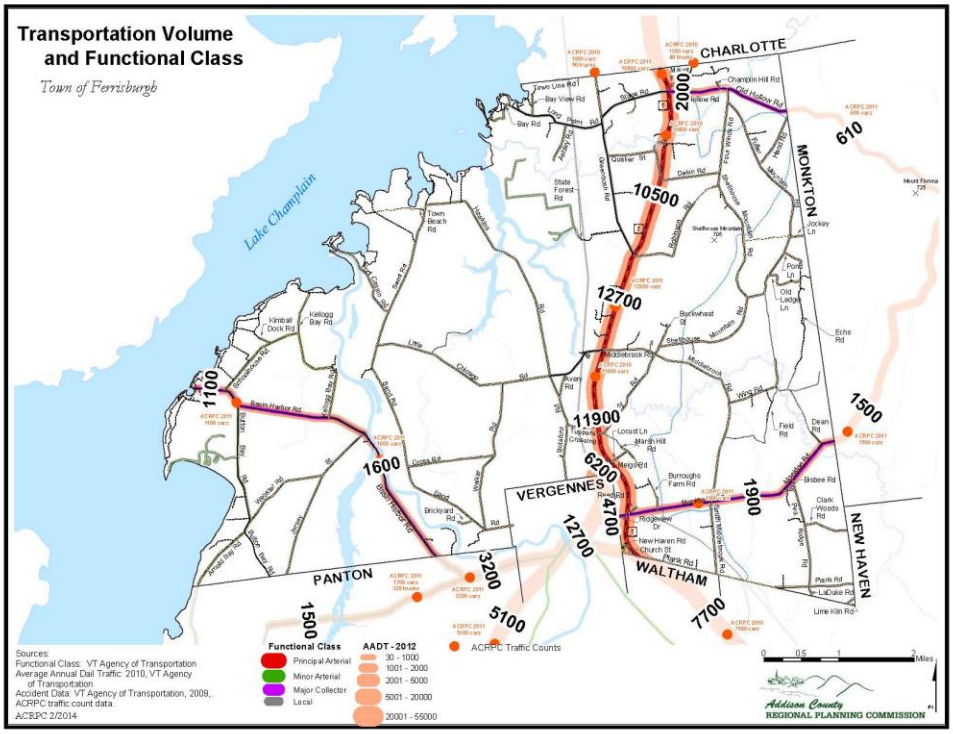
- Ferrisburgh Town Hall/Office
- Ferrisburgh Town Garage
- Ferrisburgh Fire Station
- Ferrisburgh Elementary School
- VELCO Substation

Along the path of the railroad, 31 structures could be impacted were there to be a significant spill of a hazardous substance along the rail line. The Ferrisburgh Central School lies close enough to the rail line that they have identified a spill along the tracks as an important emergency planning scenario.

Previous Occurrences: Committee members were unable to identify any recent accidents involving release of large quantities of hazardous materials but were quick to point out a 2007 derailment of gasoline tank cars in nearby Middlebury. That derailment involved 14 tank cars full of gasoline and was caused by a weak rail.

Another incident, also in nearby Middlebury, saw a tanker full of milk roll onto its side and spill hundreds of gallons of milk. This spill was a success story only because the product was not

flammable. The Town of Ferrisburgh hosts similar hazards every day on rails and highways in the community.



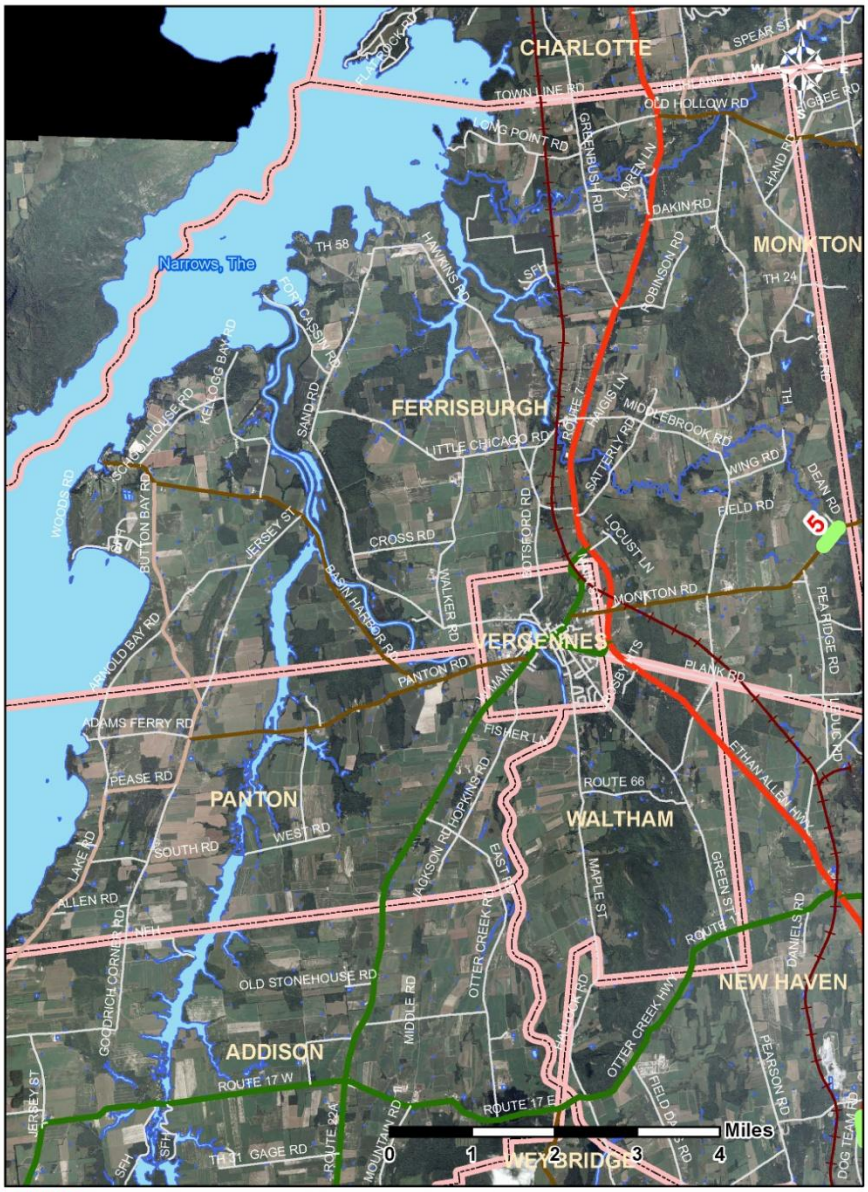
Transportation volume on main roads in Ferrisburgh

Future Probability: As traffic continues to increase along Route #7, accidents are also likely to increase. Increased congestion along the Route #7 corridor also drives an increase in traffic along the Vermont Railway. Many of the rail crossings are in relatively isolated areas, however, increased traffic along town highways as well as along the rails increases the liklihood of accidents at these locations in the future.

Vulnerability Summary: Route #7 is the primary north/south route on the western side of the state and trucks carry a mix of hazardous materials through Ferrisburgh along this highway. Recent commodity flow studies conducted by the Addison County LEPC, indicate that between 5% and 10% of trucks travelling Route #7 through Ferrisburgh are carrying hazardous cargo. Of these, approximately 65% are carrying flammable liquids with the remainder split among a number of other products. The study also showed that there is a train with 15 tank cars of fuel travelling through Ferrisburgh on a daily basis.

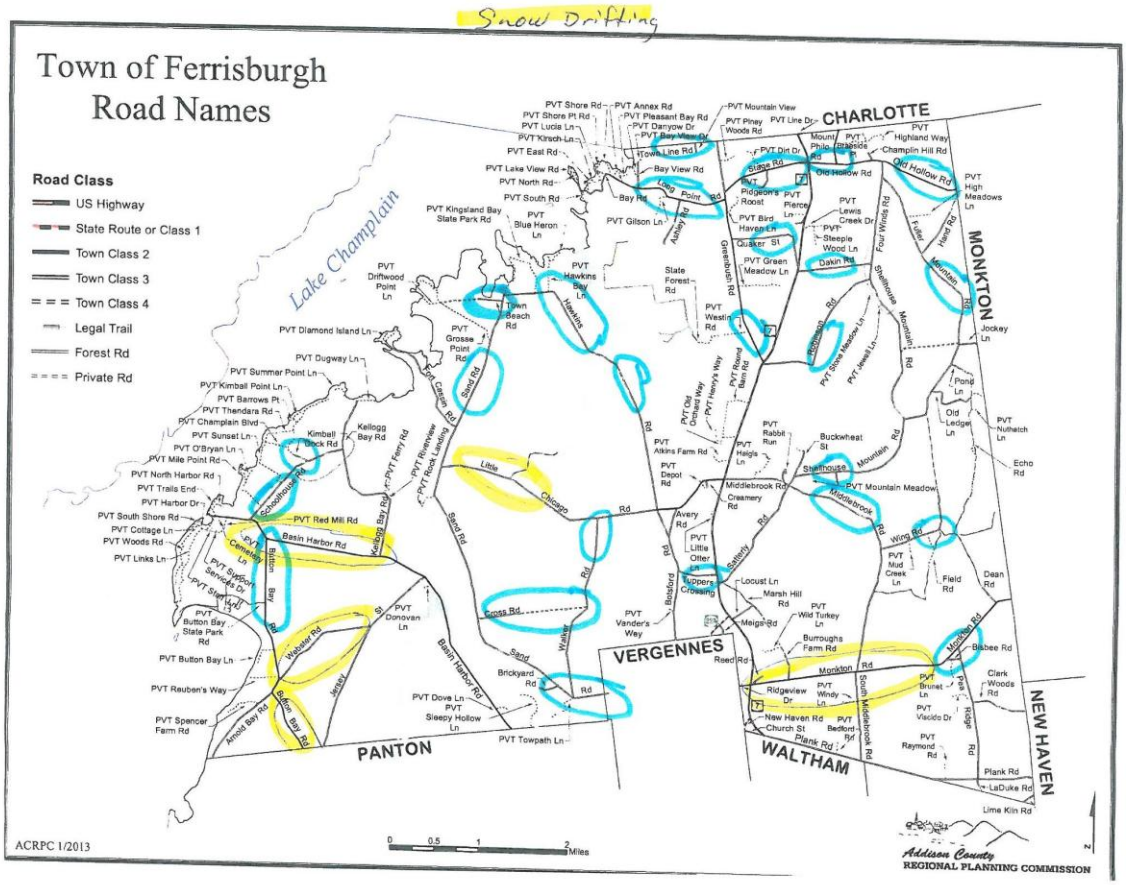
The community vulnerability score of 3 for a Hazardous Materials/Transportation incident indicates this hazard would be considered a HIGH PRIORITY for mitigation planning in the Town of Ferrisburgh.

Ferrisburgh, Vergennes, Waltham & Panton ~ High Crash Locations
2006-2010



* Labels ~ indicate "Total Number of Crashes" within the 5-year period

- **<u>Winter Storm/Ice Storm</u>** – (Risk Score 11)
  Location: Severe winter storms are common throughout Vermont and can occur geographically in any part of Ferrisburgh. As in much of the Champlain Valley, the prevailing winds are either from the south or the north. Due to these winds, blowing and drifting snow impacts east/west roads the most.



Snow Problem Areas Identified by the Ferrisburgh Hazard Mitigation Committee

Extent: The National Climatic Data Center (NCDC) measures snowfall based on its overall societal impacts. Both the Regional Snowfall Index (RSI) and the Northeast Snowfall Impact Scale (NESIS) use population affected to determine the overall impact of a storm. Unfortunately, in rural Vermont, neither scale effectively captures the impact to many Vermont residents. A storm which dumps 6" of snow in a swath between NYC and Boston is considered to have had a higher impact than a 36"+ snowfall covering the Adirondacks in New York and the Green Mountains of Vermont due to the lesser number of people affected.

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

The highest recorded snowfalls in Burlington, a city 15 miles north of Ferrisburgh give the best approximation of what the snowfall may have been in Ferrisburgh at the same time. A full 50% of these storms has hit in the past 25 years with the remaining 50% in the previous 91 years.

Construction standards for snow load (see map) indicate that structures in the Town of Ferrisburgh should be built to withstand loads of 40 pounds per square foot. Using an average weight for snow at 1 lb./sqft. and of ice at 4.75/sqft, this would indicate an average depth of snow of 40 inches and/or 8.5 inches of ice on a square foot of roof surface before design standards would be exceeded

and the structure runs the risk of collapse. Given this standard, a snowstorm which dumped 40 inches of snow or 8.5 inches of ice would likely result in a few collapsed roofs, especially on structures which are not built to these standards. No storms in the past 116 years have exceeded that standard.

Burlington, Vermont Top 10 Greatest Snowstorms
Rank Snowfall Dates Month/Year

Rank	Snowfall	Dates	Month/Year
1	33.1 inches	2-3	January 2010
2	29.8 inches	25-28	December 1969
3	25.8 inches	6-7	March 2011
4	25.7 inches	14-15	February 2007
5	24.7 inches	13-14	January 1934
6	22.9 inches	5-6	March 2001
7	22.4 inches	13-14	March 1993
8	20.0 inches	25	November 1900
9	19.7 inches	25-28	January 1986
10	19.1 inches	16-17	March 1937

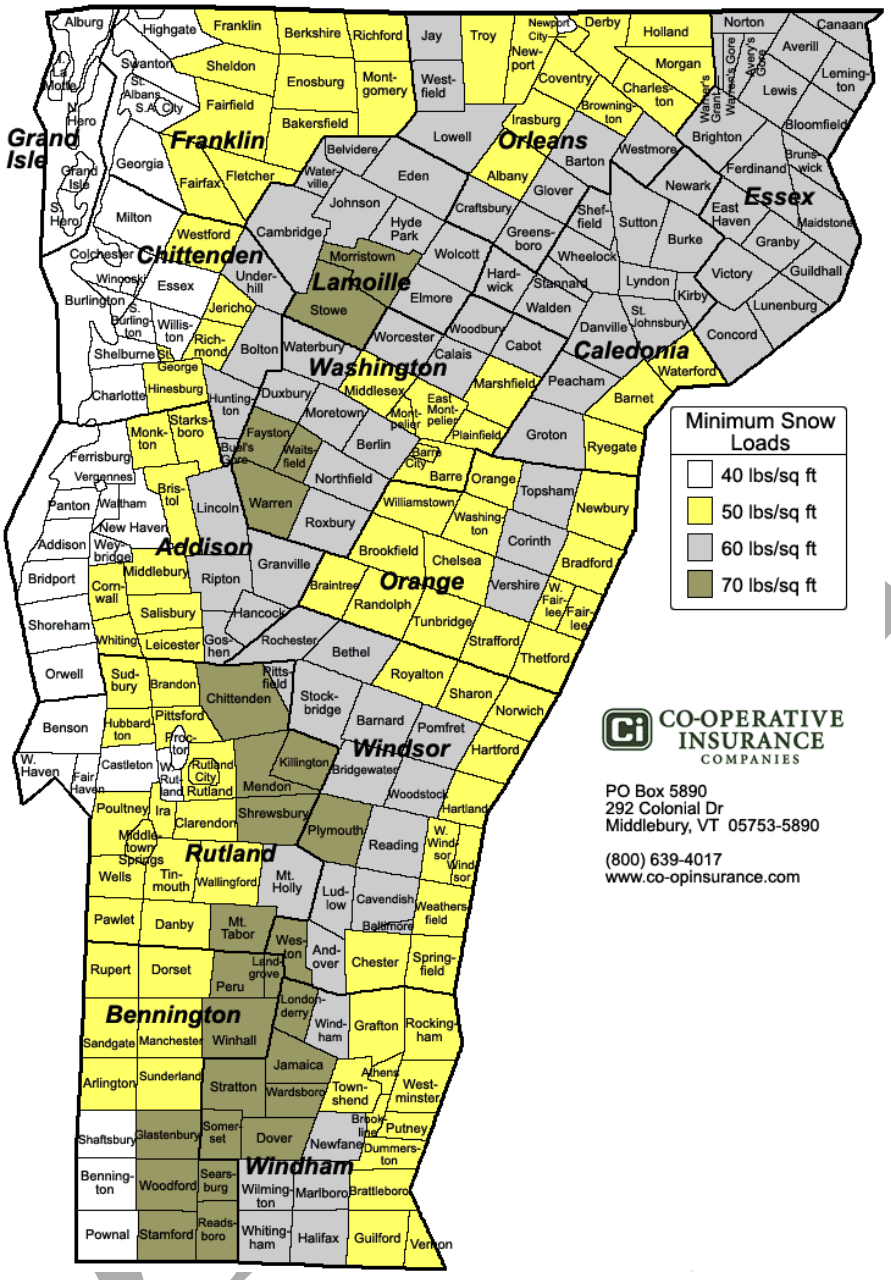
Previous Occurrences: The National Climatic Data Center reports that the Addison Region has experienced 2 major Ice Storm events over the past 25 years. The highest recorded damages were incurred during the 1998 Ice Storm which impacted most of the northeastern US and resulted in $750,000 in damages to Addison County properties. The Town of Ferrisburgh was not spared from this storm and received over $40,000 in FEMA reimbursements to assist in clean up efforts. During the 25 year period an estimated $850,000 in total property damages were recorded in the region.

The major impacts within the Town of Ferrisburgh are generally limited to residents impacted by loss of power and the occasional downed tree or branches in the road.

Three of the four highest snowfalls on record occurred in the past 10 years. During that period an estimated $1,743,000 in property damages and $10,000 in crop damages were incurred. Significant storms occurring around identifiable calendar dates tend to be informally known by that date.

In March of 2001, the so-called “Town Meeting Day” snow event caused reduced ability for residents to travel to the voting booth due to hazardous conditions. Attendance at the Ferrisburgh town meeting was so limited due to the storm that the meeting was recessed and rescheduled for a week later. Some of the additional costs of keeping roads open on voting day $8,395 were reimbursed through State and Federal assistance.

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



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

Future Probability: The number and severity of winter storms have been increasing since the 1980's. If the current trend continues, it is likely there will be a continued increase in severe winter storms that will impact the Town of Ferrisburgh in the future.

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

As population growth and housing expands along remote road corridors, increasing dependency on local roads by the new homeowners requires changes in winter maintenance. The town has, thus far, been able to keep up with those increased demands on its services through additional hires and equipment purchases.

Without that preparedness level and with a community vulnerability score of 3, Winter Storm/Ice Storm would be considered HIGH PRIORITY based on the highly likely occurrence and the high portion of the community impacted.

- **Power Failure (Widespread)**– (Risk Score 10)

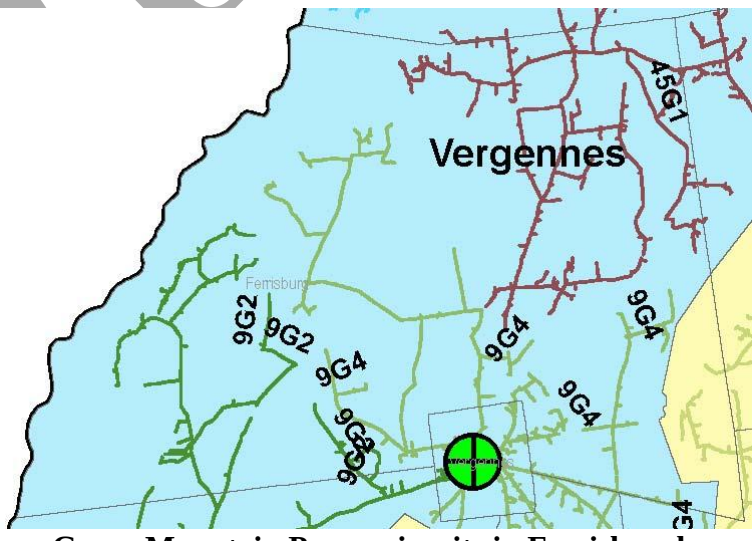
Location: Based on local knowledge, widespread power outages are a common yet relatively low impact event throughout the Town of Ferrisburgh. These failures could come at any time of the year.

Extent: The Town of Ferrisburgh is served via three primary trunk lines Two of these originate in bordering Vergennes and one accesses its power via the Ferrisburgh substation. Each of these lines serves about 1/3 of the land area of Ferrisburgh.

- West of Otter Creek – Vergennes (highest impacts to summer residents)
- Central Ferrisburgh – Vergennes (includes town offices and school)
- Northeast Ferrisburgh – Ferrisburgh (includes North Ferrisburgh and surrounds)

The Ferrisburgh substation is regionally significant and lies next to the railroad tracks at 450 Long Point Road. A catastrophic failure of this substation would cause a regional power outage. Depending on the cause of the failure, such a widespread outage could last for days or even weeks, in the case of either a failing national grid or downed power lines throughout the northeast.

Previous Occurrences: Widespread outages have been common through much of the past 50 years with limited overall impact to the community. However, in 1998 a severe ice storm hit northern Vermont and much of the Addison region. No community in the region was spared damage associated with downed power lines. Power outages continued for several days as remote power lines originally laid out by Rural Electrification in the 1930s and 1940s were accessed by off-road vehicles. In December 2014 a power outage of several days duration impacted much of Vermont including the Town of Ferrisburgh. These outages resulted in DR4207.



Green Mountain Power circuits in Ferrisburgh

Future Probability: Subsequent to the ice storm of 1998, power companies re-routed many remote lines onto town highway rights of way and increased annual pruning efforts. Frequency of occurrence and length of outage duration have been reduced thereby also reducing the overall impact impacts to residents. If these and similar efforts continue, a reasonable person would predict fewer power outages of shorter duration. DR4207 would indicate that there is still work to be done in some areas. Eventually, the effect of these improvements to infrastructure may be cancelled out by the general increase in the types of storms which lead to power outages.

Vulnerability Summary: During summer months, localized power outages caused by severe summer storms mostly cause inconveniences to residents unless extended outages impact a family's frozen food supply or their ability to pump water from wells. Many of the summer cottages lining Lake Champlain are marginally more susceptible to summer power outages than other areas of Ferrisburgh because they are at the ends of service lines. Extended outages during winter months coupled with extreme cold have periodically resulted in more extensive damage associated with freezing pipes.

Green Mountain Power, the utility serving the Town of Ferrisburgh increased its line clearing and pruning efforts in the years following the 1998 ice storm. This has resulted in a reduced overall vulnerability in the region, however Dr4207 shows us that the risks have not been fully mitigated. The community risk rating for a Widespread Power Failure is 3 and would be considered a HIGH PRIORITY.

- **Fire (Structural)** – (Risk Score 10)

Location: There are wood frame structures susceptible to structure fire scattered throughout the Town of Ferrisburgh with the highest concentrations along the shores of Lake Champlain. Most of these were built before modern fire-resistant construction material and methods were developed. Particularly along the lake, these summer cottages, prior to current zoning, were built close together to take advantage of lakeshore access, thus making them more vulnerable to a wind-spread multiple structure fire.

Extent: The community's greatest risks for structure fire are along the shoreline of Lake Champlain where traditional growth patterns of small seasonal camps have resulted in tightly packed individual structures accessed via narrow and often poorly constructed driveways. The combination of tightly packed structures and poor access for fire equipment is at its highest risk during winter months. The combination of snow, unplowed driveways, and lack of residents during the off season could lead to a fire getting out of control and spreading to nearby structures before the fire department could even get close enough to access the incident. A multiple-structure fire under these conditions could result in losses from a low of two structures up to as many as 6-7 in more crowded neighborhoods. Seven lakeside cottages could represent losses exceeding $1 million were they to be completely destroyed

Previous Occurrences: Responses by the Ferrisburgh Volunteer Fire Department for emergency calls has averaged 64 over the past 10 years. A review of available State Fire Marshall's reports indicates a relatively steady average of 10 structure fires in any given year.

The most significant structure fire in recent memory destroyed the Ferrisburgh Grange Hall in 2005. The hall had been donated to the town for use as a town office and meeting space, and was

slated for renovations. The building has since been rebuilt and currently serves as the town hall and town offices.

Ferrisburgh Volunteer Fire Department Annual Responses

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
#of Responses	60+	49	73	68	62	63	65	65	61	71

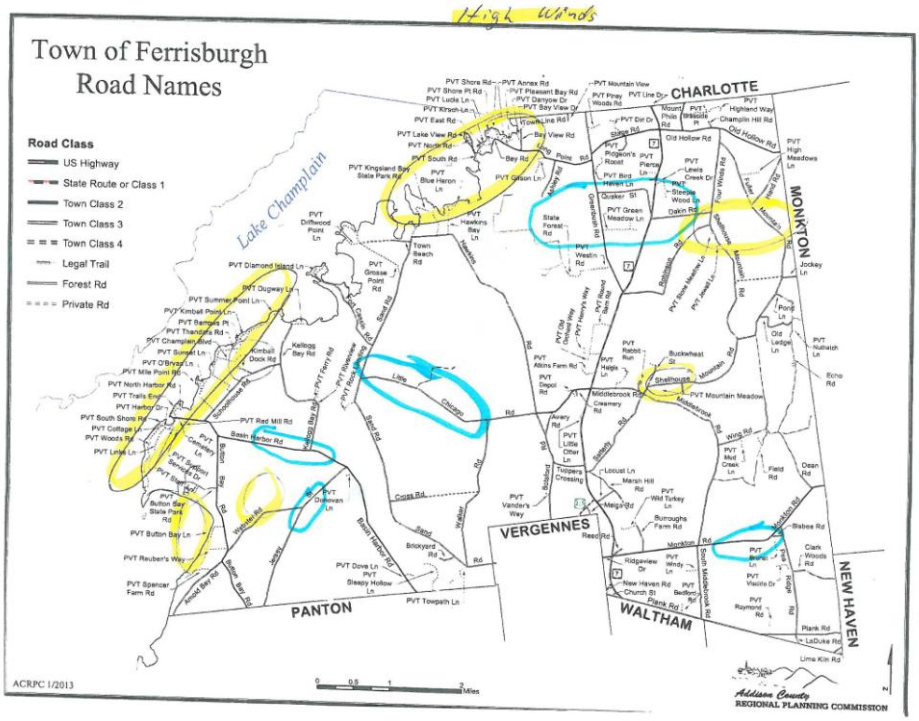
Future Probability: Over the past 20 years, prices for summer cottages have skyrocketed mostly due to the value of the land they sit on. The increased purchase costs of these properties drives a slow conversion from seasonal to more expensive year-round residences because owners feel a need to get more use out of them. The pre-existing small lot sizes converted to year-round homes increases the per acre value and increases the potential losses from wind driven fire.

Vulnerability summary: Except within camp neighborhoods, new development has not had a huge impact on fire risk due to improved construction methods. State codes for commercial construction have fire protection embedded within the standards. Unfortunately, risks to firefighters continue to escalate as newer construction materials often produce a dangerous combination of gasses when burned.

The town's well trained and equipped fire department including access to mutual aid from neighboring departments helps reduce risks to life and loss of property.

The community vulnerability score is 2 for structure fire which is a MEDIUM PRIORITY based on the highly likely occurrence of an incident with the potential for negligible impact.

- **Winds- (Extreme)** – (Risk Score 9)
  Location: Severe damages due to high winds are rare in Ferrisburgh and are dependent on the location of the wind gusts and/or cyclonic wind. While the location of these weather events cannot be precisely predicted, the prevailing winds are generally from the north or south. The Lake Champlain shoreline is at a slightly higher risk of damage due to high winds because of the long, unobstructed fetch which also produces wave action. Generally, the entire Town of Ferrisburgh is at risk of high wind damage depending on where the winds strike.



High Wind Locations Identified by the Ferrisburgh Hazard Mitigation Committee

Extent: High winds come in many forms in Addison County and are included in damages associated with Hurricane, Tornado, Wind Shear, and Thunderstorms. The National Weather Service issues a wind advisory for sustained winds of 31 to 39 mph (Beaufort #7) or gusts of 46 to 57 mph. Winds of greater than 58 mph (Beaufort #10) trigger a High Wind Warning.

Many of these wind events are accompanied by hail, which generally results in minor property damages (auto, metal roof, etc). Hail can also have a devastating effect on agricultural crops like corn and apples during certain times of the growing season. The largest recorded hail size in the past 25 years was 2" in diameter in New Haven.

Beaufort Wind Scale

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

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

The worst case high wind event could uproot trees, tear roofing from structures and collapse old or poorly constructed buildings. The loss of power and land line phone service is also probable during these events due to downed lines caused by the falling trees. Damages could potentially run into the $ millions should the damage be widespread.

Previous Occurrences: NCDC records indicate the Addison Region has experienced 34 High Wind events and 35 Strong Wind events over the past 25 years resulting in $1,451,000 in

cumulative property damage and $25,000 in crop damages. No official information was found that would corroborate specific wind damage in the Town of Ferrisburgh.

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

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

Hurricanes in 1938 and 1950 are still remembered by older residents when barns collapsed and animals needed to be rescued or put down due to injuries. As recently as 2011, remnants of Hurricane Irene struck much of Vermont as Tropical Storm Irene though damages were primarily limited to flooding rather than wind.

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

Vulnerability Summary: Due to the generally flat topography of the Champlain Valley and proximity to the lake, the entire Town of Ferrisburgh is vulnerable to many types of storms which could produce high winds. High winds usually result in damage to trees, which in turn, lead to power outages. Localized strong winds have also resulted in occasional damage to roof panels and loss of shingles. Often, residents do not take into account wind impacts when new construction or major renovations are performed.

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

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

- **Earthquake** – (Risk Score 9)
  Location: Surprising as it is to some, all of Vermont, including the Town of Ferrisburgh, 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, Ferrisburgh is at higher risk for earthquake than some other areas.

  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 Ferrisburgh would be 157). HAZUS also estimates that all essential facilities in the region (hospital, schools, police stations and fire stations) will receive at least moderate damage. 10 families would be predicted to be displaced from their homes and will need temporary shelter in Ferrisburgh.

  - 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.

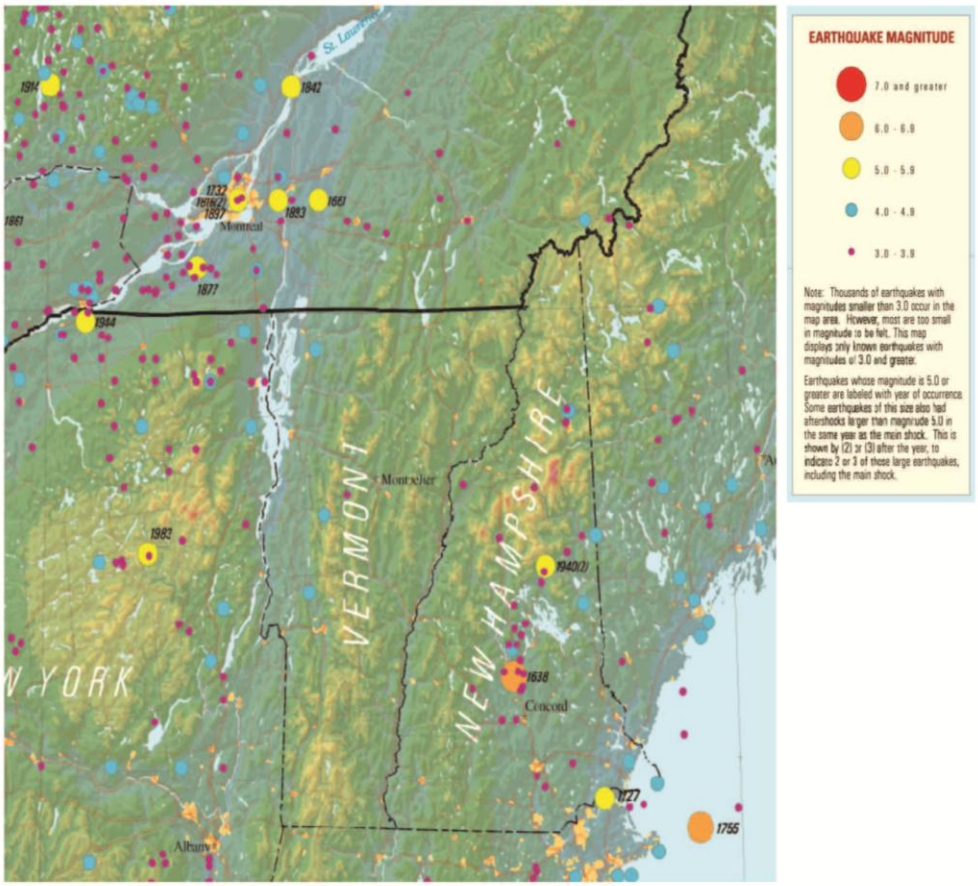
  Goodnow Scenario:

  - 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 Ferrisburgh would be 60) HAZUS also estimate that all essential facilities in the region (hospital, schools, police stations and fire stations) will receive at least moderate damage. 2 families are predicted to be displaced from their homes and will need temporary shelter.

- Transportation & utility systems – HAZUS estimates minimal disruption of the transportation and utility systems. However, over 4000 households are expected to be without electrical power for up to three days in the region.

- Casualties – Minimal casualties are also expected with less than six requiring medical attention and only one needing hospitalization.

- Economic loss – Direct building losses are estimated at > $17 million and business interruption losses are expected to be as much as $24 million. HAZUS estimates that although there was minimal damage to the transportation system the loss would still be close to $3.6 million. Approximately $0.9 million would be needed to repair damaged communications systems.



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 Ferrisburgh in the next 50 years.

Vulnerability Summary: The Ferrisburgh Hazard Mitigation Committee scored Earthquake hazard a risk score of 9 resulting in a vulnerability score of 2. 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 2, earthquakes would be considered MEDIUM 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.

- **Lightning** – (Risk Score 8)
  Location: Severe storms which include lightning along with wind and rain events are a common occurrence in Ferrisburgh during summer months. While unpredictable, lightning tends to be drawn to exposed areas of higher elevation or where there are sudden increases in elevation. One area where an increase in elevation occurs is along the lakeshore in places where rock bluffs constitute the shoreline (Basin Harbor, and North)

  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 Ferrisburgh, these numbers would extrapolate into between 600 and 950 lightning strikes per year.

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

  Previous Occurrences:
  Relatively little information has been recorded of recent significant lightning strikes. Given the estimated numbers of lightning strikes in Ferrisburgh, 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:
Ferrisburgh'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 multiple public buildings are scattered along Rte #7 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 any of the public buildings located in this area.

The community risk rating for Lightning Strike is 1 and would be considered LOW PRIORITY.

- **Transmissible Illness** – (Risk Score 8)

Location: Mosquitoes are common throughout Ferrisburgh due to the large acreages of wetlands and poorly drained soils. Culiseta melanura (CM), the species specific vector for Eastern Equine Encephalitis (EEE), lives in hardwood swamps which are common along the fringes of wetlands in Ferrisburgh. To date, no EEE carrying mosquitos have been identified in Ferrisburgh.

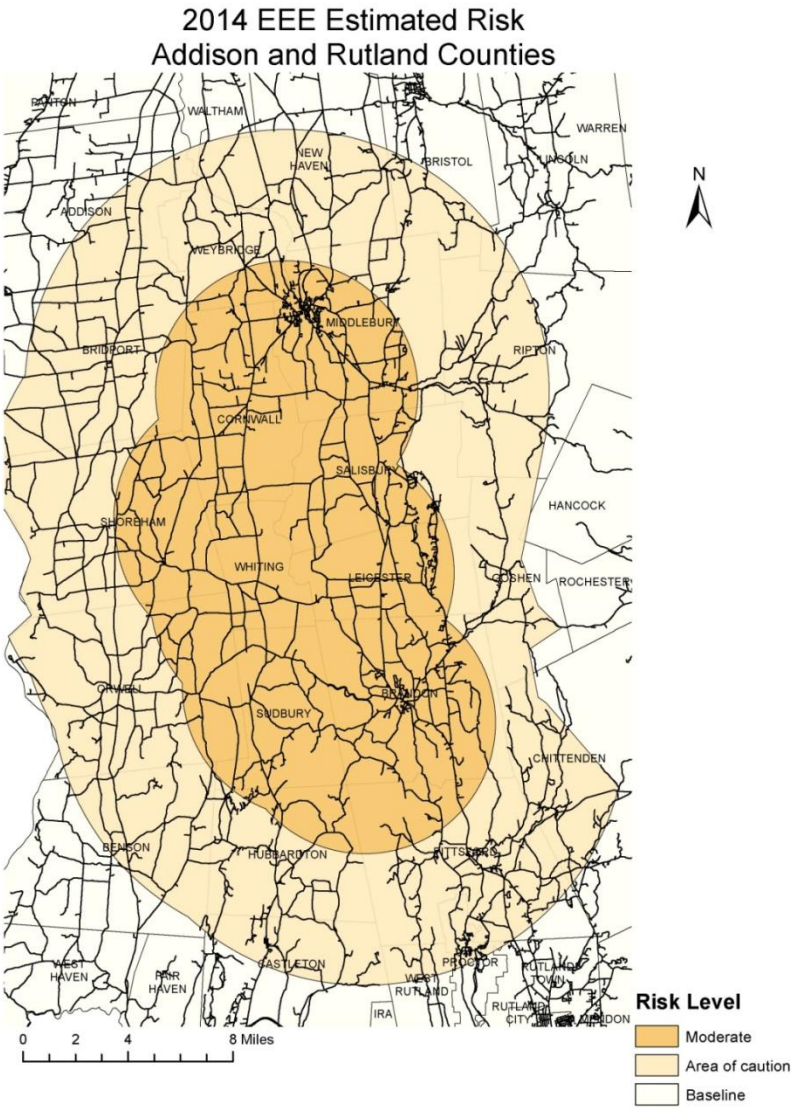
The risk for pandemics of other diseases exists throughout the world and at any point in time, pandemic conditions are present somewhere in the world. Ferrisburgh is as much at risk for pandemic as any other locations. Outbreaks of diseases such as measles and influenza will often strike schools first due to the large numbers of children in a confined area.

Extent: The discovery of West Nile Virus (WNV) in mosquito populations in the Addison region and a 2012 outbreak of Eastern Equine Encephalitis (EEE) have elevated the awareness of risks associated with mosquito bites. Due to the endemic mosquito populations, infection from either of these arboviruses is likely and could result in multiple deaths in the Town of Ferrisburgh.

A pandemic caused by H1N1 was extensively exercised in Vermont and the nation in 2004 and 2005 in anticipation of its coming. This scenario indicated as much as 60% of the residents in Vermont could be infected and unable to perform their jobs for an extended period of time. Such an event would severely tax local medical facilities in Middlebury and Burlington as well as drastically limiting the ability of a town to perform basic functions of highway maintenance, fire protection and town operations in general.

Previous Occurrences: A 2012 EEE outbreak resulted in two deaths in the Addison/Rutland region due to the disease which was first recorded in animal populations in Vermont in 2010. In late summer of 2012, the State of Vermont conducted targeted aerial spraying of known population centers in an effort to knock down these populations. While no human cases of EEE were reported in Addison County in 2014, it is assumed that the disease is endemic in the local mosquito population.

Pandemics have occurred worldwide since the beginning of time. Within the past century, the 1918 influenza outbreak was the most severe and resulted in thousands of deaths. More recently, the Hong Kong flu outbreak of the 1960s and swine flu in the early 1990s have threatened populations worldwide.



Future Probability: Mild winters and a high water table have lead to an increased population of mosquitoes which carry WNV and EEE in the State of Vermont. Two conflicting assumptions can be made to forecast the current trend. If the current climatic trend is a temporary spike, populations of many of these mosquitoes would be expected to be reduced as the trend reverses itself. However, if the current trend continues as predicted over the next few decades, these and other disease carrying insect populations will likely increase. This increase in populations results in an increasing risk to the local population.

The most dangerous of diseases are the result of humans living in close quarters with animals. Tight quarters invite transference between animal (bird, swine) hosts and human caretakers. Past examples

have included avian flu, HIV, Ebola and others. Because these mutated viruses are unfamiliar to humans, there is little resistance resulting in rapid spread of the disease. These conditions are not expected to change, especially in developing countries.

The CDC is also predicting an increase in the so-called childhood illnesses (Measles, Mumps, Rubella) due to more children's parents electing to not vaccinate for these illnesses. The winter of 2014-2015 showed increased numbers of measles throughout the nation.

Vulnerability Summary: Mosquitoes have been a known nuisance pest and have limited the enjoyment of outdoor activities in parts of Ferrisburgh for years. Recently, however, public concerns are evolving from nuisance issues to life safety issues associated with two arbovirus types. The Vermont Department of Health identifies some areas of southern Addison County within their moderate risk areas for EEE due to the discovery of infected CM in early October of 2014. Ferrisburgh lies outside of the expected risk area but 2014 captures of CM in northwestern Vermont would indicate higher risks are present but undiscovered in other areas as well..

Public health experts are constantly monitoring diseases worldwide to discover newly emerging diseases. The hope is that early detection will allow enough time for appropriate treatments or vaccines to be developed. When new diseases are discovered the CDC is quite active in increased public awareness activities. State health officials are also quite proactive and work well with Town Health Officers whose job is to manage response at the local level. In spite of this structure, mutations can emerge at any point in time or location and until there are treatments, towns remain at high risk for reduction or cessation of public services in spite of all COOP/COG plans in place.

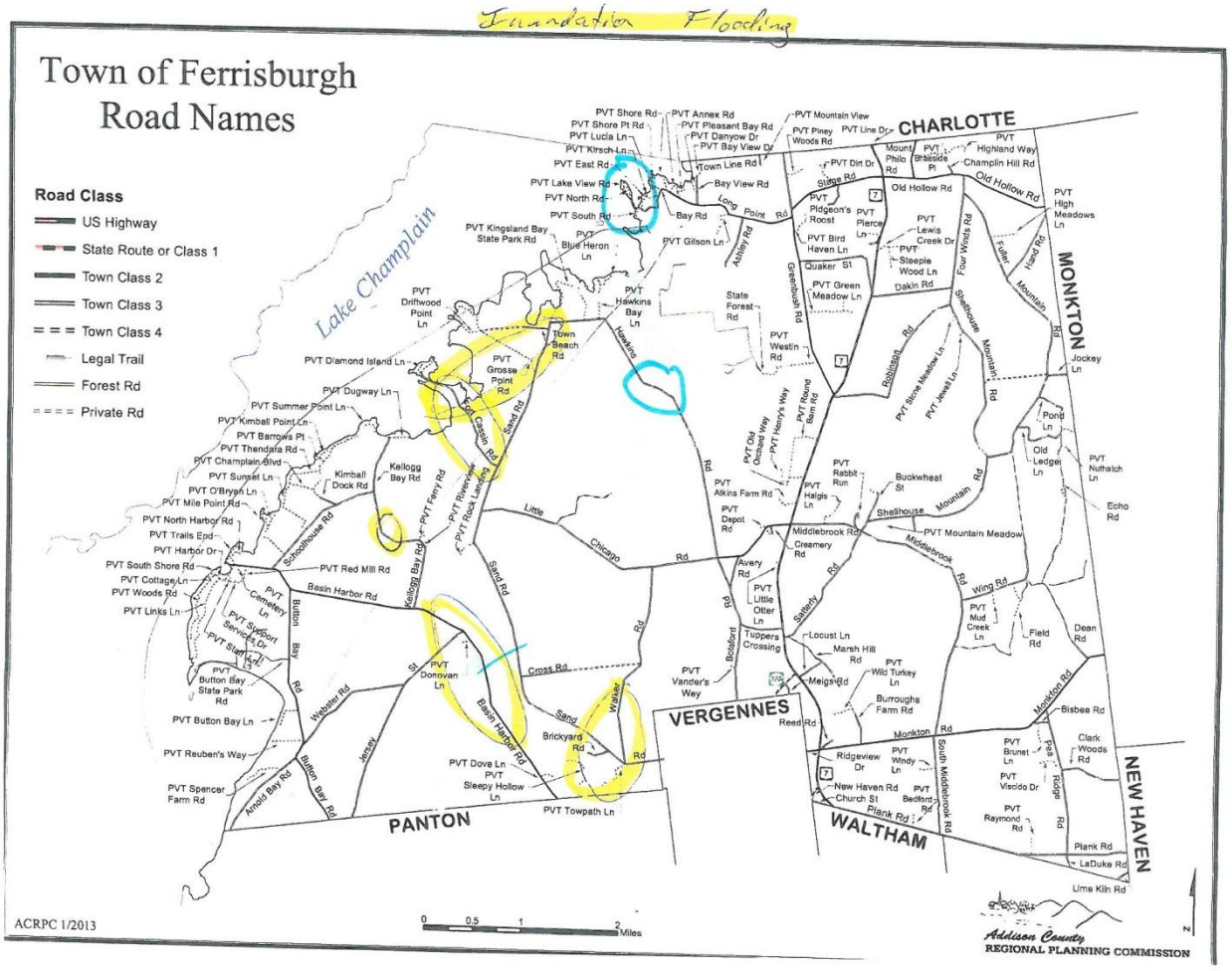
The community vulnerability rating for Transmissible Illnesses is 1 and would be considered LOW PRIORITY mostly due to the inability of the town to have much impact beyond that which is already in place nationwide.

- **Flood (Lakeside Inundation)** – (Risk Score 7)

Location: Low lying areas of roads along Otter Creek (BasinHarbor Rd., Kellog Bay Rd., and Fort Cassin Road) all experience regular inundation flooding especially during spring snow melt. In areas where Otter Creek and Little Otter Creek enter Lake Champlain, there is also occasional springtime flooding of roads limiting access to Fort Cassin and Long Point when lake levels rise above 100ft. The shoreline of Lake Champlain in Ferrisburgh is steep in most cases, with bluffs bordering the lake. These areas are not susceptible to inundation flooding because most structures have been built at the tops of these bluffs rather than at the waterline.

Extent: The mean water level of Lake Champlain is 95.5 feet above sea level, and the Federal Emergency Management Agency (FEMA) sets flood level in Ferrisburgh at an elevation of 102 feet above sea level. FIRM flood maps, developed in 1986 and digitized in 2006 by ACRPC, and E911 points as documented by the State E911 database, were compared digitally and where the two sets of data intersect, there are 136 E911 sites in the town that are indicated as vulnerable to potential flooding. These sites are primarily seasonal camps but include 55 year-round residences and 2 commercial structures. The estimated loss for damage to these properties ranges from a low of $48,000,000 to $53,000,000. This represents 11% of the grand list. Twenty-two of these properties are currently insured through the NFIP. Total insured values for these properties was $5,200,100 in 2013.

Due to the inaccuracies of the digital conversion of old Flood Insurance Rate maps and the rocky bluffs on much of the shore, it is likely that multiple seasonal camps were included in the analysis which, in fact may be located within 30ft of the lakeshore but also 20ft above it.



Inundation Flooding as Identified by the Ferrisburgh Hazard Mitigation Committee

Previous Occurrences: The Addison Region has experienced 21 flooding events over the past 25 years with reportable damages. The Town of Ferrisburgh has been impacted by 3 of these presidentially declared disasters in the past 10 years (July/August 2008, April/May 2011 and September 2011) as a result of flooding. A review of annual reports from the Town of Ferrisburgh show a total of $268,000 in FEMA reimbursements from these events and don't include reimbursement resulting from DR4022.

In August of 2008, strong storm cells hit Ferrisburgh and much of Addison County, resulting in a federal disaster declaration. Almost $67,000 was reimbursed by FEMA and the State of Vermont to cover expenses associated with this storm.

In the spring of 2011, a quick snow melt followed by weeks of spring rains resulted in a new record height for Lake Champlain at 103ft above sea level. This exceeded the elevation for a projected 500 year flood in Ferrisburgh and resulted in over $201,000 in reimbursements. Throughout the lakeshore in Vermont and New York, camps were hit with the high flood waters.

In late summer of 2011, the Tropical Storm remnants of Hurricane Irene caused devastating flooding in much of Vermont. Damages associated with TS Irene in the Town of Ferrisburgh were limited due, in large part to mitigation activities conducted during the rebuild following spring flooding.

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

Climate experts infer that residents of lakeshore properties should be prepared for more frequent and higher flood elevations in the future. Within the Town of Ferrisburgh the lands surrounding the Otter Creek, Dead Creek and Little Otter Creek are textbook examples of natural floodplain which has been left relatively undeveloped. Due to the availability of other lands much more suitable to development in town, these floodplains will likely continue to function well into the future.

Increasingly, the town is faced with the conversion of seasonal camps to year-round residences. While not increasing the number of structures, these conversions do increase the potential losses were they to be flooded. While local flood regulations address substantial improvements, much of this work is done piecemeal and never triggers in-depth review.

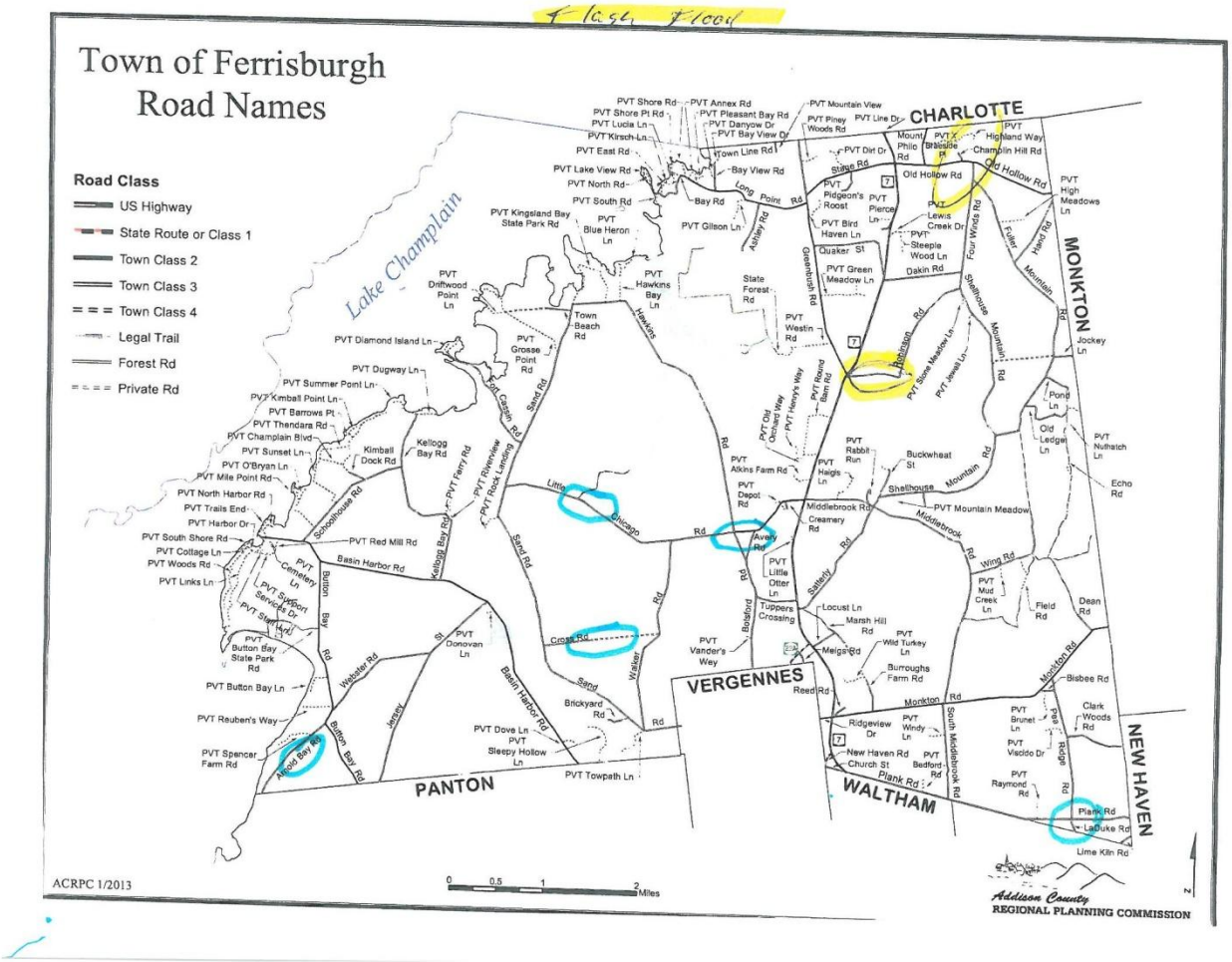
Vulnerability Summary: The Town of Ferrisburgh, in its historic development patterns, is relatively flood-safe. Mostly camps and residences near the outflow of Otter Creek and Little Otter Creek are currently at risk for flooding. With property values high along the shores of Lake Champlain, in these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

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

The community risk rating for Inundation Flooding developed by the mitigation committee is 1 and would be considered a LOW PRIORITY since most of the structures at risk are seasonal camps.

- **Flood- (Flash Flood)** –(Risk Score 6)
  Location: In Ferrisburgh, the combination of heavy rainfall and moderate to steep terrain conducive to flash flooding only occur in the eastern part of town before the rolling hills settle into the flats

near Lake Champlain. Committee members particularly called out Old Hollow Rd. and Robinson Rd. as places where sudden rain events can cause damage due to flash flooding.



Flash Flood Locations as Identified by the Ferrisburgh Hazard Mitigation Committee

Extent: Summer downpours and remnants of tropical storms can have the effect of concentrating flood waters into small and narrow areas, particularly in steeper geographic regions. According to NCDC statistics, the Addison Region has experienced 31 flash flood events over the past 25 years. The highest record of damage was $1,000,000 during a period in July of 1998 when 9.31 inches of rain fell in Burlington. During the period an estimated $32,310,000 in property damages and $1,500,000 in crop damages were incurred county-wide. A series of storms between July 21 and August 12 in 2008 (DR 1790) impacted Ferrisburgh with flash flooding which washed out culverts and closed roads. $67,000 in damages were reimbursed due to the 2008 flooding.

Previous Occurrences: The worst recorded instance of flash flooding in the Addison region occurred in New Haven in 1830 when a "freshet" along the New Haven River resulted in 14 deaths and thousands of dollars in property damages. Flash Flooding is a relatively common occurrence east of Rte #7 in the Town of Ferrisburgh. The town has been hit with 2 presidentially declared disasters in the past 10 years due to flash flooding.

Mostly due to improvements conducted in the recovery from lake flooding in 2011, Ferrisburgh was spared much of the heavy damage which impacted much of Vermont due to tropical storm Irene. This allowed the town highway crew to generously assist other, more heavily impacted, communities.

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

Vulnerability Summary: Ferrisburgh's program of progressive highway maintenance has reduced its overall vulnerability over the past few years as crews are routinely planning for increasing flood events. That maintenance spared Ferrisburgh from extensive damage during Irene and will serve the town well into the future.

Recommended changes to zoning advocated by the State of Vermont, if adopted, would limit development in hazard areas currently allowed under the federal minimum recommendations.

The community vulnerability rating for Flash Flood is 1 and is considered a LOW PRIORITY

- **Fire (Wildfire)** – (Risk Score 6)
  Location: Generally, two different wildfire fuels can be found within the boundaries of the Town of Ferrisburgh. Forested areas on the eastern part of town are characterized by fuels found in the duff

layer (leaves, fallen branches, etc.). The agricultural portions of Ferrisburgh generally have a fuel base of dried grasses and shrubs. The entire community is at risk of wildfire during dry periods. Forested areas and open fields are both most at risk each year in the spring following snow melt and before spring growth has started.

Extent: Springtime burning of open fields has been a longstanding historic practice thought to improve field fertility. Every few years, these get out of control due to either poor planning or unexpected winds. Generally, this type of wildfire is limited to a few acres and poses limited threats to structures lying close to the fuel source in the path of the fire. Fires in the forest tend to be smaller, usually limited to under an acre in size. These are generally mitigated by hardwood tree species and cover on the forest floor.

Previous Occurrences: No records of wildfire activity have been found for the Town of Ferrisburghl. However, the State Agency of Natural Resources keeps track of fires in the entire state. Most wildfires are never reported to State forestry officials and are therefore not shown in their annual reports. Based on the period between 2001 and 2010 those reported averaged just under 120 fires which burned a total of 215 acres.

Vermont Wildfire Statistics

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

Addison County Wildfire Statistics

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

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

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

Vulnerability Summary: With an historically active agricultural base, much of the Town of Ferrisburgh is still cultivated. It is abandoned and formerly farmed areas which tend to attract subdivisions and new homes. Consequently, many of the newer structures, in town would fall within an urban/wildfire interface. This increased risk for forest fire due to proximity is moderated by the so-called “Teflon Forest” conditions of the Northeastern US. While moisture levels generally tend to be higher than in the fire-plagued western forests, scattered periods of drought can increase fire danger levels to *Extreme* particularly during spring and fall seasons when dry leaves cover much of the forest floor.

It is becoming increasingly important that residences and essential facilities be constructed with an eye toward wildfire resistance by establishing no-burn zones around structures and by providing suitable water supplies for fire fighting to more remote residences.

With a community vulnerability score of 1, wildfire is considered a LOW PRIORITY based on a medium likelihood of occurrence and a low overall impact to the community.

- **Drought** – (Risk Score 5)

Location: Drought, due to lack of rain resulting in a receding water table is generally a regional issue due to its widespread nature. Any location within the town could experience drought and/or lowered water table. Residents who live along the Otter Creek and Lake Champlain live close enough to these sources that non-potable water could be taken from them. Potable water would have the same limited availability in these areas as in all other areas of town.

Extent: Four types of drought are identified in the State of Vermont's Hazard Mitigation Plan: meteorological, agricultural, hydrological and socioeconomic. Local knowledge indicates dry spells are periodic in nature and would be considered moderate to severe every 10 years on the average. Within the Town of Ferrisburgh the most obvious risks associated with drought include drying up of shallow wells (Hydrological) and reduced productivity of agricultural crops (Agricultural). Agricultural ands bordering Otter Creek, and the Little Otter Creek would suffer least from a drought due to the ability to pump water from those sources.

Palmer Drought Index Table

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

Previous Occurrences: Within the past 25 years NCDC reported no severe drought events. However, an extended drought period in the region occurred during the 1960s when much of Vermont experienced severe drought in 1964 and extreme drought in 1965 and 1966. The years following this drought period saw the development of several community-owned water systems in communities along Lake Champlain. The construction of the Vergennes/Panton Water system was the result of this drought and supplies an estimated 1/3 of Ferrisburgh residents. Future drought conditions could result in new calls for a public water supply in communities like Ferrisburgh. Most recently, a dry period in 2000 saw a few residents in the Addison region without water for several weeks until finally relieved by fall rains.

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

Vulnerability Summary: Residents depending on shallow wells always run the risk of them drying up in years of drought. When these wells do dry up, residents tend to depend on a neighbor's water supply or another nearby water source. Following occurrences such as that, an increase in well drilling can often be observed in the Addison region. The limiting factor in drilling a deep well is

usually the cost of the drilling itself. Direct costs of drought conditions tend to be borne by individual residents and therefore are difficult to track accurately.

With a community vulnerability score of 1, drought would be considered LOW PRIORITY based on a moderate overall impact to the community with a relatively common period of occurrence.

- **Dam Failure** (Risk Score – 6)

Location: The Town of Ferrisburgh has 7 current dams and one historic dam location identified in the State's dam inventory database. The database identifies the following dams and their locations:

1. Danyou Dam, an impoundment dam maintained for the benefit of waterfowl in the Lower Otter Creek Wildlife Management Area.
2. Goose Creek Dam, an impoundment dam built for wildlife within the Little Otter Creek Wildlife Management Area.
3. Jackman Dam, an impoundment dam built for wildlife within the Little Otter Creek Wildlife Management Area.
4. Robinson's Slang Dam, an impoundment dam built for wildlife within the Little Otter Creek Wildlife Management Area.
5. Harris Dam, an impoundment dam built for wildlife within the Little Otter Creek Wildlife Management Area.
6. Bergh Dam, a privately owned earthen dam on a tributary of Lewis Creek which serves to create a small pond.
7. Callery Dam, similar to the Bergh Dam, a privately owned earthen dam located on a tributary of Lewis Creek that creates a small pond.
8. Turner Dam site, located on Lewis Creek off Little Chicago Road. This is a historic location used in early times for the generation of power to run a grist mill.

Extent: The dams contained within the State of Vermont's wildlife management areas are used to retain spring high waters in the Otter and Little Otter creek backwaters to allow waterfowl a safe place to nest. They have essentially no risk to downstream properties were they to experience catastrophic failure due to the minor elevation difference between the creek and the retained waters.

Both the Bergh Dam and the Callery Dam lie on the same tributary of Lewis Creek. Though they lie in series along that tributary, the terrain below the two dams quickly flattens out into a wide floodplain with no homes present. At most, the potential impacts downstream of cascading dam failures could impact stream crossings of both Middlebrook Road and Satterly Road, located three and six kilometers downstream.

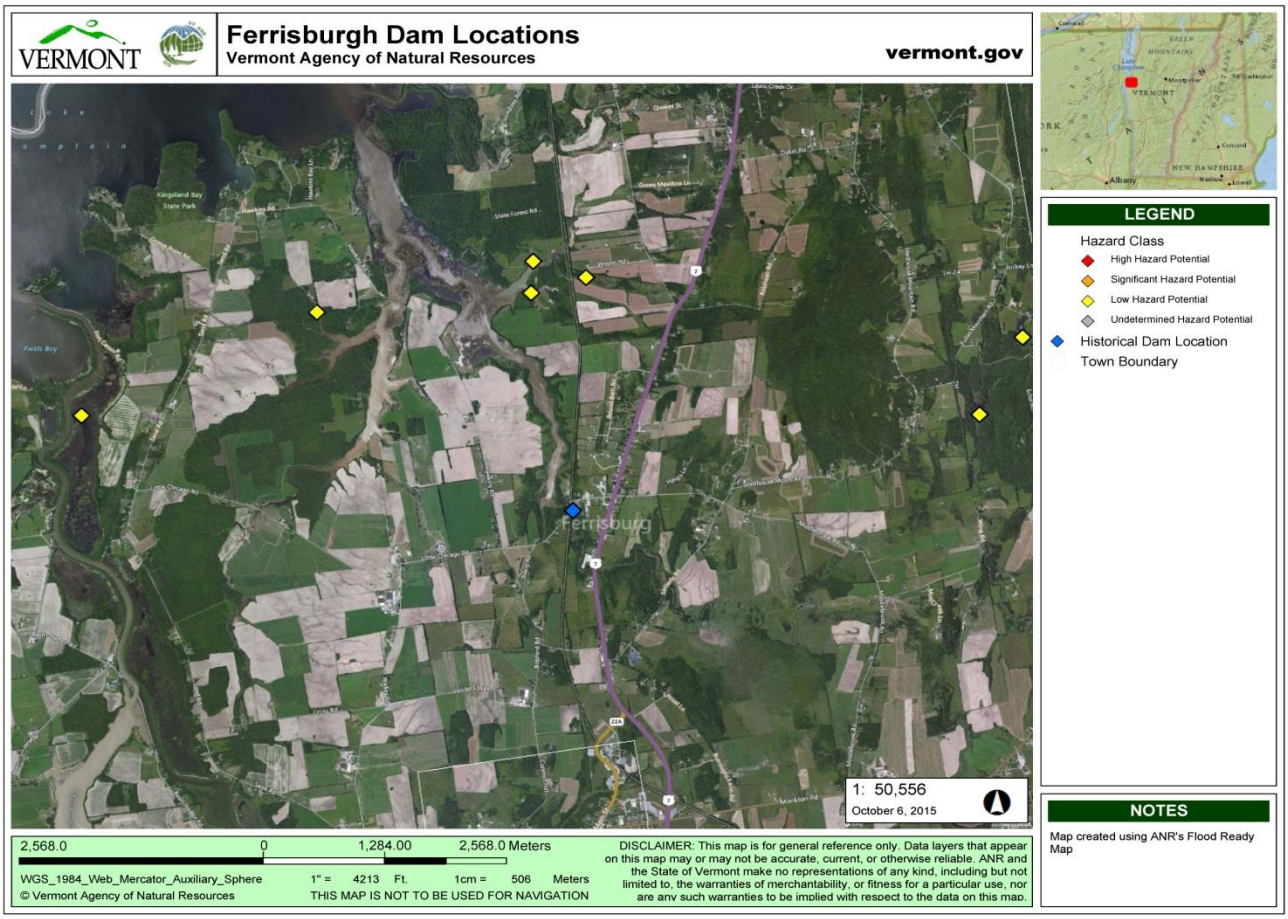
Previous Occurrences: Research uncovered no previous history of dam failure in any of these locations. It is assumed that the original dam at the Turner site failed at some time either due to lack of maintenance or during some previous flooding event. This dam was not rebuilt at that time and no historical records were found

Future Probability: Due to the generally low head created by these impoundments and the nature of the downstream geography, it is unlikely that there will be any risk to residents of the town either currently or in the future. However, as property ownerships change, new owners may not understand the nature of dam maintenance and the need for periodic inspections. Another factor in future risk is the remote possibility that homes could be built in the unmapped floodplain of the

Lewis Creek tributary where two of the dams are located. The current attenuation of floodwaters provided by these dams could result in a false sense of security for landowners in the immediate downstream vicinity.

Vulnerability Summary: There are no 9-1-1 structures located in Ferrisburgh which could be impacted by a catastrophic failure of any of these dams. At most, a cascading failure of both the Bergh and Callery dams might see a rise in waters enough to cause minor damages to either Middlebrook or Satterly Roads. The community vulnerability score for Dam Failure is 1, and would be considered a LOW PRIORITY based on the low likelihood of occurrence and the limited area impacted.

Map:



5.Community Mitigation Strategies

5.1 Hazard Mitigation Goals by Hazard Type

Each hazard type identified 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 Ferrisburgh 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**
Widespread Power Failure	Ensure that essential services can function during disaster
Flash Flood	Reduce loss of infrastructure due to flash flooding
Winter Storm/Ice Storm	Ensure that essential services can function during disaster
High Winds	Ensure that essential services can function during disaster
Lightning	Protect the health and safety of the public
Structure Fire	Protect the health and safety of the public
Transmissible Disease	Protect the health and safety of the public
Wildfire	Protect the health and safety of the public
Large-Scale HazMat Incidents	Ensure that highway improvements result in safer conditions
Drought	Ensure that all new and existing residences are drought resistant
Earthquake	Protect existing and new properties and structures
Inundation Flooding	Protect existing floodplain from development
Dam Failure	Protect existing floodplain from development

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. They prepare a municipal plan and zoning bylaws which are adopted by the Selectboard. Planning Commission members are appointed by the Selectboard.

Conservation Commission: The Town Conservation Commission is responsible for inventories of the natural resources of a town and making recommendations to the Planning Commission related to conserving them. Conservation 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 usually also serves as the administrator of town floodplain regulations.

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

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

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

Emergency Manager or Coordinator: By default, the 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

Hazardous Materials and Highway/Rail Transport Accidents

A representative from the Town of Ferrisburgh is an active member of the Local Emergency Planning Committee in planning for hazardous materials incidents. The Town mitigates risk to local responders by reporting its Tier II facilities as required at both the state and local levels.

A representative from the town sits on the local Transportation Advisory Committee, a regional group whose purpose is to prioritize potential transportation related projects within the region. This group rates High Crash Locations (HCL) highly in prioritizing projects to mitigate the risks associated with these locations by changing alignments, added signage and reduced speeds. The Town of Ferrisburgh also participates in the High Risk Rural Roads Program which has identified Plank Road from Vergennes to Bristol which also passes through Ferrisburgh as a targeted hazardous stretch of local highway.

The Towns of Middlebury and Shelburne are host to regional HazMat Decontamination trailers, providing mitigation through proximity of response resource.

The Town zoning bylaws sections 5.3 and 8.3 specifically address storage of explosives and flammable products. These uses require conditional use review by the Board of Adjustment prior to a permit being issued. In addition, Town zoning bylaws limit storage of hazardous materials or any other materials in the

mapped floodplain. Additional safeguards could be established in zoning which could limit storage of these materials in residential zones or other high impact areas.

Winter Storm/Ice Storm

Mitigation activities by power companies have re-routed many of the remote lines along town highways since a 1998 ice storm and an increased pruning effort has reduced the impact of a similar event would it happen today.

The Town of Ferrisburgh mitigates its winter storm risk through preparedness activities in the form of appropriately sized equipment and training. The periodic cutting of brush along town highways also mitigates the effects of large winter storm events by reducing their ability to act as snow fence dropping windblown snow into the town highway system.

All improvements to the road system take into account ease of snow removal in design. Budgetary constraints and cost vs benefits limit additional mitigation measures.

Widespread Power Failure

Many private residences have back-up power sources. Essential Town facilities including the Ferrisburgh Central School and Grange Hall do not currently have a back-up power source.

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 Ferrisburgh has an ongoing program of line clearing and relocation to ensure outages are kept to a minimum. In addition, recent improvements to the transmission system in northwest Vermont have provided redundant systems to bring electric power to the region.

The Town of Ferrisburgh supports development of a robust and redundant local electric generation and transmission system for its residents by providing access to the town rights of way for the power company. 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 impacts to the local landscape. The recently adopted town plan specifically identifies actions to mitigate some of the associated degradation while allowing for an improved delivery system of electricity.

In the future, providing back-up power to the school and town offices will insure that town infrastructure will be less impacted by power failure

Structure Fire

Mitigation actions by the Town Selectboard and fire department are improving the overall outlook for fire risk over the coming years. An active fire prevention/education program at the elementary school level and a lock-box ordinance will both show a reduction in fire loss over time.

The Town supports the Ferrisburgh Volunteer Fire Department with an annual appropriation. This all-volunteer organization makes up the remainder of its operating budget through generous support from townspeople in the form of donations and support at fundraising events.

In addition, the installation of dry hydrants at water supply locations has increased the availability of and speed in which water can be accessed for firefighting purposes. Recent inquiries by the fire department to

reevaluate its ISO rating may ultimately result in lower insurance costs to its residents by recognizing the high level of preparedness in the community.

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

High Winds

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

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

Where high wind hazards have been recognized, it is usually a function of damage that might be caused if a tree were to be blown over and its effect on a residents' home. For this reason, some trees are removed from the landscape to reduce their vulnerability to high wind events. The Town of Ferrisburgh removes dead and hazardous trees in the town right-of-ways to mitigate the hazards associated with their falling either on town highways or on power lines.

The town also grants permission to Green Mountain Power to conduct tree work within the town right-of-way to help reduce future wind damages. Additional tree work outside of the rights of way are politically impractible.

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 Ferrisburgh 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.

Lightning

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

Most larger privately owned structures in vulnerable locations have similarly installed lightning rod systems to protect them from lightening strike with the encouragement from insurance companies and extension agents. The Town has no adopted building standards which would require this action 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.

Transmissible Illness

The Town has an active Town Health Officer (THO), whose responsibilities include all public health issues. The THO is actively engaged in attending training when offered by the State Dept. of Health. The town continues to support the office through budgeting for both a salary and training expenses.

In the event of an outbreak, the VT Dept of Health could direct THOs to take mitigating actions but they have no such authority on their own.

Flood (Lake/Inundation)

The Town has been a member in good standing of the NFIP for over 30 years. There are no identified "Repetitive Loss" properties located in Ferrisburgh. 22 flood insurance policies are in effect for residences in the town and are insured for $5,200,100. The total benefits paid on these policies since 1978 is $270,747. The anticipated changes to flood insurance brought on by the Biggert-Waters Act will eventually cause premiums on structures within the floodplain to skyrocket. These increased insurance costs may encourage buyouts and elevation projects that have previously been considered too expensive by homeowners historically benefitted by subsidized flood insurance.

The current town zoning regulations meet the minimum standards required for membership in the National Flood Insurance Program. The town zoning administrator has the responsibility of managing the flood regulations either directly, or by referral to the Planning Commission for conditional uses or variance requests. The town planning commission is considering making changes which would further limit new construction in the floodplain areas of town.

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

Flash Flood

Ferrisburgh is active in mitigating the hazards associated with flash flooding which are limited to the eastern side of town. Culvert upgrades and ditch treatments are implemented as part of normal maintenance activities along roads in this area.

The Town of Ferrisburgh adopted the 2013 version of road and bridge standards as recommended by VT AOT on 3/18/2014. These standards address road and bridge construction, are designed to mitigate local traffic issues and are particularly designed to mitigate potential damages due to flooding and flash flooding. The standards address culvert sizing, ditch treatments and driveway access to reduce flood-caused erosion. Higher standards could be adopted for town roads and private driveways but have not been fully explored as of yet. The currently adopted standards are attached as Annex F of this mitigation plan.

Wildfire

The town has no guidelines for home construction in place that would limit the risk to wildfire in Ferrisburgh. An ordinance allowing for fire department billing for response to unauthorized burning would help limit some of the risks associated with indiscriminate burning. In addition, requiring fire ponds as an integral condition to large subdivisions should mitigate future fire risk in those developments.

Drought

A large portion of the Town of Ferrisburgh is served by the Vergennes-Panton water system and is therefore less susceptible to drought. Of those not served by this utility, most homeowners with shallow wells have learned to live with the inconvenience of dry spells by purchasing bottled water and using public toilets and laundries for the short periods they would be without a dependable water supply. When the inconvenience has become too much, many of these homeowners have mitigated the problem by drilling deep wells. Increasingly, home mortgages are requiring a dependable deep well water supply as a condition of a loan.

Agricultural activities highly dependent on water such as fruit and vegetable crops can be severely impacted by lack of rain. Most of these businesses have mitigated the effects of periodic droughts by providing irrigation systems. Other farms, dependent on crops to feed livestock rather than humans, are highly impacted by low water supplies and may be dependent on a USDA disaster declaration to find relief.

Reduced water supplies also impact the community's fire fighting capabilities. In some areas of town the fire department is highly dependent on surface water supplies for fire fighting. Increasingly, the department is installing dry hydrants in deep water ponds and streams to make access easier but as housing continues to expand into rural areas, the potential lack of a dependable water supply for fighting fire is becoming an issue.

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

Dam Failure Because potential dam failure is so low on the town's priority list, little to nothing has been done to date that would reduce the risks associated with a catastrophic failure. The Town depends on the State of Vermont to monitor and maintain the dams it owns and upon the private landowner to do the same on private dams. The Town zoning bylaws could include construction of dams impounding more than X acre/feet of water in its conditional review process.

5.3 Project Prioritization process

Projects and actions included in Section 5.2 are conducted by the Town of Ferrisburgh 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 and Projects 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.

Hazardous Materials, Highway/Rail Transport Accidents

The Town has identified the following high risk locations on its highway system and supports mitigation of the hazard in any future construction/reconstruction activities:

- The intersection of Old Hollow Road/Stage Road and US Rte #7 is a high crash location and efforts should be taken to reduce that risk. The Town will request a redesign and realignment of this intersection as part of the next resurfacing project on this segment of State highway.
  Estimated cost: None to town
  Source of funds: State highway budget.
  Possible Benefits: Reduced Accidents
  Responsibility: Joint Selectboard and State AOT
  Timeframe: Q1-Q3, 2017

- The area along Route 7 encompassing the Vermont Railway crossing and Monkton Road is a high crash location that the Selectboard will address through cooperation with State officials.
  Estimated cost: None to town
  Source of funds: State highway budget
  Possible Benefits: Reduced Accidents
  Responsibility: Joint Selectboard and State AOT
  Timeframe: Q1, 2017

- The town will request a safety audit of the ground level rail crossing at Monkton Road and will assist implementing recommendations.
  Estimated cost: None to town
  Source of funds: State highway budget
  Possible Benefits: Increased safety at this crossing
  Responsibility: Joint Selectboard and State AOT
  Timeframe: Q1, 2017

- The town will request a safety audit of the ground level rail crossing at Tuppers Crossing and will assist implementing recommendations.
  Estimated cost: None to town
  Source of funds: State highway budget
  Possible Benefits: Increased safety at this crossing
  Responsibility: Joint Selectboard and State AOT
  Timeframe: Q1, 2017

- The town will request a safety audit of the ground level rail crossing at Long Point Road and will assist implementing recommendations.
  Estimated cost: None to town
  Source of funds: State highway budget
  Possible Benefits: Increased safety at this crossing
  Responsibility: Joint Selectboard and State AOT
  Timeframe: Q1, 2017

- The town will request a safety audit of the ground level rail crossing at Town Line Road and will assist implementing recommendations.
  Estimated cost: None to town

Source of funds: State highway budget
Possible Benefits: Increased safety at this crossing
Responsibility: Joint Selectboard and State AOT
Timeframe: Q1, 2017

- The town will request a safety audit of the ground level rail crossing at Little Chicago Road and will assist implementing recommendations.
  Estimated cost: None to town
  Source of funds: State highway budget
  Possible Benefits: Increased safety at this crossing
  Responsibility: Joint Selectboard and State AOT
  Timeframe: Q1, 2017

- The town will request a safety audit of the ground level rail crossing on State Land at "The Birches" and will assist implementing recommendations.
  Estimated cost: None to town
  Source of funds: State Forestry budget
  Possible Benefits: Increased safety at this crossing
  Responsibility: Joint Selectboard and State AOT
  Timeframe: Q1, 2017

Winter Storm/Ice Storm

- The Town has historically mitigated the effects of winter storms/ice storms through the annual funding of the highway crew and its equipment. While an eye is always kept open for new approaches and equipment options, no actions are currently required.

- The Town has identified installation of back-up power for the school and Town Offices as an important need to allow continued operation in the event of a severe winter storm. This project is also identified and evaluated in the Widespread Power Outage section.

- In future requests for Right of Way usage for maintenance purposes, the Town will normally grant access. Due consideration in granting these permissions will be given when such access will adversely impact scenic corridors and residents desires to keep the beauty of tree-lined streets and roads.
  Estimated cost: $0
  Source of Funds: None needed
  Possible Benefits: Reduced power line damages due to tree failing
  Responsibility: Selectboard
  Timeframe: Q3, 2016-Q4, 2020

- Manage vegetation and ditching in the ROW to allow space for heavy/wet snow and ice events
  Estimated cost: $5,000 annual cost
  Source of funds: Town highway budget
  Possible Benefits: Reduce snow plowing and maintenance costs
  Responsibility: Joint Town Highway crew and Selectboard
  Timeframe: Q3, 2016-Q4, 2020

Widespread Power Failure

- In future requests for Right of Way usage for maintenance purposes, the Town will normally grant access. Due consideration in granting these permissions will be given when such access will adversely impact scenic corridors and residents desires to keep the beauty of tree-lined streets and roads.
  Estimated cost: $0
  Source of Funds: None needed
  Possible Benefits: Reduced power failures due to trees knocking lines down
  Responsibility: Selectboard
  Timeframe: Q3, 2016-Q4, 2020

- Acquire back-up power capacity for the Ferrisburgh Central School
  Estimated cost: $15,000-$20,000
  Source of Funds: School Budget, HMGP
  Possible Benefits: Allows use of school for shelter purposes
  Responsibility: Emergency Manager, School Board
  Timeframe: Q3, 2016 or as funding becomes available

- Acquire back-up power capacity for the Ferrisburgh Town Offices (Grange Hall)
  Estimated cost: $15,000-$20,000
  Source of Funds: Town General Fund, HMGP
  Possible Benefits: Allows use of Town office as evacuation point for school.

Responsibility: Emergency Manager, Selectboard
Timeframe: Q1, 2017, or as funds become available

Structure Fire

- The Town supports efforts by the fire department to install dry hydrants throughout town through assistance with applications and providing grant match when available.
  Estimated cost: None additional beyond annual FD support
  Source of funds: Federal Rural fire protection grants and town FD funds
  Possible Benefits: Increased availability of firefighting water and lowering ISO rating
  Responsibility: FVFD
  Timeframe: Q3, 2016 or as funds are made available

- The Town Planning Commission will research upgrading of driveway standards in the next zoning bylaw rewrite to support basic accessibility for emergency vehicles to all structures in town.
  Estimated cost: $2,000 as part of an overall rewrite
  Source of funds: Municipal planning grants.
  Possible Benefits: Increased access for fire coverage
  Responsibility: Joint Selectboard and Planning Commission
  Timeframe: at next zoning rewrite – est. Q2-Q4 2017

High Winds

The town road crew, with assistance from the tree warden, currently removes dead and dying trees from its right of way as part of normal maintenance. This is ongoing work which requires no new actions.

Earthquake

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

- The Town feels education is the key to preparing private homes for an earthquake and will make earthquake education materials available at the town office when available.
  Estimated cost: None to town
  Source of funds: Government Printing Office
  Possible Benefits: Increased earthquake awareness by residents
  Responsibility: Town Clerk/ACRPC
  Timeframe: Q3, 2016

Lightning

The Town feels the risk to private residences of lightning strike should be borne by each resident on their own.

- The Town feels education is the key to preparing private homes for a lightning strike and will make lightning education materials available at the town office when available.
  Estimated cost: None to town
  Source of funds: Government Printing Office
  Possible Benefits: Increased Lightning Awareness by residents/reduced fire risk
  Responsibility: Town Clerk/ACRPC
  Timeframe: Q3, 2016

Transmissible Illness

The Town currently supports training of the Town Health Officer to help mitigate the effects of transmissible illnesses in the community. No new actions are required.

Lakeside Flooding/Inundation Flooding

- The town will fund attendance by the Zoning Administrator at local NFIP trainings when offered locally.
  Estimated cost: $200-$300
  Source of Funds: Town General Fund Planning and Zoning budget
  Possible Benefits: Better management of NFIP policies/regulations
  Responsibility: Town Zoning Administrator/ACRPC
  Timeframe: Q3, 2016-Q4 2020

- The Town will evaluate inclusion of a river corridor hazard district in its next zoning bylaw rewrite.
  Estimated cost: $2,000 as part of an overall rewrite
  Source of funds: Municipal planning grants
  Possible Benefits: Reduced risk to new structures due to erosion
  Responsibility: Joint Selectboard and Planning Commission
  Timeframe: at next zoning rewrite – est. Q2-Q4, 2017

- The Town will request updated and digitized FIRMs from FEMA to support their flood mitigation efforts.
  Estimated cost: None to town
  Source of Funds: FEMA map modernization funds
  Possible Benefits: Increased accuracy in management of floodplain development
  Responsibility: Selectboard to make the request
  Timeframe: Q3, 2016

- The Town will explore requirements for entry into the Community Rating System of the NFIP
  Estimated cost: Negligible
  Source of funds: Town general fund
  Possible Benefits: Reduced cost of flood insurance for town residents, better floodplain management
  Responsibility: Joint, planning commission, Zoning Administrator and Selectboard
  Timeframe: Q3, 2017

Flash Flood

The following specific road projects have been identified which will serve to mitigate the effects of flooding and/or flash flooding in the road network system to be implemented as funding allows:

- Stone Line ditches according to the town road plan when work is being completed on any road.
  Estimated cost: Varies dependent on project
  Source of funds: Town highway budget
  Possible Benefits: Increased time for storm waters to enter rivers, reduced erosion damages
  Responsibility: Joint Town Highway Dept and Selectboard
  Timeframe: Q3, 2016-Q4, 2020

Wildfire

- The Town Selectboard will adopt an outdoor burn ordinance to be enforced by the Fire Warden.
  Estimated cost: None
  Source of funds: Town General Fund
  Possible Benefits: Reduced risk due to out-of-control burning.
  Responsibility: Joint Selectboard and Fire warden
  Timeframe: Q3, 2016

- The Town believes it is the homeowner's responsibility to mitigate their susceptibility to wildfire through "firewise" practices. The town will support education in this area by providing educational materials in the town office.
  Estimated cost: None to town
  Source of funds: Government printing office
  Possible Benefits: Increase awareness of outdoor burning hazards and possible defenses.
  Responsibility: Town Clerk/ACRPC
  Timeframe: Q3, 2016

Drought

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

- The town supports water line extension to underserved areas of town when paid for by those it would serve
  Estimated cost: None
  Source of funds: Private Homeowners
  Possible Benefits: Additional fire protection and reduced contamination risk
  Responsibility: Joint Selectboard/Planning Commission
  Timeframe: As requested

- The Town supports looping of dead end water lines between Sand Road and Little Chicago Road to provide more reliable service to residents.
  Estimated cost: Unknown
  Source of funds: Private Homeowners, Town general funds
  Possible Benefits: Additional fire protection and reduced contamination risk
  Responsibility: Joint Selectboard/Planning Commission
  Timeframe: As requested

Dam Failure

- The Town believes the current monitoring system in place by the State of Vermont is adequate to prevent a catastrophic dam failure and, if not, downstream damages would be minimal.

- The Town supports the planning commission looking into changes in its next zoning rewrite which would allow review of dam construction as a conditional use.
  Estimated cost: $1,000
  Source of funds: Town general fund
  Possible Benefits: Better review of creation of impounded waters to ensure safety
  Responsibility: Joint Selectboard/Planning Commission
  Timeframe: at next zoning rewrite – est. Q2-Q4 2017

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 Ferrisburgh 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 FERRISBURGH, VERMONT SELECTBOARD ADOPTION RESOLUTION

Town of Ferrisburgh, Vermont Single Jurisdiction All-Hazards Mitigation Plan

WHEREAS, the Town of Ferrisburgh 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 Ferrisburgh, 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 Ferrisburgh 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 Ferrisburgh; and

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

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

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

1. The **Town of Ferrisburgh, Vermont Single Jurisdiction All-Hazards Mitigation Plan** is hereby adopted as an official plan of the Town of Ferrisburgh, 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 Ferrisburgh are also requested to implement actions assigned to them within this plan;

3. 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 Ferrisburgh, this

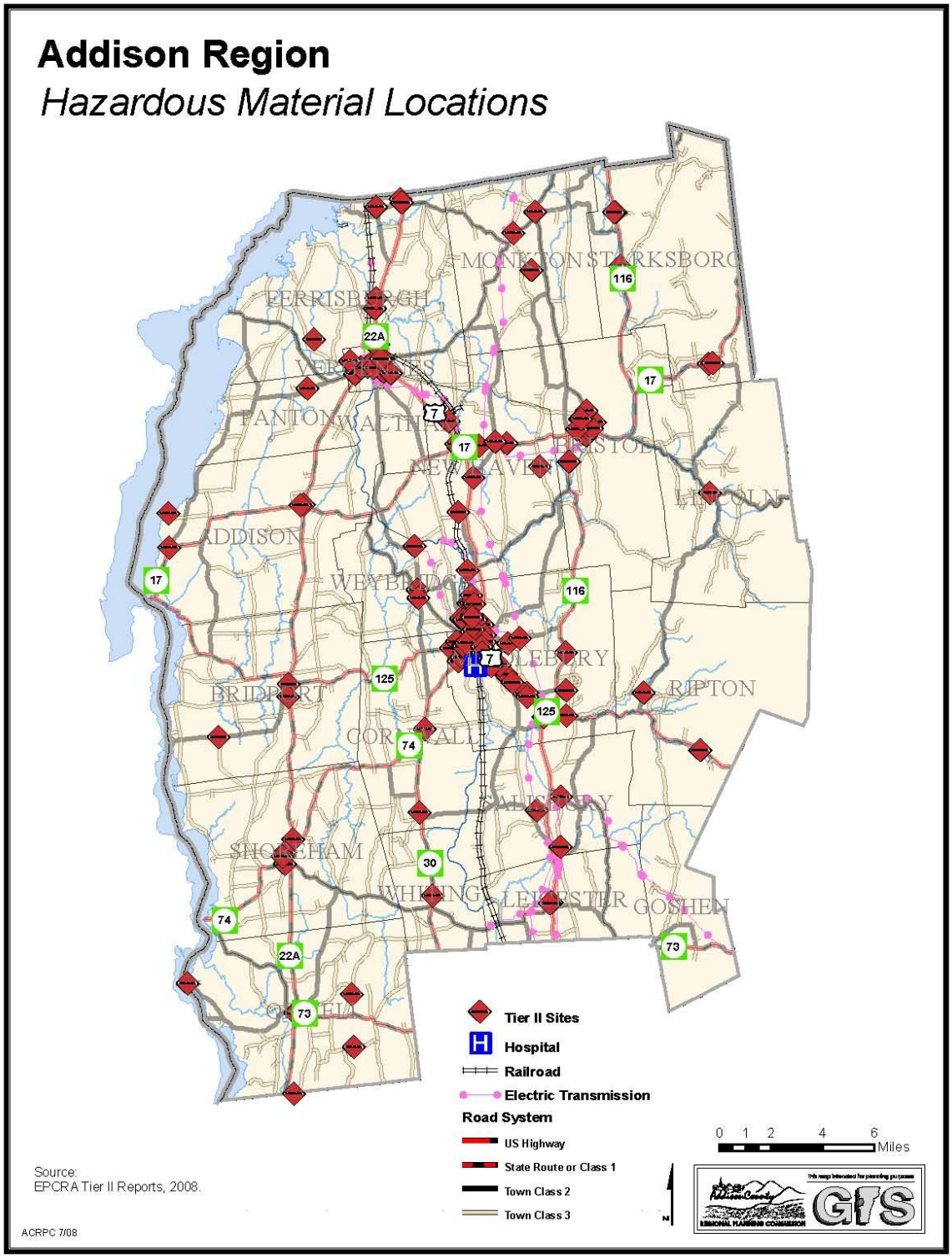
____ day of _____ 201__.

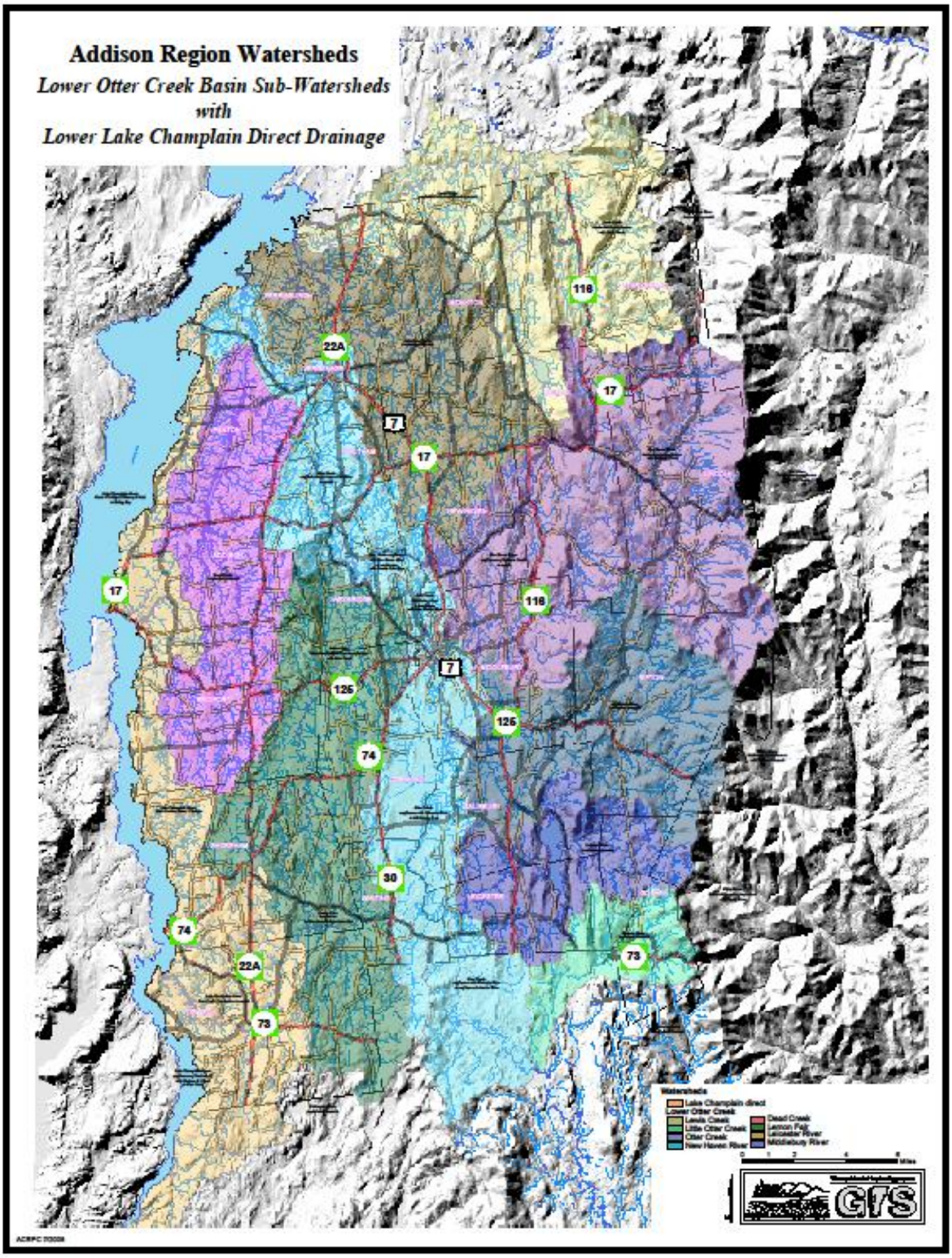
_____	_____	_____
Selectboard Chair	Selectboard Member	Selectboard Member

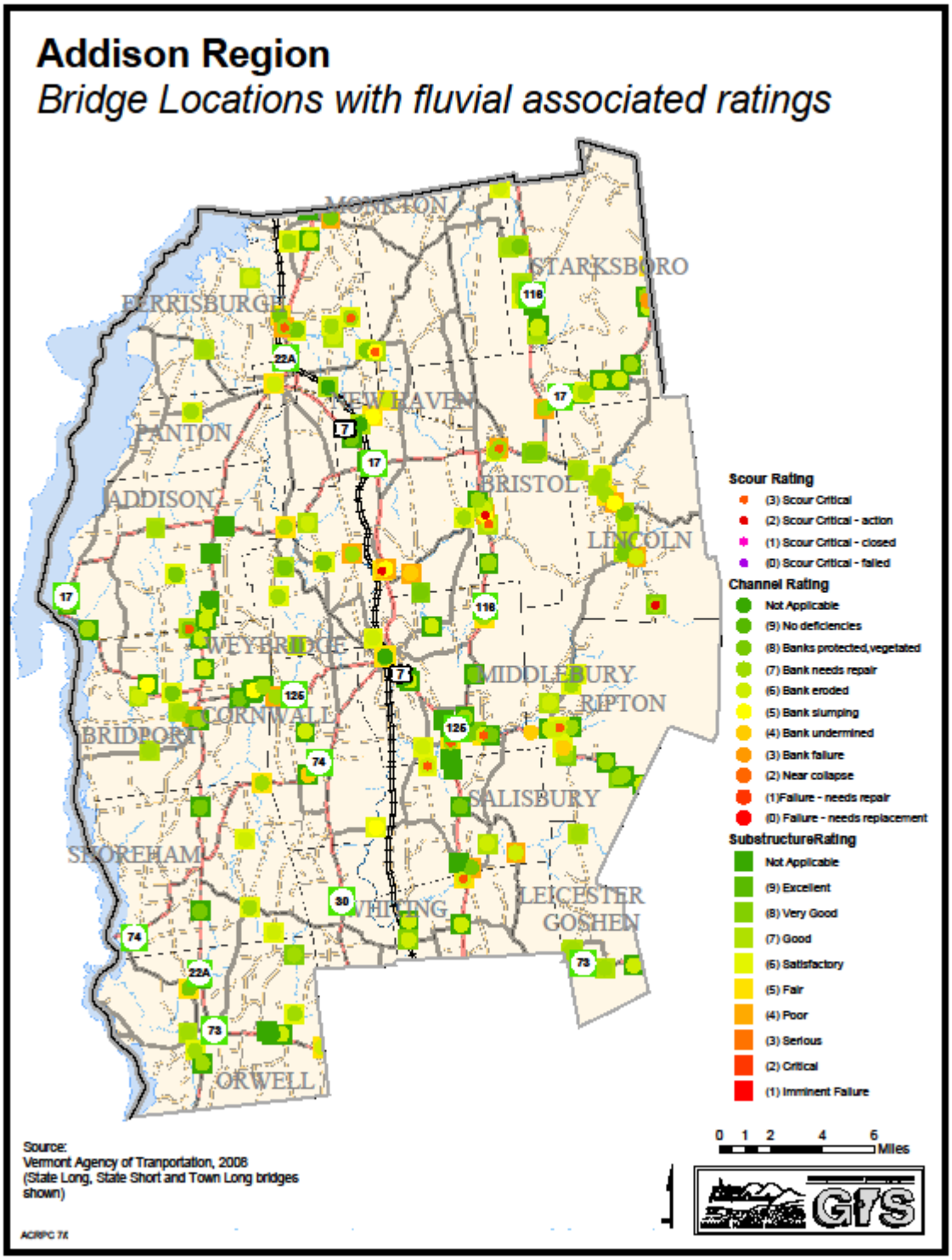
ATTEST:

_____

Annex A
Regional Maps




Addison Region Watersheds
Lower Otter Creek Basin Sub-Watersheds
with
Lower Lake Champlain Direct Drainage
118
22A
17
7
17
17
116
7
125
125
74
30
74
22A
73
73
GIS


Addison Region
Bridge Locations with fluvial associated ratings
MONKTON
STARKSBORO
FERRISBURGH
NEW HAVEN
PANTON
ADDISON
BRISTOL
LINCOLN
WEYBRIDGE
MIDDLEBURY
RIPTON
CORNWALL
BRIDPORT
SALISBURY
SHOREHAM
LEICESTER
GOSHEN
ORWELL
Scour Rating
(3) Scour Critical
(2) Scour Critical - action
(1) Scour Critical - closed
(0) Scour Critical - failed
Channel Rating
Not Applicable
(9) No deficiencies
(8) Banks protected,vegetated
(7) Bank needs repair
(6) Bank eroded
(5) Bank slumping
(4) Bank undermined
(3) Bank failure
(2) Near collapse
(1)Failure - needs repair
(0) Failure - needs replacement
SubstructureRating
Not Applicable
(9) Excellent
(8) Very Good
(7) Good
(6) Satisfactory
(5) Fair
(4) Poor
(3) Serious
(2) Critical
(1) Imminent Failure
0 1 2 4 6
Miles
Source:
Vermont Agency of Tranportation, 2008
(State Long, State Short and Town Long bridges shown)
ACRPC 7/08

Annex B
Local Documents:
Local Road and Bridge Standards

January 23, 2013

TOWN ROAD AND BRIDGE STANDARDS
TOWN OF Ferrisburgh, VERMONT

The Town of Ferrisburgh 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:

- 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.

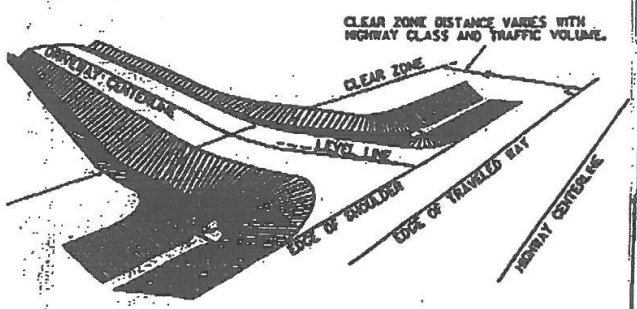
Training
Town highway maintenance crews must collectively attend a minimum total of 6 hours of training per year on best road management practices. The town must keep documentation of their attendance for a period of three years.

Passed and adopted by the Selectboard of the Town of Ferrisburgh **State of Vermont on** March 18, **20**14.

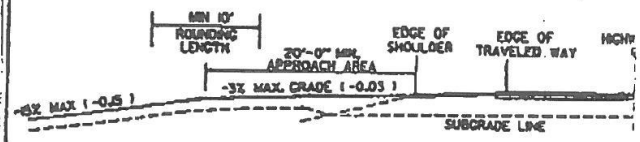
Select Board: Loretta Lawrence

3

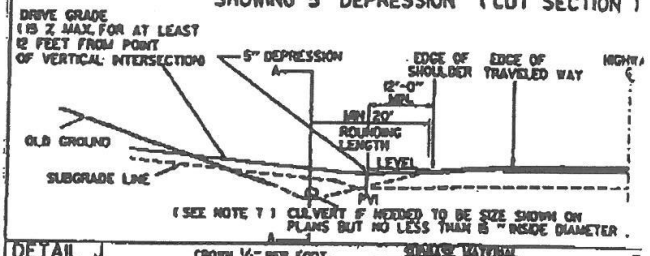
DETAIL G PERSPECTIVE SKETCH OF DRIVE INTERSECTION SHOWING DEPRESSION



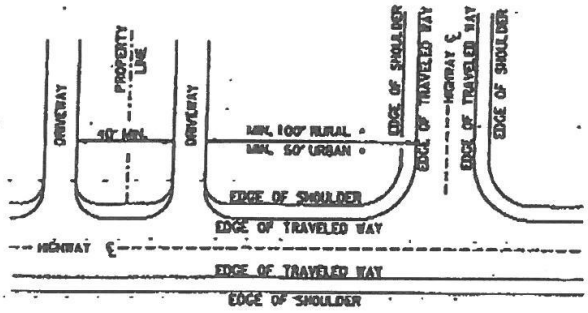
DETAIL I PROFILE OF DRIVE INTERSECTION (FILL SECTION)



DETAIL H PROFILE OF DRIVE INTERSECTION SHOWING 5" DEPRESSION (CUT SECTION)

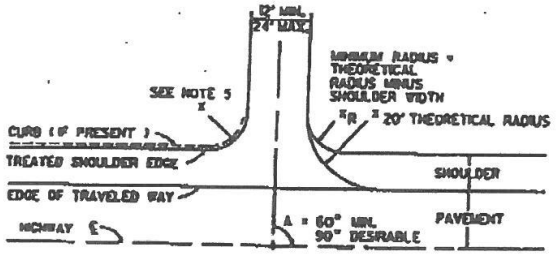


DETAIL F MINIMUM HORIZONTAL SEPARATION BETWEEN DRIVEWAYS AND INTERSECTING SIDEROADS



*MINIMUM UNLESS NO OTHER REASONABLE ACCESS IS AVAILABLE AND PRIOR APPROVAL IS GRANTED BY THE A.D.T. OTHER ITEMS SUCH AS TRAFFIC SIGNALS, HIGH TRAFFIC VOLUMES, OR FUNCTIONAL CLASS OF HIGHWAY SHOULD BE CONSIDERED WHEN DETERMINING APPROPRIATE OFFSET DISTANCE.

DETAIL A RESIDENTIAL DRIVE



DETAIL J

7. CIRCULAR DRAINAGE CULVERTS UNDER DRIVES SHALL HAVE A MINIMUM INSIDE DIAMETER (I.D.) OF 15". PIPE ARCHES USED UNDER DRIVES SHALL HAVE A MINIMUM INSIDE CROSS-SECTIONAL AREA EQUIVALENT TO THAT PROVIDED BY A 15" CIRCULAR PIPE.

8. THE OFFSET BETWEEN THE PROPERTY LINE AND THE EDGE OF THE DRIVEWAY MAY BE GOVERNED BY LOCAL ZONING LAWS. DRIVEWAY WIDTH RESTRICTIONS SHOWN PERTAIN ONLY TO THE AREA WITHIN THE HIGHWAY R.O.W..

9. DRIVEWAY GRADES STEEPER THAN THOSE SHOWN MAY BE ALLOWED AS LONG AS A 20' APPROACH AREA IS ACHIEVED FOR THE VEHICLE TO PAUSE BEFORE ENTERING THE HIGHWAY.

10. CORNER SIGHT DISTANCES, EQUAL TO OR GREATER THAN THOSE SHOWN BELOW, SHALL BE PROVIDED IN BOTH DIRECTIONS FOR ALL DRIVES ENTERING ON PUBLIC HIGHWAYS, UNLESS OTHERWISE APPROVED BY THE AGENCY OF TRANSPORTATION. CORNER SIGHT DISTANCE IS MEASURED FROM A POINT ON THE DRIVE AT LEAST 15 FEET FROM THE EDGE OF TRAVELED WAY OF THE ADJACENT ROADWAY AND MEASURED FROM A HEIGHT OF EYE OF 3.5 FEET ON THE DRIVE TO A HEIGHT OF 4.25 FEET ON THE ROADWAY.

SIGHT DISTANCE CHART

POSTED SPEED OR DESIGN SPEED (M.P.H.)	MINIMUM STOPPING SIGHT DISTANCE (FT)	MINIMUM CORNER SIGHT DISTANCE ** (1990 AASHTO) (FT)
25	150	275
30	200	335
35	225	445
40	275	560
45	325	660
50	400	770
55	450	935

NOTE * ADVANCE WARNING SIGNS WILL BE REQUIRED IF OBTAINABLE CORNER SIGHT DISTANCES ARE BELOW MINIMUM STOPPING SIGHT DISTANCES.

**ASSUMES AN APPROACHING VEHICLE WILL REDUCE ITS SPEED (BY CONSTANT DECELERATION) TO 85% OF THE POSTED OR DESIGN SPEED OF THE HIGHWAY BEFORE OVERTAKING A VEHICLE ENTERING THE TRAFFIC STREAM. IT FURTHER ASSUMES THE VEHICLE ENTERING THE TRAFFIC STREAM WILL ACCELERATE AS SOON AS POSSIBLE TO THE SPEED OF THE APPROACHING VEHICLE. WHEN CONSIDERING ACCESSES ONTO EXISTING HIGHWAYS THERE MAY BE SITUATIONS WHEN A DRIVER WILL NOT HAVE THE MINIMUM CORNER SIGHT DISTANCE AND WILL HAVE TO REDUCE HIS RUNNING SPEED TO ALLOW AN ENTERING VEHICLE TIME TO ENTER THE STREAM OF TRAFFIC.

1/18/13 Letter of Intent

Town of Ferrisburgh
PO Box 6, 3279 Route 7
Ferrisburgh, VT 05456
Email: ferrisburghclerk@comcast.net
and/or ferrisburgh@comcast.net

Tel. (802) 877-3429
Fax (802) 877-6757

Chester Hawkins
Town Clerk/Treasurer
Pam Cousino
Ass't. Town Clerk/Treasurer
Ken Wheeling
Zoning Administrator

January 18, 2013

Tim Bouton
ACRPC Sr Planner Emergency Mgt.
14 Seminary Street
Middlebury, VT 05753

Dear Tim,

The Town of Ferrisburgh would like the Addison County Regional Planning Commission to help us create and adopt a Hazard Mitigation Grant Program. Please regard this letter as a Letter of Intent for this program.

We understand that you will fill out the application for us. Please let us know if there is anything else we need to do. We look forward to working with you on this.

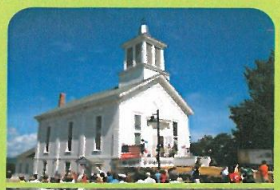
Sincerely,

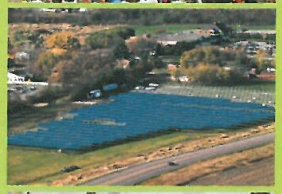
Chet Hawkins
Town Clerk/Treasurer

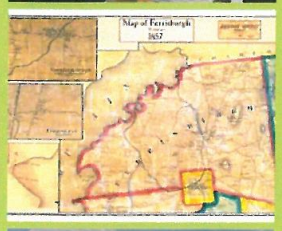
cc: Ferrisburgh Selectboard
John Bull, Ferrisburgh Road Foreman

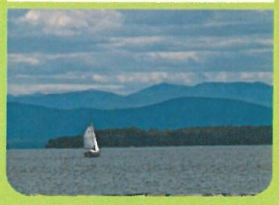
FERRISBURGH RESIDENTS!

We are updating the Town Plan and your opinion matters!









1. We want to hear from you.

Fill out a 5 minute survey

and enter to win a $50 gas voucher

Go to: www.ferrisburghvt.org and click on: 'Community Survey' or pick one up at the Town Hall.

2. You're invited!

Community Open House

October 23rd, 7-8:30pm

Town Hall Grange

Stop by and tell us what you love about living here, what your concerns and ideas are, as we update our Town Plan.

Door prizes, informal atmosphere, light-refreshments, all ages welcome.

What is a town plan?

A town plan is a road map for planning and development decisions, both now and into the future. The goals of the plan should reflect the common needs and desires of the residents in that Town. In Vermont, town plans must be updated every 5 years.

Brought to you by the Ferrisburgh Planning Commission. For more information contact: Addison County Regional Planning Commission: 388-3141

Open House Sign Up Sheet (No Takers)

Your Selectboard is looking for residents to join the

Ferrisburgh Hazard Mitigation Planning Committee

Help mitigate the impacts of future disasters!

Name:	Address:	E-mail

DRAFT

TOWN OF FERRISBURGH
SELECTBOARD MINUTES
September 17, 2013

Members present: Loretta Lawrence-Chair, Jim Warden, Jim Benoit and Sally Torrey

Others present: Bob McNary, Bessie Sessions, Duncan Harris, Tim Boutin, Jean Silveria, Bernie Dam and Bill Sullivan

The meeting was called to order at 6:30 P.M.
Sally Torrey moves to amend the agenda to have the Round Barn Farm Homeowners Assoc. go first; second by Jim Benoit. So voted

Sally Torrey moves to approve the rental agreement with the Round Barn Farm Homeowners Assoc.; second by Jim Warden. So voted.

Tim Boutin from Regional Planning is present to discuss the Hazard Mitigation Plan request that he sent to the town a year ago. The grant for the plan has been approved. He has a hand out for the Board. If the Town has a Hazard Mitigation Plan the disaster assistance reimbursement is increased. The Town needs a Hazard Mitigation Planning committee which should have members from the Selectboard, Schoolboard, Road Crew, Planning Commission, Zoning Board, Fire Chief and the Emergency Coordinator.

Jim Warden moves to continue to move forward and support the plan; second by Sally Torrey. So voted. The Board thanks Tim.

Public Comment

Bob McNary reports that the land at the corner of Route 7 and 22A needs to be mowed.

Old Business

Sheila McGregor's dogs. Jim Warden has met with the Town Attorney and is working on the problem and the VT AG Department is going to do an inspection of the property.

The Board will work on the Reserve Fund Balance at the next meeting.

Jim Warden and Sally Torrey will distribute the Ethics Policy. Bob McNary has questions about the policy. He hasn't had a chance to read it yet and doesn't want to sign what he hasn't read. Sally Torrey says that you don't have to read or sign the policy and if there are any questions just ask the Selectboard.

Jim Benoit will talk with the Road Forman about the Parking Ordinance.

Bob McNary feels that there should be a bike riding policy that explains the Towns expectations for bike riders.

Jim Benoit has called Avonda about the leak in the radiator and they are working on a fix for the problem.

PACE The program is very confusing, has changed frequently and has a high interest rate.

Jim Warden moves table the program until further information is received; second by Jim Benoit. So voted.

New Business

The sewer alarm is having problems and the Clerk will call the septic company.

Committee Appointments

TO: Tim tbouton@acrpc.org

RE: Ferrisburgh Hazard Mitigation Committee

DATE: June 18, 2014

The following were appointed to this committee on Tuesday June 17, 2014

Interested Citizen – Ted Marcy - Theodore Marcy (theodore.marcy@uvm.edu)

Interested Citizen – Laura Fall - laurafall59@yahoo.com

Fire Department – Bill Wager - Bill.Wager@utas.utc.com

ACRPC – Tim Davis - thetimdavis@gmavt.net

Planning Commission – Annie Cohn - acohn@anwsu.org

Road Forman – John Bull - John Bull (ferrisburghroad@comcast.net)

VARS – Steve Fleming - deadcreek@gmavt.net

Selectboard – Steve Gutowski - stephen gutowski yardboss@pointbaymarina.com

Selectboard - Jim Warden - james.warden@state.vt.us

9/11 Meeting Agenda

Town of Ferrisburgh

Hazard Mitigation Planning Committee Initial Meeting

Thursday, September 11. 6:30pm – 8:00pm

Town of Ferrisburgh Town Office

Agenda:

6:30 – Convene meeting/Introductions

6:35 - Brief overview of the hazard mitigation planning process

6:45 – FEMA Review tool

7:00 - Filling out the Hazard Inventory/Risk Assessment matrix

7:45 – Project brainstorming (if time allows)

8:00 - Adjourn

9/11 Meeting Minutes

Town of Ferrisburgh

Hazard Mitigation Planning Committee Initial Meeting

Thursday, September 11. 6:30pm – 8:30pm

Town of Ferrisburgh Town Office

Minutes:

1. Convene meeting/Introductions: Attendees present-

- Steve Gutowski- Ferrisburgh Selectboard
- Steve Fleming- Representing VARS
- Anne Cohn- Ferrisburgh Planning Commission and Ferrisburgh Central School
- Ted Marcy- North Ferrisburgh United Methodist Church
- Laura Fall- Interested resident

2. Brief overview of the hazard mitigation planning process:

Tim gave a brief overview of what the hazard mitigation planning process looks like including an expected timeframe. The committee will meet to complete a hazard inventory/risk assessment, brainstorm mitigation projects/activities, and conduct reviews and edits of plan drafts. A reviewable draft should be complete sometime early next year with a hoped for final local adoption of a FEMA approved plan by the Selectboard within a year.

3. Filling out the Hazard Inventory/Risk Assessment matrix:

A Hazard Inventory/Risk Assessment was completed via consensus by the committee (attached) The highest risks identified were hazardous materials incidents related to either Route #7 or to the rail line. Particular concern was expressed about at-grade rail crossings once railbed improvements have been completed and hazardous intersections near the elementary school. Also identified as high priority were: widespread power failure, structure fire, and winter storm/ice storm.

Medium priority hazards were: high winds, lightning strikes, earthquake, and transmissible illness/epidemic.

As part of the HIRA process, committee members identified highest risk areas on maps provided for drifting snow, rail and highway risk areas, high winds, inundation flooding and flash flooding. (attached)

4. Adjourn

Thank you for participating in our ongoing efforts to help Ferrisburgh plan for and mitigate future problems. Because available funding sources often require non-federal matches to the dollars ACRPC 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 again for your assistance.

1. Meeting/Class Name	2. Operational period Date: Time:	3. Check-In (Meeting/Class)Location	Check-In List ICS 211-P
HM Mtg	9/11/14 630-830	Ferrisburgh Town Hall	

4. Name	5. Town or Agency	6. Position?	7. Volunteer? (Y/N)	8. Mileage? (to & from)	9. Travel Time? (to & from)
Laura Fall	Ferrisburgh	N/A			
STEVE GUTOWSKI	FERRISBURGH	SELECTMAN	Y	12±	15 min
Ted Mariyp			Y	5	10 MIN
	N. Ferrisburgh	N/A	Y	5	5 min
Stephen Fleming	Vergennes Rescue	Member	Y	10	10
Anne Cohn	Ferrisburgh	PC + School Nurse	Y	~3	5

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

10/27 Meeting Agenda

Town of Ferrisburgh

Hazard Mitigation Plan Committee Meeting

Ferrisburgh Town Hall

Monday, October 27, 2014

6:30 PM-8:00PM

1. Welcome/Introductions
2. Plan Overview & Process
3. Review Risk Assessment
4. Mitigation Project Brainstorming
5. Next Meeting
6. Adjourn, by 8:00pm

10/27 Meeting Minutes

Town of Ferrisburgh

Hazard Mitigation Plan Committee Meeting

Ferrisburgh Town Hall

Monday, October 27, 2014 6:30 PM-8:00PM

Minutes

1. Welcome/Introductions- The committee welcomed Chief Wager of the Ferrisburgh Fire Dept and John Bull of the Ferrisburgh Highway Dept. and did quick introductions.

2. Plan Overview & Process- Tim did a quick overview of the purposes of and process for developing a plan for those not present at the last meeting.

3. Review Risk Assessment- The risk assessment as developed at the last meeting was reviewed and approved. Additional hazard locations were identified by John for addition to the plan maps showing where each type of hazard is most prevalent in town.

4. Mitigation Project Brainstorming- Tim lead a brainstorming session for committee members to identify possible mitigation solutions for each of the hazards that had been identified in the risk assessment. Tim had prepared several examples for the committee to work from and several hazard locations were removed where mitigation actions had already been taken.

5. Next Meeting- To be Determined… Probably in early December. Tim will collate all the ideas and information from the two meetings and provide new draft copies to committee members for an editing session at the next meeting

6. Adjourn- 8:13pm

Attendees:

Tim Bouton – ACRPC	Steve Gutowski –Selectboard
Steve Flemming – VARS	Bill Wager –Fire/EMD
Anne Cohn – School/Planning Comm.	John Bull –Highway
Ted Marcy – NFUMC	Laura Fall – Resident

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 Sources

Federal

FEMA

- **Pre-Disaster Mitigation Program.** FEMA's Pre-Disaster Mitigation Competitive (PDM-C) Grant Program provides funds to states, territories, and federally recognized tribes for pre-disaster mitigation activities. The grant program is administered by FEMA for pre-disaster mitigation planning and projects primarily addressing natural hazards. Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations.

- **Hazard Mitigation Grant Program.** The Hazard Mitigation Grant Program (Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act) is activated during Presidential Disaster Declarations to assist in identifying mitigation projects, and funding these projects on a 75% Federal/25% non-Federal cost share basis. Mitigation program funding is based on 15% of the federal funds expended for the Infrastructure and Individual Assistance Programs. The HMGP supports other program activities, i.e. participation the NFIP and a current Hazard Mitigation Plan are required for recipients of HMGP funds.

- **Section 406 Hazard Mitigation.** Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act provides funding to mitigate certain projects as they are being repaired as part of overall disaster assistance to a community. Under Section 406, if it can be shown to be cost effective to mitigate a Public Assistance eligible project as part of the repair, FEMA may fund the mitigation as part of the overall project cost.

- **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 municipalities highway (Class 1, 2 or 3) infrastructure are made by the Secretary of Transportation from annual appropriations for the purpose. State grant amounts are limited to $150,000 for any one project. State funds are required to be matched, as follows:
    - By at least 20% of the total project cost, or
    - By at least 10% of the total project cost providing that town has adopted Town Highway codes and standards and the town has conducted a highway infrastructure study (not less than three years old), which identifies all town culverts, bridges and identified road problems.

- **Town Highway Class 2 Roadway Program.** State grants to provide for the preservation of any Class 2 highways by providing grants for resurfacing or reconstruction are made by the Secretary of Transportation or his/her designee from annual appropriations for that purpose. State grants are limited to $150,000 for any one project and there are match requirements fir 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 Ray Doherty the State Hazard Mitigation Officer (SHMO) and Misha Bailey in the mitigation division.

Lastly, thanks to the volunteers from the Town of Ferrisburgh 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:

Steve Gutowski	Ferrisburgh Selectboard Co-Chair
Jim Warden	Ferrisburgh Selectboard
Ted Marcy	Interested Citizen/ N. Ferrisburgh Methodist Church
Laura Fall	Interested Citizen
Bill Wager	Ferrisburgh Fire Chief/Emergency Manager
Tim Davis	Regional Planning Commission Delegate
Annie Cohn	Ferrisburgh Planning Commission/Nurse- Ferrisburgh Central School
John Bull	Ferrisburgh Road Foreman
Steve Fleming	Vergennes Area Rescue Squad