BERKSHIRE, VERMONT -LOCAL HAZARD MITIGATION PLAN 2017

FEMA Approval Pending Adoption: 2/14/17 Town Adoption: March 6, 2017 Final Approval by FEMA: March 24, 2017



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



APR 0 5 2017

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

Dear Ms. Oates:

We would like to congratulate the Town of Berkshire and the State of Vermont for their dedication and commitment to mitigation planning. The Department of Homeland Security (DHS), Federal Emergency Management Agency (FEMA) Region I Mitigation Planning Team has completed its review of the Berkshire, Vermont - Local Hazard Mitigation Plan 2017 and determined it meets the requirements of 44 C.F.R. Pt. 201.

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

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

The Berkshire, Vermont - Local Hazard Mitigation Plan 2017 must be reviewed, revised as appropriate, and resubmitted to FEMA for approval within **five years of the plan approval date of March 24, 2017** in order to maintain eligibility for mitigation grant funding. We encourage the Town to continually update the plan's assessment of vulnerability, adhere to its maintenance schedule, and implement, when possible, the mitigation actions proposed in the plan.

Lauren Oates Page 2

APR 0 5 2017

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

Sincerely, Paul F. Ford

Acting Regional Administrator

PFF: ms

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

Enclosure

Berkshire, Vermont - Local Hazard Mitigation Plan 2017

RESOLUTION

Whereas, natural and man-made disasters may occur at any time, we recognize that by lessening the impacts of these disasters we will save resources, property and lives in the Town of Berkshire, Vermont;

And whereas the creation of the BERKSHIRE, VERMONT - LOCAL HAZARD MITIGATION PLAN 2017 is necessary for the development of a risk assessment and effective mitigation strategy;

And whereas, the Town of Berkshire is committed to the mitigation goals and measures as presented in this plan;

Therefore the Town of Berkshire Select Board hereby adopts the BERKSHIRE, VERMONT - LOCAL HAZARD MITIGATION PLAN 2017

AUTHORIZING SIGNATURES

Date: March 6 2017

Todd Kinney

MA

Anthony Lussier

Edward Messier

Town Clerk Seal:

Emily Fecteau, Town Clerk: Eurog Jechn

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	3
INTRODUCTION AND PURPOSE	4
NORTHWEST REGION GEOGRAPHY	4
BERKSHIRE GEOGRAPHY & TOWN PROFILE	5
PLANNING PROCESS	8
Documentation of the Planning Process, Public Involvement and Input from Neighboring	
Communities	9
RISK ASSESSMENT / VULNERABILITY ANALYSIS	10
Methodology	10
Analysis	11
Hazard Profiles	13
Flooding/Fluvial Erosion	13
Structure Fires	18
	10
Assessing vulnerability	19
Community Englisting in Barkshire	19
Community Facilities in Berkshire.	20
Darticipation in and Compliance with the National Flood Incurance Program (NEID)	20
Participation in and compliance with the National Flood Insurance Flogram (NFIP)	20
	21
Local Hazard Mitigation Goals Doveloned for this Plan	22
Relevant Town Plan Policies that Sunnort Mitigation (Town Plan Adonted June 1, 2015)	22
Goals and Policies: The Sense of Place	22
Existing Hazard Mitigation Programs, Projects and Activities. Error! Bookmark not define	ed.
Ongoing Efforts	24
Identification of Mitigation Actions	25
Existing Planning and Regulatory Capabilities	27
How this Plan will Improve Existing Capabilities	27
PLAN MAINTENANCE PROCESS	29
Monitoring and Updating the Plan – Yearly Review	29
Plan Maintenance – 5 Year Update and Evaluation Process	29
Post-Disaster Review/Update Procedure	31
Continued Public Participation	32

ACKNOWLEDGEMENTS

Project Steering Committee

Vincent Hickey – Berkshire Selectboard Todd Kinney – Berkshire Selectboard Robert Archambault – Berkshire Selectboard Anthony Lussier – Berkshire Selectboard Edward Messier – Berkshire Selectboard Emily Fecteau – Berkshire Town Clerk Danny Kennison – Berkshire Road Foreman

Project Coordinators:

Taylor Newton – Northwest Regional Planning Commission Shaun Coleman – Northwest Regional Planning Commission

Project Participants:

Town of Berkshire Planning Commission Town of Berkshire Highway Department Town of Berkshire Selectboard Northwest Regional Planning Commission Northwest Regional Planning Commission GIS Local Emergency Planning Committee (Franklin County) Vermont Agency of Transportation District 8 Vermont Agency of Transportation District 8 Vermont Emergency Management Vermont Agency of Natural Resources Vermont Homeland Security Department Vermont Fire Academy Northeast States Emergency Consortium Federal Emergency Management Agency National Weather Service Vermont Geological Survey

INTRODUCTION AND PURPOSE

This Single Jurisdiction Hazard Mitigation Plan is a new plan. It is not an update to an older plan.

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

Hazard Mitigation is any sustained action that reduces or eliminates long-term risk to people and property from natural and human-caused hazards and their effects. Based on the results of previous Project Impact efforts, FEMA and state agencies have come to recognize that it is less expensive to prevent disasters 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 the hazards are most severe and identify local actions that can be taken to reduce the severity of the hazard.

Hazard Mitigations Strategies and Measures **alter** the hazard by eliminating or reducing the frequency of occurrence, **avert** the hazard by redirecting the impact by means of a structure or land treatment, **adapt** to the hazard by modifying structures or standards or **avoid** the hazard by stopping or limiting development and could include projects such as:

- Flood-proofing structures
- Tying down propane/fuel tanks in flood-prone areas
- Elevating furnaces and water heaters
- Identifying & modifying high traffic incident locations and routes
- Ensuring adequate water supply
- Elevating structures or utilities above flood levels
- Identifying & upgrading undersized culverts
- Proactive land use planning for floodplains and other flood-prone areas
- Proper road maintenance and construction
- Ensuring critical facilities are safely located
- Buyout & relocation of structures in harms way
- Establish & enforce appropriate building codes
- Public information

NORTHWEST REGION GEOGRAPHY

Situated in Vermont's northwest corner, the Northwest Region consists of 23 municipalities in Franklin and Grand Isle, Vermont. The region is border by New York State to the west and the Province of Quebec, Canada to the north. The region consists of 564,792 acres including Lake Champlain (455,489.62 land acres).

The Northwest Region has several distinctive sub-regions that are largely defined by topography and the natural environment. Grand Isle County and western Franklin County are located in the Champlain Valley which is generally characterized as relatively flat. Central Franklin County it located within the gently rolling foothills of the Green Mountains. Eastern Franklin County contains the high ridges of western slopes of the Green Mountains. Big Jay is the highest point in the region at 3,786 feet. The lowest point is along the Lake Champlain at 95 feet.

The entire Northwest Region is located in the Lake Champlain drainage area. Several major rivers flow through the region including the Missisquoi and Lamoille Rivers.

BERKSHIRE GEOGRAPHY & TOWN PROFILE

The Town of Berkshire is located in the northwest corner of Franklin County (72°46'W, 44°58'N). Berkshire is bounded by the Province of Quebec on the north, the Town of Franklin on the west, the Town of Richford on the east and the Town of Enosburg and the incorporated Village of Enosburg Falls on the south. The total area of the town is approximately 27,008 acres or 42.2 square miles. The population of the community is 1,760 according the 2014 American Community Survey.



Berkshire is predominantly a rural town and is one of the most important agricultural towns in Northwest Region and State of Vermont. Agricultural land accounts for around 65% (17,500 acres) of total land acreage. Roughly 29% (7,832 acres) of this acreage is forested land associated with farming operations with the remainder equally divided between cropland and pastureland. Farming operations in Berkshire are predominately dairy farms. Maple sugaring is



another important type of agricultural operation in Berkshire.

Most of the forested acreage is found on the ridges and hilltops of north central Berkshire and on other areas of steep slope or wet soil scattered throughout the Town. Residential land use accounts for less than 5% of the Town's total land acreage. Most of this is concentrated on relatively small lots of one acre or less in Berkshire's three hamlets: West Berkshire, East Berkshire and Berkshire Center. There is very little commercial land uses, and no industrial land uses in Berkshire. Commercial land uses exists primarily in East Berkshire in relatively small lots. Berkshire has zoning and subdivision regulations.

The Town is a member of the National Flood Insurance Program (NFIP). Flood hazard areas have been identified along the Missisquoi River, Rock River, Hungerford Brook, Kelly Brook, Saxe Brook, Carmen Brook and Youngman Brook. Flood Insurance Rate Maps (FIRM) were prepared by FEMA in 1983. They are available for review at the Berkshire Town Office and on-line at FEMA.gov.



Data Source: U.S. Census Decennial

Topographically, Berkshire consists of rolling topography. Elevations range from approximately 1,320 feet at its highest point at Ayers Hill to approximately 400 feet at its lowest points on the Pike River in northwest Berkshire and on the Missisquoi River in southeast Berkshire.



There are four state highways in Berkshire: VT 105, VT 108, VT 118 and VT 120. The unincorporated village of West Berkshire is located at the crossroads of VT 108 and VT 120. The unincorporated village of East Berkshire is located at the crossroads of VT 105 and VT 118.

Berkshire is but one town in a region of diverse and changing communities. The Town is a member of the Northwest Regional Planning Commission and borders Richford, Enosburgh, Enosburg Falls, and Franklin in Franklin County. It is linked to these communities via roadways, waterways, recreation resources, contiguous forestland and wildlife habitat, and through the sharing of important community facilities and

services. In addition, many of Berkshire's residents have strong social and economic ties to the region's important employment and cultural centers. As the chart below shows, Berkshire's population growth is relatively higher than neighbors.

Population Change for Berkshire and Surrounding Towns

Town	1980	1990	2000	2010	% Change 1980-1990	% Change 1990- 2000	% Change 2000- 2010
Berkshire	1116	1190	1388	1692	6.6%	16.6%	21.9%
Enosburgh Town and							
Village	2070	2535	2778	2781	22.5%	9.6%	0.1%
Franklin	1006	1068	1268	1405	6.2%	18.7%	10.8%
Montgomery	681	823	992	1201	20.9%	20.5%	21.1%
Richford	2206	2178	2321	2308	-1.3%	6.6%	-0.6%
Sheldon	1618	1748	1990	2190	8.0%	13.8%	10.1%
Franklin Cnty	34788	39980	45417	47746	14.9%	13.6%	5.1%

Data Source: U.S. Census

The Town participates in the National Flood Insurance Program (NFIP), has adopted town road and bridge standards, has a Local Emergency Operations Plan, has conducted a culvert inventory and participated in 2002. Adopting this local hazard mitigation plan, will be another step forward in the Town's emergency and disaster preparedness planning process. In the future, mitigation funding may be reliant upon mitigation planning.

The Town has no health care facilities and relies on services in adjacent towns. Northern Tier Center for Health (NOTCH) has a locations in Enosburg Falls and Richford. The Northwestern Medical Center, the regional hospital, is located in St. Albans, Vermont in western Franklin County. Berkshire has a volunteer fire department. Berkshire does not have a municipal police department and relies on the Franklin County Sheriff and Border Patrol for law enforcement.

Berkshire is served by two electric utility companies: the Village of Enosburg Falls Electric Light Department serves the southwestern area and Vermont Electric Cooperative serves the remainder of town.

PLANNING PROCESS

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

Documentation of the Planning Process, Public Involvement and Input from Neighboring Communities

The Town of Berkshire held several planning meetings to discuss the development of a Hazard Mitigation Plan. All meetings were open to the public and held at regularly scheduled Selectboard meetings. Public in attendance at the meetings were encouraged to participate. All meeting agendas were posted at 3 locations in the municipality in compliance with the requirements of Vermont Open Meeting Law. All meetings were chaired by the Chair of the Selectboard, Vincent Hickey. Hard copies of drafts discussed at meetings were available to the public in attendance at meetings and upon request.

The Town of Berkshire held their initial planning meeting to discuss the drafting a Hazard Mitigation Plan and to establish a schedule on June 13, 2016. The meeting was attended by the Selectboard, Town Clerk, Highway Forman and staff from Northwest Regional Planning Commission.

The 2nd meeting was held on July 25, 2016 and involved a more in depth discussion about the town's development trends and mitigation strategies. The same staff attended the meeting. Potential mitigation projects were specifically identified at this meeting and edits were made to the draft plan.

In August 2016, the draft Berkshire Local Hazard Mitigation Plan was submitted to Vermont Emergency Management for additional comment. The Selectboard met again to review the comments provide by Vermont Emergency Management and to make final edits to the plan. A full schedule of meetings held to discuss this plan are as follows:

- June 13, 2016 Municipal Building Berkshire, VT
- July 25, 2016 Municipal Building, Berkshire, VT
- October 17, 2016 Municipal Building, Berkshire, VT

The Berkshire Local Hazard Mitigation Plan was made available for public comment using the following outlets:

- The first draft of the Berkshire Local Hazard Mitigation Plan was posted to the Northwest Regional Planning Commission website on their Hazards Page from September 7, 2016 until October 17, 2016 with a link to an email address to provide comments. There is no municipal website. No email comments on the draft plan were received.
- The final draft plan was discussed at the October 17, 2016 Selectboard meeting. The meeting was open to the public. No public attended and no public comment was received.
- An email was sent to the Town Clerk and Selectboard Chairs of Richford, Montgomery, Enosburgh, Enosburg Falls and Franklin, Vermont, with a draft version of the plan as an attachment, soliciting comment on the draft via email. The email also contained the

date of the Selectboard meeting at which the final draft of the plan would be discussed. The email was sent on September 9, 2016. No comments from surrounding towns was received.

Participants	Affiliations	Home
Emily Fecteau	Town Clerk	Berkshire
Danny Kennison	Highway Department	Berkshire
Vincent Hickey	Selectboard	Berkshire
Todd Kinney	Selectboard	Berkshire
Robert Archambault	Selectboard	Berkshire
Anthony Lussier	Selectboard	Berkshire
Edward Messier	Selectboard	Berkshire
Taylor Newton	Regional Planner,	Burlington
	Northwest Regional	
	Planning Commission	

The following people were involved throughout the mitigation planning process:

Documentation of the Review and Incorporation of Existing Plans, Studies, Reports, and Technical Information

During the planning process the Selectboard reviewed several plans, studies, and technical information. This includes review of the Vermont Agency of Natural Resources River Corridor maps, FEMA NFIP maps and Flood Insurance Study (FIS), Berkshire Municipal Plan, river gauge information from the National Weather Service, and the Northwest Regional Plan. Information from these documents was incorporated into the Risk Assessment/Vulnerability Analysis and Mitigation Strategies in this plan. A full list of documents consulted in the formulation of this plan can be view on page 27.

RISK ASSESSMENT / VULNERABILITY ANALYSIS

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

Methodology

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

- Negligible: < 10% of properties damaged/Minimal disruption to quality of life.
- Limited: 10% to < 25% of properties damaged/Loss of essential facilities/services for up to 7 days/few (< 1% of population) injuries possible.
- Critical: 25% to 50% of properties damaged/Loss of essential facilities/services for > 7 days < 14 days/Major (< 10% of population) injuries/few deaths possible.
- Catastrophic: > 50% of properties damaged/loss of essential facilities/services for > 14 days/Severe (> 10% of population) injuries/multiple deaths possible.

The frequency of occurrence (Likelihood) is classified as shown:

- Unlikely: < 1% probability in the next 100 years.
- Possible: 1% to 10% probability in the next year, or at least one chance in the next 100 years.
- Likely: 10% to 100% probability in the next year, or at least one chance in the next 10 years.
- Highly Likely: Near 100% probability in the next year.

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

The combination of the magnitude of the hazard and the likelihood was used to determine the community vulnerability as HIGH, MODERATE or LOW. For example, a flood event is highly likely (nearly 100% probability in the next year) in many communities but the degree of impact varies. A highly likely flood with critical or catastrophic impact rates the community vulnerability as HIGH. Another community with a highly likely or likely (at least one chance in the next 10 years) flood with a limited impact would receive a vulnerability rating of MODERATE. The vulnerability of a community having the occurrence of an event as possible or unlikely with limited or negligible impact would be LOW.

Likelihood/Frequency:	Impact:
U = unlikely	N = negligible
P = possible	L = limited
L = likely	CR = critical
HL = highly likely	CA = catastrophic

Analysis

Berkshire conducted its vulnerability analysis as a group exercise and the following table shows the results:

Possible Hazard	Like liho od	Impact	Community Vulnerability	Most vulnerable facilities and populations
Flooding/Fluvial Erosion	HL	L/CR	Moderate	Low lying hills, brooks, drainage ditches, culverts, road, bridges, East Berkshire village, State highways
Winter & Ice Storm / Severe winter weather	HL	L/CR	Moderate	Residences, Businesses
Highway Accidents	HL	L	Moderate	Town and State highways
Extreme Cold	HL	L	Moderate	Residences, Businesses
High Wind	HL	L	Moderate	Residences, Businesses
Structure Fire	HL	L	Moderate	Residences, Businesses
Drought	Р	L	Moderate	Residents, Farms, Businesses
Water Supply Contamination	U	L/CR	Moderate	Residences, Businesses, East Berkshire village
Power Failure / Telecommunications Failure	HL	L	Low	Residences, Businesses
Landslide	HL	L	Low	Roads
Tornado/Microburst/Hail	HL	L	Low	Roads, Bridges, Utilities
Extreme Heat	Р	N	Low	Town-wide
Hazardous materials	Р	L	Low	VT Route 105 and VT Route 118
Hurricane	U	CR	Low	Town-wide
Earthquake	U	L	Low	Town-wide
Terrorism	U	N	Low	Potential for Town-wide
Wildfire	U	L	Low	Residents, Businesses

The community has identified and chosen to focus mitigation action items on the following hazards: flooding/fluvial erosion and structure fire. These are the hazards that Berkshire most commonly faces and has developed mitigation actions around. Though other hazards, such as highway accidents, high winds, extreme cold, winter storms received a "moderate" vulnerability rating in the table above and do occur in Berkshire, they are not addressed in this plan because they occur on a routine basis and the town already routinely responds to these hazards. Current capability to mitigate hazards is limited, so it was decided that available capabilities should be dedicated to mitigating only structure fires, flooding, and fluvial erosion, as the town sees these as their most common hazards. Other hazards are able to be handled without undue hardship for the town at this time; therefore, mitigation actions are not deemed necessary for these hazards so this plan will not address these hazards. The town may choose to address them in the future. For hazards that are not profiled in this plan, the reader is directed to the Vermont State Hazard Mitigation Plan.

Hazard Profiles

The following hazards include a narrative explaining Location/Geographic Area and Extent (magnitude or severity), Probability, Impact and discussion of Past Occurrences of all natural hazards that affect the planning area. In putting together this hazard information.

Flooding/Fluvial Erosion

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

Impact and Geographic Area of the Hazard – Berkshire is threatened by two types of flooding: inundation and fluvial erosion. Inundation-type flooding is regulated through the NFIP. It involves the rise of water over a floodplain.

The Missisquoi River flows through the Town of Berkshire from the northeast to the southwest and is subject to inundation flooding. This area is composed of relatively undeveloped flood plains and agricultural land. The exception is East Berkshire, located at the junction of VT Route 105 and VT Route 118. The three bridges located in East Berkshire are not subject to flooding, however, portions of the state highways and the Missisquoi Valley Rail Train, a recreation path, are occasionally subject to flooding. The Pike River, Mineral Brook, Trout Brook and Trout River are tributaries of the Missisquoi River in Berkshire. River banks are generally steep and bordered by wide flood plains. The Pike River and Mineral Brook both have mapped floodplain and are subject to inundation.

Compared to other Vermont communities that suffer from flood damage due to extensive flood plain development, the Town of Berkshire has not been subjected to large or frequently occurring floods.

Fluvial erosion is the destruction of river banks caused by the movement of rivers and streams. This occurs when the stream is unstable and has more energy than is needed to transport its sediment load, due to channel alterations or runoff events that increase water speed in the channel. Fluvial erosion hazard mapping was released by the VT Agency of Natural Resources (ANR) in early December 2014. This mapping will assist municipalities in developing bylaws and effective mitigation strategies to regulate development within fluvial erosion hazard zones (aka "river corridors"). Berkshire may want to consider developing a fluvial erosion section within its zoning bylaw. This bylaw could meet the "river corridor" criteria set by Vermont Division of Emergency Management and Homeland Security (DEMHS). Berkshire should work with the Northwest Regional Planning Commission and ANR to ensure that their floodplain bylaw remains inclusive of river corridors.

Flash floods typically occur in high elevation drainage areas as a result of summer thunderstorm activity. Infrastructure and structures along higher elevation streams and drainage areas are most susceptible to damage from flash flooding. Drainage ditches and culverts are the biggest concern for local flash flooding events. Areas in Berkshire that are particularly susceptible include East Berkshire near the intersections of VT 118 and VT 105. These state roads frequently flood, but structures in the vicinity are typically unscathed.

Flooding usually occurs in Berkshire in the late winter and early spring when rainfall mixed with snowmelt cause water levels to rise on the Missisquoi River. Ice jams have not caused major damage along the Missisquoi River in East Berkshire, but it has been responsible for field and riverbank erosion.

Extent / Probability – Flash floods, rain storms and fluvial erosion are all are a locally probable hazard events according to plan participants. Flash floods typically occur during summer when a large thunderstorm or a series of rain storms result in high volumes of rain over a short period of time. Higher-elevation drainage areas and streams are particularly susceptible to flash floods. Flash floods are likely in Berkshire, and potential damage to Route 105 in Berkshire and neighboring Enosburgh, could limit access to town, as it is the major transportation corridor through the community. Flooding and fluvial erosion are considered highly likely by the town.

There is a stream gauge on the Missisquoi River located to the northeast of East Berkshire. This is the closest gauge to Berkshire. The highest recorded measurement was 23.10 feet, which was measured on November 4, 1927. Flood height is 13 feet, a height which has been exceeded 8 times since 2000. According to NOAA, gauge heights at this location will result in the following results:

Gauge Height	Potential Effects
23	Devastating flooding occurs. This stage equals the Great Flood of 1927. Bridges on Routes 118, 108, and 105 will be covered in water, and may be destroyed. Large sections of Routes 118, 108, and 105 and local roads will be covered in water. Water will inundate homes in East Berkshire and Enosburg Falls.
17	Severe flooding will occur from Richford downstream to Sheldon along the Missisquoi. Water will enter homes in East Berkshire, and cover portions of Route 118 near East Berkshire and Route 105 between East Berkshire and Enosburg Falls. Missisquoi Street in Enosburg Falls will flood. Flooding of farmland will be widespread along the Missisquoi in Franklin county. This stage is equivalent to the FEMA 1 Percent Annual Chance Flood.
16	There will be widespread flooding along the Missisquoi from Richford to Sheldon. Water will cover portions of Route 105 between Enosburg Falls and East Berkshire, and will approach Route 236 in Sheldon and Route 118 in East Berkshire. There will be extensive field flooding.
14	Widespread flooding of low lying fields and roadways will occur from Richford to Enosburg. Water will approach Route 118 at East Berkshire, and Route 105 between Enosburg Falls and East Berkshire. Yards will be flooded in East Berkshire.

13	Widespread flooding of low lying fields and some low lying roads will occur along the
	Missisquoi from Richford to Enosburg. Water will enter the yards of riverside homes in
	East Berkshire.

Extent for inundation flooding: The National Weather Service Reports that river gauge heights on the Missiquoi River in East Berkshire have exceeded 13 feet (flood height) approximately 47 times since 1918 (with increased frequency since the 1990s).

Extent for fluvial erosion: The worst area that is causing issues in the Town of Berkshire is on Marvin Road. The north section of this road is located on the banks of the Missisquoi River and has seen significant erosion over the past several years. Some of the road has been protected through the installation of rip rap along the bank of the river, but several sections still need to be protected. Two structures on this section of road are located within the River Corridor or special flood hazard area (SFHA). Fluvial erosion also threatens portions of East Berkshire and West Berkshire (along the Pike River). Accurate extent data for this section of fluvial erosion is unknown, but the fluvial erosion could impact about a ³/₄ of a mile section of Marvin Road.

Floodplain/River Corridor Mapping - The following map was created by the Northwest Regional Planning Commission (NRPC). This maps shows the special flood hazard areas (SFHAs) that FEMA has designated in Berkshire (as digitized by NRPC), as well as the River Corridors that VT ANR has designated. It should be noted that the current map effective date (as of this plan writing) for the Flood Insurance Rate Maps (FIRMS) for the Town of Berkshire is 6/1/1983.

The orange shaded areas are SFHAs, red hash-marked areas are FEMA SFHA and the orange shaded areas are the ANR River Corridors.



A large River Corridor exists along the Missiquoi River in eastern and southeastern Berkshire. SFHA also exists in much of this area. River Corridor has also been mapped along the Pike River in northeast Berkshire. SFHA has been mapped for larger segments of the Pike River, Mineral Brook and several wetland complexes in central and northeastern Berkshire.

There are no floodways mapped by FEMA in Berkshire. SFHAs span more stream length than the River Corridors. It is worth noting that river corridors are only mapped for streams with watershed of two or more square miles, but they do also apply to the area within fifty feet of top of bank for all mapped streams in the Vermont Hydrogography Dataset.

Past Occurrences -

Compared to other Vermont communities that suffer from flood damage due to extensive flood plain development, the Town of Berkshire has not been subjected to large or frequently occurring floods.

The flood of November 1927 has been the most severe flood on historic record with the Town of Berkshire. The storm brought 3.2 inches of rainfall within 24 hours and a total of 6.32 inches for the duration of the storm. Many of the residents of Berkshire had to be evacuated from their homes and rescued in boats. The farms within the community lost most of their livestock, houses were flooded, and the covered bridges and the Nutting Bridge beyond East Berkshire were swept away. During 1936 and 1940, minor flooding occurred along the Missisquoi River that caused some minor damage to the community.

The winter storm that occurred on January 15, 1996 (FEMA 1101-DR) triggered flooding throughout the Town and County. The flooding damaged many roads throughout Town.

During the night of July 14 through to the morning of July 15, 1997, heavy rain fell continuously throughout eastern Franklin County (FEMA-1184-DR). Several roads and culverts were damaged in Town. There was extensive flooding in East Berkshire on VT Route 105. There are no records of damage costs available.

In 1998, above average precipitation events occurred in January, March and April. On August 11, 1998, a warm air mass produced a torrential downpours causing widespread flooding in Town. Mild weather produced rain and melting snow on January 24, 1999. The conditions resulted in a few rivers reaching or exceeding their banks during Sunday

Based on interviews with local residents, there was also a relatively large flood event which occurred on June 5th, 2002. Several roads were flooded. There are no damage costs available.

There were several flood events in 2004. The National Weather Service in Burlington reports that 2004 was the third wettest summer on record. On September 23, 2004 a disaster declaration (FEMA-1559-DR) was declared due to severe storms and flooding from August 12th through September 12th, 2004. Franklin County was included in the disaster declaration. Flooding occurred as a result of heavy rain produced from Tropical Storm Francis.

From March 31 to April 3, 2005, an ice jam occurred on the Missisquoi River which resulted in flooding of Route 105 in East Berkshire. There was minor flooding of low lying areas and fields. There was an estimated \$1,000 in damages.

On October 15, 2005 an ocean storm system moved to northern New England bringing heavy rain. There was approximately 2.5 inches rainfall across Franklin County. Minor river flooding of the Missisquoi resulted in minor low land flooding. The river gage at East Berkshire exceeded flood stage during this period. A powerful storm tracked northeast across Ontario and Quebec provinces on January 18, 2006. Ahead of this storm, brisk south winds caused temperatures to rise into the 40s creating snow melt. Widespread rainfall of 1.5 to 2.5 inches fell during the night and continued through the early afternoon of the following day. Increased run-off caused widespread field flooding and ponding of water on local roads. Localized ice jams along the Missisquoi River caused flooding and left large ice chunks Route 105 between Enosburg and Berkshire. There was an estimated \$10,000 in damages.

May 2006 experienced above normal monthly rainfall amounts. A two day heavy rainfall event on May 18 and 19, 2006 brought of 3 to 5 inches of rain in Franklin County with locally more than 6 inches along the western slopes of the Green Mountains at nearby Jay Peak. Widespread flooding occurred from May 19th to the 20th resulting in numerous flooded roads, as well as some road and culvert washouts.

A series of storms affected the entire state from June 14-17, 2008, (DR 1778). Stronger storms on Monday June 16 produced up to 1 inch hail. These storms also produced heavy rainfall, but were moving more quickly. No flooding resulted. On Tuesday June 17th strong thunderstorms produced pea sized hail and heavy rain in the Trout River basin in northwest Vermont. Flash flooding occurred in the eastern parts of Franklin County.

The year 2011 was a record year for flooding in the state of Vermont. The first floods occurred over a two-week period in April and May of 2011 (DR 1995, 4043). These floods impacted the northern half of the state, including the counties of Addison, Chittenden, Essex, Franklin, Grand Isle, Lamoille, Orleans, Washington, and Windham. The damage totaled over \$1.8 million in FEMA assistance. In the spring, heavy rains in late March/early April on top of a deep late season snowpack resulted in riverine flooding and sent Lake Champlain well over the 500-year flood elevation breaking the 140-year-old peak stage elevation. Additionally, flooding and fluvial erosion caused by Tropical Storm Irene was catastrophic, destroying property and taking lives, and again eliciting a disaster declaration (DR-4022). Berkshire was one of a few Vermont communities to not be greatly affected by these flood events.

Transportation facilities that parallel the Missisquoi River are subject to periodic flooding, such as the sections of State Route 105. Public utilities such as water mains and electric lines as well as bridge crossings are also vulnerable to flooding damages.

Flood Event	Costs	Extent
March 31 to April 3, 2005	\$1,000	Minor flooding of low lying areas and fields
January 18, 2006	\$10,000	Widespread field flooding and ponding of water on local roads.

Information about flood damage costs is inconsistent. Here is a summary of available data:

Sources used - Local town knowledge and records, National Climatic Data Center storm events database, FEMA's Presidential Disaster Declarations search page.

Structure Fires

Structure fires can occur anywhere. The Town Fire Department received 33 dispatch calls in 2015 of which 6 were in response to structure fires. The Fire Department also provided assistance to other towns through Franklin County Mutual Aid. The Fire Department actively upgrades equipment through federal grant programs. Berkshire has mutual aid agreements in preparation for a coordinated response to structure fires in the area. Fire codes are in place and enforced by the State. Berkshire has received

funding from the state dry hydrant grant program to install three dry hydrants to improve water supply in rural areas.

Berkshire Center and East Berkshire contain structures that are relatively close thus raising the risk for a multiple structure fire. The impact of this type of incident would primarily be on the residential sector. Older historic buildings that lack fire alarms and sprinkler systems are greater at risk for damages.

Estimated loss due to fire damage on 5 structures annually using mean home values is \$923,209. This loss estimate does not include building contents. Impacts to future populations, residences, new buildings, critical facilities and infrastructure are anticipated to lessen due to new building construction codes and standards which address fire safety.

Assessing Vulnerability

Structures in the SFHA and River Corridor

A GIS based overlay analysis was conducted using FIRM data with the location of the Vermont E-911 Esite data. The results found that there are twenty-one (21) structures in the town that are vulnerable to potential inundation flooding. All are classified as residential (either single-family, camp, or mobile homes) except for one commercial structure. Properties within SFHAs, that have a mortgage, are required to purchase flood insurance. Berkshire's participation in the National Flood Insurance Program (NFIP) gives residents and business owners access to discount flood insurance through the National Flood Insurance Program. Flood insurance can still be purchased privately, however it is more expensive. Development in SFHAs must meet additional construction standards as outlined in Berkshire's floodplain regulations.

It is important to note the number of structures in the VT ANR mapped River Corridor. There are 39 structures in the River Corridor, or 5% of the structures in Berkshire are in the River Corridor. As noted in this plan, most of the destruction caused by flooding in Vermont is caused by fluvial erosion, which is the hazard mapped by the River Corridor.

Repetitive Loss Properties

According to FEMA, there are two multiple loss NFIP properties in Berkshire. Both properties are residential. Repetitive loss properties are defined as n NFIP-insured structure that has had at least 2 paid flood losses of more than \$1,000 each in any 10-year period since 1978. The definition of severe repetitive loss (SRL) as applied to this program was established in section 1361A of the National Flood Insurance Act, as amended, 42 U.S.C. 4102a. An SRL property is defined as a **residential property** that is covered under an NFIP flood insurance policy and:

(a) That has at least four NFIP claim payments (including building and contents) over \$5,000 each, and the cumulative amount of such claims payments exceeds \$20,000; or

(b) For which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.

For both (a) and (b) above, at least two of the referenced claims must have occurred within any ten-year period, and must be greater than 10 days apart.

Community Facilities in Berkshire

See Appendix A.

Market Values of Structures in Berkshire¹

	Municipal Total	No. of
Structure Type	land)	Parcels
All-season single		
family residence	\$84,012,100	455
Seasonal Homes	\$3,779,200	17
Mobile Home	\$9,677,400	93
Commercial	\$2,836,500	15
Farm	\$30,398,400	56
Other (Utilities,		
Woodland, and		
Miscellaneous)	\$11,808,500	94
Total	\$142,529,813	730

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

The National Flood Insurance Program (NFIP) is a voluntary program organized by FEMA that includes participation from 20,000 communities nationwide and 247 Vermont towns and cities. Combined with floodplain mapping and floodplain management at the municipal level, the NFIP participation makes affordable flood insurance available to all homeowners, renters, and businesses, regardless of whether they are located in a floodplain.

The NFIP was instituted in 1968 to make flood insurance available in those communities agreeing to regulate future floodplain development. As a participant in the NFIP, a community must adopt regulations that: 1) require any new residential construction within the 100 year floodplain to have the lowest floor, including the basement, elevated above the 100 year flood elevation; 2) allow non-residential structures to be elevated or dry flood proofed (the flood proofing must be certified by a registered professional engineer or architect); 3) require anchoring of manufactured homes in flood prone areas. The community must also maintain a record of all lowest floor elevations or the elevations to which buildings in flood hazard areas have been flood proofed.

In return for adopting floodplain management regulations, the federal government makes flood insurance available to the citizens of the community. In 1973, the NFIP was amended to mandate the purchase of flood insurance as a condition of any federally regulated, supervised

¹ These numbers are from the 2016 Berkshire Grand List.

or insured loan on any construction or building within the 100-year floodplain. In 2012, Congress passed the Biggert-Waters Flood Insurance Reform Act to reduce subsidies for structures built before the NFIP was instituted (called pre-FIRM structures). Over 50 percent of Vermont's NFIP policies are pre-FIRM, which means that flood insurance premiums for many will increase over the ensuing years.

While the NFIP floodplain management criteria are administered by States and communities through their floodplain management regulations, FEMA's role is to provide technical assistance and to monitor communities for compliance with the minimum NFIP criteria. Berkshire is a member in good standing with the NFIP (CID 500049). The latest floodplain regulations was adopted March 6, 2007. These regulations are part of the Town's Land Use and Development Regulations. The regulations do not include regulations for River Corridor. The latest FEMA records indicates that there are six (6) active NFIP policies in Berkshire. These policies have a total coverage value of \$1,096,600. There have been twelve NFIP claims filed in Berkshire since 1978 totaling \$14,776.00.²

The Town works with the elected officials, Northwest Regional Planning Commission, the state and FEMA to correct existing compliance issues and prevent any further NFIP compliance issues through continuous communications, training and education. There is a part-time Zoning Administrator in Berkshire that also serves as floodplain manager (3 hours per week). The floodplain manager enforces violations within the floodplain through the issuance of zoning violations. There are no ongoing floodplain compliance issues in Berkshire.

Development Trends

Under the most recent town plan, most of the Town lies within designated "agricultural lands" and the remaining land, considered unsuitable for farming, is included in a "protected" category. The three villages of the community, (West Berkshire, Berkshire Center, and East Berkshire) are expected to remain the principal areas of population within the town. Berkshire does have zoning and this protects particularly high risk areas such as floodplain. Development on slopes above 15% is discouraged in the town plan and there are specific zoning regulations that prevent development in these areas.

In the Village of East Berkshire, development is characterized by a concentration of structures and land uses devoted to small-scale commercial and residential uses. The character of the Village is an important social and economic asset to the community. There is some access to infrastructure, so there is some development potential in this area. Otherwise, the town has relatively low density development which coincides with Berkshire's desire to maintain its rural character.

² FEMA NFIP Insurance Report available at floodready.vermont.gov – accessed 7.19.16.

MITIGATION STRATEGY

Local Hazard Mitigation Goals Developed for this Plan

The Hazard Mitigation Goals as outlined below were developed by consensus among the emergency management stakeholder group during meetings for the Town of Berkshire Hazard Mitigation Plan.

General Goals:

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

Relevant Town Plan Policies that Support Mitigation (Town Plan Adopted June 1, 2015)

Goals and Policies: The Sense of Place

- **GOAL 2**: To protect in good quality the abundant natural and historic resources in Berkshire.
- **GOAL 4**: To protect the citizens, property and economy of Berkshire and the quality of their rivers as natural and recreational resources by using sound planning practices within designated Flood Hazard Areas and river corridors.

Policies:

• Local climatic and weather conditions, and impacts on local air quality, should be considered in planning for suitable use of the land.

- Regional, state, national, and international efforts to improve and protect environmental quality shall be supported at the local level.
- New residential and commercial development in Berkshire is encouraged to implement stormwater mitigation strategies, otherwise known as Low Impact Development.
- Intensive land development, including structures, shall be discouraged on slopes greater than 25% and as much vegetative cover as possible shall be maintained.
- Any development activity that degrades surface and/or ground water quality shall be discouraged.
- Streams, rivers, ponds, and wetlands shall be maintained in their natural state, and be protected from pollution through appropriate health and land use regulations. Local regulations shall provide buffer areas to maintain the environmental, recreational, and scenic value of water courses, water bodies, and shorelines.
- Development within close proximity of streams and rivers shall be compatible with the natural beauty of the area, shall protect existing vegetation, shall be set back sufficiently to prevent erosion along stream-banks or pollution from subsurface sewage disposal systems, and where possible shall retain visual and physical access to the water bodies.
- Development shall be carefully sited in areas with a depth to ground water of two feet or less, or in ground water Source Protection Areas.
- Prohibit land development resulting in the loss of wetland storage capacity or additions to the marsh areas of any substances which are likely to increase the concentration of materials beyond the assimilative capacities.
- The public acquisition of land, development rights, or conservation easements shall be considered where appropriate to ensure long-term protection of particularly important critical areas and maintain open space.
- Encourage the protection and restoration of floodplains and upland forested areas that attenuate and moderate flooding and fluvial erosion.
- Consider the use of River Corridors and buffers to discourage future development in high risk areas for flooding or erosion hazards.
- Consider strengthening the Flood Hazard Bylaws regarding land development in the Special Flood Hazard Area to include standards higher than the NFIP minimum standards and restrict uses to agriculture, recreational and open space in order to increase public

safety and reduce future damages.

- Incorporate mitigation measures when developing improvements or expansion to municipal infrastructure.
- Promote emergency planning for flood response.

Town Policies and Plans					
Existing Protection	Description	Effectiveness/Enforcement/ Hazard that is addressed	Gaps in Existing Policies		
Town Plan	Policies and vision for future land use. Adopted in 2015.	Policies that provide protection and limited development in Wellhead Protection Areas, Wetlands, Steep Slopes, and Shallow Soils.			
Zoning, Subdivision and Floodplain Regulations	Land Use Regulation. Adopted 2007.	Restrictions on development in potential hazardous areas such as steep slopes, floodplains, and waters source areas.			
Local Emergency Operations Plan	Summary of response and notification procedures.	Semi annual updates.			
Fire Mutual Aid	Franklin County Mutual Aid Assoc.	Assistance from area fire departments.			

Ongoing Efforts

NIMS/ICS Training

The Town wants to ensure all town officials and volunteers (if possible) are trained in the Incident Command System.

Grant Funding

Berkshire continues to work with NRPC to seek grand funding for culvert replacements and for other road-related improvements that address flood resiliency.

Equipment Upgrades

Town continues to support the local volunteer fire department and upgrades to fire fighting equipment.

Local Emergency Operations Plan

Town continues to maintain an up-to-date Local Emergency Operations Plan to respond to large incidents. The Town support emergency response volunteers attending professional training sessions.

Identification of Mitigation Actions

The participants in the Berkshire Hazard Mitigation Plan effort identified the following hazard mitigation activities based on an evaluation of hazard event vulnerability not addressed by existing hazard mitigation initiatives and the feasibility of new activities.

Mitigation actions are listed in priority order, with the most critical needs listed at the top of the list. The following criteria were used in establishing project priorities. The ranking of these criteria is largely based on the best available information and best judgment as many projects are not fully scoped out at this time.

- Does the action reduce damage?
- Does the action contribute to community objectives?
- Does the action meet existing regulations?
- Does the action protect historic structures or structures critical to town operations?
- Can the action be implemented quickly?
- Is the action socially acceptable?
- Is the action technically feasible?
- Is the action administratively possible?
- Is the action politically acceptable?
- Is the action legal?
- Does the action offer reasonable benefits compared to its cost of implementation?
- Is the action environmentally sound?

This following table outlines mitigation programs, projects and activities describe the overall direction the town is taking to work toward mitigating risk from natural, technological and societal hazards. Attachment B contains the criteria and matrix used to develop a priority. Mitigation projects are listed in terms of mitigating immediate threat or risk to public health and safety, reduction of hazard to community assets, adherence to town plan and local ordinances, cost, and feasibility. Projects are provide with a specific timeframe in which the Town hopes to finish the project. The timeframe assigned to each project is based on the scale, cost, and availability of grant funding. For instances, several of the projects will likely not be completed until 2020 when Berkshire will be eligible to apply for a Highway Structures Grant from the Vermont Agency of Transportation, a grant program available for larger culverts and bridges. The projects do not focus on future development because future development in Berkshire is expected to be limited and because of a lack of governmental capacity. All projects are expected to begin and end during the year indicated under the "timeframe" column. All project will be taken into consideration each year by the Selectboard to ensure consideration in discussions about the budget.

The Community analyzed a comprehensive range of mitigation alternatives, including regulations, infrastructure projects, natural system protection, and education/awareness programs, but chose to focus mitigation actions for the reasons outlined on Page 11 and 12. No mitigation projects have been identified relating to structure fires. This is because the Berkshire Volunteer Fire Department is a non-profit that is not directly associated with or funded by the Town of Berkshire

Implementation Schedule for Prioritized Mitigation Projects					
Priority	Project	Responsibility/Oversight	Funding/support	Time –	
Score				Frame	
25	Procure and install generator at Town Garage (backup town emergency shelter) and Town Office	Selectboard	FEMA grants, State and local	2017	
24	Install additional rip rap to stabilize and secure Marvin Road	Selectboard	FEMA grants, State and local	2017	
23	Replace undersized culvert on Marvin Road	Road Crew/Selectboard	FEMA grants, State and local	2020	
23	Replace three (3) undersized culverts on Mineral Brook Road	Road Crew/Selectboard	FEMA grants, State and local	2018	
23	Replace undersized culvert on Berkshire Center Road	Road Crew/Selectboard	FEMA grants, State and local	2020	
22	Replace undersized culvert on	Road Crew/Selectboard	FEMA grants, State and local	2020	

	Reservoir			
	Road			
	NIMS/ICS			
	Training for			
21	Selectboard	Road Crew/Selectboard	State and local	2017
	and Highway			
	Department			

Existing Planning and Regulatory Capabilities

Berkshire has a low population and a limited staff. Regulatory capabilities are low. There is a part-time Zoning Administrator that also serves as floodplain manager (3 hours per week). The town floodplain administrator could use training and better recognition. Berkshire relies upon NRPC for planning services and for technical assistance related to floodplain development. Floodplain development is an issue for Berkshire because of the location of East Berkshire.

The Town employs a three person highway department. They are constantly treating roadways in winter months and repairing road in the summer months, so the department has little ability to increase its workload.

There is no police department. The Berkshire Fire Department is volunteer and technically is a non-profit that is not directly associated or under the governance of the Town. The Selectboard chair is the Emergency Management Director.

How this Plan will Improve Existing Capabilities

The following policies, programs and activities related to hazard mitigation are currently in place and/or being implemented in the Town of Berkshire. The Selectboard analyzed these programs for their effectiveness and noted improvements needed. Berkshire uses all of the plans listed below to help plan for current and future activities with the town. For example: the Local Emergency Operation Plan has a contact list that is used for response purposes in the case of a hazard event, and is updated every year after Town Meeting. The Town Plan directs visions and goals that include Natural Resources and Land-Use decisions. In the development of this plan, the latest 2015 Town Plan was used. Town Road and Bridge Standards are followed by the town and they do an annual culvert and bridge inventory that is mapped by the WRC. The town is compliant with the NFIP.

As Berkshire goes through the update process for the planning mechanisms outlined in the table below, they will look to the Hazard Mitigation Plan's Table of Actions and Risk and Vulnerability Assessments to help guide land use district decisions, and guide goals and policies for those districts. They have agreed to this. At the Town Meeting every March, policies and action items in the Town Plan are reviewed and integrated into hazard mitigation as needed. The Local Emergency Operations Plan contact list is updated after Town Meeting each year, including updates to vulnerable geographic locations, as well as locations of vulnerable populations. Updates to each of the planning mechanisms outlined in the table below are handled by the identified by the responsible party identified in the table. There is no timeframe

for updating the below referenced plans and regulations to better incorporate hazard mitigation, however, as each document is updated the hazard mitigation plan will be reviewed for incorporation. The goals of this hazard mitigation plan will be incorporated in the upcoming town plan update to ensure that emergency preparedness and mitigation planning efforts are included in the Town Plan, with particular attention to including the projects in the Mitigation Actions Table. This will assist with ensuring that this plan is utilized and project follow-through occurs.

The next time the Land Use Regulations are updated, it will be encouraged that that update include a River Corridor maps and standards. The LEOP is updated yearly and was updated last in 2016. Other mitigation/emergency planning related documents and their status are outlined in the below table:

Type of Existing Protection	Description	Effectiveness/Enforce ment/Hazard that is addressed	Gaps in Existing Protection/Improveme nts Needed
Town Plan	Plan for coordinated town-wide planning for land use, municipal facilities, etc.	Town Plan was completed in 2015 and adopted by the Town; Emergency Preparedness addressed in plan.	Is very limited in terms of detail.
Town Local Emergency Operation Plan	Municipal procedures for emergency response	Incident Command; Hazard Annexes included	Local Emergency Operation Plan was completed in 2016 and is updated every year
LEPC 4 Hazardous Materials Plan	Procedures for hazmat emergency response at regional level	LEPC 4 has the plan; Berkshire Fire Department has a rep that goes to LEPC 4 meetings	Continued involvement with the LEPC 4
Mutual Aid – Emergency Services	Agreement for regional coordinated emergency services	Franklin County Municipal Mutual Aid – written agreement/contract. E911 is provided by the state dispatch center	None identified
Road Standards	Design and construction standards for roads and drainage systems	Town has adopted the 2013 Vtrans standards	None identified
Land Use Regulations (Zoning, Subdivision, and Flood Hazard Area Regulations)	Regulates the division of land, standards for site access and utilities. Regulates development in FEMA flood hazard areas	They do have this in place; adopted in 2007. Contains floodplain bylaw.	No River Corridor standards and maps.
Sewage Regulations	Regulates on-site sewage systems	State Regulations apply	None Identified; No public sewer
Maintenance Programs	Bridge & Culvert Inventory	Updated in 2002	Old information that needs to be updated.

PLAN MAINTENANCE PROCESS

Monitoring and Updating the Plan – Yearly Review

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

Plan Maintenance – 5 Year Update and Evaluation Process

The Hazard Mitigation Plan is dynamic. To ensure that the plan remains current and relevant, it is important that it undergo a major update periodically as required in 44 CFR § 201.6(c)(4)(i). This update process will be thorough and occur every five years. Participants outlined below will work with the Emergency Planner at the Northwest Regional Planning Commission (NRPC) in accordance with the following procedure:

- The Berkshire Selectboard will appoint a hazard mitigation planning committee. The town's Emergency Management Director will chair the committee, and other members should include local officials such as Selectboard members, zoning administrator, road commissioner, Planning Commission members, health officer, interested stakeholders, etc. The Emergency Management Director will work with the Northwest Regional Planning Commission Emergency Planner and be the "point person" for the Town.
- 2. The NRPC Emergency Planner will guide the Committee through the update process. This update process will include several advertised public meetings. The public will be asked to participate at these meetings. At these meetings the Committee will use the existing plan and update as appropriately guided by the NRPC Emergency Planner to address:
 - Update of hazard events and data gathered since the last plan update.
 - Changes in community and government processes, which are hazard-related and have occurred since the last review.
 - Changes in community growth and development trends and their effect on vulnerability.

- Progress in implementation of plan initiatives and projects.
- Incorporation of new mitigation initiatives and projects.
- Effectiveness of previously implemented initiatives and projects.
- Evaluation of the plan for its effectiveness at achieving its stated purpose and goals.
- Evaluation of unanticipated challenges or opportunities that may have occurred between the date of adoption and the date of the report, and there affect on capabilities of the town.
- Evaluation of hazard-related public policies, initiatives and projects.
- How mitigation strategy has been incorporated into other planning mechanisms
- Review and discussion of the effectiveness of public and private sector coordination and cooperation.
- 3. From the information gathered at these meetings, and other interactions the Emergency Planner has with the Town, along with data collected independently during research for the update, the NRPC Emergency Planner will prepare the updated draft in conformance with the latest FEMA Region 1 *Local Hazard Mitigation Plan Review Crosswalk* document.
- 4. The Selectboard will review the draft report. Consensus will be reached on changes to the draft. Emphasis in plan updates will critically look at how the plan can become more effective at achieving its stated purpose and goals.
- 5. Changes will be incorporated into the Plan by the NRPC Emergency Planner.
- 6. The Selectboard will notify the public that the draft plan is available for public comment and review. The public will be given the opportunity to participate and provide comments on draft plan either verbally or in writing.
- 7. The publics' and adjacent towns' comments will be incorporated by the NRPC Emergency Planner. The final draft plan will be provided to the plan development participants and town staff for final review and comment, with review comments provided to the town clerk, Selectboard chair, and incorporated into the plan.
- 8. NRPC Emergency Planner will finalize any remaining comments from the plan participants and town staff incorporated and finalized the plan. The NRPC Emergency Planner will then submit electronically to DEMHS and FEMA.
- 9. The Plan will be reviewed by the DEMHS State Hazard Mitigation Officer (SHMO) and FEMA Region 1.

- 10. SHMO and FEMA comments will be addressed in the plan by the NRPC Emergency Planner.
- 11. The plan will be resubmitted as needed until the plan is approved pending adoption. Once the plan receives notification of Approval Pending Adoption from FEMA, it will be ready for municipal adoption.
- 12. The Selectboard will adopt the plan and distribute to interested parties.
- 13. The final adopted plan, with signed town adoption resolution, will be submitted by the NRPC Emergency Planner to DEMHS and FEMA.
- 14. FEMA will issue final approval of the adopted plan. This will be the official adoption date. The plan shall be valid for five years.

Post-Disaster Review/Update Procedure

Should a declared disaster occur the Town Hazard Mitigation Committee will conducted a special review of the Hazard Mitigation Plan. This review will occur in accordance with the following procedures:

- 1. Within six months of a declared emergency event, Berkshire will initiate a post disaster review and assessment. Members of the State Hazard Mitigation Committee will be notified that the assessment process has commenced.
- 2. This post disaster review and assessment will document the facts of the event and assess whether existing Hazard Mitigation projects effectively lowered community vulnerability/damages. New mitigation projects will be discussed, as needed.
- 3. A draft After Action Report of the review and assessment will be distributed to the hazard mitigation committee.
- 4. A meeting of the committee will be convened by the Selectboard to make a determination of whether the plan needs to be amended. If the committee determines that NO modification of the plan is needed, then the After Action Report will be distributed to local communities.
- 5. If the committee determines that modification of the plan IS needed, then the committee drafts an amended plan based on the recommendations and forwards to the Selectboard for public input.
- 6. The plan will be submitted to FEMA after the Selectboard has approved the plan pending adoption. Once the plan receives notification of Approval Pending Adoption notification from FEMA, it will be ready for municipal adoption.

7. The Selectboard adopts the amended plan after receiving Approval Pending Adoption from FEMA. The final adopted plan, with signed town adoption resolution, will be submitted by the NRPC Emergency Planner to DEMHS and FEMA.

Continued Public Participation

Maintenance of this plan and implementation of the mitigation strategy will require the continued participation of local citizens, agencies, and other organizations. To keep the public aware of and involved in local hazard mitigation efforts, the town will take the following measures:

- Provide hazard mitigation information at Town Meeting
- Schedule and advertise a planning meeting each year to be held soon after Town Meeting evaluate the status of implementing the mitigation strategies in this plan/monitor the progress of achieving each project identified and to evaluate whether the plan goals are being achieved.
- Seek participation from key players in addition to general public interest:
 - Select board
 - Planning Commission
 - Road Commissioner
 - School
 - Zoning Adminstrator/ 911 Coordinator
- Selectboard will review past hazard mitigation committee members and consider whether new members should be added. Representatives of local businesses, nonprofits, academia, etc. should especially be considered.
- Notify the public of committee meetings through town bulletin board, newsletter, newspaper, Facebook, Front Porch Forum, etc.

Attachment A Critical Facilities, Hazmat Storage Facilities, and Vulnerable Sites Town Berkshire

Facility Name or	Facility Owner / Operator	Function	Street or Location
Facility Designation			
Berkshire Elementary School	Town of Berkshire	Educational Site	2850 Watertower
		Emergency Shelter	Road
Berkshire Fire Station	Town of Berkshire	Emergency Services	Berkshire Center Road
Berkshire Town Hall	Town of Berkshire	Government Site	4454 Watertower
			Road
Bullis' Garage		Hazmat storage site	Main St.
Lighthouse Assembly of God		Religious Facility	Horseshoe Road
Our Lady of Lourdes	Catholic Diocese	Religious Facility	Berkshire
Saints Quick Stop	Saints	Hazardous Materials	VT 105 East Berkshire
		Facility	
U.S. Border Station	USCBP	Government Facility	Route 108
			West Bershire

Attachment B – Project Priority Matrix

		Criteria							Total Score				
		1	2	3	4	5	6	7	8	9	10	11	
Procure an (backup to office Install addi Marvin Roz Replace un Replace th Mineral Br Replace un Center Roz	Procure and install generator at Town Garage (backup town emergency shelter) and town office	2	3	2	2	3	2	2	2	2	3	2	25
	Install additional rip rap to stabilize and secure Marvin Road	3	3	3	1	2	2	2	2	3	2	1	24
	Replace undersized culvert on Marvin Road	3	2	3	1	2	2	2	2	2	2	2	23
	Replace three (3) undersized culverts on Mineral Brook Road	3	2	3	1	2	2	2	2	2	2	2	23
	Replace undersized culverts on Berkshire Center Road	3	2	3	1	2	2	2	2	2	2	2	23
	Replace undersized culvert on Reservoir Road	2	2	3	1	2	2	2	2	2	2	2	22
	NIMS/ICS Training for Selectboard and Highway Department	1	3	3	1	3	2	2	2	2	1	1	21

Berkshire Priority Matrix

1 = Poor, 2 = Average, 3 = Good

Criteria

- 1. Does the action reduce damage?
- 2. Does the action contribute to community objectives?
- 3. Does the action meet existing regulations?
- 4. Does the action protect historic structures or structures critical to town operations?
- 5. Can the action be implemented quickly?
- 6. Is the action socially acceptable?
- 7. Is the action administratively possible?
- 8. Is the action politically acceptable?
- 9. Is the action legal?
- 10. Does the action offer reasonable benefits compared to its cost of implementation?
- 11. Is the action environmentally sound?