2005 Flood

Town of Acworth

Hazard Mitigation Plan

Update 2013

Town of Acworth

Hazard Mitigation Committee

Upper Valley Lake Sunapee

Regional Planning Commission

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I. INTRODUCTION

A. BACKGROUND

The New Hampshire Homeland Security and Emergency Management (NH HSEM) has a goal for all communities within the State of New Hampshire to establish local hazard mitigation plans as a means to reduce future losses from natural or man-made hazard events before they occur. The NH HSEM has provided funding to the Town of Acworth, to update their local Hazard Mitigation Plan. UVLSRPC began updating November 2004 Hazard Mitigation Plan for the Town of Acworth in April 2008. The *Acworth Hazard Mitigation Plan* serves 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. This *Plan* does *not* constitute a section of the Master Plan.

The Acworth Hazard Mitigation Committee updated the *Acworth Hazard Mitigation Plan* with the assistance and professional services of the Upper Valley Lake Sunapee Regional Planning Commission (UVLSRPC). After a public meeting held in the Acworth Town Offices, the Acworth Town Selectboard adopted the updated plan as shown in Appendix F.

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. HISTORY

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

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

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

Why develop a Mitigation Plan?
Planning ahead to lessen or prevent a disaster will reduce the human, economic, and environmental costs. The State of NH is vulnerable to many types of hazards, including floods, hurricanes, winter storms, wildfires, wind events, and earthquakes. All of these types of events can have significant economic, environmental, and social impacts. The full cost of the damage resulting from the impact of natural hazards – personal suffering, loss of lives, disruption of the economy, and loss of tax base – is difficult to quantify and measure.

D. SCOPE OF THE PLAN

The scope of the *Acworth Hazard Mitigation Plan* includes the identification of natural hazards affecting the Town, as 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:

- Dam Failure
- Flooding
- Hurricane
- Tornado & Downburst
- Thunderstorm/Lightning/Hail
- Severe Winter Weather
- Earthquake
- Drought
- Extreme Heat
- Erosion
- Landslide
- Wildfire
- Natural Contaminants
- Hazardous Materials Spill
- Terrorism

E. METHODOLOGY

Using the *Guide to Hazard Mitigation Planning for New Hampshire Communities* (2002), as developed by the Southwest Regional Planning Commission (SWRPC), the Acworth Hazard Mitigation Committee, in conjunction with the UVLSRPC, developed the content of the *Acworth Hazard Mitigation Plan* by tailoring the nine-step process set forth in the guidebook appropriate for the Town of Acworth. Many FEMA resources and multiple State and Federal websites were also used as well. The Committee held a total of four posted meetings in 2012. All meetings were posted inviting the general public and notices were sent to the Town Offices of neighboring towns to invite town officials.

The regional school principal and a lead teacher from the Acworth school attended one meeting to assist with information about the school's emergency plan. No other members of the public attended the meetings, but the public will continue to be invited to participate in future revisions at by publicly posting meetings. The comments of the members and the attendees were incorporated into the plan.

The Acworth Town Selectboard adopted the Plan after FEMA conditional approval as shown in Appendix F. Prior to the Town of Acworth approving the updated Plan, a public meeting was held to gain additional input from the citizens of Acworth and to raise awareness of the ongoing hazard mitigation planning process.

The following hazard mitigation meetings were vital to the development of this Plan:

August 1, 2012
August 15, 2012
September 5, 2012
September 12, 2012

To complete this updated Plan, the Hazard Mitigation Committee followed the following planning steps to re-evaluate the plan sections of the existing 2008 plan and to update it to reflect current information and issues:

Step 1: Identify and Map the Hazards (August 2012)
Committee members identified areas where damage from natural disasters had previously occurred, areas of potential damage, and human-made facilities and infrastructure that were at risk for property damage and other risk factors. A GIS-generated base map provided by the UVLSRPC was used in the process.

Step 2: Determine Potential Damage (August 2012)
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. A summary listing of "Critical Facilities" is presented in Chapter IV. Costs were determined for losses for each type of hazard.

Step 3: Identify Mitigation Plans/Policies Already in Place (August 2012)
Using information and activities in the handbook, the Committee and UVLSRPC staff identified existing mitigation strategies which are already implemented in the Town related to relevant hazards. A summary chart and the results of this activity are presented in Chapter VI.

Step 4: Identify the Gaps in Protection/Mitigation (August 2012)
Existing strategies were then reviewed for coverage, effectiveness and implementation, as well as need for improvement. Some strategies are contained in the Emergency Operations Plan and were reviewed as part of this step. The result of these activities is presented in Chapter VI.

Step 5: Determine Actions to be Taken (August 2012)
During an open brainstorming session, the Hazard Mitigation Committee developed a list of other possible hazard mitigation actions and strategies for the Town of Acworth. Ideas proposed included policies, planning, and public information. A list of potential mitigation strategies can be found in Chapter VII.

Step 6: Evaluate Feasible Options (September 2012)
The Hazard Mitigation Committee selected mitigation strategies from their list of potential strategies, and evaluated the strategies based on eight criteria derived from the criteria listed in the evaluation chart found on page 27 of the *Guide to Hazard Mitigation Planning for New Hampshire Communities*. The eight criteria used for evaluation of potential mitigation strategies are listed in Chapter VII. Each strategy was rated (high (3), average (2), or low (1)) for its effectiveness in meeting each of the eight criteria (e.g., Does the mitigation strategy reduce disaster damage?). Strategies were ranked by overall score for preliminary prioritization then reviewed again under step eight. The ratings of the potential mitigation strategies can be found in Chapter VII.

Step 7: Coordinate with other Agencies/Entities (Ongoing)
UVLSRPC staff reviewed the Acworth Master Plan. This was done in order to determine if any conflicts existed or if there were any potential areas for cooperation. Town staff that was involved in preparing the Emergency Operations Plan participated in the hazard mitigation meetings, to avoid duplication and to share information.

Step 8: Determine Priorities (September 2012)
The Committee reviewed the preliminary prioritization list in order to make changes and determine a final prioritization for new hazard mitigation actions and existing protection strategy improvements identified in previous steps. UVLSRPC also presented recommendations for the Committee to review and prioritize. These are provided in Chapter VIII.

Step 9: Develop Implementation Strategy (September 2012)
Using the chart provided under step nine of the *Guide to Hazard Mitigation Planning for New Hampshire Communities*, the Committee created an implementation strategy which included person(s) responsible for implementation (who), a schedule for completion (when), and a funding source and/or technical assistance source (how) for each identified hazard mitigation actions. The prioritized implementation schedule can be found in Chapter VIII.

Step 10: Adopt and Monitor the Plan
UVLSRPC staff compiled the results of steps one through nine in a draft document, as well as helpful and informative materials from the *State of New Hampshire Natural Hazard Mitigation Plan* (2010), which served as a resource for the *Acworth Hazard Mitigation Plan*. The process for monitoring and updating the Plan can be found in Chapter IX.

F. HAZARD MITIGATION GOALS

The Acworth Hazard Mitigation Committee reviewed the hazard mitigation goals set forth in the previous Hazard Mitigation Plan and revised them as follows:

1. To identify, introduce and implement cost effective Hazard Mitigation measures so as to accomplish the Town's goals and to raise awareness and acceptance of hazard mitigation opportunities generally.

2. To improve upon the protection of the general population, the citizens, and visitors of the Town of Acworth from natural and human-made hazards.

3. To reduce the potential impact of natural and human-made disasters to:
   - the Town of Acworth's Critical Support Services,
   - Critical Facilities in the Town of Acworth,
   - the Town of Acworth's infrastructure,
   - private property,
   - the Town's economy,
   - the Town's natural environment, and
   - the Town's specific historic treasures and interests.

4. To improve the Town's Disaster Response and Recovery capability as a hazard mitigation strategy to be prepared for emergencies and reduce their impact.

G. ACKNOWLEDGEMENTS

The following people participated in developing the update of this plan as the Hazard Mitigation Committee:

- Kathi Bradt, Administrative Assistant
- Kenneth Grant, Emergency Management Director
- Daniel Giuseppone, Emergency Management Deputy Director/Fire Fighter
- Deborah Hinman, Cold River Local Advisory Committee
- Dave Lacasse, Department of Public Works Director
- John Luther, Citizen and Farmer
- Steve Morris, Fire and Rescue Assistant Chief

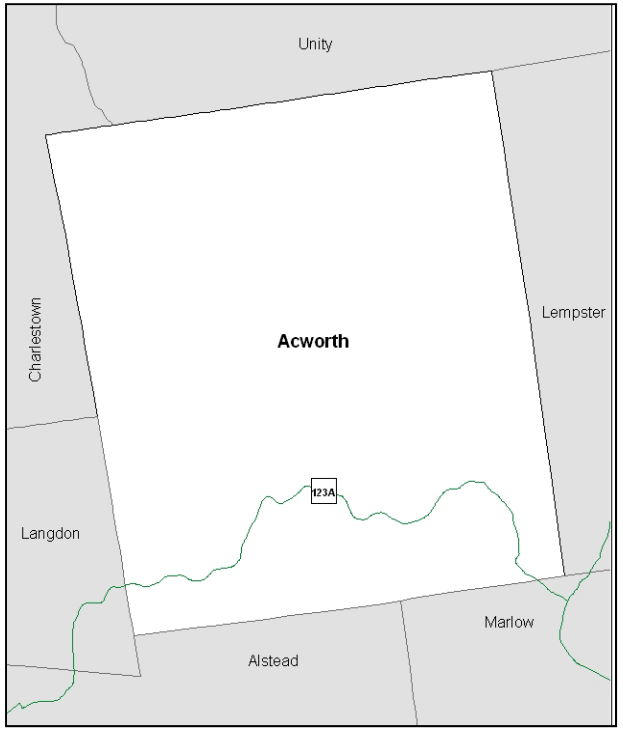
- Danielle Morse, NH Homeland Security and Emergency Management
- Victoria Davis, UVLSRPC

The Hazard Mitigation Committee was composed of local officials, citizens of Acworth and a staff representative of the UVLSPRC for meeting facilitation and plan development. Neighboring communities, agencies, businesses, academia, non-profits and other interested parties were invited to participate through the public posting of meeting times and agendas or through invitation. Historical information, relevant data and potential future mitigation strategies were contributed by all parties involved in the planning process. For a record of all meeting topics see Appendix C: Meeting Documentation. The staff representative of the UVLSRPC gathered all information from local officials, agency representatives and public input and compiled the information to develop the Plan.

II. COMMUNITY PROFILE

A. INTRODUCTION[1]

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. 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.



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

There are two village centers: South Acworth Village and Acworth Center on the hill. Both areas are mostly residential with few businesses including the South Acworth Village Store. There is also a denser residential area around Crescent Lake. For public buildings, there are churches, two post offices, a fire station, a regional primary school, the public library, and town hall.

There are about nine miles of State roads in Acworth. There are about 55 miles of Class V maintained roads and 30 miles of Class VI (unmaintained) roads in Acworth.

There are a total of approximately 24,000 acres within the town: 81.5% is in current use, 14.6% is in residential use, and 0.6% is in commercial use, and 3.3% is tax exempt. Of the land in current use, 89% is forest land—this is about 73% of the total town area.[2]

[1] Town of Acworth Master Plan (2008 Addendum)

[2] NH Department of Revenue Administration: Summary Inventory of Valuation Form MS-1 for 2011.

B. DEVELOPMENT TRENDS

Development in Acworth is affected by distance from job areas, lack of housing and relatively limited land area suitable for home construction. Significant increases could occur in the future if housing shortages develop in the region and job growth continues in the Keene, Claremont, and Lebanon-Hanover areas where new housing opportunities may be limited. However, the number of housing units in Acworth has only slightly increased over the past few years.

The pattern of development is concentrated in the two village areas, along the shore of Crescent Lake, and along Town roads. Increasing residential and commercial demands will need to be balanced with the Town's goal of retaining its historic agricultural land and working forests, as well as its small town character. Future development is expected to be moderate with potential subdivision for seasonal camps in the northwest corner of the Town of Acworth. This is land that was subdivided prior to town zoning. There are a total of about 15 lots that are five to seven acres each. The only access is by way of Hall Pond Road from Charlestown. This road is a private road, and the Town of Acworth requires acknowledgment from owners prior to building that the town will not be responsible for the road. Most of the development in this area is anticipated to be seasonal. There are area-specific hazards occurring in this area.

There is also a 260 acre parcel on the south side of Heino Road that has been on and off the real estate market. This is located on a narrow, gravel road that is pretty much a one-lane road when there is snow. Subdivision of the property would increase the demand of the town to improve the road. There are no area-specific hazards occurring in this area.

Acworth has adopted zoning (including a floodplain management ordinance) and site plan review and subdivision regulations to manage building activity and growth. At present, there are three zoning districts that control the types and density of uses. These fall into Residential (village areas), Rural, Crescent Lake District. There is also a Conservation Zone which is an overlay district including streambanks and shores of natural ponds and lakes to a distance of 100'.

Table II-1: AREA POPULATION TRENDS

Area	1970	1980	1990	2000	2010
Acworth	459	590	776	836	891
Charlestown	3,274	4,417	4,630	4,749	5,114
Unity	709	1,092	1,341	1,530	1,674
Lempster	360	637	947	971	1,154
Langdon	337	437	580	586	688
Alstead	1,185	1,461	1,721	1,964	1,937
Marlow	390	542	650	727	742
Sullivan County	30,949	36,063	38,592	40,458	42,093
New Hampshire	737,578	920,475	1,109,252	1,235,786	1,315,000

Source: US Census

Table II-2: POPULATION GROWTH IN ACWORTH

	1970	1980	1990	2000	2010
Population	459	590	776	836	891
Decade Change in Population	-	28%	32%	8%	7%

Source: 1970 – 2000 US Census

III. HAZARD IDENTIFICATION

The Acworth Hazard Mitigation Committee reviewed the list of hazards provided in the *State of New Hampshire Hazard Mitigation Plan*, and some hazard history for the State of New Hampshire and Sullivan County in particular. A list of past hazard events in Acworth, Sullivan County, and the State of New Hampshire can be found in the following discussion and tables. After reviewing this information and the Emergency Operations Plan, the Committee conducted a Risk Assessment. The resulting risk designations are provided in the heading of each hazard table below as well as a more detailed discussion further into this chapter.

A. WHAT ARE THE HAZARDS IN ACWORTH?

Acworth is prone to a variety of natural and human-made hazards. The hazards that Acworth is most vulnerable to were determined through gathering historical knowledge of long-time residents and town officials; research into the CRREL Ice Jam Database, FEMA and NOAA documented disasters, and local land use restrictions; and from the input of representatives from state agencies (NH HSEM). The hazards affecting the Town of Acworth are dam failure, flooding, hurricane, tornado & downburst, thunderstorm (including lightning and hail), severe winter weather, earthquake, drought, extreme heat, erosion, wildfire, natural contaminants, hazardous materials spills, and terrorism. Each of these hazards and the past occurrences of these hazards are described in the following sections. Hazards that were eliminated from assessment are those that have not had a direct impact on the Town of Acworth and are not anticipated to have an impact as determined by the Hazard Mitigation Planning Committee, representatives from state agencies and citizens of the Town of Acworth. Eliminated hazards include Land Subsidence, Expansive Soils, and Snow Avalanches.

B. DESCRIPTIONS OF HAZARDS

An assessment of each hazard relevant to Acworth is provided below. An inventory of previous and potential hazards is provided. Past events are shown in the following tables and the potential for future events is then discussed. The "risk" designation for each hazard was determined after evaluations discussed later in this chapter.

- Dam Failure
- Flooding
- Hurricane
- Tornado & Downburst
- Thunderstorm/Lightning/Hail
- Severe Winter Weather
- Earthquake
- Drought
- Extreme Heat
- Erosion
- Landslide
- Wildfire
- Natural Contaminants
- Hazardous Materials Spill
- Terrorism

Dam Failure

Dam failure 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. Appendix D shows the location of active dams in Acworth.

NH DES assigns a hazard designation to each dam in the state depending upon the potential damage it would cause if the dam failed:

A "high hazard potential" is indicated if the dam is in a location and of a size that failure or mis-operation of the dam would result in the following: major economic loss to structures or property; structural damage to roads; major environmental; or public health losses; and probable loss of human life.

A "significant hazard potential" would mean the dam is in a location and of a size that failure or mis-operation of the dam would result in any of the following: major economic loss to structures or property; structural damage to roads; major environmental or public health losses.

A "low" hazard dam failure could cause some structural damage to buildings and roads.

A "non-menace" dam failure would not cause any significant damage.

"High" and Significant" hazard potential dams, must provide NH DES with maps of the potential inundation area if the dam were to fail. It should be noted that there are some exemptions from this requirement such as lagoons.

Past Dam Failure Events

There have been no dam failures within the Town of Acworth or outside the town that would have affected the town.

Table III-1 - DAMS

Dam #	Class	Dam Name	Water Body	Owner (Now or Formerly)	Status	Type	Impound-ment Area in Acres	Height of Dam (Ft)	Drainage Area in Acres
001.01		Britton Dam	Cold River	Roscoe Britton	RUINS	S/E	0.000	7.00	11.80
001.02		Lombard Mill	Cold River	L. May Wheeler	RUINS		0.000	0.00	0.00
001.03		Hemphill Mill	Cold River	WL Sargent Estate	RUINS	T	0.000	5.00	31.70
001.04	NM	Beryl Mtn Road Pond Dam	Cold River	Town of Acworth	ACTIVE	C	1.000	16.00	40.00
001.05		S Acworth Dam	Cold River	unknown	RUINS		0.000	0.00	0.00
001.06		unnamed	Unnamed Stream	unknown	RUINS		0.000	0.00	0.00
001.07	NM	Crescent Lake Dam	Cold River	Crescent Lake Assoc.	ACTIVE	C	116.000	4.00	6.10
001.08	NM	Farm pond dam	natural swale	Charles H. Westney	ACTIVE	E	0.100	6.00	0.01
001.09	NM	McMahons' Dam	natural swale	Robert McMahon	ACTIVE	E	0.250	8.00	0.01
001.10	NM	Farm pond dam	natural swale	Pam McWethy	ACTIVE	E	0.300	8.00	0.01
001.11	NM	Farm pond dam	natural swale	Wesley Marple, Jr.	ACTIVE	E	0.300	4.00	0.01
001.12	NM	Farm pond dam	natural swale	Julius Christie	ACTIVE	E	0.300	10.00	0.07
001.13		Natural swale dam	natural swale	unknown	RUINS		0.000	0.00	0.00
001.14	NM	Farm pond dam	natural swale	Gordon Gowen	ACTIVE	E	0.500	6.00	0.03
001.15	NM	Wildlife pond dam	natural swale	William Russell	ACTIVE	E	0.330	13.00	0.08
001.16	NM	Recreation pond dam	natural swale	Hidden Springs Comm. Trust	ACTIVE	E	0.320	6.50	0.02
001.17	NM	Bascom Farm Pond Dam	natural swale	Kenneth Bascom	ACTIVE	E	2.400	15.00	0.02
001.18	NM	Wildlife pond dam	TR Cold River	David Lyle	ACTIVE	E	1.200	12.00	0.12
001.19	NM	Wildlife pond dam	natural swale	Mrs. Fred Goodwin	ACTIVE	E	0.700	12.50	0.02
001.20		Wildlife pond dam	natural swale	George Zabriskie	NOT BUILT	E	0.270	7.50	0.01
001.21		Wildlife pond dam	natural swale	Joseph Storms	NOT BUILT	E	1.000	8.00	0.00
001.22	NM	Mitchell Pond Dam	natural swale	Martin Mitchell	ACTIVE	E	0.300	9.00	0.00
001.23	NM	Bascom Pond Dam	natural swale	Kenneth Bascom	ACTIVE	E	2.400	15.00	0.00
001.24	L	Colsmann Dam I	TR Pierce Brook	Paul Colsmann	ACTIVE	E	3.200	17.50	0.19
001.25	NM	Colsmann Dam II	TR Pierce Brook	Paul Colsmann	ACTIVE	E	0.550	12.00	0.23
001.26		Colsmann Dam III	natural swale	Paul Colsmann	EXEMPT	E	0.250	1.50	0.10
001.27	NM	Elsesser Dam	natural swale	Richard Elsesser	ACTIVE	E	0.400	13.00	0.10
001.28		Lyle Dam	natural swale	John D. Lyle	EXEMPT	E	0.100	2.00	0.00
001.29	NM	Quarrier Dam	Unnamed Stream	Keith F. Quarrier	ACTIVE	E	0.740	6.00	0.00
001.30	NM	Wildlife pond dam	natural swale	James Brown	ACTIVE	E	0.200	7.00	0.00
001.31	NM	Herpel recreation pond dam	Unnamed Stream	John Herpel	ACTIVE	E	0.260	6.00	0.01
001.32	NM	Clark Stock Pond Dam	Unnamed Stream	David W. Clark	ACTIVE	E	0.250	13.00	0.01

Dam #	Class	Dam Name	Water Body	Owner (Now or Formerly)	Status	Type	Impound-ment Area in Acres	Height of Dam (Ft)	Drainage Area in Acres
001.33	NM	Sirkin Fire Pond Dam	runoff	Abraham Sirkin	ACTIVE	E	0.290	10.00	0.01
001.34		Bascom Maple Farm Pond Dam	NA	Bruce Bascom	EXEMPT	E	0.720	35.00	0.00
001.35		Ingoldsby Farm Pond Dam	Unnamed Stream	Robert Ingoldsby	NOT BUILT	E	0.400	32.00	0.10
		Recreation pond	Unnamed Stream	Fritz Wetherbee	Not on state list				

Class of potential hazard: NM – non-menace; L-low; S-significant *Source: NH DES*
Material: T-timber; S-stone; E-earth; C-concrete

Potential Future Dam Failure Damage

Although there are 35 dams in Acworth (6 are ruins and 3 not built at time of inventory), there are no "high" or "significant" hazard dams within town. There is one "low hazard potential" dam: "Colsmann Dam I" on a tributary of Pierce Brook. All active dams are shown on a map in Appendix D.

Outside the Town of Acworth, there are no dams that would affect the Town of Acworth if they failed.

The Committee determined that dam failure is a low risk in Acworth.

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. Floodplains indicate areas potentially affected by flooding. There are several types of 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. These areas were mapped for all towns in New Hampshire by FEMA. Appendix D displays the "Special Flood Hazards Areas."

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. A search on the Cold Regions Research and Environmental Laboratory (CRREL) did not reveal any historical ice jams. However, discussion with the Acworth Committee revealed that there are almost annual ice jam related events in the Town as shown on the map in Appendix D.

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.

Severe Storms Flooding associated with severe storms can inflict heavy damage to property. Heavy rains during severe storms are a common cause of inland flooding.

Beaver Dams and Lodging Flooding associated with beaver dams and lodging can cause road flooding or damage to property.

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. Roads and bridges are also susceptible to erosion.

Past Flooding Events

The Committee determined there are no other flood areas in the town other than the FEMA designated flood zones. Appendix D shows the special flood hazard areas of Special Flood Hazard Areas. The following tables provide a list of floods in the State, County, and Acworth. Other flooding issues are listed in the Erosion section—primarily for roads.

In October of 2005, there was major flooding on the Cold River as a result of a storm producing seven inches of rain in a 30-hour period. Most of the worst flooding damage occurred in neighboring towns of Alstead, Langdon, and Walpole below the confluence of

the Cold River and Warren Brook in Alstead and along the Warren Brook. Upstream of this confluence into Acworth, flooding was at approximately a 100-year recurrence interval.[3]

A major impediment for the Town of Acworth in providing mitigation for flooding is a State red-listed bridge on Route 123A in South Acworth village. Flooding in 2005 seriously damaged the Bowers Brook Bridge. NH Department of Transportation was scheduled to reconstruct the bridge within the last year with funding support from FEMA, but FEMA has only contributed $8,000 for the project, an amount that has precluded NH DOT from moving forward.

The local Transportation Action Committee regards the current state of the Bowers Brook Bridge as a serious safety hazard. The current waterway opening for Bowers Brook is substandard, and this has resulted in systematic flooding damage. While the bridge has been stabilized, the TAC concurred with NH DOT staff that these issues will continue to arrive so long as the bridge is in its current state. The TAC emphasized that NH Route 123A is the only numbered route in the Town of Acworth, and is a key east-west corridor for southern Sullivan County and northern Cheshire County. Essentially, there are no feasible alternate routes to NH 123A. If the bridge were to sustain further damage in upcoming flood seasons and be rendered unusable, it would not only impact the general mobility of residents, but also the ability of emergency services to effectively serve the towns of Acworth, Marlow, Langdon, and Alstead.

Table III-2: FLOODING

FLOODING				
Hazard	**Date**	**Location**	**Description of Areas Impacted**	**Damages**
Flood / Severe Storm	April 16, 1987	Cheshire, Carroll, Grafton, Hillsborough, Merrimack, Rockingham, & Sullivan Counties	FEMA Disaster Declaration # 789- DR (Presidentially Declared Disaster). Flooding of low-lying areas along river caused by snowmelt and intense rain.	$4,888,889 in damage.
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 (Ice Jam)	March 26, 1992	Cold River, Acworth	Ice jam (CRREL) which formed near a bend caused road flooding. Ice was removed by State equipment.	Unknown
Flood	October 29, 1996	Grafton, Hillsborough, Merrimack, Rockingham, Strafford & Sullivan Counties,	FEMA Disaster Declaration # 1144- DR. Flooding caused by heavy rains.	$2,341,273 in damage.

[3] *Flood of October 8 and 9, 2005, on Cold River in Walpole, Langdon, and Alstead and on Warren Brook in Alstead, New Hampshire,* USGS Opern File Report 2006-1221 by Scott A. Olson.

FLOODING				
Hazard	**Date**	**Location**	**Description of Areas Impacted**	**Damages**
		NH		
Flood	October 7-18, 2005	Cheshire, Grafton, Merrimack, Sullivan, and Hillsborough Counties, NH	FEMA Disaster Declaration # 1610. Severe storms and flooding; major devastation in neighboring town of Acworth	$3,000,000 in damages.
Flood	October-November 2005	Grafton, Hillsborough, Merrimack, Rockingham, Strafford & Sullivan counties	FEMA Disaster Declaration # DR-1144- NH	Unknown
Flood	April 16, 2007	All counties, NH	FEMA Disaster Declaration # 1695. Severe storms and flooding; 2,005 home owners and renters applied for assistance in NH. Crane Book in Acworth washed out and isolated some homes and businesses.	$27,000,000 in damages
Flood	July 24, 2008	Central and Southern NH; Counties Declared: Belknap, Carroll, Merrimack, Rockingham, and Strafford	FEMA DR 1782	Severe storms, tornado, and flooding
Flood	August 14, 2008	Central Northern NH; Counties Declared: Belknap, Carroll, Coos, and Grafton	FEMA Disaster Declaration #1787	$3 million in public assistance; primary damage to roads
Flood	March 14-31, 2010	Statewide	FEMA DR-1913; severe storms & flooding; Declared Counties: Hillsborough and Rockingham Counties	75% federal match
Flood	May 26-30, 2011	Coos and Grafton Counties	FEMA-4006-DR Federal assistance for Coos and Grafton Counties and hazard mitigation statewide	$1.8 million in public assistance; primary impact to roads and bridges
Flood	May 29-31, 2012	Cheshire County	FEMA DR-4065; severe storm and flood event	

Acworth became a participating member of the National Flood Insurance Program on April 1, 2001. Updated maps for all municipalities within Sullivan County were finalized in May 2006. There are currently four policies in the town with $680,300 of insurance. However, flood insurance purchase is not a reflection of the number of structures within the flood plain. Three of the four policies are for properties not in the designated flood plain. No loss claims have been paid, so there are no repetitive loss claims in Acworth. (Source: NH OEP office, 07/03/12)

Acworth's 100-Year Special Flood Areas are located within the A Zone, with no base flood elevations determined. See Appendix D for a map showing all Special Flood Hazard Areas.

Potential Future Flooding Events

Future flooding is likely as noted in the above table based upon local knowledge of past flood events. There are currently 40 houses, one mobile home, and one commercial retail properties located within the FEMA determined 100-year flood areas. The total structural value of these properties is $3 million. See Table III-3 below.

There are a total of 14 bridges within the flood plain along the Cold River: five are town bridges and nine are state bridges.

According to the State's Mitigation Plan, Sullivan County has a high hazard risk for flooding. The Committee also determined flooding is a high risk in Acworth.

Table III-3: STRUCTURE VALUES IN 100-YEAR FLOOD AREAS BY TYPE

Flood Zone	Houses		Mobile Homes		Commercial		Institutional		Total	
	#	Value	#	Value	#	Value	#	Value	#	Value
Zone A	39	$2,840,800	1	$30,000	1	$99,500	1	$16,500		$2,986,800

Hurricane

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).

The Saffir-Simpson Hurricane Wind Scale provides categories of sustained winds by miles per hour: 1 – 74-95 mph; 2 – 96-110 mph; 3 – 111-129 mph; 4 – 130 – 156 mph; and 5 – 157 mph or higher. Categories 3 -5 are considered to be major wind events that can cause devastating to catastrophic damage.

Past Hurricane Events

There have been several hurricanes over the years which have impacted New England and New Hampshire. These are listed below. The 1938 hurricane directly impacted Acworth according to the Committee member recollections.

Table III-4: HURRICANES & TROPICAL STORMS

HURRICANES AND TROPICAL STORMS				
Hazard	**Date**	**Location**	**Description of Areas Impacted**	**Damages**
Hurricane	August, 1635	n/a		Unknown
Hurricane	October 18-19, 1778	n/a	Winds 40-75 mph	Unknown
Hurricane	October 9, 1804	n/a		Unknown
Gale	September 23, 1815	n/a	Winds > 50mph	Unknown
Hurricane	September 8, 1869	n/a		Unknown
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.	Unknown
Hurricane (Carol)	August 31, 1954	Southern New England	Category 3, winds 111-130 mph. Extensive tree and crop damage in NH, localized flooding	Unknown
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	Unknown
Hurricane (Donna)	September 12, 1960	Southern and Central NH	Category 3 (Category 1 in NH). Heavy flooding in some parts of the State.	Unknown
Tropical Storm (Daisy)	October 7, 1962	Coastal NH	Heavy swell and flooding along the coast	Unknown

HURRICANES AND TROPICAL STORMS				
Hazard	**Date**	**Location**	**Description of Areas Impacted**	**Damages**
Tropical Storm (Doria)	August 28, 1971	New Hampshire	Center passed over NH resulting in heavy rain and damaging winds	Unknown
Hurricane (Belle)	August 10, 1976	Southern New England	Primarily rain with resulting flooding in New Hampshire. Category 1	Unknown
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	Unknown
Hurricane (Bob)	August 19, 1991	Southern New England; caused flooding in Acworth	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	Unknown
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	Unknown
Tropical Storm (Floyd)	September 16-18, 1999	Southern New England	FEMA DR-1305-NH. Heavy Rains	Unknown
Hurricane (Katrina)	August 29, 2005 & continuing	East Coast of US and more	FEMA-3258-EM. Heavy rains and flooding devastating SE US	Unknown
Tropical Storm (Tammy)	October 5-13, 2005	East Coast of US	Remnants of Tammy contributed to the October 2005 floods which dropped 20 inches of rain in some places in NH.	Unknown
Tropical Storm (Irene)	August 26 – September 6, 2011	East Coast of US	FEMA-4026-DR for Coos, Carroll, Grafton, Strafford, Belknap, Merrimack and Sullivan Counties; EM-3333 Hillsboro, Rockingham, and Cheshire Counties; there was little effect in Acworth	$2 Million primarily for roads and bridges

Potential Future Hurricane Damage

Hurricane events will affect the entire town. It is impossible to predict into the future what damage will occur in the town. According to the State's mitigation plan, Sullivan County has a medium/high risk for hurricanes. The Committee determined the hurricane risk to be high in Acworth.

Tornado & Downburst

"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.

Significantly high winds occur especially during tornadoes, hurricanes, winter storms, and thunderstorms. Falling objects and downed power lines are dangerous risks associated with high winds. In addition, property damage and downed trees are common during severe wind occurrences. 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. Downbursts fall into two categories: 1. Microburst, which covers an area less than 2.5 miles in diameter, and 2. Macroburst, which covers an area at least 2.5 miles in diameter. Most downbursts occur with thunderstorms, but they can be associated with showers too weak to produce thunder.

Past Tornado & Downburst Events

The following table displays tornadoes occurring in Sullivan County between 1950 and 1995 as provided by the "Tornado Project" (www.tornadoproject.com) and the *NH Natural Hazard Mitigation Plan*. The Committee recalled that around 2006-2007 a severe microburst knocked down stands of trees in East Acworth. This microburst affected nearby municipalities, but it mostly missed Acworth.

Table III-5: TORNADOES IN OR NEAR SULLIVAN COUNTY

TORNADOES & DOWNBURSTS – MEDIUM RISK			
	Date	**Fujita Scale**	**Damages**
Tornado	September 9, 1821	Most intense in NH	Killed 6 people; crossed Lake Sunapee
Tornado	July 14, 1963	F1	No deaths or injuries; costs unknown
Tornado	June 27, 1964	F0	No deaths or injuries; costs unknown
Tornado	August 11, 1966	F2	No deaths or injuries; costs unknown

TORNADOES & DOWNBURSTS – MEDIUM RISK			
	Date	**Fujita Scale**	**Damages**
Tornado	August 25, 1969	F1	No deaths or injuries; costs unknown
Tornado	May 31, 1972	F1	No deaths or injuries; costs unknown (Merrimack County)
Tornado	July 21, 1972	F1	No deaths or injuries; costs unknown
Tornado	May 11, 1973	F2	No deaths or injuries; costs unknown
Tornado	June 11, 1973	F0	No deaths or injuries; costs unknown
Tornado	August 15, 1976	F1	No deaths; 5 injuries; costs unknown (Merrimack County)
Tornado	August 13, 1999	F1	No deaths or injuries; costs unknown
Tornado	July 6, 1999	F2	No deaths or injuries; costs unknown (Merrimack County); in New London two roofs blown off structures; power outages,; downed trees, utility pole, and wires
Tornado	Summer 2006	NA	Began in Barnet, VT and moved to Monroe, NH
Tornado	April 15, 2007	NA	Numerous trees were knocked down in Enfield, NH
Tornado	July 24, 2008	(EF 2)	DR 1799: Numerous trees and utility poles down and tearing down houses near Concord; 1 fatality and 2 injuries

Source: www.tornadoproject.com

Potential Future Tornado and Downburst Damage

It is impossible to predict where a tornado or downburst will occur or what damage it will inflict. The Acworth Committee does not recall tornadoes or downbursts in Acworth. The FEMA website places the State of NH in the Zone II Wind Zone which provides that a community shelter should be built to a 160 mph "design wind speed." According to the State's mitigation plan, Sullivan County has a medium risk for tornadoes. The Committee determined there is a high risk for tornadoes and downbursts in Acworth.

Thunderstorms/Lightning/Hail

A thunderstorm is a rain shower during which you hear thunder. Since thunder comes from lightning, all thunderstorms have lightning. A thunderstorm is classified as "severe" when it contains one or more of the following: hail three-quarter inch or greater, winds gusting in excess of 50 knots (57.5 mph), tornado. Hail is a form of precipitation that occurs when updrafts in thunderstorms carry raindrops upward into extremely cold areas of the atmosphere where they freeze into ice. When the hail particle becomes heavy enough to resist the updraft, it falls to the ground. The resulting wind and hail can cause death, injury, and property damage.

An average thunderstorm is 15 miles in diameter and lasts an average of 30 minutes. Winter thunderstorms are rare because the air is more stable, strong updrafts cannot form because the surface temperatures during the winter are colder.

Lightning is a giant spark of electricity that occurs within the atmosphere or between the atmosphere and the ground. As lightning passes through the air, it heats the air to a temperature of about 50,000 degrees Fahrenheit, considerably hotter than the surface of the sun. Fires are a likely result of lightning strikes, and lightning strikes can cause death, injury, and property damage. It is impossible to predict where lightning will strike. There have probably been lightning strikes throughout Acworth, but there is no record of damage.

Past Thunderstorm Events

There have been lightning strikes in Acworth, but none were noteworthy according to the Committee. A thunderstorm with lightning or hail could impact the entire town, although lightning is more likely in isolated areas.

Potential Future Thunderstorm Damage

It is inevitable that thunderstorms will occur in Acworth's future. Lightning, hail, or wind from a thunderstorm could impact anywhere in town. It is not possible to estimate possible damage. According to the State's mitigation plan, Sullivan County has a medium risk of a lightning hazard. The risk for future thunderstorm damage was determined by the Committee to be high risk in Acworth.

Severe Winter Weather

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 diminishes visual range. Such conditions, when extreme enough, are called "white outs."

Ice Storms Freezing rain occurs when snowflakes descend into a warmer layer of air and melt completely. When these liquid water drops fall through another thin layer of freezing air just above the surface, they don't have enough time to refreeze before reaching the ground. Because they are "supercooled," they instantly refreeze upon contact with anything that is at or below O degrees C, creating a glaze of ice on the ground, trees, power lines, or other objects. A significant accumulation of freezing rain lasting several hours or more is called an ice storm. 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" Nor'easters can occur in the eastern United States any time between October and April, when moisture and cold air are plentiful. They are known for dumping heavy amounts of rain and snow, producing hurricane-force winds, and creating high surfs that cause severe beach erosion and coastal flooding. A Nor'easter is named for the winds that blow in from the northeast and drive the storm up the east coast along the Gulf Stream, a band of warm water that lies off the Atlantic coast.

There are two main components to a Nor'easter: Gulf Stream low-pressure system (counter-clockwise winds) generate off the coast of Florida. The air above the Gulf Stream warms and spawns a low-pressure system. This low circulates off the southeastern U.S. coast, gathering warm air and moisture from the Atlantic. Strong northeasterly winds at the leading edge of the storm pull it up the east coast. As the strong northeasterly winds pull the storm up the east coast, it meets with cold Arctic high-pressure system (clockwise winds) blowing down from Canada. When the two systems collide, the moisture and cold air produce a mix of precipitation.

Winter conditions make Nor'easters a normal occurrence, but only a handful actually gather the force and power to cause problems inland. The resulting precipitation depends on how close you are to the converging point of the two storms. 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.

Past Extreme Winter Weather Events

The following table provides a list of past extreme winter weather events in New Hampshire and Acworth.

Table III-6: SEVERE WINTER WEATHER

SEVERE WINTER WEATHER/ICE STORMS				
Hazard	**Date**	**Location**	**Description of Areas Impacted**	**Damages**
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)	Unknown

SEVERE WINTER WEATHER/ICE STORMS				
Hazard	**Date**	**Location**	**Description of Areas Impacted**	**Damages**
Blizzard	February 14-17, 1958	New Hampshire	20-30 inches of snow in parts of New Hampshire	Unknown
Snow Storm	March 18-21, 1958	New Hampshire	Up to 22 inches of snow in south central NH	Unknown
Snow Storm	December 10-13, 1960	New Hampshire	Up to 17 inches of snow in southern NH	Unknown
Snow Storm	January 18-20, 1961	New Hampshire	Up to 25 inches of snow in southern NH	Unknown
Snow Storm	February 2-5, 1961	New Hampshire	Up to 18 inches of snow in southern NH	Unknown
Snow Storm	January 11-16, 1964	New Hampshire	Up to 12 inches of snow in southern NH	Unknown
Blizzard	January 29-31, 1966	New Hampshire	Third and most severe storm of 3 that occurred over a 10-day period. Up to 10 inches of snow across central NH	Unknown
Snow Storm	December 26-28, 1969	New Hampshire	Up to 41 inches of snow in west central NH	Unknown
Snow Storm	February 18-20, 1972	New Hampshire	Up to 19 inches of snow in southern NH	Unknown
Snow Storm	January 19-21, 1978	New Hampshire	Up to 16 inches of snow in southern NH	Unknown
Blizzard	February 5-7, 1978	New Hampshire	New England-wide. Up to 25 inches of snow in central NH	Unknown
Snow Storm	February, 1979	New Hampshire	President's Day storm	Unknown
Ice Storm	January 8-25, 1979	New Hampshire	Major disruptions to power and transportation	Unknown
Snow Storm	April 5-7, 1982	New Hampshire	Up to 18 inches of snow in southern NH	Unknown
Ice Storm	February 14, 1986	New Hampshire	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 New London NH	Unknown
Extreme Cold	November-December, 1988	New Hampshire	Temperature was below 0 degrees F for a month	Unknown

SEVERE WINTER WEATHER/ICE STORMS				
Hazard	**Date**	**Location**	**Description of Areas Impacted**	**Damages**
Ice Storm	March 3-6, 1991	New Hampshire	Numerous outages from ice-laden power lines in southern NH	Unknown
Snow Storm	1996	Regional; Acworth	Two major storms with five feet of snow in a week	Unknown
Snow Storm	1997	New Hampshire	Power outages throughout Acworth due to heavy snowfall	Unknown
Ice Storm	January 15, 1998	New Hampshire; Substantial power outages in Acworth	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	Unknown
Snow Storm	2000	Regional; Acworth	Heavy snow	Unknown
Snow Storm	March 5-7, 2001	New Hampshire	Heavy snow.	Unknown
Snow Storm	December 6-7, 2003	New Hampshire	Heavy snow. Federal Disaster Declaration FEMA-3193-NH	Unknown
Snow Storm	February 10-12, 2005	New Hampshire	Heavy snow. Federal Disaster Declaration FEMA-3208-NH	Unknown
Ice Storm	December 2008	New Hampshire	Debris removal. FEMA DR-1812; power outages in Acworth for up to 10 days; downed trees blocked roads and damaged utility lines	$15 Million
Wind Storm	February 23 – March 3, 2010	New Hampshire	FEMA DR-1892; Federal funding to Grafton, Hillsborough, Merrimack, Rockingham, Strafford, and Sullivan Counties; power loss	$2 Million
Snow Storm	October 29-30, 2011	Statewide	EM-3344; FEMA-4049 Hillsborough & Rockingham Counties; canceled Town of Acworth Halloween party	Unknown
Ice Storm	January 27, 2012	Region	Isolated power outages in Acworth; several limbs down	Unknown

Potential Future Severe Winter Damage:

There is the potential for severe winter damage every year. An event would affect the entire town. The Committee determined the west central area in the Town which is more vulnerable than other parts of town due to a higher elevation. According to the State's mitigation plan, Sullivan County has a high risk for severe winter weather. The Committee determined severe winter weather to be a high risk in Acworth.

Earthquake

The following is a list of earthquakes which have impacted New England, New Hampshire, and potentially Acworth.

Table III-7: EARTHQUAKES

EARTHQUAKES			
Date	**Location**	**Magnitude**	**Damage**
1638	Central NH	6.5-7	
October 29, 1727	Off NH/MA coast	NA	Widespread damage Massachusetts to Maine: cost unknown
December 29, 1727	Off NH/MA coast	NA	Widespread damage Massachusetts to Maine: cost unknown
November 18, 1755	Cape Ann, MA	6.0	Much damage: cost unknown
1800s	Statewide	83 felt earthquake in NH	Unknown
1900s	Statewide	200 felt earthquake in NH	Unknown
March 18, 1926	Manchester, NH	Felt in Hillsborough Co	Unknown
Dec 20, 1940	Ossipee, NH	Both earthquakes 5.5	Damage to homes, water main rupture: cost unknown.
December 24, 1940	Ossipee, NH	NA	Unknown
December 28, 1947	Dover-Foxcroft, ME	4.5	Unknown
June 10, 1951	Kingston, RI	4.6	Unknown
April 26, 1957	Portland, ME	4.7	Unknown
April 10, 1962	Middlebury, VT	4.2	Unknown
June 15, 1973	Near Quebec Border	4.8	Unknown
Summer 1977-1978*	Centered in Franklin	NA	Committee recalls feeling earthquake in Acworth
January 19, 1982	West of Laconia	4.5	Structure damage 15 miles away in Concord: cost unknown
October 20, 1988	Near Berlin, NH	4	Unknown
September 26, 2010	New Hampshire	3.4	Centered in Boscawen, NH
August 23, 2011	Central Virginia, East Coast	5.8	Felt in Acworth

Source: earthquake.usgs.gov/earthquakes/states/new_hampshire/history.php for earthquakes through 1964. NH Multi-Hazard Mitigation Plan, 2010 for 1973-1982; earthquake.usgs.gov/earthquakes (12/13/11)
**Committee recollection*

Potential Future Earthquake Damage:

A United States Geographic Survey mapping tool on the web (geohazards.cr.usgs.gov/ projects) projects a 5 – 6 peak ground acceleration (pga) with 10% probability of exceedance in 50 years for the Town of Acworth. This pga rating is equivalent to a Modified Mercalli Intensity of "V" with moderate perceived shaking and very light potential damage. An earthquake event would impact the entire town. According to the State's mitigation plan, Sullivan County has a medium risk for earthquakes. The Committee determined the risk to be low/medium in Acworth.

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. Costs can include loss of agricultural crops and livestock.

The State of New Hampshire has two monitoring regions. Acworth falls into monitoring region "2."

Past Drought Events

The Committee recalls a couple times when private wells were going dry. Around 2001-2002, Acworth and other nearby towns had drought issues. This occurred again in 2010.

Table III-8: DROUGHT

Date	Location	Description	Damages
1929-1936	Statewide	Regional. Recurrence Interval 10 to > 25 years	Unknown
1939-1944	Statewide	Severe in southeast and moderate elsewhere. Recurrence Interval 10 to > 25 years	Unknown
1947-1950	Statewide	Moderate. Recurrence Interval 10 to > 25 years	Unknown
1960-1969	Statewide	Regional longest recorded continuous spell of less than normal precipitation. Encompassed most of the Northeastern US. Recurrence Interval > 25 years	Unknown
2001-2002	Statewide	Affected residential wells and agricultural water sources; third worst drought on record, exceeded only by the drought of 1956-1966 and 1941-1942; recurrence level not determined yet	Unknown

Date	Location	Description	Damages
2010	Mostly southern counties	Affected dug wells and those in hillsides; affected Acworth and surrounding towns.	Unknown

Source: NH DES through 2002; Concord Monitor August 22, 2010

Potential Future Drought Damage

Drought will affect the entire town. The damage will depend upon the crops being grown at the time of the drought. No cost has been assigned to residential wells going dry though new wells may have to be dug or drilled. According to the State's mitigation plan, Sullivan County has a medium risk for drought. The Committee determined that drought is a low/medium risk in Acworth.

Extreme Heat

Extreme heat is characterized by abnormally high temperatures and/or longer than average time periods of high temperatures. These event conditions may impact the health of both humans and livestock.

Past Extreme Heat Events

In the summer of 2008, Rescue personnel assisted several residents having breathing difficulties due to extreme heat. The following table lists the extreme heat events in the past which included the Northeast and New Hampshire.

Table III-9: EXTREME HEAT

Date	Location	Description	Damage
July, 1911	New England	11-day heat wave in New Hampshire	Unknown
Late June to September, 1936	North America	Temps to mid 90s in the northeast	Unknown
June - August, 1999	Northeast	Mean temperatures well above long-term average	Unknown
Early August, 2001	New Hampshire	Mid 90s and high humidity	Unknown
August 2-4, 2006	New Hampshire	Regional heat wave and severe storms	Unknown
July 2010	Northeast	Regional heat wave	Unknown

Potential Future Extreme Heat Events

Extreme heat would impact the entire town though those with air conditioning in their homes would have less impact. The costs of extreme heat are most likely to be in human life. The elderly are especially susceptible to extreme heat. The State did not develop a county risk factor for extreme heat in its *NH Hazard Mitigation Plan*. The Committee determined extreme heat to be a low/medium risk in Acworth.

Erosion

Soil erosion, although a natural process, can be greatly accelerated by improper construction practices. Because of the climate in New Hampshire and the general nature of our topography, eroded soils can be quickly transported to a wetland, stream, or lake. The New Hampshire Department of Environmental Services (DES) regulates major construction activities to minimize impacts upon these resources. A properly conducted construction project should not cause significant soil erosion.

Soil becomes vulnerable to erosion when construction activity removes or disturbs the vegetative cover. Vegetative cover and its root system play an extremely important role in preventing erosion by: (1) Shielding the soil surface from the impact of falling rain drops; (2) Reducing the velocity of runoff; (3) Maintaining the soil's capacity to absorb water, and (4) Holding soil particles in place.

Because of the vegetation's ability to minimize erosion, limiting its removal can significantly reduce soil erosion. In addition, decreasing the area and duration of exposure of disturbed soils is also effective in limiting soil erosion. The designer must give special consideration to the phasing of a project so that only those areas actively under construction have exposed soils. Other factors influencing soil erosion are: (1) Soil types, (2) Land slope, (3) Amount of water flowing onto the site from up-slope, and (4) Time of year of disturbance.

Past Erosion Events

There are about nine miles of State roads, 55 miles of Class V roads (maintained town roads), and 30 miles of Class VI roads (unmaintained town roads) in Acworth. In 2007, the Planning Board adopted a Capital Improvement Program which provides a format for identifying and prioritizing problem road mitigation. The DPW Director determined that the main problem for the Town is a town bridge at the beginning of the Cold River. The super structure has been scoured and continues to scour. If the bridge goes out it will significantly impact the town by isolating each side of the bridge.

Potential Erosion Events

Due to the topography of the town, there is always potential for erosion. As properties are developed there will be less vegetative buffer to protect the town from erosion during rainstorms. Several roads need improvement as shown above to mitigate erosion from future rainstorms. The Committee determined that erosion is a medium/high risk in Acworth.

Landslide

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 rivers also create potential landslide conditions. Landslides can damage or destroy roads, railroads, electrical and phone lines, and other structures.

Past Landslide Events:

There is one area in town where a landslide has occurred. This was site is located at the intersection of Route 123A and Hill Road. A house is located within a small triangle of land surrounded by roads on two sides and the brook with a very steep bank on the other. In 2005, the land along the brook slid down carrying trees and other debris that had to be cleared out to prevent flooding.

Potential Future Landslide Events:

The best predictor of future landslides is past landslides. If any landslide events were to occur, they would be most likely in areas of very steep slope. There is one additional site the Committee determined to be a potential landslide location as the land is very steep. This is located on the Cold River near the junction of Route 123A and Forest Road. There has never been a landslide at this location, and there are no structures in the vicinity if a landslide occurred. The Committee determined there is a low/medium risk for landslide damage.

Wildfire

Wildfire is defined as any unwanted and unplanned fire burning in the forest, shrub or grass. Wildfires are frequently referred to as forest fires, shrub fires or grass fires, depending on their location. They often occur during drought and when woody debris on the

forest floor is readily available to fuel the fire. The threat of wildfires is greatest where vegetation patterns have been altered by past unsafe land-use practices, fire suppression and fire exclusion. Vegetation buildup can lead to more severe wildfires.

Increased severity over recent years has decreased capability to extinguish wildfires. Wildfires are unpredictable and usually destructive, causing both personal property damage and damage to community infrastructure, cultural and economic resources. Negative short term effects of wildfires include destruction of timber, forage, wildlife habitats, scenic vistas and watersheds. Some long term effects include erosion and lowered water quality.

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.

The threat of wildland fires for people living near wildland areas or using recreational facilities in wilderness areas is real. Dry conditions at various times of the year and in various parts of the United States greatly increase the potential for wildland fires. Advance planning and knowing how to protect buildings in these areas can lessen the devastation of a wildland fire. To reduce the risk to wildfire, it is necessary to consider the fire resistance of structures, the topography of property and the nature of the vegetation in the area.

Past Wildfire Events

There have been no signficant wildfire events in Acworth. A fire in the summer of 2010 was found underground in the town forest. It was determined that lightning had hit a tree and the fire traveled down into the roots of the tree.

Potential Future Wildfire Events

There are many large, contiguous forest tracts in Acworth. Where development interfaces with the forested areas is called the “urban interface.” These are the areas where structures could be impacted by a wildfire; these areas are scattered throughout the town. The most likely areas for wildfire are where ice storm impact downs trees and branches providing provide fuel for a fire. According to the State’s mitigation plan, Sullivan County has substantial debris to fuel a wildfire remaining from the ice storm of 1998 and 2008 and heavy forest cover. The plan gives the county a high risk of wildfire. The Committee did not feel that wildfire is a significant potential hazard in Acworth and determined that the risk of wildfire in Acworth is medium/high.

Natural Water & Air Contaminants

Radium, radon and uranium are grouped together because they are radionuclides, unstable elements that emit ionizing radiation. These three particular substances are a health risk only if taken into the body by ingestion or inhalation. They occur naturally in the environment, uranium and radium as solids in rock while radon exists as a gas. Radionuclides are undetectable by taste, odor, or color, so only analytical testing can determine if they are present in water. Because they are associated with rock, wells drilled into bedrock are more likely to contain elevated levels of radionuclides than shallow or dug wells.

Radon gas can also be found in the soil. Openings between the soil and buildings, such as foundation cracks and where pipes enter, provide conduits for radon to move into structures. The difference in air pressure, caused by heated indoor air moving up and out of buildings, results in a flow of soil gas toward the indoors, allowing radon to potentially accumulate in structures. Air quality in a home can also be tested for radon.

There are many other natural contaminants which can render drinking water unsafe such as arsenic. The Drinking Water and Groundwater Bureau of the NH Department of Environmental Services has several fact sheets available to address these natural materials and suggests which materials to be included in testing. See their list of fact sheets at http://www.des.state.nh.us/dwg.htm.

Past Natural Water & Air Contaminant Events

There have been no known events related to natural water and air contamination in Acworth although uranium is a known water contaminant in neighboring towns. Concentrated amounts of uranium were also found during the construction of I-89 east of Acworth.

Table III-10: RADON – LOW/MEDIUM RISK

RADON					
Summary Table of Short-term Indoor Radon Test Results in NH's Radon Database 11/04/2003)					
County	**# Tests**	**G. Mean**	**Maximum**	**% > 4.0 pCi/l**	**% > 12.0 pCi/l**
Belknap	744	1.3	22.3	14.4	1.3
Carroll	1042	3.5	478.9	45.4	18
Cheshire	964	1.3	131.2	15.6	2.3
Coos	1072	3.2	261.5	41	17
Grafton	1286	2.0	174.3	23.2	5.2

RADON					
Summary Table of Short-term Indoor Radon Test Results in NH's Radon Database 11/04/2003)					
Hillsborough	2741	2.1	202.3	29.6	6.8
Merrimack	1961	2.0	152.8	25.2	6
Rockingham	3909	3.0	155.3	40	9.5
Strafford	1645	3.4	122.8	44	13
Sullivan	**466**	**1.4**	**29.4**	**15.7**	**2.1**
STATEWIDE	**15860**	**2.4 pCi/L**	**478.9 pCi/L**	**32.4**	**8.6**

Potential Future Natural Air & Water Contaminant Damage:

Although there are no known records of illness that can be attributed to radium, radon, or uranium or other contaminants in Acworth, residents should be aware that they are present. Houses with granite and dirt cellars are at increased risk to radon gas infiltration. According to the table above, Sullivan County radon levels are below average for the State. According to the State's mitigation plan, Sullivan County has a medium probability of a radon related hazard.

In addition radium, radon, and uranium as well as other natural materials can be present in drinking water. Residents, especially with bedrock wells, should be aware of the possibility of water contamination and the availability of testing and remediation. The Committee determined that the risk of natural contaminants is low.

Hazardous Materials Spills

Hazardous materials spills or releases can cause loss of life and damage to property. Short or long-term evacuation of local residents and businesses may be required, depending on the nature and extent of the incident. The spills may occur on-site at hazardous waste generators or in transport through town.

In Acworth, there are six potential hazardous waste generators listed on the NH Department of Environmental Services (DES) "one-stop" list. Most of these are inactive and probably only produce small amounts of hazardous waste. However, there are also some larger producers. There are also large tanks for fuel such as propane, oil, and gas to service the various businesses and industries in the town. Three entities have licensed aboveground tanks (Acworth Transfer Station, Gowen's Sugarhouse, and Balla Sawmill) and two entities have licensed underground tanks (Acworth Highway Garage and Bascom Maple Farm) with NH DES. An aboveground tank used by the Fire Station in South Acworth will be removed next year.

Past Hazardous Waste Spill Events

No known significant spills have occurred in Acworth, and there are no large hazardous waste generators in the Town. The only event was a bulk milk truck turning over in 2006 or 2007 on Bascom Hill Road. The accident was treated as a hazardous waste spill event. During the 2005 flooding, the propane tank from the Community Aid Building next to the United Church in the Valley was taken downstream in the river. A concerned citizen caught the tank and rowed it back toward the property and tied the tank to an apple tree. The propane tanks at this property are now affixed to the building.

Potential Future Hazardous Waste Spill Damage

Although there have not been any significant spills in Acworth, there is substantial truck traffic on Route 123A through the Town. Hazardous materials spills could occur along the highway. In addition, heating fuel is delivered to homes on many of the town's roads: spills could occur at storage tanks during the filling of the tanks. There conceivably could be spills near any home in Acworth due to home heating fuel delivery. The property owner is responsible for clean-up. The State oversees these reported spills.

The State did not determine county risk for hazardous waste spills in the *NH Hazard Mitigation Plan*. The Committee determined a hazardous waste spill is a low/medium risk.

Terrorism

Terrorism has been defined in many ways. The word terrorism is derived from the Latin term "terrere" which means to frighten. Under current United States law, set forth in the US Patriot Act, acts of domestic terrorism are those which: "(A) involve acts dangerous to human life that are a violation of the criminal laws of the United States or of any State; (B) appear to be intended— (i) to intimidate or coerce a civilian population; (ii) to influence the policy of a government by intimidation or coercion; or (iii) to affect the conduct of a government by mass destruction, assassination, or kidnapping; and (C) occur primarily within the territorial jurisdiction of the United States." The Town of Acworth's Emergency Operations Plan provides greater detail of terrorism threats.

Past Terrorism Events

There have been no terrorism events within Acworth in the past.

Future Terrorism Events

Terrorism is not considered a major risk, although vandalism is an occasional problem. The Committee determined that the risk of terrorism is a low risk in Acworth.

C. HAZARD RISK RATINGS

The Town of Acworth Hazard Mitigation Committee reviewed each potential hazard and rated the probability of occurrence and vulnerability (cost if the hazard actually occurs) to come up with an overall risk rating. The ratings were based on past occurrences of hazards affecting the State of New Hampshire, Sullivan County, and the Town of Acworth. The two highest risks in Acworth were determined to be Flooding and Severe Winter Weather.

Assessing Probability

The process involved assigning a number to each hazard type based on its potential of occurring determined using the committee's knowledge of past events:

1 – Unlikely: may occur after 25 years
2 – Possible: may occur within 10-25 years
3 – Likely: may occur within 10 years

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 in Table III-10. For comparative purposes the Low rating was given a designation of "1," the Medium rating a designation of "2," and the High rating a designation of "3." These figures are shown in Table III-11 and III-12.

Table III-101: PROBABILITY OF HAZARD

Probability of Hazard Occurring in Sullivan County from State Plan											
Flood	**Dam Failure**	**Drought**	**Wildfire**	**Earth-quake**	**Land-slide**	**Radon**	**Tornado**	**Hurricane**	**Lightning**	**Severe Winter**	**Avalanche**
H	L	M	H	M	M	M	M	M	M	H	L

Assessing Vulnerability

A relative scale of 1 to 3 was used to determine the impact and cost for human death and injury, property losses and damages, and business/agricultural impact: 1 – limited damage and cost; 2 - moderate amount of damage and cost, and 3 – high damage and cost.

Table III-11: VULNERABILITY OF EXISTING DEVELOPED AREAS

Committee Assessment of Vulnerability	Human Impact	Property Impact	Economic Impact	Vulnerability
	Probability of death or injury	Physical losses and damages	Cottage businesses & agriculture	Avg. of human/ property/ business impact
Dam Failure	1	1	1	1.0
Flooding	3	3	3	3.0
Hurricane	3	3	3	3.0
Tornado & Downburst	3	3	3	3.0
Thunderstorm/Lightning/Hail	3	3	3	3.0
Severe Winter/Ice Storms	3	3	3	3.0
Earthquake	1	1	1	1.0
Drought	1	1	2	1.3
Extreme Heat	1	1	1	1.0
Erosion	2	2	2	2.0
Landslide	1	1	1	1.0
Wildfire	3	3	3	3.0
Natural Contaminants	1	1	1	1.0
HazMat Spills	1	1	1	1.0
Terrorism	1	1	1	1.0

Assessing Risk

The averages of each vulnerability and probability were multiplied to arrive at the overall risk the hazard has on the community. The overall risk or threat posed by a hazard over the next 25 years was determined to be high, medium, or low.

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 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 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.

Table III-13: RISK ASSESSMENT

Risk Assessment 0-1.9 Low 2-3.9 Low/Med 4-5.9 Med 6-7.9 Med-High 8-9 High				
Hazards	**Probability based on Committee Review**	**Vulnerability based on Committee Review**	**Risk Rating (Probability x Vulnerability)**	**Risk**
Dam Failure	1	1.0	1.0	Low
Flooding	3	3.0	9.0	High
Hurricane	3	3.0	9.0	High
Tornado & Downburst	3	3.0	9.0	High
Thunderstorm/Lightning/Hail	3	3.0	9.0	High
Severe Winter	3	3.0	9.0	High
Earthquake	3	1.0	3.0	Low/Medium
Drought	3	1.3	3.9	Low/Medium
Extreme Heat	3	1.0	3.0	Low/Medium
Erosion	3	2.0	6.0	Medium/High
Landslide	3	1.0	3.0	Low/Medium
Wildfire	2	3.0	6.0	Medium/High

Risk Assessment 0-1.9 Low 2-3.9 Low/Med 4-5.9 Med 6-7.9 Med-High 8-9 High				
Hazards	**Probability based on Committee Review**	**Vulnerability based on Committee Review**	**Risk Rating (Probability x Vulnerability)**	**Risk**
Natural Contaminants	1	1.0	1.0	Low
HazMat	2	1.0	2.0	Low/Medium
Terrorism	1	1.0	1.0	Low

IV. CRITICAL FACILITIES/LOCATIONS

The Critical Facilities list, identified by the Acworth Hazard Mitigation Committee, is divided into three categories. The first category contains facilities needed for emergency response in the event of a disaster. The second category contains non-emergency response facilities that are not required in an event, but that are considered essential for the everyday operation of the Town of Acworth. The third category contains facilities/populations that the Committee wishes to protect in the event of a disaster. Values for all buildings in this document were obtained from town tax records for main structures plus accessory structures for 2012. The equalization to current values is very close to 100%.

Table IV-1: EMERGENCY RESPONSE FACILITIES, SERVICES & STRUCTURES

Critical Facility	Hazard Vulnerability	Value
Acworth Town Hall (Emergency Operations Center), 13 Town Hall Rd.	Any town-wide event	$129,900
Acworth Firehouse, 121 Hill Road	Any town-wide event	106,700
Acworth Highway Garage, 177 Beryl Mountain Road	Any town-wide event	86,500 inc. Transfer Station
Church on the Hill (temporary shelter), 16 Town Hall Road	Any town-wide event	399,400
R.L. Balla Lumber Inc. (equipment rental), Forest Road	Any town-wide event	206,500

Table IV-2: NON-EMERGENCY RESPONSE FACILITIES & STRUCTURES

Critical Facility	Hazard Vulnerability	Value
Acworth Silsby Library, 5 Lynn Hill Road	Any town-wide event	$93,900
Acworth Transfer Station, Beryl Mountain Road	Any town-wide event	86,500 inc. Hwy Garage
Church in the Valley, 1067 Route 123A	Any town-wide event; Flooding; Haz Mat Transport Spill	92,000
South Acworth Village Store, Route 123A	Any town-wide event ; Flooding; Haz Mat Transport Spill	99,500
Acworth Primary School , 16 Turkey Shoot Road	Any town-wide event	282,100
Community Aid Building, Route 123A	Any town-wide event ; Flooding; Haz Mat Transport Spill	16,500

Table IV-3: FACILITIES & POPULATIONS TO PROTECT

Critical Facility	Hazard Vulnerability	Value
Acworth Village	Any town-wide event	NA
South Acworth Village	Any town-wide event ; Flooding; Haz Mat Transport Spill	NA
Crescent Lake area	Any town-wide event	NA
Bascom Maple Farm, 64 Sugar House Road	Any town-wide event	1,767,700
Bascom Dairy Farm, 54 Bascom Hill Road	Any town-wide event	252,400
Luther Dairy Farm, 165 Luther Hill Road	Any town-wide event	278,600

V. DETERMINING HOW MUCH WILL BE AFFECTED

A. IDENTIFYING VULNERABLE FACILITIES

It is important to determine which critical facilities and other structures are the most vulnerable and to estimate potential losses. The first step is to identify the facilities most likely to be damaged in a hazard event. To do this, the locations of critical facilities were compared to the location of past and potential hazard events. Facilities and structures located in federally and locally determined flood areas, dam inundation areas, etc. were identified and included in the analysis. There is neither large land areas slated for potential development nor large development projects in the works, so vulnerability of undeveloped land was not analyzed except to note logical future development areas.

Table V-1: VULNERABILITY OF EXISTING DEVELOPED AREAS

Area	Hazard	Critical Facilities	Buildings (residential & non-residential)	Infrastructure	Natural Resources	Total Known Building Value
A Flood Zone	Flooding	South Acworth Village Store and Community Aid Building	39 houses; one mobile home: South Acworth Village Store; and the Community Aid/Rectory Building	Roads & Bridges	Stream/River embankments; natural vegetation	$3 million

Table V-2: VULNERABILITY OF POTENTIAL DEVELOPMENT

Area	Hazard	Critical Facilities	Projected Buildings	Projected Infrastructure	Projected Value
None	Two areas in town for potential residential development that are not in hazard zones	None	None	None	None

B. IDENTIFYING VULNERABLE SPECIAL POPULATIONS

There are few centers of special populations in town including such as the regional elementary school, the town offices, the town hall during special meetings, and the library. The elderly and physically or mentally impaired residents are also residing throughout the town in their homes.

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. FEMA's *Understanding Your Risks: Identifying Hazards and Estimating Losses* (August 2001) was used in estimating loss evaluations. The value of structures was determined by using town records. The Town's tax maps were used to determine number of units within each hazard area. The land damage cost, structure content loss costs, and function loss cost were not determined.

Dam Failure – Low Risk - $0
There are no dams designated as "significant" or "high" hazard potential either within Acworth or areas upstream in a position to impact Acworth in the event of dam failure. There is only one dam that is designated as a "low" hazard potential.

Flooding – High Risk - $863,400 Estimated Cost (not including roads, bridges)
There are approximately 39 houses, one mobile home, and the Community Aid Building located within the FEMA designated Special Flood Hazard areas. These areas are all "Zone A" meaning they have no base flood elevation. The South Acworth Village Store is also a flood concern as a corner of the porch was damaged by the flooding in 2005. The total value of the buildings (including residential and non-residential) is about $3 million. Assuming a 28 % structural damage to the buildings, the damage would total close to $830,000. There is one mobile home with a value of $30,000 in the flood zones which would receive more substantial damage than buildings. Assuming an estimated 78% structural damage to the mobile homes, there could be as much as $23,400 in damage. There are 14 bridges (5 are town bridges) and several sections of road in these flood areas. No value estimate has been done for these structures. No estimate for contents of buildings was done.

Hurricane – High Risk – $5.5 Million Estimated Cost
Damage caused by hurricanes can be severe and expensive. Acworth has been impacted in the past by both wind and flooding damage as a result of hurricanes. The total assessed value of all structures within Acworth is approximately $55 million. It is random which

structures would be impacted and how much. There is no standard loss estimation available and no record of past costs. If 10% of the buildings received 10% damage, the damage cost would be about $5.5 million.

Tornado & Downburst – High Risk – No Recorded or Estimated Cost
Tornadoes, downbursts, and microbursts are relatively uncommon natural hazards in New Hampshire, although microbursts in 2007 caused substantial damage. On average, about six tornado events strike each year. In the State of NH, the average annual cost of tornadoes between 1950 and 1995 was $197,000 (The Disaster Center). These wind events occur in specific areas, so calculating potential town-wide losses is difficult. There is no standard loss estimation model available for tornadoes due to their random nature.

Thunderstorm/Lightning/Hail – High Risk – No Recorded or Estimated Cost
According to the Federal Alliance for Safe Homes, in an average year, hail causes more than $1.6 billion worth of damage to residential roofs in the United States, making it, year in and year out, one of the most costly natural disasters. Lightning is one of the most underrated severe weather hazards, yet it ranks as the second-leading weather killer in the United States. More deadly than hurricanes or tornadoes, lightning strikes in America each year killing an average of 73 people and injuring 300 others, according to the National Weather Service. There is no cost estimation model for thunderstorms due to their random nature.

Severe Winter Weather – High Risk – No Recorded or Estimated Cost
Ice storms often cause widespread power outages by downing power lines, and these storms can also cause severe damage to trees. New England usually experiences at least one or two severe snowstorms, with varying degrees of severity, each year. All of these impacts are a risk to the community and put all residents, especially the elderly, at risk.

According to a study done for the Institute for Catastrophic Loss Reduction (Canada) and the Institute for Business and Home Safety (U.S.), the 1998 Ice Storm inflicted $1.2 billion (U.S.) worth of damage in the U.S. and Canada. In New Hampshire alone, over 67,000 people were without power (http://www.meteo.mcgill.ca/extreme/Research_Paper_No_1.pdf). In 2008, the ice storm caused $123,000 in Acworth. The U.S. average insurance claim was $1,325 for personal property, $1,980 for commercial property, and $1,371 for automobiles.

Earthquake – Low/Medium Risk - $5.5 million Estimated Cost if All Buildings Impacted
Earthquakes can cause buildings and bridges to collapse, disrupt gas, electric and phone lines, and precipitate landslide and flash flood events. Four earthquakes in NH between 1924 and 1989 had a magnitude of 4.2 or more. Two of these occurred in Ossipee, one west of Laconia, and one near the Quebec border. Buildings have not been subject to any seismic design level requirement for construction and would be susceptible to structural damage. The dams, bridges, and roads would be vulnerable to a sizable earthquake event.

FEMA's *Understanding Your Risks: Identifying Hazards and Estimating Costs*, August 2001 provides that an earthquake with a 5% peak ground acceleration (as determined by the US Geologic Survey for the area) could cause damage to single family residences by around 10% of the structural value. If 10% of buildings in Acworth were impacted by an earthquake, the estimated damage could be around $5.5 million.

Drought – Low/Medium Risk – No Recorded or Estimated Cost
A long drought would cause damage to crops and dry up wells. There is no cost estimate for this hazard in Acworth.

Extreme Heat – Low/Medium Risk – No Recorded or Estimated Cost
Excessive heat kills more people in the U.S. than tornadoes, hurricanes, floods, and lightning combined. The elderly, very young, obese and those who work outdoors or have substance abuse problems are most at risk from succumbing to heat. Additionally, people in urban areas are more susceptible as asphalt and cement tend to hold in heat throughout the night (Federal Alliance of Safe Homes website). The costs for this hazard are in terms of human suffering. It is not anticipated that there would be any structural or infrastructure costs.

Erosion – Medium/High Risk – No Recorded or Estimated Cost
Development on steep slopes can cause substantial erosion in the adjacent area. This can impact the adjacent roads in the area by making them more susceptible to erosion and washout. Construction itself can cause erosion if best management practices are not used to control run-off from disturbed soils, and the rooftops of buildings displace water which would have gone into the ground. This is then exacerbated by the steep slopes where the run-off moves more quickly and can cause more damage**.**

Landslide – Low/Medium Risk – No Recorded or Estimated Cost
There are two sites in Acworth where a potential landslide might occur. The damage value of one site where a landslide did occur was incorporated into the costs of the flood of 2005. It did not affect a structure, but caused a clogging of Bowers Brook with trees and other debris.

Wildfire – Medium/High Risk – $275,000 Estimated Cost
The risk of fire is difficult to predict based on location. Forest fires are more likely to occur during drought years. In addition, areas and structures that are surrounded by dry vegetation that has not been suitably cleared are at high risk. Fire danger is generally universal, however, and can occur practically at any time. Dollar damage would depend on the extent of the fire and the number and type of buildings burned. Since the entire developed area of Acworth interfaces with forest, all structures are potentially vulnerable to wildfire. The estimated value of all structures in the Town is approximately $55 million. If 1% of the structures received 50% damage, the total estimated cost would be about $275,000.

According to the Grafton County Forester, there are no reliable figures for the value of timber in New Hampshire; and excluding the last big fires of the early 1940s, the acres and timber values affected by fires would not be supportive of major investment in fire prevention in this region (v. fire-prone western regions). (The Sullivan County Forester was not available at the time of researching this issue.)

Natural Contaminants – Low Risk – No Recorded or Estimated Cost

The cost of a radon hazard would be the health of individuals exposed to radon. No cost estimate is provided for this hazard.

Hazardous Material Spills – Low/Medium Risk – No Recorded or Estimated Cost

The cost of a hazardous material spill would depend upon the extent of the spill, the location of the spill in relation to population, structures, infrastructure, and natural resources, as well as the type of hazardous material. The cost of any clean-up would be imposed upon the owner of the material. However, other less tangible costs such as loss of water quality might be borne by the community. No cost estimate has been provided for this possible hazard. There are no significant hazardous waste generators in Acworth—so any spills would likely be from heating fuel delivery or transport of materials through the town on the major routes.

Critical facilities in areas especially susceptible to hazardous materials spills include South Acworth Village and the Community Aid Building.

Terrorism – Low Risk – No Recorded or Estimated Cost

The cost of any terrorism event is unpredictable and not estimated in this document. The Committee does not feel that terrorism is a substantial threat in Acworth.

VI. EXISTING MITIGATION ACTIONS

The following table provides the existing mitigation actions in Acworth. The fifth column lists if there were recommendations for improvement in the previous hazard mitigation plan and if those recommendations were put into action or not and if not, why. The final column provides either an update of the mitigation action or proposed improvements that are currently being recommended for the future. The latter are provided in red and they will be evaluated further in upcoming chapters of this plan.

Table VI-1: EXISTING MITIGATION ACTIONS

Existing Mitigation Action & Description	Hazard Type/Service Area	Responsible Local Agent	Effectiveness (Low, Average, High)	Recommendations in Previous Hazard Mitigation Plan/Actions Taken to Meet Recommendations or Not Met	Update/Future Proposed Improvements
National Flood Insurance Program - Provides insurance program for homes in the FEMA determined flood zones or anywhere else	Flooding/Entire Town	Town Selectboard	High	Not in previous plan	Continue participation
Town Master Plan - Most recent version is 2008; provides a vision for the town with goals to achieve that vision	All Hazards/Entire Town	Planning Board	Average	Not in previous plan	Reference HazMit Plan, LEOP, and Cold River Watershed Management Plan as well as importance of hazard mitigation in appropriate Master Plan
Local Emergency Operations Plan - Describes the preparation and response necessary for the Town to address emergency situations	All Hazards/Entire Town	EMD & Selectboard	Average	Update plan & provide evacuation route in case of severe flooding/Plan is updated annually; will add Charlestown Road as evacuation route	At next annual update meeting, reformat to be more user friendly and add evacuation routes
Acworth Center School Emergency Plan – Addresses hazards, deficiencies, evacuation, relocation, drills, lockdown	All Hazards/ Acworth Center School	School Superintendent	Average	None	Copy plan to all staff; do scenario planning with first responders; amend plan when problems appear in scenarios
Emergency Shelter – Provide temporary shelter to the public in the event of an emergency.	All Hazards/Entire Town	EMD, Deputy EMD, and Selectboard	Average	Not in previous plan	Continue to be prepared to act as temporary shelter
Haz/Mat Program – Provides emergency response to	HazMat Spills/Entire	Fire Chief	Average	Not in previous plan	Continue membership with the Southwestern NH mutual aid

Existing Mitigation Action & Description	Hazard Type/Service Area	Responsible Local Agent	Effectiveness (Low, Average, High)	Recommendations in Previous Hazard Mitigation Plan/Actions Taken to Meet Recommendations or Not Met	Update/Future Proposed Improvements
hazardous materials spills	Town				
Acworth Volunteer Fire and Rescue Squad, Inc. – A private non-profit organization serving the Town of Acworth	Fire, HazMat/Entire Town	Fire Chief	Average-High	Engage in more training and have a documented response plan/have done training and have response plan through mutual aid organization	Provide more training and upgrade personal protective equipment
Fire Ponds – Provide fire suppression water sources with dry hydrants	Fire/Entire Town	Fire Chief	Average	Not in previous plan/ recently excavated one of the ponds that had no access for the last three years	Continue to maintain the three fire ponds: Henninger; Town Fire Pond; and Bascom Sugar Pond
Burn Permits – Controlled fires	Fire/Entire Town	Fire Warden and Deputy Fire Warden	Average	Provide better enforcement to reduce illegal burning/more communication with people and reporting to NH DES	Continue to properly enforce
State Police Agreement – Police coverage for the Town with dispatch in Keene	All hazards/ Entire town	Selectboard	High	Not in previous plan	Continue agreement
Mutual Aid – Fire – Agreement with Southwestern Fire Mutual Aid	All hazards/ Entire town	Fire Chief	High	Not in previous plan	Continue participation
Mutual Aid – Roads – Participate in Statewide agreement	All hazards/Entire town	Highway Agent	High	Not in previous plan	Continue participation
Class VI Road Policy – Provides emergency personnel access to remote areas of town	Fire & Recreational Emergencies/ Entire Town	Fire Chief	NA	Expand policy for all emergency services to have access to remote areas of town/Not done as would change status of road by State law	This item is considered inappropriate for this plan and will be deleted in the next plan
Class VI Road Inventory Committee – Examines issues related to Class VI road	Fire & Recreational/ Entire Town	Committee & Planning Board	NA	Obtain engineering and drainage assistance/Not done as would change status of road by State law	This item is considered inappropriate for this plan and will be deleted in the next plan
Conservation Commission – Advises Town Boards about	All Hazards/Entire	CC Chair	High	Work on better implementation programs in efforts to protect natural	Continue to manage town forests and work with property

Existing Mitigation Action & Description	Hazard Type/Service Area	Responsible Local Agent	Effectiveness (Low, Average, High)	Recommendations in Previous Hazard Mitigation Plan/Actions Taken to Meet Recommendations or Not Met	Update/Future Proposed Improvements
conservation concerns; reviews State wetlands applications	Town			resources/Developed Forest Management Plans for town lands; work with owners for development easements; developed Natural Resources Inventory with Housing and Conservation Planning Program	owners to protect valuable resources
Zoning Ordinance – Regulates land use	Flooding, Erosion/Entire Town	Planning Board; Town Selectboard	Average	Not in previous plan	Request that Planning Board consider a Steep Slopes District
Floodplain Ordinance – Restricts floodplain development	Flooding/Entire Town	Planning Board & ZBA	Average	More training for enforcement/no longer needed as have better maps	Continue to enforce ordinance and update
Subdivision Regulations – Regulates division of land	All Hazards/Entire Town	Planning Board	High	Not in previous plan	Continue to enforce regulations and update
Driveway Regulations – Regulates driveway access on town roads.	Erosion/Entire Town	Planning Board	High	Not in previous plan	Continue to enforce regulations and update; recently updated
Site Plan Review Regulations – regulates non-residential and multi-family development	All Hazards/Entire Town	Planning Board	High	Not in previous plan	Continue to enforce regulations and update; recently updated
Capital Improvements Program – Plans for future major purchases	All Hazards/Entire Town	Planning Board; Selectboard	Average	Create rating system for road condition inprovements/have incorporated this into CIP	Add future funding needs for municipal Bower's Brook work
Hazard tree trimming - Program for cutting hazardous branches and trees as necessary;	All Hazards/Entire town	Highway Agent	Average	Not in previous plan	Continue to provide trimming as necessary
911 Numbering - Town has ordinance to post 911 numbers at building	All Hazards/Entire town	Assessor's Office	Low	Not in previous plan	Provide public education to encourage residents to display street numbers
Emergency Communication – emergency dispatch serves the Town	All Hazards/Entire town	EMD	High	Evaluate gaps in communication within Town/ installed radio at town hall/Emergency Operations Center	Continue to evaluate needs in the future

Existing Mitigation Action & Description	Hazard Type/Service Area	Responsible Local Agent	Effectiveness (Low, Average, High)	Recommendations in Previous Hazard Mitigation Plan/Actions Taken to Meet Recommendations or Not Met	Update/Future Proposed Improvements
Emergency Power – Have a two portable generators at the highway garage – one for Town Hall when needed	All Hazards/Entire Town	EMD	Average	Not in previous plan	Continue to store at highway garage so they can be tested each month
Winter Road Maintenance Policy – Prioritization of roads for clearing	Severe Winter/Entire town	DPW Director	Average	Not in previous plan	Continue prioritization plan and update as needed
Winter Parking Ban – Restrict parking on certain roads to allow maintenance and safe travel	Severe Winter/Entire Town	DPW Director	Average	Increase enforcement/Currently adequate	Continue enforcement of ban
Provide Hazard Mitigation Grant Writing Funds – Need money to have grant applications written.	All hazards/Entire Town	Selectboard	High	Appropriate funds/Provide $1,000 annually in town budget	Continue to allot funding for grant writing
Public Education & Outreach – hazard preparation and mitigation	All hazards/Entire Town	EMD	Average	Expand education and outreach programs/provided emergency preparedness info at Town Hall; provides presentations to grades 1-4; has Red Cross brochures available in the Town Offices	Provide visual display of hazard mitigation information and strategies at Town Meeting; add hazard mitigation and emergency management to Town web page
Road & Bridge Improvements - Mitigate problem areas to prevent substantial future damage from natural hazards	Flooding, Erosion, Dam Inundation/ Entire town	DPW Director	High	Create volunteer list for DPW Director assistance during hazards/DPW Director works with volunteers and local businesses	Replace Cold River bridge as super structure is being scoured by river (see map)

Table VI-2 examines the proposed improvements and evaluates them as 1: Low; 2: Average; and 3: High for effectiveness looking at several criteria as shown in the table. The totals are then ranked to prioritize the improvements to help the Committee focus on the most effective strategy improvements.

Table VI-2: PRIORITIZING EXISTING MITIGATION STRATEGY IMPROVEMENTS

Rank	Strategy Improvement	Reduce Damage	Community Objectives	Existing Regulations	Quickly Implemented	Socially Acceptable	Technically Feasible	Administration Possible	Benefit - Cost	TOTAL SCORE	Mitigate Existing or New Development or Both
1	**911 Numbering -** Provide public education to encourage residents to display street numbers	3	3	3	3	3	3	3	3	24	Both
1	**Replace Cold River Bridge**	3	3	3	3	3	3	3	3	24	Both
2	**Emergency Operations Plan -** At next annual update meeting, reformat to be more user friendly and add evacuation routes	1	3	3	3	3	3	3	3	22	Both
2	**Capital Improvements Program -** Add future funding needs for municipal Bower's Brook work	2	2	3	3	3	3	3	3	22	Both
2	**Public Education & Outreach -** Provide visual display of hazard mitigation at Town Meeting	2	3	3	2	3	3	3	3	22	Both
2	**School Emergency Plan** – Issue plan copies to staff; perform scenario planning	1	3	3	3	3	3	3	3	22	Both
3	**Town Master Plan** - Reference Hazard Mitigation Plan, Emergency Operations Plan, and Cold River Watershed Management Plan as well as importance of hazard mitigation in appropriate Master Plan sections	1	3	3	2	3	3	3	3	21	Both
3	**Acworth Volunteer Fire and Rescue Squad, Inc. -** Provide more training and upgrade personal protective equipment	2	3	3	1	3	3	3	3	21	Both
4	**Zoning Ordinance -** Request that Planning Board consider a Steep Slopes District	1	1	3	1	1	3	3	3	15	New

VII. GOALS AND NEWLY IDENTIFIED MITIGATION ACTIONS

A. GOALS & OBJECTIVES

The Acworth Hazard Mitigation Committee reviewed its goals and developed objectives to meet these goals.

Goals

1. To identify, introduce and implement cost effective Hazard Mitigation measures so as to accomplish the Town's goals and to raise awareness and acceptance of hazard mitigation opportunities generally.

2. To improve upon the protection of the general population, the citizens, and visitors of the Town of Acworth from natural and human-made hazards.

3. To reduce the potential impact of natural and human-made disasters to:
   - the Town of Acworth's Critical Support Services,
   - Critical Facilities in the Town of Acworth,
   - the Town of Acworth's infrastructure,
   - private property,
   - the Town's economy,
   - the Town's natural environment, and
   - the Town's specific historic treasures and interests.

4. To improve the Town's Disaster Response and Recovery capability as a hazard mitigation strategy to be prepared for emergencies and reduce their impact.

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B. NEW PROPOSED MITIGATION ACTIONS

The Acworth Hazard Mitigation Committee brainstormed potential mitigation actions. The proposed new measures are organized by the type(s) of hazard event that the mitigation action is expected to mitigate.

Table VII-1: PROPOSED NEW MITIGATION ACTIONS

Proposed New Mitigation Action Description	Hazard Type/Service Area	Responsible Local Agent	If Recommended in Previous Plan, why was it not put into place?
New Fire Water Supply Sites – Develop dry hydrants in South Acworth, East Acworth on the Cold River; and at Crescent Lake near public access; acquire rights to use the Luther Dairy Farm Pond and install dry hydrant	Fire/South and East Acworth; western Acworth	Fire Chief	Not recommended in previous plan
Implement Fluvial Geomorphic Assessment Study of Bower's Brook Recommendations – Plan completed October 2006 and recommended stabilization and rechanneling of brook; can only do section of recommended project within the 5-year planning period.	Flooding & Erosion/along Bower's Brook	Fire Chief/DPW Director	Project permit submitted to NH DES in summer 2012 for section work; other work contingent upon Church and the State bridge work on Route 123A
Create Dam Maintenance and Oversight Program – Although this was recommended in the 2008 plan, there are no threatening dams in or around Acworth	This task will be deleted in the next plan update as it is irrelevant to Acworth.		

C. SUMMARY OF CRITICAL EVALUATION

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

- Does it reduce disaster damage?
- Does it contribute to community objectives?
- Does it meet existing regulations?
- Can it be quickly implemented?
- Is it socially acceptable?
- Is it technically feasible?
- Is it administratively possible?
- Does the action offer reasonable benefits compared to cost of implementation?

Each mitigation strategy was evaluated and assigned a score (High – 3; Average – 2; and Low – 1) based on the criteria.

The Acworth Hazard Mitigation Committee assigned the following scores to each strategy for its effectiveness related to the critical evaluation factors listed above, and actions had the following scores, with the highest scores suggesting the highest priority.

Table VII-2: PRIORITIZING PROPOSED NEW MITIGATION STRATEGIES

Rank	Strategy	Reduce Damage	Community Objectives	Existing Regulations	Quickly Implemented	Socially Acceptable	Technically Feasible	Administration. Possible	Benefit - Cost	TOTAL SCORE	Mitigate Existing or New Development or Both
1	**New Fire Water Supply Sites** – Develop dry hydrants in South Acworth, East Acworth on the Cold River; and at Crescent Lake near public access; acquire rights to use the Luther Dairy Farm Pond and install dry hydrant	3	3	3	3	3	3	3	3	24	Both
2	**Implement Fluvial Geomorphic Assessment Study of Bower's Brook Recommendations** – Plan completed October 2006 and recommended stabilization and rechanneling of brook; can only do section of recommended project within the 5-year planning period.	3	3	3	3	3	3	2	3	23	Both

VIII. PRIORITIZED IMPLEMENTATION SCHEDULE

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

Table VIII-1: PRIORITIZED IMPLEMENTATION SCHEDULE FOR EXISTING PROGRAM IMPROVEMENTS

Location: Mitigation Action	Who (Leadership)	When (Start)	How (Funding Sources)	Cost (Estimated)
911 Numbering - Provide public education to encourage residents to display street numbers	Select Board	Spring 2013	Taxes	Staff Time - 0
Replace Cold River Bridge – Replace bridge as river is scouring super structure	DPW Director	2017	Taxes and Grants	$250,000
Emergency Operations Plan - At next annual update meeting, reformat to be more user friendly and add evacuation routes	EMD	Spring 2013	Taxes	Volunteers and Staff Time - 0
Capital Improvements Program - Add future funding needs for municipal Bower's Brook work	Select Board, Planning Board	Fall 2012	Taxes and Grants	$150,000
Public Education & Outreach - Provide visual display of hazard mitigation at Town Meeting	Select Board	Spring 2013	Taxes	Staff Time - 0
School Emergency Plan – Issue plan copies to staff; perform scenario planning	Principal	2012	Taxes	Volunteers and Staff; $1,000 for bus rentals
Town Master Plan - Reference Hazard Mitigation Plan, Emergency Operations Plan, and Cold River Watershed Management Plan as well as importance of hazard mitigation in appropriate Master Plan sections	Planning Board	2013	Taxes	Volunteers and Staff - 0
Acworth Volunteer Fire and Rescue Squad, Inc. - Provide more training and upgrade personal protective equipment	Fire Chief; Squad Board of Directors	Spring 2013	Taxes and Grants	$1,500 x 13 for gear or $19,500
Zoning Ordinance - Request that Planning Board consider a Steep Slopes District	Planning Board	Fall 2013	Taxes	Volunteer work - 0

Table VIII-2: PRIORITIZED IMPLEMENTATION SCHEDULE FOR PROPOSED PROGRAMS

Location: Mitigation Action	Who (Leadership)	When (Start)	How (Funding Sources)	Cost (Estimated)
New Fire Water Supply Sites – Develop dry hydrants in South Acworth, East Acworth on the Cold River; and at Crescent Lake near public access; acquire rights to use the Luther Dairy Farm Pond and install dry hydrant	Fire Squad, DPW Director, Select Board	Fall 2012	Taxes	$10,000
Implement Fluvial Geomorphic Assessment Study of Bower's Brook Recommendations – Plan completed October 2006 and recommended stabilization and rechanneling of brook; can only do section of recommended project within the 5-year planning period.	United Church of Acworth	2014	Grants and Fund Raising	Unknown until requests for proposals are sent and returned

IX. ADOPTION & 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 revisit the Hazard Mitigation Plan *annually, or after a hazard event*. The Acworth Emergency Management Director will initiate this review 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. The plan will be updated and submitted for FEMA approval at a minimum every five years as required by the Disaster Mitigation Act 2000.

A. IMPLEMENTATION THROUGH EXISTING PROGRAMS

The Plan will be adopted locally as an Annex to the recently updated Emergency Operations Plan (EOP), and it will be updated annually along with the EOP. The Town had not incorporated hazard mitigation into other Town documents in the past. In addition, the Town Selectboard, during the Capital Improvement Process, will review and include any proposed structural projects outlined in this plan including Bowers Brook work. Reference Hazard Mitigation Plan, Local Emergency Operations Plan, and Cold River Watershed Management Plan as well as importance of hazard mitigation in appropriate Master Plan sections. The town will add hazard mitigation information to town web site.

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. Additionally, a press release will be distributed, and information will be posted on the Town website.

Copies of the Hazard Mitigation Plan have been or will be sent to the following parties for review and comment:

- Select Board Offices in neighboring towns
- NH Homeland Security & Emergency Management
- Acworth Select Board, Conservation Commission, and Planning Board
- Upper Valley Lake Sunapee Regional Planning Commission

RESOURCES USED IN THE PREPARATION OF THIS PLAN

Cold River Watershed Management Plan, Cold River Local Advisory Committee with Michael Heidorn, Professional Geologist, April 2009

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

FEMA *Multi-Hazard Mitigation Planning Guidance Under the Disaster Mitigation Act of 2000*, March 2004, Last Revised June 2007

FEMA 386-1 *Getting Started: Building Support for Mitigation Planning*, September 2002

FEMA 386-2 *Understanding Your Risks: Identifying Hazards and Estimating Costs,* August 2001

FEMA 386-3 *Developing the Mitigation Plan: Identifying Mitigation Actions and Implementation Strategies,* April 2003

Final Report Cold River Bank Stabilization Project, South Acworth, NH, Project #04123, Horizons, Engineering, PLLC, March 2005

Fluvial Geomorphic Assessment: Cold River, Warren Brook, and Bowers Brook, Horizons Engineering, October 2006

Ice Storm '98 by Eugene L. Lecomte et al for the Institute for Catastrophic Loss Reduction (Canada) and the Institute for Business & Home Safety (U.S.), December 1998

Restoration Master Plan for Cold River, Warren Brook, and Bowers Brook: Acworth, Alstead, Langdon, and Walpole, Horizons Engineering, March 2007

Town of Acworth Emergency Operations Plan, 2007

Town of Acworth Master Plan, 1979 with 2008 Addendum

NH HSEM's *State of New Hampshire Natural Hazard Mitigation Plan*, 2010

www.fema.gov/news/disasters.fema: Website for FEMA's Disaster List

www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms: Website for National Oceanic & Atmospheric Administration Disaster List

www.tornadoproject.com: Website for The Tornado Project

www.crrel.usace.army.mil/: Website for Cold Regions Research and Engineering Laboratory Website (CRREL)

www.nesec.org: Website for Northeast States Emergency Consortium

http://earthquake.usgs.gov/research/hazmaps/products_data/2002/ceus2002.php: Website for area earthquake information

APPENDICES

Appendix A: **Technical Resources**

Appendix B: **Hazard Mitigation Assistance Grants**

Appendix C: **Meeting Documentation**

Appendix D: **Map of Hazard Areas and Critical Facilities**

Appendix E: **Town Adoption & FEMA Approvals of Hazard Mitigation Plan**

APPENDIX A:

Technical Resources

APPENDIX A: TECHNICAL RESOURCES

1) Agencies

New Hampshire Homeland Security and Emergency Management
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 Energy and Planning 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 Homeland Security and Emergency Management
406 Public Assistance and Hazard Mitigation ..... NH Homeland Security and Emergency Management
Community Development Block Grant (CDBG)..... NH HSEM, NH OEP, also refer to RPC
Dam Safety Program ..... NH Department of Environmental Services
Disaster Preparedness Improvement Grant (DPIG) ..... NH Homeland Security and Emergency Management
Emergency Generators Program by NESEC‡ ..... NH Homeland Security and Emergency Management
Emergency Watershed Protection (EWP) Program ..... USDA, Natural Resources Conservation Service
Flood Mitigation Assistance Program (FMAP) ..... NH Homeland Security and Emergency Management
Flood Plain Management Services (FPMS) ..... US Army Corps of Engineers
Mitigation Assistance Planning (MAP) ..... NH Homeland Security and Emergency Management
Mutual Aid for Public Works..... NH Municipal Association
National Flood Insurance Program (NFIP) † ..... NH Office of Energy and Planning
Power of Prevention Grant by NESEC‡ ..... NH Homeland Security and Emergency Management
Project Impact..... NH Homeland Security and 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
Shoreland 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 OEM 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://wxp.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

Sponsor	Internet Address	Summary of Contents
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://wwwep.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.iiaa.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.

APPENDIX B:

Hazard Mitigation Assistance Grants

APPENDIX B:
HAZARD MITIGATION ASSISTANCE GRANTS

Hazard Mitigation Assistance (HMA) grant programs of the Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA), presents a critical opportunity to protect individuals and property from natural hazards while simultaneously reducing reliance on Federal disaster funds. The HMA programs provide pre-disaster mitigation grants annually to local communities. The statutory origins of the programs differ, but all share the common goal of reducing the loss of life and property due to natural hazards. Eligible applicants include State-level agencies including State institutions; Federally recognized Indian Tribal governments; Public or Tribal colleges or universities (PDM only); and Local jurisdictions that are participating in the National Flood Insurance Program (NFIP).

The HMA grant assistance includes four programs:

1. *The Pre-Disaster Mitigation (PDM) program*: This provides funds for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations. PDM grants are awarded on a competitive basis.

2. *The Flood Mitigation Assistance (FMA) program*: This provides funds so that cost-effective measures can be taken to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insured under the NFIP. The long-term goal of FMA is to reduce or eliminate claims under the NFIP through mitigation activities.

3. *The Repetitive Flood Claims (RFC) program*: This program provides funding to reduce of eliminate the long-term risk of flood damage to structures insured by NFIP that have had one or more claim payments for flood damages. The long-term goal of the RFC program is to reduce or eliminate claims under the NFIP through mitigation activities that are in the best interest of the NFIP.

4. *The Severe Repetitive Loss (SRL) program*: This program provides funding to reduce or eliminate the long-term risk of flood damage to severe repetitive loss residential structures insured under the NFIP.

Potential eligible projects are shown in the following table by grant program. For further information on these programs visit the following FEMA websites:

PDM – www.fema.gov/government/grant/pdm/

FMA – www.fema.gov/government/grant/fma

RFC – www.fema.gov/government/grant/rfc

SRL – www.fema.gov/government/grant/srl

Mitigation Project:	PDM	FMA	RFC	SRL
1. Property Acquisition and Demolition or Relocation Project				
Property Elevation	**X**	**X**	**X**	**X**
2. Construction Type Projects				
Property Elevation	**X**	**X**	**X**	**X**
Mitigation Reconstruction[1]				**X**
Localized Minor Flood Reduction Projects	**X**	**X**	**X**	**X**
Dry Floodproofing of Residential Property[2]		**X**		**X**
Dry Floodproofing of Non-residential Structures		**X**	**X**	
Stormwater Management	**X**	**X**		
Infrastructure Protection Measure	**X**			
Vegetative Management/Soil Stabilization	**X**			
Retrofitting Existing Buildings and Facilities (Wind/Earthquake)	**X**			
Safe room construction	**X**			
3. Non-construction Type Projects				
All Hazard/Flood Mitigation Planning	**X**	**X**		

1. The SLR Program allows Mitigation Reconstruction projects located outside the regulatory floodway or Zone V as identified on the effective Flood Insurance Rate Map (FIRM), or the mapped limit of the 1.5-foot breaking wave zone. Mitigation Reconstruction is only permitted if traditional elevation cannot be implemented.
2. The residential structure must meet the definition of "Historic Structure" in 44 CFR§59.1.

OTHER HAZARD MITIGATION ASSISTANCE FUNDING

Environmental Protection Agency

The EPA makes available funds for water management and wetlands protection programs that help mitigate against future costs associated with hazard damage.

Mitigation Funding Sources Program	Details	Notes
Clean Water Act Section 319 Grants	Grants for water source management programs including technical assistance, financial assistance, education, training, technology transfer, demonstration projects, and regulation. http://www.epa.gov/OWOW/NPS/cwact.html	Funds are provided only to designated state and tribal agencies
Clean Water State Revolving Funds	State grants to capitalize loan funds. States make loans to communities, individuals, and others for high-priority water-quality activities. http://www.epa.gov/owow/wetlands/initiative/srf.html	States and Puerto Rico
Wetland Program Development Grants	Funds for projects that promote research, investigations, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, reduction, and elimination of water pollution. http://www.epa.gov/owow/wetlands/initiative/#financial	See website

National Oceanic and Atmosphere Administration (NOAA)

NOAA is the major source for mitigation funding related to coastal zone management and other coastal protection projects.

Mitigation Funding Sources Program	Details	Notes
Coastal Services Center Cooperative Agreements	Funds for coastal wetlands management and protection, natural hazards management, public access improvement, reduction of marine debris, special area management planning, and ocean resource planning. http://www.csc.noaa.gov/funding/	May only be used to implement and enhance the states' approved Coastal Zone Management programs
Coastal Services Center Grant Opportunities	Formula and program enhancement grants for implementing and enhancing Coastal Zone Management programs that have been approved by the Secretary of Commerce. http://www.csc.noaa.gov/funding/	Formula grants require non-federal match
Coastal Zone Management Program	The Office of Ocean and Coastal Resource Management (OCRM) provides federal funding and technical assistance to better manage our coastal resources. http://coastalmanagement.noaa.gov/funding/welcome.html	Funding is reserved for the nation's 34 state and territory Coastal Zone Management Programs
Marine and Coastal Habitat Restoration	Funding for habitat restoration, including wetland restoration and dam removal. http://www.nmfs.noaa.gov/habitat/recovery/	Funding available for state, local and tribal governments and for- and non-profit organizations.

Floodplain, Wetland and Watershed Protection Programs

USACE and the U.S. Fish and Wildlife Service offer funding and technical support for programs designed to protect floodplains, wetlands, and watersheds.

Funding and Technical Assistance for Wetlands and Floodplains Program	Details	Notes
USACE Planning Assistance to States (PAS)	Fund plans for the development and conservation of water resources, dam safety, flood damage reduction and floodplain management. http://www.lre.usace.army.mil/planning/assist.html	50 percent non-federal match
USACE Flood Plain Management Services (FPMS)	Technical support for effective floodplain management. http://www.lrl.usace.army.mil/p3md-o/article.asp?id=9&MyCategory=126	See website
USACE Environmental Laboratory	Guidance for implementing environmental programs such as ecosystem restoration and reuse of dredged materials. http://el.erdc.usace.army.mil/index.cfm	See website
U.S. Fish & Wildlife Service Coastal Wetlands Conservation Grant Program	Matching grants to states for acquisition, restoration, management or enhancement of coastal wetlands. http://ecos.fws.gov/coastal_grants/viewContent.do?viewPage=home	States only. 50 percent federal share
U.S. Fish & Wildlife Service Partners for Fish and Wildlife Program	Program that provides financial and technical assistance to private landowners interested in restoring degraded wildlife habitat. http://ecos.fws.gov/partners/viewContent.do?viewPage=home	Funding for volunteer-based programs

Housing and Urban Development

The Community Development Block Grants (CDBG) administered by HUD can be used to fund hazard mitigation projects.

Mitigation Funding Sources Program	Details	Notes
Community Development Block Grants (CDBG)	Grants to develop viable communities, principally for low and moderate income persons. CDBG funds available through Disaster Recovery Initiative. http://www.hud.gov/offices/cpd/communitydevelopment/programs/	Disaster funds contingent upon Presidential disaster declaration
Disaster Recovery Assistance	Disaster relief and recovery assistance in the form of special mortgage financing for rehabilitation of impacted homes. http://www.hud.gov/offices/cpd/communitydevelopment/programs/dri/assistance.cfm	Individuals
Neighborhood Stabilization Program	Funding for the purchase and rehabilitation of foreclosed and vacant property in order to renew neighborhoods devastated by the economic crisis. http://www.hud.gov/offices/cpd/communitydevelopment/programs/neighborhoodspg/	State and local governments and non-profits

Bureau of Land Management

The Bureau of Land Management (BLM) has two technical assistance programs focused on fire mitigation strategies at the community level.

Mitigation Funding Sources Program	Details	Notes
Community Assistance and Protection Program	Focuses on mitigation/prevention, education, and outreach. National Fire Prevention and Education teams are sent to areas across the country at-risk for wildland fire to work with local residents. http://www.blm.gov/nifc/st/en/prog/fire/community_assistance.html	See website
Firewise Communities Program	Effort to involve homeowners, community leaders, planners, developers, and others in the effort to protect people, property, and natural resources from the risk of wildland fire before a fire starts. http://www.firewise.org/	See website

U.S. Department of Agriculture

There are multiple mitigation funding and technical assistance opportunities available from the USDA and its various sub-agencies: the Farm Service Agency, Forest Service, and Natural Resources Conservation Service.

Mitigation Funding Sources Agency Program	Details	Notes
USDA Smith-Lever Special Needs Funding	Grants to State Extension Services at 1862 Land-Grant Institutions to support education-based approaches to addressing emergency preparedness and disasters. http://www.csrees.usda.gov/funding/rfas/smith_lever.html	Population under 20,000
USDA Community Facilities Guaranteed Loan Program	This program provides an incentive for commercial lending that will develop essential community facilities, such as fire stations, police stations, and other public buildings. http://www.rurdev.usda.gov/rhs/cf/cp.htm	Population under 20,000
USDA Community Facilities Direct Loans	Loans for essential community facilities. http://www.rurdev.usda.gov/rhs/cf/cp.htm	Population of less than 20,000
USDA Community Facilities Direct Grants	Grants to develop essential community facilities. http://www.rurdev.usda.gov/rhs/cf/cp.htm	Population of less than 20,000
USDA Farm Service Agency Disaster Assistance Programs	Emergency funding and technical assistance for farmers and ranchers to rehabilitate farmland and livestock damaged by natural disasters. http://www.fsa.usda.gov/	Farmers and ranchers
USDA Forest Service National Fire Plan	Funding for organizing, training, and equipping fire districts through Volunteer, State and Rural Fire Assistance programs. Technical assistance for fire related mitigation. http://www.forestsandrangelands.gov/	See website
USDA Forest Service Economic Action Program	Funds for preparation of Fire Safe plans to reduce fire hazards and utilize byproducts of fuels management activities in a value-added fashion. http://www.fs.fed.us/spf/coop/programs/eap/	80% of total cost of project may be covered
USDA Natural Resources Conservation Service Emergency Watershed Protection Support	Funds for implementing emergency measures in watersheds in order to relieve imminent hazards to life and property created by a natural disaster. http://www.nrcs.usda.gov/programs/ewp/	See website

Mitigation Funding Sources Agency Program	Details	Notes
Services		
USDA Natural Resources Conservation Service Watershed Protection and Flood Prevention	Funds for soil conservation; flood prevention; conservation, development, utilization and disposal of water; and conservation and proper utilization of land. http://www.nrcs.usda.gov/programs/watershed/index.html	See website

Health and Economic Agencies

Alternative mitigation programs can be found through health and economic agencies that provide loans and grants aimed primarily at disaster relief.

Federal Loans and Grants for Disaster Relief Agency Program	Details	Notes
Department of Health & Human Services Disaster Assistance for State Units on Aging (SUAs)	Provide disaster relief funds to those SUAs and tribal organizations who are currently receiving a grant under Title VI of the Older Americans Act. http://www.aoa.gov/doingbus/fundopp/fundopp.asp	Areas designated in a Disaster Declaration issued by the President
Economic Development Administration (EDA) Economic Development Administration Investment Programs	Grants that support public works, economic adjustment assistance, and planning. Certain funds allocated for locations recently hit by major disasters. http://www.eda.gov/AboutEDA/Programs.xml	The maximum investment rate shall not exceed 50 percent of the project cost
U.S. Small Business Administration Small Business Administration Loan Program	Low-interest, fixed rate loans to small businesses for the purpose of implementing mitigation measures. Also available for disaster damaged property. http://www.sba.gov/services/financialassistance/index.html	Must meet SBA approved credit rating

Research Agencies

The United States Geological Survey (USGS) and the National Science Foundation (NSF) provide grant money for hazard mitigation-related research efforts.

Hazard Mitigation Research Grants Agency Program	Details	Notes
National Science Foundation (NSF) Decision, Risk, and Management Sciences Program (DRMS)	Grants for small-scale, exploratory, high-risk research having a severe urgency with regard to natural or anthropogenic disasters and similar unanticipated events. http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5423&org=SES	See website
U.S. Geological Survey (USGS) National Earthquake Hazards Reduction Program	The purpose of NEHRP is to provide products for earthquake loss reduction to the public and private sectors by carrying out research on earthquake occurrence and effects. http://www.usgs.gov/contracts/nehrp/	Community with a population under 20,000

Appendix C: Meeting Documentation

Meeting #1: Wednesday, August 1, 2012 – 1:00 – 3:00 PM (2 hours)

- General discussion of requirements and in-kind match process
- Review goals of hazard mitigation plan and revise (hand out)
- Review hazards (see poster – Add hazards? Remove hazards?)
- Identify and map past/potential hazards (update map & lists in Chapter 2)
- Flooding – Are there any non-FEMA flood areas?
- Specific past and potential events of hazards not in 2008 plan (recent events)
- Potential development areas in town (compare with list in 2008 plan)
- Identify critical facilities (update map and list)
- Determine Vulnerability to Hazards for Town
- Determine Probability of Hazards for Town
- Review Critical Facilities & hazard vulnerability
- Discuss future meetings, public notice, stakeholders to be notified, notices to abutting towns

Meeting #2 Wednesday, August 15, 2012 – 12:00 – 2:00 PM (2 hours)

- Review previously determined potential mitigation efforts (were they implemented? If not, why not and are they still on the table to be implemented?)
- Brainstorm improvements to existing mitigation efforts
- Brainstorm potential new mitigation efforts

Meeting #3 Wednesday, September 5, 2012 – 1:00 – 3:00 PM (2 hours)

- Evaluate the past and potential mitigation efforts
- Develop a prioritized implementation schedule and discuss the adoption and monitoring of the plan

Meeting #4 Wednesday, September 12, 2012 - 12:00 – 1:00 PM (1 hour)

- Review and revise draft plan

PLEASE SIGN IN – Acworth, NH Hazard Mitigation Plan Meeting: August 1, 2012

	Name (please print)	Title & Town	Mailing Address	Telephone	E-mail
1	KATHI BRADT	AA ACWORTH	03601-0037	835 6879	TOWNOFF@SOVER.NET
2	DANIEL GIUSEPPONE	ACWORTH FIRE FIGHTER EMDD	128 BERYL MT. RD SOUTH ACWORTH, NH	835-2504	MARYDAN@MYFAIRPOINT.NET
3	Kenneth Grant	Acworth EM Director	03607 Box 16, Acworth, NH 03601	835-6848	NA
4	Steve G Morris	Acworth Fire Asst. Chief	1697 Rt 123A So Acworth	835-6293	
5	Deborah O. Hinman	Cold River LAC rep from Acworth.	PO Box 26 Acworth, NH 03601	835-2309	dhinman@sover.net
6	John W. Lucia	citizen	141 Luther Hill Rd Acworth N.H. 03601	835-2239	NONE
7					
8					
9					
10					
11					

PLEASE SIGN IN – Acworth, NH Hazard Mitigation Plan Meeting: August 15, 2012

	Name (please print)	Title & Town	Mailing Address	Telephone	E-mail
1	John W. Luther	MODERATOR the man	141 Luther Hill Rd	835-2239	Huh?
2	KATHI BRADT	ACWORTH AA	03601-0037	835 6879	TOWNOFF@SOVER.NET
3	DANIEL GIUSEPPONE	EMDD FIREFIGHER	128 BERYL MT. RD	835-2504	MARYDAN@MYFAIRPOINT.NET
4	Kenneth Grant	Acworth EM-Director	Box 16, Acworth, NH 03601	835-6848	Nope,
5	Deborah O. Hinman	Cold River LAC rep	Box 26, Acworth 03601	835-2309	dhinman@sover.net
6	David J Lacasse	DPW	PO Box 104 Acworth	835 6866	djlacasse@Lacasse Enterprise.com
7	Steve Morris	Acworth Fire Asst Chief	1697 Rt 123A S. Acworth	855 6293	SteveMorris.theplumber@GMAIL
8					
9					
10					
11					

PLEASE SIGN IN – Acworth, NH Hazard Mitigation Plan Meeting: September 5, 2012

	Name (please print)	Title & Town	Mailing Address	Telephone	E-mail
1	Gail Rocee	Principal Alstead Attend	PO Box 670 Ave. Alstead NH 03602	835-6351	grocee@sau60.org
2	DANIEL GIUSEPPONE	AVFC EMDD	128 BERYL MTN RD SOUTH ACWORTH, NH	835-2504	MARYDAN@MYFAIRPOINT.NET
3	KATHI BRANDT	AA	03601-0037	835-6879	TOWNOFF@SOVER.NET
4	Ken Grant	EMD	Box 16 Acworth, NH 0360,	835-6848	NA-
5	Sue Rondeau	Lead Teacher Acworth	PO Box 69 Acworth NH	835-2270	srondeau@sau60.org
6	Dave Lacasse	DPW Director	PO Box 104 Acworth, NH	835 6866	David@Lacasse Enterprise.com
7	Danielle Morse	Field Rep NH HSEM	33 Hazen Dr Concord NH	419-0814	danielle.morse@dos.nh.gov
8	John W. Kuthe	The average citizen	141 Town Hall Rd Acworth NH.	835-2239	?
9					
10					
11					

PLEASE SIGN IN – Acworth, NH Hazard Mitigation Plan Meeting: September 12, 2012

	Name (please print)	Title & Town	Mailing Address	Telephone	E-mail
1	DANIEL GIUSEPPONE				
2	KATHI BRADT	ACWORTH HA	03607-0017	835 6879	TOWNOFF@SOVER.NET
3	Ken Grant	Acworth EM Director	–	–	–
4	Steve MORRIS	Acworth Asst Chief		835-6293	
5	John W. LUTHER	Acworth		835-2239	
6					
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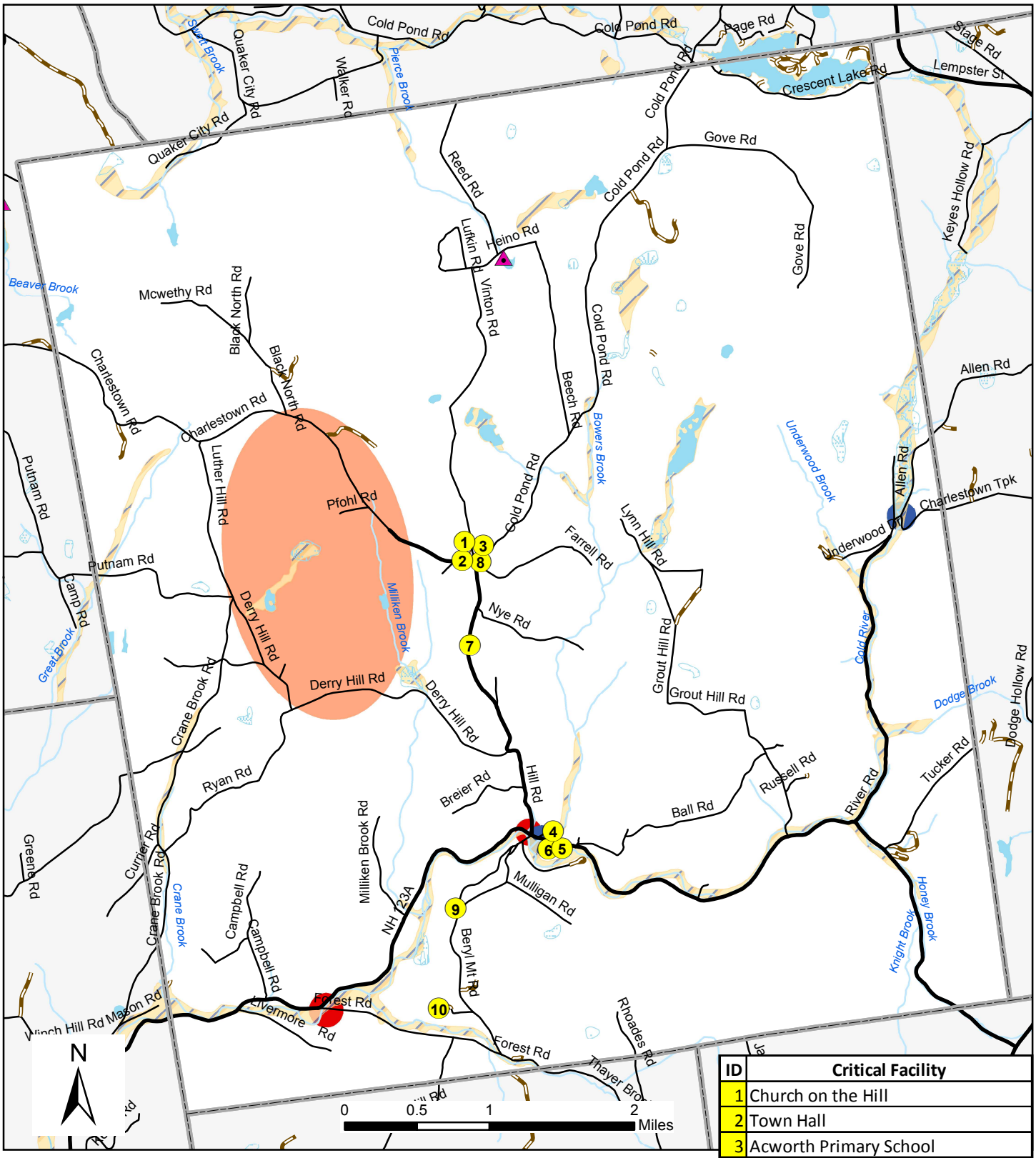
APPENDIX D:

Map of Hazard Areas and Critical Facilities

Critical Facilities and Hazard Areas - Town of Acworth, NH



ID	Critical Facility
1	Church on the Hill
2	Town Hall
3	Acworth Primary School
4	Church in the Valley
5	Community Aid Building
6	South Acworth Village Store
7	Acworth Firehouse
8	Acworth Silsby Library
9	Transfer Station & Highway Garage
10	R.L. Balla Lumber Inc.

Erosion
Landslide
Winter Weather
100-Yr Flood Zone
Low Hazard Dam
State Road
Town Maintained Road
Private Road

Map created 09/2012 by UVLSRPC - for planning only. Roads, 2011, from NHDOT. Town lines, water features, FEMA Flood Hazard Areas, 1992/2006/2006, from NH GRANIT. Dams, date unknown, from NHDES Dam Bureau. Hazards & facilities mapped by UVLSRPC, 2012.

APPENDIX E:

FEMA Approvals and Town Adoption of Hazard Mitigation Plan

Town of Acworth, New Hampshire
Board of Selectmen
A Resolution Approving the Acworth Hazard Mitigation Plan Update 2012

WHEREAS, the Town of Acworth received assistance from the Upper Valley Lake Sunapee Regional Planning Commission through funding from the NH Homeland Security and Emergency Management to prepare a hazard mitigation updated plan; and

WHEREAS, several planning meetings to develop the hazard mitigation plan update were held in August through September 2012 and then presented to the Board of Selectmen for review and discussion on FEB 26, 2013; and

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

WHEREAS, the Board of Selectmen held a public meeting on FEB 26, 2013 to formally approve and adopt the Acworth Hazard Mitigation Plan Update 2012.

NOW, THEREFORE BE IT RESOLVED that the Acworth Board of Selectmen approve the Acworth Hazard Mitigation Plan Update 2012.

APPROVED and SIGNED this 26 day of FEB, 2013.

TOWN OF ACWORTH
BOARD OF SELECTMEN

Gretchen Abendschein
Chair

(seal)

ATTEST: Charlotte Comeau

U.S. Department of Homeland Security
FEMA Region I
99 High Street, 6th Floor
Boston, MA 02110

FEMA

April 22, 2013

Rob DeValk, Selectboard Chair
Acworth Board of Selectmen
PO Box 37
Acworth, NH 03601

Dear Mr. DeValk:

Thank you for the opportunity to review the Town of Acworth, NH Hazard Mitigation Plan. The Department of Homeland Security (DHS), Federal Emergency Management Agency (FEMA) Region I has evaluated the plan for compliance with 44 CFR Part 201. The plan satisfactorily meets all of the mandatory requirements set forth by the regulations. Congratulations on this achievement!

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

Approved mitigation plans are eligible for points under the National Flood Insurance Program's Community Rating System (CRS). Complete information regarding the CRS can be found at ***www.fema.gov/business/nfip/crs.shtm*** or through your local floodplain manager.

The Town's Hazard Mitigation Plan must be reviewed, revised as appropriate, and resubmitted to FEMA for approval within **five years of the plan approval date of April 1, 2013** in order to maintain eligibility as an applicant for mitigation grants. Over the next five years, we encourage the Town to continue updating the plan's assessment of vulnerability, adhere to its maintenance schedule, and begin implementing, when possible, the mitigation actions proposed in the plan.

Once again, thank you for your continued dedication to public service demonstrated by preparing and adopting a strategy for reducing future disaster losses. Should you have any questions, please do not hesitate to contact Marilyn Hilliard at (617) 956-7536.

Sincerely,

Paul F. Ford
Acting Regional Administrator

PFF:mh

cc Beth Peck, Acting State Hazard Mitigation Officer
Jennifer Gilbert, NFIP Coordinator
Victoria Davis, Upper Valley Lake Sunapee RPC
Kenneth Grant, Acworth EMD

Enclosure

Approved Town of Acworth NH
Hazard Mitigation Plan Update 2013

LOCAL MITIGATION PLAN REVIEW TOOL
Checklist & Plan Assessment

The *Local Mitigation Plan Review Tool* demonstrates how the Local Mitigation Plan meets the regulation in 44 CFR §201.6 and offers States and FEMA Mitigation Planners an opportunity to provide feedback to the community.

- The Regulation Checklist provides a summary of FEMA's evaluation of whether the Plan has addressed all requirements.
- The Plan Assessment identifies the plan's strengths as well as documents areas for future improvement.
- The Multi-jurisdiction Summary Sheet is an optional worksheet that can be used to document how each jurisdiction met the requirements of the each Element of the Plan (Planning Process; Hazard Identification and Risk Assessment; Mitigation Strategy; Plan Review, Evaluation, and Implementation; and Plan Adoption).

The FEMA Mitigation Planner must reference this *Local Mitigation Plan Review Guide* when completing the *Local Mitigation Plan Review Tool*.

Jurisdiction: Town of Acworth, NH	**Title of Plan:** Town of Acworth Hazard Mitigation Plan Update 2013. **Type of Plan:** Single Jurisdiction	**Date of Plan:** 2012 **Update?** Yes: **X** No_ Plan Adopted: 2/26/13
Local Point of Contact: Kenneth Grant **Title:** EMD **Agency:** Town of Acworth, NH **Phone Number:** 603-835-6879 **E-Mail:** recreation@nl-nh.com	**Address:** P.O. Box 37 Acworth, NH 03601	
Local Point of Contact: Victoria Davis **Title:** Planner **Phone Number:** (603) 448-1680 **E-Mail:** vdavis@uvlsrpc.org	**Address:** Upper Valley Lake Sunapee RPC 10 Water Street Lebanon, NH 03766	

State Reviewer: Beth Peck	**Title:** Hazard Mitigation Planner, PDM Grant Manager **E-Mail:** **elizabeth.peck@dos.nh.gov**	**Date:** 09/14/2012 09/27/2012

FEMA Reviewers: Alyse Struzziery Brigitte Ndikum-Nyada	**Titles:** STARR Reviewer Community Planner	**Dates:** 10/17/2012, 1/24/2013, 2/15/13 & & 4/1/2013
Date Received in FEMA Region	9/27/2012	
Plan Not Approved	1/24/2013	
Plan Approvable Pending Adoption:	2/15/2013	
Plan Adopted	2/26/2013	
Plan Approved	4/1/2013	

See Section 2 for Plan Strengths and Opportunities for Improvement.

SECTION 1: REGULATION CHECKLIST

INSTRUCTIONS: The Regulation Checklist must be completed by FEMA. The purpose of the Checklist is to identify the location of relevant or applicable content in the Plan by Element/sub-element and to determine if each requirement has been 'Met' or 'Not Met.' The 'Required Revisions' summary at the bottom of each Element must be completed by FEMA to provide a clear explanation of the revisions that are required for plan approval. Required revisions must be explained for each plan sub-element that is 'Not Met.' Sub-elements should be referenced in each summary by using the appropriate numbers (A1, B3, etc.), where applicable. Requirements for each Element and sub-element are described in detail in this *Plan Review Guide* in Section 4, Regulation Checklist.

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	**Location in Plan (section and/or page number)**	**Met**	**Not Met**
ELEMENT A. PLANNING PROCESS			
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))	Ch. I, Part E p. 2-6 Appendix C	X	
A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))	Ch. I, Part E p. 2-5	X	
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))	Ch. I, Part E p. 2-5	X	
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))	Ch. I, Part E p. 2-5 Ch. VII, p. 45-48 Resources, end of plan Appendix A	X	
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))	Ch. I, Part E p. 3-5 Ch. VI, p. 45-48 Ch. IX, p. 55	X	
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))	Ch. IX, p. 55	X	
ELEMENT A: REQUIRED REVISIONS: **See Section 2 for Plan Strengths and Opportunities for Improvement.**			
ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT			
B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))	Ch. III, Part B p. 10-34 Appendix D	X	

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))	Ch. III, Part B p. 10-34	X	
B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))	Ch. III, Part C p. 35-38 Ch. IV, p. 39 Ch. V, p. 40-44 Appendix D	X	
B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))	Ch. III, Part B p. 16-17	X	
ELEMENT B: REQUIRED REVISIONS: **See Section 2 for Plan Strengths and Opportunities for Improvement.**			
ELEMENT C. MITIGATION STRATEGY			
C1. Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3))	Ch. VI, p. 45-49	X	
C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))	Ch. III, Part B p. 16 Ch. VI, p. 45-48 Ch. VII, Part B p. 50-52	X	
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))	Ch. 1, Part F p. 5 Ch. VII, Part A p. 50	X	
C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(ii))	Ch. VI, p. 45-49 Ch. VII, Part B p. 50-52	X	
C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))	Ch. VII, Part C p. 51-52 Ch. VIII, p. 53-54	X	
C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))	Ch. IX, Part A p. 55	X	
ELEMENT C: REQUIRED REVISIONS: **See Section 2 for Plan Strengths and Opportunities for Improvement.**			
ELEMENT D. PLAN REVIEW, EVALUATION, AND IMPLEMENTATION (applicable to plan updates only)			

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
D1. Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))	Ch. II, Parts A & B p. 7-9 Ch. V, p. 40-44	X	
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))	Ch. VI, p. 45-48	X	
D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))	Ch. VI, Table VI-2 p. 49. Ch. VII, Parts B & C p. 50-52 Ch. VIII, p. 53-54	X	
ELEMENT D: REQUIRED REVISIONS: **See the last pages for Plan Strengths and Opportunities for Improvement.**			
ELEMENT E. PLAN ADOPTION			
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))	Town of Acworth Adopted the HM Plan on **2/26/2013**. The signed Certificate of adoption is on second to the last page of the Plan	X	
E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))	**N/A** – this is a single plan	-	-
ELEMENT E: REQUIRED REVISIONS:			
ELEMENT F. ADDITIONAL STATE REQUIREMENTS (OPTIONAL FOR STATE REVIEWERS ONLY; NOT TO BE COMPLETED BY FEMA)			
F1.			
F2.			
ELEMENT F: REQUIRED REVISIONS			

SECTION 2: PLAN ASSESSMENT

A. Plan Strengths and Opportunities for Improvement

This section provides a discussion of the strengths of the plan document and identifies areas where these could be improved beyond minimum requirements.

Element A: Planning Process

Plan Strengths:

- The plan provides a brief, but detailed, description of the plan update process and the 10 steps that were followed. One of the steps is "Identify the Gaps in Protection/Mitigation" and the gaps are mentioned in Chapter VI. (*Chapter I, Part E, p. 2-5; Chapter VI, p. 45-48*)

Opportunities for Improvement:

- Provide a description of the "Gaps in Protection/Mitigation" that were identified and the methodology for how the proposed improvements were determined. (*Chapter VI, p. 45-48*)
- The plan states that the regional school principal and a teacher attended a public meeting to assist with information about the school's emergency plan. Describe how that information was incorporated into this plan update.
- Although the plan states that no one else from the public (aside from the regional school principal and the teacher) attended any of the public meetings, the plan should specify if the public shared any information with the Hazard Mitigation Committee at other times during the plan update process. **If so, describe how that information was incorporated into this plan update.** If not, provide a statement to clarify that no information from the public was provided. This was accomplished during this update. Continue to incorporate the general public's feedback and input.
- Consider using more diverse methods of participation, such as surveys, questionnaires, or workshops, to solicit public input and feedback.
- A good plan needs to provide for periodic monitoring and evaluation of its successes and failures and allow for updates of the Plan where necessary. Include all supporting documents with the next update. During the next Plan update, the jurisdiction must provide documentations relevant to monitoring, evaluating and updates of policies, programs and actions/activities that support the mitigation strategies.

Element B: Hazard Identification and Risk Assessment

Plan Strengths:

- The plan provides a detailed description of each identified hazard, provides a detailed description of past hazard events, and provides a detailed vulnerability assessment for each identified hazard as well. This gives a well-rounded vision of what could be expected should any of the hazard events were to occur. (*Chapters III-V, p. 10-44*)
- Table III-11 summarizes the Town's vulnerability for the existing developed areas in terms of human impact, property impact, and economic impact for each identified hazard. (*Chapter III, Table III-11, p. 36*)

- The plan describes the different kinds of potential events for each identified hazard [i.e., flooding is broken down into several types that could occur: 100-year floods, river ice jams, rapid snow pack melt, severe storms, beaver dams and lodging, and bank erosion and failure]. This is helpful in the sense that it provides clarification of the different types of the identified hazard that may occur. (*Chapter III, Part B, p. 10-35*)
- Appendix D provides a detailed map that identifies the hazard locations and critical facilities within the Town.
- The Plan describes the Town's vulnerability to each identified hazard in detail and designates a risk factor for each hazard as well. (*Chapter V, p. 40-44*)
- Great cover-page photographs. Provide names of photographs' locations and credit photographer(s).

Opportunities for Improvement:

- Consider providing documentation that describes whether the Town's vulnerability has changed since the previous plan. Describe if any existing mitigation actions/strategies have decreased the Town's vulnerability to any of the identified hazards.
- FEMA doesn't require maps in the plans. *However,* maps are strongly recommended as they can present information very effectively especially when making spatial relationships that may otherwise get lost in text. Consider adding maps to identify known hazard areas.

Element C: Mitigation Strategy

Plan Strengths:

- Table VI-2 identifies how the existing mitigation action improvements have been prioritized. (*Chapter VI, Table VI-2, p. 49*)
- The plan provides the evaluation criteria that were used to review and prioritize the newly identified mitigation strategies. Table VII-2 summarizes the prioritization of the newly identified actions. (*Chapter VII, Table VII-2, p. 50-52*)
- Chapter VIII provides the prioritized implementation schedule of the existing program improvements with designated timeframes of when will begin. (*Chapter VIII, Table VIII-1, p. 53-54*)

Opportunities for Improvement:

- Provide a timeframe to complete the existing mitigation actions that have been updated to "continue". Mitigation actions cannot remain in progress and must have a timeframe to be completed in order to measure progress towards successful mitigation. Consider including the steps to identify how those actions will be implemented and completed within a designated timeframe.
- Consider providing the prioritization scores for the existing mitigation actions from the previous plan as a way to better understand if any prioritization has been changed to reflect the improvements to those existing actions.
- The HM Plan **must** include general hazard mitigation goals that represent what the Town of Acworth seeks to accomplish through mitigation plan implementation. The goals **must** be

consistent with the hazards identified in the plan. The purpose of Hazard Mitigation goals is to guide the development and implementation of hazard mitigation actions for the Town of Acworth.

Element D: Plan Update, Evaluation, and Implementation (*Plan Updates Only*)

Plan Strengths:

- Table VI-1 describes the existing mitigation actions, but also identifies if those actions were from the previous plan or have been updated. (*Chapter VI, Table VI-1, p. 45-48*)
- The plan provides a description of how it will be evaluated, who will monitor the plan, and how updates will be made to accommodate for the projects that have succeeded, failed, or are no long considered feasible. (*Chapter IX, p. 55*)

Opportunities for Improvement:

- Consider providing designated timeframes of when the existing program improvements (as shown in Chapter VIII) will be completed.
- Consider including the previous plan's goals and mitigation strategies in this plan update as a way to show the Town's commitment and progress towards hazard mitigation.
- Describe the evaluation criteria that will be used to evaluate the plan in the next plan update.
- The plan shows where revisions have been made to the existing mitigation strategies from the previous plan, but it does not show any changes in the Town's priorities towards the existing and newly identified mitigation strategies. The plan update must provide a description to indicate whether or not any changes in the Town's priorities of their mitigation strategies have changed. If no changes to priorities have been given, the plan must state so.
- Describe how the Town will continue its mitigation efforts as future development is allowed.

B. Resources for Implementing Your Approved Plan

- The State of New Hampshire Hazard Mitigation Plan 2013 Update is an excellent resource to identify a number of potential funding sources for various mitigation activities.
- More information about applying for grants, available publications and training opportunities can be obtained from the New Hampshire's State Hazard Mitigation Officer.
- Consider what actions can be funded by various other governmental agencies (federal and state), especially when meeting multiple community goals. Federal agencies may support integrated planning efforts such as rural development, sustainable communities and smart growth, wildfire mitigation, conservation, watershed and estuary management, etc. Also, there may be other Federal Initiatives (Smart Growth, Sustainable Communities) and pilot projects (Federal Highways).

- Seek out other non-governmental or non-emergency management funding sources such as from private foundations, organizations, and businesses, or other programs such as historic preservation.
- The planning stages of riverine hazard mitigation projects may be eligible for assistance from the U.S. Army COE and the USDA Natural Resources Conservation Service.
- Explore opportunities for further coordination of hazard mitigation planning and 208 storm water planning to achieve efficiencies and dual purpose projects.
- Refer to the State Hazard Mitigation Plan Update for more resources available to local communities in New Hampshire.
- Explore opportunities for further coordination of hazard mitigation assistance of Part 406 and/or Part 404 or document the use of any of this mitigation assistance.

Technical Assistance

Technical assistance is available through **Risk MAP** to assist communities in identifying, selecting, and implementing activities to support mitigation planning and risk reduction; Attend any Risk MAP's discovery meetings that may be scheduled in the State (or neighboring communities with shared watersheds boundaries) in the future.

USDA, Natural Resources Conservation Service (NRCS)
Conservation Technical Assistance
http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/technical/cta

Publications

FEMA B-797, Hazard Mitigation Field Book – Roadways
http://www.fema.gov/library/viewRecord.do?fromSearch=fromsearch&id=4271

Flood Hazard Mitigation Handbook for Public Facilities
http://www.fema.gov/library/viewRecord.do?fromSearch=fromsearch&id=3724

FEMA 386-6, Mitigation Planning How To #6: Integrating Historic Property & Cultural Resource Considerations into Hazard Mitigation Planning
http://www.fema.gov/library/viewRecord.do?fromSearch=fromsearch&id=1892

FEMA P-787 Catalog of FEMA Wind, Flood & Wildfire Publications, Training Courses & Workshops (2012)
http://www.fema.gov/library/viewRecord.do?fromSearch=fromsearch&id=3184

- ***Mitigation Ideas: A Resource for Reducing Risk from Natural Hazards*** is available on the FEMA website at http://www.fema.gov/hazard-mitigation-planning-resources#7. Through Risk MAP, FEMA has developed and released this new resource for helping communities identify actions to improve their disaster resiliency! *Mitigation Ideas: A Resource for Reducing Risk from Natural Hazards* presents ideas for how to mitigate the impacts of

different natural hazards, from drought and sea level rise, to severe winter weather and wildfire. The document also includes ideas for actions that communities can take to reduce risk to multiple hazards, such as incorporating a hazard risk assessment into the local development review process.

- There is a New Tool called "Action Tracker" for Mitigation Actions. The Action Tracker is a new data system FEMA is using to document mitigation ideas and progress for all communities. Check this link to obtain and set up a profile to follow and maintain your community's selected mitigation actions/projects: http://fema.starr-team.com/Account/Login.aspx?ReturnUrl=%2f or http://fema.starr-team.com

- **Other consideration:** Creating Equitable, Healthy, and Sustainable Communities: Strategies for Advancing Smart Growth, Environmental Justice, and Equitable Development… http://www.epa.gov/smartgrowth/equitable_development_report.htm
- More information on the Partnership for Sustainable Communities: http://www.sustainablecommunities.gov
- FEMA's Planning for a Sustainable Future: the Link Between Hazard Mitigation and Livability http://www.fema.gov/library/viewRecord.do?id=1541 FEMA 364 illustrates how communities, whether planning for hazard mitigation before a disaster or initiating recovery planning after a disaster, can integrate the concepts and principles of sustainable development into each phase of mitigation planning. FEMA 364 also shows how disaster resistance can be a catalyst to help communities incorporate sustainable development practices into their day-to-day planning and development functions. FEMA 364 gives real-life examples of communities that have successfully implemented sustainable development practices in their community and describes how citizens and local officials can become advocates for disaster resistance as a part of sustainable development and livability in their communities.