

DRAFT

TOWN OF KILLINGTON, VERMONT LOCAL HAZARD MITIGATION PLAN

ADOPTION DATE

PREPARED BY THE TOWN OF KILLINGTON AND RRPC



Damage on Route 4 Roaring Brook from Tropical Storm Irene, August 2011



TABLE OF CONTENTS

1. Introduction.....2

2. Purpose.....3

3. Community Background4

4. Planning Process8

 4.1 Plan Changes10

5. Community Hazard Inventory and Risk Assessment.....13

 5.1 High Risk Hazards14

 Floods, Fluvial Erosion, and Ice Jams.....14

 Hazardous Materials, Radiological and Chemical/Biological Incidents.....18

 Highway Accidents20

 Severe Thunderstorms21

 Winter Storms, Ice Storms, and Power Outages23

 5.2 Low Risk Hazards25

 Aircraft Crashes.....25

 Continuity of Government/Record Retention25

 Dam Failure25

 Drought.....26

 Earthquakes26

 Hurricanes and Tornadoes.....26

 Landslides and Rockslides27

 Terrorism27

 Water Supply Contamination28

 Wildfires and Forest Fires28

6. Hazard Mitigation Strategy29

 6.1 Mitigation Goals.....29

 6.2 Existing Mitigation Programs, Projects, and Activities29

 6.3 Changes in Development31

 6.4 National Flood Insurance Program (NFIP) Compliance.....32

 6.5 Mitigation Actions and Projects33

7. Plan Maintenance Process.....35

 7.1 Routine Plan Maintenance35

 7.2 Post-Disaster Review Procedures.....36

 7.3 Continued Public Participation.....37

Appendix A Certificate of Adoption38

Appendix B Town Map39

Appendix C Hazard Analysis Map.....40

Appendix D Areas of Local Concern Map41

Appendix E Action Evaluation and Prioritization Matrix.....42

Appendix F Documentation of the Planning Process44

1. INTRODUCTION

The impact of expected but unpredictable natural and human-caused events can be reduced through community planning. The goal of this plan is to provide all-hazards local mitigation strategy that makes the Town of Killington more disaster resistant. This plan focuses on five high risk hazards in Killington, and additional natural and human-caused disaster categories are included to compliment the all-hazards planning approach.

Hazard mitigation is any sustained action that reduces or eliminates long-term risk to people and property from natural and human-caused hazards and their effects. FEMA and state agencies have come to recognize that it is less expensive to prevent disasters than to repeatedly repair damage after a disaster has struck. This plan recognizes that communities have opportunities to identify mitigation strategies and measures during all of the other phases of Emergency Management – Preparedness, Response and Recovery. Hazards cannot be eliminated, but it is possible to determine what the hazards are, where the hazards are most severe, and to identify local actions that can be taken to reduce the severity of the hazard.

Additionally, the Disaster Mitigation Act of 2000 (DMA 2000) establishes a national program for Hazard Mitigation that includes mitigation planning and eligibility requirements for state and local governments. The Act is aimed at reducing loss of life and property, human suffering, economic disruption and disaster costs. High priority should be given to mitigation of hazards at the local level with increased emphasis on assessment and avoidance of identified risks, implementing loss reduction measures for existing exposures and ensuring critical services/facilities survive a disaster.

Hazard mitigation strategies and measures *alter* the hazard by eliminating or reducing the frequency of occurrence, *avert* the hazard by redirecting the impact by means of a structure or land treatment, *adapt* to the hazard by modifying structures or standards or *avoid* the hazard by limiting development. These could include projects such as:

- Flood-proofing structures
- Planting stream buffers
- Tying down propane/fuel tanks in flood-prone areas
- Elevating furnaces and water heaters
- Identifying and modifying high traffic incident locations and routes
- Ensuring adequate alternative water supplies
- Elevating structures or utilities above flood levels
- Identifying and upgrading undersized culverts
- Proactive land use planning for floodplains and other flood-prone areas
- Proper road maintenance and construction
- Ensuring critical facilities are safely located
- Buyout and relocation of structures at risk
- Establish and enforce appropriate building codes
- Public information and education

2. PURPOSE

The purpose of this hazard mitigation plan is to assist the Town of Killington identify all hazards facing their community and identify strategies to begin reducing risks from identified hazards. Once adopted, the local mitigation plan is not legally binding; instead, it outlines goals and actions to prevent future loss of life and property.

Adopting and maintaining this Local Hazard Mitigation Plan will provide the following benefits:

- Make certain funding sources available to complete the identified mitigation initiatives that would not otherwise be available if the plan was not in place.
- Ease the receipt of post-disaster state and federal funding because the list of mitigation initiatives is already identified.
- Support effective pre- and post-disaster decision making efforts.
- Lessen the Town's vulnerability to disasters by focusing limited financial resources to specifically identified initiatives whose importance has been ranked.
- Connect hazard mitigation planning to community planning where possible.

3. COMMUNITY BACKGROUND

Land Use and Development Patterns

The current character of Killington as a resort community began in 1957 with the development of what would evolve into the largest ski area in the eastern United States called Killington Ski Resort. The resort brought new accommodations, restaurants and ski outfitters. The 1970's and 1980's saw steady growth, especially in second home development. The Sherburne Village 400-acre planned-unit development continued to expand, while Pico Ski Resort developed its own residential and commercial village. As Killington has gained the reputation as a world-class ski resort, it has grown into four-season resort community. Attractions related to this expansion include the Green Mountain National Golf Course and a variety of large events throughout the year.

Historically, the hamlet of Sherburne Center (where River Road meets US Route 4) was the prominent focus of community activity. The first settlements in Killington occurred near West Bridgewater and Sherburne Center, along the edge of a stage road connecting Woodstock to Rutland. With the growth in the ski industry, the Killington Basin area now has the greatest concentration of settlement in to the Town of Killington. The Ski Village District can accommodate future development of new villages within which skiing and other recreational activities would be integrated with residential and commercial uses.

While Killington's year round population is 811 residents, the town hosts up to 20,000 visitors on busy ski weekends.

Please refer to the Town Map to see the development patterns and further information.

Demographics and Growth Potential

Killington's total population is 811 according the 2010 U.S. Census. Killington has had an unsteady rate of growth, with large increases between 1970 and 1980, and significant decreases between 1980 and 1990. The change in population from 1990 to 2000 represented a 48% percent increase, followed by a 29% decrease in full-time residents between 2000 and 2010. This variability also shows the difficulty in counting full-time residents given many weekend and seasonal residents. SP Land Company has applied to expand the resort village area; growth in population and housing units is expected here and elsewhere in the town.

Land Features

Killington is the highest-elevation town in Rutland County. The forested landscape is dominated by two peaks of the Green Mountains' Coolidge Range, Killington Peak and Pico Peak. To the east of the range, medium density commercial and resort-related residential development leads to the Ottauquechee River, which follows a steep north-south valley. Farther east, East Mountain and nearby hills characterize rugged and remote terrain.

Precipitation and Water Features

Elevation and geography lend themselves to the high amounts of snowfall in Killington compared to other areas in the Region. Winter weather events in Killington often average 9 to 14 inches. Water resources, such as Baker’s Falls, Thundering Brook, Roaring Brook, Falls Brook, Pico Pond, Colton Pond and Kent Pond, are widely distributed across Killington. The town is primarily located in the watershed of the Ottauquechee River, although portions also drain west towards Mendon Brook and north into the Tweed River. Most waterways are small fast-moving streams, but the Ottauquechee River has a broad floodplain paralleling US Route 4.

Water Supply

No municipal water system currently exists in the Town of Killington. Most residential and commercial dwellings maintain individual wells whose ground water supply is primarily from bedrock aquifers. Killington Ski Resort has access to wells (on property owned by SP Land) with large capacity in the Sherburne Valley District. These wells are adequate to serve the current needs of the ski area, as well as the needs of the Killington expansion. A snowmaking pipeline connects to Woodward Reservoir in the Town of Plymouth.

Sewer Services

The Town of Killington is serviced by several large capacity sewage treatment facilities. Most of the Killington Road Commercial District is serviced by the Sherburne Fire District #1. The Alpine Pipeline services the Pico resort area, expanded development in the Killington Ski Area Basin, and other sections west of the Sherburne Pass. Killington Ski area and the 400-acre PUD are serviced by two systems operated by Killington, while the Sunrise condominiums are serviced by their own treatment facility. The remainder of the sewage treatment and disposal in Town is primarily carried out by individual on-site systems.

In 1997 resort owner Killington, Ltd. purchased approximately 600,000 gallons/day of wastewater disposal capacity from Rutland City. The resort constructed a pipeline from the Killington treatment plant to the Alpine Pipeline to serve the Grand Hotel as well as proposed new development within the Killington Basin Area.

An extension of the Alpine Pipeline has been recently constructed on the east side of the Sherburne Pass. The extension serves existing businesses as well as residences. The new line serves existing and proposed development along Killington Road to approximately Merrill Drive. The primary purpose of the pipeline extension is to serve existing businesses, which have relied on in-ground sewage disposal.

Transportation

The Town of Killington is serviced by a network of highways that range from major arterial highways to minor Class 4 roads. US Route 4 is the primary arterial highway through Killington, and plays a major role in linking the eastern and

DRAFT

western parts of the state. Vermont Route 100 carries local traffic and is a heavily traveled north/south route through the central portion of the state.

There are also several Class 2 and Class 3 roads that serve as collector routes. Of these roads, Killington Road, which connects US Route 4 to the Killington Ski Area, is the most traveled. This road has been improved through widening and access management strategies. The increased use of public transportation and shuttle services to the ski area will also decrease traffic volume on the road.

Killington has a total of 26 bridges in its highway network and many large culverts. Nine have a span of twenty feet or more; 17 are less than twenty feet. Of this total, 3 are on the state system. Under state law—19 VSA 306(b)—bridges are structures with a span of six feet or greater. Structures between six and twenty feet are considered “short structures” and neither inspected nor prioritized by the state; short structures are not eligible for regular federal highway aid (Vermont Agency of Transportation Handbook for Local Officials).

Emergency Response Resources

The Sherburne Volunteer Fire Department, D/B/A Killington Fire and Rescue, is comprised of one Fire Chief, two Deputy Chiefs, two captains, two Lieutenants, and fire fighters. Department personnel consists of active fire fighters with varying fire fighting expertise obtained through attendance at weekly training sessions and State and County fire fighting schools. Once a year, the Department sponsors a fire prevention program at the Sherburne Elementary School. The department is an active member of the Rutland County and Connecticut Valley Mutual Aid Systems. In the past, the Department has entered into an agreement with Killington Ski Resort whereby Killington Ski Resort provides a “fire brigade” of ten trained firefighters to provide additional manpower as needed. This system requires consistent membership and regular training by Resort employees and has had limited impact on firefighting capability. This is a program the town has identified as needing substantial improvement.

Police protection is provided by Town of Killington Police Department, which is a part time law enforcement organization. The Police Department includes a Chief of Police and two part time police officers. The Police Department has direct radio communication with the State Police and with town officials, including the Sherburne Volunteer Fire Department. The Vermont State Police are available to handle most criminal investigations and work closely with the Police Department on highway accidents, traffic control and general police work, and handles calls when the Killington Police Department is not on duty.

The Sherburne Volunteer Fire Department, D/B/A Killington Fire Rescue, has instituted a First Response unit to provide initial treatment and quick response time in the event of a medical emergency. The Town of Killington is served by the Regional Ambulance Service. In addition, during the winter months, personnel with first aid training comprise the Skiing Services Department at Killington Ski Area

DRAFT

and the Ski Patrol at Pico Ski Area, although these patrollers never supplant emergency medical care in the town. A private medical clinic provides orthopedic treatment, acute care, and routine medical services, especially for skiers and snowboarders.

Please refer to the Hazards Analysis map for the locations of town emergency operations centers and emergency shelters. Likely emergency operations centers include the fire house at 1973 Killington Road and the Town Office at 2706 River Road. The Town's designated shelter is Killington Elementary School at 686 School House Road.

Emergency Management Planning

Killington has a Rapid Response Plan that was adopted in June of 2004. An improved Basic Emergency Operations Plan was drafted in 2012. This plan (now called a Local Emergency Operations Plan) should be updated as necessary and adopted on a yearly basis.

4. PLANNING PROCESS

The Rutland Regional Planning Commission (RRPC) and the Town of Killington coordinated Killington’s Local Hazard Mitigation Plan process. A Pre-Disaster Mitigation (PDM) grant from FEMA supported this process.

The public was invited to participate in the planning process at duly-warned Selectboard meetings on July 22, 2009, March 26, 2013, and December 10, 2013. In addition to public involvement in the initial development of the plan, opportunities for public comment included a meeting to gather input from Killington emergency management personnel and other town officials. These participants received copies of the draft mitigation strategies and were given the opportunity to provide comments. Representatives of Killington Resort, Killington Elementary School, and the Sherburne Volunteer Fire Department (DBA Killington Fire & Rescue), and emergency management directors of all six adjoining municipalities were invited by email to comment on the draft plan.

At a Killington Selectboard meeting on December 10, 2013 the Selectboard identified local officials and stakeholders to serve on a committee to finalize the preparation of a single jurisdictional local hazard mitigation plan. The Selectboard passed a motion in support of finalizing their Local Hazard Mitigation Plan (see Selectboard meeting minutes in Appendix F).

Hazard Mitigation Committee Members

Name	Affiliation
Steve Finer	Emergency Management Director
Chet Hagenbarth	Highway & Facilities Department Director
Richard Horner	Town Planner & Zoning Administrator
Patty McGrath	Selectboard Member
Whit Montgomery	Chief of Police
Gary Roth	Fire Chief
Seth Webb	Town Manager

In addition to the local knowledge of committee members and other stakeholders, the following documents and resources were consulted in the preparation of this plan:

- National Oceanic and Atmospheric (NOAA) National Climatic Data Center’s Storm Events Database (<http://www.ncdc.noaa.gov/stormevents/>)
- National Weather Service (Burlington, VT) Recent Weather Event Summaries (<http://www.weather.gov/btv/recentwx>)
- Vermont Department of Environmental Conservation Waste Management Interactive Database (http://www.anr.state.vt.us/dec/wastediv/SMS/WMID_Intro.htm)
- FEMA Disaster Declarations for Vermont (http://www.fema.gov/disasters/grid/state-tribal-government/35?field_disaster_type_term_tid_1=All)

DRAFT

- OpenFEMA Dataset: Public Assistance Funded Project Summaries for Vermont
- Vermont Agency of Transportation High Crash Location Report, 2006-2010
- Rutland Region All Hazards Mitigation Plan (2012)
- State of Vermont Hazard Mitigation Plan (2013)
- Killington Town Plan (2010)

Utilizing these resources, a thorough update of data has been conducted by RRPC staff to take advantage of new data that may not have been available during the original development of the plan. The State of Vermont also adopted an updated Hazard Mitigation Plan in November of 2013 (Vermont HMP 2013), which was consulted during this plan preparation. As discussed in the following section, the plan was also restructured to a single jurisdictional format. RRPC staff revised the plan throughout the planning process, circulating multiple draft plans to committee members and other local stakeholders.

The hazard mitigation committee meetings were publicly warned in the following locations: Town of Killington's online calendar, community bulletin boards, Rutland Herald community calendar, RRPC website, and RRPC Facebook page. A committee meeting was held on January 15, 2014 at the Killington town offices (see Appendix F for meeting announcement, agenda, and attendance). Participants discussed the purpose and timeline for preparing the plan, other groups/individuals that should be aware of the plan, and damages that occurred in town from Tropical Storm Irene. Town maps were reviewed and the town's hazards were ranked according to their probability, impact, and risk level. The committee discussed high risk hazards in further detail. After this meeting a draft plan was developed by RRPC staff and circulated to committee members.

A final committee meeting was held on March 12, 2014 at the Killington town offices (note that in addition to the individuals in attendance, shown in Appendix F, representatives from Killington Resort were invited to attend as well). At the meeting committee members reviewed the updated draft plan and noted information to add and correct. The committee discussed and agreed upon the town's mitigation goals. Then committee members discussed the status of each mitigation action from the town's last plan, and identified new mitigation actions for the town. After this final committee meeting, RRPC staff communicated with committee members on an individual basis to gather final pieces of information, and the draft plan was finalized. The final draft plan was distributed to the entire committee in May of 2014 for their review.

The draft plan was submitted first to Northwest Regional Planning Commission on date, for review as part of the PDM grant agreement between RRPC and NRPC. Then the plan was submitted to the State Hazard Mitigation Committee through the State Hazard Mitigation Officer (SHMO) on date for review and comment. Required revisions were made...

On date, 2014 a public comment period was warned by the following means... The following neighboring communities/organizations were invited to review and comment on the plan: ... Comments were received and addressed...

DRAFT

The plan was then sent to FEMA Region I for review; after receipt of comments from FEMA Region I, changes were made until conditional approval was achieved. A public hearing was held on the plan, and then the final plan was reviewed by the West Haven Selectboard for adoption on date. The adopted plan was forwarded to FEMA Region I and the State Hazard Mitigation Officer.

4.1 Plan Changes

The Killington Local Hazard Mitigation Plan was originally adopted by the Town as an Annex to the Rutland Region All Hazards Mitigation Plan in 2004 and received FEMA final approval in 2004. The plan was updated between March and September 2009 by RRPC staff with input from the Selectboard and a mitigation planning team (then-Fire Chief Steve Finer, Town Planner Richard Horner, and then-Road Commissioner Ken Merrill). With the assistance of FEMA mitigation specialists, this version was updated in 2012 to reflect the impact of Tropical Storm Irene on August 28, 2011.

In the fall of 2013 the RRPC was awarded a PDM grant to help the town move from an Annex format to a single jurisdictional plan. As noted in the State Hazard Mitigation Plan, regional planning commissions throughout Vermont are now mainly encouraging towns to create local mitigation plans as single jurisdictional documents rather than annexes, due to the issue of plan expiration being based on the first town that is approved in a regional effort. This plan is a single jurisdictional local hazard mitigation plan.

The plan has been reorganized from the previous Annex format, with the following sections updated/added during the planning process:

Section of Plan	Changes Made
1. Introduction	Information on the Disaster Mitigation Act added
2. Purpose	Benefits of plan listed
3. Community Background	Census data updated, information on Police Department updated
Community Disaster History	Section deleted and incorporated into Community Hazard Inventory and Risk Assessment section
4. Planning Process	Section moved from end of document, additional details on process including: names of individuals involved, meeting locations and dates, list of sections updated, and the status of the town’s current mitigation actions
5. Community Hazard Inventory and Risk Assessment	List of hazards was consolidated/changed as necessary, risk assessment table added, organized discussion into high and low risk hazards, hazard information from regional and state hazard mitigation plans added, local hazard information updated, tables added on hazard history and hazard summary for high risk hazards

DRAFT

6. Hazard Mitigation Strategy	Town mitigation goals updated, goals from Regional and State Hazard Mitigation Plans added, additional information on NFIP, mitigation actions and projects reviewed and updated, tables reformatted
7. Plan Maintenance Process	Added details on routine plan maintenance and methods to continue public involvement
Appendices	Maps updated with new data, certificate of adoption added, materials added documenting the planning process

DRAFT

The following table provides an overview of Killington’s hazard mitigation actions from the 2004 Annex along with their current status. Note that mitigation actions which are completed have been deleted from the Mitigation Actions & Projects Table in Section 6.5 of this plan.

Status of Hazard Mitigation Actions

Mitigation Action	Status
Continue pre-planning program with at-risk structures.	In Progress, Revised: Fire Department continues with pre-planning, this action has been revised to be more specific to current progress with the pre-planning program.
Incorporate proposed strategies into Annual Budget and Capital Improvement Plan.	Removed: Mitigation actions included in this plan will be incorporated into the Annual Budget and Capital Improvement Plan in the regular course of completing projects.
Continue installation of needed dry hydrants.	In Progress: The town has been installing dry hydrants, and expects to finish within 2 years.
Examine current Town Plan and ensure that identified hazard areas and needed strategies are addressed.	In Progress: Town Plan is due to be updated and readopted in 2015, so this will be addressed in that update.
Examine current zoning and ensure that identified hazard areas are addressed.	Completed: Zoning Bylaws were readopted in 2012, and include a Public Open Space District and Foster’s Peak District at high elevation.
Designate Sherburne (now Killington) Elementary School as official emergency shelter and have it Red Cross approved.	Completed: School is now a Red Cross designated shelter.
Educate at-risk residents and property owners on wildfire risk reduction techniques and management strategies for the urban/wildland interface.	Completed: Information about wildfire risk reduction, techniques, and management strategies were created and distributed to residents.
Install generator in elementary school, the town’s emergency shelter.	Completed: The elementary school now has its own generator.
Decrease accident risk on Rt. 100.	Removed: This action has been incorporated into the following mitigation action which refers to Rt. 100.
Improve traffic flow at intersection of Rt. 100/4.	In Progress, Revised: The town has discussed this issue with the Agency of Transportation several times, and it will continue to advocate for AOT to make improvements.
Have Town’s floodplains mapped so town can participate in NFIP.	Removed: New floodplain maps created in Rutland County by FEMA (dated 8/28/2008) but FEMA did not study Killington and did not identify any special flood hazard areas in town.

5. COMMUNITY HAZARD INVENTORY AND RISK ASSESSMENT

What follows is an analysis of local hazards based upon review of the Hazards Analysis Map produced for the town (see Appendix C), review of existing data, and information provided by local officials and stakeholders. Whenever possible, the issues identified below are represented on the Areas of Local Concern map (Appendix D).

The Risk Assessment table below lays out all the hazards identified for the town and covered in this plan. Each hazard was discussed by committee members and ranked in terms of its Probability and Impact, and then given an overall Risk Level (see table footnotes). This assessment resulted in the categorization of High and Low risk level hazards for the town. Following the Risk Assessment table is a detailed discussion of High risk hazards including tables on Hazard History and Hazard Summary, followed by a brief discussion of Low risk hazards.

Risk Assessment

Hazard	Probability ¹	Impact ²	Risk Level ³
Aircraft Crashes	Low	Minor	Low
Continuity of Government/ Record Retention	Low to Medium	Minor	Low
Dam Failure	Medium	Moderate	Low
Drought	Low	Moderate	Low
Earthquakes	Low	Minor	Low
Floods, Fluvial Erosion, and Ice Jams	High	Major	High
Hazardous Materials, Radiological and Chemical/Biological Incidents	High	Major	High
Highway Accidents	High	Moderate	High
Hurricanes and Tornadoes	Low	Major	Low
Landslides and Rockslides	Medium	Minor	Low
Severe Thunderstorms	High	Moderate	High
Terrorism	Low	Moderate	Low
Water Supply Contamination	Low	Minor	Low
Wildfires and Forest Fires	Low	Major	Low
Winter Storms, Ice Storms, and Power Outages	High	Major	High

¹ **High** likelihood of happening: Near 100% probability in any given year.

Medium likelihood of happening: 10% to 100% probability in any given year (at least once in the next 10 years).

Low likelihood of happening: 1% to 10% probability in any given year (at least once in the next 100 years).

² **Minor** impact: Isolated occurrences of minor property damage, minor disruption of critical facilities and infrastructure, and potential for minor injuries.

Moderate impact: Occurrences of moderate to severe property damage, temporary shutdown of critical facilities, and/or injuries or fatalities.

Major impact: Severe property damage on a town-wide scale, shutdown of critical facilities, and/or multiple injuries or fatalities.

³ Based on Probability and Impact, is the risk level: **High** or **Low**? Risk is defined as the potential for damage, loss, or other impacts created by the interaction of hazards with community assets.

5.1 High Risk Hazards

A discussion of each significant hazard is included in the proceeding subsections, and the Areas of Local Concern map identifies the location of these hazards (see Appendix D). Each high risk hazard below includes a table of the Hazard History based on County-wide FEMA Disaster Declarations (DR-#) plus information from local records, a narrative description of the hazard, and a comprehensive Hazard Summary table.

Floods, Fluvial Erosion, and Ice Jams

Hazard History

Date	Event	Location	Extent¹	Impact²
August 2011 (DR 4022)	Fluvial erosion and flooding from Tropical Storm Irene	Statewide	8 to 9 inches of rain, Ottauquechee River new record peak gauge height of 14.95 feet	Major road and property damages, cost to Killington \$3.167 million
December 2000 (DR 1358)	Flooding	Rutland and Bennington Counties	Warm and moist air brought 2-3 inches of rain which combined with snowmelt and frozen ground	Cost to Killington \$10,043
January 24, 1999	Flooding	Statewide	Heavy precipitation and warmer temperatures caused ice jams and flooding	US Route 4 flooded, cost to Killington ~\$5,000
March-April 1987	Flooding	Statewide	Heavy rains combined with snowmelt caused major flooding	Damage to town infrastructure, Rabeck Road completely flooded
June 1973	Flooding	Statewide	Heavy rains, Ottauquechee River left its banks	No declared disaster for Rutland County, but major local impacts

¹ **Extent:** The strength, magnitude, or characteristics of the hazard regardless of the people and property affected.

² **Impact:** The effect of the hazard on people and property, including infrastructure damaged, fatalities, and dollar value of damage.

Flooding is the overflowing of rivers, streams, drains and lakes due to excessive rain, rapid snow melt or ice as well as overflow of banks caused by sudden high water flow due to breaching of dams (both human-made and natural dams caused by beavers or debris build-up). Flooding of land adjoining the normal course of a stream or river has been a natural occurrence since the beginning of time. If these floodplain areas were left in their natural state, floods would not cause significant damage. Development has increased the potential for flooding because rainfall that used to soak into the ground or take several days to reach a river or a stream via a natural drainage basin now quickly runs off streets, parking lots and rooftops and through human-made channels and pipes.

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

While inundation-related flood loss is a significant component of flood disasters, the more common mode of damage is associated with fluvial erosion, streambed and streambank erosion, often associated with physical adjustment of stream channel dimensions and location during flood events. These dynamic and oftentimes catastrophic adjustments are due to bed and bank erosion, debris and ice jams, or structural failure of or flow diversion by human-made structures. An ice jam occurs when the ice layer on top of a river breaks into large chunks which float downstream and cause obstructions (State HMP 2013).

As noted in the State Hazard Mitigation Plan, “Flooding is the most common recurring hazard event in the State of Vermont” (2013: 4-7). Several major flooding events have affected the state, resulting in multiple Presidential Disaster Declarations. From 2003 to 2010, Rutland County as a whole experienced roughly \$1.4 million in property damages due to flood events (State HMP 2013). The worst flooding event in recent years came in August of 2011 from Tropical Storm Irene, which dropped up to 8 inches of rain in some areas of Rutland County (State HMP 2013: 4-61). This caused most streams and rivers to flood in addition to severe fluvial erosion. As of the writing of this plan, the total amount of FEMA Public Assistance funds disbursed throughout Rutland County for Tropical Storm Irene is \$11.8 million. FEMA has also disbursed Individual Assistance payments of \$1.6 million in home repair assistance, \$303,317 in rental assistance, and \$155,921 in other needs assistance throughout Rutland County (State HMP 2013).

While heavy rains are not uncommon in the area, few areas in Killington are prone to flooding. Major flooding and fluvial erosion was experienced in 1973, 1976, and 2011,

DRAFT

each of which were declared disasters and estimated as 100-year flood events. After these events, many culverts were upgraded to accommodate higher water flows. During the 1976 flood, the town recreation area flooded badly. The town later cleared out the river and riprapped some erosion prone banks in this area.

Tropical Storm Irene caused massive damage on August 28, 2011, closing dozens of roads and destroying US Route 4 in multiple places. Due to damage east, west, north, and south of Killington, residents and visitors were unable to leave in cars for several days. US Route 4 reopened in Killington three weeks after the storm. One historic house, dating to the 1820s, was destroyed when Roaring Brook caused unprecedented erosion along US 4 near the River Road intersection. A USGS gauge on the Ottauquechee River at the Killington/Bridgewater town line recorded a peak gauge height of 14.95 feet before being damaged. Between 1985 and 2010 (the years of gauge operation), the previous peak height was 8.94 feet.

As Tropical Storm Irene showed, the greatest risk in town comes from fluvial erosion and debris flow, and the mountainous areas of town are especially vulnerable to this phenomenon. Flooding, especially flash flooding, can impact areas in town that are located outside of designated floodplains, including along streams confined by narrow valleys.

There is the potential for valley flooding along the Ottauquechee River. There are several residences that are threatened by potential flooding; however, they have not experienced significant problems. A wildlife management area protects from development much of the flood plain areas in the northern end of the valley. The town has seen little to no development pressure in the unprotected areas of the valley. FEMA has not mapped flood hazards in the town and has identified no special flood hazard areas. All waterways can flood and cause damage to infrastructure and buildings.

Longstanding problem areas include:

- Rabeck Mountain Road—washes out during high water events. The town has replaced a bridge that was susceptible to flooding. Water still comes up over the road, but the road has not washed out since the bridge replacement.
- Town Highway 22 (Richardson Road)—town used mitigation funds to replace a culvert, which has since washed out, so now riprap is used to stabilize the road.
- Ottauquechee River backs up along the valley, but hasn't threatened structures or transportation infrastructure.

Specific areas that incurred damaged during Tropical Storm Irene include:

- US 4 east of River Road (destroyed)
- East Mountain Road (most of road destroyed)
- Coffee House Road (undermined road, deep road)
- Stage Road (culvert damage)
- Estabrook Road (shoulder road)
- River Road (side washout, roadway undermined, culvert damage)
- Thundering Brook Road (side washout)

DRAFT

- Hadley Hill Road (side washout)
- Ravine Road (edge washout)
- Hemlock Road (edge washout)
- Dean Hill Rd (damage at Roaring Brook)
- Floral Drive (culvert damage)
- Old Coach (culvert damage, roadway erosion)
- Bear Mountain area roads: Bear Mountain, Trailside, Rim, Trailview, Mini Drive, Overlook, Brookside (washouts and edge damage)
- Ledge End Rd (large washout)
- Roundabout (large washout)
- Bear Run (large washout)

Due to the significant damages caused by Tropical Storm Irene—in town, in the Rutland Region, and throughout Vermont—the Town of Killington now places a higher priority on flood mitigation. See Section 6.2 for activities that the town has taken to improve flood resilience, and Section 6.5 for flood mitigation projects that the town will pursue in the future. Note whether fluvial erosion and/or river corridor studies have been done in town

Please refer to the Areas of Local Concern Map (Appendix D) for frequently flooded locations, and the Hazard Analysis Map (Appendix C) for floodplain information.

Hazard Summary

Hazard	Location	Vulnerable Assets	Extent ¹	Impact ²	Probability ³
Floods, Fluvial Erosion, and Ice Jams	Throughout town, especially along Ottauquechee River	Private property and other structures near waterways, roads, culverts, bridges	Tropical Storm Irene resulted in 8 to 9 inches of rainfall and severe flooding	Tropical Storm Irene caused major road damages, and cost \$3+	High

¹**Extent:** The strength, magnitude, or characteristics of the hazard regardless of the people and property affected.

²**Impact:** The effect of the hazard on people and property, including infrastructure damaged, fatalities, and dollar value of damage.

³**Probability:** Likelihood of hazard occurring based upon past events.

High: Near 100% probability in any given year.

Medium: 10% to 100% probability in any given year (at least once in the next 10 years).

Low: 1% to 10% probability in any given year (at least once in the next 100 years).

Hazardous Materials, Radiological and Chemical/Biological Incidents

Hazard History

Date	Event	Location	Extent	Impact
January 23, 2012	Diesel spill	Killington Resort upper snow shed parking lot	50 gallons of diesel released to frozen gravel from bus broken fuel line	22.72 tons of contaminated soil removed
June 17, 2011	Oil spill at abandoned farmhouse	6216 Route 4	200 to 300 gallons of heating oil lost to dirt floor basement, due to vandalism	Caused sheens 2 miles downstream, \$7,000 in damages
January 7, 2008	Fuel spill at residence	41 Mountain View Drive	40 gallons of fuel released due to aboveground storage tank broken valve	Fuel migrated to nearby stream and pond

Significant recent reported hazardous materials spills, from the Vermont Department of Environmental Conservation's Waste Management Interactive Database (http://www.anr.state.vt.us/dec/wastediv/SMS/WMID_Intro.htm)

Hazardous materials accidents can occur anywhere there is a road, rail line, pipeline or fixed facility storing hazardous materials. Almost the entire region is at risk of an unpredictable accident of some type. Most accidents are small spills and leaks, but some result in injuries, property damage, environmental contamination and other consequences. These materials are poisonous, corrosive, flammable, and radioactive or pose other hazards. Major accidents may result in an off-site release of hazardous or toxic materials. The overall objective of chemical emergency response planning and preparedness is to minimize exposure from a wide range of accidents that could produce off-site levels of contamination in excess of Levels of Concern (LOC) established by the U.S. Environmental Protection Agency. Minimizing this exposure reduces the consequences of an emergency to people in the area near facilities which manufacture, store, and process hazardous materials.

Large volumes of hazardous materials are transported daily to and through the region by railroad and highway. Within Rutland Region, there are a number of public and private fixed facilities that produce or use hazardous materials. These facilities must report annually to the Department of Public Safety under the Community Right-To-Know Program. Some typical examples include diesel fuel, gasoline or propane in quantities larger than 10,000 lbs; greater than 100 lbs of oxygen, carbon dioxide, paint, lead, ammonia, chlorine, sawdust, sand, road salt, battery acid, hydraulic oils, cement, pesticides, and fertilizers; and explosives in amounts requiring a license from DPS. A more complete list can be found on the Vermont Emergency Management EPCRA website (<http://vem.vermont.gov/programs/epcra>).

In Killington, because US Route 4 is a major east-west transportation route, it is frequently used to transport many types of hazardous materials. While the town has experienced few bad accidents involving hazardous materials, there is always the risk of an accident. A major concern associated with a hazardous materials release is the potential environmental damage to the Ottauquechee River, which follows US Route 4.

DRAFT

Killington has eleven sites that report storing hazardous materials including multiple cellular network sites. The town believes that there are more facilities that need to be added to the state’s Tier II database. Town officials are in the process of identifying these. Within the Sherburne Fire District, the wastewater treatment plant stores large amounts of liquid chlorine. A responsible staff at the treatment plant has decreased the likelihood of an incident involving these chemicals. The town also identified the supply shed housing much of Killington Ski Resort maintenance chemicals and equipment as a high hazard. This building is located in close proximity to the Killington Ski Resort administration offices and the Killington Base Lodge. Please refer to the Hazard Analysis Map for the location of Tier II facilities and the surrounding structures potentially affected by a hazardous material incident.

In terms of radiological incidents, mishandling and improper disposal or storage of medical wastes and low-level radioactive products from medical use are also a hazard to the Rutland Region. Radiological materials could be transported along US Route 4. Killington is not within a critical distance of Vermont Yankee Nuclear Power Station. The town does host the largest ski area in the east, and the large numbers of visitors during the ski season could make the town a potential target for radiological, chemical, or biological incidents.

Hazard Summary

Hazard	Location	Vulnerable Assets	Extent	Impact	Probability
Hazardous Materials, Radiological and Chemical/Biological Incidents	Along Route 4, and Tier II sites that store chemicals or hazardous materials	Waterways and infrastructure along Route 4	Past notable spills have been from 40 to 300 gallons of fuel/oil	Contamination of soils and waterways	High

Highway Accidents

There are many areas in Killington where highway accidents are possible. The US Route 4 corridor carries all the east-west traffic for the central part of the state. From 2006 to 2010, a total of 46 motor vehicle highway crashes occurred along Route 4 in Killington (VT Agency of Transportation).

One problematic area is Route 4 near the bottom of the pass, where water tends to build up and cause accidents. The top of the pass on Route 4 is also the site of accidents. Vermont Route 100 is narrow and winding, with short sight distances; the curve after Lakewood Drive on Route 100 is one problematic spot. During the ski season, use of these roadways increases significantly. The intersection of these two roadways has a high conflict potential. The issues with this intersection have been looked at by both the town and the State, with no resolution as of yet. Highway accidents resulting in fatalities have occurred at the intersection of Routes 100 and 4, as well as the top of the pass on Route 4. Another area with accidents is Proctor Pond Road. Because of the mountainous habitat in Killington, there is also a thriving moose population. These animals are a great risk to motorists and increase the risk of highway accidents.

In addition to injuries and fatalities, accidents on Routes 4 and 100 can - and have - delayed travel on these major roads. A major closure of either road, especially the Route 4 and 100 intersection, could have a regional impact.

Please refer to the Hazards Analysis Map for mapped buffer areas potentially affected by a highway accident. Refer to the Areas of Local Concern Map for areas with high accident rates.

Hazard Summary

Hazard	Location	Vulnerable Assets	Extent	Impact	Probability
Highway Accidents	Routes 4 and 100	Roads, private property, and other infrastructure along Routes 4 and 100	Minor to major crashes possible	Past accidents have resulted in injuries but rarely fatalities or major road closures	High

**Severe Thunderstorms
Hazard History**

Date	Event	Location	Extent	Impact
June 2, 2013	Severe thunderstorms	Statewide	Heavy rains, high winds, large hail	Trees and power lines down
August 16, 2007	Severe thunderstorms	Statewide	Straight-line winds between 60 and 80 mph	Trees, branches, and power lines down along Route 4, cost to Killington ~\$50,000
June 20, 2006	Severe thunderstorms	Central and southern Vermont	High winds	Trees downed onto Route 100, cost to Killington ~\$5,000
June 9, 2004	Severe thunderstorms	Countywide	High winds, heavy rain	Power lines blown down, cost to Killington ~\$5,000
July 1, 2001	Severe thunderstorms	Countywide	High winds, large hail	Downed trees and power lines, cost to Killington ~\$10,000

Severe thunderstorms can produce high winds, lightning, flooding, rains, large hail, and even tornadoes (State HMP 2013). Rutland County experienced severe thunderstorms on May 18, 2004 which included large hail (near one-inch diameter) and damaging winds up to ninety miles per hour (National Weather Service). From 2004 to 2010, for thunderstorms that caused more than \$200,000 in damage, Rutland County experienced nearly \$2 million in property damages.

Much of the hail activity in Rutland County is scattered and varies in intensity, and hail is often accompanied by heavy thunderstorms and gusty winds. Most areas of the region have been affected by a hail event at some point. These events are not associated with any particular area within the county. Property damages reported from the hail incidents have typically been associated with uprooted trees, downed power lines, and crop damages. Historic hail events include huge hailstones accompanying a tornado that passed over Pawlet and Manchester in June of 1782. In 1961 wind and hail hit the Rutland Fairgrounds lifting a cattle barn 50 feet from its foundation.

As shown in the hazard history table above, severe thunderstorms generally cause notable damage in town every couple of years. The worst thunderstorm in recent history occurred on August 16, 2007 when powerful straight-line winds moved through Rutland County and caused \$50,000 in damages in Killington. Killington’s road crew is prepared to handle issues related to severe thunderstorms such as road clearing and debris clean up. Typically, utility companies respond quickly to handle issues related to utility lines.

Hazard Summary

Hazard	Location	Vulnerable Assets	Extent	Impact	Probability
Severe Thunderstorms	Throughout town	Private property, public buildings, roads, culverts, bridges, power lines	High winds, hail, heavy rainfall	Downed power lines and trees, costs range from \$5k to \$50k	High

**Winter Storms, Ice Storms, and Power Outages
Hazard History**

Date	Event	Location	Extent	Impact
December 28, 2011	Winter storm	Western slopes of Green Mountains	10 inches of snow recorded in Killington	Highway Department snow removal costs
April 15-16, 2007	Late season Nor'easter	Statewide	Heavy wet snow, high winds	Trees uprooted, power outages
February 14, 2007	Winter storm	Statewide	Roughly 30 inches of snow in Killington	Highway Department snow removal costs
October 25-26, 2005	Early winter storm	Statewide at high elevations	19 inches of snow in Killington	Downed trees and power lines
December 2000 (DR 1358)	Winter storm	Rutland and Bennington Counties	Roughly 6 inches of snow, caused flooding	Cost to Killington \$10,043
March 1984	Winter storm	Statewide	Roughly 36 inches of snow in Killington	Highway Department snow removal costs

In the Rutland Region, most winter weather events occur between the months of December and March. Throughout the season, winter weather events can include snowstorms, mixed precipitation events of sleet and freezing rain, blizzards, glaze, extreme cold, and the occasional ice storm or a combination of any of the above. Events can also be associated with high winds or flooding, increasing the potential hazard. Total regional damages due to winter weather events generally peak at over \$1 million per month in January, February, and March. The costs of these storms come in the form of power outages due to heavy snow or ice accumulations, damaged trees, school closings and traffic accidents. From 2002 to 2010, Rutland County experienced \$1.1 million in property and crop damages from winter storms (State HMP 2013). There have only been two winter storm related federally declared disasters in the county (the ice storm of January 1998 – DR 1201, and the severe winter storm of December 2000 – DR 1358).

Winter storms with snow, ice and freezing temperatures in various combinations, are fairly commonplace in Killington. Recorded winter weather events in Killington often average 9 to 14 inches. Elevation and geography lend themselves to the high amounts of snowfall in Killington compared to other areas in the region. Another unique factor is that Killington is a ski resort town and large snowfalls tend to attract visitors to town, which heightens the need for emergency services. This is combined with the limited number of volunteer responders and services of a town with only about 800 full time residents.

The town is geared to handle most winter emergencies. In the case of a storm that delivers two or more feet of snow in 24 hours, the town would have difficulty in quickly clearing the roads. In these instances, there is the possibility of contracting private plow companies as well as plows owned by Killington Ski Resort to aid in clearing the roads.

DRAFT

The town budgets every year for costs associated with clearing roads in winter, and recently these costs have run from roughly \$250,000 to \$300,000 annually.

Ice storms are dangerous because they have the potential to cause power outages as well. Downed trees and utility lines are the most common impacts. Green Mountain Power (GMP), the electrical utility, typically responds quickly to outages, although residents should be prepared for several days without power. The town’s road crew handles clearing downed trees in a timely fashion.

Power outages pose risk to people reliant upon electricity for heat, water and medical equipment. The Fire Station has a 60 kW three phase generator which can run the station as an Emergency Operations Center. Killington Elementary School now has a hook up and generator to power the building, and there is a heavy rescue truck that provides power for some building functions. The Town Garage is fairly new and is wired to accommodate the use of a generator, and the town is in the process of purchasing a hook up and generator.

Hazard Summary

Hazard	Location	Vulnerable Assets	Extent	Impact	Probability
Winter Storms, Ice Storms, and Power Outages	Throughout town	Private property, public buildings, roads, power lines	Up to 30+ inches of snow per storm	Power outages, downed trees, cost of snow clearing and road maintenance	High

5.2 Low Risk Hazards

Aircraft Crashes

The Southern Vermont Regional Airport (located just south of Rutland City in Clarendon) generates some commercial and private air traffic, primarily jets and small aircraft. These types of aircraft carry small numbers of passengers and are not likely to cause a major catastrophe in the event of a crash, but nonetheless the associated fuel fires are something for which the region needs to be prepared. Also, since statistically speaking most crashes occur upon take-off and approach to an airport, the Rutland State Airport has taken a number of steps to improve visibility and other issues to increase the safety of these maneuvers.

In addition to traffic to and from this airport, there are reports of a number of low-flying, high-speed Air Force jets over parts of the region. There are also helicopters serving the hospital and other major facilities such as CVPS and VELCO. Again, the casualty count is likely to be low should one of these aircraft crash, but the related fuel fires are the biggest concern.

Continuity of Government/Record Retention

As referenced in the Rutland Region All Hazards Mitigation Plan, Vermont is one of three states that keep vital records and property information decentralized in municipalities. These municipal records document ownership of land, land transfers, property taxes, public rights of way, as well as evidence that properties are in compliance with local ordinances and of the owners' fiscal obligations, as well as vital statistics and actions of local boards and town meeting records. Securing and preserving town records are essential.

In Killington most town records are stored in two vaults that are located above the flood level. Land records have been microfilmed up to 2009, and the microfilm is stored by the state. In 2009 the town clerk moved to a digitized land record management system; additionally most records from 1980 have been scanned and digitized. However planning and zoning documents are stored in filing cabinets that are not fire proof, and they are not backed up.

Dam Failure

Dams can fail for various reasons, including structural failure, poor maintenance, overtopping due to flooding, movement of the dam foundation or soil erosion, and intentional acts of destruction (State HMP 2013: 4-95). The Vermont Agency of Natural Resources Dam Safety Section conducts periodic inspections of non-federal dams, categorizing dams based on the potential loss of life and property damage downstream in the event of failure.

The dams holding back Kent and Colton Ponds are owned by the Vermont Department of Fish and Wildlife. The Kent Pond dam suffered damages from Tropical Storm Irene, after which repairs were made to the spillway. Another dam is owned by Killington Ski Resort. This pond holds a few million gallons of water and would send water towards the

Trail Creek Condominiums if the dam were to fail. Please refer to the Hazard Analysis Map for the location and level of damage that could be caused should these dams fail.

Drought

There have been dry spells in Vermont and in the region, though they are commonly moderate or mild. The last protracted drought in Vermont occurred between 1964 and 1966. More recently, two statewide droughts were declared in June and July 1995 due to lack of rainfall. The state also experienced severe drought conditions in the summer of 2003 (State HMP 2013: 4-76). When dry spells occur, individual water wells are often affected and agricultural producers experience the greatest impact. On the whole, these problems have been sufficiently dealt with on a town and individual basis.

Drought can be a problem in late summer with local springs and private well levels reduced to minimal flows. Most wells are bedrock wells, and are therefore less affected by drought. Alpine Drive is dependent on a spring system, but has a large amount of water reserved in holding tanks. The Fire Department previously completed a 50-year drought survey. The survey certifies that existing hydrants were not where they should be located. The results have helped the Department identify where new dry hydrants should be located. The town continues to install new dry hydrants where needed.

Earthquakes

Vermont is considered to be an area with low to moderate seismic activity. 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 in 1943, and the second occurred in 1962 at Middlebury. The Swanton quake caused little damage, but the Middlebury quake did result in broken windows, cracked plaster and falling objects. Earthquakes centered outside the state have also affected Vermont. Two quakes of 5.5 magnitude occurred in New Hampshire in 1940. In 1988, an earthquake with a magnitude 6.2 was centered in Saguenay, Quebec and caused shaking in the northern two thirds of Vermont (State HMP 2013: 4-91).

Thrust faults can be found throughout the Rutland Region. These fault lines generally run north/south. On the western side of the region, a fault line cuts through the center of Benson and West Haven. Other fault lines are found in the central part of the region. One runs east/west through Pittsford, West Rutland, Ira, Middletown Springs, Tinmouth and Danby. A third is found that begins in Ira, crosses west to Poultney, and then south through Wells and Pawlet. On the eastern side of the region, two fault lines can be found crossing through the eastern portion of Killington. Despite the presence of these fault lines, there have been no incidences of reported damages due to earthquakes in the region or in Killington.

Hurricanes and Tornadoes

Hurricanes, including named tropical storms, pose high wind hazards. For a discussion of the extensive damages that resulted from Tropical Storm Irene in 2011, see the Floods,

Fluvial Erosion, and Ice Jams subsection on page 14. The state can also experience tornadoes that are capable of damaging or destroying structures, downing trees and power lines and creating injuries and death from collapsing buildings and flying objects. Tornadoes are less common than hail storms and high winds, but have occurred throughout Vermont. According to the National Climatic Data Center, from 1991 to 2010 Vermont experienced an average of one tornado each year (State HMP 2013: 4-55). Despite the low incidence of tornadoes and hurricanes within the Rutland Region, there have been numerous high wind events in the region, particularly in the towns bordering Lake Bomoseen and the mountain towns of the region.

Violent windstorms are possible in Killington. Most windstorms result in downed trees as well as damaged phone and power lines. Killington's road crew is prepared to handle issues related to road clearing and debris clean up. Typically, utility companies respond quickly to handle issues related to utility lines. The National Weather Service in Burlington issues a High Wind Warning when winds are expected to exceed 39-57 mph for at least one hour, or when any gusts of 58-73 mph are expected. This can occur in any season and when no precipitation is expected.

Landslides and Rockslides

According to USGS maps, the central part of the Rutland Region has a low susceptibility to landslides with less than 1.5% of the mapped area likely to experience one. On the other hand, the eastern and western parts of the region have a high susceptibility to landslide events, and a moderate level of actual occurrences. These higher risk areas coincide with the Green Mountains and parts of the Taconic Mountain ranges. The far western part of the region is characterized by clay soils and the shores of some major lakes. Nothing found through research or interviews indicates a regional significance for this hazard, other than a 1983 landslide event that resulted in \$11,300 in damages in Rutland (State HMP 2013: 4-89).

Part of Killington is considered by the USGS to have a high susceptibility/moderate incidence risk of landslide. One erosion prone area is on East Mountain Road. The uphill bank has the potential to slough off and block the road, while the downhill bank has the potential to erode, undermining the roadbed. The town has cleaned up the uphill side and reinforced the downhill side to help prevent slides. Since it was built, the road has stabilized considerably, and is now at less risk of landslides.

Other areas with erosion problems or potential include US Route 4 near the bottom of the pass, where the state has installed riprap to help control erosion. There are also several gravel roads in town, and steep paved mountain roads have erosion problems near the shoulders. Most of these issues are dealt with through routine maintenance.

Terrorism

Terrorism and civil hazards include actions that people *intentionally* do to threaten lives and property. They may range from a single person on a shooting rampage to a cyber-attack that harms computer systems to the organized use of weapons of mass destruction (WMD). According to the State Hazard Mitigation Plan (2013), the most probable

DRAFT

(though unlikely) attack is still a conventional bombing, hostage taking, kidnapping or shooting. A WMD attack must still be considered a rare event, but with the potential for catastrophic consequences. The most likely scenario of a WMD event in Vermont would involve the detonation of an improvised explosive device at a chemical facility (such as bulk liquid propane storage or manufacturing facility) near a large population center proximate to the Vermont/Canadian border. Within Killington, there are currently eleven “Tier II” facilities reporting the presence of hazardous materials on-site that hypothetically could be subject to this type of hazard.

Since Killington is home to a large ski resort that draws thousands of visitors from all over the world, there is some concern that it could be a target of terrorism. However there have been no incidents of terrorism in the past.

Water Supply Contamination

The Vermont Department of Environmental Conservation, through its Water Supply Division, assures compliance with Federal and state regulations to protect public health and the environment. There is no recent record of contamination to public potable water supply in the Rutland Region.

Most of the water in town is supplied by private home well systems. Some of the larger systems owned by Killington Ski Resort could be at greater risk. The largest water supply is held in a 250,000-gallon tank and services the Sunrise Condominiums complex.

Killington Ski Resort is currently exploring the possibility of installing an extensive new water system in the future. With the installation of this system, the potential for water supply contamination may need to be looked at again.

Wildfires and Forest Fires

The Rutland Region is heavily forested, particularly in the mountainous areas. Many towns have reported incidences of forest fires, particularly during periods of dry conditions, but in the last half century no major wildfires/forest fires or damages due to such have been reported in the region. However, drought conditions in 1999, 2000, 2001, 2005, and 2012 led to a statewide burning ban to reduce the risk of fire. The risk of wildfires and forest fires is considered to be statewide, with the exception of built-up areas like Rutland City (State HMP 2013: 4-83).

Killington is mostly forested. These forests contain potential fuel for a serious conflagration, though typically the timber is not dry enough to spread very fast or far. Problems arise when fires start in inaccessible areas of town. While the western side of town is potentially accessible using logging and Class 4 roads, the eastern side of town is only accessible by foot. In the past fires have been handled with local resources, including mutual aid.

6. HAZARD MITIGATION STRATEGY

6.1 Mitigation Goals

The hazard mitigation committee discussed mitigation goals, and recognized that due to the significant impacts of Tropical Storm Irene in 2011 the town now puts a higher priority on flood mitigation. The committee identified the following as Killington's main mitigation goals:

- Reduce the loss of life and injury resulting from all hazards, recognizing special considerations of being a resort community with a large transient population.
- Mitigate financial losses incurred by municipal, residential, agricultural and commercial establishments due to disasters.
- Reduce the damage to public infrastructure resulting from all hazards, especially flooding and fluvial erosion.
- Encourage the adoption and implementation of existing mitigation resources, such as River Corridor Plans and Fluvial Erosion Hazard Maps, if available.

Killington strives to be in accordance with additional goals from the Rutland Region All Hazards Mitigation Plan, which includes the following goals for the entire region as well as individual communities:

- Encourage hazard mitigation planning as a part of the Municipal Planning Process.
- Recognize the connections between land use, storm-water road design and maintenance and the effects from disasters.
- Ensure that mitigation measures are sympathetic to the natural features of Community Rivers, streams and other surface waters; historic resources; character of neighborhoods; and the capacity of the community to implement them.

Killington also strives to align with the overarching priorities of the State of Vermont Hazard Mitigation Plan:

- Local jurisdictions should use the State Hazard Mitigation Plan as a source of information and guidance.
- The state must prepare for the impacts of climate change on natural hazards.
- Private and public sector agencies should partner to mitigate hazards.

6.2 Existing Mitigation Programs, Projects, and Activities

The town's ongoing and recently completed hazard mitigation programs, projects and activities are listed below and in the chart outlining policies and plans.

Flood Prevention

After the 1973 and 1976 floods that affected the town, many culverts were upgraded to accommodate higher water flows, and the river behind the town recreation area was cleared out and riprapped in some erosion prone areas. These mitigation activities have worked well, with flooding no longer an issue in areas where projects

occurred. More recently, frequently flooded culverts on Rabeck Mountain Road and TH 22 have been upgraded. Much of the flooded area in the Ottauquechee valley is wildlife management area protected from development.

Fire Prevention

The town has been installing dry hydrants where water sources necessary to fight fires were lacking. The usefulness of this effort has been increased through a certified 50-year drought study that has identified where dry hydrants should be located. Three hydrants have been installed with task force grant money with two more planned for. Some original hydrants are also being redone.

Burn permits are mandated for any type of fire, 365 days a year. The Fire Warden aggressively enforces the Town's burn ordinance. All new buildings in town are fire code compliant; this includes most of the hotels and other commercial structures associated with Killington Ski Resort. Information is available to educate at-risk residents and property owners on wildfire risk reduction techniques and management strategies for the urban/wildland interface.

The Fire Department has led "pre-planning" efforts with some of the larger commercial facilities in town. This process identifies specific risks of the structure. This allows the fire department and private owner to work on risks before a fire occurs and approach a fire with a greater understanding of the structure.

Landslide and Rockslides

The town has stabilized uphill and downhill side of erosion prone bank along East Mountain Road, as well as redoing the blacktop on the roadway.

Emergency Management Planning

Efforts in town include participation in the Rutland Region Local Emergency Planning Committee (LEPC #2). The elementary school has an emergency plan and drills with the fire department. The school is also a certified Red Cross emergency shelter with a back-up generator. Killington Ski Resort also has an emergency plan mandated by their insurance provider.

Power Outages

The fire department has installed a generator in the Fire House, the elementary school has installed a generator, and the town is pursuing a generator for the town garage.

Highway Accident Prevention

A specific accident risk was present at the Killington Ski Resort Ramshead Lodge. A dangerous curve presented a potential for a vehicle to hit the building in the areas of the day care and electrical center. Installing a guardrail and reconfiguring the roadway have lessened this risk.

Protection of Town Records

The town has taken a variety of measures to protect town records. As mentioned previously, two vaults hold most things that are recorded in town. Land records have been microfilmed up to 2009, and since 2009 the town has used a digitized land record management system. Most other records from 1980 have been scanned and digitized, and these are backed up on a daily basis and stored in two off site locations. The town’s most important financial documents are stored in a fire proof cabinet.

Town Policies and Plans that Mitigate Hazards

Existing Policies/Plans	Description	Gaps in Existing Policies/Plans
Town Plan	Town Plan adopted July 19, 2010. Policies provide protection and limited development in the following areas: Floodplains, Steep slopes, Shallow depth to bedrock, Valley district, Ridgelines, Identified Scenic Areas, and Wetlands.	
Zoning Bylaws	Adopted June 8, 2012. Includes public open space district and Foster’s Peak District.	
School Emergency Response Plan	Killington Elementary School (K-6) has emergency plan.	
Local Emergency Operations Plan (LEOP)	Outlines town’s emergency response procedures. Older version- Rapid Response Plan- adopted 2004. New LEOP adopted in May of 2014	LEOP should be reviewed and adopted by May 1 st annually.
Fire Mutual Aid	Mutual Aid agreements with Rutland County and Connecticut Valley. Active volunteers trained at weekly trainings and State and County Fire Schools.	Killington Ski Resort “fire brigade” has been ineffective, need more trained firefighters.
Maintenance Programs	Culvert, road, and bridge inventory is in place, in process of being updated.	
Emergency Shelters	Large sites for housing in the event of an evacuation or widespread and prolonged loss of power or other disaster. Killington Elementary School is designated shelter, generator is now in place.	Identify secondary and possibly tertiary shelters in town.
Floodplain Ordinance	Protects floodplain areas from development. Special Flood Hazard Areas are identified by FEMA; fluvial erosion zones can be mapped by VT Agency of Natural Resources.	Town has no Flood Hazard Regulations.
Road and Bridge Standards	Town has adopted road and bridge standards, which improve safety, reduce lifecycle costs, address environmental concerns for transportation networks.	

6.3 Changes in Development

In February 2012, the Rutland Herald reported that SP Land Company filed a state permit application to construct “193 condominiums, nine single-family lots and 23 duplex lots, 31,000-square feet of retail space and a 77,000-square-foot base lodge” as Phase 1 of a multi-decade expansion at the base of Killington Ski Resort. The development is currently under Act 250 appeal, so it may be a number of years until it becomes a reality.

Another proposed project is a Planned Unit Development (PUD) in the village that would have 428 residential units and 32,600 square feet of non-residential space. Currently this

development has only received PUD approval, it has not yet gone through site plan approval or Act 250 review. These developments will require continued attention to mitigation strategies.

Lastly, the Town is in the process of acquiring and demolishing a single family home on Route 4, which will benefit the area by removing the structure from the floodplain.

6.4 National Flood Insurance Program Compliance

The NFIP was instituted in 1968 to make flood insurance available in those communities agreeing to regulate future floodplain development. As a participant in the NFIP, a community must adopt regulations that: 1) require any new residential construction within the 100 year floodplain to have the lowest floor, including the basement, elevated above the 100 year flood elevation; 2) allow non-residential structures to be elevated or dry flood proofed (the flood proofing must be certified by a registered professional engineer or architect); 3) require anchoring of manufactured homes in flood prone areas. The community must also maintain a record of all lowest floor elevations or the elevations to which buildings in flood hazard areas have been flood proofed.

The National Flood Insurance Program is a voluntary program organized by FEMA that includes participation from 20,000 communities nationwide and 231 Vermont towns and cities. Combined with floodplain mapping and floodplain management at the municipal level, the NFIP participation makes affordable flood insurance available to all homeowners, renters, and businesses, regardless of whether they are located in a floodplain. There are no repetitive loss properties in the town of Killington.

In return for adopting floodplain management regulations, the federal government makes flood insurance available to the citizens of the community. In 1973, the NFIP was amended to mandate the purchase of flood insurance as a condition of any federally regulated, supervised or insured loan on any construction or building within the 100-year floodplain. In 2012, Congress passed the Biggert-Waters Flood Insurance Reform Act to reduce subsidies for structures built before the NFIP was instituted (called pre-FIRM structures). Over 50 percent of Vermont's NFIP policies are pre-FIRM, which means that flood insurance premiums for many will increase over the ensuing years.

While the NFIP floodplain management criteria are administered by States and communities through their floodplain management regulations, FEMA's role is to provide technical assistance and to monitor communities for compliance with the minimum NFIP criteria. Although Killington does not participate in the NFIP, the issuance of a Flood Insurance Rate Map makes it eligible to join (despite no currently identified Special Flood Hazard Areas). This would allow homeowners to take advantage of flood insurance, regardless of whether they live in a flood hazard area. In the past the town has discussed joining the NFIP.

6.5 Mitigation Actions and Projects

The Killington hazard mitigation committee discussed each mitigation strategy and reviewed the town Action Evaluation and Prioritization Matrix (see Appendix E). The committee found that certain projects are still relevant. In some cases, strategies were left in place because of their cyclic nature.

General Mitigation Strategies for Consideration:

- Building Design/Codes/Use Regulations
- Community Preparedness Activities
- Financial & Tax Incentives
- Hazard Control & Protective Works
- Insurance Programs
- Land Use Planning/Management
- Science & Technology
- Mitigation Committee
- Protection/Retrofit of Infrastructure & Essential Facilities
- Public Awareness/Training & Education
- Public Health/Emergency Medical Care/Education
- Public Protection
- Laws/Ordinances/Inspections

The following identified programs, projects and activities are future mitigation strategies for the Town of Killington. These mitigation strategies have been chosen by the town as the most appropriate policies and programs to lessen the impacts of potential hazards. Using the Action Evaluation and Prioritization Matrix (see Appendix E), each potential project was scored and ranked according to priority. The scoring matrix includes STAPLEE criteria, which includes benefit-cost considerations. Mitigation actions and projects proposed in this plan should undergo more rigorous benefit-cost analysis by the town before action is taken.

Mitigation Actions and Projects

Priority Score	Hazards Mitigated	Mitigation Action	Local Leadership	Funding Resources	Time Frame
36	Floods, Fluvial Erosion	Evaluation and funding plans for large culvert and bridge maintenance and replacement.	Highway Department	Town Highway Structures Program, Town Budget	5 years
36	Multiple Hazards	Risk assessment and upgrades of Fire Station/EOC to support emergency response.	Fire Department	AFG, EOC Grant Program	2-3 years
36	Fire	Update of fire department’s pre-planning program with at-risk structures.	Fire Department	Town Budget	1 year
35	Floods, Fluvial Erosion	Reshape and stabilize all drainage ditches and river banks.	Highway Department	Town Budget, BBR	5-10 years

Priority Score	Hazards Mitigated	Mitigation Action	Local Leadership	Funding Resources	Time Frame
34	Floods, Fluvial Erosion	Inventory, survey, and resize all culverts (15-20 annually) to meet 25 year flood standard.	Highway Department	HMGP, PDM, FMA, Town Highway Class 2 Roadway Program, Town Budget	5-30 years
34	Floods, Fluvial Erosion, Ice Jams	Complete acquisition of flood-destroyed homes.	Town Manager	CDBG, HMGP, PDM, FMA	1 year
34	Multiple Hazards	Continue to maintain Red Cross certified shelter and volunteers in town.	Emergency Management Director	Red Cross, Town Budget	Annual ly
34	Winter Storms, Thunderstorms, Power Outages	Install a generator at the Town Garage.	Selectboard, Highway Department	HMGP, PDM, Town Budget	1-3 years
33	Floods, Fluvial Erosion	Consider adopting flood hazard regulations to join NFIP.	Planning Commission, Selectboard	Town Budget	1-2 years
33	Fire	Continue installation of needed dry hydrants.	Fire Department	Task Force grant from RC&D program	2 years
33	Multiple Hazards	Examine Town Plan and ensure hazards and mitigation strategies are addressed in 2015 update.	Planning Commission, Selectboard	Municipal Planning Grant, Town Budget	1-2 years
25	Highway Accidents	Advocate for improved traffic flow at intersections of VT 100 with US 4 and VT 100/US4 with Killington Road.	Agency of Transportation, Selectboard, Highway Department	Highway Safety Improvement Program	5 years

Acronyms

AFG	Assistance to Firefighters Grant	HMGP	Hazard Mitigation Grant Program
AOT	Vermont Agency of Transportation	HRRR	High Risk Rural Roads Program
BBR	Vermont Better Back Roads Program	MPG	Municipal Planning Grant
CDBG	Community Development Block Grant	PDM	Pre-Disaster Mitigation Program
DEMHS	Vermont Division of Emergency Management & Homeland Security	RC&D	Resource Conservation and Development
EOC	Emergency Operations Center	USDA	United States Department of Agriculture
FMA	Flood Mitigation Assistance Program		

7. PLAN MAINTENANCE PROCESS

7.1 Routine Plan Maintenance

The Hazard Mitigation Plan is dynamic. To ensure that the plan remains current and relevant, it is important that it be updated periodically. The plan will be reviewed annually at a Selectboard meeting along with review of the town's Local Emergency Operations Plan (LEOP). This meeting will allow town officials and the public to discuss the town's progress in implementing mitigation actions, identify future activities, and revise the plan as needed.

The plan will be thoroughly updated at a minimum every five years in accordance with the following procedure:

1. The Killington Selectboard will appoint the Town Manager to convene a meeting of the hazard mitigation committee. Committee members should include local officials such as Selectboard members, Fire Chief, Police Chief, Highway Department, Planning Commission, Town Planner, Town Manager, Emergency Management Director, Health Officer, Zoning Board of Adjustment, and the Town Clerk.
2. The committee will discuss the process to determine if the evaluation criteria is still appropriate or 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 information will be assigned to members. The committee will also discuss incorporating mitigation requirements into other planning mechanisms, such as comprehensive or capital improvement plans.
3. A draft report will be prepared based on these evaluation criteria and in conformance with the FEMA *Local Mitigation Plan Review Guide* document.
 - 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.
4. The Selectboard will review the draft report. Consensus will be reached on changes to the draft.
5. Changes will be incorporated into the Plan.

6. The Plan will be reviewed by the State Hazard Mitigation Officer (SHMO) and FEMA Region 1.
7. SHMO and FEMA comments will be addressed in Plan.
8. The Selectboard will notify and schedule a public meeting and the hazard mitigation committee will prepare a presentation.
9. A public meeting will be held where the public will learn about the plan update and provide comments on draft plan.
10. The Selectboard will incorporate community comments into draft plan.
11. The Selectboard will finalize and adopt the plan and distribute to interested parties.
12. The final adopted plan will be submitted to FEMA through the State Hazard Mitigation Officer.

7.2 Post-Disaster Review Procedures

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

1. Within six months of a declared emergency event, the Town will initiate a post disaster review and assessment. Members of the State Hazard Mitigation Committee will be notified that the assessment process has commenced.
2. This post disaster review and assessment will document the facts of the event and assess whether existing Hazard Mitigation Plans effectively addressed the hazard.
3. A draft After Action Report of the review and assessment will be distributed to the hazard mitigation committee.
4. A meeting of the committee will be convened by the Selectboard to 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 to local communities.
5. If the committee determines that modification of the plan IS needed, then the committee drafts an amended plan based on the recommendations and forwards to the Selectboard for public input.
6. The Selectboard adopts the amended plan after receiving approval-pending-adoption notification from FEMA.

7.3 Continued Public Participation

Maintenance of this plan and implementation of the mitigation strategy will require the continued participation of local citizens, agencies, and other organizations. To keep the public aware of and involved in local hazard mitigation efforts, the town will take the following measures:

- Provide hazard mitigation information at Town Meeting.
- Post the hazard mitigation plan on the town website.
- Selectboard will review past plan hazard mitigation committee members and consider whether new members should be added. Representatives of local businesses, nonprofits, academia, etc. should especially be considered.
- Notify the public of committee meetings through town bulletin boards, newsletter, newspaper, website, Front Porch Forum, etc.

**Certificate of Adoption
Town of Killington, Vermont
Selectboard**

A Resolution Adopting the Killington Local Hazard Mitigation Plan

WHEREAS, the Town of Killington has worked with the Rutland Regional Planning Commission to identify natural and human-caused hazards, analyze past and potential future damages due to disasters, and identify strategies for mitigation of future damages; and

WHEREAS, the Killington Local Hazard Mitigation Plan analyzes hazards and assesses risks within the community; and

WHEREAS, the Killington Local Hazard Mitigation Plan recommends the implementation of actions specific to the community to mitigate against damage from hazard events; and

NOW, THEREFORE BE IT RESOLVED that the Town of Killington adopts the Killington Local Hazard Mitigation Plan.

Duly adopted this _____ day of _____, _____.

Chair of Selectboard

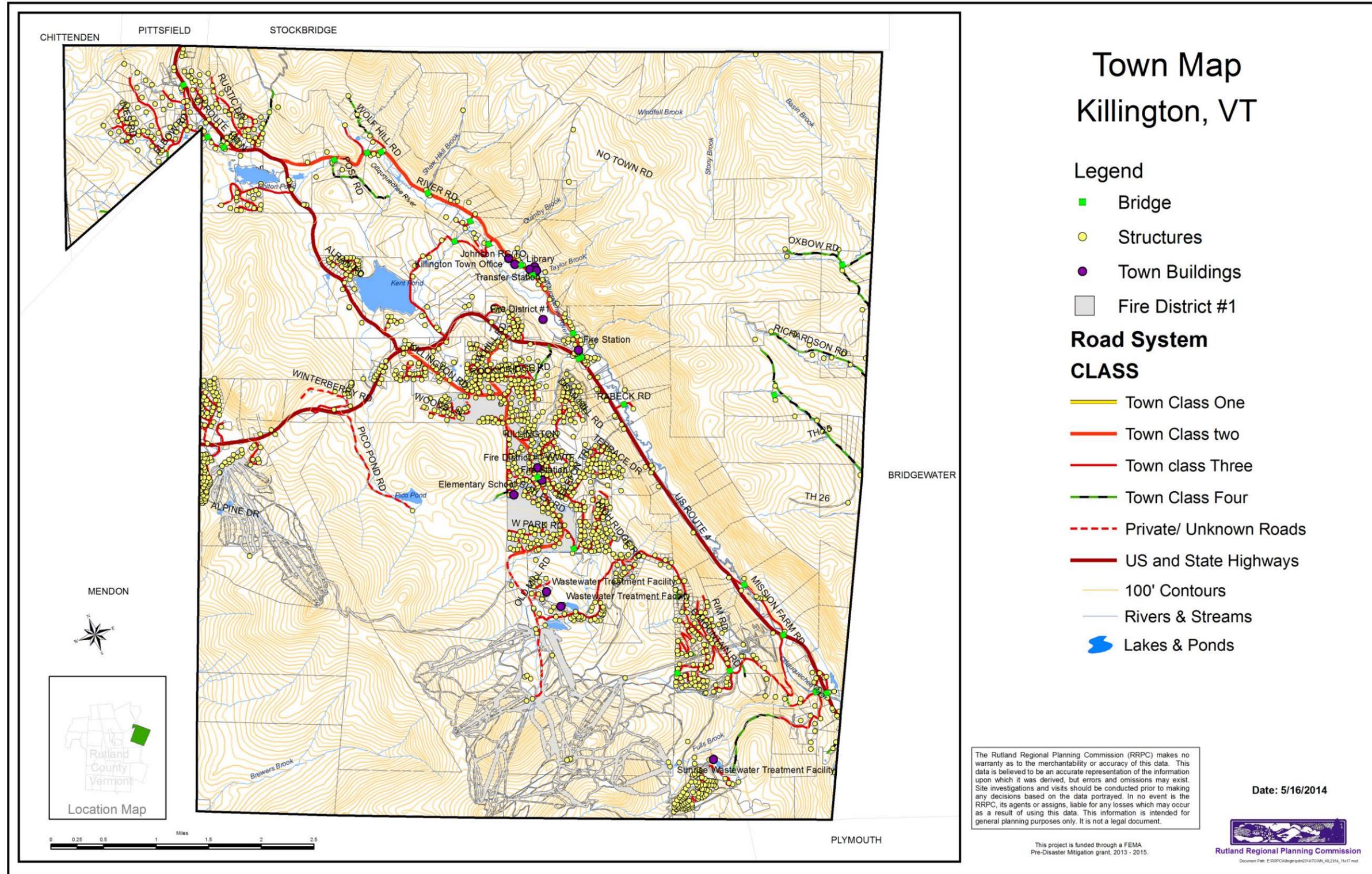
Member of Selectboard

Member of Selectboard

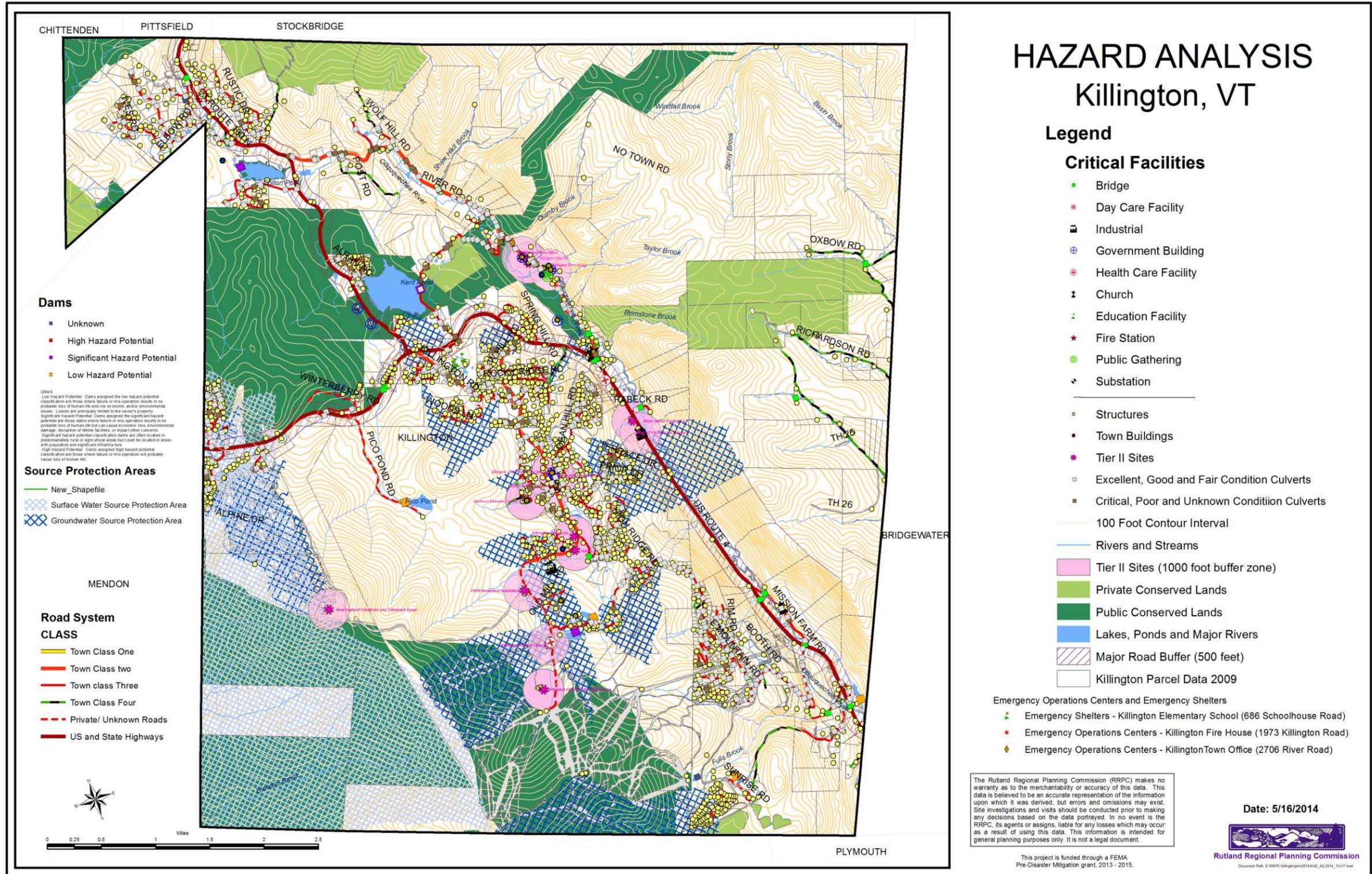
ATTEST

Town Clerk

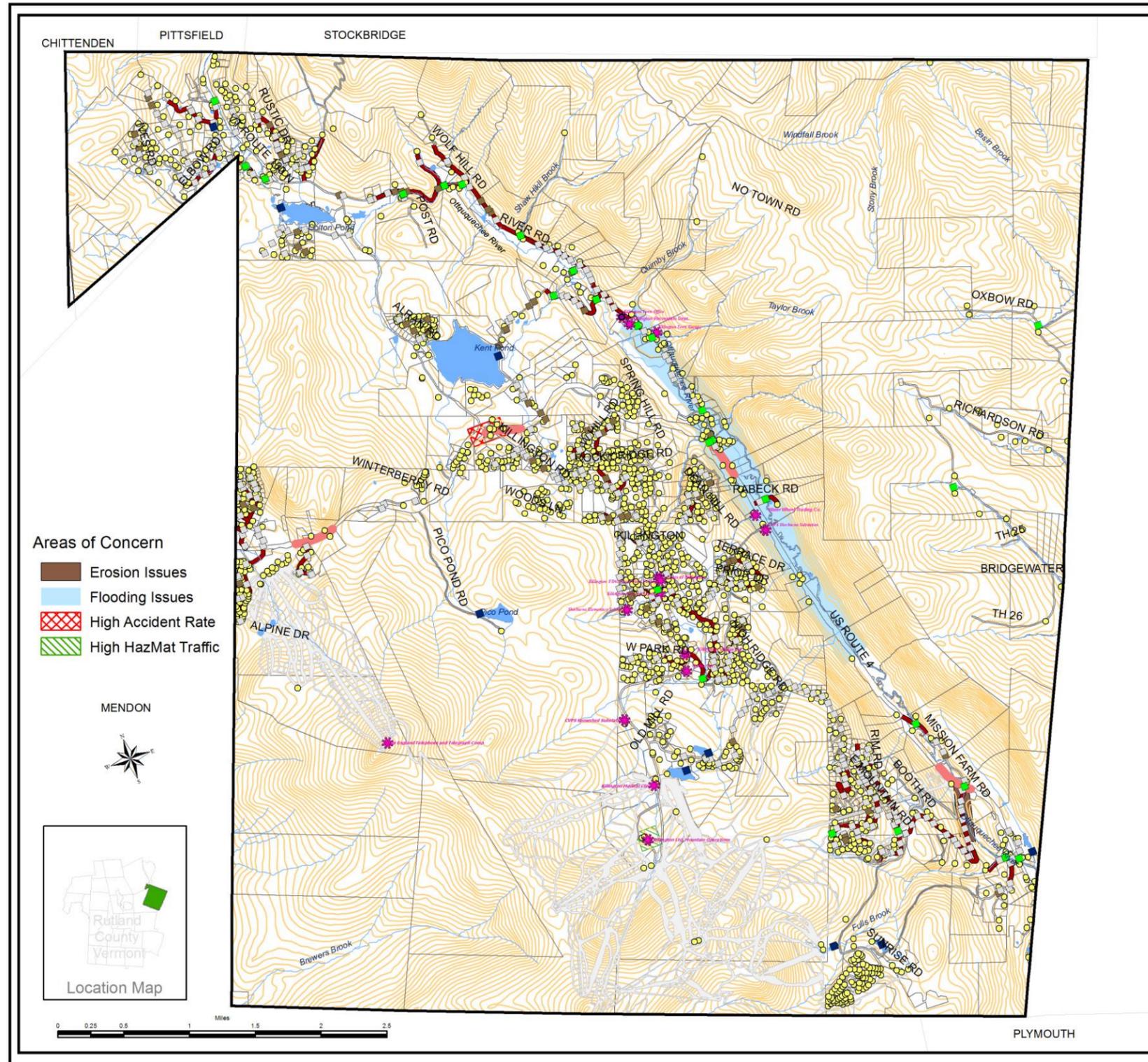
APPENDIX B- TOWN MAP



APPENDIX C- HAZARD ANALYSIS MAP



APPENDIX D- AREAS OF LOCAL CONCERN MAP



AREAS OF LOCAL CONCERN

Killington, VT

- Dam
- Bridge
- Excellent, Good and Fair Condition Culverts
- Critical, Poor and Unknown Condition Culverts
- Structures
- ★ Tier II Sites
- Town Buildings
- Tropical Storm Irene Damage
- VTRANS High Accident Segments

- Areas of Concern
- Erosion Issues
 - Flooding Issues
 - High Accident Rate
 - High HazMat Traffic



Tropical Storm Irene, August 28, 2011 (approximate type/location of damage).

Town	Location	Description
KILLINGTON	Alpine	holes in pavement on 3 culverts, one culvert blocked
KILLINGTON	Alpine Court	small hole, 6' x 10', 2' x 2' D
KILLINGTON	Alpine Terr	side damage - culvert fine, repair edge of road, 50' x L, 6' x W, 2' x D
KILLINGTON	Bear Mt Rd, TH15	significant edge damage for over one mile
KILLINGTON	Bear Run	washed out at entrance at roundabout, across a driveway
KILLINGTON	Steady Tr	washed out edge, water in wrong place, inside curve as well, 50' x long
KILLINGTON	Beechnut	side damage
KILLINGTON	Bigelow Drive	inside corner of curve, edge of road - total materials, 100' x L, 2' x W, 4' x D
KILLINGTON	Brookside	three holes, quarry will fill all three, 20' x L, 4' x W, 4' x D
KILLINGTON	Brookside	large hole at edge at driveway - no access to that home, 7' culvert
KILLINGTON	Coffee House	200' linear feet of undermined road, lost shoulder, guardrail, 10' x deep +/- graded back
KILLINGTON	Corner	small area needs gravel overlay, swale along edge needs to be redig
KILLINGTON	Dean Hill	significant damage at end of Roaring Brook
KILLINGTON	Doubleday Hill, TH6	shoulder and swale work
KILLINGTON	Elbow	previously paved, 430' x L, 4' x W, 5' x D
KILLINGTON	Estabrook	temp road single lane, 100' x L, 10' x W, 5' x D
KILLINGTON	Hend	huge hole 6' x 8' feet, culvert broken
KILLINGTON	Hickley Hill	Side of road washed, need to add to bank to create road width
KILLINGTON	Hartlock Ridge Rd, TH113	significant edge damage, needs grading
KILLINGTON	Knoll Dr, TH117	washout
KILLINGTON	Knoll Dr, TH117	washout
KILLINGTON	Ledge End	entire road washed out in a large section, smaller sections with water on them
KILLINGTON	Lombard Hill	edge - swale needs to be dug and road filled. Measurement is net materials, 200' x L, 2' x W, 3' x D
KILLINGTON	Mary Maple	side damage - at bottom culvert leads to spill water - is this Killington or Mendon?
KILLINGTON	Mini Dr	side of road washed out, culvert higher than water
KILLINGTON	Mission Farm Rd, TH38	bridge is OK, sides washed out, need fill, access from either end of rd
KILLINGTON	Mountain View	tiny dip in road
KILLINGTON	Old Coach	running water needs to be routed, rebuild berm, edge gone, clean culverts, 1000' x long
KILLINGTON	Prior	small edge damage
KILLINGTON	Rabec Mt	little edges of pavement, regrade dirt portion
KILLINGTON	Ravine Rd, TH73	edge washout entire crossing
KILLINGTON	Rim Rd, TH75	complete washout, holes, broken culverts
KILLINGTON	River Road	on hill, side of road washed out, guard rail start
KILLINGTON	Roaring Brook	minor bank work
KILLINGTON	Round Robin	swale work, clean culvert - is this in Killington or Mendon?
KILLINGTON	Roundabout Rd, TH77	huge washout
KILLINGTON	Rustic Road	needs swale and more materials to build up road, 370' x L
KILLINGTON	Stage	Missing culvert
KILLINGTON	Steady Rd, TH8	washed out, culvert missing
KILLINGTON	Terace	both sides significant spots, needs culvert for driveway, is road culvert undersized?
KILLINGTON	Thundering Brook	washed out along edge start, one small culvert seems blocked (above new runoff level), 1600' x L, 3' x W, 3' x D
KILLINGTON	Timberline	big hole at intersection with West Hill
KILLINGTON	Trailside	complete washouts, half of road washed out in spots, exposed culvert, water in road
KILLINGTON	Traverse	severe drop off where side of road is gone
KILLINGTON	Weatherwane	edge damage
KILLINGTON	West Hill	shoulder work/drainage - significant distance
KILLINGTON	West Park	big hole at edge of road, paved, 45' x L, 12' x W, 12' x D
KILLINGTON	Wolf Hill Rd, TH7	washed out, significant damage

The Rutland Regional Planning Commission (RRPC) makes no warranty as to the merchantability or accuracy of this data. This data is believed to be an accurate representation of the information upon which it was derived, but errors and omissions may exist. Site investigations and visits should be conducted prior to making any decisions based on the data portrayed. In no event is the RRPC, its agents or assigns, liable for any losses which may occur as a result of using this data. This information is intended for general planning purposes only. It is not a legal document.

Date: 5/16/2014



This project is funded through a FEMA Pre-Disaster Mitigation grant, 2013 - 2015.

APPENDIX E- ACTION EVALUATION AND PRIORITIZATION MATRIX

New local hazard mitigation strategies were prioritized using the following scoring system: list documents the questions (criteria) considered in establishing an order of priority. Each of the following criteria was rated according to a numeric score of “1” (indicating poor), “2” (indicating average) and “3” (indicating good).

- Does the action reduce damage?
- Does the action contribute to community objectives?
- Does the action meet existing regulations?
- Does the action protect historic structures or structures critical to town operations?
- Can the action be implemented quickly?
- Is the action socially acceptable?
- Is the action technically feasible?
- Is the action administratively possible?
- Is the action politically acceptable?
- Is the action legal?
- Does the action offer economic benefits compared to its cost of implementation?
- Is the action environmentally sound?

See completed matrix on the following page.

Action Evaluation and Prioritization Matrix													Town: Killington			
	3 = Good 2 = Average 1 = Poor															
Mitigation Action	Reduce Damage	Contribute to Town Objectives	Meet Regulations	Protect sensitive structures	Implemented quickly	Socially acceptable	Technically Feasible	Administratively Realistic	Politically Acceptable	Legal	Reasonable cost to benefit	Environmentally sound	Total Score			
Evaluation and funding plans for large culvert and bridge maintenance and replacement	3	3	3	3	3	3	3	3	3	3	3	3	36			
Risk assessment and upgrades of Fire Station/EOC to support emergency response	3	3	3	3	3	3	3	3	3	3	3	3	36			
Update of fire department's pre-planning program with at-risk structures	3	3	3	3	3	3	3	3	3	3	3	3	36			
Reshape and stabilize all drainage ditches and river banks	3	2	3	3	3	3	3	3	3	3	3	3	35			
Complete acquisition of flood-destroyed homes	3	2	3	3	2	3	3	3	3	3	3	3	34			
Inventory, survey, and resize all culverts (15-20 annually) to meet 25 year flood standard	3	2	3	3	3	3	3	3	2	3	3	3	34			
Continue to maintain Red Cross certified shelter and volunteers in town	3	3	3	1	3	3	3	3	3	3	3	3	34			
Install a generator at the Town Garage	2	3	3	3	3	3	3	2	3	3	3	3	34			
Consider adopting flood hazard regulations to join NFIP	3	3	3	3	2	2	3	3	2	3	3	3	33			
Continue installation of needed dry hydrants	3	2	3	2	2	3	3	3	3	3	3	3	33			
Examine current Town Plan and ensure that identified hazard areas and needed strategies are addressed	2	3	3	3	2	3	3	3	2	3	3	3	33			
Advocate for improved traffic flow at intersections of Rt. 100/4 and Rt. 100/4 with Killington Road	2	2	3	1	1	3	1	2	2	3	2	3	25			

APPENDIX F- DOCUMENTATION OF THE PLANNING PROCESS

March 27, 2009 Meeting Attendance:

Rutland Region Pre-Disaster Mitigation Meeting

Meeting date & location: Killington Municipal Building, March 27, 2009 *8³⁰ am - 10³⁰*

NOTE: This information is collected to update our contact list AND to provide documentation of participation to VEM.

Name	Affiliation	Email	Phone	Are you here tonight as a volunteer?		Total miles traveled (roundtrip)
				Yes	No	
<i>DICK HORNER</i>	<i>KILLINGTON zoning admin</i>	<i>Dick @ TOWN.KILLINGTON.VT.US</i>	<i>422-3242</i>		<input checked="" type="checkbox"/>	<i>0</i>
<i>KEN MERRILL</i>	<i>Killington Road Commission</i>	<i>kenmerrill@killingtonvt.com</i>	<i>422-9821</i>		<input checked="" type="checkbox"/>	<i>0</i>
<i>Steve Finer</i>	<i>Killington Fire Rescue</i>	<i>jsrchoe5@gmail.com</i>	<i>422-3473</i>	<input checked="" type="checkbox"/>		<i>2</i>

MEMORANDUM

TO: Selectboard Members
FROM: Kristen Mark Hughes, Executive Director
SUBJECT: Update of Local Hazard Mitigation Plan
DATE: November 19, 2013
CC: Fred Nicholson, Chairman, Laura Keir, Barbara Noyes Pulling



This past August your Town was advised of its eligibility to participate in a Pre-Disaster Mitigation (PDM) grant that has been secured by the Rutland Regional Planning Commission (through the Northwest RPC). This grant, available through the Rutland RPC at no cost to the Town, will enable the RRPC to work with your community to update your Local Hazard Mitigation Plan (LHMP).

Your town's LHMP must be updated every 5 years. While this has been accomplished in the past by submission of 'an annex' to a Regional HMP, FEMA is now encouraging each Town to complete its own Plan. Having an updated "FEMA Approved" LHMP ensures accessibility to federal and state funds for disaster relief and mitigation projects. In addition, due to recent changes regarding Vermont's Emergency Relief and Assistance Fund (ERAF), an adopted LHMP makes you eligible to receive higher levels of state funding for response and recovery after disasters.

The RRPC is ready to begin the process of updating your Town LHMP. We would like to discuss starting this process with the Town at your next Selectboard meeting. We have enclosed sample language for a motion in support of the project for your use in preparation for this meeting.

We would like your help identifying 4 or 5 individuals in your community to participate in an upcoming Plan review meeting. The involvement of local officials, including Selectboard members, emergency management directors, transportation/Road Supervisors, public works staff; other interested stakeholders; and the public is important to this planning process.

Please contact Laura Keir (x 205) or Barbara Noyes Pulling (x 202) at RRPC with any questions you may have. We look forward to working with your town to ensure that damages from future disasters can be minimized through mitigation planning.

RUTLAND REGIONAL PLANNING COMMISSION

www.rutlandrpc.org; 802-775-0871; FAX 802-775-1766
The Opera House, P.O. Box 965, Rutland, VT 05702

DRAFT - 12/20/13



**SELECTBOARD
Meeting Minutes
(the "Board")
Tuesday, December 10, 2013**

PRESENT: Chris Bianchi, Chairman
Patty McGrath
Bernie Rome

ALSO

PRESENT: Seth Webb, Town of Killington (the "Town") Manager (the "Manager")
Chet Hagenbarth, Director, Highway and Facilities Department (the
"Director H&F"), Whit Montgomery, Chief of the Killington Police
Department (the "Chief")

PUBLIC

PRESENT: Diane Rosenblum, David Rosenblum, James R. Rich, Vito Rasenas, Gail
Weymouth, Laura Keir, Tammie Rome, Ed Fowler and Anie Gallivan

AGENDA:

1. Call to Order
2. Approval of the Agenda for the December 10, 2013, Board Meeting (the
"Agenda")
3. Approval of the Board Meeting Minutes from December 3, 2013
4. Citizens Input
5. Killington's Local Hazard Mitigation Plan (the "Plan")
6. 2014 Budget Proposal
 - a. Library - Operation and Capital
 - b. Capital Plan - Highway and Bridges
 - c. Update from Last Meeting
7. 2013 Budget November Report
 - a. General Fund (the "GF")
 - b. Green Mountain National Golf Course (the "GC")
8. Liquor License Renewals and Outside Consumption Permits
9. Town Manager's Report
10. Board Member Concerns
11. Next Meeting Dates: January 7th and January 21st, 2014
12. Executive Session (if needed)
13. Adjournment

1. Called to Order

The Chairman called the meeting to order at 7:30 p.m.

2. Approval of the Agenda for the December 10, 2013, Board Meeting

On motion duly made by Mr. Rome and seconded, the Agenda for the December 10, 2013, Board meeting, as amended, was unanimously APPROVED.

3. Approval of the Board Meeting Minutes from December 3, 2013

On motion duly made by the Chairman and seconded, the approval of the draft minutes of the December 3, 2013, Board meeting, were unanimously tabled by the Board.

4. Citizens Input

The Chief discussed the investigation of an incident on Killington Road this past week, noting that it is a continuing investigation and that no further details were available.

Mr. Rome questioned the number of Vermont State troopers at the incident location and the Chief discussed components of the investigation relating thereto.

5. The Plan

The Manager introduced Ms. Keir from the Rutland Regional Planning Commission (the "RRPC").

Ms. Kier discussed the Plan and grant received by the RRPC. She further discussed the details of the Plan and coverage under the Plan.

Ms. Kier noted that the Plan must be renewed every 5 years for FEMA qualification/eligibility.

Ms. Kier discussed the make-up of the committee and the Manager noted the Town's recommendations

Ms. Kier discussed further details of the Plan and timetable of the Plan proposal.

The Manager read a proposed motion.

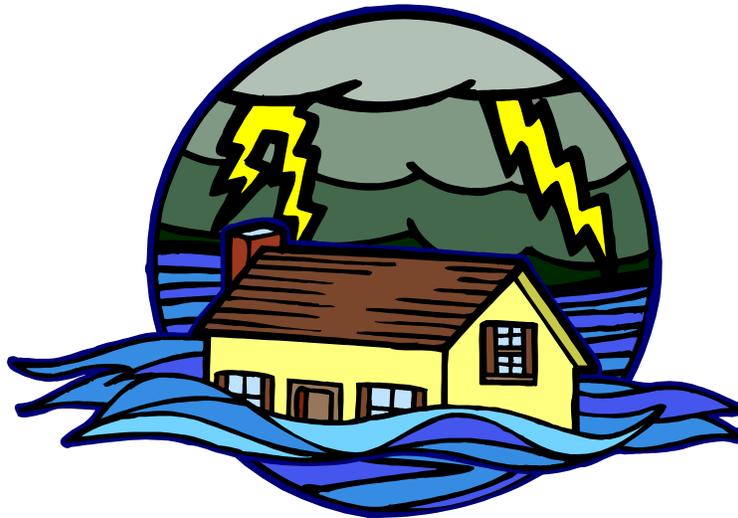
On motion duly made by Mr. Rome and seconded, the Board supports the process of reviewing and updating its local Plan, which will be accomplished with the support of the RRPC staff and with the engagement of the public. The Board appoints the following individuals to serve on an advisory committee to the RRPC,

DRAFT - 12/20/13

to participate in this process:

Steve Finer
Gary Roth
The Chief
Chet Hagenbarth
Dick Horner
Seth Webb

When the next disaster strikes, how will Killington fare?



Killington is updating its Local Hazard Mitigation Plan to minimize damages from future disasters. **The public is invited to participate in a committee that will work on the plan.** The committee will meet twice in early 2014, with the first meeting on:

Wednesday, January 15th at 10am
Killington Town Offices, Downstairs Conference Room

If you are interested in participating please contact Laura Keir at the Rutland Regional Planning Commission, 775-0871 x.205 or lkeir@rutlandrpc.org.

Agenda for Jan. 15, 2014 - Killington Hazard Mitigation Committee Meeting

1. Introduction
 - a. Purpose, goals, and timeline
 - b. Any other people or groups in town who should be involved in/aware of the plan update?

2. What relevant things have happened in town since the last hazard mitigation plan?
 - a. Where is the most recent plan lacking/in need of updating?

3. Hazard analysis update:
 - a. Risk assessment table
 - b. High risk hazards- tables
 - c. Review maps

4. Wrap up
 - a. Next steps

Jan. 15, 2014 Committee Meeting Attendance:

Group: Killington Hazard Mitigation Committee Topic: Hazard Mitigation Plan
 Meeting Location: Killington Town Office Meeting Date: 1/15/14 Meeting Length: 1.5 hrs Page 1 of 1

Name	Affiliation	Email or Phone	Miles Round Trip
Gary Roth	Chief - Killington Fire + Rescue Killington Search + Rescue	REPACK1@Aol.com	14
Patty McGrath	Selectboard + Business owner	pjm22@me.com	8
CHET HAGENBARTH	KILLINGTON HAZARD FACILITIES DIRECTOR	chthagenbarth@killington.com	
SETH WEBB	TOWN MANAGER	SETH.WEBB@TOWN.KILLINGTON.VT.US	
Whit Montgomery	Chief - Killington Police Dept.	white@killingtontown.com	10
DICK HORNER	TOWN PLANNER (ZAO)	DICK@TOWN.KILLINGTON.VT.US	
STEVEN FINAR	President Killington Fire also EMD	Pres@K&SUT.org	2
Laura Keir	R RPC	lkeir@rutlandrpa.org	-
Fred Nicholson	R RPC	Frederick@rutlandrpa.org	-

Agenda for March 12, 2014 - Killington Hazard Mitigation Committee Meeting

1. Hazard Mitigation Grant Program funding is now available! Applications due May 2, 2014
2. Review draft plan update
3. Identify town's mitigation goals
4. Determine town's mitigation actions/projects
 - a. Status of projects from last plan
 - b. New projects for town
5. Next Steps

March 12, 2014 Committee Meeting Attendance:

Sign In for March 12, 2014 Hazard Mitigation Meeting - Killington, VT Town offices 1.5 hours

Name	Affiliation	miles Travelled (Round Trip)
Laura Keir	RRPC	—
SETH WEBB	Town	—
Gary Roth	Killington Fire	21
Patty McArthur	Selectboard	—
CHET HAGEDORN	HIGHWAYS	—
Whit Montgomery	Police	7
Dick HORNER	PLANNING	—
Steve Finer	K. Killington Fire	—