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Colchester Selectboard
April 12, 2022

ACTION SHEET

Approval of Updated Local Hazard Mitigation Plan

RECOMMENDED ACTION: The Colchester Selectboard moves to approve the attached resolution, dated April 12, 2022 tilted "A Resolution Adopting the Town of Colchester 2022 Local Hazard Mitigation Plan," as recommended in an April 5, 2022 Memo from Town Manager, Aaron Frank.

Colchester
VERMONT

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www.colchestervt.gov

TO: Colchester Selectboard
FROM: Aaron Frank, Town Manager
DATE: April 5, 2022
RE: Local Hazard Mitigation Plan Update & Approval

The Issue: Whether or not the Selectboard will adopt a resolution required to formally update the Local Hazard Mitigation Plan, which is required to maintain access to federally subsidized flood insurance for property owners and state match to a portion of the local funding required to match FEMA disaster relief funding.

Hazard Mitigation Planning Overview: Hazard mitigation planning is an important process communities undertake to ensure appropriate steps have been taken to reduce or eliminate long-term risks to people and property from the effects of reasonably predictable hazards. At the federal level, hazard mitigation planning is a required by the Disaster Mitigation Act of 2000, which established a planning process and criteria for State and local hazard mitigation planning. Effective November 1, 2003, local governments must have an approved local mitigation plan prior to the approval of a local mitigation project funded through federal Pre-Disaster Mitigation funds. Furthermore, there are several other important funding opportunities directly tied to a community having an approved local hazard mitigation plan.

- Flood Mitigation Assistance Grant Program (FMAGP) funds will be available only to communities that have adopted a Local Hazard Mitigation Plan (LHMP)
- A community without a plan is not eligible for HMGP project grants but may apply for HMGP planning grants, which Colchester does. These grants cover perhaps half the cost of our Local Hazard Mitigation Plan (LHMP) as these grants do not pay for staff, only consultants, and staff involvement and knowledge is required to draft a successful LHMP.
- 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.
- ***With regards to contributions from the State of Vermont (under the Emergency Relief Assistance Fund) to cover the non-Federal share of Public Assistance project costs, communities without a plan would have to cover 17.5% of the overall project cost compared to only 7.5% to 12.5% of the cost for Towns with an approved plan.***
- ***Continued access to reduced cost flood insurance for property owners***

Background: The Town of Colchester began the process to complete its 2022 Local Hazard Mitigation Plan (2022 LHMP) in October 2021. The 2022 LHMP is an update of Colchester's 2017 All Hazard Mitigation Plan (2017 AHMP), which was included as an annex to the 2017 Chittenden County multi-jurisdictional AHMP. The 2017 AHMP expired in March 2022. Unlike the 2017 AHMP, which was part of a multi-jurisdictional plan for Chittenden County, the 2022 LHMP update is a single jurisdiction plan focused solely on hazards and mitigation actions within the Town of Colchester. In March 2022, Vermont Emergency Management found the Town's 2022 LHMP to be in compliance with FEMA's requirements and have deemed it "Approvable Pending Adoption." Once the Selectboard has approved the 2022 LHMP, the plan will be resubmitted to Vermont Emergency Management for final approval.

2022 Local Hazard Mitigation Plan Overview: The completion of the 2022 LHMP was overseen by Meredith Dolan, Part Time Project Manager, with the assistance of a Steering Committee consisting of Colchester staff: Bryan Osborne, Director of Public Works; Seth Lasker, Emergency Management Coordinator; Cathy LaRose, Director of Planning & Zoning; Zachary Maia, Planner; Karen Adams, Stormwater Utility/Public Works.

While the 2022 LHMP represents a transition from the multi-jurisdictional County-wide plan to a stand-alone plan with a single municipal focus, Colchester undertook the required coordination with adjacent communities and regional entities throughout the 2022 LHMP development process. Additionally, the public was invited to participate in the plan development through an online survey, newsletter/social media posts, public posting of the draft plan, and a public meeting. The 2022 LHMP contains six sections:

Section 1: Introduction & Purpose – Planning at the State and Federal level, and the benefits of hazard mitigation planning. This section also explains the purpose and goals of the plan.

Section 2: Community Profile - Describes Colchester's demographics and development characteristics as well as key changes since 2017 that relate to natural hazards in Colchester.

Section 3: Planning Process - Describes the process used to develop the plan and the entities and methods involved.

Section 4: Review Existing Plan & Plan Maintenance - Provides a status update on the specific mitigation actions included in the 2017 AHMP, summarizes current and ongoing hazard mitigations activities, and indicates how the Town will maintain the plan over the next five years.

Section 5: Hazard Identification & Prioritization – Assesses the natural hazards of potential threat to Colchester to identify the high priority hazards and reviews Colchester's vulnerability to them.

Section 6: Mitigation Actions – Identifies 1) mitigation actions and strategies that will address the high priority hazards as identified in Section 5, 2) prioritization of the mitigation actions, and 3) existing support for hazard mitigation in the Town Plans.

The full 2022 Local Hazard Mitigation Plan is attached.

Identified Hazards & Mitigation Actions: Central to hazard mitigation planning is the assessment of hazards and the community's vulnerability to them, which is followed by the development of mitigation strategies to address those specific hazards. To identify the hazard impacts of greatest concern to the Town of Colchester and those hazard impacts for which Town efforts to mitigate should be put forth, the Steering Committee completed a hazard assessment scoring exercise. Based on the Steering Committee's scores, the following five hazard impacts were selected as high priority hazards for which further analysis and mitigation efforts are warranted: Fluvial Erosion, Inundation Flooding, Infectious Disease Outbreak, Snow, and Ice

The following mitigation actions were developed to directly address these five high priority hazards as well as to meet the plan goals, including a consideration of the cost-benefit analysis of each action.

Action 1: Continue to Operate a Stormwater Utility to Mitigate Severe Fluvial Erosion

- Action 1-A: Continue to Operate a Stormwater Utility
- Action 1-B: Street Sweeping and Catch Basin Cleaning
- Action 1-C: Review of land development proposals
- Action 1-D: Annual upgrades to stormwater infrastructure

Action 2: Implement Flow Restoration and Phosphorous Control Plans to mitigate Fluvial Erosion

- Action 2-A: Implement Flow Restoration Plan for Morehouse Brook
- Action 2-B: Implement the Phosphorus Control Plan

Action 3: Update Fluvial Erosion Overlay District

Action 4: Pursue Opportunities for Improved Broadband

Action 5: Transition Ownership of the "Causeway"

Action 6: Consider Adopting the State Model Resilient Building Standard

Staff Recommendation / Proposed Motion: The staff recommends that the Selectboard move to approve the attached resolution, dated April 12, 2022 tilted A Resolution Adopting the Town of Colchester 2022 Local Hazard Mitigation Plan, as recommended in an April 5, 2022 Memo from Town Manager, Aaron Frank.

A Resolution Adopting the Town of Colchester 2022 Local Hazard Mitigation Plan

April 12, 2022

Town of Colchester, Vermont Selectboard

Whereas, the Town of Colchester has historically experienced severe damage from natural hazards and it continues to be vulnerable to the effects of the hazards profiled in the Town of Colchester 2022 Local Hazard Mitigation Plan, which result in loss of property and life, economic hardship, and threats to public health and safety; and

Whereas, the Town of Colchester has developed and received conditional approval from the Federal Emergency Management Agency (FEMA) for the Town of Colchester 2022 Local Hazard Mitigation Plan under the requirements of 44 CFR 201.6; and

Whereas, the plan specifically addresses hazard mitigation strategies and plan maintenance procedures for the Town of Colchester; and

Whereas, the plan recommends several hazard mitigation actions that will provide mitigation for specific natural hazards that impact the Town of Colchester with the effect of protecting people and property from loss associates with those natural hazards; and

Whereas, adoption of this plan will make the Town of Colchester eligible for funding to alleviate the impacts of future hazards;

Now therefore be it resolved by the Town of Colchester Selectboard

1) The Town of Colchester 2022 Local Hazard Mitigation Plan is hereby adopted as an official plan of the Town of Colchester;
2) The respective Town officials identified in the mitigation action plan are hereby directed to pursue implementation of the recommended actions assigned to them; and
3) Future revisions and plan maintenance as 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.

In witness whereof, the undersigned have affixed their signature and the corporate seal of the Town of Colchester, this 12 day of April, 2022.

TOWN OF COLCHESTER
2022 Local Hazard Mitigation Plan

Prepared by:

Town of Colchester, Vermont

Adopted by the Town of Colchester Selectboard on April XX, 2022

Approved by FEMA on April XX, 2022

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. This document is an update to Colchester's 2017 All Hazards Mitigation Plan and documents recent accomplishments in hazard mitigation as well as anticipated future hazards and mitigation actions. The plan contains six sections, as follows:

Section 1: Introduction & Purpose - Provides an overview of the plan, hazard mitigation planning at the State and Federal level, and the benefits of hazard mitigation planning. This section also explains the purpose and goals of the plan.

Section 2: Community Profile - Describes Colchester's demographics and development characteristics as well as key changes since 2017 that relate to natural hazards in Colchester.

Section 3: Planning Process - Describes the process used to develop the plan and the entities and methods involved.

Section 4: Review Existing Plan & Plan Maintenance - Provides a status update on the specific mitigation actions included in the 2017 plan, summarizes current and ongoing hazard mitigations activities, and indicates how the Town will maintain the plan over the next five years.

Section 5: Hazard Identification & Prioritization – Assesses the natural hazards of potential threat to Colchester to identify the high priority hazards and reviews Colchester's vulnerability to them.

This section identifies the following high priority hazards in Colchester:

1) Fluvial Erosion
2) Inundation Flooding
3) Infectious Disease Outbreak
4) Snow
5) Ice

Section 6: Mitigation Actions – Identifies 1) mitigation actions and strategies that will address the high priority hazards as identified in Section 5, 2) prioritization of the mitigation actions, and 3) existing support for hazard mitigation in the Town Plans.

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

Action 1: Continue to Operate a Stormwater Utility to Mitigate Severe Fluvial Erosion

- Action 1-A: Continue to Operate a Stormwater Utility
- Action 1-B: Street Sweeping and Catch Basin Cleaning
- Action 1-C: Review of land development proposals
- Action 1-D: Annual upgrades to stormwater infrastructure

Action 2: Implement Flow Restoration and Phosphorous Control Plans to mitigate Fluvial Erosion

- Action 2-A: Implement Flow Restoration Plan for Morehouse Brook
- Action 2-B: Implement the Phosphorus Control Plan

Action 3: Update Fluvial Erosion Overlay District

Action 4: Pursue Opportunities for Improved Broadband

Action 5: Transition Ownership of the "Causeway"

Action 6: Consider Adopting the State Model Resilient Building Standard

Finally, this section includes an Action Prioritization to aid the Town in implementing the Mitigation Actions.

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SECTION 1: INTRODUCTION AND PURPOSE

The 2022 Colchester Local Hazard Mitigation Plan (LHMP) is the update of Colchester's 2017 All Hazard Mitigation Plan (2017 AHMP), which was included as an annex to the 2017 Chittenden County multi-jurisdictional AHMP. The purpose of this updated plan is to identify and assess all natural hazards facing the community and to develop strategies to reduce or minimize the impacts of those hazards. Unlike the 2017 AHMP, which was part of a multi-jurisdictional plan for Chittenden County, the 2022 LHMP update is a single jurisdiction plan focused solely on hazards and mitigation actions within the Town of Colchester. While Colchester has transitioned to a stand-alone plan with a single municipal focus, there is a commitment to ongoing coordination with adjacent communities and regional entities. With the shift to a single jurisdiction plan, Colchester has taken the opportunity to re-organize and streamline the plan with the goal of focusing on natural hazards and the strategies that are likely to be the most impactful in the community. Additionally, since Colchester's 2017 AHMP was developed, the State of Vermont finished a complete rewrite of its 2013 plan and released the *2018 Vermont State Hazard Mitigation Plan*. This LHMP takes cues from the 2018 SHMP plan by focusing on the natural hazards and hazard impacts most likely to affect Vermont, and Colchester specifically.

State and Federal Hazard Mitigation Planning

The *2018 Vermont State Hazard Mitigation Plan* (2018 SHMP) defines hazard mitigation as "any sustained action that reduces or eliminates long-term risk to people and property from natural hazards and their effects" and states "the impact of anticipated yet unpredictable natural events can be reduced through community planning and implementation of cost effective, preventive mitigation efforts.*"* Additionally, "the 2018 Vermont SHMP was developed to help the State of Vermont and local governments identify all natural hazards facing our communities and establish actions that reduce risk."

At the federal level, hazard mitigation planning is a required by the Disaster Mitigation Act of 2000 According to 44 CFR Part 201, Hazard Mitigation Planning, this planning process establishes criteria for State and local hazard mitigation planning. Effective November 1, 2003, local governments now must have an approved local mitigation plan prior to the approval of a local mitigation project funded through federal Pre-Disaster Mitigation funds. Furthermore, the State of Vermont is required to adopt a State Pre-Disaster Mitigation Plan in order for Pre-Disaster Mitigation funds or grants to be released for either a state or local mitigation project after November 1, 2004.

There are several implications if the plan is not adopted.

- 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.

- With regards to contributions from the State of Vermont (under the Emergency Relief Assistance Fund) to cover the non-Federal share of Public Assistance project costs, a community without a plan, would have to cover 17.5% of the overall project cost compared to only 7.5% to 12.5% of the cost if the Town had a LHMP in place.

Hazard Mitigation 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 in emergency operations plans, comprehensive plans (aka "town plans"), capital improvement plans and budgeting, open space plans, and stormwater master plans..

Local Hazard Mitigation Plan Goals

The following goals were included in the 2005, 2011, and 2017 versions of this Plan and are hereby re-approved by Town of Colchester officials as part of this 2022 update.

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 LHMP.
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 LHMP, 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.

As noted previously, Colchester's 2022 LHMP marks a departure from the previous multi-jurisdictional planning effort. Due to the transition to the single jurisdiction plan, several additional goals more specific to Colchester have been developed:

7) Consider Colchester's unique natural characteristics, experiences, and community assets when developing the LHMP.
8) Ensure the plan focuses on hazards and hazard impacts for which Town efforts can have a meaningful impact.
9) Ensure the mitigation strategies and actions that are selected are consistent with Colchester's Town Plan and the capacity of the Town to implement them.
10) To the extent possible, leverage and build upon the time and financial resources already devoted to ongoing mitigation actions and strategies by Town, regional, and State entities.
11) Support processes and opportunities to foster regional coordination in hazard mitigation.

SECTION 2: COMMUNITY PROFILE

Colchester's *2019 Town Plan* describes the Town:

Colchester is located in the northwestern corner of Vermont, along the shores of Lake Champlain within the rolling landscape of the Champlain Valley. Situated between the mouths of the Winooski and Lamoille Rivers, Colchester is defined by its rich water resources and varied geography, from the rugged coastline of Clay Point to the sandy beaches of the inner bay, rolling fields of Shipman Hill, and rocky knobs of Colchester Pond Park.

The Town of Colchester is bounded on the west by Lake Champlain, on the south by Burlington, Winooski, and South Burlington, on the east by Essex, and on the north by Milton. It encompasses 37.15 square miles.

Based on 2020 U.S. Census data, Colchester had a municipal population of 17,524, an increase of 2.7% from the 2010 Census figure. While some 2020 Decennial Census is available for the Town-level characteristics, due to the lack of a complete data set, the 2019 American Community Survey 5-year estimates data was utilized for some population characteristics, as noted with an asterisk:

Table 2-1 Town of Colchester, selected population characteristics, 2020 Decennial Census and American Community Survey for 2019

Category	Number	%
Total Population	17,524	--
Median Age*	38 years	--
Population age 65 years and over*	2,243	12.7
Population (and %) under 10 years old*	1,731	9.9
Population (and %) in group quarters	1,621	9.3

Table 2-2 Town of Colchester, Population Growth, 1960-2020

Year	Population
1960	4,718
1970	8,776
1980	12,629
1990	14,731
2000	16,986
2010	17,067
2020	17,524

U.S. Census counts for 1960, 1970, 1980, 1990, 2000, 2010, and 2020

The following shows the types of housing within Colchester, based on the 2020 U.S. Census data:

Table 2-3 Town of Colchester, selected housing unit data, 2020

Category	Number	%
Total Housing Units	7,574	--
Occupied housing units	6,875	90.8
Vacant housing units	699	9.2

U.S. Census Bureau, 2020 Census of Population and Housing, Population and Housing Unit Counts

Vulnerable Populations

The 2018 SHMP reaffirmed and highlighted the importance to consider the hazard impacts on vulnerable populations. While the 2017 AHMP did include information on vulnerable populations, this 2022 update has expanded the populations considered in recognition of the heightened risk these populations face from natural hazards. Traditionally, the term vulnerable populations has included children, seniors, persons in poverty, and persons with disabilities. With regard to natural hazards and their impacts, persons with limited English proficiency and those who are housing insecure or homeless are also at heightened risk of negative consequences. Additionally, in Vermont, there is evidence that members of the BIPOC (Black, Indigenous, People of Color) community have had higher adverse effects during the Covid-19 pandemic. The rates of representation within the Colchester community for these populations have been noted below, as well as the percent change since 2017.

Table 2-4 Vulnerable Populations within Colchester

Category	2020 Number	% Change since 2017
Children (under 18)	3,007	-4%
Seniors (over 65)	2,243	+13%
Persons in Poverty (income at or below 125% of poverty level	2,005	-7%
Persons with Disabilities	1,812	+22%
Persons with Limited English Proficiency	330	-24%
Homeless Individuals *	30	NA
BIPOC **	1,192	+27%

Data from the American Community Survey 2017 and 2019 5-Year Estimates, unless otherwise noted.
** Calculated as Colchester's share of the State of Vermont's 1,100 homeless population in January 2020, based on Colchester's ratio share of the State population.*
*** Measured as the non-white population within Colchester*

While there have been some moderate increases amongst some of the vulnerable populations within Colchester, neither available data nor those with significant local knowledge are able to point to specific geographic areas within the Town where these increases have occurred. Therefore, this plan does not endeavor to tie mitigation efforts to specific geographic areas as a means to minimize the impact on vulnerable populations.

Recent and Future Development Patterns

As described in the 2019 Town Plan: "Growth in Colchester is anticipated to continue to occur at previously developed locations and at the designated mixed use growth area known as Severance Corners (located at the corners of Blakely Road, Severance Road, and US Routes 2 & 7), and Exit 17 (located at the junctions of US Routes 2 & 7 around Exit 17 of I-89). At this time, the only way to predict future development is by analysis of municipal zoning bylaws. As the municipality participates in the NFIP, zoning bylaws heavily regulate development in designated flood hazard areas. Additionally, the Town also regulates development near other waterbodies and wetlands. As a result, little to no development is likely to take place in flood hazard areas or river corridor protection areas."

Residential development is heaviest along the following roads:

- Porters Point Road, Airport Road, Holy Cross Road, Bean and Macrae Road, all located in the Prim and Heineberg Roads neighborhood
- US Route 2A in the Colchester Village neighborhood
- North of US Route 2 and Jasper Mine Road along Watkins and Mayo Roads
- Blakely Road, Williams Road, and Lakeshore Drive in the Town Services Center neighborhood
- Severance Road by the Essex Town border
- Malletts Bay Avenue by the Winooski Town border
- Fort Ethan Allen along Route 15.

Commercial and/or industrial development is concentrated along the following roads:

- Heineberg and Prim Roads
- US Routes 2 & 7 in the Exit 16 area off US I-89
- West Lakeshore Drive
- US Route 2A in the Village of Colchester and at the junction of Routes 2A, 2, and 7
- The junction of US Routes 2 & 7 in the Exit 17 area off US I-89
- Jasper Mine Road

Agricultural fields are most common in the northern third of the Town but are also present in the Shipman Hill area along Malletts Bay Avenue, the vicinity around Mill Pond and Parsons Road, and some portions of Route 7 north of Severance Corners.

Water, Wastewater and Natural Gas Service Areas

A large number of residents and business receive water service through the Champlain Water District, with the remainder using private or community wells. Almost all residents and business dispose of wastewater through septic systems with the exception of property owners in the southeast portion of the Town that abuts South Burlington and Essex. Property owners in the former grounds of the Fort Ethan Allen complex are served by the Town of Essex's municipal

water and wastewater treatment systems while St. Michael's College is served by the City of South Burlington's system. Vermont Gas services a significant portion of the Town.

Electric Power Transmission Lines and Telecommunications Land Lines

Three VELCO high tension power transmission lines run through the Town. Green Mountain Power is the sole electric distribution utility for the Town. Two substations and a power generation station are also located in the Town. Above ground telecommunication land lines run along the street grid. Additionally, since 2017, the Town has completed the installation of two municipally owned solar arrays, which generate 70% of the energy needed to provide Town services.

Emergency Services

The Town provides 24-hour Law Enforcement and emergency dispatch services through the Colchester Police Department (CPD). The Department is head quartered on Blakely Road and has twenty-nine sworn officers and 6 communication staff.

Fire services are provided by The Colchester Fire Department (CFD). The CFD is a combination department (4 paid staff and 30+ volunteers) which operates out of three (3) fire stations. The stations are located on Main Street, Church Road, and Clay Point Road. Saint Michaels College Fire and Rescue (SMFR) operates out of one station located on College Parkway and although independent of CFD, functions as a "Battalion" of CFD.

Emergency Medical Services (EMS) is provided by the Town through the Colchester Rescue Squad (CRS) head quartered on Blakely Road and Saint Michaels College Fire and Rescue (SMFR) that provides EMS to the Saint Michaels College Campus, Route 15 and Fort Ethan Allen areas of the Town.

All of the Towns emergency services participate in Mutual Aid systems with surrounding communities. This allows the Town to receive aid from surrounding communities and provide to aid when needed.

The Town last adopted its Local Emergency Management Plan (LEMP) on April 13, 2021.

Transportation Infrastructure

The Town has 114.90 miles of public roads, 22.9 miles of which are State Highways. There are also approximately eight miles of Federal Highway: Interstate 89. Unpaved roads are more vulnerable to being washed out in a flood or heavy storm, while traffic incidents are more likely to occur on large, arterial roads. The transportation infrastructure can be seen in the Community Facilities Map in Appendix E.

Critical Facilities

The following table shows the critical facilities located within Colchester. None of these facilities are located in the Flood Hazard Areas or within the River Corridor areas. Their locations can be seen in Appendix E.

Table 2-5 Critical facilities in the Town of Colchester

Facility Type	Number of Facilities
Veterinary Hospital / Clinic	6
Education Facility	5
College / University	1
EMS Station	2
Hospital	1
Fire Station	4*
Emergency Shelters	3
Emergency Operations Center	1
Energy	3
Government and Military	2
Police Station	1
Mail and Shipping	1

Source: VCGI, Colchester Town Officials
**Includes the St. Michael's College Fire and Rescue*

Key Changes Since 2017

Hazard Events: Since 2017, there have been two major hazard impacts that have affected Colchester dramatically; 1) The 2018 inundation flooding that caused significant destruction of an important community asset known as the Causeway and 2) the Covid-19 pandemic that has impacted virtually every aspect of residents' lives, economic activity, and municipal operations. These experiences have informed the 2022 plan update and highlighted the importance of hazard mitigation efforts.

Critical Service: A significant development in Colchester's emergency services occurred in 2020 with the merging of Colchester's three volunteer fire district into a single Town Fire Department as of May 1, 2020. The impetus for the change was concern about limited weekday-daytime firefighter availability and the potential risk to life and property. Through the merging of the three departments and voter support for an increased budget, the Town was able to fund four career staff firefighters to provide mid-day coverage. The newly formed Town Fire Department is led by one Chief and is a combined volunteer and career department.

Climate Change: The 2018 SHMP describes its mission as "to protect life, property, natural resources and quality of life in Vermont by reducing our vulnerability to climate change and natural disasters" and also identifies effects of climate change as "warming temperatures, shrinking winters, and increasing incidence of intense storm events." Given the concern about these potential climate change impacts, the Steering Committee members discussed the climate change impacts on natural hazards in Colchester whether climate change would the alter risks

posed to the Town and/or the potential mitigation actions during the five year life of the plan. At this time, Colchester staff indicate that it appears weather patterns have changed over time, with more frequent heavy wind and rain events. Additionally, winters seem to have less snow and more freezing rain and ice storms. However, these observations did not suggest a significant change to the Town's hazard mitigation planning is needed at this time.

SECTION 3: THE PLANNING PROCESS

As noted above, through this update of the 2017 AHMP, Colchester is transitioning from being part of Chittenden County's multi-jurisdictional plan to a single jurisdiction plan. The 2017 AHMP development was led by the Chittenden County Regional Planning Commission (CCRPC). For the 2022 LHMP, the Town of Colchester, with funding provided by the State of Vermont via a FEMA Pre-Hazard Mitigation Grant, engaged a consultant to complete the plan update with the assistance of Town staff and other key partners and stakeholders as noted below.

The consultant began the planning process by reaching out to CCRPC and Vermont Emergency Management (VEM) staff to discuss the previous planning effort and confirm Colchester's approach for 2022. The next step was the establishment of project Steering Committee made up of a core group of Colchester staff.

Steering Committee:

Bryan Osborne – Director of Public Works, Town of Colchester

Seth Lasker – Emergency Management Coordinator, Town of Colchester

Cathy LaRose – Director of Planning & Zoning, Town of Colchester

Zachary Maia – Planner, Town of Colchester

Karen Adams – Stormwater Utility/Public Works, Town of Colchester

The Town Manager, Aaron Frank, was also consulted throughout the planning process.

Due to the ongoing Covid-19 pandemic, conversations and meetings between the consultant and Steering Committee members were held virtually, including via Zoom, phone calls, and emails. Prior to the initial conversation with each Steering Committee member, the consultant developed a project timeline, a plan outline to reflect the transition to a single jurisdiction plan and an introductory list of needed data and questions to be answered (Appendix A). The kick-off conversation with each Steering Committee member included a review of that revised outline and set of questions, and a specific discussion of changes within the Town since the 2017 AHMP was adopted.

Additional topics covered in subsequent conversations and emails between the consultant and the Steering Committee members included:

1. Consideration of whether there were any significant changes in the community profile since 2017, such as an influx of new residents, new vulnerable populations, changes in government operations, or changes in development patterns/locations that affect the community's vulnerability to hazards. The consultant discussed with Town staff the best sources of updated demographic data and information on any changes to development patterns.
2. Discussion of the distribution method for the public survey.
3. Consideration of any changes to the Town's hazard mitigation goals.
4. Updated information on Town emergency services and changes that occurred since 2017.

5. Updated data on declared disasters since 2017.
6. Review of the updated list of natural hazards to be scored and prioritized to ensure there were no additional hazards committee members felt should be included. Committee members were also asked to consider whether climate change has had any effect on hazards within Colchester, in their experience.
7. Review of the updated Hazard Impact Assessment Tool, which was used to score hazard impacts and prioritize hazards facing the Town.
8. Discussion of the progress that has been made on the 2017 mitigation strategies and tasks from the 2017 AHMP.
9. Discussion of the proposed 2022 LHMP mitigation actions.
10. Discussion of the plan maintenance and update process and responsible parties.
11. Review and discussion of Town capacity to bring needed resources to the hazard mitigation activities.

The discussions with Steering Committee members, the Town Manager, and representatives from the Chittenden County Regional Planning Commission (CCRPC) and Vermont Emergency Management as part of the planning process spanned the September-December 2021 period and are summarized below:

September 2021:

- Discussions with the Town Manager regarding Town goals for the plan and methods to provide opportunities for public outreach and feedback
- Discussions with CCRPC and VEM regarding Colchester's transition to a stand-alone plan.

October 2021

- The consultant shared the Plan Outline and set of planning questions/data needed with all Steering Committee members in advance of setting up phone/zoom calls to review them in detail.
- The consultant began the initial demographic data collection effort and review of other Town and regional plans and documents.

November 2021

- There was a zoom meeting involving the consultant, Cathy LaRose and Zach Maia to review the Plan Outline and questions in detail. The conversation largely focused on what data and input Cathy and Zach could offer from the perspective of the Planning & Zoning Department, including information on development patterns and demographic changes. The consultant also went over the hazard assessment scoring tool and how it would be used in the development of the 2022 LHMP. In subsequent emails, Cathy provided updated information on development in the Town and both Cathy and Zach provided completed copies of the hazard assessment scoring tool.
- The consultant and Bryan Osborne had a phone conversation to go over all the topics contained in the Plan Outline and discuss the Public Works Department's experience with

the natural hazards identified in the 2018 SHMP as well as the progress made on the 2017 AHMP mitigation actions. In subsequent emails, Bryan provided additional data on Public Works experience with various types of natural hazards, detailed data on the previous plan's mitigation actions, and his completed hazard assessment scoring tool.

- The consultant corresponded with Karen Adams via email and phone regarding her knowledge of hazards within Colchester and hazard mitigation efforts. In a subsequent email, Karen provided a completed hazard assessment scoring tool.
- The consultant and Seth Lasker had a phone conversation to go over the Plan Outline and associated questions in detail, including a specific focus on the Town's emergency services and past emergencies/hazards. In subsequent emails, Seth provided data on vulnerable populations and the Town's emergency services, and also provided his completed hazard assessment scoring sheet.

December 2021

- Via email to the full Steering Committee and the Town Manager, the consultant provided a summary of the group hazard assessment scoring results. The top five hazards from the combined scores were identified as well as how these scores differed from the 2017 AHMP.
- Via email to the full Steering Committee and the Town Manager, the consultant suggested mitigation actions to address the top five hazards and sought feedback from the committee members on the proposed mitigation actions. Feedback and suggested revisions were provided to the consultant via phone and email by the Town Manager and Bryan Osborne.
- Via email to the full Steering Committee and the Town Manager, the consultant provided a suggested mitigation action prioritization and invited feedback should the committee members not concur with the proposed prioritization. No revisions were suggested.
- Via email to the full Steering Committee and Town Manager, the consultant provided the full draft 2022 LHMP, providing the opportunity for any needed adjustments. There was subsequent email correspondence between the consultant and Cathy LaRose regarding the distribution of the draft plan and the public meeting.

February 2022

- After receiving a list of required revisions to the Draft 2022 LHMP, the consultant sought feedback on several questions from the Steering Committee and the Town Manager. Feedback was provided via email by the Town Manager and Karen Adams regarding more detail about the Town's current public outreach efforts and current capacity to work on hazard mitigation.

Throughout the planning process, the consultant also worked and consulted with CCRPC staff who assisted with providing data from the 2017 AHMP and also created the Hydrology Map (Appendix E) and Communities Facilities Map (Appendix F).

In addition, the following materials were reviewed:

1. Town of Colchester Land Development Regulations
2. Town of Colchester 2019 Town Plan
3. FEMA information on prior disasters
4. The 2018 Vermont State Hazard Mitigation Plan
5. Green Mountain Power Climate Plan (September 2020)
6. Vermont Gas Systems Climate Plan (Vision 2050) and Integrated Resource Plan
7. Information from Vermont Agency of Natural Resources on fluvial erosion hazards and flood hazards
8. Landslide Inventory of Chittenden County, Northwest Vermont (Vermont Geological Survey Open File Report VG2018-6) from June 2018
9. Town of Colchester 2021 Phosphorous Control Plan

Opportunities for the general public, neighboring communities, local, regional and state agencies, and other stakeholders to be involved in the review and development of Hazard Mitigation Plans are a requirement and can also provide valuable input to those developing the plan. To provide this opportunity for participation, Colchester conducted the following outreach:

1) On October 26, 2021, an online public survey was released seeking input on hazards facing Colchester, Colchester's community assets, and potential mitigation strategies. The link to the online survey was included in a Town-wide newsletter, The newsletter was released in its entirely via the municipal website, the local newspaper, direct email distribution via Constant Contact, and through the six Colchester Front Porch Forum neighborhoods. Additionally, the newsletter link was also included on the municipal Facebook and Instagram accounts. The results of the public survey can be found in Appendix B.
2) On November 8, 2021, the Town's consultant directly called a member of Planning Department staff for each adjacent municipality (Burlington, South Burlington, Essex, Milton, and Winooski) to make them aware of Colchester's LHMP ongoing development process and to invite them to participate. An email to the same individuals and CCPRC was also sent the same day, reiterating the invitation to participate and providing notice that Colchester intended to release a draft plan in December 2021. The consultant invited these municipal and CCRPC representatives to reach out via email or phone call. While several municipal contacts acknowledged the consultant's email, no feedback specific to the LHMP was provided.
3) On November 16, 2021, the Town's consultant sent an email to several key stakeholders to make them aware of Colchester's LHMP development and to invite them to participate in the process. These stakeholders included Green Mountain Power, Vermont Gas Systems, UVM Medical Center, St. Michael's College, and Green Mountain Transit. The consultant provided a link to the online public survey and invited these stakeholders to complete the survey and share their organization's perspective. The consultant also invited the stakeholders to offer input via email or phone call. No feedback was received.

4) On December 13, 2021, the first draft of Colchester's 2022 LHMP was released. The draft was made available via a link which included in the December 2021 Town newsletter, which was distributed the municipal website, the local newspaper, direct email distribution via Constant Contact, and through the six Colchester Front Porch Forum neighborhoods. The newsletter notice also included the date, time and location for a public meeting to present the draft plan and offered the opportunity for members of the public to offer comments via email as well. No members of the public offered feedback via email. Notice of the draft LHMP was emailed to all adjacent communities, the CCRPC, key stakeholders, the Colchester Planning Commission, the Vermont Division of Emergency Management (VEM), the Vermont Agency of Transportation, the Vermont Agency of Commerce & Community Development, and the Vermont Department of Environmental Conservation. Public comments on the draft plan were accepted until December 30, 2021. These key stakeholders were invited to provide feedback on the draft plan to the consultant via email or phone, but no feedback was received.
5) On December 21, 2021, a public meeting was held to obtain feedback on the draft plan, which allowed for in-person attendance or virtual attendance via Zoom. The only attendees at the public meeting were the project consultant, Meredith Dolan, and the Town of Colchester Director of Economic Development, Kathi O'Reilly. While no public comments were received, the discussion that occurred at the public meeting between Ms. Dolan and Ms. O'Reilly led to additional data on the economic impact of the Covid-19 pandemic being added to Section 5.

Revised drafts of the 2022 LHMP were submitted to VEM and FEMA for review and approval pending municipal adoption on January 6, 2022 and February 23, 2022. On March 22, 2022, VEM issued a notice that the Town of Colchester LHMP was approved pending adoption by the relevant municipal governing body. On April 4, 2022, the Town's consultant provided the final version of the LHMP to the Town Manager for distribution to the Town of Colchester Selectboard members as well as a draft resolution of adoption to be discussed at a regularly scheduled and properly warned Town of Colchester Selectboard meeting on April 12, 2022

The 2022 LHMP was adopted by the Town of Colchester Selectboard on April XX, 2022 and a copy of the resolution was sent to VEM and FEMA Region One on April XX, 2022

SECTION 4: PLAN REVIEW & MAINTENANCE

Regular maintenance and review of the LHMP is vitally important to ensuring progress is made on the mitigation actions and also to confirm that no significant changes have occurred within the community that would suggest a change of course is needed. The 2017 Chittenden County Multi-Jurisdictional AHMP included details on how Colchester would monitor, evaluate, and report on its progress implementing the plan. As specified in the 2017 AHMP, Colchester submitted annual documentation of the progress it made on the identified mitigation actions. Appendix C includes the 2017, 2018, 2019, and 2020 status updates that were provided to CCPRC. These status reports document the substantial completion of Colchester's 2017

mitigation actions, which represent a considerable effort on the part of the municipality to minimize hazards and their impacts within the community.

The following summarizes the significant progress on the 2017 AHMP mitigation actions:

- Action A-1: Establish a Stormwater Utility
  Status: Completed & Ongoing
  Details: A stormwater utility was established by the Selectboard in April 2017 and the utility became effective July 2, 2017. All properties within the Town are subject to the utility and utility fees. The annual budgets for the stormwater utility over the FY18-FY21 period have been $849,000, $958,748, $959,686, and $962,733, respectively. The stormwater utility includes two dedicated maintenance staff and a manager.

- Action A-2: Perform Annual Catch Basis and Street Cleaning
  Status: Completed & Ongoing
  Details: Through annual catch basin and street cleaning by Colchester's Department of Public Works, 716 cubic yards of sediment were removed from the Town catch basins and 974 cubic yards of sediment and leaves were removed from Town streets since 2017.

- Action A-3: Review of Land Development Proposals
  Status: Completed & Ongoing
  Details: The Town has reviewed 2,690 site plans for stormwater management since 2017.

- Action A-4: Annual Upgrades to Stormwater Infrastructure
  Status: Completed & Ongoing
  Details: The Town completed multiple stormwater infrastructure improvement projects (see Appendix C for complete information). The Town also completed a town-wide condition assessment using camera technology to assign a condition rating to existing assets and assist with preparation of a five-year stormwater capital program to plan for replacements and needed upgrades.

- Action B-1: Implement Flow Restoration Plans
  Status: Completed & Ongoing
  Details: The Town worked with the Town and Village of Essex on the Sunderland Brook Flow Restoration Plan and those flow restoration targets have been met. For Morehouse Brook, the Town contributed $3,219 toward the final development of the Morehouse FRP and contributed $10,383 toward the construction of stormwater improvements for Pine Grove Terrace in the City of Winooski. The Town continues to work with the City of Winooski on Morehouse Brook projects, which will be advanced according to the FRP schedule. The RFP requires all projects be complete by 2027.

- Action B-2: Implement a Phosphorous Control Plan
  Status: Completed & Ongoing
  Details: The Town was awarded a $40,000 grant from VTrans' Municipal Highway and Stormwater Mitigation program to complete the development of a Phosphorus Control Plan (PCP) to reduce the total phosphorus discharge from the Town into Lake

Champlain. The PHP was completed and submitted to the State in April 2021. Projects included in the plan have a 2036 deadline for completion.

Ongoing Plan Review & Maintenance

Upon approval of this 2022 LHMP, the Town will implement the following process for regular plan review and maintenance. The Town of Colchester Director of Planning & Zoning will be responsible for ensuring the ongoing plan monitoring and future updates to the plan, as outlined below.

1) Semi-Annual Internal Review of Mitigation Actions – The Town staff who are members of the Steering Committee will individually review the mitigation actions every six months and will report back to the other committee members if they have concerns or questions about progress on the identified actions.
2) Annual Documentation of Mitigation Action Progress – The Town staff who are members of the Steering Committee will annually document the progress made on the mitigation actions and identify any impediments to future progress. A similar format as used in the reports in Appendix C will be used.
3) Annual Public Posting of Mitigation Action Progress – Once the annual documentation of mitigation action progress has been completed by the Steering Committee members, it will be made available to the public via the Town website and/or the Town newsletter and will also be shared with the CCRPC and adjacent communities. The public and regional partners will be invited to comment on the progress or offer ideas on how best to achieve the Town's hazard mitigation goals in the future.

The maintenance process outlined above will also serve as a basis for the anticipated plan update that will need to be completed in 2027. A schedule for the ongoing plan review and maintenance as well as preparation for the 2027 update is as follows:

Table 4-1

Date	Task
March 2022	2022 LHMP Approval
September 2022	Semi-Annual Review
March 2023	Annual Documentation & Public Comment Opportunity
September 2023	Semi-Annual Review
March 2024	Annual Documentation & Public Comment Opportunity
September 2025	Semi-Annual Review
March 2025	Annual Documentation & Public Comment Opportunity
September 2025	Semi-Annual Review
October 2025	Develop Plan & Timeline for the 2027 LHMP Update
March 2026	Annual Documentation & Public Comment Opportunity
April 2026	Kick-Off 2027 LHMP Update Project
March 2027	2027 LHMP Approval

Existing Hazard Mitigation Activities, Programs & Policies

Colchester is currently actively engaged in hazard mitigation activities, programs, and policies which span multiple municipal departments, entities, and documents.

Staff Capacity: Over the past five years, the Town has put forth great effort to provide the needed staff-level support for the hazard mitigation actions identified in the 2017 AHMP. Of particular note since 2017, the Town has assigned a designated manager to oversee the Stormwater Utility that was created in 2017. In addition to that designated manager, two other members of the Department of Public Works staff have been designated to provide assistance with the Stormwater Utility tasks. In early 2019, the Emergency Management Coordinator position was elevated to a department head level. Additionally, in the fall of 2021, the Town welcomed a new Director of Planning & Zoning and that position has been assigned the role of hazard mitigation planning oversight and plan maintenance. The Planning & Zoning Department staff is tasked with ensuring the public has access to information about hazard mitigation resources and opportunities. The Town Manager's office is also available to provide assistance and guidance on hazard mitigation activities to other Town departments, staff, and the public. Currently, there is one Certified Floodplain Manager on staff.

Current Activities, Policies, & Programs: The Town has several ongoing activities and programs directly related to hazard mitigation, including the operation of a Stormwater Utility, participation in the National Flood Insurance Program (NFIP), participation in the Community Rating System (CRS), and annual Town infrastructure maintenance and upgrades that assist with hazard mitigation. The identification of hazards and methods to mitigate hazards are contained within multiple Town documents and policies, including the 2019 Town Plan, the Town Development Regulations/Zoning Bylaws, and the recently completed Phosphorous Control Plan.

Public Outreach & Communication Resources: The Town has several existing highly effective avenues to reach the public regarding hazard mitigation activities, including the Town newsletter, Town Facebook page, Town Instagram account, Front Porch Forum, and the Town website. As part of the NFIP and CRS programs, the Town has extensive public outreach efforts, including a bi-annual stormwater newsletter, direct outreach to repetitive loss properties, site reviews with property owners to discuss flood mitigation opportunities, and the provision of hazard mitigation data and fact sheets.

Volunteers/Committees: There are several volunteer-led committees that play an active role in hazard mitigation in Colchester and the implementation of the Towns programs and policies. This includes the Planning Commission, the Development Review Board and the Board of Sewer Commissioners.

Areas for Improvement & Capability Expansion: In order to expand its capabilities and the resources offered to residents, the Town is considering pursuing having a second Certified Floodplain Manager on staff. In terms of additional expansion or improvement of its hazard mitigation resources, the Town has a history of seeking out grant funds, partnerships with other municipalities and agencies, and other opportunities to access additional resources and will continue to do so when needed.

Available Funding: Colchester took a significant step forward in 2017 with the creation of the Stormwater Utility, which includes a dedicated funding stream for activities that address the impacts of impervious surfaces and aim to mitigate the fluvial erosion hazard. The Town partnered with the City of Winooski to help fund one of the mitigation actions identified in the 2017 AHMP. The Town has also been able to fund important mitigation activities, such as participation in NFIP and CRS, within the annual municipal budget.

As outlined above, the Town of Colchester has significant existing authorities, actions, plans, and policies that support hazard mitigation. Overall, the resources available are adequate to meet the Town's hazard mitigation needs. The following table summarizes the mitigation activities, plans, and policies carried out by various municipal departments and entities.

Table 4-2 Existing Authorities, Actions, Plans, and Policies that Support Hazard Mitigation

	Specific Action/Plan/Policy	Municipal Resource	Hazard(s) Mitigated	Notes
Current & Ongoing Activities	Operation of a Stormwater Utility	Public Works Department/Stormwater Utility	Fluvial Erosion	Provides a dedicated funding stream to address the impacts of impervious surfaces.
	Catch basin cleaning & street sweeping	Public Works Department/ Stormwater Utility	Fluvial Erosion	Town staff perform regular catch basin cleaning and street sweeping
	Upgrades to stormwater infrastructure	Public Works Department/ Stormwater Utility	Fluvial Erosion	The Town regularly performs and budgets for stormwater infrastructure improvements
	Participation in National Flood Insurance Program (NFIP)	Planning & Zoning Department, Emergency Management Coordinator, and Development Review Board	Fluvial Erosion Inundation Flooding	
	Participation in the Community Rating System (CRS)	Planning & Zoning and Emergency Management Coordinator	Fluvial Erosion Inundation Flooding	The Town obtained CRS designation in 2016 and continues to maintain it.
Current Policies & Plans	2021 Phosphorous Control Plan (PCP)	Public Works Department and Stormwater Utility	Fluvial Erosion	The PCP was completed in 2021 and its action items are due to be completed by 2036.
	2019 Town Plan	Planning & Zoning Department and the Planning Commission	Fluvial Erosion, Inundation Flooding	A new Town Plan was issued in 2019 and it includes many references to hazard mitigation.
	Special Flood Hazard Area	Planning & Zoning Department, Planning Commission, and Development Review Board	Inundation Flooding	Development within the Special Flood Hazard Area is prohibited.
	Fluvial Erosion Overlay District	Planning & Zoning Department, Planning Commission, and Development Review Board	Fluvial Erosion	The Fluvial Erosion Overlay District was incorporated into the Town's regulations in 2015 and regulates development within 250 feet of the mean watermark of the Winooski and Lamoille Rivers.
	Shoreland Protection Overlay District	Planning & Zoning Department	Inundation Flooding	The Town has had shoreland protection regulations in place for decades that regulate the type of development within 250 feet of the mean watermark of Colchester Pond and Lake Champlain.

SECTION 5: HAZARD IDENTIFICATION & PRIORITIZATION

Central to hazard mitigation planning is the assessment of hazards and the community's vulnerability to them, which is conducted prior to the development of mitigation strategies. As noted in Section 3, one of the early discussions with Steering Committee members centered around whether to maintain the same set of hazards as included in the 2017 AHMP or to focus the 2022 LHMP solely on natural hazards. The 2017 AHMP considered risks for technological and societal hazards in addition to natural hazards. While the 2017 AHMP ranked and assessed technological and societal hazards, none of those hazards rose to the level of having mitigation actions developed to address them. It was also noted that the 2018 SHMP focused solely on natural hazards. Additionally, Steering Committee members did not express belief that any of the technological or societal hazards from the 2017 AHMP represented hazards of major concern for which the Town was in a strong position to mitigate. Therefore, based on the review of the 2017 AHMP and the 2018 SHMP, and the Steering Committee feedback, technological and societal hazards have been removed from the 2022 LHMP and the sole focus of the 2022 LHMP is natural hazard impacts. Additionally, the Town has seen the impact of an infectious disease outbreak in the years leading up to this plan update. Therefore, the priorities for hazard mitigation planning reflect not only new data, but lived experiences.

The natural hazard impacts evaluated in the 2022 LHMP are the same as those included in the 2018 SHMP; Fluvial Erosion, Inundation Flooding, Ice, Snow, Wind, Heat, Cold, Drought, Landslides, Wildfire, Earthquake, Invasive Species, Infectious Disease Outbreak, and Hail. The following chart compares the natural hazards included in the 2017 AHMP and the natural hazard impacts included in the 2022 LHMP.

Table 5-1 2017 AHMP and 2022 LHMP Natural Hazards

2017 AHMP Natural Hazards	2022 LHMP Natural Hazard Impacts
Severe Winter Storm	Wind
Flooding	Inundation Flooding
Fluvial Erosion	Fluvial Erosion
Severe Rainstorm	Cold
Extreme Temperatures	Heat
Wildfire	Wildfire
	Snow
	Ice
	Drought
	Landslides
	Earthquake
	Invasive Species
	Infectious Disease Outbreak
	Hail

General Hazard Descriptions

The following hazard descriptions offer general information about the hazards that were considered and prioritized in the 2022 LHMP and include data from the 2018 SHMP as well as a brief summary of recent Town experiences.

Wind:
2018 SHMP Description –
High wind can be the result of any of the following:

• Wind Storm: high wind event without precipitation.
• Hurricanes/Tropical Storms: the most significant impacts from hurricanes/tropical storms in Vermont are inundation flooding and fluvial erosion
• Thunderstorm: high wind event with the potential for compounding impacts due to precipitation, lightning, and/or hail.
• Tornado: a violently rotating column of air extending from a thunderstorm; not common in Vermont.

In Vermont, high winds are most often seen accompanying severe thunderstorms. In fact, straight-line winds are often responsible for most of the wind damage associated with a thunderstorm. These winds are frequently confused with tornadoes because of similar damage and wind speeds; however, they are not rotating like the winds of a tornado.
Recent Town Experience –
Colchester Public Works has not had to respond to any recent wind related issues beyond those typically encountered during most years. While the Town has received some wind damage in the past five years that was covered under a federal damage declaration, the total damages and expenses to the Town of Colchester were not significant.

Inundation Flooding:
2018 SHMP Description –
The rise of riverine or lake water levels, which typically occur as a result of:

- *Rainfall: Significant precipitation from rainstorm, thunderstorm, or hurricane/tropical storm. Flash flooding can occur when a large amount of precipitation occurs over a short period of time.*
- *Snowmelt: Melted runoff due to rapidly warming temperatures, often exacerbated by heavy rainfall. The quantity of water in the snowpack is based on snow depth and density.*
- *Ice Jams: A riverine back-up when flow is blocked by ice accumulation. Often due to warming temperatures and heavy rain, causing snow to melt rapidly and frozen rivers to swell.*

Recent Town Experience – The Town has experienced significant inundation flooding damage in recent years and several areas of the Town remain vulnerable to damage.

Fluvial Erosion:
2018 SHMP Description - *Streambed and streambank erosion associated with physical adjustment of stream channel dimensions (width and depth). Occurs naturally in stable,*

meandering rivers and typically occurs as a result of any of the following, alone or in conjunction:

- *Rainfall: Significant precipitation from rainstorm, thunderstorm, or hurricane/tropical storm. Flash flooding can occur when a large amount of precipitation occurs over a short period of time.*
- *Snowmelt: Melted runoff due to rapidly warming temperatures, often exacerbated by heavy rainfall. The quantity of water in the snowpack is based on snow depth and density.*
- *Ice Jams: A riverine back-up when flow is blocked by ice accumulation. Often due to warming temperatures and heavy rain, causing snow to melt rapidly and frozen rivers to swell.*

Recent Town Experience - Colchester Public Works has not had to physically respond to any recent fluvial erosion related issues. However, the Town is actively engaged in multiple activities to mitigate the risk of fluvial erosion out of recognition of the threat it poses to the community.

Cold

2018 SHMP Description –

Extreme cold temperatures can have significant effects on human health and commercial and agricultural businesses, as well as primary and secondary effects on infrastructure. In anticipation of extreme cold temperatures, the National Weather Service may issue the following watches, warnings or advisories2, which are aimed at informing the general public as well as the agricultural industry:

• Wind Chill Warning: Dangerously cold wind chill values are expected or occurring
• Wind Chill Watch: Dangerously cold wind chill values are possible
• Wind Chill Advisory: Seasonably cold wind chill values but not extremely cold values are expected or occurring
• Hard Freeze Warning: Temperatures are expected to drop below 28°F for an extended period of time, killing most types of commercial crops and residential plants
• Freeze Warning: Temperatures are forecasted to go below 32°F for a long period of time, killing some types of commercial crops and residential plants
• Freeze Watch: Potential for significant, widespread freezing temperatures within the next 24-36 hours
• Frost Advisory: Areas of frost are expected or occurring, posing a threat to sensitive vegetation

Recent Town Experience – Colchester has not experienced any significant cold-related losses in recent years.

Heat:

2018 SHMP Description –

Extreme hot temperatures can have significant effects on human health and commercial and agricultural businesses, as well as primary and secondary effects on infrastructure. In anticipation of extreme heat events, the National Weather Service (NWS) may issue the following advisories:

• Excessive Heat Outlook: A period of excessive heat is possible within the next 3 to 5 days.

• Heat Advisory – Take Action: A period of excessive heat is expected. The combination of hot temperatures and high humidity will create a situation in which heat related illnesses are possible. Heat Advisories are issued when heat indices are expected to reach at least 95°F

• Excessive Heat Watch: A prolonged period of dangerous excessive heat is possible within about 48 hours

• Excessive Heat Warning – Take Action: A prolonged period of dangerous excessive heat is expected within about 24 hours. The combination of hot temperatures and high humidity will create a situation in which heat related illnesses are possible. Excessive Heat Warnings are issued when heat indices are expected to reach at least 105°F.

Recent Town Experience – Colchester has not had any significant heat-related losses in recent years.

Wildfire:

2018 SHMP Definition –

A wildfire is the uncontrolled burning of woodlands, brush, or grasslands. According to FEMA, there are four categories of wildfires that can occur throughout the United States:

• Wildfires: Fueled by natural vegetation; typically occur in national forests and parks, where federal agencies are responsible for fire management and suppression.

• Interface or Intermix Fires: Urban wildfires in which vegetation and the built environment provide fuel.

• Firestorms: Events of such an extreme intensity that effective suppression is virtually impossible; occur during extreme weather and generally burn until conditions change or the available fuel is exhausted.

• Prescribed Fires and Prescribed Natural Fires: Fires that are intentionally set or selected natural fires that are allowed to burn for beneficial purposes.

Recent Town Experience - Colchester has not had any significant wildfire losses in recent years.

Snow:

2018 SHMP Description –

Severe winter storms bring the threat of heavy accumulations of snow. A heavy accumulation of snow, especially when accompanied by high winds, causes drifting snow and very low visibility. Sidewalks, streets, and highways can become extremely hazardous to pedestrians and motorists.

Recent Town Experience - Colchester has not experience any recent snow related losses or issues beyond those typically encountered during most winter seasons.

Ice:

2018 SHMP Description –

Ice accretion from freezing rain can weigh down trees and power lines, causing power outages. Freezing rain can also be combined with snowfall, hiding ice accumulation and further hindering travel, or with mixed precipitation and potentially ice jams or flooding.

Recent Town Experience - Colchester has not experience any recent ice related losses or issues beyond those typically encountered during most winter seasons.

Drought:
2018 SHMP Description –
Drought is defined as a water shortage with reference to a specified need for water in a conceptual supply and demand relationship. *Types of Drought include1:*

- *Meteorological: a reduction in rainfall from a normal precipitation pattern in regard to the amount, intensity, or timing of the event as well as changes in the temperature, humidity, and wind patterns. The strict threshold differs for every nation; the United States defines meteorological drought as receiving less than 2.5mm of rainfall in 48 hours. Meteorological drought is the first drought stage detected.*
- *Agricultural: deficient moisture conditions that cause a lasting effect on crops and non-natural vegetation. It is dependent on rainfall, temperature, topography, evapotranspiration, permeability, and porosity of soils, precipitation effectiveness, and vegetative demand. Agricultural drought begins when the available soil moisture supports the actual evapotranspiration rate at only a fraction of the potential evapotranspiration rate.*
- *Hydrological: related to the effects of decreased precipitation on surface or subsurface water supply. It is the last stage of drought and is lagged behind meteorological and agricultural drought because water infiltrates down to the groundwater during the latter portion of the hydrological cycle. Subsurface water supply is the last drought component to return to normal when meteorological conditions and aquifer recharge return.*
- *Socioeconomic: what happens when the consequences of the drought start to affect the socioeconomic sector. It occurs when the demand for an economic good is greater than the available supply due to weather-related drought. Examples of such goods include water, hydroelectric power, food grains, meat, dairy, and much more. Socioeconomic drought affects the associated population both individually and collectively.*
- *Ecological: defined as "a prolonged and widespread deficit in naturally available water supplies — including changes in natural and managed hydrology — that create multiple stresses across ecosystems."*

Recent Town Experience – The Town has not had any significant drought related losses in recent years.

Landslides:
2018 SHMP Description –
The term "landslide" describes a wide variety of processes that result in the downward and outward movement of slope-forming materials including rock, soil, organic matter, or artificial fill. The materials may move by falling, toppling, sliding, spreading, or flowing and generally move in either a planar fashion, classified as translational, or curved, classified as rotational or slump.
Recent Town Experience – While several areas within the Town have been found to be at risk of landslides, the Town has not had any significant landslide related losses in recent years.

Earthquake:
2018 SHMP Description –
According to the USGS, an earthquake occurs when two blocks of the Earth suddenly slip past one another along what is called a fault or fault plane. As the two blocks slide, stored energy is released producing radiating seismic waves that result in an earthquake.
Recent Town Experience - The Town has not had any significant earthquake related losses in recent years.

Invasive Species:
2018 SHMP Description –
The National Invasive Species Council defines an invasive species as one that is non-native to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health. Invasive species can overwhelm native species and their habitats, forcing the native species out.
Recent Town Experience - The Town has not had any significant invasive species related losses in recent years. Green Mountain Power, the Town's sole electric distribution utility has been engaged in a proactive plan since 2019 to remove ash trees along the power line right-of-way as a means to mitigate the impact of the Emerald Ash Borer.

Infectious Disease Outbreak:
2018 SHMP Description –
The Vermont Department of Health defines an infectious disease as one that is caused by micro-organisms, such as bacteria, viruses and parasites. A vector-borne disease is an infectious disease that is transmitted to humans by blood-feeding arthropods, including ticks, mosquitoes and fleas, or in some cases by mammals (e.g. rabies).
Recent Town Experience - Colchester has been significantly impacted by the COVID-19 pandemic, including significant staffing shortages and layoffs, depressed municipal revenue, unavailability of basic materials and resources, and significant price increases of other resources.

Hail:
2018 SHMP Description –
Hail is a form of precipitation composed of spherical lumps of ice. Known as hailstones, these ice balls typically range from 5-50 mm in diameter on average, with much larger hailstones forming in severe thunderstorms.
Recent Town Experience - The Town has not had any significant hail related losses in recent years.

To identify the hazard impacts of greatest concern to the Town of Colchester and those hazard impacts for which Town efforts to mitigate should be put forth, the Steering Committee completed a hazard assessment scoring exercise. To complete the hazard assessment scoring, the Steering Committee used the same hazard assessment ranking framework as included in the 2018 SHMP.

		Potential Impact					
Hazard Impacts	**Probability**	**Infrastructure**	**Life**	**Economy**	**Environment**	**Average**	**Score**
Fluvial Erosion							
Inundation Flooding							
Ice							
Snow							
Wind							
Heat							
Cold							
Drought							
Landslides							
Wildfire							
Earthquakes							
Invasive Species							
Infectious Disease Outbreak							
Hail							

Probability Scoring – Scored from 1-5

1 = Unlikely – less than 1% probability of occurrence per year

2 = Occasionally – 1-10% probability of occurrence per year

3 = Likely – 11-75% probability of occurrence per year

4 = Highly Likely – Greater than 75% probability of occurrence per year

Potential Impact Scoring – Scored from 1-5

1 = Negligible: Isolated occurrence of minor property and environmental damage, potential for minor injuries, no to minimal economic disruption

2 = Minor: Isolated occurrences of moderate to severe property and environmental damage, potential for injuries, minor economic disruption

3 = Moderate: Severe property and environmental damage on a community wide scale, injuries or fatalities, short-term economic impact

4 = Major: Sever property and environmental damage on a community or regional scale, multiple injuries or fatalities, significant economic impact

Score = Probability X Average of Potential Impact

Based on the Steering Committee's scores, the following five hazard impacts were selected as high priority hazards for which further analysis and mitigation efforts are warranted. The scores of all 14 hazards included in the assessment are available in Appendix D.

1) Fluvial Erosion – Score of 8.46
2) Inundation Flooding – Score of 6.61
3) Infectious Disease Outbreak – Score of 6.61
4) Snow – Score of 6.13
5) Ice – Score of 6.11

While the terminology used to describe the hazards has changed somewhat, the top hazards remain largely unchanged since the 2017 AHMP. Four of the five 2022 LHMP high priority standards were also top hazards in the 2017 AHMP. The one hazard included in the 2017 AHMP not included in the 2022 LHMP is Severe Rainstorm. The one hazard included in the 2022 LHMP not included in the 2017 AHMP is Infectious Disease Outbreak.

Profiles of High Priority Hazards

In recognition of the heightened concern for the five high priority hazards, a more detailed account of the risks posed to Colchester are provided below. The hazards wind, extreme heat, extreme cold, drought, landslides, wildfire, earthquakes invasive species, and hail were not fully assessed in this plan because they ranked lower in prioritization based on probability and impact. The steering committee selected hazards ranking above 5 in the prioritization table.

Fluvial Erosion:

The concepts of river corridors and fluvial erosion are closely inter-twined. A river corridor is defined in Vermont statute as *the land area adjacent to a river that is required to accommodate the dimensions, slope, planform, and buffer of the naturally stable channel and that is necessary for the natural maintenance or natural restoration of a dynamic equilibrium condition, as that term is defined in section 1422 of this title, and for minimization of fluvial erosion hazards, as delineated by the Agency of Natural Resources in accordance with river corridor protection procedures.*

The 2018 SHMP indicates that most flood-related damage in Vermont is caused by fluvial erosion, which it defines as streambed and streambank erosion associated with physical adjustment of stream channel dimensions (width and depth).

The 2019 Town Plan describes the river corridor and fluvial erosion concepts in the following manner:

River corridor planning in Vermont has evolved and communities are being asked to prepare for changes in stream and river locations due to storm events, such as Tropical Storm Irene in 2011. Fluvial hazard areas take into account the dynamic nature of streams and rivers and note areas at risk of erosion due to river or stream movement. Colchester's location between the mouth of the Winooski and Lamoille Rivers is characterized by broad channels that are typically slower moving and less dynamic.

Some level of geomorphic assessment has been completed for most of the streams that run through Colchester and state-identified river corridors have been mapped. Fluvial Erosion Hazard areas have been identified for some of these waterways. In 2015, the Town added a Fluvial Erosion Overlay District to its zoning regulations in order to regulate development within 250 feet of the mean watermark of the Winooski and Lamoille Rivers. These areas are depicted in Appendix E. Additionally, sections along the banks of the Winooski River, Indian Brook, and Sunderland Brook have been identified as having high to extreme fluvial erosion hazard.

A simple GIS intersection of 911 data with the Fluvial Erosion Overlay District and River Corridors indicates the following with regards to structures vulnerable to Fluvial Erosion:

- There are 38 residential structures and one commercial/industrial structure located in the Town's Fluvial Erosion Overlay District. Based on 2021 median grand list value, the estimated potential losses due to a major river erosion event in the area destroying all 39 structures are $9,126,000.
- There are 11 residential structures and three commercial structures located in the mapped River Corridors. Based on the 2021 mean grand list value, the estimated potential losses due to a major stream erosion evening in the area destroying all 14 structures are $3,276,000.
- Note that this estimate only takes structures into account, however. It does not account for loss of building contents or business losses.

Similar to this version of the plan, the 2017 AHMP recognized the potential for fluvial erosion within Colchester. The Town of Colchester does not currently have data on the acres or feet lost within the community due to fluvial erosion as a means to measure the extent of the hazard. While no specific emergencies or losses related to fluvial erosion have occurred as of the writing of this plan, the concern for possible future events lead to the development and implementation of several mitigation actions included in the 2017 AHMP. Please see Appendix C for the full details of these previous mitigation actions.

Inundation Flooding:

The 2019 Town Plan describes the inundation flooding hazard in Colchester in the following manner:

The Town of Colchester is situated between the mouths of the Lamoille River and the Winooski River along Lake Champlain. As a result of these significant features, fifteen percent of the land area in Colchester has been identified as wetlands or floodplains, with the majority of the Approximately 3,259 acres are identified as Special Floodplain Hazard Areas. The 100 year flood elevation of Lake Champlain (Special Flood Hazard Area), as determined by the Federal Flood Insurance Program, is depicted on the FIRM maps. Development within the Flood Zone has been prohibited in Colchester for several decades; however, significant development predated the regulations and there are many structures still located in the flood hazard zone. The majority of these structures are seasonal residences and accessory structures that are occupied during the summer months. The 2011 Lake Champlain flood exceeded all known historic floods with the lake level exceeding 102 feet above sea level and flood damage up to 105 feet locally.

Appendix E shows the current extent of the FEMA-FIRM flood hazard area in Colchester. Colchester has a large number of commercial and residential structures in the 100-year floodplain, compared to other municipalities in the county. Many of these are located along the low-lying shoreline of Lake Champlain. The extensive development of the lakeshore makes Colchester more vulnerable than most other municipalities to lakeshore flooding. The maximum recorded height of Lake Champlain, as measured in Burlington, Vermont, occurred on May 6, 2011 at a height of 103.91 feet. The recorded high rainfall in May 2011 for the Burlington area was 1.13 inches.

A simple GIS intersection of 911 data with the FIRM floodplain data indicates the following with regards to structures located in mapped flood hazard areas:

- There are 138 residential structures and 13 commercial/industrial structures located within the Special Flood Hazard Area, primarily along Lake Champlain.
- Based on 2021 median grand list value, the estimated potential losses due to a major flood event inundating the floodplain and destroying all of these structures is $33,524,000.
- Note that this estimate only takes structures into account, however. It does not account for loss of building contents or business losses.

The high number of structures within the flood hazard areas is a reflection of Lake Champlain's status as an important community asset in Colchester, serving as a recreation and economic resource.

The Base Flood Elevation of Lake Champlain established by FEMA is 102.0 feet while flood stage established by the National Weather Service is 100 ft. These stages are defined as follows:

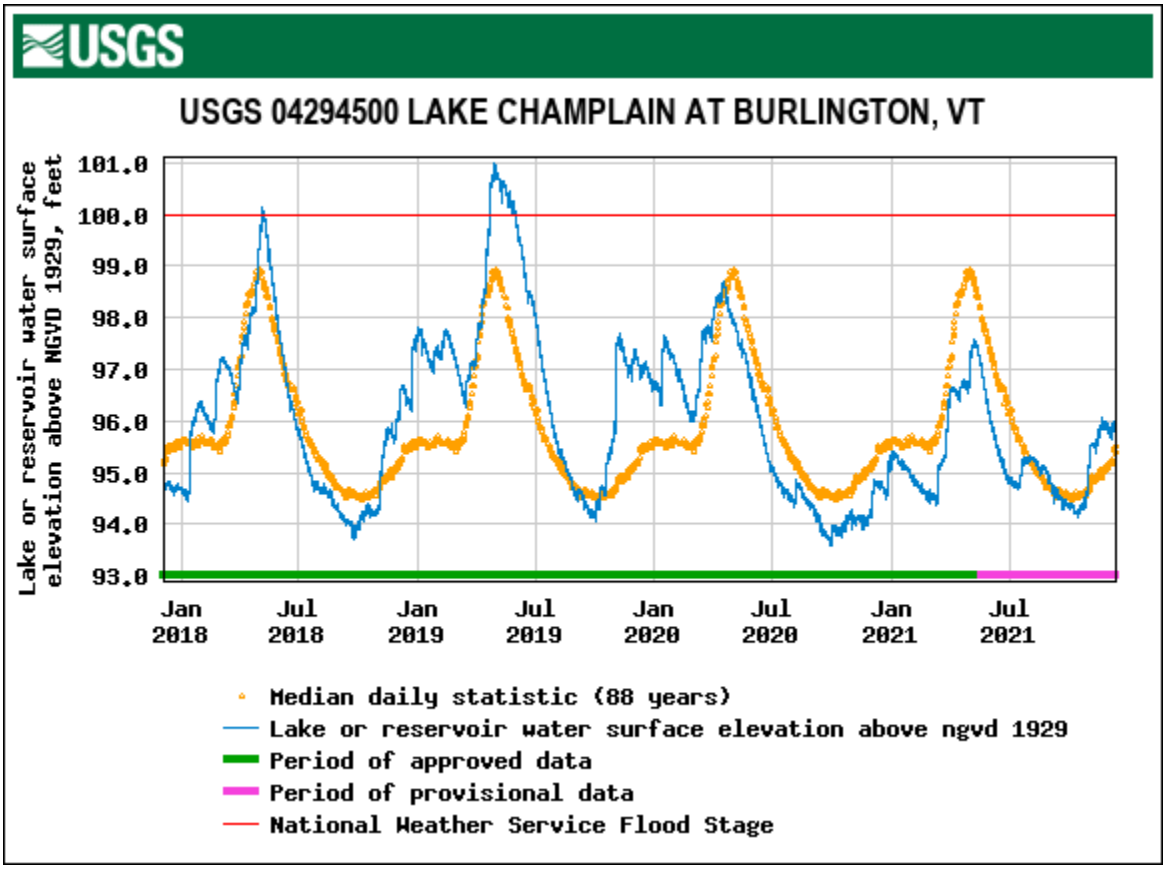
100 ft. Water begins to enter some lake front properties. Water also begins to threaten low lying roads, piers, and docks. Wave action can compound flooding on windward facing shorelines.

101. Flooding becomes serious, and wave erosion on windward shores becomes a problem. If lake ice is present, structural damage can occur.

102 ft. Severe flooding occurs, with widespread inundation of lake side properties, and closure of low lying roads.

The following graph shows the water levels measured along the Burlington waterfront over the last five years.

Figure 5.1 Lake Champlain daily water levels at Burlington, VT 2017-2021



The Town of Colchester has a high vulnerability to inundation flooding due to the town's extensive shoreline along Lake Champlain and the transit of the Winooski and Lamoille Rivers that form the Town's northern and southern boundaries. For decades, the Town has had shoreland protection regulations and the current zoning regulations include a Shoreland Protection Overlay District. The graph above documents two incidences of the lake level, as measured in Burlington, surpassing flood stage in the 2017-2021 period. The risk of inundation flooding unfortunately became very real in May 2018 when severe Lake Champlain flooding caused significant damage to the Causeway, an important community asset. Repairs to the Causeway totaled approximately $1.9 million and the Causeway remains highly vulnerable to future damage as a result of flooding and high lake levels.

Infectious Disease Outbreak:
The 2017 AHMP considered an epidemic under the "Societal Hazard" category and identified it as a potential hazard for Colchester. The Covid-19 pandemic that began in early 2019 proved Colchester's vulnerability to the hazard, like the rest of the world.

The 2020-2021 Town Report prepared for Town Meeting Day in March 2021 provided the following detailed description of the impact the pandemic has had on municipal operations:

The Town Manager and Emergency Management Coordinator began monitoring and preparing in January while all department heads developed continuity of operations plans for municipal services. The plans helped maintain the crucial services, keep the public safe, and

help maintain the capacity of our first responding public safety services. In March, we declared a State of Emergency under the Colchester Code of Ordinances Chapter 16, Emergency Management, to allow the town to exercise emergency powers to help protect the public health and safety of our community.

Due to the difficulty of providing certain public services because of COVID, new State and Federal work rules related thereto, as well as concern about lost revenues from fee based services and delayed tax payments, the town reduced services and staffing through capital, operating and hiring freezes, as well as furloughs and layoffs of three fee-funded staff. At the height, 50% of the town positions outside of public safety were open. We are thankful that residents were understanding of the cut-backs although after feedback the Selectboard opened the park restrooms. Savings were used to help fund a new ambulance, $62,500, provide storm water improvements, and to reduce the increase in taxes in FY 22 by $200,000. The town management team was very aggressive in amassing over $600,000 in grants to offset increased costs and lost revenues due to COVID.

The Town Manager provided significant public information and resources via expanded newsletters delivered in more forums including a special web page. Town departments adjusted services as often as weekly, providing modified services such as moving to curbside library lending; expanding the library's digital collection; operating a summer recreation/child care programs under special restrictions; providing a special daycare program for the children of teachers; successfully holding a presidential election primarily by early and absentee voting; and encouraging the broader use of online and drop off permitting, registrations, tax and fee payments developed for the community's convenience over the last several years.

As of December 2021, approximately 9% of Colchester's population had tested positive for Covid-19, which is virtually the same infection rate as Chittenden County and the State of Vermont as a whole. While the recent and ongoing experience with the Covid-19 pandemic is forefront in the minds of Colchester residents, businesses, and municipal entities, the 2018 SHMP reminds us of the potential for epidemics or pandemics involving other diseases:

Pandemic influenza, considered to be a global outbreak, spread quickly around the world and was observed in 1918, 1957, 1968 and in 2009 with the novel H1N1 strain. The 2009 H1N1 outbreak, though not considered a serious threat to Vermont, still affected some Vermonters. The great influenza epidemic of 1918 killed millions worldwide and would likely cause hundreds to thousands of deaths in Vermont should a similar outbreak occur today. It is anticipated that a more serious strain of the usual flu will occur some year and that vaccines might not be ready in time to combat rapid spread. Lyme disease continues to pose a significant threat to Vermonters, as cases (both probable and confirmed) have been tracked by the Vermont Department of health for several decades.

According to the Centers for Disease Control (CDC), the number of reported cases of vector-borne infectious disease has more than tripled between 2004 and 2016. Those infectious diseases that fall into the first threat classification category are already exhibiting increased prevalence in New England. For example, with both temperature and precipitation expected to increase in Vermont, West Nile Virus mosquito vector activity will likely increase, as well as the vector's

period of activity. Similarly, between 1964 and 2010, counts of Eastern Equine Encephalitis (EEE) have continued to rise in New England, though they remain constant in the southeastern states. Perhaps the most significant trend in infectious disease vulnerability in Vermont is that of Lyme disease, where Vermont ranks second in highest rate of disease incidence in the nation. The Vermont Department of Health reports that the number of reported cases of Lyme disease have increased dramatically over the last decade, and with shrinking winters, the potential for infection through tick bite continues to grow. Additionally, Vermont's increase in forest cover could provide a more suitable habitat for ticks and their hosts, which may lead to further spread of Lyme disease in the State. Outdoor laborers and recreationalists are especially vulnerable to Lyme disease, as exposure to ticks is greater.

The economic impact of the Covid-19 pandemic on Colchester is also noteworthy. During the height of the pandemic, Colchester experienced a reduction of employment within the Town of over 13% and the closure of many local businesses. The Town worked to support local businesses as much as possible, including quickly amending zoning to allow for outdoor dining and advocating regarding the tax liability for the Paycheck Protection Program.

As recent experience has shown, infectious disease outbreaks can dramatically impact virtually every aspect of individual's lives, economic activity, and municipal operations. Colchester recognizes the unfortunate reality that the current Covid-19 pandemic could continue or an epidemic or pandemic related to another infectious disease is possible.

Snow & Ice:

The 2017 AHMP included Severe Winter Storms as a top hazard for Colchester and Snow and Ice remain high priority hazards in the 2022 LHMP. Severe winter storms tend to affect the entire town and are more common in Colchester than some other natural hazards. Due to the nature of snow and ice events, a geographically specific area within Colchester with heightened hazard risk cannot be identified. The entire planning area is at equal risk of snow and ice hazards. The 2018 SHMP succinctly describes some of the primary concerns with Snow Storms and Ice Storms:

Strong winter weather can include any of the following, alone or in conjunction:

Snow Storms: a heavy accumulation of snow, which can be accompanied by high wind causing drifting snow, low visibility and hazardous travel.

Ice Storms: ice accretion from freezing rain, which can weigh down trees and power lines, causing outages and potentially occuring in conjunction with flooding

Blizzard: a storm which contains large amounts of snow and/or blowing snow, with winds in excess of 35mph and visibilities of less than 1/4 mile for an extended period of time

Severe winter storms bring the threat of heavy accumulations of snow, cold/wind chills, strong winds, and power outages that result in high rates of damage and even higher rates of expenditures.

According to the National Weather Service, from 1981-2010, Vermont had an average of 89.3' inches of snow annually. During that same period, snowfall in Burlington, Vermont (adjacent to Colchester) averaged 83.2 inches per year. The data indicates snowfall rates in Colchester (Burlington) are lower than the statewide average levels.

Nonetheless, there is strong concern for the potential impacts of heavy snow in Colchester, such as limited transportation/mobility, power outages, and property damage. Like other Vermont municipalities, Colchester is well-prepared for severe winter weather, however, there have been a few instances of weather so severe that it rose to disaster status:

1998 Ice Storm Damage (DR-1201) - Many areas of the town suffered damage. The hills surrounding Mallets Bay were particularly hard hit.

April 2001 Snow Emergency (EM-3167)

The 1998 Ice Storm is the most severe ice event on record in Colchester, with approximately one to two inches of ice throughout the area. While there was no disaster declaration for the "Valentine's Day" snow storm of February 14, 2007, it was on that day that the highest 24-hour snowfall of 25.3 inches was recorded by the National Weather Service in nearby South Burlington, Vermont.

Repetitive Loss Properties

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 three repetitive loss properties in Colchester. They are all single family residential properties. Only one was NFIP insured. For all these properties, total payments for losses have equaled $130,049, most of that going to the insured property.

The status of the town participation's in the National Flood Insurance Program is as follows:

Initial Flood Hazard Boundary Map	Initial Flood Insurance Rate Map	Current effective Map Date	Date of joining Regular NFIP	Date of Community Rating System Designation
08/23/74	03/01/82	07/18/11	03/01/82	05/1/16

National Flood Insurance Program and Community Rating System

The Town Zoning Administrator with assistance from the Planner and the Town's Development Review Board (DRB) monitor compliance with the National Flood Insurance Program. The DRB reviews and adjudicates applications for development within the floodplain including any proposed new construction in the SFHA which is highly regulated. The Town also works with DEC to respond to any local requests for Floodplain identification including questions about mapping.

The Town of Colchester is the first municipality in Chittenden County to obtain a Community Rating System from FEMA. Colchester was designated a level 8 community effective May 1, 2016 resulting in a 10% premium discount on flood insurance and maintains this designation.

Previous FEMA-Declared Natural Disasters

Since 1990, Colchester has received public assistance funding from FEMA for the following natural disasters:

Table 5-2 Town of Colchester, FEMA-declared disasters, 1990-2021.

Date (FEMA ID#)	Type of Event	Total Repair Estimates
April 1993 (DR 990)	lakeshore flooding	$336,961
January 1996 (DR 1101)	winter thaw flooding	$32,184
January 1998 (DR 1201)	ice storm	$226,747
July 1998 (DR 1228)	flooding	$124,477
April 2001 (EM 3167)	snow emergency	$27,049
August 2004 (DR 1559)	flooding	$58,364 at 5 sites in FEMA declaration; ca. $350,000 total cost for East Lakeshore Drive, 80% reimbursement from Federal Aid system funds from FHWA
June 2011 (DR 1995)	flooding	$862,089 (primarily lakeshore flooding)
June 2013 (DR 4120)	flooding	$4,817
October 2017 (DR 4356)	Severe Storm & Flooding	$23,522 (eligible for reimbursement)
July 2018 (DR 4380)	Severe storm & Flooding	$1,616,492 (eligible for reimbursement)
Oct/Nov 2019 (DR 4474)	Severe Storm & Flooding	$35,700 (eligible for reimbursement)
March 2020 & Ongoing (DR 4532)	Covid-19	$36,657 (eligible for reimbursement)

Sources: Vermont Department of Housing & Community Affairs; Vermont Agency of Transportation; Federal Emergency Management Agency.
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.

Vulnerability Assessment

The typical vulnerabilities associated with the high priority hazards are:

Table 5-3 Town of Colchester: Natural Hazards and Typical Vulnerabilities

Hazard	Typical vulnerabilities	Occasional additional vulnerability
Severe Winter Storm (Snow & Ice)	-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
Inundation 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
Infectious Disease Outbreak	-temporary closures of municipal offices and/or reduced municipal operations -loss of access to goods and services, -loss of business activity -loss of employment -isolation of individuals	-budget impacts from loss of fees and taxes and repairs to public infrastructure -damages to individuals' properties and businesses

SECTION 6: MITIGATION ACTIONS

The following mitigation actions were developed to directly address the five high priority hazards as well as to meet the plan goals, including a consideration of the cost-benefit analysis of each action. The cost of the actions are assigned one of three general categories:

Low = less than $50,000
Moderate = $50,000 to $100,000
High = more than $100,000

These mitigations action include a range of strategies, including Structure & Infrastructure Projects, Natural Systems Protection, and Local Plans & Regulations. The plan does not include an action item related to Education & Awareness Programs. The Town currently offers public information and education opportunities related to flooding risks and infectious disease outbreak on its website, newsletters, Facebook, Instagram, Front Porch Forum, and via direct staff outreach to property owners. The Town offers effective ongoing education and awareness programs that address the top three hazard priorities identified in the plan. The Town has successfully evidenced the ability to efficiently and effectively scale up and redirect resources as needed in an actual emergency. Therefore, the 2022 LHMP does not recommend additional education and awareness programs as part of its mitigation action plan.

Action 1: Continue to Operate a Stormwater Utility to Mitigate Severe Fluvial Erosion

- Action 1-A: Continue to Operate a Stormwater Utility
- Action 1-B: Street Sweeping and Catch Basin Cleaning
- Action 1-C: Review of land development proposals
- Action 1-D: Annual upgrades to stormwater infrastructure

Hazards Addressed: Fluvial Erosion
Vulnerabilities Addressed: Damage to new/existing public infrastructure and buildings; Temporary road and bridge closure and budgetary impacts;
Status: Ongoing
Primary Responsible Entity: Town Public Works Department (lead party), Town Planning & Zoning Department, and Town Manager's Office
Timeframe: Present through March 5, 2027
Funding Requirements and Sources: FEMA or other hazard mitigation grants; FHWA grants; VTrans grants; Stormwater System user fees; Municipal Operating and Capital budgets only if sufficient

These actions are a continuation from the 2017 AHMP to address the fluvial erosion hazard. As noted previously, Colchester successfully established a stormwater utility in 2017 and has operated it since then. Under the umbrella of the stormwater utility, ongoing street sweeping, catch basin cleaning, review of land development proposals, and annual upgrades to stormwater infrastructure take place.

Cost-Benefit Analysis – Significant time and financial resources have been devoted by the Town towards the establishment and operation of the stormwater utility since 2017. The Town believes the stormwater utility is making progress with managing stormwater issues and mitigating its effects. While this action has a high cost (more than $100,000), the Town believes its continued operation represents a wise use of resources as compared to starting an entirely new project to mitigate fluvial erosion.

Action 2: Implement Flow Restoration and Phosphorous Control Plans to mitigate Fluvial Erosion

- Action 2-A: Implement Flow Restoration Plan for Morehouse Brook
- Action 2-B: Implement the Phosphorus Control Plan

Hazards Addressed: Fluvial Erosion

Vulnerabilities Addressed: Damage to public infrastructure especially roads and culverts; temporary closures of roads and bridges 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 Entities: Town of Colchester Department of Public Works

Timeframe: Present through March 5, 2027

Funding Requirements and Sources: Town capital funds and operating funds; grants

These actions are also a continuation from the 2017 AHMP to address fluvial erosion. Since 2017, the Town has worked with the City of Winooski on and financially contributed towards the development of a Flow Restoration Plan (FRP) for Morehouse Brook. There are specific tasks contained in the FRP that the Town will work towards during the 5-year span of the 2022 LHMP. The development of a Phosphorous Control Plan was also a mitigation action in the 2017, which was completed in April 2021. With a completed PCP in place, the next step for the Town is to implement the plan.

Cost-Benefit Analysis – Similar to the stormwater utility, the development of the FPR and PCP took considerable Town resources. In order to make use of the resources devoted to the development of those plans, the Town believes it is important to move forward with their implementation. While it is estimated that this action will have a high cost (over $100,000), the Town feels this is more cost-effective than creating an entirely new project with the same fluvial erosion mitigation goal. Implementation of the Flow Restoration Plan and the Phosphorus Control Plan will also assure that the Town remains in compliance with its MS4 permit.

Action 3: Update Fluvial Erosion Overlay District

Hazards Addressed: Fluvial Erosion

Vulnerabilities Addressed: Damage to public infrastructure especially roads and culverts; Damage to private property; temporary closures of roads and bridges 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: New

Primary Responsible Entities: Town of Colchester Planning & Zoning Department

Timeframe: Present through March 5, 2023

Funding Requirements and Sources: Town operating funds; grants

The 2019 Town Plan includes the following as an action item: "Within three years of adoption of this plan, fluvial erosion hazard standards in the Development Review Regulations should be updated to reflect the Vermont River Corridor Maps. Development shall continue to be prohibited in the floodplain and redevelopment, only allowed if it addresses Development Regulation requirements for floodproofing." The current fluvial erosion overlay district only covers the Lamoille and Winooski rivers. The concept is to update the overlay district to also include the mapped river corridor areas.

Cost-Benefit Analysis – This is a low cost action (less than $50,000) as Colchester has the capacity to complete it internally. It is also makes use of the existing river corridor maps and the Fluvial Erosion Overlay District, seeking to strengthen and expand it rather than creating a new regulation.

Action 4: Pursue Opportunities for Improved Broadband

Hazards Addressed: Infectious Disease Outbreak

Vulnerabilities Addressed: Interruptions in municipal operations; Interruptions in economic activity; Interruptions in education; isolation of residents and in particular vulnerable individuals.

Status: New

Primary Responsible Entities: Town Manager's Office

Timeframe: Present through March 5, 2027

Funding Requirements and Sources: Town operating funds; grants; public-private partnerships

This action has the potential to mitigate the Infectious Disease Outbreak hazard and is new for the 2022 LHMP. The concept is that having access to high quality broadband service can potentially lessen the economic, social, and educational impacts of a pandemic by making remote/online learning, work, healthcare, and social interaction more convenient, and in some cases making it possible for the first time. While portions of the Town have access to high quality broadband service, there are pockets with very poor service or even no broadband service.

Cost-Benefit Analysis – Due to the many benefits high quality broadband offers to residents and businesses, Colchester is actively investigating opportunities to improve broadband service and coverage within the Town. This action is estimated to have a medium cost ($50,000-100,000) over the life of the plan, which represents the cost of Town staff working on broadband expansion, not the actual installation of broadband infrastructure. The ability to possibly mitigate the impact of an infectious disease outbreak while also providing other quality of life and economic development benefits suggests that pursuing broadband opportunities is a cost-effective strategy.

Action 5: Transition Ownership of the "Causeway" to the State of Vermont

Hazards Addressed: Inundation Flooding

Vulnerabilities Addressed: Damage to municipal property; Damage to community assets

Status: New
Primary Responsible Entities: Town Manager's Office
Timeframe: Present through June 2022
Funding Requirements and Sources: Not applicable

This action mitigates the Inundation Flooding hazard and is new for the 2022 LHMP. By transitioning ownership from the Town to the State, it recognizes that the south side of the causeway, like the north side, is a statewide asset. If there are future decisions about this resource, following future floods and high winds, they will be made at a statewide level in a coordinated manner.

Cost-Benefit Analysis – The cost of this action is low (less than $50,000). Additionally, the town was never resourced to address rebuilding of this asset following high wind and water events so relinquishing this asset will allow the town to focus on local responsibilities, some of which include hazard mitigation.

Action 6: Consider Adopting the State Model Resilient Building Standard

Hazards Addressed: Cold & Ice
Vulnerabilities Addressed: Damage to public infrastructure; Damage to private property; temporary closures of roads and bridges; temporary loss of power and/or telecommunications and temporary isolation of vulnerable individuals such as the elderly or those in poverty.
Status: New
Primary Responsible Entities: Town Planning & Zoning Department
Timeframe: Present through March 5, 2027
Funding Requirements and Sources: Grants, Town budget if sufficient

This action mitigates the snow and ice hazards and is new for the 2022 LHMP. The 2018 SHMP includes the development of sample building standards for resilient design as one its mitigation strategies and specifically mentions snow loading, ice accumulation, and cold insulation. If and when the State develops such model standards, Colchester would review it and consider whether it makes sense to promote or adopt these standards or any subset thereof.

Cost-Benefit Analysis – The cost of this action is low (less than $50,000). This action builds upon effort the State is putting forth to develop a model resilient building standard and seeks to leverage that work. By considering a model standard, the Town could potentially use fewer resources than if it sought to develop a regulation on its own.

Prioritization of Mitigation Actions

The above mitigation actions were not listed in order of priority. Because of the difficulties in quantifying benefits and costs, it is necessary to utilize a simple "Action Evaluation and Prioritization Matrix" in order to effect a simple prioritization of the identified mitigation actions. 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 FEM-approved methodology.

According to this methodology, the six mitigation actions are prioritized as follows:

High:
Continue to Operate a Stormwater Utility (includes sub-actions)
Transition Ownership of the Causeway
Update Fluvial Erosion Overlay District

Medium:
Implement Phosphorous Control Plan
Implement Sunderland Brook Flow Restoration Plan
Consider Adopting State Model Resilient Building Standard

Low:
Pursue Opportunities for Improved Broadband

The full prioritization matrix is available in Appendix G

Existing *2019 Colchester Town Plan* Actions and Policies That Support Hazard Mitigation

The following actions, policies, and selected excerpts from the 2019 Town Plan illustrate how mitigation planning and activities are formally promoted and supported through the Town Plan.

Town Plan Action Items

Within three years of adoption of this plan, fluvial erosion hazard standards in the Development Review Regulations should be updated to reflect the Vermont River Corridor Maps.

Development shall continue to be prohibited in the floodplain and redevelopment, only allowed if it addresses Development Regulation requirements for floodproofing.

The FEMA Community Rating System should be maintained.

Colchester's current regulations should be examined to consider additional river corridor protections and fluvial erosion hazard zone areas.

The community should continue its efforts to building resilience against climate effects by maintaining flood and hot weather emergency preparedness plans.

Roadway construction and reconstruction projects will address stormwater treatment and should preserve and enhance water quality.

A capital funding program for future stormwater investments should be considered during the term of this plan.

Town Plan Policies

The Town should continue its work to reduce flood insurance rates and improve flood resiliency.

The Town Stormwater Utility will continue to advance stormwater improvements within the community and advance the Colchester Clean Water Initiative.

Other Sections

In 2018, the Town began a town-wide condition assessment of its stormwater infrastructure. It is anticipated that this assessment will provide information for the development of a capital funding program for future stormwater investments during the term of this plan.

The Town has adopted Chapter 18 of the Colchester Code of Ordinance regulating stormwater. This regulation ensures that projects which can impact water quality but do not trigger State review are reviewed at the local level for stormwater management and erosion control.

The steep and eroding banks of the Winooski River should be evaluated under fluvial erosion hazard standards in the future.
The 2011 Lake Champlain flood exceeded all known historic floods with the lake level exceeding 102 feet above sea level and flood damage up to 105 feet locally. The Town of Colchester's Development Regulations ensured that damaged structures rebuilt were floodproofed to Federal standards, and, as a result of these standards, Colchester was able to join the Community Rating System of the Federal Emergency Management Agency in 2016. This program and the Development Regulations should be maintained during the term of the plan. Through the Town's proactive policies and education on flooding risk, the Town enjoys a higher rate of reimbursement in declared disasters, and property owners are eligible for discounted flood insurance rates.

During the term of this plan, Colchester's current regulations should be examined to potentially incorporate State-recommended river corridor protections and fluvial erosion hazard zone areas.
Stormwater has been identified as posing a threat to water quality, as various community land uses can result in erosion, flooding, and a reduction of the time available for adequate treatment of stormwater runoff and can cause unacceptable levels of contamination of surface waters. Stormwater is a serious problem that should be examined under all planning and development activities

Incorporation of Mitigation Actions into Town Plan and Annual Budgets

With regard 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. During any update process undertaken while this Plan document is in effect, the Town will review the recommended Mitigation Actions detailed above to see if formal incorporation within the Comprehensive Plan (or any Plan implementation tasks) is warranted.

With regard to a more formal process by which the Town will integrate the requirements of this mitigation plan while developing the Town's annual capital improvement plans/budgets, for periods , the Town will review the recommended Mitigation Actions detailed above to see if formal incorporation within these annual capital plans is warranted prior to annual review and voting by Town residents.

Appendix A

Plan Outline & Planning Process

2022 Colchester Local Hazards Mitigation Plan Outline

Planning Process Outline

1) Establish LHMP Steering Committee
    a. Meredith Dolan – Project Lead/Consultant
    b. Colchester Staff – Bryan, Karen, Zach, Seth, and Cathyann
2) Planning Stage Public Outreach
    a. Online survey – advertised in Town newsletter, FPF, and FB (open to other suggestions!)
    b. Letter to key stakeholders
    c. Outreach to Adjacent Communities
3) Public Meeting – Must be held after the draft plan is complete and available for the public to review (Tentatively scheduled for mid-December)
4) Revisions based on public input, if needed

Plan Outline

Introduction

Task: Update to reflect transition to stand-alone plan

Purpose of the Plan

Task: Update with any new data/community goals for the plan and include a discussion of ways the stand-alone plan will better serve the Town.

Data Needed: Any emergency events/developments since 2017 that would change the purpose of the plan?

Question: Are there any new concerns that have emerged since 2017 that the plan should specifically seek to address?

Community Profile

Task: Update with new Colchester demographic data as well as information on any community changes that affect hazard vulnerability.

Data Needed: The most recent demographic data available for the Town (most likely ACS – any other suggestions for Colchester? The 2017 plan used 2010 Census data, but 2020 Census data is not yet available)

Data Needed: Updated information on where major residential and commercial/industrial development has occurred since 2017

Questions: Have there been any significant changes in the community profile since 2017, such as an influx of new residents, changes in government operations (strong focus on town-owned and critical infrastructure), or changes in development patterns that affect the community's vulnerability to hazards? Are there new vulnerable populations?

The Planning Process/Plan Developers

Task: Update with information on this year's plan development process; Town's LHMP Committee, public survey/meeting, local stakeholder involvement, CCRPC coordination

Data Needed: Any changes since 2017 in other Town documents/plans that reference hazard mitigation at the Town level?

Questions: How best to involve stakeholders (residents, businesses, community boards, and adjacent communities) and how best to make contact with them? Are you aware of

other committees/boards expressing interest in hazard mitigation that we should specifically reach out to? Have there been any changes to the Town's hazard mitigation goals?

Review of Existing Plan & Plan Maintenance

Task: Provide a status update on the mitigation actions identified in the 2017 plan
Task: Provide a summary of how the Town reviewed/maintained the 2017 plan over the past five years.
Data Needed: What work has been done on the mitigation actions in the 2017 plan (see below A and B)?
2017 Mitigation Actions
CATEGORY A: Operate a Stormwater Utility
Action A-1: Establish municipal stormwater utility
Action A-2: Street sweeping and catch basin cleaning
Action A-3: Review of land development proposals
Action A-4: Annual upgrades to stormwater infrastructure;
CATEGORY B: Implement Flow Restoration Plans & Phosphorus Control Plan
Action B-1: Implement Flow Restoration Plans for Morehouse & Sunderland Brooks
Action B-2: Begin Implementation of Phosphorus Control Plan

Data Needed: What projects, programs, and activities has the Town engaged in since 2017 related to hazard mitigation? (Examples include land use planning, education, public outreach, protection of critical infrastructure, community preparedness activities)
Questions: Do you have any thoughts on whether the 2017 mitigation strategies were realistic/feasible? Do you recommend a different approach to the mitigation strategies in the new plan?

Hazard Identification & Risk/Vulnerability Assessment

Task: Evaluate Colchester's risk for each hazard addressed in the 2018 State Hazard Mitigation Plan and develop an associated vulnerability assessment using the State's tool (see last page of this document).
The State's identified hazards are: Fluvial Erosion, Inundation Flooding, Ice, Snow, Wind, Heat, Cold, Drought, Landslides, Wildfire, Earthquake, Invasive Species, Infectious Disease Outbreak, and Hail

The 2017 Colchester LHMP identified the following as the following as the top 3 hazards in Colchester: Severe Winter Storm, Flooding, & Fluvial Erosion

Note: The 2017 plan included many risks not in the 2018 State plan that are not "natural hazards."
Question: Does Colchester have specific/serious concerns about any of the non-natural hazards listed below?
The 2017 Colchester LHMP included the following

Technological Hazards: Hazardous materials incident, Major transportation incident, Multi-structure fire, Natural gas service loss, Pollution, Power loss, Sewer service loss, Telecommunications failure, Water service loss, Invasive Species
Societal Hazards: Crime, Civil disturbance, Economic recession, Epidemic, Key employer loss, and Terrorism

Data Needed:

- Each Steering Committee member will complete a hazard assessment to be compiled into a single score sheet
- Updated "history of occurrence" for all hazards being evaluated
- Colchester FEMA declared disasters since 2017
- Updated "hazard area" maps, if available
    - Flood Hazard Areas
    - Fluvial Erosion Hazard Areas
    - River Corridors
    - Repetitive Loss Properties
    - Updated Lake Champlain Water Levels

Question: Are there any other hazards beyond those in the 2018 State Plan (listed above) that we wish to evaluate because they are of particular concern to Colchester? The State strongly encourages communities to consider hazards related to climate change.

Hazard Prioritization

Task: Based on the hazard assessment scores, create a short list of priority hazards that pose the greatest threat to Colchester
Task: Evaluate Colchester's vulnerability (vulnerability of community assets) to each of the priority hazards

Mitigation Efforts/Action Plan

Task: Establish Mitigation Goals
Task: Develop Mitigation Actions for each high priority hazard
Date Needed: Excerpts from the Town Plan and other locally developed plans that are related to/supportive of hazard mitigation

Appendix B

Online Public Survey Results

Q1 Please list what you believe to be Colchester's top 5 community assets. Community assets can be people, natural areas such as lakes and forests, critical infrastructure such as municipal buildings and services, important institutions or businesses, or historic structures.

Answered: 7 Skipped: 0

ANSWER CHOICES	RESPONSES	
Answer 1	100.00%	7
Answer 2	100.00%	7
Answer 3	100.00%	7
Answer 4	100.00%	7
Answer 5	100.00%	7

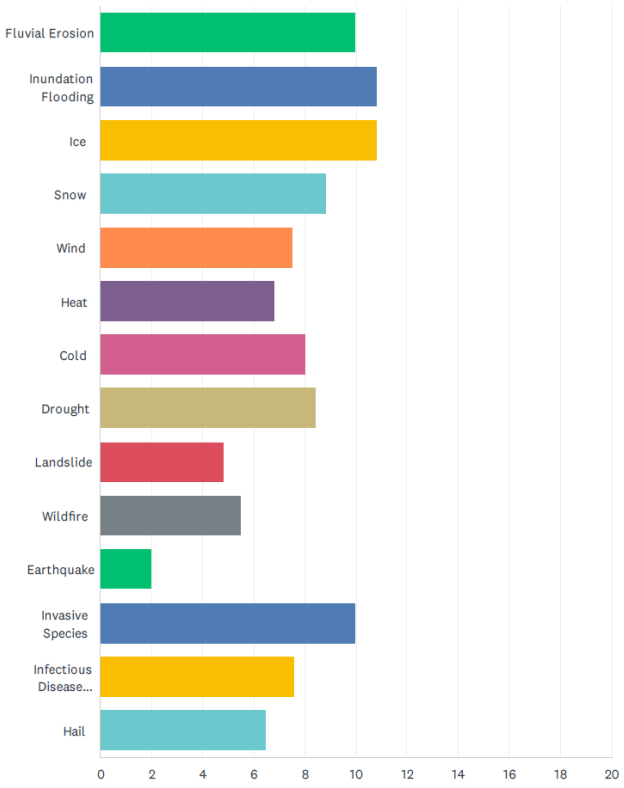
#	ANSWER 1	DATE
1	Critical Infrastructure - Fanny Allen Campus of UVM Medical Center	11/16/2021 11:13 AM
2	Historical sites	11/2/2021 9:28 AM
3	Causeway and other bike and rec paths	11/1/2021 8:53 PM
4	Lake Champlain	11/1/2021 8:44 PM
5	Rural character	11/1/2021 6:30 PM
6	The Bay both inner and outer	11/1/2021 5:41 PM
7	recreational areas (bike path, parks, trails, beaches)	11/1/2021 5:34 PM
#	ANSWER 2	DATE
1	Saint Michael's College	11/16/2021 11:13 AM
2	Recreation path and local parks	11/2/2021 9:28 AM
3	Bayside Park	11/1/2021 8:53 PM
4	Municipal Offices	11/1/2021 8:44 PM
5	Lake Champlain	11/1/2021 6:30 PM
6	Bike paths	11/1/2021 5:41 PM
7	lake champlain water access and water quality	11/1/2021 5:34 PM
#	ANSWER 3	DATE
1	Camp Johnson	11/16/2021 11:13 AM
2	Malletts Bay and other lakeshores	11/2/2021 9:28 AM
3	Town Hall	11/1/2021 8:53 PM
4	Commercial vegetable growers	11/1/2021 8:44 PM
5	Rescue	11/1/2021 6:30 PM
6	Parks	11/1/2021 5:41 PM
7	utility infrastructure (stormwater, etc.)	11/1/2021 5:34 PM

#	ANSWER 4	DATE
1	natural areas	11/16/2021 11:13 AM
2	Colchester Pond	11/2/2021 9:28 AM
3	UVM Family Medicine	11/1/2021 8:53 PM
4	Recreational facilities	11/1/2021 8:44 PM
5	Police	11/1/2021 6:30 PM
6	Schools	11/1/2021 5:41 PM
7	commercial and industrial developed areas	11/1/2021 5:34 PM

#	ANSWER 5	DATE
1	schools	11/16/2021 11:13 AM
2	Niquette Bay State Park	11/2/2021 9:28 AM
3	Parks and Rec programming	11/1/2021 8:53 PM
4	Mix of housing, businesses, water, highways	11/1/2021 8:44 PM
5	Fire	11/1/2021 6:30 PM
6	St. Michael's	11/1/2021 5:41 PM
7	historic resources	11/1/2021 5:34 PM

Q2 Please rank the following natural hazards according to your opinion of the risk to Colchester, with 1 being the greatest risk and 14 being the least risk.

Answered: 7 Skipped: 0



Q3 Are there any particular strategies you believe Colchester should adopt to reduce the impact of natural disasters on the community and community assets? Strategies can range from updating municipal regulations and policies to changing land management practices to modifying or upgrading infrastructure.

Answered: 6 Skipped: 1

#	RESPONSES	DATE
1	Ensure mapping and decision making tools are up to date.	11/16/2021 11:13 AM
2	Put pressure on the State legislature to update regulations that restrict local autonomy. Some times the Town knows best.	11/1/2021 8:53 PM
3	Improve some roadways to ensure they will be open during natural disaster to provide access to emergency facilities. Route 2 to Chimney Corners, roads around Mallett's Bay	11/1/2021 8:44 PM
4	Colchester already has exceptional emergency services infrastructure with a proven track record of responding to natural disasters. As is historically proven, each rare natural weather "disaster" presents its own unique challenges, and Colchester's police, fire, rescue, and public works departments have managed these quite well. Such drastic events are natural, not without precedent, and we can be assured that this pattern will not change just as we can be assured that properly funded and administered emergency services will continue to rise to any occasion.	11/1/2021 6:30 PM
5	Policies should be enacted that don't allow structures to be built too close to the shoreline. Change planning so that the public's views of the lake aren't obstructed. Strategize to increase the public's participation in government. Retention walls should be approved only when the problem being ameliorated isn't just pushed to the neighbors. Protect the resources that we have by keeping up maintenance. Create a committee to improve relations with St. Michaels	11/1/2021 5:41 PM
6	maintain and upgrade infrastructure to prevent flooding or other issues. strong local code for development in flood prone areas and providing stormwater quantity and quality treatment	11/1/2021 5:34 PM

Q4 The last Local Hazard Mitigation Plan was developed in 2017. Part of the plan update includes documenting important community changes since the last plan was adopted. Please indicate what you believe to be the 3 most significant changes within Colchester since 2017.

Answered: 6 Skipped: 1

ANSWER CHOICES	RESPONSES	
Answer 1	100.00%	6
Answer 2	100.00%	6
Answer 3	83.33%	5

#	ANSWER 1	DATE
1	Transportation upgrades to roadways	11/16/2021 11:13 AM
2	Water quality in Malletts Bay	11/2/2021 9:28 AM
3	new zoning plan	11/1/2021 8:53 PM
4	Drastic population growth	11/1/2021 6:30 PM
5	High turnover of employees and the restructuring of municipal government	11/1/2021 5:41 PM
6	bike path/recreation improvements	11/1/2021 5:34 PM

#	ANSWER 2	DATE
1	Drainage projects that have been completed	11/16/2021 11:13 AM
2	Forest preservation (protection from gypsy moths, etc.)	11/2/2021 9:28 AM
3	infrastucture related to growtn in multiunit housing	11/1/2021 8:53 PM
4	Accelerated development	11/1/2021 6:30 PM
5	Combining and professionalizing the fire districts	11/1/2021 5:41 PM
6	stormwater improvements	11/1/2021 5:34 PM

#	ANSWER 3	DATE
1	Erosion control measures implemented	11/16/2021 11:13 AM
2	Infectious disease outbreak (wearing masks and gloves)	11/2/2021 9:28 AM
3	water utility	11/1/2021 8:53 PM
4	Radical loss of forested/farmed land	11/1/2021 6:30 PM
5	Returning the causeway to the state	11/1/2021 5:41 PM

Q5 Do you have any additional thoughts you would like to share regarding natural hazards in Colchester or how best to lessen their impact on the community?

Answered: 4 Skipped: 3

#	RESPONSES	DATE
1	Insects that defoliate trees or weaken them in other ways	11/1/2021 8:53 PM
2	As is historically the case there is no way to accurately predict when or what type of drastic natural weather events can/will occur. Accepting our inability to control the weather, yet planning - as Colchester already already does - for rare extremes is the surest formula for successful response and mitigation of effects.	11/1/2021 6:30 PM
3	Not at this time	11/1/2021 5:41 PM
4	review local codes to provide sound development resulting in enhanced water quality, upgrading septic systems in sensitive areas, and having an asset management program in place to better plan for future asset improvements, additions, etc.	11/1/2021 5:34 PM

Appendix C

Mitigation Action Status Reports

TOWN OF COLCHESTER

Report: Calendar Year 2017: Progress on Implementation of All-Hazards Mitigation Plan

Date: **June 2018**

To: **Selectboard**

From: **Aaron Frank, Town Emergency Management Director**

Information collected by: **Chittenden County RPC in partnership with municipal staff**

Town of Colchester Mitigation Actions: Implementation Monitoring Worksheet

CATEGORY A: Operate a Stormwater Utility to mitigate Severe Rainstorm, Water Pollution and Fluvial Erosion and their associated vulnerabilities of: • Damage to new/existing public infrastructure and buildings • Temporary road and bridge closure • Temporary isolation of vulnerable individuals • Budgetary impacts	
Action **(Primary Responsible Entity)**	**Report on Progress since Plan adoption**
Action A-1: Establish municipal stormwater utility (Town of Colchester: various departments)	-note year and month established -note annual number of utility customers -note total funds raised Town reports progress as follows: • Stormwater utility established by the Selectboard in April of 2017. FY18 budget of $849,000 adopted in May 2017. Utility became effective July 2, 2017. All properties are subject to the utility.
Action A-2: Street sweeping and catch basin cleaning (Colchester Public Works Director)	-annual # basins cleaned -annual # street miles swept Town reports progress as follows: • In 2017, the Town removed 23 cubic-yards of sediment from catch basins and swept 211 cubic-yards of sediment & leaves from town streets.
Action A-3: Review of land development proposals (Colchester Public Works Director and Colchester Planning and Zoning Director)	-note major projects reviewed or inspected with regards to stormwater management and/or number of land development project applications Town reports progress as follows: • All major development in town continues to be subject to stormwater review. In 2017, the town reviewed 701

	site plans for stormwater management and conducted erosion inspections of 808 construction sites.
Action A-4: Annual upgrades to stormwater infrastructure (Colchester Public Works Director)	-note significant upgrades made on an annual basis by location and year Town reports progress in 2017 as follows: There were no significant upgrades to stormwater infrastructure in 2017 however a major stormwater planning project was completed for the Mallets Bay neighborhood.

CATEGORY B: Implement Flow Restoration Plans and Phosphorus Control Plan to mitigate Severe Rainstorm, Water Pollution and Fluvial Erosion and their associated vulnerabilities of: • Damage to new/existing public infrastructure and buildings • Temporary road and bridge closure • Budgetary impacts	
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: Implement Flow Restoration Plans for Morehouse & Sunderland Brooks (Colchester Public Works Director)	Morehouse Brook: note any projects in Town or any financial contributions to City of Winooski to support implementation of projects in their portion of the brook Sunderland Brook, its "high flow" targets are currently being met and therefore no new projects are required. However, note any projects implemented within Town or those supported outside of the Town. Town reports progress as follows: • For the Sunderland Brook Flow Restoration plan, we have worked with both the Town and Village of Essex. Flow restoration targets within the watershed have been met with a significant margin of safety. Therefore, there are no projects to implement to achieve compliance with flow targets. • For Morehouse Brook, we are still in the process of adopting a Flow Restoration Plan. Here the targets are not met, and significant improvements will be required. The identified improvements are all in Winooski, the community with whom we share the watershed. We will contribute toward these improvements based on impervious surface ratios between the two communities (we own approximately 10%).
Action B-2: Begin implementation of Phosphorus Control Plan (Colchester Public Works Director)	-progress on development of plan and filing to State - progress on any discrete phosphorus reduction projects

	Town reports progress as follows: • The requirements for a Phosphorus Control Plan (PCP) are not in place yet. The creation of a PCP will be a requirement of the re-issued Municipal Separate Storm Sewer System (MS4) permit, which is due to be completed by the state in mid-2018. However, we are aware that the new permit will require the development of a PCP. Understanding that a PCP will be required, the town has sought grant funding to support those efforts. We were awarded a $40,000 grant from VTrans' Municipal Highway and Stormwater Mitigation program to complete this plan, which is tentatively planned for FY19.

TOWN OF COLCHESTER

Report: Calendar Year 2018: Progress on Implementation of All-Hazards Mitigation Plan

Date:	**April 2019**
To:	**Selectboard**
From:	**Aaron Frank, Town Emergency Management Director**
Information collected by:	**Chittenden County RPC in partnership with municipal staff**

Town of Colchester Mitigation Actions: Implementation Monitoring Worksheet

CATEGORY A: Operate a Stormwater Utility to mitigate Severe Rainstorm, Water Pollution and Fluvial Erosion and their associated vulnerabilities of: • Damage to new/existing public infrastructure and buildings • Temporary road and bridge closure • Temporary isolation of vulnerable individuals • Budgetary impacts	
Action **(Primary Responsible Entity)**	**Report on Progress since Plan adoption**
Action A-1: Establish municipal stormwater utility (Town of Colchester: various departments)	-note year and month established -note annual number of utility customers -note total funds raised Town reports progress in 2018 as follows: • FY19 budget of $958,748 adopted in June 2018 • Total of approximately 6,400 sites subject to utility fees.
Action A-2: Street sweeping and catch basin cleaning (Colchester Public Works Director)	-annual # basins cleaned -annual # street miles swept Town reports progress in 2018 as follows: • In 2018, the Town removed 27.5 cubic-yards of sediment from catch basins and swept 116.5 cubic-yards of sediment & leaves from town streets.
Action A-3: Review of land development proposals (Colchester Public Works Director and Colchester Planning and Zoning Director)	-note major projects reviewed or inspected with regards to stormwater management and/or number of land development project applications Town reports progress in 2018 as follows: • All major development in town continues to be subject to stormwater review. In 2018, the town reviewed 535 site plans for stormwater management.
Action A-4: Annual upgrades to stormwater infrastructure (Colchester Public Works Director)	-note significant upgrades made on an annual basis by location and year Town reports progress in 2018 as follows:

	• Replacement and upsizing of culvert on East Rd • Repair and replacement of $90,000 of stormwater infrastructure on Reynolds / Renkin Dr • Structural improvements to culvert on Malletts Bay Ave • A town-wide condition assessment using zoom camera technology, to assign a condition rating to existing assets and assist with preparation of a 5yr stormwater capital program to plan for replacements and needed upgrades

CATEGORY B: Implement Flow Restoration Plans and Phosphorus Control Plan to mitigate Severe Rainstorm, Water Pollution and Fluvial Erosion and their associated vulnerabilities of: • Damage to new/existing public infrastructure and buildings • Temporary road and bridge closure • Budgetary impacts	
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: Implement Flow Restoration Plans for Morehouse & Sunderland Brooks (Colchester Public Works Director)	Morehouse Brook: note any projects in Town or any financial contributions to City of Winooski to support implementation of projects in their portion of the brook Sunderland Brook, its "high flow" targets are currently being met and therefore no new projects are required. However, note any projects implemented within Town or those supported outside of the Town. Town reports progress in 2018 as follows: • The Town of Colchester contributed $3,219 toward the final development of the Morehouse FRP (final version dated 12/31/2017, submitted to DEC 1/12/2018). This represents 10% of the overall project cost. Grant funding was awarded to complete design of the Pine Grove Terrace BMP, scheduled to be constructed by the end of 2019. Other Morehouse projects will be advanced according to the FRP schedule, which requires that all projects be complete by 2027.
Action B-2: Begin implementation of Phosphorus Control Plan (Colchester Public Works Director)	-progress on development of plan and filing to State - progress on any discrete phosphorus reduction projects Town reports progress in 2018 as follows: • The Town of Colchester has received $40,000 in grant funding ($10,000 local match required) from the Agency of Transportation to prepare a phosphorus control plan. The Town entered into a contract in October of 2018 with VHB to complete this scope of work. This effort is anticipated to be complete by December 2019.

TOWN OF COLCHESTER
Report: Calendar Year 2019: Progress on Implementation of All-Hazards Mitigation Plan

Date: **March 2020**

To: **Selectboard**

From: **Aaron Frank, Town Emergency Management Director**

Information collected by: **Chittenden County RPC in partnership with municipal staff**

Town of Colchester Mitigation Actions: Implementation Monitoring Worksheet

CATEGORY A: Operate a Stormwater Utility to mitigate Severe Rainstorm, Water Pollution and Fluvial Erosion and their associated vulnerabilities of: • Damage to new/existing public infrastructure and buildings • Temporary road and bridge closure • Temporary isolation of vulnerable individuals • Budgetary impacts	
Action **(Primary Responsible Entity)**	**Report on Progress since Plan adoption**
Action A-1: Establish municipal stormwater utility (Town of Colchester: various departments)	-note year and month established -note annual number of utility customers -note total funds raised Town reports progress in 2019 as follows: FY20 budget of $959,686 adopted in March 2019 All properties in the Town are subject to the utility. Total of approximately 6,422 sites subject to utility fees.
Action A-2: Street sweeping and catch basin cleaning (Colchester Public Works Director)	-annual # basins cleaned -annual # street miles swept Town reports progress in 2019 as follows: In 2019, the Town removed 15.5 cubic-yards of sediment from catch basins and swept 282 cubic-yards of sediment & leaves from town streets.
Action A-3: Review of land development proposals (Colchester Public Works Director and Colchester Planning and Zoning Director)	-note major projects reviewed or inspected with regards to stormwater management and/or number of land development project applications Town reports progress in 2019 as follows • All major development in town continues to be subject to stormwater review. In 2019, the town reviewed 672 site plans for stormwater management

Action A-4: Annual upgrades to stormwater infrastructure (Colchester Public Works Director)	-note significant upgrades made on an annual basis by location and year Town reports progress in 2019 as follows: • Continued advancing the design of stormwater improvements in the Shore Acres sub-division. • Initiated design work for the replacement of a culvert on Lower Mt. View Drive. • Replaced and upsized a culvert on Hercules Drive. • Repair and replacement of $35,000 of stormwater infrastructure on Hillcrest Lane and Troy Avenue. • Development of Phase II of a town-wide condition assessment using zoom camera technology, to assign a condition rating to existing assets and assist with preparation of a 5yr stormwater capital program to plan for replacements and needed upgrades

CATEGORY B: Implement Flow Restoration Plans and Phosphorus Control Plan to mitigate Severe Rainstorm, Water Pollution and Fluvial Erosion and their associated vulnerabilities of: • Damage to new/existing public infrastructure and buildings • Temporary road and bridge closure • Budgetary impacts	
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: Implement Flow Restoration Plans for Morehouse & Sunderland Brooks (Colchester Public Works Director)	Morehouse Brook: note any projects in Town or any financial contributions to City of Winooski to support implementation of projects in their portion of the brook Sunderland Brook, its "high flow" targets are currently being met and therefore no new projects are required. However, note any projects implemented within Town or those supported outside of the Town. Town reports progress in 2019 as follows: • The Town of Colchester contributed $10,383 toward the construction of stormwater improvements for Pine Grove Terrace in the City of Winooski. Other Morehouse projects will be advanced according to the FRP schedule, which requires that all projects be complete by 2027.
Action B-2: Begin implementation of Phosphorus Control Plan (Colchester Public Works Director)	-progress on development of plan and filing to State - progress on any discrete phosphorus reduction projects

	Town reports progress in 2019 as follows: • Work on development of the Phosphorus Control Plan (funding for which was secured in 2018) is being delayed due to the absence of the necessary guidance from the DEC. Accordingly the VHB contract has been extended to 12/31/20.

TOWN OF COLCHESTER
Report: Calendar Year 2020: Progress on Implementation of All-Hazards Mitigation Plan

Date:	**March 2021**
To:	**Selectboard**
From:	**Bryan Osborne, Town Public Works Director**
Information collected by:	**Chittenden County RPC in partnership with municipal staff**

Town of Colchester Mitigation Actions: Implementation Monitoring Worksheet

CATEGORY A: Operate a Stormwater Utility to mitigate Severe Rainstorm, Water Pollution and Fluvial Erosion and their associated vulnerabilities of: • Damage to new/existing public infrastructure and buildings • Temporary road and bridge closure • Temporary isolation of vulnerable individuals • Budgetary impacts	
Action **(Primary Responsible Entity)**	**Report on Progress since Plan adoption**
Action A-1: Establish municipal stormwater utility (Town of Colchester: various departments)	-note year and month established -note annual number of utility customers -note total funds raised Town reports progress in 2020 as follows: FY21 budget of $962,733 adopted in April 2020 All properties in the Town are subject to the utility. Total of approximately 6,422 sites subject to utility fees.
Action A-2: Street sweeping and catch basin cleaning (Colchester Public Works Director)	-annual # basins cleaned -annual # street miles swept Town reports progress in 2020 as follows: In 2020, the Town removed 650 cubic-yards of sediment from catch basins and piping and swept 365 cubic-yards of sediment & leaves from town streets.
Action A-3: Review of land development proposals (Colchester Public Works Director and Colchester Planning and Zoning Director)	-note major projects reviewed or inspected with regards to stormwater management and/or number of land development project applications Town reports progress in 2020 as follows • All major development in town continues to be subject to stormwater review and inspection. In 2020, the town performed 782 inspections for stormwater management.

Action A-4: Annual upgrades to stormwater infrastructure (Colchester Public Works Director)	-note significant upgrades made on an annual basis by location and year Town reports progress in 2020 as follows: • Entered the right-of-way phase for stormwater improvements in the Shore Acres sub-division. • Replaced and upsized a culvert on Lower Mt. View Drive. • Commenced design of roadway drainage improvements for Coon Hill and Galvin Hill Road to address erosion and drainage issues. • Commenced design for improvements to a Town owned stormwater outfall draining into Smith Creek. • Completion of Phase II of a town-wide condition assessment using zoom camera technology, to assign a condition rating to existing assets and assist with preparation of a 5yr stormwater capital program to plan for replacements and needed upgrades

CATEGORY B: Implement Flow Restoration Plans and Phosphorus Control Plan to mitigate Severe Rainstorm, Water Pollution and Fluvial Erosion and their associated vulnerabilities of: • Damage to new/existing public infrastructure and buildings • Temporary road and bridge closure • Budgetary impacts	
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: Implement Flow Restoration Plans for Morehouse & Sunderland Brooks (Colchester Public Works Director)	Morehouse Brook: note any projects in Town or any financial contributions to City of Winooski to support implementation of projects in their portion of the brook Sunderland Brook, its "high flow" targets are currently being met and therefore no new projects are required. However, note any projects implemented within Town or those supported outside of the Town. Town reports progress in 2020 as follows: • The Town of Colchester has been working toward the construction of stormwater improvements in the City of Winooski. No activity was recorded in 2020. Other Morehouse projects will be advanced according to the FRP schedule, which requires that all projects be complete by 2027.

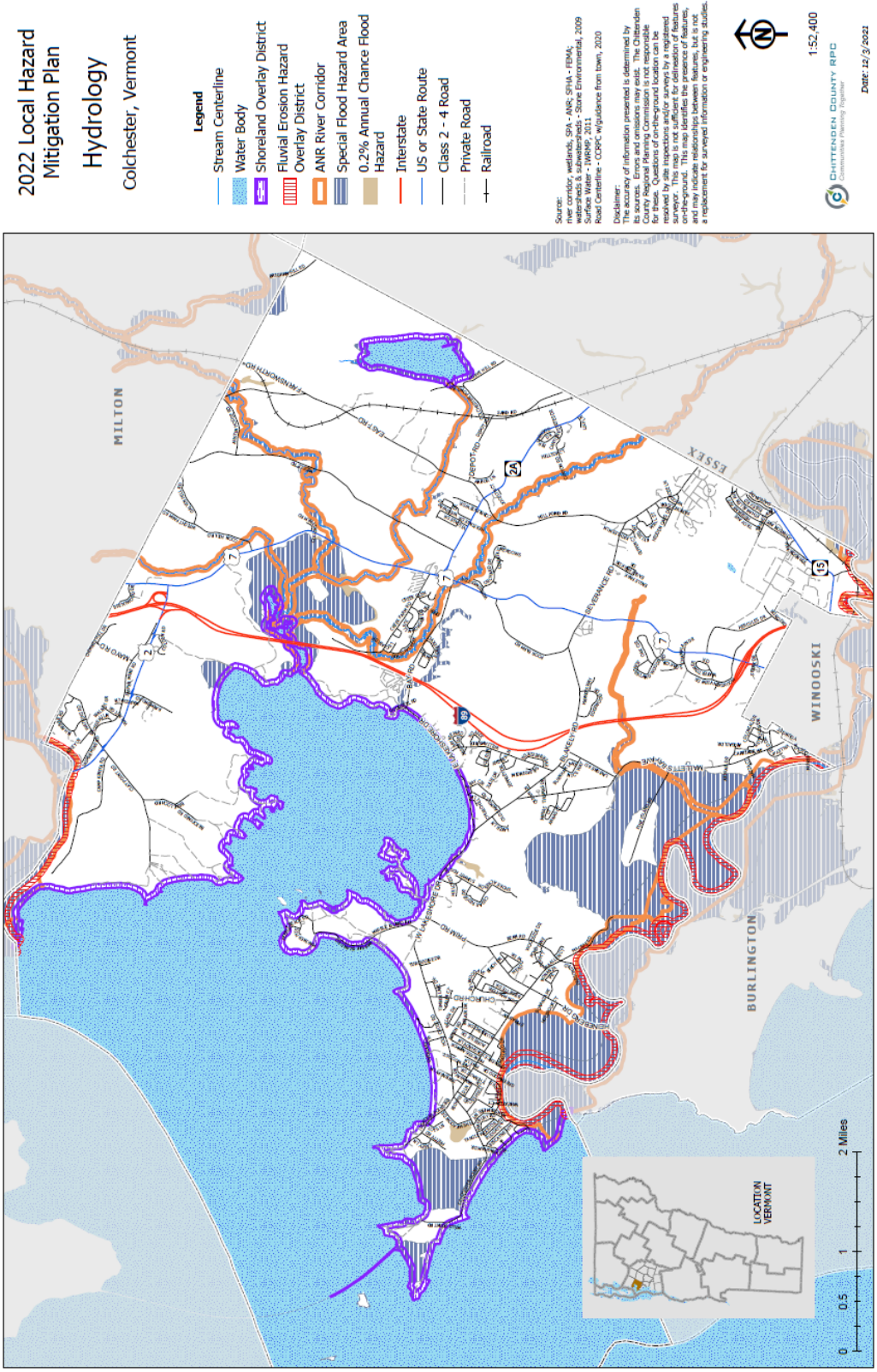
Action B-2: Begin implementation of Phosphorus Control Plan (Colchester Public Works Director)	-progress on development of plan and filing to State - progress on any discrete phosphorus reduction projects <u>Town reports progress in 2020 as follows:</u> • Development of Phosphorus Control Plan to reduce the total phosphorus discharge from the Town into Lake Champlain.

Appendix D

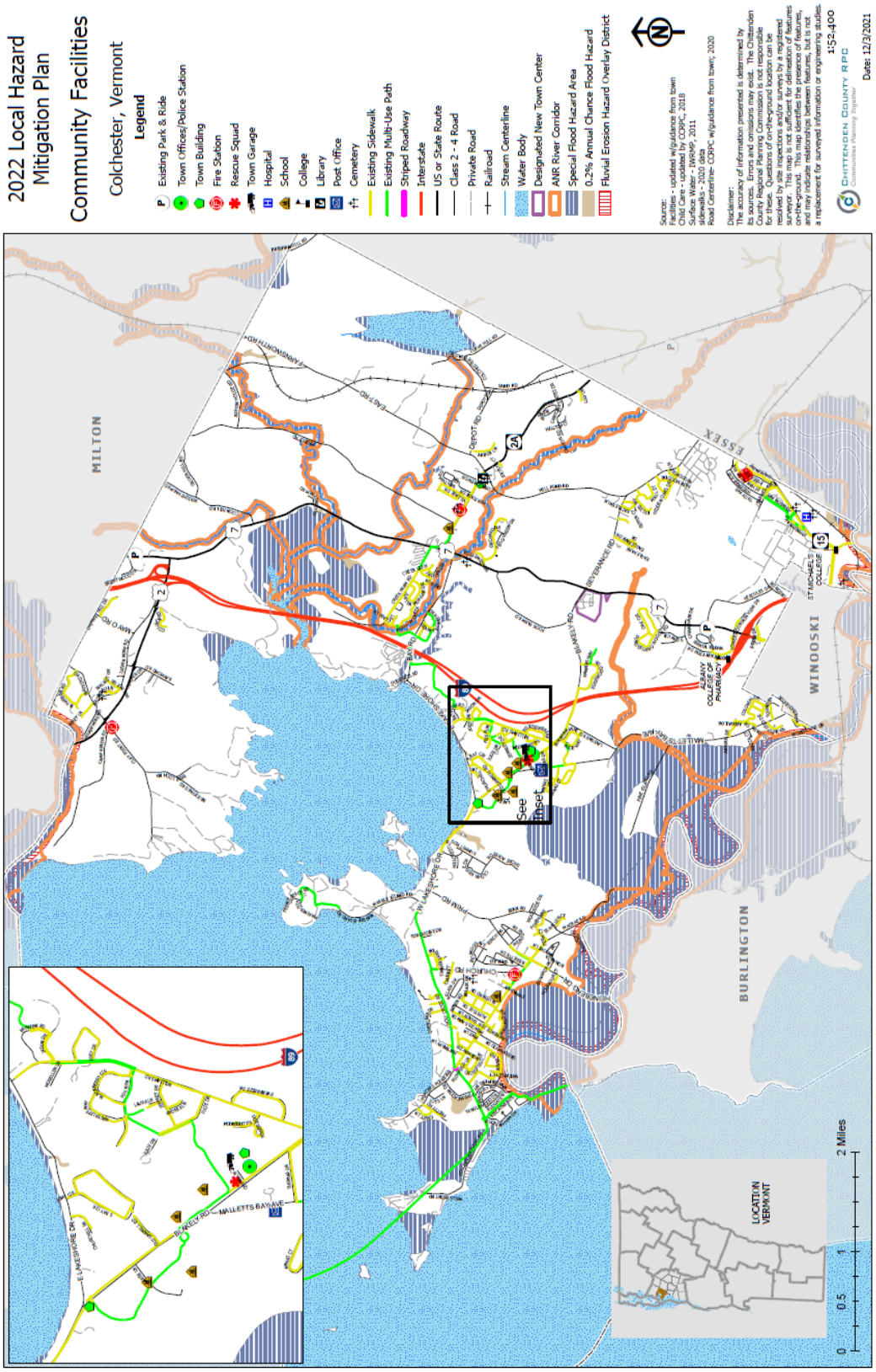
Hazard Assessment Scores

Combined Steering Committee Hazard Assessment Scores							
		Potential Impact					
Hazard Impacts	**Probability**	**Infrastructure**	**Life**	**Economy**	**Environment**	**Average**	**Score**
Fluvial Erosion	3.50	2.83	1.83	2.17	2.83	2.42	8.46
Inundation Flooding	2.83	2.67	1.67	2.33	2.67	2.33	6.61
Ice	3.33	2.00	1.83	1.83	1.67	1.83	6.11
Snow	3.50	1.83	1.83	1.83	1.50	1.75	6.13
Wind	2.83	1.83	1.83	1.50	1.33	1.63	4.60
Heat	2.00	1.50	2.17	1.50	1.83	1.75	3.50
Cold	2.50	1.50	2.00	1.50	1.50	1.63	4.06
Drought	1.83	1.33	1.33	2.00	2.00	1.67	3.06
Landslides	1.50	1.83	1.17	1.33	1.50	1.46	2.19
Wildfire	1.50	1.83	1.50	1.50	2.00	1.71	2.56
Earthquakes	1.00	1.83	1.83	2.00	1.83	1.88	1.88
Invasive Species	2.83	1.33	1.17	1.67	2.17	1.58	4.49
Infectious Disease Outbreak	2.83	1.67	3.17	3.17	1.33	2.33	6.61
Hail	2.67	1.33	1.17	1.50	1.33	1.33	3.56

Appendix E


2022 Local Hazard Mitigation Plan
Hydrology
Colchester, Vermont
Legend
Stream Centerline
Water Body
Shoreland Overlay District
Fluvial Erosion Hazard Overlay District
ANR River Corridor
Special Flood Hazard Area
0.2% Annual Chance Flood Hazard
Interstate
US or State Route
Class 2 - 4 Road
Private Road
Railroad
Source:
river corridor, wetlands, SPA - ANR; SFHA - FEMA;
watersheds & streams - Stone Environmental, 2009
Surface Water - DWRMP, 2011
Road Centerline - CCRPC w/guidance from town, 2020
Disclaimer:
The accuracy of information presented is determined by
its sources. Errors and omissions may exist. The Chittenden
County Regional Planning Commission is not responsible
for these. Questions of on-the-ground location can be
resolved by site inspections and/or surveys by a registered
surveyor. This map is not sufficient for delineation of features
on a parcel, and has not been prepared for legal purposes,
and may indicate relationships between features, but is not
a replacement for surveyed information or engineering studies.
1:52,400
Chittenden County RPC
Date: 12/3/2021
MILTON
ESSEX
WINOOSKI
BURLINGTON
LOCATION VERMONT
0
0.5
1
2 Miles

Appendix F


2022 Local Hazard Mitigation Plan
Community Facilities
Colchester, Vermont
Legend
Existing Park & Ride
Town Offices/Police Station
Town Building
Fire Station
Rescue Squad
Town Garage
Hospital
School
College
Library
Post Office
Cemetery
Existing Sidewalk
Existing Multi-Use Path
Striped Roadway
Interstate
US or State Route
Class 2 - 4 Road
Private Road
Railroad
Stream Centerline
Water Body
Designated New Town Center
ANR River Corridor
Special Flood Hazard Area
0.2% Annual Chance Flood Hazard
Fluvial Erosion Hazard Overlay District
Sources:
Facilities - updated w/guidance from town
Child Care - updated by CCRPC, 2018
Surface Water - IWRMP, 2011
sidewalks - 2020 data
Road Centerline- CCRPC w/guidance from town; 2020
Disclaimer:
The accuracy of information presented is determined by its sources. Errors and omissions may exist. The Chittenden County Regional Planning Commission is not responsible for these. Questions of on-the-ground location can be resolved by a licensed surveyor. No warranty is made concerning the accuracy of features on-the-ground. This map identifies the presence of features, and may indicate relationships between features, but is not a replacement for surveyed information or engineering studies.
1:53,400
Date: 12/3/2021
Chittenden County RPC
MILTON
ESSEX
WINOOSKI
BURLINGTON
See Inset
BAYLEY RD
MALLETTS BAY AVE
LAKESHORE DR
LOCATION VERMONT
0
0.5
1
2 Miles

Appendix G

Hazard Mitigation Prioritization Matrix

Hazard Mitigation Ation	Responds to Significant Hazard	Likelihood of Funding	Protects Threatened Infrastructure	Implemented Quickly	Socially/Politically Acceptable	Technically Feasible	Administratively Realistic	Reasonable Cost-Benefit	Environmentally Sound	Total Score		Rank	Priority
Continue to Operate Stormwater Utility	5	4	4	5	4	5	4	4	5	40	37.75		
Catch Basin Cleaning & Street Sweeping	4	4	3	5	5	5	4	4	5	39		3	High
Review of Land Development Proposals	3	4	3	5	4	4	4	4	4	35			
Annual Stormwater Infrastructure Upgrades	5	3	5	3	4	5	4	3	5	37			
Implement Flow Restoration Plan	4	3	3	2	3	3	3	3	5	29		6	Medium
Implement Phosphorous Control Plan	5	3	2	2	4	4	3	3	5	31		4	Medium
Update Fluvial Erosion Hazard Overlay District	4	5	3	5	4	4	4	5	5	39		2	High
Pursue Opportunties for Improved Broadband	4	2	1	1	5	2	2	2	5	24		7	Low
Transition Ownership of the Causeway	5	5	4	5	4	4	5	4	5	41		1	High
Consider Adopting State Model Resilient Building Standard	2	3	3	3	3	3	4	4	5	30		5	Medium

Appendix H

Template Adoption Certificate

Town of Colchester, Vermont Selectboard
A Resolution Adopting the Town of Colchester 2022 Local Hazard Mitigation Plan

Whereas, the Town of Colchester has historically experienced severe damage from natural hazards and it continues to be vulnerable to the effects of the hazards profiled in the Town of Colchester 2022 Local Hazard Mitigation Plan, which result in loss of property and life, economic hardship, and threats to public health and safety; and

Whereas, the Town of Colchester has developed and received conditional approval from the Federal Emergency Management Agency (FEMA) for the Town of Colchester 2022 Local Hazard Mitigation Plan under the requirements of 44 CFR 201.6; and

Whereas, the plan specifically addresses hazard mitigation strategies and plan maintenance procedures for the Town of Colchester; and

Whereas, the plan recommends several hazard mitigation actions that will provide mitigation for specific natural hazards that impact the Town of Colchester with the effect of protecting people and property from loss associates with those natural hazards; and

Whereas, adoption of this plan will make the Town of Colchester eligible for funding to alleviate the impacts of future hazards;

Now therefore be it resolved by the Town of Colchester Selectboard

1) The Town of Colchester 2022 Local Hazard Mitigation Plan is hereby adopted as an official plan of the Town of Colchester;
2) The respective Town officials identified in the mitigation action plan are hereby directed to pursue implementation of the recommended actions assigned to them; and
3) Future revisions and plan maintenance as 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.

In witness whereof, the undersigned have affixed their signature and the corporate seal of the Town of Colchester, this _____ day of _____, 2022.