

*Adopted by the City of Newport on
-----2017*

City of Newport, Vermont Local All-Hazards Mitigation Plan



**City of Newport, Vermont
222 Main Street
Newport, Vermont 05856
(802) 334-6733
Public Assistance Applicant #:
019-48850-00**

Prepared by:
NVDA, OPHC and the
City of Newport, Vermont

CERTIFICATE OF LOCAL ADOPTION

City of Newport, Vermont

A Resolution Adopting the All-Hazards Mitigation Plan

WHEREAS, the City of Newport has worked with its residents and community partners to identify its hazards and vulnerabilities, analyze past and potential future losses due to natural and human-caused hazards, and identify strategies for mitigating future losses; and

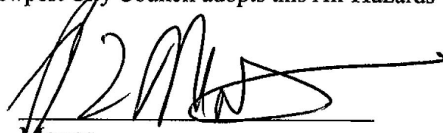
WHEREAS, the Newport City All-Hazards Mitigation Plan contains recommendations, potential actions and future projects to mitigate damage from disasters in Newport City; and

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

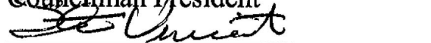
WHEREAS, a meeting was held by the Newport City Council to formally approve and adopt the Newport All Hazards Mitigation Plan.

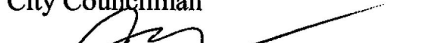
NOW, THEREFORE BE IT RESOLVED that the Newport City Council adopts this All-Hazards Mitigation Plan for the City.

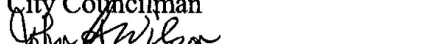
February 27, 2017
Date

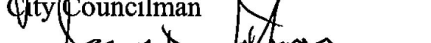

Mayor


Councilman President


City Councilman


City Councilman


City Councilman


Attested to by City Clerk

Executive Summary

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

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

This plan is organized into 5 Sections:

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

Section 2: Hazard Identification expands on the hazard identified in the Newport City Plan (2015) with specific municipal-level details on selected hazards.

Section 3: Risk Assessment discusses identified hazard areas in the City and reviews previous Federally-declared disasters as a means to identify what risks are likely in the future. This section presents a hazard risk assessment for the municipality, identifying the most significant and most likely hazards which merit mitigation activity. The most significant identified hazards for Newport City are broken with a numerical risk ranking.

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

Section 5: Mitigation Strategies begins with an overview of goals and policies in the most recent Newport City Plan that support hazard mitigation and utilizes the City's 2015 Capital Improvement Plan to formulate a work plan around major infrastructure projects for the next five years. An analysis of existing municipal actions that support hazard mitigation, such as planning, emergency services and public works are also included. The following all-hazards mitigation goals are summarized below:

- Recognize the characteristics that make the City of Newport unique within Orleans County and incorporate these findings into the hazard mitigation planning
- Reduce at a minimum, and prevent to the maximum extent possible, the loss of life and injury resulting from all hazards.
- Mitigate financial losses and environmental degradation incurred by municipal, educational, residential, commercial, industrial and agricultural establishments due to various hazards.
- Maintain and increase awareness amongst the City's residents and businesses of the damages caused by previous and potential future hazard events as identified specifically in this Local All-Hazards Mitigation Plan.
- Recognize the linkages between the relative frequency and severity of disaster events and the design, development, use and maintenance of infrastructure such as roads, utilities and storm water management and the planning and development of various land uses.
- Maintain existing municipal plans, programs and ordinances that directly or indirectly support hazard mitigation.
- Develop a mechanism for formal incorporation of this Local All-Hazards Mitigation Plan into the municipal comprehensive plan as described in 24 VSA, Section 4403(5). This mechanism will be developed by the Planning Commission, City Council and NVDA and integrate the strategies into the existing City Plan as annexes until the next formal update occurs, where a section devoted to mitigation planning will be integrated into the plan.
- Develop a mechanism for formal incorporation of this Local All-Hazards Mitigation Plan particularly the recommended mitigation actions, into the municipal/town operating and capital plans & programs as they relate to public facilities and infrastructure. With the development of the road erosion site inventory, the town will begin a process that incorporates the budgetary requirements of the defined mitigation strategies into its formal budgeting paradigm. The Planning Commission will review the LHMP and use language/actions from it to inform the integration and update process. Town Meeting Day will serve as the formal time that mitigation strategy budgetary considerations will be approved and incorporated into the town budget.

Section 5 identifies and provides a detailed discussion of the following Mitigation Actions Categories:

Action #1: Continue fluvial geomorphology (in coordination with state recommendations and protocol) assessments and develop strategies in response to any identified risk.

Action #2: Reduce vulnerability to flooding by evaluating capabilities of existing road and storm water management infrastructure, public education and through municipal services and regulations.

Action #3: Protect infrastructure and population from extreme cold events

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

Action #5: Raise public awareness of hazards and hazard mitigation actions

Action #6: Reduce Vulnerability to severe winter weather

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

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SECTION 1: INTRODUCTION AND PURPOSE

1.1 Purpose and Scope of this Plan

The purpose of this Local All-Hazards Mitigation Plan is to assist this municipality in identifying all hazards facing the community and in identifying strategies to begin to reduce the impacts of those hazards. The plan also seeks to better integrate and consolidate efforts of this municipality with those outlined in the City Plan as well as efforts of NVDA, Vermont State Agencies, Academic Institutions, FEMA and other Federal Agencies. This document constitutes an All-Hazards Mitigation Plan for the City of Newport, Vermont. Community planning can aid significantly in reducing the impact of expected, but unpredictable natural and human-caused events and the goal of this plan is provide hazard mitigation strategies to aid the City in creating disaster resilience for itself and by doing so, for communities throughout Orleans County and Vermont as a whole.

1.2 Hazard Mitigation

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

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

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

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

Hazard mitigation planning is the process that analyzes a community’s risk from natural hazards, coordinates available resources, and implements actions to reduce risks. According to 44 CFR Part 201, Hazard Mitigation Planning, this planning process establishes criteria for State and local hazard mitigation planning authorized by Section 322 of the Stafford Act as amended by Section 104 of the *Disaster Mitigation Act of 2000*. Effective November 1, 2003, local governments now must have an approved local mitigation plan prior to the approval of a local mitigation project funded through federal Pre-Disaster Mitigation funds. Furthermore, the State

of Vermont is required to adopt a State Pre-Disaster Mitigation Plan in order for Pre-Disaster Mitigation funds or grants to be released for either a state or local mitigation project after November 1, 2004.

There are several implications if the plan is not adopted:

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

1.4 Benefits

Adoption and maintenance of this Hazard Mitigation Plan will:

- Make certain funding sources available to complete the identified mitigation initiatives that would not otherwise be available if the plan was not in place
- 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

1.5 All-Hazards Mitigation Plan Goals

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

- Recognize the characteristics that make the City of Newport unique within Orleans County and incorporate these findings into the hazard mitigation planning process
- Reduce at a minimum, and prevent to the maximum extent possible, the loss of life and injury resulting from all hazards.
- Mitigate financial losses and environmental degradation incurred by municipal, educational, residential, commercial, industrial and agricultural establishments due to various hazards.
- Maintain and increase awareness amongst the City's residents and businesses of the damages caused by previous and potential future hazard events as identified specifically in this Local All-Hazards Mitigation Plan.

- Recognize the linkages between the relative frequency and severity of disaster events and the design, development, use and maintenance of infrastructure such as roads, utilities and storm water management and the planning and development of various land uses.
- Maintain existing municipal plans, programs and ordinances that directly or indirectly support hazard mitigation.
- Develop a mechanism for formal incorporation of this Local All-Hazards Mitigation Plan into the municipal comprehensive plan as described in 24 VSA, Section 4403(5).
- Develop a mechanism for formal incorporation of this Local All-Hazards Mitigation Plan particularly the recommended mitigation actions, into the municipal/town operating and capital plans & programs as they relate to public facilities and infrastructure.

1.6 City of Newport: Population, History and Characteristics

The City of Newport is in Orleans County and was chartered October 30, 1802 and incorporated March 6, 1917. With 4,981 Acres (7.6 square miles), the City has the smallest land area in the county while having the largest population at 4,589 with a population density of 830 persons per square mile. This unique characteristic brings both advantages and disadvantages specific to mitigation and community resilience. Newport City provides a leadership role in the region as the center for social services and economic, educational and cultural activities. Accordingly, it is the Orleans County Seat and was incorporated in 1918 which removed its status as a village in the Town of Newport. Newport City has a hospital, fire department, municipal water and sewer, its own police department and ambulance service. There is also a state prison and methadone clinic, an office of local health and several social service agencies. Unfortunately, Orleans County is the unhealthiest county in the state (2015 County Health Rankings). Fortunately, the disaster history for the region has not produced major damage to City infrastructure or private property in comparison to other towns within the county and the state as a whole. The City displayed exceptional resilience to both flood disasters in 2011, which serve as benchmarks for assessing risk and vulnerability to flooding. As the seat of Orleans County, Newport City has a sphere of influence that goes far beyond the municipalities that border it and stretches across the international boundary located just a short distance up Lake Memphremagog. Specifically, the adjacent towns of Newport Town, Coventry, and Derby, comprise the inner ring of the greater Newport region. The town of Brighton (Island Pond), the largest municipality in Essex County located right over the county line next to Charleston and Morgan, and Orleans County's other towns, from southernmost Greensboro to sparsely populated Holland, are pulled toward the hub of the county. The city is also connected to several area towns through a variety of legal, cultural, governmental and intermunicipal means, especially emergency services. North Country Hospital, which opened in 1974, serves Orleans County and the northern Essex County. Dating to 1920 when Orleans County Hospital was opened in the city's west side, Newport has had a strong commitment to quality medical care (*Source: 2015 Newport City Municipal Plan*).

Newport City has an elevation of 722' and shares a border with the towns of Derby, Coventry and Newport Center to the east, south and west. Newport City is positioned at the southern end

of Lake Memphremagog, a 30-mile long lake that is shared with Canada to the north. Nearly 21% (1.6 sq. mi.) of the City’s area is water. The major tributaries draining into Lake Memphremagog are the Clyde River and the Barton River. Access to Newport City is by Vermont Routes 105, 5, and Interstate 91 in Derby where there is the largest international border crossing in New England. The Montreal, Maine and Atlantic/Washington County Railroad traverses through Newport City on its route between Montreal and White River Junction, VT.

1.6.1. Population

In the late 1990s, there was a projected population decrease; however, the city saw a small increase from 4,760 in 1996 to 5,100 in 2008. The population has decreased since then to 4,589 in 2010, according to the U.S. Census. Orleans County has seen an increase from 26,277 in 2000 to 27,200 in 2008. The population of Orleans County in 2010 was 27,231, with the 2013 population projected to be 27,169 (*2015 Newport City Municipal Plan*).

Table 1-1 City of Newport, selected population characteristics, 2010 Census

Category	Number	%
Total Population	4589	100
Median Age	40	--
Population age 65 years and over	886	19.3
Population under 18 years old	1019	22.2
Population between 18 and 24	367	8.3
Population between 25 and 44	1244	27.1
Population between 45 and 64	1060	23.1

1.6.2. Housing

Sixty-five percent of Newport homes were constructed pre-1940. They are characteristically wood frame with maintenance and repairs typical of older housing. Much of the older housing has been converted into multi-family apartments. New housing construction is increasingly located in the outskirts on land once valued for its agricultural value. Future housing is trending towards higher density multi-family developments. This is resulting in the renovation and outright placement of much of the city’s older downtown housing. Accessory apartments attached to single-family residences for senior family members are supported (*2015 Newport City Municipal Plan*).

Table 1-2 City of Newport, selected housing unit data, 2010 Census

Category	Number	%
Total Housing Units	2,342	--
Families residing in the city	1,191	--
Occupied housing units	2,086	89
Households with one person over the age of 65	375	16
Households with married couples	960	41
Households with female with no husband	295	12.6

Households with individuals (single) under 65	833	35.6
Households with individuals under 18	623	26.6

1.6.3. Income and Employment

Newport City continues to be the place where Orleans County workers live and work. In 2009, Orleans County had an estimated 9,413 jobs with Newport City’s residents having 16.2% of those jobs with 27% of those jobs being located within Newport City. There is some minor job growth for Orleans County but this is offset by the highest unemployment rate in the state. Salaries within Orleans County continue to be below the state average with Coventry having the county’s highest annual wage followed closely by Newport City. The more important trend is that Newport City continues to be the primary place where the county’s labor force lives and works (2015 Newport City Municipal Plan).

1.7 Summary of Planning Process

In June, 2015, NVDA selected OPH Consulting Services (OPHC) to draft the plan for the City. An initial meeting between NVDA and OPHC covered some of the planning history for the City, NVDA’s role within the planning process and next steps, including development of the planning team. After soliciting participation of planning team members, OPHC set meeting appointments with City Officials and others that agreed to be on the planning team to discuss specific facets of plan development. On June 26th, 2015, OPHC met with community members, health department staff, NVDA, the police chief, the hospital preparedness team, the current City Manager (who was soon retiring), the Public Works Director and the Administrative Assistant of the City Manager to introduce the planning process, collect information and points of contact for moving forward. In July, 2015, a community survey was developed and placed on survey monkey with notification on the City’s and NVDA’s website. Responses were collected and used to capture information that has supported the development of mitigation strategies specific to reducing potential loss of life and property through enhanced collaborations between agencies and subsequent planning. Transportation-related concerns and public awareness of planning efforts were also gleaned from the surveys and these concerns have been addressed. The planning team roster saw continued additions as the planning process moved forward into the early fall of 2015. With the advent of a new City Manager in August of 2015, OPHC scheduled a second round of meetings with City staff, including the Zoning Administrator, Public Works Director, Police Chief and new City Manager to introduce the planning process as well as an overview of hazard mitigation and pertinent emergency planning initiatives and requirements under Vermont’s ERAF program. After review of FEMA disaster declarations for Orleans County and the City’s history of PA funding, OPHC discussed specific actions taken by the Public Works Department during these events related to public infrastructure work and vulnerability (roads, water and sewer systems). With the Zoning Administrator, OPHC collected zoning maps, inundation studies and current bylaws. After meeting with the new City Manager, it was decided that an introduction and planning update to the City Council (including the Mayor) was a good idea and on September 21st, OPHC presented information related to hazard mitigation planning, the City’s disaster history, the planning process, requirements for the plan and next steps. During this period, from project inception to the City Council presentation, OPHC engaged in direct

communication with planning team members in person, via phone and/or email. Additionally, correspondence with the entire planning team via email occurred during monthly intervals to provide updates on the planning process, collect feedback and incorporate pertinent information into relevant portions of the plan. In October, additional planning team members were added to help capture and address vulnerable populations within the City. Monthly updates and relevant questions were forwarded to the City and specific planning team members for the entire planning period. Following FEMA guidance, the plan was written using data sources (with reference to information obtained in quoted) that included:

- Surveys collecting public comment (issues raised were addressed in the plan and the public meeting- the survey with summary is included in the Appendix F)
- 2015 Newport City Plan (provided current goals and regulations supporting mitigation, recent capital expenditures and infrastructure value helped to drive vulnerability assessment)
- 2010 Newport City Zoning Bylaws (provided basis of current development protocol supporting hazard mitigation)
- 2015 Newport City Capital Improvement Plan (provided specific mitigation actions planned for the next 5 years related to infrastructure as well as provided the platform from which future actions will be formally kept regarding actions of the Public Work Department related to mitigation.
- 2013 Vermont State Hazard Mitigation Plan (provided key guidance language and definitions throughout the plan).
- Vermont Agency of Natural Resources (ANR) and Transportation (VTrans) (Provided key policy recommendations on environmental conservation, high accident locations, climate change and fluvial erosion data).
- Vermont Departments of Health (VDH) and Environmental Conservation (DEC) (provided information related with public health services that could be impacted during a disaster and state support functions designated to both VDH and DEC. DEC also provided river corridor data for mapping purposes.
- Great Bay Hydro Erosion Monitoring Report (provided current disaster planning policy initiatives and scoping information on dam breach scenarios).
- FEMA Open Source (data.gov) Data for Disaster History and PA funding (provided comprehensive declared disaster by year and type as well as project descriptions and cost per event).
- FEMA P-956: Living with Dams (provides clear guidance on planning and considerations for municipalities with dams).
- FEMA NFIP “Bureau.Net” database (provided detailed information on repetitive loss properties and associated flood insurance claims).
- EPA’s Incident Action Checklist for cold weather resilience of municipal water systems (provides a guidance tool for public works to cross-reference actions on the system).

Based on information obtained, OPHC drafted the plan with support from the planning team to provide an inclusive and strategic mitigation plan for Newport City. The following list provides those who participated and/or gave information related to the content contained in this plan:

Newport City Planning Team Roster:

- Laura Dolgin Newport City Manager
- Alison Low, Senior Planner, NVDA
- Laurel Wilson, Office Manager, Newport City Manager's Office
- Michael Sanville, Director of Materials Management and Emergency Preparedness, North Country Hospital
- Sandy Thorpe, Transit Manager, Rural Community Transportation, Inc.
- Seth Disanto, Newport Police Chief
- Thomas Bernier, Newport City Public Works Director
- Kateri Stokes, Emergency Preparedness Specialist, Newport Office of Local Health
- Pam Ladds, Age-friendly advisory committee (AARP) and Memphremagog Watershed Association
- Patricia Sears, Executive Director AARP Vermont
- Jennifer Woolard, Chronic Disease Prevention Specialist, Newport Office of Local Health
- Paul Dreher, Age-Friendly Coalition Member
- Collen Moore de Ortiz, RN, School Liason and Public Health Nurse, Newport Office of Local Health
- Jamie LeClair, Newport Fire Chief
- Madeleine Roy, Director, Green Mountain United Way
- Jay Wood, Newport Ambulance Chief
- Mike Paradis, Newport Ambulance Director
- Frank Maloney, Planner, NVDA
- Bill Revard, North Country Union High School Principal
- Trisha Ingalls Interim Chief Executive Officer at Rural Edge
- Michelle Tarryk, Executive Director, Northeast Kingdom Learning Services, Inc.
- Fernando Beltran, Canadian Border Patrol, Department of Public Safety
- Bruce Melendy, Emergency Planner, NVDA

In the City's ongoing efforts to engage and include surrounding towns, the regional LEPC chair, Seth DiSanto was a member of the planning team. Mr. DiSanto is also the current Police Chief in Newport City and was able to provide valuable insight on potential considerations unique to Newport City and its relationship to surrounding municipalities. NVDA's role in assisting the entire region with all facets of planning provided crucial information and NVDA's Emergency Management Planning representative was as a member of the planning team. While the LEPC provides the best platform to engage representatives from various Cities and agencies, all bordering towns to Newport City (Morgan, Derby, Brighton, Newport Town and Coventry) were contacted with planning objectives, relevant sections of the plan and the entire draft. The towns were contacted via email through the town clerk with planning objectives and a request to inform the selectboard via an agenda item to provide input via the community survey in addition to receiving a draft plan with an invitation to comment via email or phone to the planning team. The towns were asked to provide any concerns or suggestions as well as support the dissemination of the community survey. Due to the role Newport City plays in the region, neighboring town involvement and collaboration will continue to be a crucial facet to the

systemic planning initiatives that follow adoption of this plan. State agency involvement included the State EMS office, the Department of Health and Vermont's Department of Emergency Management and Homeland Security (DEMHS) also provided valuable guidance during the development of the plan. DEMHS also has representation at the LEPC meetings and will continue to provide input and guidance as the City moves forward with the annual mitigation plan-specific LEPC meetings. The Great Bay Hydro Corporation was also involved in addressing the risk posed by area dams and point of contact, William Rodgers, Director of Operations assisted in the planning process by sharing the Corporation's emergency notification procedures and overall Emergency Response Plan. On May 2nd, a warned community meeting was held at the municipal office to review hazards and mitigation strategies. Starting on April 18th, 2016, a draft copy of the plan was made available to public and notification of its availability was sent out with meeting warning. Following the community review, suggestions for deletions and edits were made by the City Council and questions from the public were addressed and focused on furthering understanding of the scope of hazard mitigation planning within the City. Final edits were made based on the community meeting and a draft plan was submitted to the state for review prior to FEMA submission. Following state suggestions, a final, pre-FEMA submission round of edits was made and then submitted to FEMA for review.

SECTION 2: HAZARD IDENTIFICATION

The planning team looked at three distinct hazard categories, assuring synchronicity with the state hazard mitigation plan's identified hazards and for each, considered prior history, current trends and available data to select (profile) hazards that are most likely to impact the city. Because this plan represents the first of its kind for Newport City and is intended to provide a comprehensive resource for understanding the relationship between hazards, vulnerabilities and subsequent mitigation efforts. The city had decided to provide information for all hazards and divide them into two categories; Profiled and Non-profiled hazards based on the research and risk analysis.

While it is understood that FEMA will only reimburse the town for disasters caused by natural hazards, considerations for other the categories can increase resilience to a natural disaster as the technological and social hazards often occur as a secondary consequence of the natural disaster and often times, in adjunct, where-by becoming vulnerabilities. In the interest of city-level understanding in this new process, the bulk of events are included as 'hazards' and will be addressed as vulnerabilities, when pertinent, as well. The following is a discussion of existing and potential hazards in Newport City. The definitions of each hazard, along with historical occurrence and impact, are described. The three hazard categories:

- **Natural Hazards:** weather / climate hazards (drought, hurricane/tornado, high winds, severe winter storm, extreme temperatures, climate change, lightning, hail), flooding, geological hazards (landslide / erosion, earthquake, naturally-occurring radiation), and fire hazards.

Profiled Natural Hazards: High Winds, Severe Winter Storm, Flooding, Extreme Cold Temperature

- **Technological Hazards:** utility failure (telecommunications failure, loss of electrical service, loss of sewer service, loss of water service, loss of gas service), hazardous substances (hazardous material storage and release, hazardous waste sites, military ordnance, pollution events), and transportation incident.
- **Societal Hazards:** crime, civil disturbance, terrorism, epidemic, mass casualty, food supply crisis, economic downturn, and key employer loss.

2.1 Natural Hazards: Profiled and Non-Profiled

The number of natural disasters in Orleans County (11) is near the US average (12). There have been 10 major disasters (Presidential) declared and three emergencies declared. The causes of the natural disasters have been; Floods: 9; Storms: 7; Winds: 2; Heavy Rain; 1 Landslide: 1; Snowstorm: 1; Tropical Storm: 1 (Note: Some incidents may be assigned to more than one category). The following discussion on natural hazards is based upon information from several sources. General descriptions are based upon the *2013 Vermont State Hazard Mitigation Plan*. The highest risk hazards (severe winter storm, flooding, high winds and extreme cold) have been profiled to provide the basis of future mitigation strategies and are considered to impact the entire planning area (the entire city). However, lower risk natural hazards (drought, tornado, lightning, extreme hot temperatures, hail, landslide, earthquake, naturally-occurring radiation and fire hazards) are also included as “non-profiled” hazards as means of establishing a comprehensive foundation for the city. The information presented for these non-profiled hazards supports their exclusion in that current data does not suggest a risk level for the city where mitigation efforts are required.

Table 2-1: Summary of Vermont Emergency Declarations (“” denotes Newport City PA received)*

Number	Year	Type
3338	2011	Hurricane Irene
*3167	2001	Snowstorm (PA Funding Received)
3053	1977	Drought

Source: FEMA

Table 2-2: Summary of Vermont Major Disaster Declarations since 1998 (Orleans County: Bold and “” denotes Newport City PA received)*

4207	2015	Severe Winter Storm
4232	2015	Severe Storms and Flooding
4178	2014	Severe Storms and Flooding
*4163	2014	Severe Winter Storm (PA Funding Received)

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

2.1.1. Profiled Hazards:

An Introduction to Climate Change:

From 1962 to 2006, each five-year period resulted in 0-6 Major Disaster Declarations in Vermont. From 2007-2011, there were 11. It is commonly accepted that weather extremes are becoming more commonplace in Vermont. Since 2011, record setting snow, rain and cold have been experienced in the state. In recent years, it has become evident that human activities, mostly associated with the combustion of fuel, have added to the natural concentration of greenhouse gases in the atmosphere and are contributing to rapid climate change on a global scale. While projections of the effects of climate change vary, it is generally predicted that Vermont will have warmer temperatures year-round, with wetter winters and drier summers. An increase in the size and frequency of storms is also predicted. As a result, climate change in the next century will likely increase the chance of weather-related hazards occurring. An increase in precipitation may also result in increased flooding and fluvial erosion. Drier summers may increase the chance of drought and wildfire. A warmer climate may also result in the influx of diseases and pests that cold winters previously prevented. The severity of climate change is also difficult to predict, though the effects may be mitigated somewhat if greenhouse gas emissions are reduced in the near future. In 2011, Governor Shumlin formed the *Vermont Climate Cabinet*. The Cabinet, chaired by the Secretary of Natural Resources, is a multidisciplinary approach to enhance

collaboration between various state Agencies. Its primary objectives include providing the Governor with advisory information and facilitating climate change policy adoption and implementation. In 2013, the Vermont Agency of Natural Resources (ANR) released the Climate Change Adaptation Framework which addresses climate change exposures, vulnerability-specific elements within each of the natural resource sectors, and ongoing and proposed actions that can be or have been taken to prepare for the expected changes. In line and in conjunction with the ANR report, the primary goal of a VTrans climate change adaptation policy is to minimize long-term societal and economic costs stemming from climate change impacts on transportation infrastructure.

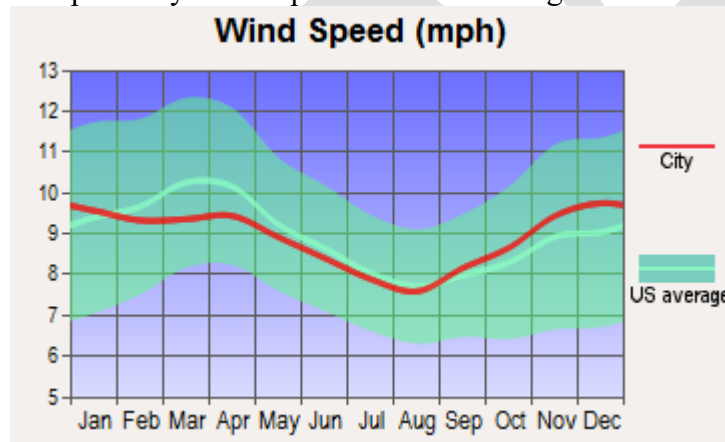
High Winds

High winds can impact the entire planning area. In a study completed by the Worcester Polytechnic Institute (Extreme Wind Speed Region in New England and New York, 2008), using wind speed data from the National Climatic Data Center, National Institute of Standards and Technology, and the US National Meteorological Service to develop a probability for extreme wind speeds and their corresponding mean recurrence interval, Newport City data was collected at station K9B2 over a 14-year period. The extreme wind speed, 50 year, 3-second gust for Newport City is 79.9 MPH. The purpose of this study was to develop recommendations for transmission line construction based on land contour data. The last recorded high wind event as tracked by the National Weather Service was recorded on 17-18 January 2012. An 81 mph wind gust was measured atop Vermont's highest peak Mount Mansfield. These strong gusts caused numerous power outages across northern New York and parts of central and northern Vermont. At the peak of the event, over 10,000 people were without power across northern New York, including the Saint Lawrence Valley and over 2,500 people had no power in parts of Vermont. During this event, Orleans County had wind speeds of 30-40 mph (category 7-8 on the Beaufort scale). With two declared disasters due to wind, this hazard remains a concern. Transportation route access and electric power supply are at risk during a major wind event. However, the duration of power supply disruption in Newport City for any hazard is minimal at less than four full days and this was only for some residential customers. Because of Newport City's role as a social service resource for so many in the region, a disruption in the ability to access the city for non-residents due to downed trees related to high wind event is a concern. The following table describes the Beaufort Scale for non-hurricane winds.

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

Beaufort*	Avg Miles per Hour	Knots	Surroundings
0 calm		0-1	Smoke rises vertically and the sea is mirror smooth
1 light air	1.2 - 3.0	1 - 3	Smoke moves slightly with breeze and shows direction of wind
2 light breeze	3.7 - 7.5	4 - 6	You can feel the breeze on your face and hear the leaves start to rustle
3 gentle breeze	8.0 - 12.5	7 - 10	Smoke will move horizontally and small branches start to sway. Wind extends a light flag
4 moderate	13.0 - 18.6	11 - 16	Loose dust or sand on the ground will move and larger branches will sway, loose paper blows
5 fresh breeze	19.3 - 25.0	17 - 21	Surface waves form of water and small trees sway
6 strong breeze	25.5 - 31.0	22 - 27	Trees begin to bend with the force of the wind and causes whistling in telephone wires. Some spray on the sea surface
7 moderate gale	32.0 - 38.0	28 - 33	Large trees sway. Moderate sea spray
8 fresh gale	39.0 - 46.0	34 - 40	Twigs break from trees, and long streaks of foam appear on the ocean
9 strong gale	47.0 - 55.0	41 - 47	Branches break from trees
10 whole gale	56.0 - 64.0	48 - 55	Trees are uprooted and the sea takes on a white appearance
11 storm	65.0 - 74.0	56 - 63	Widespread damage
12 hurricane	75+	64 +	Structural damage on land, and storm waves at sea

Newport City Wind Speed vs. U.S. Average



Severe Winter Storm

Winter storms impact the entire planning area. According to the 2013 *Vermont State All-Hazards Mitigation Plan*:

“A winter storm can range from moderate snow to blizzard conditions. A severe winter storm deposits four or more inches of snow during a 12-hour period or six inches of snow during a 24-hour period. A blizzard is a snowstorm with sustained winds of 40 miles per hour or more with heavy falling or blowing snow and temperatures of ten degrees Fahrenheit or colder. An ice

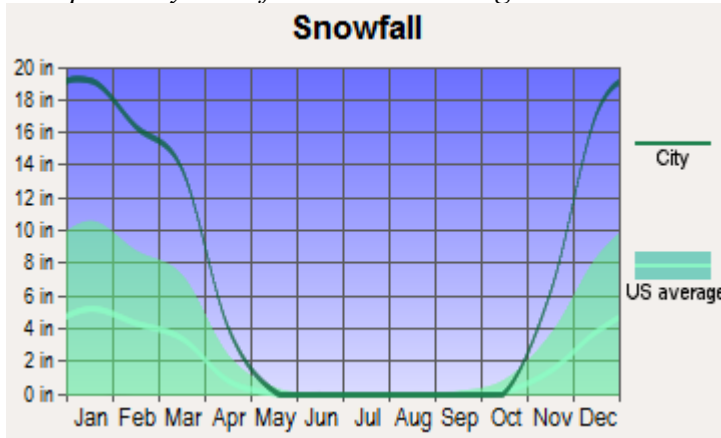
storm involves rain, which freezes upon impact. Ice coating at least one-fourth inch in thickness is heavy enough to damage trees, overhead wires, and similar objects and to produce widespread power outages.”

Winter storm frequency and distribution varies from year to year depending on the climatological patterns but snowfall in the town is significantly higher than the national average. The winter of 2010-2011 was the third-snowiest on record with a total of 124.3 inches. The record of 145.4 inches was set in 1970-1971. The potential for a major snowstorm that exceeds the capabilities of town exists every year but with the recent increase in snowfall totals and cold temperature duration, the town realizes that further consideration is required. NOAA's National Centers for Environmental Information is now producing the Regional Snowfall Index (RSI) for significant snowstorms that impact the eastern two thirds of the U.S. The RSI ranks snowstorm impacts on a scale from 1 to 5, similar to the Fujita scale for tornadoes or the Saffir-Simpson scale for hurricanes. NCEI has analyzed and assigned RSI values to over 500 storms going as far back as 1900. As such, RSI puts the regional impacts of snowstorms into a century-scale historical perspective. The index is useful for the media, emergency managers, the public and others who wish to compare regional impacts between different snowstorms. The RSI and Societal Impacts Section allows one to see the regional RSI values for particular storms as well as the area and population of snowfall for those storms. The area and population are cumulative values above regional specific thresholds. For example, the thresholds for the Southeast are 2", 5", 10", and 15" of snowfall while the thresholds for the Northeast are 4", 10", 20", and 30" of snowfall. 2010, 2012 and 2015 have some of the highest rankings for notable storms in Newport City. These rankings are based, in part on the severity of the storm using the following system. Since 2000, there has only been one event that reached a category 4 in the Northeast, five reached Category 3, eight were “significant” and all others were notable.

Table 2-4: NOAA’s Regional Snowfall Index (RSI) and Newport City Snowfall vs. U.S. Average

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

Newport City Snowfall vs. U.S. Average



The winter of 2010-2011 was the third-snowiest on record with a total of 124.3 inches. The City has seen damage from declared snow disasters in the past, primarily dealing with debris removal from downed trees. Additionally, the City received PA funding to assist with snow removal indicating the potential for even a robust public works department becoming overwhelmed to manage a major snowstorm without outside assistance. In any Vermont community, this potential exists every winter. In January of 2015, Newport City received 28'' of snow compared to only 11.3'' in 2014. Historic January snowfall totals fell in 1987 (47.5''), 1978 and 1979 (46.5'', 45.8''). Total average snowfall for Newport City in December is 26.2'', January is 22.6'', February averages are slightly less at 16.9'' and March is 18.3''. February 14th-15th, 2007 saw the greatest 24-hour max snowfall total at 23.5''. The snowfall totals are annual averages based on weather data collected from 1981 to 2010 for the NOAA National Climatic Data Center

Ice Storm

Major Ice Storms occurred in January, 1998 and again in December, 2013. The North American Ice Storm of 1998 was produced by a series of surface low pressure systems between January 5 and January 10, 1998. For more than 80 hours, steady freezing rain and drizzle fell over an area of several thousand square miles of the Northeast, causing ice accumulation upwards of 2'' in some areas. Newport City received less than .5'' of ice. On December 13th, 2013, another ice storm hit portions of Orleans County, resulting in the greatest disruption of electric service since 1998 at 96 hours for some customers within the City. While there is evidence that supports an increase in weather and precipitation severity, the incidence of ice storms remains fairly spaced out. The city expects to have another ice storm but unlike rain and snow events, the occurrence of a major ice storm is not expected every year.

Extreme Temperatures

While there is no historical evidence to support a concern over the consequences of extremely hot temperatures on human health and safety in Newport City, high temperatures can help to create severe storms as the one evidenced on September 11th, 2013, where record heat helped to

produce damaging hail and winds in parts of the NEK and other areas of Vermont and NY. Recent extremes in cold temperatures is a concern and impact the entire city and region. 2015 tied the coldest winter (January to March) on record (1923) for Vermont as a whole according to the NOAA's National Climatic Data Center whose dataset dates to 1895. The National Weather Service has the following, recent, temperature records for Newport City, Vermont:

- Highest: 95 degrees, August, 2001
- Lowest: -38 degrees, February, 1933

Cold temperatures are expected in the Northeast but they can pose a serious threat to health and safety, especially as the severity and duration increases in conjunction with other technological (e.g. power outage, fuel oil delivery disruption) and societal (ability to purchase heating fuel) factors. The winter of 2015 was the coldest anyone could remember with a mean temperature of 7.8 degrees Fahrenheit. However, the January of 1994 had a mean temperature of 2.7 degrees Fahrenheit which is the coldest mean temperature since 1930 and January is the statistically coldest month in all of Vermont. Since 1930, January produced temperatures in the negative 20's and 30's consistently for Orleans County with record cold temperatures occurring in 1957 and 1933 (-38). While the temperatures for the City remain within averages seen in the last 85 years, dangerously cold temperatures are expected every winter. There is no evidence to support concern over increases in high temperatures for the town as it relates to health and human safety at this time.

2.1.2. Flooding

Flooding is the most common recurring hazard event in the state of Vermont. June, 2015 broke records across the state for the wettest on record. Newport City received 7 to 8 inches of rain in June but flooding did not result. Recent history, including the flooding events of 2011 and the records set in 2015 suggest that increases in total rain fall and severity are to be expected along the lines seen with the records set across the state recently. There are three sources of historical precipitation data for Vermont. The data are reported at the county level: 1) recurrence time intervals for 24-hour rainfall storm depth, 2) annualized daily frequency of rainfall, and 3) rainfall-intensity frequencies. The first source of data is the recurrence time intervals for 24-hour rainfall storm depth. The recurrence depth data describes the expected intensity of major rainfall events with respect to both rainfall depth and frequency of occurrence.

Table 2-5: 24-Hour Rainfall Depths (inches) for Common Recurrence Intervals (ANR, 2002)

County: Orleans
1-yr, 24-hr Rainfall Depth: 2.1''
2-yr, 24-hr Rainfall Depth: 2.2''
10-yr, 24-hr Rainfall Depth: 3.1''
100-yr, 24-hr Rainfall Depth: 5.0''

The second source of data are the annualized daily frequencies of rainfall, which were obtained from the National Climatic Data Center (NCDC), Climate Normals program for 1981 – 2010.

The data provides the average number of days per year with measurable precipitation (greater than 0.01 inches) on a county by county basis. This data allows for the conversion of the annual probabilities derived from the recurrence time intervals to daily probabilities. The annualized estimated daily frequency of measureable rainfall for Orleans County is 174 days (highest in the state) with 119 days of rain and 55 days of snow. The final source of data are rainfall-intensity frequencies. Hourly precipitation totals throughout the state of Vermont were obtained from the NCDC's Cooperative Observer Program (COOP). Hourly rainfall data were available for 26 COOP locations between 1962 through 2012. Each station is associated with the specific county in which it was located, and the hourly precipitation totals for each station are aggregated by county to yield a frequency distribution of hourly rainfall intensities.

Table: 2-6: Orleans County Rainfall-Intensity Range (in. /hr.)

County: Orleans
$x \leq 0.01$: 22.5%
$0.01 < x \leq 0.05$: 25.6%
$0.05 < x \leq 0.10$: 38%
$0.10 < x \leq 0.15$: 3.2%
$0.15 < x \leq 0.20$: 5.9%
$0.2 < x \leq 0.25$: .8%
$0.25 < x$: 4.7%

Flood Vulnerability

Flooding is the most common recurring hazard event in the state of Vermont. There are three main types of flooding that occur in Vermont: flooding from rain or snow melt, flash flooding and urban flooding. Flooding has also been known to occur as a result of ice jams in rivers adjoining developed towns and cities. These events may result in widespread damage in major river floodplains or localized flash flooding caused by unusually large rainstorms over a small area. The effects of all types of events can be worsened by ice or debris dams and the failure of infrastructure (especially culverts), private and/or beaver dams. Rain storms are the cause of most flooding in Newport City. Winter and spring thaws, occasionally exacerbated by ice jams, are another significant source of flooding, especially when coupled with high rain levels. Much of this flooding is flash flooding, occurring within hours of a rainstorm or other event. Flash flooding, as opposed to flooding with a gradual onset, causes the largest amount of damage to property and infrastructure. Floods cause two major types of damage: water damage from inundation and erosion damage to property and infrastructure. The *2013 Vermont State All-Hazards Mitigation Plan* discusses flooding extensively. While that plan is concerned with all of Vermont, the information on flooding is all relevant to Newport City in that:

“Recent studies have shown that most flooding in Vermont occurs in upland streams and road drainage systems that fail to handle the amount of water they receive. Due to steep gradients, flooding may inundate these areas severely, but only briefly. Flooding in these areas generally has enough force to cause erosion capable of destroying roads and collapsing buildings. These areas are often not mapped as being flood prone and property owners in these areas typically do not have flood insurance (DHCA, 1998). Furthermore, precipitation trend analysis suggests that intense local storms are occurring more frequently. Additionally, irresponsible land use and

development will exacerbate the preexisting vulnerability. Urban flooding usually occurs when drainage systems are overwhelmed and damages homes and businesses. This flooding happens in all urban areas, but specifically in Burlington where the area is located at the bottom of a gradient, which adds to the intensity of this localized flooding...

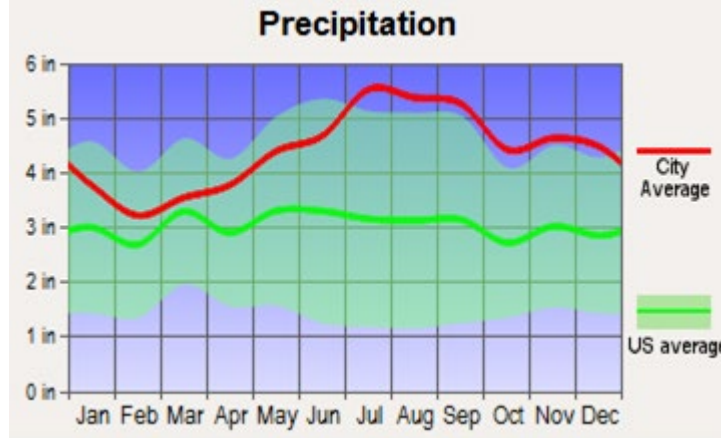
...Over the past two decades, flood damage costs have risen dramatically in Vermont due to increasing occurrences of flooding and increases in vulnerability associated with unwise land use development in flood plains or within stream corridors. The geography and topography are right for a significant localized storm with extreme damage at almost any location in Vermont. Heavy rains with previous ground saturation, which causes runoff, are a significant part of the flooding formula in Vermont. Steep topography and narrow, inhabited, stream and river valleys further increase the dangerous nature of this hazard. Furthermore, precipitation trend analysis suggests that intense, localized storms that can cause flash flooding are occurring with greater frequency. While flooding will continue, planning and other mitigation measures can help minimize damages.

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

Vermont experienced major floods long before Federal disaster assistance became available. The most destructive recorded event was in November of 1927. In the month before the flood, rains in excess of 150% of normal precipitation fell after the ground had frozen. The flood itself was precipitated by 10 inches of rain falling over the course of a few days. The flood inundated parts of many towns and damaged or destroyed numerous bridges in the county. As the history of the flooding cited above bears out, the geography and topography are right for a significant localized storm with extreme damage at almost any location in Vermont. Numerous floods have resulted in Presidentially-declared disasters and an influx of Federal disaster assistance. Of these disasters, 1973 flood inflicted widespread damage across the state and the residual rains of Hurricane Belle in 1976 resulted in substantial federal disaster assistance in Vermont. The greatest 24 hour rainfall record for the City occurred in late August, 2011 at 4.01". The greatest level of precipitation in any month for the City occurred in August, 2011 at 11.12". Previous experiences have proven to the town that flooding is the greatest risk and another flood event is probable by the time this plan requires an update. With this conviction, the need to complete viable mitigation actions to town infrastructure becomes incredibly important and the town remains aware of this. The estimated Capacity-Disruption Levels Given a Measured Rainfall Event can be interpreted as the conditional probability that a particular roadway capacity disruption occurs, given that a rainfall event occurs. For Orleans County, the probability that the intensity of a rain event will result in approximately a 2%, 7.5%, or 13.5% roadway capacity

reduction are 7.35%, 23.96%, or 1.3%, respectively (Source: *A Risk-Based Flood-Planning Strategy for Vermont's Roadway Network, 2015*).

Table 2-7: Newport City Precipitation vs. U.S. Average



Inundation and Floodplains

Newport City is located at the southern end of Lake Memphremagog and is entirely within the Lake Memphremagog Watershed, which encompasses a total of 647 square miles of which 489 square miles are in Vermont and 198 square miles of which are in the Province of Quebec in Canada. The City of Newport encompasses approximately six square miles. Three main rivers, the Clyde, the Barton and the Black flow into Lake Memphremagog at the southern end of the lake. The Barton and Black rivers flow into South Bay and the Clyde River enters in the center of the city at Railroad Square. A 1909 treaty established between Newport City and Canada allows for the City, under defined circumstances, to request a lowering of the lake. While Gardner Park floods almost yearly in the spring, the magnitude does not pose a historical risk for the water system. Regarding flood inundation issues, the 2013 *Vermont State All-Hazards Mitigation Plan* states:

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

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

In general, floods in the area are caused by heavy rains. Springtime rains are often associated with snowmelt. A winter thaw, accompanied by rain often leads to ice jams which also cause riverine flooding. Hurricanes traveling up the east coast of the country produce occasional flooding situations. Much of the land immediately surrounding Lake Memphremagog is susceptible to periodic flooding. The Magog River presents a constriction to flows through Magog, Quebec. Thus the river effectively controls lake level flooding. The level of Lake Memphremagog is controlled by a dam at Magog, Quebec. The normal operating range of the lake is maintained in accordance with the Boundary Water Treaty of 1909 and agreed upon by an exchange of notes between the Governments of the United States and Canada in 1935. The operating ranges agreed to are as follows: Upper Limit: 683.00' MSL; Lower Limit: 679.28' MSL. Also, during times of flooding, the sluiceways of the dam shall be sufficiently opened to ensure that the outflow from the lake shall be unobstructed by the dam, the flood water drawn off and the water level in the lake reduced to the normal regulated level as rapidly as possible. Low lying areas of Newport City are subject to periodic flooding caused by overflows of the Black River and Clyde River and their tributaries. The city is also subject to lacustrine flooding by Lake Memphremagog. The most frequent flooding occurs in early spring as a result of snowmelt and heavy rains, but flooding has historically occurred in every season. Flooding has also occurred due to debris collection and ice jams. Notable floods in this area have occurred in several years. The majority of damage from these storms was caused by the storm and not directly related to flooding from the river corridors or the lake. The lake water level from the one-hundred-year storm is 686' which is three feet above the upper limit of the normal lake level. This level of increase encroaches on areas such as Gardner Park, several yards and basements on Glen Road and wetlands along Lake Street. Based on State of Vermont Highway Map 163 contouring and Community-Panels from National Insurance program, the one-hundred-year storm water level increase will affect structures along the lakes edge throughout Newport City as noted above. However, other properties could be affected by secondary issues, such as windblown ice flows or high wind wave damage. The Clyde River flooding depth varies with distance back from the mouth of the river. There are several homes in the area of Tributary Number 1 entering the Clyde River near Cross Section L that are in danger of flooding (2015 Newport City Municipal Plan).

Fluvial Erosion

Erosion occurs on a consistent, but small-scale, basis within the riparian corridor of the City's streams and rivers. This is a part of normal natural processes and as such is necessary for the proper functioning of the ecosystem of these waterways. However, fluvial erosion on a large

scale can damage stream banks and undercut infrastructure such as roads, bridges and culverts as well as agricultural land and structures, causing severe damage. Fluvial erosion on a large scale can cause stream bank collapses, which are generally classified as landslides. Most flood damage is associated with fluvial erosion rather than inundation. The 2013 *Vermont State All-Hazards Mitigation Plan* contains the following discussion of fluvial erosion:

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

The Vermont Agency of Transportation (VTrans) applies the term “scour critical” to stream crossing structures especially vulnerable to streambed scour—the undermining of bridge supports by water action and erosion. A spreadsheet database is maintained by VTrans and continually updated by the Bridge Inspection Program. Structures inspected are only those of 20 ft. or longer owned by a municipality or the state. The scour critical rating is based on the structure itself, and does not take into account debris jams, outflanking, channel change, or other issues commonly associated with fluvial erosion. Water supply source and distribution systems are also endangered by fluvial erosion. Many water distribution systems involve buried pipes that cross streams, which are vulnerable to fluvial erosion. In December, 2014 the Vermont Department of Environmental Conservation (DEC) released the “Flood Hazard Area and River Corridor Protection Procedures” guide, outlining specific actions and considerations. While fluvial erosion potential has not been addressed as of yet, new data is constantly becoming available, such as the recently released River Corridors Base Map by the Agency of Natural Resources. While Newport City’s exposure is limited by the length and character of the rivers within the city, the potential for significant property damage under unique circumstances is a concern. Therefore, new river corridor data will be evaluated as it becomes available to identify

any potential problem areas and any measures that will minimize or eliminate the impact of fluvial erosion shall be implemented.

Non-profiled Natural Hazards:

The information that follows relates to natural hazards that do not pose significant risk to the planning area and the rationale why they are not being profiled for the next planning cycle. The intent with their inclusion as non-profiled hazards is so that future updates can follow an efficient process where the information presented here can be used as a basis if there is a required change in profiled vs. non-profiled hazards.

Fire Hazards

The Newport City Fire Department is staffed with a full-time fire chief and a roster of 31 volunteer members. Personnel receive fifty to sixty hours of training annually and a majority of the department is Fire Fighter I Certified. In 2013 the fire department responded to well over two hundred calls of varying degrees of seriousness. Because of the small land mass, a non-developed area fire is not likely but a major urban fire is possible due to older construction materials and relative proximity of buildings to one another.

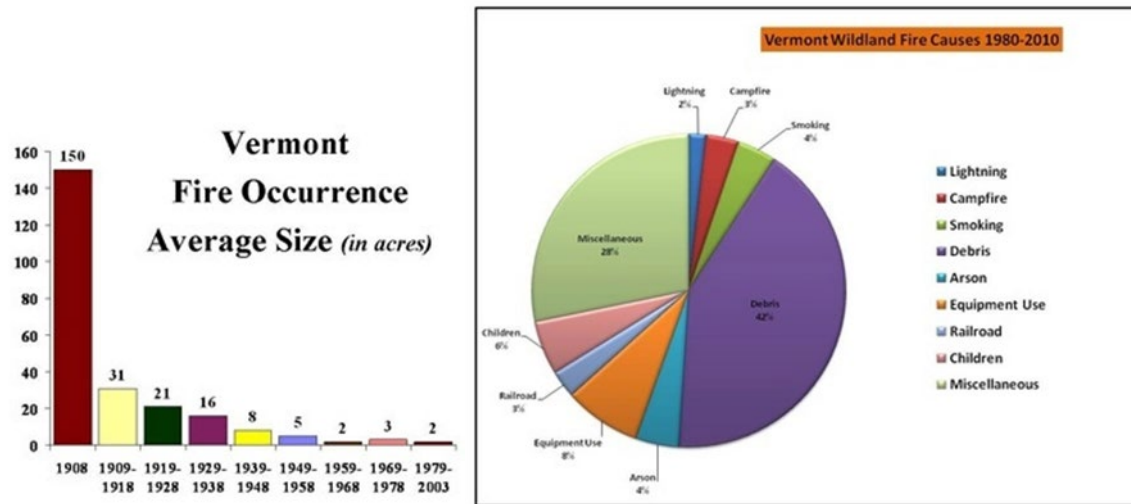
Major Fire – Urban

While structure fires have been removed from the 2013 *Vermont State All-Hazards Mitigation Plan*, the impact on the most urban area in Newport to a fire is substantial as all buildings are in close proximity to another and a fire in one is likely to spread to the next. Vermont has one of the highest per capita death rates from fire in the nation. This is the deadliest form of disaster throughout the state. In 2000, there were 831 structural fires in the state, 12 of which resulted in 22 civilian deaths. 20 of those deaths occurred at residences. Although there have been requirements for smoke detectors in rental housing for over 20 years, and requirements for smoke detectors in single family dwellings since 1994, only one building involved in the fatal fires in 2000 had working smoke alarms. Columbia Plywood Industry had a fire breakout with \$7 million damage on June 4, 1995. It was a row of warehouses that stored veneer from Columbia Forest Products. The fire was an arson but no one charged. A total of 18 fire departments from as far as Canada and New Hampshire assisted in combatting the blaze. Fortunately, there were no injuries. One of the greatest concerns of the Newport City fire department is a potential downtown fire. Many of the buildings are historic with older wiring and outdated alarm systems. They are close together so if one building is in flames with a high wind off the lake, there could be devastating results.

Major Fire –non-developed

Due to its climate and primary vegetation types, Vermont is not considered to be at serious risk for large-scale wildfires. Despite not having had a major wildfire in the last 50 years, fire suppression systems are in place at the local level. These involve burn permits, burn restrictions, prevention, and detection of fires. Isolated homes with single access roads are more vulnerable to wildfires than more heavily populated areas, and the threat is increased during dry periods, especially in the late summer and fall. The primary forms of ‘wildfire’ fire in Newport are brush and grass fires accidentally started by persons burning trash, leaves or brush. The City has not seen a significant fire in the last decade.

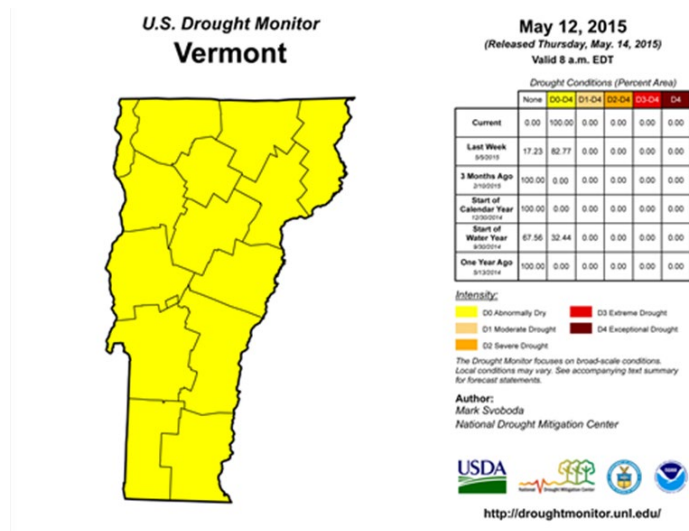
Table 2-8: Vermont Fires: Size and Causes



Drought

Severe droughts are rare in Vermont. Summer is potentially a dry period, but local thunderstorms and moisture from tropical air masses generally prevent serious drought. A severe drought during 1930-36 affected the entire State. The drought of 1960-69 affected the entire State and was the most severe for the Town. The recurrence interval of the drought was greater than 50 years. This drought was regional in scope, encompassing most of the northeastern United States. Precipitation in the State was less than normal every year during 1960-68, which was the longest continuous spell of deficient precipitation since 1895. Streamflow deficiency was greatest during 1965. In 1969, the drought ended abruptly. Below is the most recent drought monitor for the entire state. Spring can bring abnormally dry conditions as was evident in early 2015 and Newport City expects the extent of drought to remain as brief periods of abnormally dry conditions in the spring and occasionally, summer months. Table 2-3 below provides recent drought conditions and an explanation of the rating scale used. Data was not available specific to Newport City.

Table 2-9: 2014-2015 Vermont Drought Monitor



Tornadoes and Hurricanes

Tornado damage is classified by the Enhanced Fujita scale, ranging from relatively little damage (ef0) to catastrophic damage (ef5). Violent tornadoes (ef3 or greater) are capable of great destruction and loss of life. Objects such as sticks, glass, and lawn furniture become deadly missiles when driven by tornadic winds. The number of days with thunderstorms across Vermont and northern New York ranges from 20 to 30 days, with nearly a third of these days experiencing severe weather. According to the National Weather Service (NWS), severe thunderstorms can produce damaging winds in excess of 58 mph, hail one inch in diameter or larger, or even a tornado. Heavy rain and deadly lightning are also likely hazards. The Tornado Project has recorded a total of five tornadoes in Orleans County during the period from May 1962 through May 2012. Tornado damage tends to be localized. The town received no significant damage from any tornado event. No formal hurricane events are recorded for the town.

Table 2-10: Tornado Events and Fujita Scale (F-Scale) for Orleans County, Vermont

ID	Date	Event Num	Time	Dead	Inj	F-Scale	Beg Coor	End Coor	County
183	MAY 20, 1962	2	11:30	0	0	1	44.90 -072.40	00.00	0 19
184	MAY 20, 1962	3	11:45	0	1	1	44.75 -072.37	44.87 -072.25	19
708	AUG 6, 1989	1	16:20	0	0	1	44.67 -072.28	00.00	0 19
1036	SEP 3, 1993	1	18:55	0	0	1	44.82 -072.03	44.83 -071.90	19, 9
529	JUN 5, 2010	1	12:30	0	0	1	44.62 -072.42	44.61 -072.38	19
376759	MAY 29, 2012		13:25	0	0	0	44.70 -072.26	44.69 -072.26	19

Tropical cyclones (storms) are officially ranked on one of five tropical cyclone scales, according to their maximum sustained winds and which tropical cyclone basin are located. Only a few scales of classifications are used officially by the meteorological agencies monitoring the tropical cyclones, but some alternative scales also exist, such as Accumulated Cyclone Energy, the Power Dissipation Index, the Integrated Kinetic Energy Index, and Hurricane Severity Index. Of most

recent importance for Vermont was Tropical Storm Irene in 2011. Newport City received 3.4'' of rain (NOAA) in a 24-hour period. Parts of the county received 7.4'' (148% of its 100-year storm expected rainfall total, which was the highest of any Vermont County). With the increase in severe weather events related to rainfall, the town expects greater rainfall events, should they be a result of a tropical storm or smaller storms, to occur in the future. However, tornadoes are very unlikely in the region and the town does not expect to experience any enhanced threat with this hazard.

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

Earthquake

The risk of earthquake is quite low in Vermont. The risk is low enough, however, that it is not prudent to invest in mitigation for earthquakes. The most recent earthquake felt in Newport occurred in April 2002. This magnitude 5.2 quake occurred 87.4 miles away from City. Information provided by the Vermont Geological Survey, Department of Environmental Conservation, and the Agency of Natural Resources can be helpful in estimated the impact of an earthquake and for Newport, the risks are quite low.

Radiation (Naturally Occurring)

Radon gas, a naturally occurring radioactive substance that can build up in homes and can cause health problems, is enough of a concern for Vermont that health officials recommend home testing. Newport has the average predicted level of radon (between 2-4 pCi/L. The most common strategy for dealing with a radon problem is venting of basement areas. The Vermont Department of Health recommends mitigation steps be taken based on the type of radiation.

Landslides

Landslides are sudden failures of steep slopes and can cause significant damage to streams, infrastructure, and property. Landslides can be caused by fluvial processes, as discussed above. Landslides can also be caused by slope steepening due to non-fluvial erosion, increased loading on the top of a slope, or pore-water issues. Landslides can destroy or damage structures and infrastructure that lie either above or below the slope. While the City has some steep sloped roads, there is no evidence to support concern over landslides. Further discussion of landslides in the *2013 Vermont State All-Hazard Mitigation Plan* contains the following:

“Overall, the state of Vermont has had a moderate to low incidence of landslides. The USGS defines susceptibility to landslides as the probable degree of response of rocks and soils to natural or artificial cutting or loading of slopes, or to anomalously high precipitation. The U.S. Geological Survey has produced a map entitled “Map showing slope failures and slope-movement-prone areas in Vermont” (Baskerville and Ohlmacher, 2001, 1:250,000 scale). This map identifies about 2.8% of the land area of Vermont as having evidence of slope movements. This corresponds to a moderate susceptibility as a low incidence is defined as less than 1.5% of the land area involved. The map serves to broadly identify some of the areas susceptible to landslides and the included text provides an excellent description of the types of slides found in the state, but the map is not detailed enough to meet current needs. The map generally does not identify slope failures in unconsolidated material in the valley bottoms....areas along Lake Champlain and the Green Mountains show a high susceptibility and

moderate incidence. A moderate incidence is defined as 1.5%-15% of the area is involved. On the national map, none of the significant landslide events in the United States have occurred in Vermont.”

While fluvial erosion can constitute a landslide, there is little in way of historical data on Vermont landslide events. However, following tropical storm Irene in 2011, the magnitude of rain caused widespread damage, including significant scouring of riverbanks and stream channels. The most common types of landslides in Vermont are slides, which take two general forms; rotational slumps and translational slides. The translational slides occur on a wide variety of unstable slopes underlain by weathered, dense till, as well as slopes underlain by sandy to clayey lacustrine deposits, whereas the rotational slumps are more common on unstable slopes underlain by sandy to clayey lacustrine deposits. Both rotational and translational failures imply that the material has internal cohesion; otherwise the material would disintegrate into some sort of flow. An active landslide is one that has moved within the last year. The sides and upper margin of such a landslide are generally sharp and any exposed slide surfaces are bare of vegetation or have only the beginnings of pioneer vegetation on them. An inactive landslide has not moved within the last year, but it is in a setting in which it could be reactivated. One that has been inactive for several years may be largely revegetated, at least with pioneer vegetation. Inactive landslides are common near actively migrating stream meander bends where the site of landslide activity has shifted downstream as the stream meander has shifted downstream. The inactive slides may very well be reactivated if another meander bend migrates down from upstream. We define a relict slide as one where there is no evidence of movement for many years and the likely causative agent is no longer present. An example would be a former stream cut bank formed by stream erosion in early Holocene time. If the stream has since cut down vertically and moved away in such a fashion that it is now trapped by bedrock and would be unable to move back to the old cut bank, that cut bank could be considered relict. Such a feature is generally completely revegetated and the edges have been softened by erosion. The Vermont Geological Society has developed a Protocol for Identification of Areas Sensitive to Landslide Hazards in Vermont (2012). This protocol was used in Chittenden County, Vermont with inclusion into the State Hazard Mitigation Plan. Fourteen potential parameters were considered as to their effect on landslide hazard. These included location with respect to the marine limit of the Champlain Sea, aspect, distance to stream, elevation, hydrologic group, NDVI, profile curvature, roughness, slope angle, slope height, soil type, stream power index, surficial geology, and topographic wetness index. The protocol is applicable to areas in Newport City but currently, there is no data.

(source: <http://www.anr.state.vt.us/dec/geo/pdfdocs/TechReports/LandslideProtocol2012.pdf>)

Lightning

The greatest concern associated with lightning is the impact on communications, especially communications between emergency responders, from lightning striking communications infrastructure. While the potential exists for a longer term outage due to damage equipment, the relationship between the city and power companies is excellent and response times associated with restoration of power has proven to be exceptional. Vermont is ranked 17th per capita in lightning related deaths (1959 – 2003). No further data was available regarding losses to forest, electric service, property or life due to lightning.

(Source: <http://www.nekweather.net/wxVtclimatology.php>)

Hail

The town does not consider hail a significant hazard, although hailstorms can have a devastating effect on local farmers. At present there is no historical data on hailstorms in Newport City. Hail storms tend to be very localized and the frequency is low. However, with the recent increases in extreme weather and evidenced by recent hail storms like the one occurring on September 11th, 2013, where record high temperatures were observed in the state, helping to produce a severe wind and hail storm in parts of the Northeast Kingdom, the potential for more frequent hail storms is certainly a possibility. The following excerpt is from a regional NEK paper concerning the event:

"ST. JOHNSBURY -- Storms rolled into the Northeast Kingdom Tuesday, delivering severe hail, a mudslide, at least one lighting strike, road damage, and tornado warnings. "That's been the biggest news around here, the tornado warning, I think" said meteorologist Lawrence Hayes at Fairbanks Museum & Planetarium in St. Johnsbury. Hayes heard no reports of tornado sightings. He thought chances for a twister by late Tuesday afternoon were slim. "But there will still be rain and some rumbles of thunder," Hayes said at about 5 p.m. The most extreme weather Tuesday hit areas like Lowell, where hail was reported at 1.25 inches in diameter, and Albany and Holland, which both saw hail at an inch in diameter."
(Source: <http://orleanscountyrecord.com/Main.asp?SectionID=14&SubSectionID=113&ArticleID=24859>)

Ice Jams

Ice jams, which can cause rapid and catastrophic flooding, are considered increasingly hazardous in parts of Vermont. In addition to the inundation damage they cause, ice jams can block infrastructure such as roads and culverts. Ice jams are not as much of a concern in Newport as elsewhere in Vermont. A list of historic ice jams, including municipalities and streams, is maintained by the Vermont Division of Emergency Management and the Vermont Agency of Natural Resources. There has been some damage and minor flooding as a consequence to ice jams in the past. Ice jams are not as much of a concern in Newport as elsewhere in Vermont. A list of historic ice jams, including municipalities and streams, is maintained by DEMHS and the Vermont Agency of Natural Resources (ANR). The US Army Corps of Engineers Cold Regions Research and Engineering Laboratory maintains a more specific database of ice jams, which includes over 903 events in Vermont with the latest occurring in 2013. Despite Newport not having any recorded events, Clyde River has had two recorded Ice Jams. Other NEK areas have high rankings. Passumpsic had 19 (10th highest in the state) and St. Johnsbury had 38 (5th highest in the state) with the Connecticut River being number one in the state with 84 recorded ice jams and the Passumpsic River with only one. On a positive note, the total number of events has been decreasing since 2004.

(Source: http://rsgisias.crrel.usace.army.mil/apex/f?p=524:39:10954063060296::NO::P39_STATE:VT)

High Hazard Dams

The Clyde River Hydroelectric Project, owned and operated by Great Bay Hydro Corporation includes four facilities, one of which; the Newport City Power Plant, is located in the City of Newport. The plant houses three hydroelectric generators with a combined output capacity of

4.0 MW. Two penstocks extending from the Newport dam feed the Newport plant hydroelectric generators. The Newport dam is located in the town of Derby at the outlet of Clyde Pond. The water discharge from the Newport plant feeds the Clyde River that empties into Lake Memphremagog approximately one mile downstream from the plant. The hydroelectric project is licensed by the Federal Energy Regulatory Commission. There was a fifth facility, also located in the City but this dam, located at river mile 1.5, failed in 1994 and is no longer operating. According to the 2013 *Vermont State All-Hazards Mitigation Plan*, “*The VT Agency of Natural Resources (ANR) Dam Safety Program maintains an inventory of 1205 dams (including 85 ANR owned dams) with impoundments greater than 500,000 cubic feet*”. Failure of any of these dams could result in significant downstream flooding. A dam breach is remains the biggest threat to the municipal sewer system. There have been no recent or historically relevant flooding events associated with the failure of any dam in *Vermont*. However, as stated in FEMA Guide P-956 “*Living with Dams: Know Your Risks*” (2013): “*Although dam failures are infrequent, the impacts can be catastrophic, often far exceeding typical stream or river flood events.*” The Emergency Action Plan (EAP) for the Newport Dam describes risk for two scenarios:

1. Fair Weather Dam Break

Based on mapping and tabular information for this break, the lake level will not be significantly affected. Areas including Clyde Street, the Fire Station and the Treatment Facility will see flooding and flow will continue through Gardner Park. The flooding will require local evacuation within these areas and result in flooded roads.

2. Flood Failure Dam Break

Based on mapping and tabular information for this break, the lake level at the mouth of the Clyde will be significantly higher. The flood will now have an impact on structures on the west side of Hill Street, and the north side of Lake Street. It will now inundate areas of the Lakeshore Plaza and East Side Restaurant. Lower Main Street in the area of the railroad crossing may see flooding. The flooding will require local evacuation within these areas and result in flooded roads.

The total inundation area follows the Clyde River from Clyde Pond to the Lake, bulging northward between Hill St. and Western Ave. and where Upper Clyde St. meets Hill Street.

2.2 Technological Hazards

The following discussion on technological hazards is based upon information from several Sources, including the Newport City Public Works Department.

Utilities

Telecommunications System Failure

Land-line telecommunications services in City are largely provided by Fairpoint

Communications. Fairpoint is responsible for operation, maintenance and repair of telecommunications facilities. While service outages do occur, the frequency and magnitude remains slight. Distribution of phone lines generally follows the same corridor as roads. Weather or other problems interrupting services outside of the City or even outside the State of Vermont have the potential to disrupt service in the City. Service outages that affect emergency communications are of concern. The concern over the prospect of a computer virus that could propagate and shut down computer systems, public and private, across the county could certainly impact the City but the likelihood of such an occurrence has not been evaluated.

Loss of Electrical Service

Energy resources are available to Newport in sufficient supply. Vermont Electric Cooperative of Johnson, Vermont provides electric distribution services to the City of Newport. Vermont Electric Cooperative (VEC) is Vermont's second largest utility serving over 35,000 customers, primarily located in Northern Vermont, extending along the Quebec border, from the New Hampshire border and to the Lake Champlain Islands in the west. Vermont Electric Company (VELCO) headquartered in Rutland, Vermont is responsible for providing high voltage (120 kV or larger) transmission service to the entire state of Vermont. The transmission system that provides service to Newport is an integral part of the statewide transmission grid. However, the northern Vermont territory has the unique capability of interconnecting with the Hydro-Quebec system, which is not synchronized with the New England power grid (NEPOOL). This capability of switching between the New England and Quebec bulk power delivery systems gives VEC the ability to negotiate favorable purchase power agreements on both sides of the U.S./Canadian border, as well as increasing the reliability of a continuous supply of power. The unique ability to interconnect the northern Vermont transmission system to either the Hydro-Quebec system or the New England Power grid allows VEC to provide power to its customers with a significantly higher level of reliability than its counterparts to either the north or south. When system disturbances occur on either the Hydro-Quebec system or the New England power grid, VEC is able to switch its source of power supply to the unaffected power grid without loss of power to customers. Consequently, power outages due to transmission system disturbances are rare for VEC's northern Vermont customers. The City does maintain back-up power for the main water facility and pump stations along with its Fire Department and Municipal Office.

Hazardous Substances

Hazardous Material Storage and Release

A major Superfund Amendments and Reauthorization Act (SARA) provision is Title III, also referred to as or SARA Title III or the Emergency Planning and Community Right-to-Know Act (EPCRA). EPCRA establishes guidelines for Federal, State and local governments and industry regarding emergency planning and providing communities with information on hazardous chemicals within their jurisdiction. The State of Vermont's implementation of its SARA requirements was approved by the Legislature in 1994. Orleans County was designated as an emergency planning district and DEMHS established a Local Emergency Planning Committee, known as LEPC #10, for the county. The function of the LEPC is to carry out duties proscribed in SARA Title III. In addition, Vermont statute dictates that the LEPC shall insure that the local emergency response plan has been implemented upon notification of a release of hazardous chemical or substance, consult and coordinate with municipal emergency service providers,

DEMHS and the managers of all HAZMAT facilities within Orleans County regarding the facility plan, and review and evaluate requests for funding. Farmers are not required to report agricultural chemicals stored on their properties, but they do not typically store and keep large amounts of these chemicals. Hazardous material release is a concern for the City of Newport. According to the Newport Fire Department, a collection source for facility tier II reports, only the school submitted a 2014 Tier II report. With this, there are minimal reported hazardous material storage sites in Newport. Sites that contain large amounts of fuel or store what DEMHS calls Extremely Hazardous Substances are the most likely to cause significant problems in a hazardous materials incident and the City is free from such areas. The City has two diesel fuel tanks in code-compliant spill containment shrouds. Farms and businesses have smaller fuel tanks for diesel and gas. There are various sized propane tanks all around City. Garages have various automotive products, such as oil, grease and antifreeze. Recent replacement of chlorine gas cylinders with sodium chloride at the waste water plant reduces risk of a chlorine gas leak. While any site can be the source of a spill, history remarks positively to the responsible actions of business owners and farms in the City as there have been no significant chemical spills in the City. The Northeast Kingdom International Airport, while having no history of a major chemical/fuel spill is a concern and future coordination of emergency response plans is a goal.

DRAFT

Table 2-11: 2015 Newport Tier II Reporting Facilities

Owner	Facility	Locatable Address	Type of Substance
Verizon Wireless	Newport 2 VT (ID:3457874)	199 Clermont Terrace	Sulfuric acid
RCC	Derby USID102878	594 Hinman Settler Roa	Lead, Sulfuric acid
RCC	Newport USID102938	1101 East Main Street	Lead, Sulfuric acid
Cingular Wireless	Coventry VT Spencer Hill Rd - USID112962	458 Spencer Hill Road	Lead, Sulfuric acid
Vt Dept. of Building and General Services	Orleans Superior Courthouse	217 Main Street	Fuel Oil
Vt Dept. of Building and General Services	Emory Hebard State Office Building	100 Main Street	Fuel Oil, A-202, AirCon NYC400, BroMax 7.1, Hercules Cryotek 100 & 100AI, Lead, Sulfuric Acid
Vt Dept. of Building and General Services	Northern State Correctional Facility	2259 Glen Road	Fuel Oil, Hercules Cryotek 100 & 100AI, Hydraulic Oil, Lead, Propane, Sulfuric Acid
US Postal Service	Newport MPO	59 Coventry Street	Fuel Oil
City of Newport	Public Works Facility	900 Union Street	01657 Rando Hd 32, 02353 Texaco Antifreeze, Battery Fluid and Acid, Calcium Chloride, Diesel, Gasoline, Heating Oil, Propane, Sand, Sodium Chloride, TDH Oil, Traffic Marking Paint, URSA Motor Oil
City of Newport	Wastewater Treatment Facility	T.P. Lane	Alkaline Water Based Detergent, Alum, Diesel, Fuel Oil, Gasoline, Methane, Monolec Hydraulic Oil, Propane, Sodium Bisulfate, Sodium Flouride, Sodium Hypochlorite, URSA Oil
City of Newport	Gateway Facility	84 Fyfe Drive	Gasoline, Propane
City of Newport	Fire Station	350 Western Avenue	Battery Fluid and Acid, Propane
City of Newport	Gardner Park, Dept. Recreation	Gardner Park Road	Fuel Oil
City of Newport	Municipal Building	222 Main Street	Fuel Oil, Propane
VELCO	Newport Substation	917 Clyde Street	Battery Acid, Battery Lead, Mineral Oil, Sulfur Hexafluoride
Mater Dei Parish Charitable Trust	St. Mary Star of the Sea Church	191 Clermont Terrace	#2 Fuel Oil
Comcast	Comcast Service Center	561 East Main Street	Lead, Sulfuric acid
City of Newport	Arsenic Water Treatment Facility	1167 Coventry Street	Ferric Chloride, Propane, Sodium Flouride, Sodium Hypochlorite
Calkins Sand & Gravel		3258 Route 14N	#2 Fuel Oil
North Country Health Systems	Dept. Environmental Services	189 Prouty Drive	Bar Kem N, Carbon Dioxide, Compressed Air, Fuel Oil, Helium, Air FGAS East, Lead, Liquid Sour Plus, Nitrogen, Nitrous Oxide, Oxygen, Pain, Premium Break, Premium Suds, Propane, Purell Hand Sanitizer, SA-120, Sodium Hypochlorite
D&C Transportation		246 Bluff Road	#2 Fuel, Diesel, Kerosene
Cumberland Farms		535 East Main Street	Carbon Dioxide, Gasoline
Columbia Forest Products		115 Columbia Way	1-OXA-4-AZACYCLOHEXANE, Argon Compressed, Carbon Oxide (CO2), Cement, Diesel, Formaldehyde, Fuel Oil, Lead Acid Batteries-Wet, Liquefied Petroleum Gas, Misc. Oils - Lubricating and Motor, Compressed Oxygen, Paint Related Material (Corrosive), Polytreat TL-200, RT-211, Sawdust, Sodium Sulfite (Oxogon), Transformer Oil, Volafilm, Winter Sand
Fletcher Allen Health Care	Dept. Renal Services	189 Prouty Drive	Renal Pure Liquid Acid Concentrate, Sodium Chloride Pellets, Sterilyte Liquid Bicarbonate
RCC-Newport	Telecommunication	1101 East Main Street	Lead Acid Batteries
Vermont Army National Guard	Newport Armory	540 Union Street	Heating Fuel Oil
Newport Furniture Parts		450 Main Street	1,2,4-Trimethylbenzene, 2-Butoxyethanol, Ethyl Benzene, Isopropylbenzene, Methyl Alcohol, N-Butyl Alcohol, Propane, Toluene, Xylene
AT&T Wireless	Coventry VT Spencer Hill	458 Spencer Hill Road	Lead Acid Batteries
Great Bay Hydro	Newport Plant	964 Clyde Street	Diesel Fuel, Turbine Oil
Metal-Flex Welded Bellows		149 Lakemont Road	Denatured Ethanol, Liquid Argon, Rustlick Ultracut Aero
Amerigas DBA Blue Flame Gas		75 Citizens Road	Methanol (Methyl Alcohol), Propane, LP Gas
Level 3 Communications	Newport-NWPTVTBQ	561 East Main Street	Lead
Vermont Electric Cooperative	Electric Power Distribution	144 Citizen Road	Antifreeze, Battery Acid, Gasoline, Hydraulic Oil, Lead in Batteries, Methanol, Motor Oil, Transformer Oil
Maplefields		283 Main Street	Diesel, Unleaded Gasoline
Fairpoint	Newport CO (FPT-VT481706)	32 Second Street	Lead Acid Batteries

Pollution Events

The State of Vermont keeps records of hazardous sites, spills, Brownfield locations, hazardous and solid waste sites (<http://vem.vermont.gov/programs/epcra>). This data shows that nearly all such hazardous materials spill incidents consist of accidental discharges of gasoline, diesel or fuel oil when customers or delivery personnel are pumping these products. The majority of spills were in quantities of less than 5 gallons. DEC's *Local Planning and Zoning Options for Water Quality Protection* supports efforts that could increase water quality protection by addressing issues such as: development setbacks from ponds, lakes, rivers and streams; requiring vegetation in watercourse buffer zones; keeping thorough inventories of water bodies; and protecting and maintaining water quality through wetland protection regulations. Water resources often cross City, county, state, and national borders. A watershed's water quality can only be protected or enhanced through the cooperation of the municipalities and landowners that live, work, and play in the watershed. The City has one Brownfield's site:

Table 2-12: City of Newport Brownfield Locations

Site#	Site Name	Site Address	Site Town	Site County	Priority	Discovery Date	Closure Date
20134355	Newport Main Street Block	151-189 Main Street	Newport City	Orleans	SMAC	1/1/2013	10/7/2013

Transportation Incidents

Newport's transportation needs are met by a variety of facilities including roads, railroads, the Newport State Airport, Lake Memphremagog and even bike and walking paths. These link areas within the city to each other, as well as connect the city to places near and far. The city's economic health is tied very closely to the maintenance of this infrastructure. The most common form of transportation incident or accident is an automotive accident. Trains, watercraft and air vehicles are part of normal operations in the City and each poses its own special risk and considerations. With just under 38 miles of roadway, the City is concerned about transportation-related chemical accidents. There have been instances of fuel spills in the lake but these have been minor and have seen quick response. A rail incident could sever transportation across the bridges and access to hospital and emergency services could be cut off. While there is no history of a major railroad incident, the potential exists. Washington County Railroad (known by the reporting mark WACR) was awarded a 30-year contract in 2007 by the State of Vermont to operate the rail line between White River Junction and Newport. Today the only regular service on this line is freight traffic. Central Maine and Quebec Railway (known by the reporting mark CMQ) operates the line running northwest through North Troy and eventually on to Farnham, Quebec. It interchanges freight traffic with the WACR at Newport yard, just south of town. The Northeast Kingdom International Airport was once owned by Newport City but was sold to the state in the 1970's. Located three miles out of the city, the facility has two (crosswind and primary) 4,000-foot paved runways capable of handling small jets. With all of the planned development, expansion and changes for the area, the airport is also expected to see its own future improvements. The airport is slated to become a Free Trade Zone, and U.S.

Customs may open an office there if needed for inspections for incoming and outgoing flights. The Vermont Agency of Transportation’s Statewide Airport Business Plan Report for 2009 described the Newport State Airport as primarily a local service airport catering to recreational and personal flying activities, but it already exceeds these standards by serving some corporate business aviation users including jet activity. In addition, the 1997 Vermont Airport System Policy Plan stated that there were 7,140 operations and with the proposed expansion plans could see forecasted operations totaling over 8,000. While the possibility of an air traffic incident is possible, there are no prior incidents and neither the facility nor flying craft are considered a significant hazard at this time. However, the special considerations related to an event requiring Newport City response teams does support specialized training, collaboration and preparedness planning between the City and the facility based on best practices.

2.3 Societal Hazards

The following discussion of societal hazards is based upon qualitative information from discussions with law enforcement professionals as well as quantitative data from the State of Vermont. The 2013 Vermont State All-Hazards Mitigation Plan is also referenced.

Crime

Vermont crime statistics indicate a total downward trend in crime based on data. The 2014 crime index for Vermont was 661 compared to a U.S. index of 1423. However, Newport City is not congruous with state trends. The 2014 crime index for Newport City was above the U.S index at 1473. Newport City was above the U.S. average in 2012 and 2013 as well. Vermont, as a state, has seen a decrease in crime since 2012 compared to the U.S. The increased demand for law enforcement is evident with 2.66 index compared to the Vermont index of 2.16. Both rates are lower than the U.S. index at 2.85. During a natural disaster, the factor of controlling increased vulnerabilities to crime events is a significant issue for the city.

Table 2-13: 2005-2015 Crime Rates per 100,000 for Newport City, Vermont and the U.S
(<http://www.usa.com/newport-vt-crime-and-crime-rate.htm>)

Year	Location	Description	Murders	Rapes	Robberies	Assaults	Burglaries	Thefts	Vehicle Thefts	Arson	Crime Index
2014	Newport, VT	Count	0	5	0	5	24	90	4	0	
	Newport, VT	Per 100,000	0.0	111.0	0.0	111.0	532.7	1,997.8	88.8	0.0	1,476
	Vermont	Per 100,000	1.6	15.8	11.2	68.9	324.6	1,160.8	38.9	NA	661
	U.S.	Per 100,000	4.5	26.4	102.2	232.5	542.5	1,837.3	216.2	NA	1,423
2013	Newport, VT	Count	0	8	1	6	38	91	3	0	
	Newport, VT	Per 100,000	0.0	177.3	22.2	132.9	842.0	2,016.4	66.5	0.0	2,011
	Vermont	Per 100,000	1.6	14.5	11.6	87.1	528.7	1,632.2	53.3	NA	900
	U.S.	Per 100,000	4.5	25.2	109.1	229.1	610.0	1,899.4	221.3	NA	1,477
2012	Newport,	Count	0	7	0	13	20	58	2	1	

	VT										
	Newport, VT	Per 100,000	0.0	153.0	0.0	284.1	437.1	1,267.5	43.7	21.9	1,607
	Vermont	Per 100,000	1.3	19.3	17.9	104.2	633.4	1,695.8	69.5	NA	1,022
	U.S.	Per 100,000	4.7	26.9	112.9	242.3	670.2	1,959.3	229.7	NA	1,557
2011	Newport, VT	Count	0	3	0	10	30	80	1	1	
	Newport, VT	Per 100,000	0.0	65.3	0.0	217.7	653.0	1,741.4	21.8	21.8	1,318
	Vermont	Per 100,000	1.3	19.0	13.6	101.4	581.5	1,647.7	79.7	NA	978
	U.S.	Per 100,000	4.7	26.8	113.7	241.1	702.2	1,976.9	229.6	NA	1,576
2010	Newport, VT	Count	0	4	1	5	34	68	0	0	
	Newport, VT	Per 100,000	0.0	77.5	19.4	96.9	659.0	1,318.1	0.0	0.0	1,173
	Vermont	Per 100,000	1.1	21.1	11.8	96.2	537.9	1,673.9	70.5	NA	959
	U.S.	Per 100,000	4.8	27.5	119.1	252.3	699.6	2,003.5	238.8	NA	1,610
2009	Newport, VT	Count	0	1	2	2	35	121	1	0	
	Newport, VT	Per 100,000	0.0	19.4	38.7	38.7	677.9	2,343.6	19.4	0.0	1,128
	Vermont	Per 100,000	1.1	19.9	17.9	92.5	555.2	1,774.2	72.1	NA	993
	U.S.	Per 100,000	5.0	28.7	133.0	262.8	716.3	2,060.9	258.8	NA	1,683
2008	Newport, VT	Count	0	2	0	11	21	100	1	0	
	Newport, VT	Per 100,000	0.0	38.4	0.0	211.3	403.4	1,920.9	19.2	0.0	1,095
	Vermont	Per 100,000	2.7	20.4	14.3	98.3	557.2	1,887.1	94.2	NA	1,061
	U.S.	Per 100,000	5.4	29.3	145.3	274.6	730.8	2,167.0	314.7	NA	1,784
2007	Newport, VT	Count	0	2	0	1	22	100	1	0	
	Newport, VT	Per 100,000	0.0	37.5	0.0	18.8	412.8	1,876.5	18.8	0.0	891
	Vermont	Per 100,000	1.9	19.8	12.9	89.7	500.0	1,719.6	103.2	NA	968
	U.S.	Per 100,000	5.6	30.0	147.6	283.8	722.5	2,177.8	363.3	NA	1,827
2006	Newport, VT	Count	0	1	1	1	13	106	2	0	
	Newport, VT	Per 100,000	0.0	19.2	19.2	19.2	249.3	2,033.0	38.4	0.0	796
	Vermont	Per 100,000	1.9	24.0	17.6	93.0	528.9	1,681.8	93.9	NA	1,000
	U.S.	Per 100,000	5.7	30.9	149.4	287.5	729.4	2,206.8	398.4	NA	1,867
2005	Newport, VT	Count	0	2	0	2	10	134	2	0	
	Newport, VT	Per 100,000	0.0	39.0	0.0	39.0	194.9	2,611.1	39.0	0.0	1,004
	Vermont	Per 100,000	1.3	23.3	11.7	83.5	491.8	1,686.1	102.9	NA	956
	U.S.	Per 100,000	5.6	31.7	140.7	291.1	726.7	2,286.3	416.7	NA	1,888

Table 2-14: 2007-2015 Law Enforcement Index for Newport City, Vermont and U.S.

Year	Location	Description	Total	Officers	Civilians	Law Enforcement Employees Index
2014	Newport, VT	Count	13	11	2	
	Newport, VT	Per 100,000	288.6	244.2	44.4	2.66
	Vermont	Per 100,000	239.7	192.2	47.5	2.16
	U.S.	Per 100,000	335.2	234.1	101.1	2.85
2013	Newport, VT	Count	13	11	2	
	Newport, VT	Per 100,000	288.1	243.7	44.3	2.66
	Vermont	Per 100,000	252.3	185.5	66.8	2.19
	U.S.	Per 100,000	335.9	233.3	102.5	2.85
2012	Newport, VT	Count	13	11	2	
	Newport, VT	Per 100,000	284.1	240.4	43.7	2.62
	Vermont	Per 100,000	442.0	325.0	117.0	3.83
	U.S.	Per 100,000	335.5	235.2	100.3	2.85
2011	Newport, VT	Count	12	10	2	
	Newport, VT	Per 100,000	261.2	217.7	43.5	2.39
	Vermont	Per 100,000	403.5	307.9	95.6	3.56
	U.S.	Per 100,000	341.9	238.3	103.6	2.90
2010	Newport, VT	Count	13	11	2	
	Newport, VT	Per 100,000	252.0	213.2	38.8	2.33
	Vermont	Per 100,000	414.8	316.9	98.0	3.66
	U.S.	Per 100,000	347.8	241.9	105.9	2.95
2009	Newport, VT	Count	13	11	2	
	Newport, VT	Per 100,000	251.8	213.1	38.7	2.32
	Vermont	Per 100,000	467.2	352.9	114.2	4.10
	U.S.	Per 100,000	352.9	244.2	108.7	2.99
2008	Newport, VT	Count	12	10	2	
	Newport, VT	Per 100,000	230.5	192.1	38.4	2.11
	Vermont	Per 100,000	477.8	351.3	126.5	4.15
	U.S.	Per 100,000	357.8	247.5	110.3	3.03
2007	Newport, VT	Count	12	10	2	
	Newport, VT	Per 100,000	225.2	187.7	37.5	2.06
	Vermont	Per 100,000	431.8	322.8	109.1	3.77
	U.S.	Per 100,000	356.1	244.8	111.3	3.00

Terrorism

Regarding terrorism in Vermont, the 2013 *Vermont State All-Hazards Mitigation Plan* states:

“Terrorism and civil hazards include actions intentionally aimed at threatening lives and property. They may range from a single person on a shooting rampage to a cyber attack that harms computer systems, to the organized use of weapons of mass destruction (WMD). WMD events could involve chemical, biological, explosive or radioactive weapons. DEMHS and Vermont State Police conducted a risk/threat assessment of potential WMD attacks in 2000 that

ranked potential targets by State Police district. At that time, no known or suspected terrorists have been identified as operating in Vermont. However, some in the U.S intelligence community believe that radical Islamist/extremist organizations may have small cells in Montreal and Toronto, not far from the US border. In this regard, Vermont is considered a potential transit point for terrorist organizations operating out of Canada who may travel through the state to reach points to the south.... Vulnerability studies conducted at the state level have focused on dam security-”

The Border Patrol Station at Newport, Vermont, was established in 1924. The Newport Station area of responsibility (AOR) presently covers over 6,406 square miles. The Newport Station AOR is comprised of Orleans and Caledonia counties and portions of Lamoille, Washington, Orange, Windsor, Rutland, and Windham counties in the State of Vermont. It is bounded on the west by the Richford Station AOR, on the east by the Beecher Falls Station AOR, from the south by the State of Massachusetts/Vermont border, and from the north by 32 miles of international boundary. Approximately one mile of the international boundary consists of water. The Green Mountains cover the entire station AOR. Lake Memphremagog forms a portion of the border, extending south six miles into the United States, and over 25 miles north into Canada.

Epidemics and Mass Casualty Incidents

Fatal or serious contagious diseases are increasingly being considered as hazards. In the US, influenza kills an average of 36,000 people per year. An influenza epidemic on the scale of that which occurred in 1918 could potentially sicken up to 35% of the population, including over 200,000 people in Vermont (Vermont Department of Health, *Pandemic Influenza Preparedness and Response Plan*, 2012). Due to the process of manufacturing vaccines, sufficient supply might not be available in the event of a serious outbreak of influenza. Concerns about avian influenza in 2006 prompted the Vermont Department of Health to issue a report, the *Pandemic Preparedness and Response Plan*, outlining the state’s response to an avian influenza epidemic. There is also concern over how to distribute supplies, enforce quarantines, keep critical personnel from becoming ill, and disseminate information in the case of an epidemic. Other health threats mentioned in the Vermont State All-Hazards Mitigation Plan are water or food supply contamination, bioterrorism, an epidemic affecting farm animals and poultry, and rabid animals. Of these, avian influenza remains a concern for state officials and Vermont poultry owners, regardless of size. The Vermont Agency of Agriculture recommends adherence to strict disease prevention measures. Rural communities have an inherent protection from epidemics compared to densely populated urban areas. As with any disaster, effective and planned communication is crucial to protecting the safety of residents. Newport City is not a community with high percentage of poultry farmers.

Food Supply Crisis

Some state and local officials have become concerned with the ability of local and regional food systems to adequately feed the population in the event of a fuel shortage or other emergency that disrupts inter- and intra-state food supply chains. Because of the magnitude of social services, including the WIC program, Newport City serves as a hub for food acquisition for many people in the region. Given the right circumstances (e.g. prolonged road closures or mass urban influx resulting from a disaster), resources could become scarce. The State’s Commodity Point of

Distribution (CPOD) Plan addresses a food supply crisis but it remains up to individual regions and associated towns to plan for the dissemination of supplies in an actual event.

Economic Recession

The United States formally entered a recession in December 2007, which dramatically accelerated in September 2008. While Vermont is not among the states hardest hit by the recession, the state, including Newport, has certainly felt the effects of the downturn. According to the Vermont Department of Labor, the 2015 unemployment rate in Vermont is 3.6% compared to 7.9% (fourth highest in the state) in the City and 5.2% for Orleans County (highest in the state). In 2013, The U.S. Foreign Trade Zones Board granted a special foreign trade zone designation to the entire Northeast Kingdom, which is expected to drive more economic development.

SECTION 3: RISK ASSESSMENT

3.1 Designated Hazard Areas

Flood Hazard Areas

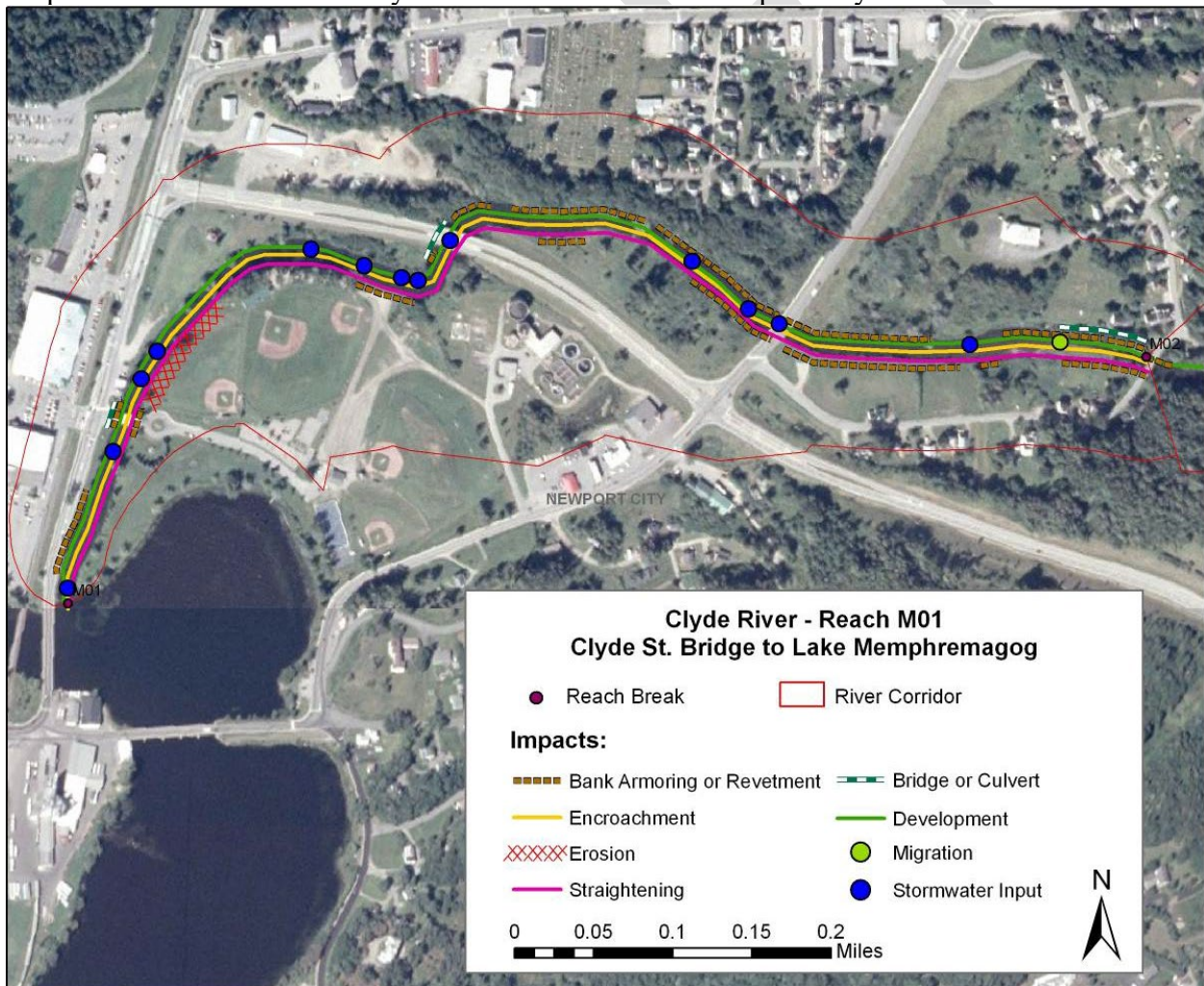
According to the latest NFIP insurance report (2015), Newport City has no properties in the A or V-Zones. During times of flood the sluiceways of the dam shall be sufficiently opened to ensure that the outflow from the lake shall be unobstructed by the dam, the flood water drawn off and the water level in the lake reduced to the normal regulated level as rapidly as possible. Low lying areas of Newport are subject to periodic flooding caused by overflows of the Black River and Clyde River and their tributaries. The city is also subject to lacustrine flooding by Lake Memphremagog. The most frequent flooding occurs in early spring as a result of snowmelt and heavy rains, but flooding has historically occurred in every season. Flooding has also occurred due to debris collection and ice jams. Notable floods in this area have occurred in several years. These storms brought significant damage to infrastructure including roads, culverts and bridges. The majority of damage from these storms was caused by the storm and not directly related to flooding from the river corridors or the lake. The lake water level from the one hundred year storm is 686' which is three feet above the upper limit of the normal lake level. This level of increase encroaches on areas such as Gardner Park, several yards and basements on Glen Road and wetlands along Lake Street. Based on State of Vermont Highway Map 163 contouring and Community-Panels from National Insurance program, the one hundred year storm water level increase will affect structures along the lakes edge throughout Newport City as noted above. However, other properties could be affected by secondary issues, such as windblown ice flows or high wind wave damage. The Clyde River flooding depth varies with distance back from the mouth of the river. There are several homes in the area of Tributary Number 1 entering the Clyde River near Cross Section L that are in danger of flooding (2015

Newport City Plan). The Appendix A map shows the designated flood hazard areas and the river corridor with associated structures.

Fluvial Erosion Hazard Areas

The Clyde River drains an area of 144 mi² extending from the river’s headwaters in the Towns of Brighton and Morgan to its mouth at the City of Newport. The watershed includes several large tributary watersheds, most notably the Pherrins River (20 mi²) and Echo and Seymour Lake Outlets (26 mi²). Numerous large lakes are found within the watershed, including Seymour Lake (1777 acres), Lake Salem (788 acres), and Island Pond (608 acres). Nearly 69% of the Clyde River Watershed is forested, however, the lower watershed contains a higher population density; agricultural land use occurs heavily throughout this region and urban land use is very concentrated in Derby and Newport City as well as West Charleston and around Lake Salem. These land uses impact the Clyde River and tributaries by decreasing soil infiltration, increasing sediment inputs, and increasing peak flood levels. East of Route 5 in Gardner Park has seen erosion damage as is noted in the Phase 2 assessment summary map below.

Map 3-1: Phase 2 results for Clyde River Reach M01 in Newport City



The Black River travels for 4.6 miles (Sections M02-M01) through floodplain forest before draining into Lake Memphremagog. While extensive work on stream geomorphology has been accomplished for the Black River with many areas having had Phase 2 assessments completed, the small portion of the river through Newport City has not received a Phase 2 assessment. The M01 area has an “E-Type” Stream Reference designation with a channel width of 113’, channel slope of less than 2%, 1.52 sinuosity rating, a very broad valley, sand streambed substrate and Dune-Ripple bedform (*source: <https://anrweb.vt.gov/DEC/SGA/finalReports.aspx>*).

Repetitive Loss Properties

The total NFIP Insurance premium for Newport City is \$17,454.00. There are a total of 11 policies amounting to a total coverage of \$3,542,000.00. There have been four claims since 1978 with a total amount paid of \$44,551.00. All four have been “BCX Claims” (outside the designated flood hazard area). No further information was available on the repetitive loss property.

3.3 Previous FEMA-Declared and Non-declared Disasters

Since 2001, the City has received \$60,600 in FEMA PA funding. Not only is this a small amount but no PA funding was needed for the storms occurring in 2011 or 2014, both of which resulted in disaster declarations for Orleans County. Using PA funding as an indicator for the magnitude of damage the City has sustained during declared disasters, Newport City has remained insulated from major disaster events that have resulted in drastically more damage and financial requirements for other parts of state, even neighboring towns. In the June of 2008, severe weather resulted in FEMA Declaration 1778 for areas east of Orleans County. At various locations in Newport City, repairs were necessary in 8 separate road and street locations totaling \$41,267 for equipment, labor and materials.

Table 3-1 City of Newport, FEMA-declared disasters and snow emergencies, 2001-2015

1428	07/12/2002	Severe Storm(s)
1559	09/23/2004	Severe Storm(s)
3167	04/10/2001	Snow

Table 3-2: City of Newport, FEMA-declared disasters and snow emergencies, 2004-2015

Disaster Number	PW #	Application Title	Applicant ID	Damage Category Code	Project Amount	Federal Share Obligated	Total Obligated
3167	90	EMERGENCY PROTECTIVE MEASURES (SNOW REMOVAL ASSISTANCE)	019-48850-00	B - Protective Measures	\$10,220.77	\$7,665.58	\$8,131.64
4163		NEWPA01 Town	019-48850-	A - Debris			

	37	Wide Debris Removal	00	Removal	\$37,498.08	\$28,123.56	\$28,123.56
1428	74	ROADS AND CULVERTS	019-48850-00	C - Roads & Bridges	\$10,537.24	\$7,902.93	\$8,383.43
1428	75	EMBANKMENT REPAIR	019-48850-00	C - Roads & Bridges	\$7,417.16	\$5,562.87	\$5,901.08
1559	131	GRAVEL ROAD REPAIR	019-48850-00	C - Roads & Bridges	\$9,805.88	\$7,354.41	\$7,801.56
1559	132	ROAD AND SHOULDER REPAIR	019-48850-00	C - Roads & Bridges	\$2,839.00	\$2,129.25	\$2,258.71

Sources: City Records, Project Worksheets, financial report forms and award letters.

3.3 Future Events

Although estimating the risk of future events is far from an exact science, the Planning Team used best available data and best professional judgment to conduct an updated Hazards Risk Estimate analysis, which was subsequently reviewed and revised by City officials in 2014. This analysis assigns numerical values to a hazard's affected area, expected consequences, and probability. This quantification allows direct comparison of very different kinds of hazards and their effect on the City and serves as a method of identifying which hazards hold the greatest risk based on prior experience and best available data. The following scoring system was used in this assessment.

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

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

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

Probability of Occurrence (scored 1-5) estimates an anticipated frequency of occurrence.

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

Natural Hazards

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

- Severe Winter Storm (36)
- Extreme Cold (36)
- Flooding (32)
- High Winds (20)

While flooding is likely to have a significant impact over a smaller area, severe winter storms tend to affect the entire City and are more common, hence the higher rating. While Newport has minimal fluvial erosion hazard areas along stream banks, high winds are more likely to result in property damage on the lake shore line. While the June 4th, 1995 fire did not impact City property, it did provide a benchmark on the magnitude of damage and cost associated with a multi-structure fire. In association, high winds would greatly exacerbate the spread of fire.

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Table 3-2 Natural hazards risk estimation matrix

Hazard & Risk Analysis: NATURAL HAZARDS	Drought	Flooding	High Winds	Fluvial Erosion	Landslide	Lightning	Multi-Structure Urban Fire	Wildfire	Winter Storm	Extreme Cold
Area Impacted Key: 0 = No developed area impacted 1 = Less than 25% of developed area impacted 2 = Less than 50% of developed area impacted 3 = Less than 75% of developed area impacted 4 = Over 75% of developed area impacted	1	1	2	1	1	1	2	1	4	4
Consequences										
Health & Safety Consequences Key: 0 = No health and safety impact 1 = Few injuries or illnesses 2 = Few fatalities or illnesses 3 = Numerous fatalities	0	1	0	0	0	0	2	1	1	1
Property Damage Key: 0 = No property damage 1 = Few properties destroyed or damaged 2 = Few destroyed but many damaged 3 = Few damaged but many destroyed 4 = Many properties destroyed and damaged	0	1	1	1	1	1	4	0	1	1
Environmental Damage Key: 0 = Little or no environmental damage 1 = Resources damaged with short-term recovery 2 = Resources damaged with long-term recovery 3 = Resource damaged beyond recovery	2	2	1	0	0	1	2	0	1	1
Economic Disruption Key: 0 = No economic impact 1 = Low direct and/or indirect costs 2 = High direct and low indirect costs 2 = Low direct and high indirect costs 3 = High direct and high indirect costs	1	3	1	0	1	1	3	1	2	2
Sum of Area & Consequence Scores	4	8	5	2	3	4	13	3	9	9
Probability of Occurrence Key: 1 = Unknown but rare occurrence 2 = Unknown but anticipate an occurrence 3 = 100 years or less occurrence 4 = 25 years or less occurrence 5 = Once a year or more occurrence	1	4	4	1	1	4	1	1	4	4
TOTAL RISK RATING Total Risk Rating = Sum of Area & Consequence Scores x Probability of Occurrence	4	32	20	2	3	16	13	3	36	36

Technological Hazards

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

- Water Service Disruption (22)
- Hazardous Materials Incident (16)
- Major Transportation Incident (20)
- Sewer Service Loss (20)

Municipal water and sewer service disruption or failure would have a significant financial and public health impact on the City and its residents. While these hazards rank highest, there is no prior history to suggest increased susceptibility. Because of the dependence on bridges to connect essential services with the ‘downtown’ area, there are scenarios that could disrupt transportation lines to essential services and contingency plans are an important facet of future city planning. These considerations, combined with population density and social services present within the city raise concern over a hazardous materials incident whereby mass evacuation would be required with a likely, corresponding transportation incident.

Table 3-3 Technological hazards risk estimation matrix

Hazard & Risk Analysis: TECHNOLOGICAL HAZARDS	Gas Service Loss	Hazardous Materials Incident	Power Loss	Radiological Incident	Sewer-Service Loss	Telecommunications Failure	Water-Service Loss	Major Transportation-Accident	Military Ordnance Incident
Area Impacted Key: 0 = No developed area impacted 1 = Less than 25% of developed area impacted 2 = Less than 50% of developed area impacted 3 = Less than 75% of developed area impacted 4 = Over 75% of developed area impacted	4	3	4	4	4	4	4	1	1
Consequences									
Health & Safety Consequences Key: 0 = No health and safety impact 1 = Few injuries or illnesses 2 = Few fatalities or illnesses 3 = Numerous fatalities	1	2	1	2	1	0	1	2	2
Property Damage Key: 0 = No property damage 1 = Few properties destroyed or damaged 2 = Few destroyed but many damaged 3 = Few damaged but many destroyed 4 = Many properties destroyed and damaged	1	1	1	1	1	0	1	0	1
Environmental Damage Key: 0 = Little or no environmental damage 1 = Resources damaged with short-term recovery 2 = Resources damaged with long-term recovery 3 = Resource damaged beyond recovery	0	1	0	3	1	0	2	1	1
Economic Disruption Key: 0 = No economic impact 1 = Low direct and/or indirect costs 2 = High direct and low indirect costs 2 = Low direct and high indirect costs 3 = High direct and high indirect costs	2	1	2	2	3	1	3	1	1
Sum of Area & Consequence Scores	8	8	8	12	10	5	11	5	6
Probability of Occurrence Key: 1 = Unknown but rare occurrence 2 = Unknown but anticipate an occurrence 3 = 100 years or less occurrence 4 = 25 years or less occurrence 5 = Once a year or more occurrence	1	2	1	1	2	2	2	4	1
TOTAL RISK RATING Total Risk Rating = Sum of Area & Consequence Scores x Probability of Occurrence	8	16	8	12	20	10	22	20	6

Societal Hazards

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

- Crime (45)
- Recession (35)
- Key Employer Loss (25)

Crime is an issue for the City and the statistics support this claim. Unemployment is also an issue and the risk of losing employment opportunities in the region increases the likelihood of crime and the unemployment rate. During a natural disaster, the opportunity for crime can be increased. This, coupled with an increased demand for law enforcement to help in response efforts during a disaster poses a unique challenge for the City.

Table 3-4 Societal hazards risk estimation matrix

Newport Hazard & Risk Analysis: SOCIETAL HAZARDS	Crime	Civil Disturbance	Terrorism	Epidemic	Economic Recession	Key Employer Loss
Area Impacted Key: 0 = No developed area impacted 1 = Less than 25% of developed area impacted 2 = Less than 50% of developed area impacted 3 = Less than 75% of developed area impacted 4 = Over 75% of developed area impacted	3	1	0	2	4	2
Consequences						
Health & Safety Consequences Key: 0 = No health and safety impact 1 = Few injuries or illnesses 2 = Few fatalities or illnesses 3 = Numerous fatalities	1	0	0	2	0	0
Property Damage Key: 0 = No property damage 1 = Few properties destroyed or damaged 2 = Few destroyed but many damaged 3 = Few damaged but many destroyed 4 = Many properties destroyed and damaged	2	1	0	0	0	0
Environmental Damage Key: 0 = Little or no environmental damage 1 = Resources damaged with short-term recovery 2 = Resources damaged with long-term recovery 3 = Resource damaged beyond recovery	0	0	0	0	0	0
Economic Disruption Key: 0 = No economic impact 1 = Low direct and/or indirect costs 2 = High direct and low indirect costs 2 = Low direct and high indirect costs 3 = High direct and high indirect costs	3	0	2	1	3	3
Sum of Area & Consequence Scores	9	2	2	5	7	5
Probability of Occurrence Key: 1 = Unknown but rare occurrence 2 = Unknown but anticipate an occurrence 3 = 100 years or less occurrence 4 = 25 years or less occurrence 5 = Once a year or more occurrence	5	4	2	2	5	5
TOTAL RISK RATING Total Risk Rating = Sum of Area & Consequence Scores x Probability of Occurrence	45	8	4	10	35	25

3.4 Hazard Summary

In comparison to other areas of the NEK and state, Newport City remains relatively insulated from the previous natural disasters than have impacted Vermont as a whole. While the opportunity for a major transportation incident to isolate parts of the City from rescue and healthcare services, there is no prior event to estimate the likelihood of an occurrence. With the increase in crime rates, unemployment level and other state-wide trends, addressing the unique relationship that exists between the economic resilience of the community, crime, social services, employment opportunities and their influence on natural disaster mitigation, response and recovery is a challenge and priority for Newport City.

SECTION 4: VULNERABILITY ASSESSMENT

4.1 Critical Facilities

The City of Newport owns 39 parcels of land and associated buildings. The Center for Disaster Management and Humanitarian Assistance defines critical facilities as: “Those structures critical to the operation of a community and the key installations of the economic sector.” Table 4-1 identifies critical facilities in Newport City along with total properties owned with estimated dollar value (some values may not take into account the most recent changes).

Table 4-1 Critical facilities (in bold) and other property owned by the City of Newport (floodplain areas in italics)

Facility Type	Location	Acreage	Dollar Value
City Garage	Union St.	5.52	1,127,800
Sewer Pump Station	Union St.	1.55	24,600
Sewer Pump Station	Bluff Rd.	19	12,100
<i>Prouty Beach</i>	Prouty Beach Rd.	29.00	956,800
City Water Reservoir	East Main St.	2.8	246,800
City School	Sias Ave.	7.67	3,861,200
Cemetery	East Main St.	5.80	79,300
<i>City Dock and Gateway</i>	Fyfe Drive	.97	801,500
City Park	Railroad Square	.74	22,500
<i>Gardner Park</i>	Gardner Park Rd.	20.00	1,602,400
City Sewer Plant	TP Lane	7.00	2,146,000
Fire Station	Western Ave.	1.00	440,400
City Hall	Main St	1.4	740,200
Library	Main St	.25	388,900
City Parking Lot	Coventry St.	.25	86,100
City Parking Lot	Central St.	.22	28,100
City Parking Lot	Central St.	.21	28,600
City Forrest	Highland Ave.	9.90	15,600
City Water Tower	Mountain View Drive	2.21	621,500

Recycling Ctr.	Coventry St.	28.51	67,600
City Wells (2)	Coventry St.	8.74	53,600
<i>State Boat Launch **</i>	Coventry St.	.41	27,200
TOTAL LAND VALUES 13,614,600 (Vacant Land not included in this table)	(Source: Newport City 2013/14 Tax Book)		
** Leased to the State of Vermont			

Based on FEMA PA funding for Newport City, the above Critical Facilities and property owned or leased by the city does not seem to be at high, or even moderate risk to the profiled hazards. As mentioned, the city remains insulated from property damage during a declared disaster. Evidence does not suggest that property in or near the mapped floodplain are at any higher risk of flooding or flood-related damage during declared or non-declared disasters. While the city has waterfront property, there are no repetitive losses from flood damage and while there are erosion concerns and economic vulnerability inherent to the management and zoning regulations along waterfront areas, the city does not consider its lakefront property a vulnerability as much as an opportunity for reaching economic and social goals to support the overall resilience of the city. Using the flooding events of 2011 as a benchmark, the city did not sustain flood damage to property to an extent to be classified as a high vulnerability along its waterfront or in other areas. While areas of the park do, consistently retain standing water, there is no resulting structural damage. The lake serves the city more as protective basin during high levels and rain than an area of threat. Unique to the region, the city does have municipal water and sewer systems and as with any municipal service, protecting these systems from all hazards remains a priority.

4.2 Infrastructure

4.2.1. City Highways

The following is a statistical overview of roads in the City of Newport. These tables show the range of road types within the City, from highways to unpaved roads. The different road types have different hazard vulnerabilities. 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.

Table 4-2 City highway mileage by class, City of Newport

Class 1	Class 2	Class 3	State Hwy	Fed Hwy	Interstate	Total 1, 2, 3, State Hwy
6.637	6.640	23.03	1.289	0	0	37.596

Source: data derived from VTrans TransRDS GIS data

4.2.2. Bridges, Culverts, and Dams

Bridges:

There are six bridges maintained by the City Public Works Department and one maintained by the railroad. Two of which connect two parts of the city, the former village of Newport with the

former village of West Derby. Those two are the bridges on Route 5 (Causeway), and the Long Bridge (Veteran Memorial) connecting Route 5 to Mt. Vernon Street. The other three are the Gardner Park Bridge, Western Ave. Bridge, Clyde Street Bridge and the Crawford Farm Bridge. The Long Bridge was completely replaced in 2013 and the City was responsible for 10% of the cost and the Western Ave. was completely repainted in 2015. Below are the bridges in Newport City.

<i>Bridge #2: City Class 2 State Highway #8 - Western Avenue Bridge, built in 1970.</i>
<i>Bridge #6: Crawford Farm Road Bridge at Clyde Pond Dam, built in 1988</i>
<i>Bridge #7: Clyde Street Bridge at intersection with Hill Street, built in 1956.</i>
<i>Bridge #8: Bluff Road Multi-plate pipe arch structure "The Tube", built in 1969</i>
<i>Bridge #9: City Class 2 State Highway #11- Mount Vernon Street Bridge "Long Bridge" built in 2013</i>
<i>Bridge #11: Gardner Park Road Bridge built in 1950</i>
<i>Bridge #00175: City Class 2 State Highway #1 - The Causeway Bridge built in 1981</i>

Culverts:

Culverts rated with most importance are located on Lake Rd., Coventry Rd., Western Ave., and East Main Street. There are 148 Culverts in Newport City. 58 of these are rated in poor condition with many on Glen Rd. (15) and Lake Rd. (14). 17 are rated critical on Billings Pt. (2), Clyde St. (2), Coventry St. (4), Glen Rd. (5), Indian Point, Memphremagog VWS, Mosher Dr. and Union St. all have 1. 8 are critical with 6 on Clyde St., 1 on Bluff and 1 on Lake Rd. VT Culverts offers an interactive mapping service and specific details on the specific locations of each culvert (<https://vtculverts.org/>).

Dams:

The Clyde River Hydroelectric Project, owned and operated by Great Bay Hydro Corporation includes four facilities, one of which; the Newport City Power Plant, is located in the City of Newport but Great Bay Hydro is responsible for the facility.

4.2.3. Water, Wastewater and Natural Gas Service Areas

Water:

Newport has the great fortune of having a clean and abundant water supply. Public water is supplied by two wells on Coventry Street, both from the same aquifer. Both wells have the capacity to supply approximately 1.4 million gallons per day (gpd). The current average use per day is 700,000 gpd, with the highs of 900,000 gpd. The water is chlorinated and fluorinated at the well site. The city has a source protection plan, better known as the Wellhead Protection Area (WHPA) which was written and designed in 1996 and is updated and provided to the State of Vermont for their approval every five years. The city feels that with the two wells it does not need to look at alternative sites for another water supply. The city’s water reservoir was completely cleaned in 2008. This is done approximately every ten years. The biggest improvement was that in 2007 the city Water Treatment Plant was finished and went online. This plant was federally mandated because the allowable arsenic levels were lowered nationally.

Newport's levels were at 18 parts per billion (ppb) and now are at or below the mandated 10 parts per billion (ppb). The plant was built at the current well site location. The cost of this project was approximately 2.5 million dollars and is being paid for by the city. The city's water lines vary based on their age and condition. Water services are currently being replaced as part of the street reconstruction program. In 2011 the city replaced water services along Third and Pleasant Streets in preparation of the state's Route 5 paving project. During 2013 two standalone water projects were completed. The first project was tying in two dead end water mains connecting Cedar Street to Pine Street, which consisted of 400 feet of 8" ductile iron. The second project was laying 1,650 feet of 12" water line from the intersection of Mount Vernon Street and Western Avenue to Kent Lane. During 2014 this line will be extended across the I91 access road, a directional bore will be placed under the Clyde River and proceed along Western Avenue to the intersection with East Main Street with an additional 2,450 feet of 12" water pipe. The water flow capacity will increase when this project is completed. Most all property within the city has connected to or has the capability of connecting to the municipal water supply. The city's water system is in great shape and is ready for what the foreseeable future brings it (*2015 Newport City Plan*).

Wastewater:

Newport's wastewater is processed at its treatment plant located at 94 T.P. Lane off of Western Avenue. The Newport City Wastewater Treatment Plant provides primary and secondary wastewater treatment. The Treatment Plant completed its twenty-year upgrade in 2007. The average daily flow from the plant is approximately 701,000 gallons per day from which about 75,500 gallons per day come from Derby. This upgrade was paid for by the City of Newport and Village of Derby Center on the basis of plant ownership. The cost of the upgrade was approximately \$4,555,000.00. The total water operation costs the City \$762,829.00 annually. With approximately 1400 users, the total water operation revenue is \$783,423.00 annually, leaving \$20,594 for improvements. Major forthcoming work include repainting of the water tower and replacement of the reservoir cover. Newport has separated 99% of their storm drains from the sewage lines and this has resulted in a significant reduction of flow to the plant during storms. Approximately 50% of the city's sewer lines have been replaced as part of the ongoing street reconstruction program. During fiscal year 2009 the city installed additional sewer lines at the Prouty Beach Campground. All fifty-two camping sites have on-site sewer availability. In 2011, 260 feet of sewer line that was seventeen feet deep along the Clyde River on Upper Clyde Street was replaced. During 2012 the city designed and installed an entire sewer system on Spring Street and Indian Point Street to change the direction of wastewater flow. This enabled elimination of a sewer overflow adjacent to the Clyde River along with the elimination of a sewer line across the Clyde River. The city's Wastewater Treatment Plant with its excellent operation record stands ready to handle what the foreseeable future brings it (*2015 Newport City Plan*).

Natural Gas:

There are propane service providers in the city but they are not affiliated with the City.

4.2.4. Electric Power Transmission Lines and Telecommunications Land Lines

Vermont Electric Cooperative of Johnson, Vermont provides electric distribution services to the City of Newport. Vermont Electric Cooperative (VEC) is Vermont's second largest utility serving over 35,000 customers, primarily located in Northern Vermont, extending along the Quebec border, from the New Hampshire border and to the Lake Champlain Islands in the west. Vermont Electric Company (VELCO) headquartered in Rutland, Vermont is responsible for providing high voltage (120 kV or larger) transmission service to the entire state of Vermont. The transmission system that provides service to Newport is an integral part of the statewide transmission grid. However, the northern Vermont territory has the unique capability of interconnecting with the Hydro-Quebec system, which is not synchronized with the New England power grid (NEPOOL). This capability of switching between the New England and Quebec bulk power delivery systems gives VEC the ability to negotiate favorable purchase power agreements on both sides of the U.S./Canadian border, as well as increasing the reliability of a continuous supply of power. The unique ability to interconnect the northern Vermont transmission system to either the Hydro-Quebec system or the New England Power grid allows VEC to provide power to its customers with a significantly higher level of reliability than its counterparts to either the north or south. When system disturbances occur on either the Hydro-Quebec system or the New England power grid, VEC is able to switch its source of power supply to the unaffected power grid without loss of power to customers. Consequently, power outages due to transmission system disturbances are rare for VEC's northern Vermont customers (2015 Newport City Plan).

4.3 Estimating Potential Losses in Designated Hazard Areas

According to the latest NFIP insurance report (2015), Newport City has no properties in the A or V-Zones. The Median Housing Value (MHV) for Newport City is \$105,000. The Equalized Value for all properties in Newport City in May of 2010 was \$307,107,000. If 1/10th of one percent of all structures were to be damaged by future flooding or other hazards, the value of the damage would be approximately more than \$307,107. There have been 4 repetitive loss claims for the same location since 1978 but all claims have been "BCX Claims" and out of the designated hazard area. Additional information concerning the four historic claims were attempted during the planning process but no further information was available.

4.4 Land Use and Development Trends Related to Mitigation

The City of Newport Bylaw contains Section 433B Flood Hazard Area Regulation - 433.01 Lands to Which This Bylaw Applies:

"This bylaw shall apply for development in all areas in the City of Newport identified as areas of special flood hazard on the current National Flood Insurance Program maps that are hereby adopted by reference and declared to be part of these regulations. Also included are 433.02 permit requirements, 433.03 base flood elevations, 433.04 review process, 433.05 development standards, 433.06 administrative duties, 433.07 variance process and 433.08 liability warning. Additionally, to determine what kinds of developments the city should plan for, it is first

necessary to determine what overall benefits the city is looking for from development. The following three broad objectives summarize the city's goals:

- 1.) Maximize the availability of good paying jobs.
- 2.) Enhance and improve real estate values while expanding the tax base and thereby minimizing individual property tax increases.
- 3.) Minimize adverse environmental impacts."

4.4.1. Future Development and Housing

The 2010 Zoning Bylaws hold to the recommended practices under the NFIP and all continued compliance and participatory requirements are managed by the Zoning Administrator. As a participating community in the NFIP, the following graph represents the currently available information regarding properties with Flood Insurance (three residential, single family properties one 2-4 family property and 5 non-residential properties). There is one repetitive loss property in the town. The last claim was in the spring of 2011. The Administrative Officer (AO) enforces the flood hazard regulations, which are integrated with the City's zoning regulations. The AO receives and reviews permit applications and forwards for board review as appropriate. In accordance with FEMA requirements, the AO maintains records of all permits issued for development in areas of special flood hazard; elevations, in relation to mean sea level, of the lowest floor, including basement, of all new or substantially improved buildings; elevations, in relation to mean sea level, to which buildings have been flood proofed; flood proofing certifications; and all variance actions, including justification for their issuance.

Table 4-2: NFIP Policies in Newport City

Community:		NEWPORT, CITY OF		State:		VERMONT		
County:		ORLEANS COUNTY		CID:		500086		
Overview	Occupancy	Zone	Pre/Post FIRM					
Policies in Force				Premium	Insurance in Force	Number of Closed Paid Losses	\$ of Closed Paid Losses	Adjustment Expense
Single Family			3	\$1,490	\$567,000	0	\$0.00	\$0.00
2-4 Family			1	\$62	\$8,000	0	\$0.00	\$0.00
All Other Residential			0	\$0	\$0	0	\$0.00	\$0.00
Non Residential			5	\$11,189	\$2,050,000	4	\$44,550.92	\$2,055.00
Total			9	\$12,741	\$2,625,000	4	\$44,550.00	\$2,055.00
Policies in Force				Premium	Insurance in Force	Number of Closed Paid Losses	\$ of Closed Paid Losses	Adjustment Expense
Condo			1	\$62	\$8,000	0	\$0.00	\$0.00
Non Condo			8	\$12,679	\$2,617,000	4	\$44,550.92	\$2,055.00
Total			9	\$12,741	\$2,625,000	4	\$44,550.00	\$2,055.00

Source: <http://bsa.nfipstat.fema.gov/reports/reports.html>

The City of Newport is one of Vermont's smallest communities in terms of area, however, the population density is one of the heaviest in the state. As such, it is important to plan for growth not only in terms of housing and other development with the remaining open land within the city's boundaries, but include redevelopment of older existing regions. Industrial development continues to be a goal of the city. Union Street north of the Bluff Road continues to be an area of industrial and commercial development. The city's only heavy industry, Columbia Forest Products, a veneer mill, is located in this area. The city garage recently located in that area alongside the Newport Ambulance facility. Identification of major traffic arteries is important in planning future growth. The heavily traveled streets will need extra attention with respect to infrastructure. On the east side, these streets are Bluff Road, Union Street, Prouty Drive, Sias

Avenue, Indian Point Street, Elm Street, East Main Street, Western Avenue, Clyde/Hill Streets, Mount Vernon St, Glen Road, the Causeway and the I91 access road. Crawford Farm Road could be included in this group. On the west side, the heavily traveled streets are: Main Street, Coventry Street, Third Street, Pleasant Street, Highland Avenue, West Main Street, Prospect Street, Lake Road and Airport Road. Attention to traffic flow is also important as residential development planned for the city progresses. At least three major developments are planned which will add to the tax rolls, but will also increase demand for municipal services such as water and sewer. In the near term, the development that continues from Estates Drive will provide additional middle income homes. Municipal hookups are already available. Alongside the Bogner building off the Lake Road, there are plans for additional senior housing on modestly sized lots. From 2002-2006, a rapid acceleration in property values seemed to have spurred renewed interest in many of these older apartment buildings. Many of the building owners renovated and improved the looks of these homes on both the inside and outside. As a result, the appearance of the older neighborhoods has improved over the past five years. The downtown area and development of the waterfront is a Designated Downtown the 2015 City Plan addresses the advantages associated with this designation.

Housing

The purpose for considering housing in planning is to evaluate the needs of the community today and into the future. Housing is an integral part of a healthy community. Safe, sound and affordable housing is a prerequisite for economic stability and growth. Housing must be judged both qualitatively and quantitatively. Newport City seeks to attract all housing types, especially affordable housing that will connect safely with schools, play areas, bicycle and pedestrian routes, and public transportation. 65% of Newport homes were constructed pre-1940. They are characteristically wood frame with maintenance and repairs typical of older housing. Much of the older housing has been converted into multi-family apartments. New housing construction is increasingly located in the outskirts on land once valued for its agricultural value. Future housing is trending towards higher density multi-family developments. This is resulting in the renovation and outright placement of much of the city's older downtown housing. Accessory apartments attached to single-family residences for senior family members are supported. Newport does a periodic review of its housing to ensure a sufficient stock for residents of all incomes and to be informed on the quality of that housing. Details on the housing count are available through the census data.

SECTION 5: MITIGATION STRATEGY

5.1 Newport City Goals and Policies that support Hazard Mitigation

5.1.1. Flood Resilience and Community Goals

- a. Continue operating standards for municipal water and sewer services.

- b. Take advantage of the UVM/ACCD mobile home park preparedness programs to support resiliency of this large and disproportionately impacted population during disasters.
- c. Consider implementation of special population tracking within the community whereby residents unable to drive or that have no one to depend on can self-identify for inclusion in a maintained data-base so that rescue personal and emergency managers can account for this demographic.
- d. Work with residents, NVDA, rescue services, Vermont EMS and the LEPC to enhance efficiency and emergency operations.
- e. Mitigate flood hazards in the most cost-effective manner possible.
- f. Minimize the risk exposure and associated expense to tax payers.
- g. Ensure the City and its facilities are prepared to meet the demands of the next flood.
- h. Ensure the City can receive the maximum outside assistance in the event of the next Federally declared disaster.
- i. Identify and protect natural flood protection assets, including floodplains, river corridors, other lands adjacent to streams, wetlands, and upland forested cover.
- j. Review and evaluate river corridor information to protect property and natural flood protection measures.
- k. Consider adopting regulations that will protect erosion prone areas for additional development and encroachment.

5.1.2. Capital Improvement Goals

- a. Provide services and facilities deemed necessary for the orderly and rational development of the City.
- b. Continue to use the Newport City Capital Improvement Program. This five-year improvement program is a tool for the integration of financial and physical planning over a long time span. The annual operating budget provides for the expenditures and revenues for a one-year period and should be closely integrated with the five-year capital budget. The capital improvement program is a detailed guide subject to changing conditions and needs. It is the basis to improve management control, identify capital needs, establish priorities, stabilize public expense for improvements, and assist City officials in acting timely.
- c. Assure that the Public Works Department has enough funding to fulfill the goals of the following year and in adjunct, increase awareness on eligibility requirements for infrastructure projects under the Hazard Mitigation Grant Program (HMGP).
- d. Continue to meet or exceed the VTrans Road and Bridge standards. Participate in regional Newport City trainings and Transportation Advisory Committee meetings to stay abreast of flood resilience measures for the Town's roads and bridges.

- d. Continue to update the Town's transportation infrastructure information in the Vermont Online Bridge and Culvert Inventory Tool (vtculverts.org).
- e. Replace undersized and failing culverts.

5.1.3. Public Participation Goals

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

5.1.4. Regulatory Devices Goals

- a. Continue to use the Newport City Zoning Bylaw. The bylaws have been established to conform to, and be in harmony with, the Vermont Municipal and Regional Planning and Development Act. Any conflicts that are identified between the two documents will defer to Title 24 VSA, Chapter 117 as the prevailing authority.
- b. Maintain and continue a Capital Expense Budget and Program for the purpose of ensuring that Newport's rate of growth does not outstrip the City's ability to pay for the associated necessary services such as roads, schools, police and fire protection, solid waste, etc. The City's capital expense budget is for roads and maintaining City property, departments and the water/sewer system.
- c. Continue participation in the National Flood Insurance Program (NFIP) and reflect or exceed recommendations for best practices accordingly in Zoning Bylaws.

5.2. Land Use

5.2.1. Development Goals

- a. Continue to use the Newport City Plan as a guide to future development. This includes the former Prouty and Miller property, which may become a mixed use enterprise zone. The other area for future development is the portion of the old Palin Farm which has already been re-zoned for commercial use. It is hoped that a connector road between this area and planned development in Derby will become another way of reducing Route 5 traffic. The possibility of affordable housing opportunities could become part of the overall plan in this area.
- b. Creation of a five year Strategic Economic Development Plan in collaboration with a group of businesses, independent business people, city representatives and regional development organizations.
- c. Implementation of a commercial welcome packet, in print and online, to guide businesses that are considering Newport as a location to start, relocate or expand their existing business.

- d. Continued creation of new strategic initiatives through the focus and work of volunteers on the four committees working in unison to drive Newport into the future.
- e. Maintain a Flood Hazard Area Overlay District to include all designated flood hazard areas. The purpose of the Flood Hazard Area Overlay District is to protect public health, safety, and welfare by preventing or minimizing hazards to life and property due to flooding, and to ensure that private property owners within designated flood hazard areas are eligible for flood insurance under the National Flood Insurance Program (NFIP).
- b. Follow recommendations associated with a “No Adverse Impact” methodology in land use decisions (http://www.floods.org/NoAdverseImpact/NAI_Toolkit_2003.pdf).

5.2.2. *Natural Resources Goals*

- a. Ensure that public works and city planners are aware of DEC water quality initiatives, including Tactical Basin Planning and TMDLs and that actions are in line with maintaining protection of both surface and groundwater supplies.
- b. Ensure that permits issued for development near sensitive areas, such as steep slopes, high elevations, wetlands, scenic vistas and wildlife habitats, contain conditions assuring conformance to the goals set forth in this plan and zoning bylaws.
- c. The Planning Commission should work with the NVDA to continue the process of identifying the Town’s land conservation priorities and to the degree possible, link them to broader regional conservation work.
- d. The Planning Commission shall also be an active participant in the local management plans for Newport City’ natural areas.
- e. With recent FEMA guidance on Climate Resilient Mitigation Actions funded under the HMA program, the town will incorporate recommendations accordingly. In line with the VTrans mission statement regarding climate change, the City remains committed to:
 - Ensure that there are viable alternative routes around vulnerable infrastructure such as bridges and roadways
 - Make safety a critical component in the development, implementation, operation and maintenance of the transportation system
 - Develop contingency plans for a wide-variety of climate impacts to be implemented as data/information becomes available
 - Utilize information technology to inform the public during times of emergency
 - Educate of the public on the threats posed by climate change and fluvial erosion hazards
 - Increase inspection of infrastructure if warranted by climate change indicators
 - Apply a decision-making framework to incorporate cost-benefit analyses into adaptive plans and policy

- Work to protect essential ecosystem functions that mitigate the risks associated with climate change
- Educate individuals within the town to use best-practices during recovery periods to avoid ecological damage that may further exacerbate risk
- Recognize the interconnected nature of our built environment with ecological processes
- Protect the state's investment in its transportation system and adapting transportation infrastructure to the future impacts of climate change

f. In line with DEC's best practices regarding fluvial erosion, work to:

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

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

5.3.2 Policies

- a. Through both city and state-level management, work to:
- Encourage and maintain naturally vegetated shorelines, buffers and setbacks for all rivers, ponds and streams.

- Allow higher density or cluster development in existing and designated settlement areas and low density development in the remaining areas.
- Reduce flood hazard and repetitive road and driveway washout through continued updates and adherence to zoning bylaws.
- Identify and manage pollution, flooding and fluvial erosion hazards along rivers and streams as they arise.

5.3 Transportation

5.3.1. Transportation Goals

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

- Maintaining safe operating conditions on the present system of City roads through design to keep traffic at appropriate speeds and timely maintenance, including consideration of additional paving (though only on portions of roads prone to damage) should state funding become available.
- Protection of existing City roads from flood damage and uncontrolled storm water runoff.
- Preserving the capacity of City roads and maintain adequate traffic flows and safety.
- Support the road maintenance crew through City -provided training sessions.
- Ensuring that owners and managers of recreational areas provide and maintain adequate and safe parking facilities.
- Continuing long term access opportunities to gravel and sand deposits for future road maintenance use.
- Consider implementation of a formal tracking mechanism by-which all infrastructure work is accounted for on a site-by-site basis. The purpose of this is to open funding possibilities under the HMGP.
- Continue to enhance understanding of the Incident Command Structure (ICS) as means to achieving enhanced communications during a response phase where significant increases in highway department responsibilities are required.
- Using ICS as a foundation, develop a Standard Operating Procedure for enhanced Public Works functionality (snow and/or flood related) that details the relationship and responsibilities of the Road Commission, Public Works Director and employees that is based on best practices and needs through a collaborative effort.

5.4 Utilities and Facilities Plan

5.4.1. Utilities and Facilities Goals

- a. Maintain and develop current city departments to meet the needs of the City and residents through adherence and modification to the Capital Improvement Program and City Plan.

5.5 Educational Facilities

5.5.1. Educational Goals

- a. The School Board should work with the City Council and the Newport Volunteer Fire Department to ensure that the necessary equipment exists at the school for use as a shelter
- b. Increase emergency planning cohesion between school and City EOPs through mutual participation and presentation at scheduled LEPC meetings and City and/or school meetings.

5.6 Existing City of Newport Actions that Support Hazard Mitigation

The City has done an excellent job at monitoring and addressing transportation issues and engaging in a documented and systematic approach to mitigation actions. The City Council has successfully pursued funding to address needs. Using Better Back Roads, Structures Grants and a capital budget program, the City has been able to enhance its transportation resilience and overall preparedness. By and large, road improvement projects remain the primary focus for the City and the areas identified are selected based on the condition of culverts and ditches and focus on runoff issues. In many cases, culverts properly sized for normal rain events are overwhelmed by the severe ones. The City will seek local, state and federal grants to address the sites. Reduce the loss of life and injury resulting from all hazards. The City has adopted a zoning ordinance that includes the designation of a Flood Hazard Area and associated regulations. Newport City is in the National Flood Insurance Program (NFIP). A Local Emergency Operations Plan (LEOP) has been updated and adopted by the City. All culverts are upgraded to meet the State Highway Standards and the State Highway Standards policy has been adopted for all new construction. The City was issued a Certificate of Compliance for meeting or exceeding current Municipal Road and Bridge Standards on 4/6/15. New downtown buildings have installed sprinkler systems and firewalls. The City and regional emergency responders and planners conduct emergency drills involving all elements of the community. Backup power is available for water and sewer needs, shelter locations and emergency services.

Table 5-1 Existing municipal actions that support hazard mitigation, City of Newport

Type of Existing Protection	Description /Details/Comments	Issues or Concerns	Responsible Party
Emergency Response			
Police Services	Newport City Police Department, Vermont State Police, Orleans County Sherriff	Assuring adequate City Police force and funding.	Newport City Police
Fire Services	Newport City Fire Dept.	Logistics of getting cut off from areas due to bridge or rail problem. Historic downtown	Newport City Fire

		Newport City fires and a hospital fire are the main concerns of the fire department Review and study the need for additional capacity and capability in the Fire Department to minimize the impact of a HAZMAT incident. Ensure that all emergency response and management personnel receive HAZMAT Awareness training as a minimum	
Fire Department Personnel	1 Full time and 25 part-time.	Recruiting.	See above
Fire Department Mutual Aid Agreements	Northeast International Mutual Aid (19 participants)	None at this time	See above
EMS Services	Newport	Assuring coordination and collaborative training with other agencies and city is a priority	Newport City Ambulance
Other Municipal Services			
Highway Services	Public Works Operates by an adopted Standards and Specifications Program that fully details protocol and procedure.	None at this time	Public works
Highway personnel	Full time and fully staff	Understanding HMGP funding can enhance opportunities for infrastructure repair/upgrade.	See above
Water / Sewer Department	There are two municipal wells on lower Coventry Street right near each other. A covered reservoir is located on Poulin Farm. There is one large water tower on Route 105 that is supplied by 2 wells. The City is tied into the Derby water system and is gravity feed. The wastewater treatment facility is behind fire department and aggregate to I91. There are pumps for sewer forced main. There are back-up generators for both the water and sewer systems.	Even though the municipal water system is checked daily and secured, there is always a contamination concern because the entire City is served by it.	Public Works
Planning and Zoning personnel	Yes	None at this time	ZA/City Manager
Residential Building Code / Inspection	Yes	None at this time	ZA/City Manager
Emergency Plans			
Local Emergency Operations Plan (LEOP)	2015	Assure sheltering plans and contact information is up to date and vulnerable populations addressed.	Newport City Fire
School Emergency/Evacuation Plan(s)	2015	Increased collaboration (with City staff, LEPC, NVDA), knowledge of roles and drills are next step.	Newport City Fire
Municipal HAZMAT Plan	None	Not required but enhanced knowledge via HMEP funded transportation study through LEPC would benefit City. Review and study the need for additional capacity and capability in the Fire Department to minimize the impact of a HAZMAT incident. Ensure that all emergency response and management personnel receive HAZMAT Awareness training as a minimum	State HAZMAT/Newport City Fire
Dam Emergency Plans	Great Bay Hydro has shared its comprehensive Emergency Response Plan with the City.	Invite representatives to LEPC and City to increase collaboration. Assure understanding of risk and associated protocol for residents and impacted City infrastructure.	Great Bay Hydro
Shelter, Primary	NCUHS	Work with ARC with Sheltering Initiative to obtain training and supplies. Include volunteer staff in planning communication and schedule drills to test efficacy.	School, Fire and Police

Replacement Power, backup generator	Yes, all key locations have generators.	None at this time	See above
Shelter, Secondary:	Municipal Building	Assure continued communication lines are open and contacts are correct (See LEOP comments)	See above
Replacement Power, backup generator	Yes	Assure maintenance program.	See above
Municipal Plans			
City / Municipal Comprehensive Plan	2015	None at this time	City Manager
City of Newport Road Capital Budget Plan	2015	Update as required and track all work expenditures	See above
Public Works Standards and Specifications	2005	Update required with development of "Road Tracking Methodology" designed to capture prior damage history.	See above
Hazard Specific Zoning (slope, wetland, conservation, industrial, etc.)	Yes	None at this time	See above
Highway Access (curb cut) Policy	Application process, review with final approval by City Council	None at this time	Public Works
Participation in National Flood Insurance Program (NFIP) and Floodplain/Flood Hazard Area Ordinance	Yes	Increase understanding of tenets of "No Adverse Impact" planning.	ZA
Culvert and bridge Inventory	2015	https://vtculverts.org/map Bridge information needs to be updated in VTculverts. City of Newport Road Inventory and Capital Budget Plan (2014)	Public Works

5.7 City of Newport All-Hazards Mitigation Goals

The following goals were developed by OPHC and NVDA staff in 2016 and approved by City of Newport officials during the development of this plan.

- Recognize the characteristics that make the City of Newport unique within Orleans County and incorporate these findings into the hazard mitigation planning
- Reduce at a minimum, and prevent to the maximum extent possible, the loss of life and injury resulting from all hazards.
- Mitigate financial losses and environmental degradation incurred by municipal, educational, residential, commercial, industrial and agricultural establishments due to various hazards.
- Maintain and increase awareness amongst the City's residents and businesses of the damages caused by previous and potential future hazard events as identified specifically in this Local All-Hazards Mitigation Plan.
- Recognize the linkages between the relative frequency and severity of disaster events and the design, development, use and maintenance of infrastructure such as roads, utilities and storm water management and the planning and development of various land uses.

- Maintain existing municipal plans, programs and ordinances that directly or indirectly support hazard mitigation.
- Develop a mechanism for formal incorporation of this Local All-Hazards Mitigation Plan into the municipal comprehensive plan as described in 24 VSA, Section 4403(5). This mechanism will be developed by the Planning Commission, City Council and NVDA and integrate the strategies into the existing City Plan as annexes until the next formal update occurs, where a section devoted to mitigation planning will be integrated into the plan.
- Develop a mechanism for formal incorporation of this Local All-Hazards Mitigation Plan particularly the recommended mitigation actions, into the municipal/town operating and capital plans & programs as they relate to public facilities and infrastructure. With the development of the road erosion site inventory, the town will begin a process that incorporates the budgetary requirements of the defined mitigation strategies into its formal budgeting paradigm. The Planning Commission will review the LHMP and use language/actions from it to inform the integration and update process. Town Meeting Day will serve as the formal time that mitigation strategy budgetary considerations will be approved and incorporated into the town budget.

5.8 Mitigation Actions

In following FEMA guidance, the following mitigation action categories form the basis of the town's future mitigation actions. The planning team, after considering the basic and generalized format of the 2005 plan, decided to adopt this approach for this update and all future mitigation work. For each mitigation action to follow, an indication of group will be given with the abbreviations listed below:

Mitigation Action Groups:

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

(SIP) Structure and Infrastructure Projects: Actions that involve the modification of existing buildings or infrastructure to protect them from a hazard, or removal from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, flood proofing, storm shutters, and shatter-resistant glass. Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include storm water controls (e.g., culverts), floodwalls, seawalls, retaining walls, and safe rooms

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

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

5.8.1. Prioritization of Mitigation Strategies

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

Criteria List:

1. *Does the action respond to a significant (i.e. likely or high risk) hazard?*
2. *What is the likelihood of securing funding for the action?*
3. *Does the action protect threatened infrastructure?*
4. *Can the action be implemented quickly?*
5. *Is the action socially and politically acceptable?*
6. *Is the action technically feasible?*
7. *Is the action administratively realistic given capabilities of responsible parties?*
8. *Does the action offer reasonable benefit compared to its cost of implementation?*
9. *Is the action environmentally sound and/or improve ecological functions?*

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

Table 5-1: Newport City Action Evaluation and Prioritization Matrix

Rank	Mitigation Action	Responds to high hazard	Funding potential	Protection value	Time to implement	Social and Political acceptance	Technical feasibility	Admin feasibility	Benefit to Cost	Environmental advantage	TOTAL
2	Reduce vulnerability to flooding by evaluating capabilities of existing road and storm water management infrastructure, public education and through municipal services and regulations.	5	4	5	2	5	3	3	4	4	35
5	Protect infrastructure and population from extreme cold events	4	2	4	2	3	2	3	3	2	25
4	Reduce vulnerability to high wind events with accepted best practices	3	4	5	2	5	3	3	5	1	27
1	Raise public awareness of hazards, hazard mitigation and disaster preparedness	4	5	5	5	5	5	5	5	1	40
3	Reduce Vulnerability to severe winter weather	4	3	3	2	4	3	4	3	3	29
6	Complete fluvial geomorphology (in coordination with state recommendations and protocol) assessment and develop strategies in response to any identified risk	1	2	2	2	2	1	1	1	3	15

Scoring: 1=Poor 2=Below Average or unknown 3=Average 4=Above Average 5=Excellent

5.8.2. Specific Mitigation Actions

Action #1: Continue fluvial geomorphology assessments in collaboration with DEC and develop strategies in response to identified risks.

Primary Responsible Entities: Department of Environmental Conservation, NVDA, Agency of Natural Resources (VT ANR), City of Newport Public Works

Potential Partner Entities: Nonprofits, Watershed Association and other appropriate entities.

Timeframe: 2016 – 2021

Progress: The Vermont Agency of Natural Resources as established a Stream Geomorphic Assessment Data Management System (<https://anrweb.vt.gov/DEC/SGA/default.aspx>). With

Basin ID 17, including the Black, Barton and Clyde rivers, the City and NVDA can access pertinent and helpful information to assist with mapping and planning.

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

Specific Identified Tasks

- 1) Fluvial Geomorphic Assessments – The city can work with DEC to increase understanding and continue fluvial geomorphic assessments on streams and waterways. If using PDM funding, individual municipalities may select only a subset of streams upon which to perform these assessments and therefore may choose to assess only those sections of streams wherein the history of flood and erosion damage, the history of channel management, and the proximity of existing or potential development or public infrastructure to the active channel makes an assessment a priority. Justification should be provided for streams, watersheds, or stream reaches not selected for fluvial assessment. Fluvial assessments shall be conducted as guided by the VT ANR Fluvial Geomorphic Assessment Protocols.
- 2) Fluvial Erosion Hazard Mapping - Within a year of completed geomorphic assessments for a waterway, funding permitting, a GIS provider (NVDA) should rate the fluvial erosion hazard for each assessed reach, and develop a fluvial erosion hazard map for the waterway, using the GIS extension known as SGAT (or Stream Geomorphic Assessment Tool) for assessed stream reaches. As assessments are completed, a map of all assessed waterways in the town should be created. This data will undergo town review and QA/QC by VT ANR before a final map is drawn. Incorporation of digital floodplain and topographic data into GIS systems, in potential conjunction with Hazus, to continually assess risk
- 3) River Corridor Management Plans – River Corridor Management Plans (RCMP) are encouraged for waterways where Phase I and Phase II assessments have been completed. Creating such a plan requires additional fieldwork and work with local landowners to identify acceptable reach-based management options that enable stream systems to reach equilibrium conditions. Management measures may include stream corridor buffer planting, culvert replacement and roadway improvements, berm removal, and corridor easements. Under Act 110, the Agency of Natural Resources will be identifying best management practices for shore lands and river corridors, and will be providing financial incentives, such as grants and pass-through funding. While the town relies on state regulations for zoning and other regulations, incorporating a RCMP into the Town Plan will only serve to increase the town's awareness in this crucial facet of mitigation planning. Using current river corridor maps, the town should consider developing a strategic plan that creates information and resources for residents within and in close proximity to the defined river corridor.

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

Rationale / Cost-Benefit Review:

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

Action #2: Reduce vulnerability to flooding through a systematic and documented process that addresses existing and any proposed infrastructure to reduce potential losses.

Lead Responsible Entity: City of Newport Public Works

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

Timeframe: 2016 – 2021

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

Progress: The city continually monitors road and storm water management capabilities. All bridges and culverts have been electronically accounted for and the town is diligent in maintaining a comprehensive understanding that serves to guide action by identifying areas of road erosion, estimated costs of repair and future needs. Within these programs, the city will make advancements that are detailed below.

Specific Identified Tasks:

- 1) Infrastructure Planning for enhanced Stormwater Vulnerability – A new waterline and sewer line is planned for construction. The city will use these opportunities to assure the implementation of a procedural protocol that serves to understand and implement, to the greatest degree possible, flood resilience measures in the design and construction of these structures as means to increasing awareness and implementation of flood protection measures to municipal water and sewer systems. From this, the development of engineering guidelines for drainage from new development will result. Additionally, the public works director will assess the following mitigation actions during the planning cycle for feasibility and viability:
 - Raising electrical components of sewage lift stations above base flood elevation.
 - Raising manhole openings using concrete pillars.
 - Installing watertight covers or inflow guards on sewer manholes.
 - Installing flood telemetry systems in sewage lift stations.
 - Installing back-up generators for pumping and lift stations in sanitary sewer systems along with other measures (e.g., alarms, meters, remote controls, and switchgear upgrades)
- 2) Street reconstruction and street resurfacing is considered a viable mitigation action and is the most visible part of the capital program for this planning cycle. The rationale for street resurfacing/reconstruction as mitigation is explained and summarized by the belief that through the consistent attention to areas in need, the city is reducing vulnerability to flood/snow-damaged transportation routes by reducing permeability to moisture invasion. The street construction cost shown in the summary by fund does not include any cost for water and sewer infrastructure. We have budgeted \$220,210 for gravel, stone and crack sealing. The majority of this amount will be used for crack sealing since this is very efficient in extending road surface life and reduce erosion of the road surface due to standing water, snow and ice.
- 3) Documenting and mapping – By develop a methodology that serves to efficiently capture work and expenditures on sites that could benefit from HMGP funding, the city will move forward in mitigating the long-term risk associated with vulnerable infrastructure and its subsequent repair costs. Also, an efficient mapping protocol that combines floodplain areas with zoning, culvert assessments, proposed development and critical facilities is needed and the city will work with NVDA to accomplish this.
- 4) Increase Awareness of Funding Opportunities - Increase understanding of FEMA’s HMGP program so that this potential funding source can be utilized to the greatest extent possible. This can mitigate the risk associated with an event where the need for repair extends beyond the PA period and the city’s budget. Using outreach activities to facilitate technical assistance programs that address measures that citizens can take and facilitate funding for mitigation measures (e.g. HMGP projects for residential property). Encouraging homeowners to install backflow valves to prevent reverse-flow flood damages in areas where there is a determined high risk. Encouraging residents in flood-prone areas to elevate homes. Educate the public about securing debris, propane tanks, yard items, or stored objects that may otherwise be

swept away, damaged, or pose a hazard if picked up and washed away by floodwaters. Support a program that serves to help keep residential storm drains clear of debris during storms (not to rely solely on Public Works).

- 5) Regulations and Zoning: In addition to current zoning regulations, determine and enforce acceptable land uses to alleviate the risk of damage by limiting exposure in flood hazard areas. Additionally, the city will assess the viability of the following actions during the planning cycle and implement accordingly:
- Adoption of a post-disaster recovery ordinance based on a plan to regulate repair activity depending on property location
 - Completing a stormwater drainage study for known problem areas
 - Preparing and adopting a stormwater drainage plan and ordinance
 - Preparing and adopting a community-wide stormwater management master plan
 - Regulating development in upland areas in order to reduce stormwater run-off through a stormwater ordinance
 - Linking flood hazard mitigation objectives with EPA Stormwater Phase II initiatives
 - Encouraging the use of Low Impact Development techniques
- 6) ICS Training and Emergency Operations (SOP) Plan Development – Enhance knowledge of the principles of ICS and develop a Standard Operating Procedures that details the relationship, roles and responsibilities of the Public Works Department during major events through update of Public Works Operations Plan. This action can serve to mitigate the risk associated with the response phase of a disaster, where a lack of coordination and/or understanding of the state’s accepted and practiced response structure impedes efficiency and effectiveness of leadership decision making process when a triage system must be implemented to sustain critical operations of city function and property.

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

Action #3: Protect infrastructure and population from extreme cold events

Primary Responsible Entities: City of Newport Planning Commission, NVDA, Emergency Planning services, American Red Cross

Potential Partner Entities: LEPC#10; Newport Fire Chief, ARC's Sheltering Initiative Program

Timeframe: 2016 – 2021

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

Specific Identified Tasks:

Economic Resilience: Establish relationships with utility companies to offer special arrangements for paying heating bills, if not already required by state law. Develop and sustain a program that serves to connect resource organizations with residents in need of support services.

Maintain Existing Shelter Capability: Maintain and improve capabilities of existing shelters. Notification procedures and shelter staffing is a priority for the city and intends to move forward on planning and public involvement. More formalized training is required and the ARC's "Shelter Initiative Program" can be used at no cost to the town to enhance both shelter management knowledge and sheltering supply cache.

Assess Vulnerable Population— Develop an awareness of the most at-risk community members during an evacuation and/or sheltering event. Focusing on those that lack resources or capability to reach facilities when in need and create plans, including outreach protocol on how to address this potential hurdle.

Notification and Education – Investigate and develop a notification/communication plan that conveys essential sheltering information. Educating citizens regarding the dangers of extreme cold and the steps they can take to protect themselves when extreme temperatures occur by sustaining a process that serves to disseminate educational resources for homeowners and builders on how to protect pipes, including locating water pipes on the inside of building insulation or keeping them out of attics, crawl spaces, and vulnerable outside walls. Inform homeowners that letting a faucet drip during extreme cold weather can prevent the buildup of excessive pressure in the pipeline and avoid bursting through a yearly public service campaign.

Rationale / Cost-Benefit Review:

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

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

Lead Responsible Entities: City of Newport Planning Commission, Fire Chief, NVDA.

Timeframe: 2016 –2021

Specific Identified Tasks:

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

Rationale / Cost-Benefit Review:

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

Action #5: Raise public awareness of hazards, hazard mitigation and disaster preparedness.

Lead Responsible Entities: City of Newport, Fire Chief, LEPC, NVDA.

Timeframe: 2016 –2021

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

Specific Identified Tasks:

- 1) School Programs: Continue school programs to raise student awareness of hazards, safety, preparedness and prevention. Explore establishing the school emergency notification system as the primary methodology for all emergency notification procedures and build in the contact information accordingly.
- 2) Family Programs: Continue family programs, such as car safety seat and bike safety programs, to raise family awareness of hazards, safety, preparedness and prevention.
- 3) Fire Prevention Programs: Continue National Fire Prevention Week and other programs to raise public awareness of fire hazards, safety, preparedness and prevention.
- 4) Dam Preparedness: Great Bay Hydro has the inundation maps and their own notification procedures which they shared with the city. The city should consider developing an outreach strategy based on likely scenarios and the subsequent properties that would be affected. Consider involving state agencies in planning and/or exercises that focus on the logistical considerations after a dam breach.
- 5) Other hazard awareness programs: Develop public awareness programs, based on all-hazards needs. Programs to address pandemic hazards, preparedness and mitigation may be appropriate as directed by the state department of health and its jurisdictional offices of local health.
- 6) Hazard Resilience for Property Owners: Develop and maintain education materials to inform property owners on how to protect their homes and businesses through accepted hazard resilience actions (e.g. securing their structures from high winds, elevating their electrical equipment/furnaces in basements, protecting from lightning strikes by grounding electrical outlets, etc.). Inform the public about severe winter weather impacts with annual outreach related to: traveler emergency preparedness information about severe winter weather hazards and support inclusion of safety strategies for severe weather in driver education classes and materials.

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

Action 6: Reduce vulnerability to severe winter storms

Lead Responsible Entities: City of Newport Planning Commission and Public Works; NVDA Emergency Planning services.

Timeframe: 2016 – 2021

Progress: Roads are monitored and altered, when necessary so that plowing can occur without damage to trucks and/or road. Snow clearing equipment is regularly serviced and the city maintains an adequate supply of salt.

Specific Identified Tasks:

- 1) Maintain Existing Shelter Capability: Maintain and improve capabilities of existing shelters. Notification procedures and shelter staffing is a priority for the town and intends to move forward on planning and public involvement. More formalized training is required and the ARC's "Shelter Initiative Program" can be used at no cost to the town to enhance both shelter management knowledge and sheltering supply cache.
- 2) Reduce risk of power failure due to ice storms: Enhance collaboration between town road foreman and electric company related to down-limbed induced power failure. Maintain function of generators.
- 3) Residential Programs: Provide guidance and communication to residents on the structural and mechanical actions that can occur to reduce risk to severe winter storms (e.g. weather-proofing, anchoring, alternative heating sources, tree trimming, financial programs, etc.)
- 4) Planning actions for safe and effective plowing: Efficient snow removal is the foundation to winter storm (snow) events, assuring roads are plowable before winter remains an important facet of highway department functions. Work to develop and maintain alternative support mechanisms for snow removal when city capacity is overwhelmed. Enhance awareness of VTrans protocol and logistics of the high density areas of population areas outside the city so that future operational plans address reliance on city services from those outside the city.
- 5) Increase awareness of ICS structure and recommended practices: The town can mitigate the effects of a severe winter by understanding how a large scale storm is managed when the State EOC is operational. Additional awareness of local-level roles and responsibilities during statewide event is a mitigation action

Rationale / Cost-Benefit Review:

Snow events are part of living in Vermont and the role of Newport City in providing essential support services for residents and beyond is a crucial component of maintaining social resilience during a disaster. During this planning cycle, the city can mitigate the long-term risk associated with severe winter weather through many of the actions outlined in other areas but also with enhanced understanding of the services, service areas and consequences of service disruption in the essential social services afforded to the public within the city. These consequences, for both the public and city departments (e.g. police, public works, etc.) will serve to assist the city in developing a process specific to mitigating severe winter weather's consequence on the most vulnerable segments of the region.

5.9 Implementation and Monitoring of Mitigation Strategies

5.9.1. Public Involvement following Plan Approval

After adoption, the city will continue to maintain web-presence of the mitigation plan with an opportunity for community input available on its website. Additionally, the town will hold an annual public meeting after performing the annual progress report for the mitigation plan to

discuss achievements and the following year's implementation plan. At town meeting, the city will present mitigation information and provide the public an opportunity to increase understanding and involvement with planning efforts. The LEPC will also host an annual mitigation plan presentation where response/state agencies, neighboring communities and business owners can provide input. The city will also notify its neighboring municipalities of the availability of information for review and any significant risks and/or mitigation actions that have an impact on surrounding towns.

5.9.2. Project Lead and Monitoring Process

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

5.9.3 Plan Evaluation and Update Process

The City Manager will lead the plan evaluation process as part of the annual progress report. Prior to town meeting and in preparation for the annual town report, a mitigation section will be included that provides an executive summary for the public that addresses the following topics:

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

By engaging in the annual evaluation, the town will have a viable method for capturing the facets of efficacy and areas needing revision and improvement in its mitigation plan. The town is committed to “institutionalizing” mitigation into its normal operating procedures and with approval of this plan, embarks on the formal incorporation of mitigation actions and discussion, maintaining an awareness that involves not only the City Council and City Staff but also the community at large, including the organizations represented by the current planning team. Along these lines, the city will maintain a contact list of the current planning team and make revisions as required, including the team on the evaluation process each year. Through this consistent

attention resulting from the evaluation process, progress reports and communication in the annual town report, the town will achieve the consistency required to enhance resilience through planning, assessment and actions devoted to mitigation.

5.9.4. Plan Update Process

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

5.9.5. Implementation Matrix for Annual Review of Progress

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

Table 5-3: Newport City All-Hazards Mitigation Plan Implementation Matrix

Action	Primary Responsible Entity	Task	Brief Description	Progress
Continue to use fluvial geomorphology assessments and develop strategies in response to identified risk.	NVDA, VT ANR	Fluvial Geomorphic Assessments	Continue Phase I and Phase II fluvial geomorphic assessments on streams and waterways in as suggested by ANR	Northwoods Stewardship has completed Phase I and some Phase II assessments.
	NVDA, VT ANR	Fluvial Erosion Hazard Mapping	Rate the fluvial erosion hazard for each assessed reach and develop a fluvial erosion hazard map for the waterway using SGAT. Create map of all assessed reaches. Submit to VT ANR for QA/QC.	Basin ID 17 and 8 (Winooski) has been designated and information is available on ANR's: Stream Geomorphic Assessment Data Management System https://anrweb.vt.gov/DEC/SGA/default.aspx
	TBD, determined by funding	River Corridor Management Plans	Where Phase I and II assessments are complete, develop a River Corridor Management Plan.	River Corridor Maps have been completed and town plan acknowledges river corridor planning.
	Newport City Zoning, Public Works and Manager, NVDA	Fluvial Erosion Hazard Mitigation Implementation	Develop strategies to mitigate losses from identified fluvial erosion hazards.	Major infrastructure enhancement has occurred.
	Newport City Planning Commission and Manger, NVDA	River Corridor Property outreach and analysis	Using updated river corridor mapping, develop an identification and outreach methodology to property owners and inform of opportunities and resources for improving flood resilience.	Mapping drafts have been completed
Infrastructure planning for enhanced stormwater vulnerability	Newport City Public Works/VTrans District Rep	Flood resilience protocol development	Assure the implementation of a procedural protocol that serves to understand and implement, to the greatest degree possible, flood resilience measures in the design and construction of municipal structures as means to increasing awareness and implementation of flood protection measures to municipal water and sewer systems.	2015 Capital Improvement Plan addresses actions to 2020. These actions can be used to implement an investigative process on measure to enhance flood resilient structures.
	Newport City Public Works/VTrans District Rep/ANR	Engineering guidelines	Development of engineering guidelines for drainage from new development actions.	Road and Bridge Standards adopted and meet or exceed 2013 standards.

	Newport City Public Works	Culvert Upgrades	Upgrade culverts and ditching along roads to mitigate against repeated damages from stormwater or spring snowmelt. Using VTCulvert ranking data, develop plans in accordance with determined level of risk.	2015 Capital Improvement Plan addresses actions to 2020.
Action	Primary Responsible Entity	Task	Brief Description	Progress
continued	Newport City Public Works/City Council and Manger /VTrans District Rep	Continued Monitoring of Vulnerable Infrastructure	Building on current Emergency Operations Plans for the Highway Department and Road Commission, an SOP can help clearly define expectations, roles and responsibilities. Develop understanding of eligibility criteria for HMGP projects.	
	Newport City Public Works	Road Improvements	Consider re-engineering certain road sections to lower overall maintenance costs, improve snow plowing speeds and improve overall capability of roads to handle current and projected traffic volumes. Work with town clerk to track and document all work on a site-by-site basis	
	Newport City Public Works	Erosion/Landslide Mitigation	Undertake erosion or landslide mitigation projects where roads regularly incur damage from adjacent rivers/streams and hillsides.	
Protect infrastructure and population from extreme cold events	Emergency Management Director	Maintain and Improve Existing Shelter Capability	Maintain and improve on capabilities of existing emergency shelter capability, including emergency generator.	Generators in place.
	Emergency Management Director	Investigate Alternate Shelters	Investigate capabilities of other buildings sufficient to serve as smaller shelters.	

	Newport City Manager, planning commission state and local businesses	Develop resource list and contingency plans for food, clothing and heating fuel acquisition.	High unemployment coupled with high cost of heating fuel and trend of extreme cold creates enhanced risk for many residents	Many social services are available to residents and neighboring communities. Efforts to enhance economic viability of the city are underway.
Action	Primary Responsible Entity	Task	Brief Description	Progress
Reduce vulnerability to high wind events with accepted best practices	Emergency Management Director, Public works and city manager	Developing and maintaining a database to track community vulnerability to severe wind:	Use GIS to map areas that are at risk to the wind hazard associated with different non-hurricane conditions and identify concentrations of at-risk structures. Create a severe wind scenario to estimate potential loss of life and injuries, the types of potential damage, and existing vulnerabilities within a community to develop severe wind mitigation priorities.	
	Emergency Management Director, School, Fire and Police Chief	Establish standards for all utilities regarding tree pruning around line	Incorporate inspection and management of hazardous trees into the drainage system maintenance process. Support and suggest the testing of power line holes to determine if they are rotting. Support the inspection of utility poles to ensure they meet specifications and are wind resistant. When feasible, support burying power lines to provide uninterrupted power after severe winds. Avoid use of aerial extensions to water, sewer, and gas lines when possible. Support use of designed-failure mode for power line design to allow lines to fall or fail in small sections rather than as a complete system to enable faster restoration.	

Reduce vulnerability to severe winter storms	Emergency Management Director, School Planning Teams, Hospital, Rail, Airport, State Agencies and local assistance organizations	Reduce risk of power failure due to ice storms	Enhance collaboration between town road foreman and electric company related to down-limbed induced power failure. Maintain function of generators.	
	Emergency Management Director, School Principal, Fire Chief	Planning actions for safe and effective plowing	Work to develop and maintain alternative support mechanisms for snow removal when city capacity is overwhelmed. Enhance awareness of VTrans protocol and logistics of the high density areas of population areas outside the city so that future operational plans address reliance on city services from those outside the city.	
Raise public awareness of hazards, hazard mitigation and disaster preparedness.	Emergency Management Director, City Council , Fire Chief and school	Develop an outreach and communication Strategy with specific populations	Continue school programs to raise student awareness of hazards, safety, preparedness and prevention. Use grand list to notify mobile home occupants of recommendations and resources. Work to identify vulnerable populations and integrate mitigation actions into evacuation plans	
	Emergency Management Director, City Council , Fire Chief	Family Programs	Continue family programs, such as car safety seat and bike safety programs, to raise family awareness of hazards, safety, preparedness and prevention.	
	Emergency Management Director, City Council , Fire Chief	Fire Prevention Programs	Continue National Fire Prevention Week and other programs to raise public awareness	
	Emergency Management Director, City Council, Fire Chief	Other hazard awareness programs	Ensure that school and hospital officials are aware of the best area of refuge in buildings and that their plans are viable in high wind mitigation events. Instruct property owners on how to properly install temporary	

			window coverings before a storm. Support education to design professionals to include wind mitigation during building design/modification to an extent deemed necessary.	
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DRAFT

APPENDICES

Appendix A: Community Reports: City of Newport (Flood Ready Vermont)

Appendix B: Culvert Locator: City of Newport (VTrans)

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

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

NOTE: THE ABOVE NOT INCLUDED IN REVIEW SUBMISSION

Appendix E: Newport City Hazard Mitigation Meeting Warning

Appendix F: Newport City Survey Responses

Appendix G: Technical Assistance

Appendix E: Newport City Hazard Mitigation Meeting Warning

City Manager.....	(802) 334-5136
City Clerk / Estimate.....	334-3301
Public Works.....	334-2112
Zoning Admin. / Assessment.....	254-3192
Registration / Health.....	274-2124
Police.....	254-4592
Fire.....	274-6315
Water.....	254-5632



City of Newport
222 Main Street
Newport, Vermont 05855

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NEWPORT CITY COUNCIL INFORMATIONAL MEETING

All-Hazards Mitigation Plan

Monday, May 2, 2016 at 6:45 p.m.

CITY COUNCIL ROOM

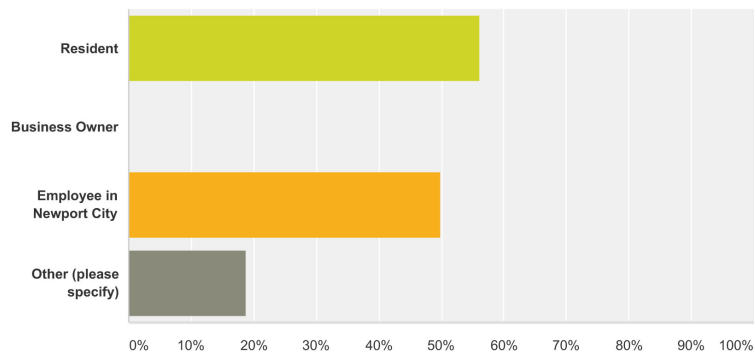
As part of the mitigation planning process, the City of Newport will be holding a meeting to review its local All Hazards Mitigation Plan with the public. Both the defined risks and mitigation strategies will be covered during the presentation and there will be a draft copy of the plan available for public review and comment.

Appendix F: Newport Community Outreach Survey and Response Summary

Newport City Hazard Mitigation Community Outreach

Q1 Are you a resident, business owner, or employee in Newport City? (Please check all that are appropriate.)

Answered: 16 Skipped: 0



Answer Choices	Responses
Resident	56.25% 9
Business Owner	0.00% 0
Employee in Newport City	50.00% 8
Other (please specify)	18.75% 3
Total Respondents: 16	

#	Other (please specify)	Date
1	Executive Director Newport Ambulance Service Inc.	8/19/2015 10:18 AM
2	Will be a resident in a couple weeks; have been a resident prior also.	8/12/2015 4:32 PM
3	Newport Ambulance Service, Inc.	8/12/2015 2:40 PM

Newport City Hazard Mitigation Community Outreach

Q2 What are your concerns about emergency events in the city?

Answered: 15 Skipped: 1

#	Responses	Date
1	Getting the information out to the public.	8/22/2015 8:12 PM
2	Overwhelming emergency services.	8/19/2015 10:18 AM
3	lack of adequate staffing in case of a disastrous event	8/18/2015 8:41 AM
4	No transportation If something happens I would be trapped	8/13/2015 3:06 PM
5	The City and local first responders and receivers have done a pretty good job in response to local events. They are relatively small and contained, allowing agencies to sometimes "fly by the seat of their pants" and still get the job done. However, inter-agency communications, establishment of a Unified Command, the JIC, and other elements of NIMS have not been as smooth as one would expect. In fact, many local agencies are poorly trained on NIMS, and often are in conflict with the chain of command structure during an incident. In fact arguments between agencies during a response have been witnessed when in reality if organization structure were understood by all these tensions would usually not exist. The City needs to take a leadership role, perhaps through the LEPC, and establish training and performance expectations as a model to all agencies regarding command structures and operations, especially for larger scale events where mutual aid activation has been called in.	8/13/2015 8:24 AM
6	Location of services	8/13/2015 6:45 AM
7	Elderly, poor, mentally ill freezing to death in a long term power outage in winter	8/13/2015 12:05 AM
8	Aliens, zombies, Donald trump visit	8/12/2015 7:08 PM
9	Personal safety, medical care and clean drinking water, transportation, housing, satellite communication and heating for less fortunate	8/12/2015 6:05 PM
10	Safely getting out of city or accessing hospital, emergency responders due to traffic configurations.	8/12/2015 5:34 PM
11	Flooding, if bad enough, may affect roadways. The fire dept. has been good. There may be emergencies on the interstate or railway, however, that may not be planned for.	8/12/2015 4:32 PM
12	Do you have all necessary emergency response contacts. In incident recently happened in another town when emergency transportation was needed for residence , they did not know how to contact RCT for transportation	8/12/2015 3:04 PM
13	Outdated police facility. Public safety communications in the city has no redundancy. Mutual Aid systems for EMS weak.	8/12/2015 2:40 PM
14	Whether or not "emergency events" are weather driven or war driven we are probably not ready to deal with them. Local Lunatic - we can easily handle!!! If getting people out of town in a hurry was necessary I do not feel that we are prepared for it.	8/12/2015 1:52 PM
15	We are loosing our 911people and I feel that it will take help longer to get to us.	8/12/2015 1:43 PM

Newport City Hazard Mitigation Community Outreach

Q3 What do think the community could plan to accomplish to be better prepared, both financially and in health and safety, for the next emergency event?

Answered: 15 Skipped: 1

#	Responses	Date
1	Not sure since its hard to determine a financial impact of a emergency.	8/22/2015 8:12 PM
2	Plan and meet with the services that are provide by others.	8/19/2015 10:18 AM
3	perhaps scheduling drills and simulations may help - I also think there could be a more open and cooperative relationship with the local hospital	8/18/2015 8:41 AM
4	Training for everyone	8/13/2015 3:06 PM
5	The LEPC has had difficulty with regional participation, and as such there has not been as much information sharing, establishment of an HVA, and long-term planning. The City could take a stronger leadership role in the establishment of a regional response plan based on the HVA, advocate for greater participation with outside town participation in exercises especially with the City, implement more full-scale exercises, and do a better job in promoting the LEPC as a regional planning and training committee. We are not prepared for a train derailment that results in the release of hazardous materials, of a breach of the border that could send radioactive material into the Newport area, of a propane explosion at Jay peak, or a dam breach.	8/13/2015 8:24 AM
6	working with other local communities to create a workable emergency plan	8/13/2015 6:45 AM
7	Neighbors organize by neighborhood to check in with vulnerable people in an emergency.	8/13/2015 12:05 AM
8	Vote for Bernie Sanders	8/12/2015 7:08 PM
9	Fall out shelters and preparedness drills	8/12/2015 6:05 PM
10	Designated safe community areas, identified community volunteers, drills, reg updated prepared packages of food, water, gloves, med supplies, etc.	8/12/2015 5:34 PM
11	Educating residents for emergency events may be helpful; i.e. where shelters may be set up, where to go, etc. Because of the lake, the city is essentially split in 2 - is this being planned for? With resources on both sides of the causeway?	8/12/2015 4:32 PM
12	Is there a plan to get out or check on vulnerable adults, or households with special needs?	8/12/2015 3:04 PM
13	Explore concept of public safety facility. Build redundant systems and consoles in the event of a long term outage or collapse at the Dispatch site. Work collaboratively with all EMS groups to build capability to protect patients.	8/12/2015 2:40 PM
14	Clearly designated Places of Safety - preferably in an elevated area. A means of getting people there. Given that many are without vehicles. The last ice storm blocked many roads. leaving many areas was not an option. Financially would be challenging.	8/12/2015 1:52 PM
15	Not a clue	8/12/2015 1:43 PM

Newport City Hazard Mitigation Community Outreach

Q4 What other thoughts or concerns do you have about emergencies, hazards and emergency response in the town?

Answered: 14 Skipped: 2

#	Responses	Date
1	None..	8/22/2015 8:12 PM
2	See above	8/19/2015 10:18 AM
3	maintenance of electrical power particularly in a winter emergency	8/18/2015 8:41 AM
4	Safety	8/13/2015 3:06 PM
5	The region has been very fortunate that a large incident has not occurred. However, under Vigilant Guard we will have an opportunity to measure some of the above concerns as the planning process rolls out, and the August 2016 event unfolds. It would be appropriate for the Mitigation team to get involved with the current Vigilant Guard planning team, and be a part of the planning and evaluation process.	8/13/2015 8:24 AM
6	We do have good notification systems with the police department	8/13/2015 6:45 AM
7	Need solar panels to provide electricity for communication and other basic needs in an emergency.	8/13/2015 12:05 AM
8	That this survey is really shitty. Asking qualitative questions isn't going to give you any usable data.	8/12/2015 7:08 PM
9	Isolated community, contact with those in need, rioting	8/12/2015 6:05 PM
10	Glad we are thinking about it.	8/12/2015 5:34 PM
11	I am not sure.	8/12/2015 3:04 PM
12	Turn away from historic reactive/obstructive policies to proactive, progressive visions using risk assessment tools.	8/12/2015 2:40 PM
13	The reality is that we would cope. There are a lot of resourceful people around. And much good will to help neighbors	8/12/2015 1:52 PM
14	Are our children safe, the elderly and those who live alone-because of drug use many young and old do not feel safe.	8/12/2015 1:43 PM

Appendix G: Technical Assistance

Technical assistance is available through Risk MAP to assist communities in identifying, selecting, and implementing activities to support mitigation planning and risk reduction; Attend any Risk MAP's discovery meetings that may be scheduled in the State (or neighboring communities with shared watersheds boundaries) in the future.

*USDA, Natural Resources Conservation Service (NRCS)
Conservation Technical Assistance*

<http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/technical/cta>

Publications

New Online! FEMA Region I Weblibliography <http://www.fema.gov/about-region-i/about-region-i/hazard-mitigation-planning-weblibliography>

Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards

<http://www.fema.gov/media-library/assets/documents/30627?id=6938>

FEMA B-797, Hazard Mitigation Field Book – Roadways

<http://www.fema.gov/library/viewRecord.do?fromSearch=fromsearch&id=4271>

Flood Hazard Mitigation Handbook for Public Facilities

<http://www.fema.gov/library/viewRecord.do?fromSearch=fromsearch&id=3724>



Newport Survey
Responses.pdf