

TOWN OF ACWORTH

HAZARD MITIGATION PLAN



**Prepared by the
Town of Acworth Hazard Mitigation Committee
and the
Upper Valley Lake Sunapee Regional Planning Commission**

FINAL FEMA APPROVAL – APRIL 2008

Executive Summary

The Acworth Hazard Mitigation Plan serves as a means to reduce future losses from natural or man-made hazard events before they occur. The Town of Acworth Hazard Mitigation Committee developed the Plan.

The natural hazards addressed in this plan are as follows:

- Flooding (100-Year Floods, River Ice Jams, Rapid Snow Pack Melt, Dam Breach and Failure)
- Severe Winter Weather (Heavy Snow Storms, Ice Storms, "Nor'easters")
- Hazardous Materials (Transport, Fixed)
- Hurricane/High Wind Events (Hurricanes, Tornadoes, Downbursts, Lightning)
- Wildfire/Structure Fire
- Seismic Hazards (Earthquakes, Landslides, Subsidence)
- Terrorism/Civil Disturbance

The Acworth Hazard Mitigation Committee, as shown in Section VI, identified "Critical Facilities" and "Facilities/Populations to Protect" as follows:

Critical Facilities:

Town Hall, Church and School Area
Fire Department
Town Barn (Highway Garage)
Town Store

Critical Roads:

Charlestown Road
Cold Pond Road
Hill Road
Route 123A
River Road
Forest Road
Crane Brook Road

Water Resources:

Public Drinking Water Supply at the School

Non-Emergency Critical Facilities:

Library
Church Buildings (Community Aid Building)

Centers of Population to Protect:

Acworth Town
South Acworth
Crescent Lake

The Acworth Hazard Mitigation Committee, as shown in Section VII, identified existing hazard mitigation strategies as follows:

Acworth Volunteer Fire and Rescue Department
Winter Maintenance Policy for Roads
Class VI Road Policy
Emergency Operations Plan Update
State Guidelines for Burning Permits
Conservation Commission
Outreach and Education

Winter Parking Ban
Floodplain Ordinance
School Emergency Plan
Class VI Road Inventory Committee
NRCS Watershed Program\
SWNH Mutual Aid

The Acworth Hazard Mitigation Committee, as shown in Sections VIII & IX, developed a prioritized implementation schedule for newly identified hazard mitigation strategies as follows:

Dam Maintenance and Supervision
Public Works Mutual Aid
Acquire Generators
Interoperability of Communications
Appropriate Funding for Hazard Mitigation Planning
Continue Working with NRCS

Education and Outreach
Update Emergency Operations Plan
Create a Volunteer Corps
Hire a Consultant to Identify Potential Hazard Sites(Protect Infrastructure)

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I. INTRODUCTION

A. BACKGROUND

The Federal Emergency Management Agency has mandated that all communities within the State of New Hampshire establish local hazard mitigation plans as a means to reduce future losses from natural or man-made hazard events before they occur. The New Hampshire Bureau of Emergency Management has outlined a process whereby communities throughout the State may be eligible for hazard mitigation grants and disaster assistance upon completion of a local hazard mitigation plan. The New Hampshire Bureau of Emergency Management has provided funding to the Upper Valley Lake Sunapee Regional Planning Commission to prepare local hazard mitigation plans with several of its communities, including the Town of Acworth, NH. A handbook entitled Hazard Mitigation Planning for New Hampshire Communities was produced by the Southwest Region Planning Commission and distributed by the New Hampshire Bureau of Emergency Management to assist communities in developing local plans. The Upper Valley Lake Sunapee Regional Planning Commission, local officials and volunteers from the Town of Acworth began preparing a local hazard mitigation plan in August 2006. The Acworth Hazard Mitigation Plan will serve as a strategic planning tool for use by the Town of Acworth in its efforts to reduce future losses from natural and/or man-made hazard events before they occur.

B. PURPOSE

The Acworth Hazard Mitigation Plan is a planning tool for use by the Town of Acworth in its efforts to reduce future losses from natural and/or man-made hazards. This plan does not constitute a section of the Town Master Plan, nor is it adopted as part of the Zoning Ordinance.

C. AUTHORITY

The Acworth Hazard Mitigation Committee prepared the Acworth Hazard Mitigation Plan with the assistance of the Upper Valley Lake Sunapee Regional Planning Commission (UVLSRPC) under contract with the New Hampshire Bureau of Emergency Management (NHBEM) operating under the guidance of the Federal Emergency Management Agency (FEMA). FEMA provided initial approval of the plan on January 7, 2008. After a public hearing held in the Acworth Town Hall, the Acworth Board of Selectmen adopted the Plan on March 31, 2008.

D. HISTORY

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

To establish a national disaster mitigation program that will reduce loss of life and property, human suffering, economic disruption and disaster assistance costs; and

To provide a source of pre-disaster mitigation funding that will assist States and local governments in accomplishing that purpose.

The DMA 2000 amends the Robert T. Stafford Disaster Relief and Emergency Assistance Act by adding a new section: 322 – Mitigation Planning. This section places new emphasis on local mitigation planning by requiring local governments to prepare and adopt jurisdiction wide hazard mitigation plans as a condition for receiving Hazard Mitigation Grant Program (HMPG) project grants. Local governments must update hazard mitigation plans within a five year cycle to continue program eligibility.

E. SCOPE OF THE PLAN

The Acworth Hazard Mitigation Plan addresses natural hazards identified by the Acworth Hazard Mitigation Committee. The hazards were reviewed under the following categories as outlined in the State of New Hampshire Hazard Mitigation Plan:

Flooding (hurricanes, 100 year floodplain events, debris, erosion, mudslides, rapid snow pack melt, river ice jams, dam breach and/or failure)

Wind (hurricanes, tornadoes, “Nor’easters,” downbursts, lightning)

Fire (wildfire, structure fire in isolated areas)

Ice and Snow Events (heavy snow storms, ice storms, “Nor’easters”)

Earthquake (landslides, geologic hazards)

In addition, the Acworth Hazard Mitigation Committee also discussed hazardous material threats, possible contamination of water sources, terrorism and civil disturbances.

F. METHODOLOGY

Using the Hazard Mitigation Planning for New Hampshire Communities handbook, as developed by the Southwest Region Planning Commission, the Acworth Hazard Mitigation Committee and the UVLSRPC developed the content of the Acworth Hazard Mitigation Plan by following the ten-step process set forth in the handbook. The Committee held a total of five posted meetings beginning on August 10, 2006 and ending on December 7, 2006. All meetings were posted at the Town Office and open to the general public. After FEMA’s initial approval of the plan on January 7, 2008, the Acworth Board of Selectmen adopted the Plan on March 31, 2008.

By nature, natural hazards affect areas not defined by political boundaries. Additionally, response to these disasters often may rely on neighboring communities for assistance such as the mutual aid services. Because of this it is important to notify and work with adjacent communities. Notification of this plan and its meetings were publicly noticed and posted, although direct invitations were not made to neighboring municipalities of Charlestown, Unity, Lempster, Alstead, Langdon and Marlow. Future iterations and updates to this plan will incorporate invitations to those communities to comment and participate in the planning process.

Support for mitigation strategies is important in order to carry out implementation. Although this Hazard Mitigation Plan for the Town of Acworth was unable to interest additional parties, every

effort will be made in the future to incorporate representation in future revisions of this plan. In order to ensure in the future that opportunity to participate in the planning process is given to other interested parties, the Town will send invitations to local businesses, educational institutions and non-profit organizations. Revisions of this plan shall incorporate press releases that will notice citizens, businesses and organizations of the progress of the plan while also soliciting input that could strengthen the value of the plan. This process will enable more successful implementation actions.

Upon notification from FEMA that this plan is been conditionally approved, the Town of Acworth will hold a public hearing. At this public hearing, public comment and input regarding the plan shall be taken. Once public input has been heard, the Town shall adopt the plan with any improvements or recommended changes that are appropriate.

The following hazard mitigation planning meetings were held to develop this plan:

August 10, 2006
September 14, 2006
October 12, 2006
November 9, 2006; and
December 7, 2006

During the hazard mitigation planning meetings the Acworth Hazard Mitigation Committee adhered to the following planning steps:

Step 1: Map the Hazards

Committee members identified areas where damage from natural disasters had previously occurred, areas of potential damage and man-made facilities and other features that were at risk for loss of life, property damage or other risk factors (e.g., contamination of water sources). A GIS generated base map was used to locate areas of past and potential hazards.

Step 2: Determine Potential Damage

Committee members identified facilities that were considered to be of value to the Town for emergency management purposes; for provision of utilities and services; and for historic, cultural and social value. A GIS generated map was prepared to show critical facilities identified by the Acworth Hazard Mitigation Committee.

Step 3: Identify Plans/Policies Already in Place

Using the information and activities in the Hazard Mitigation Planning for New Hampshire Communities handbook, the Committee identified existing mitigation strategies already in place in the Town related to flood, wind, fire, severe winter weather, and earthquakes.

Step 4: Identify Gaps in the Current Protection/Mitigation

Existing mitigation strategies were reviewed for coverage, effectiveness, and need for improvement.

Step 5: Determine Actions to be Taken

During an open brainstorming session, the Hazard Mitigation Committee developed a list of possible new hazard mitigation actions and strategies for the Town of Acworth. Ideas proposed included policies, planning efforts, structural projects, purchasing emergency services equipment and outreach/education.

Step 6: Evaluate Feasible Options

The Hazard Mitigation Committee evaluated the potential mitigation strategies based on criteria derived from the evaluation chart found on page 27 of the Hazard Mitigation Planning for New Hampshire Communities handbook.

Step 7: Coordinate with other Agencies/Entities

The UVLSRPC staff reviewed the Acworth Master Plan to determine if any conflicts existed or if there were any potential areas for cooperation. Representatives from different town departments participated in the hazard mitigation planning sessions and worked to avoid the duplication of previous plans and to share information.

Step 8: Determine Priorities

The Committee reviewed the preliminary prioritization list to determine a final prioritization list for both new hazard mitigation efforts and existing protection improvements identified in previous steps.

Step 9: Develop an Implementation Strategy

With guidance from the Hazard Mitigation Planning for New Hampshire Communities handbook, the Committee created an implementation schedule which included person(s) responsible for implementation, a schedule for completion, and a funding source for each of the identified hazard mitigation actions.

Step 10: Adopt and Monitor the Plan

The UVLSRPC staff compiled the information gathered in steps one through nine in a draft document. The State of New Hampshire Natural Hazards Mitigation Plan served as a resource for Acworth Hazard Mitigation Plan.

G. HAZARD MITIGATION GOALS

The Acworth Hazard Mitigation Committee reviewed the hazard mitigation goals set forth in the State of New Hampshire Natural Hazards Mitigation Plan and revised them as follows:

- To improve upon the protection of the general population, the citizens of Acworth and guests, from all natural and man-made hazards.
- To reduce the potential impact of natural and man-made disasters on Acworth's Critical Facilities and infrastructure.
- To improve emergency preparedness and interoperability of communications.
- To improve Acworth's disaster response and recovery capabilities.
- To reduce the potential impact of natural and man-made disasters on private property and the natural environment in Acworth.
- To reduce the potential impact of natural and man-made disasters on Acworth's economy.
- To reduce Acworth's liability with respect to natural and man-made hazards.
- To reduce the potential impact of natural and man-made disasters on Acworth's historic resources as well as other tangible and intangible characteristics which add to the quality of life of the citizens and guests of Acworth.
- To identify hazard mitigation measures to accomplish Acworth's goals and objectives and to raise awareness and acceptance of hazard mitigation in general.

H. ACKNOWLEDGEMENTS

The following people participated in the development of this plan:

John Tuthill, Board of Selectmen
Ken Grant, Emergency Management Director
Skip Auten, Assistant Emergency Management Director
Michael Blake, Member of the Volunteer Fire and Rescue
Albert Knicely, Acworth Volunteer Fire and Rescue
Kathi Bradt, Administrative Assistant
Kerry Smith, Road Agent
John W. Luther, Town Moderator
Suzanne Orlando, Cold Pond Community Land Trust
Rich Bishop, Planning Board Chairman
Gavin Bendix for Suzanne Orlando, Cold Pond Community Land Trust
Courtney Daniell, UVLSRPC

II. Community Profile

A. LOCATION

The Town of Acworth, New Hampshire is located in Sullivan County along the county's southern border with Cheshire County. Acworth is bordered by Charlestown and Langdon to the west, Unity to the north, Lempster to the east, and Marlow and Alstead to the south.

LOCATION MAP OF ACWORTH, NH



B. TOPOGRAPHY

“The topography of Acworth is generally a glacially modified upland composed of hilly terrain with mostly moderate to steep slopes. The maximum relief within the town is approximately 1288 feet, the highest point being Gove Hill with a peak elevation of 1945 feet above mean sea level and the lowest point being the surface of the Cold River with a surface elevation of approximately 657 feet where it flows out of Acworth.”¹

¹ Acworth Master Plan, p. 7

C. CLIMATE AND HYDROGRAPHY

The Acworth Master Plan states that the climate is temperate and, “characterized by extreme annual climatic fluctuations.” The fluctuations occur in both temperature and precipitation causing the strong variation in Acworth’s seasons.

“The annual precipitation for the area of New Hampshire in which Acworth is located is 44 inches per year.”² The months in which Acworth receives the most precipitation are April and November. Approximately 25 inches of this annual rainfall becomes surface runoff and is eventually carried by, “permanent and intermittent streams.”³

“Acworth is divided into two sub-watersheds, namely those of the Cold River and Little Sugar River, both of which are within and linked successively to the larger Connecticut River watershed.”⁴

D. FLOODPLAINS IN ACWORTH

As part of the National Flood Insurance Program (NFIP), Digital Flood Insurance Rate Maps were prepared for the Town of Acworth in May of 2006. The maps identify areas that fall in Zone A, which are Special Flood Hazard Areas inundated by the 100 year flood, with base flood elevations not determined. Examination of the Digital Flood Insurance Rate Maps indicates that the following areas could be inundated by a 100 year flood:

- The area surrounding Chatterton Pond,
- The two waterways extending from Hilliard Pond,
- The area surrounding Hilliard Pond,
- The areas surrounding Michell Pond and Mitchell Brook,
- All areas along the Cold River,
- Along Bowers Brook,
- Along the extension of the Swett Brook north from Unity following Quaker City Road,
- The area surrounding Crescent Lake,
- Along the Great Brook,
- Along Honey Brook,
- Along the Pierce Brook extending north from Unity,
- Along the Crane Brook following Crane Brook Road,
- Portions of the area along Dodge Brook, and
- The area along Underwood Brook.

All other areas in Acworth identified as Special Flood Hazard Areas are denoted as swamp lands on the Digital Flood Insurance Rate Maps.

² Ibid, p. 8

³ Ibid, p. 8

⁴ Ibid, p. 8

Table II-1: POPULATION TRENDS

Year	Acworth	Percent Change	Sullivan County	Percent Change	State of New Hampshire	Percent Change
1960	371		28,067		606,921	
1970	459	23.7	30,949	10.3	737,681	21.5
1980	590	28.5	36,063	16.5	920,610	24.8
1990	776	31.5	38,592	7.0	1,109,252	20.5
2000	836	7.7	40,458	4.8	1,235,786	11.4

Source: New Hampshire Office of Energy and Planning Website

E. POPULATION TRENDS

As recorded by the 2000 U.S. Census, Acworth is the 194th largest community in New Hampshire for total population with about 22 people living per square mile. The population has more than doubled since 1960. Most of the growth in population occurred between 1960 and 1990 when the population of Acworth was increasing by between 23.7% and 31.5%. The percent increase was much less between 1990 and 2000 at 7.7%. Acworth consistently increased its population by a greater percentage than Sullivan County or the State of New Hampshire between 1960 and 1990. The population trends for Acworth, Sullivan County and the State of New Hampshire for the years 1960 to 2000 are summarized in Table 1 above.

As the population of Acworth grew, the following amendments to the Zoning Ordinance helped to ensure that development did not occur in areas that were not suitable: The Floodplain Management Ordinance, and The Conservation Zone.

III. HAZARD IDENTIFICATION

The Acworth Hazard Mitigation Committee used the State of New Hampshire Hazard Mitigation Plan and hazard histories for the State of New Hampshire and Sullivan County to begin to determine which hazards affect Acworth. The Committee created a list of past and/or potential hazards events in Acworth. After the Committee had identified past and/or potential hazards a risk assessment was completed to determine which hazards were likely to occur and to assess vulnerability. Acworth is vulnerable to the following natural and/or man-made hazards: flooding, hurricane/high wind events, severe winter weather, wildfire, seismic hazards and hazardous material spills. Sources included Town of Acworth residents; New Hampshire Office of Emergency Management; Northeast State Emergency Consortium (NESEC) Website; US Army Corps of Engineers Ice Jam Database; www.tornadoproject.com.

A. DESCRIPTIONS OF NATURAL HAZARDS

Flooding

Flooding is the temporary overflow of water onto lands that are not normally covered by water. Flooding results from the overflow of major rivers and tributaries, storm surges, and inadequate local drainage. Floods can cause loss of life, property damage, crop/livestock damage, and water supply contamination, and can disrupt travel routes on roads and bridges.

Floods in the Acworth area are most likely to occur in the spring due to the increase in rainfall and snowmelt; however, floods can occur at any time of the year. A sudden winter thaw or a major summer downpour can cause flooding.

100-Year Floods

The term “100-year flood” does not mean that flooding will occur once every 100 years, but is a statement of probability to describe how one flood compares to others that are likely to occur. What it actually means is that there is a one percent chance of a flood in any given year. Appendix G is a map of the FEMA determined 100-year flood areas in Acworth.

River Ice Jams

“Ice forming in riverbeds and against structures presents significant hazardous conditions [...] ... storm waters encounter these ice formations which may create temporary dams. These dams may create flooding conditions where none previously existed (i.e., as a consequence of elevation in relation to normal floodplains). Additionally, there is the impact of the ice itself on structures such as highway and railroad bridges. Large masses of ice may push on structures laterally and/or may lift structures not designed for such impacts.”⁵

⁵ NH State Hazard Mitigation Plan, page 16

Rapid Snow Pack Melt.

Warm temperatures and heavy rains cause rapid snowmelt. Quickly melting snow coupled with moderate to heavy rains are prime conditions for flooding.

Bank Erosion and Failure

As development increases, changes occur that increase the rate and volume of runoff, and accelerate the natural geologic erosion process. Erosion typically occurs at the outside of river bends and sediment deposits in low velocity areas at the insides of bends. Resistance to erosion is dependent on the riverbank's protective cover, such as vegetation or rock riprap, or its soils and stability.

Location and Extent of Past Flooding

The extent of floods is generally thought to follow river and streams and is concentrated on floodplain and floodway areas. Acworth has experiences flood damage in recent years that follows these trends, but they have also had flood damage on roadways that are not located near flood-prone areas. Acworth is a very hilly community with roads that have been built on steep inclines and stormwater from surrounding hilltops has used the roadway system as a makeshift canal system when the community has become inundated with water.

Table III-1: FLOODING—DISASTER DECLARATIONS

Hazard	Date	Location	Description of Areas Impacted
Flood	November 3-4, 1927	Southern NH	Damage to Road Network. Caused many roads to wash out.
Flood	March 11-21, 1936	NH State	Damage to Road Network. Flooding caused by simultaneous heavy snowfall totals, heavy rains and warm weather. Run-off from melting snow with rain overflowed the rivers
Flood	July – August 1986	Statewide	Sever summer storms: heavy rains, tornados, flash floods and severe floods: FEMA-DR-771-NH
Flood	August 7-11, 1990	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack & Sullivan Counties, NH	FEMA Disaster Declaration # 876. Flooding caused by a series of storm events with moderate to heavy rains. \$2,297,777 in damage.
Flood	October 29, 1996	Grafton, Hillsborough, Merrimack, Rockingham, Strafford & Sullivan Counties, NH	FEMA Disaster Declaration # 1144- DR. Flooding caused by heavy rains. \$2,341,273 in damage.
Flood	July 2, 1998	Southern NH	FEMA Disaster Declaration # 1231. Severe storms and flooding
Flood	July 2003	Sam Putnam Road, Hoagland Road, Bascom Road, Parsons Road, Bascom Hill Road, Lynn Hill Road, Campbell Road, Quarrier Road, Livermore Road and Luther Hill Road	3-4 day rainstorm, causing flooding and interrupting travel between Alstead and Acworth. Several culverts along these roads were damaged or lost in the flooding. These areas of Acworth flood annually and are characterized by the

Hazard	Date	Location	Description of Areas Impacted
			Hazard Mitigation Committee as “chronic flooding” areas.
Flood	October 26th 2005	Cheshire, Grafton, Merrimack, Sullivan, and Hillsborough Counties, NH Locally, flooding occurred in the Cold River Watershed including areas along Honey Brook, Dodge Brook, Bowers Brook and Milliken Brook	FEMA Disaster Declaration # 1610. Severe storms and flooding. Locally, flooding affected River Road and 123A. The hazard area that was identified extends from east Acworth into South Acworth along 123A to the Langdon Town line. Damage in Acworth totaled \$117,000
Flood	October-November 2005	Grafton, Hillsborough, Merrimack, Rockingham, Strafford & Sullivan counties	FEMA Disaster Declaration # DR-1144-NH In Acworth the flood severely damaged many properties, roads and bridges along the Cold River, Warren River and Bowers Brook. Four lives were lost. Aquatic and riparian habitats and the overall aesthetic qualities of the area have been degraded. Some properties and infrastructure which survived the flood are not threatened by erosion associated with channel instability.
Flood	May 25th, 2006	Belknap, Carroll, Hillsborough, Merrimack, Rockingham, and Strafford Counties, NH	FEMA Disaster Declaration # 1643. Severe storms and flooding.
Flood	July 22, 2006	Crane Brook Road	Damaged from flooding
Flood	October 2006	Bower’s Brook	
Flood	April 15 - 19, 2007	All counties, NH	FEMA Disaster Declaration # 1695. Severe storms and flooding.
ICE JAMS A search on the Cold Regions Research and Environmental Laboratory (CRREL) and discussion with Acworth residents revealed that there is no history of ice jam-related events in the Town of Acworth			

Potential Future Events

According to the NH Statewide Hazard Mitigation Plan the entire Sullivan County region has a high risk of flooding. The Town of Acworth has seen considerable damage in recent years. Along the Cold River there is the potential for the amount of accumulating debris to cause a rechannelization of the river and damage to river banks. Route 123A and structures in South Acworth are vulnerable.

A stream flowing along Hill Road is showing signs of severe erosion giving rise to the potential for blockages and eventual flooding of the downstream area. Travel between Acworth and South

Acworth would be compromised in the event that this flooding occurs. Homeowners living along 123A are vulnerable to property damage and loss of life in the event that this occurs.

Dam Breach/Failure

Dam failure or breach results in rapid loss of water that is normally held by the dam. These kinds of floods pose a significant threat to both life and property.

Location and Extent of Past Occurrences

The South Acworth Dam was breached in the 1990s resulting in the loss of Mill Pond. During the dam breach the Cold River, arising out of Crescent Lake, flooded 123A, leaving people stranded in a location where no emergency vehicles could reach them. If the remaining structure of the dam were to fail, it could undermine the Beryl Mountain Road Bridge. The extent of dam failures is minimal and there has not been an inundation map prepared for the town by the State because of the lack of hazardous situations found.

Table III-2: DAMS

Dam #	Class	Dam Name	Owner	Status	Type	Surface Elevation (ft)	IMPND (Acres)
001.07	NM	Crescent Lk Dam	Crescent Lk Assoc	Active	Concrete	4	116
001.09	NM	McMahon's Dam	Robert McMahon	Active	Earth	8	.25
001.10	NM	Farm Pond Dam	Pam McWeathy	Active	Earth	8	.3
001.22	NM	Mitchell Pond Dam	Martin Mitchell	Active	Earth	9	.3
001.19	NM	Wildlife Pond Dam	Fred Goodwin	Active	Earth	7	.7
001.23	MN	Bascom Pond Dam	Kenneth Bascom	Active	Earth	15	2.4
001.12	NM	Farm Pond Dam	Julius Christie	Active	Earth	10	.3
001.08	NM	Farm Pond Dam	Charles Westney	Active	Earth	6	.1
001.27	NM	R Elsesser Dam	Richard Elsesser	Active	Earth	13	.4
001.30	NM	Wildlife Pond Dam	James Brown	Active	Earth	7	.2
001.18	NM	Wildlife Pond Dam	David Lyle	Active	Earth	12	1.2
001.15	NM	Wildlife Pond Dam	William Russell	Active	Earth	13	.33
001.16	NM	Rec Pond Dam	Hidden Springs Tr	Active	Earth	6.5	.32
001.04	NM	Beryl Mtn Rd Pd Dam	Town of Acworth	Active	Concrete	16	.1
001.11	NM	Farm Pond Dam	Wesley Marple Jr.	Active	Earth	4	.3
001.29	NM	Quarrier Dam	Keith Quarrier	Active	Earth	6	.74
001.14	NM	Farm Pond Dam	Gordon Gowen	Active	Earth	6	.5
001.33	NM	Sirkin Fire Pond Dam	Abraham Sirkin	Active	Earth	10	.29
001.32	NM	Clark Stock Pond Dam	David Clark	Active	Earth	13	.25
001.31	NM	Herperl Rec Pond Dam	John Herpel	Active	Earth	6	.26
001.24	L	Paul Colsmann Dam I	Paul Colsmann	Active	Earth	17.5	3.4
001.25	NM	Paul Colsmann Dam II	Paul Colsmann	Active	Earth	10	.4

Source: Dam information provided by the NH Dam Bureau in 2007; Significant & High Hazard dams must have an emergency action plan. The State of New Hampshire classifies dams into the following four categories: Blank- Non-Active; NM – Non-menace; L – Low hazard; S – Significant hazard; H – High Hazard

Potential Future Events

Given the size of most dams located within Acworth, the impact of dam failure would be relatively low. This is also how the Statewide Hazard Mitigation Plan classifies this region. All of the dams located within Acworth with one exception have been given a hazard classification by the State Department of Environmental Service’s Dam Bureau of Non-Menace (NM). This means a dam is not a menace because of its location and size. A failure or miss-operation of the dam would not result in loss of life or loss or property.

Drought

A drought is defined as a long period of abnormally low precipitation. The effects of drought are indicated through measurements of soil moisture, groundwater levels and stream flow; however, not all of these indicators will be low during a drought.

Location and Extent of Past Occurrences

Droughts in the region have had no geographic extent. Any drought in the past has affected the entire town to varying degrees.

Table III-3: DROUGHT

Date	Area	Description
1929-1936	Statewide	Regional. Recurrence Interval 10 to > 25 years
1939-1944	Statewide	Severe in southeast and moderate elsewhere. Recurrence Interval 10 to > 25 years
1947-1950	Statewide	Moderate. Recurrence Interval 10 to > 25 years
1960-1969	Statewide	Regional longest recorded continuous spell of less than normal precipitation. Encompassed most of the Northeastern US. Recurrence Interval > 25 years
2001-2002	Statewide	Third worst drought on record, exceeded only by the drought of 1956-1966 and 1941-1942.

Potential Future Events

Based on the cyclical nature and past history of drought in the State of New Hampshire it is most probable that Acworth will see drought again in the future. However, according to the State Hazard Plan Sullivan County has a medium risk of drought and it averages recurrence intervals between 10 and 25 years. Droughts in the past have had no geographic extent within the Town of Acworth. It is reasonable to assume that future droughts that affect the region will not be isolated to any geographic location.

Hurricane and High Wind Storms

“High winds are a primary cause of hurricane (and tornado)-inflicted loss of life and property damage.” (Northeast States Emergency Consortium Website) The powerful storm surge, and rain

that accompany a hurricane lead to flooding causing further the loss of life and property damage. Other potential hazards associated with these storms include downbursts and lightning.

A hurricane is an intense tropical weather system with a well-defined circulation and maximum sustained winds of 74 mph (64 knots) or higher. Hurricane winds blow in a large spiral around a relative calm center known as the "eye." The "eye" is generally 20 to 30 miles wide, and the storm may extend outward 400 miles. As a hurricane nears land, it can bring torrential rains, high winds, and storm surges. A single hurricane can last for more than 2 weeks over open waters and can run a path across the entire length of the eastern seaboard. August and September are peak months during the hurricane season that lasts from June 1 through November 30. Damage resulting from winds of this force can be substantial, especially considering the duration of the event, which may last for many hours (NH Hazard Mitigation Plan; FEMA website).

Lightning kills an average of 87 people per year in the United States, and New Hampshire has the 16th highest casualty rate in the nation. All areas of Acworth are potentially at risk for property damage and loss of life due to lightning.

Location and Extent of Past Occurrences

The location of hurricanes is general and large in nature and when occurring in Acworth affects the entire town. Sullivan County has experienced high winds from some hurricane events but is at a more significant risk to flooding from the associated rainfall from hurricanes.

Table III-4: HURRICANES

Event	Date	Area	Description
Hurricane	August, 1635	n/a	
Hurricane	October 18-19, 1778	n/a	Winds 40-75 mph
Hurricane	October 9, 1804	n/a	
Gale	September 23, 1815	n/a	Winds > 50mph
Hurricane	September 8, 1869	n/a	
Hurricane	September 21, 1938	Southern New England	Flooding caused damage to road network and structures. 13 deaths, 494 injured throughout NH. Disruption of electric and telephone services for weeks. 2 Billion feet of marketable lumber blown down. Total storm losses of \$12,337,643 (1938 dollars). 186 mph maximum winds.
Hurricane (Carol)	August 31, 1954	Southern New England	Category 3, winds 111-130 mph. Extensive tree and crop damage in NH, localized flooding
Hurricane (Edna)	September 11, 1954	Southern New England	Category 3 in Massachusetts. This Hurricane moved off shore but still cost 21 lives and \$40.5 million in damages throughout New England. Following so close to Carol it made recovery difficult for some areas. Heavy rain in NH
Hurricane (Donna)	September 12, 1960	Southern and Central NH	Category 3 (Category 1 in NH). Heavy flooding in some parts of the State.
Tropical Storm (Doria)	August 28, 1971	New Hampshire	Center passed over NH resulting in heavy rain and damaging winds

Event	Date	Area	Description
Hurricane (Belle)	August 10, 1976	Southern New England	Primarily rain with resulting flooding in New Hampshire. Category 1
Hurricane (Gloria)	September, 1985	Southern New England	Category 2, winds 96-110 mph. Electric structures damaged; tree damages. This Hurricane fell apart upon striking Long Island with heavy rains, localized flooding, and minor wind damage in NH
Hurricane (Bob)	August 19, 1991	Southern New England	Structural and electrical damage in region from fallen trees. 3 persons were killed and \$2.5 million in damages were suffered along coastal New Hampshire. Federal Disaster FEMA-917-DR
Hurricane (Edouard)	September 1, 1996	Southern New England	Winds in NH up to 38 mph and 1 inch of rain along the coast. Roads and electrical lines damaged
Tropical Storm (Floyd)	September 16-18, 1999	Southern New England	FEMA DR-1305-NH. Heavy Rains

Potential Future Events

The State Hazard Plan lists Sullivan County as a medium risk for future hurricanes based on past evidence. Hurricanes in Acworth are more likely to cause flooding from associated rain than disturbance and destruction from winds speeds, although the region has seen remnants from many hurricanes from the coast over the past 100 years. The extent of hurricanes in Acworth would most likely not be geographically bound and would affect the entire community.

Tornadoes

“A tornado is a violent windstorm characterized by a twisting, funnel shaped cloud. These events are spawned by thunderstorms and, occasionally by hurricanes, and may occur singularly or in multiples. They develop when cool air overrides a layer of warm air, causing the warm air to rise rapidly. Most vortices remain suspended in the atmosphere. Should they touch down, they become a force of destruction.” (NH Hazard Mitigation Plan). The Fujita Scale is the standard scale for rating the severity of a tornado as measured by the damage it causes. Most tornadoes are in the F0 to F2 Class. Building to modern wind standards provides significant property protection from these hazard events. New Hampshire is located within Zone 2 for Design Wind Speed for Community Shelters, which suggests that buildings should be built to withstand 160 mph winds.

“A downburst is a severe localized wind blasting down from a thunderstorm. These ‘straight line’ winds are distinguishable from tornadic activity by the pattern of destruction and debris. Depending on the size and location of these events, the destruction to property may be devastating. Downbursts fall into two categories.” Microbursts cover an area less than 2.5 miles in diameter and macrobursts cover an area at least 2.5 miles in diameter.”

Location and Extent of Past Tornadoes

All areas of Acworth are potentially at risk for property damage and loss of life due to tornadoes. Although the Statewide Plan lists Sullivan County as a medium risk for tornadoes, the Acworth

Hazard Mitigation Committee could not recall any events within the community. Acworth is a very hill region and as such the terrain itself may mitigate tornados.

Within the County, there have been four events of F2 severity and four additional tornadic events at level F1, although the impacts of these events were not felt in Acworth.

Potential Future Events

The State Hazard Plan lists Sullivan County as an area of medium risk for tornados and downbursts. Tornados in Acworth could be associated with a specific location. Previous tornados have not documented any location specific to local implications. Any tornados that may occur would most likely be localized. Flatter terrain in the town would be the most vulnerable areas for tornados. The impact would be limited.

Severe Winter Weather Storms

Ice and snow events typically occur during the winter months and can cause loss of life, property damage, and tree damage.

Heavy Snow Storms

“A heavy snowstorm is generally considered to be one which deposits four or more inches of snow in a twelve-hour period... A blizzard is a winter storm characterized by high winds, low temperatures, and driving snow- according to the official definition given in 1958 by the U.S. Weather Bureau, the winds must exceed 35 miles per hour and the temperatures must drop to 20°F (-7°C) or lower. Therefore, intense Nor’easters, which occur in the winter months, are often referred to as blizzards. The definition includes the conditions under which dry snow, which has previously fallen, is whipped into the air and creates a diminution of visual range. Such conditions, when extreme enough, are called ‘white outs’.”

Ice Storms

“When a mass of warm moist air collides with a mass of cold arctic air, the less dense warm air will rise and the moisture may precipitate out in the form of rain. When this rain falls through the colder more dense air and comes in contact with cold surfaces, the latent heat of fusion is removed by connective and/or evaporative cooling. Ice forms on these cold surfaces and may continue to form until the ice is quite deep, as much as several inches. This condition may strain branches of trees, power lines and even transmission towers to the breaking point and often creates treacherous conditions for highway travel and aviation. Debris impacted roads make emergency access, repair and cleanup extremely difficult.

“Nor’easters”

In the winter months, [Towns within] the State may experience the additional coincidence of blizzard conditions with many of these events as well as the added impact of the masses of snow and/or ice upon infrastructure thus, impacting upon transportation and the delivery of goods and services for extended periods of time, as well as various related impacts upon the economy. The entire area of the State may be impacted by these events... Heavy snow and/or rainfall may be experienced in different areas of the State and the heavy rains may contribute to flood conditions.

Nor'easter events which occur toward the end of a winter season may exacerbate the spring flooding conditions by depositing significant snow pack at a time of the season when spring rains are poised to initiate rapid snow pack melting.”

Lightning

“Lightning is a giant spark of electricity that occurs between the positive and negative charges within the atmosphere or between the atmosphere and the ground. In the initial stages of development, air acts as an insulator between the positive and negative charges. However, when the potential between the positive and negative charges becomes too great, there is a discharge of electricity that we know as lightning.”

Location and Extent of Past Events

Severe winter weather by nature can affect the entire community or be localized in some of the higher elevations of the town.

Table III-5: EXTREME WINTER WEATHER/ICE STORMS

	Date	Location	Extent/severity
Ice Storm	December 17-20, 1929	New Hampshire	Unprecedented disruption and damage to telephone telegraph and power system. Comparable to 1998 Ice Storm (see below)
Ice Storm	Dec. 29-30, 1942	NH	Glaze storm; severe intensity
Snow Storm	December 10-13, 1960	Southern NH	Up to 17 inches of snow
Snow Storm	January 18-20, 1961	Southern NH	Up to 25 inches of snow
Snow Storm	February 2-5, 1961	Southern NH	Up to 18 inches of snow
Snow Storm	January 11-16, 1964	Southern NH	Up to 12 inches of snow
Blizzard	January 29-31, 1966	Central NH	Third and most severe storm of 3 that occurred over a 10-day period. Up to 10 inches of snow across central NH
Snow Storm	December 26-28, 1969	West Central NH	Up to 41 inches of snow
Snow Storm	February 18-20, 1972	Southern NH	Up to 19 inches of snow
Snow Storm	January 19-21, 1978	Southern NH	Up to 16 inches of snow
Blizzard	February 5-7, 1978	New Hampshire	New England-wide. Up to 25 inches of snow in central NH
Snow Storm	April 5-7, 1982	Southern NH	Up to 18 inches of snow
Ice Storm	February 14, 1986	Monadnock Region	Fiercest ice storm in 30 yrs in the higher elevations in the Monadnock region. It covered a swath about 10 miles wide from the MA border to Acworth NH
Extreme Cold	November-December, 1988	New Hampshire	Temperature was below 0 degrees F for a month
Severe Ice Storm	1998	Acworth	Citizens in Acworth lost electricity.

	Date	Location	Extent/severity
Ice Storm	March 3-6, 1991	New Hampshire	Numerous outages from ice-laden power lines in southern NH
Ice Storm	January 15, 1998	New Hampshire	Federal disaster declaration DR-1199-NH, 20 major road closures, 67,586 without electricity, 2,310 without phone service, \$17+ million in damages to Public Service of NH alone
Winter Storms	2003-2005	Acworth	There were several severe winter storms affecting the entire town. The town received \$10,000 from FEMA to assist with these incidents.
Winter Storm	December 4th, 2006	Acworth	Entire town of Acworth as well as the greater region of NH experienced severe cold.

Potential Future Events

Three types of winter events are heavy snow, ice storms and extreme cold. Occasionally heavy snow will collapse buildings. Ice storms have disrupted power and communication services. Extreme cold affects the elderly. These random events make it difficult to set a cost to repair or replace any of the structures or utilities affected. The whole town is at risk from severe winter weather, and the most rural areas in high elevations of town are the most vulnerable.

Similar to the rest of the state Sullivan County and Acworth have a high risk of severe winter weather storms.

Wildfire

There are many types and causes of fires. Wildfires, arson, accidental fires and others all pose a unique danger to communities and individuals. Since 1985, approximately 9,000 homes have been lost to urban/wild land interface fires across the United States (Northeast States Emergency Consortium: www.nesec.org). The majority of wildfires usually occur in April and May, when home owners are cleaning up from the winter months, and when the majority of vegetation is void of any appreciable moisture making them highly flammable. As weather and human activities change with the seasons of the year, so does the incidence, causes and severity of fires. Cold winter weather increases indoor activities and the need for heating, which brings about the peak period of heating structure fires. Daily fire incidence is at its highest in the spring. Spring is characterized by an increase in outside fires and a decrease in fires related to heating. The increase in outside spring fires is in large part due to the increase in tree, grass, and brush fires. Summer fires reflect an increase of incendiary and suspicious fires, fires associated with fireworks and natural fires caused by lightning strikes. These fires are a reflection of the change to warmer weather and the consequent increase in both outside activities and dry natural vegetation. Fire incidence is at its lowest in the fall. In fall, there is a decrease in outside fires, an increase in heating-related structure fires and the peak period of cooking fires.

Location and Extent of Past Events

“Historically, large NH wildland fires run in roughly 50 year cycles. Present concerns of New Hampshire Department of Resources and Economic Development, Division of Forests & Lands are that the Ice Storm of 1998 has left a significant amount of woody debris in the forests of the

region as may fuel future wildfires.” “NH averages 500 fires per year and averages ½ acre or less per fire due to the excellent coordination between Fire Towers and local Fire Departments.” Forested, high elevation areas in Acworth are particularly vulnerable to wildfire events. Prolonged drought increases the likelihood of such events.

Unlike other natural hazards wildfires tend to be more localized and controllable through mitigation measures and education to residents. Extreme heat can aid in the potential for fires that are not mitigating events. However, there tends to be a greater risk of wildfire in the spring and fall when extreme heat is not an issue.

Table III-6: EXTREME HEAT

Event	Date	Area	Description
Extreme Heat	July, 1911	New England	11-day heat wave in New Hampshire
Extreme Heat	Late June to September, 1936	North America	Temps to mid 90s in the northeast
Wildfire	1941	Acworth	Wildfire caused 25,000 acres of land to burn beginning in the neighboring town of Marlow, affecting the southeastern corner of Acworth.
Extreme Heat	Late July, 1999	Northeast	13+ days of 90+ degree heat
Extreme Heat	Early August, 2001	New Hampshire	Mid 90s and high humidity
Extreme Heat	August 2-4, 2006	New Hampshire	Regional heat wave and severe storms,

Potential Future Events

The attached map in Appendix F shows the wildland-urban interface and provides an overview of interface area that is vulnerable to wildfire. The State has indicated that there is a high risk for wildfire in this region, although historic knowledge of wildfires within Acworth is limited and the wildland/urban interface mapping shows little areas of vulnerability. Acworth has many remote homes with a significant amount of forest. The impact of wildfires on the town is likely to be minimal as there are few homes and buildings that within the WUI that would be impacted.

Earthquakes

New England is considered a moderate risk earthquake zone. An earthquake is a rapid shaking of the earth caused by the breaking and shifting of rock beneath the earth’s surface. Earthquakes can cause buildings and bridges to collapse, disrupt gas, electric and phone lines, and cause landslides, flash floods and fires. The magnitude and intensity of an earthquake is determined by the use of scales such as the Richter scale and the Mercalli scale.

Location and Extent of Past Occurrences

The topography of Acworth is generally a glacially modified upland composed of hilly terrain with mostly moderate to steep slopes. Because of this, impact from earthquakes could be damaging. However the Hazard Mitigation Committee only noted those earthquakes that were

felt in Acworth but that were centered in other areas of New England so impact was minimal. Earthquakes have been felt throughout the entire town, and have not been associated with localized damage.

Table III-7: EARTHQUAKES

Date	Area	Description
1638	Central New Hampshire	6.5-7
October 29, 1727	Off NH/MA coast	Widespread damage Massachusetts to Maine
December 29, 1727	Off NH/MA coast	Widespread damage Massachusetts to Maine
November 18, 1755	Cape Ann, MA	6.0, much damage
1800s	Statewide New Hampshire	83 felt earthquakes in New Hampshire
1900s	Statewide New Hampshire	200 felt earthquakes in New Hampshire
March 18, 1926	Manchester, NH	Felt in Hillsborough County
December 20, 1940	Ossipee, NH	Both earthquakes of magnitude 5.5, both felt for 400,000 sq miles, structural damage to homes, damage in Boston MA, water main rupture.
December 24, 1940	Ossipee, NH	
December 28, 1947	Dover-Foxcroft, ME	4.5
June 10, 1951	Kingston, RI	4.6
April 26, 1957	Portland, ME	4.7
April 10, 1962	Middlebury, VT	4.2
June 15, 1973	Near NH Quebec Border, NH	4.8
January 19, 1982	Gaza (west of Laconia), NH	4.5, walls and chimneys cracked, damage up to 15 miles away in Concord
October 20, 1988	Near Berlin, NH	4

Potential Future Events

New Hampshire lies in a zone of moderate seismic vulnerability. The County lies in an area of moderate seismicity. The extent of most earthquakes would be town-wide.

Landslides

A landslide is the downward or outward movement of slope-forming materials reacting under the force of gravity, including mudslides, debris flows, and rockslides. Formations of sedimentary deposits along the Connecticut River also create potential landslide conditions. Landslides can damage or destroy roads, railroads, electrical and phone lines, and other structures.

Location and Extent of Past Occurrences

Landslides and avalanche events are thought to be moderate to low risk given the topography of the town. The extent of landslides and avalanches would be localized although for this plan a study of steep slopes that are at risk was not done. The Town of Acworth has no known history of these events and it is unlikely that there will be an increase in these events in the future. However, given the steep slopes within the town, some areas may be at greater risk.

The Hazard Mitigation Committee identified the area near the junction of Forest Road and 123A with no specific informant given regarding the extent of the incident.

Potential Future Events

The Committee also identified this area as that could lead to the damming of Cold River due to the amount of material that could be discharged. Because of the hilly terrain that has been identified previously in this plan and the overall landscape that is found in Sullivan County the Statewide Hazard Plan has listed Sullivan County as a medium risk for landslide events. These localized areas along steep sloped roads and areas along streams would be the most vulnerable. Impact of these events may be moderate depending on the volume of debris.

Subsidence

Subsidence is the collapse of the Earth's surface elevation due to the removal of subsurface support. Many of the older industrial communities in the state have canals that were constructed to facilitate hydro-mechanical power to local factories. Generally, subsidence poses a greater risk to property than to human life.

Location and Extent of Past Occurrences

The Committee was unable to identify any of these types of events and believes there is minimal risk of future occurrences as there are not sufficient underground aquifers to cause concern.

Other Hazards

The Committee felt there was a potential threat for a hazardous materials spill along 123A. The threat is exacerbated due to a lack of guard rails between the road and the stream.

The Hazard Mitigation Committee recognizes the ongoing need for primitive and aging infrastructure and its effect on water contamination in streams, rivers, groundwater and wetlands areas.

The Hazard Mitigation Committee acknowledges the potential to be impacted by terrorism and other man made events such as civil disturbance.

B. Assessing Probability, Vulnerability, and Risk

The Committee members completed a Risk Assessment all of the types hazards identified in Chapter III. Appendix E provides a detailed methodology for the Risk Assessment. The process involved assigning Unlikely, Possible, Likely values (numerically 1, 2 or 3) to each hazard type for its potential of occurring based on past historic information. (An n/a score was given if there was insufficient evidence to make a decision). To assess vulnerability, a 1, 2, or 3 value was assigned to each hazard type. Risk was calculated by multiplying probability by the vulnerability. Low-Medium-High risk was assigned as shown below.

Table III-8: RISK ASSESSMENT

Hazards (Natural & Manmade)	Probability of Occurrence Likely (3), Possible (2) Unlikely (1)	Probability based on State Hazard Plan Likely (3), Possible (2), Unlikely (1)	Average of Prob - abilities	Vulnerability based on State Hazard Plan High (3), Moderate (2), Low (1)	Vulnerability High (3), Moderate (2), Low (1)	Average of Vulnerabilities	Risk Rating (Probability x Vulnerability)
Flooding	3	3	3	1	2	1.5	4.5
Dam Failure	3	1	2	1	2	1.5	3
Drought	1	2	1.5	1	1	1	1.5
Hurricanes	1	2	1.5	1	1	1	1.5
Tornadoes	1	2	1.5	1	1	1	1.5
Severe Winter Weather	3	3	3	1	3	2	6
Wildfire	2	3	2.5	1	3	2	5
Earthquake	1	2	1.5	1	1	1	1.5
Landslide	1	2	1.5	1	1	1	1.5
Avalanche	n/a	1	1	1	n/a	1	1
HazMat	1	n/a	1	1	1	1	1
Radon	n/a	2	2	1	n/a	1	2
Terrorism – Civil disturbance	1	n/a	1	n/a	1	1	1
0-1.9- Low	2.0-3.9- Low-Med	4-5.9- Med	6-7.9- Med-High	8-9- High			

As was consistent with the assumptions of the Committee, the Risk Assessment revealed the most significant risks the Town of Acworth should address are wildfire, flooding and severe winter weather.

IV. CRITICAL FACILITIES

The Critical Facilities list, identified by the Acworth Hazard Mitigation Committee, is divided into the following five categories: Emergency Response Facilities and Structures, Critical Roads and Infrastructure, Water Resources, Non-Emergency Response Facilities, and Centers of Population to Protect.

The “hazard vulnerability” column following in Table 4 was completed by assessing vulnerability of the critical facilities to the three hazards with the highest risk ratings. The three hazards with the highest risk ratings are severe winter weather, flooding and wildfire/structure fire.

Table IV-1: EMERGENCY RESPONSE FACILITIES AND STRUCTURES

Critical Facilities	Hazard Vulnerability	Replacement Value
Town Hall, Churches and School Area	Storm, Fire	\$669,632.00
Fire Department	Storm, Fire	\$81,400
Town Barn (Highway Garage)	Storm, Fire	\$596,200.00
Town Store	Flood, Storm, Fire	\$111,000.00

A. CRITICAL ROADS AND INFRASTRUCTURE

Acworth’s transportation system plays a critical role in the everyday functioning of the Town and provides access to both populated and remote areas of town in the event of an emergency. Additionally, the road system in Acworth is the Town’s only means of escape in the event of an evacuation due to flooding or other disaster. The Town of Acworth has approximately 50 miles of Class V roads, 30 miles of Class VI roads and 15 miles of state maintained roads. Some of the most important roads in Acworth’s transportation system are identified in Table 5.

Table IV-2: CRITICAL ROADS

Critical Facilities	Hazard Vulnerability	Replacement Value
Charlestown Road	Storm	The cost is approximately \$100 per foot to replace a road.
Cold Pond Road	Storm	The cost is approximately \$100 per foot to replace a road.
Hill Road	Storm, Fire, Landslide	The cost is approximately \$100 per foot to replace a road.
123A	Storm, Flood, Landslide	The cost is approximately \$100 per foot to replace a road.
River Road	Storm, Fire, Landslide	The cost is approximately \$100 per foot to replace a road.
Forest Road	Storm	The cost is approximately \$100 per foot to replace a road.
Cranebrook Road	Storm, Landslide	The cost is approximately \$100 per foot to replace a road.
Local Bridges	Storm, Landslide	The cost is approximately \$10,000 - \$15,000 per foot.

Table IV-3: WATER RESOURCES

Critical Facilities	Hazard Vulnerability	Replacement Value
Public Drinking Water Supply at the School	Storm, Hazardous Materials, Earthquake,	NA

Table IV-4: NON-EMERGENCY RESPONSE FACILITIES AND STRUCTURES

Critical Facilities	Hazard Vulnerability	Replacement Value
Library	Fire	\$416,326.00
Church Buildings (Community Aid Building)	Flooding, Fire	\$154,400

Table IV-5: CENTERS OF POPULATION TO PROTECT

Critical Facilities	Hazard Vulnerability	Replacement Value
Acworth Town	Storm, Fire	\$4,672,458
South Acworth	Flood, Fire, Storm, Landslide	\$1,347,400
Crescent Lake	Fire, Flood	\$2,234,900

B. IDENTIFYING VULNERABLE FACILITIES

The Acworth Hazard Mitigation Committee determined which critical facilities and other structures are the most vulnerable to past and/or potential hazards. The Committee estimated the cost if these critical facilities and structures were lost. The first step is to identify the facilities most likely to be damaged in a hazard event. Locations of critical facilities were compared to the location of identified hazard areas. There are no large land areas designated for potential development, so vulnerability of undeveloped land was not analyzed.

Table IV-6: VULNERABLE FACILITIES

Hazard Area	Total Buildings	Estimated Value	Critical Facilities
Acworth Village	22	\$4,672,458	Town Hall, School, Church
South Acworth Village	15	\$1,347,400	Town Store, Community Aid Building, Church
Crescent Lake	100	\$2,234,900	Population to Protect

C. POTENTIAL LOSS ESTIMATES

This section identifies areas in town that are most vulnerable to hazard events and estimates potential losses from these events. It is difficult to ascertain the amount of damage caused by a natural hazard because the damage will depend on the hazard’s extent and severity, making each hazard event quite unique. In addition, human loss of life was not included in the potential loss estimates, but could be expected to occur.

Flooding

The following facilities were identified by the Committee to have potential flooding damage: 15 buildings in the South Acworth Village, Community Aid Building, and housing and building surrounding Crescent Lake as well as the Town Store. The total replacement cost of these facilities and buildings equals \$3,847,700. The potential loss was calculated by multiplying the estimated value of the structure by the percent of the floodwaters. For example, FEMA estimates that in the event of a 100-year, 4-foot flood, structures in the 100-year floodplain would suffer 28% damage.

High Risk

Considers eight foot flooding in 100 and 500-year floodplain areas. All structures receiving 49% damage. Cost for repairing or replacing bridges, railroads, power lines, telephone lines, natural gas pipelines, water and wastewater treatment facilities, contents of structures and loss of cropland values are not included.

$$\$3,847,700 \times 49\% = \$1,885,373$$

Medium Risk

Considers 4-foot flooding in 100-year floodplain areas. All structures receive 28% damage.

$\$3,847,700 \times 28\% = \$1,077,356$

Low Risk

Considers 1-foot flooding in 100-year floodplain areas. All structures receive 15% damage.

$\$3,847,700 \times 15\% = \$577,155$

The potential loss estimates for flood in Acworth for the identified facilities and buildings would be between \$1,885,373 and \$576,155.

Hurricane

Given that the extent of hurricanes could encompass the entire town of Acworth the total value of identified facilities and buildings was assessed at \$10,283,716. A major hurricane can cause significant damage to a community. Since Acworth is inland from the coast, less damage would be expected to occur here than elsewhere in New Hampshire. A community-wide approximation of damage of 1% to 5% could be anticipated in the event of a large scale event.

The potential loss estimate for hurricanes in Acworth for the identified facilities and buildings would be between \$102,837 and \$514,185.

Tornado,

Tornadoes, downbursts and microbursts are relatively uncommon natural hazards in New Hampshire. On average, about six tornado events strike each year. The total cost of tornadoes between 1950 and 1995 was \$9,071,3896. Most tornadoes are in the F0 to F2 Class. Building to modern wind standards provides significant property protection from these hazard events. It is difficult to assess the monetary impact a tornado may have on a community as the effect may vary from minor roof damage to a single structure, to destruction of an entire neighborhood. The range of damage is difficult to project as tornadoes can be erratic and localized.

The potential loss estimate for tornados in Acworth for the identified facilities and buildings would be between \$51,418 and \$102,837 based on past history.

Severe Winter Storms

New England usually experiences at least one or two severe snow storms per year. The storms impact the region with varying degrees of severity. Typical effects of severe winter weather are power outages and damages to infrastructure. For example, in the storm of 2005 the total cost to clean up the Town was \$12,000.

Ice Storms

Ice storms often cause widespread power outages by breaking power lines.

The potential loss estimate for severe winter storms in Acworth for the identified facilities and buildings would be between \$51,418 and \$102,837 base on past history.

⁶ The Disaster Center

Wildfire

Wildfire is most likely to occur during drought years and the exact location of the occurrence is difficult to predict. However, areas and structures that are surrounded by dry vegetation that has not been suitably cleared are at high risk. The Wildland/Urban Interface map provides an overview of where wildfire is most likely to occur. Critical facilities and buildings identified by the Committee include Town Store, Fire Department, Town Hall, Churches and school, the Town Barn the Library, Community Aid building, and the facilities in the areas of the Crescent Lake and the villages of Acworth and South Acworth.

Following the accepted formula for flooding the following assumptions regarding wildfire could be made.

High Risk - $\$10,283,716 \times 49\% = \$5,039,020$

Moderate Risk - $\$10,283,716 \times 28\% = \$2,879,440$

Low Risk - $\$10,283,716 \times 15\% = \$1,542,557$

The total potential loss due to wildfire in Acworth could be between \$5,039,020 and \$1,542,557.

Earthquake

Earthquakes can cause buildings and bridges to collapse; disrupt gas, electric and phone lines; precipitate landslides; and cause flash flooding events. Buildings in Acworth that are not built to a high seismic design level would be vulnerable in the event of an earthquake. Additionally, Acworth's dams could be breached or fail. There is no record of damages from earthquakes in Acworth on which to base a potential loss estimate. Assuming a moderate earthquake in Acworth where structures are not built to a high seismic design level, presuming mostly wood framed construction, it could be estimated that about 1% to 5% of the assessed structural valuation could be lost, including damage to homes.

The potential loss estimate for earthquakes in Acworth for the identified facilities and buildings would be between \$102,837 and \$514,185.

Landslides

The Committee identified South Acworth as an area of concern for landslides. The total replacement value of the 15 structures in that area is \$1,347,400. It could be assumed that about 1% to 5% of the value of those structures could be lost.

The potential loss estimate for landslides in Acworth for the identified facilities and buildings would be between \$13,474 and \$67,370.

D. EXISTING MITIGATION STRATEGIES

The Acworth Hazard Mitigation Committee identified policies and practices that already exist to protect the Town from past and/or potential hazards. The existing mitigation strategies were evaluated for gaps in the protection. This information will be used to determine future mitigation strategies to protect the Town from natural and some man-made hazards. Following this paragraph is a chart of existing mitigation strategies in the Town of Acworth.

Table IV-7: EXISTING MITIGATION

Type of Existing Protection	Description	Effectiveness and/or Enforcement	Gaps in Existing Protection/ Recommended Improvements
Acworth Volunteer Fire and Rescue Department	The Acworth Volunteer Fire and Rescue Squad practice a hazardous material response protocol.	This protocol is enforced by the Fire Chief.	The Committee suggested that the Acworth Volunteer Fire and Rescue Squad engage in more training and that they have a documented response plan.
Winter Maintenance Policy for Roads	Winter maintenance is prioritized based on the importance of the road, e.g., a School Bus Route may have high priority.	The Road Agent enforces the Winter Maintenance Policy.	The Committee did not identify and gaps in this existing protection.
Class VI Road Policy	This policy provides emergency personnel access to remote areas of town in the event of a wildfire. This policy also allows the town to make improvements to Class VI Roads. However, these roads must be designated, "emergency lanes," by the Selectmen.	The Board of Selectmen and Road Agent oversee and enforce the Class VI Road Policy.	The Committee suggested that the policy be expanded to ensure that all emergency services have access to remote areas of town.
The Town of Acworth is currently working to update the Emergency Operations Plan.	This plan provides emergency services with a documented organized response in the event of an emergency.	The Emergency Management Director and Deputy Emergency Management Director are in charge of the Emergency Operations Plan. The EMD and DEMD both work for the Fire Department.	The Committee stated that the Plan needs to be completed.
The Town of Acworth follows state guidelines for burning permits/Entire Town	This effort protects the Town from fire hazards.	The Fire Warden and Deputy Fire Warden enforce the state guidelines for burning permits.	The Committed suggested that there be a better enforcement of fines for illegal burning.

Type of Existing Protection	Description	Effectiveness and/or Enforcement	Gaps in Existing Protection/ Recommended Improvements
Conservation Commission/Entire Town	The Conservation Commission exists to ensure the proper utilization and protection of Acworth's natural resources. The Conservation Commission oversees wetlands applications, shoreland protection and best management practices.	The Conservation Commission is appointed by the Board of Selectmen.	The Committee suggested that the Conservation Commission work on better implementation programs for their efforts in the protection of natural resources.
The Town of Acworth participates in public awareness and outreach to educate citizens about potential hazards/Entire Town	The Town of Acworth organizes a fire prevention week at the Town's school and posts rules for burning in the Town offices.	The Fire Warden and Deputy Fire Warden oversee the public awareness and outreach program.	The Committee would like to further the Town's education and outreach programs.
The Town of Acworth has initiated a winter parking ban on certain roads/Entire Town	Restricting parking on certain roads during winter weather allows for maintenance and travel on otherwise unsafe roads.	The Winter Parking Ban is enforced by the Board of Selectmen.	The Committee recommends that this mitigation effort be better enforced.
Floodplain Ordinance/Floodplains	The Ordinance places more stringent controls on development in the floodplain. This Ordinance is included in the Zoning Ordinance.	The Ordinance is enforced by the Board of Selectmen and the Conservation Commission.	The Committee suggested that the Board of Selectmen and the Conservation Commission need more experience in implementation.
School Emergency Plan/Vilas School	This is a reactionary document outlining school procedures in the event of an emergency.	School Administrators oversee the School Emergency Plan.	The Committee did not identify any gaps in this protection.
Class VI Road Inventory Committee/Entire Town	This Committee examines issues affecting Class VI Roads.	The Committee is responsible for reporting to the Planning Board.	The Hazard Mitigation Committee stated that the Class VI Road Inventory Committee needs outside assistance for engineering and drainage work.
NRCS Watershed Program/Cold River Watershed	This program has helped to identify mitigation sites and aided the Town of Acworth in debris clearing.	The Board of Selectmen oversees this effort.	The Committee stated that this program needs more funding.
SWNH Mutual Aid/Entire Town	Acworth's participation in a mutual aid program provides the Town with additional manpower and equipment in the event of an emergency.	The Chief of the SWNH Mutual Aid is in charge of this mitigation effort.	The Committee identified that there are areas of the Town where communication is impossible and emergency information must be relayed.

E. SUMMARY OF RECOMMENDED IMPROVEMENTS

The Acworth Hazard Mitigation Committee recommended improvements to existing programs and potential mitigation measures as follows:

- It was recommended that the Acworth Volunteer Fire and Rescue Squad engage in more training and that they have a documented hazard response plan.
- It was recommended that the Class VI Road Policy be expanded to allow all emergency services access to remote areas of town.
- It was stated that the Emergency Operations Plan needs to be completed.
- It was recommended that the Town better enforce fines for illegal burning.
- It was recommended that the Conservation Commission work on better implementation programs for their efforts to protect Acworth's natural resources.
- The Committee would like to further the Town's education and outreach programs.
- It was recommended that the Floodplain Ordinance be better implemented.
- The Committee noted that the Class VI Road Inventory Committee needs outside assistance for engineering and drainage work.
- The Committee identified areas of the Town where communication is impossible and emergency services must rely on relayed information to make use of programs such as mutual aid.
- The Committee identified that they are lacking an evacuation plan in the event of a severe flood.

V. NEWLY IDENTIFIED MITIGATION ACTIONS

A. POTENTIAL MITIGATION ACTIONS

Multiple Hazards

- Participate in the State's public works mutual aid program to provide additional man power and equipment in the event of hazard to protect public infrastructure.
- Purchase back-up generators for the Town Hall and Highway Department to provide shelter and communications in the event of an emergency.
- Appropriate funds for hazard mitigation grant writing.
- Create education and outreach information for citizens of how to react and/or avoid potential hazards.
- Create a rating system for road condition improvements.
- Create a volunteer list to assist the Road Agent during hazards.
- Update the Emergency Operations Plan.
- Create a regional plan to mitigate for terrorist attacks.

Flooding

- Create a program of dam maintenance and oversight to protect dams prone to flooding and to protect structures in the floodplain.
- Clear debris, sure up streambanks to prevent flooding events.
- Stabilize and rechannel Bower's Brook preventing the loss of the Community Aid Building in South Acworth.
- Implement the recommendations from the Fluvial Geomorphic Assessment Study of Bower's Brook which was a cooperative effort between NRCS, NH Department of Environmental Services, NH Fish and Game and NH Department of Transportation.
- This includes some of the following:
- Replace the box culvert at Route 123. Its span is about 26% as wide as the bankfull channel. This is considered inadequate.
- Replace or improve the Prentice Hill Road Bridge
- Removal of dam remnants of Bowers Brook.
- The Town will include the mitigation actions in any future Capital Improvement Program.

B. SUMMARY OF CRITICAL EVALUATION

The Acworth Hazard Mitigation Team reviewed each of the newly identified mitigation strategies using the following factors:

- Does it reduce disaster damage?
- Does it contribute to community objectives?
- Can it be quickly implemented?
- Is it socially acceptable?

- Is it technically feasible?
- Is it administratively possible?
- Is the action legal?
- Does the action offer reasonable benefit compared to cost of implementation?

The Acworth Hazard Mitigation Team assigned the following scores to each strategy for its effectiveness related to the critical evaluation questions listed above. For each critical evaluation question the Committee assigned a 1, 2, or 3 to the strategy being scored. Three indicated that the strategy ranked high in regard to the evaluation question, and one indicated that the strategy ranked low in regard to the evaluation question. The sum of the scores for each evaluation question equals the overall score for a particular strategy. The highest score suggests the highest priority. The highest possible total score is 24.

Table V-1: CRITICAL EVALUATION

Project	Score	Additional Cost/Benefit Consideration	Mitigate Existing or New Built Environment, or Both?
Dam Maintenance and Supervision	19	Costly Program/Great Benefit	Both
Public Works Mutual Aid	22	Very Inexpensive/Very Beneficial	Both
Acquire Generators	21	Very Expensive/Cannot Predict Benefit	Both
Compatible Communications	20	Very Expensive/Very Beneficial	NA
Appropriating Funding for Hazard Mitigation Planning	20	Very Beneficial to the Town	Both
Continue Working with NRCS	24	Funding is Available/Very Beneficial	Both
Education and Outreach	24	Very Inexpensive/Very Beneficial	Both
Update EOP	18	Funding is Available/Very Beneficial	Both
Creating a Volunteer Corps	19	Very Beneficial	Both
Hire a Consultant to Identify Potential Hazard Sites (Protect Infrastructure)	23	Very Expensive/Cannot Predict Benefit	Both

VI. PRIORITIZED IMPLEMENTATION SCHEDULE

The Acworth Hazard Mitigation Committee created the following action plan for implementation of priority mitigation strategies:

Table VI-1: PRIORITIZED IMPLEMENTATION SCHEDULE

Mitigation Action	Who (Leadership)	When (Deadline)	Cost/Funding Source
Education and Outreach	The project will be overseen by the Board of Selectmen until an appointment can be made.	The Committee would like to start this program after the March Town Meeting 2007.	Citizens and Town Officials of Acworth would have volunteer time. There is free literature available.
Continue to Work with NRCS	The Board of Selectmen is in charge of this mitigation effort.	This is an on-going mitigation effort.	The project is funded through a grant and in-kind time.
Hire a Consultant from the State	The Town Public Works would be responsible for this effort.	The Committee would like to complete this before the Fall of 2007	This effort is dependent upon the Town of Acworth's ability to secure grant funding for an engineer.
Appropriate Funds for Hazard Mitigation Planning	The Board of Selectmen will be in charge of this funding.	March Town Meeting 2008	This effort would require a budget appropriation to be approved at Town Meeting.
Public Works Mutual Aid	The Road Agent will register the Town of Acworth in this program.	March Town Meeting 2008	The Committee would like to include the \$25.00 fee in the budget to be voted on at Town Meeting.
Acquiring Generators	The Board of Selectmen will be in charge of this effort.	March Town Meeting 2008	The Committee would like to secure a grant for this mitigation effort.
Maintain Emergency Operations Plan	Emergency Management Director	This project is an on-going effort.	The Plan is updated as allowed by Town funding.
Creating a Volunteer Corps	Emergency Management Director, Assistant Emergency Management Director	Summer 2008	Acworth would like to seek multiple town participation and to have this effort funded by the state. Volunteer time would also be required.
Compatible Communications	Highway Department	This is a long term goal for the Town of Acworth and work is on-going.	The success of this effort is dependent upon grant funding and future town appropriations.
Dam Maintenance and Supervision	The Board of Selectmen would manage this effort in conjunction with the NH Department of Environmental Services.	The Committee would like to begin this effort as soon as possible.	Department of Environmental Services

VII. ADOPTION AND IMPLEMENTATION OF THE PLAN

A good plan needs to provide for periodic monitoring and evaluation of its successes and challenges, and to allow for updates of the Plan where necessary. In order to track progress and update the Mitigation Strategies identified in the Plan, the Town of Acworth will review the Hazard Mitigation Plan annually, or after a hazard event. The Plan will be updated on a five-year cycle. The Acworth Emergency Management Director will initiate this review, or update and should consult with the Hazard Mitigation Committee. Changes will be made to the plan to accommodate for projects that have failed, or that are not considered feasible after a review for their consistency with the evaluation criteria, the timeframe, the community's priorities, and funding resources. Priorities that were not ranked highest, but that were identified as potential mitigation strategies, will be reviewed as well during the monitoring and update of this plan, to determine feasibility for future implementation. During the five-year update, there will be a public hearing to receive public comment, and the Board of Selectmen will adopt the final Plan.

A. Implementation Through Existing Programs

The Plan will be adopted locally as a stand-alone document. The Board of Selectmen will review and include any proposed projects outlined in this plan. During periods of review or update the Hazard Mitigation Committee will consult the Acworth Master Plan to ensure that the Hazard Mitigation Plan doesn't conflict with the Master Plan.

B. Continued Public Involvement

The public will continue to be involved in the hazard mitigation planning process. In future years, a public meeting will be held (separate from the adoption hearing) to inform and educate members of the public. Prior to the meeting, a press release will be distributed, and information will be posted in the Town.

By the nature, natural hazards affect areas not defined by political boundaries. Additionally, response to these disasters often may rely on neighboring communities for assistance such as the mutual aid services. Because of this it is important to notify and work with adjacent communities. Notification of this plan and its meetings were publicly noticed and posted, although direct invitations were not made to neighboring municipalities of Charlestown, Unity, Lempster, Langdon and Marlow. Future iterations and updates to this plan will incorporate invitations to those communities to comment and participate in the planning process.

Support for mitigation strategies is important in order to carry out implementation. Although this Hazard Mitigation Plan for the Town of Acworth was unable to interest additional parties, every effort will be made in the future to incorporate representation in future revisions of this plan. In order to ensure in the future that opportunity to participate in the planning process is given to other interested parties, the Town will send invitations to local businesses, educational institutions and non-profit organizations. Revisions of this plan shall incorporate press releases that will notice citizens, businesses and organizations of the progress of the plan while also

soliciting input that could strengthen the value of the plan. This process will enable more successful implementation actions.

Copies of the Acworth Hazard Mitigation Plan will be sent to the following parties for review:

- Jeremy LaPlante, Field Representative, NH BEM
- Board of Selectmen
- Conservation Commission
- Planning Board
- Fire Department
- Highway Department

RESOURCES USED IN THE PREPARATION OF THIS PLAN

NH BEM's State of New Hampshire Natural Hazards Mitigation Plan (9/99)

Guide to Hazard Mitigation Planning for New Hampshire Communities, prepared for NH BEM by the Southwest Regional Planning Commission (October 2002)

FEMA's Community Based Hazard Mitigation Planning: Lowering the Risks and Costs of Disasters (8/98)

Town of Acworth Master Plan, 1979

www.nesec.org: Website for Northeast States Emergency Consortium (NESEC)

www.tornadoproject.com: Website for The Tornado Project

www.fema.gov: FEMA website

www.crrel.usace.army.mil/: Cold Regions Research and Engineering Laboratory website

APPENDICES

Appendix A: Technical Resources

Appendix B: Technical and Financial Assistance

Appendix C: Matrix of Federal All-Hazards Grants

Appendix D: Meeting Documentation

Appendix E: Risk Assessment

Appendix F: Wildland/Urban Interface Map

Appendix G: 100- Year Flood Plain

APPENDIX A: TECHNICAL RESOURCES

1) Agencies

New Hampshire Bureau of Emergency Management	271-2231
Hazard Mitigation Section	271-2231
Federal Emergency Management Agency	(617) 223-4175
NH Regional Planning Commissions:	
Upper Valley Lake Sunapee Regional Planning Commission	448-1680
NH Executive Department:	
Governor's Office of Energy and Community Services	271-2611
New Hampshire Office of State Planning	271-2155
NH Department of Cultural Affairs:	271-2540
Division of Historical Resources	271-3483
NH Department of Environmental Services:	271-3503
Air Resources	271-1370
Waste Management	271-2900
Water Resources	271-3406
Water Supply and Pollution Control	271-3504
Rivers Management and Protection Program	271-1152
NH Office of State Planning and Energy Programs	271-2155
NH Municipal Association	224-7447
NH Fish and Game Department	271-3421
NH Department of Resources and Economic Development:	271-2411
Natural Heritage Inventory	271-3623
Division of Forests and Lands	271-2214
Division of Parks and Recreation	271-3255
NH Department of Transportation	271-3734
Northeast States Emergency Consortium, Inc. (NESEC)	(781) 224-9876

US Department of Commerce:
 National Oceanic and Atmospheric Administration:
 National Weather Service; Gray, Maine 207-688-3216

US Department of the Interior:
 US Fish and Wildlife Service 225-1411
 US Geological Survey 225-4681
 US Army Corps of Engineers (978) 318-8087

US Department of Agriculture:
 Natural Resource Conservation Service 868-7581

2) Mitigation Funding Resources

404 Hazard Mitigation Grant Program (HMGP)	NH Office of Emergency Management
406 Public Assistance and Hazard Mitigation	NH Office of Emergency Management
Community Development Block Grant (CDBG)	NH OEM, NH OSP, also refer to RPC
Dam Safety Program	NH Department of Environmental Services
Disaster Preparedness Improvement Grant (DPIG)	NH Office of Emergency Management
Emergency Generators Program by NESEC‡	NH Office of Emergency Management
Emergency Watershed Protection (EWP) Program Natural Resources Conservation Service	USDA,
Flood Mitigation Assistance Program (FMAP)	NH Office of Emergency Management
Flood Plain Management Services (FPMS)	US Army Corps of Engineers
Mitigation Assistance Planning (MAP)	NH Office of Emergency Management
Mutual Aid for Public Works	NH Municipal Association
National Flood Insurance Program (NFIP) †	NH Office of State Planning
Power of Prevention Grant by NESEC‡	NH Office of Emergency Management
Project Impact	NH Office of Emergency Management
Roadway Repair & Maintenance Program(s)	NH Department of Transportation

Section 14 Emergency Stream Bank Erosion & Shoreline Protection
US Army Corps of Engineers

Section 103 Beach Erosion..... US Army Corps of Engineers

Section 205 Flood Damage Reduction
US Army Corps of Engineers

Section 208 Snagging and Clearing US Army Corps of Engineers

Shoreline Protection Program
NH Department of Environmental Services

Various Forest and Lands Program(s) NH Department of Resources and Economic Development

Wetlands Programs
NH Department of Environmental Services

‡NESEC – Northeast States Emergency Consortium, Inc. is a 501(c)(3), not-for-profit natural disaster, multi-hazard mitigation and emergency management organization located in Wakefield, Massachusetts. Please, contact NH BEM for more information.

† Note regarding National Flood Insurance Program (NFIP) and Community Rating System (CRS):
The National Flood Insurance Program has developed suggested floodplain management activities for those communities who wish to more thoroughly manage or reduce the impact of flooding in their jurisdiction. Through use of a rating system (CRS rating), a community’s floodplain management efforts can be evaluated for effectiveness. The rating, which indicates an above average floodplain management effort, is then factored into the premium cost for flood insurance policies sold in the community. The higher the rating achieved in that community, the greater the reduction in flood insurance premium costs for local property owners. The NH Office of State Planning can provide additional information regarding participation in the NFIP-CRS Program.

3) Websites

Sponsor	Internet Address	Summary of Contents
Natural Hazards Research Center, U. of Colorado	http://www.colorado.edu/litbase/hazards/	Searchable database of references and links to many disaster-related websites.
Atlantic Hurricane Tracking Data by Year	http://wpx.eas.purdue.edu/hurricane	Hurricane track maps for each year, 1886 – 1996
National Emergency Management Association	http://nemaweb.org	Association of state emergency management directors; list of mitigation projects.
NASA – Goddard Space Flight Center “Disaster Finder:	http://www.gsfc.nasa.gov/ndrd/disaster/	Searchable database of sites that encompass a wide range of natural disasters.
NASA Natural Disaster Reference Database	http://ltpwww.gsfc.nasa.gov/ndrd/main/html	Searchable database of worldwide natural disasters.
U.S. State & Local Gateway	http://www.statelocal.gov/	General information through the federal-state partnership.
National Weather Service	http://nws.noaa.gov/	Central page for National Weather Warnings, updated every 60 seconds.
USGS Real Time Hydrologic Data	http://h20.usgs.gov/public/realtime.html	Provisional hydrological data
Dartmouth Flood Observatory	http://www.dartmouth.edu/artsci/geog/floods/	Observations of flooding situations.
FEMA, National Flood Insurance Program, Community Status Book	http://www.fema.gov/fema/csb.htm	Searchable site for access of Community Status Books
Florida State University Atlantic Hurricane Site	http://www.met.fsu.edu/explores/tropical.html	Tracking and NWS warnings for Atlantic Hurricanes and other links
National Lightning Safety Institute	http://lightningsafety.com/	Information and listing of appropriate publications regarding lightning safety.
NASA Optical Transient Detector	http://www.ghcc.msfc.nasa.gov/otd.html	Space-based sensor of lightning strikes
LLNL Geologic & Atmospheric Hazards	http://www.wep.es.llnl.gov/wwwep/ghp.html	General hazard information developed for the Dept. of Energy.
The Tornado Project Online	http://www.tornadoroject.com/	Information on tornadoes, including details of recent impacts.
National Severe Storms Laboratory	http://www.nssl.uoknor.edu/	Information about and tracking of severe storms.
Independent Insurance Agents of America IIAA Natural Disaster Risk Map	http://www.iaa.iix.com/ndcmap.htm	A multi-disaster risk map.
Earth Satellite Corporation	http://www.earthsat.com/	Flood risk maps searchable by state.
USDA Forest Service Web	http://www.fs.fed.us/land	Information on forest fires and land management.
Northeast Emergency Consortium	http://www.serve.com/NESEC	Information on disasters and preparedness.

**APPENDIX B:
TECHNICAL AND FINANCIAL ASSISTANCE FOR HAZARD MITIGATION**

Note – Communities must have an approved Hazard Mitigation Plan to be eligible for HMGP and PDM grants.

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.

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

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.

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 database 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.

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

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.

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 Pre-disaster 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.

Here are the high points of the FY 2002 PDM program:

- The program will be administered by each State, with a base allocation of \$250,000, and additional funds provided via a population formula.
- 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 emphasis for FY2002 will be on mitigation planning, to help localities meet the new planning requirements of the Disaster Mitigation Act of 2000.

Each state establishes grant selection criteria and priorities based on:

- The State Hazard Mitigation Plan
- The degree of commitment of the community to hazard mitigation
- The cost effectiveness of the proposed project
- The type and degree of hazard being addressed
- For project grants, "good standing" of the community in the National Flood Insurance Program

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.

Disaster Preparedness Improvement Grant (DPIG)

FEMA and the State co-sponsor the DPIG Program, which supports the development and updating of disaster assistance plans and capabilities and promotes educational opportunities with respect to preparedness and mitigation. Authority: See Subchapter E. of 44 CFR.

Past DPIG initiatives include:

- Support of the position of Protection Planner/Hazard Mitigation Officer
- Installation of river gauges
- Support of the NH State Environthon School Program
- Coordinate the Voluntary Organizations Active in Disasters (VOAD) Program (See Resource Profile Annex) NHOEM via the DPIG has sponsored annual meetings with training workshops
- Sponsoring Dam Safety Training initiatives and workshops
- Production and distribution of a handbook for small embankment dam owners
- Inventory of the State's Dams
- Review of Dam Plans
- Sponsored extensive statewide, two day workshops for Granite State Incident Stress Debriefing Teams and funded educational materials
- Community visits and production of informational materials
- Assist with Plan Annex update for local Haz Mat planning.
- Funding workshops for NH Road Agents in cooperation with the T2 program of the Technology Transfer Center at the University of New Hampshire

Present DPIG funded Hazard Mitigation initiatives

- Support the position of Protection Planner/Hazard Mitigation Officer
- Continued support of the Environthon Program
- Development of this Plan
- Providing Technical Assistance to State and local officials
- Development of Emergency Operations Plans (EOPs) for Significant and High Hazard dams

Disaster Preparedness Improvement Grant

- Evaluate natural hazards on a continuing basis and develop programs and actions required to mitigate such hazards
- Provide Technical Assistance
- Grants to States of up to \$50,000 annually
- (50% State match - cash or in kind)

Eligible Projects Include:

- Evaluations of Natural Hazards
- Hazard Mitigation activities (i.e. Plan/policy/program/strategy development
- Plan updates
- Handbooks: publication & distribution
- Creating exercise materials
- Developing Standard Operating Procedures
- Training state employees
- Report of formal analysis of State enabling legislation and authorities
- Update inventory of State/local Critical Facilities
- Develop a tracking system of critical actions to be taken post-event
- Creating Damage Assessment Plans and defining procedures
- Developing Plans for procedures when no Federal Aid is forthcoming
- Creating Plans for Search and Rescue Operations
- Developing Disaster accounting procedures

This list is not exhaustive

Future DPIG funded Hazard Mitigation initiatives

- Continued Support the position of Protection Planner/Hazard Mitigation Officer
 - Continued support of the Environthon Program
 - Update and maintenance of this Plan
 - Provide Technical Assistance to State and local officials
 - Support of other planning, technical assistance and training as indicated
 - Digitization of EOPs for the State's "Significant" and "High Hazard" dams to provide rapid access to information in Emergency situations and to facilitate Plan maintenance.
- community development block grant Program

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 NHBEM and NHOEP administers the grant.

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.

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.

Mitigation Programs of Other NH State Agencies

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

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

APPENDIX C:
MATRIX OF FEDERAL ALL-HAZARDS GRANTS

This matrix provides information about key all-hazards grant programs from the Departments of Homeland Security, Justice, Transportation, Health and Human Services, and Education under which state, local, and tribal governments, first responders, and the public are eligible to receive preparedness, response, recovery, mitigation, and prevention assistance. It lists the purpose of the program, amount appropriated for this program in FY 2002 and 2003, and the website where additional information can be found.

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Agency	Office/ Directorate	Program	Amount (FY 02)	Amount (FY 03)	Purpose	Funding Beneficiaries
Preparedness					Programs to prepare the Nation to address the consequences of natural and human-made disasters and emergencies.	
Department of Homeland Security	Border and Transportation Security Directorate	State Homeland Security Grant Program www.ojp.usdoj.gov	See DOJ State Domestic Preparedness Grant Program	\$566.3 million \$39.7 M Planning \$29.8 M Training \$99.3 M Exercises \$397.4 M Equipment	To provide for the purchase of specialized equipment to enhance the capability of state and local agencies to prevent and respond to incidents of terrorism involving the use of chemical, biological, radiological, nuclear or explosive (CBRNE) weapons; for the protection of critical infrastructure and prevention of terrorist incidents; for costs related to the design, development, conduct and evaluation of CBRNE exercises; for costs related to the design, development and conduct of a state CBRNE Training Program; and for costs associated with updating and implementing each state's Homeland Security Strategy.	State and local governments; first responders
	Emergency Preparedness and Response Directorate	Emergency Management Performance Grants www.fema.gov	\$134 million	\$165 million	To provide basic assistance to sustain the nation's emergency management system, build state and local emergency management capability, and serve as the foundation for first responder activities.	States with pass through to local emergency management organizations

Agency	Office/ Directorate	Program	Amount (FY 02)	Amount (FY 03)	Purpose	Funding Beneficiaries
	Emergency Preparedness and Response Directorate	Assistance to Firefighters Grant Program www.usfa.fema.gov/grants	\$360 million	\$750 million	To provide direct assistance to local fire departments in order to support basic levels of capability to protect the health and safety of the public and firefighting personnel against fire and fire-related hazards, and to provide assistance for fire prevention programs	Local Fire Departments
	Emergency Preparedness and Response Directorate	State and Local Emergency Operations Planning Grants www.fema.gov	\$100 million	\$0	To provide funding assistance to States and local governments to update their all-hazards Emergency Operations Plans, with an emphasis making sure WMD hazards are covered in the plans.	States with a pass through to local governments
	Emergency Preparedness and Response Directorate	State and Local Emergency Operation Centers (EOCs) www.fema.gov	\$56 million	\$25 million	To address the most immediate EOC needs nationwide to build state and local capabilities to respond to all-hazards, including acts of terrorism.	States; local governments may be sub-grantees of the State
	Emergency Preparedness and Response Directorate	Citizen Corps www.citizen corps.gov	\$4 million	\$0	To support the formation of state and local Citizen Corps Councils to help drive local citizen participation by coordinating Citizen Corps programs, developing community action plans, assessing possible threats and identifying local resources to make communities safer, stronger, and better prepared to respond to the threats of terrorism, crime, public health issues, and disasters of all kinds.	States with a pass through to local governments
	Emergency Preparedness and Response Directorate	Community Emergency Response Teams www.fema.gov	\$17 million	\$18.8 million	To train people in neighborhoods, the workplace, and schools in basic disaster response skills, such as fire suppression, urban search and rescue, and medical operations, and helps them take a more active role in emergency preparedness.	States with pass through to local jurisdictions
	Emergency Preparedness and Response Directorate	National Fire Academy Training Grants www.fema.gov	\$1.2 million	\$1.2 million	To provide financial assistance to State Fire Training Systems for the delivery of a variety of National Fire Academy courses/programs.	State fire training organizations

Agency	Office/ Directorate	Program	Amount (FY 02)	Amount (FY 03)	Purpose	Funding Beneficiaries
	Emergency Preparedness and Response Directorate	Emergency Management Institute Training Assistance www.fema.gov	\$1.4 million	\$1.4	To defray travel and per diem expenses of State, local and tribal emergency management personnel who attend training courses conducted by the Emergency Management Institute, at the Emmitsburg, Maryland facility; Bluemont, Virginia facility; and selected off-site locations. Its purpose is to improve emergency management practices among State, local and tribal government managers, in response to emergencies and disasters. Programs embody the Comprehensive Emergency Management System by unifying the elements of management common to all emergencies: planning, preparedness, mitigation, response, and recovery.	State, local, and tribal emergency managers
	Emergency Preparedness and Response Directorate	Hazardous Materials Assistance Program (CERCLA Implementation)	\$330,000	200,000	Provide technical and financial assistance through the States to support State, local and tribal governments in oil and hazardous materials emergency planning and exercising. To support the Comprehensive Hazardous Materials (HAZMAT) Emergency Response – Capability Assessment Program (CHER-CAP) activities.	State, local, and tribal governments, state emergency response committees, local emergency planning commissions
	Emergency Preparedness and Response Directorate	Interoperable Communications Equipment Grant	\$0	\$25 million	To facilitate communications interoperability among public safety emergency responders at the state and local level. (This funding is being coordinated with funding provides through COPS.)	N/A

Agency	Office/ Directorate	Program	Amount (FY 02)	Amount (FY 03)	Purpose	Funding Beneficiaries
	Emergency Preparedness and Response Directorate	SARA Title III Training Program www.fema.gov	\$193,000	\$187,000	To make funding available to provide training in support of Tribal governments emergency planning, preparedness, mitigation, response, and recovery capabilities. These programs must provide special emphasis on emergencies associated with hazardous chemicals.	Indian tribal governments
	Emergency Preparedness and Response Directorate	Chemical Stockpile Emergency Preparedness Program www.fema.gov	\$64.8 million	\$72.1 million	A cooperative agreement to enhance emergency preparedness capabilities of the States and local communities at each of the eight chemical agent stockpile storage facilities. The purpose of the program is to assist States and local communities in efforts to improve their capacity to plan for and respond to accidents associated with the storage of chemical warfare materials.	State and local governments and the general public in the vicinity of the eight chemical agent stockpile storage facilities.
Department of Justice	Emergency Preparedness and Response Directorate	Metropolitan Medical Response System www.mmrs.hhs.gov	See HHS MMRS Grant	\$50 million	To provide contractual funding to the 122 largest metropolitan jurisdictions to sustain and enhance the integrated medical response plans to a WMD terrorist attack.	Local governments
	Office of Domestic Preparedness	State Domestic Preparedness Equipment Support Program www.usdoj.gov	\$315.7 million \$301.7 M Equipment \$14 M Exercises	See State Homeland Security Grant Program	Funding will be provided to enhance first responder capabilities, and to provide for equipment purchases and exercise planning activities for response to Weapons of Mass Destruction (WMD) domestic terrorist incidents.	State and local governments

Agency	Office/ Directorate	Program	Amount (FY 02)	Amount (FY 03)	Purpose	Funding Beneficiaries
	National Institutes of Justice	Domestic Anti-Terrorism Technology Development Program www.usdoj.gov/nij	\$47 million	N/A	To support the development of counter terrorism technologies, assist in the development of standards for those technologies, and work with state and local jurisdictions to identify particular areas of vulnerability to terrorist acts and be better prepared to respond if such acts occur.	States and local governments, nonprofit and for profit organizations, universities
	Office of Community Oriented Police Services (COPS)	COPS Interoperable Communications Technology Program www.cops.usdoj.gov	N/A	\$19.9 million	To facilitate communications interoperability public safety responders at the state and local level.	Tribal, State, and local law enforcement agencies
Department of Health and Human Services		Public Health and Social Services Emergency Fund www.hhs.gov	\$242.9 million	\$2.3 billion \$514 M Hospital Preparedness \$940 M Public Health Preparedness	To continue to prepare our nation's public health system and hospitals for possible mass casualty events, and to accelerate research into new treatments and diagnostic tools to cope with possible bioterrorism incidents.	Individuals, families, Federal, State, and local government agencies and emergency health care providers
	Health Resources and Services Administration	State Rural Hospital Flexibility Program www.ruralhealth.hrsa.gov	\$25 million	\$25 million	To help States work with rural communities and hospitals to develop and implement a rural health plan, designate critical access hospitals (CAHs), develop integrated networks of care, improve emergency medical services and improve quality, service and organizational performance.	States with at least one hospital in a non- metropolitan region

Agency	Office/ Directorate	Program	Amount (FY 02)	Amount (FY 03)	Purpose	Funding Beneficiaries
	Health Resources and Services Administration	EMS for Children www.hrsa.gov	\$18.9 million	\$19.5 million	To support demonstration projects for the expansion and improvement of emergency medical services for children who need treatment for trauma or critical care. It is expected that maximum distribution of projects among the States will be made and that priority will be given to projects targeted toward populations with special needs, including Native Americans, minorities, and the disabled.	State governments and schools of medicine
	National Institute of Health	Superfund Hazardous Substances Basic Research and Education www.nih.gov	\$25 million	\$48.9 million	To establish and support an innovative program of basic research and training consisting of multi-project, interdisciplinary efforts that may include each of the following: (1) Methods and technologies to detect hazardous substances in the environment; (2) advance techniques for the detection, assessment, and evaluation of the effects of hazardous substances on humans; (3) methods to assess the risks to human health presented by hazardous substances; and (4) and basic biological, chemical, and physical methods to reduce the amount and toxicity of hazardous substances.	Any public or private entity involved in the detection, assessment, evaluation, and treatment of hazardous substances; and State and local governments
		Metropolitan Medical Response System www.mmrs.hhs.gov	\$25 million	See EP&R MMRS Grant	To provide contractual funding to the 122 largest metropolitan jurisdictions to sustain and enhance the integrated medical response plans to a WMD terrorist attack.	Local governments
	Centers for Disease Control	Immunization Research, Demonstration, Public Information and Education www.cdc.gov	\$9 million	\$9 million	To assist States, political subdivisions of States, and other public and private nonprofit entities to conduct research, demonstrations, projects, and provide public information on vaccine-preventable diseases and conditions.	States and nonprofits organizations

Agency	Office/ Directorate	Program	Amount (FY 02)	Amount (FY 03)	Purpose	Funding Beneficiaries
	Centers for Disease Control	Surveillance of Hazardous Substance Emergency Events www.atsdr.cdc.gov	\$1.32 million	\$1.84 million	To assist State health departments in developing a State-based surveillance system for monitoring hazardous substance emergency events. This surveillance system will allow the State health department to better understand the public health impact of hazardous substance emergencies by developing, implementing, and evaluating a State-based surveillance system.	State, local, territorial, and tribal public health departments
	Centers for Disease Control	Human Health Studies, Applied Research and Development www.atsdr.cdc.gov	\$1.5 million	\$1.8 million	To solicit scientific proposals designed to answer public health questions arising from situations commonly encountered at hazardous waste sites. The objective of this research program is to fill gaps in knowledge regarding human health effects of hazardous substances identified during the conduct of ATSDR's health assessments, consultations, toxicological profiles, and health studies, including but not limited to those health conditions prioritized by ATSDR.	State health departments
Department of Education		School Emergency Response and Crisis Management Plan Discretionary Grant Program www.ed.gov/emergencyplan/	N/A	\$30 million	To provide school districts with funds to strengthen and improve current school crisis plans in preparation for emergencies including potential terrorist attacks.	School Districts
Department of Transportation	Research and Special Programs Administration	Hazardous Materials Emergency Preparedness Training and Planning Grants www.rspa.dot.gov	\$12.8 million	\$12.8 million	Increase state, local, territorial, and Native American tribal effectiveness to safely and efficiently handle HazMat accidents and incidents; enhance implementation of the Emergency Planning and Community Right-to-Know Act of 1986; and encourage a comprehensive approach to emergency planning and training by incorporating response to transportation standards.	States, local, territorial, tribal governments.

Agency	Office/ Directorate	Program	Amount (FY 02)	Amount (FY 03)	Purpose	Funding Beneficiaries
Response					Programs to coordinate Federal response efforts and to assist states, localities, and tribes in responding to disasters and emergencies.	
Department of Homeland Security	Emergency Preparedness and Response Directorate	Urban Search and Rescue www.fema.gov	\$32.4 million	\$60 million	To expand the capabilities of existing Urban Search and Rescue Task Forces.	28 existing US&R Task Forces
Recovery					Programs to provide assistance to States, localities, tribes, and the public to alleviate suffering and hardship resulting from Presidentially declared disasters and emergencies caused by all types of hazards.	
Department of Homeland Security	Emergency Preparedness and Response Directorate	Individual Assistance	\$256 million (as of 4/03 for disasters and emergencies declared in FY02; additional funding expected as assistance is provided; FY01=\$1.39 billion as of 4/03)	N/A	To provide assistance to individuals and families who have been affected by natural or human-made Presidentially declared disasters. Funding provided from the Disaster Relief Fund.	Individuals and Families

Agency	Office/ Directorate	Program	Amount (FY 02)	Amount (FY 03)	Purpose	Funding Beneficiaries
	Emergency Preparedness and Response Directorate	Public Assistance	\$519 million (as of 4/03 for disasters and emergencies declared in FY02; additional funding expected as assistance is provided; FY01=\$3.6 billion as of 4/03)	N/A	To provide assistance to states, localities, tribes, and certain non-profit organizations affected by natural or human-made Presidentially declared disasters. Funding provided from the Disaster Relief Fund	State, local and tribal governments; private non-profit organizations
	Emergency Preparedness and Response Directorate	Fire Management Assistance Grant Program	\$56 million (as of 4/03; for fires declared in FY02; additional funding is expected as assistance is provided)	N/A	Provide funds to States, local, and tribal governments for the mitigation, management, and control of wildland fires posing serious threats to improved property.	State, local and tribal governments
Small Business Administration	Office of Disaster Assistance	Disaster Loan Program www.sba.gov/disaster/			To offer financial assistance to those who are trying to rebuild their homes and businesses in the aftermath of a disaster.	Individuals, families, private sector
Department of Justice	Office for Victims of Crime	Antiterrorism and Emergency Assistance Program www.usdoj.gov	Based on Need of Applicant Community	Based on Need of Applicant Community	To provide assistance programs for victims of mass violence and terrorism occurring within and outside the United States and a compensation program for victims of international terrorism.	Public and private nonprofit victim assistance agencies
Mitigation					Programs to reduce or eliminate future risk to lives and property from disasters.	

Agency	Office/ Directorate	Program	Amount (FY 02)	Amount (FY 03)	Purpose	Funding Beneficiaries
Department of Homeland Security	Emergency Preparedness and Response Directorate	Hazard Mitigation Grant Program	\$16.5 million (as of 4/03 for disasters declared in FY02; additional funding expected as assistance is provided; FY01=\$319 million as of 4/03)	N/A	To provide assistance to states, localities, and tribes to fund projects that will reduce the loss of lives and property in future disasters. Funding is provides from the Disaster Relief Fund and administered by the states according to their own priorities.	State, local, and tribal governments
	Emergency Preparedness and Response Directorate	Pre-Disaster Mitigation Program	\$25 million	\$150 million	This program provides funding for mitigation activities before disaster strikes. In recent years it has provided assistance for mitigation planning. In FY03, Congress passes a competitive pre-disaster mitigation grant program that will include project funding.	State, local, and tribal governments
	Emergency Preparedness and Response Directorate	Map Modernization	\$11 million	\$33 million	This funding provides assistance to develop digital flood maps, support flood-mapping activities and expand the Cooperating Technical Partners Program to communities and regional entities.	State, local and tribal governments
Prevention					Programs to interdict potentially hazardous events from occurring	
Department of Health and Human Services	Centers for Disease Control	Immunization Grants www.cdc.gov	\$350 million (317 Grants) \$745 million (VFC Grants)	\$403 million (317 Grants) \$772.3 million (VFC Grants)	To assist States and communities in establishing and maintaining preventive health service programs to immunize individuals against vaccine-preventable diseases.	States

APPENDIX D:

MEETING DOCUMENTATION

**Hazard Mitigation Committee
Town of Acworth**

AGENDAS

Thursday, August 10, 2006; 1:00 – 3:00 p.m.; Acworth Town Hall

- 1:00 Brainstorm past and/or potential hazards
- 2:00 Map hazard areas

Thursday, September 14, 2006; 1:00 – 3:00 p.m.; Acworth Town Hall

- 1:00 Identify critical facilities
- 2:00 Map critical facilities
- 2:30 Determine potential loss estimates based on hazard areas

Thursday, October 12, 2006; 1:00 – 3:00 p.m.; Acworth Town Hall

- 1:00 Identify current mitigation policies/programs in place
- 1:30 Identify gaps in the current protection
- 2:00 Brainstorm potential mitigation strategies

Thursday, November 9, 2006; 1:00 – 3:00 p.m.; Acworth Town Hall

- 12:30 Continue to brainstorm potential mitigation strategies
- 1:00 Establish prioritized implementation schedule
- 1:30 Evaluate funding opportunities
- 2:00 Discuss public process and adoption

Thursday, December 7, 2006; 1:00 – 3:00 p.m.; Acworth Town Hall

- 1:00 Establish prioritized implementation schedule
- 2:00 Evaluate funding opportunities (dependent upon NHBEM representation)
- 2:30 Discuss public process and adoption

Thursday, March 22, 2007; 1:00 p.m.; Acworth Town Hall

- 1:00 Hazard Mitigation Plan Review

APPENDIX E:

RISK ASSESSMENT

Probability- The Committee members completed a risk assessment of all types of hazards identified in Chapter III. The process involved assigned Unlikely (1), Possible (2), Likely (3) to each hazard type for its potential of occurring based on the committee’s knowledge of past historic information. The ratings were based on the probability that the occurrence may happen within the next ten years (3), between 10-25 years (2), or after 25-years (1). (An n/a score was given if there was insufficient evidence to make a decision). To ensure some balance with a more scientific measurement, the plan also identifies the probability of occurrence from the State Hazard Plan as shown below.

State Hazard Plan – “By weighting both the building value and population, each county is assigned a Vulnerability Level, as seen in Table 4.2 on the next page. In addition you will find Table 4.1 which identifies the hazard risk (probability of occurring) by county. By evaluating the two tables you can compare each county’s vulnerability with it’s’ risk to the 12 different hazards that occur in New Hampshire.

In summary, the counties of Hillsborough, Merrimack and Rockingham have a high vulnerability due to large population concentration and high value of state owned buildings as well as high risk of flooding, wildfire, tornadoes/downburst, and severe winter weather.”

Hazard Vulnerability by Hazard for Sullivan County											
Flood	Dam Failure	Drought	Wild-fire	Earth-quake	Land-slide	Radon	Tornado	Hurricane	Lightning	Severe Winter	Avalanche
H	L	M	H	M+	M	M	H	M	M	H	L

Hazard Risk Vulnerability by County										
Hillsborough	Merrimack	Rockingham	Grafton	Stratford	Coos	Belknap	Cheshire	Sullivan	Carroll	
H	H	H	M	M	L	L	L	L	L	

Vulnerability- The Committee members completed a risk assessment of all type of hazards identified in Chapter III. The process also involved assigning vulnerability based on the Committee’s opinion of the extent of damage the hazard may cause based on past occurrences and current assessments of the Town. Great amount of damage and cost (3), moderate amount of damage and cost (2), and limited damage or costs (1).

The probabilities and vulnerabilities were then averaged with those that were determined by the State Hazard Plan.

The averages of each vulnerability and probability were multiplied to arrive at the overall risk the hazard has on the community.

Risk - An adjective description (High, Medium, or Low) of the overall threat posed by a hazard over the next 25 years.

HIGH: (1) There is strong potential for a disaster of major proportions during the next 25 years; or (2) history suggests the occurrence of multiple disasters of moderate proportions during the next 25 years. The threat is significant enough to warrant major program effort to prepare for, respond to, recover from, and mitigate against this hazard. This hazard should be a major focus of the town's emergency management training and exercise program.

MEDIUM: There is moderate potential for a disaster of less than major proportions during the next 25 years. The threat is great enough to warrant modest effort to prepare for, respond to, recover from, and mitigate against this hazard. This hazard should be included in the town's emergency management training and exercise program.

LOW: There is little potential for a disaster during the next 25 years. The threat is such as to warrant no special effort to prepare for, respond to, recover from, or mitigate against this hazard. This hazard need not be specifically addressed in the town's emergency management training and exercise program except as generally dealt with during hazard awareness training.

APPENDIX F:
WILDLAND/URBAN INTERFACE MAP

APPENDIX G:
100-YEAR FLOODPLAIN

