

Town of Barnstead New Hampshire



2008: DARYL CARLSON/CITIZEN PHOTO A tornado that touched down between Alton and Barnstead along Rte 28 caused major damage, ripping trees down, blocking roads and caused damage to homes throughout the region.

Hazard Mitigation Plan Update 2013

Town Adoption Date: _____
FEMA Approval Date: _____

TABLE OF CONENTS

1. INTRODUCTION	
Authority	1-1
Funding Source	1-1
Purpose	1-1
Introduction	1-1
Scope of Plan	1-2
Methodology	1-2
Goals	1-4
Acknowledgements	1-5
2. COMMUNITY PROFILE	
Community Description	2-1
National Flood Insurance Program	2-1
Disaster Risk	2-1
Natural Hazard Analysis Matrix	2-2
Human Caused Hazard Analysis Matrix	2-3
Development Trends	2-4
3. HAZARD IDENTIFICATION	
Winter Weather	3-1
Flooding	3-2
Lightning	3-4
Hurricane	3-5
Wildfire	3-6
Drought	3-6
Severe Wind	3-7
Earthquake	3-7
Dam Failure	3-8
Extreme Heat	3-9
Landslide	3-9
Avalanche & Hail	3-9
Human Caused	3-10
4. CRITICAL FACILITIES	
Introduction	4-1
Inventory of Critical Facilities & Assets	4-2

TABLE OF CONTENTS – CONTINUED

5. CAPABILITY ASSESSMENT	
Summary of Policies and Programs	5-1
Integration of Mitigation Priorities	5-1
Existing Protection Matrix	5-2
6. HAZARD MITIGATION PROJECTS	
Hazard Identification	6-1
Problem Statements	6-1
Goals Identified	6-1
Project Identification	6-1
Prioritized Mitigation Projects	6-2
Mitigation Project Status	6-3
Mitigation Action Plan	6-4
7. ADOPTION, IMPLEMENTATION AND MONITORING	
Adoption, Implementation and Monitoring	7-1
Resolution	7-3

ACRONYMS

APPENDIX A	Hazard Mitigation Resources
APPENDIX B	Documentation of Planning Process
APPENDIX C	Approval Letter from FEMA

Chapter 1 INTRODUCTION

Authority

This Hazard Mitigation Plan was prepared in accordance with the Disaster Mitigation Act of 2000 (DMA), Section 322, Mitigation Planning. Accordingly, this Hazard Mitigation Plan will be referred to as the “Plan”.

Funding Source

This Plan was funded by the NH Homeland Security and Emergency Management (HSEM) through an Emergency Management Planning Grant, with soft match provided by the Town of Barnstead.

Purpose

This Hazard Mitigation Plan is a planning tool to be used by the Town of Barnstead, as well as other local, state and federal governments, in their effort to reduce the effects from natural and man-made hazards.

Introduction

On October 30, 2000 the President signed into law the Disaster Mitigation Act of 2000 (DMA 2000). The ultimate purpose of DMA 2000 is to:

- Establish a national disaster hazard mitigation program that will reduce loss of life and property, human suffering, economic disruption, and disaster assistance costs resulting from disasters, and
- Provide a source of pre-disaster hazard mitigation funding that will assist State and local governments in accomplishing that purpose.

DMA 2000 amends the Robert T. Stafford Disaster Relief and Emergency Assistance Act by, among other things, adding a new section, 322 – Mitigation Planning. This places new emphasis on local mitigation planning. **It requires local governments to prepare and adopt jurisdiction-wide hazard mitigation plans as a condition of receiving Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation (PDM) mitigation project grants.** Local governments must review and if necessary, update the mitigation plan annually to continue program eligibility.

Why Develop a Mitigation Plan?

The full cost of the damage resulting from natural hazards – personal suffering, loss of lives, disruption of the economy, loss of tax base – is difficult to measure. Our State is subject to many types of natural hazards: floods, hurricanes, severe winter weather, earthquakes, tornadoes, downbursts, and wildfires, all of which can have significant economic and social impacts. Some, such as hurricanes, are seasonal and strike in predictable locations. Others, such as floods, can occur anytime of the year and almost anywhere in the State.

Scope of the Plan

The scope of this Plan includes the identification of natural hazards affecting the Town, as identified by the Hazard Mitigation Planning Committee. The hazards reviewed under the scope of this plan include those that are outlined in the State of New Hampshire’s Hazard Mitigation Plan:

- | | | |
|---------------------|-----------------------------|-----------------------|
| Flooding | Landslide | Lightning |
| Dam Failure | Avalanche | Severe Wind |
| Extreme Heat | Hurricane | Winter Weather |
| Drought | Hail | Wildfire |
| Earthquake | Human Caused Hazards | |

Methodology

In 2006, the Barnstead Hazard Mitigation Planning Committee with the assistance of Hubbard Consulting LLC developed the contents of this Plan through a Hazard Mitigation Planning Process. The Committee held a total of 5 meetings beginning on April 3, 2006 and ending on August 24, 2006. Two Public Information Meetings for the public to review and comment on the plan were held on April 3, 2006 and August 24, 2006 (see Appendix B). The Board of Selectmen will hold a public hearing and formally adopt the Plan once it has been approved by FEMA.

During the 2013 Update, the Hazard Mitigation Planning Committee with the assistance of Hubbard Consulting LLC held a total of 3 meetings on April 17, 2012; May 15, 2012; and June 5, 2012. Public notices were posted at the Town Hall and Post office; inviting members of the Committee, surrounding communities, businesses, academia, State agencies and non-profit agencies. No members of the public attended the meetings or commented on the Plan. In addition, the Emergency Management Directors from surrounding towns were notified of the Plan Update and asked to comment on the Plan (see Appendix B). The committee analyzed and revised the following sections of the Plan and provided input to update them: Chapter 3, 4, 5 and 6. The Board of Selectmen will hold a public hearing and formally adopt the Plan once it has been approved by FEMA.

The committee developed this Plan as a result of the above meetings and the following planning process.

Step 1: Form a Hazard Mitigation Planning Committee

Prior to the first public information meeting the Emergency Management Director contacted town department heads and posted public notices to residents, business owners and neighboring towns, requesting that they consider serving on the Committee (See Appendix B). The Committee Members consisted of town staff.

Step 2: Set Hazard Mitigation Goals

At the first working meeting the committee identified the Town's Hazard Mitigation Goals. Thirteen Hazard Mitigation Goals were adapted from the State of New Hampshire's Natural Hazards Mitigation Plan. This first step is extremely important in helping the committee understand the purpose of the Plan and the direction it should go. (See the end of this chapter for the "Hazard Mitigation Goals of the Town of Barnstead, NH".)

Step 3: Hazard Identification

The Committee members identified thirteen (13) natural hazards and eleven (11) human-caused hazards that have or could potentially affect the Town of Barnstead. The results of this step can be found in Chapter 3.

Step 4: Critical Facilities Analysis

The Committee members created a Critical Facilities List for the Town. The Critical Facilities List is divided into 3 sections: Facilities needed for Emergency Response; Facilities not necessary for emergency response; and places and populations to protect in the event of a disaster. These were then mapped and evaluated for their vulnerability to the hazards identified in Step 3. The "Critical Facilities Map" in Chapter 4 identifies the critical facilities needed for Emergency Response.

Step 5: Capability Assessment

The Committee members identified what plans and policies are already in place to reduce the affects of hazards. The results of this step can be found in Chapter 5. Many of these plans and technical reports were reviewed and incorporated during the planning process. They include the Barnstead Emergency Operations Plan (2004) and the Barnstead Master Plan (2002)

Step 6: Develop Objectives

The Committee identified "Problem Statements" for each of the hazards identified earlier in the planning process. All of the hazards have at least one problem statement associated with them (See Problem Statement in Appendix B). These problem statements were then utilized as objectives in developing mitigation projects, as described in the next step.

Step 7: Develop Specific Mitigation Measures

As a result of the problem statements identified in step 6, the committee brainstormed specific projects or mitigation measures to address each hazard. The Committee Members used the "*Mitigation Project Identification Worksheet*", as shown in Appendix B, to identify mitigation projects that directly address the hazards affecting the community. Finally, the committee prioritized the top priority projects and listed them in the Mitigation Action Plan found at the end of Chapter 6.

Step 8: Adopt and Implement the Plan

After acceptance by the committee the Plan was submitted to the NH HSEM and FEMA Region 1 for formal Approval. The Board of Selectmen formally adopted the Plan on [REDACTED], 2013. The letter of approval from FEMA Region 1 can be found in Appendix C.

With respect to any ongoing mitigation projects, the lead and support agencies/people for such activity will be tasked with implementing the Plan's mitigation projects. The Committee approved the "Prioritized Mitigation Projects" list, which identifies responsibility, funding/support and a timeframe for each of the prioritized projects. The Emergency Management Director should be tasked with requesting annual reports as to the progress of each project.

Step 9: Monitor and Update the Plan

It is important that this plan be monitored and updated annually or after a presidentially declared disaster. Chapter 7 specifically addresses this issue.

Hazard Mitigation Goals Town of Barnstead, NH

During the 2013 update, the Committee reviewed these goals but made no changes in priorities or goals. The overall Goals of the Town of Barnstead with respect to Hazard Mitigation are as follows:

1. To improve upon the protection of the general population, the citizens of the Town of Barnstead and guests, from natural and man-made hazards.
2. To reduce the potential impact of natural and man-made disasters on the Town of Barnstead's:
 - Emergency Response Capability
 - Critical Facilities
 - Infrastructure
 - Private property
 - Economy
 - Natural environment
 - Historic treasures
3. To improve the Town of Barnstead's:
 - a. Emergency preparedness and communication network.
 - b. Disaster response and recovery capability.
4. To identify, introduce and implement cost effective Hazard Mitigation measures so as to accomplish the Town's Goals and Objectives.
5. To work in cooperation with the State of New Hampshire's Hazard Mitigation Goals.

Hazard Mitigation Planning Committee

2006 Committee	
Name	Title/Affiliation
David Murley	Chair, Planning Board
Edward A. Tasker	Selectman
George Krause II	Fire Chief
Gordon Preston	Selectman
Jane Hubbard	Hubbard Consulting LLC
John O'Neil	Selectman
Mary Reed	Captain, Fire & Rescue
Michael Atskin	Selectman
Michael Tebbetts	Road Agent
2013 Committee	
Stephen Byers	Barnstead Emergency Management Director
Shawn Mulcahy	Barnstead Emergency Management Director
Joseph McDowell Jr.	Barnstead Police Sgt.
David Kerr	Barnstead Selectmen
Robert LaRoche	Barnstead Selectmen
Jim Barnard	Barnstead Selectmen
Priscilla Tiede	Barnstead Selectmen
Nancy Carr	Barnstead Planning Board Chair
Chris Carazzo	Barnstead Road Agent
Nancy St. Laurent	NH HSEM Field Representative
Danielle Morse	NH HSEM Field Representative
Jane Hubbard	Hubbard Consulting LLC, Consultant
Bonnie Lockwood	McGrew Management Services LLC, Consultant

The Committee members listed above participated in committee meetings, provided departmental information, contributed in their field of expertise, reviewed and commented on committee meeting minutes, reviewed drafts of the Plan and worked together to identify and prioritize mitigation projects.

*Many thanks to all the hard work and effort from each and every one of you.
This plan would not exist without your knowledge and experience.*

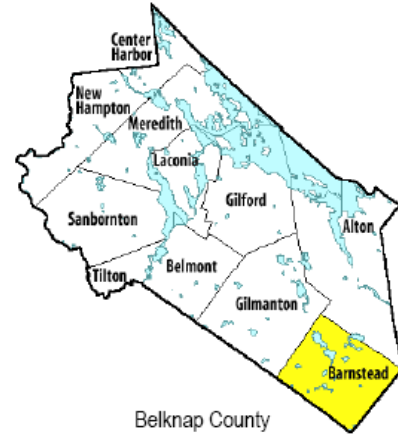
Thank you!

Chapter 2 COMMUNITY PROFILE

Community Description

The Town of Barnstead is located in Belknap County in southeastern New Hampshire. Barnstead is a community governed by a 5 member Board of Selectmen, with a population of over 4,400 people. The town is predominantly a residential community with some commercial businesses, primarily established on Route 28.

According to the NH Employment Security, "Population change for Barnstead totaled 3,743 over 50 years, from 850 in 1960 to 4,593 in 2010. The largest decennial percent change was between 1970 and 1980, when the population increased by 105 percent, more than doubling the population in those ten years. The 2010 Census estimate for Barnstead was 4,593 residents, which ranked 77th among New Hampshire's incorporated cities and towns."



National Flood Insurance Program (NFIP)

The Town is currently participating in the National Flood Insurance Program (NFIP). The community has Flood Insurance Rate Maps (FIRM) dated April 2, 1986. According to the July 2012 NFIP Policy and Claims report by FEMA, there are 10 NFIP policies, seven of which are located in a 100-year floodplain and 5 located outside of the 100-year floodplain. There has been 5 claims made since 1978, for a total of \$60,076. There is 1 single-family residential repetitive loss property, with four losses from 2005 to 2010.

The Town will continue compliance with the NFIP by conducting Community Assistance Visits (CAVs) with the Office of Energy and Planning and updating the Floodplain Ordinance as federal requirements are updated.

	Policies in Force	Premium	Insurance in Force	Number of Closed Paid Losses	\$ of Closed Paid Losses
Single Family	8	\$4,270	\$1,419,900	5	\$60,076
2-4 Family	1	\$405	\$350,000	0	\$0
All other Residential	1	\$262	\$20,000	0	\$0
Non Residential	0	\$0	\$0	0	\$0
Total	10	\$4,937	\$1,789,900	5	\$60,076

Disaster Risk

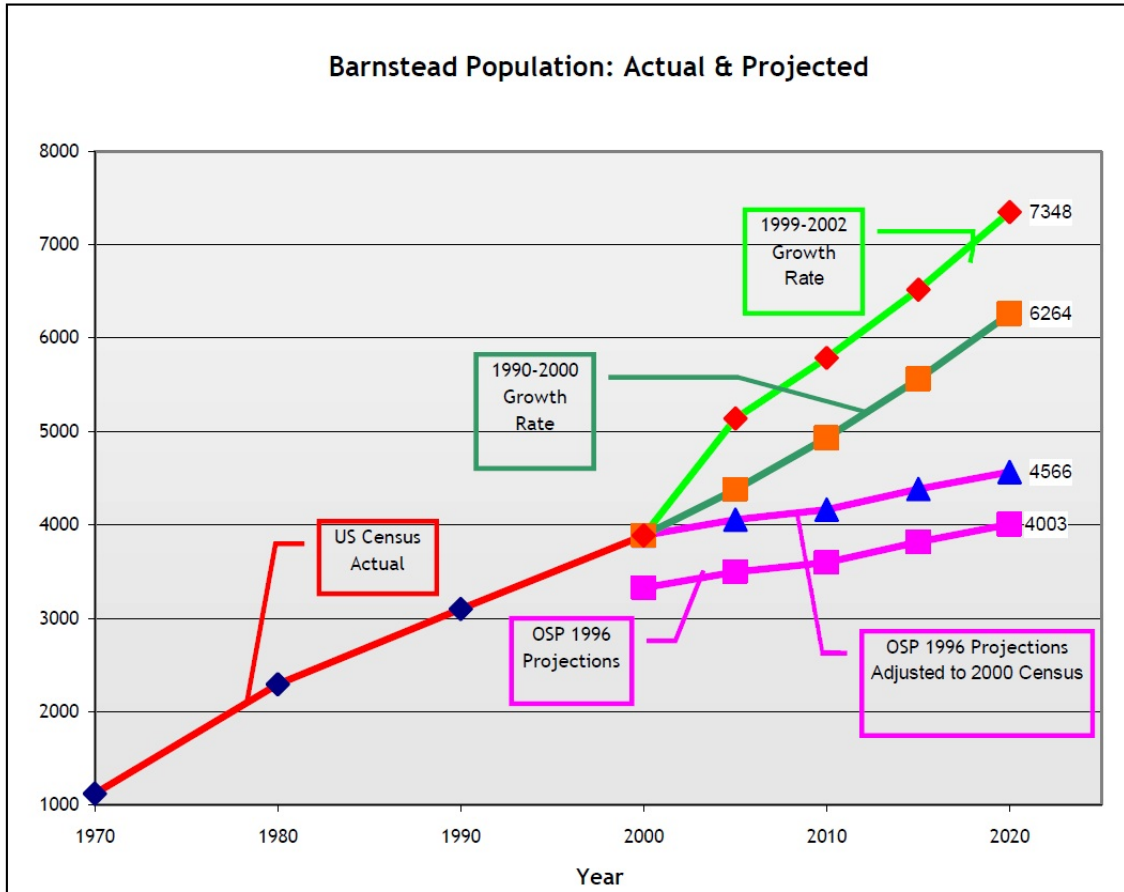
Barnstead is prone to a variety of natural hazards. These include: flooding, dam breach, severe wind events (downbursts, hurricanes, and tornadic activity), wildfire, drought, earthquake, lightening strikes, extreme heat, and severe winter weather, in addition to man-made hazards. The following table summarizes the impact and probability of natural and man-made hazards.

Natural Hazards	Human Impact	Property Impact	Business Impact	Severity	Probability In 25 years	Risk <i>Severity x Probability</i>
	Probability of death or injury 0: n/a 1: Low 2: Moderate 3: High 4: Catastrophic	Physical loss damage 0: n/a 1: Low 2: Moderate 3: High 4: Catastrophic	Interruption of service 0: n/a 1: Low 2: Moderate 3: High 4: Catastrophic	<i>Avg. of Human / Property / Business</i>	Likelihood this will occur 0: Improbable 1: Remote 2: Occasional 3: Probable 4: Frequent	0-3: Low 4-6: Moderate 7-9: High 10-12: Severe
Severe Winter Weather	2	2	2	2	4	8
Flood	1	2	2	1.7	4	6.8
Severe Wind <i>(Tornado/ Downburst)</i>	2	2	2	2	3	6
Lightning	1	2	1	1.3	4	5.2
Hurricane	1	2	1	1.3	3	3.9
Wild/Forest Fire	1	2	1	1.3	3	3.9
Earthquake	3	3	3	3	1	3
Dam Failure	2	2	2	2	1	2
Drought	1	1	1	1	2	2
Extreme Heat	1	0	1	.66	3	1.98
Avalanche	-	-	-	-	-	-
Hail	-	-	-	-	-	-
Landslide	-	-	-	-	-	-

Human Caused Hazards	Human Impact	Property Impact	Business Impact	Severity	Probability* In 25 years	Risk Severity x Probability
	Probability of death or injury 0: n/a 1: Low 2: Moderate 3: High 4: Catastrophic	Physical loss damage 0: n/a 1: Low 2: Moderate 3: High 4. Catastrophic	Interruption of service 0: n/a 1: Low 2: Moderate 3: High 4. Catastrophic	Avg. of Human / Property / Business	Likelihood this will occur 0: Improbable 1: Remote 2: Occasional 3: Probable 4: Frequent	0-3: Low 4-6: Moderate 7-9 High 10-12: Severe
Haz Mat (Transport)	3	2	2	2.3	3	6.9
Mass Casualty (Trauma or Medical)	3	1	2	2	3	6
Utility Interruption	1	1	2	1.3	4	5.2
Transport Incident (plane, train, etc.)	1	1	1	1	3	3
Haz Mat (Fixed)	1	1	1	1	2	2
Armed Attack (assault, sniper)	3	1	1	1.6	1	1.6
Biological Terrorism	3	1	1	1.6	1	1.6
Radiological Release	2	1	2	1.6	1	1.6
Urban Fire	2	2	1	1.6	1	1.6
Civil Disorder	1	1	1	1	1	1
Terrorist Attack (WMD)	3	2	1	2	0	0

Development Trends

According to NH Office of Energy and Planning, the Town's population has increased from 850 in 1960 to 4,593 in 2010 for an increase of 18.2%. Some of Barnstead's future land use policies include preserving the rural character and to protect the natural resources of the town. Population forecasts based on the 10 year and the 3 year rates of growth of Barnstead are displayed in the chart below. The 2002 Master Plan does not address future land use.



Source: US Census 1970-2000; NHOSP 1996 Population Projections; Barnstead Building Permits

The Hazard Mitigation Planning Committee utilized the Master Plan to review and incorporate development changes. However, due to no substantial changes in development since the 2005 Plan, there were no changes in priorities made to the Barnstead Hazard Mitigation Plan Update 2013.

**Chapter 3
HAZARD IDENTIFICATION**

Winter Weather

Location
<p>There is a town-wide vulnerability to severe winter weather. Nor'easters (wind), Ice Storms, Heavy Snow Accumulations and Severe Cold can occur at any place within the Town and generally affect the entire Town when it happens. The higher elevations are more likely to experience snow or ice before the lower terrain.</p>
Extent/Impact
<p>Heavy snow accumulations (generally considered one that deposits four or more inches of snow in a 12-hour period) especially those associated with nor'easters can have a significant affect on the Town, including extended power outages, road closures, collapsed roofs and increased snow removal costs. During ice storms, ice forms on cold surfaces, such as trees and power lines, and may continue to form until the ice is quite deep, as much as several inches thick. Ice damage results in power outages, road closures and forest damage. Ice on the roads can be the most difficult for a rapid emergency response. Private roads are difficult for emergency response vehicles due to the restricted access to roads during winter.</p>
Previous Occurrence
<p>January of 1923: 4 storms within a week left over 30 inches of snow. January 20, 1978: 20 inch snowstorm leaving 20' high snowdrifts February 6, 1978 Region-wide Blizzard affecting southern New England February 8-10, 1969 Event Accumulations up to 27" in southeastern New Hampshire and up to 42" in northeastern New Hampshire. February 22-28, 1969 Events Accumulations to 98" in Western Central New Hampshire, 34" in coastal areas and 2 to 3' across New Hampshire generally. The storm produced excessive amounts of snow across New England with accumulations of greater than 75 cm across large sections of eastern Massachusetts, New Hampshire, and Maine. February 5-7, 1978 Events accumulations to 28" in northeast New Hampshire, 25" in west central New Hampshire and 33" along coastal New Hampshire. Hurricane-force winds and record-breaking snowfall made this storm one of the more intense to occur this century across parts of the northeastern United States. Ice Storm Disaster: January 7-9, 1998 A severe Ice Storm hit sections of New Hampshire from January 7 through January 9 1998. The hardest hit areas in northern and central New Hampshire were generally between about 1000 and 2000 ft above sea level. While many cities and towns at lower elevations received only rain, towns at higher elevations, such as New London, where the temperatures were slightly cooler had freezing rain. Ice accreted several inches thick on trees, power lines, and other exposed surfaces causing many people in those areas to lose electrical service. Statewide, the storm knocked out power to about 55,000 customers, an estimated 125,000 people. During the time without power, residents and those involved with the restoration efforts had to contend with snow, additional freezing rain, rain, slippery roads, falling ice and other debris, sub-zero temperatures, strong winds, and dangerous wind chills. For many homes, the lack of electrical power also meant no heat, no running water, no means for cooking food. The storm caused an estimated 30 million dollars in damages. Debris cleanup from the storm was expected to last into the summer. Within the state, there were no deaths directly attributed to</p>

the storm, although one utility worker was partially paralyzed when struck by a falling tree while making repairs to a line. Carbon monoxide poisoning was a problem and many residents were treated at area hospitals. Long-term effects from the ice storm are expected to persist for many years. The debris from tree damage will create an increase in the forest fire danger over the next several years and has blocked many fire access roads and trails. Additionally, many, many tree limbs were left dangling by the ice storm and many trees were left partially fallen. These "widow makers" will pose a significant threat to anyone who works, walks, or drives through wooded areas over the next several years.

March 2001 Snow Emergency: A presidential declaration covered 7 counties with record and near-record snowfall from the late winter storm that occurred March 5-7.

February 2003 Snow Emergency: A presidential declaration covered 5 counties with record and near-record snowfall from the snowstorm that occurred February 17-18.

Extreme Cold Temps: Extreme cold up to -50 wind chill in Jan 2004; Dec/Jan/Feb of 2003; Jan 2000 and Dec98/Jan99.

December 11-12, 2008: A major winter storm brought a mixture of snow, sleet, and freezing rain to New Hampshire from the morning of December 11th to the morning of December 12th. The greatest impact in the state was in southern and central New Hampshire where a significant ice storm occurred. Following the ice storm, recovery and restoration efforts were negatively impacted by additional winter weather events that passed through the state. A mixture of snow, sleet, freezing rain and rain began Thursday morning across the state. However, as the northerly winds strengthened at the surface and southerly winds strengthened aloft, the precipitation changed to mostly a mix of sleet and freezing rain in southern and central New Hampshire. The freezing rain and sleet continued overnight and into Friday morning before ending. Precipitation amounts across the southern and central part of the state ranged from 1 to 3 inches, ice accretion to trees and wires in these areas generally ranged from about a half inch to about an inch. The weight of the ice caused branches to snap, and trees to either snap or uproot, and brought down power lines and poles across the region. About 400 thousand utility customers lost power during the event, with some customers without power for two weeks. Property damage across northern, central and southeastern New Hampshire was estimated at over \$5 million. Many residents in Barnstead were without power for two weeks. The EOC was activated for 5 days and local emergency Shelter at Barnstead Elementary School was opened for 3 days. Town personnel conducted door-to-door checks on residents.

October 30, 2011: The storm brought a heavy, wet snow to southern and central New Hampshire. Snow began to fall across southern New Hampshire late Saturday afternoon, became heavy during the night, and ended before 7 am Sunday morning. The snow was mixed with rain along the immediate coast. The combination of the heavy wet snow and leaves still on the trees caused numerous trees and branches to snap and fall, causing widespread power outages. About 315,000 customers lost power during the storm, mostly across the southeastern part of the state. Some customers were without electrical service for almost a week. Snowfall amounts were quite variable across the state with southern areas and the higher terrain receiving the most snow, and in some cases, record snowfall. In Belknap County, trained weather spotters reported 17.9 inches in Belmont and 17.5 inches in Tilton. The Town of Barnstead experienced heavy snowfall, debris and isolated power outages for several days.

Probability

Remote/Occasional/Probable/Frequent (in 25 years)

Frequent

Flooding

Location	
Flooding in Barnstead will occur in the 100 year floodplain as designated on the FEMA Flood Insurance Rate Map. These 100-year floodplains and historical flooding locations are shown on the Hazard Map at the end of this Chapter. These areas primarily include Suncook River and the Big River and other minor tributaries. The potential is moderate but the impact historically is minimal.	
Extent/Impact	
The extent of damage caused by any flood depends on the depth and duration of flooding, the topography of the area flooded, velocity of flow, rate of rise, and the amount and form of development in the floodplain. Primarily flooding impacts the road, culvert and bridge infrastructure more than residential and non-residential buildings. Since 1978, there has been 1 insured loss totaling \$3, 551.03.	
Previous Occurrence	
March 11-21, 1936	Double flood; first due to rains and snowmelt; second, due to large rainfall.
July - Aug.10, 1986	FEMA DR-771-NH: Severe summer storms with heavy rains, tornadoes; flash flood and severe winds.
April 16, 1987	Severe Storms & Flooding. FEMA DR-789-NH
August 7-11, 1990	FEMA DR-876-NH: A series of storm events from August 7-11, 1990 with moderate to heavy rains produced widespread flooding in New Hampshire.
August 19, 1991	FEMA DR-917-NH: Hurricane Bob struck New Hampshire causing extensive damage in Rockingham and Stafford counties, but the effects were felt statewide.
January 3, 1996	FEMA DR-1077-NH – Storms and flooding
October 29, 1996	FEMA DR-1144-NH – Severe storms and flooding
July 2, 1998:	FEMA DR-1231-NH – Severe storms and flooding
Sep.16-18, 1999:	A southeast flow of tropical moisture developed over New Hampshire late Wednesday, September 15 as Hurricane Floyd moved slowly northeastward along the East Coast of the United States. Minor flooding occurred along the Pemigewasset and Saco Rivers. Strong winds accompanied the storm and then increased again on the back side of the storm during the day on Friday as high pressure pushed into the area. The winds knocked down tree limbs onto power lines causing power outages that affected about 10,000 customers. Some of the stronger winds gusts reported in the state included 44 mph in Concord and 41 mph in Laconia. Rainfall totals from the event generally ranged from about 4 to 7 inches statewide, with some locally higher amounts.
October 8, 2005	FEMA DR- 1610 The interaction between a cold frontal boundary and the remnants of Tropical Storm Tammy resulted in tremendous amount of rainfall throughout most of central and southern New Hampshire. Rainfall ranged from just under 2 inches in far northern New Hampshire to 9 inches at Gilford in Belknap County. An unofficial report was received of 12.75 inches near Gunstock Ski area. There was a tremendous amount of damage to roads and bridges, and to the infrastructure in general due to flooding of small rivers and streams. Homes and businesses were damaged. Tragically, two young people lost their lives in the town of Unity in Sullivan County when they attempted to drive over a bridge that had already been washed away.
May 12, 2006:	FEMA – DR 1643 Flooding occurred along the Suncook River from the outlet of Lower Suncook dam through to the town line with evacuation in center Barnstead along Rt.126 and Parade Road and Depot Street. The shelter was opened for 2 days at Town hall.
April 15-23, 2007:	An area of low pressure intensified rapidly as it moved slowly from the southeastern United States on the morning of Sunday, April 15th to near New York City by the morning of Monday, April 16th. The intense low over New York City in combination with high pressure over eastern Canada produced a very intense pressure gradient across the area which caused strong east to northeast winds to develop across the region. Over land, the strong winds downed numerous trees. The downed trees caused widespread power outages, especially near the coast, and numerous road closures. The storm brought heavy rain to the region which, when combined with snow melt, produced widespread flooding across much of the region. The flooding of small rivers and streams was worst in southern and coastal

areas and led to numerous road closures. In the mountains, the rain was preceded by heavy snow. Flooding was minor on most mainstem rivers. The U.S. Geological Survey in New Hampshire reported that 5 river basins recorded all time record flows and 9 river basins in southern and southeast New Hampshire recorded peak flows that were equal to or greater than the 100 year recurrence interval. Of these nine river basins in New Hampshire, seven had recorded record flows just 11 months earlier during the Mother's Day flood. Damage to infrastructure was severe (roads, bridges, waste water treatment plants, public buildings). Homes and businesses were also damaged.

August 7, 2008: An area of slow moving showers and thunderstorms produced up to 6 inches of rain in 3 hours resulting in flash flooding in several towns in southeast New Hampshire. Numerous roads were inundated by small streams and many were washed out. Several cars were trapped in rising water in Laconia and several homes were also damaged. Damage was also extensive in Meredith and New Hampton.

September 3, 2011: Tropical Storm Irene brought over 4 inches of rain to Wilmot and higher amounts throughout New Hampshire. The eye of the storm traveled up the Connecticut River valley, resulting in lower rainfall amounts than originally predicted for the Wilmot area. Many roads in Barnstead were washed out. Downed trees and power lines caused sporadic power outages, but was completely restored within several days.

Probability <i>Remote/Occasional/Probable/Frequent (in 25 years)</i>
Frequent

Lightning

Location
The entire Town is at moderate risk to lightning hazard. The higher elevation areas have an increased probability, such as the areas with cell towers as shown on the Hazard Identification Map, however lightning strikes can occur anywhere in the Town.
Extent/Impact
Residents and visitors to the New Hampshire area are more vulnerable to being struck by lightning because of the activities with which they are involved, particularly on those warm summer days when lightning is most likely to occur. Often, many people are outside enjoying the variety of recreational activities that attract people to New England during the summer when the vulnerability to lightning strike is highest. More likely to be affected are structures and utilities, often resulting in structure fires and power outages.
Previous Occurrence
Barnstead experiences annually lightning events. There are no official records on lightning events but there have been several structure fires as a result of lightning strikes with in the last 20 years.
Probability <i>Remote/Occasional/Probable/Frequent (in 25 years)</i>
Frequent

Hurricane

Location
<p>When hurricane events occur in Barnstead they affect the entire Town. Certainly, the heavy rainfall associated with hurricanes will impact the 100-year floodplain but the high winds can have an impact on the whole Town.</p>
Extent/Impact
<p>New Hampshire's exposure to direct and indirect impacts from hurricanes is real, but modest, as compared to other states in the region. That being said, the probability of hurricanes occurring in Barnstead is possible. The largest impact is on the floodplain areas due to heavy rains. High winds cause trees to fall down thereby causing power outages, structural damage to buildings, road closures and debris management issues.</p>
Previous Occurrence
<p>September 21, 1938 - The Great New England Hurricane: Statewide there were 13 Deaths, 1,363 families received assistance. Disruption of electric and telephone services for weeks. 2 Billion feet of marketable lumber blown down. Flooding occurred throughout the State, in some cases equaling and surpassing the Flood of 1936. Total Direct Losses - \$12,337,643</p> <p>August 31, 1954 - Hurricane Carol: Extensive amount of trees blown down and property damage. Large crop loss. Localized flooding.</p> <p>September 12, 1960 - Hurricane Donna: Heavy flooding in Massachusetts and Southern New Hampshire</p> <p>October 7, 1962 - Tropical Storm Daisy: Heavy ocean swells, and flooding Coastal New Hampshire.</p> <p>August 28, 1971 - Tropical Storm Doria: Doria's center passed over New Hampshire resulting in heavy rain and damaging winds.</p> <p>September 16-18, 1999 - Tropical Storm Floyd: 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 in Belknap, Grafton and Cheshire Counties.</p> <p>August 28, 2011 - Tropical Storm Irene: The center of Irene was located just to the southwest of New Hampshire at 5 pm Sunday evening August 28 and then travelled up the Connecticut River Valley to the northern border of New Hampshire by 11 pm. The storm brought a prolonged period of strong and gusty winds and heavy rain to the state. The high winds snapped or uprooted numerous trees throughout the state causing more than 160,000 customers to lose electrical and/or communication services. The heavy rains caused rivers and streams throughout the state to flood causing damage to bridges, roads, and property. Rainfall amounts across the state ranged from 1.5 to 3 inches across southeastern New Hampshire with 3 to 6 inches across most of the remainder of the State, except in the White Mountains where 5 to 8 inches of rain fell. Rainfall was elevation dependant with the highest elevations receiving the greatest amounts. Much of the higher terrain in central and southern New Hampshire received between 4 and 6 inches of rain.</p>
Probability
<p><i>Remote/Occasional/Probable/Frequent (in 25 years)</i></p>
<p>Probable</p>

Wildfire

Location
The outer edge of the Town and the surrounding communities of Barnstead are heavily forested and are therefore vulnerable to this hazard, particularly during periods of drought. The majority of town relies on dry hydrants or cisterns for fire suppression.
Extent/Impact
Fires in New Hampshire are predominantly human-caused, and roughly half of the total fire activity is in the most populous three southern counties. The proximity of many populated areas to the forested lands exposes these areas and their populations to the potential impact of wildfire. In addition, the potential for wildfires increases during a prolonged drought. Finally, there are large areas of town (about 50% of the town) that are inaccessible during a wildfire due to lack of road access. Even some residential driveways with the homes located far from a main road are difficult to access.
Previous Occurrence
In 1947 there was a significant that affected Barnstead as it spread from Milton, NH to the coast of Maine. Almost annually, the town will experience forest fires about 5 acres in size.
Probability <i>Remote/Occasional/Probable/Frequent (in 25 years)</i>
Probable

Drought

Location
Droughts are difficult to define geographically. Due to their widespread nature a drought would affect the entire Town. However, a drought can affect fire suppression in those areas that do not have access to the public water system.
Extent/Impact
Droughts are not as damaging to the Town as floods or winter weather. However a severe drought can affect public water supply, increase the probability of fires, and impede fire suppression. Those areas with minimal fire protection are at a higher risk as a result of a prolonged drought.
Previous Occurrence
According to the NH State Hazard Mitigation Plan (2004), five droughts of significant extent and duration are evident in the 1900s: 1929-36, 1939-44, 1947-50, 1960-69 and 2001-2002. The 2001-02 drought was the 3rd worst on record, exceeded only by the droughts of 1965-1966 and 1941-1942. All of these droughts were statewide in extent and had recurrence intervals ranging from 10 to more than 25 years. In the statewide drought of 2001/02 private wells dried up and agriculture was affected. The State experienced a moderate in early 2012.
Probability <i>Remote/Occasional/Probable/Frequent (in 25 years)</i>
Occasional

Severe Wind (Tornado/Downburst)

Location
Severe wind events (tornado, downburst or high winds associated with thunderstorms) can occur anywhere in Barnstead. Generally the higher elevations are more susceptible as well as more vulnerable due to the fact that they are home to communication towers.
Extent/Impact
Depending on the size and location of these events, the destruction to property may be devastating. Several of the more significant and recent events within southern New Hampshire have caused several millions of dollars in damage and at least 5 fatalities. A tornado occurring in Barnstead would cause considerable damage. Roofs could be torn off frame houses; mobile homes demolished; large trees snapped or uprooted; and light object missiles would be generated as a result of an F-2 Tornado.
Previous Occurrence
<p>July 6, 1999 Severe thunderstorm winds caused damage statewide as downed trees blocked roads and caused power outages. The winds also damaged several buildings. In Sanbornton, a 60 foot pine tree fell on a car killing the driver. An F2 tornado touched down in Pittsfield, moved through Barnstead, and then into Strafford before lifting off the ground, snapping and uprooting hundreds of trees, and damaging several homes.</p> <p>July 27, 2005 A severe thunderstorm knocked down trees in the town of Barnstead. The tornado occurred on Grey Road which damaged the roof, broke windows and made the house uninhabitable. In February 2006 a series of severe wind was wide spread throughout the State. Barnstead opened up the local shelter for a 60 hour period to assist those that needed heat and electricity.</p> <p>June 5, 2007: Widespread severe thunderstorm activity produced very large hail and damaging winds across portions of southern New Hampshire. A severe thunderstorm produced .75 inch hail in Alton</p> <p>July 24, 2008: An E-F2 tornado moving north northeast out of Rockingham County entered Belknap County about 2 miles southwest of South Barnstead near Province Road. The storm traveled almost 12 miles before crossing into Strafford County resulting in E-F0 to E-F2 damage. There were numerous houses and buildings that were damaged or destroyed by the tornado or by falling trees. In addition, there were thousands of downed trees and numerous power lines down along the path of the storm.</p>
Probability
<i>Remote/Occasional/Probable/Frequent (in 25 years)</i>
Occasional

Earthquake

Location
According to the NH State Hazard Mitigation Plan, New Hampshire is considered to lie in an area of "Moderate" seismic activity with respect to other areas of the United States and is bordered to the North and Southwest by areas of "Major" activity. There are no identified fault lines for the entire state, therefore an earthquake could occur and/or affect any location in the Town.
Extent/Impact
It is assumed that all of the buildings in the Town have not been designed to withstand seismic activity. More specifically, the older historic buildings that are constructed of non-reinforced masonry are especially vulnerable to any moderate sized earthquake. Those town owned buildings include the Barnstead Town Hall. In addition, utilities (water, gas, etc) are susceptible to earthquake damage. Barnstead has experienced the effect of small to moderate earthquakes that had minor to no effect on the town's infrastructure. However, if a large (6+ on the Richter Scale) occurred in or around the town, it is assumed that structural damage would be moderate to severe.
Previous Occurrence

<u>New England Location</u>	<u>Date</u>	<u>Magnitude</u>
Ossipee, NH	December 20, 1940	5.5
Ossipee, NH	December 24, 1940	5.5
Dover-Foxcroft, ME	December 28, 1947	4.5
Kingston, RI	June 10, 1951	4.6
Portland, ME	April 26, 1957	4.7
Middlebury, VT	April 10, 1962	4.2
Near NH Quebec Border, NH	June 15, 1973	4.8
West of Laconia, NH	Jan. 19, 1982	4.5
Probability		
<i>Remote/Occasional/Probable/Frequent (in 25 years)</i>		
Occasional		

Dam Failure

Location
<p>Areas at risk include Suncook Lake Dam (Class C) and Parade Dam (Class B). If either of these dams gave way it would impact Route 28 and Parade Road as well as a minor amount of residential structures. The Emergency Action Plan for both of these Plans are available through the NH Department of Environmental Services. The dam inundation pathways from these EAPs are displayed on the Hazard Identification Map at the end of this Chapter.</p>
Extent/Impact
<p>A Class C structure 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:</p> <ul style="list-style-type: none"> ▪ 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 road impassable or interrupt public safety services. ▪ The release of a quantity and concentration of material which qualify as "hazardous waste" ▪ Any other circumstance which would more likely than not cause one or more deaths <p>A Class B structure is a dam that has a significant hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in any of the following:</p> <ul style="list-style-type: none"> ▪ No probable loss of lives. ▪ Major economic loss to structures or property. ▪ Structural damage to a Class I or Class II road which could render the road impassable or interrupt public safety services. ▪ Damage to a public water system, 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;
Previous Occurrence
<p>There is no history of significant dam failures in Barnstead.</p>
Probability
<i>Remote/Occasional/Probable/Frequent (in 25 years)</i>
Remote

Extreme Heat

Location
Extreme heat events are difficult to define geographically. Due to their widespread nature a period of extreme heat would affect the entire Town.
Extent/Impact
Extreme heat conditions may impact the health of residents and visitors. Facilities without generators and air-conditioners that house the elderly and disabled are very susceptible to human health issues. Roads, bridges, railroads etc. may be damaged due to extreme heat. Utilities are also vulnerable as the demand for air-condition rises. Prolonged high temperature has also been associated with civil unrest
Previous Occurrence
The summer of 1999 was one of the hottest summers on record. As of 7/27/99, there had been 13 days with temperatures recorded above 90 degrees, 5 days above 95 degrees and 2 above 97 degrees. There was a large increase in emergency response calls, however there were no deaths associated with this event. A cooling shelter was opened in 2011, due to extended period of extreme heat during the summer.
Probability
<i>Remote/Occasional/Probable/Frequent (in 25 years)</i>
Probable

Landslide

Location
Due to no significant history of Landslide in the Town of Barnstead, the Committee chose not to recognize the risk of Landslide in this Plan.

Hail

Description
Due to no significant history of hail in the Town of Barnstead, the Committee chose not to recognize the risk of hail in this Plan.

Avalanche

Description
Due to no history of avalanche as well as the lack of avalanche conditions within the Town of Barnstead, the Committee chose not to recognize the risk of avalanche in this Plan.

Human Caused Hazards

History:

There is no history of human caused events in the Town of Barnstead. The following Human Caused Hazard Vulnerability Table was completed by the Committee utilizing a vulnerability tool developed by FEMA.

Critical Facility	Man Made Hazard Vulnerability Score							
	Visibility	Target	Accessibility	Mobility	Hazardous Materials	Collateral Damage	Site Population	TOTAL
Fire: Barnstead Fire Station, South Barnstead Rd.	3	3	5	5	2	2	1	21
Shelter: Barnstead Elementary	4	3	5	5	2	1	1	21
Town Hall: Barnstead Town Hall	3	3	5	5	1	2	1	20
Shelter: Town Hall	3	3	5	5	1	2	1	20
Public Works: Highway Garage	3	1	5	5	4	1	1	20
Police: Barnstead Police Department	3	4	2	5	2	2	1	19
Fire: Station #1, Parade Road	3	3	4	5	2	1	1	19
EOC Secondary: Barnstead Fire Station	1	1	5	4	2	2	1	16
EOC Primary: Barnstead Town Hall	1	1	5	4	1	2	1	15

1-11 Low Vulnerability

12-22 Moderate Vulnerability

23-35 High Vulnerability

Chapter 4 CRITICAL FACILITIES

Introduction

The Critical Facilities List for the Town of Barnstead has been identified by the Barnstead Hazard Mitigation Planning Committee. The list is divided into three sections: Facilities needed for Emergency Response (Category 1), Facilities Not Necessary for Emergency response (Category 2), and Populations and facilities to protect in the event of a disaster (Category 3). In addition, the Inventory of Critical Facilities table assesses the value of these structures.

CATEGORY 1 (Facilities needed for Emergency Response)

- Fire
- Emergency Medical Services (EMS)
- Police
- Hospital
- Shelter
- Town Hall / Emergency Operations Center (EOC)
- Public Works
- Water Supply/Treatment
- Sewer Treatment
- Emergency Fuel



Fire Station

CATEGORY 2 (Facilities NOT necessary during an emergency event)

- Public Utilities
- Communications
- Transportation
- Evacuation Routes



Elementary School

CATEGORY 3 (Populations & Places to Protect)

- Schools
- Daycares
- High Concentration Populations
- Elderly Facilities
- Healthcare Facilities
- Recreation areas
- Historic Resources

Barnstead, NH Inventory of Critical Facilities and Assets								
Facility	Name/Location	Owner	Category 1	Category 2	Category 3	Assessed Value	Hazard Vulnerability	Comments
			✓	✓	✓			
Town Hall	Town Hall, 108 South Barnstead Road St.	Municipal	✓			\$368,100	Hurricane, Severe Wind, Human Caused Hazards	Fixed Generator
EOC	Town Hall, South Main St. (Primary)	Municipal	✓			368,100	Hurricane, Severe Wind, Human Caused Hazards	Fixed Generator
	Barnstead Fire Station #2, 106 South Barnstead Rd. (Secondary)	Municipal	✓			278,900	Earthquake, Hurricane, Severe Wind, Drought	Fixed Generator
Police Station	Barnstead Police, South Barnstead Rd.	Municipal	✓			265,400	Earthquake, Hurricane, Severe Wind, Human Caused Hazards	Fixed Generator
Fire Station	Barnstead Fire Station #2, 106 South Barnstead Rd.	Municipal	✓			278,900	Earthquake, Hurricane, Severe Wind, Drought	Fixed Generator
	Station #1, 305 Parade Rd.	Municipal	✓			356,900	Earthquake, Hurricane, Severe Wind, Drought	Fixed Generator
Hospital	Concord, Lakes Region, Frisbee, Huggins and Douglas Wentworth	Private	✓			n/a	n/a	
Shelters	Barnstead Elementary, 91 Maple St.	SAU 51	✓			5,175,000	Earthquake, Winter Weather, Hurricane, Severe Wind, Human Caused Hazards	Fixed Generator
	Prospect Mountain High School, Alton, NH	SAU 51	✓			n/a	n/a	
	Town Hall, 108 South Barnstead Road (warming center only)	Municipal	✓			368,100	Hurricane, Severe Wind, Human Caused Hazards	
Road Agent	Highway Garage, 23 Beauty Hill Road East	Municipal	✓			293,000	Hurricane, Severe Wind, Human Caused Hazards	Portable Generator
Public Utilities	NH Elec. Coop Substation 168 Garland Road	Private		✓		36,800	Human Caused Hazards	
	TDS Telephone: North Barnstead Rd. and Shackford Corner Rd., Douglas Dr.	Private		✓		4357200	Human Caused Hazards	
	Cell Tower, Hartshorn Rd.	Private		✓		148,400	Winter Weather, Severe Wind, Hurricane	
Transportation	Marston Bus Company First Student	Private		✓		n/a	Winter Weather	

Barnstead, NH Inventory of Critical Facilities and Assets								
Facility	Name/Location	Owner	Category 1	Category 2	Category 3	Assessed Value	Hazard Vulnerability	Comments
			✓	✓	✓			
Emergency Fuel	Highway Garage – Diesel Only (1800 gal)	Municipal		✓		n/a	Earthquake, Hurricane, Severe Wind, Human Caused Hazards	Portable Generator
Water Supply	Locke Lake Water Supply	Pennichuck		✓		2,419,623	Drought, Human Caused	
Sewer	None	-		✓		-	-	
Schools	Barnstead Elementary, 91 Maple St.	SAU 51			✓	5,175,000	Earthquake, Winter Weather, Hurricane, Severe Wind, Human Caused Hazards	
	Prospect Mountain High School, Alton, NH	SAU 51			✓	n/a	n/a	
High Population Areas	Locke Lake	Private			✓	Varies	Flood	
	Birchwood Hideaway, Pinkham Pond	Private			✓	Varies	High Wind, Winter Weather	
	Beaver Estates, Beaver Ridge Road	Private			✓	Varies	High Wind, Winter Weather	
	Barnstead Parade	Mixed			✓	Varies	High Wind, Winter Weather	
	Center Barnstead	Mixed			✓	Varies	High Wind, Winter Weather	
Elderly Facilities	None	-			✓	-	-	
Recreation Areas	Upper Suncook Lake	Mixed			✓	Varies	Flood	
	The Narrows	Mixed			✓	Varies	Flood	
	Lower Suncook Pond	Mixed			✓	Varies	Flood	
	Soccer Field at School	SAU 51			✓	n/a	Lightning, Severe Wind	
	2 baseball fields on 126	Municipal			✓	n/a	Lightning, Severe Wind	
	2 Boy Scout Camps (Storr & Wild Goose)	Private			✓	1,514,400	Lightning, Severe Wind	
	Harris Property Conservation Land	Private			✓	1,219,900	-	
Historic	Sellin Farm, 305 Gilmanton Road (State Historic Site)	Private			✓	206,105	Earthquake, Human Caused Hazards	
	Oscar Foss Memorial Library, 111 S. Barnstead Rd. (National Historic Site)	Municipal			✓	460,500	Earthquake, Human Caused Hazards	
	No. Barnstead Cong. Church	Private			✓	270,800	Earthquake, Human Caused Hazards	
	Center Barnstead Bandstand	Municipal			✓	1,500	Severe Wind, Winter Weather, Human Caused Hazard	

Barnstead, NH Inventory of Critical Facilities and Assets								
Facility	Name/Location	Owner	Category 1	Category 2	Category 3	Assessed Value	Hazard Vulnerability	Comments
			✓	✓	✓			
	American Legion Hall	Private			✓	190,600	Severe Wind, Winter Weather, Human Caused Hazard	
Other	South Barnstead Congregational Church	Private			✓	163,500	Earthquake, Human Caused Hazards	
	Agape Christian Fellowship Church	Private			✓	288,800	Earthquake, Human Caused Hazards	
	Center Barnstead Christian Church	Private			✓	173,200	Earthquake, Human Caused Hazards	
	Barnstead Parade Cong. Church (1779)	Private			✓	217,900	Earthquake, Human Caused Hazards	

Chapter 5 CAPABILITY ASSESSMENT

The following table is a list of current policies and regulations adopted by the Town of Barnstead that protect people and property from natural and man-made hazards. The table includes a description of the policy/regulation, the responsible agent, the policy's effectiveness and recommended strategies to improve mitigation efforts.

Integration of Mitigation Priorities into Planning and Regulatory Tools

The Town should conduct periodic review of these regulations and this Hazard Mitigation Plan. Reviewing these plans on a regular basis will ensure the integration of mitigation strategies. This review will continue to be a priority of the Barnstead Emergency Management Director and will likely include yearly requests in the annual budget process. Moreover, as suggested in the onset of this document, this *Plan* is a planning tool to be used by the Town of Barnstead, as well as other local, state, and federal governments, in the effort to reduce future losses from natural and/or man-made hazardous events before they occur. Under the Prioritized Mitigation Projects *Action Plan* (found in Chapter 6), all parties listed under the Responsibility/Oversight category shall also review this listing annually, and consider the listed (and updated) mitigation projects within their annual budget requests.

Existing Protection Matrix Barnstead, NH				
Existing Protection	Description	Responsible Agent	Effectiveness <i>Poor/Average/Exc.</i>	Status
Emergency Operations Plan	The Town maintains an EOP that meets the recommendations by the NH Homeland Security Emergency Management. This plan identifies the response procedures and capabilities of the Town of Barnstead in the event of a natural or man-made disaster.	EMD	Excellent	Planned for update in 2013.
Building Code	The town complies with the State of New Hampshire Building Code which incorporates the IBC, IPC and NFPA.	Building Inspector / Code Enforcement Officer	Average	Continue to enforce Building Code Regulations.
Floodplain Ordinance	The minimum National Flood Insurance Program (NFIP) requirements have been adopted as part of the Town's Zoning Ordinance. This regulates all new and substantially improved structures located in the 100-year floodplain, as identified on the FEMA Flood Maps.	Planning Board / Zoning Board / Building Inspector	Excellent	Continue to enforce floodplain regulations, including substantially improved structures; and amend regulations as necessary per federal requirements.
Elevation Certificates Maintained	Elevation certificates are maintained for new and substantially built structures in the 100-year floodplain.	Building Inspector	Excellent	Code Enforcement continues to administer, enforce, and ensure that Elev. Cert. are properly filed, certified and implemented.
Emergency Warning System	The Town has an official public warning/alert protocol outlined in the EOP. Supplementing the EOP are PA systems in all Fire & Police vehicles. School District has notification system – Reverse 911.	Police/Fire	Excellent	The State of NH is supposed to implement a reverse notification system in 2013.
Subdivision Regulations	The purpose of Barnstead's subdivision regulations is to provide for the orderly present and future development of the town by promoting the public health, safety, convenience and welfare of the town's residents.	Planning Board	Excellent	Review and update annually.

Existing Protection Matrix Barnstead, NH				
Existing Protection	Description	Responsible Agent	Effectiveness <i>Poor/Average/Exc.</i>	Status
Road Design Standards	Barnstead Subdivision and Site Plan Regulations include road design standards that control the amount and retention of storm water runoff.	Planning Board / Road Agent	Excellent	Subdivision regulations to include provisions for emergency vehicle access.
Bridge Maintenance Program	There is currently one bridge on the state Red List. Inspection and clean-up occur annually. The state inspects all bridges and maintains State bridges.	Road Agent/State DOT	Excellent	Develop a bridge maintenance plan.
Storm Drain / Culvert Maintenance	Culverts and drainage basins are cleaned on occasion. Culverts are replaced as needed.	Road Agent	Average	Many haven't been cleaned in years. GPS location of all culverts.
Wetlands Protection	The Zoning Ordinance contains wetland buffer regulations.	Planning Board / Conservation Commission	Excellent	Update as required by state standards.
Shoreland Protection Program	Establishes standards beyond the minimum state requirement for future subdivision, use, and development of shore lands within 250' of the state's public waters (4th Order or higher). (State Shoreline Protection)	Planning Board	Excellent	Update as required by state standards.
Hazardous Materials Plan / Team	There are no substantial Hazardous Material facilities that warrant a Hazardous Material Plan. There is also a regional HazMat response team that serves the town.	Fire Chief	Excellent	Continue to participate in the Lakes Region Mutual Aid Hazardous Response Team.
Public Education Programs	The Fire Department annually conducts a Fire Prevention Week and Awareness. The Police Department conducts periodic safety programs.	Fire / Police	Excellent	Implement additional public education programs.

Existing Protection Matrix Barnstead, NH				
Existing Protection	Description	Responsible Agent	Effectiveness <i>Poor/Average/Exc.</i>	Status
Master Plan	The Master Plan serves as the guiding document for future development in Barnstead. It also serves as the guiding document to assist the Planning Board as it updates the Town Zoning Ordinance, Subdivision and Site Plan Review Regulations and other regulations that fall under its jurisdiction.	Planning Board	Average	Currently updating to incorporate Hazard Mitigation Plan as part of the Master Plan.
Capital Improvement Program	A decision making tool used to plan and schedule town improvements over at least a six-year period. The CIP provides a suggested timeline for budgeting and implementing needed capital improvements.	Planning Board	Average	Reviewed and updated Annually.

Chapter 6 MITIGATION PROJECTS

The following describes the process undertaken by the Committee to identify and prioritize mitigation projects. The flowchart on Page 6-3 depicts the correlation between hazard identification and the identification of mitigation projects.

Hazard Identification

The Committee utilized the *Hazard Identification Worksheet*, as shown in Appendix B, to identify potential hazards, the historical occurrence, locations, assets at risk and the probability of each hazard. The results of this process can be found in Chapter 3.

Problem Statements

From the Hazard Identification process the Committee developed a list of Problem Statements for each Hazard (see Appendix B). Based on the hazards and risks within the town, the Committee summarized the ‘problems’ associated for every hazard identified. These problem statements allowed the Committee to identify mitigation alternatives during the project identification step described below.

Goals Identified

The Committee identified Goals based on the hazards identified, as well as the Mitigation Goals identified in the NH Hazard Mitigation Plan.

Project Identification

Using the *Mitigation Project Identification Worksheet* (see Appendix B) as a guide, the Committee members identified mitigation projects for each problem Statement. Specific objectives (mitigation alternatives) included: Prevention, Property Protection, Public Education, Natural Resource Protection, Emergency Services and Structural Projects. In total, there were thirteen (13) projects identified.

This process resulted in the *Mitigation Project Identification Matrix*. For illustrative purposes the table below is an excerpt from the *Matrix* included in Appendix B. In this *Matrix*, the committee was able to determine a basic benefit/cost by using the STAPLEE method. For each project identified, the committee considered the STAPLEE Criteria (Social, Technical, Administrative, Political, Legal, Economic and Environmental) to guide their decision in prioritizing the projects. One component of STAPLEE is the Economic criteria which aided the committee in determining whether the benefits outweigh the costs.

Mitigation Project Identification Matrix									
Hazard	Problem Statement	Projects <i>Prevention /Property Protection/ Public Educ./ Nat.Resources /Emerg.Serv / Structural</i>	Social	Technical	Administrativ	Political	Legal	Economic	Environment
			Flood	Heavy rains and heavy snow melt cause flooding and erosion in and around undersized culverts and poorly drained roads (see hazard map).	Upgrade culverts on Colony Drive/dam site	+	+	+	+

Excerpt from Mitigation Project Identification Matrix

Prioritized Mitigation Projects

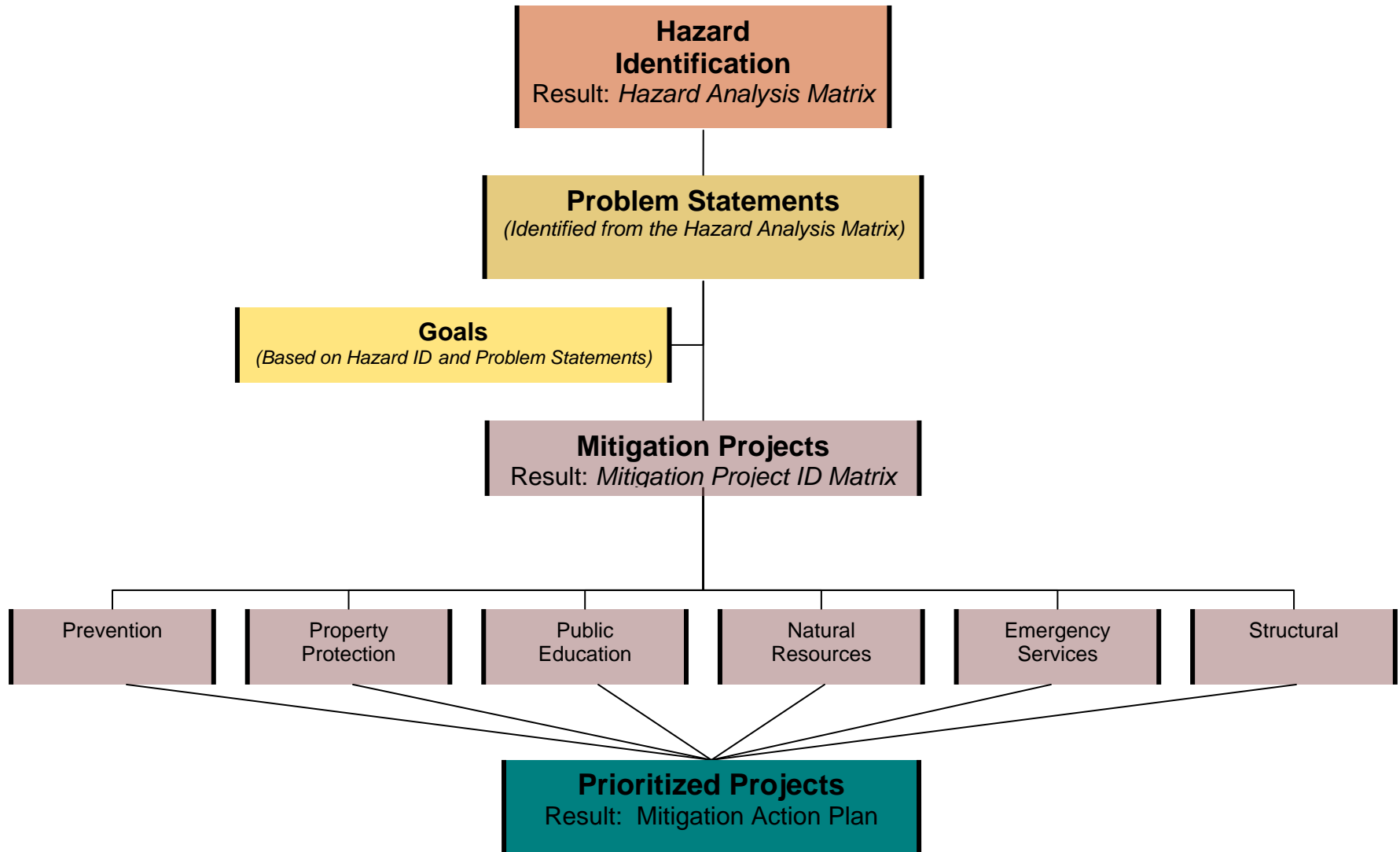
Each committee member reviewed the 13 projects. After careful evaluation, the committee ranked the projects by voting for half of the projects. The project that received the most votes was ranked as the highest priority and the project receiving the least amount of votes received the lowest priority. (See Prioritized Mitigation Projects in Appendix B.) The prioritized projects are identified in the Mitigation Action Plan.

Projects	1		2		3		4		5		Sur Rive Stabi
	Flood Maps		Public Education		Enforce Floodplain Regs		Enforce Bldg. Regs		Enforce Fire Permits		
Criterion	Cost	Benefit	Cost	Benefit	Cost	Benefit	Cost	Benefit	Cost	Benefit	Cost
Social	+	+	+	+	+	+	+	+	+	+	+
Technical	+	+	+	+	+	+	+	+	+	+	-
Administrative	+	+	+	+	+	+	+	+	+	+	+
Political	-	+	+	+	+	+	+	+	+	+	+
Legal	+	+	+	+	+	+	+	+	+	+	+
Economic	-	+	+	+	+	+	+	+	+	+	+
Environmental	+	+	+	+	+	+	+	+	+	+	-

Mitigation Action Plan

All thirteen projects were compiled in the Mitigation Action Plan found on Page 6-4 which identifies Responsibility, Funding, Time frame, Hazards Addressed and the Priority for each mitigation project.

Mitigation Project Identification Flowchart



Mitigation Action Plan							
Project	Responsibility/ Oversight	Funding/ Support	Time frame	Cost Estimate	Hazard(s) Addressed	Priority (H/M/L)	Project Status
Update Flood maps and produce on GIS maps.	Selectmen / FEMA	FEMA	2017	\$30,000	Flood		Continued from 2006 Plan
Implement public education programs on mitigation activities.	EMD	NH HSEM	2013	\$500 - \$3,000	Hurricane, Wildfire, Wind, Dam Failure, Extreme Heat, Human Caused		New
Continue to enforce floodplain regulations, including substantially improved structures; and amend regulations as necessary per federal requirements.	Planning Board / Zoning Board / Building Inspector	NH Office of Energy and Planning	2012	None (staff time only)	Flood		Continued from 2006 Plan
Continue to enforce Building Code Regulations.	Building Inspector / Code Enforcement Officer	NH Office of Energy and Planning	2012	None (staff time only)	All Hazards		Continued from 2006 Plan
Continue to enforce fire permits and regulations.	Forest Fire Warden	DRED	2012	None (staff time only)	Wildfire		New
Investigate soil stabilization along Suncook River.	Selectmen	Grants	2015	\$100,000+	Flood		New

Chapter 6 MITIGATION PROJECTS

Hazard Identification

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The Committee identified Goals based on the hazards identified, as well as the Mitigation Goals identified in the NH Hazard Mitigation Plan.

Project Identification

Using the *Mitigation Project Identification Worksheet* (see Appendix B) as a guide, the Committee members identified mitigation projects for each problem Statement. Specific objectives (mitigation alternatives) included: Prevention, Property Protection, Public Education, Natural Resource Protection, Emergency Services and Structural Projects. In total, there were thirteen (13) projects identified.

This process resulted in the *Mitigation Project Identification Matrix*. For illustrative purposes the table below is an excerpt from the *Matrix* included in Appendix B. In this *Matrix*, the committee was able to determine a basic benefit/cost by using the STAPLEE method. For each project identified, the committee considered the STAPLEE Criteria (Social, Technical, Administrative, Political, Legal, Economic and Environmental) to guide their decision in prioritizing the projects. One component of STAPLEE is the Economic criteria which aided the committee in determining whether the benefits outweigh the costs.

Mitigation Project Identification Matrix									
Hazard	Problem Statement	Projects <i>Prevention /Property Protection/ Public Educ./ Nat.Resources /Emerg.Serv / Structural</i>	Social	Technical	Administrativ	Political	Legal	Economic	Environment
Flood	Heavy rains and heavy snow melt cause flooding and erosion in and around undersized culverts and poorly drained roads (see hazard map).	Upgrade culverts on Colony Drive/dam site	+	+	+	+	+	+	+

Excerpt from Mitigation Project Identification Matrix

Prioritized Mitigation Projects

Each committee member reviewed the six mitigation projects. After careful evaluation, the committee ranked the projects by voting for half of the projects. The project that received the most votes was ranked as the highest priority and the project receiving the least amount of votes received the lowest priority. (See Prioritized Mitigation Projects in Appendix B.) The prioritized projects are identified in the Mitigation Action Plan.

There have been no significant changes to mitigation priorities for the Town of Barnstead. The Hazard Mitigation Committee identified new projects as described below and prioritized them as discussed above.

Mitigation Project Status:

The Town completed the original version of this Plan in 2006. The completed projects listed below are not included in the 2013 edition of the Plan. In addition, the Committee deleted some projects and added new projects to the Plan.

Completed Projects since 2006
Investigate hiring code enforcement officer / building inspector
Purchase "Road Closed" signage to be used during flooding events.
Purchase a 4-wheel drive gator to be used during wildfires that have limited access.
Look into driveway regulations to include provisions for emergency vehicle access.
Upgrade culverts on Colony Drive/ Dam Site
Deleted Projects
"Make Application to Community Rating System (CRS) through Office of Energy & Planning" was deleted. The Town decided that due to the low number of NFIP policies, it is not necessary to join the CRS.
Continuing Projects since 2006
Elementary School to be used as a shelter.
Site Survey/selection/property acquisition to place a tower and antennae system.
GPS the location of all culverts and initiate a maintenance and clean-up program
Update Floodmaps and produce on GIS maps.
Hazardous Materials awareness training for Police and Highway personnel.
Assess the town property for flooding along the Suncook River in center Barnstead north of 126 (i.e. soil stabilization)

Mitigation Action Plan

The projects identified in 2006 included preparedness projects as well as mitigation projects. During the 2013 update, the committee only prioritized mitigation projects. The six mitigation projects were compiled in the Mitigation Action Plan found on Page 6-4 which identifies Responsibility, Funding, Time frame, Hazards Addressed and the Priority for each mitigation project. The preparedness projects are identified on page 6-5.

Since the 2008 version of the Hazard Mitigation Plan (HMP), the Town did not incorporate mitigation strategies into other planning mechanisms. However, the Town will consider incorporating HMP activities into other planning documents over the next five years. Some of those plans could include the following:

- Master Plan – The Master Plan is updated every 5 to 10 years in accordance with RSA 674. This plan also includes a discussion of capital improvements within the Town. The next Master Plan update will integrate mitigation strategies and actions from the HMP (which will have been updated in accordance with the provisions of Section VI in this plan).
- Emergency Operations Plan (EOP) – The EOP is designed to allow the Town to respond more effectively to disasters as well as mitigate the risk to people and property. The EOP will be reviewed to ensure that where appropriate, specific mitigation actions outlined in the HMP are also addressed in the EOP.

MITIGATION ACTION PLAN

The following is the completed list of projects, recommended by the Committee. The following action plan identifies Responsibility, Funding and a Time frame for the high priority projects for each objective.

Project	Responsibility/ Oversight	Funding/ Support	Time frame	Cost Estimate	Hazard(s) Addressed	Priority (H/M/L)
Continue to enforce Building Code Regulations.	Building Inspector / Code Enforcement Officer	NH Office of Energy and Planning	2013	None (staff time only)	All Hazards	High
Implement public education programs on mitigation activities.	EMD	NH HSEM	2013	\$500 - \$3,000	Hurricane, Wildfire, Wind, Dam Failure, Extreme Heat, Human Caused	Medium
Continue to enforce fire permits and regulations.	Forest Fire Warden	DRED	2013	None (staff time only)	Wildfire	Medium
Update Flood maps and produce on GIS maps.	Selectmen / FEMA	FEMA	2017	\$30,000	Flood	Medium
Continue to enforce floodplain regulations, including substantially improved structures; and amend regulations as necessary per federal requirements.	Planning Board / Zoning Board / Building Inspector	NH Office of Energy and Planning	2013	None (staff time only)	Flood	Medium
Investigate soil stabilization along Suncook River.	Selectmen	Grants	2015	\$100,000+	Flood	Low

Non-Mitigation Actions				
Project	Responsibility/ Oversight	Funding/ Support	Time frame	Hazard(s) Addressed
Purchase generator for the Elementary School to be used as a shelter.	Selectmen / School Board	Grants / Town Match	2013	All Hazards
Install multiple phone lines for EOC and centralize the town hall/fire and police with the EOC phone lines.	Selectmen	Town Budget / telephone companies	2014-2015	All Hazards
Site Survey/selection/property acquisition to place a tower and antennae system.	Selectmen	EMPG / Town Match	2013-2014	All Hazards
GPS the location of all culverts and initiate a maintenance and clean-up program	Road Agent	Staff Time / UNH	2013-2014	Flood
Hazardous Materials awareness training for Police and Highway personnel.	Emergency Management Director	Fire Academy / NH HSEM	2013	Human Caused

Chapter 7

ADOPTION, IMPLEMENTATION, MONITORING

Adoption

The Barnstead Selectmen by majority vote officially adopted the *Barnstead Hazard Mitigation Plan Update 2013* on _____, 2013. The formal Resolution is on the following page.

Implementation

There were 6 mitigation projects that were prioritized by the Committee. For each project the Committee identified who, when and how they would be implemented. Please refer to the "Action Plan" in Chapter 6 for a description of the timeframe and persons or departments responsible for implementation of the Prioritized Projects.

It will be the future responsibility of the Emergency Management Director to ensure implementation of these Prioritized Projects.

Monitoring & Updates

The *Barnstead Hazard Mitigation Plan Update 2013* should be reviewed and evaluated annually; and formally updated every five years. The Emergency Management Director is responsible for initiating this review and needs to consult with members of the Barnstead Emergency Management Committee, in order to track progress and update the Prioritized List in Chapter 6. The EMD will ensure the following:

- The Hazard Analysis will be evaluated for accuracy.
- Projects completed will be evaluated to determine if they met their objective.
- Projects not completed since the last updated will be reviewed to determine feasibility of future implementation.
- Lastly, new projects will be identified and included in future updates as needed.
- The public, members of the Committee, surrounding communities, businesses, academia, State agencies and non-profit agencies, will continue to be invited and involved during this process. These groups can be notified through invitations, public notices, newspapers articles, brochures and/or other public outreach activities.
- In keeping with the process of adopting the Barnstead Hazard Mitigation Plan Update 2013, a public hearing to receive public comment will be held. This will require the posting of two public notices.
- Updates to the *Plan* may be adopted subsequent to a public meeting or hearing by the Barnstead Board of Selectmen.
- Once every five years, the EMD will submit an updated plan to FEMA for approval.

Annual Hazard Mitigation Plan Update, Monitor & Evaluate Schedule and Public Involvement			
Meeting Schedule	Task	Town of Andover Responsibilities	Public Involvement (neighboring communities)
Annually or as needed	Assess current status of funding for mitigation projects. Discuss any new projects/plans that should be obtained for your community.	Dept. heads and Board of Selectmen to locate and apply for sources of funding and implement the proposed strategies and plans.	Residents, businesses, and neighboring / watershed communities.
Annually or as needed	Meet to discuss the Hazard Mitigation Plan content and any updates needed for the plan	Department Heads or other agencies.	Residents, businesses, and neighboring / watershed communities.
Annually or as needed	Discussion and evaluation of Training Programs and public outreach efforts. New public outreach methods discussed.	Department Heads or other agencies.	Residents, businesses, and neighboring / watershed communities.

**TOWN OF BARNSTEAD, NH
A RESOLUTION ADOPTING THE
BARNSTEAD HAZARD MITIGATION PLAN UPDATE 2013**

Date: _____, 2013

WHEREAS, the Town of Barnstead received funding from the NH Homeland Security and Emergency Management to assist in the preparation of the Barnstead Hazard Mitigation Plan Update 2013; and

WHEREAS, several public meetings and committee meetings were held between October 2011 and February 2013, regarding the development and review of the Barnstead Hazard Mitigation Plan Update 2013; and

WEREAS, the Barnstead Hazard Mitigation Plan Update contains several potential future projects to mitigate hazard damage in the Town of Barnstead; and

WEREAS, a public meeting was held by the Board of Selectmen on _____ to formally adopt the Barnstead Hazard Mitigation Plan Update 2013.

NOW, THEREFORE, BE IT RESOLVED that the Barnstead Board of Selectmen Adopts the Barnstead Hazard Mitigation Plan Update 2013.

APPROVED and SIGNED this ____ day of _____ 2013.

Signature: _____
Selectmen, Chairman

Signature: _____
Selectmen

Signature: _____
Selectmen

ACRONYMNS

BMP – Best Management Practices
CDBG - Community Development Block Grant
CRS – Community Rating System
DES – Department of Environmental Services
DHS – Department of Homeland Security
DMA – Disaster Mitigation Act
DOT – Department of Transportation
EAP – Emergency Action Plan
EMD – Emergency Management Director
EMPG – Emergency Management Planning Grant
EMS – Emergency Medical Services
EOC – Emergency Operations Center
EOP – Emergency Operations Plan
FEMA – Federal Emergency Management Agency
FIRM – Flood Insurance Related Maps
FMA – Flood Mitigation Assistance Program
GIS – Geographic Information System
HAZMAT – Hazardous Material
HMGP – Hazard Mitigation Grant Program
HSEM – Homeland Security and Emergency Management
ICC – International Code Council
NFIP – National Flood Insurance Program
NH HSEM – NH Homeland Security and Emergency Management
PDM – Pre-Disaster Mitigation
OEP – Office of Energy Planning
RC&D – Resource Conservation and Development
USGS – United State Geological Survey

APPENDICES

Appendix A
Appendix B
Appendix C

Hazard Mitigation Resources
Documentation of Planning Process
Approval Letter from FEMA

APPENDIX A

Hazard Mitigation Resources

◆ **HAZARD MITIGATION GRANT PROGRAM - "Section 404 Mitigation"**

The Hazard Mitigation Grant Program (HMGP) in New Hampshire is administered in accordance with the 404 HMGP Administration Plan which was derived under the authority of Section 404 of the Stafford Act in accordance with Subpart N. of 44 CFR.

The program receives its funding pursuant to a Notice of Interest submitted by the Governor’s Authorized Representative (or GAR, i.e. the Director of NHOEM) to the FEMA Regional Director within 60 days of the date of a Presidentially Declared Disaster. The amount of funding that may be awarded to the State/Grantee under the HMGP may not exceed 15% of (over and above) the overall funds as are awarded to the State pursuant to the Disaster Recovery programs as are listed in 44 CFR Subpart N. Section 206.431 (d) (inclusive of all Public Assistance, Individual Assistance, etc.). Within 15 days of the Disaster Declaration, an Inter-Agency Hazard Mitigation Team is convened consisting of members of various Federal, State, County, Local and Private Agencies with an interest in Disaster Recovery and Mitigation. From this meeting, a Report is produced which evaluates the event and stipulates the State’s desired Mitigation initiatives.

Upon the GAR’s receipt of the notice of an award of funding by the Regional Director, the State Hazard Mitigation Officer (SHMO) publishes a Notice of Interest (NOI) to all NH communities and State Agencies announcing the availability of funding and solicits applications for grants. The 404 Administrative Plan calls for a State Hazard Mitigation Team to review all applications. The Team is comprised of individuals from various State Agencies.

- Eligible Subgrantees include:**
- State and Local governments,
 - Certain Not for Profit Corporations
 - Indian Tribes or authorized tribal organizations
 - Alaskan corporations not privately owned.

- Minimum Project Criteria**
- Must conform with the State’s "409" Plan
 - Have a beneficial impact on the Declared area
 - Must conform with:
 - NFIP Floodplain Regulations
 - Wetlands Protection Regulations
 - Environmental Regulations
 - Historical Protection Regulations
 - Be cost effective and substantially reduce the risk of future damage
 - Not cost more than the anticipated value of the reduction of both direct damages and subsequent negative impacts to the area if future disasters were to occur i.e., min 1:1 benefit/cost ratio
 - Both costs and benefits are to be computed on a "net present value" basis
 - Has been determined to be the most practical, effective and environmentally sound alternative after a consideration of a range of options
 - Contributes to a long-term solution to the problem it is intended to address
 - Considers long-term changes and has manageable future maintenance and modification requirements

- Eligible Projects** may be of any nature that will result in the protection to public or private property and include:
- Structural hazard control or protection projects
 - Construction activities that will result in protection from hazards
 - Retrofitting of facilities
 - Certain property acquisitions or relocations
 - Development of State and local mitigation standards
 - Development of comprehensive hazard mitigation programs with implementation as an essential component
 - Development or improvement of warning systems

◆ **FLOOD MITIGATION ASSISTANCE (FMA) PROGRAM**

New Hampshire has been a participant in the Flood Mitigation Assistance Program (FMA or FMAP) since 1996/97. In order to be eligible, a community must be a participant in the National Flood Insurance Program.

In 1997, the State was awarded funds to assist communities with Flood Mitigation Planning and Projects. A Planning Grant from the 1996/97 fund was awarded to the City of Keene in 1998. In preparation for the development of the Flood Mitigation Plan, the Planning Department of the City of Keene created a digital data base of its floodplain including the digitizing of its tax assessing maps as well as its Special Flood Hazard Areas in GIS layers. The Plan Draft was submitted to FEMA for review and approval in March of 2000. The Plan includes a detailed inventory of projects and a "model" project prioritization approach.

In 1998, the FMAP Planning Grant was awarded to the Town of Salem. Given the complexity of the issues in the Spicket River watershed, the Town of Salem subcontracted a substantial portion of the development of its Flood Mitigation Planning to SFC Engineering Partnership of Manchester, NH, a private engineering firm. Salem submitted a Plan and proposed projects to the State and FEMA in May of 1999 which were approved by FEMA. This made Salem the first community in NH to have a FEMA/NFIP approved Flood Mitigation Plan.

Flood Mitigation Assistance Program

- NFIP Funded by a % of Policy Premiums
- Planning Grants
- Technical Assistance Grants to States (10% of Project Grant)
- Project Grants to communities
- Communities must have FEMA approved Flood Mitigation Plan to receive Project Funds

Eligible Projects
(44 CFR Part 78)

- Elevation of NFIP insured residential structures
- Elevation and dry-proofing of NFIP insured non-residential structures
- Acquisition of NFIP insured structures and underlying real property
- Relocation of NFIP insured structures from acquired or restricted real property to sites not prone to flood hazards
- Demolition of NFIP insured structures on acquired or restricted real property
- Other activities that bring NFIP insured structures into compliance with statutorily authorized floodplain management requirements
- Beach nourishment activities that include planting native dune vegetation and/or the installation of sand-fencing.
- Minor physical mitigation projects that do not duplicate the flood prevention activities of other Federal agencies and lessen the frequency of flooding or severity of flooding and decrease the predicted flood damages in localized flood problem areas. These include: modification of existing culverts and bridges, installation or modification of flood gates, stabilization of stream banks, and creation of small debris or flood/storm water retention basins in small watersheds (not dikes, levees, seawalls etc.)

◆ PRE-DISASTER MITIGATION PROGRAM (PDM)

FEMA has long been promoting disaster resistant construction and retrofit of facilities that are vulnerable to hazards in order to reduce potential damages due to a hazard event. The goal is to reduce loss of life, human suffering, economic disruption, and disaster costs to the Federal taxpayer. This has been, and continues to be accomplished, through a variety of programs and grant funds.

Although the overall intent is to reduce vulnerability before the next disaster threatens, the bulk of the funding for such projects actually has been delivered through a "post-disaster" funding mechanism, the Hazard Mitigation Grant Program (HMGP). This program has successfully addressed the many hazard mitigation opportunities uniquely available following a disaster. However, funding of projects "pre-disaster" has been more difficult, particularly in states that have not experienced major disasters in the past decade. In an effort to address "pre-disaster mitigation", FEMA piloted a program from 1997-2001 entitled "Project Impact" that was community based and multi-hazard oriented.

Through the Disaster Mitigation Act of 2000, Congress approved creation of a national Predisaster Hazard Mitigation program to provide a funding mechanism that is not dependent on a Presidential disaster declaration. For FY2002, \$25 million has been appropriated for the new grant program entitled the *Pre-Disaster Mitigation Program (PDM)*. This new program builds on the experience gained from Project Impact, the HMGP, and other mitigation initiatives.

Eligible projects include:

- State and local hazard mitigation planning
- Technical assistance [e.g. risk assessments, project development]
- Mitigation Projects
 - Acquisition or relocation of vulnerable properties
 - Hazard retrofits
 - Minor structural hazard control or protection projects
- Community outreach and education [up to 10% of state allocation]

The funding is 75% Federal share, 25% non-Federal, except as noted below. The grant performance periods will be 18 months for planning grants, and 24 months for mitigation project grants. The PDM program is available to regional agencies and Indian tribes. Special accommodation will be made for "small and impoverished communities", who will be eligible for 90% Federal share, 10% non-Federal.

◆ COMMUNITY DEVELOPMENT BLOCK GRANT PROGRAM

These Federal funds are provided through the U.S. Department of Housing and Urban Development (HUD) and are administered by the CDBG Program of the New Hampshire Office of State Planning.

Some CDBG disaster related funding has been transferred to FEMA recently and the SHMO is scheduled to receive guidance as to which specific funds and, new program management criteria.

The specific CDBG funds designated for hazard mitigation purposes are made available to address "unmet needs" pursuant to a given Disaster Declaration to States which request them. For these funds, project selection guidance is provided by NHOEM and NHOSP administers the grant.

Pursuant to Declaration DR-1144-NH, \$557,000.00 was made available to the State and pursuant to DR-1199-NH, the grant award is targeted at \$1,500,000.00.

In October of 1998, HUD announced the program guidelines for the expenditure of the DR-1144-NH related funding and the community of Salem applied for, and has received preliminary approval for funding to acquire a 19 unit trailer park in the Floodplain.

Community Development Block Grant

- *U.S. Dept. of Housing and Urban Development*
- *Funds for a Declared Disaster's "Unmet Needs"*
- *Projects must meet one of three National Objectives*
- *Provide a direct benefit to low and moderate income persons or households*
- *Prevent or eliminate slums and blight*
- *Eliminate conditions which seriously and immediately threaten the public health and welfare*

Additional conditions with respect to the expenditure of these funds includes the provision that at least 50% of the grant award must be expended in a manner which benefits individuals who earn 80% or less than the area's (county's) median income.

WEBSITES FOR MITIGATION RESOURCES	
American Planning Association	http://www.planning.org
Catalog of Federal Domestic Assistance Programs	http://aspe.os.dhhs.gov/cfda
Community Rating System	http://www.fema.gov/nfip/crs.htm
FEMA Individual Assistance Program	http://www.fema.gov/rrr/inassist.shtm
FEMA Mitigation Planning	http://www.fema.gov/fima/planning
FEMA Public Assistance Program	http://www.fema.gov/rrr/pa
Flood Hazard Mitigation	http://www.fema.gov/hazards/floods
Flood Mitigation Assistance Program	http://www.fema.gov/fima/mtap.shtm
Habitat for Humanity	http://www.habitat.org/
Hazard Mitigation Grant Program	http://www.fema.gov/fima/hmgp/
HAZUS and HAZUS–MH	http://www.fema.gov/hazus/index.shtm
Home Rule and Dillon Rule	http://www.naco.org/pubs/research/briefs/dillon.cfm
Institute for Business and Home Safety	http://www.ibhs.org/
Institute for Local Self Government	http://www.ilsg.org/
Landslide Hazard Mitigation	http://www.fema.gov/hazards/landslides
Maxwell Campbell Public Affairs Institute: City and County Report Cards	http://www.governing.com/gpp/2000/gp0intro.htm http://www.governing.com/gpp/2002/gp2intro.htm
Mitigation Success Stories	http://www.fema.gov/fima/success.shtm
Multi-hazard Mapping Initiative	http://www.hazardmaps.gov
National Association of Regional Councils	http://www.narc.org
National Dam Safety Program	http://www.fema.gov/fima/damsafe/
National Earthquake Hazard Reduction Program	http://www.fema.gov/hazards/earthquakes/eqmit.shtm
National Flood Insurance Program	http://www.fema.gov/nfip
National Hurricane Program	http://www.fema.gov/hazards/hurricanes/nhp.shtm
National League of Cities	http://www.nlc.org
Native eDGE	http://nativeedge.hud.gov
NH Bureau of Emergency Management	http://www.nhoem.state.nh.us
Pre-Disaster Mitigation Program	http://www.fema.gov/fima/pdm
Protecting Your Home	http://www.fema.gov/hazards/tornadoes/presskit3.shtm
Protecting Your Property from Fire: Dealing with Vegetation and Combustible Materials	http://www.fema.gov/fima/how2001
Protecting Your Property from Fire: Roofing	http://www.fema.gov/fima/how2002.shtm
Protecting Your Property from Wind	http://www.fema.gov/fima/how2018.shtm
Protecting Yourself from Tornadoes: Safe Rooms	http://www.fema.gov/mit/saferoom
Small Business Administration	http://www.sba.gov/disaster
The Grantsmanship Center: Community Foundations	http://www.tgci.com/resources/foundations/searchGeoLoc.asp
Tribal Governments: Laws, Legislation, and Related Topics	http://www.findlaw.com/01topics/21indian/index.html
U.S. Army Corps of Engineers	http://www.usace.army.mil
U.S. Department of Agriculture	http://www.usda.gov/da/disaster/nda.htm
U.S. Department of Agriculture, Natural Resources Conservation Service	http://www.nrcs.usda.gov
U.S. Department of Housing and Urban Development	<a href="http://www.hud.gov/offices/cpd/communitydevelopment/
programs/dri/driquickfacts.cfm">http://www.hud.gov/offices/cpd/communitydevelopment/ programs/dri/driquickfacts.cfm
U.S. Department of Transportation	http://www.fhwa.dot.gov/programadmin/erelief.html
U.S. Environmental Protection Agency	http://www.epa.gov/
U.S. State and Local Government Gateway	http://www.firstgov.gov/Government/State_Local.shtml
Wildfire Hazard Mitigation	http://www.fema.gov/hazards/fires

APPENDIX B

Documentation of Planning Process

Including:

Agendas

Attendance Sheets

Public Notices

Hazard Identification Worksheet

Problem Statement

Mitigation Project Identification Matrix

Prioritized Mitigation Projects

Barnstead, NH Hazard Mitigation Plan

April 17, 2011

Committee/Public Meeting AGENDA

1. Introductions
2. Overview of Hazard Mitigation
3. Review/Update Goals
4. Review/Update Risk Matrix
5. Review/Update Hazard History
6. Develop Hazard Problem Statements
7. Review for next meeting:

Update Critical Facilities (Chap. 4)
Update Capability Assessment (Chap.5)
Distribute Sample Mitigation Projects

ATTENDEES

Name	Affiliation
Stephen Byers	Barnstead Emergency Management Director
Shawn Mulcahy	Barnstead Emergency Management Director
Joseph McDowell Jr.	Barnstead Police Sgt.
David Kerr	Barnstead Selectmen
Robert LaRoche	Barnstead Selectmen
Jim Barnard	Barnstead Selectmen
Priscilla Tiede	Barnstead Selectmen
Nancy Carr	Barnstead Planning Board Chair
Chris Carazzo	Barnstead Road Agent
Nancy St. Laurent	NH Homeland Security and Emergency Management
Danielle Morse	NH Homeland Security and Emergency Management
Jane Hubbard	Hubbard Consulting LLC
Bonnie Lockwood	McGrew Management Services LLC

Barnstead, NH Hazard Mitigation Plan

May 15, 2012

Committee/Public Meeting AGENDA

1. Review/update Critical Facilities - Chapter 4
2. Review/update Capability Assessment - Chapter 5
3. Update Mitigation Projects - Chapter 6
4. Distribute list of 'sample mitigation projects'
5. Review for next meeting:

Identify and Prioritize Mitigation Projects
Complete Mitigation Action Plan

ATTENDEES

Name	Affiliation
Joseph McDowell Jr.	Barnstead Police Sgt.
David Kerr	Barnstead Selectmen
Robert LaRoche	Barnstead Selectmen
Jim Barnard	Barnstead Selectmen
Priscilla Tiede	Barnstead Selectmen
Nancy Carr	Barnstead Planning Board Chair
Chris Carazzo	Barnstead Road Agent
Jane Hubbard	Hubbard Consulting LLC
Bonnie Lockwood	McGrew Management Services LLC

Barnstead, NH Hazard Mitigation Plan

June 5, 2012

Committee/Public Meeting AGENDA

1. Identify new Mitigation Projects using the "Problem Statements to Projects" matrix
2. Prioritize Projects
3. Complete the Mitigation Action Plan
4. Next Step:

Email Draft Plan for Committee and Public to Review

ATTENDEES

Name	Affiliation
Mark Tetreault	Barnstead Fire Chief
Edwin Dwain Pitman	Barnstead Police Dept.
David Kerr	Barnstead Selectmen
Robert LaRoche	Barnstead Selectmen
Jim Barnard	Barnstead Selectmen
Chris Carazzo	Barnstead Road Agent
Jane Hubbard	Hubbard Consulting LLC
Bonnie Lockwood	McGrew Management Services LLC

**PUBLIC NOTICE TO THE
RESIDENTS OF BARNSTEAD, NH**

HAZARD MITIGATION PLAN UPDATE

**April 17, 2012
5:00 - 6:30pm
Barnstead Town Office**

The Town of Barnstead is beginning in the process of working with the Hazard Mitigation Planning Committee to update and revise Barnstead's *All Hazard Mitigation Plan*. The *Plan* identifies potential natural and man-made hazards throughout the town and various projects and/or strategies to mitigate their effects. The President signed into law, The Disaster Mitigation Act of 2000 (DMA), Section 322-Mitigation Planning. It requires all local governments prepare and adopt jurisdiction-wide hazard mitigation plans as a condition of receiving Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation (PDM) project grants.

All residents, neighborhood groups, business owners and other interested parties are formally invited to participate in the planning process and publicly comment on their concerns regarding the *Plan*. For more information please visit the Town Hall or contact Jane Hubbard, Hubbard Consulting LLC at jhubb_99@yahoo.com or at 603-848-8801.

THIS IS A PUBLIC NOTICE AND OPEN TO THE PUBLIC

Notices posted on or before every meeting at the Barnstead Town Hall and Barnstead Post Office. In addition notices were posted in the local/regional newspaper and the Town Website.

Email: April 11, 2012

The Town of Barnstead, NH is in the process of updating its Hazard Mitigation Plan. This Plan is a tool to be used by the Town, as well as other local, state and federal governments, in an effort to reduce the effects of natural and man-made hazards. Our communities and organizations share common hazards which do not respect governmental boundaries. Therefore, we are personally inviting you to participate in the planning process to update the Town's Hazard Mitigation Plan.

We encourage you to attend the Committee meeting on April 17th at 5:00pm at the Town Offices. If you are unable to attend this meeting you may access a copy of the Planning Documents and/or comment on hazard mitigation issues by emailing Jane Hubbard, with Hubbard Consulting LLC at jhubb_99@yahoo.com or at [603-848-8801](tel:603-848-8801).

For further information on Mitigation Planning, we are attaching a Mitigation Fact Sheet. We look forward to hearing your ideas on how to mitigate future hazards for the community.

The above email was sent to the following individuals:

Chief Paul
Emergency Management Director
Town of Gilmanton
1824 NH RT 140
Gilmanton IW, NH 03837
firechief@gilmantonnh.org

Russ Bailey
Emergency Management Director
1 Monument Square
Alton, NH 03809
administrator@alton.nh.gov

Scott Young
Chief of Police / EMD
Town of Strafford NH
syoung@straffordpolice.org

Paul Stover
Chief of Police ? EMD
Pittfield NH

Left message & request for email address
(833-1639

Robert Fiske
Chief of Police / EMD
Town of Loudon NH
chieffiske@loudonpolice.com

Peter Angwin
Fire Chief / EMD
Town of Canterbury NH
Firechief88@hotmail.com

Dr. William Compton
Superintendent
SAU 86
Barnstead
Sau86admin@metrocast.net

HAZARD IDENTIFICATION WORKSHEET

1. **Type of hazard:** _____

2. **Historical occurrence:**
Severity and Extent of the problem: (Hazard) happens (how many) times a year and is this (last how long over how much area) severe. There are (how many) structures that get damage to this (how much) extent:

3. **Location** (town-wide or specific geographic area): _____

4. **Probability** (likely, possible, unlikely): _____

5. **Assets at Risk** (describe):
Critical Facilities: _____

Historical/Cultural Resources: _____

Special Populations: _____

Utilities: _____

Infrastructure: _____

Businesses: _____

Other: _____

6. **Problem Statement/s:**

Barnstead, NH	
Hazard	Problem Statements 2012
Avalanche	The Hazard Mitigation Committee found no significant history or potential for Avalanche to consider for mitigation.
Dam Failure	<ol style="list-style-type: none"> 1. There are several dams in and outside of Barnstead that, if breeched, could cause significant flood damage. 2. Emergency Actions Plans for Class B & C Dams should be reviewed, updated and shared with the public.
Drought	<ol style="list-style-type: none"> 3. An extended drought increases the probability of fires and may hinder fire suppression in minimal fire protection areas. 4. The town relies on shuttling and tankers for fire suppression for a majority of the town. 5. The public water system may be at risk during a drought.
Earthquake	<ol style="list-style-type: none"> 6. The town water and sewer system is at risk during an earthquake. 7. Town municipal critical facilities may be at risk.
Extreme Heat	<ol style="list-style-type: none"> 8. Special populations are at risk during extreme heat events. 9. Potential for increase in wild fire. 10. Increase in power outages and brownouts.
Flood	<ol style="list-style-type: none"> 11. Heavy and prolonged rain events cause flood damage primarily to roads and culverts. 12. Flooding limits access to some critical areas in town (i.e. retail & residential). 13. Barrett St. is susceptible to residential flooding.
Hail	The Hazard Mitigation Committee found no significant history or potential for Hail to consider for mitigation.
Hurricane	<ol style="list-style-type: none"> 14. Power outages from downed utilities, structural damage, debris removal, limited access and flooding can affect the town as a result of a hurricane. 15. Creates the need for temporary shelter.
Landslide	<ol style="list-style-type: none"> 16. There are some state and town roads that are susceptible to minimal landslide hazards.
Lightning	<ol style="list-style-type: none"> 17. Structural and forest fires can result from frequent lightning strikes 18. Utilities are at risk from lightning strikes.
Severe Wind (Tornado/Downburst)	<ol style="list-style-type: none"> 19. Wind damage can result in downed utilities causing power outages and limit access. 20. Recreational areas are at high risk in severe wind events.
Wild/Forest Fire	<ol style="list-style-type: none"> 21. Need to determine and identify areas in town that need additional fire suppression capability (dry hydrants, cisterns, etc). 22. Majority of the town has limited accessibility for emergency apparatus.
Winter Weather	<ol style="list-style-type: none"> 23. All structures are susceptible to collapse due to heavy snow loads. 24. Resulting power outages result in increased emergency response calls and could require opening a shelter. 25. Financial burden to town for snow removal. 26. Severe damage to roads due to pot holes.
Human Caused Hazards	<ol style="list-style-type: none"> 27. There is a potential for mass casualty incidents due to the high volume of traffic on Routes 12 & 124, Monadnock Street and the Common. 28. Transportation related Hazardous Material incidents are highly probably and will result in high human, property & business impact. Evacuation could be hampered due to the layout of town roads. 29. Municipal buildings, including schools, are at risk to armed assault. 30. The Town is at risk to aviation accidents (Keene Airport).
Public Health	<ol style="list-style-type: none"> 31. Continue to work with Greater Monadnock Public Health Network.

MITIGATION PROJECT IDENTIFICATION WORKSHEET

Problem Statement: _____

Objective (i.e. Stop flooding on smith street, reduce fire threat on smith hill subdivision,)

Can I use any of the following methods to reduce the problem and to what extent:

Prevention: Government administrative or regulator actions or programs that influence the way land and buildings are developed and built:

- Zoning Ordinance
- Subdivision & Site Plan
- Building codes
- Capital improvement plan
- Open Space Preservations
- Storm water regulations

Property Protection: Activities by government, residents, business owners, property owners that mitigate the hazards.

- Land acquisition
- Relocation
- Elevation
- Retrofitting
- Hazard/Flood Insurance
- Critical Facilities protection

Public education and awareness: Actions to inform and educate citizens, elected officials and property owners about the hazards and potential ways to mitigate them.

- Outreach
- All aged education programs
- Awareness week

Natural Resource Protection: Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems.

- Sediment/erosion control
- Stream corridor restoration
- Forest and vegetation management
- Wetland restoration/preservation
- Floodplain storage

Emergency Services: Must be a part of a bigger plan that includes mitigation actions in order to qualify for FEMA mitigation programs.

- Warning Systems
- Emergency response services
- Equipment
- Training

Structural projects: Must be small scale for individual structure in order to qualify for FEMA mitigation programs.

- Critical facilities protection
- Elevation of structures
- Elevation of utilities
- Safe room construction
- Earthquake and high-wind retrofits
- Culvert replacement

What are our options (consider cost-benefit)?

A. _____

B. _____

C. _____

STAPLEE COST/BENEFIT REVIEW

Projects	1 Flood Maps		2 Public Education		3 Enforce Floodplain Regs		4 Enforce Bldg. Regs		5 Enforce Fire Permits		6 Suncook River Soil Stabilization	
	<i>Cost</i>	<i>Benefit</i>	<i>Cost</i>	<i>Benefit</i>	<i>Cost</i>	<i>Benefit</i>	<i>Cost</i>	<i>Benefit</i>	<i>Cost</i>	<i>Benefit</i>	<i>Cost</i>	<i>Benefit</i>
<i>Criterion</i>												
Social	+	+	+	+	+	+	+	+	+	+	+	+
Technical	+	+	+	+	+	+	+	+	+	+	-	+
Administrative	+	+	+	+	+	+	+	+	+	+	+	+
Political	-	+	+	+	+	+	+	+	+	+	+	+
Legal	+	+	+	+	+	+	+	+	+	+	+	+
Economic	-	+	+	+	+	+	+	+	+	+	+	+
Environmental	+	+	+	+	+	+	+	+	+	+	-	+

Hazard	Risk Rating	Problem Statements	Projects <i>Prevention /Property Protection/ Public Educ./ Nat.Resource /Emerg.Serv / Structural</i>
Avalanche	n/a	The Hazard Mitigation Committee found no significant history or potential for Avalanche to consider for mitigation.	n/a
Dam Failure	6	1. There are several dams in and outside of Barnstead that, if breeched, could cause significant flood damage.	Implement public education programs on mitigation activities.
		2. Emergency Actions Plans for Class B & C Dams should be reviewed, updated and shared with the public.	
Drought	3	3. An extended drought increases the probability of fires and may hinder fire suppression in minimal fire protection areas.	Adopt a water use ordinance to restrict public water supply use during droughts.
		4. The town relies on shuttling and tankers for fire suppression for a majority of the town.	
		5. The public water system may be at risk during a drought.	
Earthquake	3.4	6. The town water and sewer system is at risk during an earthquake.	
		7. Town municipal critical facilities may be at risk.	
Extreme Heat	3	8. Special populations are at risk during extreme heat events.	
		9. Potential for increase in wild fire.	
		10. Increase in power outages and brownouts.	
Flood	3	11. Heavy and prolonged rain events cause flood damage primarily to roads and culverts.	Continue to enforce floodplain regulations, including substantially improved structures; and amend regulations as necessary per federal requirements.
		12. Flooding limits access to some critical areas in town (i.e. retail & residential).	
		13. Barrett St. is susceptible to residential flooding.	Acquisition and demolition of residential property on Barrett Drive.

Hazard	Risk Rating	Problem Statements	Projects <i>Prevention /Property Protection/ Public Educ./ Nat.Resource /Emerg.Serv / Structural</i>
Hail	n/a	14. The Hazard Mitigation Committee found no significant history or potential for Hail to consider for mitigation.	n/a
Hurricane	2	15. Power outages from downed utilities, minor structural damage, debris removal, limited access and flooding can affect the town as a result of a hurricane.	
		16. Creates the need for temporary shelter.	
Landslide	1	17. There are some state and town roads that are susceptible to minimal landslide hazards.	
Lightning	5.2	18. Structural and forest fires can result from frequent lightning strikes	Implement public education programs on mitigation activities.
		19. Utilities are at risk from lightning strikes.	
Severe Wind <i>(Tornado/ Downburst)</i>	8	20. Wind damage can result in downed utilities causing power outages and limit access.	
		21. High population (recreational) areas are at high risk in severe wind events.	
Wild/Forest Fire	6.9	22. Need to determine and identify areas in town that need additional fire suppression capability (dry hydrants, cisterns, etc).	
		23. Some areas in town have limited accessibility for emergency apparatus.	
Winter Weather	5.2	24. All structures are susceptible to collapse due to heavy snow loads.	
		25. Resulting power outages result in increased emergency response calls and could require opening a shelter.	
		26. Financial burden to town for snow removal.	

Hazard	Risk Rating	Problem Statements	Projects <i>Prevention /Property Protection/ Public Educ./ Nat.Resource /Emerg.Serv / Structural</i>
		27. Severe damage to roads due to pot holes	
Human Caused Hazards	Ranges from 1 to 9	28. There is a potential for mass casualty incidents due to the high volume of traffic on Routes 12 & 124, Monadnock Street and the Common.	
		29. Transportation related Hazardous Material incidents are highly probable and will result in high human, property & business impact. Evacuation could be hampered due to the layout of town roads.	
		30. Municipal buildings, including schools, are at risk to armed assault.	
		31. The Town is at risk to aviation accidents (Keene Airport).	
Public Health		32. Continue to work with Public Health Emergency Preparedness Plan (PHEPRP)	

For purposes of prioritizing the mitigation projects listed in the table below, each committee member should vote **for half of the projects (3) by placing a check mark in the "# of votes" column**. The projects will be prioritized based upon the total number of votes received for each project.

PRIORITIZED MITIGATION PROJECTS	# of Votes	Priority
Project Description		
1. Update Flood maps and produce on GIS maps.	2	Medium
2. Implement public education programs on mitigation activities.	4	Medium
3. Continue to enforce floodplain regulations, including substantially improved structures; and amend regulations as necessary per federal requirements.	2	Medium
4. Continue to enforce Building Code Regulations.	5	High
5. Continue to enforce fire permits and regulations.	4	Medium
6. Investigate soil stabilization along Suncook River.	1	Low

6 committee members voted. Low: 0-1

Med: 2-4

High: 5-6

APPENDIX C

Approval Letter from FEMA