BUEL'S GORE, Vermont
2017 All-Hazards Mitigation Plan

Annex 2 to the
2017 Chittenden County Multi-Jurisdictional All-Hazards Mitigation Plan

Prepared by:
The Chittenden County Regional Planning Commission
and Buel's Gore, Vermont

Adopted by the Supervisor of Unorganized Towns and Gores of Chittenden County on June 22, 2017

Approved by FEMA on July 18, 2017

U.S. Department of Homeland Security
FEMA Region I
99 High Street, Sixth Floor
Boston, MA 02110-2132

FEMA

JUL 18 2017

Lauren Oates
State Hazard Mitigation Officer
Vermont Department of Public Safety
45 State Drive
Waterbury, Vermont 05671-1300

Dear Ms. Oates:

We would like to acknowledge the participating jurisdiction and the State of Vermont for their dedication and commitment to mitigation planning. The Department of Homeland Security (DHS), Federal Emergency Management Agency (FEMA) Region I Mitigation Planning Team has completed its review of the 2017 Chittenden County, Vermont Multi-Jurisdictional All-Hazards Mitigation Plan and determined it meets the requirements of 44 C.F.R. Pt. 201. This plan approval includes the following participating jurisdiction that provided a copy of their resolution adopting the plan. The newly approved jurisdiction is highlighted in **bold.**

Buel's Gore	Colchester	Huntington	Jericho
Milton	Richmond	Underhill	Westford
Williston			

With this plan approval, the community above is eligible to apply to the Vermont Division of Emergency Management & Homeland Security for mitigation grants administered by FEMA. Requests for mitigation funding will be evaluated individually according to the specific eligibility requirements identified for each of these programs. A specific mitigation activity or project identified in your community's plan may not meet the eligibility requirements for FEMA funding; even eligible mitigation activities or projects are not automatically approved.

Approved mitigation plans are eligible for points under the National Flood Insurance Program's Community Rating System (CRS). Complete information regarding the CRS can be found at http://www.fema.gov/national-flood-insurance-program-community-rating-system, or through your local floodplain administrator.

JUL 18 2017

The 2017 Chittenden County, Vermont Multi-Jurisdictional All-Hazards Mitigation Plan must be reviewed, revised as appropriate, and resubmitted to FEMA for approval within **five years of the plan approval date of March 6, 2017** in order to maintain eligibility for mitigation grant funding. We encourage Chittenden County Regional Planning Commission communities to continually update the plan's assessment of vulnerability, adhere to its maintenance schedule, and implement, when possible, the mitigation actions proposed in the plan.

Once again, thank you for your continued dedication to public service demonstrated by preparing and adopting a strategy for reducing future disaster losses. Should you have any questions, please do not hesitate to contact Melissa Surette at (617) 956-7559.

Sincerely,

Paul F. Ford
Acting Regional Administrator

PFF: ms
cc: Ben Rose, Recovery and Mitigation Section Chief, VT DEMHS
Stephanie Smith, Hazard Mitigation Planner, VT DEMHS

Enclosure

SUPERVISOR, BUEL'S GORE

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CERTIFICATE OF ADOPTION
Date: 6 / 22 / 2017

SUPERVISOR OF UNORGANIZED TOWNS AND GORES OF CHITTENDEN COUNTY
A RESOLUTION ADOPTING THE 2017 Chittenden County Multi-Jurisdictional All-Hazards Mitigation Plan and Annex #2, the 2017 Buels Gore All-Hazards Mitigation Plan (Plan).

WHEREAS, Buels Gore has historically experienced severe damage from natural hazards and it continues to be vulnerable to the effects of the hazards profiled in the **2017 Chittenden County Multi-Jurisdictional All-Hazards Mitigation Plan and Annex #2, the 2017 Buels Gore All-Hazards Mitigation Plan** which result in loss of property and life, economic hardship, and threats to public health and safety; and

WHEREAS, Buels Gore has developed and received conditional approval from the Federal Emergency Management Agency (FEMA) for **the 2017 Chittenden County Multi-Jurisdictional All-Hazards Mitigation Plan and Annex #2, the Buels Gore All-Hazards Mitigation Plan (Plan)** under the requirements of *44 CFR 201.6;* and

WHEREAS, the **Plan** specifically addresses hazard mitigation strategies, and Plan maintenance procedures for Buels Gore; and

WHEREAS, the **Plan** recommends several hazard mitigation actions (projects) that will provide mitigation for specific natural hazards that impact Buels Gore with the effect of protecting people and property from loss associated with those hazards; and

WHEREAS, adoption of this **Plan** will make Buels Gore eligible for funding to alleviate the impacts of future hazards; now therefore be it

RESOLVED by the Buels Gore Supervisor:

1. The **2017 Chittenden County Multi-Jurisdictional All-Hazards Mitigation Plan and Annex #2, the 2017 Buels Gore All-Hazards Mitigation Plan (Plan)** is hereby adopted as an official plan of Buels Gore;

2. The respective officials identified in the mitigation action plan of the **Plan** are hereby directed to pursue implementation of the recommended actions assigned to them;

3. Future revisions and **Plan** maintenance required by 44 CFR 201.6 and FEMA are hereby adopted as part of this resolution for a period of five (5) years from the date of this resolution; and

4. An annual report on the process of the implementation elements of the Plan will be presented to Gore residents by the Gore's Emergency Management Director or Coordinator.

IN WITNESS WHEREOF, the undersigned have affixed their signature and the corporate seal of Buels Gore this 22nd day of June 2017.

Supervisor of Unorganized Towns and Gores of Chittenden County

ATTEST

Witness

Executive Summary

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 purposes of this updated Local All-Hazards Mitigation Plan are to:

- Identify specific natural, technological and societal hazards that impact Buel's Gore;
- Prioritize hazards for mitigation planning;
- Recommend town-level goals and strategies to reduce losses from those hazards; and
- Establish a coordinated process to implement the plan, taking advantage of a wide range of resources.

This plan is a local annex to the *Chittenden County Multi-Jurisdictional All-Hazards Mitigation Plan*. **In order to become eligible to receive various forms of Federal hazard mitigation grants, a Chittenden County municipality must formally adopt its Local All-Hazards Mitigation Plan along with the *Chittenden County Multi-Jurisdictional All-Hazards Mitigation Plan*, or develop and adopt an independent, stand-along Local All-Hazards Mitigation Plan.**

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

Section 2: Hazard Identification expands on the hazard identification in the *Chittenden County Multi-Jurisdictional All-Hazards Mitigation Plan* with specific municipal-level details on selected hazards.

Section 3: Risk Assessment discusses identified hazard areas in the municipality 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 top three Hazards by type with the most risk in Buel's Gore are:

Natural Hazards:	Severe Winter Storm and Severe Rainstorm
Technological Hazards	Major Transportation Incident, Telecommunications Failure and Power Loss
Societal Hazards	Economic Recession, Crime and Epidemic

Section 4: Vulnerability Assessment discusses buildings, critical facilities and infrastructure in designated hazard areas, vulnerable populations and the issue of estimating potential losses.

Section 5: Mitigation Strategies is the heart of this All Hazards Mitigation Plan. This section begins with an overview of policies in place in Buel's Gore that support hazard mitigation. This is followed by an analysis of existing municipal actions that support hazard mitigation, such as planning and zoning and public works. This section presents the following municipal all-hazards mitigation goals:

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 and as identified generally in the Chittenden County Multi-Jurisdictional 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 stormwater management and the planning and development of various land uses.
5) Maintain existing municipal plans, programs, regulations, bylaws and ordinances that directly or indirectly support hazard mitigation.
6) Consider formal incorporation of this Local All-Hazards Mitigation Plan into the municipal comprehensive plan as described in 24 VSA, Section 4403(5), as well as incorporation of proposed new mitigation actions into the municipality's/town's bylaws, regulations and ordinances, including, but not limited to, zoning bylaws and subdivision regulations and building codes.
7) Consider formal incorporation of this Local All-Hazards Mitigation Plan, particularly the recommended mitigation actions, into the municipal/town operating and capital plans and infrastructure, utilities, highways and emergency services.

This section includes the following Mitigation Actions planned by the Town:

CATEGORY A: Replace and Improve vulnerable infrastructure to mitigate Severe Rainstorm, Flooding and Fluvial Erosion.

- Action A-1: Complete Culvert Upgrades
- Action A-2: Plan for Repair of Vulnerable Infrastructure on Old County Road

CATEGORY B: Address identified high crash locations to mitigate Major Transportation Incident

- Action B-1: Highway Safety Improvements

Finally, this section concludes with an Implementation Matrix to aid the municipality in implementing the Mitigation Actions and annual monitoring & evaluation of this Plan.

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[Note: See appendices of Chittenden County Multi-Jurisdictional AHMP for weblinks to the various data sources used to generate many of the tables noted above.]

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SECTION 1: INTRODUCTION AND PURPOSE

1.1 Purpose and Scope of this Plan

The purpose of this Local All-Hazards Mitigation Plan is to assist this municipality in identifying all hazards facing their community and in identifying strategies to reduce the impacts of those hazards. The plan also seeks to coordinate the mitigation efforts of this municipality with those outlined in the *Chittenden County Multi-Jurisdictional All-Hazards Mitigation Plan* as well as efforts of quasi-governmental organizations such as Local Emergency Planning Committee, District #1 and the Chittenden County Regional Planning Commission.

This annex, when used with the appropriate sections of the Chittenden County Multi-Jurisdictional All-Hazards Mitigation Plan, constitutes an All-Hazards Mitigation Plan for Buel's Gore. Community planning can aid in significantly 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 Chittenden County.

1.2 Hazard Mitigation

The *2013 Vermont State All-Hazards Mitigation Plan* 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, Mitigation Response and Recovery. Hazards cannot be eliminated, but it is possible to determine what the hazards are, where they are most severe and to identify actions that can be taken to 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.

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 have to 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.

- Flood Mitigation Assistance Grant Program (FMAGP) funds will be available only to communities that have adopted a local Plan
- 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.
- Under Vermont's Emergency Relief Assistance Fund rules, contributions from the State to cover the non-Federal share of a municipality's FEMA Public Assistance project costs varies depending on whether a community has a plan. A community without a plan would have to cover 17.5% of the overall project cost, but a community with a plan would have to cover only 7.5% to 12.5% of the cost.

1.4 Benefits

Adoption and maintenance of this 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.
- Ease the receipt of post-disaster state and federal funding because the list of mitigation initiatives is already identified.
- Support effective pre- and post-disaster decision making efforts.
- Lessen each local government's vulnerability to disasters by focusing limited financial resources to specifically identified initiatives whose importance has been ranked.
- Connect hazard mitigation planning to community planning where possible such as emergency operations plans, comprehensive plans (aka "town plans:), capital plans and budgeting, open space plans and stormwater master plans.

1.5 All-Hazards Mitigation Plan Goals

The Chittenden County Multi-Jurisdictional All-Hazards Mitigation Plan establishes the following general goals for the county as a whole and its municipalities:

1) Hazard mitigation planning should take into account the multiple risks and vulnerabilities of the significant hazards in the County due to its mixed urban-suburban-rural nature, its economic importance to the State and its significant presence of public and private infrastructure.
2) Promote awareness amongst municipalities, residents and business in the county of 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 stormwater management and the planning and development of various land uses.

3) Ensure that regionally-initiated mitigation measures are consistent with municipal plans and the capacity of municipalities to implement them.
4) Encourage municipalities to formally incorporate their individual Local All-Hazards Mitigation Plan into their municipal plan as described in 24 VSA, Section 4403(5), as well as incorporate their proposed mitigation actions into their various bylaws, regulations and ordinances, including, but not limited to, zoning bylaws and subdivision regulations and building codes.
5) Encourage municipalities to formally incorporate elements of their Local All-Hazards Mitigation Plan, particularly their recommended mitigation strategies, into their municipal operating and capital plans and programs, especially, but not limited to, as they relate to public facilities and infrastructure, utilities, highways and emergency services.
6) Educate regional entities on the damage to public infrastructure resulting from all hazards and work to incorporate hazard mitigation planning into the regional land use and transportation planning program conducted by the Chittenden County Regional Planning Commission.
7) Maintain existing mechanisms or develop additional processes to foster regional cooperation in hazard mitigation, specifically and emergency management planning, generally.

1.6 Buel's Gore: Demographics and Development Characteristics

Buel's Gore (*cf. Figure 1-1)* is the southernmost municipality in Chittenden County, bordered on the north by Huntington, on the west by Starksboro in Addison County and on the east by Fayston in Washington County. It encompasses 4.96 square miles. The Gore was first settled in 1789, and has existed as an unorganized territory ever since, despite attempts at annexation to neighboring towns such as Huntington.

Based on U.S. Census data, the University of Vermont's Center for Rural Studies reports a municipal population of 30 people in 2010. The Buel's Gore Supervisor, however, indicates that the Census numbers are incorrect, and has provided corrections for some numbers. Selected population characteristics are as follows:

Table 1-1 Buel's Gore, selected population characteristics, 2010

Category	Census Number	Corrected Number	Census %
Total Population	30	21	--
Median Age	42 years		--
Population age 65 years and over	4		13.33
Population (and %) under 10 years old	5	3	16.66
Population (and %) in group quarters	0		0.0
U.S. Census Bureau, 2010 Census of Population and Housing, Population and Housing Unit Counts with corrections by Buel's Gore Supervisor.			

The following shows the types of housing within Buel's Gore, also based on the 2000 U.S. Census data:

Table 1- 2 Buel's Gore, selected housing unit data, 2010 Census

Category	Census Number	Corrected Number by	Census %
Total Housing Units	14		--
Occupied housing units	12	11	85.7
Vacant housing units	2	1	14.3
Vacant housing units used for seasonal, recreational or occasional use	2		14.3
Detached 1-unit housing units	8		100.0
Housing units with 5 or more units in structure	0		0.0
Mobile homes	0		0.0
Housing structures built in 1939 or earlier	0	1	0.0

U.S. Census Bureau, 2010 Census of Population and Housing, Population and Housing Unit Counts with corrections by Buel's Gore Supervisor.

The concentration of residential development in Buel's Gore is shown in Figure 1.2. There is no commercial/industrial development in the municipality. With the exception of limited residential development along VT Route 17 and Gore Road, the overwhelming use of the landscape is large lot natural resources or recreation. With regards to land use, zoning is shown in Map 2.

Table 1-3 Buel's Gore, Population Change 1980-2014

Year	Population
1980	9
1990	2
2000	12
2010	30
2014	30
April 1 Census Counts for 1980-2010 *July 1 ACS Estimates for 2014*	

1.7 Summary of Planning Process

As noted above, the update of this municipal All Hazard Mitigation Plan (AHMP) was part of the planned update of the Chittenden County Multi-Jurisdictional All-Hazards Mitigation Plan and the municipal AHMPs that are annexes to the Multi-Jurisdictional Plan. The CCRPC, with funding provided by the State of Vermont via a FEMA Hazard Mitigation Grant, began this update process in the spring of 2015.

The Gore is unique among Chittenden County municipalities in its form of governance. In Vermont, unorganized towns and gores do not have any local government. Instead, the governor appoints (to a two year term) a Supervisor of Unorganized Towns and Gores for each county that has at least one. While Essex County has its own structure because it has so many gores, other counties, including Chittenden, each have a single supervisor who acts, for each unorganized town or gore.

Therefore, the Buel's Gore Supervisor acts as the governing body, tax collector, dog catcher, fence viewer, and every other municipal official except Road Foreman. That position is filled by staff of the Vermont Agency of Transportation's Maintenance District #5 headquartered in Colchester. In Buel's Gore, the Supervisor holds an annual meeting in August to "announce the tax rate and deal with other business as needed", somewhat like a town meeting in an organized town. While the Supervisor can declare the tax to be whatever he chooses, historically, he has discussed needs with residents before setting it. As in organized towns, the annual education tax is set by the State legislature and the Supervisor sets the municipal tax only. Municipal records for Buel's Gore are kept at the county courthouse in Burlington.

1.7.1 Development of the 2017 Buel's Gore All Hazards Mitigation Plan

CCRPC staff met several times with various Gore officials during the course of the development of this plan. Initial Meetings focused on the following issues:

1. Reviewing the matrix used in 2011 to identify and prioritize hazards facing Buel's Gore, and determining whether the overall scoring still makes sense
2. Discussing any newly significant hazards in Buel's Gore and identifying any new actions that could be taken to address them.
3. Discussing any progress that has been made on the strategies and tasks from the 2011 plan.

The meetings were held on:

- In August 2015, CCRPC Staff met with Ryan McLaren, Buel's Gore's representative on the All Hazard Mitigation Committee.
- On June 15, 2016, staff conferred with Jake Perkinson, Buel's Gore Supervisor.

CCRPC staff shared several drafts in the spring of 2017 with Mr. McLaren, Mr. Perkinson, Dick Hosting of the Vermont Agency of Transportation and with Mr. Garret Mott, the Gore's appointed member of the CCRPC Board.

In addition, the following materials were reviewed:

1. Zoning Regulations for Buel's Gore, 2010
2. Information on previous disasters
3. Information from Vermont Agency of Natural Resources on fluvial erosion hazards and flood hazards

4. Information from the Vermont Agency of Transportation on roads, bridges, culverts and high crash locations in the Gore.
5. Information from the Vermont Department of Emergency Management and Homeland Security on prior disaster and hazardous materials reporting.

Demographic information for this Plan was updated by a CCRPC interns in 2015. New information, relative to the 2011 AHMP, from review of the Land Development regulations and the Comprehensive Plan was incorporated into Section 5. Information on prior disasters, fluvial erosion hazards and flood hazards and various transportation data was incorporated into Sections 2, 3 and 4. Throughout the plan development process CCRPC staff sent rough drafts of the plan to numerous town staff to review for accuracy and conferred with these same staff regularly via phone and email. CCRPC staff produced new versions of the 2011 maps and also produced new maps desired in this 2017 update.

1.7.2 Opportunities for involvement in the planning process and formal public review and governing body approval

Emergency management planners are obligated to provide opportunities for the general public, neighboring communities, local, regional and state agencies, development regulation agencies and other interests to be involved in the review and development of Hazard Mitigation Plans. Additionally, the CCRPC, as a public agency is obligated to provide public notice and opportunities for input into its programming and processes. With regards for public involvement in the develop of the first drafts of this Municipal AHMP *prior to release of public drafts*, there was no formal solicitation process to recruit or invite the public to come to staff level meetings wherein the first process of updating data in the old 2011 Plan. That being said, however, the public has been free to review the 2011 Plans on the CCRPC website since they were first posted in 2011. Additionally as noted in Section 1.10.2.4 of the Multi-Jurisdictional AHMP, in the period before the first municipal draft AHMPs were publicly released in August 2016 (see below) there were twelve public meetings held by the CCRPC Board and the Plan Update Committee wherein the overall Hazard Mitigation planning process was discussed including the content and purpose of the local, Municipal AHMPs as well as the planned timeline for their development starting in 2015 and extending well into 2016. *[Note that opportunities for public review and development of the Multi-Jurisdictional AHMP are described in Section 1.10.2 of the that document.]*

Commencing with an August 5**,** 2016 press release and with a comment deadline of August 19, 2016, the CCRPC issued a press release and also posted to all of the electronic bulletin boards of Front Porch Forum in every municipality in the County to solicit and receive comments on the first drafts of this Buel's GoreAll-Hazards Mitigation Plan as well as the AHMPs of the other 18 municipalities in the County. On August 5, 2016, emails to the same state agency staff and executive directors of neighboring Regional Planning Commissions as noted above, were also sent to encourage their review and comment. The public, agency staff and RPC staff were directed to provide comments to Dan Albrecht, Senior Planner at the CCRPC.

With regards to opportunities for public involvement and input from neighboring communities in development of individual Local All-Hazards Mitigation Plans including this Plan for Buel's Gore, opportunities were as follows:

a) On August 5, 2016, the CCRPC posted all the first drafts of the 18 local AHMPs on the CCRPC website and via various means (press release, electronic newsletter, etc) made the public aware of the opportunity to comment. The public was advised to send comments directly to Dan Albrecht, CCRPC Senior Planner by August 19, 2016.
b) On August 5, 2016 the CCRPC staff sent direct emails to the Agency staff noted above notifying them as well of the opportunity to review the 18 local AHMPs posted on the CCRPC website and encouraging them to send any comments directly to Dan Albrecht, CCRPC Senior Planner by August 19, 2016.
c) On August 5, 2016 direct emails were also sent to the municipal Mayors/ Managers/ Administrators and/or Clerks of the abutting 12 communities outside of Chittenden County (South Hero, Georgia, Fairfax, Cambridge, Stowe, Waterbury, Duxbury, Fayston, Lincoln, Starksboro, Monkton and Ferrisburgh) that abut the County notifying them of the opportunity to review the 18 local AHMPs posted on the CCRPC website and encouraging them to send any comments directly to Dan Albrecht, CCRPC Senior Planner by August 19, 2016.

No comments were received on the draft Buel's Gore AHMP prior to the August 19th deadline. Additionally, no inquiries were received concerning this AHMP after August 19th through December 31, 2016 while the Plan was posted on the CCRPC website.

1.7.3 Review and adoption process

On July 31, 2016 the first draft of this local Buel's Gore AHMP was sent to the Vermont Department of Emergency Management and Homeland Security (VDEMHS) for review.

Comment and required revisions were received from VDEMHS on August 8, 2016.

CCRPC staff, working in concert with municipal staff, then made revisions to the Plan to address the required revisions.

On May 8, 2017, the revised final draft annex was submitted to VDEMHS for review and forwarding to FEMA for formal review and approval pending municipal adoption

On June 9, 2017 FEMA Region One issued a notice that the Buel's Gore AHMP was approved pending adoption by the relevant municipal governing body.

On June 21, 2017, CCRPC staff provided the final versions of the Multi-Jurisdictional Plan and this Municipal Annex to the Supervisor of Unorganized Towns and Gores of Chittenden County and also provided draft language for a resolution of adoption.

On June 22, 2017 the revised annex was adopted by the Supervisor and a copy of the resolution sent to VDEMHS and FEMA Region One on July 7, 2017.

On July 18, 2017 FEMA Region One issued a letter that the Buel's Gore AHMP was approved.

1.7.4. Monitoring, Evaluation and Updating of the Plan

Section 6 of the Multi-Jurisdictional AHMP document provides extensive details on the role each municipality and the Chittenden County RPC will play to be certain that progress on the implementation of this local AHMP is monitored and evaluated and that the AHMP is updated as needed and no later than its anticipated expiration in early 2022. In short, the Buel's Gore will:

- in the fall of 2017 and each fall thereafter, the municipality as noted in Section 5.5 as the conclusion of this document shall respond to CCRPC's questionnaire seeking information on the status (progress, problems if any, etc.) of each identified mitigation strategy detailed in Section 5;
- in the fall of 2018 and the fall of 2020, provide information to aid CCRPC in its more comprehensive review of the Multi-Jurisdictional AHMP and this local AHMP which will address issues such as goals, risks, resources, implementation problems, and partners; in partnership with the municipalities, the CCRPC will make the public aware of the availability of these review documents (via press releases, posting on the CCRPC website, electronic newsletters, one formal announcement in a paper of general circulation in the County, and other mechanisms) and provide detailed instructions on how to provide comment on these reviews
- provide at least one representative of the Gore to participate as a member of the Chittenden County Multi-Jurisdictional All-Hazards Mitigation Plan Update and Review Committee which, after the current Plan update process is completed, to resume meeting in 2018; and
- participate in the Plan update process (assumed to commence in 2020 and conclude in early 2022).

Finally, it should be reemphasized that Buels Gore may review and update their own programs, initiatives and projects more often by working directly with the State Hazard Mitigation Officer (SHMO) based on changing local needs and priorities. Formal changes to individual municipal annexes may be made at any time by each municipality's governing body in order to reflect changing conditions, priorities, and opportunities during the 5-year life cycle of their single jurisdiction plan.

SECTION 2: HAZARD IDENTIFICATION

Detailed descriptions of the natural, technological, and societal hazards affecting the municipalities of Chittenden County are contained Section 2 of the *Multi-Jurisdictional All-Hazards Mitigation Plan*. Designated and non-designated hazard areas are described in Section 3 of this annex. Vulnerability of structures and infrastructure to hazards is also described in Section 4 and depicted in *Figure 4.1*.

2.1.1 Profiled Hazards

This Plan profiles six (6) Natural Hazards: Severe Winter Storm, Flooding, Fluvial Erosion, Severe Rainstorm, **Extreme** Temperatures and Wildfire**.** Prior to this discussion of Hazards and the subsequent analysis of Risk and Vulnerability, it will be first helpful to summarize the general state of knowledge regarding Location, Extent and Impact in Buel's Gore for these hazards.

Hazard (Section of MJAHMP where discussed)	**Are location data available?**	**Are extent data available?**	**Are impact data available?**
Severe Winter Storm (2.1.1.1)	No, occurs across the municipality and not mapped	No, only long-term data is at single point of National Weather Service station in South Burlington	Yes, if FEMA declares disaster. See 3.3 below.
Flooding (2.1.1.3)	Yes, 100 & 500 year flood areas delineated in the municipality. *See Figure 2.1*	*Yes but only at a few discrete locations with gauge data such as USGS gauge on Winooski River downstream of the Town	Yes, if FEMA declares disaster but co-mingled with fluvial erosion and severe rainstorm hazards events. See 3.3 below.
Fluvial Erosion (2.1.1.4)	Yes, fluvial erosion hazards areas (now termed river corridor protection areas) are mapped in the municipality. *See Figure 2.1*	Though fluvial erosion is considered a significant hazard in the municipality, the number of feet-acres of soil lost in any one event has not been recorded nor is there a record with such data.	Yes, if FEMA declares disaster but data co-mingled with flood and severe rainstorm events. See 3.3 below.
Severe Rainstorm (2.1.1.2)	No, occurs across the municipality and not mapped. Damage locations are mapped	*Yes but only long-term data is at single point of National Weather Service	Yes, if FEMA declares disaster but data co-mingled with flood and fluvial

	but damages can just as easily be a function of poorly designed road and/or driveway drainage as it is a function of heavy rain exceeding infrastructure capacity.	station in South Burlington.	erosion events. See 3.3 below.
Extreme Temperatures (2.1.1.5)	No, occurs across the municipality and not mapped.	*Yes but only at single point of National Weather Service station in South Burlington	†Data not systematically collected on impacts.
Wildfire (2.1.1.6)	No, occurs across the municipality and not mapped.	Some compiled data on a countywide basis as shown in the Multi-Jurisdictional Plan but no systematic data collected after 2010.	‡Data not systematically collected on impacts.

** It is useful to note that while this NWS data is reliable it represents one discrete location in a county that has an area of 620 square miles in area. Likewise, while there are likely other systematic point-specific records being collected by individuals, business or organizations these data do not appear to be easily accessible. Finally, even if such data were accessible, only if the data was collected by mutually compatible means would it be useful.*

†An intensive search of municipal public works records may reveal documentation of some prior repair or labor costs associated with frozen or burst sewer and/or water pipes caused by Extreme Cold. However, such analysis would show where past events happened not the location of inadequately buried pipes which might be vulnerable to future events.

‡ An intensive search of fire department records may reveal documentation of locations and acres burned caused by Wildfire. However, such analysis would show where past events happened but would not show the location of areas susceptible to future events (warnings by the US Forest Service and local fire departments are not location-specific) nor the location of individuals who are likely to unwisely burn trash or leaves or fail to extinguish a campfire during dry conditions.

This Plan profiles several Technological Hazards. Prior to this discussion of Hazards and the subsequent analysis of Risk and Vulnerability, it will be first helpful to summarize the general state of knowledge regarding Location, Extent and Impact in Buel's Gore for these hazards.

Hazard (Section of MJAHMP where discussed)	**Are location data available?**	**Are extent data available?**	**Are impact data available?**

Water Pollution (2.2.1)	Impaired streams that lack adequate biota are identified.	Phosphorus-loading for general locations is known but non-point sources are varied and dispersed. Road segments that could discharge runoff have been identified but have not yet been formally inventoried.	Annual budgetary impacts to individual municipalities are significant but vary depending upon location and whether or not they are an MS4 permitted community. The municipality is not an MS4 community, but it is subject to the requirements of the pending Municipal Roads General Permit.
Hazardous Materials Incident (2.2.2)	No storage locations exist in Buel's Gore	Rough estimates of spill amounts are recorded.	No formal data readily available on cleanup costs.
Power Loss (2.2.3)	Outage locations not mapped	During an actual outage some data is recorded on duration although typically this is stated as "x,000 customers within the power company's service area".	Outage data is broad and refers to total customers within a county.
Invasive Species (2.2.4)	Several species may occur but no systematic mapping has taken place.	No formal damage has been documented to date	No formal damage has been documented to date
Multi-Structure Fire (2.2.5)	Unlikely given the sparse population of the Gore	Data not formally collated across agencies	Data not formally collated across agencies
Major Transportation Incident (2.2.6)	Depending upon type of incident, could happen anywhere	No formal database of damages.	Varies depending upon type of incident.
Water Supply Loss (2.2.7)	Residences use private wells.	Data not formally collated across agencies	Data not formally collated across agencies
Sewer Service Loss (2.2.8)	Residences use private septic systems.	Data not formally collated across agencies	Data not formally collated across agencies

Natural Gas Service Loss (2.2.9)	No natural gas service.	Information for this rare occurrence not publicly available.	No formal damage has been documented to date.
Telecommunications Failure (2.2.10)	Depending upon type of incident, could happen anywhere	Information for this rare occurrence not publicly available.	No formal damage has been documented to date
Other Fuel Service Loss (2.2.11)	Distribution points of fuels such as firewood, fuel oil and propane are individual addresses and not mapped nor publicly available.	No formal loss of service has been documented.	No formal damage has been documented to date

The following discussion of societal hazards is based upon qualitative information from discussions with Chittenden County law enforcement professionals as well as quantitative data from the State of Vermont.

Hazard (Section of MJAHMP where discussed)	Are location data available?	Are extent data available?	Are impact data available?
Crime (2.4.1.1)	Significant incidents could happen anywhere in the municipality.	Data collection is not standardized across municipalities.	Significant socio-economic impacts
Civil Disturbance (2.4.1.2)	Would occur across the community.	Historic data on unemployment levels & poverty rates	Longer lasting impacts hard to measure below county level
Terrorism (2.4.1.3)	The FBI does not share a list of potential targets.	Unknown but assumed to be significant if incident occurs	Unknown but assumed to be significant if incident occurs
Economic Recession (2.4.1.4)	County-wide. Significant incidents can happen anywhere. The likelihood of an event may not be geographically likely but rather related to the type of event (political	No formal damage has been documented to date	No formal damage has been documented to date

	event, sporting event, protest, etc.)		
Epidemic (2.4.1.6)	Could happen anywhere	Data not formally collated across agencies	Other than 1917 Influenza epidemic no formal damage has been documented to date
Key Employer Loss (2.4.1.5)	Unlikely. No major employer in Gore.	No formal database of damages.	No formal database of key employer loss is maintained

SECTION 3: RISK ASSESSMENT

3.1 Mapped Hazard Areas

3.1.1 Flood Hazard Areas

There are no federally designated flood hazard areas in Buel's Gore. The municipality does not participate in the National Flood Insurance Program. As there is no floodplain, there is little need to mitigate against flood hazards and enrolling in the NFIP is not a priority for Buel's Gore (see *Figure 2.1)*.

3.1.2 Fluvial Erosion Hazard and River Corridor Areas

Some level of geomorphic assessment has been completed in watersheds that include Buel's Gore, but no assessments have been made on streams within the Gore. As a result, no fluvial erosion hazard areas have been identified in the municipality.

3.1.3 Repetitive Loss Properties and National Flood Insurance Program

Repetitive loss properties are public or private buildings insured under the National Flood Insurance Program that have made at least two insurance claims of more than $1,000 each during a ten-year period. According to the National Flood Insurance Program, there are no such properties located in the municipality. Buel's Gore does not participate in the National Flood Insurance Program. Also, as noted above, no there are no buildings or infrastructure located within the 100-year floodplain.

3.2 Other Information

The following hazards are not formally analyzed nor mapped due to the random nature of where such damage occurs. However they occur with some frequency and therefore are discussed here.

3.2.1 1998 Ice Storm Damage

Buel's Gore suffered significant damage to trees from the ice storm. However, this was limited to altitudes above the settled area, so no damage to homes or buildings occurred.

3.2.2 Severe Rainstorms

In prior versions of this Annex and the County Plan, damage to roads, culverts and bridges from thunderstorm events was discussed as either the result of flooding or fluvial erosion. It was assumed that overflowing nearby streams, rivers or lakes were the cause of the damage. Analysis has shown that this damage is caused by intense, localized thunderstorms which cause excessive and rapid water flows on and over paved and gravel roads, roadside ditches, driveway culverts, stormwater systems, etc. In many cases, damaged infrastructure is located nowhere near a formally mapped Floodplain or Fluvial Erosion Hazard Area or River Corridor. This was the case in more recent FEMA-declared disasters in the summer of 2013 and 2015. Because of this new information, CCRPC has decided to add "Severe Rainstorm" to the 2016 Update to the County Plan and its annexed local AHMPs. While past damage locations can sometimes be mapped (depending upon the degree and accuracy of data collection efforts) this may or may not provide any degree of predictability of the potential locations for future events.

Ridgeline and hilltop homes, utility lines, and homes located in the midst of mature forests are the most vulnerable to damage from falling trees and tree limbs. The high-elevation ridgelines north and south of Appalachian Gap are at risk for lightning strike. This hazard is particularly acute during the summer months, when ridgetop trails are most heavily used by hikers.

3.2.3 High Crash Locations

The following High Crash Locations have been identified by the Vermont Agency of Transportation in Buel's Gore.

Table 2-1 Buel's Gore, high crash road sections, 2010-2014

Road	Road Type	Section (miles)	Severity Index ($/crash)
VT 17	Major Collector	1.503-1.803	$80,680

Source: Vermont Agency of Transportation

3.2.4 Road Infrastructure Failure

No inventoried bridges exist within Buel's Gore. For a listing of culverts identified as "geomorphically-incompatible" either due to inadequate size or improper alignment, see Section 4.2.2.

3.2.5 Hazardous Substances

No hazardous substance storage sites exist within Buel's Gore.

3.3 Previous FEMA-Declared Natural Disasters and Snow Emergencies

3.3.1 Public Assistance

Since 1990, Buel's Gore has received public assistance funding from FEMA for the following natural disasters:

Table 3-1 Buel's Gore, FEMA-declared disasters and snow emergencies, 1990-2016

Date (FEMA ID#)	Type of Event	Total repair estimates
April 2001 (EM3167)	snow emergency	$12,736

Sources: Vermont Department of Housing & Community Affairs; Vermont Agency of Transportation, FEMA
Dollar value figures represent the total estimated repair costs for damages suffered to municipal resources. This table does not include damage claims submitted to FEMA by non-municipal organizations or by private individuals or businesses.

Buel's Gore was reimbursed at a rate of 75 percent by FEMA for the estimated repair costs coupled with additional dollars from the State's Emergency Relief Assistance Fund (ERAF) typically averaging 7.5%. Funds provided in response to these natural disasters were used as follows:

- April 2001: Increased contractual costs for snow removal.

See *Figure* 3.1. to see locations where repairs funded in part with FEMA Public Assistance took place for disasters between 2001 and 2015.

3.3.2 Individual Assistance funds

As noted in Section 3.3 of the County Plan, due to privacy concerns, the individual homes or businesses which received Individual Assistance funds in connection with the two Federal disasters in 2011 (Spring flooding and Tropical Storm Irene in September) are not public information. However, the names of the streets of such homes or businesses from which claims are filed is available as are the funds provided. No individual assistance claims were filed in Buel's Gore.

3.4 Future Events

Although estimating the risk of future events is far from an exact science, CCRPC staff used best available data and best professional judgment to conduct an updated Hazards Risk Estimate analysis, which was subsequently reviewed and revised by the Gore supervisor in June 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 county, and serves as a rough method of identifying which hazards hold the greatest risk. CCRPC staff applied the following scoring system:

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 frequency of occurrence.

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

As explained in detail in Section 3.4 of the Multi-Jurisdictional Plan, for the 2011 Plan, the following Hazards were considered to occur or have the potential to occur with sufficient frequency and/or severity for to be profiled for Risk Estimation in that Plan:

Natural Hazards:

- Drought
- Flooding
- Fluvial erosion
- High winds
- Landslide
- Lightning
- Multi-structure urban fire
- Radiological (natural)

Technological Hazards:

- Gas service loss
- Hazardous materials incident
- Major transportation incident
- Military ordnance incident
- Power loss
- Radiological incident
- Sewer service loss

Societal Hazards:

- Crime
- Civil disturbance
- Economic recession
- Epidemic
- Key employer loss
- Terrorism

- Wildfire
- Winter storm
- Telecommunications failure
- Water service loss

For the 2016 update, the CCRPC and its All-Hazards Mitigation Plan Update Committee made slight changes to this list by consolidating some hazards or delineating hazards with more specificity as follows:

Natural Hazards:
- Flooding
- Fluvial erosion
- Severe rainstorm
- Wildfire
- Winter storm
- Extreme temperatures

Technological Hazards:
- Hazardous materials incident
- Major transportation incident
- Multi-structure urban fire
- Natural gas service loss
- Pollution
- Power loss
- Sewer service loss
- Telecommunications failure
- Water service loss
- Other fuel service loss
- Invasive Species

Societal Hazards:
- Crime
- Civil disturbance
- Economic recession
- Epidemic
- Key employer loss
- Terrorism

3.4.1 Natural Hazards

For the 2011 Hazard and Risk Estimation analysis for Buel's Gore, the following natural hazards received the highest risk ratings out of a possible high score of 80:
- Severe Winter Storm (45)
- High Winds (30)

For the 2017 update, the following natural hazards received the highest risk ratings out of a possible high score of 80 (see Table below):
- Severe Winter Storm (40)
- Severe Rainstorm (24)

Because Buel's Gore has very little development, limited infrastructure is at risk from flooding and fluvial erosion. Severe winter storms and severe rainstorms tend to affect the entire Gore and are more common, hence the higher ranking of these hazards than in other towns in Chittenden County.

Table 3-2 Natural hazards risk estimation matrix, Buel's Gore

	Risk Characteristic	Score	Winter Storm	Severe Rainstorm	Fluvial Erosion	Wildfire	Extreme Temperatures	Flooding
	0 = No developed area impacted	0					0	0
Area	1 = Less than 25% of developed area impacted	1			1	1		
Impacted	2 = Less than 50% of developed area impacted	2		2				
	3 = Less than 75% of developed area impacted	3						
	4 = Over 75% of developed area impacted	4	4					
Health and	0 = No health and safety impact	0						
Safety	1 = Few injuries or illnesses	1		1	1	1	1	1
Consequences	2 = Few fatalities but many injuries and illnesses	2	2					
	3 = Numerous fatalities	3						
	0 = No property damage	0					0	0
Property	1 = Few properties destroyed or damaged	1		1	1	1		
Damage	2 = Few destroyed but many damaged	2	2					
	2 = Few damaged and many destroyed	2						
	3 = Many properties destroyed and damaged	3						
	0 = Little or no environmental damage	0						
Environmental	1 = Resources damaged with short-term recovery	1	1	1	1		1	1
Damage	2 = Resources damaged with long-term recovery	2				2		
	3 = Resources destroyed beyond recovery	3						
	0 = No economic impact	0						0
Economic	1 = Low direct and/or indirect costs	1	1	1	1	1	1	
Disruption	2 = High direct and low indirect costs	2						
	2 = Low direct and high indirect costs	2						
	3 = High direct and high indirect costs	3						
	TOTAL SCORE		10	6	5	6	3	2
	1 = Unknown but rare occurrence	1						
Probability of	2 = Unknown but anticipate an occurrence	2					2	
Occurrence	3 = 100 years or less occurrence	3				3		3
	4 = 25 years of less occurrence	4	4	4	4			
	5 = Once a year or more occurrence	5						
	TOTAL RISK RATING		40	24	20	18	6	6

3.4.2 Technological Hazards

In the 2011 Hazard and Risk Estimation analysis for Buel's Gore, the following technological hazards received the highest risk ratings out of a possible high score of 80:

- Power Loss (25)
- Telecommunications Failure (21)
- Major Transportation Incident (21)

For the 2017 update, the following technological hazards received the highest risk ratings out of a possible high score of 80 (see Table below):

- Major Transportation Incident (28)
- Power Loss (18)
- Telecommunications Failure (20)

VT Route 17 through Appalachian Gap is a rugged mountain road featuring steep grades (between 5% and 16%) and sharp turns throughout. It is one of the most popular scenic motorcycle routes in the state. It is also popular amongst motorcycle racing enthusiasts who are known to conduct bottom-to-top time trials between spring and fall. Accidents are common, and motorcycle accidents occur with some regularity. Buel's Gore is vulnerable to power loss and telecommunications failure because the population is dispersed and repairing utility infrastructure in rural areas can take more time. Buel's Gore does not have municipal water service, but town residents and businesses rely on well water, so it should be noted that a power loss could result in a water service loss if a generator is not available to run the pump.

Power loss and telecommunications failure were both identified as the most significant technological hazards in the 2011 plan. Though cellular service is somewhat more reliable than it was five years ago, both issues remain significant for residents of rural areas.

Table 3-3 Technological hazards risk estimation matrix, Buel's Gore

	Risk Characteristic	Major Transportation Incident	Power Loss	Telecommunication s Failure	Water Pollution	Invasive Species	Multi-structure fire	Hazardous Materials Incident	Other Fuel Service Loss	Sewer Service Loss	Gas Service Loss	Water Servic
	0 = No developed area impacted								0	0	0	0
Area	1 = Less than 25% of developed area impacted	1			1	1	1	1				
Impacted	2 = Less than 50% of developed area impacted											
	3 = Less than 75% of developed area impacted		3	3								
	4 = Over 75% of developed area impacted											
Health and	0 = No health and safety impact					0			0	0	0	0
Safety	1 = Few injuries or illnesses		1	1	1		1	1				
Consequences	2 = Few fatalities but many injuries and illnesses	2										
	3 = Numerous fatalities											
	0 = No property damage			0					0	0	0	0
Property	1 = Few properties destroyed or damaged	1	1		1	1	1	1				
Damage	2 = Few destroyed but many damaged											
	2 = Few damaged and many destroyed											
	3 = Many properties destroyed and damaged											
	0 = Little or no environmental damage		0	0					0	0	0	0
Environmental	1 = Resources damaged with short-term recovery	1					1	1				
Damage	2 = Resources damaged with long-term recovery				2	2						
	3 = Resources destroyed beyond recovery											
	0 = No economic impact								0	0	0	0
Economic	1 = Low direct and/or indirect costs		1	1	1	1	1	1				
Disruption	2 = High direct and low indirect costs	2										
	3 = Low direct and high indirect costs											
	4 = High direct and high indirect costs											
	TOTAL SCORE	7	6	5	6	5	5	5	0	0	0	0
	1 = Unknown but rare occurrence								1	1	1	1
Probability of	2 = Unknown but anticipate an occurrence				2	2	2	2				
Occurrence	3 = 100 years or less occurrence		3	3								
	4 = 25 years of less occurrence	4										
	5 = Once a year or more occurrence											
	TOTAL RISK RATING	28	18	15	12	10	10	10	0	0	0	0

3.4.3 Societal Hazards

In the 2011 Hazard and Risk Estimation analysis for Buel's Gore, the following societal hazards received the highest risk ratings out of a possible high score of 80:

- Epidemic (21)
- Economic Recession (20)

For the 2017 update, the following societal hazards received the highest risk ratings out of a possible high score of 80 (see Table below):

- Economic Recession (18)
- Crime (12)
- Epidemic (6)

Economic recession is highly ranked for both its direct impacts and its secondary effects on health, safety, and the environment. In a recession, property owners may not be able to maintain their properties, which are then more vulnerable to natural hazards. Major crime is rare in the town, but small crimes are very common.

Epidemic and economic recession were both identified as threats in the 2011 plan, and the risk of them remains low but still exists. The risk of crime is perceived as being higher now. This is related to Vermont's opioid epidemic. Drug use and crimes related to drug use, while still rare compared to the situation in major cities, are a major point of discussion in Vermont. Residents of small towns no longer feel immune to crime, increasing the ranking of this hazard.

Table 3-4 Societal hazards risk estimation matrix, Buel's Gore

	Risk Characteristic	Score	Economic Recession	Crime	Epidemic	Terrorism	Civil Disturbance	Key Employer Crisis
	0 = No developed area impacted	0	2	1	2	0	0	0
Area	1 = Less than 25% of developed area impacted	1						
Impacted	2 = Less than 50% of developed area impacted	2						
	3 = Less than 75% of developed area impacted	3						
	4 = Over 75% of developed area impacted	4						
Health and	0 = No health and safety impact	0	0	1	2	1	1	0
Safety	1 = Few injuries or illnesses	1						
Consequences	2 = Few fatalities but many injuries and illnesses	2						
	3 = Numerous fatalities	3						
	0 = No property damage	0	2	1	1	1	1	0
Property	1 = Few properties destroyed or damaged	1						
Damage	2 = Few destroyed but many damaged	2						
	2 = Few damaged and many destroyed	2						
	3 = Many properties destroyed and damaged	3						
	0 = Little or no environmental damage	0	0	0	0	0	0	0
Environmental	1 = Resources damaged with short-term recovery	1						
Damage	2 = Resources damaged with long-term recovery	2						
	3 = Resources destroyed beyond recovery	3						
	0 = No economic impact	0	2	1	1	1	0	1
Economic	1 = Low direct and/or indirect costs	1						
Disruption	2 = High direct and low indirect costs	2						
	3 = Low direct and high indirect costs	2						
	4 = High direct and high indirect costs	3						
	TOTAL SCORE		6	4	6	3	2	1
	1 = Unknown but rare occurrence	1	3	3	1	1	1	1
Probability of	2 = Unknown but anticipate an occurrence	2						
Occurrence	3 = 100 years or less occurrence	3						
	4 = 25 years of less occurrence	4						
	5 = Once a year or more occurrence	5						
	TOTAL RISK RATING		18	12	6	3	2	1

3.4.4 Hazard Summary

According to the risk estimation analysis, the highest rated hazards by type for Buel's Gore are:

Natural Hazards
- Severe Winter Storm (40)
- Severe Rainstorm (24)

Technological Hazards
- Major Transportation Incident (28)
- Power Loss (18)
- Telecommunications Failure (20)

Societal Hazards
- Economic Recession (18)
- Crime (12)
- Epidemic (6)

It should be noted that the two natural hazards on the list—severe winter storm and severe rainstorm—could be the cause of the highest-rated technological hazards—major transportation incident, power loss and telecommunications failure. Winter storms are the highest rated hazard for Buel's Gore, due in large part to their widespread nature and frequent occurrence.

SECTION 4: VULNERABILITY ASSESSMENT

As discussed in Section 4 of the County Plan, typical vulnerabilities from the County's common hazards consist primarily of:

- Damage to public infrastructure especially roads and culverts;
- Temporary closures of roads and bridges including from debris;
- Temporary loss of power and/or telecommunications
- Temporary isolation of vulnerable individuals such as the elderly or those in poverty.

More specifically, these vulnerabilities typically occur in association with the Profiled Natural Hazards as follows:

Table 4-1 Buel's Gore: Natural Hazards and typical vulnerabilities

Hazard	**Typical vulnerabilities**	**Occasional additional vulnerability**
Severe Winter Storm	-temporary closures of roads and bridges including from debris; -temporary loss of power and/or telecommunications, and -temporary isolation of vulnerable individuals	-budget impacts from debris cleanup
Flooding	-temporary closures of roads and bridges including from debris; -temporary loss of power and/or telecommunications, and -temporary isolation of vulnerable individuals -damage to public infrastructure	-budget impacts from road/bridge closures and repairs to public infrastructure -damages to individuals' properties and businesses
Fluvial Erosion	-temporary closures of roads and bridges including from debris; -temporary loss of power and/or telecommunications, and -temporary isolation of vulnerable individuals -damage to public infrastructure	-budget impacts from road/bridge closures and repairs to public infrastructure -damages to individuals' properties and businesses
Severe Rainstorm	-temporary closures of roads and bridges including from debris; -temporary loss of power and/or telecommunications, and -temporary isolation of vulnerable individuals -damage to public infrastructure	-budget impacts from road/bridge closures and repairs to public infrastructure -damages to individuals' properties and businesses
Extreme Temperatures	-damage to public infrastructure -loss of water service	-budget impacts due to needed repairs
Wildfire	-damage to private property	

Relative to the County as a whole Buel's Gore has a higher vulnerability to:

- Severe Rainstorms and Fluvial Erosion due to high amount of gravel roads and mountainous terrain.

Vulnerabilities with regards to Technological Hazards are harder to project as these incidents occur with less frequency and less predictability.

Table 4-2 Buel's Gore: Technological Hazards and typical vulnerabilities

Hazard	**Typical vulnerabilities**	**Occasional additional vulnerability**
Major Transportation Incident	-temporary closures of transportation infrastructure -injuries, deaths	-if major event, potential long term closure of infrastructure.
Power Loss	-temporary loss of electrical service -temporary impacts to vulnerable individuals -damage to public infrastructure	-if extended event, damage to perishable goods or business income. -if extensive loss, potential budget impacts to service providers.
Hazardous Materials Incident	-temporary closures of roads and bridges during cleanup.	-if large event, potential high cleanup costs. -injuries to persons
Water Service Loss	-temporary loss of service -temporary impacts to vulnerable individuals *(Note: no municipal water service in Gore).*	-if extensive loss, potential budget impacts to service providers.
Gas Service Loss	-temporary loss of service -temporary impacts to vulnerable individuals *(Note: no natural gas service in Gore).*	-if extensive loss, potential budget impacts to service providers.
Telecommunications Failure	-temporary loss of service -temporary impacts to vulnerable individuals	-if extensive loss, potential budget impacts to service providers.
Other Fuel Service Loss	-temporary loss of service -temporary impacts to vulnerable individuals	-if extensive loss, potential budget

		impacts to service providers.
Sewer Service Loss	-temporary loss of service -temporary impacts to vulnerable individuals *(Note: no municipal sewer service in Gore).*	-if extensive loss, potential budget impacts to service providers.
Water Pollution	-ongoing budgetary impacts due to permit requirements. *(limited exposure to Gore as they are not subject to pending Municipal Roads General Permit.)*	-if repeat events, impacts to tourism-based businesses
Invasive Species	-small but ongoing cost to monitoring level of occurence	-unknown at this point.

Relative to the County as a whole Buel's Gore has a slightly higher vulnerability to:

- Major Transportation Incident due to steep roadways within the municipality
- Power Loss and Telecommunications Failure due to its mountainous terrain

With regards to Societal Hazards, vulnerabilities are typically more dispersed among individuals and societal sectors compared to the natural environment and to technology which is fixed.

Table 4-3 Buel's Gore: Societal Hazards and typical vulnerabilities

Hazard	**Typical vulnerabilities**	**Occasional additional vulnerability**
Crime	-increased demands on police services and social services *(Note: no municipal police service in Gore).*	-injuries -deaths
Epidemic	-temporary closures of schools, businesses, places of assembly -increased demand on medical services	-if an epidemic is widespread and long-lasting, impact could be severe
Key Employer Loss	-loss of economic activity -loss of portion of tax base -increased demands on social services	-effects increased if employer is of significant size
Economic Recession	-loss of economic activity -increased demands on social services -some loss of tax revenue	-effects increased if event is of extended duration
Civil Disturbance	-injuries to persons -damage to public and private property	-budget impacts to police services

		depending upon severity of event -deaths
Terrorism	-injuries to persons -damage to public and private property	-budget impacts to police services depending upon severity of event -deaths

Relative to the County as a whole there is insufficient data to conclude whether or not the Town is more vulnerable to one of the six Societal Hazards noted above.

With regards to the vulnerability of critical facilities, infrastructure and vulnerable populations, quantitative and locational data for the Town is available as follows.

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." There are no critical facilities in Buel's Gore (*cf. Figure 1.4*).

4.2 Infrastructure

4.2.1 Town Highways

The following is a statistical overview of roads in Buel's Gore. Buel's Gore has only two roads, Vermont Route 17 and a very short town road, both of which are paved. These tables show the range of road types within the town, from state highway to unimproved unpaved roads. Different road types have different hazard vulnerabilities. Unpaved roads are more vulnerable to washing out in a flood or storm, while traffic incidents are more likely to occur on large, arterial roads.

Municipal highways, bridges and dams are well mapped in Chittenden County. The following three tables show the diversity of municipal highways and road surface in Buel's Gore.

The Vermont Agency of Transportation divides municipal (town) highways into various classes as follows:
Class 1 town highways are subject to concurrent responsibility and jurisdiction between the municipality and VTrans. Class 1 town highways are state highways in which a municipality has assumed responsibility for most of the day to day maintenance (pot hole patching, crack filling, etc.). The state is still responsible for scheduled surface maintenance or resurfacing. In Chittenden County Class 1 highways are generally paved.

Class 2 town highways are primarily the responsibility of the municipality. The state is responsible for center line pavement markings if the municipality notifies VTrans of the need. The municipality designates highways as Class 2 with approval from VTrans. These are generally speaking the busier roads in a given town second to Class 1. In Chittenden County,

most Class 2 highways are generally paved although in the more isolated areas these are gravel roads.

Class 3 town highways are the responsibility of and designated by the municipality. These are to be maintained to an acceptable standard and open to travel during all seasons. In Chittenden County, Class 3 roads are both paved or gravel.

Class 4 town highways are all other highways and the responsibility of the municipality. However, pursuant to Vermont State Statutes, municipalities are not responsible for maintenance of Class 4 town highways. These are generally closed during the winter and minimally maintained and almost exclusively dirt. Note that the Gore has no Class 4 roads.

Table 4-1 Town highway mileage by class, Buel's Gore

Class 1	Class 2	Class 3		Class 4	State Hwy	Fed Hwy	Interstate	Total 1, 2, 3, State Hwy
	0.450				2.745			3.195

Source: derived from VTrans TransRDS GIS data – surface class and arc length

Table 4-2 Town highway mileage by surface type, Buel's Gore

Paved	Gravel	Soil or Graded	Unimproved	Impassable	Unknown	Total
3.195	0.000	0.000	0.000	0.000	0.000	3.195

Total Known	Total Unpaved	% Paved	% Unpaved
3.195	0.000	100.0%	0.0%

Source: derived from VTrans TransRDS GIS data – surface class and AOTmiles

Note: The Long Trail, a popular, maintained hiking route that follows the spine of the Green Mountains north-south through the entire state, runs through Buel's Gore for roughly two miles.

See *Figure 3.2* for locations of paved vs. gravel and/or soil roads.

4.2.2 Bridges, Culverts, and Dams

There are no inventoried bridges in Buel's Gore.

As noted in Section 4 of the County Plan, a large portion of the County's stream have had detailed Phase II Stream Geomorphic Assessments conducted. With regards to Buel's Gore, studies identify specific stream reaches where fluvial erosion is a concern as well as where infrastructure, primarily culverts, as noted in the table below is at risk

Table 4-3 Culverts with a geomorphic compatibility rating of "Mostly Incompatible" or "Incompatible"

Bankfull Width	Compatibility Score	Town	Location	Road Name	Stream Name
36.36	9	Buel's Gore	Second structure after pond	ROUTE 17	Trib to Beaver Brook

Mostly incompatible *5<GC<10*
% Bankfull Width + Approach Angle scores < 2
Structure mostly incompatible with current form and process, with a moderate to high risk of structure failure. Re-design and replacement planning should be initiated to improve geomorphic compatibility.

Fully incompatible *0<GC<5*
% Bankfull Width + Approach Angle scores < 2 ***AND*** *Sediment Continuity + Erosion and Armoring scores < 2*
Structure fully incompatible with channel and high risk of failure. Re-design and replacement should be performed as soon as possible to improve geomorphic compatibility.

Information on dams is available from two sources: a database of dams regulated by the Vermont Department of Environmental Conservation and the National Dam Inventory maintain by the U.S. Army Corps of Engineers. Neither DEC nor the National Dam Inventory identify any dams in the Gore.

4.2.3 Water, Wastewater and Natural Gas Service Areas

The town operates no wastewater or water delivery systems. All residents and businesses receive water from wells and dispose of wastewater through septic systems. There are no natural gas distribution facilities in the town (*cf. Figure 1.4).*

4.2.4 Electric Power Transmission Lines and Telecommunications Land Lines

There are no high-tension power lines in the Gore (*cf. Figure 1.4)*. Power distribution and telecommunications lines run along VT Route 17 and Gore Road and then to individual house lots.

4.3 Estimating Potential Losses in Designated Hazard Areas.

There is no federally-designated flood hazard area in Buel's Gore (*cf. Figure 2-1).* No fluvial geomorphology assessments or infrastructure assessments have been completed. Therefore, it is not possible to estimate potential losses. Such analysis would require individual site visits and analysis conducted by both river geomorphologists and structural engineers which is beyond the capacity of the CCRPC due to funding limitations.

4.4 Vulnerable Populations

Like most of the County's rural communities, census data more detailed than the town boundaries is not available to see if there are concentrations of either elderly populations or low-income populations. In other words, the town's boundaries form one single census tract. Demographic information on the relative percentages of vulnerable populations is in the table below. However, given the small population of Buel's Gore, data quality is extremely poor (as evidenced by the margins of error provided below).

Table 4-4 Vulnerable populations, Buel's Gore

	Buel's Gore	Margin of Error	Chittenden County	Vermont	National
Percent Minority (non-white)[1]	7.0%	±10.7%	7.7%	4.8%	26.7%
Children <18 in poverty[1]	0.0 %	±76.9%	11.1%	14.8%	21.6%
Families w/children in poverty[1]	0.0 %	±76.9%	10.5%	13.4%	17.8%
Families w/ female householder, no husband present w/children in poverty[1]	0.0%	±100.0%	37.0%	37.4%	40%
Population, age 65+ in poverty[1]	0.0%	± 88.0%	6.5%	7.5%	13.4%

[1]*US Census Bureau, 2010-2014 5-Year Estimates, American Community Survey*

Given the coarseness of the available data, CCRPC is not able to determine specific locations with a concentration of vulnerable individuals within individual municipalities. Given the coarseness of the available data, CCRPC is not able to determine specific locations with a concentration of vulnerable individuals within individual municipalities. However, a useful analysis known as a Social Vulnerability Analysis has been prepared by the Vermont Department of Health. Data for the Town is shown in *Figure 4.1.*

The Social Vulnerability Index (SVI) draws together 16 different measures of vulnerability in three different themes: socioeconomic, demographic, and housing/transportation. The 16 individual measures include poverty, unemployment, per capita income, educational attainment, health insurance, children/elderly, single parent households, disability, minority, limited English, location of apartment buildings, mobile homes, crowding, no vehicle access, and population living in group quarters. The measures are combined to create relative vulnerability index. For every vulnerability measure, census tracts above the 90th percentile, or the most vulnerable 10%, are assigned a flag. The vulnerability index is created by counting the total number of flags in each census tract. It is important to remember that this Social Vulnerability Index is just a first step in screening for populations that may be more or less vulnerable to a variety of hazard. Depending on the situation, different measures could be more or less important and should be looked at more closely. These data are NOT saying that one census tract is more vulnerable than another. Rather it is saying that there is a higher concentration of various vulnerable populations living within a tract and seeks to identify the conditions that make a population vulnerable.

4.5 Land Use and Development Trends Related to Mitigation

As noted at the introduction of this appendix, Buel's Gore's land use is primarily residential and conservation. An analysis of GIS data shows the following percentages for land use and the percentages of land allocated to each zoning district.

Table 4-5 Structures compared to zoning, Buel's Gore

Buels Gore Structures	Percent		Buels Gore Zoning	Percent
Residential	87.50%		Design Review	2.62%
Commercial	0.00%		Forestry / Conservation 1	63.94%
Industrial	0.00%		Forestry / Conservation 2	31.61%
Institutional / Infrastructure	0.00%		Ridgetop	1.83%
Mass Assembly*	6.25%			
Leisure / Recreation	0.00%			
Natural Resources	0.00%			

Source: 2015 e911 Data and 2010 Buels Gore Zoning Regulations, Note: The structure categories relate to the Land Based Classification System (LBCS) used in the 2011 AHMP not E-911 site types. E-911 site types were assigned to each LBCS category to create synergy between the 2011 AHMP and 2017 AHMP.
** There is no actual structure at this location which is the overlook for the Long Trail hiking trail. It shows up in the e911 database however.*

4.4.1 Conserved or Undevelopable Parcels

There are a significant number of conserved parcels in Buel's Gore, much of it publically owned. Most parcels have been conserved for their scenic, agricultural or natural resource values.

Table 4-6 Conserved Land, Buel's Gore

Town Name	Acres	Acres of Public Land	Percent Public	Acres of Conserved Land	Percent Conserved	Total Public & Conserved	Percent Conserved Land
Buels Gore	3,201.53	1,942.62	61%			1,943.23	61%

Source: VLT Data and ANR Public Lands

Buel's Gore does not have a conservation fund.

4.4.2 Recent and Future Development

At present and for the foreseeable future the development pattern of sparsely populated dispersed residential development will continue. Industrial or commercial activity is unlikely. As there are no designated hazard areas in Buel's Gore, no future development will take place in hazard areas. Zoning requirements will apply to all future structures.

From 2011 through 2014, the municipality has seen no new development. Additionally, through at least 2021, there is no known or projected development of new buildings or infrastructure anticipated to be constructed in areas known to be particularly vulnerable to Natural Hazards.

SECTION 5: MITIGATION STRATEGY

The municipality considered a range of mitigation actions across the categories of Planning and Regulations, Structure and Infrastructure Projects, Natural Systems Protection, and Education and Awareness Programs. As is demonstrated in the discussion that follows the municipality carries out efforts as part of its day-to-day operations that fit within these categories and address and serve to mitigate the impacts of various hazards. The section concludes within an analysis of which vulnerabilities need additional attention and therefore stipulates discrete tasks to be carried out by the municipalities during the 5-year period this Plan is in effect to address these vulnerabilities.

5.1 Existing Buel's Gore Regulations Supporting Hazard Mitigation

Buel's Gore is the only municipality in Chittenden County without a current town plan. However, the Zoning Regulations for Buel's Gore prohibit all development beyond forestry, agriculture, wind, solar, & hydro structures and existing commercial structures on steep slopes and in other areas of poor soils (the Forestry/Conservation Two and Ridgetop districts). This helps mitigate against the effects of stormwater runoff during severe rainstorms.

5.2 Existing Buel's Gore Actions that support Hazard Mitigation

The following table illustrates how mitigation activities and plans are carried out by various municipal departments and whether such capabilities are adequate to address hazard vulnerabilities and whether the department, if needed, has the ability to improve policies and programs and programs to unmitigated vulnerabilities.

Table 5-1 Existing municipal capabilities addressing hazard mitigation, Buel's Gore

Type of Programs & Policies	**Description / Details**	**1) Adequacy of municipal capabilities to address hazards 2) and ability to expand upon or improve policies & programs**
Highway Services	Contract through Town of Huntington Public Works Department for Gore Road. AOT has formal responsibility for roads in Buel's Gore.	1) Generally adequate with regards to mitigating the impacts of common hazards. 2) However, these organizations, through the strategies noted below, are taking on a stronger role to mitigate against damages caused by Severe Rainstorm, Fluvial Erosion and Water Pollution.
Highway personnel	Contract through Town of Huntington Public Works Department for Gore Road. AOT has formal responsibility for roads in Buel's Gore.	1) Generally adequate with regards to mitigating the impacts of common hazards. 2) However, these organizations, through the strategies noted below, are taking on a stronger role to mitigate against damages caused by Severe Rainstorm and Fluvial Erosion.
Water / Sewer Department	None	N/A

Water / Sewer Personnel	None	N/A
Planning and Zoning personnel	None	N/A
Residential Building Code / Inspection	No local building code.	1) No need to expand upon or improve policies & programs with regard to hazards under its purview. 2) Note that commercial properties open to the public and all multi-family buildings of 3 units are more must be inspected and permitted by the Vermont Division of Fire Safety.
Town / Municipal Comprehensive Plan	None	1) The Chittenden County Regional Planning Commission will begin writing a municipal plan for Buel's Gore which will integrate the issues discussed in this plan.
Zoning Bylaws and Subdivision Regulations	2010	1) Generally adequate with regards to mitigating the impacts of common hazards. 2) No need, at this time, to expand upon or improve policies & programs with regard to hazards under its purview.
Hazard Specific Zoning (slope, wetland, conservation, industrial, etc.)	Forest/Conservation Two, Ridgetop	1) Generally adequate with regards to mitigating the impacts of common hazards. 3) The Gore will not consider adoption of River Corridor or River Corridor Protection Area zoning regulations due to the limited areas of mapped hazard areas within the Gore
Participation in National Flood Insurance Program (NFIP) and Floodplain/ Flood Hazard Area Ordinance	No	1) There are no mapped flood hazard areas in the Gore 2) There have been no federally-declared flood disasters in the Gore.
Open Space Plans; Conservation Funds	None	N/A

The following table illustrates how Emergency Preparedness, Response & Recovery actions are carried out in the Town.

Table 5-2 Existing municipal emergency services & plans, Buel's Gore

Type of Existing Protection	**Description /Details/Comments**
Emergency Services	**Emergency response personnel may have overlapping responsibilities with other town response organizations.**
Police Services	Vermont State Police

Police Department Personnel	Adequate level of coverage
Fire Services	Starksboro Fire Department (Addison County)
Fire Department Personnel	Adequate level of coverage
Fire Department Mutual Aid Agreements	N/A
EMS Services	Bristol Rescue, Mad River/Waitsfield Rescue, and Richmond Rescue
EMS Personnel	Adequate level of coverage
EMS Mutual Aid Agreements	N/A
Emergency Plans	
Local Emergency Operations Plan (LEOP)	None
Primary Shelter	None designated
Replacement Power, backup generator	N/A
Secondary Shelter	None designated
Replacement Power, backup generator	N/A

5.3 Buel's Gore All-Hazards Mitigation Goals

The following goals were first approved by the Gore in its 2005 and 2011 AHMPs and approved by the Buel's Gore Supervisor during the development of this 2017 annex.

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 and as identified generally in the *Chittenden County Multi-Jurisdictional 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 stormwater management and the planning and development of various land uses.
5) Maintain existing municipal plans, programs, regulations, bylaws and ordinances that directly or indirectly support hazard mitigation.
6) Consider formal incorporation of this Local All-Hazards Mitigation Plan into the municipal comprehensive plan as described in 24 VSA, Section 4403(5), as well as incorporation of proposed new mitigation actions into the municipality's/town's bylaws, regulations and ordinances, including, but not limited to, zoning bylaws and subdivision regulations and building codes.
7) Consider formal incorporation of this Local All-Hazards Mitigation Plan, particularly the recommended mitigation actions, into the municipal/town operating and capital plans &

programs especially, but not limited to, as they relate to public facilities and infrastructure, utilities, highways and emergency services.

With regards to a more formal process by which the Town will integrate the requirements of this mitigation plan into the Town's Comprehensive Plan, as required by Vermont law, municipalities must update their Comprehensive Plans every eight years. Due to Buel's Gore's small size and lack of staff, the Gore supervisor recently requested that CCRPC staff develop a comprehensive plan for the Gore. During this process, staff will review the recommended Actions detailed below to see if formal incorporation within the Comprehensive Plan (or any Plan implementation tasks) is warranted. During any update process undertaken while this Plan document is in effect, the Town will review the recommended Actions detailed below to see if formal incorporation within the Comprehensive Plan (or any Plan implementation tasks) is warranted.

Additionally, as the CCRPC is tasked with also reviewing and approving each such municipal comprehensive plan for consistency with various requirements in state stature and consistency with the Chittenden County Regional Plan (aka the *ECOS 2013 Plan*). This review includes a detailed staff critique with recommendations for improvement. This CCRPC review provides another opportunity to formally integrate elements of this local AHMP into the Town's Comprehensive Plan.

5.4 Mitigation Actions

The table below records the strategies from the 2011 Plan and progress on their implementation. This table also encapsulates the Town's decision making with regards to which Actions to continue, which to establish as new actions and which to discontinue. During the development of this Municipal AHMP and its parent Multi-Jurisdictional AHMP, FEMA staff indicated to the CCRPC a need to separate out or remove strategies which are more properly considered to be Preparedness, Response or Recovery strategies rather than Mitigation. Additionally, upon revisiting and reviewing the 2011 actions and devising action for this 2017 local AHMP CCRPC staff and municipal representatives thought it would be best to focus on known and likely actions with a high likelihood of implementation versus consideration of more expansive but largely aspirational strategies.

Table 5-3 Progress of Actions of the 2011 Buel's Gore All Hazards Mitigation Plan

Action **Primary Responsible Entity**	**Task**	**Brief Description**	**Progress since 2011 and recommendations for 2017 Plan**
#1 Evaluate capabilities of existing road and stormwater management infrastructure			
VTrans, Road Supervisor	Culvert Upgrades	Upgrade culverts and ditching along roads to mitigate against repeated damages from stormwater or spring snowmelt.	Gore-owned Road was repaved in 2015. **CONTINUE FOR 2017 PLAN**

VTrans	Continued Monitoring of Vulnerable Infrastructure	Monitor bridges and culverts with erosion and scouring concerns.	Monitoring is ongoing. **MONITORING IS NOT CONSIDERED MITIGATION. REMOVE FROM NEW PLAN**
VTrans, Gore Supervisor	Road Improvement	Consider paving 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.	Not applicable. **REMOVE FROM 2017 PLAN**
#2 Address identified high crash locations			
VTrans,	Highway Safety Improvement	Assess and implement appropriate traffic calming measures on VT 17's high crash sections	No progress has been made since 2011. **CONTINUE FOR 2017 PLAN**

5.4.1 Current Capabilities and Need for Mitigation Actions

The zoning regulations 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 Gore considers its existing capabilities are adequate to address the identified priority hazards in this plan. However, it should be noted that the Gore has no town staff, save the Gore Supervisor, who is appointment by the governor. There is no highway department, town budget, town office, or other services provided by the town. All services are provided by the State of Vermont or neighboring towns. As detailed in the *Table* below, generally, the Gore considers its existing capabilities, regulatory structure and programs as adequate to address its vulnerabilities however continuation of existing mitigation actions or the implementation of new actions are warranted during the 5-year period this Plan is in effect.

Table 5-4 Buel's Gore: Capabilities to address vulnerabilities from natural hazards

Hazard	**Adequacy of Municipal Capabilities to address associated vulnerabilities (Excellent, Good, Average, Below Average)**	**Additional expansion or improvement in policies & programs needed to address hazard given long-term vulnerability**
Severe Winter Storm	Good	No
Flooding	N/A	No, no mapped floodplain in Gore.
Fluvial Erosion	Good	**Yes, see actions below**
Severe Rainstorm	Good	**Yes, see actions below.**
Extreme Temperatures	Good	No, rare occurrence and extent, impact & vulnerabilities are limited.

Wildfire	Excellent	No, rare occurrence and extent, impact & vulnerabilities are limited.

Table 5-5 Buel's Gore: Capabilities to address vulnerabilities from technological hazards

Hazard	**Adequacy of Municipal Capabilities to address vulnerabilities (Excellent, Average, Below Average)**	**Additional expansion or improvement needed to address hazard given long-term vulnerability**
Major Transportation Incident	Average	**Yes, see actions below**
Power Loss	Average	No given that events are limited in duration and vulnerabilities are short-lived.
Hazardous Materials Incident	Average	No, rare occurrence and extent, impact & vulnerabilities are limited.
Water Service Loss	N/A	N/A
Gas Service Loss	N/A	N/A
Telecommunications Failure	Private utilities are primarily responsible	No, rare occurrence and extent, impact & vulnerabilities are limited.
Other Fuel Service Loss	Private businesses are primarily responsible	No, rare occurrence and extent, impact & vulnerabilities are limited.
Sewer Service Loss	N/A	N/A
Water Pollution	Average	No, local waters are not impaired.
Invasive Species	Average	No, rare occurrence and extent, impact & vulnerabilities are limited.

Table 5-6 Buel's Gore: Capabilities to address vulnerabilities from societal hazards

Hazard	**Adequacy of Municipal Capabilities to address vulnerabilities (Excellent, Average, Below Average)**	**Additional expansion or improvement in policies & programs needed to address hazard given long-term vulnerability**
Crime	No police services, police coverage provided by Vermont State Police	No
Economic Recession	Good +State Agencies provide support	No Diversity of county economy mitigates vulnerabilities.
Terrorism	Good	No, rare occurrence.

	+State & Federal agencies provide support	
Civil Disturbance	Good + State agencies provide support. If muni has no utility, note that and do not "grade"	No, rare occurrence
Epidemic	Average +State & Federal agencies provide support	No, rare occurrence. The Gore's abilities to mitigate an epidemic are limited The Gore relies on state and school efforts related to epidemic preparedness, prevention and mitigation, and medical facilities and services in neighboring communities for response.
Key Employer Loss	Good +State agencies provide support	No. Diversity of employers in region mitigates vulnerabilities.

Note that this Plan does not recommend a discrete mitigation action regarding "future development." Our justification for this is as follows:

- The Gore's regulations have prevented and will prevent new buildings and infrastructure being constructed in areas vulnerable to hazards. As documented in detail in section 4.6.2, no structures and infrastructure subject to municipal regulation, have been constructed in either the Special Flood Hazard Areas or mapped River Corridor Protection Areas.
- For the next five years, there are no known or anticipated plans for the construction of municipal infrastructure in areas vulnerable to hazards.
- There is no evidence that unwise or poorly regulated development in the municipality has been a significant contributor to putting people or property in harm's way.

Therefore, the reader will note that the proposed Mitigation Actions for the next five years represent a much more focused and achievable list of actions focused on those hazards (e.g. Severe Rainstorm, Fluvial Erosion, Water Pollution, etc.) that cause more frequent if less dramatic damages. It is these more mundane damages of erosion along road beds, damaged small culverts and the ongoing struggle to maintain and improve water quality (which cost the municipality and its taxpayers both time and money) that deserve the most attention rather than hazards that could hypothetically cause damage but which are rare and wherein the benefit-to-cost ratio for potential mitigation actions is weak (e.g. Major Transportation Incident, Hazardous Material Incident, Terrorism). No new discrete action is recommended with regard to Education & Awareness as the Town does not have adequate funds or staff to undertake such an effort nor is such an effort warranted given the identified vulnerabilities. **Lastly, it is also worthwhile to note that in comparison to the 2011 Plan the priorities for this 2017 Plan have not changed. The hazards and vulnerabilities remain the same as well. Indeed, the only real change is that there is a more heightened awareness due to the severity of recent disasters starting in 2011 to the present.**

5.4.2 Specific Mitigation Actions

CATEGORY A: Replace and Improve vulnerable infrastructure.
Hazards Addressed: Fluvial Erosion and Severe Rainstorm

Vulnerabilities Addressed: damage to new or existing public infrastructure especially roads and culverts; temporary closures of roads including from debris; temporary loss of power and/or telecommunications and temporary isolation of vulnerable individuals such as the elderly or those in poverty.

Status: Ongoing

Primary Responsible Entity: Vermont Agency of Transportation; Gore Supervisor

Timeframe: Month 2017 through March 5, 2022 (update after FEMA approval date)

Funding Requirements and Sources: FEMA or other hazard mitigation grants; FHWA grants; VTrans grants; Contingent on available resources and funding.

Rationale / Cost-Benefit Review:

These 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 damage events.

Specific Identified Actions:

Action A-1: Complete Culvert Upgrades

The Gore has no responsibility for culverts on Vermont Route 17 however this Plan anticipates that VTrans will upgrade or replace culverts and ditching as needed to mitigate against repeated damages from stormwater or spring snowmelt.

Action A-2: Plan for Repair of Vulnerable Infrastructure on Old County Road

The Gore will seek funds to develop cost estimates, plans and construction funds to address locations on this non-state-owned road that have erosion and scouring concerns.

CATEGORY B: Address identified high crash locations.
Hazards Addressed: Major Transportation Incident

Vulnerabilities Addressed: Temporary closures of roads; injuries, fatalities

Status: Ongoing

Primary Responsible Entity: Vermont Agency of Transportation

Timeframe: Month 2017 through March 5, 2022 (update after FEMA approval date)

Funding Requirements and Sources: FHWA grants; VTrans funding

Rationale / Cost-Benefit Review:

VT Route 17 through Appalachian Gap is a rugged mountain road featuring steep grades (between 5% and 16%) and sharp turns throughout. It is one of the most popular scenic motorcycle routes in the state. It is also popular amongst motorcycle racing enthusiasts who are known to conduct bottom-to-top time trials between spring and fall and also is part of the route of an annual road bike race. Accidents are common, and motorcycle accidents occur with some

regularity. Traffic calming measures may reduce accidents and thus reduce both incidence of injury, spending on emergency response, and closure of the roadway.

Specific Identified Actions:

Action B-1: Highway Safety Improvement

VTrans will assess and implement appropriate traffic calming measures on VT 17's high crash sections.

5.4.3 Prioritization of Mitigation Strategies

The above mitigation actions were listed in order of priority. Descriptions of specific projects, where available, are listed in Section 5.4.2 and 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 effect a simple prioritization of the mitigation actions identified by the jurisdiction. The following list identifies the 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).

- Does the action respond to a significant (i.e. likely or high risk) hazard?
- What is the likelihood of securing funding for the action?
- Does the action protect threatened infrastructure?
- Can the action be implemented quickly?
- Is the action socially and politically acceptable?
- Is the action technically feasible?
- Is the action administratively realistic given capabilities of responsible parties?
- Does the action offer reasonable benefit compared to its cost of implementation?
- 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 municipalities begin 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, all proposed FEMA mitigation projects will undergo a benefit-cost analysis using a FEMA BCA template and approved methodology.

Based on feedback from FEMA, CCRPC Staff have concluded that several strategies previously identified in 2011 by Buel's Gore as mitigation strategies are more accurately classified as preparedness, response and recovery strategies. These strategies are not intended to mitigate against the hazards identified in Section 3, and should not be evaluated as such. As such, these strategies are not included in the prioritization below.

Other than the reclassification of some strategies as non-mitigation strategies, there have not been significant changes in the prioritization of strategies between 2011 and now, with one notable exception. Strategies related to landslide assessment have been removed from the plan. CCRPC staff, in consultation with FEMA, have concluded that landslides are not a discrete threat in Chittenden County and are adequately captured in the plan's discussion of fluvial

erosion. Additionally, further work on the development of a Vermont-specific landslide risk estimation protocol has not progressed making landslide-specific strategies inappropriate at this time for inclusion in the County plan and its annexes.

Note that these priorities are within categories as this is more appropriate rather than ranking projects that address different hazards.

Table 5-7 Buel's Gore action evaluation and prioritization matrix

Mitigation Category & Actions	Responds to significant (likely or high risk) hazard	Likelihood of funding	Protect threatened infra-structure	Implemented quickly	Socially / Politically acceptable	Technically Feasible	Administra-tively Realistic	Reasonable cost to benefit	Environmen-tally sound	TOTAL SCORE
CATEGORY A: Replace and Improve vulnerable infrastructure										
Action A-1: Complete Culvert Upgrades	5	5	5	5	4	5	5	5	5	**44**
Action A-2: Plan for Repair of Vulnerable Infrastructure	4	5	5	4	4	5	5	5	5	**42**
CATEGORY B: Address identified high crash locations										
Action B-1: Highway Safety Improvement	5	3	5	3	4	4	3	3	5	**35**

5 = Excellent; 4=Good; 3=Average; 2=Below Average or Uknown; 1=Poor

5.5 Implementation and Monitoring of Mitigation Strategies

The following Table is intended to aid municipal officials in implementing their mitigation actions and to facilitate the annual monitoring & evaluation of the plan as outlined in Section 1.7.4 above.

Table 5-8 Buel's Gore Mitigation Actions: Implementation Monitoring Worksheet

CATEGORY A: Replace and Improve vulnerable infrastructure to mitigate Severe Rainstorm and Fluvial Erosion and their associated vulnerabilities of: • Damage to new/existing public infrastructure • Temporary road closure • Budgetary impacts • Temporary isolation of vulnerable individuals	
Action **(Primary Responsible Entity)**	**Report on Progress since Plan adoption** *See Section 5.4 for details on locations identified during Plan development.*
Action A-1: Complete Culvert Upgrades on VT-17 (VTrans)	-note any grants or funding source investigated -note any grants applied for/obtained -note progress on geomorphic assessment and/or river corridor plan if underway
Action A-2: Plan for upgrade of Vulnerable Infrastructure on Old County Road (Gore Supervisor; CCRPC)	-note any grants or funding source investigated -note any grants applied for/obtained -note any projects completed
CATEGORY B: Address identified high crash locations to mitigate Major Transportation Incident and their associated vulnerabilities of: • Temporary road closure • Injuries and/or fatalities	
Action **(Primary Responsible Entity)**	**Report on Progress since Plan adoption** *See Section 5.4 for details on locations identified during Plan development.*
Action B-1: Highway Safety Improvement (VTrans)	-note any improvements scoped or design -note any improvements implemented