TOWN OF CHESTER, NEW HAMPSHIRE

Ice Storm 2009, Chester, New Hampshire

HAZARD MITIGATION PLAN 2016

TOWN OF CHESTER
NEW HAMPSHIRE

HAZARD MITIGATION PLAN

September, 2016

Prepared for the Town of Chester, NH and the
NH Homeland Security & Emergency Management (NHHSEM) and the
Federal Emergency Management Agency (FEMA)
by the
The Southern New Hampshire Planning Commission
and assistance from Chester Hazard Mitigation Committee with

December, 2016

December 1, 2016 Public Hearing Date
December 1, 2016 Adoption Date
Final Plan

Acknowledgements

Southern NH Planning Commission and the Town of Chester wish to thank the following individuals for serving on the Town's Hazard Mitigation Committee and for their assistance in the development of this Plan:

Acknowledgements

We would like to thank the following people for contributing their time and effort to complete the ***Chester Hazard Mitigation Plan:***

2016 Chester Hazard Mitigation Plan (HMP) Committee Members

Phil Gladu, Committee Chair, Chester Fire Department, Emergency Management Director
Chief Aaron Berube, Chester Police Department
Interim Chief Greg Bolduc, Chester Fire Department
Jason Coulter, Chester Fire Department
Scott Newnan, Chester Fire Department
Myrick Bunker, Chester Building Inspector
Evan Sederquest, Chester Planning Board
Michael Oleson, Chester Road Agent
Andy Higham, Highway Foreman
Darrell Quinn, Chester Health Officer
Tony Amato, Chester Maintenance Supervisor
Karen Lacroix, Chester Academy, Vice Principal
Andrew Hadik, ,Chester Planning Coordinator
Joseph Castricone, Chester Board of Selectmen
Richard (Dick) Trask, Chester Board of Selectmen
Sylvia von Aulock, Southern NH Planning Commission

Special thanks also to:

Parker Moore, Emergency Management Planning Specialist, NH Homeland Security & Emergency Management
Elizabeth Lufkin, Senior Field Representative, NH Homeland Security & Emergency Management
Former Fire Chief Richard Antoine

- The New Hampshire Homeland Security and Emergency Management (NH HSEM), which developed the *New Hampshire Multi-Hazard Mitigation Plan (2013)*;
- Derry, Raymond, Bedford, and Auburn Hazard Mitigation Plans.

All the above publications served as models for this plan.

The preparation of this document has been financed in part by a grant from the New Hampshire Homeland Security & Emergency Management (NH HSEM)

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Town of Chester, New Hampshire
Hazard Mitigation Plan
Executive Summary

This Plan was created through a grant from the New Hampshire Homeland Security and Emergency Management (NHHSEM). The Plan is an update to the original Chester Hazard Mitigation Plan, approved by the U.S. Department of Homeland Security, Federal Emergency Management Agency (FEMA), Region 1 on July 13, 2011.

Approval/Adoping Dates for 2016 Update

Town of Chester Public Hearing Date:	**December 1, 2016**
Town of Chester Board of Selectmen Adoption Date: (See Appendix G)	**December 1, 2016**
NHHSEM Plan Approval Date:	_____
FEMA Plan Approval Date:	**November 21, 2016**

The following organizations have contributed invaluable assistance and support to this Plan:

- New Hampshire Homeland Security & Emergency Management (HSEM)
- Federal Emergency Management Agency (FEMA)
- NH Office of Energy and Planning (NH OEP)
- NH Department of Environmental Services, Dam Safety

The ***Chester Hazard Mitigation Plan Update 2016*** serves as a means to reduce future losses from natural and/or man-made hazard events before they occur. The 2016 Plan was guided by Southern New Hampshire Planning Commission and developed by the Chester Hazard Mitigation Committee and affected stakeholders. The Plan contains the tools necessary to identify specific hazards and aspects of existing and future mitigation efforts. In an effort to produce an accurate and current planning document, the Chester Hazard Mitigation Committee used the 2011 Plan as a foundation building upon that Plan to provide more current information.

A "natural hazard" is defined as a source of harm or difficulty created by a meteorological, environmental, or geological event. "Hazard mitigation is any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards (44CFR 201.2). Hazard mitigation activities may be implemented prior to, during, or after an event. However, it has been

demonstrated that hazard mitigation is most effective when based on an inclusion, comprehensive, long-term plan that is developed before a disaster occurs."[1]

This 2016 Updated Plan addresses the following natural and human-caused hazards:

Natural Hazards

- Flooding
  - Flooding (100-year events)
  - Riverine Flooding
  - Hurricanes
  - Debris-Impacted Infrastructure
  - Rapid Snow Pack Melt
  - Dam Breach or Failure
- Wind
  - Hurricanes
  - Tornadoes
  - Nor'easters
  - Downbursts
  - Lightning
- Fires
  - Wildfires
  - Isolated Homes
- Ice and Snow Events
  - Heavy Winter Weather (heavy snow)
  - Ice Storms
  - Hailstorms
- Seismic Events
  - Earthquakes
- Other Hazards
  - Geomagnetism
  - Radon
  - Drought
  - Extreme Heat
  - Extreme Cold

Human-Caused Hazards

- Critical Infrastructure Failure
- Civil Disorder
- Terrorism

[1] Source: Local Mitigation Plan Review Guide, FEMA, October 1, 2011.

The Plan also provides a list of Critical Facilities including: Emergency Response Service; Non-Emergency Response Facilities; Facilities and Populations to Protect; and Potential Resources (PR). Highlights of these resources include:

Emergency Response Services, :

- Emergency Operations Center; Chester Fire Station
- Primary Emergency Shelter: Town Offices, Multi-Purpose Room
- Secondary Emergency Shelter: Chester Academy
- Chester Police Station
- Primary Evacuation Routes
- Power Stations and Telephone Facilities
- Wireless Communication Facilities

Potential Resources:

- Medical Supplies: Parkland Medical Center in Derry
- Gas/Fuel: Town Gas Pumps at Chester Fire Station
- Emergency Power Source: Portable Generators

In addition, this Plan addresses the Town of Chester's involvement in the National Flood Insurance Program (NFIP).

The Town of Chester also has a number of existing programs, land use regulations and building codes in place that are designed to help mitigate and adequately cope with the impact of natural hazards within the community. The Chester Hazard Mitigation Committee has identified the following **existing hazard mitigation programs**:

- Best Management Practices
- Chester Academy Blizzard Bag Program
- Chester Academy Emergency Evacuation and Notification Plan
- Coordinated Mock Drills
- State Dam Emergency Procedure Plan
- Emergency Back-up Power Service
- Emergency Snow Removal
- Emergency Snow Removal Plan
- Floodplain Conservation District
- Flood Warning System
- Groundwater Protection District
- Installation of Lightning Rods and Grounding Devices
- National Flood Insurance Program
- River Stewardship
- Seabrook Evacuation Plan

- Southeast NH Hazard Materials Mutual Aid
- Steep Slope Ordinance
- Storm Drain Maintenance
- Town-adopted Building Code
- Town-Wide Coordinated Communication Plan
- Wellhead / Aquifer Monitoring Program
- Wetland Conservation District

Developing mitigation strategies and action items addressing every hazard impacting the community is at times difficult to achieve. In addition, confronted with today's economic constraints, the Town of Chester like many other cities and towns in New Hampshire is not likely to have the financial resources and ability to pay for certain mitigation action items. In recognizing this financial reality, the Chester Hazard Mitigation Committee prepared the following comprehensive list of **mitigation strategies** for the 2016 Update Plan. The Committee believes these strategies will help to diminish the impact of hazards within the community and at the same time allow the town to maintain a list of preparedness action items for future reference and use.

SECTION I
INTRODUCTION

The Hazard Mitigation Planning Process

The Town of Chester Hazard Mitigation Plan 2016 Update was prepared in accordance with the Disaster Mitigation Act of 2000 (DMA), Section 322 Mitigation Planning, signed into law by President Clinton on October 30, 2000. This updated hazard mitigation plan was prepared by the Chester Hazard Mitigation Committee for the Town of Chester under contract with the New Hampshire Homeland Security and Emergency Management (HSEM) operating under the guidance of Section CFR 201.6(b)(1) and with the assistance and professional services of the Southern New Hampshire Planning Commission. The Plan was funded by HSEM through grants from FEMA (Federal Emergency Management Agency); matching funds for Committee members' time were also part of the funding formula.

The primary purpose of the Disaster Mitigation Act of 2000 (DMA) is to: "…establish a national disaster hazard mitigation program – to reduce the loss of life and property, human suffering, economic disruption and disaster assistance costs resulting from natural disasters; and to provide a source of pre-disaster hazard mitigation funding that will assist States and local governments (including Indian tribes) in implementing effective hazard mitigation measures that are designed to ensure the continued functionality of critical services and facilities after a natural disaster."[2]

It is HSEM's goal to have all New Hampshire communities complete a local hazard mitigation plan as a means to reduce future losses from natural or human-caused events before they occur. HSEM outlined a process whereby communities throughout the state may be eligible for grants and other assistance upon completion of this hazard mitigation plan.

The Chester Hazard Mitigation Plan Update 2016 is a planning tool to use to reduce future losses from natural and human-caused hazards as required by the Disaster Mitigation Act (DMA) of 2000; this Plan does not constitute a section of the Town's Master Plan; however mitigation action items contained in this Plan may be incorporated into future Master Plan updates.

The DMA places a new emphasis on local mitigation planning. It requires local communities to have a FEMA approved hazard mitigation plan as a condition to

[2] Disaster Mitigation Act (DMA) of 2000, Section 101, b1 and b2.

receiving hazard Mitigation Assistance (HMA) funds. Local governments should review the plan yearly and must update the plan every 5 years to ensure compliance.

Jurisdiction

This 2016 Updated Plan addresses one jurisdiction – the Town of Chester, NH.

Authority

The Chester Hazard Mitigation Committee prepared the Chester Hazard Mitigation Plan Update 2016 with the assistance of the Southern New Hampshire Planning Commission (SNHPC) under contract with the New Hampshire Homeland Security and Emergency Management (NHHSEM). After a public hearing held in the Chester Town Hall on December 1, 2016, the Chester Board of Selectmen formally adopted this Plan on December 1, 2016. Documentation of the Board of Selectmen's adoption of the Plan is provided in Appendix H.

Scope of the Plan & Federal and State Participation

A community's hazard mitigation plan often identifies a large number of natural hazards and is somewhat broad in scope and outline. The scope and effects of this Plan were assessed based on the impact of hazards on: Critical Infrastructure and Key Resources within the community such as the town's public infrastructure (public water, sewer, roads, streets, drainage, etc.), existing residential buildings and other structures within the town; future development; administrative technical and physical capacity of emergency response services; and response coordination between federal, state and local entities.

In seeking approval as a Hazard Mitigation Plan, the planning effort included participation of Homeland Security and Emergency Management staff, floodplain management staff at the NH Office of Energy and Planning (OEP), and notification of upcoming meetings to public agencies, communities, and officials. In addition, as required under Code of Federal Regulations (CFR), Title 44, Part 201.6(c)(2) (ii) and 201.6(c)(3)(ii), the Plan must address the Community's participation in the National Flood Insurance Program (NFIP), its continued compliance with the program and as part of vulnerability assessment, the Plan must address the NFIP insured structures that have been repetitively damaged due to floods.

What Is Hazard Mitigation?

Hazard mitigation is the practice of reducing risks to people and property from natural hazards. FEMA's Local Mitigation Planning Handbook states that "Hazard mitigation reduces disaster damages and is defined as sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards."[3] It includes both structural interventions, such as flood control devices, and nonstructural measures, such as avoiding construction in the most flood-prone areas. Mitigation includes not only avoiding the development of vulnerable sections of the community, but also making existing development in hazard-prone areas safer. For example, a community could identify areas that are susceptible to damage from natural disasters and take steps to make these areas less vulnerable. It could also steer growth to less risky areas. Keeping buildings and people out of harm's way is the essence of mitigation.

Mitigation should not be seen as an impediment to growth and development. On the contrary, incorporating mitigation into development decisions can result in a safer, more resilient community, one that is more attractive to new families and businesses.

Why Develop a Hazard Mitigation Plan?

The full cost of the damage resulting from natural hazards—personal suffering, loss of lives, disruption of the economy, and loss of tax base—is difficult to measure. New Hampshire is subject to many types of natural disasters: floods, hurricanes, nor'easters, winter storms, earthquakes, tornadoes, and wildfires, all of which can have significant economic and social impacts. Some, such as hurricanes, are seasonal and often strike in predictable locations. Others, such as floods, can occur any time of the year and almost anywhere in the state.

Benefits of Hazard Mitigation

Hazard mitigation offers many benefits for a community. It can:

- **Save lives and property.** A community can save lives and reduce property damage from natural hazards through identifying risks and taking action, such as elevating structures in the floodplain.
- **Reduce vulnerability to future hazards.** By having a mitigation plan in place, a community is prepared to take steps that will permanently reduce the risk of future losses. This opportunity is often lost when communities are built without regard to natural hazards, or when they are rebuilt after a disaster "just like they were before." While it is natural to want to return things to the way they were, it

[3] Local Mitigation Planning Handbook, FEMA, March 2013.

is important to remember that, in many cases, the disaster would not have been as severe if a mitigation plan had been implemented.

- **Facilitate post-disaster funding.** By identifying and ranking recovery projects before the next disaster, a community will be in a better position to obtain post-disaster funding because much of the background work necessary for applying for federal funding will already be done.
- **Speed recovery.** By developing a mitigation strategy, a community can identify post-disaster mitigation opportunities in advance of a disaster and be ready to respond quickly after a disaster.

Hazard Mitigation Planning Process & Methodology

The 2016 Updated Plan was prepared with substantial local, state and federal coordination and assistance. Completion of this new hazard mitigation plan required significant planning preparation. In August 2015, the Chester Hazard Mitigation Committee was formed to begin updating the Plan. The Committee followed the process set forth in the Local Mitigation Planning Handbook (2013) and the 9 steps according to FEMA's *Local Mitigation Planning Handbook*, March 2013 is outlined on pages 6 and 7 of this Plan.

The Committee consisted of representatives from various town departments and boards, as well as and state agencies, including the School, Planning, Fire, Police, Public Works, Planning Board, and Board of Selectmen. All meetings of the Chester Hazard Mitigation Committee were geared to accommodate brainstorming, open discussion and an increased awareness of potential hazardous conditions within the Town.

All of the meetings were properly posted in two public places as required by NH state open meeting laws. The public was invited to attend meetings and provide input through such opportunities as viewing the Town of Chester Fire Department's and SNHPC websites, meeting agendas and minutes, public meeting notices, as well as press release and public media blasts and newsletter articles prepared by the SNHPC. Emergency Management representatives from abutting communities were invited to public meeting via email invite. All meetings were held at the Chester Fire Station. Copies of all the meeting agendas, minutes and attendance sheets for this 2016 Updated Plan are provided in Appendix F.

The planning process included a complete review of the 2011 Chester Hazard Mitigation Plan. Each section of the 2011 Plan was reviewed and updated according to new information and the events of the past five years. Use the 2011 Plan as a base, each element of the old plan was examined and revised to reflect changes that had taken place in development and in the priorities of the community. In addition, referring to

the 2011 Plan, the Chester Hazard Mitigation Committee was able to reassess strategies from the past and to improve upon mitigation strategies for the future.

The following narrative explains how the 2011 Chester Hazard Mitigation Plan was used during each step of the planning process to make revisions that resulted in this Plan

Tasks to complete the Plan Update were as follows:

Task 1: Determine the Planning Area & Resources: This task was conducted by town staff and the Regional Planning Commission. Information from the previous plan was reviewed and revised. The results of this research can be found in Section II, "Community Profile".

Task 2: Building the Planning Team: This task was conducted by town staff and the Regional Planning Commission. Commission staff contacted department heads and land use board volunteers. Town staff made further inquiries and posted notices for residents and other stakeholders who might wish to volunteer their time and serve on a committee.

Task 3: Create an Outreach Program: This task was conducted by town staff and the Regional Planning Commission throughout the plan's update. Together multiple efforts were made to involve and educate the public regarding the process and input of the plan. Details of various outreach efforts can be found in this section of the plan.

Task 4: Review Community Capabilities: The Committee reviewed each type of hazard and which sections or town were vulnerable to that type of hazard. The results were the Identified Hazards Map, which can be found on page 43. Furthermore, the Committee identified and catalogued all of the critical facilities and areas at risk within the town, see Section V and maps "Critical Facilities," and "Areas at Risk" on pages 55 and 54 respectively.

Task 5: Conduct a Risk Assessment: The Committee conducted several assessments to help determine the gaps in coverage. These include Assessing Probability, Severity, and Risk (Section IV) and Vulnerability Assessment (Section V).

Task 6: Develop a Mitigation Strategy: The Committee reviewed all hazards and the existing mitigation strategies meant to address those hazards in Section VI. In addition, the Committee evaluated the effectiveness of the existing measures to identify where they can be improved. Section VII summaries the Committees efforts in reviewing "complete", "completed and ongoing", "deferred" and "new" mitigation action items. They evaluated all mitigation actions and prioritized them. The results are found in Section VIII, which provides the Committee's rank, the projects STAPLEE score, problem statement, mitigation action, hazard addressed, responsible party, anticipated cost, potential funding source and timeframe.

Task 7: Keep the Plan Current: The Town of Chester understands the ramifications for ensuring that this plan be monitored and updated annually or after a presidentially declared

disaster. Section IX addresses this issue.

Task 8: Review & Adopt the Plan: The Committee members reviewed and approved each section of the plan as it was completed. After acceptance by the Committee, the Plan was submitted to the New Hampshire Homeland Security and Emergency Management and the Federal Emergency Agency Region 1 Office, for review. At a public meeting, the Board of Selectmen formally adopted the plan on December 1, 2016. The plan was then granted formal approval by FEMA on January 9th, 2017.

Task 9: Create a Safe & Resilient Community: The committee discussed the mitigation actions in the Action Plan and the ways in which the implementation of the actions will be beneficial to the community. Annual reviews of the Action Plan by the committee are needed to maintain the timeframes identified for completion of activities. Incorporation of the plan into other land use plans and the Capital Improvement Plan help to ensure that the goals of the plan are met. This is also reviewed in this section as well as Section IX.

2016 Plan Update Public Committee Meetings

The Chester Hazard Mitigation Committee held meetings at the Chester Fire Department on the following dates: August 19th, 2015, Sept. 17th, 2015, Oct. 14, 2015, Nov 19th, 2015, Jan. 13th, 2016, March 3rd, 2016, April 27th, 2016, and Sept. 26th, 2016. All the Committee meetings were made public and posted in two public places as required by New Hampshire state law for public meetings.

Minutes were kept for each meeting. Each committee member received an E-mail that contained the minutes of the previous meeting and an agenda along with drafts of the plan. The minutes were available to the public. No public comment was received. Copies of the meeting agendas, minutes and attendance sheets are provided in Appendix G.

Coordination with Other Agencies and Individuals

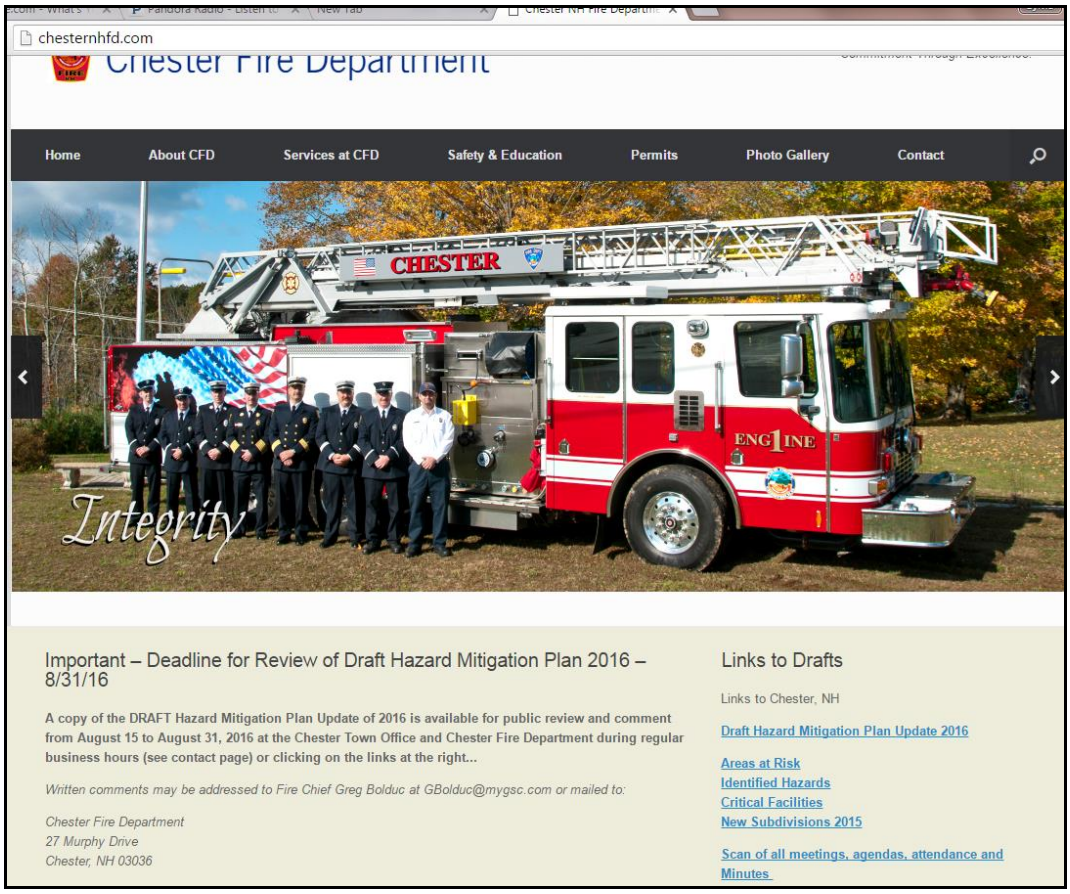
The Hazard Mitigation Committee members and their respective Town Departments contributed the contents and reviewed the *Plan* drafts. Departments represented were:

- Building Department
- Fire Department
- Police Department
- Health Department
- Highway Department
- Emergency Management
- Planning Board
- Board of Selectmen

Throughout the process, Stakeholders including neighboring communities (see Table 1 for full list of Stakeholders) were emailed meeting notices and agendas prior to the meetings. Documentation of meeting agendas and minutes can be found in Appendix F. Examples of public solicitation of public comments, including website announcements and a community newspaper article regarding the Hazard Mitigation Process can be

found on the following pages and further described in **Public and Stakeholder Involvement** on page 8.

Plan Review: Copies of the *Draft Plan* were left at the Chester Town Office Building and at the Chester Fire Department for public review and comment from August 15th, 2016 through August 31st , 2016. The Plan was also emailed to neighboring communities for review and input. Availability of the Plan and its location was publicized on the town website and postings on the Town Hall bulletin board.



Incorporation of Chester's HMP into other Chester Planning and Emergency Management Efforts:

Chester Capital Improvement Program:

Planning staff from both Chester Town Office and from SNHPC reviewed projects recommended by the Chester Hazard Mitigation Committee to ensure they were reflected in the Chester CIP. Many of the projects were represented in the CIP while a few were

not. It is anticipated that some of the projects will be added to the CIP later in the fall of 2016 when the next update is developed.

Chester Zoning Ordinance:
During the process of this program's update, the Floodplain Ordinance was updated as recommended by the NHOEP.

Chester Site and Subdivision Regulations:
It is anticipated that these regulations will be updated in the course of the next twelve months especially in regards to the steep slope ordinance. Other areas may also be deemed important to update as recommended in this report.

Town Policy Updates:
It is anticipated that the Chester Board of Selectmen will review this report and take into consideration the many recommendations developed by the Hazard Mitigation Committee.

Existing Chester Emergency Operations Plan
The Town of Chester last updated the *Chester Emergency Operations Plan* in 2010 and is reviewed by the Board of Selectmen annually. This *Plan* describes *preparedness* activities to improve the Town's ability to respond to an incident; *response* activities, including rescue operations, evacuation, emergency medical care, and emergency personnel training; and *recovery* activities that begin after the disaster. *Mitigation* activities help to reduce or eliminate the damages from future disaster events, and can occur before, during and after a disaster.

Public and Stakeholder Involvement
Public and stakeholder involvement was stressed throughout the process. A list of Stakeholders consisting of various public officials and emergency response personnel was developed (see Table A,). This group was emailed all public meeting agendas and review materials with invitations to participate. Over the course of seven meetings, a total of twenty-two people representing Chester, Auburn, NHHESM, Eversource, and NHEC participated in the review and development of the Plan

To seek public involvement and participation in the 2016 Plan Update, SNHPC released the following Press Release to the local media early on in the planning process. In addition, SNHPC prepared an article about the Hazard Mitigation Plans in its quarterly newsletter which is distributed electronically to every community and public official in the SNHPC Region, including local board members, volunteers and the general public (see following copy of the article). During the development of the Plan, SNHPC also posted meeting announcements and minutes on the SNHPC website and worked with the town staff to post agendas and public notices of all the Chester Hazard Mitigation Committee meetings at the Town Office Building.

FOR IMMEDIATE RELEASE – August 1, 2015

CONTACT:
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Southern New Hampshire Planning Commission
(603) 669-4664 – Phone
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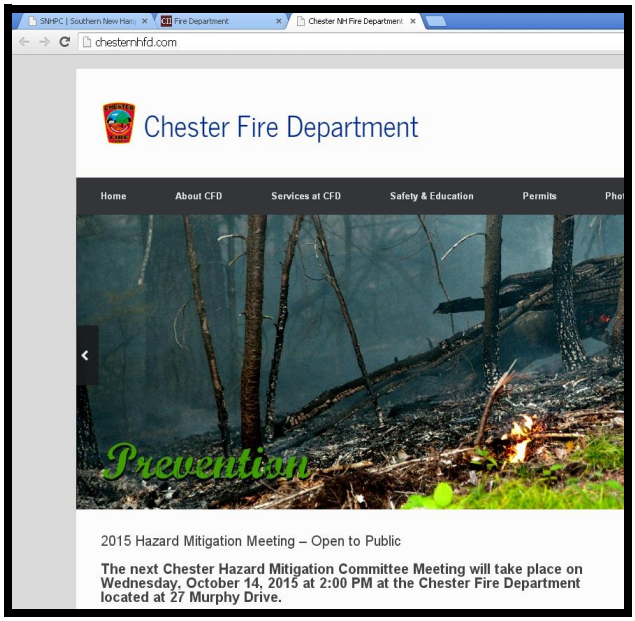
TOWN OF CHESTER HAZARDS MITIGATION PLAN

The Southern New Hampshire Planning Commission (SNHPC) is assisting the Town of Chester in updating the community's existing 2011 Hazards Mitigation Plan and is inviting the public and surrounding municipalities as well as other local, town, state and federal officials and environmental organizations to participate in the planning process.

The first Chester Hazard Mitigation Committee Meeting will take place on August 19, 2015 at 2:30 PM in the Chester Fire Department located at 27 Murphy St, Chester, NH.

As the primary contacts for the plan, please contact Sylvia von Aulock with the SNHPC for any questions, information, or interest in the plan at (603)-669-4664. Thank you!

END



Chester Fire Department Web Page: Typical Notification for Hazard Mitigation Committee Meetings.

Additional outreach efforts included the following article by Matt Rittenhouse in the October 8th, 2015 edition of Tri-Town Times, Chester's local paper.

HOMETOWN NEWS DELIVERED TO EVERY HOME IN CHESTER, HAMPSTEAD & SANDOWN

Tri-Town Times

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October 8, 2015 • Volume 10 - Issue 41 A FREE Weekly Publication

Hazard Mitigation Planning Calls for Resident Insight

MATT RITTENHOUSE
Tri-Town Times

CHESTER - An update of the Chester Hazard Mitigation Plan is underway and committee members are looking for public input to make sure they've taken into account all of the safety issues they should.

The group is looking at potentially hazardous situations in town, whether highway, infrastructure or first responder related, to get insight on their urgency and list them in order of priority as a tool to make sure those areas are handled.

The committee has had two meetings so far, and while emergency management director Philip Gladu noted that the department heads involved in the work have done good work and made practical suggestions for the document, he concedes that they don't know everything in town and thus the group needs residents who are just as invested in hazard mitigation to double check their work.

"We can't catch everything," said Gladu, adding that people may see issues in their neighborhoods or commutes that need to be addressed, and the committee is a good platform in which to raise those concerns.

The Hazard Mitigation Plan, by state law, needs to be updated every five years.

"We're talking about a lot of good things for the town," said Gladu.

For example, a big issue in town is flooding during heavy rain events, often because of the combination of development and undersized culverts, and while there are typically at least two ways of egress for any one subdivision, some areas can be left stranded when flooding washes out a road. A particular issue, said Gladu, is the culvert on Rod and Gun Club, which when washed out can leave the residents of Twin Fawn stranded. While work has been done by the highway department in the past to mitigate the situation, more is necessary.

Its issues like that that need to be identified by residents and department heads, to make sure plans are in place to fix the problem or to handle it in the meantime.

The committee is also a good place for residents to get involved in town affairs, even if they don't have much time for an ongoing commitment. All that's needed is to attend one meeting and air concerns. There's no commitment necessary, noted Gladu.

While there are many areas of town that need attention, one of the main tasks of the committee is to prioritize the issues. Gladu noted that while various factors are used to determine this hierarchy, such as how long it takes to travel to a spot in town during an emergency, most of it comes down to common sense.

The group spends some of its time at meetings brainstorming these issues, consulting maps and first responders' opinions, and making decisions on those priorities.

Like the current plan, the new plan will be used to direct emergency resources, grant searches and warrant articles that will be floated at town meeting for voter review. While some items on the last plan have been taken care of, whether by highway department efforts or town meeting-authorized spending, some have not, and those will be updated into the new plan.

"It's a continuous cycle," explained Gladu.

If interested in helping out or just visiting a meeting to air a concern and see how the process works, keep an eye out on the town's website at www.chesternh.org for the next meeting date or email Gladu at Phil.Gladu1@gmail.com with questions.

"We're just trying to get more eyes," said Gladu.

The next meeting is set for Wednesday, Oct. 14, at 2 p.m. at the fire station on Murphy Drive.

The process is planned to be wrapped up by the start of the new year.

Currently the fee for a police detail is $55 an hour, with $37 going to the officer and the rest to administrative and cruiser costs, but this is low in comparison to nearby towns, said Berube.

The average of the surrounding towns is $63 total, with $40 to the officer.

Berube noted that in addition to that increased cost in surrounding towns, revolving fund and can be used for a variety of police-related expenses. Most recently voters agreed to pull funds from it to cover the cost of upgrading the department's communications systems. Berube noted that the cruiser's video systems will need an upgrade soon, as they are 7 years old and starting to fail, and that money can hopefully be

"This is a service that we provide, apparently, for people who do not live in Chester," said Berube, joking.

He suggested keeping the rate at $1 for residents, employees and local businesses, but to increase it for out of towners to $25.

The department handles

continued on page 15

folk and North Reading, Mass., to design and construct two communications towers for the Town.

Meeting in a work session Wednesday, Sept. 30, the selectmen talked with the three bidders they had chosen to interview further about their proposals to construct communication towers in Hampstead. The Department on Little's Lane.

In the end, James George of Blue Sky Tower, who has spent nearly a year working with Hampstead selectmen and others to come to terms with how to encourage and smooth the way for communication tower construction, was the winning bid.

The board scheduled the

The other companies were Varsity Wireless in Portsmouth and Bay Communication of Mansfield, Mass.

Speaking for Varsity Wireless, Francis Parisi's proposal didn't include providing a generator for the Hampstead Fire Department safety communications equipment

continued on page 3

Finally, the Fire Department staff with assistance from NH HSEM Field Representative Liz Lufkin hosted a table with information about hazard mitigation, the process of updating the report, and information on how to get involve.

TABLE A: STAKEHOLDER LIST				
	Contact	Title	Organization	Email
STATE	Parker Moore	Emergency Management Planning Specialist	NH HESM	Parker.Moore@dos.nh.gov
	Elizabeth Lufkin	Senior Field Representative	NH HESM	elizabeth.lufkin@dos.nh.gov
	Jennifer Gilbert	Floodplain Planner	NH OEP	jennifer.gilbrt@nh.gov
	Nancy Ballargeon	Administrator	NH DES Dam Bureau	damsafety@des.nh.gov
	Shane Csiki	Fluvial Coordinator	NH DES Geologic Survey	Shane.Csiki@des.nh.gov
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	Evan Sederquest	Planning Bd. Vice Chair	Town of Chester	questy@att.net
	Greg Bolduc	Interim Fire Chief	Town of Chester	gbolcuc@gsinet.net
	Richard Antoine	Former Fire Chief	Town of Chester	
	Jason Coulter	Firefighter	Town of Chester	jwcautoservice@aol.com
	Aaron Berube	Police Chief	Town of Chester	aberube@gsinet.net
	Phil Gladu	Emergency Management Director	Town of Chester	Philip.gladu1@gmail.com
	Tony Amato	Maintenance Supervisor	Town of Chester	maintenancedept@gsinet.net
	Mike Oleson	Road Agent	Town of Chester	M1train@gsinet.net

	Andy Higham	Highway Foreman	Town of Chester	
	Darrell Quinn	Health Officer	Town of Chester	dfq@gsinet.net
	Myrick Bunker	Building Inspector/Code Enforcement Officer	Town of Chester	chesterbi@gsinet.net
	Andrew Hadick	Planning Coordinator.	Town of Chester	chstrpl@gsinet.net
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	Karen Lacroix	Assistant Principal	Chester Academy	lacroixk@chesteracademy.org
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	Brian Salas	Arborist	Eversource	
	Elizabeth LaRocca	Community Relations	Eversource	
	Michael Staurk	Forester	Eversource	
NEIGHBORING COMMUNITIES	Brian Chevalier	Emergency Management Director	Town of Sandown	chief@sandownfirerescue.com
	Robert Panit	Emergency Management Director	Town of Candia	BP-SJ@comcast.net
	Ed Gannon	Fire Chief	Town of Auburn	chief@auburnfire.org
	Mike Gagnon	Fire Chief	Town of Derry	mikegagnon@derrynh.org
	Joyce Booker-Janvrin	Emergency Management Director	Town of Freemont	joycebookerjanvrin@comcast.net
	Kevin Pratt	Emergency Management Director	Town of Raymond	kpratt@raymondnh.gov

Town of Chester's Hazard Mitigation Goals

The Chester Hazard Mitigation Committee developed, reviewed and adopted the following Hazard Mitigation Goals for this Plan and the Town of Chester.

1. To improve upon the protection of the general population, citizens and guests of the Town of Chester from all natural and man-made hazards.

2. To reduce the potential impact of natural and man-made disasters on the Town of Chester's Critical Support Services and Critical Facilities.

3. To reduce the potential impact of natural and man-made disasters on the Town of Chester's infrastructure.

4. To improve the Town of Chester's Emergency Preparedness, Disaster Response and Recovery Capability.

5. To reduce the potential impact of natural and man-made disasters on private property.

6. To reduce the potential impact of natural and man-made disasters on the Town of Chester's natural environment.

7. To reduce the Town of Chester's liability with respect to natural and man-made hazards generally.

8. To reduce the potential impact of natural and man-made disasters on the Town of Chester's specific historic treasures.

9. To address the challenges posed by climate change as they pertain to increasing risks in the Town of Chester's infrastructure and natural environment as resources allow.

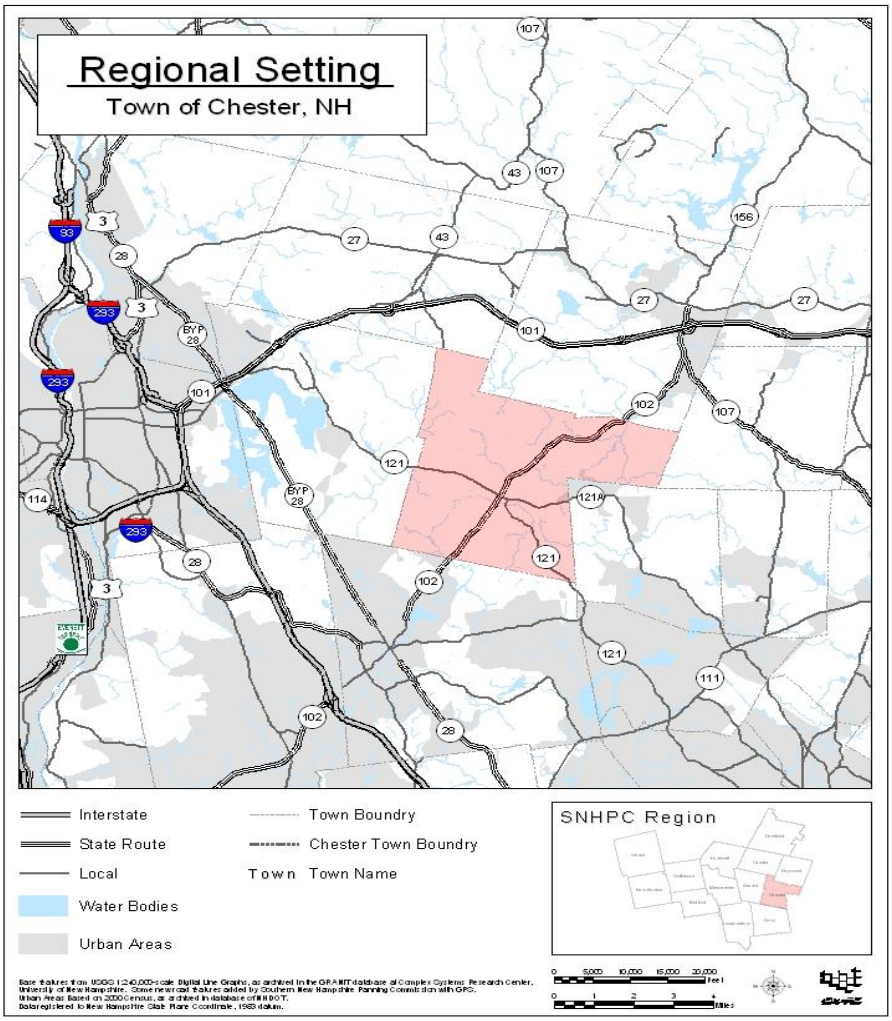
10. To continue participation in the National Flood Insurance Program (NFIP).

SECTION II
COMMUNITY PROFILE

Location, Population, Topography, and Climate Check Land Use

Chapter update from Master Plan

The Town of Chester is located in the south-central portion of the State of New Hampshire in Rockingham County. Chester is bordered by the towns of Raymond and Candia to the north; the town of Auburn to the west; the towns of Sandown and Fremont to the west; and the town of Derry to the south. It is located 13 miles east of the City of Manchester; 26 miles south of the City of Concord; and 17 miles north of Nashua. N.H. Routes 102 and 121 provide primary highway access to the Town.



Chester encompasses a total of approximately 26.1 square miles; 26.0 square miles of land area and 0.09 square miles of inland water area. Population change for Chester totaled 3,749 over 54 years, from 1,053 in 1960 to 4,802 in 2014. The largest decennial percent change was a 45 percent increase between 1970 and 1980; the smallest, a 23 percent increase between 2000 and 2010. The 2014 Census estimate for Chester was 4,802 residents, which ranked 73rd among New Hampshire's incorporated cities and towns. This results in 184.5 persons per square mile of land area. (NH Employment Security)

Most of Chester lies within the Exeter River basins however, the extreme westerly border of the community drains toward the Merrimack River basin. The major watercourses flowing through Chester are the Exeter River and its tributaries, which bisect the central and northeast corner of town, and a tributary of the Lamprey River, which is located south of NH Rt. 121 within the southwest corner of town. Other smaller streams and water bodies include North Pond, Edwards Mill Pond, Wason Pond and Harantis Lake. These surface waters provide a good quality source of drinking water for town residents, as well as downstream communities.

The landscape of Chester is generally characterized by rolling terrain that rises in elevation as it extends north and west of the Exeter River. The highest elevations are found in the north central and southwest sections of town. The highest elevation in the town is roughly 639 feet found at the top of a hill directly to the west of Harantis Lake.

There are several areas where steep slopes greater than 25% can be found. The greatest concentration occurs primarily within the northwest part of town, particularly in the area that is bound by Candia Road, Lane Road, Raymond Road and North Pond Road. Other significant locations are located within the Mardons Hill and King Hill – Walnut Hill areas. Numerous smaller areas are randomly scattered throughout the community (Master Plan for the Town of Chester, 1986, pg. 19).

The land surface of Chester is characterized by both stratified and unstratified material transported by a retreating glacial ice sheet. Along the streams, alluvial silt covers the glacial outwash deposits to form floodplains. The predominant soil group is comprised mainly of unsorted, non-stratified material such as clay, silt, sand and boulders deposited by glacial ice. Several glacial landforms, such as kames, terraces, deltas, and outwash plains are formed in the area.

The National Resource Conservation Service (NRCS) has identified approximately 770 acres of probable sources of sand and gravel in the town. An estimated 75 to 80 percent of this material appears to be located in the northwest portion of the community, generally to the east of NH Route 102. A smaller and considerably less accessible concentration has been identified northerly of NH Route 121, adjacent to the town of Auburn (1997 Chester Master Plan, pg. 19).

The climate of Chester is typical of Southern New Hampshire, with warm summers and cool winters. Temperatures during the month of July range from an average high of 82.1 degrees Fahrenheit to an average low of 54.6 degrees. January temperatures range from an average high of 32.3 degrees to an average low of 5.2 degrees. Prolonged periods of severe cold are rare. Annual average precipitation is 39.82 inches. (Golden Gate Weather Services)

Current Land Use Development Trends in Chester

Chester was first known as the chestnut country, and may have been the first of the settlement grants by the Governor of Massachusetts in 1722 for expansion of New Hampshire's seacoast settlements. Many new settlers were from Hampton, Newbury, Kingston, and Portsmouth, which were considered overcrowded. Settlers were required to plant, build houses, lay out roads, and construct a church and schoolhouse, or they would forfeit the land. The name Chester apparently came from Cheshire County in England, whose county seat is Chester, and Earl of Chester is a title held by the Prince of Wales. The towns of Auburn, Candia, Derryfield (renamed Manchester), Hooksett, and Raymond were later formed from Chester's original 100 square mile grant. (NH Employment Security)

Chester was described in the New Hampshire Municipal Abstracts of 1944 as an agricultural community with up to 25 percent seasonal residences. Since then, agriculture has declined in importance. As reported in the town's 2006 Master Plan, since 1962, Chester grew from 576 acres of developed land to 3,991 acres of developed land in 2005. The Town has seen significant increase in residential, commercial-industrial, and new roadways over the last four decades. As a result, some agricultural land has been lost, yet in 2005 nearly 60 percent of the town's 1962 farm land remains untouched. In 2010, there still remains approximately 872 acres of farmland within the community. This is a significant feat of accomplishment for the Town given the high development pressures felt on agricultural land within the community and throughout southern New Hampshire. (excerpt from Chester's 2015 Master Plan)

Existing land use activities can influence future development patterns. For example, agricultural land may continue to be subjected to development pressure during construction booms, such as the ones experienced by many

southern New Hampshire communities during the 1970s, 1980s, and since 2000. Agricultural land presents few, if any, constraints to development and can generally be suitable for many types of residential and non-residential uses. Continued population growth will require still more acres to be devoted to residential and non-residential uses. Additional acres will be consumed for expanded utilities and streets.

The Chester Planning Board reports that Chester is currently experiencing residential growth in a number of parts of town and pressure for continued residential growth despite rising land values. Below is a record of residential development since 2011, see New Subdivision Map for location.

Corresponding Map Location	**Development Name**	**Location**	**Map & Lot**	**No. of Units**
1	Jenkins Farm	Haverhill Rd	2-88	62
2	Ruth Ray	Haverhill Rd	3-6	12
3	Lincoln Lane	Sandown Rd	5-105	10
4	Downing	Sandown Rd	5-107-3	7
5	McLean	Sandown Rd	6-12	7
6	Mill Pine Village	Woodbury Ln	10-1	38
7	Jig Saw (Issac Foss Rd)	Reed Rd	9-12	9
8	Pond View	Raymond Rd	13-6-2	11
9	Emerson Ext	Emerson Dr	5-80	4
10	Hadik	Candia Rd	11-20	2
11	Abdallah	Candia & Clark Rds	7-21	4
12	Benson	Raymond & Ledge Rds	8-8,8-7-1, 8-57	18
13	Villages			

The Town of Chester's existing Zoning Ordinance, Floodplain Development Regulations, and Subdivision and Site Plan Regulations all work to minimize the impacts, if not eliminate any development in the flood hazard areas. Within the floodplain district, no new development is allowed without a variance, which would increase flood levels during the occurrence of a 100-year flood event. These programs are further outlined in Section IV "Existing Mitigation Strategies and Proposed Improvements."

The land outside of the special flood hazard areas and areas of steep slopes remain the preferred location of development in Chester by the town and developers and extensive acreage of vacant developable land still exists outside

Insert New Subdivision Map

these areas. An extensive analysis of residences and other structures within and near the floodplain was completed for this update. The first house built within the floodplain was in 1790, the last house built on the edge was in 2011.

There have been no changes in the overall vulnerability to hazards from Chester's development trends.

National Flood Insurance Program

Chester has been participating in the National Flood Insurance Program (NFIP) since June 30, 1997. Digital Flood Insurance Rate Maps and the most recent Flood insurance Study bearing the effective date of May 17, 2005 are used for flood insurance purposes and are on file with the Chester Board of Selectmen and the Building Inspector/Code Enforcement Officer.

The following actions have taken place since the last Hazard Mitigation Plan.

- Review of Chester's regulations by NHOEP Floodplain specialist, Jennifer Gilbert, including land designated as "Special Flood Hazard Areas" (SFHA) by the National Flood Insurance Program (NFIP) in both zoning ordinance and site//subdivision regulations
- Adoption by the Town of recommended changes.

According to the most recent information, there are 10 policies for residential single family structures within the FEMA designated special flood hazard areas (100 year floodplain).

Two claims have been filed with NFIP (April 2007 and May 2006) for a total of 11,331 in paid losses. Additionally, there are no repetitive loss properties currently insured under the NFIP within the Town of Chester.

Candia Road, Chester, NH Flooding Event 1996

SECTION III
HAZARD IDENTIFICATION

A. Flooding

FLOODING - DISASTER DECLARATIONS NEAR OR WITHIN ROCKINGHAM COUNTY			
Hazard	**Date**	**Location**	**Description of Areas Impacted**
Flood	October 26th 2005	Cheshire, Grafton, Merrimack, Sullivan, and Hillsborough Counties, NH	FEMA Disaster Declaration # 1610. Severe storms and flooding; severe property damage.
Flood	October-November 2005	Grafton, Hillsborough, Merrimack, Rockingham, Strafford & Sullivan counties	FEMA Disaster Declaration # DR-1144- NH
Flood	May 25th, 2006	Belknap, Carroll, Hillsborough, Merrimack, Rockingham, and Strafford Counties, NH	FEMA Disaster Declaration # 1643. Severe storms and flooding.
Flood	April 16, 2007	All counties, NH	FEMA Disaster Declaration # 1695. Severe storms and flooding.
Flood	October 3, 2008	Central and Southern Regions	FEMA-1799-DR: Severe storms and flooding, starting on September 6th and 7th and continuing.
Flood	May 12, 2010	Rockingham County	FEMA-1913-DR: Severe storms and flooding, between March 14th and 31st.

The following descriptions are from the 2013 State of New Hampshire Multi Hazard Mitigation Plan.

The Chester Hazard Mitigation Committee reviewed the following kinds of hazards related to flooding:

1. Riverine Flooding

Riverine flooding is the most common disaster event in the State of New Hampshire. In recent years some areas in the State have experienced multiple disastrous flood events at recurrence intervals of less than ten years. New Hampshire usually has a climate of abundant precipitation. Weather ranges from

moderate coastal to severe continental, with annual precipitation ranging from about 35 inches in the Connecticut and Merrimack River valleys, to about 90 inches on top of Mount Washington. (2013 State Multi-Hazard Mitigation Plan)

Some of the more severe flooding in Chester occurs during the spring, fall and winter seasons. The most severe riverine flooding events in Chester occurred in March 1936 along the Exeter River, due to heavy rainfall in combination with rapid snowmelt and debris impacted infrastructure. These factors occurring together created catastrophic results.

All FEMA designated special flood hazard areas (SFHAs) in the Town of Chester are potentially at risk in the event of riverine flooding.

Low probability for riverine flooding to occur and cause damage in Chester.

2. Hurricanes

The primary threats associated with hurricanes come from flooding due to a coastal storm surge, inland flooding due to heavy precipitation and severe winds. Hurricanes are known for their high winds and the damage they can cause, but about 80 percent of deaths during hurricanes are due to drowning.

The largest recorded hurricane to strike New Hampshire was the Great New England Hurricane of 1938, which caused $22 million (in 1938 dollars) in direct damage and killed 13 people. A repeat of this event today would be devastating. The state's population has more than doubled since 1938 and much of that population growth has been in areas near the coast or inland waterways. There are many more people in harm's way today. New Hampshire also lacks a statewide building code to enforce wind-resistant construction standards.

Hurricane Bob dealt New Hampshire a glancing blow in 1991 yet still was responsible for $2.5 million in damage and three deaths. It is important to note that tropical storms below hurricane intensity have been responsible for some of the worst inland flooding experienced in the Northeast. Moving slowly and carrying lots of moisture, tropical storms can produce rain of several inches per hour. Even though hurricanes tend to lose intensity and their winds diminish as they move north, the heavy rain they bring can still be dangerous. (2013 State Multi-Hazard Mitigation Plan)

Potential effects of a hurricane include flooding, runoff not handled adequately, and disrupted travel. The following is a table of hurricane and tropical storm events that impacted New Hampshire from 1938 to 2012 is from the 2013 State Multi-Hazard Mitigation Plan.

HURRICANES AND TROPICAL STORMS FROM 1938 TO 2012				
Name	**Date**	**Category**	**Area Impact**	**NH Damages**
THE GREAT NEW ENGLAND HURRICANE	Sep 21, 1938	3	Southern New England	13 Deaths, 1,363 families received assistance, interruption of electric and telephone services for weeks, 2 billion feet of marketable lumber blown down, flooding throughout the State, in some cases equaling and surpassing the Flood of 1936. Total Direct Losses - $12,337,643 (1938 Dollars) This does not include indirect losses, such as loss of trade and the impact to the timber industry.
HURRICANE	Aug 31, 1954	3	Southern New	Extensive amount of trees blown down and property damage, large crop loss, localized
HURRICANE EDNA	Sep 11, 1954	3	Massachusetts	This Hurricane moved off shore but still cost 21 lives and $40.5 million in damages throughout New England. Followed so close to Carol it made recovery difficult for some areas. Heavy rain in
HURRICANE DONN	Sep 12, 1960	3	Southern and Central New	Heavy flooding in Massachusetts and Southern New Hampshire.
TROPICAL STORM DAISY	Oct 7, 1962	N/A	Southern and Central New	Heavy swell and flooding coastal New Hampshire.
TROPICAL STORM DORIA	Aug 28, 1971	N/A	Southern and Central New	Center passed over New Hampshire resulting in heavy rain and damaging winds.
HURRICANE BELLE	Aug 10, 1976	1	Southern New England	Primarily rain with resulting flooding in New Hampshire.
HURRICANE GLORIA	Sept 27, 1985	2	Southern New England	This hurricane fell apart upon striking Long Island with heavy rains, localized flooding, and minor wind damage in New Hampshire.
HURRICANE BOB	Aug 19, 1991	2	Southern New England	Hurricane Bob struck southern New England then curved off the coast, to the east, causing it to miss New Hampshire. Yet 3 persons were killed and $2.5 million in damages were suffered along

TROPICAL STORM FLOYD	Sep 16-18, 1999	N/A	New Hampshire wide	This was originally a Hurricane that heavily impacted North Carolina and dumped heavy rains on New England, resulting in a Presidential Declaration of Disaster in NH; FEMA DR-1305-NH with the counties of Belknap, Grafton and
Tropical Storm Irene	August 26, - September 6, 2011	N/A	New England	Storm dumped heavy rains on New England causing significant damage resulting in a Presidential Declaration of Disaster in NH; FEMA DR-4026-NH with the counties of Belknap, Carroll, Coos, Grafton, Merrimack, Strafford, and Sullivan designated.
Hurricane Sandy	October 29, 2012	1	New England, NYC and New Jersey	Strong Storm surge and heavy rains across New England, NYC and New Jersey caused significant damage resulting in an emergency declaration EM-3360 for Direct Federal Assistance and Category B (Emergency Protective Measures).

All areas of the Town of Chester are potentially at risk if a hurricane reaches Rockingham County, New Hampshire. This could affect electrical power for the entire town.

Medium probability for hurricanes to occur and cause damage in Chester.

3. Debris-impacted infrastructure and river ice jams
(Note: Road Washouts and Culvert Crossings have been incorporated into this section to reduce redundancy)

Debris carried by floodwaters can significantly compromise the effectiveness of otherwise adequately designed bridges, dams, culverts, diverting structures, etc. Storm debris carried by floodwaters may exacerbate a given flooding hazard by becoming obstructions to normal storm water flow. Culverts and bridge crossings that are undersized in relation to the river or stream in which they are contained can lead to sedimentation and debris accumulation, potentially causing structural failures and major flooding downstream. (2013 State Multi-Hazard Mitigation Plan)

The potential effects of flooding are increased when infrastructure (culverts) are obstructed either by debris or ice formations. These obstructions compromise the normal stormwater flow, creating an artificial dam causing a backup of water upstream and forcing water levels higher. Debris obstructions can be caused from vegetative debris (including and typically beaver activity), silt, and soils, that have developed in infrastructure such as roadway culverts. Ice jams are

caused by ice formations in and around infrastructure but were considered an uncommon and low risk by the Committee.

Historically, floods in Chester have been due to snowmelt and heavy rains in conjunction with debris-impacted infrastructure.

Localized Flooding

Committee members reported flooding at the following locations:

1. Shepard Home Road at the intersections of Hanson Road
2. Raymond Road near the Town line – Route 102 at the intersection of Shepard Home Road
3. Rod & Gun Club
4. Freemont Road near Jennifer Drive
5. Edwards Mill Road
6. North Pond Road – two locations, one near North Pond, one near North Pond Dam
7. Candia Road near "The Villages of Chester"
8. Lane Road – two locations, one along gravel area, one near Norton Road
9. Cole Road near Derry town line
10. Harantis Lake Road near intersection of Cole Road
11. Halls Village Road – two locations, one near Hart Roberts Road, the second just west of Hart Roberts Road

It was noted many of these locations also are subject to culverts clogging due to beaver activity, and that the flooding duration and intensity varies according to storm and culvert size. Still, typically flooding is not experienced much longer than actual storm event for most of these locations.

All special flood hazard areas in the Town of Chester are potentially at risk if there is debris-impacted infrastructure.

These locations are identified as Special Flooding Areas on the Identified Hazard Areas Map. In many cases, the shoulder and roadway itself have been washed out making it impassable and difficult to access adjacent properties.

The roads most affected include: Candia Road, North Pond Road, Harantis Lake Road, Derry Road, Towle Road, Fremont Road, Shepard Home and Hanson Road.

High probability for debris impacted infrastructure to occur and cause damage in Chester.


Hanson Rd At the Exeter River, Flooding Event, 1996

4. Erosion and mudslides

The Chester HMP Committee determined that Chester had zero probability of this hazard to occur in Chester and therefore has been removed from this plan.

5. Rapid snowpack melt

The State's climate, mountainous terrain increases the susceptibility to flooding which may be accelerated by the seasonal rapid melting of the snowpack, coupled with moderate temperatures and heavy rains. The upland areas may be exposed to associated erosion and deposition issues in or near streambeds. The lower-lying areas of the State may experience either flash-flooding or inundation events accelerated by the rapid melting of the snowpack. (2013 State Multi-Hazard Mitigation Plan)

The roads identified in the Flooding Subsection Debris Impacted Infrastructure as well as Town owned buildings with flat roofs are potentially at risk if there is rapid snowpack melt.

Medium probability for rapid snowpack melt to occur and cause damage in Chester.

6. Dam breach or failure

Dams can sustain damage during an unusually heavy rain event or a rain event that occurs in conjunction with runoff produced during the spring thaw, which can stress a dam beyond its design capabilities. An example would be if a storm event produced more runoff than a dam's outlet works (spillways and gates, etc.) could pass. (2013 State Multi-Hazard Mitigation Plan)

The State of New Hampshire uses a hazard potential classification based on the impact of dam breach or failure. All class S and H dams have the potential to cause damage if they breach or fail. Chester has three (3) Class NM dams (Non-menace), four (4) Class L dams (low hazard potential), no Class S dams (significant hazard potential), and no Class H dams (high hazard potential). The dam classes are defined in Appendix B. (NH DES Dam Bureau, "Dams")

The Town has three dams which they monitor and maintain. These dams are identified as North Pond dam, Wason Pond dam, and Edwards Mill dam. The latter two have recently been renovated and the first is considered in good condition.

"The Department of Environmental Services (DES), through its Dam Bureau, is responsible for the regulation of the State's dams to ensure that they are constructed, maintained and operated in a manner to promote public safety. (2013 State Multi-Hazard mItigation Plan)." In 1988, the New Hampshire State Legislature recognized the need for dam owners to prepare a plan to assist the local community in responding effectively to a dam failure. The legislature amended RSA 482:2 and RSA 482:12 and adopted RSA 482:11a to require that dam owners develop an Emergency Action Plan for all dams that may be a menace to public safety due to their condition, height, and location. (NH DES Dam Bureau, Environmental Fact Sheet DB-11) The most notable private dam is Harantis Lake dam.

There have been no significant dam failures that have adversely impacted the Town in the past five years.

Low probability for dam breach or failure to occur and cause damage in Chester.

B. <u>Wind</u>

The Chester Hazard Mitigation Committee reviewed the following kinds of hazards related to wind:

1. <u>Hurricanes</u>

Severe hurricanes reaching south-central New Hampshire in the late summer and early fall are the most dangerous of the coastal storms that pass through New England from the south. Tropical depressions are considered to be of hurricane force when winds reach 74 miles per hour, see table below for hurricane categorization according to the Saffir-Simpson Scale. Substantial damage may result from winds of this force, especially considering the duration of the event, which may last for many hours. Potential effects of hurricane force winds include fallen trees, telephone poles and power lines.

Saffir-Simpson Hurricane Wind Scale

Category	Sustained Winds	Types of Damage Due to Hurricane Winds
1	74-95 mph	**Very dangerous winds will produce some damage:** Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.
2	96-110 mph	**Extremely dangerous winds will cause extensive damage:** Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.
3	111-129 mph	**Devastating damage will occur:** Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.
4	130-156 mph	**Catastrophic damage will occur:** Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
5	157 mph or higher	**Catastrophic damage will occur:** A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

Source: National Oceanic and Atmospheric Administration (NOAA)

The two most recent hurricanes recognized by the Committee included the following:

A. August 26 - September 6, 2011 Hurricane Irene: This storm produced heavy rains and caused substantial damage in New England. The storm produced substantial damage in Vermont.

B. October 29, 2012 Hurricane Sandy: This storm, like Hurricane Irene, caused a Presidential Disaster Area to be declared. Hurricane Sandy created a strong storm surge and heavy rains across New England, NYC and New Jersey. Hurricane Sandy left parts of Chester without power and resulted in tree limbs falling on wires throughout town, however there was no structural damage in the Town, nor any injuries or deaths reported. The Fire Department coordinated with FEMA prior to the storm. The Town opened the emergency shelter at Chester Academy for one afternoon for community members to use to take showers. Fire, Police,

and Highway Departments conducted a final cleanup of debris. The storm left no significant cost to the Town.

All areas of Chester are at risk if a hurricane reaches Rockingham County, NH.

Medium probability for hurricanes to occur and cause damage in Chester.

2. Tornados

A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud. These events are spawned by thunderstorms and occasionally by hurricanes. They may also occur singularly or in multiples. Tornados develop when cool air overrides a layer of warm air, causing the warm air to rise rapidly. Most vortices remain suspended in the atmosphere. Should they touch down, they become a force of destruction. (NH 2013 State Multi-Hazard Mitigation Plan)

Tornados are measured using the Fujita Tornado Damage Scale, as seen in the table below (National Oceanic and Atmospheric Administration).

Enhanced Fujita Tornado Damage Scale

FUJITA SCALE			DERIVED EF SCALE		**OPERATIONAL EF SCALE**	
F Number	Fastest 1/4-mile (mph)	3 Second Gust (mph)	EF Number	3 Second Gust (mph)	**EF Number**	**3 Second Gust (mph)**
0	40-72	45-78	0	65-85	**0**	**65-85**
1	73-112	79-117	1	86-109	**1**	**86-110**
2	113-157	118-161	2	110-137	**2**	**111-135**
3	158-207	162-209	3	138-167	**3**	**136-165**
4	208-260	210-261	4	168-199	**4**	**166-200**
5	261-318	262-317	5	200-234	**5**	**Over 200**

Source: NOAA

Between 1956 and 2010 there were 10 known tornados in Rockingham County.[4] Two of these were a F0, two were F1, five were F2 and one was a F3.

[4] NOAA Satellite and Information Service

In the past five years there have been no known tornados that adversely impacted the town of Chester.

All areas of Chester are potentially at risk if a tornado reaches the town.

Low probability for tornados to occur and cause damage in Chester.

3. Nor'easters

A Nor'easter is a large weather system traveling from South to North, passing along or near the seacoast. As the storm approaches New England and its intensity becomes increasingly apparent, the resulting counterclockwise cyclonic winds strike the coast and inland areas from a Northeasterly direction. In the winter months, oftentimes heavy snow conditions accompany these events. It can form over land or over the coastal waters. These winter weather events are notorious for producing heavy snow, rain, and tremendous waves that crash onto Atlantic beaches, often causing beach erosion and structural damage. Wind gusts associated with these storms can exceed hurricane force in intensity. A nor'easter gets its name from the continuously strong northeasterly winds blowing in from the ocean ahead of the storm and over the coastal areas.[5]" Hazards from nor'easters include icing and heavy snows which cause downed trees and power lines to go down.

Recent Nor'easters affecting Chester included:

- October 29 to 31, 2011 early and severe snow storm around Halloween, referred to as "Snowtober," affected communities in central and southern NH. As expected, the Chester Police Department responded to numerous weather-related calls during this snow event. The Chester Fire Department had 36 calls for service, and staffed the Fire Station during this event. The Chester Highway Department spent $15,000 for plowing and $4,500 for sand and salt for this event.
- February 8-9, 2013, a Nor'easter, known as Winter Storm NEMO, struck the state of New Hampshire and brought almost three feet of snow to New England with wind gusts up to 75 mph. The Governor declared a State of Emergency. As expected, the Chester Police Department responded to numerous weather-related calls during this snow event. The Chester Fire Department had 5 calls for service, and staffed the Fire Station during this event. The Chester Highway Department spent $33,000 for plowing and $10,000 for sand and salt for this event.

[5] NOAA. National Weather Service. Glossary. http://w1.weather.gov/glossary/index.php?letter=n. 02-06-14.

- November 25-30, 2014 Thanksgiving Day snowstorm caused a significant number of power outages in southern and central NH. The storm was the 4th largest in number of power outages according to PSNH. As expected, the Chester Police Department responded to numerous weather-related calls during this snow event. The Chester Fire Department had 20 calls for service, and staffed the Fire Station during this event. The Chester Highway Department spent $21,000 for plowing and $8,000 for sand and salt for this event.
- January 26 through about February 16, 2015 series of frequent heavy snowstorms taxed state and local government snow plowing budgets and caused the cancellations of schools and businesses. FEMA declared this incident a disaster. As expected, the Chester Police Department responded to numerous weather-related calls during this snow event. The Chester Fire Department had 24 calls for service, and staffed the Fire Station during these storms. The Chester Highway Department spent $175,000 for plowing and $40,000 for sand and salt for this event. To put the Highway Department's expenses in perspective, the current annual plowing and salt budgets are $187,000 and $75,000 respectively.

These were regional events that affected southern and central NH, including the Town of Chester. **All areas of Chester** are potentially at risk for property damage and loss of life due to nor'-easters.

Medium probability for nor'easters to occur and cause damage in Chester.

4. Downburst

A downburst is a severe, localized wind blasting down from a thunderstorm. These "straight line" winds are distinguishable from tornadic activity by the pattern of destruction and debris. Depending on the size and location of these events, the destruction to property can be devastating. Downbursts fall into two categories: Microburst which covers an area less than 2.5 miles in diameter; and Macroburst which covers an area at least 2.5 miles in diameter.

The following table is from the 2013 State Multi-Hazard Mitigation Plan.

State of New Hampshire Micro/Macroburst Historic Events			
Location(Town or Counties)	**Date**	**Type**	**Damages**
Town of Stratham	08/18/1991	Microburst	11 Injured, 5 fatalities and $2,498,974 in damages

Town of Moultonborough	07/26/1994	Microburst	Downed trees, utility poles and wires, 1800 homes without power, and 50 – 60 houses damaged
Merrimack, Grafton, Hillsborough	07/06/1999	Macroburst	2 fatalities, 2 roofs blown off structures, downed trees, widespread power outages, and damaged utility poles and wires
Town of Bow	09/06/2011	Microburst	City Auto in Bow had 15 campers damaged and estimated $200,000 in damage
Lake Winnisquam, Tilton	07/04/2012	Microburst	Several large trees came down, many landing on homes or parked vehicles. No one was hurt, but there was a lot of damage. Thirty homes were damaged and 12 people spent the night sheltered at a local hotel.
City of Franklin, Webster Lake	10/30/2012	Microburst	Several large trees came down, landing on two summer homes, completely demolishing one. No injuries were reported.

While there have been recent incidents of downbursts in New Hampshire, none have adversely impacted Chester. **All locations in Chester** are at risk for property damage and loss of life due to downbursts.

Medium probability for downbursts to occur and cause damage in Chester.

5. Lightning

Lightning is a giant spark of electricity that occurs within the atmosphere, or between the atmosphere and the ground. As lightning passes through the air, it heats the air to a temperature of 50,000 degrees Fahrenheit, considerably hotter than the surface of the Sun. During a lightning discharge, the sudden heating of the air causes it to expand rapidly. After the discharge, the air contracts quickly as it cools back to ambient temperatures. This rapid expansion and contraction of the air causes a shock wave that we hear as thunder, a shock wave that can damage building walls and break glass. In the United States, it is reported that an average of 54 people are killed by lightning annually. (2013 State Multi-Hazard Mitigation Plan)

Lightning can be measured to determine how likely it may be for starting fires. Using a Level system of 1 to 6 corresponding with storm development and the number of lightning strikes, the Lightning Activity level (LAL) measures the magnitude of lightning strikes as displayed in the below table.

Lightning Activity Level (LAL)

Level	LAL Cloud and Storm Development	Cloud to Ground Strikes per 5 Minutes	Cloud to Ground Strikes per 15 Minutes
LAL 1	No thunderstorms	n/a	n/a
LAL 2	Isolated thunderstorms. Light rain will occasionally reach the ground. Lightning is very infrequent, 1 to 5 cloud to ground strikes in a five minute period.	1 to 5	1 to 8
LAL 3	Widely scattered thunderstorms. Light to moderate rain will reach the ground. Lightning is infrequent, 6 to 10 cloud to ground strikes in a 5 minute period.	6 to 10	9 to 15
LAL 4	Scattered thunderstorms. Moderate rain is commonly produced. Lightning is frequent, 11 to 15 cloud to ground strikes in a 5 minute period.	11 to 15	16 to 25
LAL 5	Numerous thunderstorms. Rainfall is moderate to heavy. Lightning is frequent and intense, greater than 15 cloud to ground strikes in a 5 minute period.	>15	>25
LAL 6	Dry lightning (same as LAL 3 but without rain). This type of lightning has the potential for extreme fire activity and is normally highlighted in fire weather forecasts with a Red Flag Warning.	6 to 10	9 to 15

Source: National Weather Service

All areas of Chester are potentially at risk for property damage and loss of life due to lightning.

There have been no significant lightning strikes that have adversely impacted the Town in the past five years.

Medium probability for lightning to occur and cause damage in Chester.

C. Fires

The Chester Hazard Mitigation Committee reviewed the following kinds of hazards related to fires:

1. Wild Land Fires

Wildfire is defined as any unwanted and unplanned fire burning in forest, shrub or grass and is frequently referred to as forest fires, shrub fires or grass fires, depending on their location. They often occur during drought and when woody debris on the forest floor is readily available to fuel the fire. The threat of wildfires is greatest where vegetation patterns have been altered by past land-use practices, fire suppression and fire exclusion.

New Hampshire is a heavily forested state and is therefore vulnerable to this hazard, particularly during periods of drought and/or large- scale natural

disturbances causing unusual fuel buildup. The proximity of many populated areas to the State's forested lands exposes these areas and their populations to the potential impact of wildfire. The Granite State is the second most forested state in the United States (trailing Maine). Forests occupy 84 percent, or 4.8 million acres. The southern portion of the State has seen rapid commercial and residential development which has extended into previously forested areas. Although this development has slowed, this sprawl has created its own concerns regarding the increased risk of damage in the wildland-urban interface. In a study conducted by the United States Forest Service in 2006, New Hampshire was ranked as having the highest percentage of homes in the wildland-urban interface of any state in the nation. Present concerns are that the Ice Storm of 2008 has also left a significant amount of woody debris in the forests of the region and may fuel future wildfires. (2013 State Multi-Hazard Mitigation Plan)

The potential magnitude of a hazard event, also referred to as the extent, scale or strength of a disaster, provides a measurement of how large and significant a hazard can become. The Table below shows the National Wildfire Coordinating Group (NWCG) Size Fire Classification.

National Wildfire Coordinating Group (NWCG) Size Fire Classification	
Class A	1/4 acre or less
Class B	More than 1/4 acre, but less than 10 acres
Class C	10 acres or more, but less than 100 acres
Class D	100 acres or more, but less than 300 acres
Class E	300 acres or more, but less than 1,000 acres
Class F	1,000 acres or more, but less than 5,000 acres
Class G	5,000 acres or more

The Fire Department has responded to only four larger wild land or brush fires in the five years since the last HMP update; fewer than the eight wild fires that occurred all in 2010. Most of the wild fires were mutual aid responses to communities outside of Chester's boundaries.

In the Town of Chester, the following areas are susceptible to wild land fires:

- The South Woods area that are located at the end of The Bridle Path Road and Harantis Lake Roads;
- The woods area around Wason Pond Recreation Area;
- Power lines (Pingree Hill Road area, Lane Road to Candia Road to Chester Tpk to Chester Street, Pomp Road to Wells Village Road, and Pingree Hill Road to the FAA tower); and

These areas are shown on the Identified Hazards Map.

Low probability for wild land fires to occur and cause damage in Chester.

2. Isolated Homes

Isolated homes are more susceptible to the impacts of wildfire due to the challenges of reaching them with fire-fighting capabilities. Isolated homes are a concern for New Hampshire, as it is heavily forested and there has been an increase in the urban-wildlife interface as towns develop and grow.

There are isolated homes located throughout the Town of Chester. Most of these homes can be found along or near the town's existing roads and highways. The greatest concentration of homes occurs within the northeast and southeast sections of town.

Low probability for isolated homes to be damaged in Chester.

D. Ice and Snow Events

The Chester Hazard Mitigation Committee reviewed the following kinds of hazards related to ice and snow events:

1. Heavy Snowstorms

A heavy snowstorm is generally considered to be one that deposits four or more inches of snow (or 10 cm) in a twelve-hour period. A blizzard is a violent snowstorm with winds blowing at a minimum speed of 35 miles (56 kilometers) per hour and visibility of less than one-quarter mile (400 meters) for three hours. A Nor'easter is a large weather system traveling from south to north, passing along the coast. As the storm's intensity increases, the resulting counterclockwise winds which impact the coast and inland areas in a Northeasterly direction. Winds from a Nor'easter can meet or exceed hurricane force winds. (2013 State Multi-Hazard Mitigation Plan)

Since 1993, the Federal Emergency Management Agency declared five snowstorms-related Emergency Declarations for Rockingham County. The first was declared by FEMA in March of 1993 for statewide heavy snow. The second was for snowstorms during March of 2001 covering seven of the State's ten counties. (FEMA, "Federally Declared Disasters by Calendar Year,")

The third declared emergency was for a snowstorm on February 17-18, 2003. This storm accumulated approximately 18 inches of snow in the Chester area (National Weather Service, "Winter Weather Summaries"). This snow was added to an existing base of snow to create an approximate snow depth of 29 inches (National Weather Service, "Climate Data").

The fourth declared emergency was on December 6-7, 2003. This emergency was declared for eight out of 10 New Hampshire counties. The storm accumulated approximately 20 inches of snow in the Londonderry area and winds were measured at up to 39 miles per hour (National Weather Service, "Winter Weather Summaries"). Following is a map depicting snowfall during this storm.

Another declared emergency was for January 22-23, 2005 and was declared for all New Hampshire counties, except Coos. The storm accumulated 19.5 inches of snow on top of an existing six inch snow depth. (National Weather Service, "Winter Weather Summaries" and "Climate Data") Following is a map depicting snowfall during this storm.

Descriptions of the following heavy snowstorm events can be found in the Nor'easters section of Hazard Identification.

Recent heavy snowstorms affecting Chester and the region include:

- October 29-31, 2011 – known as the Halloween Storm
- February 8-9, 20413, a Nor'easter, known as the Winter Storm NEMO
- November 25-30, 2014, known as the Thanksgiving Day Snowstorm
- January 26 – February 16, 2015, a series of frequent and heavy snowstorms

All areas of Chester are potentially at risk for property damage and loss of life due to heavy snows.

Medium probability for heavy snowstorms to occur and cause damage in Chester.

2. Ice Storms

Ice Storms occur when a mass of warm, moist air collides with a mass of cold, arctic air. The less dense warm air will rise and the moisture may precipitate out in the form of rain. When this rain falls through the colder, denser air and comes in contact with cold surfaces, ice will form and may continue to form until the ice is as thick as several inches.

Much of the Northeast, experienced an intense ice storm from December 11-12, 2008. A major disaster declaration was declared for 10 counties in New Hampshire, including Rockingham. The damage was widespread and approximately 400,000 residents of New Hampshire lost power from the storm. Restoring power to a majority of the State took approximately 14 days and in some extreme cases it took 17 days.

"It was absolutely unprecedented in devastation. Take the largest number of outages in any past storm, multiply that figure by three, and it still won't equal

the outages in the 2008 ice storm." PSNH spokesman, Matt Chagnon, went on to say that, "the response was as unprecedented as the storm itself. PSNH put 2,400 linemen to work. On average, they restored power to 28,000 customers a day."[6] The 2008 ice storm was believed to be the worst ice storm ever recorded in New Hampshire.

There have been no significant ice storms that have adversely impacted the Town in the past five years.

All areas of Chester are potentially at risk for property damage and loss of life due to ice storms.

Medium probability for ice storms to occur and cause damage in Chester.

Ice storm, Chester, NH 2009

[6] Sullivan, Margo. *State, power companies explore ice storm response*. 12/29/08. http://www.eagletribune.com/punews/local_story_364030134.html

3. Hailstorms

Hailstorms are characterized by showery precipitation in the form of irregular pellets or balls of ice more than five mm in diameter, falling from a cumulonimbus cloud.[7]

Most hailstones are smaller in diameter than a dime, but, stones weighing more than a pound have been recorded. Details of how hailstones grow are complicated but, the results are irregular balls of ice that can be as large as baseballs, sometimes even bigger. While crops are the major victims, hail is also a hazard to vehicles and windows. Hail damage events can be severe to persons, property, livestock and agriculture.

The Hail Size Description Chart developed by the National Oceanic and Atmospheric Administration (NOAA) and enhanced by other National Weather Service local sites depicts the potential size of hail during a hurricane or severe storm event. Some examples from the Hail Size Description chart include "1/2 inch=Pea Size" and "2 inches=Hen Egg Size."

Hail Size Description

Hailstone Diameter in Inches	Size Description
<1/4	Bb
¼	Pea Size
½	Mothball Size
¾	Penny Size
7/8	Nickel Size
Severe Criteria 1	Quarter Size
1 ¼	Half Dollar Size
1 ½	Walnut or Ping Pong Ball Size
1 ¾	Golf Ball Size
2	Hen Egg Size
2 ½	Tennis Ball Size
2 ¾	Baseball Size
3	Teacup Size
3 4/5	Softball Size
4	Grapefruit Size
4 ¾	CD/DVD
Note: Hail size refers to the diameter of the hailstone.	

[7] NOAA. National Weather Service. Glossary. http://w1.weather.gov/glossary/index.php?letter=n. 02-06-14.

Sources: National Oceanic and Atmospheric Administration (NOAA), National Weather Service (NWS)

All areas of Chester are potentially at risk from this hazard.

There have been no significant hailstorms that have adversely impacted the Town in the past five years.

Low probability for hailstorms to occur and cause damage in Chester.

E. Seismic Events

The Chester Hazard Mitigation Committee reviewed the following kinds of hazards related to seismic events:

1. Earthquakes

An earthquake is defined as a series of vibrations induced in the Earth's crust by the abrupt rupture and rebound of rocks in which elastic strain has been slowly accumulating. New Hampshire is considered to lie in an area of moderate seismic hazard with respect to other areas within the United States. New Hampshire has had and will continue to experience large damaging earthquakes; however, the intervals between such events are greater in New Hampshire than in high hazard areas.

Earthquakes in the New Hampshire cannot be associated with specific, known faults. Though there are no identified active faults in New Hampshire, no doubt that there are active faults located beneath the surface. With that said, there is a "zone" that extends from north of the Lakes Region south along the Merrimack River into Massachusetts where most New Hampshire earthquakes have occurred. New Hampshire is in the low attenuation of seismic waves in the eastern United States. Attenuation is a term in physics that means the slow loss of intensity of flow through any kind of medium. Seismic waves can cover an area 4 to 40 times greater in the east than they do in the west because of the cold hard rock geology of New Hampshire. The importance of this to emergency planning and response is that damages can be expected to be spread over a much greater area, and an earthquake's location does not have to be close to a particular point to cause damage. (2013 State Multi-Hazard Mitigation Plan)

There are two scales that measure earthquakes, the Modified Mercalli (MM) and the Richter scales. On the Richter Scale, magnitude is expressed in whole numbers and decimal fractions. For example, a magnitude 5.3 might be computed for a moderate earthquake, and a strong earthquake might be rated as magnitude 6.3. Because of the logarithmic basis of the scale, each whole number increase in magnitude represents a tenfold increase in measured amplitude; as an

estimate of energy, each whole number step in the magnitude scale corresponds to the release of about 31 times more energy than the amount associated with the preceding whole number value.[8] The Modified Mercalli scale denotes the intensity of an earthquake, as it is perceived by humans, their reactions and damage created. It is not a mathematically based scale but a ranking of perception. (USGS)

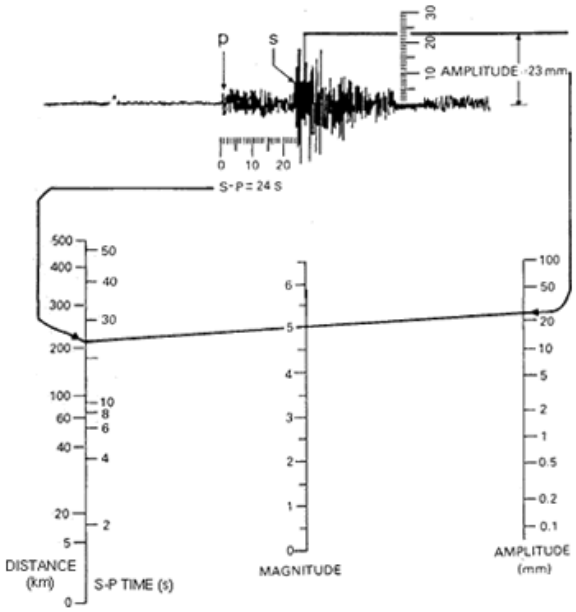
Modified Mercalli Scale

Intensity	Shaking	Description/Damage
I	Not felt	Not felt except by a very few under especially favorable conditions.
II	Weak	Felt only by a few persons at rest,especially on upper floors of buildings.
III	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Very strong	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Violent	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Extreme	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.

Source: United States Geological Survey

[8] USGS Earthquake Glossary: Richter Scale. Retrieved from https://earthquake.usgs.gov/learn/glossary/?term=Richter%20scale

Richter Scale



Source: USGS

For the figure to the right:

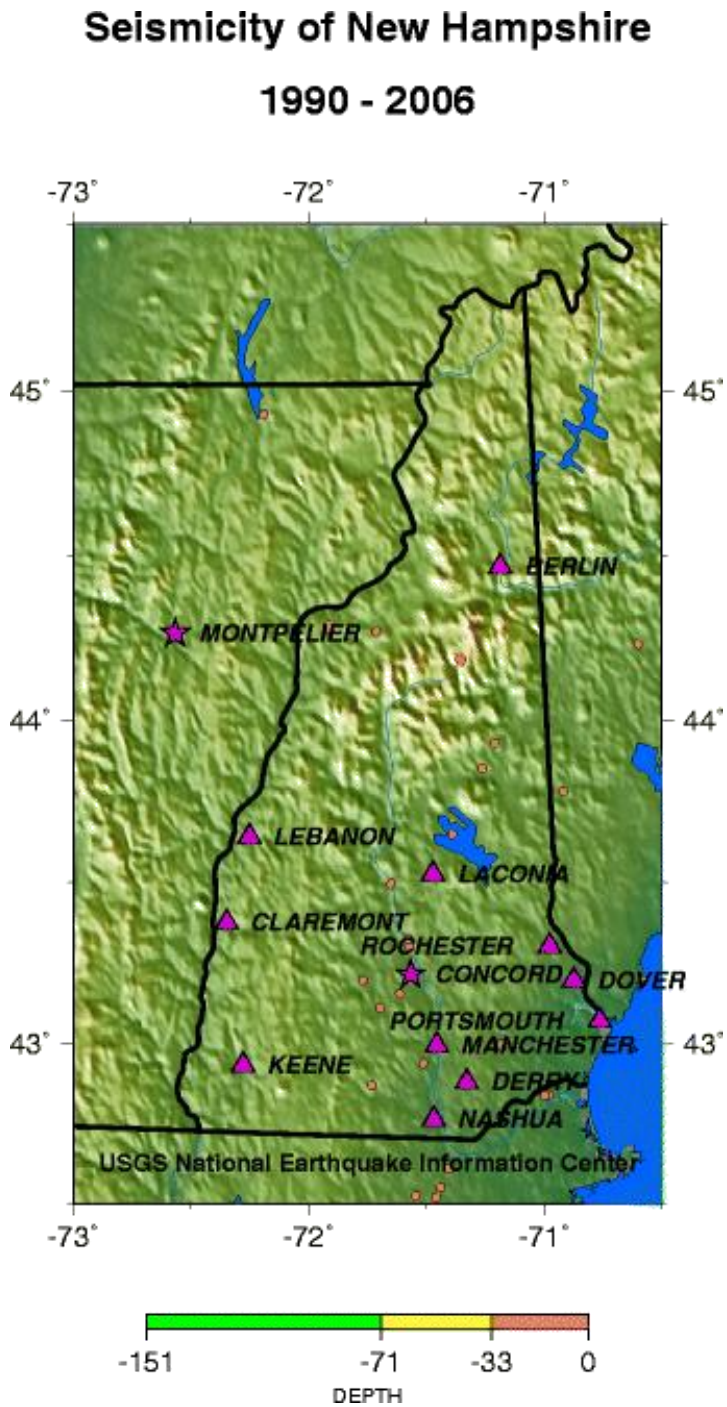
Depth is in kilometers.
Purple Triangles: Cities
Purple Star: Capital City
Circles: Earthquakes (color represents depth range)

Earthquake locations are from the USGS/NEIC PDE catalog.

From 1728-1989, there were 270 earthquakes in New Hampshire. This averages to approximately one quake every year. There have been six quakes over 4.0 on the Richter scale during the 1900s (Ibid 39-42). The most recent quake occurred on June 9, 2010, near Berlin, New Hampshire, with a magnitude of 1.8 on the Richter scale (USGS Earthquake Hazards Program).

All areas of Chester are potentially at risk for property damage and loss of life due to earthquakes.

Low probability for earthquakes to occur and cause damage in Chester.



2. Landslides

The Chester HMP Committee determined that Chester had zero probability of this hazard to occur in Chester and therefore has been removed from this plan.

F. Other Hazards

The Chester Hazard Mitigation Committee reviewed the following other kinds of hazards:

1. Geomagnetism

The Chester HMP Committee determined that Chester had zero probability of this hazard to occur in Chester and therefore has been removed from this plan.

2. Radon

Radon is a radioactive gas which is naturally occurring as a result of the typical decay of uranium commonly found in soil and rock (especially granite). Radon has carcinogenic properties and is a common problem in many states; New Hampshire has some isolated areas that are among the highest levels of radon in the United States according to the US Environmental Protection Agency (EPA).

Whether or not a particular type of granite emanates radon is dependent on the geochemistry of that particular granite, some types are a problem and some are not. In other parts of the country, radon is associated with certain black shales, sandstones, and even limestones. The EPA has estimated that radon in indoor air is responsible for about 13,600 lung cancer deaths in this country each year (EPA document, EPA 811-R-94-001, 1994). Data is very limited for radon. For the 2016 update of this plan there will be a discussion of whether radon should stay within the plan. (2013 State Multi-Hazard Mitigation Plan)

All areas of Chester would be affected by radon.

Low probability for radon to occur and cause damage in Chester.

3. Drought

A drought is a natural hazard that evolves over months or even years and can last as long as several years to as short as a few months. Fortunately droughts are rare in New Hampshire. The severity of the drought is gauged by the degree of moisture deficiency, its duration and the size of the area affected. The effect of droughts, or decreased precipitation, is indicated through measurements of soil moisture, groundwater levels, lake levels, stream flow and increased fire danger. Not all of these indicators will be minimal during a particular drought. For example, frequent minor rainstorms can replenish the soil moisture without

raising ground water levels or increasing stream flow for a sustained period of time.

Low stream flow correlates with low ground water level because it is ground water that discharges to streams and rivers that maintain stream flow during extended dry periods. Low stream flow and low ground water levels commonly cause diminished water supply.

New Hampshire breaks the State into five Drought Management Areas: one in the north; one across the central region; and three along the southern portion of the State. Federal agencies have coordinated to develop the National Drought Monitor which classifies the duration and severity of the drought using precipitation, stream flow, and soil moisture data coupled with information provided on a weekly basis from local officials. The New Hampshire Drought Management Team, whose efforts are coordinated by the NH DES, utilizes these maps to help determine which areas are hit the hardest. NH DES also maintains a "Situation Summary" where precipitation, stream flow, groundwater level, lake level and fire danger data from all over the state can be accessed to assess if areas in New Hampshire are being impacted by drought.

There are five magnitudes of drought outlined in the New Hampshire State Drought Management Plan. The highest magnitude is Exceptional, followed by Extreme, Severe, Moderate and Abnormally Dry. Each level has varying responses. (2013 State Multi-Hazard Mitigation Plan)

In the past five years, New Hampshire has experienced two significant drought periods. In spring of 2012, New Hampshire experienced a statewide drought. In 2016, southern New Hampshire experienced a severe to moderate drought. As of September 1, 2016, Rockingham County experienced a severe drought[9]. As of September 15, 2016, there is an outdoor water restriction in Chester.[10]

All areas of Chester would be affected by a drought.

Medium probability for a drought to occur and cause damage in Chester.

4. Extreme Heat

A Heat Wave is defined as a "Prolonged period of excessive heat, often combined with excessive humidity." Heat kills by pushing the human body beyond its limits. In extreme heat and high humidity, evaporation is slowed and

[9] NH Drought Management Team: Drought Status in New Hampshire 9/1/2016. Retrieved from http://des.nh.gov/organization/divisions/water/dam/drought/documents/droughtstatus.pdf

[10] Known Water Use Restrictions and Bans 2016. Retrieved from http://des.nh.gov/organization/divisions/water/dwgb/water_conservation/documents/waterban.pdf

the body must work extra hard to maintain a normal temperature. Most heat disorders occur because the victim has been overexposed to heat or has over-exercised for his or her age and physical condition. Older adults, young children and those who are sick or overweight are more likely to succumb to extreme heat. Conditions that can induce heat-related illnesses include stagnant atmospheric conditions, and poor air quality. Consequently, people living in urban areas may be at greater risk from the effects of a prolonged heat wave than those living in rural areas. Also, asphalt and concrete store heat longer and gradually release heat a night, which can produce higher nighttime temperatures known as the "urban heat island effect."[11] NOAA's National Weather Service has prepared the following Heat Index identifying likelihood of heat disorders under prolonged exposure or strenuous activity.

NOAA's National Weather Service

Heat Index

Temperature (°F)

Relative Humidity (%)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution | Extreme Caution | Danger | Extreme Danger

Extreme heat is an occasional and short-lived event in Southern New Hampshire. While there have been no extended periods of extreme heat in Hooksett, the state has seen a significant increase in mean annual temperature over the past 50 years.[12] By the end of this century, an extreme heat event that currently occurs once every 20 years could occur every two to four years in most parts of the country. This example is based on how the climate is expected to change under a high greenhouse gas emissions scenario.[13]

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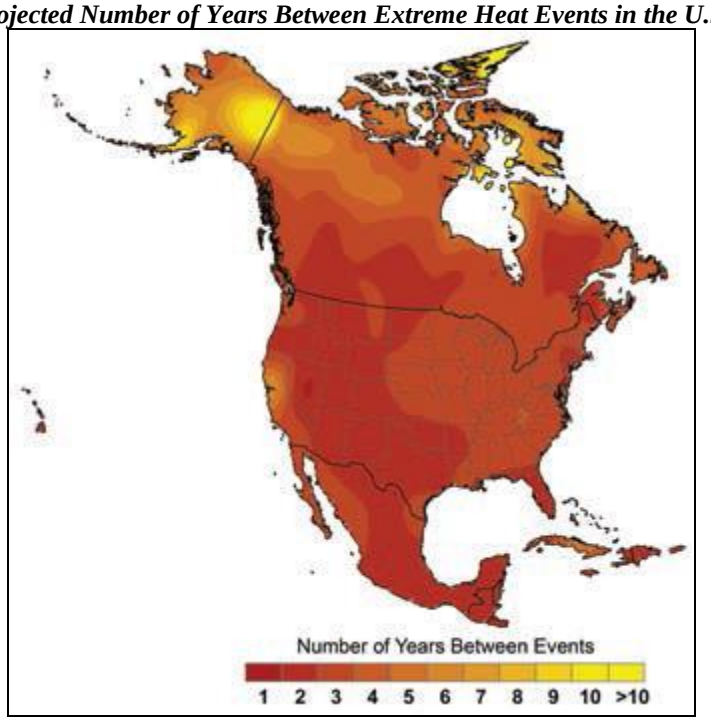
[11] NOAA, Index/Heat Disorders: http://www.srh.noaa.gov/ssd/html/heatww.htm
Climate Change in Southern New Hampshire. Climate Solutions of New England, 2014.

[12] Hubbard Brook Ecosystem Study. November 2006.
http://www.hubbardbrook.org/research/climate/vadeboncoeur06.htm

[13] Karl, T.R., J.M. Melillo, and T.C. Peterson (eds.). 2009. *Global Climate Change Impacts in the United States*. Cambridge University Press, New York.

Projected Number of Years Between Extreme Heat Events in the U.S.



Source: Karl, T.R., J.M. Melillo, and T.C. Peterson (eds.). 2009.
Global Climate Change Impacts in the United States

All areas of Chester would be affected by extreme heat, in its event. Particular areas and populations at a greater risk are:

- elderly populations and day care centers;
- power system that may become overburdened; and
- communications negatively affected by power burden.

Medium probability for extreme heat to occur and cause damage in Chester.

5. Extreme Cold

While most New Hampshire residents are rather habituated to the extreme cold situations in the State, and this is not a section identified by the State of New Hampshire Natural Hazards Mitigation Plan, it was decided to include a statement in this *Plan*. For the purposes of this *Plan,* we will refer to extreme cold in a general manner, without a scientific definition. Periods of extreme cold pose a life-threatening situation for Chester's homeless and low-income populations. With the rising costs of heating fuel and electric heat, many low-income citizens are not able to adequately heat their homes, exposing themselves to cold related medical emergencies or death. This is an even greater concern for homeless persons who may be unable to escape the extreme temperatures.

In Concord, New Hampshire there are on average 21 days below 32 degrees Fahrenheit in November, 29° in December, 30° in January, 27° in February, and 26° in March. The coldest temperatures recorded for each month were –5 degrees Fahrenheit in November, -22° in December, -33° in January, -37° in February, and -16° in March. (Northeast Regional Climate Center)

All areas of Chester would be affected by extreme cold, in its event. Particular areas and populations at a greater risk are:

- elderly populations and day care centers;
- power system that may become overburdened; and
- homeless and low-income populations.

High probability for extreme cold to occur in Chester.

A GIS-generated map was prepared to illustrate the Identified Hazard Areas.

Insert Hazard Map.

SECTION IV
ASSESSING PROBABILITY, SEVERITY, AND RISK

Past and Potential Hazards

The Chester Hazard Mitigation Committee rated each hazard utilizing the following process.

1. Assigning Low (0 to 33%chance) , Medium (34-66% chance) , or High (67 to 10% chance) values (numerically 1, 2 or 3) to each hazard type for its possible impact to Human, Property, and Business factors (vulnerability). (A score of zero is given if the hazard is considered non-applicable).

2. The same process is used to assign Low (0 to 33% chance), Medium (34-66% chance), or High (34-66% chance) , values (numerically 1, 2, or 3) to each hazard type with respect to the probability that the hazard would occur in the next 25 years

3. The Severity is calculated by determining the average of the Human, Property, and Business impacts.

4. Risk is calculated by multiplying severity by probability.

5. Relative Threat Results: Low, Medium, High risk is assigned as follows:

(0-3.3 – Low) (3.4-6.6 Med) (6.7-10 High)

.

The summary of their rating is in the following table.

Hazard Vulnerability Assessment

0-N/A 1-Low 2-Moderate 3-High	**Human Impact** Probability of death or injury	**Property Impact** Physical losses and damages	**Business Impact** Interruption of Service	**Probability** Likelihood this will occur in 25 years	**Severity** Avg. of humans/ property business	**Relative Threat** Severity-x-Probability
Event						
Flooding						
Flooding (100-YR)	1	2	2	3	1.6	5 = Med
Riverine Flooding	1	2	2	2	1.6	3.3 = Low
Hurricanes	2	2	2	2	2	4 = Med
Debris Impacted	1	3	3	3	2.3	6.9 = High

Infrastructure						
Erosion/Mudslides	1	1	1	0	1	0
Rapid Snow Pack Melt	1	2	2	3	1.6	5 = Med
Dam Breach/Failure	1	2	2	2	1.6	3.3 = Low
Road Wash Out/Culvert Crossings	2	2	2	3	2	6 = Med
Wind						
Hurricanes	2	2	2	2	2	4 = Med
Tornadoes	1	1	1	1	1	1= Low
Nor'easter	2	2	2	3	2	6 = Med
Downbursts	2	2	2	3	2	6 = Med
Lighting	2	2	2	3	2	6 = Med
Fires						
Wild Land Fires	1	1	1	1	1	1= Low
Isolated Homes	1	1	0	1	.66	<1= low
Ice and Snow Events						
Heavy Snowstorms	2	2	2	3	2	6 = Med
Ice Storms	2	2	2	3	2	6 = Med
Hailstorms	1	2	1	2	1.3	2.6 = Low
Seismic Events						
Earthquakes	1	1	1	1	1	1= Low
Landslides	0	0	0	0	0	0
Other Hazards						
Geomagnetism	0	0	0	0	0	0
Radon	1	1	1	2	1	2 = Low
Drought	1	2	1	3	1.3	3.9 = Med
Extreme Heat	2	1	1	3	1.3	3.9 = Med
Extreme Cold	2	3	2	3	2.3	6.9 = High
Critical Infrastructure	2	2	2	3	2	6 = Med
Arsenic in Wells	1	1	1	2	1	2 = Low
Large Trees Down Blocking Roads	2	2	2	3	2	6 = Med
Civil Disorder	1	2	2	1	1.6	1.6= Low
Terrorism	1	2	2	1	1.6	1.6= Low

SECTION V
VULNERABILITY ASSESSMENT:
IDENTIFICATION AND ESTIMATION OF LOSSES

Disaster Risk and Vulnerability Assessment

The Town of Chester is susceptible to a variety of natural hazards, including flooding, river ice jams, severe winter storms, and hurricanes. The following is an estimate of damage in dollars that may result when a natural hazard occurs in the town.

These estimates were calculated using FEMA's *Understanding Your Risks: Identifying Hazards and Estimating Losses,* August 2001. The publication's methodology was modified for this *Plan* based on the data available. For example, the inventory of assets includes available NFIP data, 2015 Town valuation, and identified essential facilities. Data is not yet available in a format (i.e. assessing data linked to a GIS coverage of tax maps and building footprints) to locate property specific information in a given hazard area other than as produced expressly for this *Plan*. The following calculations used available current or historical data and "Worksheet 4" in the Estimating Losses section of *Understanding Your Risks: Identifying Hazards and Estimating Losses*. Background, historical information, associated risks, and summary of assets considered in the estimation process are described in the following subsections to this chapter.

Human losses were not calculated during this exercise, but could be expected to occur depending on the type and severity of the hazard. The estimates typically represent only structural loss, unless sufficient data was available to incorporate contents, structure use and function loss. The tables below show current valuation of the Town of Chester.[14]

Note : Erosion, Mudslides, Landslides, Geomagnetism were identified as a zero risk factor by the Chester Hazard Mitigation Committee and therefore removed from the risk assessment valuation process.

[14] From the NH Department of Revenue Administration, "2009 Property Tax Tables by County"

Land Use Classification	2015 Assessed Valuation		
	Land	Buildings	Total
Current Use	$ 708,300	$ -	$ 708,300
Discretionary Preservation	$ 200	$ 6,600	$ 6,800
Residential	$ 164,307,300	$ 296,096,400	$ 460,403,700
Manufactured Housing	$ -	$ 3,309,300	$ 3,309,300
Commercial/Industrial	$ 3,637,600	$ 7,026,500	$ 10,664,100
Utilities	$ -	$ -	$ 30,715,000
		Total Assessed Valuation	**$ 505,807,200**

*Assessed values were estimated to be 91% of the full market value

Flooding **$615,331 - $2,269,888**

As part of the update, SNHPC's GIS specialist, conducted a thorough analysis of the area in and near the floodplain. The result of the analysis identified Chester had 27 single family structures, 3 two family structures, 4 garages, and 1 barn located in, adjacent or within 100 feet of the floodplain. The oldest structure was built in 1790, the majority built in the 1900s, only 4 built since 2000, and the newest built in 2011 (this was adjacent to the floodplain). According to the Assessor's office, there is an estimated population of 2.71 persons per household resulting in an estimated potentially effected population of 89. The average residential house price is $301,415. Two scenarios were considered for residential damage with a low estimate assuming damage to 25% of the structures with a one-foot flood depth and a high estimate assuming damage to 50% of the structure with a four-foot flood depth. These estimates also assume the residential structures are one- or two-story homes with basements. Standard values for percent damage, functional downtime and displacement time were used from FEMA's *Understanding Your Risks: Identifying Hazards and Estimating Losses* and its "Worksheet 4- Estimate Losses" was used to determine the actual estimates.

The low estimate was $339,092 in structural damages, $254,319 in contents loss, and $21,921 in structure use and function loss. The total low estimate loss was $615,331. The high estimate was $1,265,943 in structural damages, $949,457 in contents loss, and $54,488 in structure use and function loss. The total high estimate loss was $2,269,888.

Damage to other structures and infrastructure damage could also be extensive, including roads, bridges, utilities, towers, etc. If a major devastating flood were to occur, the damage to properties located within the floodplain could be expected to exceed this estimated amount. The cost-benefit ratio for these items makes it clear that Chester will benefit greatly from any flood mitigation

measures that will help to reduce the losses that typically occur during a major flood event.

Hurricanes **up to $5.1 million**

Most of the damage from hurricanes is caused by high water and strong winds. However, less damage could be expected to occur in Chester, which is located inland, than in a more vulnerable coastal area. Assuming a community-wide assessed structural valuation adjusted to market value of approximately $505,807,200, damaging 1% of these structures could result in losses of up to $5,058,072. This does not include other damages expected to occur on public property within the community.

Debris-Impacted Infrastructure and River Ice Jams **$10,000 to $1,300,000**

Damage from these two hazards could be expected to occur not only to privately owned structures, but also to infrastructure such as roads, bridges and culverts. An estimate of damage, in dollars, from this type of hazard can range widely depending on the nature and severity of the hazard. According to the Town's Road Agent, the more likely occurrences would be due to debris-clogged culverts from beaver activity. Undersized culverts are the most susceptible to damages. Although, beaver activity may seem a small nuisance; constant vigilance and routine maintenance must occur, especially during spring and fall months in order to keep culverts free of debris. For the purpose of this plan, culvert replacement may cost between $10,000 to $450,000 and damages could be expected to impact anywhere from 1 to 20 houses. Assuming basement flooding equal to one foot below the first floor elevation, structural and contents damages could fall within the range of $40,000 to $850,000.A small-to-medium-sized event could be expected to produce a loss from $25,000 to $2 million.

Rapid Snowpack Melt **$137,983 to $1, 379,835**

Undersized culverts and Town-owned buildings with flat roofs such as the Municipal Office Building are the most susceptible to rapid snowpack melt damage. Chester Town Office has several sections that have flat roofs, including the Multi-Purpose Room, Front Offices, and Recreation Office assessed at $564,890, $329,040, and $25,960 respectively. Contents are estimated at half the assessed value or $459,945. Heavy snowstorms associated with rapid snow melt could damage these roofs, create structural damage and damage contents. Damage estimates could range from 10% to complete failure plus

Dam Breach or Failure **$37,853 – $189,266**

Chester has no class S dams that could cause serious failure damage. There are 4 Class L dams that could pose a threat due to upstream flooding, if the dams should breach or fail. These dams are located in less developed areas of Chester, thus, less fiscal damage is expected. The Identified Hazards Map shows the

probable extent of inundation waters if the dams do breach or fail. Damage estimates could be expected to be from 5 to 25% of estimated flooding losses, or $37,853 – $189,266.

Tornados **$50,000 to $5 million**

The Fujita Scale is used to determine the intensity of tornados. Most tornados are in the F0 to F2 Class, in a range that extends to F5 Class. Building to modern wind standards provides significant property protection from tornados. New Hampshire is located within Zone 2 for Design Wind Speed for Community Shelters, which is 160 mph. While it is difficult to assess the monetary impact a tornado may have on a community, as there are no existing standard loss estimation models, the dollar range shown above indicates an approximation of what might be expected. Tornados rarely occur in this part of the country, so damage from this hazard would be uncommon.

Nor'easters, Ice Storms, Heavy Snowstorms **$5,000 to $2.5 million**

Damage from nor'easters and ice storms vary greatly depending on the amount of snow and ice that accumulates during the storm. The ice storms of 1998 and 2008 caused much damage to power lines, structures and the agricultural economy in northern New England and southeastern Canada, with $1.1 billion in insurance claims and 35 lives lost due to the storm. These types of storms in Chester could be expected to cause damage ranging from a few thousand dollars to several million, depending on the severity of the storm.

Wild Land Fires **$113,030 to $9,042,440**

A fire can strike at any time, but may be expected to occur during years of drought and particularly in the summer and fall months. From 2010 to present, there were approximately 12 wild land fires in Chester, a significant reduction in the number of wildfires reported in the previous HMP update.

Urban fires typically are contained before spreading rapidly between structures, thus limiting the damage to only one structure. Fire loss to a residential property, with 25% damage to the structure and contents, where the structure is valued at $301,415 and contents equal to half of the structure value, would create $113,030 in damages. Whereas, 100% damages to the structure and contents of the same home would equal $452,122.

Forest fires can spread more rapidly between structures due to the increased intensity and size of the fire. Presuming a small-to-medium-sized fire that destroys from one to 20 homes, damage from this hazard could be expected to range from $452,122 to $9,042,440 other damage, such as to utilities, was not included in these estimates.

Earthquakes **up to $16.7 million**

Assuming a moderate earthquake occurs in Chester, where structures are not built to a high seismic design level and are mostly of wood frame construction, it is estimated that about 5% of the community-wide assessed structural valuation adjusted to market value could be lost, including both partial and total damage.

Downbursts, Lightning, Hailstorms, Drought, Extreme Heat/Cold up to $25,000

According to the Chester Hazard Mitigation Committee, lighting storms are not unusual in Chester. Multiple measures have been taken to minimize damage to public and historic buildings. Also, in more recent years, hailstorms have also occurred, although more severe damage has occurred further east of Chester. Assuming a 1% loss on town owned structures, loss could total up to $25,000.

Note: The figures used in the above summary are estimates only. The amount of damage from any hazard will vary from these figures depending on the time of occurrence, severity of impact, weather conditions, population density and building construction at the exact event local, and the triggering of secondary events.

Critical Facilities and Areas at Risk

Town Wide Hazards (Summary of all Critical Facilities)		
Facility Type	**No. of Facilities**	**Assessed Value (2016 at 100%)**
Municipal Offices	1	$1,638,900
Police Station	1	Part of Municipal Bldg
Fire Station	1	$494,500
Emergency Operations Center	1	Part of Fire Station
Emergency Fuel Facilities	1	Part of Fire Station
Public Works Garage	1	$66,900
Primary Evacuation Routes		NA
Town Dump		$193,500
Bridges/Culverts Crossing on Primary Evacuation Routes		NA
Emergency Shelters	1	NA
Back Up Electrical Generators	2	$51,875
Electrical Power Substations/Lines	2	$12,400
Telephone Facilities	2	$287,000
Wireless Communication Facilities	3	$799,400
Radar Tower	1	$1,000,000

Areas at Risk

Chester's Hazard Mitigation Committee has divided Critical Facilities List for the Town of Chester this list of facilities into four categories.

1. The first category contains facilities needed for Emergency Response in the event of a disaster.
2. The second category contains Non-Emergency Response Facilities that have been identified by the Committee as non-essential. These are not required in an emergency response event, but are considered essential for the everyday operation of Chester.
3. The third category contains Facilities/Populations that the Committee wishes to protect in the event of a disaster.
4. The fourth category contains Potential Resources, which can provide services or supplies in the event of a disaster.

Category 1 - Emergency Response Services:

The Town has identified the Emergency Response Facilities and Services as the highest priority in regards to protection from natural and man-made hazards.

1. **Emergency Operations Center / Fire Station**
   Chester Fire Station- 27 Murphy Dr.
2. **Police Station**
   Police Station-84 Chester St. (same as Town Office and Multi-Purpose Room)
3. **Red Cross Approved Emergency Shelters**
   First Choice is Multi-Purpose Room at 84 Chester St.
   Second Choice is Chester Academy at 22 Murphy Dr.
4. **Primary Evacuation Routes**
   Routes 102, 121, 121A
   Alternative during extreme flood events – Smith Rd.
5. **Bridges Located on Primary Evacuation Routes**
   At the town line between Raymond and Chester on Route 102, Ledge Rd on 102,
   121A (or Haverill Rd) and Paul's Village
6. **Power stations, sub-stations, transmission lines**
   3 Substations, Granite State Switching Station

   Telephone facilities, transmission lines and cell towers
   4 Cell towers, FAA Tower at Bridal Path, Communication Tower incl. FAA equipment at Haverill Rd and Tower Hill
7. **Hospitals (none in Chester)**

Closest facility is Parkland Medical Center in Derry, NH

8. **Helicopter Landing Sites**
   Ballfields at Chester Academy, Wasson Pond, NHDOT Shed, Haverill Rd Field (approx. Location)

Category 2 - Non Emergency Response Facilities:
The town has identified these facilities as non-emergency facilities; however, they are considered essential for the everyday operation of Chester.

1. **Facilities**
   Town Services 84 Chester St

Category 3 - Facilities/Populations to Protect:
The third category contains people and facilities that need to be protected in event of a disaster.

1. **Annual Events**
   Halloween (approx.. 5,000 to 6,000 participants), Wasson Pond Pounder – 5k (approx.. 1250 participants), Chester Town Fair in September (approx.. 2500-3000 participants),
2. **School/Daycare**
   Chester Academy
3. **Gathering Places**
   Multi-Purpose Room at 84 Chester St.
4. **Historic Buildings/Sites**
   Stevens Hall (alternative evacuation plan)
   First Congregational Church (alternative evacuation plan)
5. **Religious Facilities**
   First Congregational Church

Category 4 - Potential Resources:
Contains facilities that provide potential resources for services or supplies.

1. **Medical Supplies**
   Parkland Medical Center in Derry, NH
2 **Gas/Fuel**
   Town gas pumps at Fire Dept. (27 Murphy Dr.),
   NHDOT Shed on 825 Raymond Rd
   Transfer Station – Diesel Fuel
3. **Emergency Power Source**

Fire Dept, Town Offices, Chester Academy all equipped with generators, total of five portable generators

Commercial Economic Impact Areas

The Chester Hazard Mitigation Committee felt that due to the lack of commercial activity in the Town of Chester, that there would be no extraordinary impacts specifically to this land use category.

Hazardous Materials Facilities

Hazard materials are managed at the Chester Transfer Station and inspected annually with the State Labor Board. Eyewash stations have recently been installed. Some of the items include two above ground tanks (a 250 gal. diesel fuel tank and 250 gal used motor oil), florescent light bulb storage, used automobile and smaller batteries, and tires. Chester puts on two hazard waste day events per year in conjunction with other participating communities such as Danville, Plaistow, and Kingston. A third party is hired to remove all materials.

Other oil and propane tanks (above ground, underground and in basements) are all inspected regularly by a third party and upgraded if needed. Due to this contract and regular inspections, the Town is very confident in the safety of all tanks.

Insert Areas at Risk Map

Insert Critical Facilities Map

SECTION VI
EXISTING MITIGATION STRATEGIES AND PROPOSED IMPROVEMENTS

EXAMPLES OF PROGRAMS FOR HAZARD CATEGORIES

Flooding

- Best Management Practices (BMP's)
- Chester Academy Emergency Evacuation and Notification Plan
- Communication Division: Dispatch Center Radio System
- Emergency Back-up Power Service
- Emergency Operations Plan
- Floodplain Conservation District
- Groundwater Protection District (Zoning Ordinance)
- National Flood Insurance Program
- New Hampshire Shoreland Protection Act
- River Stewardship
- Southeast NH Hazard Materials Mutual Aid
- State Dam Program
- Storm Drain Maintenance
- Stormwater Management Program
- Town-Adopted Building Code
- Weekly Culvert Inspection (informal) especially during heavy beaver activity periods
- Wellhead/Aquifer Monitoring Program
- Wetland Conservation District (Zoning Ordinance)

Severe Wind (includes Tornadoes & Hurricanes)

- Best Management Practices (BMP's)
- Chester Academy Emergency Evacuation and Notification Plan
- Communication Division: Dispatch Center Radio System
- Emergency Back-up Power Service
- Emergency Operations Plan
- Fire Codes, Fire Prevention
- Southeast NH Hazard Materials Mutual Aid
- State Dam Program

Debris Impacted Infrastructure

- Communication Division: Dispatch Center Radio System
- Emergency Operations Plan
- River Stewardship
- Southeast NH Hazard Materials Mutual Aid

- State Dam Program
- Storm Drain Maintenance

Ice & Snow Events
- Best Management Practices (BMP's)
- Chester Academy Blizzard Bag Program
- Chester Academy Emergency Evacuation and Notification Plan
- Communication Division: Dispatch Center Radio System
- Emergency Back-up Power Service
- Emergency Operations Plan
- Emergency Snow Removal
- Southeast NH Hazard Materials Mutual Aid
- State Dam Program
- Road Design Standards (Regulations)
- Storm Drain Maintenance
- Town-Adopted Building Code
- Winter Parking and Placing Snow or Ice In Highway Ordinances

Dam Breach or Failure
- Communication Division: Dispatch Center Radio System
- Emergency Operations Plan
- State Dam Program

Wildfire
- Best Management Practices (BMP's)
- Chester Academy Emergency Evacuation and Notification Plan
- Communication Division: Dispatch Center Radio System
- Emergency Back-up Power Service
- Emergency Operations Plan
- Fire Codes, Fire Prevention
- Southeast NH Hazard Materials Mutual Aid
- Storm Drain Maintenance
- Town-Adopted Building Code

Landslide/Erosion
- Best Management Practices
- Communication Division: Dispatch Center Radio System
- Road Design Standards (Regulations)
- River Stewardship Program
- Wetland Conservation District (Zoning Ordinance)

Earthquake

- Chester Academy Emergency Evacuation and Notification Plan
- Communication Division: Dispatch Center Radio System
- Emergency Back-up Power Service
- Emergency Operations Plan
- Fire Codes, Fire Prevention
- Mobile/Manufactured Homes Regulations
- Southeast NH Hazard Materials Mutual Aid
- State Dam Program
- Town-Adopted Building Code

Lightening, Drought, Extreme Temperatures, Hail

- Communication Division: Dispatch Center Radio System
- Emergency Back-up Power Service
- Fire Codes, Fire Prevention
- Installation of Lightning Rods and Grounding Devices

Man-Made Hazards

- Chester Academy 2015 School Security Assessment
- Chester Fire Dept Regulations for Sprinkler Systems
- Communication Division: Dispatch Center Radio System
- Emergency Operations Plan
- Fair Share Contribution
- Fire Codes, Fire Prevention
- Groundwater Protection District
- Law Enforcement
- Road Design Standards (Regulations)
- Sanitary Protection Requirements (Zoning Ordinance)
- State Wellhead/Aquifer Monitoring Program
- Southeast NH Hazard Materials Mutual Aid
- Wellhead/Aquifer Monitoring Program

Description of Existing Programs

The Town of Chester has adopted several programs and ordinances for hazard mitigation. Below are brief descriptions of these programs and how they aid in hazard mitigation.

Best Management Practices

The State has established Best Management Practices (BMPs) for erosion and sediment control. These BMPs are methods, measures or practices to prevent or reduce water pollution, including, but not limited to, structural and nonstructural controls, operation and maintenance procedures, and other

requirements and scheduling and distribution of activities. Usually, BMPs are applied as a system of practices rather than a single practice. BMPs are selected because of site-specific conditions that reflect natural background conditions.

Chester Academy Evacuation and Notification Plan

Chester Academy maintains an Emergency Evacuation and Response Plan which was adopted on June 20, 1996 and is updated annually. The plan identifies the roles and responsibilities of the Superintendent, Principle, Teachers, Custodians and Maintenance Personnel as well as contracted bus transportation personnel during fire hazards, bomb threats and emergency closing dues to inclement weather conditions. The Academy is currently working on an update to the plan.

Chester Academy Cancellation Day Program

The purpose of Cancellation Assignments is to give students a learning opportunity at home when there is a cancelled school day, typically due to snow or ice. If 80% or more of students complete their assignments, then the day will be counted as a school day and does not need to be made up at the end of the school year.

Chester Fire Dept Regulations for Sprinkler Systems

These rules compliment the Housing and Building codes by establishing further minimum fire protection standards and specifications for sprinkler systems for residential and commercial development in accordance with National Fire Protection Association (NFPA) Codes 13, 13D, and 13R.

Communication Division: Dispatch Center and Radio System

The Town operates a Communication Division, located at the Fire Department and Emergency Operation Center. The Fire Department staffs the communication center and uses a specified frequency to coordinate efforts during a major event. All 911 calls from the community are routed to the Town of Derry (20%) or to the Rockingham County Dispatch Center (80 %) in Brentwood. From there they are dispatched to Chester Fire Department (mostly the calls from Derry) or the Chester Police Department (mostly the calls from Rockingham). The Police Department reports that their communication equipment is inadequate in that they frequently experience communication "black holes" within the community depending on the location of police vehicles.

Emergency Operations Plan

The Town of Chester maintains an Emergency Operations Plan. The latest review of this plan was conducted during Jan. 2016, however the last update of the Plan was in 2010. The plan coordinates the Town Departments' actions and responses before, during and after emergency operations. Events planned for

range from flooding and snowstorms to downed aircrafts and nuclear attack. The plan was prepared to conform to guidelines by the Federal Emergency Management Agency, U.S. Nuclear Regulatory Commission, Federal Energy Regulatory Commission, the New Hampshire Homeland Security and Emergency Management and the NH State Emergency Operations Plan. The plan establishes the Emergency Operations Center at the Chester Fire Station and an Emergency Shelter at the Town Multi-Purpose Room. The center provides room for staff meetings, communication between departments and agencies, and media relations. The Emergency Operations Plan addresses evacuation procedures for emergency notification and routes to be taken. It also includes a Radiological Protection and Emergency Operations Plan.

Emergency Back-up Power Service

Town supplied generators for life support, health needs, and critical facilities. Allocation determined by Building Inspector, Building Maintenance and Fire Department

Emergency Snow Removal

Subcontractors used to assist with snow removal including building roofs, especially in the event of an excessive snowfall and accumulation on town-owned buildings.

Excavation and Reclamation Regulations (Zoning Ordinance & Subdivision & Site Plan Regulations)

The Town's Excavation Regulations minimize safety hazards created by open excavations; safeguard the public health and welfare; preserve the natural assets of soil, water, forests, and wildlife; maintain aesthetic features of the environment; prevent land and water pollution; to protect ground water resources, and promote soil stabilization and return the disturbed area to a suitable use after reclamation.

Fair Share Contribution (Zoning Ordinance, Subdivision and Site Plan Regulations)

The Town's Zoning Ordinance provides that new development subject to either subdivision approval or site plan review bear its fair share of any needs occasioned by that development for the construction or improvement of those capital facilities owned or operated by the Town of Chester, including and limited to water and wastewater treatment and distribution, sanitary sewers, storm water, drainage and flood control, public roads and rights-of-way, municipal offices, public schools, public safety facilities, solid waste collection, transfer, recycling and disposal, and public recreation facilities. This "Fair Share Contribution" Ordinance is authorized under NH RSA 674:21(I), (m) as an impact fee ordinance.

Fire Codes, Fire Prevention

The Town enforces the International Fire Code, 2000 edition and the 2009 edition of NFPA 1 and 101 Life Safety Code, and its provisions to protect residents from fire hazards in residential and non-residential facilities. Additionally, emergency fire lanes are designated, fire alarm system is established along with its maintenance, and hazardous materials regulations. Provisions are created for EMS, Ambulance, Air Medical Response, and general rescue services. It is through these provisions that the Office of Emergency Management is established.

Flood Plain Conservation District (Zoning Ordinance)

The Town of Chester's Flood Plain Conservation District zoning regulations apply to those areas of land, including floodways of the Exeter River within the Town of Chester designated as Zone A on the Flood Insurance Rate Maps dated June 17, 2005 issued by the Federal Emergency Management Agency. No person shall erect, construct, enlarge, alter, repair, improve, move or demolish any building or structure without first obtaining a separate permit for each building or structure from the Town's Building Inspector. All new construction and substantial improvements of residential structures must have the lowest floor (including basement) elevated to or above the 100-year or base flood elevation and all new construction and substantial improvements of nonresidential structures must have the lowest floor (including basement) elevated or flood proofed to or above the base flood elevation. The Building Inspector reviews all building permit applications for new construction or substantial improvements to determine whether proposed building sites will be reasonably safe from flooding.

Groundwater Protection District (Zoning Ordinance)

The Town's groundwater protection regulations are enforced as an overlay district that is superimposed over the existing underlying zoning of the entire community. The regulations set forth that a stormwater management plan must be prepared for any lot which will be covered by 15% or more impervious surface. The plan must demonstrate that stormwater recharged to groundwater will not result in a violation of ambient groundwater quality standards at the property boundary. Certain hazardous uses are prohibited. Conditional Use Permits are also required for certain uses storing or handling over 100 gallons or more of regulated substances or any use on a lot which will be covered by 15% or more impervious surface.

Growth Management (Zoning Ordinance)

After careful study of the Town's Capital Improvements Plan, Master Plan and regional development needs, the Planning Board has determined that there are

no circumstances under which the Town of Chester can sustain a rate of growth that increases Chester's housing stock by more than three percent (3%) over the course of a calendar year. The Chester Planning Board is required to review this percentage rate every year.

Health and Sanitation Regulations – State Statutes

The Town's Health Officer works through the Board of Health to protect the health and safety of Chester's residents. Several activities are regulated, including childcare facilities, paint removal, swimming and bathing facilities, mosquito control, solid waste, sludge control and littering.

Installation of Lightning Rods and Grounding Devices

Town recognizes the threat of lightning and has installed and monitors lightning protection devices.

Law Enforcement (State Statutes)

The Police Chief is charged with preserving public peace, preventing riots and disorder. During fires the police are to prevent theft and further unwarranted destruction of property. The Town enforces all applicable State Statutes and RSAs.

National Flood Insurance Program (NFIP)

A federally backed program that encourages communities to enact and enforce floodplain regulations.

New Hampshire Shoreland Protection Act

The NH Shoreland Water Quality Protection Act (SWQPA), formally named the Comprehensive Shoreland Protection Act (CSPA), RSA 483B, became effective on July 1, 1994 and established the "protected shoreland." The protected shoreland is all the land located within 250 feet of the "reference line" of public waters. Within the protected shoreland, certain activities are restricted or prohibited, and others require a permit from the New Hampshire Department of Environmental Services (DES). All activities that are regulated by the DES must comply with applicable local, state, and federal regulations. For a complete summary of the minimum standards of the Shoreland Water Quality Protection Act listing the activities and the distances they must be set back from the reference line, see the Summary of the Shoreland Water Quality Protection Act Minimum Standards.

Phasing of Developments (Zoning Ordinance, Subdivision and Site Plan Regulations)

The Town's zoning regulations provide that all applicants must demonstrate that a proposed development will not adversely affect public health, safety or welfare

due to a sudden demand on service(s) which cannot be provided for by a reasonable expenditure of public funds. If after careful review, the Planning Board determines that a sudden demand will exist, then the proposed development shall be phased over such a period of time to allow the Town to manage and meet the demands created for such services. Such services shall include, but not be limited to, police and fire protection, schools, water supply, drainage, transportation, highway maintenance, or other public services.

River Stewardship

Chester serves on the Exeter River Local Advisory Committee.

Road Design Standards (Subdivision and Site Plan Regulations)

Chester administers and enforces road design regulations as part of the Town's Subdivision and Site Plan Regulations. These regulations assure "safe and convenient access" to all associated lots and set engineering standards to maintain adequate visibility and safety. A maximum road slope regulation is presently at 10% but being reconsidered to being reduced to 8%.

Sanitary Protection Requirements (Zoning Ordinance)

The Town's sanitary protection requirements are established in the zoning ordinance to protect the public heath and well-being of residents and ensure that sewage disposal systems are designed and constructed so they are not a public nuisance or environmentally harmful. A review of proposed plans and all test pits is carried out by the Building Inspector. No new sewage disposal is permitted within 100 feet of any proposed or existing well. No leach field bed shall be located on land having slopes of 20 percent or more.

Southeast NH Hazard Materials Mutual Aid

Provides member communities with Technician-level response capability consistent with the federal, state and local laws, rules, regulations and consensus standards of safe practice; to potential and identified hazardous materials challenges that endanger life, property and the environment. Hazmat training and response is also provided to the Town of Chester through this Mutual Aid District. The program covers chemical, biological, and nuclear agents and their properties, effects and identification methodology. (Membership fee: $6,000 per year)

State Dam Program

The Town of Chester maintains three Class NM and four Class L dams in coordination with the State Dam Program, regulated by the Department of Environmental Services, Water Division. Town staff inspects these dams on a regular basis. Inspections look for "unusual seepage, erosion of embankments and around structures, animal burrows in earthen dams, spalling and cracking of

concrete surfaces, vegetation growth and security issues (Town of Chester, "Dam Monitoring")." Preventive maintenance is conducted as needed. No Emergency Action Plans have been prepared for emergency notification procedures, staff assignments, warning procedures, inundation area evacuation procedures, and a formal list of plan holders.

State Wellhead/Aquifer Monitoring Program

State monitoring specific areas known to be contaminated or vulnerable to contamination.

Storm Drain Maintenance

Continued maintenance of culverts is performed by the road agent. This informal but necessary program is especially important in Chester during the seasons when beaver activity is at its highest. During spring and fall, the road agent clears debris from culverts at least once a week but monitors them more often.

Stormwater Management Program – Planning Board Subdivision and Site Plan Review Regulations

Stormwater management in Chester is regulated through the Planning Board's Site Plan Regulations. These regulations address illicit discharge detection and elimination, construction of site runoff controls, post-construction stormwater management in new developments, and pollution prevention.

Town-Adopted Building Codes

"The Building Department enforces the 2009 editions of the *International Building Code*, *International Residential Code, International Plumbing Code*, *the National Fire Prevention Code* as well as the 2009 edition of the *National Electric Code* with certain additions, insertions, deletions and changes (Chester Building Department)." Building codes set minimum safety standards for occupants utilizing structural, fire and life safety provisions, wind loads and design, seismic design, flood proofing, and egress design.

Travel Trailers (Zoning Ordinance & Building Code)

The Town has established regulations to prevent travel trailers from being used as permanent residences and for storage in all zones of the Town of Chester. Occupancy is only permitted for one year, provided the trailer is hooked up to an approved septic system and well, as verified by the Building Inspector. Minimum standards are set regulating required utilities, construction and installation methods, and foundations in order to protect the occupants and reduce the homes' vulnerability to natural disasters.

Wetlands Conservation District (Zoning Ordinance)

The wetlands regulations in the Town's zoning ordinance are contained within the Wetlands Conservation District. This district applies to all areas of town that contain marshes, ponds, bogs, lakes, as well as soils that are identified as poorly or very poorly drained by the National Cooperative Soil Survey conducted by the U.S.D.A. Soil Conservation Service. No septic tank or leach field may be located within 75 feet of the high water mark of any body of water, poorly drained soil or very poorly drained soil. Setbacks from bodies of water shall be increased to 100 feet if the soil adjacent to the body of water has a "sandy-skeletal" structure. No building shall be erected within 75 feet of the high water mark of any body of water or poorly drained soil, except for the construction of fences, foot bridges, wharves, and boat houses, etc.

Winter Parking and Placing Snow or Ice In Highway Ordinances

The Town's Winter Parking Ordinance creates parking restrictions on any highway between November 15th to April 1st. Also, no person shall place snow or ice on any highway with the exception of snow needed to move a horse-drawn sleigh across a highway.

Review of Existing Protection Mitigation Strategy Effectiveness

The Committee reviewed all programs and their effectiveness based on their experiences in working for the Town of Chester over the years (some for over a decade). All responsible parties discussed their roles, the programs successes and limitations, funding concerns, political will, and other issues. A summary of the outcome of this process is listed in the following table.

Committee members reviewed each strategy and assigned an effectiveness rating according to the following scheme:

Poor: The policy, plan or mutual aid system does not work as it should and often falls short of meeting its goals.

Average: The policy, plan or mutual aid system works relatively well however sometimes falls short of meeting its goals.

Good: The policy, plan or mutual aid system works very well and is achieving its goals.


Edwards Mill Rd, Flooding Event, 1996

REVIEW OF EFFECTIVENESS

COLUMN 1: TYPE OF EXISTING PROTECTION	COLUMN 2: RESPONSIBLE AGENT/DESCRIPTION	COLUMN 3: AREA OF TOWN COVERED	COLUMN 4: EFFECTIVENESS	COLUMN 5: IMPROVEMENTS OR CHANGES NEEDED
Best Management Practices (BMP's)	State/Building Inspector Planning Board	All	good	Education outreach.
Chester Academy Emergency Evacuation and Notification Plan 2015	School Superintendent	Local Schools	average	Plan is being reassessed.
Chester Academy Cancellation Day Program	School Superintendent	Local Schools	good	No changes planned.
Chester Fire Dept. Regulations for Sprinkler Systems	Fire	All	good	Maximum regulations allowed by State law in force, so no changes planned.
Communication Division: Dispatch Center And Radio System	Fire	All	average	Technical & infrastructure improvements needed system-wide to create a functional and inter-operable communications center for Fire &Police & other departments
Emergency Back-up Power Service	Emergency Management Director/Fire Dept.	Emergency Shelters	good	Voltage regulator being added to Town Hall / MPR generator.
Emergency Operation Plan 2010	Emergency Management Director	All	good	Plan is being reviewed.
Emergency Snow Removal Plan (informal)	Board of Selectmen	All	average	Define authority and procedure including stringent timeframes.
Excavation and Reclamation Regulations	Planning Board State	All	good	No changes planned.
Fair Share Contribution	Planning Board	All	good	Impact fees currently being updated.
Fire Codes, Fire Prevention	Fire	All	good	Review and update where required.
Floodplain Conservation District (Zoning Ordinance)	Building Inspector Planning Board	Designated by FIRM maps	good	Regulations updated in 2016.
Groundwater Protection District	Planning Board	All	average	Regulations slated for review and updating.
Growth Management	Planning Board	All	good	No changes planned.
Health and Sanitation Regulations	Board of Health	All	good	No changes planned.
Installation of Lightning Rods and Grounding Devices	Board of Selectmen	All	good	No Changes planned.
Law Enforcement	Police Dept.	All	good	Seeking to increase staff.

National Flood Insurance Program	Building Inspector Planning Board	All areas designated in 100 year floodplain on FIRM maps	good	Seeking better quality maps.
NH Shoreland Protection Act	State	All	good	No changes planned.
Phasing of Developments	Planning Board	All	good	Actively phasing large subdivisions.
River Stewardship (preventative program)	Exeter River LAC (ERLAC)	Exeter River corridor	good	Ensure a Town representative is assigned
Road Design Standards: Road Slope Ordinance	Planning Board	All	average	To be revised so as to allow slopes not greater than 8%.
Sanitary Protection Requirements	Building Inspector Planning Board State	All	good	Regulations slated for review and updating.
Southeast NH Hazard Materials Mutual Aid	Fire	All	good	Active participation.
State Dam Program	State	Inundation Area	good	Dams being inspected and repaired.
State Wellhead/Aquifer Monitoring Program	State	All	good	Regulations slated for review and updating.
Storm Drain Maintenance	Road Agent	All	average	Open ditch lines/ culverts are susceptible to beaver activities, increase funding for increased maintenance and surveillance
Town-Adopted Building Codes	Building Inspector	All	good	No changes planned.
Travel Trailers Ordinance	Building Inspector	All	good	Regulations slated for review and updating.
Wellhead / Aquifer Monitoring Program	State	Town well sites	good	Regulations slated for review and updating.
Wetlands Conservation District	Building Inspector; Conservation Commission Planning Board	All wetlands	good	Review and update where necessary.
Winter Parking Ban and Placing Snow or Ice on Highway	Police Dept.	All	good	Review and update where necessary. Better enforcement.

SECTION VII
NEWLY IDENTIFIED MITIGATION STRATEGIES AND CRITICAL EVALUATION

Summary of Existing and New Strategies

Initial selection of mitigation projects was based on filling in perceived gaps in hazard protection within the Town. The Chester Hazard Mitigation Committee then brainstormed additional actions of benefit to the Town and its residents with the potential to reduce future damages. Projects were reviewed for their ability to reduce hazard impacts to both existing and future buildings and infrastructure; as well as the Town's ability to respond to disasters. The Chester Hazard Mitigation Committee reviewed all mitigation actions from the 2011 plan, identified whether they were completed, completed and ongoing, or deferred. The committee identified attentional steps to be taken and considered changes in priorities due to political will or budget issues. The Committee also identified new potential mitigation strategies**:**

Existing and New Mitigation Strategies:

Priorities and Programs Outlined in 2011 Plan	Update	Next Steps
All Completed Tasks		
Make extra copies of Town Maps and EOP for EOC use	Completed	School requested map with town roads for improved coordination
Purchase and Install generator for Town Offices and Police Station	Completed	
Purchase board-up building supplies for buildings damaged by fires	Completed	
Bridge replacement on Fremont Rd	Completed	
Develop list and purchase supplies for Emergency Shelter	Completed	
Update HazMat/Terrorism Response Capabilities	Completed	
Completed and Ongoing Efforts or Needing Action		
A. Implement Nixle or similar public notification system	911 Blackboard connected	Continue to improve notification system
B. Chester Academy to follow recommendations as outlined in their 2015 HSEM School Security Assessment	Completed and ongoing, have implemented improvements at school entrance and school also takes part in the Blizzard Bag Program	
Coordinated Mock Drills: To coordinate efforts within the community (town and school staff)	Completed and ongoing	Town staff to establish coordination/protocol effort. Also, establish similar with Sandown,

for mock emergency drills as well as efforts involving neighboring communities (ie. Sandown) for school evacuation or Seabrook Station evacuation drills.		Freemont, and other neighboring communities. Note, Phil and Karen to make contact with counterparts regarding contact info and next meeting info. Identify community contacts, facilities needed, and protocol.
C. Public Education of Town Emergency Plans and Shelters	Completed and ongoing, continues in town report	
D. Pursue HazMit funding for 5 culvert upgrades/replacements	Completed and ongoing (1 of 5, Freemont Rd)	
E. Replace missing house numbers	Completed, Up to date, and ongoing monitoring	
F. Update and coordinate Chester Academy's Emergency Evacuation Plan with the Town's Emergency Operations Plan	Updated in 2014 and ongoing	
G. Develop and adopt Steep Slope Ordinance Note, steep roads cause a great deal of problems to public works maintenance trucks, cause erosion issues, and create safety concerns.	Completed but recommended to be revised and adopted	Work with Planning Board on revising the Town's Steep Slope Ordinance to reduce the steep slope allowance on public roads from 10% to 8%.
H. Coordinate with the Town of Raymond and the State on the town line flooding issues	Completed and ongoing	
I. Coordinate with the Town of Derry and the State on the town line flooding issues	Completed and ongoing	
J. Continue compliance with NFIP actions related to continued compliance	Completed and ongoing program	In compliance, however flood ordinance should be updated as per recommendation from NHOEP
K. Purchase and Install Updated Radio Equipment, Chester Tower & Dispatch new portable equipment for FD	Completed in part, ongoing efforts	PD has new portables, Sheriff's office has received grant to replace dispatch equipment, FD has new radio equipment at the station, FD should purchase new portable Equipment
L. Integrate Best Management Practices (BMP) in department policies and procedures	Completed and ongoing	
Deferred Mitigation Strategies from 2010 HMP		
M. Purchase and install Electronic sign outside of the Fire Department for Emergency Info	deferred	Lack of resources; Board of Selectmen have not made this strategy a funding priority
N. Upgrade culverts on Orcutt and North Pond Rd	deferred	Lack of resources; Board of Selectmen have not made this strategy a funding priority

O. Work with the State on downstream flooding issues from Harantis Lake	deferred	Lack of resources; Board of Selectmen have not made this strategy a funding priority
P. Upgrade multiple culverts on Lane Rd	deferred	Lack of resources; Board of Selectmen have not made this strategy a funding priority
Q. Upgrade/replace Hanson Road Bridge	deferred	Lack of resources; Board of Selectmen have not made this strategy a funding priority
2015 New Proposed Strategies		
R. Tree removal program: Create an education and outreach program regarding BMP for dealing with dead or sick trees along all roadways.		Note: the Committee noted several large, old, sick trees had fallen across the roads which at times but not necessarily are due to weather events

Mitigation Strategy Evaluation Process

Using a similar methodology as the previous plan, the HMP Committee identified new actions based on the updated risk assessment and capability assessment. The new actions were prioritized in combination with the actions carried forward from the previous plan. The STAPLEE method analyzes the Social, Technical, Administrative, Political, Legal, Economic and Environmental aspects of a project and is commonly used by public administration officials and planners for making planning decisions.

The following questions were asked about the proposed mitigation strategies identified in the table below:

- **Social**: Is the proposed strategy socially acceptable to the community? Are there equity issues involved that would mean that one segment of the community is treated unfairly?

- **Technical**: Will the proposed strategy work? Will it create more problems than it solves?

- **Administrative**: Can the community implement the strategy? Is there someone to coordinate and lead the effort?

- **Political**: Is the strategy politically acceptable? Is there public support both to implement and to maintain the project?

- **Legal**: Is the community authorized to implement the proposed strategy? Is there a clear legal basis or precedent for this activity?

- **Economic**: What are the costs and benefits of this strategy? Does the cost seem reasonable for the size of the problem and the likely benefits?

- **Environmental**: How will the strategy impact the environment? Will the strategy need environmental regulatory approvals?

Each mitigation strategy was evaluated and assigned a score (Good = 3, Average = 2, Poor = 1) based on the above criteria by the Committee. An evaluation chart with total scores for each strategy can be found in the table below. Each strategy was evaluated and prioritized according to the final score. The highest scoring strategies were determined to be of most importance, economically, socially, environmentally, and politically.

STAPLEE CHART **Mitigation Strategy**	Is it **Socially** acceptable?	Is it **Technically** feasible &potentially successful?	Is it **Administratively** workable?	Is it **Politically** acceptable?	Is there **Legal** authority to implement?	Is it **Economically** beneficial?	Is it **Environ-mentally** beneficial?	Total Score
A. Upgrade culverts on Orcutt and North Pond Rd	3	3	3	3	3	3	3	21
B. Work with the State on developing a strategy to mitigate downstream flooding issues from Harantis Lake	3	3	3	3	3	3	3	21
C. Upgrade multiple culvert on Lane Rd	3	3	3	3	3	3	3	21
D. Update Floodplain Zoning Ordinance as recommended by NHOEP to comply with NFIP requirements	3	3	3	3	3	3	3	21
E. Review and revise Steep Slope Ordinance so as to allow slopes not greater than 8%, Town-wide	3	3	3	3	3	3	3	21
F. Tree Outreach and Education Program: Create an education and outreach program regarding BMP for dealing with dead or sick trees along all roadways.	3	3	3	3	3	3	3	21
G. Update and coordinate Chester Academy's Emergency Evacuation and Notification Plan with the Town's Emergency Operations Plan	3	3	3	3	3	3	3	21

H. Purchase and install permanent electronic sign at the corner of Murphy Dr. and Route 102 for use by Town Departments as well as Chester Academy for Town and Events, Town Updates, and Emergency Info	3	3	3	3	3	3	2	20
I. Encourage River Steward Representative on ERLAC	3	3	3	3	3	3	3	21
J. Incorporate BMPs in department policies and procedures	3	3	2	2	3	3	3	19
K. Review and update policy for Emergency Snow Removal for Municipal facilities including building roofs	3	3	1	2	3	3	3	18
L. Support resources to increase Storm Drain Maintenance	2	3	3	2	3	2	3	18
M. Upgrade/Replace Hanson Road Bridge	3	3	2	1	3	2	3	17
N. Review and update Groundwater Protection District	2	3	2	1	3	3	3	17
O. Chester Academy to follow recommendations as outlined in 2015 HSEM School Security Assessment.	3	3	3	3	3	3	3	21
P. Chester Academy to continue practicing emergency evacuation mock drills with neighboring communities such as Sandown	3	3	3	3	3	3	3	21
Q. Incorporate technical and infrastructure improvements into the existing town-wide system to create a functional and inter-operable communications center for Fire &Police & other departments	3	3	3	2	3	3	3	20
R. Continue public education/outreach of Town Emergency Plans and shelter	3	3	3	3	3	3	3	21
S. Continue to coordinate with the Towns of Raymond and Derry regarding flooding issues	3	3	3	3	3	3	3	21
T. Pursue Haz Mit funding for 5 culvert upgrades/replacements (Edwards Mills Rd, Halls Village Rd., Rod and Gun Club Rd., Cole Rd, and Harantis Lake Rd)	3	3	3	3	3	3	3	21
U. Continue to replace missing house numbers	3	3	3	3	3	3	3	21

SECTION VIII
PRIORITIZED IMPLEMENTATION SCHEDULE AND FUNDING SOURCES

Implementation Strategy for Priority Mitigation Actions

The Chester Hazard Mitigation Committee reviewed all ongoing, deferred and new strategies. Each mitigation action was ranked by considering its STAPLEE scores, costs, political will, relative necessity, whether previous work had been completed, and past voting of town residents for capital projects. Priority shifted in comparison from the previous Hazard Mitigation Plan due to two reasons: first, projects that had been completed but remain ongoing, such as *replacing missing house numbers*, were still important but ranked lower. Second, flooding and snow events brought deficiencies to the forefront and raised awareness, therefore, their ranking increased, such as *upgrade multiple culverts on Lane Road*. The Committee also considered the Hazard Mitigation Plan Goals, the Town's Capital Improvement Program, recent estimates and other sources for the various categories indicated in the table below. It should be noted that although the Hazard Mitigation Goal #9 regarding climate change was not addressed in a specific mitigation action, the awareness of climate change was still an important consideration for the Committee. Lastly, the Committee considered crucial variables such as safety for children; probability, severity and risk of hazards, (flooding vs tornadoes); and resources needed for town staff. The Committee weighed all these factors in debating the various action items. Their final ranking listed in the following table is a result of this effort.

Overview of Prioritized Mitigation Strategies and Related Cost Estimate

Rank / ID	STAPLEE Score *	Problem Statement	Mitigation Action	Hazard Addressed	Responsible Party	Anticipated Cost	Potential Funding Source	Time-frame
1	Ongoing mitigation actions were not scored	Important protocols should be followed to ensure an appropriate and planned response.	Chester Academy to follow recommendations as outlined in 2015 HSEM School Security Assessment.	Manmade hazards	Chester Academy	< $10,000	School Operating Budget	Ongoing
2	21	Efficient and effective response is ensured if practiced.	Chester Academy to continue practicing emergency evacuation mock drills with neighboring communities such as Sandown	Flooding, Ice and snow storms, other hazards	Chester Academy, Fire Dept, Police Dept	< $10,000	School and Town Operating Budget	Ongoing
3	21	A low cost method to have essential process	Update and coordinate Chester Academy's	Human Created	Chester	< $10,000	School	MidTerm and

		and data identified for potential future hazards.	Emergency Evacuation and Notification Plan with the Town's Emergency Operations Plan	Hazards	Academy		Budget	ongoing
Rank / ID	**STAPLEE Score**	**Problem Statement**	**Mitigation Action**	**Hazard Addressed**	**Responsible Party**	**Anticipated Cost**	**Potential Funding Source**	**Time-frame**
4	20	Communication systems should be updated to ensure reliable communication throughout the community.	Incorporate technical and infrastructure improvements into the existing town-wide system to create a functional and inter-operable communications center for Fire &Police & other departments	All Hazards	Fire Dept	>$400,000	Town Operating Budget or as part of the Town's CIP, Grants	Ongoing effort, Mid term
5	20	A public notification system such as Nixle would allow emergency information to efficiently reach the public.	Implement Nixle or similar public notification system	All Natural Hazards	Fire Dept.	Annual cost?, < $10,000	Town Operating Budget or as part of the Town's CIP	Midterm
6	20	Simple means visually convey Town and School information at a central location including emergency management response information.	Purchase and install permanent electronic sign at the corner of Murphy Dr. and Route 102 for use by Town Departments as well as Chester Academy for Town and Events, Town Updates, and Emergency Info	All Natural Disasters	Board of Selectmen, Fire Dept., Chester Academy	$25,000 - $40,000	State Grants, Town Operating Budget or as part of the Town's CIP	Short term
7	21	Culvert upgrades needed due to flooding issues	Upgrade culverts on Orcutt and North Pond Rd	Flooding	Highway Dept	$10,000-$25,000	Town Operating Budget or as part of the Town's CIP	Long term
8	21	Mitigation is needed for downstream flooding issues from Harantis Lake. This will be a long-term project where coordination and funding from the State will be necessary.	Work with the State on developing a strategy to mitigate downstream flooding issues from Harantis Lake	Flooding	Highway Dept	>$100,000	State Grants, Town Operating Budget or as part of the Town's CIP	Long term

Rank / ID	STAPLEE Score	Problem Statement	Mitigation Action	Hazard Addressed	Responsible Party	Anticipated Cost	Potential Funding Source	Time-frame
9	21	Mitigation is needed for flooding problems from inadequate culverts on Lane Rd.	Upgrade multiple culverts on Lane Rd	Flooding	Highway Dept	>$100,000	State Grants, Town Operating Budget or as part of the Town's CIP	Long term
10	18	Decision process needs to be more efficient to ensure public safety.	Review and update policy for Emergency Snow Removal for Municipal facilities including building roofs	Snow/Ice storms	Board of Selectmen, Building Inspector, Fire Dept	< $10,000	Town Operating Budget	Ongoing
11	18	Intense beaver activity needs to be monitored seasonally so that culverts and ditches do not get clogged.	Support resources to increase Storm Drain Maintenance	Flooding	Board of Selectmen, Highway Dept	< $10,000	Town Operating Budget	Ongoing
12	17	Flooding mitigation needed with the replacement of the bridge.	Upgrade/replace Hanson Road Bridge	Flooding	Bd. Of Selectmen, Highway Dept, NHDOT	>$500,000	State Grants, Town Operating Budget or as part of the Town's CIP	Long term
13	21	Public Education is a low-cost method to increase public awareness of emergency management programs and procedures.	Continue public education/outreach of Town Emergency Plans and shelter	All Natural Hazards	Emergency Management Director	< $ 10,000	Town Operating Budget	Ongoing
14	21	Flooding issues at town-lines necessitate coordination with neighboring communities.	Continue to coordinate with the Towns of Raymond and Derry regarding flooding issues	Flooding	Emergency Management Director	< $ 10,000	State Funding	Ongoing
15	21	Multiple culvert upgrades needed in town to mitigate further repetitive flooding.	Pursue Haz Mit funding for 5 culvert upgrades/replacements (Edwards Mills Rd, Halls Village Rd., Rod and Gun Club Rd., Cole Rd, and Harantis Lake Rd)	Flooding	Highway Dept.	> $ 2,250,000	State Grants, Town Operating Budget or as part of the Town's CIP	Long Term

Rank / ID	STAPLEE Score	Problem Statement	Mitigation Action	Hazard Addressed	Responsible Party	Anticipated Cost	Potential Funding Source	Time-frame
16	21	This is a low cost method to ensure effective emergency response.	Continue to replace missing house numbers	All Natural Hazards	Fire Dept.	< $ 10,000	Town Operating Budget	Ongoing
17	21	Floodplain Ord. is out of date.	Update Floodplain Zoning Ordinance as recommended by NHOEP to comply with NFIP requirements	Flooding	Planning Dept Planning Board	< $10,000	Town Operating Budget	Short term: updated May 2016
18	19	Best management practices would ensure that proper steps are being taken to prevent environmental contamination, vehicle corrosion, and reduced salt to maintain roads in the winter.	Incorporate BMPs in department policies and procedures	Snow/Ice storms, flooding, …	Planning, Police, Fire, Highway	< $10,000	Town Operating Budget	Ongoing
19	21	Educating the public about weak and dying trees to prevent road closings, utility line damage, and structural damage.	Tree Outreach and Education Program: Create an education and outreach program regarding BMP for dealing with dead or sick trees along all roadways.	Wind, Snow, Ice events	Planning, Building, Fire, and Highway Depts	< $10,000	Town Operating Budget	Ongoing
20	21	Original steep slope ordinance was not restrictive enough.	Review and revise Steep Slope Ordinance so as to allow slopes not greater than 8%, Town-wide	Snow/ice storms, erosion, flooding	Planning and Planning Board	< $10,000	Town Operating Budget	Midterm
21	17	Revise and update existing language in zoning ord.	Review and update Groundwater Protection District	Environ-mental Protection	Planning Planning Board	< $10,000	Town Operating Budget	Mid Term
22	21	Chester has not had a representative on ERLAC for some time.	Encourage River Steward Representative on ERLAC	Flooding	Conservation Commission	< $10,000	Town Operating Budget	Short term

Time frame	
Short Term	1 year or less
Mid Term	2 to 3 years
Long Term	4-5 years
Ongoing	This action will be completed on an ongoing basis throughout the life of the plan

SECTION IX
ADMINISTRATIVE PROCEDURES REGARDING ADOPTION, EVALUATION AND MONITORING OF THE PLAN

"Incorporating hazard mitigation considerations into the thought processes and decision making that comprise local planning reinforces community sustainability and strengthens community planning programs. It ensures that the community survives natural disasters so that it can grow and develop as it was envisioned."

– Michael J. Armstrong, Associate Director for Mitigation, FEMA

Adoption

Upon notification that FEMA has conditionally approved this *Plan*, a public hearing will be held and the Chester Board of Selectmen will formally adopt the ***Chester Hazard Mitigation Plan*** as an official statement of Town policy. In the future, this *Plan* may constitute a new section of the Chester Master Plan, in accordance with RSA 674:2. The public hearing shall be properly posted and advertised by the Town in accordance with New Hampshire state law. Documentation that the Chester Board of Selectmen has formally adopted the *Plan* will be included in Appendix I.

Adoption of the ***Chester Hazard Mitigation Plan*** demonstrates the Town's commitment to hazard mitigation. It also qualifies the municipality for federal, state and local funding and prepares the public for what the community can be expected to do both before and after a natural hazard disaster occurs.

Following adoption, the Hazard Mitigation Committee and the Board of Selection shall seek to incorporate the mitigation actions identified in the Priority Implementation Schedule of Section V of the *Plan* into other planning mechanisms, including the Town's Master Plan and Capital Improvement Program (CIP).

Monitoring, Evaluating and Updates

The ***Chester Hazard Mitigation Plan*** (HMP) shall be monitored and evaluated annually to track progress in implementing the mitigation strategies and actions as well as updating the goals and objectives of the *Plan*. The Emergency Management Director of the Town shall be responsible for initiating this review and scheduling an annual meeting of the Hazard Mitigation Committee. In addition to reviewing Hazard Mitigation Committee members' progress on projects, the strategy for the following year will be reviewed and new projects will be selected for implementation at the annual meeting.

The Chester Planning Department will also use the HMP as a resource for developing future projects for the Capital Improvement Program, the Master Plan, and in updating the Zoning Ordinance and Site and Subdivision Regulations.

The Chester Emergency Management Director will conduct updates in coordination with the Chester Planning Board and Chester Board of Selectmen. Updates should be made to the *Plan* every three to five years[15] to accommodate for actions that have failed or are not considered feasible after a review for their consistency with STAPLEE, the timeframe, the community's priorities, and funding resources. Priorities that were not ranked high, but identified as potential mitigation strategies, should be reviewed as well during the monitoring and update of this *Plan* to determine feasibility of future implementation. Also, at that time any other items identified during the annual meetings will be updated in the *Plan*, including, but not limited to goals, objectives, and identification of past hazard events, and updating the inventory of Town assets vulnerable to hazards.

Keeping with the process of adopting the ***Chester Hazard Mitigation Plan***, a public hearing to receive comment on the *Plan* maintenance and updating shall be held during the review period, and the Board of Selectmen will adopt the final product.

Continued Public Involvement

The public will continue to be invited and encouraged to be involved during this process at monitoring, evaluation and update meetings. All meetings involving implementation or updates of the *Plan* shall be open to the public as is required by RSA 91-A and notice of the meeting will be posted at least 24 hours in advance in a minimum of two locations such as the Municipal Offices and Chester Fire Department. The meetings may also be publicized on the local access television station or local newspaper. To gain additional public involvement, draft copies of the amended *Hazard Mitigation Plan* will be made available at two public locations for review and comment. The document should be left for a minimum of two weeks and then all comments will be considered in drafting final revisions.

[15] FEMA Disaster Mitigation Act of 2000 44 CFR Part 201.6(d)(3) mandates "Plans must be reviewed, revised if appropriate, and resubmitted for approval within five years to continue to be eligible for HMGP project grant funding." (Federal Register Vol. 36, No. 38, Feb 26, 2002, Rules and Regulations, p8852)

APPENDIX A

DEFINITIONS

Areas at Risk: Emergency equipment or areas not needed to respond at the time of a natural disaster, but which could still be threatened if a natural disaster were to occur. These include critical facilities not utilized for emergency response, people and facilities to be protected in the event of a disaster, and/or potential resources for services or supplies in the event of a disaster. Examples include schools, parks, commercial resources, day care facilities, and senior housing.

Critical Facilities: Any building, structure or location that is vital to the hazard response effort, maintains an existing level of protection from hazards for the Town, and would create a secondary disaster if a hazard were to impact it. Examples include emergency medical services, law enforcement, electric generators, and emergency shelters.

Commercial Economic Impact Areas: These areas include organizations and businesses with more than 25 employees. These are facilities that are vital to the community's economic well being.

Emergency Operations Plan: A jurisdiction's emergency operations plan is typically designed to establish the procedures that will take place during an emergency and designate who will be responsible to perform those procedures.

Essential Facilities: All critical facilities, areas at risk, commercial economic impact areas and hazardous material locations.

GIS: Geographic Information Systems includes a form of mapping that enables users to easily locate physical attributes of a community such as dams, bridges, wetlands, steep slopes, etc. Much of the data for these maps is maintained by Complex Systems Research Center in Durham, N.H.

Hazard Mitigation: The practice of reducing risks to people and property from natural hazards. FEMA defines hazard mitigation as "any action taken to reduce or eliminate the long-term risk to human life and property from hazards."

Hazardous Materials Facilities: These facilities include active hazardous waste generators, underground storage tanks, and aboveground storage tanks.

Hazardous Waste Generators: Defined by the N.H. Department of Environmental Services. These businesses produce household hazardous waste, or treat and store or dispose of hazardous waste, or are a waste handler or used oil marketer.

APPENDIX B

NEW HAMPSHIRE DAM CLASSIFICATION SCHEDULE

N.H. Department of Environmental Services Dam Classification, listed from highest to lowest damage class:

Non Menace (NM) structure means a dam that is not a menace because it is in a location and of a size that failure or mis-operation of the dam would not result in probable loss of life or loss to property, provided the dam is:

- Less than six feet in height if it has a storage capacity greater than 50 acre-feet; or
- Less than 25 feet in height if it has a storage capacity of 15 to 50 acre-feet.

Low Hazard (L) structure means a dam that has a low hazard potential because it is in a location and of a size that failure or mis-operation of the dam would result in any of the following:

- No possible loss of life.
- Low economic loss to structures or property.
- Structural damage to a town or city road or private road accessing property other than the dam owner's that could render the road impassable or otherwise interrupt public safety services.
- The release of liquid industrial, agricultural, or commercial wastes, septage, Or contaminated sediment if the storage capacity is less than two-acre-feet and is located more than 250 feet from a water body or water course.
- Reversible environmental losses to environmentally-sensitive sites.

Significant Hazard (S) structure means a dam that has a significant hazard potential because it is in a location and of a size that failure or mis-operation of the dam would result in any of the following:

- No probable loss of lives.
- Major economic loss to structures or property.
- Structural damage to a Class I or Class II road that could render the road impassable or otherwise interrupt public safety services.
- Major environmental or public health losses, including one or more of the following:
- Damage to a public water system, as defined by RSA 485:1-a, XV, which will take longer than 48 hours to repair.
- The release of liquid industrial, agricultural, or commercial wastes, septage, sewage, or contaminated sediments if the storage capacity is 2 acre-feet or more.
- Damage to an environmentally-sensitive site that does not meet the

definition of reversible environmental losses.

High Hazard (H) means a dam that has a high hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in probable loss of human life as a result of:

- Water levels and velocities causing the structural failure of a foundation of a habitable residential structure or commercial or industrial structure, which is occupied under normal conditions.
- Water levels rising above the first floor elevation of a habitable residential structure or a commercial or industrial structure, which is occupied under normal conditions when the rise due to dam failure is greater than one foot.
- Structural damage to an interstate highway, which could render the roadway impassable or otherwise interrupt public safety services.
- The release of a quantity and concentration of material, which qualify as "hazardous waste" as defined by RSA 471-A:2 VI.
- Any other circumstance that would more likely than not cause one or more deaths.

APPENDIX C - PUBLICATIONS, AGENCIES , WEBSITES

I. PUBLICATIONS

1. *Community-Based Hazard Mitigation Planning: Lowering the Risks and Costs of Disasters*; New England Training Workshop, 27 August 1998; sponsored by the Federal Emergency Management Agency/Region I, Massachusetts Department of Environmental Management, Massachusetts Emergency Management Agency, and the Massachusetts Chapter of the American Planning Association.

2. *Community Flood Mitigation Planning Guidebook*; Wisconsin Department of Natural Resources.

3. *Federal Programs Offering Non-Structural Flood Recovery and Floodplain Management Alternatives*; the Office of Management and Budget; June 1998

4. *Flood Hazard Mitigation Planning: A Community Guide*; The Commonwealth of Massachusetts, Department of Environmental Management, Flood Hazard Management Program; June 1997

5. *Hazard Mitigation Plan*; Charlestown, Rhode Island; January 1997.

6. Hubbard Brook Ecosystem Study. November 2006. http://www.hubbardbrook.org/research/climate/vadeboncoeur06.htm

7. Kafka, Alan. *Why Does the Earth Quake in New England?* August 24, 2011. https://www2.bc.edu/~kafka/Why_Quakes/why_quakes.html. 02-06-14.

8. Karl, T.R., J.M. Melillo, and T.C. Peterson (eds.). 2009. Global Climate Change Impacts in the United States. Cambridge University Press, New York.

9. Known Water Use Restrictions and Bans 2016. Retrieved from http://des.nh.gov/organization/divisions/water/dwgb/water_conservation/documents/waterban.pdf

10. *Local Multi-Hazard Mitigation Planning Guidance*; Federal Emergency Management Agency; 2008.

11. *Local Mitigation Plan Review Guide*; Federal Emergency Management Agency; 2013.

12. State of New Hampshire Multi-Hazard Plan. 2013. New Hampshire Department of Homeland Security and Emergency Management.

13. *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards*. Federal Emergency Management Agency. January 2013

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29. *The Local Mitigation Strategy: A Guidebook for Florida Cities and Counties*; Florida Depart. of Community Affairs; April 1998.
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II. AGENCIES

New Hampshire Homeland Security and Emergency Management		(603) 271-2231
Federal Emergency Management Agency		1-877-336-2734
NH Regional Planning Commissions:		
	Central NH Regional Planning Commission	226-6020
	Lakes Region Planning Commission	279-8171
	Nashua Regional Planning Commission	424-2240
	North Country Council	444-6303
	Rockingham Planning Commission	778-0885
	Southern New Hampshire Planning Commission	669-4664
	Southwest Region Planning Commission	357-0557
	Strafford Regional Planning Commission	742-2523
	Upper Valley Lake Sunapee Regional Planning Commission	448-1680
NH Executive Department:		
	New Hampshire Office of Energy and Planning	(603) 271-2155
NH Department of Cultural Resources		(603) 271-2392
	Division of Historical Resources	603-271-3483
NH Department of Environmental Services		(603) 271-3503
	Air Resources	271-1386
	Waste Management	271-2925
	Water Conservation	271-0659
	Dam Safety & Maintenance	271-3406
NH Fish and Game Department		(603) 271-3421
NH Department of Resources and Economic Development		(603) 271-2411
	Division of Economic Development	(603) 271-2591
	Division of Forests and Lands	(603) 271-2214
	Division of Parks and Recreation	(603) 271-3556
NH Department of Transportation		(603) 271-3734
U.S. Department of Commerce		(202) 482-2000
	National Oceanic and Atmospheric Administration	1-301-713-1208
	National Weather Service; Gray, Maine	207-688-3216
U.S. Department of the Interior		
	U.S. Fish and Wildlife Service	1-800-344-9453
	U.S. Geological Survey	1-888-275-8747
U.S. Department of Agriculture		
	Natural Resource Conservation Service	888-526-3227

III. WEBSITES

Sponsor	Internet Address	*Summary of Contents*
Natural Hazards Research Center, U. of Colorado	http://www.colorado.edu/hazards/	*Searchable database of references and links to many disaster-related web sites.*
Atlantic Hurricane Tracking Data by Year	http://weather.unisys.com/hurricane/	*Hurricane track maps for each year, 1886 – 1996*
National Emergency Management Association	http://nemaweb.org	*Association of state emergency management directors; list of mitigation projects.*
NASA Natural Disaster Reference Database	http://gcmd.nasa.gov/Resources/pointers/hazards.html	*Searchable database of worldwide natural disasters.*
U.S. State and Local Gateway	http://www.fedgate.org/fg_statelocal.htm	*General information through the federal-state partnership.*
National Weather Service	http://nws.noaa.gov/	*Central page for National Weather Warnings, updated every 60 seconds.*
USGS Real Time Water Data	http://waterdata.usgs.gov/nwis/rt	*Provisional hydrological data*
Dartmouth Flood Observatory	http://www.dartmouth.edu/~floods/	*Observations of flooding situations.*
FEMA, National Flood Insurance Program, Community Status Book	https://www.fema.gov/national-flood-insurance-program-community-status-book	*Searchable site for access of Community Status Books*
Florida State University Atlantic Hurricane Site	http://www.met.fsu.edu/explores/tropical.html	*Tracking and NWS warnings for Atlantic Hurricanes and other links*
National Lightning Safety Institute	http://lightningsafety.com/	*Information and listing of appropriate publications regarding lightning safety.*
NASA Optical Transient Detector	http://www.nasa.gov/centers/marshall/news/background/facts/otd.html	*Space-based sensor of lightning strikes*
LLNL Geologic and Atmospheric Hazards	https://www.llnl.gov/	*General hazard information developed for the Deptment of Energy.*
The Tornado Project Online	http://www.tornadoproject.com/	*Information on Tornadoes, including details of recent impacts.*
National Severe Storms Laboratory	http://www.nssl.noaa.gov/	*Information about and tracking of severe storms.*
Earth Satellite Corporation	http://www.earthsat.com/HTML/naturalvue/	*Flood risk maps searchable by state.*
USDA Forest Service Web	http://www.fs.fed.us/fire/management/	*Information on forest fires and land management.*
Sponsor	*Internet Address*	*Summary of Contents*

APPENDIX D
TECHNICAL AND FINANCIAL ASSISTANCE FOR HAZARD MITIGATION

This matrix provides information about key all-hazards grant programs from the Departments of Homeland Security, Justice, Transportation, Health and Human Services, and Education under which state, local, and tribal governments, first responders, and the public are eligible to receive preparedness, response, recovery, mitigation, and prevention assistance.

Agency	Office/ Directorate	Program	**Purpose**	**Funding Beneficiaries**
Programs to prepare the Nation to address the consequences of natural and man-made disasters and emergencies.				
Department of Homeland Security	*Border and Transportation Security Directorate*	State Homeland Security Grant Program (SHSP) www.fema.gov	SHSP supports the implementation of state Homeland Security Strategies to address the identified planning, organization, equipment, training, and exercise needs to prevent, protect against, mitigate, respond to, and recover from acts of terrorism and other catastrophic events. SHSP also provides funding to implement initiatives in the State Preparedness Report	State governments
	Emergency Preparedness and Response Directorate	Emergency Management Performance Grants (EMPG) www.fema.gov	To assist State and local governments in enhancing and sustaining all-hazards emergency management capabilities.	States with pass through to local emergency management organizations
	Emergency Preparedness and Response Directorate	Assistance to Firefighters Grant Program (AFG) www.usfa.fema.gov/grants	The primary goal of the Assistance to Firefighters Grants is to meet the firefighting and emergency response needs of fire departments and nonaffiliated emergency medical services organizations.	Local, State, and Regional Fire Departments and agencies.
	Emergency Preparedness and Response Directorate	Citizen Corps www.citizencorps.gov	To bring community and government leaders together to coordinate community involvement in emergency preparedness, planning, mitigation, response and recovery.	States with a pass through to local governments

Agency	Office/ Directorate	Program	**Purpose**	**Funding Beneficiaries**
	Emergency Preparedness and Response Directorate	Emergency Management Institute Training Assistance www.fema.gov	To defray travel and per diem expenses of State, local and tribal emergency management personnel who attend training courses conducted by the Emergency Management Institute, at the Emmitsburg, Maryland facility; Bluemont, Virginia facility; and selected off-site locations. Its purpose is to improve emergency management practices among State, local and tribal government managers, in response to emergencies and disasters. Programs embody the Comprehensive Emergency Management System by unifying the elements of management common to all emergencies: planning, preparedness, mitigation, response, and recovery.	State, local, and tribal emergency managers
	Health Resources and Services Administration	State Rural Hospital Flexibility Program www.ruralhealth.hrsa.gov	To help States work with rural communities and hospitals to develop and implement a rural health plan, designate critical access hospitals (CAHs), develop integrated networks of care, improve emergency medical services and improve quality, service and organizational performance.	States with at least one hospital in a non-metropolitan region
Department of Health and Human Services	*Health Resources and Services Administration*	EMS for Children www.hrsa.gov	To support demonstration projects for the expansion and improvement of emergency medical services for children who need treatment for trauma or critical care. It is expected that maximum distribution of projects among the States will be made and that priority will be given to projects targeted toward populations with special needs, including Native Americans, minorities, and the disabled.	State governments and schools of medicine

Agency	Office/ Directorate	Program	**Purpose**	**Funding Beneficiaries**
	National Institute of Health	Superfund Hazardous Substances Basic Research and Education www.niehs.nih.gov/research/supported/dert/programs/srp/	To establish and support an innovative program of basic research and training consisting of multi-project, interdisciplinary efforts that may include each of the following: (1) Methods and technologies to detect hazardous substances in the environment; (2) advance techniques for the detection, assessment, and evaluation of the effects of hazardous substances on humans; (3) methods to assess the risks to human health presented by hazardous substances; and (4) and basic biological, chemical, and physical methods to reduce the amount and toxicity of hazardous substances.	Any public or private entity involved in the detection, assessment, evaluation, and treatment of hazardous substances; and State and local governments
	Centers for Disease Control	Immunization Research, Demonstration, Public Information and Education Training and Clinical Skills Improvement Projects www.cdc.gov	To assist States, political subdivisions of States, and other public and private nonprofit entities to conduct research, demonstrations, projects, and provide public information on vaccine-preventable diseases and conditions.	States and nonprofits organizations
Department of Transportation	*Pipeline and Hazardous Materials Safety Administration (PHMSA)*	Hazardous Materials Emergency Preparedness Training and Planning Grants http://phmsa.dot.gov/hazmat/grants	Increase state, local, territorial, and Native American tribal effectiveness to safely and efficiently handle HazMat accidents and incidents; enhance implementation of the Emergency Planning and Community Right-to-Know Act of 1986; and encourage a comprehensive approach to emergency planning and training by incorporating response to transportation standards.	States, local, territorial, tribal governments.
Programs to coordinate Federal response efforts and to assists states, localities, and tribes in responding to disasters and emergencies.				
Department of Homeland Security	*Emergency Preparedness and Response Directorate*	Urban Search and Rescue www.fema.gov	To expand the capabilities of existing Urban Search and Rescue Task Forces.	28 existing US&R Task Forces
Programs to provide assistance to States, localities, tribes, and the public to alleviate suffering and hardship resulting from Presidentially declared disasters and emergencies caused by all types of hazards.				

Agency	Office/ Directorate	Program	**Purpose**	**Funding Beneficiaries**
Department of Homeland Security	*Emergency Preparedness and Response Directorate*	Individuals and Households Program (IHP) www.fema.gov/assistance/process/guide.shtm	To provide assistance to individuals and families who have been affected by natural or man-made Presidentially declared disasters. Funding provided from the Disaster Relief Fund.	Individuals and Families
	Emergency Preparedness and Response Directorate	Public Assistance (PA) www.fema.gov/government/grant/pa/index.shtm	To provide assistance to states, localities, tribes, and certain non-profit organizations affected by natural or man-made Presidentially declared disasters. Funding provided from the Disaster Relief Fund	State, local and tribal governments; private non-profit organizations
	Emergency Preparedness and Response Directorate	Fire Management Assistance Grant Program www.fema.gov/government/grant/fmagp/index.shtm	Provide funds to States, local, and tribal governments for the mitigation, management, and control of wildland fires posing serious threats to improved property.	State, local and tribal governments
Small Business Administration	*Office of Disaster Assistance*	Disaster Loan Program www.sba.gov/services/disasterassistance/	To offer financial assistance to those who are trying to rebuild their homes and businesses in the aftermath of a disaster.	Individuals, families, private sector
Department of Justice	*Office for Victims of Crime*	Antiterrorism and Emergency Assistance Program www.ojp.usdoj.gov/ovc/publications/infores/terrorism/	To provide assistance programs for victims of mass violence and terrorism occurring within and outside the United States and a compensation program for victims of international terrorism.	Public and private nonprofit victim assistance agencies
Programs to reduce or eliminate future risk to lives and property from disasters.				
Department of Homeland Security	*Emergency Preparedness and Response Directorate*	Hazard Mitigation Grant Program (HMGP) www.fema.gov/government/grant/hmgp/index.shtm	To provide assistance to states, localities, and tribes to fund projects that will reduce the loss of lives and property in future disasters. Funding is provides from the Disaster Relief Fund and administered by the states according to their own priorities.	State, local, and tribal governments
	Emergency Preparedness and Response Directorate	Pre-Disaster Mitigation Program (PDM) www.fema.gov/government/grant/pdm/index.shtm	This program provides funding for mitigation activities before disaster strikes. In recent years it has provided assistance for mitigation planning. In FY03, Congress passes a competitive pre-disaster mitigation grant program that will include project funding.	State, local, and tribal governments

Agency	Office/ Directorate	Program	Purpose	Funding Beneficiaries
Department of Homeland Security	*Emergency Preparedness and Response Directorate*	Flood Mitigation Assistance Program (FMA) www.fema.gov/government/grant/fma/index.shtm	The FMA program was created as part of the National Flood Insurance Reform Act (NFIRA) of 1994 (42 U.S.C. 4101) with the goal of reducing or eliminating claims under the National Flood Insurance Program (NFIP).FEMA provides FMA funds to assist States and communities implement measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the National Flood Insurance Program.	State, local and tribal governments
Other				
Department of Housing and Urban Development	*NH Office of Energy and Planning*	Community Development Block Grant Program (CDBG) Disaster Recovery Assistance www.hud.gov/offices/cpd/communitydevelopment/programs/	HUD provides flexible grants to help cities, counties, and States recover from Presidentially declared disasters, especially in low-income areas, subject to availability of supplemental appropriations.	State, local and tribal governments
Agency	**Office/ Directorate**	**Program**	**Purpose**	**Funding Beneficiaries**
Programs to prepare the Nation to address the consequences of natural and man-made disasters and emergencies.				
NH Homeland Security and Emergency Management	*Border and Transportation Security Directorate*	State Homeland Security Grant Program www.ojp.usdoj.gov	This core assistance program provides funds to build capabilities at the state and local levels and to implement the goals and objectives included in state homeland security strategies and initiatives in the State Preparedness Report.	State governments
	Emergency Preparedness and Response Directorate	Emergency Management Performance Grants www.fema.gov http://www.fema.gov/government/grant/index.shtm	To assist State and local governments in enhancing and sustaining all-hazards emergency management capabilities.	States with pass through to local emergency management organizations
	Emergency Preparedness and Response Directorate	Assistance to Firefighters Grant Program www.usfa.fema.gov/grants http://www.firegrantsupport.com/afg/	The primary goal of the Assistance to Firefighters Grants (AFG) is to meet the firefighting and emergency response needs of fire departments and nonaffiliated emergency medical services organizations.	Local, State, and Regional Fire Departments and agencies.

Agency	Office/ Directorate	Program	**Purpose**	**Funding Beneficiaries**
	Emergency Preparedness and Response Directorate	State and Local Emergency Operation Centers (EOCs) www.fema.gov http://www.fema.gov/government/grant/index.shtm	To improve emergency management and preparedness capabilities by supporting flexible, sustainable, secure, and interoperable Emergency Operations Centers (EOCs) with a focus on addressing identified deficiencies and needs.	States; local governments may be sub-grantees of the State
	Emergency Preparedness and Response Directorate	Citizen Corps www.citizencorps.gov	To bring community and government leaders together to coordinate community involvement in emergency preparedness, planning, mitigation, response and recovery.	States with a pass through to local governments
NH Homeland Security and Emergency Management	*Emergency Preparedness and Response Directorate*	National Fire Academy Training Grants www.fema.gov	To provide financial assistance to State Fire Training Systems for the delivery of a variety of National Fire Academy courses/programs.	State fire training organizations
	Emergency Preparedness and Response Directorate	Emergency Management Institute Training Assistance www.fema.gov	To defray travel and per diem expenses of State, local and tribal emergency management personnel who attend training courses conducted by the Emergency Management Institute, at the Emmitsburg, Maryland facility; Bluemont, Virginia facility; and selected off-site locations. Its purpose is to improve emergency management practices among State, local and tribal government managers, in response to emergencies and disasters. Programs embody the Comprehensive Emergency Management System by unifying the elements of management common to all emergencies: planning, preparedness, mitigation, response, and recovery.	State, local, and tribal emergency managers
	Emergency Preparedness and Response Directorate	Hazardous Materials Assistance Program (CERCLA Implementation)	Provide technical and financial assistance through the States to support State, local and tribal governments in oil and hazardous materials emergency planning and exercising. To support the Comprehensive Hazardous Materials (HAZMAT) Emergency Response – Capability Assessment Program (CHER-CAP) activities.	State, local, and tribal governments, state emergency response committees, local emergency planning commissions

Agency	Office/ Directorate	Program	**Purpose**	**Funding Beneficiaries**
	Emergency Preparedness and Response Directorate	Interoperable Communications Equipment Grant http://www.fema.gov/government/grant/index.shtm	To provide governance, planning, training and exercise, and equipment funding to States, Territories, and local and tribal governments to carry out initiatives to improve interoperable emergency communications, including communications in collective response to natural disasters, acts of terrorism, and other man-made disasters.	N/A
NH Homeland Security and Emergency Management	*Emergency Preparedness and Response Directorate*	Chemical Stockpile Emergency Preparedness Program www.fema.gov	A cooperative agreement to enhance emergency preparedness capabilities of the States and local communities at each of the eight chemical agent stockpile storage facilities. The purpose of the program is to assist States and local communities in efforts to improve their capacity to plan for and respond to accidents associated with the storage of chemical warfare materials.	State and local governments and the general public in the vicinity of the eight chemical agent stockpile storage facilities.
	National Preparedness Directorate	Metropolitan Medical Response System http://www.fema.gov/mmrs	To provide contractual funding to the 124 largest metropolitan jurisdictions to sustain and enhance the integrated medical response plans to a WMD terrorist attack.	Local governments
Department of Justice	*Office of Domestic Preparedness*	State Domestic Preparedness Equipment Support Program http://www.ojp.usdoj.gov/odp/equipment.htm	Funding will be provided to enhance first responder capabilities, and to provide for equipment purchases and exercise planning activities for response to Weapons of Mass Destruction (WMD) domestic terrorist incidents.	State and local governments
	Office of Community Oriented Police Services (COPS)	COPS Interoperable Communications Technology Program www.cops.usdoj.gov	To facilitate communications interoperability public safety responders at the state and local level.	Tribal, State, and local law enforcement agencies

Agency	Office/ Directorate	Program	**Purpose**	**Funding Beneficiaries**
Department of Health and Human Services		Public Health and Social Services Emergency Fund www.hhs.gov	To continue to prepare our nation's public health system and hospitals for possible mass casualty events, and to accelerate research into new treatments and diagnostic tools to cope with possible bioterrorism incidents.	Individuals, families, Federal, State, and local government agencies and emergency health care providers
	Health Resources and Services Administration	State Rural Hospital Flexibility Program www.ruralhealth.hrsa.gov	To help States work with rural communities and hospitals to develop and implement a rural health plan, designate critical access hospitals (CAHs), develop integrated networks of care, improve emergency medical services and improve quality, service and organizational performance.	States with at least one hospital in a non-metropolitan region
Department of Health and Human Services	*Health Resources and Services Administration*	EMS for Children www.hrsa.gov	To support demonstration projects for the expansion and improvement of emergency medical services for children who need treatment for trauma or critical care. It is expected that maximum distribution of projects among the States will be made and that priority will be given to projects targeted toward populations with special needs, including Native Americans, minorities, and the disabled.	State governments and schools of medicine
	National Institute of Health	Superfund Hazardous Substances Basic Research and Education www.nih.gov	To establish and support an innovative program of basic research and training consisting of multi-project, interdisciplinary efforts that may include each of the following: (1) Methods and technologies to detect hazardous substances in the environment; (2) advance techniques for the detection, assessment, and evaluation of the effects of hazardous substances on humans; (3) methods to assess the risks to human health presented by hazardous substances; and (4) and basic biological, chemical, and physical methods to reduce the amount and toxicity of hazardous substances.	Any public or private entity involved in the detection, assessment, evaluation, and treatment of hazardous substances; and State and local governments

Agency	Office/ Directorate	Program	**Purpose**	**Funding Beneficiaries**
	Centers for Disease Control	Immunization Research, Demonstration, Public Information and Education www.cdc.gov	To assist States, political subdivisions of States, and other public and private nonprofit entities to conduct research, demonstrations, projects, and provide public information on vaccine-preventable diseases and conditions.	States and nonprofits organizations
	Centers for Disease Control	Surveillance of Hazardous Substance Emergency Events www.atsdr.cdc.gov	To assist State health departments in developing a State-based surveillance system for monitoring hazardous substance emergency events. This surveillance system will allow the State health department to better understand the public health impact of hazardous substance emergencies by developing, implementing, and evaluating a State-based surveillance system.	State, local, territorial, and tribal public health departments
Department of Health and Human Services	*Centers for Disease Control*	Human Health Studies, Applied Research and Development www.atsdr.cdc.gov	To solicit scientific proposals designed to answer public health questions arising from situations commonly encountered at hazardous waste sites. The objective of this research program is to fill gaps in knowledge regarding human health effects of hazardous substances identified during the conduct of ATSDR's health assessments, consultations, toxicological profiles, and health studies, including but not limited to those health conditions prioritized by ATSDR.	State health departments
Department of Education	Office of Safe and Drug free Schools (OSDFS)	Readiness and Emergency Management for Schools http://www.ed.gov/programs/dvpemergencyresponse/index.html/	This grant program supports efforts by LEAs to improve and strengthen their school emergency operations plan, including training school personnel and students in emergency management procedures; communicating with parents about emergency plans and procedures; and coordinating with local law enforcement, public safety, public health, and mental health agencies.	School Districts

Agency	Office/ Directorate	Program	Purpose	Funding Beneficiaries
Department of Transportation	*Pipeline and Hazardous Materials Safety Administration (PHMSA)*	Hazardous Materials Emergency Preparedness Training and Planning Grants http://phmsa.dot.gov/hazmat/grants	Increase state, local, territorial, and Native American tribal effectiveness to safely and efficiently handle HazMat accidents and incidents; enhance implementation of the Emergency Planning and Community Right-to-Know Act of 1986; and encourage a comprehensive approach to emergency planning and training by incorporating response to transportation standards.	States, local, territorial, tribal governments.
Programs to coordinate Federal response efforts and to assists states, localities, and tribes in responding to disasters and emergencies.				
NH Homeland Security and Emergency Management	*Emergency Preparedness and Response Directorate*	Urban Search and Rescue www.fema.gov	To expand the capabilities of existing Urban Search and Rescue Task Forces.	28 existing US&R Task Forces
Programs to provide assistance to States, localities, tribes, and the public to alleviate suffering and hardship resulting from Presidentially declared disasters and emergencies caused by all types of hazards.				
NH Homeland Security and Emergency Management	*Emergency Preparedness and Response Directorate*	Individuals and Households Program http://www.fema.gov/assistance/process/guide.shtm	**To provide assistance to individuals and families who have been affected by natural or man-made Presidentially declared disasters. Funding provided from the Disaster Relief Fund.**	Individuals and Families
	Emergency Preparedness and Response Directorate	Public Assistance http://www.fema.gov/government/grant/pa/index.shtm	**To provide assistance to states, localities, tribes, and certain non-profit organizations affected by natural or man-made Presidentially declared disasters. Funding provided from the Disaster Relief Fund**	State, local and tribal governments; private non-profit organizations
	Emergency Preparedness and Response Directorate	Fire Management Assistance Grant Program http://www.fema.gov/government/grant/fmagp/index.shtm	**Provide funds to States, local, and tribal governments for the mitigation, management, and control of wildland fires posing serious threats to improved property.**	State, local and tribal governments

Agency	Office/ Directorate	Program	**Purpose**	**Funding Beneficiaries**
Small Business Administration	*Office of Disaster Assistance*	Disaster Loan Program http://www.sba.gov/services/disasterassistance/	**To offer financial assistance to those who are trying to rebuild their homes and businesses in the aftermath of a disaster.**	Individuals, families, private sector
Department of Justice	*Office for Victims of Crime*	Antiterrorism and Emergency Assistance Program http://www.ojp.usdoj.gov/ovc/publications/infores/terrorism/	**To provide assistance programs for victims of mass violence and terrorism occurring within and outside the United States and a compensation program for victims of international terrorism.**	Public and private nonprofit victim assistance agencies
Programs to reduce or eliminate future risk to lives and property from disasters.				
NH Homeland Security and Emergency Management	*Emergency Preparedness and Response Directorate*	Hazard Mitigation Grant Program http://www.fema.gov/government/grant/hmgp/index.shtm	**To provide assistance to states, localities, and tribes to fund projects that will reduce the loss of lives and property in future disasters. Funding is provides from the Disaster Relief Fund and administered by the states according to their own priorities.**	State, local, and tribal governments
	Emergency Preparedness and Response Directorate	Pre-Disaster Mitigation Program http://www.fema.gov/government/grant/pdm/index.shtm	**This program provides funding for mitigation activities before disaster strikes. In recent years it has provided assistance for mitigation planning. In FY03, Congress passes a competitive pre-disaster mitigation grant program that will include project funding.**	State, local, and tribal governments
NH Homeland Security and Emergency Management	*Emergency Preparedness and Response Directorate*	Flood Mitigation Assistance Program (FMA) http://www.fema.gov/government/grant/fma/index.shtm	**The FMA program was created as part of the National Flood Insurance Reform Act (NFIRA) of 1994 (42 U.S.C. 4101) with the goal of reducing or eliminating claims under the National Flood Insurance Program (NFIP). FEMA provides FMA funds to assist States and communities implement measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the National Flood Insurance Program.**	State, local and tribal governments

Agency	Office/ Directorate	Program	**Purpose**	**Funding Beneficiaries**
	Emergency Preparedness and Response Directorate	Map Modernization http://www.fema.gov/plan/prevent/fhm/mm_main.shtm	**This funding provides assistance to develop digital flood maps, support flood-mapping activities and expand the Cooperating Technical Partners Program to communities and regional entities.**	State, local and tribal governments
Programs to interdict potentially hazardous events from occurring				
Department of Health and Human Services	*Centers for Disease Control*	Immunization Grants www.cdc.gov	To assist States and communities in establishing and maintaining preventive health service programs to immunize individuals against vaccine-preventable diseases.	States
Other				
Department of Housing and Urban Development	*NH Office of Energy and Planning*	Community Development Block Grant (CDBG) Program http://www.hud.gov/offices/cpd/communitydevelopment/programs/	HUD provides flexible grants to help cities, counties, and States recover from Presidentially declared disasters, especially in low-income areas, subject to availability of supplemental appropriations.	State, local and tribal governments

Mitigation Programs of Other NH State Agencies

The following agencies of the state of New Hampshire are directly or indirectly involved in activities that include Hazard Mitigation Planning and/or program implementation:

- *NH Department of Transportation Bureau of Repair and Maintenance*
- *NH OSP/NFIP Program*
- *NH OSP Coastal Program*
- *NH DRED Division of Forests and Lands*
- *NH DES Water Resources Division – Dam Safety Program*
- *NH DES Wetlands Program*
- *NH DES Shoreline Protection*

APPENDIX E.
PAST STRATEGIES
2005 NEWLY IDENTIFIED MITIGATION STRATEGIES UPDATE

All shaded line items were added to the 2010 Update mitigation strategies.

Mitigation Action	Who (Leadership)	When (Deadline)	How (Funding Source)	2010 Update
Replace Shepard Home Road Bridge/Culvert	Road Agent	1-2 Years	Town Operating Budget, NH DOT	Permanently fixed with new headwalls and reinforcement
Update Emergency Operations Plan as required	Emergency Management Director	As needed	Town Operating Budget	Updated June 2010 and continuously being implemented
Replace Hanson Road Bridge	Road Agent	3-5 Years	Town, NH DOT, PDM Grant	Deferred due to lack of funding/time, Still needs to be replaced
Purchase and install auto-generator at EOC/Fire Station	EOC and Fire Department	5 Years	Town Operating Budget	Complete
Purchase and install generator for Town Offices and Police Station	Board of Selectmen	5 Years	Town Operating Budget	Purchased and installed, currently troubleshooting operational problems
Replace missing house numbers and reflective street numbers on posts at the end of driveways for 911	Building and Planning Depts	1-2 Years	Town Operating Budget	99% complete, estimated completion is 2010
Update and coordinate Chester Academy's Emergency Evacuation Plan	Emergency Management Director & Chester Academy	1-2 Years	Town Operating Budget	Update and coordinate with Town EMD as required

with the Town's Emergency Operations Plan				
Mitigation Action	**Who (Leadership)**	**When (Deadline)**	**How (Funding Source)**	**2010 Update**
Develop Comprehensive Resource List of Builders and Contractors within the community who would be available during and after emergencies.	Emergency Management Director	5 years	Town Operating Budget	Complete
Update HazMat/Terrorism Response Capabilities	Emergency Management Director	As needed	Town Operating Budget	Deferred due to lack of time/funding, Still needs updating
Establish a wellhead protection program and identify aquifer recharge areas	Planning Dept	5 Years	Town, DES Grants	Completed 2008
Develop a Steep Slope Ordinance in parallel with the Town's Excavation and Reclamation Regulations	Planning & Building Depts.	5 Years	Planning Board Budget	Deferred due to lack of time, Still Needed
Repair Wason Pond Dam Spillway	Planning & Building Depts.	5-10 Years	Town Operating Budget	In Progress
Purchase extra "Detour", "Road Closed" and "High Water" signs	Highway Department	1-2 Years	Town Operating Budget	Complete
Establish additional radio frequencies for dispatch	Fire, Police and Highway Departments	5 years	Town Operating Budget	Complete
Explore cast and possibility of using	Emergency Management	5-10 Years	Town & School Operating	Complete and in effect

Chester Academy as a Emergency Shelter rather than the Town Offices	Director & Chester Academy		Budget	
Mitigation Action	**Who (Leadership)**	**When (Deadline)**	**How (Funding Source)**	**2010 Update**
Develop standard operating procedures for emergency operations	Emergency Management Director	1-2 Years	Town Operating Budget	Complete
Public Education of Town Emergency Plans and Shelters	Emergency Management Director	5 Years	Town Operating Budget	Continuously being implemented through brochures and town website
Update definitions and terms in Town's Wetland regulations	Planning Department	5 years	Planning Board Budget	Complete
Purchase board-up building supplies for buildings damaged by fires	Fire Department	5Years	Town Operating Budget	Deferred due to lack of time/funding, Still needed
Make extra copies of Town Maps and EMO plan for EOC use	Planning & Building Depts.	1-2 Years	Town Operating Budget	Currently being implemented
Develop list and purchase supplies for Emergency Shelter	Emergency Management Director	1-2 Years	Town Operating Budget	In Progress
Adopt May 17, 2005 Digital FIRMs	Planning & Building Depts.	1-2 Years	FEMA Map Modernizations	Complete
Incorporate BMPs in Department policies and procedures	Planning, Police, Fire, and Highway Depts.	1-2 Years	Town Operating Budget	In progress and continuously being implemented

APPENDIX F

CHESTER HAZARD MITIGATION COMMITTE MEETING AGENDAS, MINUTES AND ATTENDANCE SHEETS

APPENDIX G
DOCUMENTATION OF PLAN ADOPTION

Town of Chester, New Hampshire

Chester Board of Selectmen

A Resolution Adopting the Chester Hazard Mitigation Plan Update 2016

WHEREAS, the Southern New Hampshire Planning Commission received funding from the New Hampshire Department of Safety – Homeland Security and Emergency Management under a Pre-Disaster Mitigation Grant to assist the Town of Chester in the preparation of the Chester Hazard Mitigation Plan Update; and

WHEREAS, several public planning meetings/hearings were held between August 2015 and April of 2016 regarding the development and review of the Chester Hazard Mitigation Plan Update; and

WHEREAS, adoption of this Plan will make the Town of Chester eligible for funding to alleviate the impacts of future hazards;

WHEREAS, the Chester Hazard Mitigation Plan contains several potential future projects to mitigate hazard damage in the Town of Chester; and

WHEREAS, a public hearing was held by the Chester Board of Selectmen on_____, 2016 to formally approve and adopt the Chester Hazard Mitigation Plan.

NOW, THEREFORE BE IT RESOLVED that the Chester Board of Selectmen approve the Chester Hazard Mitigation Plan Update.

ADOPTED and SIGNED this _____ day of _____, 2016.

Board of Selectmen

_____

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ATTEST

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