

***Town of Sharon, Vermont***  
***2015 Local Hazard Mitigation Plan***

***Prepared by the Two Rivers-Ottawaquechee Regional Commission and  
the Town of Sharon***

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***Date of Town Adoption: June 20, 2016***

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***Date of Final Approval by FEMA: August 4, 2016***

# TOWN of SHARON, Vermont

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## CERTIFICATE OF ADOPTION

JUNE 20, 2016

TOWN OF Sharon, Vermont Selectboard

### A RESOLUTION ADOPTING THE Sharon, Vermont 2015 Local Hazard Mitigation Plan

WHEREAS, the Town of Sharon has historically experienced severe damage from natural hazards and it continues to be vulnerable to the effects of the hazards profiled in the **Sharon, Vermont 2015 Local Hazard Mitigation Plan**, which result in loss of property and life, economic hardship, and threats to public health and safety; and

WHEREAS, the Town of Sharon has developed and received conditional approval from the Federal Emergency Management Agency (FEMA) for its **Sharon, Vermont 2015 Local Hazard Mitigation Plan (Plan)** under the requirements of 44 CFR 201.6; and

WHEREAS, the **Plan** specifically addresses hazard mitigation strategies, and Plan maintenance procedures for the Town of Sharon; and

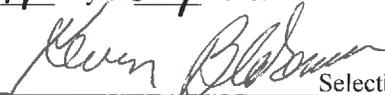
WHEREAS, the **Plan** recommends several hazard mitigation actions (projects) that will provide mitigation for specific natural hazards that impact the Town of Sharon with the effect of protecting people and property from loss associated with those hazards; and

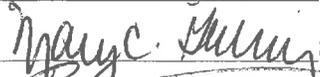
WHEREAS, adoption of this **Plan** will make the Town of Sharon eligible for funding to alleviate the impacts of future hazards; now therefore be it

RESOLVED by Town of Sharon Selectboard:

1. The **Sharon, Vermont 2015 Local Hazard Mitigation Plan** is hereby adopted as an official plan of the Town of Sharon;
2. The respective officials identified in the mitigation action plan of the **Plan** are hereby directed to pursue implementation of the recommended actions assigned to them;
3. Future revisions and **Plan** maintenance required by 44 CFR 201.6 and FEMA are hereby adopted as part of this resolution for a period of five (5) years from the date of this resolution; and
4. An annual report on the process of the implementation elements of the Plan will be presented to the Selectboard by the Emergency Management Director or Coordinator.

IN WITNESS WHEREOF, the undersigned have affixed their signature and the corporate seal of the Town of Sharon this 11 day of July 2016.

  
Selectboard Chair

  
Selectboard Member

  
Selectboard Member

ATTEST

  
Town Clerk



**FEMA**

AUG 11 2016

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

Dear Ms. Oates:

Thank you for the opportunity to review the Town of Sharon, Vermont 2015 Local Hazard Mitigation Plan. The Department of Homeland Security (DHS), Federal Emergency Management Agency (FEMA) Region I has evaluated the plan for compliance with 44 C.F.R. Pt. 201. The plan satisfactorily meets all of the mandatory requirements set forth by the regulations.

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

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

The Town of Sharon, Vermont 2015 Local Hazard Mitigation Plan must be reviewed, revised as appropriate, and resubmitted to FEMA for approval within **five years of the plan approval date of August 4, 2016** 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  
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AUG 11 2016

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,

A handwritten signature in blue ink, appearing to read "Paul F. Ford".

Paul F. Ford  
Regional Administrator

PFF: ms

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

Enclosure

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## **I. Introduction**

Natural and human-caused hazards may affect a community at any time. Natural hazard events cannot be stopped; however, their impact on human life and property can be reduced through community planning. Accordingly, this Plan seeks to provide an all-hazards mitigation strategy that will make the community of Sharon more disaster resistant.

“Mitigation” is defined as any sustained action that reduces or eliminates long-term risk to people and property from natural and human-caused hazards and their effects. Previous Federal Emergency Management Agency (FEMA), State and Regional Project Impact efforts have demonstrated that it is less expensive to anticipate disasters than to repeatedly ignore a threat until the damage has already been done. While hazards cannot be eliminated entirely, it is possible to identify prospective hazards, anticipate which might be the most severe, and recognize local actions that can be taken ahead-of-time to reduce the damage. These actions, also known as ‘hazard mitigations strategies’ can (1) avert the hazard by redirecting its impact by means of a structure, land treatment, or land use pattern change (2) adapt to the hazard by modifying structures or standards or, (3) avoid the hazard through improved public education, relocating/removing buildings in the flood zone, or ensuring development is disaster resistant.

## II. Purpose of the Plan

The purpose of this Local Hazard Mitigation Plan is to assist Sharon in identifying all hazards facing the town, to rank them according to local vulnerabilities, and to identify strategies to begin reducing risks from vulnerabilities of highest concern. Implementation of this Plan will make our community more resistant to harm and damages in the future. And reduce public costs.

The Town of Sharon's Plan seeks to be in accordance with the strategies, goals, and objectives of the State Hazard Mitigation Plan.

The 2015 Sharon Local Hazard Mitigation Plan is the first single jurisdiction mitigation plan drafted for the Town. Previously, the Town had a town-specific 2009 Annex in the Regional (multi-jurisdiction) Pre-Disaster Mitigation Plan. This new Plan has been reorganized and new sections have been added:

- Program eligibility subsequent to plan approval
- Authority for plan development
- Participating jurisdictions
- Funding for plan development
- Brief information about community

Old assumptions have been challenged throughout and new information has been added to make the plan stronger and more useful for those Sharon town officials and residents who will implement the hazard mitigation strategies in the future.

### III. Community Profile

The Town of Sharon is located along the banks of the main stem of the White River. Bordered by mountains on three sides, Sharon consists of approximately 40 square miles of fertile land. Interstate 89 and Routes 14 and 132 transport visitors and residents alike into and out of town.

According to the U.S. Census Bureau, Sharon's 2010 population was 1,502 compared to 1,411 in 2000, representing a 6.5% increase in the Town's population. Between the years of 1990 and 2000, Sharon had a growth rate of 16.5%. In 1990 there were 578 housing units in Sharon; by 2000, there were 663, an increase of 14.7%, which exceeded the regional and statewide growth rates. As of 2010, there were a total of 735 housing units, which was an overall increase of 10.9% over the 2000 census. This growth is higher than Windsor County or the State of Vermont (7.9% and 9.6% respectively) for the decade from 2000 to 2010. In 2010, 114 of the housing units were vacant, either because they were for sale or rent, or were second homes.

The Town lies within the service area of Green Mountain Power, which supplies electrical power to all sections of Town.

The Sharon Fireman's Association, Inc. provides fire protection services in Sharon. Through mutual aid agreements, the Town provides back up services to Hartford, Norwich, Pomfret, Strafford, and Royalton. Fire equipment and vehicles are housed in a 30' X 45' structure located on an approximately one-half acre site west of the village at 5808 Route 14. Both land and building are owned by the Town of Sharon. Emergency rescue services are provided by the South Royalton Rescue Squad and Hartford Ambulance Service. The Town annually appropriates funds to these squads for services. Nearby hospitals include Dartmouth Hitchcock Medical Center, located in Lebanon, NH; Gifford Memorial Hospital, located in Randolph, VT; and the VA Medical Center in White River Junction, VT. Medivac services are available by the DHART helicopter.

Starting in 2009, the Town contracted with the Royalton Police Department to enforce the Town's Traffic Control Ordinance and provide some policing services (investigation, enforcement, etc.) within the Town. Police protection is also provided by the Vermont State Police headquartered in Royalton on Route 107.

## IV. The Planning Process

### A. Plan Developers

Samantha Holcomb, a Land Use Planner at the Two Rivers-Ottawaquechee Regional Commission (TRORC), initially assisted the Town of Sharon with updating and developing its Local Hazard Mitigation Plan. Michael Storage completed work on the Plan with the Sharon LHMP Committee.

This section of the Plan satisfies 44 CFR 201.6(b)(1) and 201.6(c)(1) (or, A3.a and A3.b of FEMA's Local Mitigation Plan Review Guide, 2011).

Committee members who assisted with the revisions include:

Name	Role/Organization	How Participation Was Solicited
Paul Haskell	Selectboard Chair	On 2/7/2013, TRORC staff sent an introductory letter and e-mail to Selectboard members (Paul Haskell, Brad Atwood, Mary Gavin), and the Emergency Coordinator (Becky Owen). In this letter, TRORC's staff requested names and contact information for potential committee members to revise Sharon's HMP. Sharon representatives responded before the end of February with a list of individuals they wanted to participate. A Doodle poll invitation was sent to those individuals on April 18, 2013 and an initial introductory meeting was scheduled. TRORC staff continued to meet with the update committee until the Local Hazard Mitigation Plan was adopted by the Selectboard. See below section for meeting details.
Mary Gavin	Selectboard Member	
Becky Owens	Emergency Coordinator/ South Royalton Rescue	
Carol Flint	Member of Sharon Fire Department/ Member of Sharon Fire Department	
Margy Becker	Sharon Administrative Assistant/Secretary	
Tim Higgins	Town of Sharon Road Foreman	
Dana Durkee	Sharon Fire Chief	
Peter Anderson	Planning Commission Chair	
Ira Clark	Planning Commission member	
Barrett Williams	Sharon Elementary	
Michael Livingston	Sharon Academy	

#### Additional Participants in the Process:

- Ulrike von Moltke, Resident
- Ned Swanberg, Resident
- Nina Swaim, Resident

## B. Plan Development Process

The 2009 Sharon Annex was originally part of the 2008 multijurisdictional Regional Hazard Mitigation Plan drafted by Two Rivers-Ottawaquechee Regional Commission, and approved by FEMA on September 30, 2008. The Sharon Annex received FEMA approval on September 30, 2008. While this plan is an update of the 2009 Annex, it has been reconstructed as a single jurisdiction, standalone Sharon Local Hazard Mitigation Plan that will be submitted for individual approval to FEMA. As such, several sections have been added or updated to include all necessary information.

This section of the Plan satisfies the Element A: Planning Process requirements set out in 44 CFR 201.6.

The changes to this plan include:

- **General**
  - New sections: Plan Development Process, 2009 Mitigation Strategies Status Update chart, Existing Hazard Mitigation Programs, Projects & Activities, Plan Maintenance;
  - Data updates: New hazard incidents, emergency declarations, census data;
  - Hazards have been reevaluated with the hazard ranking system used by the Vermont Division of Emergency Management and Homeland Security.
- **Hazards Analysis**
  - Severe Weather and Extreme Cold/Snow/Ice Storm are now on the list of “top threats” which reflect the Town’s intention/priority to expand their analysis of hazards that the Town is or may be vulnerable to in the next five years;
  - Severe Weather events are now depicted in a chart that shows the multiple hazards involved during each event;
  - For each hazard, a location/vulnerability/extent/impact/likelihood table has been added to summarize the hazard description.
- **Maps**
  - Added map of the Town of Sharon depicting critical facilities, town infrastructure, the NFIP special flood hazard area, mapped fluvial erosion hazard area, and stream buffers.

The following represent the avenues taken to draft the Sharon Local Hazard Mitigation Plan:

- **Activities and Public Participation and Involvement**

\*\*Note: The meetings listed below were public sessions.

- 02/07/2013: TRORC sent an introductory letter and email indicating that the town’s LHMP would soon expire and explaining the process for revising and readopting. TRORC requested names and contact information for potential committee members to revise the LHMP. Sent to Selectboard members (Brad Atwood, Paul Haskell, Mary Gavin) and Sharon’s Emergency Coordinator (Becky Owen). No public comments were received.
- 05/15/2013: TRORC met with members of Sharon’s emergency services personnel and Selectboard members and introduced the Local Hazard Mitigation Plan update process. TRORC and Sharon Mitigation Committee reviewed the Mitigation Actions identified in the previous 2009 Hazard Mitigation Plan and determined the current status. This

meeting was open to the public. All meetings have agendas posted at the town hall and other public places 48 hours before they take place, and minutes are posted on the Town's website within five days of when they take place.

- 08/01/2013: TRORC staff met with town officials, the Emergency Coordinator and residents to discuss and review list of Sharon's existing hazard mitigation activities/programs/projects. The Committee also discussed and ranked hazards to determine the "Top Hazards" in the Town that expose our greatest vulnerabilities. TRORC staff explained to the committee what the next steps in the process are (draft plan, and then schedule a meeting to review and discuss it). The agenda for this meeting was posted in three places in Town. No public comments were received.
- 10/16/2013: The Local Hazard Mitigation Plan Committee reviewed and discussed the first draft. Their input was recorded and incorporated into this document. No public comments were received, although this meeting was open to the public. All meetings have agendas posted at the town hall and other public places 48 hours before they take place, and minutes are posted on the Town's website within five days of when they take place.
- October 2013: A notice was placed in the Two Rivers-Ottawaquechee Regional Commission Newsletter alerting recipients that Sharon was engaging in hazard mitigation planning and updating their Local Hazard Mitigation Plan. Contact information was provided in the notice to allow those interested in Sharon's efforts to receive more information and how to find out about upcoming meetings. No public comments were received.
- 11/20/2013: With the help of TRORC staff, the Sharon Mitigation Committee discussed and identified the mitigation strategies (actions/projects/programs) to be included in the 2015 Local Hazard Mitigation Plan. No public comments were received.
- **Governmental participation and involvement (44 CFR 201.6(b)(2))**
  - TRORC sent the revised draft to Planning Commission Chair, Peter Anderson, and provided contact information for receiving comments via hard copy/email—10/26/2015
  - TRORC sent the revised draft to Selectboard Chair, Paul Haskell, and provided contact information for receiving comments via hard copy/email—10/26/2015
  - TRORC sent the revised draft to Vermont Division of Emergency Management and Homeland Security – 12/03/2015
  - Note: Town officials were given the opportunity to review, provide feedback and approve the changes that were made through the initial Plan drafting process, and during Plan revision and FEMA review process, if applicable.
- **Neighboring community participation and involvement (44 CFR 201.6(b)(2))**
  - October 2013: A notice was placed in the Two Rivers-Ottawaquechee Regional Commission Newsletter alerting recipients that Sharon was engaging in hazard mitigation planning and updating their Local Hazard Mitigation Plan. No comments were received. Contact information was provided in the notice to allow those interested in Sharon's efforts to receive more information and how to find out about upcoming meetings. No public comments were received.

- TRORC posted a notice in four local papers alerting the public to the hazard mitigation planning process that was taking place. Contact information was provided in the notice to allow those interested in Sharon’s efforts to receive more information and how to find out about upcoming meetings.
  - Valley News—ran 10/23/2013
  - The Herald of Randolph— ran 10/23/2013
  - Journal Opinion— ran 10/23/2013
  - Vermont Standard—ran 10/23/2013
- TRORC posted a notice in four local papers alerting the public to the hazard mitigation planning process that was taking place. Contact information was provided in the notice to allow those interested in Sharon’s efforts to receive more information and how to find out about upcoming meetings.
  - Valley News—ran 03/20/2014
  - The Herald of Randolph—ran 03/20/2014
  - Journal Opinion—ran 03/20/2014
  - Vermont Standard—ran 03/20/2014
- October 2014: A notice was placed in the Two Rivers-Ottauquechee Regional Commission Newsletter alerting recipients that Sharon was engaging in hazard mitigation planning and updating their Local Hazard Mitigation Plan. Contact information was provided in the notice to allow those interested in Sharon’s efforts to receive more information and how to find out about upcoming meetings. No comments were received.
- TRORC posted a notice in four local papers alerting the public to the hazard mitigation planning process that was taking place. Contact information was provided in the notice to allow those interested in Sharon’s efforts to receive more information and how to find out about upcoming meetings. No comments were received.
  - Valley News—ran 01/15/2015
  - The Herald of Randolph—ran 01/15/2015
  - Journal Opinion—ran 01/15/2015
  - Vermont Standard—ran 01/15/2015
- February 2015: A notice was placed in the Two Rivers-Ottauquechee Regional Commission Newsletter alerting recipients that Sharon was engaging in hazard mitigation planning and updating their Local Hazard Mitigation Plan. Contact information was provided in the notice to allow those interested in Sharon’s efforts to receive more information and how to find out about upcoming meetings. No comments were received.
- TRORC sent the revised draft to neighboring Selectboards for comment and provided contact information for receiving comments via email/hard copy— 10/26/2015
  - Towns of: Royalton, Strafford, Norwich, Pomfret, and Hartford
  - No comments were received.

- **Review of existing plans, studies, reports, and technical information (44 CFR 201.6(b)(3))**
  - State of Vermont Hazard Mitigation Plan, 2013
  - Sharon Hazard Mitigation Plan (Adopted Jan. 20, 2009)
    - This Plan was referenced extensively during the update process, especially in regard to the worst threats and mitigation action strategies identified in 2009.
  - Sharon Town Plan (Adopted April 6, 2015)
    - This Plan provided TRORC’s staff with background information on the community, as well as more detail on their emergency services.
  - Sharon Subdivision Regulations (Adopted Dec. 18, 2009)
    - The Subdivision Regulations were referenced when completing the Flood/Flash Flood/Fluvial Erosion section of this Local Hazard Mitigation Plan.
  - Sharon Flood Hazard Area Bylaws (Adopted Dec. 6, 2010)
    - The Bylaws were referenced when completing the Flood/Flash Flood/Fluvial Erosion section of this Local Hazard Mitigation Plan.
  - “River Corridor Plan for the White River and Tributaries in Sharon, VT” (Sharon's Phase II Stream Assessment Report and Appendices) (Published March 15, 2010)
    - This document was referenced when completing the Flood/Flash Flood/Fluvial Erosion section of this Local Hazard Mitigation Plan.
  - Sharon’s Local Emergency Operations Plan (LEOP) (Last Adopted April 13, 2015)
    - This Plan provided TRORC’s staff with general information about Sharon’s emergency operations.
  - Flood Insurance Study for Windsor County, Vermont (Dated 09/28/2007)
    - The Flood Insurance Study was referenced for general knowledge of the White River and peak discharge information.
    - Relevant peak discharge information for the White River can be found on page 26 of Volume 1. At the Royalton-Sharon corporate limits, the peak discharge for the 100-year event (or event having 1% chance of occurring in a year) is 51,800 cubic feet/second (cfs).
    - This information was incorporated into the mapping/GIS components of this Plan; specifically in determining the number of structures that are vulnerable to SFHA, and into the Flash Flood/Flood/Fluvial Erosion and Severe Weather sections of this Plan.

This section of the Plan satisfies 44 CFR 201.6(b)(3) (or, A4.a and A4.b of FEMA’s Local Mitigation Plan Review Guide, 2011).

### C. Status Update on Mitigation Actions Identified in 2009

The following table outlines the mitigation actions that were proposed in the 2009 All-Hazard Pre-Disaster Mitigation Plan for the Town of Sharon (adopted on January 20, 2009 as an appendix to the

This section of the Plan satisfies the requirements of 44 CFR 201.6(d)(3).

Two Rivers-Ottawaquechee Regional Commission’s multi-jurisdictional Pre-Disaster Mitigation Plan). Participants in the plan update process reviewed those actions and reported on the status of each (in order of 2009 priority). Actions related to long-term mitigation of natural hazards are so noted:

2009 Mitigation Action	Who (Leadership)	When (Timeframe)	How (Funding/Support)	2015 – Status of Mitigation Actions
<u>ALL HAZARDS</u> 1. Ensure that Rapid Response Plan (RRP) is current.	Selectboard	Yearly	With TRORC assistance	<input checked="" type="checkbox"/> Complete. The new iteration of RRP is the Local Emergency Operations Plan (LEOP). Sharon updates this document annually. Their most recent LEOP was updated and then adopted on 04/13/2015 by the Sharon Selectboard.
<u>FLOOD</u> 2. Continue the planned road maintenance program and update existing culvert inventory. Upgrade culverts and ditching. (Mitigation)	Highway Department	Ongoing	Local resources	In process and ongoing. New culverts are being installed to new standards. Culvert inventory was updated in fall 2015. This action has been carried over into the 2015 plan.
3. Work with FEMA to conduct a full flood study and update town flood maps. (Mitigation)	Selectboard	2010	FEMA and local resources	Selectboard has written a letter specifically to FEMA requesting maps be updated, but no funding is in place for map updates. This action has been carried over into the 2015 Plan.
4. Consider adopting Fluvial Erosion Hazard regulations. (Mitigation)	Planning Commission and Selectboard	2009	Local resources, TRORC assistance	<input checked="" type="checkbox"/> Complete. Fluvial Erosion Hazard regulations were included in Sharon’s Flood Hazard Area Bylaw which was adopted on Dec. 6, 2010. This action has been carried over into the 2015 Plan (though modified slightly for river corridor regulations).
<u>FIRE</u> 5. Study the need for additional water resources for the Fire Department. This could include underground water tanks, hydrants, dry hydrants or connections to ponds throughout town.	Fire Department	2009	Local resources, NRCS Northern Vermont Resource Conservation & Development Council	The Town has installed 4 new dry hydrants since 2009, and they are always on the look-out for new potential sites.

2009 Mitigation Action	Who (Leadership)	When (Timeframe)	How (Funding/ Support)	2015 – Status of Mitigation Actions
<u>HAZMAT</u> 6. Pursue HAZMAT training for Fire Department.	Fire Department	2009	Funded by Fire Service Training Academy (now funded by the Fire Department)	Half of the Fire Department is now trained to Firefighter Level 1 certification and HAZMAT Operations certified.
7. Develop emergency access points to the railroad corridor in locations where access is presently difficult in the event of a derailment.	Emergency Management Coordinator	2010	With state transportation agency assistance	The Town has found this to be very difficult due to the terrain and lack of access to railroad corridor in general.
8. Study dispatching options and improve communication with the Vermont State Police in an effort to be better prepared for a major accident on I-89.	Emergency Management Coordinator	2010	State or local resources	The Town believes it has determined some of the problems with the dispatching system as it relates to the town, and has developed some ideas about how those problems might be fixed/improved.
9. Study the need for a Hazard operations plan regarding the railroad and potential hazmat spills	Emergency Management Coordinator	2009	State or local resources	There is a need for a hazard operations plan. The Town wants to meet that need. However, an evacuation plan should be studied.

The Town of Sharon is located in the Upper Connecticut River Valley of Vermont. Interstate 89 runs through the middle of the Town, as does Vermont Route 14, an important local route in the area. There is an I-89 interchange in the Town of Sharon, and it is located close to the Town's village, where there are a few businesses and a number of single and multi-family residences. Route 14 connects the Town of Sharon with the Town of Hartford, one of the most developed and populous towns in the area. Despite being bisected by I-89 and being well-connected to the Town of Hartford, development within the Town of Sharon is slow. The Town does not have any zoning regulations, but local officials estimate that there are no more than two to three new homes built in a year. These homes are located in the rural areas of Sharon, not in the village. Depending on the location of new home development, the structure may be vulnerable to flood hazards. The Town's Flood Hazard Area Bylaw regulates development within the Special Flood Hazard Area (SFHA), where development is vulnerable to inundation from flood waters. Structures located outside the SFHA are also vulnerable to flood hazards if they are located near a steep, upland stream. Structures in these areas are vulnerable to fluvial erosion, not inundation hazards. Following Tropical Storm Irene, there were three structures that entered the home buyout/acquisition program, which will remove those structures and return the land to preexisting floodplain. There are no current plans for commercial or industrial development within the Town of Sharon, nor are there any development plans on the horizon.

## D. Town Capabilities for Implementing Mitigation Strategies

The Town of Sharon is currently engaged in the following ongoing hazard mitigation programs, projects and activities:

	Type of Existing Authority / Policy / Program / Action	Resources: Staffing & Funding	Ability to Expand/Improve on
<b>Community Preparedness Activities</b>	Program—Annual update of Sharon’s Local Emergency Operations Plan (LEOP).  Last updated and approved on 04/13/2015.	Updated by the Town Administrative Assistant, assistance from TRORC and funding from Vermont DEMHS.	This document is reviewed and updated each year to ensure that the contact information of emergency response personnel is up-to-date. This information is then sent to Vermont Emergency Management and Homeland Security (VEMHS) for their records. The current program works well, no need to expand or improve on.
	Completed Action— Designated Red Cross Shelter— located at the Sharon Fire Station and Sharon Elementary	Staff time from the Town Clerk and volunteer time from other emergency management personnel. Funding from American Red Cross.	This is a one-time action. There is currently no need to expand on it.
	Completed Action— Town officers certified in ICS-100 level Training (Introductory)	Volunteer time from town officials. Funding from FEMA.	There is a need for constant renewed training as elected officials change.
	Program— Participation/attendance in the Local Emergency Planning Committee District 12 (LEPC 12)	Volunteer time from the Sharon Emergency Management Coordinator(s); meetings convened by TRORC. Funding from Vermont DEMHS.	No need to expand or improve on attendance, as it is satisfactory.
<b>Insurance Programs</b>	Authority/ Program—participation in National Flood Insurance Program (NFIP)  The Town participates and complies with the NFIP through their enforcement of the Flood Hazard Area Bylaw, which was last adopted on 12/06/2010.  [Note: This section of the Plan satisfies the requirements of 44 CFR 201.6(c)(3)(ii).]	A contracted individual serves as the NFIP Administrator. Assistance from TRORC and Vermont ANR. Funding from local resources—annual budget.	Sharon’s initial Flood Hazard Boundary Map was identified on 02/04/77 and their initial and current Flood Insurance Rate Map (FIRM) is dated 09/28/07. Please note that elevation was not included on this map. The Town’s FIRM and Flood Insurance Study (FIS) has been updated, and the current effective date for both is 09/28/07.  The Flood Hazard Area Bylaw is kept up-to-date and regulate new development in the Special Flood Hazard Area (SFHA).
<b>Land Use Planning</b>	Policy/Program— Sharon Town Plan  Adopted on 04/06/2015, includes a “Flood Resilience Chapter”	Volunteer time from the Planning Commission, and assistance from TRORC and other state agencies on specific subject matter. Funding from Municipal Planning Grants.	The Town Plan is reviewed/updated every five years, as required by statute. The Planning Commission may expand or improve on any section it deems necessary, or that is required by changes in state statute.

	<b>Type of Existing Authority / Policy / Program / Action</b>	<b>Resources: Staffing &amp; Funding</b>	<b>Ability to Expand/Improve on</b>
	<p>Policy/Program— “River Corridor Management for the White River and Tributaries in Sharon, VT” - Sharon's Phase II Stream Assessment report and appendices.</p> <p>Published 03/15/10.</p>	<p>Completed with staff time from Fitzgerald Environmental Associates LLC and TRORC, and volunteer time from the Town of Sharon White River Task Force. Funding from Vermont Department of Conservation</p>	<p>There is currently no need to expand or improve on this document, but it should be reviewed periodically.</p>
	<p>Completed Authority—Sharon Flood Hazard Area Bylaws</p> <p>Last adopted on 12/06/2010.</p>	<p>Volunteer time from the Planning Commission, and assistance from TRORC and Vermont Agency of Natural Resources. Funding from Municipal Planning Grants.</p>	<p>During the Town Plan review/update period, the Flood Hazard Area Bylaws are also reviewed and updated if needed.</p>
	<p>Authority— Sharon Subdivision Regulations</p> <p>Adopted on 12/18/2009.</p>	<p>Volunteer time from the Planning Commission. Funding from Municipal Planning Grants.</p>	<p>The Subdivision Regulations may be updated when deemed appropriate by the Selectboard. Currently, there is no need to expand or improve on these regulations.</p>
<b>Hazard Control &amp; Protection of Critical Infrastructure &amp; Facilities</b>	<p>Policy/Program— Sharon Hazard Mitigation Plan</p> <p>Adopted on 01/20/2009.</p>	<p>Updated with volunteer time from local officials and assistance from TRORC and Vermont DEMHS. Funding from DEMHS/FEMA.</p>	<p>The 2015 Sharon Local Hazard Mitigation Plan will replace the 2009 Plan. The 2015 LHMP has evolved from the 2009 Plan and has greatly expanded and improved upon it. Future iterations of the Town’s LHMP will be updated by the Town at least every five years.</p>
	<p>Authority— 2014 Town Road and Bridge Standards</p> <p>Adopted 03/03/2014</p>	<p>Adopted by the Selectboard, implemented by the Road Foreman, and assistance from TRORC. Funding from VTrans and the local budget to implement.</p>	<p>Specifies minimum construction standards for roadway, ditches, culverts and bridges and guardrails. VTrans updates the Town Road and Bridge Standards on a fairly regular basis. The Town has the authority to require above-and-beyond what is written in the policy. Needs to be recertified each year.</p>

	<b>Type of Existing Authority / Policy / Program / Action</b>	<b>Resources: Staffing &amp; Funding</b>	<b>Ability to Expand/Improve on</b>
	Program/Action—Home Buyouts	Staff time from Town Selectboard Assistant and volunteer time from other Town officials. Administrative assistance from TRORC. Funding from HMGP and CDBG.	A brownfield site in town, the Davis Estate Property (a.k.a Norm’s Garage), is a property buy-out site. It will be cleaned up by the State of Vermont, and then acquired by the Town. The property will remain as open space. Other vulnerable properties that would be ideal candidates for property buy-outs include Green’s Mobile Home Park, several sites on Vermont Route 132, several sites on Fay Brook Road, the Sharon Fire Department on Vermont Route 14, and an additional site across from the Sharon Health Center on Vermont Route 14.
	Program—Projects with White River Partnership for riparian buffers, other water quality improvement projects	Staff time from the White River Partnership and the Selectboard Assistant/other Town Office staff; possibility for volunteer hours or town match requirements (based on grant). Permission/buy-in from private landowners for some projects. Funding (state and federal) sought and obtained by the White River Partnership.	The White River Partnership, in coordination with the Town of Sharon has completed a number of water quality improvement projects in the past, and continues to do so. There is no need to expand or improve on this program, as needs are identified and then funding is sought to implement the appropriate project.
	Program—Culvert inventory completed in November 2015 for the Town of Sharon  This inventory includes georeferenced locations and attributes for all culverts/drop inlets in Sharon. The Town received targeted assistance in the culvert inventory and specific priority projects were identified.	Staff time from the Sharon Road Foreman; assistance from TRORC. Funding from Better Backroads grant; local personnel time.	Once completed, the Town will use the culvert inventory to further its culvert mitigation improvement program, and seeking funding through various sources for implementation projects. Routine in-house updates occur on an on-going basis. There is no need to expand or improve on this program at this time.
<b>Education/ Public Outreach</b>	Action— Use of Town website and listserv	Staff time from the Selectboard Assistant and other town officials. Funding from local budgets.	This is an ongoing action, and there is no need to expand or improve on the use at this time.
	Action — Public training associated with Red Cross Shelter designation	Staff time from Town Office personnel; volunteer time from meeting attendees. Funding from the American Red Cross.	This was a one-time action, and there is no need to expand or improve on it at this time.

	<b>Type of Existing Authority / Policy / Program / Action</b>	<b>Resources: Staffing &amp; Funding</b>	<b>Ability to Expand/Improve on</b>
	<p>Completed Action— Community Recovery Partnership Meeting</p> <p>Meeting held on Jan. 17, 2012 in Sharon, VT.</p>	<p>Organized by the State of Vermont and partnering organizations for the following towns—Sharon, Royalton, Bethel, and Randolph—in the aftermath of Tropical Storm Irene (Aug. 2011). Staff and volunteer time; funding from the State of Vermont and partnering organizations.</p>	<p>This was a one-time action, and there is no need to expand or improve upon it.</p>

## E. Plan Maintenance

This Plan (the Sharon Local Hazard Mitigation Plan) will be updated and evaluated, by discussing its effectiveness and making note to incorporate any necessary revisions in the update process, annually at an April Selectboard meeting, along with the review of their Local Emergency Operations Plan (LEOP). At this meeting, the Selectboard will monitor the implementation of the hazard mitigation strategies outlined in this Plan, by noting those that have been completed and any comments from local officials and the public will be incorporated when relevant. This meeting will constitute an opportunity for the public and other town officials to hear about the town's progress in implementing mitigation strategies and to give input on future activities and Plan revisions. The public will be given the opportunity to comment at this meeting.

Updates and evaluation of this Plan by the Selectboard and the local Emergency Coordinator/Director will also occur within three months after every federal disaster declaration directly impacting the Town of Sharon. The Town will monitor, evaluate and update this Local Hazard Mitigation Plan at an April Selectboard meeting and after every federally declared disaster directly impacting the Town according to the graphic in Appendix C. The Town shall reference the Local Hazard Mitigation Plan when working on Town Plan amendments or changes to the Town's bylaws.

This section of the Plan satisfies 44 CFR and 201.6(c)(4)(i), 201.6(c)(4)(ii), and 201.6(c)(4)(iii).

At least one year before the Plan expires, the update process will begin (through annual updates, monitoring of progress and evaluation that will occur at the April Selectboard meeting). For this next Plan update, the Two Rivers-Ottawaquechee Regional Commission (TRORC) will help with Plan updates if assistance is requested by the Town of Sharon and if funding is available. If TRORC is unable to assist the Town, the Administrative Assistant, or Selectboard will update the Plan, or the Selectboard may appoint a committee of interested citizens (including the current local Emergency Coordinator/Director) to draft changes. Ultimately, it will be the Town's responsibility to update their Local Hazard Mitigation Plan.

The process of evaluating and updating the plan will include continued public participation through public notices posted on the municipal website, notice within the municipal building, notice in The Herald of Randolph, and notice on the TRORC newsletter, inviting the public to the scheduled Selectboard (or specially scheduled) meeting. The public will be given the opportunity to comment during this process. Additional stakeholders should be invited to the meeting; these include: area businesses and non-profit organizations, South Royalton Rescue, representatives from The Sharon Academy (middle and high school) and elementary school, and the Vermont Agency of Natural Resources (VT ANR). VT ANR will be invited because they can provide assistance with NFIP outreach activities in the community, models for stricter floodplain zoning regulations, delineation of fluvial erosion hazard areas, and other applicable initiatives. These efforts will be coordinated by the Town Clerk.

Updates will address changes in community mitigation strategies; new town bylaws, zoning and planning strategies if appropriate; progress on the implementation of initiatives and projects;

effectiveness of implemented projects or initiatives; and evaluation of challenges and opportunities effectiveness in reducing town's vulnerabilities and meeting plan goals. If new actions are identified in the interim period, the plan can be amended without formal re-adoption during regularly scheduled Selectboard meetings.

Sharon shall also incorporate mitigation planning into their long-term land use and development planning documents. The 2013 Vermont Legislature passed a law requiring all towns to incorporate flood resiliency elements into their town plans as of July 2014. To do so, flood hazard and fluvial erosion hazards will be identified, and strategies and recommendations will be provided to mitigate risks to public safety, critical infrastructure, historic structures and public investments. This Local Hazard Mitigation Plan will help the town to comply with the new community flood resiliency requirement for town plans adopted after July 2014.

It is also recommended that the process work both ways and the Town review and incorporate elements of the Local Hazard Mitigation Plan into updates for the municipal plan, zoning regulations, and flood hazard/ fluvial erosion hazards (FEH) bylaws when they are reviewed in 2020. The Sharon Planning Commission will incorporate mitigation strategies directly into goals, policies, and recommendations in future updates to the Sharon Town Plan. The incorporation of the goals and strategies listed in the Local Hazard Mitigation Plan into the municipal plan, zoning regulations and flood hazard/FEH bylaws will also be considered after declared or local disasters. The Town shall also consider reviewing any future TRORC planning documents for ideas on future mitigation projects and hazard areas.

## V. Community Vulnerability by Hazard

### A. Hazard Identification

Mitigation efforts must be grounded in the rational evaluation of hazards to the area and the risks these hazards pose. This is done through a process, which in essence asks and answers three basic questions:

- What bad things can happen, given the Town’s vulnerabilities?
- How likely are they to occur?
- How bad could they be?

This process, which is laid out in the table below, is an attempt to inventory the known hazards, establish the likelihood of them occurring in the future, and then assess the community’s potential vulnerability to each. By performing this analysis, we are then able to prioritize actions that are designed to mitigate the effects of each of these disaster types and ultimately make Sharon a safer place.

It is important that we learn from the past in order to avoid the same disasters and their outcomes. Disasters that have occurred within the Town of Sharon, the larger region, and the State of Vermont can give us good information about what types of disasters we can expect in the future and what kinds of damage they might cause. However, while this historical data can inform our perspective of what might happen in the future, it is by no means a prophecy. While Sharon might not have been impacted by a specific hazard in the past, this does not necessarily mean it will never be affected in the future. Indeed, the advance of climate change means that old weather patterns may not hold. For instance, in recent years, Vermonters have seen an increase in the number and severity of storms, especially rainfall events. Armed with historical data and a healthy respect for climate change and the unknown, we have tried our best to identify hazards and prepare for the future.

The following table reflects the hazards that we believe can be expected, or are at least possible, in the central Vermont area. We have considered factors such as frequency of occurrence, warning time and potential community impact to rank each and determine which hazards pose the greatest threats to life and property in Sharon.<sup>1</sup> The top threats (bolded in the table below) are then followed with a discussion and mitigation strategies throughout the rest of this Plan.<sup>2</sup> It should be noted that hazards assigned with the same “Hazard Score” are not in order and their placement in the table should not be assumed to reflect their potential to create hazards for the town.

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<sup>1</sup> The ranking methodology used in this Plan (see Appendix A) is closely modeled on that which is used by the Vermont Division of Emergency Management & Homeland Security (VDEMHS). The only changes made were intended to reflect the more limited geographical scope of this analysis, which is focused on a small, rural town rather than the entire State of Vermont (which is the focus of VDEMHS). Those hazards which were not found to pose the greatest threats to Sharon - including Drought, Extreme Heat, Tornadoes, Wildfires, Ice Jams, Dam Failures, nuclear facility accidents, avalanches, Hail Storms, Invasive Species Infestation, Landslides/Mudslides/Rockslides, and Earthquakes - were not addressed in this plan. For these hazards, please review the Vermont State Hazard Mitigation Plan.

<sup>2</sup> It’s important to note that those hazards which were not found to pose the greatest threats may still occur in Sharon’s future; however, they are not the focus of this Plan.

Hazard	Frequency of Occurrence	Warning Time	Potential Impact	Hazard Score
<b>Severe Weather (Thunderstorm, Lightning, High Winds, Hail, and Flooding)</b>	<b>Highly Likely</b>	<b>None/Minimal</b>	<b>Moderate</b>	<b>11</b>
<b>Flash Flood/Flood/Fluvial Erosion</b>	<b>Highly Likely</b>	<b>3-6 hours</b>	<b>Major</b>	<b>11</b>
<b>Structure Fire</b>	<b>Highly Likely</b>	<b>None</b>	<b>Minor</b>	<b>10</b>
Lightning	Highly Likely	None	Minor	10
<b>Extreme Cold/Snow/Ice Storm</b>	<b>Highly Likely</b>	<b>6-12 hours</b>	<b>Moderate/Major</b>	<b>9.5</b>
<b>Hazardous Material Spill</b>	<b>Likely</b>	<b>None</b>	<b>Minor/Moderate</b>	<b>9.5</b>
Tornado	Likely	None	Minor	9
Hail Storm	Likely	None	Minor	9
Wildfire	Occasionally/Likely	None	Minor	8.5
Ice Jams	Highly Likely	6-12 hours	Minor/Moderate	8.5
Hurricanes/Tropical Storms	Likely	12+ hours	Major	8
Earthquake	Likely	None	Negligible	8
Dam Failure	Unlikely/Occasionally	None	Minor	7.5
High Wind	Likely	6-12 hours	Minor	7
Landslides/Mudslides	Occasionally	None	Negligible	7
Water Supply Contamination	Unlikely/Occasionally	None	Negligible	6.5
Invasive Species/Infestation	Highly Likely	12+ hours	Negligible	6
Nuclear Facility Accident	Unlikely/Occasionally	(Group could not decide.)	Major	5.5
Extreme Heat	Occasionally	12+ hours	Minor	5
Drought	Unlikely/Occasionally	12+ hours	Negligible	3.5
Avalanche (Sharon determined they do not receive enough snow build-up, nor do they have the exposures that create the possibility of avalanches).	N/A	N/A	N/A	N/A

Tsunami (Vermont is landlocked.)	N/A	N/A	N/A	N/A
Volcano (There are no active volcanoes in Vermont.)	N/A	N/A	N/A	N/A

The Sharon LHMP discussed the result of the hazard ranking activity and decided to focus on hazards that had the potential to impact the Town on a town-wide scale (having a potential impact score of “Moderate” or “Major”) and/or had the potential to occur frequently (having a likelihood/probability of “Highly Likely”). In addition to the highest ranking natural hazards, the LHMP committee decided to address in this Plan *Structure Fire* and *Hazardous Material Spill* due to the potential for serious bodily injury. Although *Lightning* was given a **Hazard Score** of 10, the Committee decided to eliminate it from further analysis because they believed it would be adequately addressed in the *Severe Weather* section and it did not pose a significant risk to the Town. Given the Town’s location, the group also wanted to discuss and rank the threat of a nuclear disaster and its effects on the Town.

After engaging in discussions using their best available knowledge, the Town of Sharon identified the following “top hazards” which they believe their community is most vulnerable to (based on frequency of occurrence and potential impact):

- Severe Weather (Thunderstorm, Lightning, High Winds, Hail, and Flooding)
- Flash Flood/Flood/Fluvial Erosion
- Structure Fire
- Extreme Cold/Snow/Ice Storm
- Hazardous Material Spill

Each of these top hazards will be discussed in the following sections. Within each section, previous occurrences of each hazard will be listed, including the County-wide FEMA Disaster Declarations (DR-#) when applicable. Hazards information was gathered from local sources (ex. town history book or local record), the National Climatic Data Center’s (NCDC’s) Storm Events Database (1950-2015), the Spatial Hazard Events and Losses Database for the United States (SHELDUS) 1960-2015, and Special Reports produced by the National Weather Service in Burlington, Vermont. Each section also includes a description of each top hazard and a hazard matrix that will also include the following information (please see each hazard profile for a hazard-specific matrix):

Hazard	Location	Vulnerability	Extent	Impact	Likelihood/ Probability
Type of hazard.	General areas in community that may be vulnerable to the hazard.	Community structures affected by hazard.	Strength or magnitude, and details of a notable event(s).	Dollar value or percentage of damages.	<u>Occasionally:</u> 1–10% probability of occurrence per year, or at least one chance in next 100 years <u>Likely:</u> >10% but <100% probability per year, at least 1 chance in next 10 years <u>Highly Likely:</u> 100% probable in a year

## B. Hazard Profiles for Hazards Posing Highest Vulnerabilities

### 1. Severe Weather (Thunderstorm, Lightning, High Winds, Hail, Flooding)

More common than hurricanes or tropical storms are severe thunderstorms (usually in the summer), which can cause flooding as noted above, and are associated with lightning, high winds, hail and tornadoes. Hailstorms have occurred in Vermont, usually during the summer months. While local in nature, these storms are especially significant to area farmers, who can lose entire fields of crops in a single hailstorm. Large hail is also capable of property damage.

This section of the Plan satisfies the requirements of 44 CFR 201.6(c)(2)(i), 201.6(c)(2)(ii), and 201.6(c)(2)(iii) for **Severe Weather (Thunderstorm, Lightning, High Winds, Hail, Flooding)**.

Between 1950 and 2013, there were 698 hail events recorded in the state of Vermont, making hail an annual occurrence in some part of the state. Most of these events had hail measuring .75 inches, but many had hail at least 1.5 inches in size. The largest hail during the period was 3-inch hail that fell in Chittenden County in 1968 (NCDC). Tennis ball-sized hail was reported in the town of Chittenden during a storm in the summer of 2001. Thunderstorms can also generate high winds, such as hit the region on July 6, 1999, downing hundreds of large trees in a few minutes.

In Sharon, severe weather is quite common, typically in the late spring and summer months when the region experiences high temperatures. Severe thunderstorms tend to bring other hazards such as high winds, hail, and lightning, and flooding. These hazards are often experienced in combinations which create many unique weather and emergency management situations. Over the years, Sharon has been hit with high winds that have downed and uprooted numerous trees, and knocked out electricity to residents in the Town. Town-specific wind data could not be easily found, but the “Remarks” section of NCDC Database helps to illuminate the impact strong winds can have on Sharon.

The following list indicates the history of occurrence with regard to this hazard in Windsor County. Given the relatively small population of Sharon, town-specific data is limited. Federal disaster numbers are listed when appropriate. Damage estimates will only be provided when the weather event is only listed for the Town of Sharon, and if that data is available. In an attempt to capture the individual hazards that may arise, and the different circumstances caused by the hazards in concert, the separate hazards are documented in the table below.

Severe weather events are highly likely to occur in the future in Sharon. Precipitation trend analysis suggests that intense, local storms are occurring more frequently and will continue to do so in the future. More localized severe weather events will occur in the Town of Sharon, which will be high intensity and will likely result in high flooding events, as well.

**History of Occurrences:**

Severe Weather Date	Event Characteristics					Location	Extent and Impacts
	Thunderstorm/ severe storm	Flooding	Hail	High Wind	Lightning		
05/10/2015	✓		✓	✓		Sharon, County-wide	Strong winds caused power outage and tree damage. Power was out for 3.18 hours.
07/27/2014	✓		✓			County-wide	Scattered thunderstorms developed, some of which produced localized large hail (greater than an inch in diameter) with isolated damaging winds. 3.34 inches of rain fell over five days. No power outage occurred in Sharon.
07/03/2014	✓			✓		Sharon, County-wide	Thunderstorms, high winds, downed trees, and power lines in Windsor County. Power outages occurred in Sharon and lasted between 2.28-5.41 hours.
10/07/2013				✓		County-wide	Several reports of tree branches on utility lines in several communities in Windsor County. Four Sharon residents were affected by a 1.6 hour power outage.
09/11/2013	✓		✓	✓		Sharon, County-wide	High winds and severe thunderstorms downed trees and power lines. 2.07 inches of rain fell in 96 hours. Altogether 210 green mountain power customers in Sharon were affected with power outage ranging from 3.6 hours to 23.77 hours.
Period of 06/25/2013—07/11/2013 (DR-4140 VT)	✓	✓				Sharon, County-wide	Power outages reported in Sharon during this period of time. 8.3 inches of rain fell in Sharon over this period. Power outage affected 99 Sharon residents and lasted 2.8 hours.
09/08/2012	✓			✓		County-wide	No power outage occurred.
07/17/2012	✓			✓		County-wide	No power outage occurred.
06/02/2012	✓			✓		Sharon	Tree fell down on power lines on Quimby Mountain Road. No power outage occurred.

Severe Weather Date	Event Characteristics					Location	Extent and Impacts
	Thunderstorm/ severe storm	Flooding	Hail	High Wind	Lightning		
05/28/2012	✓		✓	✓	✓	Sharon	State police reported large tree and several other branches down on Howe Hill road. Wind estimated at 50 knots. \$5,000 in public damage was reported. Most affected green mountain power customers only sustained power outage for .35 hours.
08/28/2011 (DR 4022 VT for period of 08/26/2011 – 09/2/2011)	✓	✓				Sharon, County-wide	Tropical Storm Irene. 5-7" of rain in Sharon. Severe damage to state and town road infrastructure including VT Route 132, Quimby Mountain Road, Fay Brook Road, Downer Road, White Brook Road, among others. There was \$2,456,547 in public damages*. White River in West Hartford (just south of Town of Sharon) crested at 28.40 feet, about a foot below the record crest of 29.30 feet set in the Great Flood of 1927. Power outages in Sharon lasted from 8/28-8/31 in different locations in the Town. The longest outage lasted 73.45 hours. *Irene-related FEMA & FHWA expenses incurred by the Town of Sharon since August 2011 until 10/31/2014.
08/21/2011	✓		✓	✓		County-wide	While not in the Town of Sharon, these storms produced a microburst with 70-90mph straight-line winds in Rutland County (to the west of Windsor County.)
07/13/2011	✓		✓			Sharon	Nickel-sized hail fell in Sharon. Hail caused a tree limb to fall in Sharon which caused 272 Sharon residents to lose power for 1.8 hours.
07/06/2011	✓			✓	✓	County-wide	15,000+ customers in Vermont lost power. In Sharon, 1,435 Green Mountain Power customers were without power for 2.5 hours.
05/26/2011 - 05/27/2011 (DR 4001 VT)		✓				County/ region-wide	Storm damaged/took out all of upper White Brook Road and end of Downer Road. .57 inches of rain fell in 24 hours. (no power outage)

Severe Weather Date	Event Characteristics					Location	Extent and Impacts
	Thunderstorm/ severe storm	Flooding	Hail	High Wind	Lightning		
05/09/2009	✓			✓		County-wide	High winds and severe thunderstorms knocked down multiple trees in Green Mountain Power right-of-ways. Altogether 267 GMP customers in Sharon were without power for 7-14 hours.
08/07/2008 (DR-1719)	✓	✓				Sharon, County-wide	Heavy rainfall led to flash flooding in Sharon. Floodwaters covered a bridge on Faybrook Road along with several driveway culverts being washed out. 2.64 inches of rain fell in 72 hours. (no power outage)
08/16/2007	✓			✓		County-wide	While not in the Town of Sharon, these storms produced 60-80mph straight-line winds in Rutland County (to the west of Windsor County.)
07/11/2007 (DR-1715)	✓	✓				County-wide	5.3 inches of rain fell in Sharon in 24 hours. Four Sharon Green Mountain Power customers in Sharon were without power for more than 1 hour.
06/27/2007	✓			✓		Sharon, County-wide	Trees and power lines blew down 1.2 inches of rain fell in 24 hours. Power outage in Sharon occurred on 6/28 for five hours.
06/19/2007	✓			✓		County-wide	.75 inches of rain fell in 24 hours. On 6/16/2007 119 Green Mountain Power customers in Sharon were without power for 2.78 hours.
08/12/2004					✓	Sharon	A lightning strike caused roof damage and knocked out the telephone system at Sharon Elementary School. There was \$15,000 in damage. Detailed power outage time data for this event are not known.
7/6/1973 (DR 397 VT)	✓	✓				County-wide	One of the largest flood events of the 20 <sup>th</sup> century in VT. Landslides reported in the region.
11/3/1927- 11/4/1927 ("The Great Flood of 1927")	✓	✓					The White River crested at a record of 29.30 feet.

The Town of Sharon has received high wind events in the past. Thankfully, the damage caused by high winds has been relatively minimal. Often power outages occur as a result of trees and tree limbs falling on power lines. The Town of Sharon does not follow a regular tree-trimming schedule;

however, Green Mountain Power provides this service as part of the utility company’s Reliability Project. Green Mountain Power is re-routing power lines to the road corridor for improved access. This will help improve Green Mountain Power’s response time during a power outage and decrease the amount of time some residents are without power.

The main hazard caused by severe weather throughout the Town is flooding. Prior to the flooding from Tropical Storm Irene, spring of 2011 was particularly wet and a pre-Memorial Day storm caused widespread flooding throughout Windsor County. Both upper White Brook Road and Downer Road were damaged during the spring 2011 flooding event. During the flooding caused by Tropical Storm Irene, Vermont Route 132 was severely damaged. Other roads damaged during Tropical Storm Irene include: Quimby Mountain Road, Fay Brook Road, Downer Road, White Brook Road, Cross Road, Keyes Road, Raymond Road, and Moore Road, among others. There are a number of roads in Town that are subject to erosional flooding when heavy rain events drop large amounts of rain in a short period of time.

In an attempt to improve the flow of floodwater through the Town, Sharon has upgraded culverts on the following roads: White Brook Road at Route 132, Fay Brook Road “Bridge,” Broad Brook Bridge, and Krivac Road. A State Structures Grant has been procured, which allowed for Downer Road culvert improvements in 2014. The town plans to update culverts with at least 18 inch replacements. The Town last updated its culvert inventory in November 2015, and will continue to periodically update it. The work to upgrade culverts remains ongoing.

Hazard	Location	Vulnerability	Extent	Impact	Likelihood/Probability
Severe Weather	Town wide for wind, hail, high winds, lightning and thunderstorm impacts; for flooding (damaged during Tropical Storm Irene): Route 132, Quimby Mountain Road, Fay Brook Road, Downer Road, White Brook Road, Cross Road, Keyes Road, Raymond Road, and Moore Road. Many other roads may be subject to erosional flooding, especially in steep areas.	Town and private buildings, and utilities; culverts, bridges, road infrastructure.	Most recent severe flooding event: Tropical Storm Irene- 5-7” of rain across county (6-7” in Sharon). **	From TS Irene: \$2,456,547.00 in damages. Irene FEMA and FHWA expenses incurred by the Town of Sharon since August 2011 until 10/31/2014. **	Highly likely

**\*\*Note:** The main hazard caused by severe weather is typically flooding (though not always). In addition, flooding is often the most expensive hazard caused by severe weather. Therefore, the Extent and Impact categories for Severe Weather will reflect the data reported in the Flash Flood/Flood/Fluvial Erosion, as it represents the higher limits of damage caused by severe weather.

## 2. Flash Flood/Flood/Fluvial Erosion

Flooding is one of the worst threats to Sharon's residents and infrastructure. Past instances of flooding in Sharon have included rain and/or snowmelt events that cause flooding in the major rivers' floodplains and intense rainstorms over a small area that cause localized flash flooding. Both kinds of events can be worsened by the build-up of ice or debris which can contribute to the failure of important infrastructure, such as culverts, bridges, and dams.

This section of the Plan satisfies the requirements of 44 CFR 201.6(c)(2)(i), 201.6(c)(2)(ii), and 201.6(c)(2)(iii) for **Flash Flood/Flood/Fluvial Erosion**.

Perhaps the worst flood disaster to hit the Town of Sharon, as well as the overarching region and the State of Vermont, occurred on November 3, 1927. This event was caused by nearly 10 inches of heavy rain from the remnants of a tropical storm that fell on frozen ground. Eighty-four Vermonters, including the Lieutenant Governor, were killed. The flooding in the White River Valley was particularly violent, with the river flowing at an estimated 900,000 gallons per second on the morning of the 4th (Vermont Weatherbook). Like many towns in the region, the Town of Sharon received heavy precipitation.

A more recent flood that devastated the region and the state was the result of Tropical Storm Irene, which occurred on August 28, 2011. Record flooding was reported across the state and was responsible for several deaths, and millions of dollars of home, road and infrastructure damage. Due to the strong winds, 50,000 Vermont residents were initially without power, and many did not have electricity restored to their homes and businesses for over one week. Despite the damage wrought, the flooding caused by Tropical Storm Irene is considered to be the second greatest natural disaster in 20<sup>th</sup> and 21<sup>st</sup> century Vermont; second only to the Flood of 1927.

The Town of Sharon suffered major damage to property and infrastructure during Tropical Storm Irene, although no lives were lost. It is estimated that Tropical Storm Irene dropped 6-7 inches in the Town of Sharon in a very short span of time, and 5-7 inches across the county. Many of Sharon's roads and culverts were damaged by the storm, including parts of Route 132, Quimby Mountain Road, Fay Brook Road, Downer Road, White Brook Road, Cross Road, Keyes Road, Raymond Road, and Moore Road, among others. The county-wide damage totaled \$32.5 million, and Town-wide damage was over \$2.4 million for this flooding event. Following the flood damage, the state of Vermont and FEMA has been coordinating on the home buy-out process across the state. There are three Tropical Storm Irene-related home buy-outs in Sharon, two of which are along Route 14 and the other is on Farm Field Lane. A further buy-out property may be the Davis property, but this is yet to be determined.

Flooding is common across the region, with many events impacting the Town of Sharon specifically. The following list indicates the history of occurrence with regard to this hazard in Windsor County and given the relatively small population of Sharon, town-specific data is somewhat limited. Federal disaster numbers are listed when appropriate. No detailed data was available for fluvial erosion damage in Sharon in terms of numbers of acre lost during each event.

**History of Occurrences:**

<b>Date</b>	<b>Event</b>	<b>Location</b>	<b>Extent and Impacts</b>
08/28/2013	Flash flooding	County wide	Thunderstorms with very heavy rainfall developed over east central Vermont, resulting in isolated flash flooding.
Period of 06/25/2013—07/11/2013 (DR-4140 VT)	Flooding	County and region wide	No data available.
08/28/2011* (DR 4022 VT for period of 8/26/2011 – 9/2/2011)	Severe Flash Flooding	Sharon, county/region wide	5-7" of rain across region, 4.45" in Sharon. Significant damage to state and local roads/culverts/bridges. VT Route 132 was severely damaged, among other local roads/culverts/bridges. White River in West Hartford (just south of Town of Sharon) crested at 28.40 feet, about a foot below the record crest of 29.30 feet set in the great flood of 1927. Following the storm, there was very limited access to and from the Town, with the majority of roads being inaccessible for nearly a full day after rains subsided.
5/26/2011 – 5/27/2011 (DR 4001 VT)	Flash & riverine flooding	County-wide	3-5+" of rain county-wide
04/27/2011	Flooding	Sharon	Quickly melting snow pack combined with 0.5-1" of rain lead to flash flooding late on the 26 <sup>th</sup> , then river flooding on the 27 <sup>th</sup> . Flood waters from heavy rain and snowmelt damaged White Brook Road in Sharon. \$100,000 in damage.
08/07/2008	Flash flooding	Sharon, region-wide	Floodwaters covered a bridge on Fay Brook Road along with several driveway culverts being washed out. \$25,000 in damage was reported.
07/21/2008—08/12/2008 (DR 1790 VT)	Flooding	County-wide	No data available.
07/09/2007—07/11/2007 (DR 1715VT)	Flash flooding	County-wide	No data available.
5/15/2006	Flooding	County-wide	No data available.
04/04/2000	Flooding	County-wide	Steady rain combined with melting mountain snows.
06/27/1998	Flash flooding	Sharon, County/region wide	3-6" of rain. Extensive flooding occurred along the White River and its branches.
6/28/1973 - 6/30/1973	Flooding	Sharon, County-wide	5-8" County-wide.
11/2/1927 – 11/4/1927* ("The Great Flood of 1927")	Flash flooding	Sharon, County-wide	4-9" of rain across the region. Approximately 7" in Sharon.

The Town of Sharon Flood Hazard Area Bylaw prohibits new structures in the Special Flood Hazard Area (also considered the 100-year floodplain) and Fluvial Erosion Hazard Zone/stream buffer area. It also places restrictions on other types of activities within the Special Flood Hazard Area and the Fluvial

Erosion Hazard Zone/stream buffer area, and specifies structural requirements in both zones. These buffers seek to protect the fragile riparian habitat, improve or maintain water quality and prevent soil erosion. Fluvial Erosion Hazard Zones have been mapped for Broad, Elmers, Fay and Quation Brooks only. In addition, the Town Subdivision Regulations require that no building envelopes are placed within 100 feet of the top of the bank of any perennial stream on the edge of any wetland, and no ground disturbance or removal of healthy vegetation is permitted within 50 feet of those boundaries, except for permitted crossings.

There are 30 residences and 6 commercial structures within the 500 year floodplain or Special Flood Hazard Area, which is estimated at \$8,588,409 if all properties were damaged/destroyed in a severe flooding event. Disruption of the critical services in the 500-year floodplain could drastically hamper future response and relief efforts in the Town, and cause major disruption to business continuity of operations. Putting such an event into context, the flooding that occurred as a result of Tropical Storm Irene is considered to be greater than a 100-year flood event, and likely closer to a 500-year flood, and, during that storm, local businesses and the Town Fire Station were badly flooded. The Town of Sharon would like to take a more protective stance by being proactive and assessing the number of properties that are in the 500 year floodplain. Unfortunately, the 500 year floodplain has not been mapped in the Town of Sharon, and the data needed to complete this type of analysis is currently unavailable.

Due to the development restrictions mountainous terrain places on an area, "at-risk populations," such as children or the elderly, low-income housing and critical infrastructure are sometimes located in flood hazard areas. Across Vermont, most child and elder care facilities are not registered with the State. Much of the child day care is likely private and in-home in Sharon, but there are two licensed facilities within the Town: Sharon Preschool and Child Care and Sharon Afterschool Program. Neither of these facilities (which are located at the same address) is located in a FEMA designated floodplain. There are no elder care facilities in the Town of Sharon. Finally, low income housing is not registered with the State, but there are two mobile home parks in Sharon. Green's Trailer Park is located in a floodplain and is one of Sharon's three buy-out properties.

Recent studies have shown that the majority of flood damage in Vermont is occurring along upland streams, as well as along road drainage systems that fail to convey the amount of water they are receiving. These areas are often not recognized as being flood prone and property owners in these areas are not typically required to have flood insurance (DHCA, 1998). It should be noted that although small, mountainous streams may not be mapped by FEMA in NFIP FIRMs (Flood Insurance Rate Map), flooding along these streams is possible, and should be expected and planned for. Flash flooding in these reaches can be very erosive, causing damage to road infrastructure and to topographic features including stream beds and the sides of hills and mountains. The presence of undersized or blocked culverts can lead to further erosion and stream bank/mountain side undercutting. Furthermore, precipitation trend analysis suggests that intense, local storms are occurring more frequently. These trends suggest that storms in the Town of Sharon will be high intensity and will cause large volume rain events. Future flooding events are highly likely in Sharon. In the Town of Sharon, there are 6 commercial structures, 21 mobile homes and 30 residential structures located in the mapped Fluvial Erosion Hazard zone.

A number of culverts have been replaced or upgraded since Sharon’s 2009 Annex was adopted. In an attempt to improve the flow of floodwater through the Town, Sharon upgraded culverts on the following roads: Route 132, White Brook Road at Route 132, Fay Brook Road “Bridge,” Broad Brook Bridge, Quimby Mountain Road, and a smaller scale culvert replacement on Krivac Road. Many of Sharon’s major roads run alongside the main stem of the White River and its tributaries, such as Broad Brook, Fay Brook, and Quation Brook. Moore Road, Broad Brook Road, and Fay Brook Road are especially vulnerable to erosion and washouts. Two culverts were upgraded on Downer Street during the 2014 work-season.

The last official culvert inventory completed for the Town of Sharon was in November of 2015. The process of upgrading culverts is ongoing.

No development projects are planned in Sharon in areas that would be vulnerable to flooding. There are no repetitive loss properties in Sharon on FEMA’s NFIP list.

Hazard	Location	Vulnerability	Extent	Impact	Likelihood/Probability
Flooding	Route 132, Quimby Mountain Road, Fay Brook Road, Downer Road, White Brook Road, Cross Road, Keyes Road, Raymond Road, and Moore Road (all damaged during Tropical Storm Irene). Many other roads in the Town subject to erosional flooding.	Culverts, bridges, road infrastructure, public and private property. 30 residences and 6 commercial structures within the 500 year floodplain.	Most recent severe flooding event, Tropical Storm Irene- 5-7” across county (6-7” in Sharon). No detailed data are available for fluvial erosion damage in Sharon in terms of numbers of acre lost during each event.	From TS Irene: \$2,456,547.00 in damages. Irene FEMA and FHWA expenses incurred by the Town of Sharon since August 2011 until the 10/31/2014.	Highly likely

### 3. Structure Fire

Vermont has one of the highest per capita death rates from fire in the nation. This is in fact the deadliest form of disaster throughout the state. In 2012, there were 2,225 reported structure fires in the state, which included 6 fatalities and \$17.8 million dollars in damage. 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, there was only one building involved in the fatal fires in 2012 that had evidence of working smoke alarms.

This section of the Plan satisfies the requirements of 44 CFR 201.6(c)(2)(i), 201.6(c)(2)(ii), and 201.6(c)(2)(iii) for **Structure Fire**.

Structure fires may occur at any point, and are typically initiated within a single fuel object. Smoke produced by the burning object forms a smoke plume and rises, creating a layer of smoke while also transporting heat to the smoke layer. Fire then spreads quickly by radiation from the flames, or from

the smoke layer. Once other objects are engulfed, more smoke plumes are formed and heat radiates to other objects. Fire burns and moves across different materials depending on the material's composition, orientation, surface to mass ratio and air supply in the structure/room.

The Town of Sharon has a village center, with houses and buildings lining a short stretch of Route 14 on one side. There is a small mobile home park at K & L Trailer Park and an apartment building adjacent to the gas station. A structural fire in Sharon village, or in the mobile home parks has the potential to spread to other structures located nearby in the right conditions. This type of spreading is especially hazardous if the buildings are located close together. A review of the fires listed in the "History of Occurrences" chart below demonstrates the potential for structures located in the Town of Sharon to be completely or severely destroyed by fire.

The following list indicates the history of occurrence with regard to this hazard in the Town of Sharon. The details of these events were obtained from the archives of local newspapers.

**History of Occurrences:**

<b>Date</b>	<b>Event</b>	<b>Location</b>	<b>Extent and Impacts</b>
07/12/2013	House Fire	River Road	Badly damaged by fire, and extensive smoke damage.
01/04/2013	House Fire	Beaver Meadow Road	Structure destroyed.
01/14/2011	House Fire	Farm Field Lane	Structure completely destroyed by fire, a total loss. There were \$150,000 in estimated damages.

Poor access to fires and distances of homes from the Fire Station are a few of the challenges that leave Sharon vulnerable to the impacts of structure fires. A number of large, older buildings that have been converted into apartments also pose increased fire risk, including the following: the apartment building adjacent to the gas station, Clown's Alley, and the Half Acre apartment building on Rt. 132. Another area of concern is chimney fires. Historically, the fire department routinely cleaned chimneys; however, this is no longer the case due to insurance limitations. It is feared that low-income households may not be able to afford such a service, thereby increasing fire risks in Sharon homes. Some recreational and retirement homes with single access roads and no fire-fighting water supply are at risk. To help combat these problems, the Town of Sharon has installed 4 new dry hydrants since 2009, and they are always on the look-out for new potential sites. There are currently dry hydrants located on Beaver Meadow Road, on Drum Heller Road, on Route 132, on Fay Brook Road, on Harlow Road, and on Clifford Farm Road. There are also water storage tanks at the Sharon Academy, the Sharon Health Center and the Sharon Elementary school. It is hoped that an upcoming road inventory will help identify potential dry hydrant sites. In addition, half of the Sharon Fire Department volunteers are trained to the Firefighter Level 1 certification. The Town also maintains mutual aid agreements with surrounding towns.

Hazard	Location	Vulnerability	Extent	Impact	Likelihood/ Probability
Structure Fire	Town-wide. Increased risk in village center and mobile home parks.	Public and privately owned structures.	Depends on fire location and conditions.	Depends on fire. \$150,000 loss due to a house fire in 2011.	Highly likely

#### 4. Extreme Cold/Snow/Ice Storm

Winter storms are a regular occurrence in Vermont. Severe winter storms can cause serious damage, including collapse of buildings due to overloading with snow or ice, brutal wind chills, downed trees, downed power lines, and stranded vehicles. People can be at risk of freezing in extended power outages if they lack wood heat or backup power, and individuals shoveling large accumulations of snow can also be at risk from frostbite, hypothermia and heart attacks due to cold and overexertion. While snow removal from the transportation system is standard fare in Vermont winters, extreme snow or ice can close rail and road systems, further jeopardizing any stranded persons that are in danger of freezing or needing medical assistance.

This section of the Plan satisfies the requirements of 44 CFR 201.6(c)(2)(i), 201.6(c)(2)(ii), and 201.6(c)(2)(iii) for **Extreme Cold/Snow/Ice Storm**.

Severe winter storms included a blizzard on February 15-17 in 1958 that dumped over 30 inches and resulted in 26 deaths in New England. On December 26-27 in 1969, another blizzard left 18-36 inches of snow in northwestern Vermont and a whopping 45 inches in Waitsfield. A string of storms in March 2001 hit the state, beginning with 15-30 inches on March 5-6 (later declared a federal disaster), 10-30 inches on the 22nd and 10-20 inches on the 30th. Recent years have seen wet snow storms that have leveled trees and caused widespread power outages.

The worst winter storm in terms of damage to hit the state recently was not a snow storm, but an ice storm. In January of 1998, just the right combination of precipitation and temperature led to more than three inches of ice in spots, closing roads, downing power lines, and snapping thousands of trees. This storm was estimated as a 200-500 year event. Power was out up to 10 days in some areas and 700,000 acres of forest land were damaged in Vermont. Amazingly, there were no fatalities in Vermont, unlike Quebec where 3 million people lost power and 28 were killed.

Over the past few winters, Sharon has received numerous snow storms that have dropped significant amounts of snow over a day or two. However, the details of these events and the damage they caused are overshadowed by winter weather events of the past. This is not to say such extreme events will not

repeat themselves. It should be assumed that extreme winter weather events will occur at some point in the future. The following table documents the occurrence of extreme cold/snow/ice storms in the Town of Sharon and Windsor County.

**History of Occurrences:**

<b>Date</b>	<b>Event</b>	<b>Location</b>	<b>Extent and Impacts</b>
Period from 12/09/2014—12/12/2014 (DR-4207 VT)	Winter storm	Town of Sharon and County-wide	Heavy, wet snowfall totals across Windsor county ranged from 6 to 18 inches. Damage in Sharon was assessed at \$7,848.00.
03/12/2014—03/13/2014	Winter storm	Town of Sharon and County-wide	A major snowstorm with near blizzard conditions. In addition to heavy snowfall accumulations, strong northeast-north winds with gusts to 35-40 mph at times caused considerable blowing and drifting of the snow. 26 inches fell in Sharon.
02/03/2014—02/04/2014	Winter storm	County-wide	Snowfall across Windsor county was 12 to 20+ “. There were two bands of heavy snowfall, snowfall rates of 1-2” an hour, that moved across the region. Thursday evening and especially Friday morning's commute was hazardous with nearly all schools closed due to the storm on 02/14/2014.
02/05/2014	Winter storm	County-wide	Eight to twelve inches of snow fell across Windsor county. Snowfall was at its peak during both the morning and afternoon/evening commutes causing hazardous travel.
01/02/2014—01/03/2014	Winter storm	County-wide	A widespread 6 to 9 inches of snow fell across Windsor county.
12/29/2013—12/30/2013	Winter storm	County-wide	A wet, heavy 6 to 10 inches of snow fell across Windsor county.
12/14/2013—12/15/2013	Winter storm	County-wide	A widespread 10 to 15 inches of snow fell across Windsor county.
03/18/2013 – 03/19/2013	Winter storm	County-wide	8-14” of snow fell across the county, with higher amounts above 1000 ft. Numerous vehicle accidents.
02/27/2013—02/28/2013	Winter storm	County-wide	Snow across the county, 6-12” of snow fell across the southern Green Mountains.
03/01/2012	Winter storm	County-wide	Widespread 4-8” inches of snowfall occurred in Windsor county with 10-14” inches along the eastern slopes of the Green Mountains.
11/22/2011—11/23/2011	Winter storm (heavy, wet snow mixed with rain and sleet)	County-wide	6-12” across the county. Numerous vehicle accidents and scattered power outages occurred due to heavy snow on trees.
12/26/2010—12/27/2010	Winter storm (Nor’easter)	County-wide	Snowfall totals of 6-15” with localized higher amounts occurred as well as considerable blowing and drifting of the snow due to north winds of 15 to 25 mph with gusts approaching 40 mph.
02/23/2010—02/24/2010	Winter storm	County-wide	A heavy wet snow fell across Vermont that resulted in snowfall accumulations of 6 to 30 inches with the higher amounts in the higher terrain of central and southern Vermont. 50,000+ customers without power in the region.
12/09/2009	Winter storm	County-wide	6-12” of snow along the eastern side of the Green Mountains. 60-85 mph wind knocked down power lines and caused some structural damage.

Date	Event	Location	Extent and Impacts
02/26/2008 – 02/27/2008	Snow	Town of Sharon, county-wide	6-8" in Sharon. Storm broke previously set all-time snow record for February (42.3" in 2008, as recorded at National Weather Service in Burlington, VT).
04/12/2007	Winter storm (heavy wet snow, sleet, rain)	Town of Sharon, county/region-wide	7" of snow. Dangerous road conditions. Some downed tree limbs and power lines.
03/09/2007	Extreme cold/wind chill	Town of Sharon, county-wide	Morning lows were 10 to 34 degrees below zero.
03/06/2007	Extreme cold/wind chill	Town of Sharon, County/region wide	Very low temperatures accompanied by 15-20mph winds (recorded as -8F to -25F in nearby towns).
02/14/2007	Snow	Town of Sharon, County-wide	Snowfall totals ranged from 15 to 25" in the Connecticut River valley. The deep snowfall (18-30 inches) and deeper snow drifts (4-6+ feet) caused numerous problems, including the blocking of numerous heat vents that resulted in the build-up of carbon monoxide and sent dozens of people seeking treatment at area hospitals. The weight of the heavy snowfall on some weaker roofs resulted in the partial or total collapse of 20 or more barn roofs and the deaths of more than 100 cattle.
01/25/2007 – 01/26/2007	Extreme Cold/wind chill	County/region-wide	Combination of brisk northwest winds of 10 to 15 mph and temperatures 5 to 20 degrees below zero for wind chill readings of 25 to 40 degrees below zero.
12/30/2006	Snow	County/region-wide	2-6" of snow. "Extremely dangerous" road conditions.
02/18/2003	Snow	Town of Sharon, county-wide	12" of snow.
01/07/1998 – 01/09/1998 (DR 1201 VT)	Ice Storm	County/region-wide	No detailed information about this event was available.

The Town of Sharon is no stranger to winter weather and the hazards it brings. Depending on the event, particularly with heavy, wet snow or ice, electricity may be knocked out for a few hours or days. The utility companies currently serving the Town of Sharon, including Green Mountain Power, have followed a regular tree-trimming schedule. Sharon town officials believe this is satisfactory to mitigate damage and the power outages caused by downed trees and tree limbs during a heavy, wet snow or ice event. In the event of an extended power outage, the Town would open emergency shelters at the local Fire House and Sharon Elementary School.

Heavy, wet snow or large quantities of snow may also leave structures vulnerable to roof collapse. Roof collapse occurs when the structural components of a roof can no longer hold the weight of the snow. Flat roofs are most vulnerable to collapse because they do not drain well, and the snow on the roof soaks up water like a sponge, increasing the weight the roof must bear. More common it seems is the collapse of barns commonly used for livestock sheltering and other agricultural purposes.

Unfortunately, livestock in the barn are often killed and equipment stored in the barn may be damaged or ruined. It is difficult to determine whether a residential structure or a barn would be rebuilt after a roof collapse, because the decision to rebuild would likely depend on the extent of damage and the property owner’s finances. The collapse of a barn roof is likely to be a total loss, and the collapse of a house roof may be a 50% loss. While roof collapse has not occurred in Sharon recently, very heavy snow in the region on February 14, 2007 resulted in the partial or total collapse of 20 or more barn roofs, and led to the deaths of more than 100 cattle.

In general, winter weather is most hazardous to travelers. Icy and snow-covered roads present multiple examples of dangerous driving conditions and situations. In Sharon, the mountainous terrain, steep slopes, and remoteness of some roads further complicate travel. The Town relies on Travel Advisories issued by the State of Vermont Department of Emergency Management Homeland Security and the National Weather Service to alert residents of dangerous travel weather. However, it is difficult, if impossible, to prohibit people from driving during winter weather events. As a result, emergency services personnel must always be prepared to provide assistance to stranded drivers or to those who have been in an accident. To increase awareness in the event of hazardous weather, the Town also encourages residents to utilize 411, social media outlets, and the Town listserv.

Hazard	Location	Vulnerability	Extent	Impact	Likelihood/Probability
Extreme Cold/ Snow/Ice Storm	Town wide	The entire Town is vulnerable, including road infrastructure, town and privately owned buildings, utility infrastructure. In particular, power transmission lines and power-critical customers.	Snow fall has varied, from a few inches to over a foot or more. Heavy snow and wind downed trees and power lines. Snow/ice contributed to hazardous driving conditions.	For car crashes due to poor driving conditions: minimal damage to vehicle to totaled vehicle. Health impacts could vary significantly. From DR-4207 VT: \$7848.00.	Highly likely

## 5. Hazardous Materials Spill

Based on available VT Tier II data, there are five sites in town that have sufficient types and/or quantities of hazardous materials to require reporting. Sharon’s village is located at the junction of I-89 and Vermont Routes 132 and 14. I-89 travels through a portion of the Town that is very close to the village center and runs behind both the Sharon Elementary School and Sharon Academy. There are 350 residential and 43 commercial, industrial or public buildings within 1,000 feet of a potential HAZMAT spill on I-89, Routes 14 and Route 132 and the railroad (in-house estimate). This includes three government/town buildings, the fire station, one cultural center, one church, the Sharon

This section of the Plan satisfies the requirements of 44 CFR 201.6(c)(2)(i), 201.6(c)(2)(ii), and 201.6(c)(2)(iii) for **Hazardous Materials Spill**.

Academy and the Sharon Elementary School. In the event that 5% of these structures were involved in a HAZMAT incident, the estimated damage would be \$4,622,760. It should also be noted that the State of Vermont currently has one fully trained HAZMAT response team, with vehicles located in Essex Junction, Brandon, and Windsor. The HAZMAT crew chief is available within minutes of a call for the team but on-scene response would be a matter of hours. In the event of a serious accident in town, there would be little time for evacuation and response would be difficult.

The following data was retrieved from the Vermont Department of Environmental Conservation’s Spill List and by searching the archives of local newspapers. The table below is used to illustrate the ease with which trucks, trains and the day-to-day activities in the Town have the potential to create a hazardous material spill and dangerous conditions for emergency responders and town residents.

**History of Occurrences:**

<b>Date</b>	<b>Event</b>	<b>Location</b>	<b>Extent and Impacts</b>
11/28/2013	Above ground tank leak	Faybrook Road	Approximately 70 gallons of kerosene released. Kerosene migrated under manufactured home and soaked in.
10/28/2013	Trucked leaked fuel	I-89 North-bound, MM 9	Unknown quantity of diesel fuel leaked. 50’x5’ section of pavement impacted and fuel flowed into soil.
01/08/2013	Amtrak and car crash	Sharhart Road Railroad Crossing and Wood Lane	Extensive damage to the passenger side and rear end of car after being thrown 50 feet and landing in an embankment. Driver taken to hospital due to complaints of back pain. Minimal damage done to train.
09/13/2012	Fuel tank leaking	Cross Road	Unknown quantity of kerosene leaked. Kerosene odor noticed in spring, leak at filter had been occurring for some time. Surficial PID readings of 100-150ppm. Invoice was in the amount of \$10,122.72 for cleanup.
07/20/2012	Tractor transmission leak	Route 14, 1 mile south of village.	Less than 20 gallons of lube/gear/transmission oil leaked. Some spilled on road and some in the soil.
07/11/2012	Mineral oil dielectric oil spilled on roadside	River Road	1 pint transformer oil spilled, cleaned up.
07/20/2011	Tractor trailer hit debris in road, puncturing saddle tank	I-89 South-bound	150 gallon diesel tank was half full—approximately 75 gallons spilled. Fire Department contained spill in trench dug on shoulder of road.
06/05/2011	Amtrak Vermonter train derailment	Along part of River Road in Sharon	Train derailed due to set of wheels on rear portion of third car. None of the 85 passengers and 5 crew members were injured.
10/16/2008	Granite slab fell off truck on I-89	I-89 and Rt. 132	A large granite slab weighing 20 tons fell off a truck traveling southbound on I-89. It then crashed onto Rt. 132, nearly causing accidents.
02/15/2008	Fuel tank overfill	Route 15	30 gallon overfill of an above ground tank.
06/25/2004	Fuel tank leak	I-89 North-bound	80 gallons of diesel spilled.
09/11/2002	Train crash	Sharon, VT	A train hit a car on the backside of the river.

Date	Event	Location	Extent and Impacts
08/08/1990	Central Vermont Railway units hit wash out caused by beaver dam failure.	Sharon, VT	One unit completely destroyed/flattened, four were damaged but returned to service. Three crewmen were injured but fully recovered. Diesel spilled into the river, causing the entire valley to smell.
06/20/1924	Train crash	Sharon, VT	The "Montrealer" collided head-on with another train at the switch of the Sharon track.

While only a small number, or no major hazardous material spills have occurred in the Town of Sharon, the potential for a major spill exists. One of the major risk-areas in the Town of Sharon is along the I-89 corridor. This corridor poses a constant threat to the Town of Sharon. As one of the major highways in Vermont, I-89 is a main thoroughfare for trucks and other motor vehicles transporting a wide-range of goods, including a variety of hazardous materials. Of particular concern to the Town is the proximity of I-89 to the Sharon Elementary School, Sharon Academy and the village of Sharon. A truck accident and a resulting hazardous material spill could be exceedingly disastrous for the Town and its residents. In addition, VT Route 132 passes underneath I-89 in the village of Sharon. Anything falling off of a truck passing over the bridge at that intersection could seriously impact travel through the village, and may cause harm to emergency responders and/or residents living nearby. In recent years, a large granite boulder being transported on I-89 fell off the truck and landed on Route 132 below, severely damaging the road. While no one was injured, this type of event illustrates the threat that I-89 poses to the Town of Sharon. Lastly, I-89 passes over the White River on a very high bridge less than a mile from the village of Sharon. An accident on this bridge could send debris or whole vehicles into the shallow river below or onto Rt. 14. Materials that are leaked as a result of the accident could easily reach the White River as well.

Vermont Route 14 parallels I-89 through much of the Town of Sharon. As the more “local route” between the Town of Sharon, the Town of Hartford and the Town of Royalton, it is likely that trucks and other vehicles carrying hazardous materials frequently travel along this road. The majority of Route 14 in the Town of Sharon is built in close proximity to the White River, which could create additional water contamination problems if a hazardous material spill occurred on Route 14.

The New England Central Railroad and Amtrak trains run through the village and Town of Sharon. At any given time, there can be hazardous materials aboard the train. As the trains travel through Sharon, they bring not only the daily Amtrak passenger train but several freight trains, some carrying propane and other hazardous cargo. Railroads are not required to disclose the materials they transport through Towns and Cities in Vermont. Within the past couple of years, there has been a train/car crash and a train derailment. Had these accidents involved a freight train, instead of an Amtrak train, there could have easily been a large hazardous material spill in the Town of Sharon. Due to the terrain and location of the rail bed, access to the railroad corridor in some parts of Town is very difficult. Therefore, in the event of a hazardous material spill or railroad accident, it may be challenging for emergency responders to quickly respond to the situation.

In order to prepare for hazardous material spills in Sharon, half of the members of the Sharon Fire Department are trained to the Firefighter 1 certification level as well as to the HAZMAT Operations level. In addition, the Town plans to host Level 2 classes.

Hazard	Location	Vulnerability	Extent	Impact	Likelihood/Probability
Hazardous Materials Spill	I-89, Routes 14 and 132, railroad running along White Rivers. Locations of HazaMat storage facilities include the Sharon Town Garage, Sharon Trading Post, Sharon Academy Middle School, and Sharon Town Office.	Road infrastructure, nearby structures, Sharon village, White River.	Initially, local impacts only; but depending on material spilled, extent of damage may spread (ex. into groundwater).	There are 350 residential and 43 commercial, industrial or public buildings within 1,000 feet of a potential HAZMAT spill on I-89, Routes 14 and Route 132 and the railroad. In the event that 5% of these structures were involved in a HAZMAT incident, the estimated damage would be \$4,622,760.	Likely

### C. Vulnerability Summary

As a result of the above profiled hazards, the Town believes the following vulnerabilities to be of highest concern due to their potentially severe consequences and likelihood of occurrence:

- Severe Summer Weather & Hurricanes/Tropical Storms:** Damage to public and private property and municipal infrastructure can be extensive during severe weather events. Prolonged power outages and downed cellular communications can greatly hamper public and business services for indeterminate periods of time.
- Flash Flood/Flood/Fluvial Erosion:** One of the worst threats, flooding impacts roads and the village center, especially facilities for children, elders, and community emergency shelters. Under-sized bridges and culverts factor into the threat, with Sharon being home to many known, problematic choke points (as identified by the LHMP Committee). Outdated flood hazard mapping for Orange County also compounds existing threats. Furthermore, flood hazard mapping (Special Flood Hazard Areas) does not adequately encompass all areas that could be flooded, thus potentially making some residents too complacent in regard to the threat. In addition, numerous homes and public facilities, including the Sharon Fire Department, are located in the 500-year floodplain and could be impaired by a major flood event. Other areas vulnerable to flooding include areas on Fay Brook Road, Vermont Route 14, Vermont Route 132, and Green’s Mobile Home Park.
- Structure Fire:** Structure fire is particularly pernicious because of the lack of warning ahead of an event. With the great many old, wooden structures in Town (including portions of the Village’s main block of stores), many homes are particularly vulnerable.
- Extreme Cold/Snow/Ice Storms:** Lack of access to power and telecommunication services throughout the Town could severely impede response efforts, and could be especially harmful to vulnerable populations (e.g., the elderly and disabled).

- **Hazardous Material Spill:** Hazard material spills can occur at any time without warning, although some accrete over a long period without anyone's knowledge (e.g., a leaking storage tank or residual waste from historic operations on Brownfield sites). Adjacent or immediate landowners (municipal, businesses, and private homeowners alike) are anticipated to be most adversely impacted by contaminants at the outset of a spill. Infrastructure could also incur impacts. In the case of Sharon, impacts are expected to affect roadways, road infrastructure, and railways. Water wells may also be at risk. Hazardous Material storage facilities include Sharon Town Garage, Sharon Trading Post, Sharon Academy Middle School, and Sharon Town Office.

## VI. Mitigation

### A. Mitigation Goals

1. To reduce injury and losses from the natural hazard of severe weather.
2. To reduce injury and losses from the natural hazard of flash flooding/flooding/fluvial erosion.
3. To reduce injury and losses from the hazard of structure fire(s).
4. To reduce injury and losses from the natural hazard of extreme cold/snow/ice storms.
5. To reduce injury and losses from the hazard of hazardous material spills.

### B. Town Plan Goals & Objectives Supporting Local Hazard Mitigation

- The Selectboard should update the Local Emergency Operations Plan at least once a year or when key emergency management personnel change (page 35).
- The Selectboard should adopt a Hazard Mitigation Plan with assistance from the Two Rivers-Ottawaquechee Regional Commission, and establish procedures for continued maintenance of the Plan (page 35).
- The White River is a well-used scenic and recreational resource that is greatly valued by the town and its residents. It is therefore the policy of the Town:
  - to prohibit development within 150 feet of the top of the river bank, consistent with the Town's 2009 Stream Geomorphic Assessment;
  - to encourage partnerships between landowners, non-profit organizations, and local and state governments to protect river access, to acquire buffer strips (riparian zones), and to encourage river conservation easements on important segments;
  - to develop appropriate land use at the town level and to foster the protection and management of the White River, its tributaries and adjacent lands; and
  - to promote better public understanding and involvement in rivers as scenic and recreational assets through improved public education (page 43-44).
- To enhance and maintain wise use of flood hazard areas as open space, greenways, non-commercial recreation and/or agricultural land, and protect these natural resources (page 59).
- To retain the Town's eligibility for and participation in the National Flood Insurance Program (page 59).
- To maintain maps which reflect as accurately as possible the flood hazard areas, to assist in appropriate land use decisions (page 59).
- To identify and protect significant wetlands and the values and functions which they serve, and in so doing to minimize loss of such wetlands (page 59).
- To identify and encourage land use development practices that prevent or mitigate adverse impacts on significant wetlands (page 59).
- It is a policy of the Town that development within stream buffer areas is prohibited (page 60).
- It is the policy of the Town that a vegetated buffer will be maintained adjacent to the White River and all other streams, measured horizontally from the top of the stream bank (page 61).
- To extend the design, life, and function of the transportation system of the Town (page 90).

The Sharon Town Plan was adopted on April 6, 2015 and has a 5-year lifespan.

## **B. Hazard Mitigation Strategies: Programs, Projects & Activities**

Vermont Division of Emergency Management & Homeland Security encourages a collaborative approach to achieving mitigation at the local level through partnerships with Vermont Agency of Natural Resources, VTTrans, Vermont Agency of Commerce and Community Development, Regional Planning Commissions, FEMA Region 1 and others. That said, these agencies and organizations can work together to provide assistance and resources to towns interested in pursuing hazard mitigation projects.

This section of the Plan satisfies the requirements of 44 CFR 201.6(c)(3)(ii), 201.6(c)(3)(iii) and 201.6(c)(3)(iv).

With each mitigation strategy, general details about the following are provided: local leadership, possible resources, implementation tools, and prioritization. The prioritization category is based upon the economic impact of the action, Sharon’s need to address the issue, the cost of implementing the strategy, and the availability of potential funding. The cost of the strategy was evaluated using STAPLEE-like guidelines (includes economic, political, environmental, technical, social, administrative, and legal criteria). A range of mitigation strategies was vetted by the committee, and those that were determined to be feasible are included in the table below. The committee also determined preparedness, response, and recovery strategies, which have been included in the table following mitigation actions.

Strategies given a “High” prioritization indicate that it is either critical or potential funding is readily available, and should have a timeframe of implementation of less than two years. A “Medium” prioritization indicates that a strategy is less critical or the potential funding is not readily available, and has a timeframe for implementation of more than two years but less than four. A “Low” prioritization indicates that the timeframe for implementation of the action, given the action’s cost, availability of funding, and the community’s need to address the issue, is more than four years.

The Town of Sharon understands that in order to apply for FEMA funding for mitigation projects that a project must meet FEMA benefit cost criteria. The Town must have a FEMA approved Local Hazard Mitigation Plan as well.

The following strategies will be incorporated into the Town of Sharon’s long-term land use and development planning documents. In addition, the Town will review and incorporate elements of this Local Hazard Mitigation Plan into updates for the municipal plan, subdivision regulations, and flood hazard/ fluvial erosion hazards (FEH) bylaws. The Sharon Planning Commission will review and incorporate aspects of and mitigation strategies from this Hazard Mitigation Plan during the Sharon Town Plan update in 2020. The incorporation of the goals and strategies listed in the Local Hazard Mitigation Plan into the municipal plan, zoning regulations and flood hazard/FEH bylaws will also be considered after declared or local disasters. The Town shall also consider reviewing any future TRORC planning documents for ideas on future mitigation projects and hazard areas.

<b>Hazard(s) Mitigated</b>	<b>Mitigation Action</b>	<b>Local Leadership</b>	<b>Prioritization (Mitigation Project Status)</b>	<b>Possible Resources*</b>	<b>Time Frame</b>
Severe Weather (High Wind)	<i>Work closely with Green Mountain Power to support their Reliability Project (moving power lines to road corridor for easier servicing), which will prevent damage to utility and town infrastructure. (Mitigation)</i>	Road Crew	Medium (new)	Local resources; Green Mountain Power	Fall 2018- Fall 2020
	<i>Complete a hazard tree inventory to identify trees in town right-of-way to be removed. This would complement Green Mountain Power's Reliability Project and would prevent damage to town and utility infrastructure. (Mitigation)</i>	Road Crew, Town Tree Warden	Medium (new)	Local resources	Fall 2018- Fall 2020
Severe Weather// Flash Flood/Flood/ Fluvial Erosion	<i>Complete an up-to-date georeferenced culvert inventory, which will identify priority upgrade projects. Upgraded culverts more effectively clear high volumes of water during flooding and large rain events, therefore protecting town infrastructure. (Mitigation)</i>	Selectboard, Road Crew	High (new)	Local resources, Better Back Roads grants	Fall 2017
	<i>Develop a schedule to replace undersized culverts. Properly sized culverts will allow greater volumes of water to be cleared, therefore protecting town infrastructure from flood damage. (Mitigation)</i>	Selectboard, Road Crew	High (1 <sup>st</sup> priority of 3 natural hazard mitigation actions in 2009 Plan)	Local resources	Fall 2017
	<i>Adopt river corridor regulations which incorporate Vermont Agency of Natural Resource's river corridor maps. These updated regulations will prevent further construction of infrastructure in areas that are prone to flooding and damage. (Mitigation)</i>	Planning Commission	High (3 <sup>rd</sup> priority of 3 natural hazard mitigation actions in 2009 Plan)	Local resources; TRORC; Municipal Planning Grants; VT Agency of Natural Resources	Winter 2017- Winter 2018
	<i>Upgrade culverts on Downer Road, TH-16, which will allow greater volumes of water to be cleared therefore protecting town infrastructure from flood events. (Mitigation)</i>	Road Foreman	High (new)	Local resources, VTrans Structures grant	Fall 2017

	<i>Implement a notice of construction ordinance that serves as a trigger for flood insurance to reduce the risk to future infrastructure. (Mitigation)</i>	Planning Commission	High (new)	Local resources	Fall 2017- Fall 2018
	<i>Provide public outreach on flood insurance opportunities and requirements for town residents. Flood insurance comprehension will help reduce the damage to private infrastructure. (Mitigation)</i>	Planning Commission	High	Local resources (including Sharon Academy students completing community service projects)	Winter 2017- Winter 2018
	<i>Identify flood-safe transportation routes for primary traffic flow in the event of flooding, which will be cleared in a designated order of priority. Access and usage of priority routes will reduce the risk to health of residents during flooding. (Mitigation)</i>	Planning Commission, Road Crew	Medium	Local resources	Summer 2019- Summer 2021
	<i>Support the elevation or acquisition of vulnerable structures that are already in the flood hazard or erosion areas to improve structure safety, public safety, and lower insurance rates. (Mitigation)</i>	Planning Commission	High	Local Resources; FEMA HMGP	Summer 2018- Summer 2019
	<i>Buyout, and return to green space, the Ackley and Norm's Garage properties. This will increase floodplain capacity of the White River, reducing future flood potential and damage to life and property in Sharon. (Mitigation)</i>	Selectboard	High	FEMA HMGP; CDBG; TRORC; local resources	Fall 2017- Fall 2020
Severe Weather// Flash Flood/Flood/ Fluvial Erosion	<i>Work with FEMA to conduct a full flood study and update town flood maps to allow Sharon to better comprehend areas and infrastructure that are vulnerable to flooding. (Mitigation)</i>	Selectboard	Low (3 <sup>rd</sup> priority of 3 natural hazard mitigation actions in 2009 Plan)	Local resources; FEMA	Summer 2022
Structure Fire	<i>Install additional dry hydrants in strategic locations around town to protect town infrastructure from structural fires. (Mitigation)</i>	Selectboard, Fire Department, Road Crew	Medium (new)	Local Resources; Vermont Rural Fire Protection Task Force	Spring 2019- Spring 2020
	<i>Ensure that fire department personnel maintain their Firefighter certifications, which will allow department members to quickly and effectively address structural fires</i>	Fire Department	High	Local Resources	Winter 2017- Winter 2018

	<i>that threaten health and property in Sharon. (Mitigation)</i>				
	<i>Install a live hydrant in the village of Sharon to protect infrastructure in the village from damage from structural fires. (Mitigation)</i>	Fire Department	Medium-High	Local resources, Vermont Rural Fire Protection Task Force	Spring 2018-Spring 2021
	<i>Require site-specific dry wells be installed for isolated properties to protect them from structural fires.(Mitigation)</i>	Fire Department	Low	Local resources	Summer 2021
Extreme Cold/ Ice/ Snow Storm	<i>Identify, design and appropriate resources for an inventory to assist vulnerable residents (identify those that are vulnerable to severe winter weather, create volunteer network for shoveling roofs, etc.). Knowledge of the location of vulnerable residents will facilitate response and reduce risk to these people during hazards. (Mitigation)</i>	Emergency Coordinator, Fire Chief, Fire Department	Medium (new)	Local Resources	Spring 2019-Spring 2021
	<i>Develop a program to plan for, budget and maintain roads for safe winter travel, which will reduce the threat to the health of residents. (Mitigation)</i>	Selectboard; Road Foreman	High (new)	Local resources	Spring 2017
Hazardous Materials Spill	<i>Identify emergency access points to the railroad corridor in locations where access is presently difficult in the event of a derailment. Additional emergency access points will allow quicker response and reduced risk to life. (Mitigation)</i>	Fire Department	High	Local Resources	Spring 2018-Spring 2019

<b>Hazard(s) Mitigated</b>	<b>Preparedness, Response, or Recovery Action</b>	<b>Local Leadership</b>	<b>Prioritization (Mitigation Project Status)</b>	<b>Possible Resources*</b>	<b>Time Frame</b>
All hazards	<i>Create a "Resident's Skills" database, noting who has skills/equipment that would be useful in responding to an emergency or disaster scenario. (Preparedness)</i>	Selectboard	High	Local resources	Spring 2018- Spring 2019
	<i>Recruit a representative to regularly attend the Local Emergency Planning Committee (LEPC #12) meetings.(Preparedness)</i>	Selectboard, Fire Dept.	High	Local resources	Spring 2018- Spring 2019
	<i>Ensure that Sharon's Local Emergency Operations Plan (LEOP) is kept up-to-date and identifies vulnerable areas and references this Plan. (Preparedness)</i>	Emergency Coordinator	High	Local Resources; TRORC; VT DEMHS	Spring 2018- Spring 2019
Severe Weather// Flash Flood /Flood/Fluvial Erosion	<i>Develop a town methodology for consistently documenting infrastructure damage after weather events. (Response)</i>	Selectboard/ Road Foreman	High	TRORC; local resources	Fall 2018- Fall 2019
	<i>Develop and include in the Town's emergency operations plan, a flood response plan, which includes allocating tasks and resources and back-up volunteer recruiting procedures. (Response)</i>	Planning Commission, Selectboard	Medium	Local resources	Spring 2019- Spring 2021
Hazardous Materials Spill	<i>Ensure that all emergency response and management personnel continue to receive HAZMAT Awareness training at a minimum. (Preparedness).</i>	Fire Department	High	Local Resources	On-going

\*Depending on the mitigation action, local resources may include the following: personnel/staff time; volunteer time; budget line items, donations, cash from capital campaigns, among others.

**CERTIFICATE OF ADOPTION**

<<DATE>>

**TOWN OF Sharon, Vermont Selectboard**

**A RESOLUTION ADOPTING THE Sharon, Vermont 2015 Local Hazard Mitigation Plan**

WHEREAS, the Town of Sharon has historically experienced severe damage from natural hazards and it continues to be vulnerable to the effects of the hazards profiled in the **Sharon, Vermont 2015 Local Hazard Mitigation Plan**, which result in loss of property and life, economic hardship, and threats to public health and safety; and

WHEREAS, the Town of Sharon has developed and received conditional approval from the Federal Emergency Management Agency (FEMA) for its **Sharon, Vermont 2015 Local Hazard Mitigation Plan (Plan)** under the requirements of 44 CFR 201.6; and

WHEREAS, the **Plan** specifically addresses hazard mitigation strategies, and Plan maintenance procedures for the Town of Sharon; and

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

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

RESOLVED by Town of Sharon Selectboard:

1. The **Sharon, Vermont 2015 Local Hazard Mitigation Plan** is hereby adopted as an official plan of the Town of Sharon;
2. The respective officials identified in the mitigation action plan of the **Plan** are hereby directed to pursue implementation of the recommended actions assigned to them;
3. Future revisions and **Plan** maintenance required by 44 CFR 201.6 and FEMA are hereby adopted as part of this resolution for a period of five (5) years from the date of this resolution; and
4. An annual report on the process of the implementation elements of the Plan will be presented to the Selectboard by the Emergency Management Director or Coordinator.

IN WITNESS WHEREOF, the undersigned have affixed their signature and the corporate seal of the Town of Sharon this \_\_\_\_ day of \_\_\_\_\_ 201\_\_.

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Selectboard Chair

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Selectboard Member

ATTEST

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Town Clerk

## Appendices

### Appendix A: Hazard Ranking Methodology

<u>Frequency of Occurrence</u> Probability	<u>Warning Time</u> Amount of time generally given to alert people to hazard	<u>Potential Impact</u> Severity and extent of damage and disruption *Note: Severity of damage and disruption generally correlates with magnitude (extent) of an event
<p>1 = <i>Unlikely</i> &lt;1% probability of occurrence in the next 100 years</p> <p>2 = <i>Occasionally</i> 1–10% probability of occurrence per year, or at least one chance in next 100 years</p> <p>3 = <i>Likely</i> &gt;10% but &lt;100% probability per year, at least 1 chance in next 10 years</p> <p>4 = <i>Highly Likely</i> 100% probable in a year</p>	<p>1 = More than 12 hours</p> <p>2 = 6–12 hours</p> <p>3 = 3–6 hours</p> <p>4 = None–Minimal</p>	<p>1 = <i>Negligible</i> Isolated occurrences of minor property damage, minor disruption of critical facilities and infrastructure, and potential for minor injuries</p> <p>2 = <i>Minor</i> Isolated occurrences of moderate to severe property damage, brief disruption of critical facilities and infrastructure, and potential for injuries</p> <p>3 = <i>Moderate</i> Severe property damage on a neighborhood scale, temporary shutdown of critical facilities, and/or injuries or fatalities</p> <p>4 = <i>Major</i> Severe property damage on a metropolitan or regional scale, shutdown of critical facilities, and/or multiple injuries or fatalities</p>

## Appendix B: Critical Stream Crossings

Critical crossings in the table below includes stream crossing structures on town highways that cross third order streams or larger. Headwater streams generally include first through third order. Third order was included as these headwater streams will have larger drainage areas and may have larger structures that are more difficult to replace and have a larger impact on the road network. Most of these are bridges. Structures that have a “Y” in the “AOTSTRUCT” column are state-owned.

RDFLNAME	STRUCT_NUM	CATEGORY	STRUCTYPE	STRC_LBL	AOTCLASS	X_COORD	Y_COORD
BRIDGE LN	101417002714171	B	TL	B27	0	-72.3945	43.7548
BROAD BROOK RD	101417001314171	B	TL	B13	0	-72.4865	43.779
BROAD BROOK RD	101417001414171	B	TL	B14	0	-72.5014	43.7786
DOWNER RD	600017000114171	C	TU	TU1	0	-72.4157	43.8001
DOWNER RD	600017003914171	C	TU	TU39	0	-72.3707	43.815
FAY BROOK RD	401417001714171	B	TS	B17	3	-72.441	43.8146
FAY BROOK RD	401417002314171	B	TS	B23	3	-72.449	43.8122
FAY BROOK RD	401417002414171	B	TS	B24	3	-72.4612	43.7967
FAY BROOK RD	401417002514171	B	TS	B25	3	-72.4621	43.7959
FAY BROOK RD	401417002614171	B	TS	B26	3	-72.4642	43.7898
HIGHLAKE RD	400011000114171	C	TS	TS1	0	-72.4194	43.8126
KEYES RD	600015000114171	C	TU	TU1	0	-72.3779	43.8156
MOORE RD	401417002014171	B	TS	B20	3	-72.4835	43.7666
OGDEN LN	401417002814171	B	TS	B28	3	-72.4468	43.7925
QUIMBY MTN RD	401417001014171	B	TS	B10	3	-72.4447	43.7731
QUIMBY MTN RD	401417000314171	B	TS	B3	3	-72.4302	43.7754
QUIMBY MTN RD	401417000914171	B	TS	B9	3	-72.433	43.7751
RIVER RD	401417001214171	B	TS	B12	2	-72.4848	43.7859
RIVER RD	401417000814171	B	TS	B8	2	-72.4688	43.7792
RIVER RD	200177001514172	B	SL	B15	0	-72.4597	43.7822
ROUTE 132	401417000414171	B	TS	B4	2	-72.4207	43.8032
ROUTE 132	401417000514171	B	TS	B5	2	-72.4221	43.8029
ROUTE 132	401417000614171	B	TS	B6	2	-72.4259	43.8024
ROUTE 132	401417000714171	B	TS	B7	2	-72.4377	43.7981
ROUTE 132	600051003714171	C	TU	TU37	0	-72.4184	43.8054

The critical crossings in the table below includes significantly undersized structures, usually culverts, which were identified from the ANR-DEC stream geomorphic assessment survey with openness ratios less than 50%. This measure refers to when structure’s width is less than half of the stream bank’s full width. Several of these structures may have been damaged during TS Irene or other events and may have been replaced. The town, at some point, should look at these sites and assess their status and need for repair/upgrades.

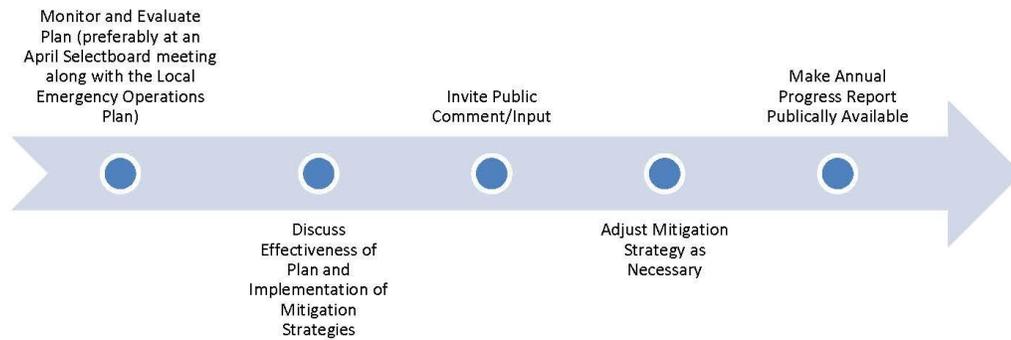
RDFLNAME	GROUP_TWO	CATEGORY	STRUCTYPE	STRC_LBL	X_COORD	Y_COORD	CUL_WIDTH	CUL_HEIGHT	CUL_LEN	OpennessR	ChannelWid
CHAPEL HILL RD	Y	C	TU	TU1	-72.3617	43.788	24	24	25	0.096	9
CHAPEL HILL RD	Y	C	TU	TU3	-72.3601	43.7926	24	24	25	0.07	9
CROSS RD	Y	C			-72.4065	43.8202	24	24	30	0.133333	9.3
DEER MEADOW LN	Y	C	TU	TU4	-72.4017	43.7641	18	18	20	0.080357	8
DOWNER RD	Y	C			-72.3814	43.8162	48	48	30	0.408333	12.3
DOWNER RD	Y	C			-72.3832	43.8159	48	48	28	0.4375	12.3
DOWNER RD	Y	C			-72.3745	43.8154	60	36	56	0.267857	10
FAY BROOK RD	Y	C			-72.4519	43.8116	48	24	60	0.145833	11
KRIVAK RD	Y	C			-72.3697	43.8142	36	36	26	0.393462	15.8
WHITE BROOK RD	Y	B	TS	B29	-72.4749	43.8026	4	3	50	0.2752	7

## Appendix C: Five-Year Review and Maintenance Plan

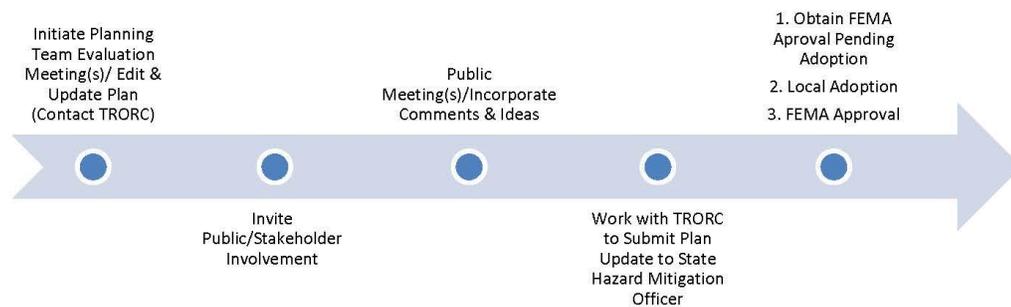
### Five-Year Local Hazard Mitigation Plan Review/Maintenance



#### After Plan Adoption—Annually Implement & Evaluate



#### Fifth Year, and After a Major or Federally Declared Disaster Directly Impacting the Town Evaluate & Revise



## **Attachments**

### **Attachment A: Map of the Town of Sharon**