

*Adopted by the Town and Village of Albany on
March 21, 2017*

**Town and Village of Albany, Vermont
Multi-jurisdictional
All-Hazards Mitigation Plan**

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Albany, VT 05860
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Public Assistance Applicant #: 019-00475-00

Prepared by:

Town of Albany, Vermont

CERTIFICATE OF LOCAL ADOPTION

**Town and Village of Albany, Vermont
Multi-jurisdictional
All-Hazards Mitigation Plan**

A Resolution Adopting the All-Hazards Mitigation Plan

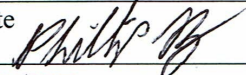
WHEREAS, the Town of Albany has worked with its residents and stakeholders to identify its hazards and vulnerabilities, analyze past and potential future losses due to natural and human-caused hazards, and identify strategies for mitigating future losses; and ...

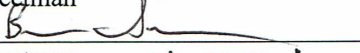
WHEREAS, the Town of Albany All-Hazards Mitigation Plan contains recommendations, potential actions and future projects to mitigate damage from disasters in Albany; and


WHEREAS, the Town of Albany and the respective officials will pursue implementation of the strategy and follow the maintenance process described in this plan to assure that the plan stays up to date and compliant; and...

WHEREAS, a meeting was held by the Town of Albany Selectboard to formally approve and adopt the Town of Albany Multi-Jurisdictional All Hazards Mitigation Plan.

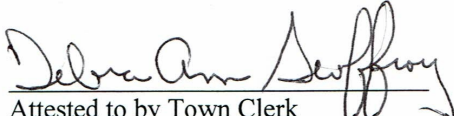
3/21/17
Date


Selectman


Selectman


Selectman


Selectboard Chair


Attested to by Town Clerk

CERTIFICATE OF LOCAL ADOPTION

**Town and Village of Albany, Vermont
Multi-jurisdictional
All-Hazards Mitigation Plan**


A Resolution Adopting the All-Hazards Mitigation Plan

WHEREAS, the Village of Albany has worked with its residents and stakeholders to identify its hazards and vulnerabilities, analyze past and potential future losses due to natural and human-caused hazards, and identify strategies for mitigating future losses; and ...


WHEREAS, the Village of Albany All-Hazards Mitigation Plan contains recommendations, potential actions and future projects to mitigate damage from disasters in Albany; and

WHEREAS, the Village of Albany and the respective officials will pursue implementation of the strategy and follow the maintenance process described in this plan to assure that the plan stays up to date and compliant; and...

WHEREAS, a meeting was held by the Village of Albany to formally approve and adopt the Village of Albany Multi-jurisdictional All Hazards Mitigation Plan.

3-21-17
Date

Trustee
Chris M. Chamberlain
Trustee

Village Trustee


Attested to by Village of Albany

Town and Village of Albany All-Hazards Mitigation Plan adopted _____ ii

Executive Summary

In November 2015, the Town of Albany contracted with OPH Consulting Services (OPHC) to develop the Town and Village of Albany Multi-Jurisdictional All-Hazard Mitigation Plan. The results of this work are contained herein and represent the collaborative efforts of the Town of Albany Hazard Mitigation Planning Team and associated residents, towns and agencies that contributed to the development of this plan. As hazard mitigation is a sustained effort to permanently reduce or eliminate long-term risks to people and property from the effects of reasonably predictable hazards, the town has communicated its efforts related to developing this plan to its residents and surrounding municipalities, providing a formal opportunity to provide input and review relevant sections of the plan. Along these lines, the town has documented the planning process so that future updates can follow an efficient pattern of capturing information as means of establishing institutional memory related to mitigation. In realization that eligibility to receive federal hazard mitigation grants and optimize state-level reimburse or “match” dollars during a federally declared disaster is dependent on federally approved plan, the town remains committed to sustaining its mitigation efforts and by developing this plan, will have a guide for action that will foster enhanced emphasis on mitigation in the years to come. The town realizes the importance of mitigation inherent to its own resilience as well as a means to establishing strong partnerships with regional support agencies and associations, state government and FEMA. As the town moves towards formally adopting this Local All-Hazards Mitigation Plan, the purpose of this plan is to:

- Identify specific natural, technological and societal hazards that impact the town of Albany
- Prioritize hazards for mitigation planning
- Recommend town-level goals and strategies to reduce losses from those hazards
- Establish a coordinated process to implement goals and their associated strategies by taking advantage of available resources and creating achievable action steps

This plan is organized into 5 Sections:

Section 1: Introduction and Purpose explains the purpose, benefits, implications and goals of this plan. This section also describes demographics and characteristics specific to Albany and describes the planning process used to develop this plan.

Section 2: Hazard Identification expands on the hazard identification in the Albany Town Plan (2016) with specific municipal-level details on selected hazards.

Section 3: Risk Assessment discusses identified hazard areas in the town and reviews previous federally-declared disasters as a means to identify what risks are likely in the future. This section presents a hazard risk assessment for the municipality, identifying the most significant and most likely hazards which merit mitigation activity. The most significant identified hazards for Albany are broken down in the grid below:

Severe winter/Ice storm	Extreme Cold	Flooding
High Winds	Fluvial Erosion	Inundation

Section 4: Vulnerability Assessment discusses buildings, critical facilities and infrastructure in designated hazard areas and estimates potential losses.

Section 5: Mitigation Strategies begins with an overview of goals and policies in the most recent Albany Town Plan that support hazard mitigation and utilizes a current road inventory to formulate a work plan around major infrastructure projects. An analysis of existing municipal actions that support hazard mitigation, such as planning, emergency services and actions of the highway department are also included. The following all-hazards mitigation goals are summarized below:

- 1) Reduce at a minimum, and prevent to the maximum extent possible, the loss of life and injury resulting from all hazards.
- 2) Mitigate financial losses and environmental degradation incurred by municipal, educational, residential, commercial, industrial and agricultural establishments due to various hazards.
- 3) Maintain and increase awareness amongst the town's residents and businesses of the damages caused by previous and potential future hazard events as identified specifically in this Local All-Hazards Mitigation Plan.
- 4) Recognize the linkages between the relative frequency and severity of disaster events and the design, development, use and maintenance of infrastructure such as roads, utilities and storm water management and the planning and development of various land uses.
- 5) Maintain existing municipal plans, programs and ordinances that directly or indirectly support hazard mitigation.
- 6) Formation of a resource and information source for inclusion in the municipal comprehensive plan as described in 24 VSA, Section 4403(5).
- 7) Provision of detailed information and mitigation actions that will be used in the municipal/town operating and capital plans & programs as they relate to public facilities and infrastructure.
- 8) Support long-term solutions over short-term fixes to community needs and problems
- 9) Promote collaboration and cooperation through working partnerships between governments, non-profits, institutions, and businesses

Section 5 also identifies and provides a detailed discussion on the following mitigation actions and while some of these correspond to emergency preparedness actions, the town holds that by engaging in these actions, they are working towards mitigating future losses to property and resident health and safety.

Action #1: Improve capabilities of existing road and storm water management infrastructure.

Action #2: Improve resilience to severe winter storms

Action #3: Reduce risk and impact of extreme cold

Action #4: Mitigate high wind vulnerability

Action #5: Develop mitigation measures for water system protection and implementation plan

Action #6: Raise public awareness of hazards and hazard mitigation actions

Action #7: Continue fluvial geomorphology (in coordination with state recommendations and protocol) assessments and develop strategies in response to any identified risk

In conclusion, Section 5 provides an Implementation Matrix to aid the municipality in implementing the outlined mitigation actions with an annual evaluation process to be coordinated and administered by the Albany Planning Commission.

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SECTION 1: INTRODUCTION AND PURPOSE

1.1 Purpose and Scope of this Plan

This document constitutes an All-Hazards Mitigation Plan for the Town of Albany. While there is a distinct Village in the Town of Albany, with a separate board of trustees which serves to create a multi-jurisdictional approach to this plan, all forward reference to the “Town of Albany”, includes the Village as well. The purpose of this Local, Multi-jurisdictional All-Hazards Mitigation Plan is to assist this municipality in identifying all hazards facing their community and in identifying strategies to begin to reduce the impacts of those hazards. The plan also seeks to better integrate and consolidate efforts of the municipality with those outlined in the Town Plan as well as efforts of NVDA, Vermont State agencies, FEMA and the State Hazard Mitigation Plan. The town is aware that community planning can aid significantly in reducing the impact of expected, but unpredictable natural and human-caused events. Community planning can aid significantly in reducing the impact of expected, but unpredictable natural and human-caused events. The goal of this plan is provide hazard mitigation strategies to aid in creating disaster resistant communities throughout Orleans County.

1.2 Hazard Mitigation

The Vermont State All-Hazards Mitigation Plan of 2013 defines hazard mitigation as:

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

Hazard mitigation strategies and measures can reduce or eliminate the frequency of a specific hazard, lessen the impact of a hazard, modify standards and structures to adapt to a hazard, or limit development in identified hazardous areas. This plan aligns and/or benefits from the 5 goals accomplished as a State since 2010 and as referenced in Section 5 of the State’s 2013 Hazard Mitigation Plan and as part of the newly created Emergency Relief Assistance Funding (ERAF) requirements. With enhanced emphasis on community resiliency, many state agencies and local organizations have an increased awareness of the importance of mitigation planning and have produced plans and resources that towns can use to support their planning efforts. This plan will reference, when relevant, pertinent tools and resources that can be used to enhance mitigation strategies.

1.3 Hazard Mitigation Planning Required by the Disaster Mitigation Act of 2000

Hazard mitigation planning is the process that analyzes a community’s risk from natural hazards, coordinates available resources, and implements actions to reduce risks. According to *44 CFR Part 201: Hazard Mitigation Planning*, this planning process establishes criteria for State and local hazard mitigation planning authorized by Section 322 of the Stafford Act as amended by

Section 104 of the *Disaster Mitigation Act of 2000*. Effective November 1, 2003, local governments now must have an approved local mitigation plan prior to the approval of a local mitigation project funded through federal Pre-Disaster Mitigation funds. Furthermore, the State of Vermont is required to adopt a State Pre-Disaster Mitigation Plan in order for Pre-Disaster Mitigation funds or grants to be released for either a state or local mitigation project after November 1, 2004.

There are several implications if the plan is not adopted:

- After November 1, 2004, Flood Mitigation Assistance Grant Program (FMAGP) funds will be available only to communities that have adopted a local Plan
- For disasters declared after November 1, 2004, a community without a plan is not eligible for HMGP project grants but may apply for planning grants under the 7% of HMGP available for planning
- For the Pre-Disaster Mitigation (PDM) program, a community may apply for PDM funding but must have an approved plan in order to receive a PDM project grant
- For disasters declared after October 14th, 2014, a community without a plan will be required to meet a greater state match when public assistance is awarded under the ERAF requirements (Emergency Relief Assistance Funding)

1.4 Benefits

Adoption and maintenance of this Hazard Mitigation Plan will:

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

1.5 All-Hazards Mitigation Plan Goals

This All-Hazards Mitigation Plan establishes the following general goals for the town as a whole and its residents:

- 1) Reduce at a minimum, and prevent to the maximum extent possible, the loss of life and injury resulting from all hazards.
- 2) Mitigate financial losses and environmental degradation incurred by municipal, educational, residential, commercial, industrial and agricultural establishments due to various hazards.
- 3) Maintain and increase awareness amongst the town's residents and businesses of the damages caused by previous and potential future hazard events as identified specifically in this Local All-Hazards Mitigation Plan.

- 4) Recognize the linkages between the relative frequency and severity of disaster events and the design, development, use and maintenance of infrastructure such as roads, utilities and storm water management and the planning and development of various land uses.
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- 8) Support long-term solutions over short-term fixes to community needs and problems
- 9) Promote collaboration and cooperation through working partnerships between governments, non-profits, institutions, and businesses

1.6 Town of Albany Population and Characteristics

County: Orleans

Census Population: 941

Land Area: 38.7 Square Miles

Population Density: 21.8 Persons Per Sq. Mi.

Coordinates (Geographic Center): 44°44" N 72°23" W

Altitude: 956 Feet ASL



1.6.1 Population:

The Town of Albany is a small rural community in north-central Vermont. This Orleans county community is part of an area known as the Northeast Kingdom and covers 18,232 contiguous acres. It is composed of forestland interspersed by active farmland and residential property. The 2010 U.S. Census reports a total population of 941 residents, 47.5% female and 52.5% male,

indicating a population density of about 21.8 people per square mile acres. Population figures indicate that the number of people residing in Albany in the 1920's was 741.

Table 1-1 Town of Albany, selected population characteristics, 2010 Census

Category	Number	%
Total Population	941	100
Median Age	42.9	--
Population age 65 years and over	131.7	14
Population under 20 years old	220.2	23.4
Population between 20 and 24	47.0	5
Population between 25 and 44	234.3	24.9
Population between 45 and 64	307.7	32.7

1.6.2. Housing

According to the 2010 Census, there are 511 housing units in Albany, with 116 vacant. Of the vacant housing stock, 85 are for seasonal, recreational and occasional use. Albany has 399 households, of which 274 are family households. The average household size is 2.48, and the average family size is 2.86. Of the 395 occupied housing units, 325 are owner-occupied. The remaining 70 housing units were renter occupied. At the time of the 2010 Census 780 individuals were living in owner-occupied dwellings, and 161 in renter-occupied dwellings. The main source of household heating energy is Fuel oil, kerosene, etc. (57%), Wood (30%), Bottled, tank, or LP gas (11%). The following shows the types of housing within Albany, also based on the 2010 U.S. Census data:

Table 1-2 Town of Albany, selected housing unit data

Category	Number	%
Total Housing Units	511	--
Occupied housing units	395	77.3
Vacant housing units	116	22.7
Owner-Occupied	325	82.3
Renter Occupied	70	17.7
Population in Renter-occupied	161	
Population in Owner-occupied	780	

Table 1-2.1 Income and Cost of Housing

	Albany	Orleans	Vermont

		County	
Median Household Income	\$33,274	\$40,929	\$53,422
Median Family Income	\$48,375	\$49,966	\$66,340
Median family adjusted gross income, 2011*	\$35,893	\$41,818	\$59,315
Median Price of primary residences sold, 2012	\$112,500	\$129,000	\$196,000
Median Price of vacation residence sold, 2012	\$315,000	\$186,973	\$281,117
Median monthly owner costs	\$778	\$875	\$1195
Median monthly owner costs as % of household income	28.7%	23.2%	23.2%
Median gross rent	\$668	\$671	843
Median gross rent as a % of household income	22%	33.2%	30.9%
Per capita income	\$19,038	\$21,000	\$28,376
Income needed to afford an apartment at HUD's Fair Market Rent for 2013:			
0 bedroom unit	\$24,480	\$24,480	\$30,290
1 bedroom unit	\$25,360	\$25,360	\$33,119
2 bedroom unit	\$30,320	\$30,320	\$42,156
Source: American Community Survey 5-year estimates (2007-2011); Vermont Housing Data (www.housingdata.org)			
Notes: * from the Vermont State tax forms of families.			

Table 1-2.2 Albany Residents' Employment by Occupation

OCCUPATION	Estimate	Percent
Civilian employed population 16 years and over	417	100%
Management, business, science, and arts occupations	140	33.6%
Service occupations	62	14.9%
Sales and office occupations	67	16.1%
Natural resources, construction, and maintenance occupations	64	15.3%
Production, transportation, and material moving occupations	84	20.1%

Table 1-2.3 Albany Residents' Employment by Industry

INDUSTRY	Estimate	Percent
Civilian employed population 16 years and over	417	100%
Agriculture, forestry, fishing and hunting, and mining	40	9.6%
Construction	50	12.0%
Manufacturing	59	14.1%
Wholesale trade	13	3.1%
Retail trade	50	12.0%
Transportation and warehousing, and utilities	10	2.4%
Information	2	0.5%
Finance and insurance, and real estate and rental and leasing	6	1.4%
Professional, scientific, and management, and administrative and waste management services	24	5.8%
Educational services, and health care and social assistance	76	18.2%

Arts, entertainment, and recreation, and accommodation and food services	39	9.4%
Other services, except public administration	26	6.2%
Public administration	22	5.3%

Source: U.S. Census Bureau. ACS 5-Year Estimates 2008-2012, Table DP03

Albany compared to Vermont state average:

- Median house value below state average.
- Unemployed percentage significantly below state average.
- Black race population percentage significantly above state average.
- Hispanic race population percentage significantly below state average.
- Median age below state average.
- Length of stay since moving in above state average.
- House age above state average.

1.6.4. Town Locations:

Hospitals and medical centers near Albany:

- Maple Leaf Nursing Home (about 9 miles away in Barton, VT)
- Newport Health Care Center (Nursing Home about 10 miles away in Newport, VT)
- Orleans Essex VNA (Home Health Center about 10 miles away in Newport, VT)
- Fletcher Allen Health Care – North Country Dialysis Unit (Dialysis Facility about 10 miles away in Newport, VT)
- North Country Hospital and Health Center (Critical Access Hospitals about 10 miles away in Newport, VT)
- Union House Nursing Home (about 12 miles away in Glover, VT)

Public elementary/middle school in Albany:

- Albany Community School (Students: 106; Location: 351 MAIN ST; Grades: K-8)

Library in Albany:

- Albany Town Library: (Operating income: \$22,341; Location: 530 Main St.; 6,000 books; 122 audio materials; 278 video materials; 5 print serial subscriptions)

Cemeteries:

- Albany Village Cemetery,

Streams, rivers, and creeks:

- Shalney Branch

1.7 Summary of Planning Process

In November of 2015, the town contracted with OPH Consulting Services (OPHC) to draft the plan. The planning team was established and represented the community as best as possible, including the school, long-standing residents, town and village officials and planners. The kick-off meeting was held on December 15, 2015. The planning team discussed the planning process and facts related to the town. Additionally, a survey was drafted asking for community input and made available through the town's standard public notification process. The survey introduced the importance and informational needs of a LHMP and asked for more town-specific concerns the resident and/or business owner had. 48 responses came back and the results of the community input has helped in the development of identifying specific facets of mitigation action the town can take on in the 5-year planning cycle following adoption. A summary graph of the responses is included in Appendix B. The survey and final planning team roster were approved by the Selectboard in January, 2016. Monthly updates on plan development were included in each Selectboard meeting as well. Following FEMA guidance in Local Mitigation Plan Review Tool Regulation Checklist and FEMA informational resources, the plan was written using data sources that included:

- Surveys and warned, public meetings collecting public comment (issues raised were addressed in plan and the public meeting)
- 2016 Albany Town Plan draft (provided current goals and regulations supporting mitigation, recent capital expenditures and infrastructure value helped to drive vulnerability assessment)
- 2004 Albany Flood Hazard Regulations (Used for historical foundation for future investigation in joining the NFIP)
- 2015 Albany Road Erosion Site Inventory (created in adjunct to this plan and used to scope infrastructure priorities for the 5-year planning cycle as well as give the town a method to track and capture needed work)
- 2013 Vermont State Hazard Mitigation Plan (provided key guidance language and definitions throughout the plan).
- Vermont Agency of Natural Resources (ANR) and Transportation (VTrans) (Provided key policy recommendations on environmental conservation, high accident locations, climate change and fluvial erosion data).
- Vermont Departments of Health (VDH) and Environmental Conservation (DEC) (provided information related with public health services that could be impacted during a disaster and state support functions designated to both VDH and DEC. DEC also provided river corridor data for mapping purposes).
- Great Bay Hydro Erosion Monitoring Report (provided current disaster planning policy initiatives and scoping information on dam breach scenarios).
- FEMA Open Source (data.gov) Data for Disaster History and PA funding (provided comprehensive declared disaster by year and type as well as project descriptions and cost per event).

- FEMA NFIP “Bureau.Net” database (provided detailed information on repetitive loss properties and associated flood insurance claims).
- EPA’s Incident Action Checklist for cold weather resilience of water systems (provides a guidance tool for public works to cross-reference actions on the system).
- 2013 ACCD Mobile Home Resilience Plan (served as resource for future mitigation actions)

Based on the information obtained, input from town and state officials, the planning team, state and federal databases, local associations and NVDA, the plan was created. The Town of Albany Planning Team is composed of:

- Tim Cota, Orleans EMS
- Chad Tollman, Albany Village Trustee
- Todd Rivers, Principal Albany Community School
- Rodney Hurskin, Road Foreman (at the time of initial planning)
- Paige Horner, current Road Foreman
- Donald Peters, Fire Chief
- Brian Goodridge, Goodrich Lumber
- Ed Oleary, resident and Planning Commission
- Debra Ann Geoffroy, Town Clerk
- Gary Mason, Emergency Management Coordinator
- Bruce Melendy, NVDA
- Sandy Thorpe, Transit Manager for Rural Community Transportation, Inc.
- Seth DiSanto, Newport City Police Chief and LEPC 10 Chair
- Sue Richardson, Lister
- Cathy Wilder, Lister

While many small communities in Vermont face similar circumstances (e.g. flooding, winter storms and remote residents), each one has unique considerations and opportunities. There was a point made to capture the subtle characteristics of the town, its history and its residents. From this, the specific risks, vulnerabilities and mitigation strategies were developed.

NVDA’s role in assisting the entire region with all facets of planning provided crucial information and NVDA’s Emergency Management Planning representative provided guidance. While the LEPC provides the best platform to engage representatives from various towns and agencies, all bordering towns to Albany (Irasburg, Lowell, Glover, Craftsbury and Eden) were contacted via email through the town clerk with planning objectives and a request to inform the selectboard via an agenda item to provide input via the community survey in addition to receiving a draft plan with an invitation to comment via email or phone to the planning team. Vermont’s Department of Emergency Management and Homeland Security (DEMHS) also provided information during the development of the plan. DEMHS also has representation at the LEPC meetings and will continue to provide input and guidance as the town moves forward with their mitigation strategies.

On June 21, 2016, the town held a warned public meeting to review the identified hazards and

associated mitigation strategies. The draft plan was then revised based on input and presented to the town. The revised draft was made available for review at the town office and residents were informed via meeting minutes and the town bulletin board of the ability to review the draft and additional opportunity for formal comment and suggestions. All neighboring town offices were sent the draft for review and comment as well. Minor edits were made to the plan following state recommendations and the final draft was resubmitted to DEMHS and then to FEMA for formal review and approval pending municipal adoption. A resolution of adoption is anticipated following final FEMA approval.

SECTION 2: HAZARD IDENTIFICATION

2.1 Profiled Hazards

The number of natural disasters in Orleans County (11) is near the US average (12). There have been 10 major disasters (Presidential) declared and three emergencies declared. The causes of the natural disasters have been; Floods: 9; Storms: 7; Winds: 2; Heavy Rain; 1 Landslide: 1; Snowstorm: 1; Tropical Storm: 1 (Note: Some incidents may be assigned to more than one category). The following discussion on natural hazards is based upon information from several sources but specific extent data for Albany was largely not available. However, Orleans County and specifically, nearby Newport City data can be used to capture the extent of natural hazard events for the town. General descriptions are based upon the *2013 Vermont State Hazard Mitigation Plan*. According to NOAA Storm data, there were over 460 severe weather events from 1995-2015 in Orleans County. Events specific to Albany in addition to declared disasters include:

- 9/6/98, 6/26/02 thunderstorms
- 5/29/12 hail/tornado
- 7/29/13 flash flood

The highest risk hazards are for both the town and village have been profiled to provide the basis of future mitigation strategies. However, lower risk natural hazards (drought, tornado, tornado, high winds, extreme temperatures, hail, landslide, earthquake, naturally-occurring radiation and fire hazards) are omitted from full profiling because they do not pose enough risk to substantiate mitigation efforts at this time.

Table 2-1: Summary of Vermont Emergency Declarations

Number	Year	Type
3338	2011	Hurricane Irene
3167	2001	Snowstorm
3053	1977	Drought

Source: FEMA

Table 2-2: Summary of Vermont Major Disaster Declarations since 1998 (Orleans County: Bold with "*" indicating PA funding for the town)

4207	2015	Severe Winter Storm
4232	2015	Severe Storms and Flooding
4178	2014	Severe Storms and Flooding
*4163	2014	Severe Winter Storm
4140	2013	Severe Storms and Flooding
4120	2013	Severe Storms and Flooding
*4066	2012	Severe Storms, Tornado and Flooding
4043	2011	Severe Storms and Flooding
*4022	2011	Tropical Storm Irene
4001	2011	Severe Storms and Flooding
*1995	2011	Severe Storms and Flooding
1951	2010	Severe Storm
1816	2009	Severe Winter Storm
1790	2008	Severe Storms and Flooding
1784	2008	Severe Storms, Tornado and Flooding
1778	2008	Severe Storms and Flooding
*1715	2007	Severe Storm, Tornado and Flooding
1698	2007	Severe Storms and Flooding
1559	2004	Severe Storms and Flooding
1488	2003	Severe Storms and Flooding
*1428	2002	Severe Storms and Flooding
1358	2001	Severe Winter Storm
1336	2000	Severe Storms and Flooding
*1307	1999	Tropical Storm Floyd
1228	1999	Severe Storms and Flooding
1201	1998	Ice Storm

Climate Change:

“Climate change, once considered an issue for a distant future, has moved firmly into the present. Corn producers in Iowa, oyster growers in Washington State, and maple syrup producers in Vermont are all observing climate-related changes that are outside our recent experience.”

National Climate Assessment Report 2014

Vermont experienced the warmest year on record in 2012. The year 2011 was the second wettest with extensive flooding in the spring and from Tropical Storm Irene in the fall. According to the Agency of Natural Resources Vt.’s average temperature has increased by 1.8 degrees F since 1970 with the winter temperature increasing faster than the summer temperature. Precipitation has increased by 15 -20% over the past 50 years with 67% of this falling in heavy precipitation events. In 2006 the Northeast Kingdom went from a USDA Hardiness Zone 3 to a Zone 4 with the growing season increasing by 2 weeks. According to one model areas of the northeast near the Canadian border are projected to shift from having less than 5 to more than 15 days per year over 90 degrees F by the 2050s. Alan Betts, an independent atmospheric scientist living in

Pittsford, Vt. describes what we can expect to see in the coming decades from the warming trend in our climate. Some of the changes include:

- Warmer winters with increased precipitation including more wet snow and freezing rain
- More overwintering pests
- Shortened ski, snowmobile, ice-fishing season
- Multiple melt events in winter with possible flooding
- Reduced productivity of sugar maples
- Hotter summers with more heat waves
- Summer/fall heavy rain events with more frequent floods
- Increased warm-weather pests – mosquitoes, ticks, and algae

These climate changes will impact agriculture, water, human health, energy, transportation, forests and our ecosystems and pose a growing challenge to the region's environmental, social, and economic systems. As with other hazards it is important to take steps that will support the town and community to adapt to these changes. The Planning Commission will explore local interest in forming a town Energy Committee in order to support an increase in energy efficiency and conservation.

While projections of the effects of climate change vary, it is generally predicted that Vermont will have warmer temperatures year-round, with wetter winters and drier summers. An increase in the size and frequency of storms is also predicted. As a result, climate change in the next century will likely increase the likelihood of weather-related hazards occurring. An increase in precipitation may also result in increased flooding and fluvial erosion. Drier summers may increase the chance of drought and wildfire. A warmer climate may also result in the influx of diseases and pests that cold winters previously prevented. The severity of climate change is also difficult to predict, though the effects may be mitigated somewhat if greenhouse gas emissions are reduced in the near future. In 2011, Governor Shumlin formed the *Vermont Climate Cabinet*. The Cabinet, chaired by the Secretary of Natural Resources, is a multidisciplinary approach to enhance collaboration between various state agencies. Its primary objectives include providing the Governor with advisory information and facilitating climate change policy adoption and implementation. In 2013, the Vermont Agency of Natural Resources (ANR) released the Climate Change Adaptation Framework which addresses climate change exposures, vulnerability-specific elements within each of the natural resource sectors, and ongoing and proposed actions that can be or have been taken to prepare for the expected changes. In line and conjunction with the ANR report, the primary goal of a VTrans climate change adaptation policy is to minimize long-term societal and economic costs stemming from climate change impacts on transportation infrastructure. Regardless of cause, the frequency of declared disasters for the county is increasing.

Albany Town and Village Profiled Hazard Analysis:

High Winds

Severe winter/Ice storm,

Extreme cold

Flooding (including fluvial erosion, inundation and floodplains)

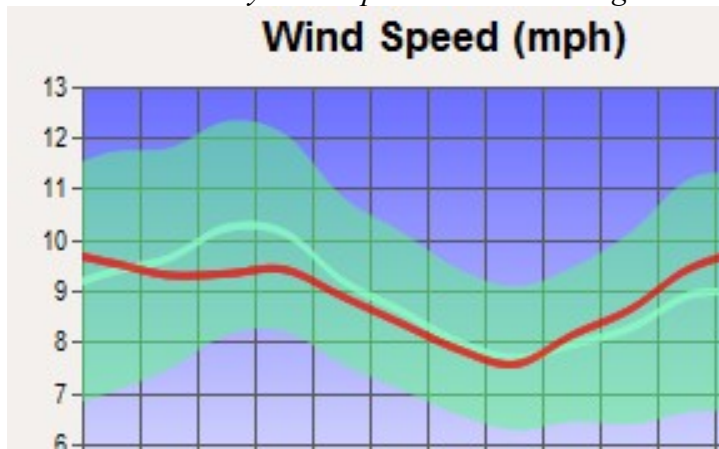
High Winds

High wind is defined as an event with sustained wind speeds of 40 m.p.h. or greater lasting for 1 hour or longer or an event with winds of 58 m.p.h. or greater for any duration. Thunderstorms can generate high winds and down hundreds of large trees within a few minutes. High winds can impact the entire planning area. In a study completed by the Worcester Polytechnic Institute (Extreme Wind Speed Region in New England and New York, 2008), using wind speed data from the National Climatic Data Center, National Institute of Standards and Technology, and the US National Meteorological Service to develop a probability for extreme wind speeds and their corresponding mean recurrence interval, the purpose of this study was to develop recommendations for transmission line construction based on land contour data. The last recorded high wind event as tracked by the National Weather Service was recorded on 17-18 January 2012. An 81-mph wind gust was measured atop Vermont's highest peak Mount Mansfield. These strong gusts caused numerous power outages across northern New York and parts of central and northern Vermont. At the peak of the event, over 10,000 people were without power across northern New York, including the Saint Lawrence Valley and over 2,500 people had no power in parts of Vermont. During this event, Orleans County had wind speeds of 30-40 mph (category 7-8 on the Beaufort scale). With two declared disasters, due to wind, this hazard remains a concern. Transportation route access and electric power supply are at risk during a major wind event. The following table describes the Beaufort Scale for non-hurricane winds.

Table 2-3: Beaufort Scale and Albany Windspeed vs. U.S. Average

Beaufort*	Avg Miles per Hour	Knots	Surroundings
0 calm		0-1	Smoke rises vertically and the surface is smooth
1 light air	1.2 - 3.0	1 - 3	Smoke moves slightly with the direction of wind
2 light breeze	3.7 - 7.5	4 - 6	You can feel the breeze on your face. Leaves start to rustle
3 gentle breeze	8.0 - 12.5	7 - 10	Smoke will move horizontally. Small branches start to sway. Wind is felt on the face
4 moderate	13.0 - 18.6	11 - 16	Loose dust or sand on the ground is raised. Larger branches will sway, loose papers are blown about
5 fresh breeze	19.3 - 25.0	17 - 21	Surface waves form on water. Wind is felt on the face
6 strong breeze	25.5 - 31.0	22 - 27	Trees begin to bend with the wind. Causes whistling in telegraph wires. Spray on the sea surface
7 moderate gale	32.0 - 38.0	28 - 33	Large trees sway. Moderate damage to trees and shrubs
8 fresh gale	39.0 - 46.0	34 - 40	Twigs break from trees, and some branches are broken. Large waves appear on the ocean
9 strong gale	47.0 - 55.0	41 - 47	Branches break from trees

Table 2-3.1: Albany Wind Speed vs. U.S. Average



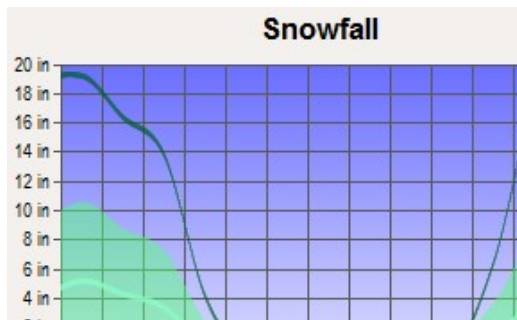
Severe Winter Storm:

Albany has received PA funding for one major snow event in 2014 for \$11,424, mainly for debris removal. Winter storm frequency and distribution varies from year to year depending on the climatological patterns but snowfall in the town is significantly higher than the national average. The winter of 2010-2011 was the third-snowiest on record for the region with a total of 124.3 inches. The record of 145.4 inches was set in 1970-1971. The potential for a major snowstorm that exceeds the capabilities of town exists every year but with the recent increase in snowfall totals and cold temperature duration, the town realizes that further consideration is required. NOAA's National Centers for Environmental Information is now producing the Regional Snowfall Index (RSI) for significant snowstorms that impact the eastern two thirds of the U.S. The RSI ranks snowstorm impacts on a scale from 1 to 5, similar to the Fujita scale for tornadoes or the Saffir-Simpson scale for hurricanes. NCEI has analyzed and assigned RSI values to over 500 storms going as far back as 1900. As such, RSI puts the regional impacts of snowstorms into a century-scale historical perspective. The index is useful for the media, emergency managers, the public and others who wish to compare regional impacts between different snowstorms. The RSI and Societal Impacts Section allows one to see the regional RSI values for particular storms as well as the area and population of snowfall for those storms. The area and population are cumulative values above regional specific thresholds. For example, the thresholds for the Southeast are 2", 5", 10", and 15" of snowfall while the thresholds for the Northeast are 4", 10", 20", and 30" of snowfall. 2010, 2012 and 2014 have some of the highest rankings for notable storms in Albany. These rankings are based, in part on the severity of the storm using the following system. Since 2000, there has only been one event that reached a category 4 in the Northeast, five reached Category 3, eight were "significant" and all others were notable.

Table 2-4: NOAA's Regional Snowfall Index (RSI)

CATEGORY	RSI VALUE	DESCRIPTION
1	1-3	Notable
2	3-6	Significant
3	6-10	Major
4	10-18	Crippling
5	18.0+	Extreme

Table 2-4.1: Albany Snowfall vs. U.S. Average



Because such storms are expected during a Vermont winter, the town is well-equipped to deal with snow removal and traffic incidents. The most damaging types of snowstorms are ice-storms caused by heavy wet snow or rain followed by freezing temperatures. This leads to widespread and numerous power and telephone outages as lines either collapse due to the ice weight or are brought down by falling trees and branches. The winters of 1969-72 produced record snowfalls, and greater than normal precipitation was recorded in 8 of the 11 years during 1969-79. A record breaking continuous snowfall occurred in March, 1993 with an excess of 21 inches (RSI of 5), the most on record for the town. The storm of 2014, a declared disaster for Orleans County, resulted in significant debris and the town relied on PA funding of \$11,434 to mitigate the damage to trees. According to the *2013 Vermont State All-Hazards Mitigation Plan*:

“A winter storm can range from moderate snow to blizzard conditions. A severe winter storm deposits four or more inches of snow during a 12-hour period or six inches of snow during a 24-hour period. A blizzard is a snowstorm with sustained winds of 40 miles per hour or more with heavy falling or blowing snow and temperatures of ten degrees Fahrenheit or colder. An ice storm involves rain, which freezes upon impact. Ice coating at least one-fourth inch in thickness is heavy enough to damage trees, overhead wires, and similar objects and to produce widespread power outages.”

Ice Storm:

Major Ice Storms occurred in January, 1998, December, 2013 and January, 2014. Albany received PA funding for the 2014 event for \$11,424. The North American Ice Storm of 1998 was produced by a series of surface low pressure systems between January 5 and January 10, 1998. For more than 80 hours, steady freezing rain and drizzle fell over an area of several thousand square miles of the Northeast, causing ice accumulation upwards of 2” in some areas. Albany received .5 to 1 inch of ice. On December 13th, 2013, another ice storm hit portions of Orleans County, resulting in a disruption of electric service up to 96 hours. While there is evidence that supports an increase in weather and precipitation severity, the incidence of ice storms remains fairly low. The town expects to have another ice storm but unlike rain and snow events, the occurrence of a major ice storm is not expected every year. But accepted emergency preparedness actions can help to mitigate the consequences of a major ice storm, where-by

protecting the health and safety and infrastructure of the town (e.g. sheltering plans, generator power, trimming limbs near power lines, etc.

Extreme Cold:

While there is no historical evidence to support a concern over the consequences of extremely hot temperatures on human health and safety in Albany, recent extremes in cold temperatures is a concern. 2015 tied the coldest winter (January to March) on record (1923) for Vermont as a whole according to the NOAA's National Climatic Data Center whose dataset dates to 1895. Albany's winter of 2015 had a mean temperature of 7.8 degrees Fahrenheit. The NOAA Storm Event Database lists five extreme cold events since 2000 with the following narrative for the 2015 event:

An arctic cold front pushed across Vermont during the afternoon hours of January 7th with plummeting temperatures and brisk, strong winds (15 to 30+ mph) causing dangerously cold wind chills of 25 to 40 degrees below zero during the evening of January 7th into the morning hours of January 8th. These dangerously cold wind chills lead to delayed school openings of 2 hours or cancelled classes on the morning of January 8th. Actual minimum ambient temperatures on the morning of January 8th were 15 to 30 below zero across northern New York. Observed wind chills in the mountains ranged from 40 to 70 below zero. Temperatures by early evening of January 7th were zero to 10 above zero with winds of 15 to 30 mph that created wind chills colder than 20 to 30 below zero through the overnight into the morning hours of January 8th. Actual morning low temperatures on January 8th were 15 below to 30 below zero in Orleans county, including 32 degrees below zero at Morgan, 28 below zero in Greensboro, 22 below zero in Newport, Craftsbury and North Troy, 21 below zero in Derby and 20 below zero in Holland.

However, the January of 1994 had a mean temperature of 2.7 degrees Fahrenheit which is the coldest mean temperature since 1930 and January is the statistically coldest month in all of Vermont. Since 1930, January produced temperatures in the negative 20's and 30's consistently for Orleans County with record cold temperatures occurring in 1957 (-38). Cold temperatures are expected in the Northeast but they can pose a serious threat to health and safety, especially as the severity and duration increases in conjunction with other technological (e.g. power outage, fuel oil delivery disruption) and societal (ability to purchase heating fuel) factors. Maintaining a safe living environment for livestock during extreme temperatures, especially cold extremes, is a real concern for farmers in Albany and the rest of the state and while the temperatures for the town remain within averages seen in the last 85 years, the town expects dangerously cold temperatures every winter. There is no evidence to support concern over increases in high temperatures for the town as it relates to health and human safety at this time.

Flooding

Flooding is the most common recurring hazard event in the state of Vermont. June, 2015 broke records across the state for the wettest on record. Albany, along with other towns in the NEK received 7 to 8 inches of rain in June. Recent history, including the flooding events of 2011 and the records set in 2015 suggest that increases in total rain fall and severity in terms of rainfall per given unit of time are to be expected along the lines seen with the records seen across the state

recently. The Black River is 26 miles in length, originates east of Great Hosmer Pond with headwater tributaries flowing west off Ames Hill in Albany. It drains 134 square miles of land. This river has the lowest gradient of the three main rivers in the basin with an average slope of about 8 feet per 1 mile. The Black River watershed contains over 600 acres of lakes and ponds, the three largest being Elligo Pond, Little Hosmer Pond and Great Hosmer Pond. The current is slow. The drop from the source to Lake Memphremagog, including the falls at Irasburg and Coventry is 190 feet. The Black River flows through the central part of the town from south to north, having a number of quite considerable tributaries. It continues meandering in a more northeasterly fashion on the western side of Great Hosmer Pond. It winds through Albany and into Irasburg east of Potters Pond. The river continues northeast through Albany. On July 9th, 2013, flash flooding occurred. Showers and thunderstorms developed on a daily basis in the summertime heat, and rainfall rates as high as two to three inches in an hour were observed, and flash flooding resulted in several areas where storms remained stationary or repeatedly moved across the area. Of most recent importance for Vermont was Tropical Storm Irene in 2011. Irene resulted in the worst Vermont flooding in 83 years. During Irene (August 20th-29th, 2011). While rainfall totals specific to Albany are not available, Orleans County received 7.4” of rain (NOAA) in a 24-hour period (148% of its 100-year storm expected rainfall total, which was the highest of any Vermont County). The mass and force of water destroyed the Chamberlin Hill Road Bridge which was the greatest single point of destruction from flooding the town has ever seen.

Source: http://www.uvm.edu/~transctr/research/trc_reports/UVM-TRC-14-016.pdf54348

Inundation and Floodplains:

Albany’s floodplains are depicted on a FEMA Flood Insurance Rate Map (FIRM) from 1/3/1986. This map depicts the Special Flood Hazard areas, which are floodplains that would likely become inundated during a significant flood known as a “base flood.” The base flood is often referred to as the “100-year flood.” Albany’s FIRM is not accompanied by any insurance studies or base flood elevations, which would indicate how high the water would rise in a 100-year flood event. Regarding flood inundation issues, the *2013 Vermont State All-Hazards Mitigation Plan* states that:

“While inundation-related flood loss is a significant component of flood disasters, the predominant mode of damage is associated with the dynamic, and often times catastrophic, physical adjustment of stream channel dimensions and location during storm events due to bed and bank erosion, debris and ice jams, structural failures, flow diversion, or flow modification by man-made structures. Channel adjustments with devastating consequences have frequently been documented wherein such adjustments are linked to historic channel management activities, flood plain encroachments, adjacent land use practices and/or changes in watershed hydrology associated with conversion of land cover and drainage activities. The 100-year, or “base” floodplain is the national standard for floodplain management. The area is shown on town Flood Insurance Rate Maps (FIRMs) as issued by FEMA. The 100-year floodplain has one chance in a hundred of being flooded in any given year. The probability that a 100-year flood will occur is a statistical determination based on past flooding in an area. This is not to say that a flood of such magnitude cannot occur two years in a row or twice in the same year. The term

only means that in any given year, the odds are 1% that the area will be flooded. The same logic holds true for defining a 500- year flood. In this case, a flood of the 500-year magnitude has a 0.2% chance of occurring in a year. Much flood damage in Vermont occurs along upland streams, damaging private property and infrastructure such as bridges, roads, and culverts. The failure of beaver dams, private ponds and public and private culvert crossings contributes to flood surges and often dramatically increased damage downstream. Homes and other private investments along these streams are generally not recognized as a flood area on FEMA maps of flood hazard zones and, thus, are not typically identified as being vulnerable to flooding or erosion. Town plans and zoning regulations have generally not identified these stream corridors as areas needing protective setbacks for development or zoning.”

Fluvial Erosion:

Erosion occurs on a consistent, but small-scale basis within the riparian corridor of the town’s streams and rivers. This is a part of normal natural processes and as such is necessary for the proper functioning of the ecosystem of these waterways. However, fluvial erosion on a large scale can damage stream banks and undercut infrastructure such as roads, bridges and culverts as well as agricultural land and structures, causing severe damage. Fluvial erosion on a large scale can cause stream bank collapses, which are generally classified as landslides. Most flood damage is associated with fluvial erosion rather than inundation. The *2013 Vermont State All-Hazards Mitigation Plan* contains the following discussion of fluvial erosion:

“Vermont’s landscape has historically contributed greatly to the widespread practice of the channelization of rivers and streams in order to maximize agricultural land uses and facilitate the development of transportation infrastructure. Channelization, in combination with widespread flood plain encroachment, has contributed significantly to the disconnection of as much as 70% of Vermont’s streams from their flood plains. In this unsustainable condition and when energized by flood events, catastrophic adjustments of the channel frequently occur, usually with consequent fluvial erosion damage to adjacent or nearby human investments. All areas of the state suffer equally from fluvial erosion hazards. Some areas have suffered more than others simply because of the location of storm tracks. Transportation infrastructure and agricultural property are the most frequently endangered types of human investment affected by fluvial erosion hazards. Residential, commercial and other municipal properties are also frequently endangered. Changes in watershed hydrology that significantly influence fluvial stability are commonly associated with urbanization or with silvicultural practices. However, watershed scale hydrologic changes have been observed in Vermont as a localized phenomenon either in small, highly urbanized watersheds or in small, rural sub watersheds where clear cutting of a large percentage of the watershed land area has recently occurred. Stream geomorphic assessments and a fluvial geomorphic database maintained by the Agency of Natural Resources have identified main stem rivers typically channelized from 60-95% of their lengths. When human investments and land use expectations include all the land in the valley up to the river banks, there results extreme public interest in maintaining this unsustainable morphological condition despite its great cost and resultant hazard to public safety.”

The Vermont Agency of Transportation (VTrans) applies the term “scour critical” to stream crossing structures especially vulnerable to streambed scour—the undermining of bridge supports by water action and erosion. A spreadsheet database is maintained by VTrans and continually updated by the Bridge Inspection Program. Structures inspected are only those 20’ or longer owned by a municipality or the state. The scour critical rating is based on the structure itself, and does not take into account debris jams, outflanking, channel change, or other issues commonly associated with fluvial erosion. Water supply source and distribution systems are also endangered by fluvial erosion. Many water distribution systems involve buried pipes that cross streams, which are vulnerable to fluvial erosion, however, the town does not have a municipal water supply. In December, 2014 the Vermont Department of Environmental Conservation (DEC) released the “Flood Hazard Area and River Corridor Protection Procedures” guide, outlining specific actions and considerations for all towns in the state. Town bridges suffered the greatest damage in 2011(DR 4022) due to the magnitude of water and resulted in the greatest expense to repair. The Chamberlin Hill Road Bridge, specifically, needed to be replaced but specific extent data relating to the most significant eroded area in the town or village is not currently available.

SECTION 3: RISK ASSESSMENT

The following information relates to both the Village and Town:

3.1 Designated Hazard Areas

3.1.1. Flood Hazard Areas

Albany is located in the Barton River watershed, a drainage area of approximately 164 square miles. The mainstem of the Barton originates from Tildy’s Pond in Glover, then travels through Barton and the Village of Orleans, on to Lake Memphremagog’s South Bay in Coventry. The Barton River watershed contains one large tributary watershed, the Willoughby River (62 square miles), which drains from Lake Willoughby in Westmore, runs through Evansville and enters the Barton River just north of Orleans Village. It is difficult to estimate the total number of structures located in designated hazard area because current E911 maps do not correspond accurately to FIRMs. However, currently mapped Zone A’s include the following areas:

1. Entire length of western portion of Black River
2. Great Hosmer Pond
3. Seaver Brook
4. Lords Creek (south of Albany Brook)
5. Beaver Brook (northern tip)
6. Southeast portion of Black RiverMcCleary Brook
7. Shatney Brook
8. Albany Brook

Approximately 25% of Albany Village is in Zone A but Albany Center is not.

3.1.2. Fluvial Erosion Hazard Areas

About two-thirds of Vermont’s flood-related losses occur outside of mapped floodplains, and this reveals the fundamental limitations of the FEMA FIRMs. A mapped floodplain makes the dangerous assumption that the river channel is static, that the river bends will never shift up or down valley, that the river channel will never move laterally, or that river beds will never scour down or build up. In reality, river channels are constantly undergoing some physical adjustment process. This might be gradual, resulting in gradual stream bank erosion or sediment deposit – or it might be sudden and dramatic, resulting a stream bank collapse. The losses experienced during the May 2011 storms and Tropical Storm Irene were most often related to the latter. In fact, this type of flood-related damage occurs frequently in Vermont, due in part to the state’s mountainous terrain. Land near stream banks are particularly vulnerable to erosion damage by flash flooding, bank collapse, and stream channel dynamics. The Vermont Department of Environmental Conservation, Agency of Natural Resources, has identified river corridors, which consist of the minimum area adjacent to a river that is required to accommodate the dimensions, slope, planform, and buffer of the naturally stable channel and that is necessary for the natural maintenance or natural restoration of a dynamic equilibrium condition. In other words, the river corridor provides “wobble room” for a stream as its channel changes over time. Keeping development out of the river corridors therefore reduces vulnerability to erosion. (*Albany Town Plan Draft*).

Repetitive Loss Properties

The town has no repetitive loss properties (buildings or homes).

3.2 Non-designated Hazard Areas

The area north of Seaver Brook and east of Hartwell Pond is a constant concern for the town during high rain events. Road washouts and culvert damage are frequent in this area and the town is being proactive in mitigating risk here.

3.3 Previous FEMA-Declared Natural Disasters and Non-declared Disasters

While the Town of Albany has had a history of flooding, losses to public infrastructure have intensified in recent years. The summers of 1996, 1998 and 2002 saw moderate road damage throughout the town and in the village areas. Damage was largely contained to local back roads (unpaved) due to washouts. During Tropical Storm Irene, the Chamberlin Hill Road Bridge was destroyed. This single bridge event was the single greatest expense associated with a natural disaster the town has sustained in recorded history. The town has been fortunate that its buildings and residential property has remained unaffected by recent disasters. Albany has received public assistance funding from FEMA for the following natural disasters:

Table 3-1: KEY:

DR	Date	Type
----	------	------

1307	11/10/1999	Severe Storm(s)
1428	07/12/2002	Severe Storm(s)
1715	08/03/2007	Severe Storm(s)
1995	06/15/2011	Severe Storm(s)
4022	09/01/2011	Hurricane
4066	06/22/2012	Severe Storm(s)
4163	01/29/2014	Severe Ice Storm

Table 3-2: Town of Albany, FEMA-declared disasters and snow emergencies, 2005-2014

Disaster Number	PW Number	Application Title	Damage Category Code	Project Size	Project Amount	Federal Share Obligated	Total Obligated
4022	284	NCORLAB shute ville	C - Roads & Bridges	Small	\$14,780.71	\$13,302.64	\$13,302.64
4022	311	NCORLAB delano	C - Roads & Bridges	Small	\$13,208.22	\$11,887.40	\$11,887.40
4022	322	NCORLAB chamberlin hill road	C - Roads & Bridges	Small	\$13,652.37	\$12,287.14	\$12,287.14
4022	323	NCORLAB chamberlin bridge removal	B - Protective Measures	Small	\$33,085.38	\$29,776.85	\$29,776.85
4022	340	NCORLAB wells	C - Roads & Bridges	Small	\$18,268.27	\$16,441.44	\$16,441.44
4022	347	NCORLAB creek	C - Roads & Bridges	Small	\$28,987.60	\$26,088.84	\$26,088.84
4022	382	NCORLAB barton	C - Roads & Bridges	Small	\$8,911.79	\$8,020.61	\$8,020.61
4022	503	NCORLAB sinon	C - Roads & Bridges	Small	\$26,988.36	\$24,289.52	\$24,289.52
4022	515	NCORLAB lafont	C - Roads & Bridges	Small	\$2,948.02	\$2,653.22	\$2,653.22
4022	548	NCORLAB page pond	C - Roads & Bridges	Small	\$2,975.19	\$2,677.67	\$2,677.67
4022	581	NCALC01 - Chamberlin Hill Rd Bridge Replacement (B-28)	C - Roads & Bridges	Large	\$360,407.56	\$324,366.81	\$324,366.81
4022	1080	NCAL C09 larabee	C - Roads & Bridges	Small	\$2,412.93	\$2,171.64	\$2,171.64
4022	1361	NCAL c09 south albany	C - Roads & Bridges	Small	\$3,623.80	\$3,261.42	\$3,261.42
4022	1413	NCAL c10 south albany/sawmill	C - Roads & Bridges	Small	\$3,218.66	\$2,896.80	\$2,896.80
4066	3	JCABC1 Burbank Rd	C - Roads & Bridges	Small	\$2,600.00	\$1,950.00	\$1,950.00
4066	26	JCABC2 Sinon Rd.	C - Roads & Bridges	Small	\$2,132.27	\$1,599.20	\$1,599.20
4066	32	JCABC6 Page Pond Rd.	C - Roads & Bridges	Small	\$20,730.35	\$15,547.76	\$15,547.76
4066	33	JCABC4 LaFont Rd.	C - Roads & Bridges	Small	\$11,877.83	\$8,908.37	\$8,908.37
4066	34	JCABC7 Shute Ville Rd.	C - Roads & Bridges	Small	\$6,863.97	\$5,147.98	\$5,147.98
4066	39	JCABC5 Larabe Hill Rd.	C - Roads & Bridges	Small	\$8,336.29	\$6,252.22	\$6,252.22
4066	43	JCABC3 Creek Rd.	C - Roads & Bridges	Small	\$9,013.76	\$6,760.32	\$6,760.32

4066	55	JCABC8 Barton Rd.	C - Roads & Bridges	Small	\$17,814.66	\$13,361.00	\$13,361.00
4163	10	ALBAA01 Town Wide Debris Removal	A - Debris Removal	Small	\$15,232.75	\$11,424.56	\$11,424.56

Sources: FEMA and the 2016 Albany Town Plan

Non-declared disasters (e.g. snow and rain storms) have not resulted in damage above and beyond normal maintenance. Extreme, long-lasting cold temperatures during winter months do pose a concern for the town as in many communities where the price of heating fuel often exceeds resident’s ability to pay. Coupled with high unemployment, there is an increased risk for the town’s residents to not meet the financial requirements for adequate heat, especially during long periods of extremely cold temperatures. Without adequate provisions, 48 hours of extremely cold temperatures could create a serious health hazard. In 2014, the town had a road surplus of \$50,023.46 after spending \$580,248.28 that year.

3.3 Hazard Assessment and Risk Analysis

Although estimating the risk of future events is far from an exact science, the Planning Team used best available data and best professional judgment to conduct an updated Hazards Risk Estimate analysis, which was subsequently reviewed and revised by town officials in 2016. This analysis assigns numerical values to a hazard’s affected area, expected consequences, and probability. This quantification allows direct comparison of very different kinds of hazards and their effect on the town and serves as a method of identifying which hazards hold the greatest risk based on prior experience and best available data. The following scoring system was used in this assessment:

Area Impacted: scored from 0-4, rates how much of the municipality’s developed area would be impacted.

Consequences: consists of the sum of estimated damages or severity for four items, each of which are scored on a scale of 0-3:

- Health and Safety Consequences
- Property Damage
- Environmental Damage
- Economic Disruption

Probability of Occurrence: (scored 1-5) estimates an anticipated likelihood of occurrence based on prior experience and current information.

To arrive at the Overall Risk Value, the sum of the Area and Consequence ratings was multiplied by the Probability rating. The highest possible risk score is 80.

3.3.1. Natural Hazards

According to the updated Hazard and Risk Estimation for Albany, the following natural hazards received the highest risk ratings out of a possible high score of 80:

- Flooding (44)
- Severe Winter Storm (40)
- High Winds (32)
- Extreme Cold (36)

Flood-related disasters have had the greatest financial impact on the town. While no deaths or injuries have been recorded for declared or non-declared disasters, the potential for health and safety risk during a severe winter storm are considered higher than that posed by a flooding event. Lightning and high winds further the risk for power loss and while high winds can occur any time of year (and normally occur in unison with rain or snow events), lightning is isolated to warmer month

Table 3-2 Natural hazards risk estimation matrix

Albany, VT Hazard & Risk Analysis: NATURAL HAZARDS		Drought	Flooding	High Winds	Fluvial Erosion	Landslide	Lightning	Multi-Structure Urban Fire	Wildfire	Winter Storm	Extreme Cold
		Area Impacted									
Key: 0 = No developed area impacted											
1 = Less than 25% of developed area impacted											
2 = Less than 50% of developed area impacted											
3 = Less than 75% of developed area impacted											
4 = Over 75% of developed area impacted		1	3	3	1	1	2	1	1	3	4
Consequences											
<i>Health & Safety Consequences</i>											
Key: 0 = No health and safety impact											
1 = Few injuries or illnesses											
2 = Few fatalities or illnesses											
3 = Numerous fatalities		0	1	1	0	1	1	1	1	1	1
<i>Property Damage</i>											
Key: 0 = No property damage											
1 = Few properties destroyed or damaged											
2 = Few destroyed but many damaged											
3 = Few damaged but many destroyed											
4 = Many properties destroyed and damaged		2	2	2	1	1	1	1	1	1	1
<i>Environmental Damage</i>											
Key: 0 = Little or no environmental damage											
1 = Resources damaged with short-term recovery											
2 = Resources damaged with long-term recovery											
3 = Resource damaged beyond recovery		2	2	1	2	1	1	2	1	1	1
<i>Economic Disruption</i>											
Key: 0 = No economic impact											
1 = Low direct and/or indirect costs											
2 = High direct and low indirect costs											
2 = Low direct and high indirect costs											
3 = High direct and high indirect costs		2	3	1	1	1	1	1	1	2	2
Sum of Area & Consequence Scores		7	11	8	5	5	6	6	5	8	9
Probability of Occurrence											
Key: 1 = Unknown but rare occurrence											
2 = Unknown but anticipate an occurrence											
3 = 100 years or less occurrence											
4 = 25 years or less occurrence											
5 = Once a year or more occurrence		1	4	4	4	1	4	1	1	5	4
TOTAL RISK RATING											
Total Risk Rating =		7	44	32	20	5	24	6	5	40	36
Sum of Area & Consequence Scores											
x Probability of Occurrence											

SECTION 4: VULNERABILITY ASSESSMENT

Vulnerability refers to the potential impact of a specific loss related to an identified risk. Albany is a small town with very few buildings aside from residential. While the loss of any one facility would cause a disruption in town services and operations, the overall vulnerability is low. There

are roads, bridges and culverts vulnerable to flooding and those are identified below. Loss of equipment function for the highway department is a vulnerability for the town but the risk is not due or predicted to be a result of a disaster, merely, the required maintenance expected of highway-related machinery. For this section of the plan, the planning team looked at prior history and worst-case scenarios. The primary vulnerability for the town and village is transportation-related infrastructure during flood events. Using declared disaster PA funding as a guide to understanding the relationship between natural hazards and infrastructure damage, the most significant, single location damage event was that of the Chamberlin Hill Road Bridge removal (\$33,085.00) and replacement (\$360,407.00) due to disaster 4022. With a total of 14 PA projects resulting from this event (all considered small projects aside from Bridge), 4022 was historic in terms of infrastructure damage. Second to 4022, was the May floods of 2011 (DN: 1995) with 8 projects totaling \$90,120.00 in Federal assistance. The following represents information for both the village and town:

4.1 Flood Vulnerability:

Albany has 28 E911 structures in the Special Flood Hazard Area the but none of which have a history of repeated damage. There are three main types of flooding that occur in Vermont: flooding from rain or snow melt, flash flooding and urban flooding. Flooding has also been known to occur as a result of ice jams in rivers adjoining developed towns and cities. These events may result in widespread damage in major river floodplains or localized flash flooding caused by unusually large rainstorms over a small area. The effects of all types of events can be worsened by ice or debris dams and the failure of infrastructure (especially culverts), private dams and beaver dams. Rain storms are the cause of most flooding in Albany and the storms of 2011 caused historic damage. Winter and spring thaws, occasionally exacerbated by ice jams, are another significant source of flooding. Much of this flooding is flash flooding, occurring within hours of a rainstorm or other event. Flash flooding, as opposed to flooding with a gradual onset, causes the largest amount of damage to property and infrastructure. Floods cause two major types of damage: water damage from inundation, and erosion damage to property and infrastructure. The *2013 Vermont State All-Hazards Mitigation Plan* discusses flooding extensively. While that plan is concerned with all of Vermont, the information on flooding is relevant to Albany in that:

*“Recent studies have shown that most flooding in Vermont occurs in upland streams and road drainage systems that fail to handle the amount of water they receive. Due to steep gradients, flooding may inundate these areas severely, but only briefly. Flooding in these areas generally has enough force to cause erosion capable of destroying roads and collapsing buildings. These areas are often not mapped as being flood prone and property owners in these areas typically do not have flood insurance (DHCA, 1998). Furthermore, precipitation trend analysis suggests that intense local storms are occurring more frequently. Additionally, irresponsible land use and development will exacerbate the preexisting vulnerability. Urban flooding usually occurs when drainage systems are overwhelmed and damages homes and businesses. This flooding happens in all urban areas, but specifically in Burlington where the downtown area is located at the bottom of a gradient, which adds to the intensity of this localized flooding. ...
...Over the past two decades, flood damage costs have risen dramatically in Vermont due to increasing occurrences of flooding and increases in vulnerability associated with unwise land use development in flood plains or within stream corridors. The geography and topography are*

right for a significant localized storm with extreme damage at almost any location in Vermont. Heavy rains with previous ground saturation, which causes runoff, are a significant part of the flooding formula in Vermont. Steep topography and narrow, inhabited, stream and river valleys further increase the dangerous nature of this hazard. Furthermore, precipitation trend analysis suggests that intense, localized storms that can cause flash flooding are occurring with greater frequency. While flooding will continue, planning and other mitigation measures can help minimize damages.

All of Vermont’s major rivers have inhabited flood plains. While residents in mountain valleys are at risk, they may not be aware of the danger or may choose to ignore it. There are many reasons property owners are reluctant to relocate to less flood prone ground, not the least of which is the lack of personal experience of flooding. In addition, many communities originated beside rivers and streams; some of the most attractive property is located in vulnerable areas. Lakeshore property in Vermont is vulnerable to flooding from high water levels, either by surface water erosion or flooding. Occasionally, water-saturated ground and high water tables cause flooding to basements and other low lying areas. Lakeshore property is highly desirable and valuable, making the development of lakeshore areas very likely, even with the high potential for flooding. Restrictions on lakeshore property development have significant negative economic and tax revenue impacts that must be carefully weighed against the gains in personal safety and protection of property.”

Vermont experienced major floods long before Federal disaster assistance became available. A very destructive event occurred in November of 1927. In the month before the flood, rains in excess of 150% of normal precipitation fell after the ground had frozen. The flood itself was precipitated by 10 inches of rain falling over the course of a few days. The flood inundated parts of many towns and damaged or destroyed numerous bridges in the county. As the history of the flooding cited above bears out, the geography and topography are right for a significant localized storm with extreme damage at almost any location in Vermont. Numerous floods have resulted in Presidentially-declared disasters and an influx of federal disaster assistance. The last two decades have resulted in an increase in flood events for the town. The summers of 1996, 1998 and 2002 saw moderate road damage but the disasters of 2011 created considerably more damage. Damage was largely contained to local back roads due to washouts. Damage to the Chamberlin Hill Road Bridge was a worst consequence of the rain and flooding brought by Irene in 2011 and was, financially, the greatest single damage event the town has ever seen. The area of town most susceptible to flooding is the southeast corner of town between Hartwell Pond and Seaver Brook.

4.1 Critical Facilities

The Center for Disaster Management and Humanitarian Assistance defines critical facilities as: “Those structures critical to the operation of a community and the key installations of the economic sector.” Table 4-1 identifies critical facilities in Albany.

Table 4-1 Critical facilities in the Town of Albany

Facility Type	Number of Facilities	Value
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Education Facility	1	Not owned by town
Town Office/fire station	1	\$841,500
Emergency Shelters	2	Not owned by town
Town Garage	2	\$322,600
Recycling Center	2	\$205,000
The Albany Historical Society	1	Not owned by town
Post Office	1	Not owned by town
Town Hall/Library	1	\$248,900
Village Water System	2 wells	\$50,000 annual income

No critical facilities have a history of damage due to a disaster. In this regard, the town is resilient to critical facility damage during a natural disaster most likely to affect the region.

4.2 Infrastructure

Town Highways

The major transportation route in Albany is VT Route 14 which had an Annual Average Daily Traffic (AADT) volume of 1,400 in 2012. This route runs northeast to southeast through town and connects Albany with Orleans, Newport City and Derby to the northeast, Hardwick and Montpelier to the south, and Burlington to the southwest. This route is categorized as a “Major Collector” by the Vermont Agency of Transportation. Major routes connect the Town to employment, healthcare, education, shopping, and many other services. According to Vermont General Highway Map, there are approximately 46.6 miles of town roads in Albany, and 6.7 miles of state highways. Other transportation routes in Town included approximately 16 miles of snowmobile trails maintained by the Vermont Association of Snow Travelers (VAST), which are also used by Nordic skiers.

Table 4-2 Town highway mileage by class, Town of Albany

Class 1	Class 2	Class 3	Class 4	State Hwy	Fed Hwy	Interstate	Total 1, 2, 3, State Hwy
0	16.04	30.56	0	6.722	0	0	53.322 Miles

Source: data derived from VTrans TransRDS GIS data –Albany Town Plan 2015

Bridges, Culverts, and Dams

Bridges:

There are a variety of bridges, culverts and dams (beaver only) located in the town. The following bridges are contained in an inventory maintained by VCGI, VTrans and the NVDA and represent those of greatest concern for the town. This analysis does not take into account the fluvial geomorphology or the elevation of the bridge above the floodplain.

Table 4-4 Inventoried bridges and culverts in the Town of Albany with identified risk

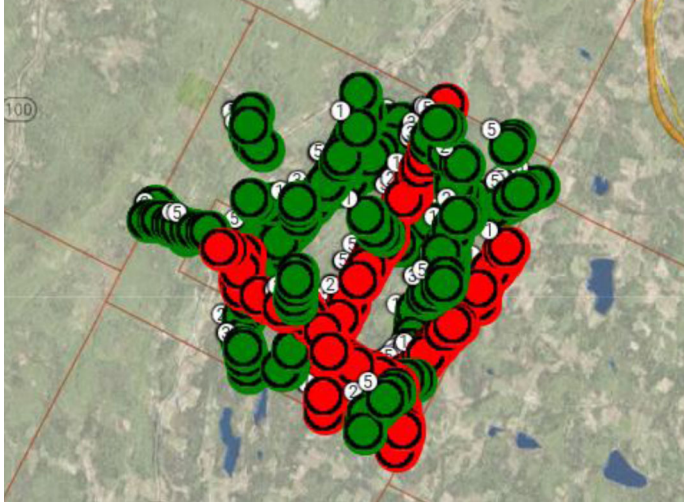
Bridge	Wylie Hill Rd.
Bridge	Water St
Bridge	W. Town Farm Rd.
Culvert	Shutesville Rd.
Bridge	Old St.
Culvert	E. Daniels Rd.
Bridge	Chamberlain Hill Rd. near jct. of Creek Rd.
Bridge	Near jct. of Wells and Creek Rd.

The entire Bridge Inventory with maps for the town can be found on the state site: <https://vtculverts.org/bridges#list>

Culverts:

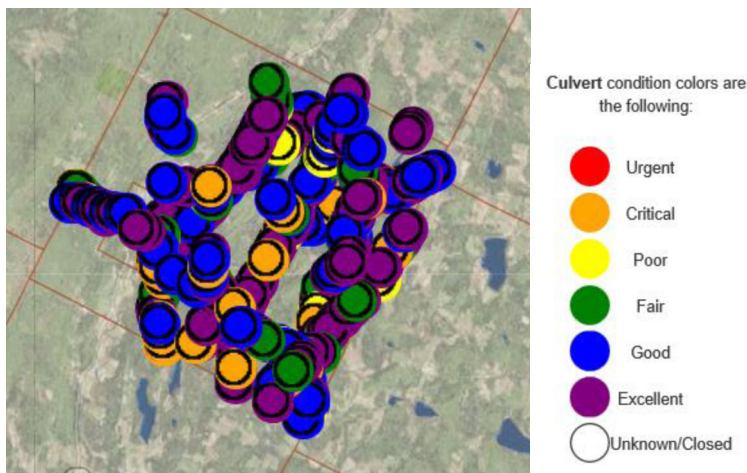
There are currently 439 culverts in the town and are classified in the system. The majority of the culverts are in GOOD or EXCELLENT condition. Most of the culverts in town have low vulnerability or importance (green dots in Table 2-4). The red dots indicate high importance and many are located on Creek Rd., Hartwell Pond Rd and Page Pond Rd. This inventory is updated by the Town in conjunction with NVDA and VTrans. As of 2010, very few culverts, if any, were rated as critical along the high risk areas.

Table 4-3: Vulnerability Ranking Map for Albany Culverts



Source: <https://www.vtculverts.org/structures>

Table 4-4: Condition Ranking Map for Albany Culverts



Source: <https://www.vtculverts.org/structures>

The Town maintains a culvert inventory that assesses over data on length, overall condition, size and location. This data guides the town’s culvert maintenance and replacement plan. Culverts most at risk of failing have been identified in the Road Erosion Site Inventory created in adjunct to this plan. The entire Culvert Inventory with maps for the town can be found on the state site: <https://vtculverts.org/map>.

Water, Wastewater and Natural Gas Service Areas

There are two public community water supply systems in Albany; a system which serves the Albany School and a system which serves properties in the incorporated village. The Albany Town School has its own community water and sewage system. The Village water system currently has 97 connections. Water service is not metered to individual customers. The water system is managed by Simon Operation Services based in Waterbury, Vermont. The Village Trustees own approximately 20 acres in the Source Protection Area (SPA) for the Village Water system. All other water and sewer systems are the sole responsibility of the property owner and they are required to meet state and federal regulatory standards. While there is no history of damage to this long-established system, the village-managed water supply systems is a significant source of income (\$50,000 annually) and protecting the integrity of the system is a goal. Increased communication and knowledge of Simon Operation Services and their emergency/contingency plans is planned

4.3 Estimating Potential Losses in Designated Hazard Areas

There are structures, including portions of town roads and bridges within the 100-year floodplain, many of which are indicated within the river corridor maps when compared to FIRM. According to most current American Community Survey 5-Year averages, the median value of an owner occupied housing unit in Albany is \$112,500. With no repetitive loss properties, the town does not believe that even during a flooding event similar to those of 2011 that there would be substantial damage to buildings or residential housing that exceeded 1%. However, given the magnitude of damage to town bridges, the potential for costs exceeding the annual road budget does exist. However, the repairs and enhanced resilience of locations damaged or destroyed as a result of recent declared disasters greatly reduces the potential for a recurrence. The following list had been populated from the 2014 River Corridor Maps developed for the town by NVDA. As mentioned, there are several designated floodplains in town and despite not having any repetitive loss properties, those structures in, or close to, designated flood hazard areas are at increased risk, the number of properties by Zone A designation are included below:

Zone A Location	Number of structures
Black River	18
Great Hosmer Pond	1
Lords Creek	1
McCleary Brook	2
Shatney Brook	2
Albany Brook	4

Assuming that each structure is a residential home at average value for the town, a loss of all properties listed above would result in a 6.5% reduction in taxable property for the town. While the likelihood of such an occurrence is very low, it provides a framework of understanding the financial impact of losing property in the flood hazard areas.

Table 4-5: Town of Glover Hazard Risk and Vulnerability Summary

Hazard Type	Probability ¹	Vulnerability ²	Impact ³
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Flood/Fluvial Erosion	Medium to High	All town and village structures.	The most significant, single location damage event was that of the Chamberlin Hill Road Bridge removal (\$33,085.00) and replacement (\$360,407.00) due to disaster 4022. With a total of 14 PA projects resulting from this event (all considered small projects aside from Bridge), 4022 was historic in terms of infrastructure damage. Second to 4022, was the May floods of 2011 (DN: 1995) with 8 projects totaling \$90,120.00 in Federal assistance.
Winter Storm/Ice Storm/Extreme Cold with Power Failure	High	The entire Town and Village is vulnerable, including road infrastructure, town and privately owned buildings and utility infrastructure	For roof collapse: monetary damages will depend on each structure but, collapse of barn roof is often a total loss. This does not include the loss of livestock. Collapse of a house roof may be at a 50% loss. For car crashes due to poor driving conditions: minimal damage to vehicle to totaled vehicle and operator injury. Health impacts could vary significantly. Loss of energy or communication capabilities may occur and impede recovery. Albany received PA funding for the 2014 ice event for \$11,424. On December 13 th , 2013, another ice storm hit portions of Orleans County, resulting in a disruption of electric service up to 96 hours
High Wind	Medium	The entire town and village is vulnerable to the results of high wind exposure. Significant damage possible to trees, power lines, building roofs.	With two declared disasters, due to wind, this hazard remains a concern. Transportation route access and electric power supply are at risk during a major wind

			event
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SECTION 5: MITIGATION STRATEGIES

5.1 Land Use and Development Trends Related to Mitigation

Agriculture has historically helped to characterize the Town of Albany and continues to today. In 2012, Albany had 10,599 acres enrolled in Vermont’s Current Use Program, both agricultural and forestry properties, constituting roughly 43% of the Town’s total land area. In Albany, there are 15 properties that are listed as “farms” on the Town’s Grand List, which range from 0.83 acres to 436 acres in size, with the average size being 178 acres. There are 44 properties identified as “woodland”, many of which contain sugar houses, ranging in size from 10 acres to 378 acres, the average size being 84 acres. Albany’s farms cover a total of 2,667 acres, and woodland parcels cover a total of 3,704 acres. Combined, they cover approximately 26% of the Town’s total land area. The Vermont Land Trust has conserved a total of 1,076 acres in Albany, approximately half of which is agricultural land at 534 acres. 555 acres of this land received financial assistance from the Vermont Housing and Conservation Trust Fund (VHCB). In addition, 43 acres of property now part of the Albany Community School, was purchased with the help of a grant from assistance from VHCB, and combined with an appropriation from the Town of Albany. The greatest concentration of dwelling units in Albany is within the center of the incorporated Village, along Main Street, Water Street, Old Street, and New Street. The 2010 census counted a total of 511 housing units in the Town, 83 of which were located within the incorporated village. There is also a small cluster of dwellings in the area of South Albany. The rest of the Town’s housing units are dispersed along Route 14, and on the paved and unpaved town roads. Albany sits within the watershed of the Black River, which flows into Lake Memphremagog, ultimately into the Saint Lawrence River in Canada and then into the Atlantic Ocean. Each of the watersheds that our waters drain into has been affected by nonpoint source pollution, which occurs when runoff such as rainwater or snowmelt moves over the land surface and washes with it a number of manmade or natural pollutants into lakes, rivers, wetlands, and even groundwater. The main nonpoint sources of contaminants are sediment, bacteria, nutrients, toxic chemicals, and metals. Land uses such as agriculture, forestry, construction, residential areas, and septic systems are all potential nonpoint pollution sources. The Vermont Division of Water Quality is working through the Basin Planning Program to assess streams and rivers for such pollutants.

There are a number of ponds within Albany (either entirely or partially), including Great Hosmer, Page Pond, Hartwell Pond, and Griggs Pond. The Hosmer Ponds Watershed Initiative is an informal group of Craftsbury and Albany Residents which wants to increase its appreciation and understanding of the community’s natural resources through outings, workshops, and gatherings. This group strives to engage community members to think about long-term conservation goals for the region and the tools available to reach such conservation goals. This

effort began in 2007, supported by the Vermont Land Trust through a small grant from the Vermont Community Foundation. The Hosmer Ponds Watershed Initiative recently joined forces with the Craftsbury Outdoor Center.

Riparian buffers and corridors, including stream banks and lakeshores, serve vital functions that have significant environmental, economic, and social value. Conserving riparian ecosystems allows them to carry out their many functions, which include: protecting water quality and aquatic habitats for terrestrial wildlife, including travel and dispersal corridors; supporting significant natural communities and adjacent wetlands and protecting channel-forming processes and channel stability. Riparian vegetated buffer strips can contribute to addressing residents' concerns about water quality and supply, pollution of water sources, disappearance of natural areas, and wildlife habitat

The wetlands of the state of Vermont are valuable natural resources. It is estimated that Vermont's existing wetlands comprise less than 5 percent of the state's surface area. In addition to being Vermont's most reproductive ecosystems, wetlands serve a wide variety of functions beneficial to the health, safety, and welfare of the general public, including:

- Retaining storm water runoff, reducing food peaks, delaying flood crests, and thereby reducing flooding;
- Protecting the quality and quantity of groundwater;
- Improving surface water quality by storing organic materials. Chemically breaking down or removing pollutants, and by filtering eroded sediments and organic matter from the surface runoff;
- Stabilizing soil and dissipating wave and current energy;
- Providing spawning, feeding and general habit for fish;
- Providing a wide diversity of habitat for wildlife, including waterfowl, birds, mammals, furbearers, amphibians, and reptiles;
- Providing habitat critical for survival of rare, threatened, or endangered species of plants and animals;
- Providing both representative and rare examples of plant communities which make up the state's natural wetland heritage;
- Providing valuable resources for education and research in natural sciences;
- Providing a diversity of recreational and economic benefits;
- Contributing to the open space character and overall beauty of the landscape.

5.1.1 Proposed Land Use

While the town currently does not participate in the NFIP, it is committed to reducing flood risk and vulnerability and increasing the location of new residential and commercial uses in its designated village districts. Residential homes or businesses in the floodplain and at risk of flooding is not an outstanding concern for the town. With adopted Flood Hazard Area Regulations in 2004, the town demonstrated its willingness to address flood risk but currently had no zoning. Also, the level of repetitive flood damage to property in the town is very low, if not non-existent. However, a current town goal as stated in the 2016 Town Plan Draft is to explore participation in the FEMA Community Rating System (CRS) so as to secure a discount

on flood insurance. Historically, the relationship between the town and village governance is positive and effective. The following narratives represent the best interests of both the village and the town.

5.1.2. Land Use Goals

The town is committed to retaining its rural character and its economic base of working farms and productive forests without hampering the landowner's ability to profit from either the use or sale of his or her assets.

5.1.3. Land Use Strategies

The town will continue to encourage stewardship of its natural resources through information and education and promote viability of resources through current use, Vermont Land Trust and Local Vermont products. This will educate the public on the benefits of Village Center designation and pursue Village Center re-designation for Albany Village while monitoring rural residential development trends in order to identify potential conflicts with long-range land use goals. Additionally, the Albany Planning Commission will investigate the feasibility of implementing subdivision regulations to preserve open space, and discourage loss of farmland and, if found appropriate, shall draft such regulations for submission to the Selectboard.

5.1.4. Future Development and Housing

Despite the advantages of attracting new businesses and housing, the town does not foresee major development occurring in the next five-year planning cycle. Other than individual real-estate transactions, there is little anticipated business development projected. However, the town plans to investigate incentives, such as a low interest loan program, that will promote business development in the Village, including a general store. The town will also consider the benefits of Village Center designation and encourage the development of commercial enterprises in town that that make use locally grown or harvested products while preserving and enhancing the recreational potential of land as a draw for eco-tourism.

5.1.5. The rate of growth in occupied (year-round) housing units and family households in Albany was significantly higher than in the county and state. Family households in Albany increased by 12.6% from 2000-2010, while Orleans County had growth of only 2% and the State, only 1.7%. Occupied housing units increased by 17.2% in Albany, while the increase was only 8.4% and 6.6%, respectively, in the county and state.

The vast majority of new housing units built occurred outside of the incorporated village, with only 4 of the 58 new units occurring inside the village boundaries. However, percentage-wise, the growth in population and family households was greater within the village than in the town as a whole, with population in the village increasing by 17% compared to growth of 12% town-wide.

Within the village, the number of units that was renter-occupied increased by 7 while owner-occupied units decreased by 4. Percentage-wise, the number of renter-occupied units increased at a greater rate than owner-occupied units town-wide. While this increase (22.8%) was significantly higher than the percent increase in rental units county-wide and state-wide, owner-

occupied units still account for the majority (about 82%) of the households in Albany. County-wide, owner-occupied units account for 75.6 % of all households, and state-wide, 70.7% of units. Factors such as the capacity of the Village water system, the location of fluvial erosion hazard areas, and the presence of soils unsuitable for septic systems will influence the ability of the Village to absorb more residential density. Future residential development should occur in such a way that it will not stress existing resources, including community facilities and services. Increased residential density in the Village is not desirable at this time, although improvement in the condition of existing housing resources in the village through restoration, rehabilitation or rebuilding is desirable. New residential development occurring outside the Village should make use of existing roads and infrastructure, and avoid impacting existing and potential agricultural and recreational use of the land.

5.1.6. Residential Development Patterns

Albany has no zoning although the Town will consider adopting flood hazard regulations town-wide in order to qualify for membership in the National Flood Insurance Program, there are currently no local regulations that might hinder the development of affordable types of housing, including manufactured home parks or multiple unit dwellings. However, all new residential development needs review and approval of an on-site septic system from the State.

Housing Goals and Objectives

Albany is dominated by owner occupied dwellings and will continue to be so for the foreseeable future. Goals include:

- Retain existing scale and density of housing in the Village by encouraging restoration and/or rebuilding of existing dwellings while not encouraging development of new housing on open land.
- Preserve the agricultural and recreational use of lands in Town by encouraging new residential development occurring outside the Village to make use of existing roads and infrastructure, and to avoid impacting existing and potential agricultural and recreational use of the land (*2015 Albany Town Plan*).

5.2 Albany Town Goals and Policies that support Hazard Mitigation

5.2.1. Community Goals

- a. Continue supporting state standards with local, POS water/sewer sources.
- b. Take advantage of the UVM/ACCD mobile home park preparedness programs to support resiliency of this disproportionately impacted population during disasters.
- c. Consider implementation of special population tracking within the community where-by residents unable to drive or that have no one to depend on can self-identify for inclusion in a maintained data-base so that rescue personal and emergency managers can account for this demographic.
- d. Work with residents, NVDA, rescue services, Vermont EMS and the LEPC to accomplish community outreach to develop understanding of the scope of practice of EMS in rural Vermont.

- e. The Selectboard and Planning Commission shall pursue grant funding for shelter emergency generators.
- f. Selectboard and Planning Commission shall continue to study the availability of firefighting water supplies, recommend locations and install dry hydrants where needed.
- h. The Selectboard and Planning Commission shall pursue grants and program participation for the provision of wireless and broadband communications.

5.2.2. Capital Improvement Goals

- a. Provide services and facilities deemed necessary for the orderly and rational development of the Town.
- b. Selectboard shall investigate options for the construction of public building or buildings to house Road Department equipment and operations and possibly an animal holding facility for dogs impounded by the Town and propose such facility to the voters.

5.2.3. Public Participation Goals

- a. Continue to solicit input regarding planning issues from town residents and from other entities which can help to offer solutions and insight into the problems the Town faces both now and in the future via formal meetings and advertised opportunities for input.
- b. Utilize the LEPC and NVDA to increase awareness, enhance planning and engage in exercises that address needs in the community.

5.2.4. Regulatory Devices Goals

- a. The town is confident that state regulations will serve the town best and adopts to not have zoning at this time.
- b. Maintain and continue a Capital Expense Budget and Program for the purpose of ensuring that Albany's rate of growth does not outstrip the Town's ability to pay for the associated necessary services such as roads, schools, police and fire protection, solid waste, etc.
- c. Develop and maintain a "No Adverse Impact" (NAI) approach to flood hazard management by institutionalizing the best practices set forth by the ASFPM.
- d. Utilize best practices in flood-plain management for farm-related development in town

5.2.5. Land Use

- a. Work to develop a Flood Hazard Area Overlay District to include all designated flood hazard areas. The purpose of the Flood Hazard Area Overlay District is to (1) protect public health, safety, and welfare by preventing or minimizing hazards to life and property due to flooding, and (2) to ensure that private property owners within designated flood hazard areas are eligible for flood insurance under the National Flood Insurance Program (NFIP). The town has elected not to be part of the NFIP but is dedicated to not encouraging new development in the floodplain. The town has no mobile home parks but has a substantial amount of mobile homes (13.5% of grand list)

and very few residences at risk of flooding with no repetitive loss properties (*Source: Repetitive Losses / BCX Claims Federal Emergency Management Agency: VERMONT*)

5.2.6 Natural Resources

- a. Ensure that the existing health ordinance is enforced to maintain protection of both surface and groundwater supplies.
- b. Ensure that permits issued for development near sensitive areas, such as steep slopes, high elevations, wetlands, scenic vistas and wildlife habitats, contain conditions assuring conformance to the goals set forth by the state of Vermont and when applicable and feasible, those defined as best practices by floodplain management organizations such as the ASFPM as well as those set forth in this plan and the most recent town plan.
- c. The town should work with the NVDA and ACCD to continue the process of identifying the Town's land conservation priorities, and to the degree possible, link them to broader regional conservation work.
- d. In line with the VTrans mission statement regarding climate change, the town remains committed to:
 - Ensure that there are viable alternative routes around vulnerable infrastructure such as bridges and roadways
 - Make safety a critical component in the development, implementation, operation and maintenance of the transportation system
 - Develop contingency plans for a wide-variety of climate impacts to be implemented as data/information becomes available
 - Utilize information technology to inform stakeholders during times of emergency
 - Educate of the public and other stakeholders on the threats posed by climate change and fluvial erosion hazards
 - Increase inspection of infrastructure if warranted by climate change indicators
 - Apply a decision-making framework to incorporate cost-benefit analyses into adaptive plans and policy
 - Work to protect essential ecosystem functions that mitigate the risks associated with climate change
 - Educate individuals within the agency to use best-practices during recovery periods to avoid ecological damage that may further exacerbate risk
 - Recognize the interconnected nature of our built environment with ecological processes
 - Protect the state's investment in its transportation system and adapting transportation infrastructure to the future impacts of climate change
- e. In line with DEC's best practices regarding fluvial erosion, the town will work to:
 - Slowing, Spreading, and Infiltrating Runoff (The State Surface Water Management Strategy is found at <http://www.watershedmanagement.vt.gov/swms.html> and <http://www.watershedmanagement.vt.gov/stormwater.htm>)

- Avoiding and Removing Encroachments.
http://www.watershedmanagement.vt.gov/rivers/htm/rv_floodhazard.htm
http://www.watershedmanagement.vt.gov/rivers/docs/rv_RiverCorridorEasementGuide.pdf
- River and Riparian Management: DEC has prepared a compendium of *Standard River Management Principles and Practices* to support more effective flood recovery implementation; improve the practice of river management; and codify best river management practices in Vermont. The document compiles the most current river management practices based on the best available science and engineering methods to create consistent practice and language for risk reduction while maintaining river and floodplain function. Best practices are established to address common flood damages, including:
 - Erosion of banks adjacent to houses and infrastructure
 - Erosion of road embankments
 - Channel movement across the river corridor
 - River bed down-cutting that destabilizes banks, undermines structure foundations, exposes utility crossings, and vertically disconnects rivers from adjacent floodplains
 - Bridge and culvert failure

Source: http://www.watershedmanagement.vt.gov/permits/htm/pm_streamcrossing.htm

5.2.7. Policies

- a. Through both town and state-level management, the town will work to:
 - Encourage and maintain naturally vegetated shorelines, buffers and setbacks for all rivers, ponds and streams
 - Allow higher density or cluster development in existing and designated settlement areas and low density development in the remaining areas
 - Reduce flood hazard and repetitive road and driveway washout through continued updates and adherence to priorities in road, bridge and culvert improvement projects developed in adjunct to this plan (see Appendix E)
 - Identify and manage pollution, flooding and fluvial erosion hazards along rivers and streams as they arise

5.2.8. Transportation Plan

In adjunct to town-specific planning, the town is committed to continually subscribing to all current state standards related to:

- a. Maintaining safe operating conditions on the present system of town roads through design and modification to keep traffic at appropriate speeds and to assure the safest possible driving conditions, including consideration of additional paving (though only on portions of roads prone to damage) should state funding become available.
- b. Protection of existing town roads from flood damage and uncontrolled storm water runoff.
- c. Preserving the capacity of town roads and maintain adequate traffic flows and safety.

- d. Support the road maintenance crew through Town-provided training sessions. This includes ICS training along with the Road Commission (Selectboard).
- e. Support policies and procedures that ensure longevity of essential town-equipment and develop and maintain MOU's with neighboring towns related to equipment use.
- f. Continue long term access opportunities to gravel and sand deposits for future road maintenance use.
- g. Consider developing a standard operating procedure (SOP) based on ICS principles for highway department response events where coordination, communication and support are at a heightened level.

5.2.9. Utilities and Facilities Goals

- a. Maintain current relationships with the Vermont State Police and Rescue for police and emergency medical services, respectively.
- b. Develop policies and procedure that ensures equipment longevity to the greatest extent possible.
- c. Develop a retention plan for highway department personnel to help avoid high turnover and preserve institutional memory.
- d. Promote high-speed internet access in the Village to encourage local businesses to reside in Albany.
- e. Ensure adequate provision of water sources for fire suppression by requiring dry hydrants, fire ponds, water storage, or other measures where appropriate. The Planning Commission will work with developers and property owners on this task.

5.2.9.1. Educational Goals

- a. The School Board should work with the Selectboard, the American Red Cross and Orleans Fire Department to ensure that the necessary equipment exists at the school for its use as an emergency shelter.
- b. Increase emergency planning cohesion between school and town EOPs through mutual participation and presentation at scheduled LEPC meetings and town and/or school meetings.
- c. Continue collaboration with the Vermont Chapter of the American Red Cross on their sheltering initiative program to further readiness with training and supplies related to sheltering operations.

5.3 Existing Town of Albany Actions that Support Hazard Mitigation

Excluding the water system management by the Village, all town actions are inclusive regarding the village. With that, the town has done an excellent job at monitoring and addressing transportation issues, engaging in a documented and systematic approach to mitigation actions. The town relies on the road crew to keep its residents informed on maintenance issues regarding

the roads or town garages. A road maintenance budget for repairs and upkeep of existing roads and structures is set every year at Town Meeting. Albany's current road policy allows the Select board to accept and maintain new and upgraded Class 4 roads into the Town Highway system only with a vote from the Town Residents. Participation by the Town in the Northeastern Vermont Development Association (NVDA) Transportation Advisory Committee (TAC) allows Albany to have a voice in the regional transportation infrastructure prioritization. NVDA also conducts Road Foreman meeting through the Agency of Transportation District Offices and at NVDA. This is an excellent peer learning opportunity and builds relationships between communities. The town has also adopted municipal road and bridge standards that meet or exceed the 2013 standards and has an approved and adopted Local Emergency Operations Plan and the 2016 Town Plan is slated for adoption. Related to flood resilience goals and strategies, the 2016 Town Plan states:

5.3.1. Flood Resilience Goals:

- Mitigate Albany's flood hazards in the most cost-effective manner possible
- Minimize the risk exposure and associated expense to Albany tax payers
- Ensure the Town and its facilities are prepared to meet the demands of the next flood
- Ensure the Town can receive the maximum outside assistance in the event of the next Federally declared disaster

5.3.2. Flood Resilience Strategies:

- Identify and protect Albany's natural flood protection assets, including floodplains, river corridors, other lands adjacent to streams, wetlands, and upland forested cover
- Adopt flood hazard regulations that at a minimum, protect property from known risks
- Review and evaluate statewide river corridor information, when it becomes available.
- Consider adopting regulations that will protect erosion prone areas for additional Development and encroachment
- Maintain and regularly update the Local Emergency Operations Plan.
- Continue to meet the VTrans Road and Bridge standards. Participate in regional Road Foreman trainings and Transportation Advisory Committee meetings to stay abreast of flood resilience measures for the Town's roads and bridges
- Continue to update the Town's transportation infrastructure information in the Vermont
- Online Bridge and Culvert Inventory Tool
- Replace undersized and failing culverts
- Develop a Local Hazard Mitigation Plan
- Equip the town's emergency shelter (the school) with a generator

Table 5-1: Existing municipal actions that support hazard mitigation, Town of Albany

Type of Existing Protection	Description /Details/Comments	Issues or Concerns
Emergency Response		
Police Services	Vermont State Police	None at this time
Fire Services	Orleans VFD and Town of Albany VFD	Water access for fire department is problematic; some roads are difficult to access.
Fire Department Personnel	Chief plus PT staff	Need for new volunteers remains
Fire Department Mutual Aid Agreements	Northeast International Mutual Aid (19 participants)	None at this time
EMS Services	Orleans	Staffing longevity and community awareness of scope of services
Other Municipal Services		
Highway Services	Town Highway Department	Stabilizing transition of operational structure/staff and assuring equipment longevity
Highway personnel	3 FTE field personnel	MOU's completed with residents to avoid future conflict and liability over culvert and ditching work and other towns to assure equipment availability
Water / Sewer Department	Village Managed	Protection measures for well needed
Planning and Zoning personnel	Town positions filled	None at this time
Residential Building Code / Inspection	No	None at this time
Emergency Plans		
Local Emergency Operations Plan (LEOP)	2016	Assure sheltering plans and contact information is up to date and vulnerable populations are addressed.
School Emergency/Evacuation Plan(s)	2016	Increased collaboration (with town staff, school, LEPC, NVDA), knowledge of roles and drills are next step.
Municipal HAZMAT Plan	None	Not required but enhanced knowledge via HMEP funded transportation study conducted by LEPC would benefit town.
Shelter, Primary	Albany School	Working with ARC's Shelter Initiative and have obtained certification, training and supplies. Include volunteer staff in planning communication and schedule drills to test efficacy.
Replacement Power, backup generator	HMGP grant approved/award awaiting Hazard Mitigation plan approval	Stay proactive with state and FEMA regarding town interests.
Shelter, Secondary:	Congregational Church	Assure continued communication lines are open and contacts are correct (See LEOP comments)
Replacement Power, backup generator	None	
Municipal Plans		
Town / Municipal Comprehensive Plan	2016	None at this time
Town of Albany Road Erosion Site Inventory	2016	Created in adjunct, incorporate identified priorities into formal plan
Hazard Specific Zoning (slope, wetland, conservation, industrial, etc.)	Utilize most current state regulations	Consider using current best practices to guide actions for achieving a "No Adverse Impact" policy as well as assuring future farm development occurs with defined best practices
Participation in National Flood Insurance Program (NFIP) and Floodplain/Flood Hazard Area Ordinance	No, the town elects not to participate but is investigating participation	Residential homes or businesses in the floodplain are not an outstanding concern for the town and the barrier to obtaining mortgages would serve has a deleterious consequence to participating. SFHA mapping update is needed.
Culvert and bridge Inventory	2015/2016	Bridge inventory needs to be populated Strive to coordinate lists and keep up to date

5.3 Town of Albany All-Hazards Mitigation Goals

The following goals were developed by the planning team, vetted during a warned community meeting and approved by the Town of Albany during the development of this plan:

1. Reduce at a minimum, and prevent to the maximum extent possible, the loss of life and injury resulting from all hazards.
2. Mitigate financial losses and environmental degradation incurred by municipal, educational, residential, commercial, industrial and agricultural establishments due to various hazards.
3. Maintain and increase awareness amongst the town's residents and businesses of the damages caused by previous and potential future hazard events as identified specifically in this Local All-Hazards Mitigation Plan.
4. Recognize the linkages between the relative frequency and severity of disaster events and the design, development, use and maintenance of infrastructure such as roads, utilities and storm water management and the planning and development of various land uses.
5. Maintain existing municipal plans, programs and ordinances that directly or indirectly support hazard mitigation.
6. Formation of a resource and information source for inclusion in the municipal comprehensive plan as described in 24 VSA, Section 4403(5). The mechanism (action) by which this will proceed will be developed by the Planning Commission, Selectboard and NVDA so that integration (as annexes) until the next formal update occurs, where a section devoted to mitigation planning will be integrated into the town plan
7. Provision of detailed information and mitigation actions that will be used in the municipal/town operating and capital plans & programs as they relate to public facilities and infrastructure. With the development of the road erosion site inventory, the town will begin a process that incorporates the budgetary requirements of the defined mitigation strategies into its formal budgeting paradigm. The Planning Commission will review the LHMP and use language/actions from it to inform the integration and update process. Town Meeting Day will serve as the formal time that mitigation strategy budgetary considerations will be approved and incorporated into the town budget.
8. Support long-term solutions over short-term fixes to community needs and problems
9. Promote collaboration and cooperation through working partnerships between governments, non-profits, institutions, and businesses

5.4 Mitigation Actions

5.4.1. Current Capabilities and Need for Mitigation Actions

The Town Plan's goals and policies that support hazard mitigation and the existing mitigation actions demonstrate the variety of policies and actions forming the foundation of this All Hazards Mitigation Plan. Generally, the Town considers its existing capabilities are adequate to address the identified priority hazards in this Plan. The town understands the distinction between preparedness actions and mitigation actions and that by enhancing infrastructure resilience to disasters is the foundation of mitigation for many small communities in the region, the potential for a natural disaster event to exceed capabilities of infrastructure and services exists. With that and in regards to mitigating long-term risk, the town and village need to develop policy and procedures and implement to reduce long-term risk associated with an event that exceeds capabilities.

- 1) Severe Winter Storm – The Town regards its current hazard mitigation efforts carried out by the road departments as adequate to address moderate winter storm impacts to local roads, however temporary road closure due to winter storms may isolate parts of town and the point at which town capabilities are exceeded need to be met with viable mitigation actions. Additionally, winter storms are often the cause of the power loss and telecommunications failure.
- 2) Flooding – Major infrastructure that has seen repeated damage due to flooding is a concern for the town and they are active in identifying priorities, working with State Transportation and Natural Resource Agencies as a means to increasing infrastructure resilience. The Town will investigate establishing a Flood Hazard Overlay District to include all designated flood hazard areas and utilize current River Corridor Maps to support decision making.
- 3) Severe Winter Weather – Impact to farmers during severe weather in addition to flooding is a concern. Additionally, with the percentage of housing stock as mobile homes (which are at greater risk of damage during severe weather, mitigating severe weather impact to health and safety and economy is an action for the future.
- 4) Water System Protection – The village is responsible for the water system and assuring protective measures to mitigate risk is a necessary action for this planning period.
- 5) Extreme Cold – The entire town and village are vulnerable to both short-term and extended periods of extreme cold. Mitigating risk to infrastructure, equipment, livestock and residents is part the action plan for this planning period.

In following FEMA guidance, the following mitigation action categories form the basis of the town's future mitigation actions. The planning team, after considering the basic and generalized format of the 2005 plan, decided to adopt this approach for this update and all future mitigation work. While the town does not anticipate significant new buildings or infrastructure development in the next planning cycle, the town does not have the resources, political will or community support to limit new development in hazard areas. However, it will consider a "No Adverse Impact" methodology when opportunity arises to discuss the potential of new structure development. For each mitigation action to follow, an indication of group will be given with the abbreviations listed below:

Mitigation Action Groups:

(P) Prevention: Government administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, building codes, capital improvement programs, open space preservation, and storm water management regulations.

(PP) Property Protection: Actions that involve the modification of existing buildings or infrastructure to protect them from a hazard, or removal from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, flood proofing, storm shutters, and shatter-resistant glass.

(PEA) Public Education & Awareness: Actions to inform and educate citizens, elected officials, and property owners about potential risks from hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.

(NRP) Natural Resource Protection: Actions that, in addition to minimizing hazard losses also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.

(SP) Structural Projects: Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include storm water controls (e.g., culverts), floodwalls, seawalls, retaining walls, and safe rooms

5.4.2. Prioritization of Mitigation Strategies

Descriptions of specific projects, where available, are listed in Table 5-3 below. Because of the difficulties in quantifying benefits and costs, it was necessary to utilize a simple “*Action Evaluation and Prioritization Matrix*” in order to affect a simple prioritization of the mitigation actions identified by the jurisdiction. The following list identifies the nine questions (criteria) considered in the matrix so as to establish an order of priority. Each of the following criteria was rated according to a numeric score of “1” (indicating poor), “2” (indicating below average or unknown), “3” (indicating good), “4” (indicating above average), or “5” (excellent).

Criteria List:

- 1. Does the action respond to a significant (i.e. likely or high risk) hazard?*
- 2. What is the likelihood of securing funding for the action?*
- 3. Does the action protect threatened infrastructure?*
- 4. Can the action be implemented quickly?*
- 5. Is the action socially and politically acceptable?*
- 6. Is the action technically feasible?*
- 7. Is the action administratively realistic given capabilities of responsible parties?*

8. *Does the action offer reasonable benefit compared to its cost of implementation?*
9. *Is the action environmentally sound and/or improve ecological functions?*

The ranking of these criteria is largely based on best available information and best judgment, as many projects are not fully scoped out at this time. The highest possible score is 45. It is anticipated that, as the town begins to implement the goals and actions of their Mitigation Strategies, they will undertake their own analysis in order to determine whether or not the benefits justify the cost of the project. Also, most proposed FEMA mitigation projects will undergo a benefit-cost analysis using a FEMA BCA template and approved methodology.

Table 5-2: Albany Action Evaluation and Prioritization Matrix

Rank	Mitigation Action	Responds to high hazard	Funding potential	Protection value	Time to implement	Social and Political acceptance	Technical feasibility	Admin feasibility	Benefit to Cost	Environmental advantage	TOTAL
2	Improve highway, culvert and bridge programs and infrastructure.	5	4	5	3	5	5	4	5	4	40
3	Improve resilience to severe winter storms	4	4	5	4	5	3	3	5	2	39
7	Reduce risk and impact of extreme cold	2	2	3	2	3	2	2	3	3	22
4	Develop mitigation measures for water system protection and implementation plan	4	5	5	4	5	3	3	5	4	38
5	Mitigate high wind vulnerability	2	3	3	3	5	1	1	5	1	24
1	Raise public awareness of hazards, hazard mitigation and disaster preparedness	4	5	5	5	5	5	5	5	3	43
6	Continue fluvial geomorphology (in coordination with state recommendations and protocol) assessments and develop strategies in response to any identified risk	3	2	4	2	2	2	2	3	3	23

5.4.3. Specific Mitigation Actions

The following seven actions define the mitigation measures to be taken by the town and village in the next five years:

- Action #1: Improve capabilities of existing road and storm water management infrastructure.
- Action #2: Improve resilience to severe winter storms
- Action #3: Reduce risk and impact of extreme cold
- Action #4: Mitigate high wind vulnerability
- Action #5: Develop mitigation measures for water system protection and implementation plan
- Action #6: Raise public awareness of hazards and hazard mitigation actions
- Action #7: Continue fluvial geomorphology (in coordination with state recommendations and protocol) assessments and develop strategies in response to any identified risk

Each of the seven actions listed above are explained below in regards to status, progress, project leads and partner agencies and specific action steps:

Action #1: Improve capabilities of existing road and storm water management infrastructure. Group: SP, NRP, PP

Lead Responsible Entity: Town of Albany Road Foreman and Selectboard

Potential Partner Entities: Vermont Agency of Natural Resources; Vermont Agency of Transportation; NVDA, Agency of Commerce and Community Development

Funding Requirements and Sources: FEMA or other hazard mitigation grants; FHWA grants; VAOT grants; Municipal Operating and Capital budgets only if sufficient.

Progress: The Road Foreman continually monitors road and storm water management capabilities. All bridges and culverts have been electronically accounted for and the town is diligent in maintaining a comprehensive road plan that serves to guide action. The Town of Albany Road Erosion Site Inventory (2016) specifies actions, areas of road erosion, estimated costs of repair and future needs. As mentioned, the town has done an outstanding job in acquiring Hazard Mitigation funding to address critical facilities and can begin moving forward when this plan is approved. The town has an updated Local Emergency Operations Plan and has adopted Road and Bridge Standards that exceed previous levels. Lastly, the town has worked successfully with FEMA to acquire public assistance to address major damage to infrastructure caused by flooding and maintains the institutional memory to properly track and document work and expenditures that will support efficiency and viability of future funding opportunities.

Specific Identified Tasks:

1 Infrastructure Assessment for Storm Water Vulnerability – Funding and staff resources permitting, assess the vulnerability and operational capability of municipal-owned roads, culverts and other storm water management infrastructure to predicted storm water and snowmelt in areas with a documented history of recurring problems. The infrastructure will be evaluated regularly prior to replacement or upgrades of the existing infrastructure.

2) Infrastructure Assessment for Fluvial Erosion/Landslide Vulnerability – Funding and staff resources permitting, assess the operational capability and vulnerability of municipal-owned roads, culverts, bridges and other infrastructure to fluvial erosion of varying severity as determined by Strategy #1 above.

3) Culvert Upgrades – Upgrade culverts and ditching along various roads to mitigate against repeated damages from storm water or spring snowmelt:

- Barton Road Culvert Replacement (@ Gilles Roberts & Site 2)
- Centerbar Road Culvert Replacement (@ D, Atwoods)
- Shuteville Road Culvert Replacement (@ Pothiers)
- Delano Road Culvert Upsize (@ B. Perrons)

4) Continued Monitoring of Vulnerable Infrastructure – Monitor bridges and culvert locations that have erosion and scouring concerns. Track findings and report to VTCulvert.org inventory with NVDA assistance.

5) Road Improvements – Within political and financial restraints, develop process to select road re-engineering projects to lower overall maintenance costs, improving snow plowing speeds and improve overall capability of roads to handle current and projected traffic volumes. Specific projects include: See Albany Road Erosion Site Inventory.

6) Erosion / Landslide Mitigation – Develop process to assess future erosion or landslide risk and develop strategy to address high risk areas.

7) Documenting – Develop a methodology that serves to efficiently capture work and expenditures on sites and keep this information at the town office.

8) Increase Awareness of Funding Opportunities - Increase understanding of FEMA’s HMGP program so that this potential funding source can be utilized.

9) ICS Training and Emergency Operations (SOP) Plan Development – Enhance knowledge of the principles of ICS and develop a Standard Operating Procedures that details the relationship, roles and responsibilities of the Highway Department and Road Commission during major events.

Rationale / Cost-Benefit Review: Conducting vulnerability assessments facilitates a targeted and effective approach to road and storm water management infrastructure. This will prove useful in the development and implementation of municipal capital and operating plans as well as the development and implementation of grant-funded mitigation projects. Some areas suffer low-level but consistent damage during heavy rains and snowmelt. Mitigating against these problems would reduce short and long term maintenance costs and improve the flow of traffic for personal and commercial purposes during flooding events. Tracking road work and understanding the HMGP program can open funding streams into the town and can make the application process much easier when required information is already available. A basis understanding of ICS will serve the town and at little or no cost. As a requirement for an approved LEOP, municipal ICS-awareness is seen as necessary state-wide. During an emergency event when the Highway Department personnel are required to work beyond normal capacity, increased communication and collaboration between the Highway Department and local entities can be enhanced with a basic SOP. An SOP can also serve to increase institutional memory when there are staff changes at every level as well as provide a template from which tabletops and drills can be based off of.

Action #2: Maintain and improve resilience to severe winter storms
Group: SP, PP, PEA

Primary Responsible Entities: Town of Albany selectboard, planning commission, village trustees and highway department

Potential Partner Entities: LEPC, Albany Fire Chief, ARC's Sheltering Initiative Program, Trans

Funding Requirements and Sources: DEMHS or FEMA hazard mitigation funding; existing programs, contingent on available resources and funding.

Progress: Roads are monitored and altered, when necessary so that plowing can occur without damage to trucks and/or road. Albany Elementary School has been identified as the primary emergency shelter. The school does have an emergency generator. Snow clearing equipment is regularly serviced and the town maintains an adequate supply of salt.

Specific Identified Tasks:

- 1) Maintain Existing Shelter Capability: Maintain and improve capabilities of existing shelters. Notification procedures and shelter staffing is a priority for the town and intends to move forward on planning and public involvement. More formalized training is required and the ARC's "Shelter Initiative Program" can be used at no cost to the town to enhance both shelter management knowledge and sheltering supply cache.
- 2) Reduce risk of power failure due to ice storms: Enhance collaboration between town road foreman and electric company related to down-limbed induced power failure. Maintain function of generators.
- 3) Notification: Develop a notification/communication plan that conveys essential sheltering information using school phone system and back-up methodology (email, text, etc.)
- 4) Residential Programs: Provide guidance and communication to residents on the structural and mechanical actions that can occur to reduce risk to severe winter storms (e.g. weather-proofing, anchoring, alternative heating sources, tree trimming, financial programs, etc.)
- 5) Continue to monitor roads for safe and effective plowing: Efficient snow removal is the foundation to winter storm (snow) events, assuring roads are plowable before winter remains an important facet of highway department functions
- 6) Increase awareness of ICS structure and recommended practices: The town can mitigate the effects of a severe winter by understanding how a large scale storm is managed when the State EOC is operational. Additional awareness of local-level roles and responsibilities during statewide event is a mitigation action.

Rationale / Cost-Benefit Review:

This mitigation action serves to reduce the economic impact and risk to both human and animal (livestock and pet) health and safety during severe winter storm events by reducing risk and enhancing the mechanisms of winter storm mitigation in the long term. More formalized policy formation in both staffing and notification procedures, especially pertaining to vulnerable

populations where transportation and special needs are a concern could potentially significantly reduce the physical, psychological and social impacts of a disaster.

Action #3: Reduce risk and impact of extreme cold durations

Group: PEA, PP, SP

Risk or Hazard Addressed: Risk to infrastructure, livestock and residents

Primary Responsible Entities: Town of Albany Selectboard and planning commission, NVDA, Albany School, local/regional assistance organizations.

Potential Partner Entities: Vermont DMEHS, LEPC

Timeframe: 2017 – 2022

Funding Requirements and Sources: Financial factors may produce barriers to change. Strategic planning and understanding of the total scope of needs and potential for change is logical first-step.

Specific Identified Tasks:

- 1) Economic Resilience: Establish relationships with utility companies to offer special arrangements for paying heating bills, if not already required by state law. Develop and sustain a program that serves to connect resource organizations with residents in need of support services.
- 2) Maintain Existing Shelter Capability: Maintain and improve capabilities of existing shelters. Notification procedures and shelter staffing is a priority for the city and intends to move forward on planning and public involvement. More formalized training is required and the ARC's "Shelter Initiative Program" can be used at no cost to the town to enhance both shelter management knowledge and sheltering supply cache.
- 3) Assess Vulnerable Population— Develop an awareness of the most at-risk community members during an evacuation and/or sheltering event. Focusing on those that lack resources or capability to reach facilities when in need and create plans, including outreach protocol on how to address this potential hurdle.
- 4) Notification and Education – Investigate and develop a notification/communication plan that conveys essential sheltering information. Educating citizens regarding the dangers of extreme cold and the steps they can take to protect themselves when extreme temperatures occur by sustaining a process that serves to disseminate educational resources for homeowners and builders on how to protect pipes, including locating water pipes on the inside of building insulation or keeping them out of attics, crawl spaces, and vulnerable outside walls. Inform homeowners that letting a faucet drip during extreme cold weather can prevent the buildup of excessive pressure in the pipeline and avoid bursting through a yearly public service campaign.
- 5) Work with business owners and residents to determine magnitude of problem. Identify current resources available for identified at-risk populations and engage in outreach to

alert those in need of assistance of the resources available. Requiring minimum temperatures in housing/landlord codes.

Rationale / Cost-Benefit Review:

With an increase in extreme weather, including cold, there is a need to protect property and the population. Given the magnitude of population dependence on social services, indicating economic and other social vulnerabilities, effective outreach, education and collaboration with resources supports this mitigation action category.

Action #4: Reduce vulnerability to high wind events with accepted best practices

Group: SP, PP

Lead Responsible Entities: Albany Planning Commission, Fire Chief, NVDA.

Specific Identified Tasks:

1. Developing and maintaining a database to track community vulnerability to severe wind: Use GIS to map areas that are at risk to the wind hazard associated with different non-hurricane conditions and identify concentrations of at-risk structures. Create a severe wind scenario to estimate potential loss of life and injuries, the types of potential damage, and existing vulnerabilities within a community to develop severe wind mitigation priorities.
2. Establish standards for all utilities regarding tree pruning around line: Incorporate inspection and management of hazardous trees into the drainage system maintenance process. Support and suggest the testing of power line holes to determine if they are rotting. Support the inspection of utility poles to ensure they meet specifications and are wind resistant. When feasible, support burying power lines to provide uninterrupted power after severe winds. Avoid use of aerial extensions to water, sewer, and gas lines when possible. Support use of designed-failure mode for power line design to allow lines to fall or fail in small sections rather than as a complete system to enable faster restoration.
3. Public Outreach: Ensure that school and hospital officials are aware of the best area of refuge in buildings and that their plans are viable in high wind mitigation events. Instruct property owners on how to properly install temporary window coverings before a storm. Support education to design professionals to include wind mitigation during building design/modification to an extent deemed necessary.

Rationale / Cost-Benefit Review:

High winds have impacted the city and do pose a risk for infrastructure, transportation and public safety. Many mitigation actions associated with high wind risk also address and reduce risk associated with other hazards affecting the city and maintaining the functionality of the city is not only important for the city and its residents but for the region as well.

Action #5: Improve resilience of Village Water System

Group: SP, NRP, P

Lead Responsible Entities: Albany Village Trustees, Simon Operation Services

Progress: The Village and Simon OS work to assure the continued functionality of the system with a routine maintenance and inspection plan.

Specific Identified Tasks:

1. Develop understanding of best practices associated with small municipal water system management, including well longevity and protection from contamination.
2. Develop strategy to prioritize actions that will lead to greatest resilience of system at the least amount of cost.
3. If customer action is determined to influence resilience of system, develop and disseminate information on recommendations and notification procedures in the event of contamination.
4. Develop action plan that assesses the relationship between flood events and water system integrity.

Rationale / Cost-Benefit Review:

The Village Water System is a long-standing service and provides a substantial amount of revenue into the Village. Loss of the system would have major financial consequences for the village residents, school, village and town. Effort placed on the study and development of actions to increase resilience of this system is needed.

Action #6: Raise public awareness of hazards, hazard mitigation and disaster preparedness and develop emergency plan specific to mobile home residents

Status: Ongoing

Lead Responsible Entities: Town of Albany, Orleans Fire Chief, LEPC, NVDA.

Progress since 2005: The Volunteer Fire Department annually conducts fire preparedness programs and school and family programs related to hazard awareness and disaster preparedness, including providing information at Town Meeting. The LEPC meets regularly and covers a host of topics related to emergency preparedness and raises awareness in the community about what organizations are doing around emergency response planning and chemical safety. Town meeting day can serve as an annual update and outreach opportunity as well.

Specific Identified Tasks:

- 1) School Programs – Continue school programs to raise student awareness of hazards, safety, preparedness and prevention.
- 2) Family Programs – Continue family programs, such as car safety seat and bike safety programs, to raise family awareness of hazards, safety, preparedness and prevention.
- 3) Fire Prevention Programs – Continue National Fire Prevention Week and other programs to raise public awareness of fire hazards, safety, preparedness and prevention.
- 4) Other hazard awareness programs – Develop public awareness programs, based on all-hazards needs. Programs to address pandemic hazards, preparedness and mitigation may be appropriate as directed by the state Department of Health and the Agency of Agriculture.

5) Hazard Resilience for Property Owners- Develop and maintain education materials to inform property owners on how to protect their homes and businesses through accepted hazard resilience actions (e.g. securing their structures from high winds, elevating their electrical equipment/furnaces in basements, protecting from lightning strikes by grounding electrical outlets, etc.). UVM and ACCD have developed essential planning services for mobile home resilience. The town will incorporate these resources into an outreach campaign.

Rationale / Cost-Benefit Review: Improved public awareness could potentially significantly reduce the loss of life and property damage through ongoing, formal, ongoing, public information campaigns that address property protection actions (flood proofing, elevation, anchoring mobile homes/propane tanks, electric and water system elevation, electric grounding, etc.) Improved awareness would also build understanding and public support for municipal mitigation actions to reduce potential infrastructure and liability costs.

Action #7: Continue fluvial geomorphology assessment and develop strategies in response to identified risks in addition to investigating increased mapping of the SFHA.

Status: Ongoing

Primary Responsible Entities: NVDA, Agency of Natural Resources (VT ANR) (for assessments and mapping), Town of Albany Selectboard (for ordinance changes and other actions).

Potential Partner Entities: Nonprofits, other Town of Albany officials, and other appropriate entities.

Timeframe: 2016 – 2021

Progress: The Vermont Agency of Natural Resources has established a Stream Geomorphic Assessment Data Management System (<https://anrweb.vt.gov/DEC/SGA/default.aspx>), the town and NVDA can access pertinent and helpful information to assist with mapping and planning.

Funding Requirements and Sources: Through EMPG funding, NVDA can assist in enhanced mapping of the floodplain within the town. Continuation of assessments and strategy development is contingent upon individual municipalities and/or regional and local organizations, securing funding in partnership with ANR. The level of municipal participation is contingent upon the level of participation asked of staff and that such work would not hinder the ability of municipal staff to carry out their day-to-day municipal duties.

Specific Identified Tasks

1) Fluvial Geomorphic Assessments - Funding permitting, continue fluvial geomorphic assessments on streams and waterways in Albany. If using PDM funding, individual municipalities may select only a subset of streams upon which to perform these assessments and therefore may choose to assess only those sections of streams wherein the history of flood and erosion damage, the history of channel management, and the proximity of existing or potential development or public infrastructure to the active channel makes an assessment a priority. Justification should be provided for streams, watersheds, or stream reaches not selected for fluvial assessment. Fluvial assessments shall be conducted as guided by the VT ANR Fluvial Geomorphic Assessment Protocols.

2) Fluvial Erosion Hazard Mapping - Within a year of completed geomorphic assessments for a waterway, funding permitting, a GIS provider (NVDA) should rate the fluvial erosion hazard for each assessed reach, and develop a fluvial erosion hazard map for the waterway, using the GIS extension known as SGAT (or Stream Geomorphic Assessment Tool) for assessed stream reaches. As assessments are completed, a map of all assessed waterways in the town should be

created. This data will undergo town review and QA/QC by VT ANR before a final map is drawn.

3) River Corridor Management Plans – River Corridor Management Plans (RCMP) are encouraged for waterways where Phase I and Phase II assessments have been completed. Creating such a plan requires additional fieldwork and work with local landowners to identify acceptable reach-based management options that enable stream systems to reach equilibrium conditions. Management measures may include stream corridor buffer planting, culvert replacement and roadway improvements, berm removal, and corridor easements. Under Act 110, the Agency of Natural Resources will be identifying best management practices for shore lands and river corridors, and will be providing financial incentives, such as grants and pass-through funding. While the town relies on state regulations for zoning and other regulations, incorporating a RCMP into the Town Plan will only serve to increase the town’s awareness in this crucial facet of mitigation planning. Using current river corridor maps, the town should consider developing a strategic plan that creates information and resources for residents within and in close proximity to the defined river corridor, while avoiding having ‘zoning’ regulations.

4) Fluvial Erosion Hazard Mitigation Implementation - Within five years of completing the final fluvial erosion hazard map, the town will draft strategies to avoid or mitigate losses from the identified fluvial erosion hazards. These strategies may include the adoption and implementation of programs, mechanisms or regulations to prevent endangerment of persons and property in riparian corridor areas from fluvial adjustment processes. Efforts could range from a relatively simple, public information campaign about the map to the adoption of a municipal ordinance or by-law that restricts development in such hazard areas.

Rationale / Cost-Benefit Review:

Continuing this project will require a sustained succession of grants, state appropriations and other funding to complete assessments in Albany. Successful completion will provide municipal and regional benefits. The municipality’s fluvial erosion areas would be adequately and electronically mapped. This will enable the municipality to make residents and businesses aware of fluvial erosion hazards and potentially lead to municipally-directed programs, mechanisms and regulations that further mitigate against this hazard, protecting existing structures and infrastructure. Identifying fluvial erosion hazard areas could also help the municipality restrict future development in hazardous areas, if that should be an advantage to the town in the future. More accurate knowledge of fluvial geomorphology will enable the community to have a better understanding of hazard areas and what mitigation measures might most effectively address those concerns. Flooding is the most common and most significant hazard that can trigger a Federal disaster declaration in Albany. Along with an update to the flood hazard area maps, identifying the fluvial erosion hazard areas provides improved opportunities for the community to mitigate potential losses and gauge future development initiatives.

5.5 Implementation and Monitoring of Mitigation Strategies

5.5.1. Public Involvement Following Plan Approval

After adoption, the town will continue to maintain web-presence of the mitigation plan with an opportunity for community input available on its website (via NVDA). Additionally, the town will hold an annual public meeting after performing the annual progress report for the mitigation plan to discuss achievements and the following year's implementation plan. At town meeting, the town will present mitigation information and provide the public an opportunity to increase understanding and involvement with planning efforts. The LEPC will also host an annual mitigation plan presentation where response/state agencies, neighboring communities and other stakeholders can provide input. The town will also notify its neighboring municipalities of the availability of information for review and any significant risks and/or mitigation actions that have an impact on surrounding towns. The village will be included in all correspondence and assume ownership of mitigation actions related to the water system with town input.

5.5.2. Project Lead and Monitoring Process

The town's Selectboard chair is the project lead and will work in conjunction with the selectboard, village trustees, town clerk and NVDA to complete the yearly progress report included in the plan. The town will create a mitigation action collection system that will be used as the source of future updates following the annual evaluation that will occur in conjunction with the progress report using the Plan Implementation Matrix provided below. While mitigation actions are, by default, often addressed at monthly Selectboard meetings, the town will schedule one meeting annually to formally assess the plan and adopt updates following the annual progress report and community meeting regarding the LHMP. Once the plan is approved by FEMA, the calendar will begin for annual review. The town will take the following implementation matrix and add actions to it each year, modifying tasks and/or needs as required so that the next LHMP update will be populated with the specific actions related to each mitigation strategy by year.

5.5.3 Plan Evaluation and Update Process

The town's Selectboard chair, with participation from the Village Trustee will lead the plan evaluation process as part of the annual progress report. Prior to town meeting and in preparation for the annual town report, a mitigation section will be included that provides an executive summary for the public that addresses the following topics:

- Status of recommended mitigation actions for the five-year planning period
- Identification of barriers or obstacles to successful implementation or completion of mitigation actions, along with possible solutions for overcoming risk
- Identification of a lead person to take ownership of, and champion the Plan if different from Selectboard Chair
- An approach to evaluating future conditions (i.e. socio-economic, environmental, demographic, change in built environment etc.)
- Discussion of how changing conditions and opportunities could impact community resilience in the long term
- Discussion of how the mitigation goals and actions support the long-term community vision for increased resilience

By engaging in the annual evaluation, the town will have a viable method for capturing the facets of efficacy and areas needing revision and improvement in its mitigation plan. The town is committed to “institutionalizing” mitigation into its normal operating procedures and with approval of this plan, embarks on the formal incorporation of mitigation actions and discussion, maintaining an awareness that involves not only the Village Trustees, Selectboard, Town Clerk and Road Foreman but also the community at large, including the organizations represented by the current planning team. Along these lines, the town will maintain a contact list of the current planning team and make revisions as required, including the team on the evaluation process each year. Through this consistent attention resulting from the evaluation process, progress reports and communication in the annual town report, the town will achieve the consistency required to enhance resilience through planning, assessment and actions devoted to mitigation.

5.5.4. Plan Update Process

The Plan update will be led by the Selectboard Chair, Village Trustee lead and Town Clerk. Depending on funding availability, the town may elect to acquire the assistance of NVDA and/or a consultant to update the plan following a declared disaster and/or the next five-year planning cycle. To assure that the Plan does not expire, the town will begin the update process within no less than six months of the current Plan’s expiration date. Following a disaster and during the recovery phase, the town will use the experience to assess the current Plan’s ability to address the impact of the most recent disaster and edit the plan accordingly. Using the annual progress reports and evaluation narratives as a guide, along with perceived changes in risk or vulnerabilities supported by data and/or observation, strategies will be captured in accordance with FEMA guidelines, which includes reconvening the planning team during the update process. The town will establish a “Mitigation File” that documents all evaluations and progress reports, along with actions, especially related to infrastructure improvement projects. While the progress reports are designed to capture the specific actions the town has accomplished related to implementation, keeping a narrative list with dates on all actions relatable to mitigation (e.g. school drills, LEOP updates, Fire Safety Awareness, meetings, etc.), will provide the town the bulk of information required in the update process.

5.5.5. Implementation Matrix for Annual Review of Progress

The following table is intended to aid municipal officials in implementing the mitigation actions for Albany and to facilitate the annual monitoring and progress reporting. Progress has been included as a guide to future updates. Each year, the town will reserve a Selectboard and Village Trustee meeting to review and update the Implementation Matrix as means to establishing an accurate evaluation of the plan’s efficacy and the information required for the succeeding update to the plan.

Table 5-3: Albany All-Hazards Mitigation Plan Implementation Matrix

Instructions: At each annual update, the following chart should be edited to reflect the progress of that year so that when the next update is required, there will be 5 charts (2018, 2019, 2020, 2021, 2022), one for each annual update.

2017 Hazard Mitigation Action Implementation Matrix					
Action	Primary Responsible Entity	Timeframe	Task	Brief Description	Progress Year: 2016
Continue fluvial geomorphology assessments and develop strategies in response to identified risk.	VT DEC, TransCanada, NVDA, VT ANR	Spring 2019-Fall 2022	Fluvial Geomorphic Assessments and assessment-based mapping/action	Continue Phase I and Phase II fluvial geomorphic assessments on streams and waterways in Albany.	DEC has a comprehensive and interactive database for Basin 15 and TransCanada has done some of this work in the past that the town can build from.
	NVDA, VT ANR	Spring 2019-Fall 2022	Fluvial Erosion Hazard Mapping	Rate the fluvial erosion hazard for each assessed reach and develop a fluvial erosion hazard map for the waterway using SGAT. Create map of all assessed reaches. Submit to VT ANR for QA/QC.	none
	Planning Commission and Selectboard	Spring - summer 2019	River Corridor Management Plans	Where Phase I and II assessments are complete, develop River Corridor Management awareness	The town opts for no zoning but understanding that river corridor mapping and planning is suggested

	Albany Planning Commission	January-October 2018	Fluvial Erosion Hazard Mitigation Implementation	Develop strategies to mitigate losses from identified fluvial erosion hazards.	Major infrastructure enhancement has occurred as result of DR4022
Evaluate capabilities of existing road and storm water management infrastructure. Continue and improve highway, culvert and bridge maintenance programs.	Road Foreman, Commission	January 2017-Winter 2022	Infrastructure Assessment for Storm water Vulnerability	Assess the vulnerability and operational capability of municipal roads, culverts and storm water infrastructure.	Town has developed a culvert monitoring program to address problems, priority and estimated budget. With great institutional memory of town infrastructure, the highway department is well-equipped to assess, monitor and prioritize needs.
	Road Foreman, Commission	Spring 2018-Fall 2019	Infrastructure Assessment for Fluvial Erosion/Landslide Vulnerability	Assess the vulnerability and operational capability of municipal roads, culverts, bridges and other infrastructure to fluvial erosion.	Road and Bridge Standards met as of 4/2015
	Road Foreman	Spring 2017-Fall 2022	Culvert Upgrades	Upgrade culverts and ditching along roads to mitigate against repeated damages from storm water or spring snowmelt.	VTCULVERTS.ORG Culvert and Bridge Inventory has not been populated. Town has a functioning culvert monitoring program that addresses problem, priority and estimated budget.

Action	Primary Responsible Entity	Timeframe	Task	Brief Description	Progress
continued	Selectboard, Road Foreman	Winter-spring 2018	Develop SOP for emergency events	Building on current Emergency Operations Plans for the Highway Department and Road Commission, and SOP can help clearly define	Communication between Highway Department and Road Commission is ongoing.

				expectations, roles and responsibilities. Develop understanding of eligibility criteria for HMGP projects.	
	Road Foreman	January 2018-Spring 2022	Road Improvements and tracking system	Consider re-engineering certain road sections to lower overall maintenance costs, improve snow plowing speeds and improve overall capability of roads to handle current and projected traffic volumes. Develop process by which all Highway Department actions and expenses are documented.	
	Road Foreman	Spring-fall 2018	Erosion/Landslide Mitigation	Undertake erosion or landslide mitigation projects where roads regularly incur damage from adjacent rivers/streams and hillsides.	
Maintain and improve resilience to severe winter storms and extreme cold durations	Emergency Management Director selectboard	Fall-winter 2018	Maintain and Improve Existing Shelter Capability	Maintain and improve on capabilities of existing emergency shelter capability, including emergency generator functionality	Explore other sheltering options and secure funding for emergency power if required. Use Red Cross sheltering initiative to acquire supplies and training
	Road Foreman	Spring 2018-Winter 2019	Assure optimal snow response and removal capabilities Reduce risk of power failure due	Through operational measures, work to improve response and efficiency with best practices in previous snow emergencies. Enhance collaboration	Current road foreman has been with town long enough to understand the subtle characteristics and logistics of responding to major snow/ice events.

		to ice storms:	between town road foreman and electric company related to down-limbed induced power failure. Maintain function of generators.	
		Notification:	Develop a notification/communication plan that conveys essential sheltering logistics pre-event	
		Residential Programs:	Provide guidance and communication to residents on the structural and mechanical actions that can occur to reduce risk to severe winter storms (e.g. weather-proofing, anchoring, alternative heating sources, tree trimming, financial programs, etc.)	
		Continue to monitor roads for safe and effective plowing:	Efficient snow removal is the foundation to winter storm (snow) events, assuring roads are plowable before winter remains an important facet of highway department functions	

Extreme Cold			Increase awareness of ICS structure and recommended practices:	
	Planning commission and Selectboard	Spring 2018-Fall 2019	Economic Resilience Assess Vulnerable Population	Establish relationships with utility companies to offer special arrangements for paying heating bills, if not already required by state law. Develop and sustain a program that serves to connect resource organizations with residents in need of support services. Develop an awareness of the most at-risk community members during an evacuation and/or sheltering event. Focusing on those that lack resources or capability to reach facilities when in need and create plans, including outreach protocol on how to address this potential hurdle.

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Action	Primary Responsible Entity	Timeline	Task	Brief Description	Progress
Increase resilience of mobile homes through accepted structural modifications and resident awareness of programs and opportunities	Emergency Management Director, Albany Fire Chief	September 2018-September 2019	Outreach	Develop and/or acquire informational brochure regarding accepted mitigation actions specific to mobile homes (e.g. anchoring home and fuel tanks, elevating electric and furnaces, etc.) and distribute to residents in most economical way. UVM program and ACCD have the recommendations and information to use	new
	NVDA planners,	March – May 2018	Mapping	Work with NVDA to map all mobile homes in the town and use this map to assess flood risk, create risk ranking and gauge outreach accordingly	new
Reduce vulnerability to high wind events with accepted best practices	Selectboard and Road Foreman	June 2018-December 2022	Developing and maintaining a database to track community vulnerability to severe wind: Create a severe wind scenario to estimate potential loss of life and injuries	Use GIS to map areas that are at risk to the wind hazard associated with different non-hurricane conditions and identify concentrations of at-risk structures. Learn the types of potential damage, and existing vulnerabilities to	new

			<p>Establish standards for all utilities regarding tree pruning around line</p> <p>Support and suggest the testing of power line holes to determine if they are rotting. Support the inspection of utility poles to ensure they meet specifications and are wind resistant.</p> <p>Public Outreach:</p>	<p>develop severe wind mitigation priorities.</p> <p>Incorporate inspection and management of hazardous trees into the drainage system maintenance process.</p> <p>Avoid use of aerial extensions to water, sewer, and gas lines when possible. Support use of designed-failure mode for power line design to allow lines to fall or fail in small sections rather than as a complete system to enable faster restoration.</p> <p>Ensure that school and hospital officials are aware of the best area of refuge in buildings and that their plans are viable in high wind mitigation</p>	
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				events. Instruct property owners on how to properly install temporary window coverings before a storm. Support education to design professionals to include wind mitigation during building design/modification to an extent deemed necessary	
Raise public awareness of hazards, hazard mitigation and disaster preparedness.	Emergency Management Director; Albany Fire Chief	Fall 2017-December 2022	Hazard Resilience for Property Owners HMGP Awareness: School Programs:	Develop and maintain education materials to inform property owners on how to protect their homes and businesses through accepted hazard resilience actions (e.g. securing their structures from high winds, elevating their electrical equipment/furnaces in basements, protecting from lightning strikes by grounding electrical outlets, etc.). Attend informational sessions on the HMGP funding opportunities for acquisition, elevation and flood-proofing projects. Work with NVDA to develop an information brochure for residents. Assure the school is	new

			<p>Family Programs:</p> <p>Fire Prevention Programs:</p> <p>Other hazard awareness programs:</p>	<p>structurally ready to handle natural hazard risks to the greatest extent possible. Continue school programs to raise student awareness of hazards, safety, preparedness and prevention. Explore establishing the school emergency notification system as the primary methodology for all emergency notification procedures and build in the contact information accordingly.</p> <p>Continue family programs, such as car safety seat and bike safety programs, to raise family awareness of hazards, safety, preparedness and prevention.</p> <p>Continue National Fire Prevention Week and other programs to raise public awareness of fire hazards, safety, preparedness and prevention.</p> <p>Develop public awareness programs, based on all-hazards needs. Programs</p>	
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				to address pandemic hazards, preparedness and mitigation may be appropriate as directed by the state department of health and its jurisdictional offices of local health	
Action	Primary Responsible Entity	Timeline	Task	Brief Description	Progress
Improve resilience of Village Water System	Albany Village Trustees, Simon Operation Services	Fall 2017- Fall-2019	<p>Develop understanding of best practices associated with small municipal water system management, including well longevity and protection from contamination.</p> <p>Develop strategy to prioritize actions that will lead to greatest resilience of system at the least amount of cost.</p> <p>If customer action is determined to influence resilience of system, develop</p>	<p>Collaboration and information from EPA and VT ANR required</p> <p>Cost-benefit analysis will help to determine future actions</p> <p>Public outreach can help build resilience of system</p>	

			<p>and disseminate information on recommendations and notification procedures in the event of contamination.</p> <p>Develop action plan that assesses the relationship between flood events and water system integrity.</p>	<p>Specific focus on flood risk to system may be necessary</p>	
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APPENDICES

NOTE: Appendices C-D not included with State submission or for FEMA review)

Appendix A: 2016 Road Erosion Site Inventory

Appendix B: 2015 Community Survey Results

Appendix C: No Adverse Impact Floodplain Management Fact Sheet (ASFPM)

Appendix D: Farm Structures in Designated Flood Hazard Area Planning Checklist (VAAFEM)

Appendix A: Town of Albany Road Erosion Site Inventory

Town of Albany – Road Erosion Site Inventory July 2015			
Site #1 Gilles Roberts			
Site Location: Barton Road			
Priority	HIGH		
Nearest Body of Water			
Distance to Body of Water:			
Current Condition:	poor		
Proposed Solution:	Replace culvert with new one and cut 300 ft ditch stone inlet		
Estimated Costs to Improve/Repair (easiest)			
Culvert, Ditching and Bank Stabilization			
Materials	3 24x20 steel culvert	Cost	--1150.00
Materials	120 CY ¾ crushed gravel	Cost	--1700.00
Materials	17 ton stone	Cost	210
Materials	Excavator, 100hrs	Cost	800
Materials	2 ten wheeler town trucks	Cost	1000
Machinery	Excavator and trucks	Cost	--
Labor		Cost	
Total Culvert, Ditching and Bank Stabilization Costs:			
Crowning and Re-grading Roads			
Materials	grader	Cost	--100
Materials	3 rolls mat and seed	Cost	--200
Materials		Cost	--
Materials		Cost	
Materials		Cost	
Machinery		Cost	
Labor		Cost	275

Total Crowning and Re-grading Roads Costs:			275
Total Costs:			5495
Town of Albany – Road Erosion Site Inventory July 2015			
Site #2 Barton Road			
Site Location:			
Priority High			
Nearest Body of Water			
Distance to Body of Water:			
Current Condition:	poor		
Proposed Solution:	Replace old culvert with new 18" steel culvert wth 300 ft ditch and gabien stone culvert inlet		
Estimated Costs to Improve/Repair			
Culvert, Ditching and Bank Stabilization			
Materials	3 18x20 steel culvert @18ft	Cost	\$1100
Materials	150 cy ¾ crushed gravel @12 yard	Cost	\$1800
Materials	17 ton gabien stone @12.25/ton	Cost	210
Materials	Chainsaw work	Cost	\$320
Materials	Excavator 100/hr full day	Cost	\$800
Machinery	2 10 wheeler dump 65/hr each	Cost	\$1100
Labor	2 men full day	Cost	320
Total Culvert, Ditching and Bank Stabilization Costs:			\$5550
Crowning and Re-grading Roads			
Materials	1 hr grading	Cost	\$75
Materials	3 100 ft rolls erosion mat and seed	Cost	\$165
Materials		Cost	
Materials		Cost	

Materials		Cost	
Machinery		Cost	
Labor		Cost	
Total Crowning and Re-grading Roads Costs:			240
Total Costs:			\$5890.00
Town of Albany – Road Erosion Site Inventory July 2015			
Site #3: Centerbar rd			
Site Location: Diana Atwoods			
Priority: High			
Nearest Body of Water			
Distance to Body of Water:			
Current Condition:	Poor		
Proposed Solution:	Replace culvert with new and create stone inlet with quarry stone outlet		
Estimated Costs to Improve/Repair			
Culvert, Ditching and Bank Stabilization			
Materials	60 cy screened gravel	Cost	\$480
Materials	10 ton gabien stone	Cost	\$125
Materials	8 ton quarry stone	Cost	\$100
Materials	Excavator half day	Cost	\$400
Materials	2 10 wheeler dump truck	Cost	\$520
Machinery	grader	Cost	\$75
Labor	30 cy crushed gravel	Cost	\$360
Total Culvert, Ditching and Bank Stabilization Costs:			
Crowning and Re-grading Roads			
Materials		Cost	
Materials		Cost	

Materials		Cost	
Materials		Cost	
Materials		Cost	
Machinery		Cost	
Labor		Cost	
Total Crowning and Re-grading Roads Costs:			
Total Costs:			\$ 2500
Town of Albany – Road Erosion Site Inventory July 2015			
Site #4: Shuteville Road			
Site Location: Pothiers			
Priority: High			
Nearest Body of Water			
Distance to Body of Water:			
Current Condition:	Fair: road shoulder erodes with hard rain		
Proposed Solution:	Install longer culvert and enlarge ditch, cut trees and rebuild shoulder with quarry stone and gravel		
Estimated Costs to Improve/Repair			
Culvert, Ditching and Bank Stabilization			
Materials	60 ton quarry stone	Cost	\$720
Materials	60 cy bank run gravel	Cost	\$720
Materials	excavator	Cost	\$800
Materials	Dump trucks (2) full day	Cost	\$1100
Materials	17 ton stone	Cost	\$210
Machinery		Cost	
Labor	town	Cost	\$495.00
Total Culvert, Ditching and Bank Stabilization Costs:			\$ 4160
Crowning and Re-grading Roads			

Materials		Cost	
Materials		Cost	
Materials		Cost	
Materials		Cost	
Materials		Cost	
Machinery		Cost	--
Labor		Cost	
Total Crowning and Re-grading Roads Costs:			
Total Costs:			\$ 4160
Town of Albany – Road Erosion Site Inventory July 2015			
Site #5: Delano Rd.			
Site Location: Bruce Perrons			
Priority: High			
Nearest Body of Water			
Distance to Body of Water:			
Current Condition:	Culvert too small		
Proposed Solution:	Replace 15" culvert with new 18" steel culvert and 600 ft ditch		
Estimated Costs to Improve/Repair			
Culvert, Ditching and Bank Stabilization			
Materials	3 18x20 steel culvert	Cost	\$1080
Materials	120 cy screened gravel	Cost	960
Materials	17 ton gabien stone	Cost	210
Materials	excavator	Cost	800
Materials	2 ten wheeler dumps	Cost	1040
Machinery		Cost	
Labor	2 men full day	Cost	320

Total Culvert, Ditching and Bank Stabilization Costs:			4410
Crowning and Re-grading Roads			
Materials	grader	Cost	\$75
Materials	60 cy screened gravel	Cost	720
Materials	6 roll erosion mat and seed	Cost	330
Materials		Cost	
Materials		Cost	
Machinery	Included in contracted price	Cost	--
Labor	Included in contracted price	Cost	--
Total Crowning and Re-grading Roads Costs:			1125
Total Costs:			\$5535

Town of Albany – Road Erosion Site Inventory

Site #			
Site Location			
Priority:			
Nearest Body of Water			
Distance to Body of Water:			
Current Condition:			
Proposed Solution:			
Estimated Costs to Improve/Repair			
Culvert, Ditching and Bank Stabilization			
Materials		Cost	
Materials		Cost	
Materials		Cost	
Materials		Cost	
Materials		Cost	
Machinery		Cost	
Labor		Cost	

Total Culvert, Ditching and Bank Stabilization Costs:			
Crowning and Re-grading Roads			
Materials		Cost	
Materials		Cost	
Materials		Cost	
Materials		Cost	
Materials		Cost	
Machinery		Cost	
Labor		Cost	--
Total Crowning and Re-grading Roads Costs:			

Appendix B: Town of Albany Community Survey Results

There were 45 surveys returned with responses other than “No Opinion”, the following table represents the concerns raised by category and how many surveys included the issue. Note that each survey may have listed more than one concern.

Concern	Number of Responses
Power outages	5
Sheltering (including animals)	6
Notification plans	10
Access to and response time on remote roads for rescue service	5
Cell phone service	7
Flooding and winter storms	9
Illegal dumping	1
NFIP participation	1
Assuring necessities to those in need	2
Concern over perceived increase in cancer deaths and potential environmental connection	2
Fire and EMS training	2