

Town of Guilford Local Hazard Mitigation Plan



Adopted 8/24/15

Prepared for the Town of Guilford
By the
Windham Regional Commission



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INTRODUCTION AND PURPOSE

This Single Jurisdiction Hazard Mitigation Plan is NEW, and has never been approved by FEMA or adopted by the Town of Guilford.

The purpose of this plan is to assist the Town of Guilford in identifying all of the hazards facing the town and to identify new and continuing strategies to reduce risks from identified hazards.

Hazard mitigation is any sustained action that reduces or eliminates risk to people and property from natural and human-caused hazards and their effects. Based on the results of previous Project Impact efforts, FEMA and state agencies have come to recognize that it is less expensive to prevent damage from disasters than to repeatedly repair damage after a disaster has struck. This plan recognizes that communities also 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 identify what local actions can be taken to reduce the severity of hazard-related damage.

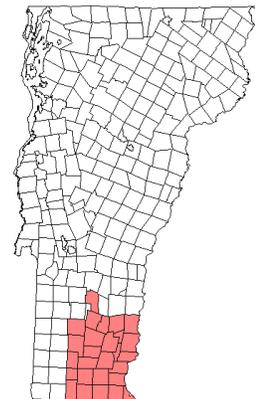
Hazard mitigation strategies and measures alter the hazard by: eliminating or reducing the frequency of occurrence; averting the hazard by redirecting the impact by means of a structure or land treatment; adapting to the hazard by modifying structures or standards; or avoiding the hazard by stopping or limiting development. Mitigation could include projects such as:

- Flood-proofing structures
- 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 water supply
- Elevating structures or utilities above flood levels
- Identifying and upgrading undersized culverts
- Planning for land use for floodplains and other flood-prone areas
- Proper road maintenance and construction
- Ensuring critical facilities are safely located
- Establishing and enforcing appropriate building codes
- Public information

WINDHAM REGION GEOGRAPHY

Situated in Vermont’s southeastern corner, the Windham Region consists of 23 towns in Windham County, the neighboring towns of Readsboro, Searsburg, and Winhall in Bennington County, and Weston in Windsor County. The region is bordered by Massachusetts to the south and New Hampshire to the east. At over 920 square miles (590,000 acres), the region accounts for roughly 9.6% of the State’s total land area. The Windham Region has several distinctive identities, largely defined by the diverse natural environment.

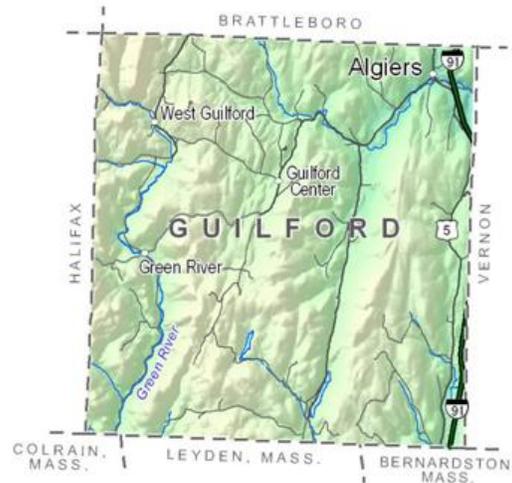
The Region’s topography is relatively flat or gently rolling land in the Connecticut River valley in the east, while the western part of the region is characterized by the Green Mountain ridges and peaks with narrow stream valleys. Stratton Mountain is the highest point in the region at 3,936 feet. The lowest point is along the Connecticut River in Vernon, at 200 feet.



In addition to the Connecticut, other major rivers of the region are the Deerfield, Green, North, Saxtons, West, and Williams, all tributaries of the Connecticut. There are two major flood control reservoirs on the West River, Ball Mountain and Townshend, and two major storage reservoirs for hydropower generation on the Deerfield River, Somerset and Harriman.

GUILFORD GEOGRAPHY & TOWN PROFILE

The Town of Guilford is 40.3 square miles, or 25,792 acres. The population density is 51 people per square mile, up from 38 people per square mile in 1980 and 48 in 1990. The east side of town borders Vernon; Brattleboro is to the north and Halifax is to the west. Guilford is bordered on the south by three Massachusetts towns: Colrain, Leyden, and Bernardston. There are two ridgelines in town, running north-south. East Mountain extends almost the length of Guilford in the east; it's a chain of heights reaching a maximum elevation of 1,424 feet. In the west are Governor's Mountain (the town's highest elevation at 1,823'), Pulpit Mountain (1,236'), French Hill (1,586'), Owl's Head (1,430') and Amidon Pinnacle (1,241'). The lowest point in town is 250 feet above sea level where the Broad Brook enters Vernon. Guilford's topography resulted in its original settlement pattern of five hamlets: Algiers, Guilford Center, Green River, Hinesburg, and Packer Corners.



Guilford has a very hilly terrain which influences the settlement pattern and transportation routes. Most of the main roads in Guilford run north and south as a result of three prominent ridgelines that do the same. Since there are few roads running east and west, the time it takes to reach members of the community on the other side of ridgelines is lengthier, including emergency responders. The terrain also influences the weather. People who live closer to the tops of the ridgelines often have a different weather-related experience from those living in the valleys.

Guilford is blessed with many streams and wetlands, which form important ecosystems and wildlife habitats. There are two major drainage basins in town, both of which ultimately deliver their waters to the Connecticut River. Brooks near the western border empty into the Green River, flowing south into Massachusetts. The Broad Brook drains the center and northeast corner, flowing east into Vernon. Brooks in the southeastern portion of Guilford drain into the Fall River, a tributary of the Connecticut. The town has two major ponds, both man-made: Weatherhead Hollow Pond, and Sweet Pond, which is now drained pending dam inspection and upgrade. There are two state parks in town: Sweet Pond State Park and Fort Dummer State Park. Additionally, the Roaring Brook Wildlife Management Area is a large portion of land that runs north/south adjacent to Interstate 91 throughout most of the Town of Guilford and into Vernon.

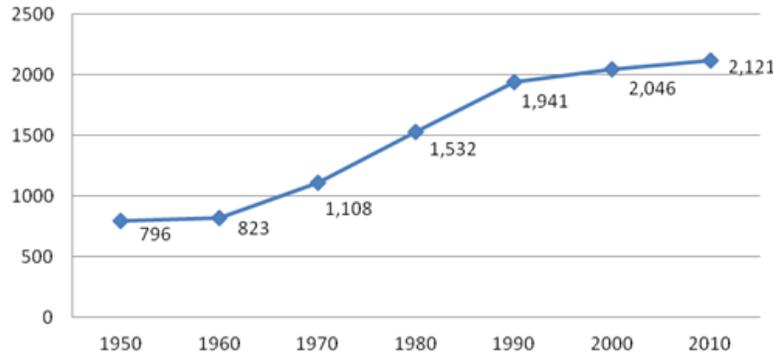
Guilford has a strong community spirit. When something goes wrong in Guilford, the work crew is thinking of their neighbors and immediately responding in a thoughtful and caring manner to make things safe for the town. Additionally, Guilford residents take active role in community planning. They can be outspoken and although opinions may differ, they come from a culture of respect for one another. This attitude fosters a deep sense of community and interest in being involved in the public participation component of planning.

Guilford has a rich history, well documented in the *Official History of Guilford, Vermont 1678-1961*. Many old churches still stand, and there are 14 one-room schoolhouses. One of these is owned by the Guilford Historical Society and is maintained as a museum. Other sights include the covered bridge and crib dam in Green River Village, and many slate gravestones in the cemeteries.¹ In the 1940s and 1950s there used to be 24 working farms in the Town of Guilford. These were primarily dairy farms. Today there are only three. All of the farmland has either been developed or is in conservation.

¹ Guilford, VT town website, accessed 12/11/14 < <http://www.guilfordvt.net> >

The population of Guilford increased between 2000 and 2010, from 2,046 to 2,121 people. It has been seeing a slight rise for years, as the chart below shows. Relative to surrounding towns, Guilford is seeing more growth (4%). Marlboro is the only neighboring town with more growth (10%). Guilford does not have zoning, which represents its independent spirit. This is a detriment, however, when it comes to preventing at-risk development.

Town Population



Town	1990	2000	2010	% Change 1990-2000	% Change 2000-2010
	Guilford	1,941	2,046	2,121	5%
Brattleboro	12,241	12,005	12,046	-2%	0.3%
Marlboro	924	978	1,078	6%	10%
Halifax	588	782	728	33%	-7%
Vernon	1,850	2,141	2,206	16%	3%
Leyden, MA	662	772	711	17%	-8%
Bernardston, MA	2,048	2,155	2,129	4%	-1%

Emergency Services

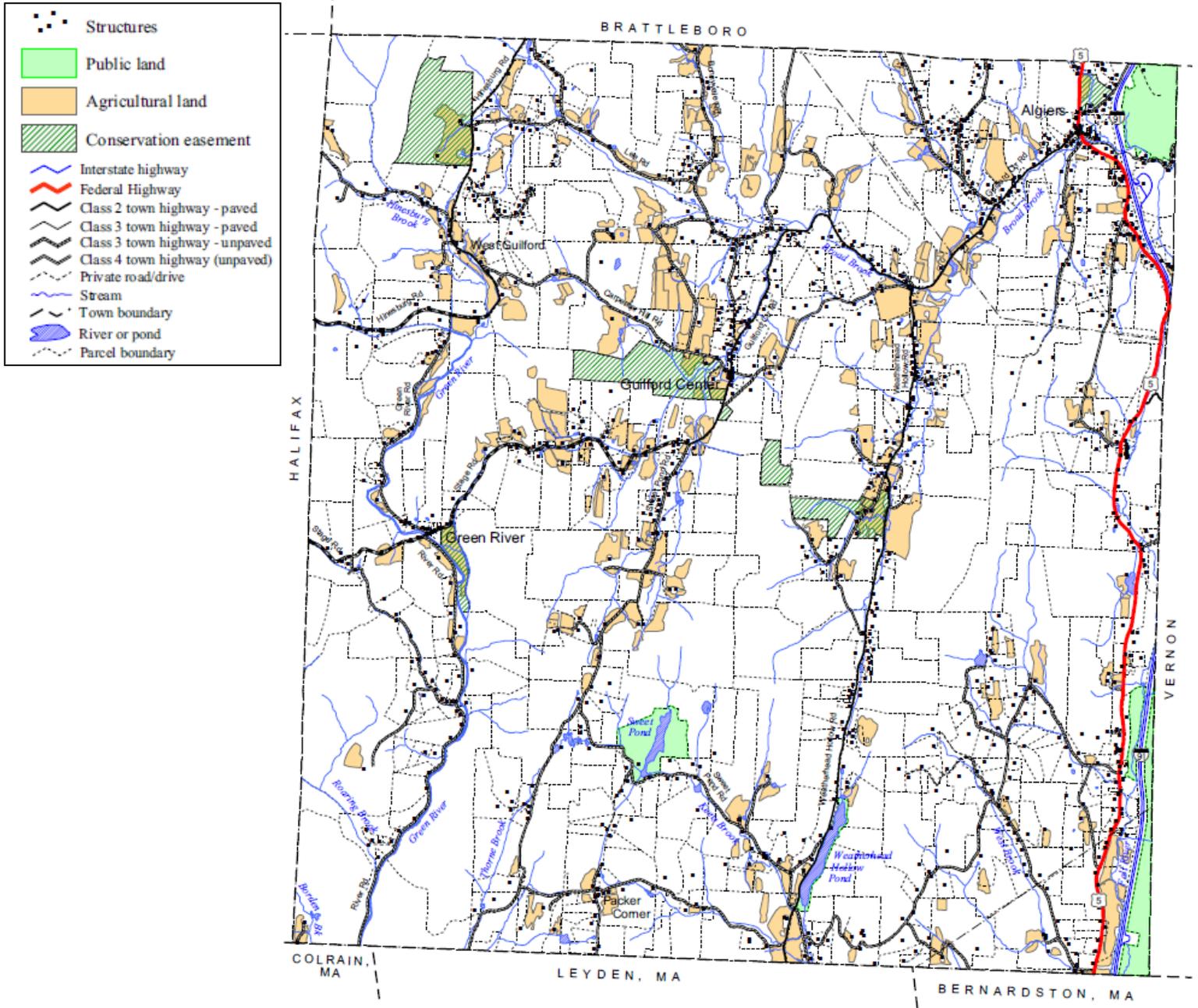
Fire protection and emergency medical service is provided to the Town by the Guilford Volunteer Fire Department (GVFD). Founded in 1949 and incorporated in 1955, the GVFD is headquartered at 108 Guilford Center Road. It maintains two pumpers, one tanker, and one brush/utility truck. It provides fire fighting protection for buildings and its specially trained First Responders respond to all town 911 calls for emergency medical and accident services, including the nearly four miles of Interstate 91 within the town boundaries. Its 22 volunteers serve without pay and respond to about 200 calls each year.

The protection of the Town from natural and man-made disasters is vested in the Emergency Management Organization (EMO), which is chartered by the State Department of Public Safety. The EMO is primarily responsible in cases of fire, flood, storms (ice, snow, and wind), earthquakes, radioactive release, terrorist attack, energy shortages, etc., as well as any other emergencies.

In March, 2002 the Town adopted An Ordinance for Emergency Management of the Town of Guilford. The Select Board appoints a volunteer organization for emergency management utilizing to the fullest extent, the existing local and regional agencies, organizations and individuals. The Select Board also appoints a Local Emergency Director (LED). The LED and the EMO are responsible for emergency administration and operation in Guilford. A volunteer emergency staff, separate from the Fire Department

and First Responders, is organized to manage a Guilford Emergency Operations Center (EOC), currently located in the Fire Department.

Existing Land Use Map from the 2010 Guilford Town Plan



PLANNING PROCESS

Town residents who took part in the planning process for developing the Local Hazard Mitigation Plan for Guilford tend to be affiliated with more than one association for the town. In rural areas of Vermont, it is typical that people who are most interested in the safety, health and welfare of their community will preside on more than one board and may for example, hold the role of Fire Chief, or school teacher, or be a small business owner, in addition to owning personal property in the town. Therefore, although the meeting may not have as many people in attendance as a more populated community would, those present at the meeting are representing not only a variety of roles, but many roles that would be held by numerous individuals in a more populated area.

Documentation of the Planning Process

This Single Jurisdiction Hazard Mitigation Plan is NEW, and has never been approved by FEMA or adopted by the Town of Guilford.

Past Process

In 2010, representatives from Guilford participated in a regional public participation planning event held by the Local Emergency Planning Commission (LEPC 6). Since the Windham Regional Commission was writing Hazard Mitigation Plans for 20 towns within its region, two public participation events were scheduled as “joint events” to be held at the September and October monthly meetings of the LEPC 6. These events were meant to educate the towns about the hazard mitigation planning process and identify hazards in their towns. A presentation was made at the September meeting explaining the process and the meaning of a hazard analysis, with time for questions. The October meeting provided an informal map exercise where numerous maps were posted for each town, and comment sheets provided for participants to write ideas/comments about areas in their towns facing potential negative impacts from hazards.²



Guilford began the process of developing this plan by holding a meeting on the evening of September 10, 2013. The event had representation from numerous residents of Guilford and was led by the Town EMD, Herbert Meyer, and Town Selectboard Chair, Dick Clark. The evening discussions, questions and answers lasted approximately one and a half hours. Neighbors proposed ideas about creating community awareness and helping each other out in the case of severe storm and power outages. Special designation zones have been drawn on a map of town. Each zone was assigned a volunteer who would try to stay informed about the vulnerable populations of their assigned zone, i.e. people coming home from the hospital with an oxygen tank, or those without a generator. They also decided upon a subcommittee to work with the Emergency Planner from the Windham Regional Commission on the Hazard Mitigation Plan.³

The first meeting of the Hazard Mitigation Planning Committee was in January 2011. This meeting at the Town Offices involved a discussion/work group on vulnerability analysis, risk assessment, and thinking about mitigation strategies. Those present at the meeting included members of the Planning Commission, the road crew, the Town Administrator, the Town Emergency Management Director, Selectboard members, business owners, and Conservation Commission members.

² SEE APPENDICES 14-17 FOR INFORMATION ON THE LEPC MEETINGS

³ MEETING SIGN IN SHEET SHOWN IN APPENDIX 13

The following meetings were held:

- ❖ September 21 and October 19, 2010 LEPC 6 meetings – Brattleboro Fire Department and Brattleboro Retreat – Topics: Pre-Disaster Hazard Mitigation Plans Overview and Interactive Map Viewing and Hazard Analysis Comments from Local Jurisdictions
- ❖ November 17, 2010 – Guilford Central School - Guilford Emergency Planning meeting
- ❖ January 28, 2011 – Guilford Town Offices – Guilford Hazard Mitigation Planning meeting
- ❖ September 10, 2013 - Guilford Town Offices - Guilford Hazard Mitigation Planning meeting

A plan was drafted from the information collected at these meetings, but was never completed or submitted for FEMA review. This was primarily because of Tropical Storm Irene. Just after TS Irene, Guilford was busy with many visits by the Vermont Agency of Natural Resources (ANR), NRCS, VT Fish & Wildlife (VT F&W), and VTrans. ANR made site visits to discuss major woody debris piles in streams; bridges and embankment stabilization near homes; how to plan for debris piling up under bridges; and erosion issues. NRCS made site visits regarding embankment stabilization to determine if homes would qualify for the Emergency Watershed Protection Program. VT F&W made site visits to determine impacts of erosion of riparian habitat along streams. The State agencies worked with Guilford and looked at their problems to make sure the improvements are sustainable mitigation efforts for the long term.

Although Guilford suffered damage from Tropical Storm Irene, other towns in the Windham region suffered more significant damage and had properties with buyouts. This required prioritization of developing hazard mitigation plans, which pushed Guilford’s hazard mitigation plan timeline back. The Town commenced the planning process again, after Tropical Storm Irene, on September 10, 2013 with a meeting put on by Dinah Reed of the Windham Regional Commission and held at the Guilford Town Offices. This meeting added more information to the draft plan, but still a draft was not completed or submitted to VT DEMHS or FEMA.

Current Process

The Town commenced the planning process again in the fall of 2014 when the draft that was worked on in 2010 through 2013 was picked back up for review and update. Alyssa Sabetto, Emergency Planner for the Windham Regional Commission, worked with Katie Buckley (then Town Administrator) and EMD Herb Meyer to make some minor updates to the old draft. The Hazard Mitigation Planning participants later reconvened on November



17, 2014 at the Guilford Town Office and met with Alyssa Sabetto. This meeting was open and advertised to the public.⁴ It lasted for several hours and involved:

- a detailed review of the draft document with discussion of more recent hazard events,
- progress made in mitigation efforts that were noted several years ago,
- development of new hazard mitigation projects,

⁴ See appendices 9 and 10 for sign in sheet and meeting agenda.

- review of mapping of the town to note where hazard events are causing repeated or large scale damage, and
- general overview of the draft for relevancy and updating purposes.

There were numerous changes that came out of that meeting. Alyssa Sabetto significantly revised the draft per that meeting, and presented the updated draft for review by the Committee and town personnel. Comments, corrections and some additional information was received back from Sheila Morse, Linda Lembke, Herb Meyer and Dick Clark. Herb Meyer, the local Emergency Management Director and local plan champion, brought the revised draft plan to the January 12, 2015 selectboard meeting where it was reviewed and discussed. No comments were received at that meeting. The revised draft plan was then put out for public comment. This was done by posting an electronic copy on the town website and having a hard copy of the plan advertised and made available at the town office for public review and comment. Flyers were posted around town advertising its availability for review and comment. No comments were received from the public. It was simultaneously distributed to adjacent towns for comment via email.⁵ There was one response received.⁶ The plan was then finalized by Alyssa Sabetto for submittal to VT DEMHS and FEMA.

The following people were involved in the hazard mitigation planning process:

Committee (2010-13)	Affiliations	Home
Herbert Meyer	AFD #1 Town EMD Sportsmen, Inc. – Director Planning Commission	Guilford
Richard J. Clark	Selectboard Emergency Management Planning and Conservation Committee BBF Grange Food Pantry Health Officer WRC Commissioner	Guilford
Penny Marine	Town Clerk / Treasurer Guilford Fair Committee	Guilford
Daniel Zumbruski	Road Commissioner	Guilford
Troy E. Revis, Jr.	Selectboard Maintenance Supervisor, Guilford Central School	Guilford
Katie Buckley	Town Administrator Broad Brook Grange Friends of Algiers Village Preservation Trust of Vermont	Guilford
Hal W. Kuhns	Owner – Hawk of All Trades President – Broad Brook Grange Co-Chair – Guilford Planning Commission	Guilford
Michelle Frehsee	Owner – Frehsee Carpentry LLC Chair, Guilford Planning Commission Curator and Trustee – Guilford History Society	Guilford

⁵ See appendix 6 for email.

⁶ See appendix 7 for email.

William Jewell	Guilford Conservation Commission Westminster Zoning Administrator Wm Jewell & Co Environmental Consultant Friends of Algiers Village Guilford Preservation Inc.	Guilford
Dinah Reed	Planner, Windham Regional Commission	Brattleboro
Committee (2014)	Affiliations	Home
Sheila Morse	Secretary, Planning Commission Friends of Algiers	Guilford
Herb Meyer	Emergency Management Director for Guilford Planning Commission	Guilford
Michelle Frehsee	Chair, Planning Commission	Guilford
Troy Revis	Selectboard	Guilford
Anne Rider	Selectboard	Guilford
Dick Clark	Selectboard	Guilford
Steve Lembke	Green River Village Preservation Trust	Guilford
Linda Lembke	Conservation Commission	Guilford
Alyssa Sabetto	Planner, Windham Regional Commission	Brattleboro

Public Involvement and Input from Neighboring Communities

Making the Guilford Hazard Mitigation Plan available for public comment included the following efforts:

- All of the meetings discussed in the above sections were advertised and open to the public.⁷
- The Planning Commission listed the hazard mitigation plan on their agenda throughout the process as another opportunity for the public to ask questions and contribute.
- Between 2010 and mid 2014, the Guilford Draft Plan was posted on the Windham Regional Commission website for public review and comment. No comments were received during this time.
- The draft plan was discussed and made available for comment at the January 12, 2015 Guilford Selectboard meeting.
- The draft plan was made available in hard copy for public review and comment at the town office from January 13 through January 28, 2015.
- A draft of the plan was posted from 1/13/15 through 1/28/15 on the town website for public comment.⁸
- Flyers were put up around town for public comment on the draft.⁹
- On January 13, 2015, an invitation was extended via email to neighboring towns to provide a means and opportunity to review and comment on the draft Guilford Hazard Mitigation Plan.¹⁰ One response was received back from the Planning Board for Bernardston, Massachusetts.¹¹ Inter-town communication will repeat for future revisions of this Plan.

⁷ See appendix 11 for town website advertisement for November 17, 2014 meeting.

⁸ See appendix 2.

⁹ See appendix 3.

¹⁰ See appendix 6 for email.

¹¹ See appendix 7 for response from Bernardston, MA.

RISK ASSESSMENT

The risk assessment portion of a Hazard Mitigation Plan contributes to the decision-making process for allocating available resources to mitigation projects. 44 CFR Part 201.6(c)(2) of FEMA’s mitigation planning regulations requires local municipalities to provide sufficient hazard and risk information from which to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.

Methodology

A **vulnerability analysis** for each community begins with an inventory of possible hazards and an assessment of the risk that they pose. These are the questions to be answered. What hazards can affect your community? How bad can it get? How likely are they to occur? What will be affected by these hazards? How will these hazards affect you? The **Potential Impact** (percentage of the community affected) or magnitude of the impact of the hazard can be classed as follows:

- | | |
|----------------|--|
| 1 = Negligible | Isolated occurrences of minor property damage, minor disruption of critical facilities and infrastructure, and potential for minor injuries |
| 2 = Minor | Isolated occurrences of moderate to severe property damage, brief disruption of critical facilities and infrastructure, and potential for injuries |
| 3 = Moderate | Severe property damage on a neighborhood scale, temporary shutdown of critical facilities, and/or injuries or fatalities |
| 4 = Major | Severe property damage on a town-wide or regional scale, shutdown of critical facilities, and/or multiple injuries or fatalities |

Frequency of Occurrence: Probability

- | | |
|-------------------|---|
| 1 = Unlikely | <1% probability of occurrence in the next 100 years (less than 1 occurrence in 100 years) |
| 2 = Occasionally | 1–10% probability of occurrence per year |
| 3 = Likely | >10% but <100% probability per year (at least 1 chance in next 10 years) |
| 4 = Highly Likely | 100% probable in a year (an annual occurrence) |

Warning Time: Amount of time generally given to alert people to hazard

- 1 = More than 12 hours
- 2 = 6–12 hours
- 3 = 3–6 hours
- 4 = None–Minimal

Additionally, seasonal patterns that may exist are considered, what areas are likely to be affected most, the probable duration of the hazard, the speed of onset (amount of warning time, considered with existing warning systems).

The combination of the Potential Impact, Frequency of Occurrence and Warning Time was used to determine the hazard ranking score for each hazard.

The **Potential Impact, Frequency of Occurrence and Warning Time** for each hazard was discussed at the November 17, 2014 Hazard Mitigation Plan meeting. There was also a review of what was developed in 2010-13; however, the below table, which the participants developed at the most recent meeting was more detailed in terms of areas of vulnerability and current in terms of what has happened in recent years. The participants discussed each potential hazard in detail and ranked each element for each hazard. The numbers were combined to give each hazard a hazard score. This score was used to determine which hazards the plan would address.

While all hazards were considered by the Hazard Mitigation Planning participants for inclusion in this plan, it is not feasible to study each in depth. For hazards that are not profiled in this plan, the reader is directed to the Vermont State Hazard Mitigation Plan. The rationale for not addressing all of the hazards is that they are unlikely to occur in Guilford, or the town cannot mitigate for them. This plan will only focus on the hazards that Guilford has decided are pertinent to their community and they have chosen to

mitigate for, which are High Winds, Flooding and Fluvial Erosion. The below table shows the hazards in terms of their hazard ranking score as determined by the Hazard Mitigation Planning participants.

Possible Hazard	Frequency of Occurrence	Warning Time	Potential Impact	Score	Most vulnerable facilities and populations
Power Failure	4	4	3	11	Entire town; Particular safety concern during winter months for those without a generator.
High Wind	3	4	3	10	Entire town
Flood	4	2	3	9	Green River Basin; anywhere along Broad Brook and its tributaries; Slate Rock Road; tributaries to Broad Brook.
Fluvial Erosion	3	4	2	9	Fluvial erosion along Green River
Structure Fire	2	4	1	7	Grange
Tornado/Microburst	2	2	3	7	Entire town, especially open lands
Highway Accidents	2	4	1	7	Routes 91, 5 and Guilford Center Road
Hazardous material spill	2	3	2	7	Route 91 corridor
Winter & Ice Storm	4	1	2	7	Higher elevations are vulnerable to ice damage
Hurricane	2	2	3	7	Entire town
Wildfire	2	4	1	7	Campers and hikers; forest land
Earthquake	2	4	1	7	Entire town
School Safety Issues	1	4	2	7	Guilford Central School is K-6 school; they have school safety plan in place
Air crash	1	4	2	7	Entire town
Terrorism	1	4	2	7	Entire town; public places, Guilford Central School
Invasive Species / Infestation	4	1	2	7	Japanese Knotweed along river corridors; Multi-flora Rose on farmlands and road corridors; Asiatic Bittersweet and Japanese Barberry mostly in the woods; Woolly Adelgid is starting in the area and affects hemlocks.
Radiological Incident	1	3	2	6	Guilford is within the EPZ for Vermont Yankee which is shutting down 12/29/14
Drought	2	1	2	5	Entire town; agricultural land; forest land
Water Supply Contamination	1	3	1	5	The only public water is in Algiers Village.
Hail Storm	2	1	1	4	Entire town
Ice Jams	2	1	1	4	Green River has a couple ice jams but they cure themselves and have very limited damage potential.
Dam Failure	1	1	1	3	Deer Park Pond embankment failure may cause issue for Jelly Mill Road.
Extreme Heat	1	1	1	3	Entire town.
Railroad Accidents	NA	NA	NA	0	No railroad
Tsunami	NA	NA	NA	NA	N/A (Vermont is landlocked.)
Volcano	NA	NA	NA	NA	N/A (Vermont has no active volcanoes.)

Though the above table shows structure fires, highway accidents, hazardous material spill, winter and ice storm, wildfire, earthquake, school safety issues, air crash, terrorism, and invasive species infestation, radiological incident, drought and water supply contamination all rank fairly high, Guilford—due to their size and limited resources--doesn't feel that they are able to mitigate these hazards. Hail storm, dam failure, extreme heat, railroad accidents, tsunami and volcano are all low-ranking hazards or not applicable to Guilford, according to the Hazard Mitigation Planning participants. For hazards not covered in this plan, the reader is referred to the State All Hazards Mitigation Plan. Hurricanes will be addressed within both flooding and high winds. Tornadoes will be addressed in High Winds. Power Failure will be

addressed where appropriate, because it is not a natural hazard. Winter and ice storms are not being addressed in this plan because they are a way of life in Vermont and they are handled well. Ice jams are covered in the flooding section. Guilford does not currently have ways of mitigating for winter weather events other than what is currently being done. Current methods are deemed adequate at this time. The biggest hazard of concern associated with winter weather events is power outage and that will be addressed in this plan.

Identifying and Profiling Hazards

The following sections include a narrative with a Description, Geographic Area of the Hazard, Impact, Extent, Probability, and discussion of Past Occurrences of the three highest ranking natural hazards affecting Guilford.

High Wind

Description, Geographic Area of Hazard, and Impact

High wind events are highly likely in Guilford, with potential for limited damage. The most likely local threats for high winds are from nor'easters, severe thunderstorms, hurricanes, downbursts, tornados, or wind shear. High-wind events that are sufficient enough to cause damage to property can occur at anytime during a year. Trees downed by high winds can block roads and down power and communications lines. Mobile home parks and houses on ridge lines are at greater risk from wind damage. Depending on the wind direction, winds can skim across the ridge lines from the west and not affect folks in the valley, or can come from the north or south and run straight up the valleys knocking down trees and taking power out. Highly susceptible locations for damage in Guilford include manufactured homes and ridgelines. There are 65 manufactured homes in Guilford.¹² Most high winds events in Guilford have resulted in minor damage from downed trees and power lines. For hypothetical potential impact purposes, if a disastrous wind event damaged 1-5% of Guilford real estate, this would have an impact costing from \$2,239,002 to \$11,195,014 in damages. There hasn't been public assistance for any wind damages in Guilford.

Extent

In 1938 winds from Hurricane Igor were recorded at 100 mph, and in recent years winds have been recorded at 60 mph in the Southeast region of Vermont, to include the Town of Guilford. The Town anticipates high wind events in this realm of magnitude to occur any given year.

Extent/magnitudes of Hurricanes and Tropical Storms are ranked using the Saffir-Simpson Scale in the Western Hemisphere, as follows: CAT1=74-95 mph winds, CAT2=96-110 mph winds, CAT3=111-130 mph winds, CAT4=131-155 mph winds, Tropical Storm=39-73 mph winds, Tropical Depression=0-38 mph winds.

Tornado magnitude is measured by the Enhanced Fujita (EF) Scale which is rates strength based on damage caused, EF-0: 65 to 85 mph, EF-1: 86 to 110 mph, EF-2: 111 to 135 mph, EF-3: 136 to 165 mph, EF-4: 166 to 200 mph, EF-5: Over 200 mph.

Probability

The participants from Guilford that provided input into this plan have stated that high wind events are highly likely in any given year. High wind events generally occur at least ten times per year where they are powerful enough to take out power, no matter what season. These events can be town wide or in more specific areas.

Past Occurrences

There have been 49 events in Windham County since 1996 that are notated by the National Climatic Data Center as being High Wind, Strong Wind, Thunderstorm Wind or Tornado events. There are no recorded

¹² According to the 2014 Guilford Grand List

tornadoes since 1996 to impact Guilford according to the National Climatic Data Center, although there have been four recorded tornados in Windham County since 1950.

September 12th, 2013 - Severe Thunderstorms and Flash Flooding - A series of cold fronts moved towards the region on Thursday, September 12th. Despite some periods of cloudiness, a warm and humid air mass ahead of the approaching boundaries allowed for moderate amounts of instability to be in place. Along and ahead of the boundaries, several lines of showers and thunderstorms developed and moved across the region during the afternoon and early evening hours. In addition to a large amount of cloud to ground lightning, a few of the thunderstorms became severe, with damaging wind gusts. Several trees were downed across the region. Some areas that received repeated showers and thunderstorms experienced flash flooding as well, with roads washed out and/or closed as a result. The hardest hit areas were within the town of Brattleboro. Two to four inches of rain in a short period of time was reported in the areas that experienced flash flooding. As the last in the series of cold fronts crossed during the evening hours, the threat of showers and thunderstorms ended. Trees were reported uprooted in Guilford Center as a result of thunderstorm winds.

October 29, 2012 - Strong and gusty winds in association with Hurricane Sandy caused damage to trees and power lines across the region. Although not quite as widespread as areas across southeastern New York and New Jersey, power outages occurred throughout the region. Most of the outages in Vermont were primarily in the western part of the state. Wind gusts of 40 to 60 mph were common from the afternoon of the 29th until the early morning hours of the 30th. The highest wind gust in southern Vermont occurred in Woodford, where a wind gust to 58 mph was reported. Route 9 was closed to traffic due to power lines down in the road near the Molly Stark Motel just west of Brattleboro. Two trees were reported down on Interstate 91 in southern Vermont.

Aug. 28, 2011 - Tropical Storm Irene tracked north northeast across eastern New York and western New England during Sunday, August 28th, producing widespread flooding, and damaging winds across the region. Strong winds occurred across southern Vermont, with frequent wind gusts of approximately 30 mph in Grafton. The strongest winds occurred from the north to northeast during the morning hours, then from the west to northwest during Sunday evening. The combination of strong winds, and extremely saturated soil led to numerous downed trees and power lines across the region. This also resulted in widespread long duration power outages. In Guilford, the major impacted area was the Green River area, but there were a number of other roads that were also washed out. No bridges needed replaced, but there was major road damage. The worst was River Road and Hale Road.

May 26, 2010 - A backdoor cold front approached the area from the northeast and provided a focus for thunderstorms during the late evening hours of Wednesday, May 26th. Numerous trees and wires were reported down in Guilford and Vernon due to strong thunderstorm winds. Two downed trees were reported on homes in Vernon.

May 31, 2009 - The passage of a strong upper level disturbance produced strong winds across portions of southern Vermont during Sunday afternoon and evening on May 31st. Wind gusts of 35 to 45 mph were estimated. These strong winds led to a fallen tree and wires on Route 5, approximately 5 miles south of Guilford.

July 9, 2008 - The passage of a cold front, combined with a warm and humid air mass in place, led to the development of isolated severe thunderstorms across portions of southern Vermont during the afternoon hours of Wednesday July 9th. Numerous trees and power lines were downed between Brattleboro and Guilford due to strong thunderstorm winds. Route 5 was partially closed between Brattleboro and Guilford due to numerous downed trees and power lines. In Brattleboro, some of the streets that had downed trees included Vernon, Thomas, South Main, Acorn, Oak, Spring, and Cotton Mill Hill.

October 29, 2006 - A low pressure system moved northeast from the Tennessee Valley into the eastern Great Lakes by Saturday evening on October 28th, and intensified rapidly before moving into eastern Canada on Sunday, October 29th. Strong southeast winds ahead of the low developed Saturday morning, with some gusts exceeding 60 mph, particularly across the higher elevations, and within

channeled valley locations. Once the storm lifted into eastern Canada, strong west to northwest winds developed, with some gusts locally reaching or slightly exceeding 60 mph. The winds finally diminished across the region by Sunday evening. Trees and wires down in Guilford, on Weatherhead Road.

Summer, 2005 (Exact date unknown) - Wind Shear/Mini Tornado came from the South up the Green River and moved east over the hilltops then back toward the south, taking down hundreds of large trees and power lines. The Town received \$20,000 (approx.) in public assistance for damages.

May 3, 2002 - The gradient between a high pressure center in the Ohio Valley, and deep low pressure over eastern Canada, produced a marginally high wind event across high elevations of southern Vermont during the midday hours of May 3. Many trees and power lines were reported blown down across the county. One tree landed on a car and destroyed it in the town of Guilford. Over 1,000 customers were temporarily without power in southern Vermont as a result of the wind. Total of \$20,000 in damages countywide.

Mar. 10, 2002 - The pressure gradient between deep low pressure over Ontario, and high pressure off the southeast coast, produced a strong southerly flow across southern Vermont on the evening of March 9. Then, a strong cold front moved across the region shortly after midnight, early on March 10th. A line of showers and embedded thunderstorms accompanied the front. Strong winds ahead of and along the front produced some damage across Windham County. Law enforcement personnel reported a large number of trees and power lines down throughout the county.

June 2, 2000 - A powerful cold front moved across southern Vermont on June 2. This front produced thunderstorms, one of which became severe in Windham County. Several trees were blown down at Guilford Center. \$18,000 in damages.

Jul 6, 1999 - A cold front moved from the Great Lakes eastward across New York State and then into southern Vermont on July 6. With sultry air in place, and favorable strong upper level winds, this front triggered a powerful squall line around midday which bore down on southern Vermont during the afternoon. Destructive thunderstorm winds brought down trees and power lines in Pownal and Stamford, Bennington County. Dime size hail was noted in Halifax, Windham County. By far the most widespread damage occurred at Guilford Center in Windham County. A microburst with estimated winds up to 90 mph, brought hundreds of trees down or sheared them in half. The most significant tree damage appeared along the upper sections of Jacksonville Stage, Miller and along northern sections of Sweet Pond roads. The microburst travelled 3 miles and damage fanned out to nearly 2.5 miles wide. \$150,000 in damages countywide, mostly in Guilford.

Nov. 27, 1997 - The passage of a cold front produced strong winds across southern Vermont during the early morning hours of November 27. Winds gusting to 40-50 miles an hour downed trees and power lines in Bennington and Windham Counties. Approximately 1,500 customers lost power for a six to eight hour period.

Feb. 24, 1996 - A rapidly deepening low pressure system - moved from southern New Jersey northeast to northern Maine by the morning of February 25. This system brought damaging winds to southern Vermont including Bennington and Windham counties, which downed many trees across the area and produced scattered power outages.

Jan 19, 1996 - An intense area of low pressure located over the Mid-Atlantic Region on Friday morning January 19th produced damaging winds across southern Vermont. This storm was associated with a strong southerly flow which resulted in scattered reports of downed trees, limbs and power lines.

July 15, 1995 - A widespread severe weather outbreak hit Vermont during the morning hours of July 15th. A long lived squall line, known as a Derecho, crossed Vermont during the morning hours. Southern Vermont was hardest hit especially across Windham, Windsor, Rutland and Bennington Counties. \$10,000 in damages.

July 14, 1988 - Tornado in Windham County (exact location not known). Traveled 10 yards. Caused \$250,000 in damages.

July 5, 1957 – Tornado in Windham County (exact location not known). Traveled 33 yards. Caused \$2,500 in damages.

Sept. 21, 1938 - A hurricane Igor hit the region of Southeast Vermont to include the Town of Grafton, paralyzing it for weeks. As it was coming, packing winds over 100 miles an hour, authorities were unaware of the magnitude so no evacuation procedures were instituted and very few precautions were taken. As a result over 600 people lost their lives and tens of thousands were left homeless. Wind, rain and flash flooding wiped out trees, church steeples and buildings, leaving behind nearly \$400 million in damage.

Sources used

Local town knowledge and records, data for Windham County from the National Climatic Data Center storm event database¹³

Flooding

Description

Flooding is the most widespread and destructive hazard in the United States. Flooding has also been the most common and costly hazard to affect Guilford. The effects of flooding are also considered in the fluvial erosion section of this plan, because much of the flood related damage is caused by fluvial erosion. Flooding can occur anytime of the year as a result of heavy rains, thunderstorms, tropical storms, hurricanes or Nor'easters. It can result from the overflow of major rivers and their smaller tributaries, or inadequate local drainage. Historically, floods have been a factor in over 80 percent of all federally declared disasters. People living in close proximity to bodies of water such as rivers, lakes, and streams are at greater risk from flooding than those not living in the floodplain. There is a 26 percent chance of experiencing a flood during the life of a 30-year mortgage compared to a 4 percent chance of a fire. Guilford has an NFIP compliant floodplain ordinance, which gives residents access to discount flood insurance and enables the Town to regulate development within the Special Flood Hazard Area (SFHA). SFHAs are subject to inundation by the 1% annual chance flood (100-year flood). Maps of these areas can be found in the vault at the Town Office or online at the FEMA Map Service Center.¹⁴

Impact

Most of the destruction from flooding in Guilford is due to fluvial erosion rather than inundation, which is the type of flooding targeted through the NFIP. Fluvial erosion is the destruction of river banks caused by the movement of rivers and streams, when stream power overcomes resistance of bed and bank material. This can range from gradual bank erosion to catastrophic changes in river channel location and dimension during flood events. This occurs when the stream has more energy than is needed to transport its sediment load, due to channel alterations or runoff events that increase water speed in the channel, leading to erosion. Fluvial erosion hazard mapping was released by the VT Agency of Natural Resources in early December 2014. This mapping will assist municipalities in developing bylaws and effective mitigation strategies to regulate development within fluvial erosion hazard zones. Guilford does not currently have a fluvial erosion bylaw, but should consider developing one.

Ice jam flooding is fairly common in the early springtime, generally around March. The heavy rainfall, combined with runoff from snowmelt due to the mild temperatures, results in flooding of rivers, streams and creeks, mainly from the formation of ice jams. Guilford doesn't have mapped ice jams.¹⁵ However, there are four areas in Guilford that locals know are prone to jams: on the Green River just southwest of the intersection of Green River Road and Hinesburg Road; going south on Green River Road, just below The Rod Shop; on Hinesburg Road just north of the cement bridge on River Road; and on Broad Brook

¹³ < <http://www.ncdc.noaa.gov/stormevents/>> accessed December 12, 2014

¹⁴ <https://msc.fema.gov/portal>

¹⁵ CRELL Ice jam database/map <<http://rsgisias.crrel.usace.army.mil/apex/f?p=273:9:0::NO>>

near the intersection of Bonnyvale Road and Guilford Center Road, north of Guilford Center. Some of these jams remain in place for several years, and the river can back up for several hundred yards. Vermont Agency of Natural Resources has told the town not to touch the jams.

Flash floods typically occur in high elevation drainage areas as a result of summer thunderstorm activity. Damage from flash floods is difficult to predict since flash flood areas are not mapped at this time. Infrastructure and structures along higher elevation streams and drainage areas are most susceptible to damage from flash flooding. Drainage ditches and culverts are the biggest concern for local flash flooding events. Flash floods are likely in Guilford, and potential damage to Route 5 or Guilford Center Rd. could limit access to town, as they are the major transportation corridors through the community.



Areas adjacent to the Green River have seen some of the most recent damage from springtime rain on snow events. Due to their higher elevation, flash floods can potentially cause severe flood damage in these areas of Guilford. Weatherhead Hollow Road is in the floodplain and during high water events, the water comes up over the road because it's a flat area, leading to inundation flooding.

Fluvial erosion is an issue on the west end of Hinesburg Road. Trees keep coming down because of this. River Road is another high hazard road. It was destroyed in Irene in the area from the covered ridge south into Massachusetts. Since Irene, it has been replaced and upgraded with stone lining and new culverts. Carpenter Hill Road, near the cemetery going east, the north side is always a mess and continually gets washed out during even not major rain events. It gets washed out every time there is a heavy rain. It takes out about half the road. The branch of the Fall River, adjacent to Slate Rock Road, has reoccurring flash flooding that have washed out sections of Slate Rock Road over and over again. Hale Road has reoccurring wash outs due to Hinesburg Brook flash flooding events. Broad Brook, which has a meandering and steep bed, runs adjacent to Guilford Center Road and causes frequent washouts and road damage. Approaching from the west on Stage Road, coming toward the Green River covered bridge, there are perpetual wash outs because of a steep slope in this area. These areas have all seen damage in recent years associated with flooding and severe thunderstorms that have been a part of presidentially declared disasters. According to the Hazard Mitigation Planning Committee, no development has been affected by flooding.

Location / Special Flood Hazard Area and River Corridor Mapping

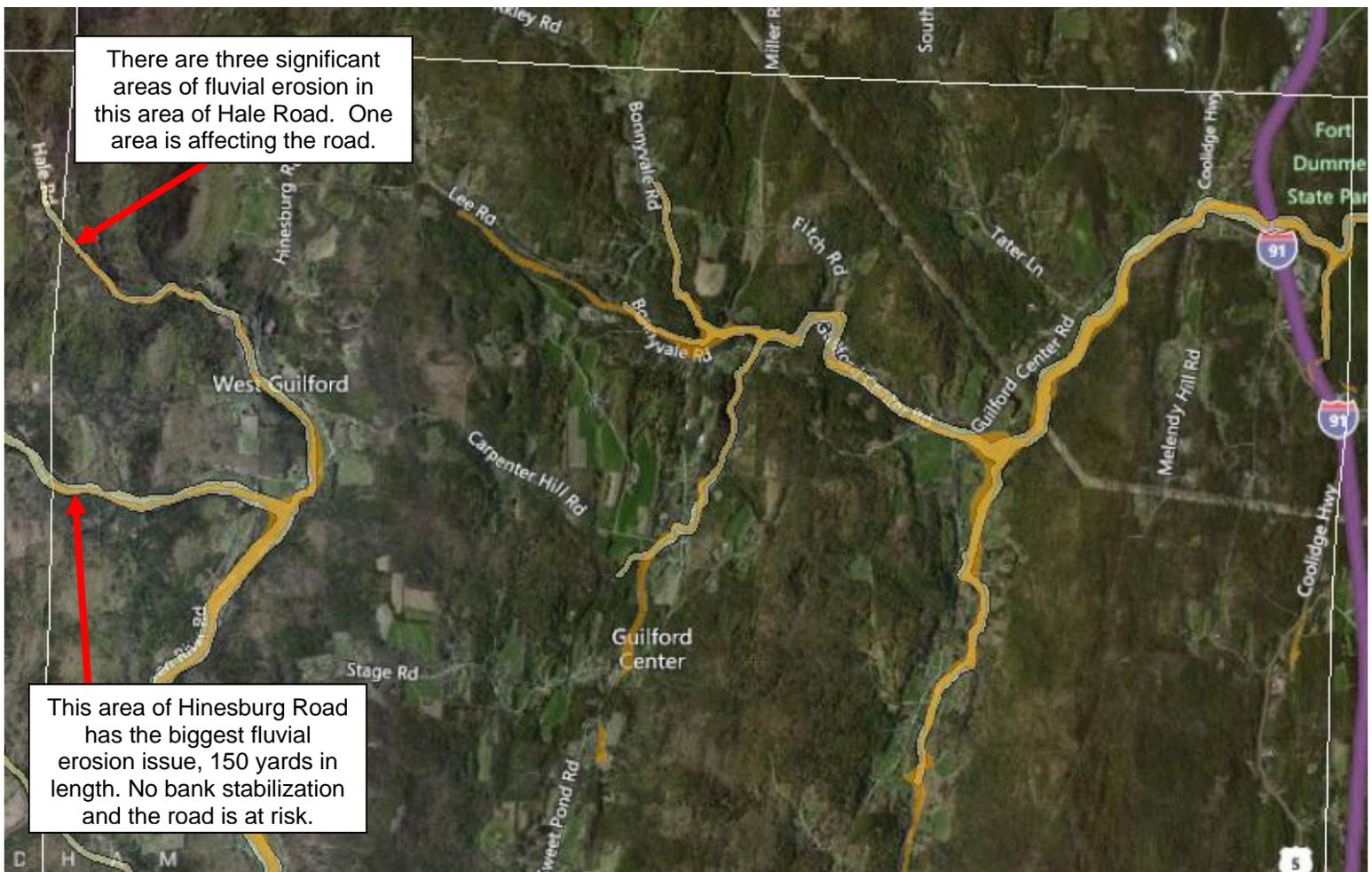
All SFHAs in Guilford are “A” zones, which are the lowest risk flood hazard areas that FEMA maps. There are no floodways. Properties within the SFHA, that have a mortgage, are required to purchase flood insurance. Guilford’s participation in the NFIP gives residents access to discount flood insurance through the program. The Flood Hazard Summary Sheets on FloodReady Vermont’s website says there are 46 structures in the Special Flood Hazard Area and only 13% of these structures have flood insurance.¹⁶

The below maps were created using the Vermont Agency of Natural Resources ‘Natural Resources Atlas’ which is an online mapping tool. These maps are snips showing all of the special flood hazard areas (SFHAs) that FEMA has designated in Guilford. They are shown in orange. The floodplains shown in these maps are based on the FEMA Flood Insurance Rate Maps (FIRMs) available through the FEMA

¹⁶ Flood Hazard Summary Report for Guilford, accessed 12/18/14
 <<https://anrweb.vt.gov/DEC/FoFReports/DisplayFloodHazardReport.aspx>>

Map Service Center.¹⁷ The map effective date for the latest FIRMs for Windham County is 9/28/2007. The map also shows the River Corridors that Vermont Agency of Natural Resources (ANR) has mapped. River Corridors encompass an area around the present channel where fluvial erosion, channel evolution and down-valley meander migration are most likely to occur. The mapped river corridor includes this area and a 50-foot buffer on either side to allow for the recommended setback and zone of avoidance to protect the riparian/fluvial erosion hazard corridor. The ANR defined River Corridor also includes a 50 foot buffer on all streams shown on the Vermont Hydrologic dataset. The only mapped River Corridors are for streams with a watershed of two square miles or greater.

The below map shows the Special Flood Hazard Areas (SFHAs) in orange, and the River Corridors in white, for the northern half of Guilford. There are a number of SFHAs in Guilford. There is a strong correlation between the low lying SFHA areas and the main transportation routes in Guilford. This leads to a lot of road washouts and culvert issues during storm events. The SFHAs in this portion of Guilford are primarily along Broad Brook, the stream that runs along Weatherhead Hollow Road, and in West Guilford area along the Green River going out to Halifax. The River Corridor has a strong overlap with the SFHA in the northern half of Guilford.



¹⁷ FEMA Map Service Center, accessed 12/18/14
<https://msc.fema.gov/portal/search?AddressQuery=wndham%2C%20vermont>

The below map shows the Special Flood Hazard Areas (SFHAs) in orange, and the River Corridors in white, for the southern half of Guilford. SFHAs are along the Green River in the western part of Guilford; along portions of Weatherhead Hollow Road in the central area; south of Weatherhead Hollow Pond heading into Massachusetts; and along the Fall River in the eastern portion of Guilford along Interstate 91. The mapped River Corridor is on the Green River and extends up a couple of tributaries.



Extent

The highest recorded measurement at the nearest stream gauge to Guilford on the Green River was 13.98 feet, which was measured during TS Irene on August 28, 2011.¹⁸ Average height for this reach is about 5.62 feet.

Extent for thunderstorms/heavy rain events: The table below shows the top 10 rain events at the Windham County National Weather Service Cooperative station at Ball Mountain Lake (in the Town of Jamaica). Most stations take their observations in the morning (7 and 8am are the most common times), so the precipitation would have fallen between 7am on the previous date to 7 am on the date listed in the table below. To give context to the below data, for a 1-day period a 50-year event is 3.96-6.15 inches, a 100-year event is 4.40-7.49 inches, a 200-year event is 4.89-9.11 inches, and a 500-year event is 5.63-11.84 inches. If we base on lower confidence limits, the below listed # 1 event that occurred in 1973 is a 500-year event and TS Irene, which is #2 in the table is a 200-year event. It is important to remember that precipitation levels vary throughout the region.

¹⁸ USGS Stream gauge 01170100 GREEN RIVER AT COLRAIN, MA
 <http://waterwatch.usgs.gov/?id=wwchart_ftc&site_no=01170100>

Maximum 1-Day Total Precipitation ¹⁹ for BALL MTN LAKE		
Rank	Value (inches)	EndingDate
1	5.6	1973-06-30
2	4.9	2011-08-29
3	4.36	1999-09-17
4	3.97	2005-10-09
5	3.32	1987-06-23
6	3.3	1975-08-08
7	3.21	2003-08-02
8	3.14	1988-04-29
9	3.07	2010-10-01
10	3.02	2000-12-18
Period of record: 1969-05-01 to 2015-04-02		

Probability

Flooding is highly likely, as determined by the Road Foreman and other members of the Hazard Mitigation Planning Committee. There are frequent road washouts every year, especially during spring snow melt and late summer season rains.

Past Occurrences

Since 1996, when National Climatic Data Center detailed records start, there have been 35 flood events in Windham County, Vermont. Guilford experiences routine spring flooding, but this is not always documented. There have been several Presidentially Declared Disasters in recent years for Windham County which have included severe thunderstorms and associated flooding. Windham County, including the Town of Guilford, experienced nearly constant rain and thunderstorms in the late summer of 2003. The storms affected Guilford from the period of July 21 through August 18. FEMA Declaration DR – 1488 was associated with this event. Many roads were washed out and culverts needed replacing throughout town. The following year, another severe period of flooding and thunderstorms, which lasted from the period of August 12- September 12 engendered Presidential Disaster Declaration DR – 1559. In 2007, Windham County was part of DR – 1698, and DR-4043 in May 2011, and DR-4022 in September 2011.

Sept. 12, 2013 - A series of cold front moved towards the region on Thursday, September 12th. Despite some periods of cloudiness, a warm and humid air mass ahead of the approaching boundaries allowed for moderate amounts of instability to be in place. Along and ahead of the boundaries, several lines of showers and thunderstorms developed and moved across the region during the afternoon and early evening hours. In addition to a large amount of cloud to ground lightning, a few of the thunderstorms became severe, with damaging wind gusts. Several trees were downed across the region. Some areas that received repeated showers and thunderstorms experienced flash flooding as well, with roads washed out and/or closed as a result. The hardest hit areas were within the town of Brattleboro. Two to four inches of rain in a short period of time was reported in the areas that experienced flash flooding. As the last in the series of cold fronts crossed during the evening hours, the threat for showers and thunderstorms ended.

Aug. 28, 2011 – Tropical Storm Irene – The Federally Declared Disaster DR-4022, Tropical Storm Irene, tracked northeast across eastern New York and western New England during Sunday, August 28th, producing widespread flooding, and damaging winds across the region, including Guilford. The greatest impact from Irene across southern Vermont was due to heavy to extreme rainfall, which resulted in catastrophic flooding. Rainfall amounts generally averaged 4 to 8 inches. Much of the rain which fell

¹⁹ Data provided by the NOAA, Northeast Regional Climate Center at Cornell University. <http://www.nrcc.cornell.edu/>. Courtesy of Jessica Spaccio, Climatologist. 4/3/2015.

occurred within a 12 hour period, beginning early Sunday morning, and ending Sunday evening. Route 9, the main route across southern Vermont was closed. Numerous evacuations were reported. The Green River took out large portions of River Road, Green River Road and Hinesburg Road from Halifax all the way to the Massachusetts line during TS Irene. Flooding was reported along Guilford Center Road in Guilford. Total damage in Guilford for TS Irene was \$778,279. The image below shows TS Irene damage along the Green River.²⁰



Our worst damage was in the Green River area.

May 20, 2011 - A vertically stacked upper level low moved slowly over eastern Pennsylvania, New Jersey and southern New York on Friday, May 20th. The surface low moved to near Long Island by the early afternoon. Showers and thunderstorms developed in a moist and unstable airmass across the region. Storms repeatedly moved over the same areas across a portion of Windham County resulting in flash flooding in the Saxtons River area. DR – 4043

March 6-7, 2011 - A cold front moved gradually southeastward across the region during the day Monday, March 7th, as a wave of low pressure moved northeastward along the boundary. To the south of the boundary, it was mild as the area was in the warm sector of the low pressure system. The storm tapped into both Atlantic and Gulf moisture, resulting in heavy rainfall of 1 1/2 to 3 1/2 inches across southern Vermont Sunday, March 6th, into Monday, March 7th before the precipitation transitioned to a wintry mix then snow early Monday morning. The heavy rainfall, combined with runoff from snowmelt due to the mild temperatures, resulted in flooding of rivers, streams and creeks, mainly from the formation of ice jams.

April 15-21, 2007 – Major spring flooding. Rain and snow caused damage to roads and utility lines across Windham County and Guilford. Across, the State, nearly 3.6 million dollars was obligated as part of the FEMA Public Assistance Program. While it is not normal for the town to receive this type of damage from severe flooding and thunderstorms on an annual basis, road washouts and culvert repairs from these associated events have ranged in the ballpark of \$200,000 to \$400,000 in some communities in Windham County. Rain and snow caused damage to roads and utility lines across Windham County and Guilford.

October 8, 2005 - A nearly stationary cold front was over southwestern New England. The air over the northeastern United States was very moist. Low pressure in the vicinity of the eastern Carolina states moved slowly north northeast along the cold front. Heavy rain fell over southern Vermont through the early morning hours of October 9. During this period, there was over 6 inches of rainfall in southern Vermont, triggering widespread flooding. Several evacuations of people from their homes occurred.

²⁰ Photo shown in the 2011 Town Report.

There was major inundation flooding on all the roadways along the Green River, isolating some residents. Total cost for Guilford was \$127,013.46, \$114,312 awarded to the town from FEMA.

March 31-April 2, 2004 - As much as three inches of rain fell between March 31 through April 2 across southern Vermont. This rain combined with the last of the snow melt to produce an excessive runoff of water. As a result, flooding took place in Bennington County. The Manchester Schools were closed due to flooding. The gage on the Batten Kill River in Arlington, rose to 6.90 feet, nearly a foot above the 6-foot flood stage during the predawn hours of April 3. Also in Bennington County, flooding was observed at the Paper Mill Village along the Waloomsac River. In Windham County, flooding was reported in West Brattleboro, where the Ames Brook and Whetstone Creek both rose over their banks and impacted nearby roads.

August 12-September 12, 2004 - Presidential Disaster Declaration DR – 1559 resulted in severe period of flooding and thunderstorms. Flash flooding resulted in washouts of small bridges at Ames Hill, Hescoc and Cook Roads. Canoe Brook Road in Dummerston impassable, with a culvert washed away, and a 20-foot wide by 20-foot deep hole in the road. These two 2004 events allowed for funding from the FEMA Public Assistance Program to flow into Windham County and help pay for the costs associated with debris removal and other emergency protective measures.

July 21 through August 18, 2003 nearly constant rain and thunderstorms affected Guilford. A tropical air mass was in place over southern Vermont on August 3. With a strong disturbance over the Great Lakes adding weak lift to a very unstable atmosphere, scattered showers and thunderstorms erupted during the afternoon hours. A slow moving storm over Windham County produced Doppler radar estimated rainfalls of 3 to 4 inches in about four hours time. The torrential rains took a toll, washing out roads in the city of Londonderry. County Highway 121 was washed out in the Town of Windham. Massive flooding occurred in the city of Grafton at the base of Fire Pond and Hinkley Brook roads, where water, debris and mud washed those roads out. The raging debris knocked a house off its foundation and damaged several other ones. This was the same area affected by the infamous Flood of 96 which was even more severe. Heavy rains also washed away a small covered bridge in Grafton. FEMA Declaration DR – 1488 was associated with this event. Many roads were washed out and culverts needed replacing throughout town. \$250,000 of damage county-wide.

In 1996, Between Saturday morning July 13 and Sunday morning July 14 rainfall from three to five inches was common across southern Vermont resulting in significant damage and a Presidential Declaration of Emergency. Flooding occurred throughout New England causing millions of dollars in damage. The remnants of Hurricane Bertha tracked from the Mid-Atlantic region northeast to Quebec, Canada. Several roads and streams were flooded throughout the region, including low-land flooding along the Hoosic River in Bennington County. Scattered power outages also occurred over the area, when strong winds downed water-laden tree branches onto wires.

In the spring of 1987 there was rapid meltdown of snow over frozen ground with 3” of rain flooding the west end of Reed Road. There were a number of roads in Guilford that were damaged by this event.

During 1976, flooding occurred throughout New England, as result of Hurricane Belle, causing millions of dollars in damage.

In 1973 there was an extreme rainfall event from June 28-30 that affected all areas of Vermont except the northwest section. Rainfall amounts as much as 6 inches in 24 hours in some locations. This was the largest rain event since the 1927 flood. Highway damage was extensive in the south-central, southeastern, and northeastern areas of the State. The town of Ludlow on the Black River was seriously damaged. Three persons were killed in the 1973 flood, and damage was estimated at \$64 million. Sizable crop loss was reported, and damage to State highways was estimated to be \$10 million. The entire State was declared a disaster area.²¹

²¹ USGS “Vermont Floods and Droughts” information page <http://md.water.usgs.gov/publications/wsp-2375/vt/>. Accessed 4/3/15.

The Vermont Flood of 1927 was the deadliest flooding event in the history of the State; eighty-four people were killed with over \$28 million in property damage. The Spring Floods of 1938, which had an effect on all of New England, caused \$113 million in damage, killed 24 people and made 77,000 people homeless. During this flood alone, the main street of Hooksett, New Hampshire was 18 to 20 feet underwater.

Sources used

Local town knowledge and records, VT ANR online mapping, FEMA FIRM maps, US ACE's CRELL Ice Jam mapping tool, USGS stream gauge data, National Climatic Data Center storm event database data for Windham County²²

Fluvial Erosion

Description and Geographic Area of Hazard/Location/Occurrences

Most of the destruction from flooding in Guilford is due to fluvial erosion rather than inundation, which is the type of flooding targeted through the NFIP. Fluvial erosion is the destruction of river banks caused by the movement of rivers and streams, when stream power overcomes resistance of bed and bank material. This can range from gradual bank erosion to catastrophic changes in river channel location and dimension during flood events. This occurs when the stream has more energy than is needed to transport its sediment load, due to channel alterations or runoff events that increase water speed in the channel, leading to erosion. Fluvial erosion hazard mapping was released by the VT Agency of Natural Resources in early December 2014. This mapping will assist municipalities in developing bylaws and effective mitigation strategies to regulate development within fluvial erosion hazard zones. Guilford does not currently have a fluvial erosion bylaw, but should consider developing one.

Gravity and water power are the forces driving fluvial erosion. Factors that allow the force of gravity to overcome the resistance of earth material to erosion include: saturation by water, steepening of slopes by erosion or construction, alternate freezing or thawing, removal of trees and other vegetation and earthquake shaking. Major erosion events are typically associated with periods of heavy rainfall or rapid snow melt and tend to worsen the effects of flooding that often accompanies these events. Associated issues in Guilford are related to road cutting and bank erosion for the most part, areas where roads have been built between steep slopes on one side of the road, and slopes to a river or brook on the opposite side. Existing homes are dotted on the landscape along these roads which have existed for 200 years or more, so cannot be easily closed or relocated.

In some instances stabilization/mitigation projects in Guilford have helped. In other areas throughout Guilford, issues remain. One area is Hinesburg Road out west near the Halifax town line there is a large area of fluvial erosion on the slope adjacent to the Green River. Another is along River road south near the Massachusetts line, in the area of Randall Drive; this one is not an immediate danger but it's a gradual slide to be aware of. Approaching from the west on Stage Road, coming toward the Green River covered bridge, there are perpetual wash outs because of a steep slope in this area. Hale Road has a high bank of 50 feet that routinely washes into Hinesburg Brook. Green River Road embankment is also de-stabilized in many areas from the wash outs in 2011, TS Irene. Near the Old Mill north of the village, embankment stabilization issues exist.

The river Corridor mapping (included in this plan) shows the ANR defined River Corridors, which are likely to have fluvial erosion. The map also points out some of the issues discussed in the text of particular problem spots.

Impact

There are several areas in Guilford with fluvial erosion risks, primarily to roadways that would cut off residences. All of the issues in Guilford that are of concern are along roadways and disturbance is often more of a risk than letting them alone. Risks are to passing drivers and residents being cut off by erosion debris covering roadways. The deeper layer of the soil is clay-based composition which stays in place, but the soil with vegetation on top of it, if inundated by water, will slither off the clay-based soil and erode

²² < <http://www.ncdc.noaa.gov/stormevents/>> accessed December 12, 2014

into the stream or land on a road, shutting it down. Repeatedly having to repair roadways, slow erosion areas with short term stabilization methods, and clean out culverts that fill with erosive debris are threats to the town budget.

Fluvial erosion is an issue on the west end of Hinesburg Road. Trees keep coming down in this area. River Road is another high hazard road. It was destroyed in Irene in the area from the covered ridge south into Massachusetts. Since Irene, it has been replaced and upgraded with stone lining and new culverts. Carpenter Hill Road, near the cemetery going east, the north side is always a mess and continually gets washed out during even not major rain events. It gets washed out every time there is a heavy rain. It takes out about half the road. The branch of the Fall River, adjacent to Slate Rock Road, has reoccurring flash flooding that have washed out sections of Slate Rock Road over and over again. Hale Road has reoccurring wash outs due to Hinesburg Brook flash flooding events. Broad Brook, which has a meandering and steep bed, runs adjacent to Guilford Center Road and causes frequent washouts and road damage. Approaching from the west on Stage Road, coming toward the Green River covered bridge, there are perpetual wash outs because of a steep slope in this area. These areas have all seen damage in recent years associated with flooding and severe thunderstorms that have been a part of presidentially declared disasters. According to the Hazard Mitigation Planning Committee, no development has been affected by flooding.

Extent

Extent for fluvial erosion: The biggest area of fluvial erosion in Guilford is along Hinesburg Road. It is a 150-year long embankment on the south side of the Green River, that affects the infrastructure of Hinesburg Road. This area is out near the Halifax town line. The road is not at risk because the erosion is on the other side of the brook from the road. There is no bank stabilization in place.

Probability

Fluvial erosion are highly likely and they exist, especially due to the damage caused by TS Irene in 2011, where fluvial erosion hazard flooding de-stabilized many steep-sloped areas and washed out riparian zones next to roads and streams.

Sources used

Local knowledge of areas of concern and impacts

Power Outages

Power failure is a common condition associated with high winds, ice storms, downed trees, and other hazards. It can occur anywhere in town. Power failures are typically the result of power lines damaged by high winds or heavy snow/ice storms. Power failures may also result from disruptions in the New England or National Power grid, as indicated by the widespread power outages in 2003. Dead or dying trees in close proximity to power lines pose a particular threat for power failure. Green Mountain Power serves Guilford. Power outages can be viewed on their website.²³

There are a number of businesses that don't have generators, particularly inns and lodges. Extended power outage would be a problem if there were a lot of tourists that couldn't leave the area. There is a need for tourists to be alerted not to come to town when bad weather is expected. Residents that don't have access to a generator are of concern in winter months if there is no alternate heat source other than electric. The need to educate residents about the proper installation and use of generators to prevent accidents was acknowledged.

TS Irene in 2011 and the December 2008 ice storm were major weather events that caused extended power loss. Some areas were out of power for 10 days. There was another long power outage during the summertime in the late 1990's when the power was out for two days due to equipment failure at a substation.

²³ <https://wss.greenmountainpower.com/customers/outages/>

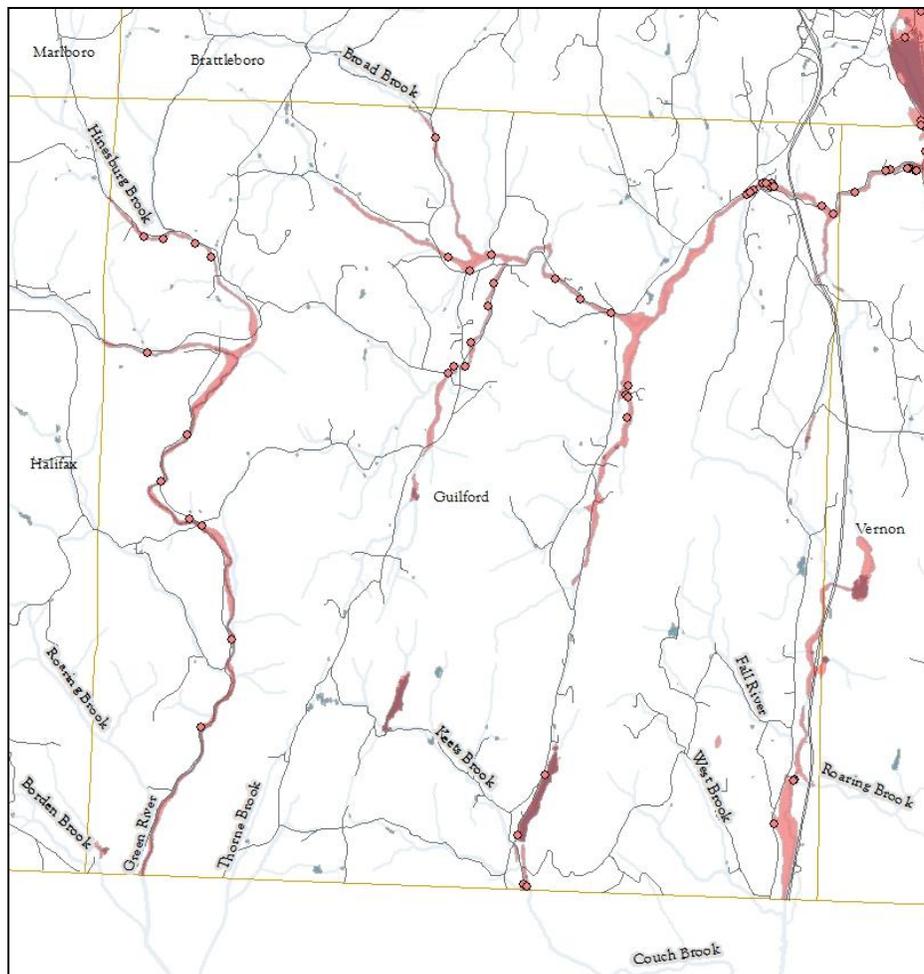
Potential loss estimates from power failures are difficult to predict, as they typically are isolated in geographic area and short in duration. Therefore, they often have only minimal impact to people and property. Power failures usually result in minor inconveniences to residents; however, longer duration events can result in the loss of perishable items and business losses. Power outages in winter months can result in the loss of home heating, bursting water pipes and resulting structural water damage.

ASSESSING VULNERABILITY

Structures in the SFHA

There are approximately 46 buildings within FEMA-designated Special Flood Hazard Areas (SFHAs).²⁴ The below map shows structures (red dots on map below) that are located in the SFHA. The 46 are spread throughout Guilford, but a concentration is in the village of Algiers. These structures are particularly vulnerable to flooding and fluvial erosion hazards described in this plan.

Properties within SFHAs, that have a mortgage, are required to purchase flood insurance. Guilford's participation in the National Flood Insurance Program (NFIP) gives residents access to discount flood insurance through the National Flood Insurance Program. Flood insurance can still be purchased privately, however it is more expensive. Development in SFHAs must meet additional construction standards as outlined in Guilford's floodplain regulations, which are a stand-alone ordinance revised in 2007.



²⁴ 2014 Flood Hazard Summary Sheet for Guilford

Repetitive Loss Structures

According to FloodReady.Vermont.gov, Guilford has no repetitive loss claims.²⁵ A Repetitive loss structure is an NFIP-insured structure that has had at least 2 paid flood losses of more than \$1,000 each in any 10-year period since 1978.²⁶ Severe repetitive loss (SRL) structures are NFIP-insured buildings that, on the basis of paid flood losses since 1978, meet either of the loss criteria described in the SRL section. SRL properties with policy effective dates of January 1, 2007 and later will be afforded coverage (new business or renewal) only through the NFIP Servicing Agent's Special Direct Facility (SDF) so that they can be considered for possible mitigation activities. An SRL property is defined as a residential property that is covered under an NFIP flood insurance policy and:

- That has at least four NFIP claim payments (including building and contents) over \$5,000 each, and the cumulative amount of such claims payments exceeds \$20,000; or
- For which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.
- For both (a) and (b) above, at least two of the referenced claims must have occurred within any ten-year period, and must be greater than 10 days apart.

Participation in and Compliance with the National Flood Insurance Program (NFIP)

The National Flood Insurance Program (NFIP) is a voluntary program organized by FEMA that includes participation from 20,000 communities nationwide and 247 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.

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.

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. Guilford joined the NFIP on June 3, 1986 and is a member in good standing (CID 500130). The latest floodplain ordinance was adopted September 3, 2007 and is a stand-alone ordinance.

²⁵ Report listing repetitive losses is available here:

<<http://floodready.vermont.gov/sites/floodready/files/documents/RLReport6.17.14.pdf>>

²⁶ <https://www.fema.gov/national-flood-insurance-program/definitions>

The latest record indicates that there are fifteen (15) active NFIP policies in Guilford. These policies have a total value of \$2,696,800. There have been three NFIP claims paid in Guilford since they joined the NFIP, totaling \$33,552.²⁷

The Town works with the elected officials, Windham Regional Commission, the state and FEMA to correct any compliance issues and prevent further NFIP compliance issues through continuous communications, training and education.

Critical Facilities in Guilford

- Town Offices, 236 School Road
- Central School, School Road
- Old Town Garage, Guilford Center Road – this property is on the floodplain
- Guilford Library
- Historical Society Building
- Guilford Volunteer Fire Department (location of Emergency Operations Center)
- Sewer System for Algiers Fire District #1, Algiers Village
- Guilford Country Store, Algiers Village
- Broad Brook Grange – has reliable drinking water that is gravity fed by a spring, not dependent on anything else
- Guilford Community Church
- Green River Covered Bridge
- Algiers Fire (Sewer) District
- Welcome Center on Interstate 91
- Weatherhead Hollow Pond
- Fort Dummer State Park

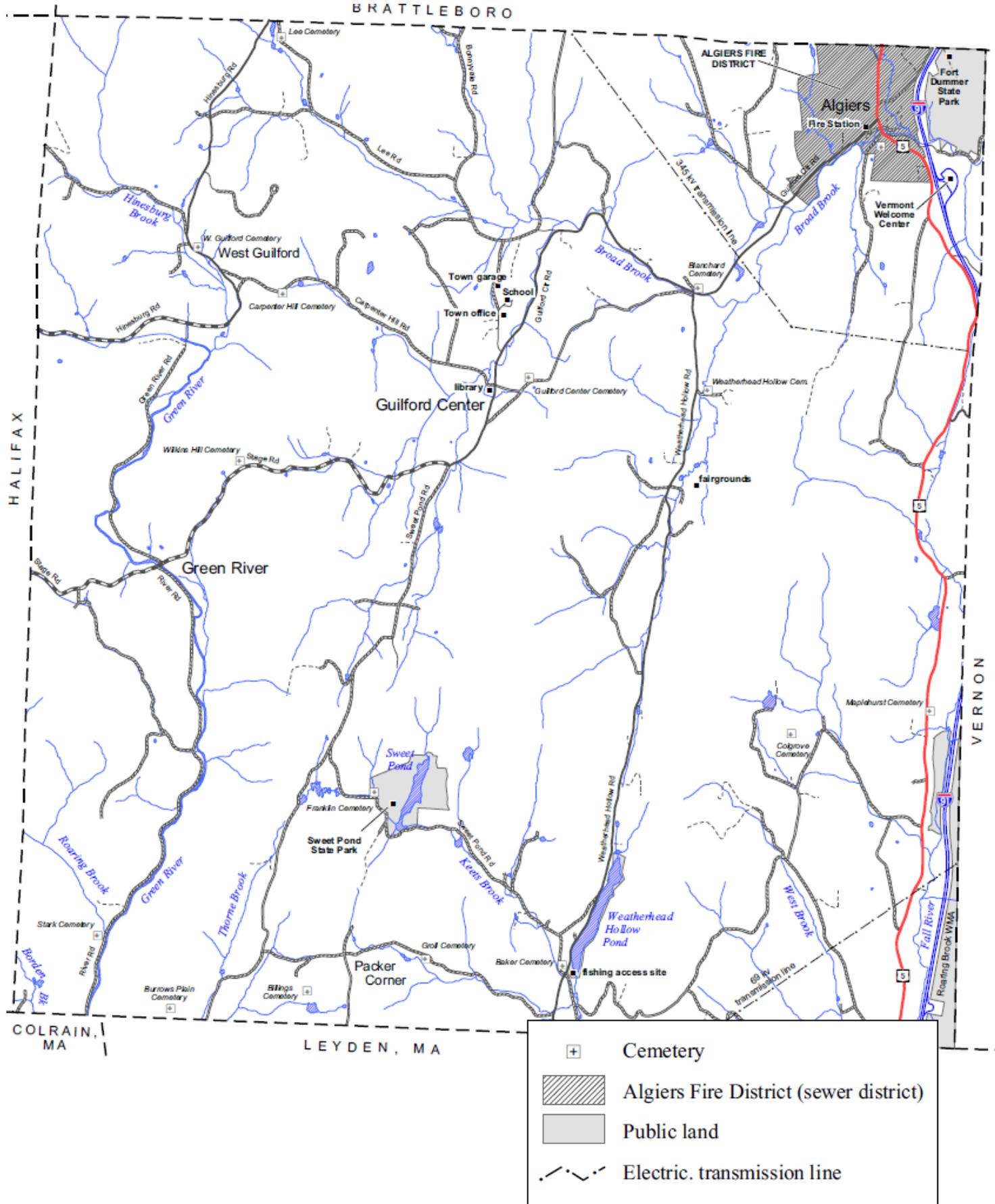
Market Values of Structures in Guilford

The total Grand List in the Town of Guilford:	\$223,900,295.00**
Common Level of Appraisal:	93.19 (Dec., 2014)

** \$223,900,295.00 = Grand List Adjusted for Exemptions (voted and legal)
 These counts do not include non-taxable structures. There are 16 (non taxable) locally exempt properties.

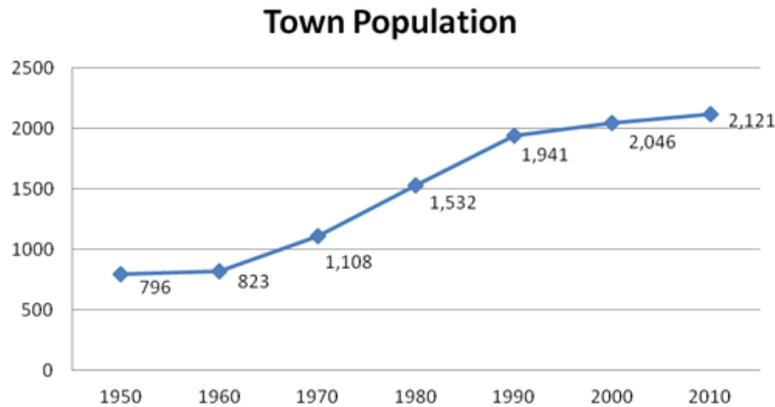
²⁷ FEMA NFIP Insurance Report, Septemer 2014, accessed December 18, 2014
<http://floodready.vermont.gov/sites/floodready/files/NFIP%20Insurance%20community-report%209.26.14.pdf>

Guilford Community Facilities Map from 2010 Guilford Town Plan



Development Trends

To reiterate what was stated in this report introduction, the population of Guilford increased between 2000 and 2010, from 2,046 to 2,121 people. It has been seeing a slight rise for years, as the chart below shows. Relative to surrounding towns, Guilford is seeing more growth (4%). Marlboro is the only neighboring town with more growth (10%).



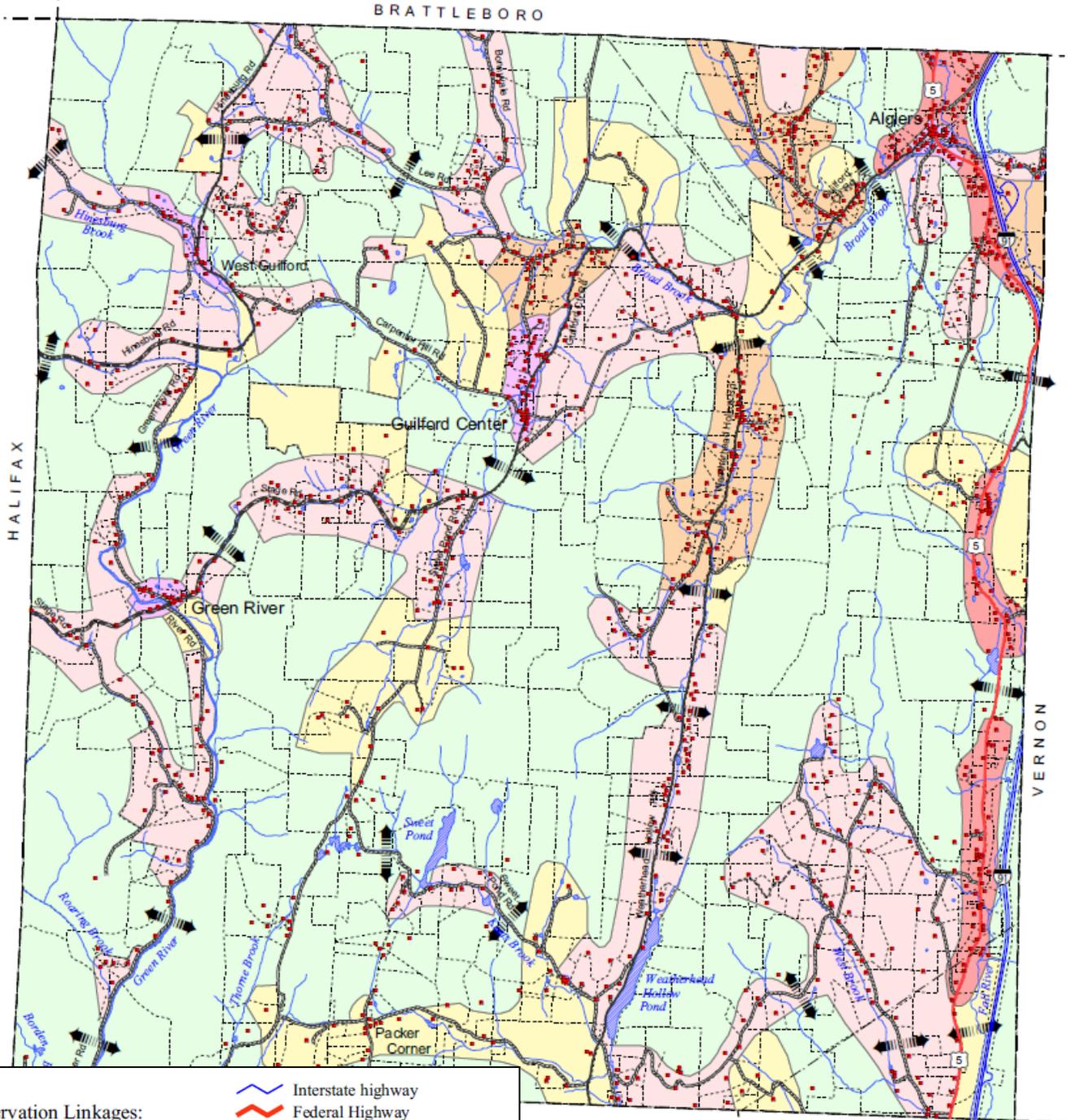
There hasn't been much new development in Guilford outside of the Village of Algiers. Recently, a 17-unit subsidized housing development was built in Algiers. The other recent development is Sweet Pond Village, a private development with several units. Neither of these new developments is in the floodplain. Guilford's Town Plan encourages new development in hamlet areas, rather than outlying area. This is to protect farmland and the rural character of the community. Maintaining rural character is the big emphasis of the Town Plan.

The next page shows the proposed land use map from the 2010 Guilford Town Plan. To quote the Town Plan, "This map is the heart and soul of this Town Plan. It represents the Planning Commission's best efforts to protect what is most important about Guilford while allowing for moderate growth and change in the future. The Proposed Land Use Map is our attempt to identify the important ridgelines, wetlands, farms and large areas of wildlife habitat in order to begin the process of preserving these critical resources for future generations."

The town is encouraging most development around the Village of Algiers and along Route 5 in the eastern portion of the town, near Interstate I-91. These areas are currently the most developed areas of Guilford. Most of the rest of the town is deemed conservation, agricultural or residential. Guilford Center, West Guilford and Green River are historic village hamlet areas with residential development around them.

This encouragement is important but there are not many hard and fast development regulations in Guilford. The town does not issue development or building permits and there is no zoning. There is only a floodplain ordinance to regulate development in Special Flood Hazard Areas. This lack of restriction has some benefits to existing residents, but could pose an issue if non-desirable development was inclined to locate in Guilford. So, in terms of vulnerability, there hasn't been change to Guilford's vulnerability to natural hazards in recent years; but, without enacting stricter regulations for future development, such as zoning, subdivision and wetland regulations, Guilford leaves itself vulnerable.

Proposed Land Use Map from 2010 Guilford Town Plan



Critical Conservation Linkages:

Land Use Areas:

- Historic Village
- High Density Mixed Use
- Low Density Mixed Use
- Residential
- Agricultural Resource
- Conservation

Legend:

- Interstate highway
- Federal Highway
- Class 2 town highway - paved
- Class 3 town highway - paved
- Class 3 town highway - unpaved
- Class 4 town highway (unpaved)
- Private road/drive
- Stream
- Town boundary
- River or pond
- Buildings
- Electric transmission line
- Parcel boundary

Data notes:
 - Proposed land use area boundaries and critical conservation corridors were determined by the Guilford Planning Commission. Refer to the 2010 Guilford Town Plan for a description of each future land use district.

MITIGATION STRATEGY

Local Hazard Mitigation Goals for this Plan

The Hazard Mitigation Goals as outlined below were agreed up by consensus among the Hazard Mitigation Planning Committee during meetings for the development of this plan.

- Reduce the loss of life and injury resulting from all hazards.
- Reduce the impact of hazards on the town’s water bodies, natural resources, and historic resources.
- Reduce the economic impacts from hazard events.
 - Minimize disruption to the road network and maintain access,
 - Mitigate financial losses incurred by municipal, residential, industrial, agricultural and commercial establishments due to disasters,
 - Ensure that community infrastructure is not significantly damaged by a hazard event.
 - Being proactive in implementing any needed mitigation projects for public infrastructure such as roads, bridges, culverts, municipal buildings, etc.
- Encourage hazard mitigation planning to be incorporated into other community planning projects, such as the Town Plan, Capital Improvement Plan, and Town Basic Emergency Operation Plan
- Ensure that members of the general public continue to be part of the hazard mitigation planning process.

2010 Town Plan Goals that Support Mitigation

Town Plan Goal 5. To Identify, Protect and Preserve Important Natural and Historic Features of the Guilford Landscape, including Outstanding Water Resources and Wetlands, Agricultural and Forest Land, Significant Scenic Landscapes and Views, Important Archaeological Sites, and Historic Structures, Sites and Districts.

Transportation Policy 10. When bridges on public roads need to be replaced, the Town shall consider the impact of the new structures, both in terms of safety and the rural character of the Town.

Transportation Action 4. That the Town enforce the existing Driveway Ordinance, including slopes when entering public roads, adequate culverts and proper drainage, safe engineering and adequate lines-of-sight for oncoming traffic.

Fire and Police Protection, Emergency Medical Service, and Emergency Management Policies:

1. There should be adequate police protection in Guilford, as determined by the Select Board.
2. The Fire Department should remain affiliated with Tri-State Mutual Aid and Southwestern New Hampshire Mutual Aid systems, or in any other such system deemed important by the Chief and Trustees.
3. Fire ponds and dry hydrants should be encouraged throughout the Town. Any person planning a pond or a pool should be encouraged to discuss the plans with the Fire Chief or his designated representative.
4. The Town should continue to support the Guilford Volunteer Fire Department through its appropriations from General Funds. Such funds should be used to help provide adequate expenses of the Department, including bonding for the new fire station, and the regular replacement of fire fighting apparatus and equipment as needed to provide for the safety of the firefighters and First Responders and for the protection of Guilford residents and their properties.

Natural Resources Policies:

3. Require, where possible, that public utilities and transportation facilities integrate use of the same corridors in order to minimize their visual and environmental impact.
5. Identify, establish, and maintain reserves for wetlands and prime agricultural and forest lands.

Water Resources Policy 5. Protect our waters and watersheds by limiting the intensity of development within the following areas:

- a) Headwaters of watersheds characterized by steep slopes and shallow soils.
- b) Drainage areas of pristine or upland streams; within these areas special attention should be given to preservation of shade trees on stream banks, preventing soil erosion and siltation of streams, and preventing pollution of ground and surface waters.

Land Use Policy 6. To protect our significant natural areas such as ridgelines, wetlands, wildlife corridors and large tracts of open and forested lands.

Progress between 2011 and 2014

Though there was no hazard mitigation plan in place, Guilford was busy doing things to make their town a safer place to live and visit. These are some of the main achievements they have made in the years that this plan was in development.

2011 Mitigation Action	Status
Green River Bridge Replacement	Wing wall and abutment work was done in the Summer of 2014, funded partially through FEMA. They still need to straighten it and replace the roof and deck. Repairs will be done in summer 2015 to return it to 8 ton capacity.
Stage Road – Town Highway 1 Stabilization Project	Stone lined the ditches and replaced two culverts. Completed late summer 2014.
Carriage Road – culvert replacement	Completed shortly after TS Irene. It was replaced, but not enlarged.
Stream Geomorphic Assessment for the Green River	Completed with assistance from Evan Fitzgerald & Associates, the Windham Regional Commission and the Guilford Conservation Commission.
Green River Corridor Plan	The Green River Corridor Plan was completed in November 2014.
River Road - repair portions of embankment or replace entire embankment with larger material and a stacked wall	Completed early 2014; TS Irene took out the road, and it had been having repeated problems.
River Road embankment - Develop design to repair/replace rip-rap. Potentially install a stacked stone wall to increase bank full width to ~50' and reduce road vulnerability.	Completed
Green River Road berm removal to restore floodplain access	Completed in 2013
Develop School Emergency Operations Plan for Guilford Central School	School emergency plan completed and was adopted early 2014. The school also participated in an emergency exercise.
Better communication throughout town during emergencies	Two programmable road signs have recently been purchased for all hazards communication.
Remove utilities from river right of way	Green Mountain Power installed new poles and moved their lines out of the river right of way; Comcast and Fairpoint still have use of the poles, however.
Maintain active involvement in training and exercises around Vermont Yankee and state all-hazards planning	Town tabletop exercise completed in February 2014 in preparation for CAT2.

Green River Covered Bridge

Vermont Department of Transportation (VTTrans) has deemed the Green River Covered Bridge functionally and structurally obsolete. It is a one-lane bridge in the hamlet of Green River that was

designed to handle horse and buggy traffic in its day. It is on the National Historic Registrar so it cannot be moved or altered. Fire trucks cannot travel across the bridge nor can highway equipment, though ambulances can pass if it is an emergency. The west side of Guilford relies on Mutual Aid from Massachusetts and Halifax. It is the town's greatest problem with concern to safety and emergency response for its people. To build a new bridge in a new location will require obtaining private property and new road construction. The entire project is projected to cost approximately \$5-10 million. The current plan is to upgrade the existing bridge, and that is underway and described in the mitigation actions tables. Building a new bridge is not feasible at the current time. The Selectboard is in discussion now for committing more funding for planning a bypass road. The alternative route from the covered bridge is going through Halifax on Dear Park Road or going down through Colrain, MA.

Ongoing Efforts

1. Leaf removal and ditch cleaning are maintenance activities done every Fall by the road crew.
2. VT Council on Rural Development (VCRD) selects and works with two towns per year to analyze what could be done to improve quality of life and bring community together in rural areas so it functions as a whole during times of need. At the end of 2013 and the beginning of 2014, VCRD selected Guilford. The program developed several projects and gave to Guilford on how to increase communication within the town. Guilford has been acting on these decisions and as a result, town communication is getting better. The town website is well used, Front Porch Forum is utilized better than it used to be, and the planning commission is developing welcome packets for new residents, as VCRD suggested.
3. Guilford participates routinely in catastrophic exercises around a multi-hazard incident. EMD, Herb Meyer, participated in a state-wide week long exercise. These exercises are scheduled every couple years. Herb ensures that Guilford is an active participant in state emergency practice events.
4. Town EMD, Herb Meyer, is an active participant in the Local Emergency Planning Committee 6 (LEPC 6) meetings to maintain communication with other town/regional emergency personnel for planning, information sharing and networking purposes. LEPC 6 is also a way for EMD's to stay aware of events and opportunities.
5. Guilford Community Church is set up to be a certified Red Cross emergency shelter.
6. There is a bus owned by the town and administered by the Emergency Preparedness Department that can be used to pick up those throughout town who need assistance/ transportation during emergencies. There is a list of residents that are checked on during emergencies. The list is maintained by the Emergency Preparedness Coordinator, who also maintains contact with these residents.
7. Guilford is a member in good standing of the National Flood Insurance Program. The floodplain ordinance is kept compliant and the town maintains SFHA maps at the town office.
8. Mapping of vulnerable populations – This is an ongoing project with work conducted by the Emergency Management Director and volunteers.

Identification of Mitigation Actions

The Guilford Hazard Mitigation Plan Committee identified the following hazard mitigation activities based on an evaluation of hazard event vulnerability not addressed by existing hazard mitigation initiatives and the feasibility of new activities. As a part of the ongoing plan process, these were updated in 2014 by the Hazard Mitigation Plan Committee to reflect progress and new ideas.

Mitigation actions are listed in priority order by hazard. Actions were prioritized by the plan participants. These are new actions so any shifts in prioritization of actions came out through the multi-year plan development process. The following criteria were used in establishing project priorities. The ranking of these criteria is largely based on the best available information and best judgment as many projects are not fully scoped out at this time. Prioritization was done during the meetings for the plan development in discussions among participants and guided by WRC’s Emergency Planner.

- 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 reasonable benefits compared to its cost of implementation?
- Is the action environmentally sound?

Cost-Benefit Analysis

As part of public involvement discussions, there was a rough cost/benefit analysis done for each action listed in the table and those results are shown in the table. The below cost and benefits tables address the priorities for the mitigation strategies that are stated in the Mitigation Actions Table. This was how the mitigation actions were assessed by the Planning Committee. Priority was assessed somewhat independently of cost/benefit and was based more on the perceived need of each action and availability of funding, versus what the action costs and benefits.

At the time of applying for FEMA’s PDM-C, FMA or HMGP grant programs, each project listed below will undergo full benefit-cost analysis (BCA) methodology, version 5.1 or higher to maximize savings. Whenever possible, Guilford will utilize 406 mitigation funding.

Cost Estimates	
High	= >\$100,000
Medium	= \$25,000 – 100,000
Low	= < \$25,000

Benefit Estimates	
High	Public Safety
Medium	Infrastructure/ Functionality
Low	Aesthetics/ General Maintenance

Detail on two large mitigation projects:

- 1) Green River Covered Bridge Replacement Project - Wing wall and abutment work was done in the summer of 2014, funded partially through FEMA. They still need to straighten it and replace the roof and deck. Repairs will be done in summer 2015 to return it to 8 ton capacity.
- 2) Fitch Road Bridge #60 Replacement Project - This Bridge gets a lot of traffic and is in substandard condition. WRC Transportation Committee has it on a list of needed bridge replacements. It also needs abutment work as well. They are seeking funding from the State currently.

Mitigation Actions Identified by the Mitigation Planning Committee

HAZARD	ACTION	RESPONSIBLE PARTY	TIME-FRAME	FUNDING SOURCE	MITIGATION OR PREPAREDNESS	COST / BENEFIT	PRIORITY	STATUS
Flooding	Fitch Road Bridge Replacement	Road Commissioner	Will begin once funding is rc'vd; one season to complete	Grant funding	Mitigation	High/High	High	Awaiting funding
Flooding	Green River Bridge Repair - straightening, replacement of roof and deck to restore 8 ton capacity	Road Commissioner & Selectboard	Summer 2015, begin and end	VTrans and FEMA	Mitigation	High/High	High	Funding in place; There has been wing wall and abutment work done in the Summer of 2014
Flooding / Fluvial Erosion	Explore buyout and demolition of abandoned house on Hinesburg Rd/Harris Drive	Landowner/ Town of Guilford/FEMA	Begin Spring – End Fall 2017	FEMA	Mitigation	Medium/High	High	Need to work with landowner on this
All-Hazards / Flooding/ High Winds / Fluvial Erosion	Transfer town emergency alert system from VY RENTS to VT Alert	EMD	Begin as soon as funding/ training provided	VT DEMHS	Preparedness	Low/High	High	Written request submitted to DEMHS for funding and assistance; Now waiting for DEMHS to provide training and then transfer database to VT Alert.
All-Hazards / Flooding	In update of Town Plan incorporate flood and emergency planning information	Planning Commission and WRC	End of 2015 is adoption goal	Dues to WRC	Mitigation	Low/High	High	Town Plan update is in progress
Flooding / Fluvial Erosion	Complete Actions identified in Green River Corridor Plan	Guilford Conservation Commission; Planning Commission; Town Manager	2015-2017, as funding allows	VT ANR Ecosystem Restoration Grant; etc	Mitigation	Med/Medium	High	Projects and funding sources are outlined in the Corridor Plan which was completed in November 2014
Power Outage / All Hazards	Education of town residents on proper generator use. Survey of residents that have generators.	Selectboard; Fire Department	Town Meeting Day 2015	Town Funding	Mitigation	Low/High	High	In discussion with Selectboard
Flooding / Fluvial Erosion	Utility repairs - Remove at least one utility pole out of active river area. If pole is no longer in use, remove pole and abandoned cables	Comcast and Fairpoint; Landowner	Summer 2015 begin and end	Comcast and Fairpoint	Mitigation	Low/ Medium	Medium	In discussion with landowner and utilities
Flooding / Fluvial Erosion / High Winds	Move utility pole and assess bank for stability and erosion risk for Green River Road. If pole is no longer active,	Green Mountain Power; Landowner	Summer 2015 begin and end	Green Mountain Power	Mitigation	Low/ Medium	Medium	In discussion with landowner and utilities

	remove pole and wires.							
All-Hazards / Flooding/ High Winds / Fluvial Erosion	Public education and outreach – continue current methods and look for more	Emergency Management Director	2015 and ongoing	Town Funding	Preparedness	Low/High	Medium	Town website posts safety information; Town Gazette runs articles; Town Plan has expanded public safety section in draft.
High Winds	Develop yearly Tree Inventory and Cutting along roads / power poles	Road Commissioner	Yearly in the fall and spring	Highway Department , GMP, Vtrans	Preparedness	Low/High	Medium	In development with Vtrans and GMP

The Green River Corridor Plan, which was recently completed, is a detailed study of the entire river corridor. Part of the report outlines specific projects and ranks them for mitigation priority.

Green River Corridor Plan Identified Mitigation Projects for the Town of Guilford

Project #, Location, Reach, Lat/Long	Type of Project	Site Description Including Stressors and Constraints	Project or Strategy Description	Hazard Mitigation Priority	Ecological Benefits Priority	Project Benefits	Costs	Potential Partners & Funding
#1 River Road Reach M04 42.7630 N 72.6625 W	Active Restoration Road Embankment	Existing road embankment consists of large, rounded material and is constricting the bankfull channel to 40'. Some rock armor is unstable. Left floodplain is accessible upstream with some avulsion risk.	Develop design to repair/replace rip-rap. Potentially install a stacked stone wall to increase bankfull channel width to ~50' and reduce road vulnerability.	Moderate	Low	Increase channel width and capacity; protect critical road embankment from future flood washouts.	Stacked stone wall costs are approximately \$500/lf. Length is approx 150lf. Costs could exceed \$75,000.	Town of Guilford
#2 Utility Line Reach M04 42.7634 N 72.6622 W	Active Restoration Utility Repairs	The utility providing service to houses on the east side of the river is located in an active flood chute with moderate channel avulsion potential. Utility pole may have been abandoned but pole and old cables are still vulnerable to erosion.	Move at least one utility pole out of active river area. If pole is no longer in use, remove pole and abandoned cables to avoid debris snagging in future floods.	Moderate	Low	Reduce risk of utility line damage and loss of residential service?	Moderate	Green Mountain Power; Landowner
#3 Riparian Corridor Reach M04 42.7642 N 72.6686 W	Passive Restoration Corridor Protection and Buffer Plantings	Large hayfield on right floodplain (approx. 6 acres) is moderately accessible and provides very important floodwater storage during larger events. Buffer width is very narrow throughout and channel may start to migrate in to field due to lack of resistance.	Plant stream buffer with native woody vegetation in areas lacking canopy cover to reduce streambank erosion and improve water quality and habitat. Coordinate with landowner to assess interest, cooperation, and potential for maintaining forested buffer and conserving land in permanent easement.	High	Moderate	Very important floodwater and sediment storage zone during large floods. Dampens floodwave on lower reaches along River Road where floodplain access is minimal.	Low to Moderate dependent on size of area to be conserved. Low costs for buffer planting.	NRCS CREP; VTANR ERP; WCNRCD Trees for Streams

Project #, Location, Reach, Lat/Long	Type of Project	Site Description Including Stressors and Constraints	Project or Strategy Description	Hazard Mitigation Priority	Ecological Benefits Priority	Project Benefits	Costs	Potential Partners & Funding
#4 River Road Reach M04 42.7698 N 72.6628 W	Active Restoration Road Embankment	Approximately 500' bank armoring is failing in some places with the channel thalweg (i.e., deepest part of flow) pushed against the embankment. Bankfull width is adequate at 60ft. A few of the existing trees stabilizing the road bed are falling over.	Alternatives analysis to repair portions of the embankment or potentially replace the entire embankment with larger material and a stacked wall.	High	Moderate	Protect road from major washout, reduce sediment inputs to stream, increase shading and habitat.	Stacked stone wall costs are approximately \$500/lf. Length is approx 400lf. Costs could exceed \$150,000.	Town of Guilford
#5 VLT Property Reach M04 42.7704 N 72.6616 W	Passive Restoration Buffer Plantings	The left floodplain is under conservation management through the Vermont Land Trust. The floodplain is low and very accessible. Major T.S. Irene deposits were observed. Recent buffer planting site was damaged and needs to be replanted in some locations. The channel is actively adjusting planform and will likely continue to migrate into the left floodplain.	Plant stream buffer with native woody vegetation throughout to reduce stream bank erosion and improve water quality and habitat. Land is under conservation management but work with VLT to allow for channel migration through property over long-term.	Moderate	Moderate	Slow erosion with continued channel migration, increase shading and inputs of woody debris.	Low costs for materials and labor for infill buffer plantings.	Vermont Land Trust; WCNRCDC Trees for Streams
#6 Timber Crib Dam Segment M05A 42.7757 N 72.6675 W	Active Restoration Dam Maintenance	The Green River timber crib dam is an important historic feature on the river. However, the dam is currently filled in with sediment, and is likely increasing water temperature and streambed scour downstream. The fish ladder is impassable at lower flows due to upstream sedimentation.	Evaluate the following as part of long term planning for the dam: 1) sediment maintenance plan to periodically remove coarse sediment and restore fish passage; 2) in the event of dam failure or future removal, understand the fate of the sediment behind dam and whether it should be removed or allowed to naturally transport downstream based on the condition of downstream reaches.	Moderate	High	Restore natural flow and sediment transport. Improve channel stability downstream. Improve fish passage, decrease sediment loading, decrease water temperatures.	High costs for sediment maintenance. High costs for dam removal in future if dam failure occurs.	Green River Village Preservation Trust; Private Landowners
#7 Green River Rd Segment M05B 42.7776 N 72.6728 W	Active Restoration Berm Removal & Buffer Plantings	Recently windrowed cobbles are restricting access to a floodplain (approx. 1 acre) in lawn/hayfield on the left bank. There is minimal additional accessible floodplain available in reach.	Remove cobble berm to restore floodplain access on left bank. Buffer plantings to stabilize bank and improve shading.	High	Low	Increase sediment and floodwater attenuation in reach. Improved near bank habitat and shading.	Low cost of berm removal and buffer plantings.	WCNRCDC Trees for Streams; Private landowner

Project #, Location, Reach, Lat/Long	Type of Project	Site Description Including Stressors and Constraints	Project or Strategy Description	Hazard Mitigation Priority	Ecological Benefits Priority	Project Benefits	Costs	Potential Partners & Funding
#8 Utility Line along Green River Rd Reach M05B 42.7634 N 72.6622 W	Active Restoration Utility Repairs	The river is actively migrating through the right bank and has eroded past a utility pole which is currently in the stream. Utility pole may have been abandoned but pole and old cables are still vulnerable to erosion.	Move utility pole and assess bank for stability and erosion risk for Green River Road. If pole is no longer in use, remove pole and abandoned cables to avoid debris snagging in future floods.	Moderate	Low	Reduce risk of utility line damage and loss of residential service.	Moderate	Green Mountain Power; Landowner
#9 Floodplain Reach M06A 42.7904 N 72.6663 W	Active Restoration Berm Removal	A historic right bank berm and a new berm from T.S. Irene material severely restrict floodplain access on both banks. The left floodplain (approx. 5 acres) is much lower and was heavily accessed during T. S. Irene.	Remove the failing cobble berm to restore access to a large left floodplain. Work with landowner on the right floodplain to allow the historic berm to continue failing, access to right floodplain may eventually be restored.	High	Moderate	Provide valuable sediment and stormflow attenuation in reach to take pressure off downstream areas. Floodplain access on this property dampens floodwave on Green River Village where floodplain access is minimal.	Low to moderate cost of berm removal.	WCNRCD; VTANR; Private Landowner
#10 Floodplain Reach M06A 42.7904 N 72.6663 W	Passive Restoration Corridor Protection and Buffer Plantings	Buffer vegetation is variable on both banks in the upper half of the segment. The right bank is eroding upstream of the historic berm. The left bank has no woody vegetation behind the new cobble berm.	Potentially coupled with project #9. Work with landowners to remove the left berm, allow for channel migration on both banks, and plant native woody vegetation along both banks.	Moderate	Moderate	Reduce erosion rates as channel adjusts planform, increase shading and inputs of woody debris.	Low to Moderate dependent on size of area to be conserved. Low costs for buffer planting.	NRCS CREP; VTANR ERP; WCNRCD Trees for Streams; Private Landowner
#11 Harris Dr. Reach M06B 42.7940 N 72.6598 W	Passive Restoration Conservation	Segment is very active with recent channel avulsions and major sediment deposition. Existing forested floodplains on one or both banks are accessible during moderate storm events. A logging road exists along the left valley wall in the upper segment.	Prevent stream corridor from future development of logging, and monitor recently logging road for erosion/runoff.	Moderate	Low	Downstream benefits through the maintenance of water and sediment attenuation in this riparian area.	Low to Moderate costs depending on conservation or easement approach and size of parcel.	VLT; Private Landowner
#12 Green River Rd Reach M07 42.7970 N 72.6650 W	Active Restoration Berm Removal	A historic and newly constructed berm along the left bank restrict access to an elevated floodplain (approx. 1 acre). As a result, floodplain access is minimal in this reach.	Work with landowner to potentially remove berm to restore access to floodplain during large events. Ensure that increased floodplain access does not increase inundation risk to house in floodplain.	High	Moderate	Provide sediment and stormflow attenuation during large storms.	Low to moderate cost of berm removal.	WCNRCD; VTANR; Private Landowner

Project #, Location, Reach, Lat/Long	Type of Project	Site Description Including Stressors and Constraints	Project or Strategy Description	Hazard Mitigation Priority	Ecological Benefits Priority	Project Benefits	Costs	Potential Partners & Funding
#13 Abandoned House - Hinesburg Road Reach M08A 42.7962 N 72.6729 W	Active and Passive Restoration Corridor Protection, House/Debris Removal, Bank Stabilization	A large channel avulsion occurred during T.S. Irene and the channel is currently pushed against the right valley wall and actively adjusting width and depth. A house was completely cut off and is abandoned on the new right floodplain. The former channel is an active flood chute and could potentially be re-accessed as the primary channel.	Explore buyout of property through town: remove house and debris, explore potential to stabilize eroding banks on new channel (i.e., on island where septic system used to be), plant native woody vegetation, assess access and stability of former channel, protect corridor from future development.	High	Moderate	Remove debris which could enter stream in future floods. Reduce sediment and nutrient inputs from eroding lawn and leach field. Reduce potential damage to Hinesburg Road if channel re-accessed former location. Protect highly active corridor from future development.	Low costs for more detailed hydraulic and alternatives analysis. Potentially moderate to high costs for restoration and demolition work.	Landowner; Town of Guilford; FEMA
#14 Green River Rd Reach M08B 42.7971 N 72.6786 W	Passive Restoration Buffer Planting	A tall armor slope was constructed from coarse river bed material after T.S. Irene. Upper armor slope is not revegetating rapidly due to lack of topsoil.	Add topsoil/grubbings to upper slope and seed with conservation mix. Plant smaller stock saplings to encourage long term woody vegetation along banks and shading of channel.	Low	Moderate	Increase shading and woody debris inputs to stream.	Low costs for materials and labor for infill buffer plantings.	Town of Guilford; WCNRCD Trees for Streams

Implementation of Mitigation Actions / Capabilities

Barriers to Implementation:

1. Financial constraints of town budget
2. There is a new Town Administrator as of January 5, 2014. It will take time to get this new person up to speed. The Town Administrator is responsible for seeking grant funding.
3. Emergency staff in Guilford is all volunteer – though they function well, reliance upon all volunteers can be risky
4. When VY closes there will less funding for emergency management in Guilford. Source for funding and training for EMDs is needed after VY.
5. There is currently no floodplain administrator
6. There is no Development Review Board
7. No zoning
8. Active Planning Commission, Conservation Committee, EMD

Capabilities to build upon for implementation:

1. Active Selectboard
2. Three town employee positions
3. Great volunteer base, like the EMD, to carry out projects - though they function well, reliance upon all volunteers can be risky
4. No open volunteer positions
5. Floodplain ordinance in place, though floodplain administrator missing

Recognizing that there is no place that doesn't have barriers to overcome in project implementation, Guilford is in a good position overall. There is an exceptional community of committed volunteers who make this town function well. They are invested and plan to remain in the area.

Additionally, Guilford works closely with the VT Department of Emergency Management and Homeland Security by attending many workshops and training sessions. Typically 6-8 Guilford residents who either hold official positions, including Town Administrator, Emergency Management Director, Co-Emergency Management Director, Road Foreman, Selectboard Chair, and others have attended training on "Train the Trainer", Emergency Operation Center (EOC) operations, Benefit Cost Analysis, Hazard Mitigation Planning, to name some. The towns EOC is activated for all emergencies. Guilford is well versed in emergency response planning and action.

The town also looks to and works closely with the Windham Regional Commission. They look to the Regional Plan policies for guidance on land use decisions which influence their town plan policies and goals. The town works closely with VT Department of Environmental Conservation Agency of Natural Resources when mitigating any work in streams or rivers. Additionally the town adopts VTrans Road Standards for road/culvert/bridge improvement projects.

With the support of these agencies and the Commission, Guilford is capable of carrying out all of the mitigation actions outlined in this plan and the Green River Corridor Plan.

Existing Planning Mechanisms / Integration

The following policies, programs and activities related to hazard mitigation are currently in place and/or being implemented in the Town of Guilford. The Hazard Mitigation Planning participants analyzed these programs for their effectiveness and noted improvements needed. Guilford uses all of the tools listed below to help plan for current and future activities with the town. For example: the Local Emergency Operation Plan has a contact list that is used for response purposes in the case of a hazard event, and is updated every year after Town Meeting. Town Road and Bridge Standards are followed by the town and Guilford updated their culvert inventory in 2013. In the development of this plan, the latest 2010 Town Plan was used.

As Guilford goes through the update process for the planning mechanisms outlined in the table below, they will look to the Hazard Mitigation Plan’s Table of Actions and Risk and Vulnerability Assessments to help guide land use district decisions, and guide goals and policies for those districts. They have agreed to this. At the Town Meeting every March, policies and action items in the Town Plan are reviewed and integrated into hazard mitigation as needed. The Local Emergency Operations Plan contact list is updated after Town Meeting each year, including updates to vulnerable geographic locations, as well as locations of vulnerable populations. Updates to each of the planning mechanisms outlined in the table below are handled by the identified by the responsible party identified in the table. There is no timeframe for updating the below referenced plans and regulations to better incorporate hazard mitigation, however, as each document is updated the hazard mitigation plan will be reviewed for incorporation. The goals of this hazard mitigation plan will be incorporated in the upcoming town plan update to ensure that emergency preparedness and mitigation planning efforts are included in the Town Plan, with particular attention to including the projects in the Mitigation Actions Table. This will assist with ensuring that this plan is utilized and project follow-through occurs.

Currently, Guilford is in the midst of updating the Town Plan, which will address flood resiliency and preparation. The hazard mitigation plan will be considered and incorporated as appropriate. The next time the floodplain ordinance is updated, it will be encouraged that that update include a Fluvial Erosion Hazard bylaw. The LEOP is updated yearly and was updated last in 2014. Other mitigation/emergency planning related documents and their status are outlined in the below table:

Type of Existing Protection	Description	Effectiveness/Enforcement/Hazard that is addressed	Gaps in Existing Protection/Improvements Needed
Town Plan	Plan for coordinated town-wide planning for land use, municipal facilities, etc.	Flooding Addressed	Town Plan adopted in 2010; New Plan in preparation now will incorporate flood and emergency planning information
Town Local Emergency Operation Plan	Municipal procedures for emergency response	Incident Command; Hazard Annexes included	LEOP and adopted by Town Select board in 2014
School Emergency Response Protocol	School procedures for emergency response	School Crisis Plan was recently put together for Guilford Central School	None identified
LEPC 6 Hazardous Materials Plan	Procedures for hazmat emergency response at regional level	LEPC 6 has the plan	Continued involvement with the LEPC
Mutual Aid – Emergency Services	Agreement for regional coordinated emergency services	Keene (NH) Mutual Aid – written agreement/contract for Fire/Ambulance and HazMat	None identified
Mutual Aid – Public Works	Agreement for regional coordinated emergency highway maintenance services	Public Works MAA signed 04/28/03	None identified
Road Standards	Design and construction standards for roads and drainage systems	Adopted new VTrans Road Standards in 2013.	Road standard issues that could be addressed to protect bridges. Action 2.g. in Natural Resources section of draft 2015-2020 Town Plan addresses this gap.
Subdivision Regulations	Regulates the division of land, standards for site access and utilities	The Town does not have zoning or subdivision regs	NA
Sewage Regulations	Regulates on-site sewage systems	Town Sewage Ordinance State Regulations apply	None Identified
Flood Hazard Area	Regulates development	Stand Alone Ordinance	Revised in 2007 to include new

Regulations	in FEMA identified SFHAs		FEMA DFIRM's.
National Flood Insurance Program (NFIP)	Provides ability for residents to acquire flood insurance	NFIP member updated September 2007	Need to identify and train floodplain administrator
Maintenance Programs	Bridge & Culvert Inventory	Updated in 2013 Completed Annually	None Identified
Building Code	Regulates building construction standards	No building codes in place	NA
Wetland protection – VT Wetland Rules	Protected by 1990 Vermont Wetland Rules	Protection of environment, water resources, wildlife, biota	None Identified

PLAN MAINTENANCE PROCESS

Monitoring and Updating the Plan – Yearly Review

Once the plan is approved and adopted, the Emergency Management Director in Guilford, along with interested and appointed volunteers and stakeholders, will continue to work with the Windham Regional Commission to monitor, evaluate, and update the plan throughout the next 5-year cycle. The plan will be reviewed annually at an April Selectboard meeting along with the 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 and determine if the town is interested in applying for grant funding for projects that can help mitigate future hazardous events; e.g., bridge and culvert replacements, road replacements and grading, as well as buying out any repetitive loss structures that may be in the Special Flood Hazard Area, and revise the plan as needed. Windham Regional Commission's emergency planner will assist the Guilford Emergency Management Director with this review, as requested by the Town. Progress on actions will be kept track using a table that WRC will provide to the Emergency Committee to update. There will be no changes to the plan, unless deemed necessary by the Town. If so, the post disaster review procedure will be followed.

Plan Maintenance – 5 Year Update and Evaluation Process

The Hazard Mitigation Plan is dynamic. To ensure that the plan remains current and relevant, it is important that it undergo a major update periodically as required in 44 CFR § 201.6(c)(4)(i). This update process will be thorough and occur every five years. This update will include a thorough evaluation of the plan and incorporate any new requirements that FEMA has for Hazard Mitigation Plans. Participants outlined below will work with the Emergency Planner at the Windham Regional Commission (WRC) in accordance with the following procedure:

1. The Guilford Selectboard will appoint a team to convene a meeting of the hazard mitigation planning committee. The town's Emergency Management Director will chair the committee, and other members should include local officials such as Selectboard members, fire chief, zoning administrator, constable/police chief, road commissioner, Planning Commission members, health officer, interested stakeholders, etc. The Emergency Management Director will work with the Windham Regional Commission Emergency Planner and be the point person for the Town.
2. The WRC Emergency Planner will guide the Committee through the update process. This update process will include several advertised public meetings. At these meetings the Committee will use the existing plan and update as appropriately guided by the WRC Emergency Planner to address:
 - Update of hazard events and data gathered since the last plan update.

- Changes in community and government processes, which are hazard-related and have occurred since the last review.
 - Changes in community growth and development trends and their effect on vulnerability.
 - Progress in implementation of plan initiatives and projects.
 - Incorporation of new mitigation initiatives and projects.
 - Effectiveness of previously implemented initiatives and projects.
 - Evaluation of the plan for its effectiveness at achieving its stated purpose and goals.
 - Evaluation of unanticipated challenges or opportunities that may have occurred between the date of adoption and the date of the report, and their effect on capabilities of the town.
 - Evaluation of hazard-related public policies, initiatives and projects.
 - How mitigation strategy has been incorporated into other planning mechanisms
 - Review and discussion of the effectiveness of public and private sector coordination and cooperation.
3. From the information gathered at these meetings, and other interactions the Emergency Planner has with the Town, along with data collected independently during research for the update, the WRC Emergency Planner will prepare the updated draft in conformance with the latest FEMA Region 1 *Local Hazard Mitigation Plan Review Crosswalk* document.
 4. The Selectboard will review the draft report. Consensus will be reached on changes to the draft. Emphasis in plan updates will be put on critically looking at how the plan can become more effective at achieving its stated purpose and goals.
 5. Changes will be incorporated into the Plan by the WRC Emergency Planner.
 6. The Selectboard will notify the public that the draft is available for public comment and review. The Town will advertise and make available the draft plan for provide comments both electronically and in hard copy. The draft plan will simultaneously be distributed electronically to adjacent towns for review and comment.
 7. Public and adjacent town comments will be incorporated by the WRC Emergency Planner. The final draft will be provided to the Emergency Management Director, and interested individuals that participated in the update, for final review and comment, with review comments provided to the Committee and incorporated into the plan.
 8. WRC Emergency Planner will finalize the plan with any remaining comments from the Emergency Management Director and others, and submit electronically to DEMHS and FEMA.
 9. The Plan will be reviewed by the DEMHS State Hazard Mitigation Officer (SHMO) and FEMA Region 1.
 10. SHMO and FEMA comments will be addressed in the plan by the WRC Emergency Planner.
 11. The plan will be resubmitted as needed until the plan is approved pending adoption. Once the plan is approved by FEMA, it will be ready for adoption.
 12. The Selectboard will adopt the plan and distribute to interested parties.
 13. The final adopted plan will be submitted by the WRC Emergency Planner to DEMHS and FEMA.
 14. FEMA will issue final approval of the adopted plan and the five year clock will begin again.

Post-Disaster Review/Update Procedure

Should a declared disaster occur, a special review will occur amongst the Selectboard, the Emergency Management Coordinator, the WRC Emergency Planner, and those involved in the five year update process described above. This 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 projects effectively lowered community vulnerability/damages. New mitigation projects will be discussed, as needed.
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 of 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.

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
- Schedule and advertise a planning meeting each year, soon after Town Meeting
- Seeking participation from key players in addition to general public interest:
 - Select board
 - Planning Commission
 - Public Works
 - School
 - Fire & Rescue
 - Emergency Mgt/ 911 Coordinator
 - Town Administrator
- Post the hazard mitigation plan on the town website
- Selectboard will review past 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 board, website, newsletter, newspaper, Facebook, Front Porch Forum, etc.

APPENDIX

1. Adoption Sheet
2. Website advertisement for Draft Hazard Mitigation Plan (posted 1/13/15 – 1/28/15)
3. Flyer advertising availability of Draft Hazard Mitigation Plan for comment
4. Email sent 12/23/14 to Town Staff and Hazard Mitigation Committee for comment on draft
5. Committee email comments received back on draft
6. Email to adjacent towns for comment on draft
7. Adjacent town comments received back on draft
8. Website advertisement for November 17, 2014 Hazard Mitigation Committee meeting at Guilford Town office
9. November 17, 2014 Hazard Mitigation Committee meeting agenda
10. November 17, 2014 Hazard Mitigation Committee meeting sign-in sheet
11. September 10, 2013 Hazard Mitigation Committee meeting sign-in sheet
12. January 28, 2011 Hazard Mitigation Committee meeting sign-in sheet
13. Road Foreman Meeting of October 21, 2010 sign-in sheet
14. October 19, 2010 LEPC 6 meeting with program about Pre-Disaster Hazard Mitigation Plans (Guildford had a representative)
15. Flyer advertising October 19, 2010 LEPC 6 meeting
16. October 19, 2010 LEPC 6 meeting - overview and photographs showing public interaction
17. September 21, 2010 LEPC 6 meeting with program about Pre-Disaster Hazard Mitigation Plans (Guildford had a representative)

1. PREREQUISITE

Adoption by the Local Governing Body

Certificate of Adoption
Town of Guilford, VT
Selectboard

**A Resolution Adopting the Local Hazard Mitigation Plan
for the Town of Guilford, VT**

WHEREAS, the Town of Guilford, VT has worked with the Windham Regional Commission to identify natural hazards, analyze past and potential future damages due to natural disasters, and identify strategies for mitigating future damages; and

WHEREAS, The Town of Guilford, VT Local Hazard Mitigation Plan analyzes natural hazards and assesses risks within the community; and

WHEREAS, the Town of Guilford, VT Local Hazard Mitigation Plan recommends the implementation of action(s) specific to the community to mitigate against damage from natural hazard events; and

WHEREAS, the Town of Guilford, VT authorizes responsible agencies to execute their responsibilities to implement this plan for the purposes of long term risk reduction and increased community resiliency and;

WHEREAS, the Town of Guilford, VT will follow the Plan Maintenance Process outlined in this plan to assure that the plan stays up to date and compliant; and

NOW, THEREFORE BE IT RESOLVED that the Town of Guilford, VT adopts the *Town of Guilford Local Hazard Mitigation Plan* as well as future revisions and maintenance required by 44 CFR 201.6 and FEMA for a period of five (5) years from the date of this resolution.

Duly adopted this 8/24 day of August, 2015
date month, year

Selectboard

Anne Rider
Anne Rider, Chair

Richard Clark
Richard Clark

Troy Revis, Jr.
Troy Revis, Jr.

Gabrielle Ciuffreda

Sheila Morse
Sheila Morse

ATTEST

Penny Marine
Penny Marine, Town Clerk

2. Website advertisement for Draft Hazard Mitigation Plan (posted 1/13/15 – 1/28/15)

www.guilfordvt.net

Home Deadlines & Dates to Remember About Guilford

Town Office & Government

- Algiers Sewer & Water
- Emergency Operations
- Guilford Volunteer Fire Dept.
- Guilford Free Library
- Guilford Historical Society
- Guilford Central School
- Organizations & Links
- Business, Farming & Forestry
- Maps

Welcome to Guilford's Official Town Website

We are pleased to provide up-to-date information on our local government, services and community events for our residents, businesses and visitors.

Guilford Town Office
 236 School Road
 Guilford, Vermont 05301
 Phone: 802 254 6857

Town Office Hours

Monday	Tuesday	Wednesday	Thursday	Friday
7 am - 6 pm	7 am - 5 pm	7 am - 5 pm	7 am - 5 pm	Closed

See Announcements and Town Office Calendar for holidays and special closings. We do not close for lunch!

Announcements

[DRAFT HAZARD MITIGATION PLAN NOW AVAILABLE FOR PUBLIC REVIEW](#) Tuesday, January 13, 2015 at 1:20 PM

[Seeking Guilford related photos for 2015 Town Report](#)

[GREEN RIVER COVERED BRIDGE - TA Program Final Plans](#)

[Green River Covered Bridge Alternatives Study - October 2014](#)

www.guilfordvt.net/index.asp?SEC=AF36A755-1C38-4CD1-96EF-33CE818AF03A&DE=66B23BC5-F90F-4285-A412-BF972DDC3639&Type=B_PR

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Town of Guilford, Vermont

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Town Office & Government

- Algiers Sewer & Water
- Emergency Operations
- Guilford Volunteer Fire Dept.
- Guilford Free Library
- Guilford Historical Society
- Guilford Central School

DRAFT HAZARD MITIGATION PLAN NOW AVAILABLE FOR PUBLIC REVIEW

Tuesday, January 13, 2015 at 1:20 PM

[FLYER for public comment GUILFORD.pdf](#)

[Guilford Single Jurisdiction Haz Mit Plan 011315_AJS_public_comment.pdf](#)

3. Flyer advertising availability of Draft Hazard Mitigation Plan for comment

Guilford Hazard Mitigation Plan

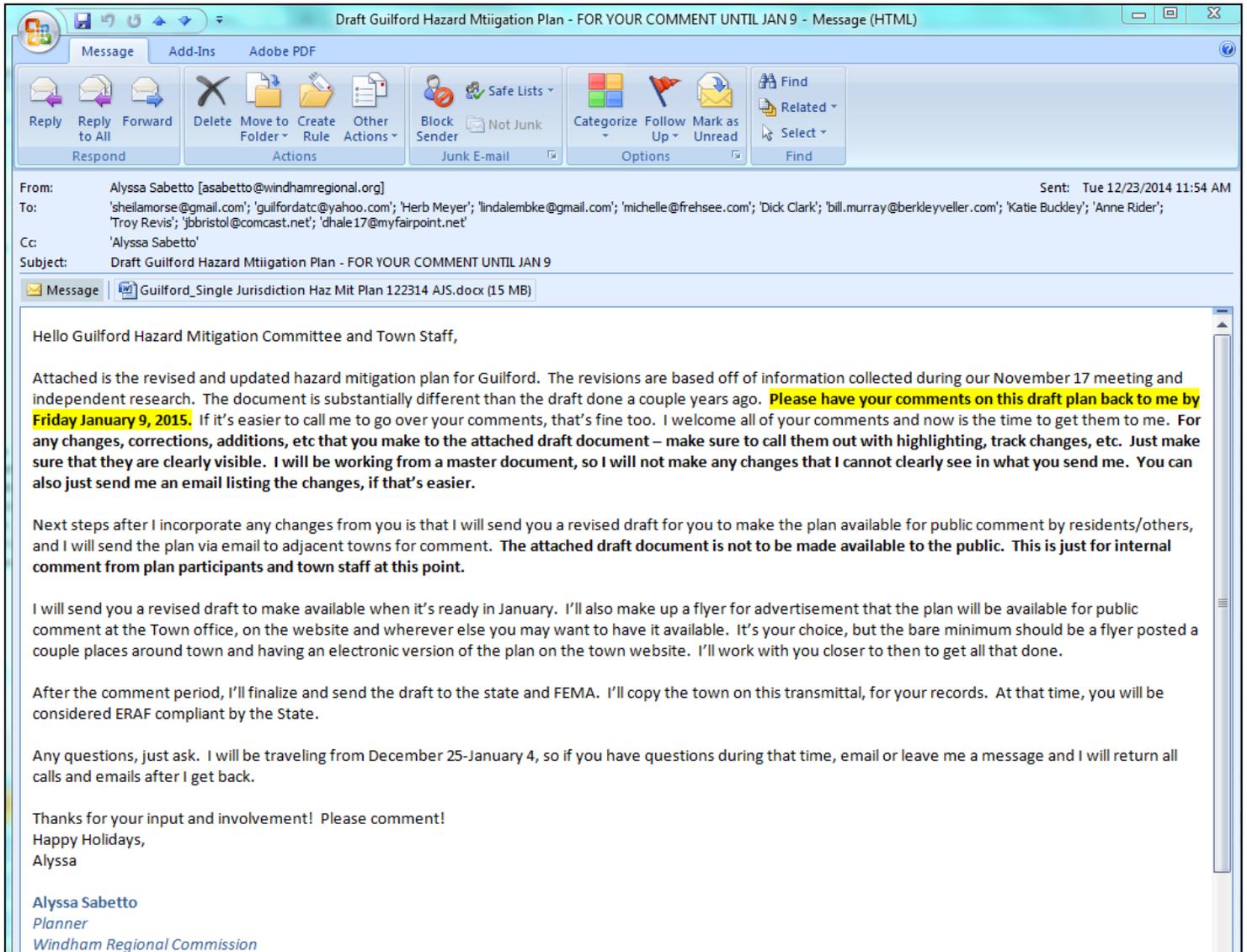
The draft Guilford Hazard Mitigation Plan is now available for public review at the Guilford Town Office and on the town website www.guilfordvt.net



The Plan will be available for comment until the end of the public comment period on January 28, 2015.

Anyone who would like to comment on the plan should contact Alyssa Sabetto at the Windham Regional Commission. She can be reached via phone at 802-257-4547 x109 or email at asabetto@windhamregional.org. We encourage your review and participation!

4. Email sent 12/23/14 to Town Staff and Hazard Mitigation Committee for comment on draft



5. Committee email comments received back on draft

From: Sheila Morse [sheilamorse@gmail.com] Sent: Thu 1/1/2015 11:04 AM
 To: Alyssa Sabetto
 Cc: Peter Hetzel; Herb Meyer; Linda Lembke; Michelle Frehsee; Dick Clark; bill.murray@berkeleyveller.com; Katie Buckley; Anne Rider; Troy Revis; Jared Bristol; dhale17@myfairpoint.net
 Subject: Re: Draft Guilford Hazard Mtiigation Plan - FOR YOUR COMMENT UNTIL JAN 9

Alyssa,
 Happy New Year!
 This is a most impressive document. I feel that I am the last person to comment on most of the subjects covered in the topics of all the people who have participated in this process to date. Having said that, I note a few typos and errors that should be corrected, and wonder how you want to receive that information. In addition:

1. On page 33, #2 under ongoing measures: The VCRD selects and works with two towns per year, so that several towns have undertaken their process over time. In that same point, the planning commission is suggesting that Welcome Packets be made available to new residents but that is not yet happening.
2. As the Planning Commission worked just this week on policies, I'll review the Town Plan Goals and Policies section to be sure that the two documents are consistent and send you comments after reviewing with the Planning Commission members in our working meeting on 1/7.

Best,
 Sheila Morse

From: Linda Lembke [lindalembke@gmail.com] Sent: Tue 1/6/2015 2:02 PM
 To: Alyssa Sabetto
 Cc:
 Subject: Re: Draft Guilford Hazard Mtiigation Plan - FOR YOUR COMMENT UNTIL JAN 9

Message: Guilford Haz Mit Plan 122314 AJS 010614 LL.docx (15 MB) ATT00079.htm (7 KB)

Alyssa,

I just finished reading through the plan. What a lot of work! I appreciate your handling of so much information and was glad to see the Green River Corridor Plan projects included.

I made a few corrections and comments using "track changes" on your document. This is attached.

In an ideal world, you could send this off to a copy editor for final editing, but I double that's possible. So 2 suggestions for doing it on your own (after incorporating whatever suggestions others make) would be to do a final read through and:

1. Remove or reduce any information that is repeated elsewhere in the document (like the population chart). This is a very long plan and it is more likely to be read and implemented if it is as concise as possible.
2. Change the double spacing after periods to single spacing (this is an typewriter rule that has unfortunately carried over to computer typefaces which were designed for single spaces). It's easy to change in the whole document (Edit>Find>Replace)

Thanks to you for all this good work. I'm helping with the natural resources section of our town plan at the moment and find all the resources and available information overwhelming at times. A few things I read in your plan answered a couple of my outstanding questions, so thanks again.

Linda

From: Guilford Town [guilfordtown@yahoo.com] Sent: Tue 1/13/2015 9:14 AM
 To: Alyssa Sabetto
 Cc: Anne Rider
 Subject: Guilford Draft Hazard Mitigation Plan

Was discussed at the Selectboard meeting on Jan 12. No other comments. Ready for you to put out for public comment. Let me know if you need anything further. Great to meet you yesterday at the DLAN training
 -Becky

Rebecca Stone
 Town Administrator
 Town of Guilford
 236 School Road
 Guilford, VT 05301
 (802) 254-6857 ext 105
www.guilfordvt.net

6. Email to adjacent towns for comment on draft

From: Alyssa Sabetto [asabetto@windhamregional.org] Sent: Tue 1/13/2015 1:12 PM
To: pmoreland@brattleboro.org; 'Rod Francis'; Jimmyvalente@gmail.com; 'Brian Bannon'; halifax@myfairpoint.net; mnpelbar@gmail.com; brimmerbilt@gmail.com; clerk@vernonvt.org; spencebcc@aol.com; stephenskibniowsky@comcast.net; leydenselectboard@crocker.com; joansrockwell@gmail.com; 'John LaFlamme'
Cc: 'Guilford Town'; guilfordatc@yahoo.com; 'Alyssa Sabetto'
Subject: Guilford Hazard Mitigation plan - draft for your review and comment

Message |  Guilford_Single Jurisdiction Haz Mit Plan 011315 AJS public comment.pdf (5 MB)

Hello towns adjacent to Guilford,

Attached please find a draft of the Guilford Hazard Mitigation Plan. I have recently worked on finalizing and updating this draft plan with the help of the Guilford Hazard Mitigation Planning Committee. It is now being sent to you for your review and comment, per FEMA requirements. **Please review and provide comment back to me by January 28th, 2015.** My contact information is shown below.

I would appreciate you letting me know that you have reviewed the draft, even if you do not have comment.

I appreciate your time and assistance in this matter. If you have any questions, please let me know.

Thank you,
Alyssa

From: Alyssa Sabetto [asabetto@windhamregional.org] Sent: Tue 1/13/2015 5:02 PM
To: 'planningboard@townofbernardston.org'
Cc:
Subject: FW: Guilford Hazard Mitigation plan - draft for your review and comment

Message |  Guilford_Single Jurisdiction Haz Mit Plan 011315 AJS public comment.pdf (5 MB)

Hi Eric,
Thanks for your message with the address. Please see the below and attached.
Thank you,
Alyssa Sabetto

From: Alyssa Sabetto [<mailto:asabetto@windhamregional.org>]
Sent: Tuesday, January 13, 2015 1:12 PM
To: pmoreland@brattleboro.org; 'Rod Francis'; Jimmyvalente@gmail.com; 'Brian Bannon'; halifax@myfairpoint.net; mnpelbar@gmail.com; brimmerbilt@gmail.com; clerk@vernonvt.org; spencebcc@aol.com; stephenskibniowsky@comcast.net; leydenselectboard@crocker.com; joansrockwell@gmail.com; 'John LaFlamme'
Cc: 'Guilford Town'; guilfordatc@yahoo.com; 'Alyssa Sabetto'
Subject: Guilford Hazard Mitigation plan - draft for your review and comment

Hello towns adjacent to Guilford,

Attached please find a draft of the Guilford Hazard Mitigation Plan. I have recently worked on finalizing and updating this draft plan with the help of the Guilford Hazard Mitigation Planning Committee. It is now being sent to you for your review and comment, per FEMA requirements. **Please review and provide comment back to me by January 28th, 2015.** My contact information is shown below.

I would appreciate you letting me know that you have reviewed the draft, even if you do not have comment.

I appreciate your time and assistance in this matter. If you have any questions, please let me know.

Thank you,
Alyssa

7. Adjacent town comments received back on draft

From: Planning Board [planningboard@townofbernardston.org] Sent: Wed 1/28/2015 1:40 PM
To: Alyssa Sabetto
Cc:
Subject: Re: Guilford Hazard Mitigation plan - draft for your review and comment

Good Afternoon Alyssa,

Sorry for the delayed response. The planning board intended on reviewing the plan on Monday evening but we got snowed out.

I reviewed it myself and have no comments to offer.

Let me know if you require anything else from me.

Eric Almeida
Planning Board, Bernardston

8. Website advertisement for November 17, 2014 Hazard Mitigation Committee meeting at Guilford Town office



The screenshot shows the website for the Town of Guilford, Vermont. The header includes the town name and a search bar. A navigation menu contains links for Home, Deadlines & Dates to Remember, About Guilford, Contact Us, and Website Map. A large banner image depicts a rural landscape with trees and a field. On the left, a sidebar lists various town services. The main content area features a public meeting announcement for a Single Jurisdiction Hazard Mitigation Plan on November 17, 2014, at 9:00 AM. Below the announcement, there is a link to a workshop for landowners interested in controlling invasive plants.

Town of Guilford, Vermont

Search

Home Deadlines & Dates to Remember About Guilford Contact Us Website Map

Town Office & Government
Algiers Sewer & Water
Emergency Operations
Guilford Volunteer Fire Dept.
Guilford Free Library
Guilford Historical Society

Public Meeting - Single Jurisdiction Hazard Mitigation Plan - Monday, November 17, 2014, 9:00 AM

If you are a landowner looking for ways to control invasive plants or simply interested in learning more about the spread of these plants, this workshop is designed for you!

[Hazard Mitigation Plan Public Mtg - 11-17-2014](#)



TOWN OF GUILFORD

NOTICE OF PUBLIC MEETING for STAKEHOLDERS

Monday, November 17, 2014 - 9:00 AM

The purpose of this public meeting is to allow stakeholders to have the opportunity to provide input on Guilford's draft Single Jurisdiction Hazard Mitigation Plan before it is submitted to FEMA for its approval.

Should you have any questions, please contact Katie Buckley, Town Administrator, 254-6857, option 5.

NOTE: Meetings are open to the public.

9. November 17, 2014 Hazard Mitigation Committee meeting agenda

Hazard Mitigation Plan – Update & Plan Development Guilford Town Office – November 17, 2014

Agenda

1. Introduce the Hazard Mitigation Plan

- a) Purpose
- b) Process
- c) Review of what's been done to date

2. Hazard Identification

- a) Review and update hazards ranking table
- b) Are the key threats still what we want to focus on? Flash Flood, Winter Storm/Ice Storm, High Wind, Landslide
- c) Discuss events that have happened that aren't included in the plan
- d) Impacts that aren't already addressed in the plan
- e) Mapping of vulnerable areas – mark up map as a group

3. Mitigation Actions

- a) Review and update Mitigation Goals
- b) Discuss existing/ongoing Hazard Mitigation Projects, Programs & Activities
- c) Discuss progress made since the plan was last drafted - update
- d) Review and update Mitigation Actions Table
- e) Gaps and capabilities with Implementation

4. Other Updates

- a) Development trends
- b) Review of other elements of the draft plan and questions that weren't discussed

5. Next Steps

10. November 17, 2014 Hazard Mitigation Committee meeting sign-in sheet

Guilford, VT - HAZARD MITIGATION PLAN MEETING
November 17, 2014
Location: Guilford Town Office

SIGN IN SHEET

Name	Affiliations - Please list all	Town where you live
Sheila Morse	Planning Commission sheila.morse@gmail.com	Guilford
Heab Megan	EMD	Guilford
Michelle Frehsee	Planning Commission michelle@frehsee.com	Guilford
Troy E. J.	Select Board	Guilford
Anna Rider	Selectboard	Guilford
Derek Clark	"	"
Steve Lemke	Guilford Resident	Guilford

11. September 10, 2013 Hazard Mitigation Committee meeting sign-in sheet

<p style="text-align: center;">GUILFORD, VT - LOCAL HAZARD MITIGATION PLAN MEETING September 10, 2013 Location: Guilford Town Offices</p> <p style="text-align: center;">SIGN IN SHEET</p>		
Name	Affiliations - Please list all	Town where you live
HERBERT S. MEYER	E. M.D. PLANNING COMMISSION	Guilford
Hal W Kohns	Owner Hawk of All Trades President Broad Brook Grange Chair Guilford Planning Commission	
Michelle Frehsee	- Owner Frehsee Carpentry LLC - Guilford Planning Commission - Creator - Guilford Hist. Society Trustee	
Dick Clark	Selectboard chair - Broad Brook grange health officer	
KATIE BUCKLEY	- Town Administrator - Broad Brook Grange - Friends of Alger's Village - Preservation Trust of VT	
William Jewell	Guilford Conservation Westernmost EA Wm Jewell & Co Environmental Forestry & Alger's Village Consultant Guilford Preservation Inc	

12. January 28, 2011 Hazard Mitigation Committee meeting sign-in sheet

GUILFORD – PRE-DISASTER HAZARD MITIGATION PLANNING MEETING
 January 28, 2011
~~December 8, 2010~~
 Location: Guilford School
SIGN IN SHEET

Name	Affiliations – Please list all	Town where you live	Phone	email
HERBERT MEYER	AFD #1 TOWN EMD Sportsman, Inc. Director	Guilford	257-1256	hsmeyer33@yahoo.com
Richard J Clark	Select Board Emergency Management Planning & Consumption Com BBQ Grange Food Pantry	Guilford	451-8339	rlow94141@yahoo.com
Penny Payne	Town Clerk/Treasurer Guilford Fair Committee	Guilford	257-3779	Guilford70@yahoo.com
Daniel Zimbrski	Road Commis h	Guilford	257-150	
Troy E. Revis Jr	Select Board Maint. Supervisor @ Guilford Central School	Guilford	579-85812	reddawater@yahoo.com

13. Regional Road Foreman Meeting of October 21, 2010 sign-in sheet (Guilford had representative)

Road Foreman Meeting - Windham Regional Commission
 October 21, 2010 - Location: Newbrook Fire Station
SIGN IN SHEET for Pre-Disaster Hazard Mitigation Planning Process

Name	Town	email
David Elliott	Marbleton VT	MarlboroFireChief@NET
Gary Conners	Dover	dvrhwy@sover.net
Daniel Zumbroski	Guilford	
Todd Sawyer	Newfane	Newfanegarage@SVCable.net
Lee Chamberlain	Dummerston	
E. Mark Bills	Breakline VT	

15. Flyer advertising October 19, 2010 LEPC 6 meeting

SAFE COMMUNITIES—RESILIENT TOWNS

Meeting Oct. 19th—Windham Region VT Towns Pre-Disaster Hazard Mitigation Plans

WHAT'S HAPPENING?

The Windham Regional Commission is working with 18 towns to complete their Pre-Disaster All Hazard Mitigation Plans. The plans will address flooding, winter storms, wildfire/structure fire, power failures, high winds and other emergencies that towns may face.



WHY PARTICIPATE?

Local Knowledge is important!
We want to know:

- The hazards of greatest concern to you;
- How have natural hazards affected you or your community in the past;
- How you think damage can be prevented or mitigated in the future?

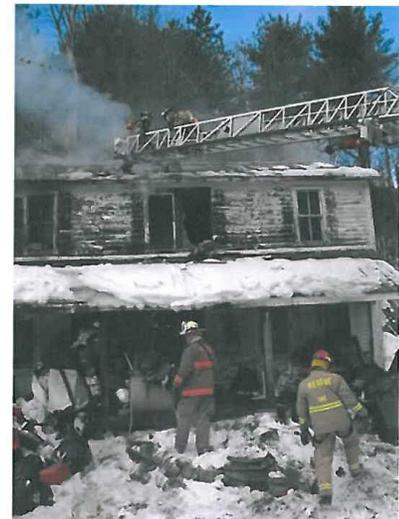


HOW CAN YOU PARTICIPATE?

**Come to the LEPC 6 Meeting on
Tuesday, October 19th**

**LOCATION: Brattleboro Retreat – Edu. Conf. Ctr.
In Admin. Bldg. (75 Linden Street)**

- 5-5:30 pm LEPC Business Meeting
- 5:30—8 pm Public Participation Opportunity
- 5:30 pm: Dinner Buffet (Complementary)
- 5-7 pm: View New Red Cross Moving Shelter



16. October 19, 2010 LEPC 6 meeting - overview and photographs showing public interaction

On the evening of October 19, 2010 representatives from eleven towns in the Windham Region came together to talk about proactive planning mechanisms they should consider to become better informed about making infrastructure decisions and land use decisions as they relate to hazard mitigation planning across town boundaries. The following towns were represented:

1. Westminster – County Sherriff
2. Londonderry – Emergency Mgmt. Director (EMD), Selectboard member, Town Administrator
3. Windham – EMD
4. Marlboro – EMD
5. Jamaica – EMD, Selectboard member
6. Townshend – EMD, Environmental Consultant, CERT/RACES
7. Guilford – EMD, Selectboard Chair, Road Foreman
8. Grafton – EMD
9. Vernon – County Fire Fighter
10. Newfane – EMD
11. Brattleboro -- Brattleboro Retreat

The invitation for the meeting went out to all members of the LEPC 6 (Local Emergency Planning Committee), and to all Town Clerks and Town Managers, and all EMDs in the Windham region. The email asked that they bring anyone from their respective towns that they know to participate.

The first part of the meeting was to look at a series of maps of the region. There were two very large maps displayed of the entire region, showing hydrology, relief, development patterns, public land, conservation land, wetlands, resort centers, villages and hamlets, and all classes of roads.

Several other smaller theme maps of the region were displayed showing; utilities, broadband and cell coverage, government facilities, watersheds, and health and social services facilities. Participants were asked to use sticky notes to write down problem areas and post them on those locations on the maps. Most of the problems identified were local, smaller, but reoccurring problem areas. The map exercise was followed by a group discussion with WRC staff prompting the group with questions. Main points from the discussion are as follows:

- 1) An exchange of contact information needs to take place between towns so they have one another's phone numbers.
- 2) An inventory of resources available by adjacent towns would be very useful. Sometimes towns reach out further than they need to when it might be next door. Knowledge of smaller companies that can help towns; such as, environmental firms, contractors, etc.
- 3) Communication from upstream towns to downstream towns about debris in streams that pose a problem during the next hard rain. A debris pile in their town may cause ponding, and once it releases it could potentially wreak havoc on roads, culverts and/or bridges in downstream towns.
- 4) Contact list of who to call regarding hazardous debris in streams.
- 5) Coordinating future road construction projects so there is always a through path from town to town.
- 6) MOU's regarding emergency shelter space – if one town cannot provide enough, that adjacent towns can take in folks as overflow.
- 7) Mapping of tanks for *regulated* substances that are on personal property. Many towns do not have a clear understanding of where propane tanks are located in relationship to water ways that could potentially pose a problem during flash flood events.
- 8) Working with towns in adjacent counties, Regional Planning Commissions and/or bordering states.

There were EMDs and Selectboard officials in adjacent towns who met for the first time. As they were departing, several people stated they felt the meeting was very important, and did not really realize the positive impact they would have by having a cross-town discussion about proactive planning for hazard events. See Appendix C for documentation on the evening forum.



TOWN	COMMENT
Guilford	Needs Culvert MAP
Guilford FLOOD HAZARD (WINDMILL)	1ST 1/2 mile West on STATE ROCK Rd River Rd - 1 mile so of Hinesburg Rd (East side) Stone Brook Rd - between Rte 58 & I 91 9200
NEWFANE	Jones Hill Rd Dam SMITH BROOK SWARDS BROOK BRACK DAM Porch Bange South FANE STATE BRIDGE

TOWN	COMMENT
Done	Commonly have two different weather systems High elevations different LITTLE BETTER ACCESS TO THE EAST
Wilmington	Top of Highley Hill Rd / Lake Rapids Rd High Elevation → Freezing Rain frequently icy roads



17. September 21, 2010 LEPC 6 meeting with program about Pre-Disaster Hazard Mitigation Plans (Guildford had a representative)

VOLUNTEER FORM TO DOCUMENT IN-KIND SERVICES - MATCH INFORMATION								
PROGRAM: LEPC VI - EMPG								
DATE OF MEETING: September 21, 2010								
MEETING LOCATION: Brattleboro Fire Station								
TOPIC: Hazard Mitigation Planning - Public Participation Involvement								
MEETING TIME: 5:00 PM								
VOLUNTEER ATTENDEES - CLAIMED								
NAME	SIGNATURE	AFFILIATION 1	AFFILIATION 2	AFFILIATION 3	MILEAGE ROUND TRIP	MEETING HOURS	TOTAL MILEAGE	TOTAL TIME
Chris Company		WRC	Wilmington		N/A		0.955	\$20.00
Ken March		Wilmington Fire	Wilmington EMD					
David Mosca		Newport Fire	Southwestern VT Wilmingtonville	EMO T/Newsome	R/B			
David Desrosiers		Town of Windsor (EMD)	Town of Windsor School	MEDRY VERMONT Public Permits	N/A			
Boris Faloux		Red Cross			N/A			
Michael Bussisi		Brattleboro Fire Chief	Town of Brattleboro Emergency Management					
Lisa Hegert		EMD Town of Northboro EDC	FF MVEC					
Sindy Martel								
Mark Considine		Rescue Inc	VT EMS D13					
Paula Carboth		VT Dist Health			N/A			
Caroline Sturmen		Guilford Road Officer	VTIL special needs		N/A			
Andrew Hill		Brattleboro Memorial Hospital						
Peter Coffey		WEM						
Jim Tenkovich		VT DA	VT/VY JK					
JAY KARPIN		SELECTMAN GRAFTON VT	TOWN HEALTH OFF	WRC SHELTER MD				
Anthony Simard		Brattleboro Retreat - ED Coordinator			N/A			
Diane Champion		VT Dept Health						