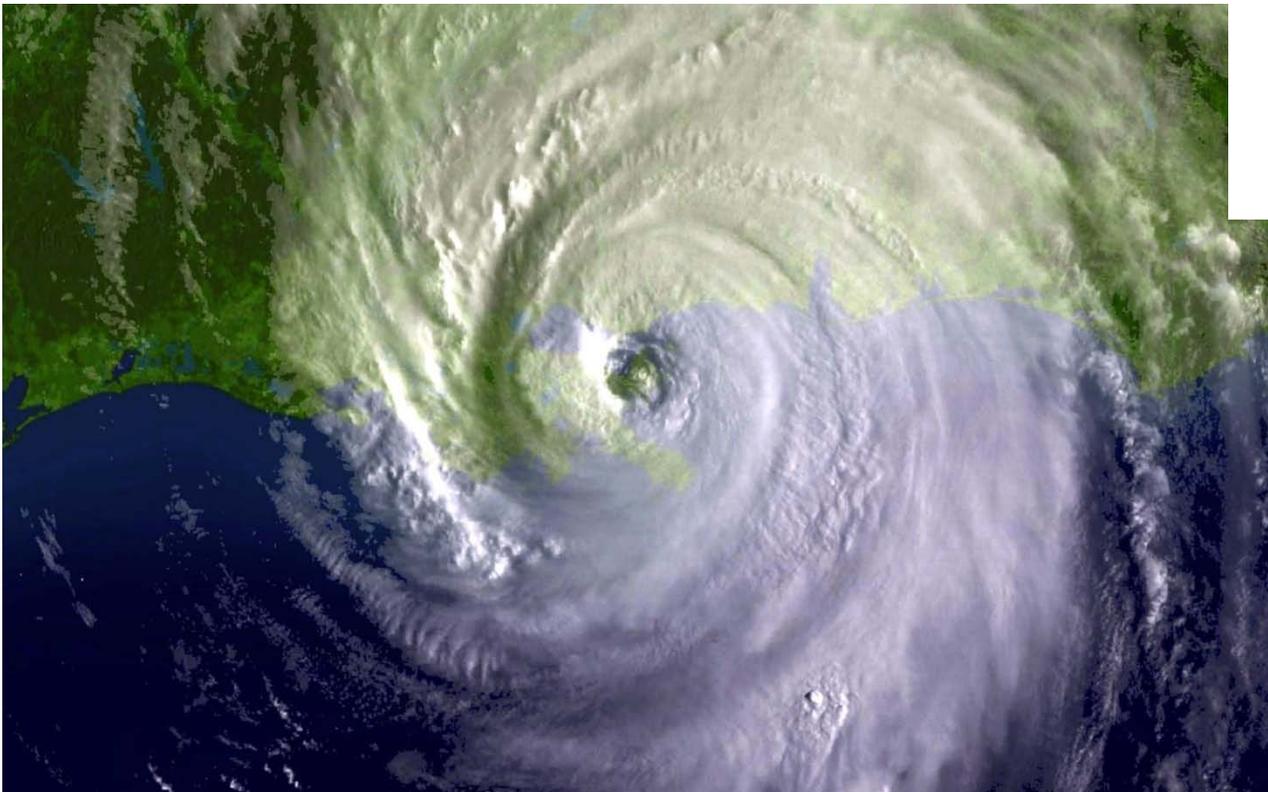


OFFICE OF EMERGENCY MANAGEMENT

Hazard Mitigation Plan Update December 2009



- SECTION 2** *Hazard Mitigation Strategies: Development of goals / objectives & policies / programs; task responsibility & schedule; procedures to evaluate / update the Plan; progress report*
- APPENDIX A** *Hazard Identification & Analysis: Identification / analysis of each type of hazard that could impact Burke County*
- APPENDIX B** *Assessment of Vulnerability: Inventory of critical facilities, damage cost estimates, map risks & vulnerabilities*
- APPENDIX C** *County Capability Assessment: Inventory of existing / proposed hazard mitigation programs & effectiveness; evaluation of county's technical & fiscal capabilities to implement objectives*
- APPENDIX D** *Evaluation of County & Municipal Policies & Ordinances: Identification of current mitigation goals / objectives and obstacles, determination of need to modify existing goals / objectives*
- APPENDIX E** *Project Schedule*
- SUPPLEMENTAL ATTACHMENT A** *Public Notices, Meeting Sign-In Sheets, Resolution of Adoption*
- SUPPLEMENTAL ATTACHMENT B** *Municipal Attachments (Morganton, Drexel, Glen Alpine, Valdese, Rutherford College, Connelly Springs, Hildebran)*
- SUPPLEMENTAL ATTACHMENT C** *Duke Power Emergency Action Plan for Dam Failure Event*Page

The following county & municipal staff members worked on the Planning Committee:

Randy Price, Emergency Management, **Burke County Emergency Services**
 Mark Pitts, Fire Marshal, **Burke County Fire Marshal's Office**
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 Susan Berley, AICP, **Burke County Planning Department**
 Barry Vess, **Burke County Building Inspections**
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 John Kinley **Town of Hildebran**
 Jeanie Barus, Town Clerk, **Town of Connelly Springs**
 Jerry Causby, Planner, **Town of Glen Alpine**
 W.F. Brown, III, **Safety Director, Broughton Hospital**

1: Introduction and Background Information

County Profile

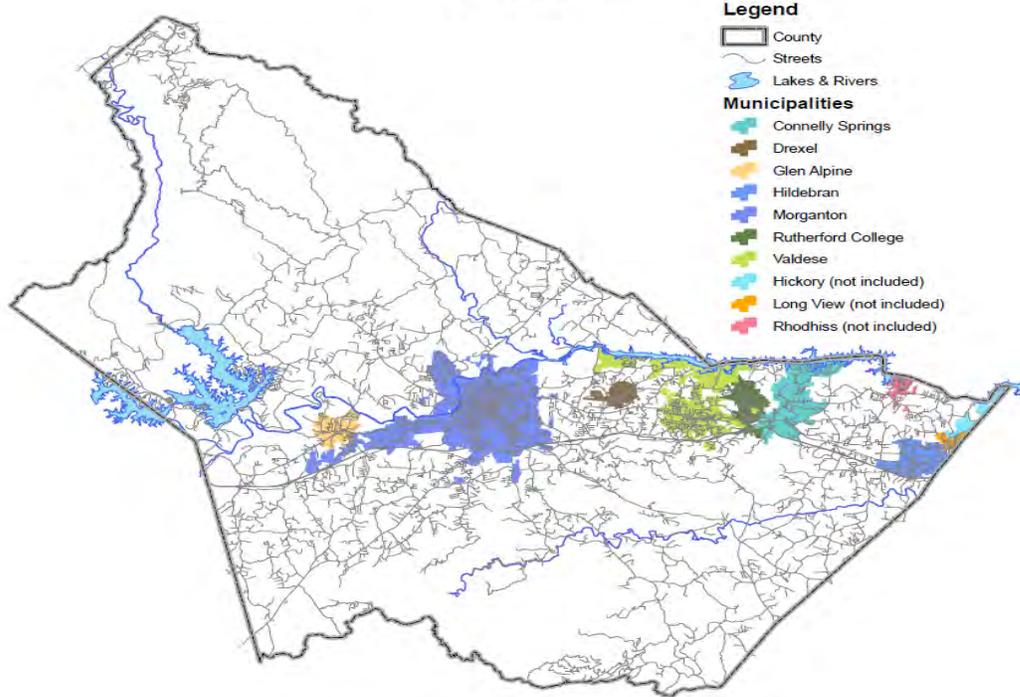
Burke County is located in the foothills region of western North Carolina and is just over 500 square miles in size. The varied landscape of the county goes from the Blue Ridge escarpment to the rolling plains of the western piedmont. There are seven municipalities that lie entirely in Burke County including Morganton, Glen Alpine, Drexel, Valdese, Connelly Springs, Rutherford College, and Hildebran. The City of Hickory and the Town of Longview are located in Catawba County, but a portion of their extra-territorial jurisdiction is located in the extreme eastern reaches of Burke County and they are not included in this plan. The Town of Rhodhiss has a portion of their jurisdiction in Burke County as well, but they did not participate in this planning process and are not represented in this document. A map of the county including the location of the municipalities is included on the following page.

Burke County's population grew only 4.5% during the 1980s, however this trend did not continue in the 1990s. The County quadrupled its growth rate of the 1980s with an 18% increase in population during the 1990s. Over 75% of this growth was the direct result of net in-migration from nearby areas, other eastern states, and foreign countries. These new citizens were attracted to the area by the 21,670 new jobs created in the region during the 1990s. This also had an impact on the price of land in Burke County and the convenient access to Interstate 40 makes it an attractive place to live for people commuting to work outside of the county as well. The County's population also shows significant aging in the past couple of decades. Although the 18-44 age group makes up nearly 37% of the population, the 65+ age group grew at a faster rate (77.9%) than any other between 1980 and 2000. (Census data, 2000)

Burke County's economy experienced a transformation during the 1990's, transitioning from a manufacturing-based economy to a service-based economy (56.8%). Of the many types of service industries, Tourism and Recreation are perhaps the best suited for Burke County. The County has abundant natural resources including South Mountains State Park, Pisgah National Forest and the Linville Gorge Wilderness Area, the Catawba River, the Johns River, the Henry River, Table Rock Mountain, the Blue Ridge Parkway, and the recently announced 3000-acre expansion of the Lake James State Park. These natural resources offer excellent recreational opportunities and attract visitors from across the southeastern United States. Per capita income has grown over the last twenty years, but the rate of increase has slowed significantly and ranks 57th among other North Carolina counties.

To better understand citizen concerns, Burke County conducted a Community Opinion Survey in August 2001. The survey asked citizens to rank 13 separate issues on their "level of importance," and also asked for comments on specific issues such as growth. The ten highest ranking issues were the following, in order: Better Jobs, Protecting the Environment, Water Service, Police / Fire / Rescue Service, Schools, Developing New Industry, Road Improvements, County Appearance, Retaining Agriculture / Farming, and

Burke County & Municipalities Map C-2



Legend

- County
- Streets
- Lakes & Rivers
- Municipalities**
- Connelly Springs
- Drexel
- Glen Alpine
- Hildebran
- Morganton
- Rutherford College
- Valdese
- Hickory (not included)
- Long View (not included)
- Rhodhiss (not included)



0 5 10 Miles

Burke County GIS
May 2009

Sewer Service. Additional comments included a strong concern that Burke County was growing too fast and that unplanned growth threatened the rural character of the county. These citizen preferences can open the door to more innovative approaches to spatial arrangements and open space preservation while having the dual function of mitigating natural hazards.

Growth is occurring predominantly in the municipalities, though some outlying areas in the county's zoning jurisdiction near them are growing too. The one area isolated from the municipalities that is projected to grow is in the area around Lake James in the western portion of the county. That area is currently included in a planning process that is in progress and will have the effect of recommending the implementation of lower density zoning due to the environmental and scenic qualities of the area. There is already some low density conservation zoning in the area, and that should expand in the near future. This will have the effect of providing an additional measure of natural hazard mitigation by limiting the amount and type of development near the lake and the Catawba River. A map of the county zoning is included on the following page, and shows that higher density and non-residential zoning is found closer to the municipalities and the Interstate 40 corridor, lower density rural districts are further from these areas. The primary natural hazard associated with this scenario is the danger of flooding of the Catawba River and its primary tributaries.

County Profile Update 2009

The population growth trend of the 1990s has not continued. Since 2000 there has been negligible population growth in Burke County (1% from 2000 through 2006). This may be attributed to the loss of nearly 4000 manufacturing jobs between 2000 and 2003 and the recent economic downturn. Population projections to 2020 anticipate that overall the County will grow by only 7%.

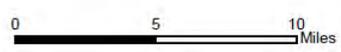
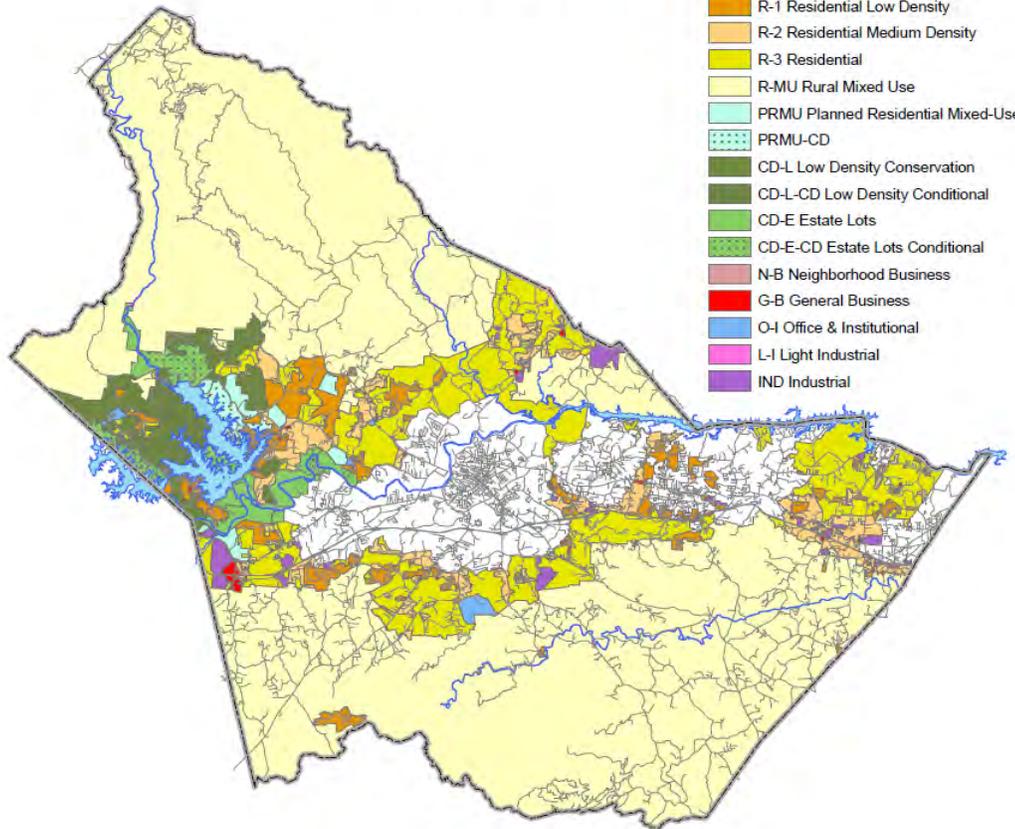
The percent growth in new housing units for Burke County has exceeded population growth from 2000 through 2006 with a rate of 4.3%. Persons per unit declined in Burke, following national trends as family size diminishes and older adults continue to live longer by themselves. Though population growth has slowed, with the increasing trend for new housing units comes the potential for property owners wanting to locate homes in natural hazard areas. In addition, manufactured homes consisted of twenty-six percent of the 2006 housing stock in Burke County. Oftentimes manufactured homes are more susceptible to natural hazards than site built homes.

Description of the Planning Process & Summary

Burke County Hazard Mitigation Plan was developed by the County Office of Emergency Services, Burke County Community Development Department and various representatives from the following municipalities: Morganton, Glen Alpine, Drexel, Valdese, Connelly Springs, Rutherford College, and Hildebran. A variety of stakeholders were involved throughout the plan development process through public meetings held to discuss and review the planning document. Existing land use plans and policies from the

Burke County Zoning Map C-1

- Legend**
-  County
 -  Streets
 -  Lakes & Rivers
 -  R-1 Residential Low Density
 -  R-2 Residential Medium Density
 -  R-3 Residential
 -  R-MU Rural Mixed Use
 -  PRMU Planned Residential Mixed-Use
 -  PRMU-CD
 -  CD-L Low Density Conservation
 -  CD-L-CD Low Density Conditional
 -  CD-E Estate Lots
 -  CD-E-CD Estate Lots Conditional
 -  N-B Neighborhood Business
 -  G-B General Business
 -  O-I Office & Institutional
 -  L-I Light Industrial
 -  IND Industrial



Burke County GIS
May 2009

county and the municipalities were analyzed for information relevant to natural hazard mitigation. Copies of the initial draft document were placed on the County website and placed in the two county libraries. Each jurisdiction reviewed the plan and identified their respective hazards and due to the similarity, the agreement was to consolidate each plan into an overall county Hazard Mitigation plan. Flyers inviting citizens to attend “drop-in” sessions were placed throughout the county and in the local newspaper. Written requests for comments were sent to the Duke Power Company, Rutherford Electric Membership Corp., Western Piedmont Community College, and Blue Ridge Healthcare (owns local hospitals). The Duke Power Company provided information regarding dam safety and inundation patterns in the event of a dam failure. The hazard mitigation committee of the county met on several occasions to discuss and review the findings. Finally, formal public hearings (Appendix E Project Schedule) were held as well. (Supplemental Attachment A includes sign in sheets and public notices.) At the public hearing, only a small number of citizens attended. During the opportunity to comment, there were no public comments received.

The plan takes a comprehensive view by identifying and analyzing the natural hazards that could impact Burke County and its municipalities. The bulk of the plan document is contained in the appendices that cover hazard identification and analysis, an assessment of the County’s vulnerability to natural hazards, an assessment of the County’s capability to address natural hazards, and evaluation of current County policies and ordinances that influence hazard mitigation planning.

The essence of the plan is contained in Section 2 Hazard Mitigation Strategies, which outlines activities that can be implemented to reduce or eliminate exposure to natural hazards, particularly on reducing exposure to flood damages. Flooding was identified as the natural hazard most likely to impact the greatest number of citizens and the greatest land area. Flooding is also the only natural hazard where the area of impact can be predicted given the rainfall event and the characteristics of the drainage basin. Thus, flood damage prevention has the most potential to reduce citizen exposure to natural hazards.

Now that the plan is complete, the real work effort begins. Over the next several years, the County and the municipalities will be implementing the identified hazard mitigation strategies to ensure that the public benefits from this planning effort.

As these strategies are implemented, elected and appointed boards and staff will be promoting the public health, safety, and welfare. The plan will also be re-evaluated every 5 years by a multi-jurisdictional committee of planning and emergency management staff members utilizing information received from well-advertised citizen comment periods and directives from elected and appointed officials. Copies of the approved plan will be posted on the county website and available for public review in the two county libraries and various county / municipal offices.

Planning Process & Summary Update

The process to update the Burke County Natural Hazards Mitigation Plan began in October 2008. Burke County’s Emergency Management Director coordinated the effort and

established a committee to work on the update. Committee members included staff from Burke County as well as from all seven municipalities participating in the multi-jurisdictional plan (Connelly Springs, Drexel, Glen Alpine, Hildebran, Morganton, Rutherford College and Valdese). In addition, an invitation was extended to special populations to participate in the committee meetings. This invitation was sent to non-English speaking, deaf, institutional communities as well as to utility providers. From October 2008 through April 2009 the committee met monthly.

Burke County Hazard Mitigation
Planning Committee

Randy Price,	Emergency Management,	Burke County Emergency Services
Mark Pitts,	Fire Marshal,	Burke County Fire Marshal's Office
Lisa Propst,	Communications Manager,	Burke County Emergency Services
Susan Berley, AICP,	Director,	Burke County Planning Department
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Steve Holden,		Burke County Building Inspections
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Jerry Causby,	Planner,	Town of Glen Alpine
W.F. Brown, III,	Safety Director,	Broughton Hospital

During the November and December 2008 meetings the committee discussed risk assessment and issues that needed to be included in the update due to changes since 2004 when the plan was initially adopted. Changes included significant events, expansion of city/town limits, population changes, new ordinances or policies, progress towards mitigation activities and major construction. Each municipality was asked to analyze each section of their existing plan and forward updates to the Burke County Emergency Management Director. Focus was to be on any significant changes, events, ordinances or policies that had occurred since the last version of the plan. Each jurisdiction reviewed their part of each section of the County plan looking for things that have changed over the 5 year period. Assignments and objectives were assigned in the following areas:

Section 1 Introduction, planning process, and Background. Look for any planning needs or improvements, background changes.

Section 2- Hazard Mitigation Strategy-Review strategy, are objectives still appropriate, are existing policies/procedures still appropriate/

Appendix A- Hazard Analysis- Are hazards the same, look for events, locations, trends etc.
Appendix B- Assessment of vulnerability-is assessment method still effective, any new hazards and effect of those
Appendix C-Capability assessment-are existing assessments accurate or do they need changes
Appendix D- Policies-are existing policies still effective and appropriate

The County Planning Director, Emergency Management Director, and Fire Marshal met to review the plan modifications. Development trends and new activities that were identified and submitted from each municipality were analyzed and discussed. Any questions or concerns were returned to the jurisdiction for clarification. Each jurisdiction was allowed to respond to any concerns. Then information was included into the plan update. Overall, most of the plan was left unchanged. There were a few hazards that were added from the municipalities, such as Drought and Hail. These updates are summarized in Supplemental Attachment B pg. 103.

During this update, the original plan goals were reviewed and updated. The committee adopted Five more goals, that were suggested by other jurisdictions. The following is an updated version of the original goals.

The goals serve as the basis for development of the more specific plan objectives and hazard mitigation activities.

The North Carolina Division of Emergency Management has developed four broad goals for the communities of North Carolina to use in developing hazard mitigation plans. These are:

1. Decrease the community's vulnerability to future hazard events.
2. Increase the community's resiliency so that recovery can be quicker and less costly.
3. Decrease the likelihood that a future natural hazard becomes a natural disaster.
4. Insure that future development contributes to the community's sustainability over time.

Additional local goals recently adopted include more specifically:

5. Reduce hazard risks to citizens' lives and property.
6. Restore and protect public health, restore degraded ecosystems, and make communities more livable.
7. To protect natural resources and farmland.
8. To increase public awareness of risk and mitigation, insure potential homebuyers are notified of flood designations.
9. To minimize expenditures for costly flood control projects, rescue, relief and repairs..
10. To minimize prolonged business interruptions, damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets, and bridges.
11. To help maintain a stable tax base by providing for the sound use and development of flood prone areas.

All of these goals are to be pursued in a manner to ensure fairness, equity and consistency to all citizens.

Mitigation goals can only be accomplished within the planning context of providing a sustainable environment that meets the needs of today while protecting the needs of future generations. Sustainable development and smart growth principles of land stewardship, protection of the natural environment, and preservation of natural resources have all been considered during the development of mitigation activities.

The committee spent January, February and March 2009 compiling information from each jurisdiction. Revisions were incorporated into the plan while sections with no changes were left intact.

In April 2009 two opportunities were presented for the public to provide comments on the draft update. The committee held a hearing for members of the public to review the draft update on April 20, 2009 and on April 21, 2009 the committee presented the draft update during a public meeting of the Burke County Board of Commissioners. See table below

Hazard Mitigation Plan Update Project Schedule	
Activity/Task	Timeline
Project Initiation Meeting	Oct 2008
1.0 Hazard Identification and Analysis	Fall 2008
1.1 Identify hazards	Fall 2008
1.2 Analyze each hazard	Fall 2008
1.3 Develop multi-hazard map	2008 Mapping
1.4 Summary Report to Municipalities	Winter 2008
2.0 Vulnerability Assessment	Spring 2008 Planning, Committee
2.1 Inventory critical facilities	Spring, 2008 EMS
2.2 Estimate cost of potential damage	Spring 2008 Mapping, Planning
2.3 Identify and map highly vulnerable populations	Spring, 2008 Mapping
2.4 Identify and map areas of greatest risk	Spring, 2008 Mapping
2.5 Project future vulnerability based on current development trends and land use policies	Spring, 2009 EMS, Planning
2.6 Summary Report to Planning Boards / Public Input	Spring 2009 Planning
3.0 County Capability Assessment	Spring, 2009
3.1 Inventory existing and proposed hazard mitigation and flood damage prevention programs	Spring, 2009 Planning
3.2 Evaluate effectiveness of current programs	Spring, 2009 Planning
3.3 Evaluate technical and fiscal capabilities to implement hazard mitigation objectives	Summer, 2009
3.4 Summary Report to Planning Boards	
4.0 County Goals	Summer 2009
4.1 Identify current hazard mitigation goals/objectives	Summer 2009
4.2 Identify any existing goals that may hinder hazard mitigation	Summer 2009
4.3 Determine need to modify goals and objectives	2009
4.4 Summary Report to Planning Board	
5.0 Mitigation Strategy	summer 2009
5.1 Develop new goals/objectives	summer 2009
5.2 Develop new policies/programs	summer 2009

5.3 Establish responsibility/target dates	summer 2009
5.4 Planning Department to establish schedule/develop procedures to evaluate/update plan using state approved criteria every 5 years	summer 2009
5.5 Staff Review	summer 2009
5.6 Draft Plan to Planning Board	
6.0 Review and Public Input on Hazard Mitigation Plan	
6.1 Public Forum (Planning Board)	Fall, 2009
6.2 Planning Board recommendation	Fall, 2009
6.3 Public Hearing (Board of Commissioners)	Fall, 2010
6.4 Adoption (Board of Commissioners)	Oot 2010

Introduction

Natural hazards are features of the earth’s natural systems. Although they are not as predictable, they are as inevitable as the rising and setting of the sun. Natural hazards damage the earth’s environment but the land has an incredible capacity for recuperation.

The built environment, however, is not as resilient. Natural disasters occur when human activity in the form of buildings, infrastructure, agriculture and other land uses are located in the path of the destructive forces of nature. Since the built environment is more susceptible to natural hazards and cannot recuperate like the natural environment, communities impacted by a natural hazard often recover only over a long period of time and at a great social and economic cost.

In recent years, the frequency and impact of natural disasters has increased because more people are choosing to live and work in locations that put them and their property at risk. Likewise, while floods have caused a greater loss of life and property and have disrupted more families and communities than all other natural hazards combined, the rate of development in flood prone areas continues to escalate, putting more people and property at risk.

While natural hazards cannot be prevented, local communities can use various means to reduce the vulnerability of people and property to damage. Communities can reduce exposure to future natural hazards by managing the location and characteristics of both the existing and future built environment. By utilizing location and construction techniques, a community can mitigate negative impacts and reduce future damage to both human lives and property.

Preparing for natural hazards involves establishing a comprehensive emergency management system consisting of the following four component activities:

1. Preparedness activities undertaken to improve a community’s ability to respond immediately after a disaster. Preparedness activities include the development of response procedures, design and installation of warning systems, exercises to test emergency operation procedures, and training of emergency personnel.
2. Response activities designed to meet the urgent needs of disaster victims. Response activities occur during the disaster and include rescue operations, evaluation, emergency medical care, and shelter programs.

3. Recovery activities designed to rebuild after a disaster. These activities include repairs to damaged public facilities such as roads and bridges, restoration of public services such as power and water, and other activities that help restore normal services to a community.
4. Hazard mitigation activities designed to reduce or eliminate damages from future hazardous events. These activities can occur before, during and after a disaster and overlap all phases of emergency management.

Hazard mitigation is defined as any action taken to eliminate or reduce the long-term risk to human life and property from natural and technological hazards. Mitigation activities are ongoing and overlap all phases of emergency management and can typically be categorized into three types:

1. Structural mitigation – constructing dam and levee projects to protect against flooding, constructing disaster-resistant structures, and retrofitting existing structures to withstand future hazardous events.
2. Non-structural mitigation – development of land use plans, zoning ordinances, subdivision regulations, and tax incentives and disincentives to discourage development in high-hazard risk areas; and
3. Educational programs – educating the public about potential natural hazards, the importance of mitigation, and how to prepare to withstand a disaster.

A fundamental premise of mitigation strategy is that current dollars invested in mitigation activities will significantly reduce the demand for future dollars by reducing the amount needed for emergency recovery, repair and reconstruction following a disaster. Mitigation also calls for conservation of natural and ecologically sensitive areas (such as wetlands, floodplains) which enables the environment to absorb some of the impact of hazard events. In this matter, mitigation programs help communities attain a level of sustainability, ensuring long-term economic vitality and environmental health for the community as a whole.

The concept of sustainable development has emerged in recent years as a means to emphasize the need to regain a balance between the built and natural environment. Sustainable development is defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs while protecting natural resources over time, focusing on the type of development rather than quantity. By building a community that is resilient to natural hazards, citizens strengthen the local economy. A locality that reduces its vulnerability will experience less restoration time, shortened business downtime, and less social disruption following a disaster, freeing resources that would otherwise be devoted to response and recovery, and move quickly improving citizens' lives.

Why Implement a Hazard Mitigation Plan?

Burke County created a hazard mitigation plan for two primary reasons. First, hazard mitigation planning is a prudent course of action to reduce the impact of future disasters. Second, to bring Burke County and the municipalities into compliance with both Federal and

State requirements respectively Disaster Mitigation Act Public Law 106-309 and Senate bill 300 in order to maintain eligibility for public and private assistance as well as mitigation / post disaster funds.

Planning is the key to making mitigation a proactive rather than reactive process and to ensuring that land subject to hazards is identified and managed appropriately to reduce future exposure. Planning ensures individual mitigation projects and initiatives are carried out in a cooperative manner such that all local activities work together and no single action or project detracts from the overall goal of creating a safer community.

Planning also plays an important part in generating community understanding to support hazard mitigation efforts. The hazard mitigation process serves to publicize hazard information and created a forum for discussion of how best to balance the public interest and private property rights.

2: Hazard Mitigation Strategies

Introduction

“Undertaking mitigation at the local level is a particularly effective way to create safer, more hazard-resilient communities. Although the economic effect of large disasters like Hurricane Floyd is statewide, the brunt of the physical, financial, and emotional impact is felt in the settings in which people live and work in the towns, neighborhoods, homes, businesses, schools, and farms damaged or demolished. Knowing from experience the extent to which Mother Nature can transform the landscape, the people of these communities may be willing to support changes that could prevent a repeat experience. The power of local decision-makers to affect the future is substantial. They regulate land use patterns and building practices, make many public spending and taxation decisions, and largely determine growth and development policy. Local resolution can control to a large degree where, when and how homes, businesses, schools and farms are built”. 2-1

Hazard mitigation reduces the loss of life and property from natural disasters and serves as an essential component in emergency management. After natural disasters, repairs and reconstruction are often completed in such a way as to simply restore damaged property to pre-disaster conditions. Replication of pre-disaster conditions results in a repetitive loss cycle of damage, reconstruction, and repeated damage. Hazard mitigation is needed to ensure that such cycles are broken, that post-disaster repairs and reconstruction take place after damages are analyzed, and that sounder, less vulnerable conditions are produced.2-3

In addition to the Stafford Act, there have been two Executive Orders dealing with flood losses. Executive Order 11988 is used by Federal Emergency Management Agency (FEMA) to deny disaster assistance in a repetitively flooded area. Instead, technical and financial resources of existing programs are used to help with relocation expenses and to prevent reoccupation of residential properties. The effect of this order is to mitigate future flood

damages by encouraging residents to relocate. Federal and state hazard mitigation officers limit federal and state investments in floodplains through Executive Order 11990. This order restricts the availability of Federal Housing Administration (FHA), and Veterans Housing Administration (VHA) low-interest loans to homebuyers, the availability of Small Business Administration loans for future development, and Department of Housing and Urban Development Community Development Block Grant funds. The effect is to reduce the financial incentive that encourages development in an identified flood hazard area.

Development of a hazard mitigation plan has the potential to not only restrict future development within flood hazard areas but also to ensure mitigation opportunities are not lost in the hasty effort to rebuild and recover from the next disaster. The intent of the hazard mitigation plan is to develop, over time, a disaster resistant community.

Natural Hazard Response

Other sections of the hazard mitigation plan outline Burke County's vulnerability to natural hazards and the capability of the County to respond to a natural disaster. Even though there are limited financial and staff resources to dedicate to hazard mitigation, it is essential that those hazards with the highest likelihood of occurrence and the greatest potential impact receive immediate attention.

Based on the analysis of potential hazard impacts in Appendix A (see Table A-7), the natural hazards with the highest hazard index for Burke County are flooding, dam failure, landslides, thunderstorms, and severe winter. Moderately rated hazards include wildfires, earthquakes, drought, hurricanes, and tornados. A hazard rated low is noreaster storms. The combination of the highest ranked hazards together with these rated moderate indicate that the greatest potential natural hazard is flooding with high wind damage representing a second, less likely threat. No other natural hazard threats were identified.

It is imperative that the County take immediate and sustained actions to reduce the level of vulnerability of people and property to future flooding and consider how to address the threat of damage from the other hazards listed.

Planning Goals

Plan goals are broad statements that set community priorities for reducing susceptibility to natural hazards. The goals serve as the basis for development of the more specific plan objectives and hazard mitigation activities.

The North Carolina Division of Emergency Management has developed four broad goals for the communities of North Carolina to use in developing hazard mitigation plans. These are:

1. Decrease the community's vulnerability to future hazard events.
2. Increase the community's resiliency so that recovery can be quicker and less costly.
3. Decrease the likelihood that a future natural hazard becomes a natural disaster.

4. Insure that future development contributes to the community's sustainability over time.

Additional local goals recently adopted include more specifically:

5. Reduce hazard risks to citizens' lives and property.
6. Restore and protect public health, restore degraded ecosystems, and make communities more livable.
7. To protect natural resources and farmland,
8. To increase public awareness of risk and mitigation, insure potential homebuyers are notified of flood designations,
9. To minimize expenditures for costly flood control projects, rescue, relief and repairs.,
10. To minimize prolonged business interruptions, damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets, and bridges,
11. To help maintain a stable tax base by providing for the sound use and development of flood prone areas.

All of these goals are to be pursued in a manner to ensure fairness, equity and consistency to all citizens.

Mitigation goals can only be accomplished within the planning context of providing a sustainable environment that meets the needs of today while protecting the needs of future generations. Sustainable development and smart growth principles of land stewardship, protection of the natural environment, and preservation of natural resources have all been considered during the development of mitigation activities. The real challenge, however, has not and will not be the development of mitigation activities, but will come in months and years ahead as the people and leaders of Burke County and its municipalities convert the Hazard Mitigation Plan into action.

The Burke County Planning Committee agreed upon the mitigation goals, mitigation objectives and mitigation actions in this section. The Planning Committee received input from individuals from Burke County, Connelly Springs, Drexel, Glen Alpine, Hildebran, Morganton, Rutherford College and Valdese. In the context of this section Burke County will also refer to the City of Morganton and the Towns of Connelly Springs, Drexel, Glen Alpine, Hildebran, Rutherford College and Valdese. Due to limited staff in Connelly Springs, Drexel, Glen Alpine, Hildebran, Rutherford College and Valdese, the County administers select ordinances, plans, regulations, etc. for the municipalities. These mitigation goals have remained unchanged as they still reflect the objectives and direction of the mitigation strategy.(09.28.05 update)

Public Education and Integration of New Policies and Ordinances

In developing the plan, the County sought to educate the public by soliciting public participation in the planning process and to integrate any proposed new policies and ordinances into the County's existing regulatory environment. The leaders of Burke County and its municipalities know that education plays a vital role in both the development and

implementation of the Hazard Mitigation Plan, thus, the hazard mitigation planning process was perceived as an opportunity to encourage and promote public awareness and participation. Public meetings were scheduled throughout the planning process to gain valuable citizen input and to broaden public understanding and support for development and implementation of the Plan. The Plan was used as an educational tool to convey to County citizens the danger of natural hazards and to outline strategies for mitigating potential damage to lives and property within the County. A major goal of the hazard mitigation process is to continue to offer support and information to County residents. After adoption of the Plan, the county and municipal planning departments will play the lead roles in seeking to educate citizens on the findings and strategies of the Plan.

The development of the Hazard Mitigation Plan entailed reviewing and updating existing land use policies and regulatory ordinances while considering new policies and ordinances that improve and extend protection of the public health, safety, and welfare. Each jurisdiction adheres to the state building codes and recommendations.

The hazard mitigation planning process has provided the opportunity to ensure that all planning efforts work cohesively in order to achieve mitigation goals for existing and future development. Integration into the existing regulatory framework will ensure that the Hazard Mitigation Plan will be utilized to its full potential.

Plan Objectives and Hazard Mitigation Activities

Hazard mitigation includes three types of activities:

1. Structural mitigation – constructing dam and levee projects to protect against flooding, constructing disaster-resistant structures, and retrofitting existing structures to withstand future hazardous events;
2. Non-structural mitigation – development of land use plans, zoning ordinances, subdivision regulations, and tax incentives and disincentives to discourage development in high-hazard risk areas; and
3. Educational programs – educating the public about potential natural hazards, the importance of mitigation, and how to prepare to withstand a disaster.

The mitigation objectives described in the text below and the mitigation activities outlined in Table 2-1 cover aspects of all three types of mitigation activities. These objectives and activities have been developed as specific ways in which to reach the plan’s stated goals.

Plan Objectives

1. Continue public awareness campaign to educate citizens of the possible hazards associated with locating in floodplains and measures that can be taken to lessen impacts of future floods.

2. Strive to participate in the Community Rating System to help monitor hazard mitigation efforts and to improve the affordability of flood insurance for County citizens.
3. Ensure that emergency services are adequate to protect public health and safety.
4. Encourage growth in areas suitable for development while discouraging growth in environmentally sensitive or flood hazard prone areas.
5. Increase control over development in the floodplain to prevent increases in flood velocities and levels that endanger both people and property.
6. Enforce codes to ensure that structures are being built in a way that minimizes damage from natural hazards.
7. Require increased elevation of new or substantially improved residential construction within floodplains and flood proofing of new substantially improved non-residential construction.

Hazard Mitigation Activities

This section addresses specific ways the County can act to lessen and, hopefully, eventually eliminate repetitive flood losses and prevent future loss from inappropriate new development. The primary impetus for the development of this section, has been the potential for the municipalities within Burke County not currently participating to join the Community Rating System (CRS) of the National Flood Insurance Program (NFIP).

Communities that regulate development in floodplains are able to join the National Flood Insurance Program (NFIP). In return, the NFIP provides federally backed flood insurance for properties in the community. Burke County already participates in the NFIP; however, the CRS provides opportunities to reduce flood insurance premiums if the County goes above and beyond the NFIP's minimum standards for floodplain regulation. The objective of the CRS is to reward communities for what they are doing, as well as to provide an incentive for new flood protection activities. The reduction in the insurance premiums is in the form of a CRS classification. There are 10 classes, each providing an additional 5% premium rate reduction for properties in the mapped floodplain. A community's class is based on the number of credit points it receives for floodplain management activities. A community that does not apply for the CRS is a class 10 community.

The CRS has three major goals: to reduce flood losses, to facilitate accurate insurance ratings, and to promote awareness of flood insurance. There are four mitigation categories (Series 300, 400, 500 and 600) with a total of eighteen creditable floodplain management activities. Participation in the program will reward the citizens of Burke County with lower insurance premium rates.

A detailed explanation of the four CRS mitigation categories is included at the end of this section. Reference to the applicable CRS mitigation category is included in the Table 2-1 Hazard Mitigation Activities.

Burke County, along with the City of Morganton and the Towns of Connelly Springs, Drexel, Glen Alpine, Hildebran, Rutherford College and Valdese worked to develop the mitigation

actions shown in the following Table 2.1 Hazard Mitigation Activities. The mitigation activities were developed with an eye toward reducing vulnerability to all natural hazards that can be addressed in a practicable way at the local level. The listed actions primarily focus on ways Burke County, the City of Morganton and the Towns of Connelly Springs, Drexel, Glen Alpine, Hildebran, Rutherford College and Valdese can act to lessen and eventually eliminate repetitive flood losses and prevent future flood losses due to inappropriate new development. (09.28.05 update)

All the mitigation actions were prioritized according to:

1. Cost effectiveness (i.e. returns or savings produced by implementation of the action outweigh the cost of implementation);
2. Environmental soundness (i.e. actions were designed to protect environmentally fragile areas as natural stormwater storage areas); and
3. Technical feasibility (i.e. actions are to be undertaken by the County using current staff and resources except where grant funds are available.)
4. Ensuring participation in the NFIP.

The county will review and evaluate each jurisdictions mitigation activities by yearly review with the entities.

Table 2-1: Hazard Mitigation Activities

Note: Abbreviations used in Table 2-1: Federal Emergency Management Agency (FEMA); North Carolina Department of Environment and Natural Resources (NCDENR); North Carolina Division of Emergency Management (NCDDEM); Management Information Systems (MIS); Emergency management Services (EMS); Natural Resource Conservation Services (NRCS)

Short Range (1-2 year) Activities (CRS Activity Code)	Hazards	Priority	Responsible Parties	Funding	Schedule
I. Review/update Flood Damage Prevention Ordinance to ensure maximum protection from flood hazard events (CRS 430)	Flooding	High	Planning General Services Building Inspections	Local	Completed 2007 Continue to Evaluate 2010-2015
A. Consider adopting temporary moratorium on new construction and new subdivisions within flood hazard areas until Flood Damage Prevention Ordinance has been updated	Flooding	Medium	Planning Planning Board	Local	-No longer applicable
B. Raise minimum flood protection level from the base flood elevation (BFE) to minimum 1'-0" 2' above BFE. All substantially damaged buildings should be elevated to this level. (CRS 430). Consider prohibiting construction or substantial improvement of buildings within the 100-year floodplain	Flooding	High	Planning Building Inspections	Local	Completed 2007 Ongoing Implementat ion
C. Track rebuilding and repair activities after severe storms and consider policies/procedures for minimizing repetitive losses	All Hazards	Medium	Building Inspections General Services	Local	Ongoing requires continued monitoring
D. Prohibit enclosures to the lower areas of elevated buildings. (CRS430)	Flooding	Medium	Planning Building Inspections	Local	Ongoing

E. Continue to require and maintain FEMA elevation certificates for all new permits for new buildings or improvements to buildings on lots including any portion of 100-year floodplain (CRS 31) (See Section VIII.A).	All Hazards	High	Planning Building Inspections	Local	Ongoing requires continued monitoring
F. Advise/assist property owners in retrofitting their homes and businesses. Retrofitting means modifying an existing building or yard to protect the property from flood damage.	All Hazards	Medium	Planning Building Inspections	Local	Ongoing requires continued monitoring
II. Revise/update regulatory floodplain maps (CRS 410).	Flooding	High	Planning WPCOG	Local/State/Federal	Ongoing (outside control)
III. Complete Community Rating System Application	Flooding	Medium	EMS	Local	Complete
A. Ensure participation in NFIP	Flooding	High	Planning/EM	Local	Ongoing requires continued monitoring
IV. Adopt zoning and subdivision regulations in floodplain, steep slope, and wildfire areas to better control future development in these hazard susceptible areas.	All Hazards	High	Planning	Local	Complete but reviewing yearly
V. Acquire federal funds to purchase destroyed or substantially damaged properties and relocate households (voluntary program) (CRS 520/420).	All Hazards	High	EMS	State/Federal	Ongoing requires continued actions
VI. Update 1993 Comprehensive Land Use Plan	All Hazards	High	Planning	Local	annual review
A. Delineate preferred growth areas and develop area plans for target locations.	All Hazards	High	Planning	Local	Ongoing requires continued monitoring
B. Develop an open space plan; target properties for acquisition/fund acquisition program.	Flooding	Medium	Planning	Local	Ongoing requires continued monitoring
C. Consider amending subdivision ordinance to provide incentives for clustering to maximize density while preserving flood, steep hazard areas.	All Hazards	High	Planning	Local	2010-2015
D. Adopt policies that discourage growth in flood hazard areas, including policy on not extending public services and utilities into flood hazard zones.	Flooding	High	General Services	Local	Ongoing requires continued monitoring
E. Ensure the public is fully informed of the building permit process restrictions on providing service within the 100-year floodplain	Flooding	High	General Services	Local	Yearly actions
VII. Step up centralized, coordinated permitting process, including effective filing/permitting system to ensure compliance with floodplain regulations. Count building improvements cumulatively (maintain permit history so when cumulative improvements equal 50% of building value, (substantial improvement) building must be brought up to flood	Flooding	High	Building Inspections Planning Environmental Health EMS	Local	Sentence 1 Completed Sentence 2 Completed Sentence 3 Ongoing

protection standards for new construction). Goal to eventually have all flood hazard endangered buildings brought up to flood protection standards (CRS 430) (Section I. E.).					
VIII. Develop a comprehensive Capital Improvement Plan for public facilities that steers capital projects out of hazard areas; amend as necessary. Protect new critical facilities by not developing them in designated floodplains or dam inundation areas.	Flooding	High	Management All Departments	Local	Ongoing requires continued monitoring
IX. Maintain library on retrofitting techniques/publicize through bulletins/newsletters (CRS 330/350/360).	All Hazards	Medium	FEMA, Corps of Engineers, County Library	Local	Ongoing requires continued monitoring
X. Continuation and expansion of E-911 Addressing Program to include all municipalities (as possible) with goal to cover entire County with one system.	All Hazards	High	EMS Municipalities	Local	Ongoing requires continued monitoring
XI. Drainage Systems management (CRS 540).					
A. Establish coordinating committee to ensure that responsible parties communicate to ensure maximum cooperation in developing and maintaining the County's drainage and stormwater systems	Flooding	Medium	Burke County Planning	Local/State/Federal	Reevalutate 2012
B. Establish/maintain coordinated inspection program	All Hazards	High	General Services NRCS	Local	Ongoing requires continued monitoring
C. Debris removal program/problem site corrections	All Hazards	Medium	Planning	Local/State/Federal	Ongoing requires continued monitoring
D. Prepare countywide storm water management plan covering the Catawba River basin.	Flooding	High	WPCOG	Local/State	Update 2011
XII. Early Warning System A. Ensure adequate evacuation time in case of major hazard event ex: dam failure	All Hazards	High	Emergency Services	Local/State/Duke Power	Ongoing requires continued monitoring
B. Evaluate areas with limited evacuation capacity and pursue methods for improving capacity.	All Hazards	High	Planning/NCDOT	Local	Ongoing requires continued monitoring

Mid Range (3-5 year) Activities (CRS Activity Code)	Hazard	Priority	Responsible Parties	Funding	Schedule
XIII. Acquisition of properties susceptible to flood damage (involuntary program) (CRS 420/510). Also land prone to wildfires.	Flooding	Medium	Planning/Building Inspections	Local/State/Federal	Annual review
A. Identify any properties suitable for public acquisition using available federal and/or state funds.	All Hazards	Medium	Planning/Building Inspections	Local	Annual Review
B. Implement Recreation Plan to provide for integration of publicly acquired land into park or greenway system so hazardous	All Hazards	High	Planning/Building Inspections	Local	Annual Review

areas remain undeveloped in perpetuity (much more effective than removing structures from isolated parcels).					
XIV. Capital Improvements Program					
A. Develop plan for relocating public infrastructure out of hazard areas.	All Hazards	Low	Planning/Building Inspections	Local	Ongoing requires continued monitoring
B. Establish reserve fund for relocating damaged infrastructure after next natural disaster	All Hazards	Medium	Management General Services	Local	Ongoing requires continued monitoring
C. Establish program for evaluation and improvement of critical services (public and private) – roads, bridges, water, sewer, electricity, etc. – and critical facilities – fire, rescue, medical, etc.	All Hazards	Medium	Emergency Services NCDOT	Local	Annual Review
D. Evaluate flood or access problems for critical facilities, develop recommendations for protecting critical parts, e.g., police and fire command centers. Identify alternate command posts, if necessary	Flooding	High	Emergency Services Planning Building Inspections	Local	Ongoing requires continued monitoring
XV. Establish program for purchase of development rights for floodplain & hazard properties. (possible tax deduction for charitable donation by property owner (s).) (CRS 420).	Flooding	Medium	Planning/Finance	Local	requires continued monitoring
XVI. Develop and implement natural hazard awareness program (elevation certificates, FIRM data, bulletin on property protection measures and flood insurance, etc.) (CRS 310/320/330/340/440).	Flooding	High	Planning Building Inspections	Local	Review 2012
A. Establish a Flood Awareness Week to publicize hazard and protection measures (CRS 610).	Flooding	High	Emergency Services	Local	Each year
B. Request that the real estate Multiple Listing Service (MLS) be amended to include notice of flood hazard and the requirement to purchase flood insurance.	Flooding	High	Planning	Local	-information currently available through disclosure statement which is available to some extent through the MLS
C. Improve Hazard Warning and Response Plan – warning and evacuating critical facilities, getting persons out of flood prone or isolated areas, controlling vehicles on evacuation routes, evacuation of hazard materials. (CRS 610).	All Hazards	High	Emergency Services Duke Power	Local	Annual review of capability
XVII. Plan Implementation					
A. Monitor plans to ensure schedules are met.	All Hazards	High	Planning	Local	Yearly
B. Develop tracking system to evaluate progress and revise mitigation activities as necessary.	All Hazards	High	Planning	Local	Yearly
C. Track benefits in flood loss reduction	All Hazards	High	Planning	Local	requires annual monitoring
XVIII. Produce annual periodic progress report on how plan is being implemented – send with annual CRS recertification.	All Hazards	High	Planning	Local	Annual

Table 2-1: Connelly Springs Hazard Mitigation Activities					
Strategy	Hazard	Priority	Responsible Party	Funding	Schedule
Adopt Flood Damage Prevention Ordinance	Flooding	High	Board of Aldermen (Planning Board)	Local	8/6/2007
Adopt Watershed Protection Ordinance	Flooding	High	Board of Aldermen (Planning Board)	Local	10/4/1993
Require structures to be built in the flood plain to be constructed 2' above base flood elevation or flood proofed	Flooding	Low	Planning Board Burke County Building Inspections	Local	8/6/2007
Track rebuilding activities after severe storms and consider policies to minimize repetitive losses	All Hazards	Medium	Board of Aldermen (Planning Board)	Local	Ongoing
Require flood proofing for structures not elevated 2' above base flood elevation.	Flooding	Low	Planning Burke County Building Inspections	Local	8/6/2007
Require/maintain FEMA elevation certificates for all new permits for buildings or improvements in the floodplain	Flooding	Low	Board of Aldermen (Planning Board) (Burke County Building Inspections)	Local/State	8/6/2007
Receive and begin using regulatory floodplain maps.	Flooding	High	Board of Aldermen (Planning Board)	FEMA/State/Local	8/6/2007
Review zoning and subdivision regulations to better control future development in these susceptible areas.	Flooding	Medium	Board of Aldermen (Planning Board)	Local	Ongoing
Prepare Comprehensive Land Use Plan.	All Hazards	Medium	Board of Aldermen (Planning Board)	Local	10/5/2005
Work in cooperation with Burke County, surrounding local governments, state and federal agencies to continue to develop and maintain appropriate mitigation strategies.	All Hazards	High	Board of Aldermen (Planning Board)	FEMA/State/Local	Ongoing

Table 2-1: Drexel Hazard Mitigation Activities

Strategy or Goal	Hazard	Priority	Responsible Party	Resources	Schedule	Status
Require and maintain FEMA evaluation certificates for all new permits for new buildings or improvements to buildings on lots including any portion of the 100-year floodplain (CRS 31)	Flooding	Low	Planning Burke County Building Inspections	Local	Ongoing	Complete
Revise/update regulatory floodplain maps (CRS 410)	Flooding	Low	FEMA NC DENR NC DEM	State	Ongoing	Complete
Revise zoning and subdivision regulations in floodplain areas to better control future development in these hazard susceptible areas	Flooding	Low	Planning Board Town Council (Planning)	Local	2005- 2007	Revising zoning and subdivision regulations
Prepare and implement a Town-wide storm water management plan to meet new federal Phase II storm water regulations	Flooding	High	Planning Board Town Council Planning (DWQ)	Local	2005- 2007	In compliance with Phase II Stormwater regulations
Require 50-foot buffers for new development activities along the Catawba River	Flooding	Low	NC DWQ (Planning)	State	Ongoing	N/A
Maintain backup, portable generator for emergency power needs	All Hazards	High	Town Council	Local	Ongoing	New Generator Installed
Revise subdivision regulations to require all perennial and intermittent streams be shown on plats.	Flooding	Medium	Planning Board Town Council (Planning)	Local	2005- 2007	Revising zoning and subdivision regulations

Table 2-1: Glen Alpine Hazard Mitigation Activities

Strategy or Goal	Hazard	Priority	Responsible Party	Resources	Schedule
Update Land Use Plan	Flooding Wildfire	Medium	Zoning Officer	Local	2012
Review Local Subdivision Ordinances	Flooding, Dam, Wildfire	High	Zoning Officer	Local/State/Federal	Annually
Review Zoning Ordinance	Flooding, High Winds, Wildfire	High	Zoning Officer Burke County Building Inspections	Local	Annually
Review Building Code Enforcement Ordinance	All Hazards	High	Zoning Officer Burke County Building Inspections	Local/State	Ongoing
Review Watershed Protection	Flooding	Medium	Zoning Officer Burke County Building Inspections	Local	Ongoing
Review and Update Flood Damage Prevention Ordinance	Flooding	Medium	Zoning Officer Burke County Building Inspections	Local	Completed 2008

Table 2-1: Hildebran Hazard Mitigation Activities

Strategy or Goal	Hazard	Priority	Responsible Party	Funding	Schedule
Adopt Flood Damage Prevention Ordinance	Flood	High	Town Council Planning Board Hazard Mitigation Committee Planning Staff	Local	COMPLETED Adopted August 2007
Review zoning and subdivision regulations in floodplain areas to manage future development	Flood	Low	Town Council Planning Board Hazard Mitigation Committee Planning staff	Local	Ongoing
Require structures to be built in the flood plain to be constructed 2' above base flood elevation or flood proofed.	Flood	Low	Town Council Planning Board Hazard Mitigation Committee Planning staff Burke Co. Bldg. Inspections	Local	Ongoing
Require/maintain FEMA elevation certificates for all new permits for buildings or improvements in the floodplain	Flood	Low	Planning Staff Burke County Building Inspections Hazard Mitigation Committee	Local State	Ongoing
Track rebuilding activities after severe storms and consider policies to minimize repetitive losses	Multiple	Medium	Town Council Planning Board Hazard Mitigation Committee Planning staff Burke Co. Bldg. Inspections	Local	Ongoing
Require flood proofing for structures not elevated 2' above base flood elevation.	Flood	Low	Burke Co. Bldg. Inspections Planning Staff	Local	Ongoing
Advise property owners of ways to modify existing buildings and yards to protect their properties from flood damage	Flood	Planning staff Burke Co. Bldg. Inspections	Local	Ongoing	Low
Use and enforce the floodplain boundary shown on the FIRMs	Flood	FEMA NCDENR, NCDEM Planning staff WPCOG Hazard Mitigation Committee	Federal, State, Local	Ongoing	High
Support DWQ in implementing Phase II Stormwater Regulations outside the WS-IV Area.	Flood	Town Council Planning Board Planning NCDWQ	State, Local	Ongoing	High

Work with Burke Co., local governments, state and federal agencies to continue to develop and maintain appropriate mitigation strategies	Multiple	FEMA NCDENR, NCDEM Planning staff WPCOG Hazard Mitigation Committee	Federal, State, Local	Ongoing	Medium
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Table 2-1: Morganton Hazard Mitigation Activities

Short Range (1-2) Activities (CRS Activity Code)	Hazard	Priority	Responsible Parties	Support Parties	Funding	Schedule
I. Review/update Flood Damage Prevention Ordinance to ensure maximum protection from flood hazard events (CRS 430)	Flooding	High	Planning Commission, City Council	Development and Design Department	Local	Implemented
A. Track rebuilding and repair activities after severe storms and consider policies/procedures for minimizing repetitive losses	All Hazards	Medium	City Council	Development and Design Department	Local	Implemented
B. Continue to require and maintain FEMA elevation certificates for all new permits for new buildings or improvements to buildings on lots including any portion of 100-year floodplain (CRS 31) (See Section VIII. A)	Flooding	High	Development and Design Department		Local	Implemented
C. Advise/assist property owners in retrofitting their homes and businesses. Retrofitting means modifying an existing building or yard to protect the property from flood damage.	Flooding	Medium	Development and Design Department		Local	Implemented
II. Revise/update regulatory floodplain maps (CRS 410).	Flooding	High	FEMA NCDENR NCDEM	Development and Design Department	Local/State/ FEMA	Implemented (outside control)
III. Complete Community Rating System Application	Flooding	Medium		Development and Design Department	Local	Implemented
IV. Update 1990 Land Development Plan	All Hazards	High	Planning Commission City Council	Development and Design Department	Local	Implemented
A. Revise open space plan; target properties for acquisition/fund	Flooding	Medium	Planning Commission City Council	Development and Design Department	Local	Implemented

acquisition program						
B. Adopt policies that discourage growth in flood hazard areas, including policy on not extending public services and utilities into flood hazard zones.	Flooding	High	Planning Commission City Council	Development and Design Department	Local	Implemented
C. Ensure the public is fully informed of the building permit process restrictions on providing service within the 100-year floodplain	Flooding	High	Development and Design Department		Local	Implemented
V. Continuation and expansion of E-911 Addressing Program to include all Municipalities (as possible) with goal to cover entire County with one system.	All Hazards	High	E-911 MIS	Development and Design Department	Local	Implemented
VI. Drainage Systems Management (CRS 540)						
A. Establish coordinating committee to ensure that responsible parties communicate to ensure maximum cooperation in developing and maintaining the City's drainage and storm water systems	Flooding	Medium	City Council	Development and Design Department	Local	Implemented
B. Establish/Maintain coordinated Drainage System inspection program	Flooding	High	Development and Design Department	WPCOG GIS Division	Local	Implemented
C. Debris removal program/problem site corrections	All Hazards	Medium	City Council	Development and Design Department/Public Works Department	Local	Implemented
D. Prepare countywide storm water management plan covering the Catawba River basin	Flooding	High	NCDENR NRCS		Local/State	Implemented
VII. Early Warning System						

A. Ensure adequate evacuation time in case of major hazard event.	All Hazards	High	Burke Co. Emergency Services/Morganton Public Safety	NCDOT/Development and Design Department	Local	Implemented
B. Evaluate areas with limited evacuation capacity and pursue methods for improving capacity	All Hazards	High	Burke Co. Emergency Services/Morganton Public Safety	NCDOT/Development and Design Department	Local	Implemented

Mid Range (3-5 year) Activities (CRS Activity Code)			Responsible Parties	Support Parties		Schedule
VIII. Acquisition of Properties						
A. Identify properties for public acquisition	Flooding	Medium	Development and Design Department	FEMA NCDENR	Local/State/ Federal	Implemented
B. Establish list of priority properties for acquisition in the event of another natural disaster.	Flooding	Medium	Development and Design Department	FEMA NCDENR	Local	Implemented
C. Amend Recreation Plan to provide for integration of publicly acquired land into park or greenway system so hazardous areas remain undeveloped in perpetuity (much more effective than removing structures from isolated parcels).	Flooding	High	Recreation	FEMA NCDENR	Local	2012
VIII. Capital Improvements Program			City Council	Executive/Finance		2009-2014
A. Establish program for evaluation and improvement of critical services (public and Private) - roads, bridges, water, sewer, electricity, etc. - and critical facilities - fire, rescue, medical, etc.	All Hazards	Medium	Public Safety/Public Works/Water Resources/Electric	Emergency Services Power & Gas Companies Hospital NCDOT	Local	Implemented

B. Evaluate flood or access problems for critical facilities, develop recommendations for protecting critical parts, e.g., police and fire command centers. Identify alternate command posts, if necessary	Flooding	High	Public Safety	Emergency Services Power & Gas Companies Hospital NCDOT	Local	Implemented
X. Establish program for purchase of development rights for floodplain properties. (possible tax deduction for charitable donation by property owner (s).) (CRS 420)	Flooding	Medium	City Council	Development and Design Department	Local	2010-2014
XI. Develop and implement hazard awareness program (elevation certificates, FIRM data, bulletin on property protection measures and flood insurance, etc.) (CRS 310/320/330/340/440)	Flooding	High	Development and Design Department	Banks Real Estate Agents Insurance Agents Chamber of Commerce	Local	Implemented
A. Establish a Flood Awareness Week to publicize hazard and protection measures (CRS 610)	Flooding	High	City Council	Schools Media	Local	2012
B. Request that the real estate Multiple Listing Service (MLS) be amended to include notice of flood hazard and the requirement to purchase flood insurance	Flooding	High	City Council	Development & Design Department Real Estate Agents	Local	2013
C. Improve Hazard Warning and Response Plan - warning and evacuating critical facilities, getting persons out of flood prone or isolated areas, controlling vehicles on evacuation routes, evacuation of hazard	All Hazards	High	Public Safety/Emerge ncy Services	NCDOT/FEMA/NCDEM	Local	Implemented

materials. (CRS 610)						
XII. Plan Implementation						
A. Monitor plans to ensure schedules are met	Flooding	High			Local	Implemented
B. Develop tracking system to evaluate progress and revise mitigation activities as necessary	Flooding	High	Development and Design Department		Local	Implemented
C. Track benefits in flood loss reduction	Flooding	High	Development and Design Department		Local	Implemented
XIII. Produce annual progress report on how plan is being implemented - send with annual CRS recertification	Flooding	High	Emergency Services		Local	Implemented

Table 2-1: Rutherford College Hazard Mitigation Activities					
Strategy	Hazard	Priority	Responsible Party	Funding	Schedule
Require & maintain FEMA elevation certificates for new permits for new buildings or improvements to buildings on lots including portions of the 100-year floodplain (CRS 31).	Flooding	Low	Planning Burke County Building Inspections	Local	Ongoing
Revise/update regulatory floodplain maps (CRS 410)	Flooding	Low	FEMA NC DENR NC DEM	State	Ongoing
Revise zoning and subdivision regulations in floodplain areas to better control future development in these hazard susceptible areas.	Flooding	Low	Planning Board Town Council (Planning)	Local	2009-2010
Prepare and implement a Town-wide stormwater management plan to meet the new federal Phase II stormwater regulations.	Flooding	High	Planning Board Town Council (Planning) (DWQ)	Local	Ongoing
Require 50-foot buffers for new development activities along the Catawba River.	Flooding	Low	NC DWQ (Planning)	State	Ongoing
Administer a minimum housing ordinance.	Multiple hazards	Medium	Town Council (Planning) (Burke County Building Inspections)	Local	Ongoing
Maintain backup, portable generator for emergency power needs.	Multiple hazards	High	Town Council	Local	Ongoing
Obtain short-wave radio to provide direct communication with Burke County EMS.	Multiple hazards	Medium	Town Council	Local	Completed 2005
Revise subdivision regulations to require all perennial and intermittent streams be shown on subdivision plats.	Flooding	Medium	Planning Board Town Council (Planning)	Local	2009-2010
Trim trees along town power lines as needed.	Ice Storms	High	Town Council (Planning)	Local	Ongoing

Table 2-1: Valdese Hazard Mitigation Activities

Strategy / Goal	Hazard	Priority	Responsible Parties	Support Parties	Schedule
I. New Flood Ordinance adopted August 6, 2007			Planning Board		
A. Consider adopting temporary moratorium on new construction and new subdivisions within flood hazard areas until Flood Damage Prevention Ordinance has been updated	Flooding	Medium	N/A	N/A	N/A
B. Raise minimum flood protection level from the base flood elevation (BFE) to minimum 1' or 2' above BFE. All substantially damaged buildings should be elevated to this level. (CRS 430). Consider prohibiting construction or substantial improvement of buildings within the 100-year floodplain	Flooding	High	Planning Board Town Council	Planning Building Inspections	Completed Currently at 2' above BFE
C. Track rebuilding and repair activities after severe storms and consider policies/procedures for minimizing repetitive losses.	All Hazards	Medium	Planning Town Council Fire Department	Building Inspections General Services	Ongoing
D. Prohibit enclosures to the lower areas of elevated buildings, including breakaway walls. (CRS430)	Flooding	Medium	Building Inspections		Ongoing
E. Continue to require and maintain FEMA elevation certificates for all new permits for new buildings or improvements to buildings on lots including any portion of 100-year floodplain (CRS 31) (See Section VIII.A).	All Hazards	High	Planning Building Inspections		Ongoing
F. Advise/assist property owners in retrofitting their homes and businesses. Retrofitting means modifying an existing building or yard to protect the property from flood damage.	All Hazards	Medium	Planning Building Inspections		Ongoing
II. Revise/update regulatory floodplain maps (CRS 410).	Flooding	High	FEMA NCDENR NCDEM	Planning WPCOG	Ongoing (outside control)
III. Complete Community Rating System Application	Flooding	Medium	Planning Board	Planning	Completed
IV. Adopt zoning and subdivision regulations in floodplain areas to better control future development in these hazard susceptible areas.	All Hazards	High	Planning Board Town Council	Planning	Addressed in new Flood Ordinance
V. Acquire destroyed or substantially damaged properties and relocate households (voluntary	All Hazards	High	Not Applicable		

program) (CRS 520/420).					
VI. Update 1993 Comprehensive Land Use Plan	All Hazards	High	Planning Board Town Council	Planning	Awaiting Funding
A. Delineate preferred growth areas and develop area plans for target locations.	All Hazards	High	Planning Board Town Council	Planning	To Be Addressed in Land Use Plan
B. Develop an open space plan; target properties for acquisition/fund acquisition program.	Flooding	Medium	Planning Board Town Council	Planning	Awaiting Funding
C. Consider amending subdivision ordinance to provide incentives for clustering to maximize density while preserving flood hazard areas.	All Hazards	High	Planning Board Town Council	Planning	Addressed in Subdivision Ordinance
D. Adopt policies that discourage growth in flood hazard areas, including policy on not extending public services and utilities into flood hazard zones.	Flooding	High	Town Council	General Services	Addressed in Subdivision Ordinance
E. Ensure the public is fully informed of the building permit process restrictions on providing service within the 100-year floodplain	Flooding	High	Building Inspections	General Services	Ongoing
VII. Step up centralized, coordinated permitting process, including effective filing/permitting system to ensure compliance with floodplain regulations. Count building improvements cumulatively (maintain permit history so when cumulative improvements equal 50% of building value, (substantial improvement) building must be brought up to flood protection standards for new construction). Goal to eventually have all flood hazard endangered buildings brought up to flood protection standards (CRS 430) (Section I. E.).	Flooding	High	MIS	Building Inspections Planning Environmental Health Valdese Planning Dept.	Ongoing
VIII. Develop a comprehensive Capital Improvement Plan for public facilities that steers capital projects out of flood prone areas; amend as necessary. Protect new critical facilities by not developing them in designated floodplains.	Flooding	High	Town of Valdese	Management All Departments	Ongoing
IX. Maintain library on retrofitting techniques/publicize through bulletins/newsletters (CRS 330/350/360).	All Hazards	Medium	Building Inspections FEMA, Corp. of Engineers	FEMA, Corps of Engineers, County Library	Ongoing
X. Continuation and	All Hazards	High	E-911	EMS	Ongoing

expansion of E-911 Addressing Program to include all municipalities (as possible) with goal to cover entire County with one system.			MIS	Municipalities	
XI. Drainage Systems management (CRS 540).			Town of Valdese Wastewater Dept.	Town of Valdese Planning and Public Works Depts.	Addressed in Watershed Ordinance. Currently in the process of mapping drainage system
A. Establish coordinating committee to ensure that responsible parties communicate to ensure maximum cooperation in developing and maintaining the County's drainage and storm water systems	Flooding	Medium	Planning General Services NRCS Environmental Health		Awaiting Funding at County Level
B. Establish/maintain coordinated inspection program	All Hazards	High	Building Inspections Planning	General Services NRCS	Currently ongoing within Town of Valdese
C. Debris removal program/problem site corrections	All Hazards	Medium	General Services	Planning	Ongoing
D. Prepare countywide storm water management plan covering the Catawba River basin.	Flooding	High	NCDENR NRCS	WPCOG	Unknown
XII. Early Warning System A. Ensure adequate evacuation time in case of major hazard event.	All Hazards	High	Burke Emergency Services Valdese Fire Dept.	NCDOT	Ongoing
B. Evaluate areas with limited evacuation capacity and pursue methods for improving capacity.	All Hazards	High	Burke Emergency Services Valdese Fire Dept.	NCDOT Planning	Ongoing
Mid Range (3-5 year) Activities (CRS Activity Code)					
XIII. Acquisition of properties susceptible to flood damage (involuntary program) (CRS 420/510).					Not Applicable
A. Identify properties for public acquisition.	All Hazards	Medium	Planning	FEMA NCDENR	
B. Establish list of priority properties for acquisition in the event of another natural disaster.	All Hazards	Medium	Planning	FEMA NCDENR	Not Applicable
C. Implement Recreation Plan to provide for integration of publicly acquired land into park or greenway system so hazardous areas remain undeveloped in perpetuity (much more effective than removing structures from isolated parcels).	All Hazards	High	Planning Parks & Recreation	FEMA NC Parks and Recreation	Ongoing

XIV. Capital Improvements Program			Town Council	Management	Awaiting Funding
A. Develop plan for relocating public infrastructure out of flood hazard areas.	All Hazards	Low	General Services		Not Applicable
B. Establish reserve fund for relocating damaged infrastructure after next natural disaster	All Hazards	Medium	Town Council	Management General Services	
C. Establish program for evaluation and improvement of critical services (public and private) – roads, bridges, water, sewer, electricity, etc. – and critical facilities – fire, rescue, medical, etc.	All Hazards	Medium	General Services EMS Planning Valdese Fire Dept.	Emergency Services Power & Gas Companies Hospital NCDOT	Ongoing
D. Evaluate flood or access problems for critical facilities, develop recommendations for protecting critical parts, e.g., police and fire command centers. Identify alternate command posts, if necessary	Flooding	High	Emergency Services		Ongoing
XV. Establish program for purchase of development rights for floodplain properties. (possible tax deduction for charitable donation by property owner (s.)) (CRS 420).			Not Currently Required		
XVI. Develop and implement hazard awareness program (elevation certificates, FIRM data, bulletin on property protection measures and flood insurance, etc.) (CRS 310/320/330/340/440).	Flooding	High	Building Inspections	Banks Real Estate Agents Insurance Agents Chamber of Commerce	Ongoing
A. Establish a Flood Awareness Week to publicize hazard and protection measures (CRS 610).			NC State EM	Emergency Services Schools Media	Addressed in Severe Weather Awareness Week Activities
B. Request that the real estate Multiple Listing Service (MLS) be amended to include notice of flood hazard and the requirement to purchase flood insurance.			Building Inspections	Planning Real Estate Agents	Not addressed at this time
C. Improve Hazard Warning and Response Plan – warning and evacuating critical facilities, getting persons out of flood prone or isolated areas, controlling vehicles on evacuation routes, evacuation of hazard materials. (CRS 610).	All Hazards	High	Burke Emergency Services Valdese Fire Dept.	Valdese Police Dept.	Ongoing
XVII. Plan Implementation					
A. Monitor plans to ensure schedules are met.	All Hazards	High	Valdese Fire Dept. Burke Emergency Services Valdese Planning	Burke County Planning	Ongoing

			Dept.		
B. Develop tracking system to evaluate progress and revise mitigation activities as necessary.	All Hazards	High	Burke Emergency Services	Planning	Ongoing
C. Track benefits in flood loss reduction	All Hazards	High	Planning Tax Department Emergency Services	Valdese Planning Dept.	Ongoing
XVIII. Produce annual progress report on how plan is being implemented – send with annual CRS recertification.	All Hazards	High	Emergency Services	Town of Valdese	Annual

High Wind Activities

The second highest ranked potential natural hazard threat to Burke County is damage from the winds. There are a number of natural hazards that have the potential to include high wind damage – hurricanes, tornadoes, nor'easters, severe winter storms, and thunderstorms. In 1997, the Federal Emergency Management Agency instituted a new program to help communities and property owners deal with the impact of tornadoes and other high-wind natural hazards.

A list of recommendations to help reduce the devastating effects of high winds is included in Table 2-2. It should be noted that any of these recommendations that go beyond the construction requirements of the North Carolina Building Code may require approval by the North Carolina Building Code Council before they can be legally enforced.

Table 2-2: High Winds Mitigation Activities

Activities & Date of Completion	Responsible Parties
Early Warning System/Dissemination of information regarding need to seek shelter in safe room when high winds expected	Emergency Services Communications
Adopt and enforce latest model building codes and national wind engineering standards. –Completed & Being Enforced	Building Inspections
Ensure that manufactured homes are installed and secured properly. –Being Enforced	Building Inspections
Encourage insurance companies to offer lower premium rates to owners who install manufactured homes on permanent foundations or who anchor homes securely. – Ongoing	Planning Chamber of Commerce - Private Housing Committee
Require residential construction to meet latest wind-resistance standards; encourage replacement of doublewide garage doors to improve wind resistance. – -Being Enforced	Building Inspections
Require new masonry chimneys>6' above roof to have continuous vertical reinforcing steel to help resist high winds. Retrofit existing chimneys. Being Enforced	Building Inspections
Ensure doorframes are securely anchored, especially double doors that can be very dangerous in high winds if not securely fastened. – Being Enforced	Building Inspections
Make sure that architectural features are designed, manufactured and installed to limit the creation of wind-borne debris. – Being Enforced	Building Inspections
Encourage use of wind-resistant construction techniques. – Being Enforced	Building Inspections

Procedure for Monitoring and Evaluating the Hazard Mitigation Planning

(amended 09.28.05)

Periodic monitoring and reporting of progress is required to ensure that Plan goals and objectives are kept current and that local mitigation efforts are being accomplished. The Burke County Multi Jurisdictional Hazard Mitigation Plan shall be reviewed annually, or more often as the local situation may require following a disaster declaration, to ensure that progress is being made on achieving stated goals and objectives. The Plan will also undergo periodic evaluation and update as required by FEMA and the State.

A. Annual Review/Progress Report

The County Manager shall direct the County Planning Director to take responsibility for conducting the annual review. The annual review shall include the re-initiation of the hazard mitigation team planning process utilized during development of the Plan. The team will include representatives of all affected County departments, as well as the Towns of Connelly Springs, Drexel, Glen Alpine, Hildebran, Rutherford College, Valdese and the City of Morganton.

Annual Hazard Mitigation Plan Review

Month	Date	Location	Time
October	10/10/2011	EOC	10:00
October	10/8/2012	EOC	10:00
October	10/14/2013	EOC	10:00
October	10/13/2014	EOC	10:00
October	10/12/2015	EOC	10:00

The general public will be notified through a variety of media, including, but not limited to, the local newspaper, the Burke County website, and mailed or emailed notices, or the review process and the opportunity to comment on the Plan review.

The annual review shall ensure:

1. That the Planning Board receives an annual report and/or presentation on the progress of Plan implementation. The report will include a status report on the implementation of mitigation activities.
2. That the County Board of Commissioners receives an annual report and/or presentation on the progress of Plan implementation along with a recommendation from the Planning Board regarding ongoing implementation of the Plan.
3. The annual report will include an evaluation of the effectiveness and appropriateness of the mitigation actions included in the Plan.
4. The annual report will recommend, as appropriate, any necessary revisions or amendments to the Plan.

The annual review shall take place each year in the month of October. This way any events that occur can be evaluated and recommendations made. Annual review for local jurisdictions is to occur in the month of September. Then the entire group will meet in the annual meeting /review on the dates in the schedule above.

If the County Board of Commissioners determines that the recommendations warrant amendment of the Plan, the Board may initiate an amendment through the process described below.

B. Periodic Plan Review and Update

Periodic evaluation and revision of the Hazard Mitigation Plan will help ensure that local mitigation efforts include the latest and most effective mitigation techniques. Periodic revisions may also be necessary to keep the Plan in compliance with Federal and State statutes and regulations. The Plan will need to be updated to reflect changes, such as new development in the area, implementation of mitigation efforts, revisions of the mitigation processes, and changes in Federal and State statutes and regulations.

In the context of a Federal disaster declaration, State and local governments are allowed to update or expand an existing plan to reflect circumstance arising out of the disaster. An updated plan in this circumstance might include a re-evaluation of the hazards and the jurisdiction's exposure to them, a re-assessment of existing mitigation capabilities, and new or additional mitigation recommendations.

The Plan shall be reviewed at a minimum every five (5) years during the month of March. This will allow any needed planning or budgeting to be accomplished. Representatives from each jurisdiction will be involved. The Planning Department and Emergency Management will notify the jurisdictions of the time, place and meeting schedule. If the committee finds that there have been any significant changes that would affect the Plan, The committee will then make necessary recommendations to the involved jurisdiction. Increased development, increased exposure to certain hazards, the development of new mitigation capabilities or techniques, and changes to Federal or State legislation may affect the appropriateness of the Plan.

The Plan will be updated within five (5) years of a presidential declared disaster, if necessary and will be forwarded to NCEM and FEMA for review and approval.

Review of the Plan

The procedure for reviewing and updating the Plan shall begin with a report prepared by the County Planning Director and submitted to the Planning Board for consideration and recommendation to the Board of Commissioners. The report shall include a summary of progress on implementation of hazard mitigation strategies and a recommendation, as appropriate, for any changes or amendments to the Plan.

The review shall include an evaluation of the effectiveness and appropriateness of the Plan. Specifically, the evaluation shall involve a review of the consistency of day-to-day land use decisions to determine if the hazard mitigation policies are being implemented. The review shall recommend if plan amendments are warranted and if any revisions to regulatory tools (zoning, subdivision regulation, etc.) are necessary to assist in implementing the policies of the Plan.

If the Board of Commissioners determines that such report raises issues that warrant modification of the Plan, or if the Planning Board recommends that issues have been raised which warrant modification of the Plan, the Board may initiate an amendment as delineated below, or may direct the County Manager to

undertake a complete update of the Plan. If other jurisdictions require amendments to the plan, the County Manager will direct the Director of Emergency Management to notify the involved jurisdiction by certified mail, of the needed amendment. The Jurisdiction will report the information to their respective governing boards, and report back to the County Manager and Director of Emergency Management within 45 days.

Initiation of Amendments

Any person or organization, including county departments, may petition the Board of commissioners to amend the Hazard Mitigation Plan. The petition shall be filed with the Planning Department and shall include a description of the proposed text or map amendment, along with an explanation of the changing circumstances that necessitate consideration of the amendment. Upon the initiation of a text or map amendment, the Planning Department shall forward the proposed amendment to all interested parties, including, but not limited to, all affected County departments, and other interested agencies such as the North Carolina Division of Emergency Management, the United States Army Corps of Engineers, and the Natural Resource Conservation Service for a 30-day review and comment period. At the end of the comment period, the proposed amendment shall be forwarded along with all review comments to the Planning Board for its consideration. If no comments are received from the reviewing department or agency within the specified review period, such shall be noted in the Planning Department's recommendation to the Planning Board.

Planning Board Review and Recommendation

The Planning Board shall review the proposed amendment, along with the Planning Department's recommendation and any comments received from other departments and agencies. The Planning Board shall submit its recommendation on the proposed amendment to the Board of Commissioners within forty-five (45) days. Failure of the Planning Board to submit its recommendation within this time period shall constitute a favorable recommendation.

Public Hearing Requirements

No amendment to the Hazard Mitigation Plan may be adopted until a public hearing has been held. Upon receipt of a recommendation from the Planning Board, their Planning Department shall after consultation with the Clerk to the Board, schedule a public hearing before the Board of Commissioners on the petition. The public notice shall be published one (1) time in the newspaper having general circulation within the County at least ten days prior to the scheduled public hearing date. In computing this period, the date of publication shall not be counted but the date of the public hearing shall be.

With respect to map amendments, the planning Department shall provide first-class mail notice of the public hearing to:

- (a) Owners, according to county tax records, of all properties whose use of land may be affected by the proposed amendment; and
- (b) Owners, according to tax records, of all properties adjacent to the properties affected by the proposed amendment.

The Planning Department may also post notices of the public hearing in the vicinity of the properties affected by the proposed amendment and take any other action deemed by the Planning Department to be useful or appropriate to give notice of the public hearing. The notice required or authorized by this section shall:

- (a) State the date, times, and places of the public hearing;
- (b) Summarize the nature and character of the proposed change;
- (c) If the proposed amendment involves a change in potential use of the land, reasonably identify the property whose potential land use would be affected by the amendment;
- (d) State that the full text of the amendment can be obtained from the Burke County Planning Department; and
- (e) State that substantial changes in the proposed amendment may be made following the public hearing.

Board of Commissioners Review and Adoption

Upon receipt of a recommendation from the Planning Board, the Planning Department shall schedule a public hearing before the Board of Commissioners on the petition according to the procedure outlined in Section “Public Hearing Requirements”.

Footnotes

2-1 Preventing Disasters through Hazard Mitigation, Ana K. Schwab, Popular Government, Spring 2000, p.6.

2-2 Post-Disaster Hazard Mitigation Planning Guidance for State and Local Governments, Federal Emergency Management Agency, 1990, p iii.

2-3 *ibid.* p.6.

2-4 FEMA News Room, www.fema.gov/nwz00/nwz00_11.htm.

Community Rating System

Public Information (Series 300)

This series credits programs that advise people about flood hazards, flood insurance, and ways to reduce flood drainage. These activities also provide data for insurance agents for accurate flood insurance rating. These programs serve all members of the community and work toward all three goals of the CRS. Activities for which credit is given are described in Table 2-3.

Table 2-3 : Public Information (Series 300)

310	Elevation Certificates	<ol style="list-style-type: none"> 1. Maintain on all new construction and substantial improvements. 2. Use FEMA form: 3. Make copies available to public
320	Map Information	<ol style="list-style-type: none"> 1. Consult flood Insurance Rate Maps (FIRMS) in response to public. 2. Advise of requirement for flood insurance. 3. Maintain copies of FIRMS; 4. Update maps to reflect new subdivisions, changes in corporate limits, and all new FIRM data from flood insurance restudies, map revisions, map amendments, and Letters of Map Amendment (LOMA) and Map Revision (LORM); 5. Publicize service annually, keep record of service.
330	Outreach Projects	<p>Annually advise public of:</p> <ol style="list-style-type: none"> 1. Flood hazards; 2. Availability of flood insurance; and 3. Flood protection methods.
340	Hazard Disclosure	<p>Disclosure Information</p> <ol style="list-style-type: none"> 1. Must be volunteered (not in response to a request); or 2. Appear on a document, e.g., Multiple Listing Service printout or offer to purchase contract that person sees before committing to purchase or buy property.
350	Flood Protection Library	<p>Local public library</p> <ol style="list-style-type: none"> 1. Available to all branches; 2. Maintain flood-related documents; 3. No credit for keeping in planning office.
360	Flood Protection Assistance	<p>Annually publicize flood hazard information available:</p> <ol style="list-style-type: none"> 1. Newsletter 2. County website or 3. Other outreach project

Mapping and Regulations (Series 400)

This series credits programs that provide increased protection to new development. These activities include mapping areas not shown on the FIRM, preserving open space, enforcing higher regulatory standards, and managing storm water. The credit is increased for growing communities. These activities work toward the first and second goals of the CRS – damage reduction and accurate insurance rating. Activities for which credit is given are described in Table 2-4.

Table 2-4: Credit Programs (Series 400)

Code	Activity	Description
410	Additional Flood Data	<ol style="list-style-type: none"> 1. Credit for studies conducted outside the Special Flood Hazard Area (SFHA); 2. Studies conducted in the SFHA where base flood elevations (BFEs) were not shown of FIRM, 3. Re-studying an area shown on the FIRM where new study produced higher BFEs, 4. Studies that were conducted to higher standards than the normal FEMA mapping.
420	Open Space Preservation	<ol style="list-style-type: none"> 1. Credit for preserving land in the floodplain as open space through <ol style="list-style-type: none"> a) public ownership; or b) by development regulations 2. Can be used for public parks, private preserves, playing fields, golf courses, etc.
430	Higher Regulation Standards	Regulations that require new development to be protected to one or more standards stricter than the NFIPs minimum requirements.
430 LZ	Low-Density Zoning	1. Available for underdeveloped land within low-density zoning districts as well as for areas developed in accordance with the density requirements.
440	Flood Data Maintenance	Credit for keeping floodplain maps and evaluation reference marks current, useful and accurate in order to improve local regulations, planning, disclosure, and property appraisals.

450	Storm Water Management	Credits regulation of new development within the watershed (not just floodplain) to minimize adverse impacts of storm water runoff on downstream flooding and water quality.
400SH	Special Hazard Areas	1. 413SH Additional Flood Data in Special Hazard Areas. 2. 423SH Open Space Preservation in Special Hazard Areas. 3. 433SH Higher Regulatory Standards in Special Hazard Areas.

Flood Damage Reduction (Series 500)

This series programs for areas in which existing development is at risk. Credit is provided for a comprehensive floodplain management plan, relocating or retrofitting floodprone structures, and maintaining drainage systems. These activities work toward the first goal of the CRS – damage reduction. Activities for which credit is given are described in Table 2-5

Table 2-5: Flood Damage Reduction (Series 500)

Code	Activity	Description
500	Repetitive Loss Areas	Create outreach project to inform property owners of flood damage prevention methods and flood insurance options.
510	Floodplain Management Planning	Expand Hazard Mitigation Plan to meet Section 511 standards if there are repetitive loss areas.
520	Acquisition and Relocation	Credit provided for acquiring, relocating or otherwise clearing buildings out of floodplains. Credit provided only if community also receives credit for vacant lot under Activity 420 Open Space Preservation
530	Retrofitting	Credit provided for buildings that have been floodproofed, elevated, or otherwise modified to protect them from flood damage.
540	Drainage System Maintenance	Credit for inspecting drainage system, removing debris, connecting drainage problem sites and regulating dumping into the system

Flood Preparedness (Series 600)

This series credits flood for flood warning, levee safety, and dam safety programs. These activities work toward the first and third goals of the CRS – damage reduction and hazard awareness. Activities for which credit is given are described in Table 2-6.

Table 2-6: Flood Preparedness (Series 600)

Code	Activity	Description
610	Flood Warning Program	Credit for program that provides timely identification of impending flood threats, disseminates warnings to appropriate floodplain occupants, and coordinates flood response activities.
620	Levee Safety	Credit to communities protected by levees that are properly maintained and operated
630	Dam Safety	Credit for any community in a state with a dam safety program that has submitted the necessary documentation of its program to FEMA. (Note: North Carolina has submitted documentation).

Progress Report

Progress has been made in the past five years to fulfill the commitments outlined in the previously approved plan. Burke County and the seven municipalities participating in the multi-jurisdictional plan have made considerable progress in implementing the hazard mitigation activities outlined in Table 2-1. Each participating jurisdiction has provided a table of activities and indicated under the column for “Schedule” whether a proposed activity has been completed or if it is ongoing. Though some of the activities have been completed, many activities are ongoing. An activity may be ongoing if it is something that needs to be continually enforced or monitored. For example, public education is something that needs to take place continuously. An activity may also be ongoing if funds are needed before the activity may be implemented.

Progress has also been made implementing the activities outlined in Table 2-2 High Wind Mitigation Activities. Much like the ongoing activities mentioned above, many of the high wind mitigation activities have been completed (i.e. ordinance adopted) but the activity will continue to be ongoing since enforcement is an ongoing effort.

The public had the opportunity to participate in the plan’s maintenance over the past five years through the public hearing process involved in ordinance adoption and amendments. Numerous ordinances, whether through Burke County or the various jurisdictions, have been adopted or amended since 2004 to address issues in the Hazard Mitigation Plan. When the ordinances were adopted or amended the governing board of the jurisdiction was required to hold a public hearing to gather input from citizens. One of the major ordinances which affected a large number of property owners and also played a major role in implementing the hazard mitigation activities was the adoption of an updated floodplain ordinance and maps by all the Plan partners in 2007.

After evaluating and monitoring activities of the currently approved plan over the last five years the update committee did not propose any major resultant changes to the approved plan. The committee has recommended that possible terrorism events be added to the plan and that the section pertaining to drought be expanded. Terrorism was not addressed in the current plan and drought has been an issue in recent years.

Since initial approval of the current plan many of the mitigation activities have been completed. As a result the mitigation strategy has changed from one of adopting ordinances to implementing ordinances to achieve the goals of the plan. For example, one of the hazard mitigation activities identified in the approved plan is adoption of an updated Flood Damage Prevention Ordinance and Regulatory Floodplain Maps. This occurred in 2007 so now the focus of the mitigation strategy is on implementing the updated ordinance and using the new maps to educate property owners regarding the restrictions on their property if it is located in a floodplain.

Appendix A: Hazard Identification and Analysis

"Storms, floods, earthquakes, and wildfires are a part of the natural balance of the environment. A storm that levels dunes displaces the sand to another part of the beach system. A wildfire that blackens the forest allows new growth to flourish. But when such events occur where people have made their homes and built their businesses, the results can be devastating. Weather and geological phenomena can wreak havoc in towns and communities, disrupting the flow of goods and services, destroying property, and unsettling people's lives.A-1

Hazard Identification

Before Burke County can determine how best to utilize time and resources on hazard mitigation, it is necessary to determine which specific hazards present the greatest potential for a natural disaster. Factors, such as geography, topography, climate and natural features, must be considered. Burke County is vulnerable to a number of natural hazards including dam failure, floods, landslides, drought, tornadoes, thunderstorms, severe winter storms, wildfires, earthquakes, nor'Easter, and hurricanes. Each hazard is unique to Burke County in terms of impact, frequency, and likelihood of occurrence.

The following sections describe and discuss the eleven natural hazards identified in North Carolina. Climatic and historic data were used to identify the potential for each of the hazards. The last section summarizes the hazards and rates each on its potential to cause a natural disaster in Burke County. Tables A-10 - A-17 at the end of this section summarize data on past storm events that have impacted Burke County.

Hazard Assessment update

The past five year period has not shown any appreciable change in Hazard Threat for Burke County. We find that we are still vulnerable to the same hazards as were identified in the plan five years ago. Findings indicate that we are still susceptible to Hurricane, Tornado, Northeaster, Thunder storm, Winter storm, Wildfire, Earthquake, Landslide and Dam Failure. We have added drought to the list, based on recent experience and findings by some municipalities. The only added risk we find is that we have realized more development on floodplains than in previous years. In addition to the aforementioned issues, we find that the three dams on Lake James are undergoing renovation. All three will be upgraded two are done now and by 2011 the third will be finished. This factor will help reduce our odds of catastrophe due to dam failure.

**Natural Hazard Summary Assessment for Burke County and Municipalities Updated
8/2010**

Natural Hazard	Burke Co.	Connely Springs	Drexal	Glen Alpine	Hildebran	Morganton *Adopted County's Assessment	Rutherford College	Valdese
Hurricane	Low	Moderate		Moderate	Moderate	Low	Moderate	Moderate
Flood	High		Low	Moderate	Low	High	Low	Moderate
Tornado	Moderate	Moderate	High	High	High	Moderate	High	
Nor'easter	Very Low		Low	Low		Very Low	Low	Low

Thunderstorm	Moderate	High	High	High	Low	Moderate	High	High
Severe Winter Storm	High	High	High	High		High	High	High
Wildfire	Moderate		High	High	High	Moderate	High	High
Earthquake	Moderate	Low		Low	Low	Moderate	Low	Low
Landslide	High		Low	Low	Low	High	Low	Low
Dam Failure	High			Moderate		High		Low
Drought	Moderate			Low	Low	Moderate	Low	Low
Severe Heat								
Hail		High						

Hurricanes

Hurricanes have long threatened all portions of North Carolina to varying degrees. Hurricanes are cyclonic storms originating in tropical waters and fueled by latent heat from the condensation of warm water. Heavy precipitation, high winds and tornadoes are all typically associated with hurricanes. The economic and human impact a hurricane has on a community depends greatly on how development has occurred within that community. Development in areas of high risk or vulnerability greatly increases the potential for property damage and loss of life. Burke County is not a coastal county and it is seldom that Hurricane conditions affect Burke County. However, the trickle down effects do affect the county in an indirect manner. Effects of such storms would have countywide significance. The track of a storm can still have a major impact on inland counties bringing high winds and heavy precipitation, as demonstrated with Hurricane Hugo during 1989, and Hurricane Frances in 2004.

Burke County has experienced development in high-risk areas such as river and stream floodplains that are vulnerable to flooding caused by hurricanes. Burke County has also experienced an increase in the number of manufactured homes that are also vulnerable to the damaging effects of high winds produced by hurricanes. A major landfall hurricane can have tremendous adverse impact on Burke County in terms of property damage, loss of life, and economic impacts from business closures.

Hurricane intensity is measured using the Saffir-Simpson Scale ranging from 1 (minimal) to 5 (catastrophic) based on wind speeds, surface pressure, and height of storm surge as shown in Table A-1. Major hurricanes are categorized as 3, 4, or 5 on the Saffir-Simpson Scale. While hurricanes within this range comprise only 20 % of total tropical cyclone landfalls, they account for over 70% of the damage in the United States. Maximum sustained winds of category 3, 4, and 5 hurricanes range from 112 mph to over 156 mph. This wind intensity topples trees and causes severe damage to structures.

The worst hurricane to impact North Carolina was Hurricane Hazel, a Category 4, in 1954. Hurricane Floyd, which caused severe flood damage within eastern North Carolina, was a Category 2 hurricane. (Note: the Saffir-Simpson Scale currently includes only three variables noted in Table A-1 but is being revised to include rainfall potential to improve storm rating accuracy.)

Table A-1: Saffir-Simpson hurricane Scale, (Simpson and Reihl, 1981)

Saffir-Simpson Category	Maximum Sustained Winds (mph)	Minimum Surface Pressure (mb)	Height of Storm Surge (in feet)
1	74-96	>980	3-5
2	97-111	979-965	6-8
3	112-131	964-945	9-12
4	132-155	944-920	13-18
5	156+	<920	19+

Source: North Carolina Division of Emergency Management, 1998: Local Hazard Mitigation Planning Manual.

According to historical data, North Carolina has experienced landfall hurricanes more frequently in recent years, each having a measurable impact on some area of the state. Burke County experienced significant losses as a result of several recent landfall hurricanes including Bertha (1996), Bonnie (1998), Dennis (1999) and Floyd (1999) as shown in Table A-2.

Table A-2: Recent Hurricanes Affecting Burke County

Hurricane	Date Occurred	Category
Faye	August 15 - 26, 2008	Tropical Storm
Cindy	July 3 - 7 2005	1
Charley	September 14, 2004	4
Jeane	September 13 – 28, 2004	3
Ivan	September 9 - 24, 2004	Tropical Storm
Frances	August 25 – September 8, 2004	2
Floyd	September 14-16, 1999	2
Dennis II	September 1-4, 1999	Tropical Storm
Dennis I	August 29-30, 1999	Tropical Storm
Bonnie	August 26, 1998	2
Fran	September 5-6, 1996	3
Bertha	July 11, 1996	2

Floods (Map A-1 Burke County Floodplain Areas)

Flooding is normally the result of a larger event such as hurricane, nor'easter thunderstorm. Flooding is caused by excessive precipitation and can be generally considered in two categories: flash floods and general floods. Flash floods are the product of localized, high-intensity precipitation over a short period in small drainage basins. General floods are caused by precipitation over a longer time period and over a given river basin.

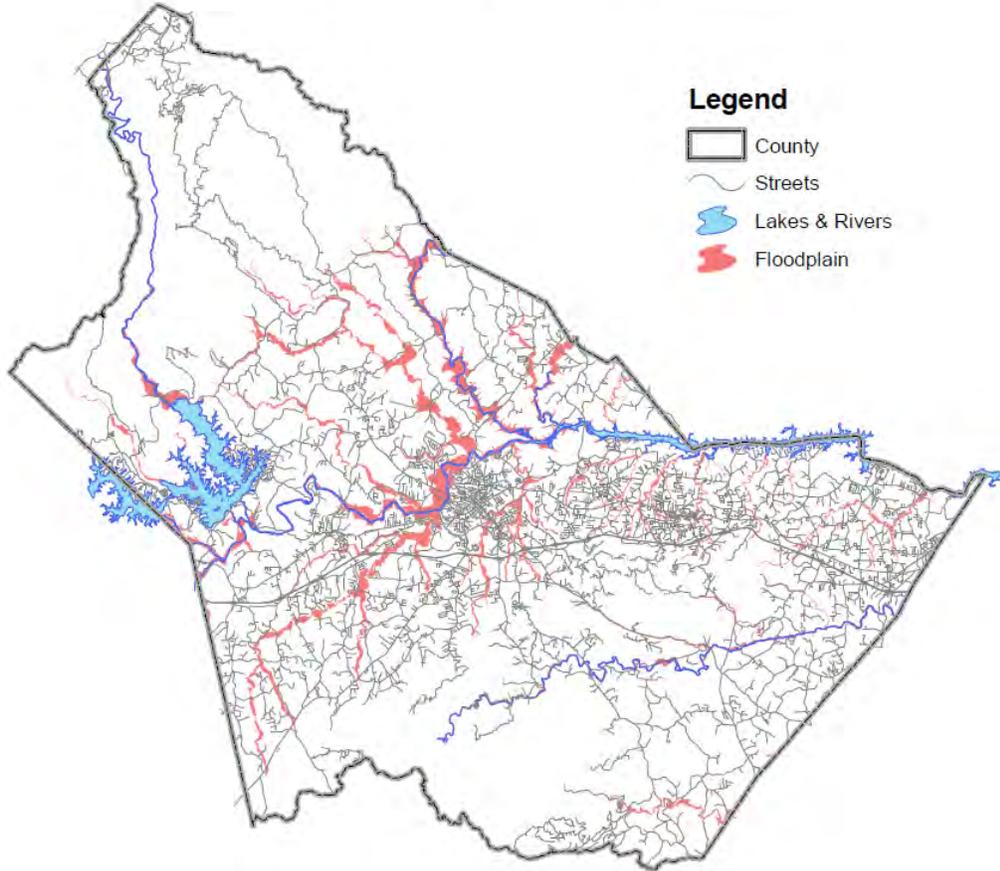
A combination of river basin physiography, local thunderstorm movements, past soil moisture conditions, and the degree of vegetative clearing determine the severity of a flooding event. Flooding is typically most severe in areas of the floodplain immediately adjacent to major streams and rivers. Flooding can be as frequent as the occurrence of a spring rain or summer thunderstorm. The amount of precipitation produced by storm events determines the type of flooding. Flash floods, which typically occur more frequently than general floods, occur along small streams and creeks of the type that are widely present throughout Burke County.

The undermining or washing out of roads is typically associated with flash floods. General flooding occurs less frequently and as a result of much larger storm events such as hurricanes. These larger storm events occur along the East Coast of the United States most often in the late summer and fall. The total economic and loss of life impact depends greatly on the amount of development within the area. Currently, Burke County has a moderate amount of development, mostly residential, along the floodplains of major rivers and streams throughout the County.

The County GIS Department has overlaid the most current FEMA Flood Insurance maps onto a layer of GIS Data in order to better analyze the properties at risk in and along the Flood Plain of Burke County and its municipalities. Between 1990 and May, 2003, twenty-four residential structures and two non-residential structures have been built in the floodplain in Burke County.

Current information indicates that over the past ten years, 1999 through 2008, 587 structures have been built in the floodplain in Burke County.

Burke County Floodplain Areas Map A-1



Legend

- County
- Streets
- Lakes & Rivers
- Floodplain



0 5 10 Miles

Source: FEMA - Flood Insurance Rate Maps
www.ncfloodmaps.com
Burke County GIS
May 2009

Tornadoes

Severe storms such as thunderstorms and hurricanes can often produce smaller, more localized storms. Tornadoes, typically the by-product of a larger storm, are violently rotating columns of air that may come in contact with the ground. Tornadoes have a much more localized impact than a hurricane or nor'easter. Tornadoes generally produce a narrow path of concentrated destruction from 0.01 mile to greater than 1 mile wide. Tornadoes may also produce paths of destruction from less than 1 mile in length to greater than 100 miles in length

Actual locations of previous tornadoes are not documented or traceable due to lack of actual sightings. While we have had 2 verified tornados reported from 1953-1998. During the plan update period there has been no absolute identifiable tornadic activities or no local records exist verify or exclude such activity. Yet 3 records suggest tornadic activity over the past 10 years. Complete verification of tornadic activity can be difficult and there may actually have been more or less. Part of the lack of identifiable activity results from the fact that probable tornadoes are diagnosed by damage patterns and associations with presence of storm cells, rather than by sightings in NC, They remain difficult to see since they are hidden in Rain patterns. As a result some are wrongly categorized. This can complicate accurate number generation.

The destruction caused by tornadoes may range from light to severe depending on the path of travel. Damage to structures may range from light to severe depending on the path of travel. Typically, structures of light construction, such as residential structures, suffer the greatest damage from tornadoes. Tornadoes are generally rated according to the Fujita-Pearson Scale as shown in Table A-4.

Table A-4: The Fujita-Pearson Tornado Scale

F-Scale	Damage	Winds	Path Length Miles	Mean Width Miles
F0	Light	40-72	<1.0	<0.01
F1	Moderate	73-112	1.0-3.1	0.01-0.03
F2	Considerable	113-157	3.2-9.9	0.04-0.09
F3	Severe	158-206	10-31	0.1-0.3
F4	Devastating	207-260	32-99	0.32-0.99
F5	Incredible	261-318	100+	1.0+

Source: North Carolina Division of Emergency Management. 1998: Local Hazard Mitigation Planning Manual.

Because tornadoes are typically a by-product of thunderstorms, they have a higher likelihood of occurrence. Tornadoes and thunderstorms are most likely to occur during the months of March through June. Tornadoes during these months have also caused the greatest amount of damage. Limited data is available on Tornadic activity location, and since disaster declarations secondary to these events are necessary to mark these events, they are difficult to locate. Such activity would affect the entire county, no maps are available to trend or generalize the locations of these events. Recognizing standard

construction methods, an F5 tornado will devastate the entire structure and associated area.

Nor'easters

Nor'easters (or northeastern) are wind or gale storms with winds predominantly from the northeast. Nor'easters typically impact the eastern United States and are similar to hurricanes in respect to their effects. Unlike hurricanes, however, nor'easters are extra-tropical storms, deriving their strength from horizontal gradients in temperature- they form as a result of a drop in temperature. Nor'easters affect the coast in a similar fashion as hurricanes in that they produce heavy surf and high winds. A nor'easter occurring during winter months may also produce ice hazards and effects similar to those of a severe winter storm in other parts of the state.

Burke County would typically suffer the same effects from a nor'easter as from a hurricane; however, the impact of a nor'easter would not be expected to be as severe. The location history and trend is not available since the effects of these events would affect the whole county, as opposed to a specific location within the county. The occurrence of a nor'easter often produces substantial amounts of precipitation and strong winds. Nor'easters occurring in the winter months may result in accumulation of snow and/or ice. The chance of Burke County experiencing a nor'easter is minimal due to its geographic location.

According to an analysis of a nor'easter frequency, fewer nor'easters occurred during the 1980's. However, the frequency of major nor'easters (Class 4 or 5) has increased in recent years. From 1987 to 1993 at least one class 4 or 5 storm occurred each year along the Atlantic seaboard of the United States, a situation duplicated only once in the last 50 years. A-2 Nor'easters are rated by the Dolan-Davis Intensity Scale shown in Table A-5.

Table A-5: Dolan-Davis Nor'easter Intensity Scale (1993)

Storm Class	Beach Erosion	Dune Erosion	Overwash	Property Damage
1 (Weak)	Minor changes	None	No	No
2 (Moderate)	Modest; mostly lower beach	Minor	No	Modest
3 (Significant)	Erosion extends across beach	Can be significant	No	Loss of many structures at local level
4 (Severe)	Severe beach erosion and recession	Severe dune erosion and destruction	On low beaches	Loss of structures at community-scale
5 (Extreme)	Extreme beach erosion	Dunes destroyed over extensive areas	Massive in sheets and channels	Extensive at regional-scale-millions of \$

Source: Local Hazard Mitigation Planning Manual, NC Division of Emergency Management, 1998, p.73.

Thunderstorms

Severe thunderstorms most frequently occur in the summer in Western North Carolina. These usually occur in the late afternoon or during the evening or night hours. Summer thunderstorms involve lightning, strong winds and heavy rains that can result in wildfires

or localized wind damage and flash flooding and can produce large hail. Thunderstorms are classified by NOAA as Single cell, multi cell, Severe, and Supercell. Most of our activity is that of single cell variety, characterized by a single updraft and downdraft. Multicells are characterized by a strong radar reflectivity gradient on the leading edge of the thunderstorm, and possibly by a radar weak echo region. The Supercell is The familiar radar reflectivity signature commonly referred to as the "hook echo" is shown to be at the confluence of the thunderstorm updraft with the rear flank downdraft, and is the preferred region for strong tornado occurrence. Although a few Supercells are encountered, they are by far the least common, and are serious predictors of impending tornadic activity. No maps and trend locations are available for these events since these tend to be highly scattered with each approaching storm, and usually affect large areas in varying patterns each time.

Severe Winter Storms

Severe winter weather is associated with colder climates as in western North Carolina. Burke County has occasional winter weather events that can be compounded by a result of a nor'easter originating in the Gulf Stream and producing frozen precipitation.

The impact of a winter storm in Burke County can be paralyzing. Because of the severe occurrence of large amounts of snow, sleet and freezing rain. Winter storms produce an accumulation of snow and ice on trees and utility lines resulting in loss of electricity and blocked transportation routes. The majority of winter storms are of the extent of 1-3” of accumulation. In most cases, these events cause localized hazards and disruption of services for a few hours. Occasionally a storm event will occur with accumulations of precipitation of >8”. These storms can disrupt services for several hours up to a few days. Very infrequent events result in accumulations of > 12”, and these cause serious disruptions in power, emergency aid, and mobility. Location trends of Winter storms is largely countywide, as s storm system that can cause such storms, likely affect the rest of the county as well. Frequently, especially in rural areas, loss of electric power means loss of heat, and many times water, for residents that poses an immediate threat to human life.

See Table A-2

A recent comparison for the 12 year period reveals that we have averaged the same number of storms each year (6-7), with the occasional increase and the precipitation average has also remained steady.

Table A2: List of storms for GSP

Date	Type	Precipitation	Impact
10 Feb 1995	Freezing Rain	0.7	Low
6-8 Jan 1996	Winter Mix	9.3	Extreme
11-12 Jan 1996	Snow	3.1	Moderate/High
1-3 Feb 1996	Winter Mix	2.0	Moderate/High
16 Feb 1996	Snow	1.0	Moderate
18-19 Dec 1996	Snow	2.0	High
8-9 Jan 1997	Freezing Rain	7.2	High

13-14 Feb 1997	Freezing Rain	0.6	Low/Moderate
23-25 Dec 1998	Freezing Rain	7.2	High
2-3 Jan 1999	Freezing Rain	7.9	High
31 Jan-3 Feb 1999	Winter Mix	3.6	Moderate
9 Mar 1999	Winter Mix	3.1	High
22-23 Jan 2000	Winter Mix	9.5	High/Extreme
24-25 Jan 2000	Snow	0.2	Low/Moderate
29-30 Jan 2000	Winter Mix	7.2	High
19 Nov 2000	Snow	2.5	Moderate
13-14 Dec 2000	Freezing Rain	0.7	Low
19 Dec 2000	Snow	0.8	Low
21 Dec 2000	Winter Mix	0.3	Low
2-3 Jan 2002	Snow	1.6	High
4-6 Dec 2002	Freezing Rain	5.8	High
16 Jan 2003	Snow	1.5	Moderate
23 Jan 2003	Snow	3.0	Moderate
16 Feb 2003	Winter Mix	3.9	Moderate/High
3-6 Dec 2003	Freezing Rain	2.5	Moderate/High
8-10 Jan 2004	Freezing Rain	0.1	Low
25-27 Jan 2004	Winter Mix	7.1	High
25-27 Feb 2004	Snow	3.5	Moderate
8-9 Dec 2005	Freezing Rain	1.3	Moderate
14-16 Dec 2005	Freezing Rain	11.0	Extreme
18 Jan 2007	Freezing Rain	0.9	Moderate
1-2 Feb 2007	Freezing Rain	6.1	High

Wildfires (Map A-2: Burke County Urban Wildfire Interface)

Wildfires occur in North Carolina during the dry spring and summer months of the year. The potential for wildfires depends upon recent climate conditions, surface fuel characteristics, and fire behavior. Wildfires can destroy precious natural resources and habitat essential to the survival of wildlife. According to the NC State Division of Forestry, between 1970 and 2002, 158,616 wildfires occurred in the state, burning a total of almost one and a half million acres. The most common cause of wildfires is debris burning, followed by smokers, children, and machinery. Lightening causes relatively few fires compared to the number of blazes caused by humans.

Wind fuels wildfires and structures in close proximity to potential wildfire fuels are at risk of damage as wind direction and velocity change. According to the State Forest Service, frequency of wildfires in Burke County is relatively moderate, but drought years increase our vulnerability regarding this natural hazard. Fortunately, most wildfire-prone areas are located on public land, within the South Mountains State Park and Pisgah National Forest, so threat to private development is limited.

Historical data for Wildfire and Drought in Burke County are summarized in the following table.

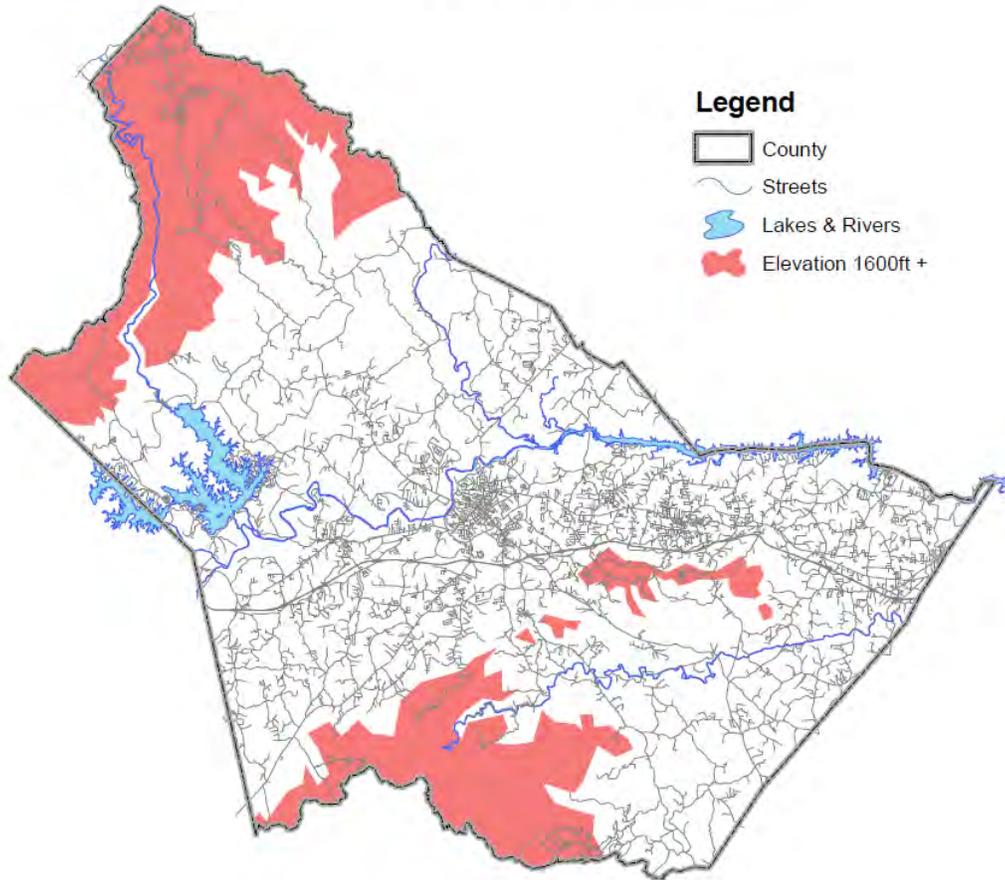
Burke County Wildfire/drought events
1980-2010

Begin Date	Hazard Type	State	County	Injuries	Fatalities	Property Damage*	Crop Damage*
4/1/1985	Drought - Wildfire - Wind	NC	Burke	0.00	0.00	500.00	50000.00
5/1/1986	Drought - Wildfire	NC	Burke	0.00	0.00	0.00	50000.00
Total				0.00	0.00	500.00	100000.00

* Losses are not adjusted for inflation. To compare losses across years, please see the [FAQs](#).

SOURCE:

Burke County Urban Wildfire / Landslide Interface Map A-2



Legend

- County
- Streets
- Lakes & Rivers
- Elevation 1600ft +



Source: Topography - NCDOT GIS
Burke County GIS
May 2009

Earthquakes

Earthquakes are geological events that involve movement or shaking of the crust of the earth. Earthquakes are measured in terms of their magnitude and intensity as shown in Table A-6. Earthquakes can cause devastating and costly destruction to the manmade environment.

Earthquakes are relatively infrequent but not uncommon in North Carolina. From 1868 to 1992, 157 earthquakes have occurred in North Carolina. A-3 In 1987, a quake measuring 4.2 points on the Richter Scale occurred along the North Carolina / Tennessee border. In 2003, a quake occurring in Alabama that registered a magnitude of 4.9 caused tremors in several western North Carolina counties. No seismic activity data could be found for Burke County.

North Carolina's vulnerability to earthquakes increases from East to West in relation to the Eastern Tennessee Seismic Zone. Epicenters are generally concentrated in this active seismic zone, which is second in activity in the eastern United States only to the New York Madrid Fault and thus, the western part of the state is vulnerable to seismic activity. A-4 Our research for the update period indicates no earthquakes have occurred in Burke County. However, that does not preclude the possibility. A search for probabilities of occurrence in Burke County is shown in the table below:



Morganton, North-Carolina Earthquake Risk Grade

Measured at	35.7, -81.7
Probabilities of Earthquakes within the next 50 years within 50 km above Magnitude	
5.0 M	1.795%
5.1 M	1.452%
5.2 M	1.452%
5.3 M	1.176%
5.4 M	0.954%
5.5 M	0.775%

Source: www.homefacts.com/earthquakes/north-carolina/burke-county

Table A-6: Modified Mercalli Scale of Earthquake Intensity

Scale	Instrumental	Description of Effects	Maximum Acceleration (mm/sec)	Richter Scale
I	Instrumental	Detected only on seismographs	<10	
II	Feeble	Some people feel it	<25	<4.2
III	Slight	Felt by people resting; like a truck rumbling	<50	
IV	Moderate	Felt by people walking	<100	
V	Slightly Strong	Sleepers awake; church bells ring	<250	4.8

VI	Strong	Trees sway; suspended objects swing, objects fall off shelves	<500	<5.4
VII	Very Strong	Mild alarm; walls crack; plaster falls	<1000	<6.1
VIII	Destructive	Moving cars uncontrollable; masonry fractures, poorly constructed buildings damaged	<2500	
IX	Ruinous	Some houses collapse; ground cracks; pipes break open	<5000	<6.9
X	Disastrous	Ground cracks profusely; many buildings destroyed; liquefaction and landslides widespread	<7500	<7.3
XI	Very Disastrous	Most buildings and bridges collapse; roads, railways, pipes and cables destroyed; general triggering of other hazards	<9800	<8.1
XII	Catastrophic	Total destruction; trees fall; ground rises and falls in waves	>9800	>8.1

Source: Local Hazard Mitigation Planning Manual, North Carolina Division of Emergency Management, 1998, p.75.

Landslides

According to the United States Geological Survey (USGS), landslides are major geologic hazards that occur in all 50 states, cause \$1-2 billion in damages, and result in an average of over 25 fatalities each year. (USGS, 1997) Landslides often occur with other natural hazards such as earthquakes, wildfires, and floods. A-5

Landslides are a serious risk in Burke County due to the relatively mountainous topography of western North Carolina. Areas of steep slopes associated with the banks of major lakes, rivers, and streams in the county could collapse under heavy rainfall to produce a localized landslide. The potential of damage to lives or property from this type of natural hazard could potentially involve excessive erosion, mudslides, as well as road and property damage. Fortunately, most very steep slopes in Burke County are on public land in the South Mountains State Park and the Pisgah National Forest, so threat to private development is limited. The research into this area reveals that our likelihood of this event remains that same as previously identified. Although our neighbors have suffered this event, there are no recorded occurrences of landslides in Burke County, as demonstrated in the table below which shows that Burke County has experienced none.

Landslide Information 1980-2010 for NC
--

hazard_id	_DATE	HAZARD_	County	State	FIPS	INJURIES	FATALITIES	DAMAGE	REMARKS
209679	9/8/2004	Landslide	Buncombe	NC	37021	0	0	10000000	0 Landslide
210366	9/17/2004	Landslide	Buncombe	NC	37021	0	0	10000000	0 Landslide
210280	9/16/2004	Landslide	Macon	NC	37113	9	4	1600000	0 Landslide
209683	9/8/2004	Landslide	Haywood	NC	37087	0	0	1166667	0 Landslide
209684	9/8/2004	Landslide	Henderson	NC	37089	0	0	1166667	0 Landslide
209690	9/8/2004	Landslide	Transylvania	NC	37175	0	0	1166667	0 Landslide
209678	9/8/2004	Landslide	Avery	NC	37011	0	0	1125000	0 Landslide
209681	9/8/2004	Landslide	Caldwell	NC	37027	0	0	1125000	0 Landslide
209688	9/8/2004	Landslide	Mitchell	NC	37121	0	0	1125000	0 Landslide
209691	9/8/2004	Landslide	Yancey	NC	37199	0	0	1125000	0 Landslide
210363	9/17/2004	Landslide	Avery	NC	37011	0	0	500000	0 Landslide
210376	9/17/2004	Landslide	Jackson	NC	37099	0	0	100000	0 Landslide

209685	9/8/2004	Landslide	Jackson	NC	37099	0	0	50000	0	Landslide
399868	7/7/2005	Landslide	Buncombe	NC	37021	0	0	50000	0	Landslide
399874	7/14/2005	Landslide	Transylvania	NC	37175	0	0	50000	0	Landslide
8716927	12/28/1980	Landslide	Brunswick	NC	37019	0	0	25000	0	Landslide
			New							
8716928	12/28/1980	Landslide	Hanover	NC	37129	0	0	25000	0	Landslide
216757	5/10/2005	Landslide	Mitchell	NC	37121	0	0	1000	0	Landslide

SOURCE:

Dam Failure (Map A-3: Burke County Dam Failure Inundation Pathway)

Situations under which a dam failure could occur are major flooding, earthquakes, "piping" seepage through earthen impoundment / structural failure, a slide or other movement of the dam or impoundment. There are no records of dam failure in Burke County in the past, but because of the catastrophic potential consequences, this hazard is rated high. The most significant threat to Burke County is the impoundment of Lake James, consisting of earthen structures and 2 spillways which were constructed in 1919 and impounds a maximum 265182 acre feet of water or a total of 86, 422, 813, 800 gallons within Lake James. A dam failure at Lake James would pose a significant threat to persons and property within the inundation pathway through the entire county. Data provided by the Duke Power Company on a dam failure flood inundation pathway was entered as a layer onto the County GIS System to identify the properties and areas at risk should an event occur. In the event of a major dam failure at the Bridgewater site, 27,570 people living in 11,508 housing units would be impacted to some extent by inundation. The table on page 33 provides specific information regarding impacts to each jurisdiction. These dams were identified as the most serious risk in the county due to substandard scores on seismic stability. The Duke Power Company is currently working to reinforce these structures and upgrade their construction standards. This process is expected to continue throughout the next 2-5 years. At this point, no dam failures have occurred since 1919.

Drought

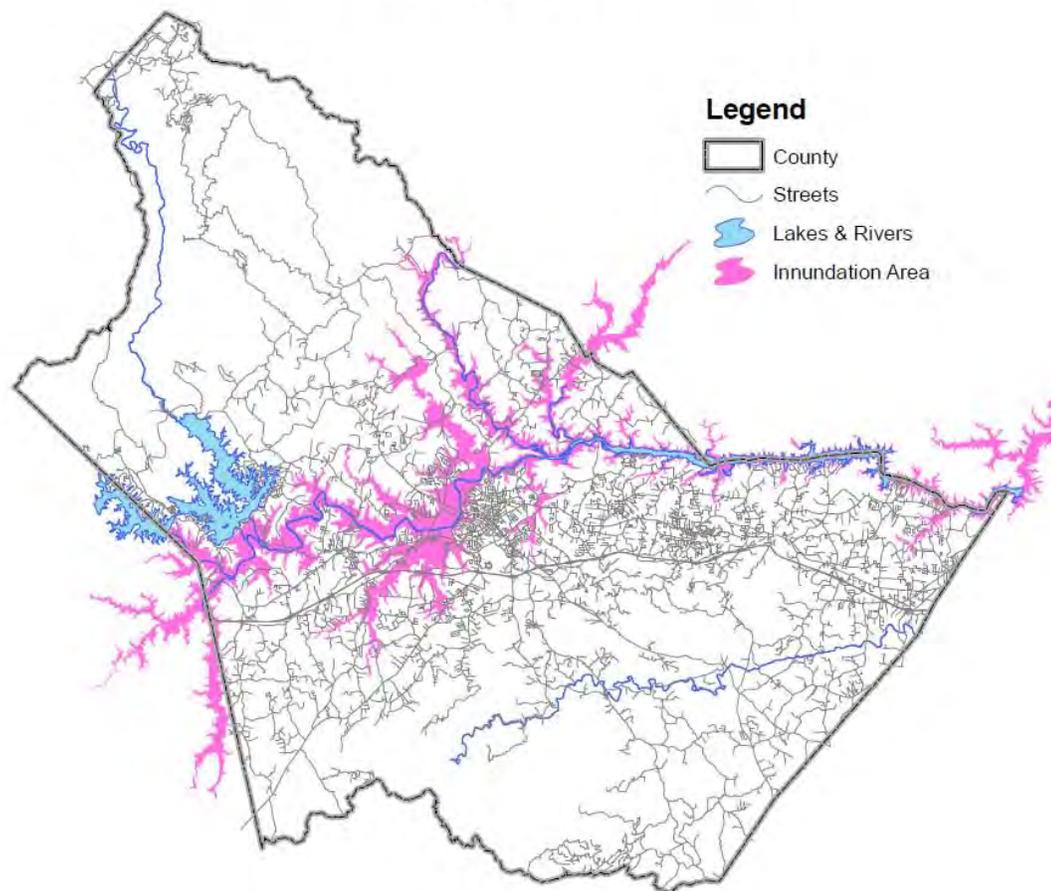
Drought is a naturally occurring climate event that has considerable impact in our area of the state. Prolonged drought can have severe economic and ecological ramifications for a particular area, and a thorough understanding of drought mitigation measures are imperative for our growing communities. THE NATIONAL DROUGHT MONITOR classifies drought into one of the five categories:

- D0) ABNORMALLY DRY
- D1) MODERATE
- D2) SEVERE
- D3) EXTREME

D4) EXCEPTIONAL

Since 1998, there have been 19 separate drought events in Burke County. There is no single identifiable location, as drought is a wide spread event, and would involve the county as a whole, opposed to a localized event. Though specific dollar amounts are not available, drought events can be very costly for water suppliers and agricultural interests, and have the potential to impact water quality and recreational opportunities for the community at-large. Drought History is summarized in the Wildfire/Drought table above.

Burke County Dam Failure Inundation Area Map A-3



Source: Duke Energy
Burke County GIS
May 2009

Terrorism

Terrorism can be defined as criminal acts or threats by individuals or groups to achieve political, social or economic gain or recognition by fear, intimidation, coercion or violence against the government and its citizens. The threat for a terrorist event has proven to be both domestic and international and can strike at anytime, anywhere without warning. The two primary phases associated with terrorist incidents are Crisis Management and Consequence Management. Crisis Management includes the broad spectrum of data collection and dissemination of information primarily to law enforcement groups and to other groups that are part of the initial response. This phase also represents the first-in organizations to incidents and is part of the consolidated efforts by all levels of government to ensure life, safety and rescue efforts. Consequence Management refers to response measures that are implemented to ensure continuity of essential services of government and to provide emergency relief to all levels of government. Both phases should be implemented at the same time and work hand-in-hand to resolve and recover from acts of terrorism.

It is assumed that law enforcement agencies, from the federal, state and local levels, will gather intelligence by both overt and covert means and will provide briefings to support agencies when information or intelligence reveals a potential increase or likelihood that a terrorist threat or event could likely occur. By monitoring the intelligence, the responsible officials, by pre-planning and utilizing emergency plans and procedures, can have a reasonable assurance that adequate support for increased response readiness is available to minimize the impact upon the citizens and property of Burke County and to maintain or restore order.

Although the threat of a terrorist event occurring within the jurisdictional boundaries of Burke County is low, a threat assessment of potential targets has been conducted and completed. In the event a terrorist incident occurs, local law enforcement will be the lead agency, due to the potential of a criminal act, with all other local agencies functioning as support agencies. A “State of Emergency” proclamation, issued by Burke County, gives the issuing government body additional authority to effectively address the situation, to restrict and/or abate activities so as to assist law enforcement activities. The Burke County Emergency Operations Center will be activated and will serve as the primary point for the direction and control of operational efforts during both the response and recovery phases, coordinate with law enforcement to support human service needs and will be the primary point of contact for state and/or federal resources.

North Carolina Natural Hazard Summary Assessment for Burke County

North Carolina experiences different types of hazards with some more likely than others to impact different regions of the state. The North Carolina Division of Emergency management has assessed the State's vulnerability to natural hazards by county. As is noted, there has been no change in the types and extents of hazards over the past five years. Table A-7 shows the State's summary assessment for Burke County for the nine natural hazards identified as affecting North Carolina.

Table A-7: Natural Hazard Summary Assessment for Burke County

Natural Hazard	Vulnerability of Burke County
Hurricane	Low
Flood	High
Tornado	Moderate
Nor'easter	Very Low
Thunderstorm	Moderate
Severe Winter Storm	High
Wildfire	Moderate
Earthquake	Moderate
Landslide	High
Dam Failure	High
Drought	Moderate

Source: Local Hazard Mitigation Planning Manual, NCDEM, 1998, p.84-5.

a The North Carolina Division of Emergency Management Methodology; Each of the one hundred counties in North Carolina was categorized into one of three levels of natural hazard likelihood- "Low", "Moderate", or "High" for eight natural hazards. Some assignments were made, in part, using the Climate Division (formatted by the National Climatic Data Center (Guttman and Quayle, 1995) to which each county was assigned. The Climate Division number for Burke County is 4. For additional information on how ratings were developed, see "Local Hazard Mitigation Planning Manual, North Carolina Division of Emergency Management, November 1998.

Note: the following table analyzes and summarizes the vulnerability of each jurisdiction in the County, based information in Appendix B..

Natural Hazard Summary Assessment for Burke County and Municipalities Updated 8/2010

Natural Hazard	Burke Co.	Connely Springs	Drexal	Glen Alpine	Hildebran	Morganton *Adopted County's Assessment	Rutherford College	Valdese
Hurricane	Low	Moderate		Moderate	Moderate	Low	Moderate	Moderate
Flood	High		Low	Moderate	Low	High	Low	Moderate
Tornado	Moderate	Moderate	High	High	High	Moderate	High	
Nor'easter	Very Low		Low	Low		Very Low	Low	Low
Thunderstorm	Moderate	High	High	High	Low	Moderate	High	High
Severe Winter Storm	High	High	High	High		High	High	High
Wildfire	Moderate		High	High	High	Moderate	High	High
Earthquake	Moderate	Low		Low	Low	Moderate	Low	Low
Landslide	High		Low	Low	Low	High	Low	Low
Dam Failure	High			Moderate		High		Low
Drought	Moderate			Low	Low	Moderate	Low	Low
Severe Heat								
Hail		High						

North Carolina Natural Hazards Potential Impact for Burke County

The State of North Carolina has estimated their potential impact of various natural hazards for Burke County as shown in Table A-8.

Table A-8: Natural Hazards Potential Impact Data for Burke County

Natural Hazard	Range	Burke County
Earthquake vulnerability	Low=1 to high =6	3
Landslide Vulnerability	Low = 1 to High =6	6
Frequency of Hurricanes, 1900-96	Saffir-Simpson Class 1-5	1
Nor'easter Vulnerability	1= some direct vulnerability	0
Frequency of Tornadoes, 1953-1995	Number of Tornadoes	2
Extreme 1-day snowfall	In inches	12.8"
Wildfires, 1953-1995	Low = 1, Mod =2, high = 3	2
Number of Acres Burned	Low = 1, Mod. = 2, high =3	1

Source: Local hazard Mitigation Planning Manual, NCDEM, 1998, p.88.

Natural Hazards Summary Assessment Used for Hazard Mitigation Planning Purposes for Burke County

Having reviewed the State's Assessment of vulnerability for Burke County, the following Local Assessment is being utilized for Hazard Mitigation Planning Purposes for the county and its municipalities.

Natural Hazards Summary Assessment for Burke County

Natural Hazard	Vulnerability for Burke County
Hurricane	Moderate
Flood	High
Tornado	Moderate
Thunderstorm	High
Nor'easter	Low
Severe Winter Storm	High
Landslide	Moderate
Dam Failure	High
Earthquake	Moderate
Wild Fire	Moderate
Drought	Moderate

Hazard Index for Burke County

Floodplains, dam failure inundation areas, and steep slopes are more prone to hazards than other areas in Burke County. Certain hazards are likely to produce only localized effects, while others have widespread effects. Some hazards can have extraordinary impacts but occur infrequently while others occur regularly but cause less damage. Of course, natural hazards often occur simultaneously (tornados and thunderstorms for example) and cause damage totals to increase dramatically.

The total potential impact for each hazard can be projected using a combination of the following: Likely strength of the event, size of the area affected, the density of human activity within the likely path of the hazard. The following Table gives each natural hazard for Burke County an Index Rating based on a combination of these three factors: likelihood of occurrence, size of potential area affected, and the potential impact of the event. Based on review, it is our opinion that these hazards are still ranked correctly.

Table: Hazard Index for Burke County

Hazard Type	Likelihood of Occurrence	Potential Area Affected	Potential Impact	Hazard Index Combined Rating
Hurricane	Possible	Medium	Limited	Low
Flood	Highly Likely	Medium	Limited	Moderate
Tornado	Likely	Small	Limited	Low
Thunderstorm	Highly Likely	Medium	Negligible	Moderate
Nor'eastr	Possible	Medium	Negligible	Low
Severe Winter Storm	Highly Likely	Medium	Limited	Low
Landslide	Likely	Small	Limited	Low
Dam Failure	Possible	Large	Catastrophic	High
Earthquake	Possible	Medium	Limited	Low
Wild Fire	Highly Likely	Small	Limited	Low
Drought	Possible	Medium	Limited	Low

Calculated occurrence with the Guidelines set forth in the Mitigation Planning Guide for Local Government: Keeping Natural Hazards from Becoming Natural Disasters.

History of Weather Events in Burke County

The following Tables chronicle the history of weather events in Burke County. All information is from the National Climatic Data Center beginning 01-01-1950. Injury and property damage data is not available for most events.

Table: Thunderstorms, Wind, Lightning and Hail

Location	Date	Time	Magnitude	Injury	Property Damage
Burke	09-06-57	1730			
Burke	07-08-59	1400			
Burke	08-19-68	1500			
Burke	07-20-69	1300			
Burke	05-16-70	1830			
Burke	05-22-70	1545			
Burke	07-04-70	1335			
Burke	06-20-75	1438	50kts		
Burke	08-23-75	1542	50kts		
Burke	09-05-75	1905	55kts		
Burke	02-18-76	1433	55kts		
Burke	04-14-76	1236			
Burke	06-06-77	1432	50kts		
Burke	07-28-81	1418	58kts		
Burke	07-28-81	1718	65kts		
Burke	05-12-85	1700			
Burke	06-03-85	0311			
Burke	06-07-85	1345	Hail .75in.		
Burke	05-20-86	1450	Hail 1 in		
Burke	07-13-86	1430			
Burke	07-13-86	1922			
Burke	07-26-86	1900			
Burke	08-07-86	1500			
Burke	08-07-86	1521	50kts		
Burke	05-01-87	1430	Hail .75 in		
Burke	06-03-87	1445			
Burke	06-04-87	0150	56kts		
Burke	07-04-87	1518			
Burke	08-05-87	1730			
Burke	08-21-90	1323			
Burke	08-06-91	1445			
Burke	08-07-91	1615			
Burke	05-15-94	1736	Hail 1 in		
Glen Alpine	08-19-94	1405	Hail .75 in		

Morganton	06-09-95	1415			
Morganton	06-10-95	1640	Hail .75 in		
Valdese	07-25-95	2154			
Valdese	07-31-95	1630			
Jonas Ridge	05-05-96	0730 PM	Hail 1.75 in		
Morganton	05-27-96	0300 PM	Hail 1.5 in.		
Hildebran	05-27-96	0452 PM	60 kts		
Glen Alpine	06-24-96	0245 PM	Hail .75 in		
Morganton	06-24-96	0300 PM	50kts		
Morganton	06-24-96	0315 PM	Hail 1 in.		
Rutherford College	08-17-96				
Glen Alpine	08-24-96	0219 PM	Hail 1.75 in.		
Morganton	09-11-96	0830 PM	50 kts		
Morganton	06-02-97	0614 AM	Hail 1.75 in		
Morganton	06-26-96	0450 PM	Hail .75 in 50kts		5K
Valdese	07-04-97	0700 PM	50kts		
Rutherford College	07-09-97	0400 PM	Hail 2.5 in 75kts		25K
Hildebran	07-28-97	0218 PM	5kts		
Morganton	05-07-98	0510PM	Hail 1.5 in		
Morganton	05-25-98	0257 PM	Hail .88 in 52kts		
Hildebran	06-11-98	0305 PM	Hail 1.75 in 50kts		
Glen Alpine/Linville Falls	07-21-98	0350 PM	50kts		
Rutherford College/Morganton	09-06-98	0242 PM	50kts Hail .75 in		
Morganton	07-07-99	0200 PM	50 kts		
Morganton	08-26-99	0500 PM	50kts		
Hildebran/Morganton	05-20-00		0415 pm52kts		
Morganton	05-21-00	0342 PM	Hail .75 in 56 kts		
Morganton/GA/Bridge water/Morganton	05-24-00	0440 PM	Hail 4.50 in 52 kts		
Valdese	06-25-00	0200 PM	50 kts		
Morganton/Valdese	08-10-00	0145 AM	50 kts		
Morganton	08-18-00	0310 PM	50kts		
Rutherford College/Morganton	08-25-00	0810 PM	Hail .75 in		
Morganton	11-09-00	0815 PM	50 kts		
Morganton	06-04-01	0718 PM	Hail I in 55 kts		
Morganton	06-20-01	0700 PM	50 kts		5k
Burke	02-04-02	12:00 PM	50 kts	0	0
Burke	4/17/02	1:30 PM	1.75	0	0
Burke	04-25-02	12:45 PM	N/A	0	5 k
Morganton	5/02/02	8:35 PM	50 k/s	0	0
Morganton	6/6/02	2:18 PM	.75" – 50 kts	0	0
Morganton	6/13/02	7:10 PM	55kts	0	1 k
Morganton	7/21/02	5:30 PM	60 kts	0	30 k
Longview	8/17/02	4:00 PM	50 kts	0	10 k
Morganton	8/18/02	6:50 PM	50 kts	0	0
Burke	09-26-02	9:00 PM	N/A	0	0
Burke	11-06-02	10:00 AM	50 kts	0	0
Burke	12-13-02	08:29 AM	65 kts	0	0
Burke	12/25/02	10:00 AM	50 kts	0	0
Morganton	05-02-03	03:44 PM	50 kts		1 k
Morganton	07-13-03	03:30 PM	50 kts		
NCZ033>034-048>055-058>059-064>067	10-14-03	08:00 PM	50 kts		18k
NCZ033>034-048>050-053>055-064>065-067	11-13-03	06:00 AM	50 kts		25k
Morganton	11-19-03	06:45 AM	60 kts		1k
NCZ034>035-054>055	03-07-04	06:30 PM	50 kts		170k
Glen Alpine	07-04-04	04:45 PM	50 kts		
NCZ034-054>055-066>067	09-16-04	11:00 PM	50 kts		20k
NCZ033>035-	09-17-04	08:00 PM	50 kts		75k

048>055-059-063>067					
NCZ033>034-049>050-052>055-064>067	04-02-05	08:00 PM	60 kts		700k
Morganton	04-22-05	02:20 PM	50 kts		5k
Chesterfield	06-06-05	02:30 PM	50 kts		
Pleasant Grove	06-19-05	04:30 PM	55 kts		
Morganton	06-29-05	05:35 PM	50 kts		
Morganton	07-27-05	06:10 PM	50 kts		
Morganton	07-28-05	06:15 PM	50 kts		
NCZ052>055-062>067	01-14-06	08:00 AM	60 kts		10k
NCZ033>034-054>055-067	04-03-06	07:00 PM	50 kts		20k
Morganton	04-25-06	07:00 PM	50 kts		
Countywide	05-14-06	03:03 PM	50 kts		
Morganton	06-11-06	02:27 PM	50 kts		
Morganton	06-23-06	03:05 PM	55 kts		
Connelly Springs	07-20-06	02:15 PM	55 kts		
Icard	08-04-06	05:55 PM	50 kts		
Morganton	09-28-06	01:58 PM	50 kts		
Glen Alpine	06-23-07	21:15 PM	50 kts		
Morganton	07-10-07	17:20 PM	50 kts		
Morganton	08-23-07	20:00 PM	60 kts		
Morganton	03-04-08	18:30 PM	60 kts		

Table of Flood Events

County	10-05-95	1042	Flash floods	
County	01-18-96	0100 PM	Flooding	
County	01-26-96	0853 PM	Flooding	30 K
Morganton	08-12-96	0645 PM	Flash floods	
Oak Hill	08-12-96	1000 AM	Flash floods	
Morganton	07-29-97	1155 PM	Flashfloods	4 K
Morganton	09-06-98	0415 PM	Flooding	
Jonas Ridge	07-07-99	0330 PM	Flashfloods	
Morganton	05-20-00	0430 PM	Flooding	
Morganton	09-02-00	1200 PM	Flashfloods	
Jonas Ridge	04-17-02	1245 PM	Flooding	2 K
Morganton	08-17-02	0510 PM	Flash Flood	
NCZ055	04-10-03	0300 PM	Flood	
Morganton	06-15-03	1030 PM	Flash Flood	
Morganton	06-16-03	0425 PM	Flash Flood	
Morganton	07-13-03	0430 PM	Flash Flood	
Morganton	08-07-03	0230 PM	Flash Flood	
Hildebran	08-09-03	0630 PM	Flash Flood	
NCZ055	11-19-03	0530 AM	Flood	
NCZ055	11-19-03	1000 AM	Flood	
NCZ033>034-049>050-054>055	09-07-04	0530 PM	Flood	
NCZ033>034-050-054>055	09-17-04	0100 AM	Flood	8.2 Million Property 4.0 Million Crop
Northeast Portion	05-19-05	0355 PM	Flash Flood	
NCZ055	07-07-05	0100 PM	Flood	
Morganton	07-19-05	0600 PM	Flash Flood	
Morganton	07-27-05	6:30 PM	Flash Flood	
West Portion	08-17-05	1120 PM	Flash Flood	
NCZ055	08-18-05	0230 AM	Flood	
NCZ055	10-07-05	0700 PM	Flood	
Table Rock	08-26-08	2330 PM	Flash Flood	

Table of Tornado Events

Burke	04-03-74	0700	F1	25K
Burke	05-24-79	1557	F2	250 K
Bridgewater/Morganton	05-24-00	0456	7-0	50 K
Morganton	05-24-00	0457		
Morganton	05-11-08	1530		

Table of High Winds

PLACE	DATE	TIME	INJURIES	MAGNITUDE	DAMAGE
County	11-11-95	1200			250 K
County	01-18-96	0800 PM			75 K
County	03-31-97	0900 AM	2		
County	02-24-98	0900 AM		50kts	20 K
County	01-13-00	1200 PM		52 kts	
County	11-09-00	1200 PM			
County	03-06-01	1000 AM		55kts	
County	03-20-01	0700 AM		55kts	1.0 M
County	04-25-02	12:45 PM			
County	11-06-02	10:00 AM		50kts	
County	12-12-02	09:29 AM		65kts	
County	12-25-02	10:00 AM		50kts	
County	09-26-02	09:00 PM			
County	02-04-03	12:00PM		50kts	

See Table of Thunderstorms, Wind, Lighting and Hail above

Table of Winter Weather: Snow, Sleet, Freezing Rain

N. Burke	02-10-94	1000		Ice	
Burke	12-09-95	0000		FR	20 K
Burke	01-06-96	0800PM		S	
Burke	01-11-96	0600PM		S	
Burke	01-26-96	1100AM		I	
Burke	02-02-96	0300AM		I	50 M
Burke	02-03-96	0600PM		S	
Burke	02-16-96	0200AM		S	
Burke	12-05-96	1200PM		SI	
Burke	120-6-96	0500AM		I	
Burke	01-08-97	1200PM		SS	
Burke	01-09-97	1200PM		I	2.0 M
Burke	01-15-97	0200PM		S	
Burke	02-13-97	1000AM		WS	
Burke	12-08-97	1100AM		WS	
Burke	12-27-97	1200AM		S	
Burke	12-29-97	0530PM		HS	
Burke	01-18-98	0800PM		S	
Burke	01-27-98	0400AM		HS	
Burke	02-03-98	1200AM		HS	
Burke	03-11-98	0400PM		S	
Burke	12-23-98	0900AM		FR-I	
Burke	12-24-98	1000PM		S	
Burke	01-02-99	0300PM		I	
Burke	02-01-99	1200AM		I	
Burke	02-13-99	0800AM		S	
Burke	02-19-99	1200PM		S	
Burke	02-23-99	0600AM		S	
Burke	03-03-99	1200AM		HS	
Burke	03-09-99	0300AM		HS	
Burke	03-13-99	1200PM		HS	
Burke	03-26-99	0200PM		S	
Burke	04-29-99	0400PM		S	
Burke	12-24-99	0800AM		S	
Burke	01-18-00	0400AM		HS	
Burke	01-22-00	0300PM		HS	

Burke	01-29-00	0900PM	FR	
Burke	11-19-00	0600AM	S	
Burke	12-03-00	0300PM	S	
Burke	12-13-00	0500PM	FR	
Burke	12-19-00	0300PM	S	
Burke	02-22-01	0300AM	HS&I	
Burke	030-6-01	0700AM	HS	
Burke	03-20-01	0800AM	HS	
Burke	04-17-01	0700AM	S	
Burke	01-03-02	12:00 AM	Heavy snow	
Burke	01-06-02	09:00 AM	Ice storm	
Burke	02-06-02	09:00 Am	Winter weather	
Burke	12-04-02	02:00 AM	Heavy Snow/ Ice	100.m
Burke	12-25-02	10:00 AM	Winter weather mix	
Burke	01-16-03	8:00 PM	Heavy Snow	
Burke	01-23-03	4:00 AM	Heavy Snow	
NCZ034>035-037-054>055	02-06-03	11:00 PM	Winter Storm	
NCZ034-054>055-066>067	04-10-03	09:00 AM	Winter Weather/Mix	
NCZ034>037-054>057-066>068-071	12-04-03	06:00 AM	Winter Weather/Mix	
NCZ034-054>055	12-18-03	08:00 PM	Winter Weather/Mix	
NCZ033>037-048>055-057>058-072	01-09-04	12:00 AM	Winter Weather/Mix	
NCZ033>037-048>050-053>057-062>067	01-25-04	12:00 PM	Heavy Snow	
NCZ034-054>055	02-05-04	06:00 PM	Winter Weather/Mix	
NCZ034-054>055-065	02-06-04	02:00 AM	Ice Storm	12k
NCZ034>037-054>056	02-12-04	04:00 AM	Winter Weather/Mix	
NCZ034-036>037-048>050-053>057	02-15-04	12:00 PM	Winter Weather/Mix	
NCZ033-036-049>050-054>057-066>072-082	02-26-04	10:00 AM	Heavy Snow	3.1m
NCZ034-048-051>055-058>059-062>066	03-30-04	12:00 AM	Winter Weather/Mix	
NCZ034-054>055-059-062>063	12-19-04	06:00 PM	Winter Weather/Mix	
NCZ033>034-055	01-21-05	08:00 PM	Winter Weather/Mix	
NCZ033>034-049>050-053>055-064>065	02-27-05	08:00 PM	Winter Weather/Mix	
NCZ033>034-049>050-053>055-064>065	02-28-05	03:00 AM	Heavy Snow	
NCZ033>037-048>050-052>057-059-063>068	03-17-05	02:00 AM	Winter Weather/Mix	
NCZ033-048>055-058>059-062>064	11-21-05	07:00 PM	Winter Weather/Mix	
NCZ033>034-036>037-048>050-052>053-055>056-064-066>069	12-08-05	04:00 PM	Winter Weather	
NCZ033>034-049>050-054>055	12-15-05	02:00 AM	Winter Weather	
NCZ033>034-049>050-054>055	12-15-05	10:00 AM	Ice Storm	225k
NCZ033-048>055-059-062>063	01-14-06	04:00 AM	Winter Weather	
CZ033>034-048>055-058-064>065	02-11-06	02:00 AM	Winter Weather	
NCZ034>036-052>056-067>069	03-20-06	12:00 PM	Winter Weather	

Table of Drought Events

Burke	07-01-98
Burke	10-01-98
Burke	11-01-98

Burke	07-01-99
Burke	08-01-99
Burke	09-01-99
Burke	10-01-99
Burke	08-01-00
Burke	09-01-00
Burke	10-01-00
Burke	11-01-00
Burke	02-01-01
Burke	03-01-01
Burke	04-01-01
Burke	05-01-01
Burke	08-01-01
Burke	11-01-01
Burke	12-01-01
Burke	08-01-02

No record of landslide events is recorded for Burke County.

Appendix B: Assessment Of Vulnerability

Introduction

Vulnerability to a natural hazard measures the extent to which people are expected to experience physical harm and the likelihood of property damage. Vulnerability to natural hazards exists both at the present and in the future. Present levels of development and growth generate conditions that expose people and property to some degree of vulnerability to natural hazards. As an area experiences an increase or decrease in development and growth, that degree of vulnerability will change.

Note: Information on past hazards and natural disasters will be presented as available. Most historic data will be available on a countywide basis only. When available, information will be presented for the County as a whole, for the County's planning jurisdiction, and for the municipalities of Morganton, Valdese, Glen Alpine, Drexel, Rutherford College, Connelly Springs, and Hildebran which are participating in the County Hazard Mitigation Plan.

Inventory of Developed Facilities and Undeveloped Land

Table B-1: Value of Developed Facilities and Undeveloped Land in Unincorporated Areas of Burke County ¹

	Number	Acres	Bldg. Value	Land Value	Tax Value
Single-Family Dwelling	19739	74583	1842739521	683736773	2599809432
Multi-Family Dwelling	118	107	16431685	2346842	19145889
Manufactured Home Park	418	2746	12457143	16392812	42231956
Exempt Property	720	80094	261767997	285834251	560105916
Commercial	626	3916	69008481	34887927	115195423
Industrial	124	1095	26162792	10820856	38768756
Other	3597	22839	2105280	123188189	135263980
Vacant	15176	103562	665009	526005912	527480487
TOTAL			2231337908	1683213562	4038001839

Source: Burke County GIS.

1 Areas outside of municipal corporate limits and extraterritorial jurisdictions.

2 Total number of buildings does not equal addressable structures.

3 Land and building values do not equal total tax value which includes value of accessory and out buildings.

4 Exempt category includes religious, state, county, federal, city, utilities, railroads, subdivision lots not sold, subdivision common areas, clubs and lodges, cemeteries, water and sewer facilities, fire and rescue facilities, and recycling facilities.

Table B-1 shows that total building value within unincorporated areas of Burke County accounts for almost \$1.5 billion worth of property improvements. All of these improvements are exposed to possible damage from a variety of future natural hazards although those within the floodplain and flood inundation pathway due to dam failure are the most likely to be affected by a future hazard event.

Critical Facilities (Map B-1 – Burke County Critical Facilities)

Critical facilities include those that are necessary in the daily operation of a community and those that might be hazardous to a community. Certain critical facilities are vital to the response and recovery efforts in the wake of a disaster resulting from a natural or technological hazard. These include fire and rescue facilities, schools, hospitals, major thoroughfares and communication facilities. Burke County has an extensive inventory of critical facilities as indicated in Table B-2 and shown on Map B-1 Burke County Critical Facilities. The Map B-1 shows critical facilities and locations associated with hazards. The ability to protect these facilities from damage is critical to the welfare of communities in Burke County in the wake of a future natural hazard event. At this point in time, the county does not have a capital improvements plan, so vulnerability of future public buildings is impossible to determine.

Table B-2: Critical Facilities in Burke County updated 8-10

Type of Critical Facility County Wide	Total Facilities	Morg.	Valdese	GA	Drexel	RC	CS	Hildebran	Rhodhiss		
Fire, EMS Rescue Police	24 Stations	7	3 4	3	4 2	3 2	1	3	2		
Schools	22	11	3	2	2	1		2	1		
Water Treatment Plants	2	1	1								
Sewer Treatment Plants	2	1	1						1		
Railroads	1	1	1	1	1	1	1	1			
Major Highways	5	5	2	1		1	1	2			
Major Bridges	56	20	4	2	1	1	1	4 2			
Hospitals	3	2	1								
Hydro Electric Dam	3										

Source: NC Center for Geographic Information and Analysis and Burke County Emergency Services.

Present Vulnerability

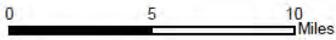
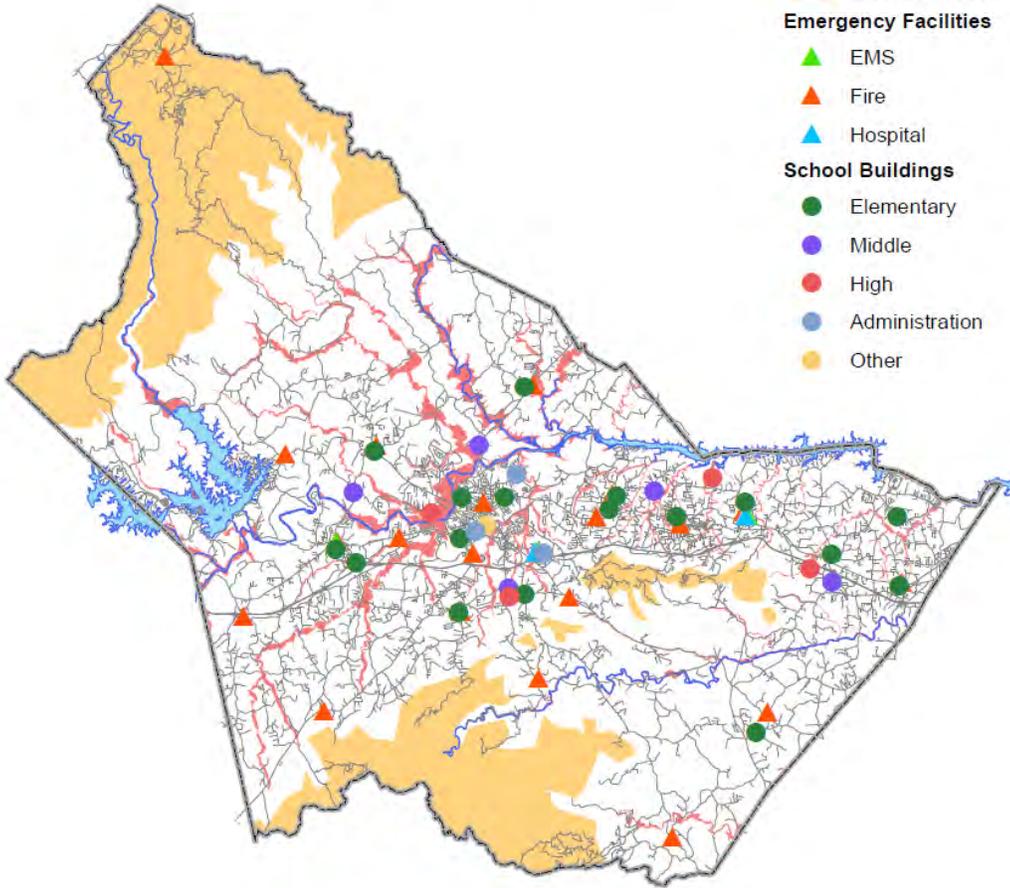
There are many considerations in determining the overall vulnerability of a community or area. These include vulnerable populations, high-risk areas, and vulnerable structures and facilities.

Vulnerable populations are identified as those highly populated areas that are most susceptible to natural or technological hazards. Burke County has many areas of

Burke County Critical Structures Map B-1

Legend

-  County
-  Streets
-  Lakes & Rivers
-  Floodplain
-  Elevation 1600ft +
- Emergency Facilities**
 -  EMS
 -  Fire
 -  Hospital
- School Buildings**
 -  Elementary
 -  Middle
 -  High
 -  Administration
 -  Other



Burke County GIS
May 2009

vulnerable populations and most are located in the 100-year floodplains of the County and in the dam failure inundation pathway. These areas are identified on Map A-1 – Burke County Floodplain Areas-in Appendix A.

In 2002, the County GIS Department identified the current information of properties at risk in and along the Flood plain of Burke County and its municipalities using the most current FEMA flood insurance rate maps available. That research found that 3439 total parcels at risk. Additionally, 2157 structures totaling 20,011 acres (or 31 square miles of the county) are located within the hazard areas with an appraised value of \$\$269,623,275.00

Burke County’s GIS Department updated the information above in 2009. The update found that the total acreage of the floodplain is now 21, 171 acres. Furthermore, 2765 structures are located in the floodplain and have an appraised value of \$596,088,257.00
The estimated population of the floodplain is 4654.

100 Year Floodplain Hazard Area 2002

Municipality	Appraised Value
Glen Alpine	\$616,357
Morganton	\$214,371,545
Drexel	\$1,813,968
Valdese	\$51,028,637
Rutherford College	\$77,828
Connelly Springs	\$215,813
Hildebran	\$1,499,127

100 Year Floodplain Hazard Area (Updated 2009)

Municipality	Appraised Value
Glen Alpine	\$3,866,278
Morganton	\$428,466,846
Drexel	\$5,625,432
Valdese	\$96,024,852
Rutherford College	\$2,547,094
Connelly Springs	\$48,448,372
Hildebran	\$7,530,416

Data provided by the Duke Power Company in 2000, reveals the following vulnerability data under "PMF" Probable Maximum Failure scenario (dam failure): Full impoundment overflowing ground saturated rain continuously. Property damage projected under this scenario is as follows:

Dam Failure Hazard Area

	Total Value	Residential Structures at Risk	Industrial/ Commercial Value	Industrial/ Commercial Sites
Glen Alpine	\$11,974,446	74	\$0	0
Morganton	\$326,142,685	862	\$172,285,008	233
Valdese	\$7,036,554	1	\$6,822,776	2
Rutherford College	\$0	0	\$0	0
Connelly Springs	\$10,657,195	11	\$0	0
Rhodhiss	\$7,834,795	65	\$1,747,646	6
Hickory	\$6,293,291	0	\$6,293,291	3
Municipal Total	\$369,938,966	1013	\$187,148,721	244
Burke County	\$223,918,290	1139	\$24,906,466	69
Grand Total	\$593,857,256	2152	\$212,057,187	313

Burke County GIS August 2009

In 2002, there were 3439 parcels and 2157 structures located in the 100-year floodplain of Burke County. Using the 2000 Special Census occupancy rate of 85% and average household size of 2.68 persons/household, an estimated 4914 persons were residing within the 100-year floodplain in 2002. There are over 20,000 acres in the floodplain totaling over 31 square miles.

In 2009, there were 24,176 acres of land (37.8 square miles) and 2465 structures located within the flood inundated pathway, which would be impacted in the event of a dam failure on the impoundments of Lake James. These structures represent a real property value of \$593,857,256.00.

National Flood Insurance Program

The National Flood Insurance Program (NFIP) provides insurance coverage for flood susceptible properties. Data on current NFIP insurance policies and recent claims are shown in Table B-3. No repetitive losses were recorded during the plan revision period.

Six of the eight jurisdictions collaborating on this Hazard Mitigation Plan participate in the National Flood Insurance Program. As participants in the National Flood Insurance Program these six communities:

- 1) Adopted a flood damage prevention ordinance.
- 2) Require permits for development in the floodplain.
- 3) Assure that building sites are reasonably safe from flooding.
- 4) Established Base Flood Elevations (BFE) where not determined by FEMA.
- 5) Require new or substantially improved homes and manufactured homes to be elevated above the BFE.
- 6) Require non-residential buildings to be floodproofed or elevated above the BFE.
- 7) Determine if damaged buildings are substantially damaged.
- 8) Conduct field inspections; cite and remedy violations.
- 9) Require surveyed elevation information to document compliance.
- 10) Consider requests for variances.
- 11) Resolve non-compliance and violations.
- 12) Advise and work with FEMA and the states when updates to flood maps are needed.

Burke County Building Inspections administers the flood damage prevention ordinance for Burke County, Connelly Springs, Drexel, Hildebran and Valdese. The City of Morganton administers their flood damage prevention ordinance. The towns of Glen Alpine and Rutherford College have adopted flood damage prevention ordinances and are applying to become participants in the National Flood Insurance Program.

**Table B-3: National Flood Insurance Program Statistics for Burke County
As of 12-31-02/updated 11-09**

Jurisdiction	Total Claims	Total Payments
	12-31-02/11-09	13-31-02/11-09
Burke County	3/20	\$1,719.50/\$700,168
Morganton	4/17	\$44,043.11/\$1,190,781

Future Vulnerability

Future vulnerability is defined as the extent to which people are expected to experience harm and property damage by a hazard event if projected development were to occur. If current development patterns continue in Burke County, vulnerability will increase accordingly. Indeed, vulnerability will increase significantly if development occurs in areas susceptible to adverse impacts from natural hazards.

According to the 2000 Burke County Census, the annual population growth rate for Burke County from 1990-2000 was 7.17 %. Over that same time period, the number of housing units within Burke County increased over 18% (Table B- 4 & 5).

Table B-4: Burke County Housing Unit Growth*

1990 Census	2000 Census	Increase in Units	% Increase	2007 Estimate	Change in Housing Units	% Increase
31575	37427	5852	18.5%	39240	1,813	4.8%

Source: 1990 Census and 2000 Census.
*Countywide including all incorporated municipalities.

According to the Burke County Planning Department, 6561 new residential building permits were issued within the County (excluding Morganton) from January 1995 to through 2001. In the next ten years results in a similar rate and pattern of growth, then a substantial number of additional people and structures could be at risk when another flood hazard event occurs. As depicted in Table B-5, the county’s population growth expanded by nearly 18% between 1990 and 2000. For public safety and protection of property, such growth must be steered out of the floodplain in the future.

Updated information indicates that between 1999 and 2008 6430 new residential building permits were issued within Burke County (excluding Morganton). According to Table B-5 below population growth since 2000 has slowed. Residential building permits may follow this trend.

Table B-5: Burke County Population Growth

Place	1990 Population	2000 Population	1990-2000 % Growth	2007 Population	2000-2007 % Growth
Connelly Springs	1349	10814	34.5%	1874	3%
Drexel	1746	1938	11%	1875	-3%
Glen Alpine	563	1090	93.6%	1080	-1%
Hickory	79	63	-20.3%	40985	10%
Hildebran	786	1472	87.3%	1828	24%
Long View	358	709	98.0%	4918	4%
Morganton	15085	17310	14.7%	17108	-1%
Rhodhiss	226	327	44.7%	902	3%
Rutherford College	1126	1293	14.8%	1272	-2%
Valdese	3914	4485	14.6%	4542	1%
Burke County	75740	89148	17.7%	89361	0%

Data obtained from Western Piedmont Council of Government

This type of increase in susceptibility to flooding should not be allowed to continue. Future growth and development must be encouraged in areas of low vulnerability through implementation of Burke County’s Comprehensive Land Use Plan and various small area plans. Burke County’s Comprehensive Land Use Plan places 100-year floodplains in the "resource conservation" land use category. The resource conservation land use recommends open space, recreational, agriculture, and low-density residential development as appropriate use of land. Lake James Phase I and Phase II small area plans implemented strict requirements regarding density and setbacks for building on lots within 250’ of the reference line of Lake James, Lake Rhodhiss, Lake Hickory and the Catawba River. The Urban Corridor Small Area Plan is currently underway and draft recommendations from the committee include creating conservation areas along streams.

Redevelopment

Planning for redevelopment in the wake of a natural disaster also serves to reduce future vulnerability. Redevelopment should be encouraged in a manner which will result in lower vulnerability by restricting re-building within high-risk areas and requiring, where rebuilding does occur, the use of mitigative measures such as higher finished floor evaluations and floodproofing.

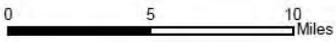
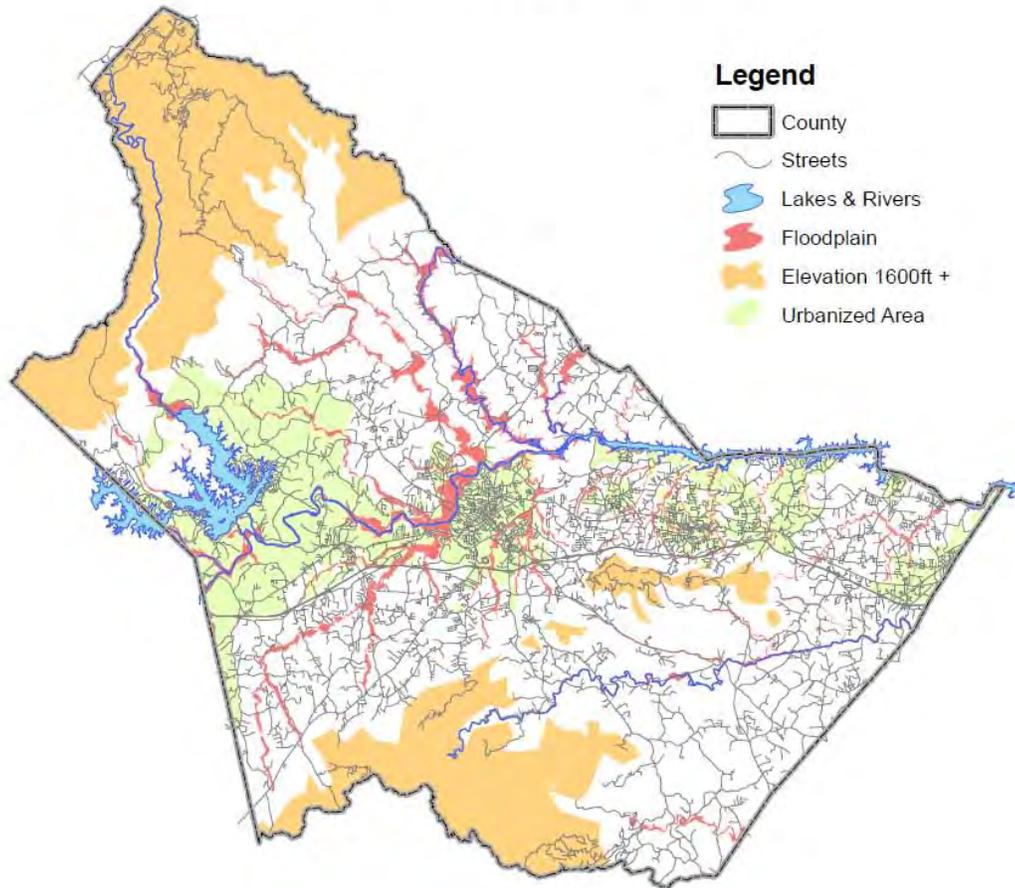
Repetitive loss properties would most likely occur as a result of flooding. In 2007, Burke County updated its Flood Damage Protection Ordinance. The updated ordinance has provisions for flood hazard reduction. The provisions apply to new construction as well as to substantial improvements to existing structures and are intended to minimize flood damages. Current data shows that there are 2765 structures currently located in the floodplain. Any substantial improvement to those structures or construction of a new structure in the floodplain would fall under the regulations of the Flood Damage Prevention Ordinance. Burke County Building Inspections administers the Flood Damage Prevention Ordinance.

Urbanization (Map B-2 Urbanization in Hazard Areas)

The level of general development in unincorporated areas of Burke is not expected to contribute appreciatively to a rise in the height of general flooding, however, urbanization in the county's River Basin may contribute to higher levels of flooding in future years. As municipalities within Burke County continue to grow and urbanize, flash flood levels within small drainage basins are expected to increase significantly if mitigative measures such as on-site stormwater retention are not required.

Another significant problem with increasing urbanization, is the reduced amount of time between the rainfall event and the actual flooding. Without mitigation, urbanization increases the likelihood of flash floods, increases the land susceptible to flooding, and reduces warning time for evacuation of susceptible population.

Burke County Urbanization & Hazard Areas Map B-2



Burke County GIS
May 2009

Appendix C: County Capability Assessment

Introduction

The ability of a community to develop an effective hazard mitigation plan depends upon its capability to implement policy and programs. This is accomplished through the legal, technical, and fiscal capabilities of the local government.

Burke County is a local government body with a Board-Manager form of government. The elected Board of Commissioners is the decision making body for the County. The appointed Planning Board serves as an advisory body to the elected officials with regards to planning matters. The County has a number of professional staff departments to serve the citizens of the County and to carry out day-to-day administrative activities.

County Capability summary update

During the planning and update, over the past 5 years, this section remains largely unchanged. We are however, monitoring the issues in this section as we review the plan for changes.

Legal Authority of Local Governments in North Carolina

Burke County has a wide array of powers as a result of North Carolina legislation. These powers enable the County to adopt and implement policies and ordinances that may be used to mitigate the potential harmful effects of natural hazards. Below is a summary of the legal authority and powers that North Carolina has conferred on local governments within the state. These powers fall into four broad categories: regulation, acquisition, taxation, and spending.

Regulation

General Police Power

Local governments in North Carolina have been granted broad regulatory powers in their jurisdictions. North Carolina General Statutes (NCGS) bestow the general police power on local governments, allowing them to enact and enforce ordinances that define, prohibit, regulate, or abate acts, omissions, or conditions detrimental to the health, safety, and welfare of the people, and to define and abate nuisances (including public health nuisances). Since hazard mitigation can be included under the police power (as protection of public health, safety and welfare), towns, cities, and counties may include requirements for hazard mitigation in local ordinances. Local governments may also use their ordinance-making power to abate "nuisances", which could include, by local definition, any activity or condition making people or property more vulnerable to any hazard (NCSG 160A Art.. 8 (Delegation and Exercise of the General

Police Power to Cities and Towns); 153A, Art. 6 (Delegation and Exercise of the General Police Power to Counties).

Building Codes and Building Inspection

Many structural mitigation measures involve constructing and retrofitting homes, businesses and other structures according to standards designed to make the buildings more resilient to the impacts of natural hazards. Many of these standards are imposed through the building code.

North Carolina has a state compulsory building code, which applies throughout the state (NCGS 143-138 (c)). However, municipalities and counties may adopt codes for their respective areas if approved by the state as providing "adequate minimum standards" (NCGS 143-138 (e)). Local regulations cannot be less restrictive than the state code. Exempted from the state code are public utility facilities other than buildings; liquefied petroleum gas and liquid fertilizer installations; farm buildings outside municipal jurisdictions.

Local governments in North Carolina are also empowered to carry out building inspection. NCGS 160A, Art. 19. Part 5; and 153 A. 18, Part 4 empower cities and counties to create an inspection department and enumerate its duties and responsibilities, which include enforcing state and local laws relating to the construction of buildings, installation of plumbing, electrical, heating systems, etc.; building maintenance; and other matters.

Land Use

Regulatory powers granted by the state to local governments are the most basic manner in which a local government can control the use of land within its jurisdiction. Through various land use regulatory powers, a local government can control the amount, timing, density, quality, and location of new development. All these characteristics of growth can determine the level of vulnerability of the community in the event of a natural hazard. Land use regulatory powers include the power to engage in planning, adopt plans, enact and enforce zoning ordinances, floodplain ordinances, and subdivision controls.

Zoning

Zoning is the traditional and nearly universal tool available to local governments to control the use of land. Board enabling authority for municipalities in North Carolina to engage in zoning is granted in NCGS 160A-381; and for counties in NCGS 153A-340 (counties may also

regulate inside municipal jurisdiction at the request of a municipality (NCGS 160A-360 (d)). The statutory purpose for the grant of power is to promote health, safety, morals, or the general welfare of the community. Land "uses" controlled by zoning include the type of use (e.g., residential, commercial, industrial) as well as minimum specifications for each use such as lot size, building height and set backs, density of population, and the like. The local government is authorized to divide its territorial jurisdiction into districts, and to regulate and restrict the erection, construction, reconstruction, alteration, repair or use of buildings, structures, or land within those districts (NCGS 160A-382). Districts may include general use districts, overlay districts, and special use or conditional use districts. Zoning ordinances consist of maps and written text.

Floodplain Regulation

In the summer of 2000, the North Carolina General Assembly adopted an act entitled "An Act to Prevent Inappropriate Development in the One-Hundred-Year Floodplain and to Reduce Flood Hazards". By this act, the North Carolina statutes regulating development within floodways were rewritten to include floodplain regulation (NCGS 143-214.51-214.61). The purpose of the new law is to:

- (1) Minimize the extent of floods by preventing obstructions that inhibit water flow and increase flood height and damage.
- (2) Prevent and minimize the loss of life, injuries, property damage, and other losses in flood hazard areas.
- (3). Promote the public health, safety, and welfare of citizens of North Carolina in flood hazard areas.

The new statute authorizes local governments to adopt a flood hazard prevention ordinance to regulate uses in flood hazard areas and to grant permits for the use of flood hazard areas that are consistent with the requirements of the statute. The statute provides for certain uses within flood areas without a permit consistent with local land use ordinances. (NCGS 143-215.54).

The statute establishes minimum standards for local ordinances and provides for variances for prohibited uses as follows:

- (a) A flood hazard prevention ordinance adopted by a county or city pursuant to this Part shall, at a minimum:
 - (1) Meet the requirements for participation in the National Flood Insurance Program and of this section.
 - (2) Prohibit new solid waste disposal facilities, hazardous waste management facilities, salvage yards, and chemical storage facilities in the 100-year floodplain except as noted in section (b) below.

(3) Provide that a structure or tank for chemical or fuel storage incidental to a use that is allowed under this section or to the operation of a water treatment plant or waste water treatment facility may be located in a 100-year floodplain only if the structure or tank is either elevated above base flood elevation or designed to be watertight with walls substantially impermeable to the passage of water and with structural components capable of resisting hydrostatic and hydrodynamic loads and the effects of buoyancy.

(b) A flood hazard prevention ordinance may include a procedure for granting variances for uses prohibited under G.S. 143-215.54 (c). A county or city shall notify the Secretary (of Crime Control and Public Safety) of its intention to grant a variance at least 30 days prior to granting the variance. A county or city may grant a variance upon finding that all the following apply:

- (1) The use serves a critical need in the community.
- (2) No feasible location exists for the location of the outside the 100-year floodplain.
- (3) The lowest floor of any structure is elevated above the base flood elevation or is designed to be watertight with walls substantially impermeable to the passage of water and with structural components capable of resisting hydrostatic and hydrodynamic loads and the effects of buoyancy.
- (4) The use complies with all other applicable laws and regulations.

The statute authorizes priority ratings for local government applications for revolving loans or grants based on adoption of a local comprehensive land use plan, a zoning ordinance, or other measure that significantly contributes to the implementation of the comprehensive land use plan and a flood hazard ordinance.

The Floodplain Act also instructed the Environmental Review Commission to study and report its findings to the 2002 General Assembly on the need to:

- (1) Increase the minimum elevation requirements;
- (2) Increase the authority of the Secretary of Crime Control and Public Safety to enforce the new statute;
- (3) Increase protection against the potential recurrence of damage to public and private property that resulted from the hurricanes of 1999, and other measures to reduce the likelihood that public assistance will be needed in response to future hurricanes and other storm events.

Planning

In order to exercise the regulatory powers conferred by the General Statutes, local governments in North Carolina are required to create or designate a planning agency (NCGS 160A-3 87). The planning agency may perform a number of duties, including: make studies of the area; determine objectives; develop and recommend policies, ordinances, and administrative means to implement plans; and perform other related duties (NCGS 160A-361). The importance of the planning powers of local governments is emphasized in NCGS 160A-383, which requires that zoning regulations be made in accordance with a comprehensive plan. While the ordinance itself may provide evidence that zoning is being conducted in "accordance with a plan", the existence of a separate planning document ensures that the government is developing regulations and ordinances that are consistent with the overall goals of the community. Commitment to adequately fund the department and enforce the ordinances are the responsibilities of the Board of County Commissioners.

Subdivision Regulation

Subdivision regulations control the division of land into parcels for the purpose of building development or sale. Flood-related subdivision controls typically require that subdivisions install adequate drainage facilities, and design water and sewer systems to minimize flood damage and contamination. They prohibit the subdivision of land subject to flooding unless flood hazards are overcome through filing or other measures and prohibit filing of floodway areas. They require that subdivision plans be approved prior to the sale of land. Subdivision regulations are a more limited tool than zoning and only indirectly affect the type of use made of land or minimum specifications for structures.

Broad division control enabling authority for municipalities is granted in NCGS 160A-371, and in 153A-330 for counties outside of municipalities and municipal extraterritorial areas. A subdivision is defined as all divisions of a tract or parcel of land into two or more lots and all divisions involving a new street (NCGS 160A-376). The definition of subdivision does not include the division of land into parcels greater than 10 acres where no street right-of-way dedication is involved (NCGS 160A-376(2)).

The community thus possesses great power (in theory, anyway) to prevent unsuitable development in hazard-prone areas, NCGS 160A, Art. 8 (Delegation and Exercise of the General Police Powers to Cities and Towns); Art. 19 (Planning); Part 3 (Zoning) and 153A, Art. 6 (Delegation and Exercise of the General Police Power to Counties; Art. 18 (Planning and Regulation of Development); Part 2 (Subdivision Regulation); Part 3 (Zoning).

Acquisition

The power of acquisition can be a useful tool for pursuing mitigation goals. Local governments may find the most effective method for completely "hazard-proofing" a particular piece of property or area is to acquire the property (either in fee or a lesser interest, such as easement), thus removing the property from the private market and eliminating or reducing the possibility of inappropriate development occurring. North Carolina legislation empowers cities, towns, and counties to acquire property for public purpose by gift, grant, devise, bequest, exchange, purchase, lease or eminent domain. (NCGS 153A. Art. 8; 160A. Art 11).

Taxation

The power to levy taxes and special assessments is an important tool delegated to local governments by North Carolina law. The power of taxation extends beyond merely the collection of revenue, and can have a profound impact on the pattern of development in the community. Many communities set preferential tax rates for areas, which are unsuitable for development (e.g., agricultural land, and wetlands), and can be used to discourage development in hazardous areas.

Local units of government also have the authority to levy special assessments on property owners for all or part of the costs of acquiring, constructing, reconstructing, extending or otherwise building or improving beach erosion control for flood and hurricane protection works within a designated area (NCGS 160A-238). This can serve to increase the cost of building in such areas, thereby discouraging development.

Because the usual methods of apportionment seem mechanical and arbitrary, and because the tax burden on a particular piece of property is often quite large, the major constraint in using special assessments is political. Special assessments seem to offer little in terms of control over land use in developing areas. They can, however, be used to finance the provision of necessary services within municipal or county boundaries. In addition, they are useful in distributing to the new property owners the costs of the infrastructure required by new development.

Spending

The fourth major power that has been delegated from the North Carolina General Assembly to local governments is the power to make expenditures in the public interest. Hazard mitigation principles should be made routine part of all spending decisions made by the local government, including annual budgets and a Capital Improvement Plan (CIP).

A CIP is a schedule for the provision of municipal or county services over a specified period of time. Capital programming, by itself, can be used as a growth management technique, with a view to hazard mitigation. By tentatively committing itself to a timetable for the provision of capital to extend services, a community can control its growth to some extent especially where the surrounding area is such that the provision of on-site sewage disposal and water supply are unusually expensive.

In addition to formulating a timetable for the provision of services, a local community can regulate the extension of and access to service. A CIP that is coordinated with extension and access policies can provide a significant degree of control over the location and timing of growth. These tools can also influence the cost of growth. If the CIP is effective in directing growth away from environmentally sensitive or high hazard areas, for example, it can reduce environmental costs.

Fiscal Capability

Beyond legal authority and political willpower, fiscal capability is the key component to effectively developing and implementing a hazard mitigation plan. In addition to local tax funds, non-profits and other non-governmental organizations are often interested in helping to implement hazard mitigation projects. And fortunately, local governments can also apply for State and Federal funds to implement hazard mitigation initiatives.

Local Funds

In the State of North Carolina, property taxes provide the primary source of revenue for counties. These taxes are typically used to finance services that must be available and delivered on a daily basis, such as schools, health and social services, planning, solid waste management, and emergency services, leaving very little, if any, for additional services and projects. Fortunately, State and Federal funds are available to local governments for the development and implementation of hazard mitigation programs.

Non-Governmental Funds

Another source of revenue for local mitigation efforts, are the contribution of non-governmental organizations, such as churches, charities, community relief funds, the Red Cross, hospitals, for non-profit businesses, and nonprofit organizations. A variety of these local organizations can participate in carrying out hazard mitigation initiatives.

State and Federal Funds

The Hazard Mitigation Grant Program (HMGP) provides funding for mitigation measures following a presidential disaster declaration. The HMGP is funded in most part by the Federal government and administered by respective State governments. HMGP funds can be used for such projects as acquisition or relocation, retrofitting, development of local mitigation standards and comprehensive mitigation plans, structural hazard control and the purchase of equipment to improve preparedness and response.

The Flood Mitigation Grant Program (FMAP) is a federally funded program for mitigation assistance to states, communities and individuals for cost-effective measures to reduce or eliminate the long- term risk of flood damage to the built environment and to real property. Unlike the HMGP, it is available to eligible communities on an annual basis. An eligible community must be a participant in the National Flood Insurance Program and must develop a flood mitigation plan. FMAP funds may be used for such projects as elevation and/or dry flood proofing of structures, acquisition of real property, relocation or demolition of structures, and minor structural projects.

The Community Development Block Grant (CDBG) is another source of funding for hazard mitigation initiatives. The objective of the CDBG program is to assist communities in rehabilitating substandard dwelling structures and to expand economic opportunities, primarily for low-to-moderate-income families. However, as a result of a Presidential declared disaster, CDBG funds may be used for long-term needs such as acquisition, reconstruction, and redevelopment of disaster-affected areas.

Ability to Pay

In recognition of the disparate economic prosperity of the State's one hundred counties, the North Carolina Department of Commerce ranks counties in an economic tier system. The impetus for this system was the William S. Lee Quality Jobs and Business Expansion Act of 1996 which provides for a sliding scale of state tax credits for economic investment. The Lee Act has become the state's main development tool in effort to help smaller rural counties be more economically competitive.

The most economically distressed counties are ranked in Tier 1 and the most economically prosperous in Tier 5. The rankings are evaluated annually using three factors: population growth, unemployment rate, and per capita income. The 2009 County Tier Designation places Burke County in Tier #1. The tier ranking is now widely used by the State as a measure of an individual county's ability to pay when applying for state and federal grants.

Technical Capability

Effective hazard mitigation initiatives depend largely on a community's technical capability. Local governments such as Burke County typically have limited technical capability due to a lack of funding and human resources. There are, however, some technical sources available at the County level and at the Western Piedmont Council of Governments.

Burke County

Burke County operates a geographic information system (GIS) that provides essential information and technology for hazard response and mitigation. The GIS system provides detailed data on property ownership, land use type, and location. GIS allows this information to be displayed visually to assist in hazard mitigation planning. The GIS provides fast access to and processing of detailed data that can be used to assist in deployment of resources before, during, and after a natural disaster.

Western Piedmont Council of Governments

Western Piedmont is one of the seventeen Council of Governments across North Carolina. Western Piedmont covers a four (4) county region to include Burke County, Catawba County, Caldwell County, and Alexander County providing technical assistance, planning, housing, economic development, small business, and is an available resource to the counties and municipalities within the region.

State and Federal

Agencies such as the Federal Emergency Management Association (FEMA) and the North Carolina Division of Emergency Management (NCDEM) have made available numerous implementation manuals and other resource documents. These manuals provide information on mitigation techniques for various hazards, including hurricanes, floods, wildfires, tornadoes and earthquakes.

The manuals include information on engineering principles, construction methods, costs and suggestions for how techniques can be financed and implemented. Other Federal agencies such as, the U.S. Army Corps of Engineers and Soil Conservation Service also provides similar services. The North Carolina Division of Emergency Management works in concert with these various Federal agencies to ensure that the State and local governments are prepared to respond to natural disasters. A major effort to improve technical information available to

local governments is being undertaken by the State of North Carolina and the Federal Emergency Management Agency.

Statewide Floodplain Mapping Initiative

The State of North Carolina, through the Federal Emergency Management Agency's Cooperating Technical Community partnership initiative, has been designated as a Cooperating Technical State (CTS). As a CTS, the State will assume primary ownership and responsibility for Flood Insurance Rate Maps (FIRMs) for all North Carolina communities. This project included conducting flood hazard analysis and production of updated, digital FIRMs (DFIRMs)

The Catawba River Basin has been mapped and information is available which provides current, accurate information for communities and property owners to make sound siting and design decisions when building new structures and infrastructure and when retrofitting existing structures. If used by communities for floodplain management, this will dramatically reduce long-term flood losses in North Carolina and Burke County specifically.

Footnotes

C-1 Local Hazard Mitigation Planning Manual, North Carolina Division of Emergency Management, 1998, Appendix B, pp.61-64.

Appendix D: Evaluation of County Policies and Ordinances

Introduction

Burke County has used its regulatory power to adopt and implement policies, programs, and ordinances that help mitigate the potential harmful effects of natural hazards. The County has developed and adopted the following local policies and ordinances:

- Comprehensive Land Use Plan / Small Area Plans
- Flood Damage Prevention Ordinance
- Blueprint for Burke Strategic Plan
- Subdivision Ordinance
- Minimum Housing Ordinance
- Building Code Enforcement Ordinance

- Water Supply Watershed Protection Ordinance
- Zoning Ordinance

These ordinances establish development regulations for different types of land development including both subdivided and non-subdivided land uses. Each policy, ordinance or regulation has a unique and varying impact on hazard mitigation. Although these policies are not specifically oriented for mitigation purposes, they can be utilized to implement hazard mitigation initiatives. A summary of current ordinances and policies that may pertain to hazard mitigation is included below.

Evaluation of policies and ordinances update summary.

Over the course of the past 5 years, little has changed in this section. We have seen the following: Burke County’s Flood Damage Prevention Ordinance was updated in August 2007. Article 2 of the ordinance establishes a “Regulatory Flood Protection Elevation” as the “Base Flood Elevation” plus the “Freeboard.” In “Special Flood Hazard Areas” where Base Flood Elevations (BFEs) have been determined, this elevation shall be the BFE plus two (2) feet of freeboard. In “Special Flood Hazard Areas” where no BFE has been established, this elevation shall be at least two (2) feet above the highest adjacent grade.

In addition Over the past five years each participating local government has worked to incorporate the mitigation strategy and other information contained in the plan into other planning mechanisms. Planning Boards have utilized the document when reviewing development requests, such as rezonings, subdivisions and conditional use permits. Committees drafting new plans, such as small area plans or comprehensive land use plans have used the information contained in the plan to draft future land use recommendations.

County Policies and Ordinances

Zoning

Zoning, the traditional and nearly universal tool available to local governments to control the use of land, has been adopted in all unincorporated areas of Burke County. The zoning permitting process allows for varying levels of project review including a check on floodplain and watershed status.

Planning

Burke County has the statutory authority to plan for growth and development including the power to make studies of the county, to determine growth objectives, to prepare and adopt plans for achieving those objectives and to develop policies, ordinances, and the administrative means to implement plans. The Board of

Commissioners has created and appointed a Planning Board to serve as an advisory body on planning matters.

Local government enabling legislation requires that zoning regulations, when adopted by a county, be made in accordance with a comprehensive land use plan. The existence of a comprehensive plan ensures that the county boards and staff are developing regulations and ordinances that are consistent with the overall goals of the community.

Comprehensive Land Use Plan

Burke County adopted a Comprehensive Land Use Plan in 1993 with the purpose to outline long-range growth and development policies for the unincorporated areas of the County. The 1993 Comprehensive Land Use Plan delineated “conservation” areas which consist of areas located within the regulatory flood plains of major streams and the Catawba River (see Map B-2 I-Appendix B). Recommended uses most suitable for this area include open space, recreational, agricultural and low-density residential development. The promotion of these types of land use is typical of current mitigation initiatives. A small area planning process is being conducted to update the comprehensive plan and zoning classifications in various portions of the county. These plans are / will also address hazard mitigation as specific floodplain areas are analyzed.

Growth and development in Burke County is predominantly located around the incorporated areas along the Interstate 40 Corridor. There is also a growing trend of second home development in the area around Lake James and the Jonas Ridge Community in the northwest portion of the county. The Lake James area has some flooding issues that manifested during Hurricane Frances. Once damage assessments are completed, we’ll have a better idea about how we can make our ordinances more effective. Small area plans have been completed for the Interstate 40 Corridor and for the watershed around Lake James. In some cases, growth and development result in the alteration of natural topographic features that, in turn, affect the extent of flooding and the boundary of the floodplain, so this is an issue we need to address.

Specific goals, objectives and relevant strategies from the 1993 Comprehensive Plan, the zoning ordinance and Lake James Phase 1 & 2 Small Area Plans that directly affect hazard mitigation are extracted from the Plan and outlined in Table D-1 below:

Table D-1: Specific Hazard Mitigation Goals, Objectives and Relevant Strategies

1993 Comprehensive Plan			
Category	Goal	Objectives	Relevant Strategies

Growth and Development	Manage the physical growth and development of Burke County to preserve and protect the County's character and assets	Discourage development in unsuitable or sensitive areas, which have natural or man-made constraints or limitations	Prohibit development in floodways and encourage less intensive land uses such as agriculture and recreation in floodway fringes. Evaluate and revise, if necessary, the Flood Damage Prevention Ordinance
Land Use	Promote an orderly and efficient land use pattern, which allows for a variety of land uses and is sensitive to environmental and social concerns	Develop an efficient countywide land use regulatory program	Update countywide zoning ordinance with necessary maps and text as the primary tool to implement the Comprehensive Land Use Plan and goals of Strategic Plan. Amend all other applicable land development ordinances to address the goals and objectives of the plan. Incorporate any new or revised environmental health standards into land use regulations
		Protect natural resources, which have recreational, environmental or aesthetic value	Implement greenway along Catawba River as recommended in Recreation Plan. Continue enforcement of buffer regulations on Lake James, Lake Rhodhiss, and Lake Hickory and along the Catawba River. Promote the use of the cluster concept in new residential development and revise the subdivision ordinance to encourage the effective use of this development option.
Natural Environment	Protect and preserve sensitive environmental areas and natural resources.	Minimize soil erosion, runoff, and sedimentation to reduce negative effects on surface and subsurface water quality, natural river systems, and private property.	Maintain waterway/adjacent lands in a natural state. Reduce the amount of unpaved streets and roads. Require stormwater BMPs for new development.
		Preserve significant wetland areas in a natural state to assure their ecological value.	Coordinate development review with U.S. Army Corps of Engineers and Soil Conservation Service. Revise development ordinances to mitigate effects of development on wetland areas and provide ample review time for relevant regulatory agencies. Incorporate valuable wetlands in open space preservation programs.
		Protect floodplain from inappropriate development	Strengthen existing development regulations to discourage land uses that reduce natural flood storage capabilities. Mandate open space, recreational, agricultural, or other low-intensity uses within floodway fringes.
		Provide an effective surface drainage system to protect public health and safety.	Support Soil Conservation Service watershed management projects, which provide for improved drainage and flood protection for agricultural purposes. Require

			adequate and functional drainage improvements, maintenance guarantees, and other related measures in new developments. Establish a perpetual maintenance program for minor drainage systems in new and existing subdivisions.
		Protect significant natural features such as the Catawba River and tributaries from the adverse effects of inappropriate development.	Expand existing conservation district and/or buffer zone. Develop a greenway plan with the Catawba River as a major plan element. Require that new development consider the natural vegetative, drainage, and topographic conditions of the land. Continue the Environmental Affairs Board in an advisory capacity to the Commissioners to monitor and address environmental issues
		Protect existing natural wildlife habitat and mitigation corridors from habitat fragmentation.	Continue to support efforts of the NC State Park, USFS, and NCWRC to protect riparian habitat throughout the county.

Burke County Zoning Ordinance

Article/Section	Regulation
Art. IX Sec. 920	Schedule of Permitted and Permissible Uses by District Creates a table of uses indicating uses by right, accessory uses and conditional uses permitted in each zoning classification.
Art. X Sec. 1001	Minimum Lot Area Establishes minimum lot sizes for residential zoning districts through a sliding scale based on availability of public water and sewer. Also establishes density per unit in the conservation and mixed uses districts.
Art. XII	Catawba River, Lake James, Lake Rhodhiss & Lake Hickory Overlay District Regulates development within 250' of the reference line of Lake James, Lake Rhodhiss, and Lake Hickory. The reference line is the Duke Power Company Lake James project boundary of 1,200 feet, Lake Rhodhiss project boundary of 1,000 feet, and the lake Hickory project boundary of 935 feet above sea level. These provisions shall also apply to all lands in the zoning jurisdiction of Burke County which lie in whole or in part within 250' of the main stem and old channel of the Catawba River that flows between Lake James to the mouth of Lake Rhodhiss.

Lake James Phase I Small Area Plan

Goal	Results
Improve Water Quality	Article XII of the Burke County Zoning Ordinance was established to regulate development along Lake James, Lake Rhodhiss, Lake Hickory and the Catawba River (see above). Crescent Resources established a plan for development of significant land holdings around Lake James in compliance with Burke County's Parallel Conditional Rezoning Process.
Provide Public Recreational Opportunities	
Improve Compliance with County Regulations	
Balance land uses while preserving scenic, recreational, environmental and economic qualities of the area	

Lake James Phase II Small Area Plan

Goal	Results
1. Encourage reasonable and appropriate development in the area while being sensitive to environmental and economic implications. 2. Ensure that all new development in the planning area is compatible with preserving its status as a water	Recommendations put forth to guide residential density, the location for commercial uses and to establish a system of trails. Implementation is ongoing.

<p>supply watershed.</p> <p>3. Use a combination of traditional and progressive tools to protect and conserve the area's natural resources, including public waters, wildlife habitat, scenic landscapes and natural open space.</p> <p>4. Where appropriate, promote development in the planning area that is compatible with current and anticipated tourism and recreation activities occurring near Lake James.</p> <p>5. Ensure that policy makers recognize the importance of preserving and enhancing the County's cultural and historic resources in its economic development aims.</p> <p>6. Provide sufficient improvements to roads in the Phase II area, especially those around Lake James, to ensure safe and enjoyable trips for visitors and residents.</p> <p>7. Ensure the safety of residents and visitors by providing adequate public services in appropriate areas of the Catawba</p> <p>WS-IV Watershed.</p>	
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Flood Damage Prevention Ordinance

North Carolina General Statutes empower counties to regulate designated floodways for the purpose of controlling and minimizing the extent of floods by preventing obstructions which inhibit water flow and increase flood height and damage and other losses (both public and private) in flood hazard areas, and to promote the public health, safety and welfare of citizens of North Carolina in flood hazard areas. No permit is required for certain uses, including agricultural, wildlife and related uses; ground level area uses such as parking areas, rotary aircraft ports; lawns, gardens, golf courses, tennis courts, parks open space, and similar private and public recreational uses. Existing artificial obstructions in the floodway may not be enlarged or replaced without a permit. Local governments are empowered to acquire existing obstructions by purchase, exchange, or condemnation, if necessary, to avoid flood damages.

The National Flood Insurance Program (NFIP) is administered by the Federal Emergency Management Agency (FEMA). This program makes flood insurance available to a local community which, in exchange, agrees to adopt and enforce a flood damage prevention ordinance to regulate flood-prone areas to help reduce future flood losses. In addition to the availability of flood insurance, the NFIP supports mitigation through floodplain management measures and the flooded property acquisition program. Enforcement of a local Flood Damage Prevention

Ordinance is required for participation in the NFIP. Burke County enforces the Flood Damage Prevention Ordinance (adopted in 1991) for the unincorporated areas of the County.

The Flood Damage Prevention Ordinance regulates development within floodplains by providing for issuance of development permits for construction, and for the periodic inspections to ensure compliance with the permit. The Flood Damage Prevention Ordinance also provides the authority to issue stop work orders until problems are resolved or corrective actions have been taken, and for revocation of permits in extreme cases. The Flood Damage Prevention Ordinance requires a local permit prior to development work to ensure development will not aggravate the effects of flooding and that structures are flood damage resistant. Article 5, Section B establishes that new construction or substantial improvement of any residential structure (including manufactured homes) shall have the lowest floor, including basement, elevated no lower than the base flood elevation. Following Hurricane Floyd, on recommendation from FEMA, the interpretation of elevation of lowest floor expanded to include all mechanical systems, i.e., heating, ventilation and air conditioning systems, and electrical and plumbing systems.

Burke County's Flood Damage Prevention Ordinance was updated in August 2007. Article 2 of the ordinance establishes a "Regulatory Flood Protection Elevation" as the "Base Flood Elevation" plus the "Freeboard." In "Special Flood Hazard Areas" where Base Flood Elevations (BFEs) have been determined, this elevation shall be the BFE plus two (2) feet of freeboard. In "Special Flood Hazard Areas" where no BFE has been established, this elevation shall be at least two (2) feet above the highest adjacent grade.

Subdivision Ordinance

Subdivision regulations control the division of land into parcels for the purpose of building development or sale. The regulations require that subdivision plans be approved prior to the sale of land. Subdivision regulations are a more limited tool than zoning and only indirectly affect the type of use of land or minimum specifications for structures. Flood-related subdivision controls typically require that developers install adequate drainage facilities, and design water and sewer systems to minimize flood damage and contamination. The Burke County Subdivision Ordinance prohibits the subdivision of land subject to flooding and also prohibits filling of floodway areas.

The Subdivision Ordinance is also used to ensure storm water drainage facilities in developments are properly installed to protect properties from flooding and to lessen development in areas of high risk. Although these regulations currently provide measures that support mitigation initiatives, the ordinance can be

amended to include more restrictive standards to further mitigate the effects of flooding.

The Burke County Subdivision Ordinance is currently enforced within the unincorporated areas of the County beyond each municipality’s extra-territorial jurisdiction.

Table D-3: Sections of Subdivision Ordinance Pertaining to Hazard Mitigation

Section	Purpose	Objectives
Art. VII, Art. IX	To regulate land divisions so as to create and maintain conditions essential to protecting the public health, safety and general welfare	<ol style="list-style-type: none"> 1. Providing for orderly growth and development of the county; 2. Coordinating proposed streets and roads within subdivisions with existing and planned streets, roads, highways, and other public facilities. 3. Ensuring the dedication or reservation of land, rights-of-way, and easements for public or private facilities, streets, drainage, utilities, common areas, or other related aspects of the subdivision; 4. Distributing population and traffic in manner that will avoid congestion and overcrowding. 5. Ensuring proper recording of land divisions and subsequent revisions or modifications; 6. Providing mechanisms which will guarantee long-term maintenance of necessary improvements; and 7. Encouraging the appropriate design and layout of new development to protect and preserve natural, historical and cultural features and resources.
Art. X	Site Design Standards	<ol style="list-style-type: none"> 1. Subdivisions should be laid out to avoid an adverse effect on groundwater and aquifer recharge; to reduce site grading and cut and fill; to prevent accelerated erosion; to prevent flooding; to provide adequate access to lots and sites; and to mitigate adverse effects of noise, traffic, drainage, and utilities on neighboring properties. 2. To the maximum extent practicable, development shall be located to preserve the natural features of the site, to address areas of environmental sensitivity, and to minimize alteration of natural features, except as otherwise permitted by this article. In particular, the following areas or items should be considered for protection or preservation: <ol style="list-style-type: none"> a) Unique or fragile areas, including wetlands, as defined in Section 404, Federal Water Pollution Control Act Amendments of 1972, and field-verified by onsite inspection by the regulatory branch of the US Army Corps of Engineers. b) Lands within flood hazard areas; c) Identified habitats of endangered wildlife; and d) Historically significant structures and sites, as listed on federal or state lists of historic places.
Art. IX, Sec. 900	Drainage objectives: and adequate surface and subsurface drainage system shall be designed, installed and maintained to meet the following objectives:	<ol style="list-style-type: none"> 1. Each lot shall have a suitable building area safe from flooding and erosion, or shall conform to the flood damage prevention ordinance and/or the soil and erosion and sedimentation control ordinance. 2. The drainage system shall be designed to minimize inundation of public and private land during the ten-year storm. It shall also prevent excess infiltration or inundation of surface water and/or groundwater into septic tank nitrification fields. 3. The system of drainage shall protect all roads, driveways, utilities, and other improvements from damage that may be caused by improper storm water management. 4. Drainage ditches, underground tile, and swales shall be coordinated with existing and proposed general drainage system. 5. Drainage ditches and swales shall be designed and constructed to avoid excessive rates of flow, erosion, or overflow into developed areas subject to potential damage. Underground tile shall be kept free from obstructions. 6. The drainage system shall be designed so as not to impede the natural drainage of water.
Art. VIII Sec. 807	Flood Damage Prevention	<p>Lots that are subject to flooding shall not be established in subdivisions for the purpose of creating building lots except as herein provided.</p> <ol style="list-style-type: none"> 1. If there is any water course of any type running through or within 150 feet of the proposed subdivision, the prospective sub-divider shall furnish reasonable evidence to the Planning Board that lots within the subdivision will not be flooded according to the Flood Insurance Rate Maps as distributed by FEMA. 2. The prospective sub-divider shall make a determination of the 100-year probable frequency in accordance with generally accepted engineering practice. This determination must reflect the actual conditions imposed by the completed subdivision, and must give due consideration to the effects of urbanization and obstruction. 3. No proposed building lot shown that is wholly subject to flooding shall be approved. 4. No proposed building lot that is partially subject to flooding shall be approved.

		<p>unless there is established on the lot a line representing an actual contour at an elevation two (2) feet above the 100-year flood. Such line shall be known as the “building restriction flood line”. No filling shall be permitted in the 100-year flood area. All buildings or structures designed or intended for use shall be located on such a lot so that the lowest usable and functional part of the structure shall not be below the elevation of building restriction flood line. Usable and functional part of the structure is defined as being inclusive of living areas, basements, sunken dens, utility rooms, attached carports and mechanical appurtenances such as furnaces, air conditioners, water pumps, electrical conduits and wiring but shall not include water lines or sanitary sewer traps, piping and clean-outs provided openings serving the structure are above the building restriction flood line. Where only a portion of the proposed building lot is subject to flooding, such a lot may be approved only if there will be available for building a usable lot area of not less than 10,000 square feet. The usable lot area shall be determined by deducting from the total area of the setback required by the Burke County Zoning Ordinance and any remaining area of lot lying below the building restriction flood line.</p> <p>5. During the construction, preparation, arrangement, and installation of subdivision improvements and facilities in subdivisions located at or along a stream bed, the developer shall maintain the stream bed of each stream, creek backwash channel contiguous to the subdivision, in an unobstructed state. The developer shall also remove from the channel and banks of the stream all debris, logs, timber, junk, and other accumulations of a nature that would, in time of flood, clog or dam the passage of waters in their downstream course. Installation of appropriately sized storm water drains, culverts, or bridges shall not be construed as obstructions in the streams.</p> <p>6. No private or public wells are to be located within the designated flood plain.</p>
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International Building Code Enforcement

The County enforces the International Building Code within the unincorporated areas of the County and also has the authority to enforce the code in any municipality, which requests by resolution that the County do so within its corporate limits. Currently Burke County enforces the building code in all municipal jurisdictions within the county except the City of Morganton.

Table D-4: Sections of International Building Code Relevant to Hazard Mitigation

Section	Purpose
R301.2.4	<p>Exclusions from the code: Construction, excluding electrical work, or nonresidential farm buildings. Construction of pipelines and storage tanks for LP gas and liquid fertilizer; Construction of power, communication, and utility lines; Prefabricated buildings or pre-assembled outside storage buildings less than 250 square feet. (Any wiring, plumbing, or mechanical system installed to or within are not excluded). Nonstructural repairs or alterations not to exceed \$5,000 in value; Notwithstanding the above, when a property owner improves property at a cost of more than \$2,500 but less than \$5,000, the owner must within 14 days after completion of the work, submit to the County Tax Supervisor, a statement setting forth the nature of the improvement and the total cost thereof.</p>
1403.6 & 1612	No permit shall be issued unless the proposed site conforms to the Subdivision, Manufactured Home Park, Flood Damage Prevention, and Soil Erosion and Sedimentation Control ordinances. Substandard lots of record or exempt.
Appendix G	No new building or structure or part thereof may be occupied, and not existing building or structure whose use has been changed may be occupied until a Certificate of Occupancy is issued.

Water Supply Watershed Protection Ordinance

The Water Supply Watershed Act of 1989 instituted a statewide program to protect drinking water supply watersheds from inappropriate development. The intent of the program was to protect the quality of surface water supplies from non-point source pollution, and to minimize storm water runoff by regulating development densities and the amount of built-upon area within the critical and protected areas of affected watersheds. Certain land uses are also prohibited within protected water supply watersheds.

The County enforces the ordinance within the unincorporated areas of the County and also has the authority to enforce the code in any municipality, which requests by resolution that the County do so. Currently Burke County enforces the water supply watershed protection ordinance within the unincorporated planning jurisdiction.

The ordinance applies within areas designated by the North Carolina Environmental Management Commission as the critical or protected area of a surface water supply watershed and as shown on the official watershed map for Burke County.

The ordinance provides for the continuation of existing uses and the reconstruction of buildings and built-upon areas. The ordinance establishes development restrictions for different types of street systems (with and without curb and gutter).

Certain types of uses are also prohibited. Within the critical and protected areas, the storage of toxic and hazardous materials (unless a spill containment plan is implemented) is prohibited. Landfills and sites for land application of sludge/residuals or petroleum-contaminated soils are prohibited in the critical area.

A minimum 30' vegetative buffer is required along each side of all perennial waters and no new development is allowed in the buffer area except for water dependent structures and public projects such as road crossings and greenways where no practicable alternative exists.

Public Water and Sewer Extension Policies

Water and sewer services within Burke County are provided by several of the municipalities. Other water systems within Burke County include the Brentwood, and Icard water cooperatives. Each of these entities has their own extension policy that is not controlled by the County of Burke. The County does provide water to some portions of their jurisdiction, but is limited by grant stipulations regarding the extensions to hazard areas of the county.

Catawba River Basin Rules

The North Carolina Division of Water Quality has adopted rules for buffer areas within the Catawba River Basin that will affect development in Burke County. The goal of the rules is to reduce and maintain nutrient loading and to reduce sediment and pollution by controlling the velocity and volume of storm water runoff within this protected river basin.

Burke County’s own buffer rules are more strict than the state rules. These rules apply to all parcels of land in the county’s planning jurisdiction that lie within 250’ of the high water mark of Lake James, Lake Rhodhiss, Lake Hickory, and the main stem of the Catawba River. The municipalities enforce the state regulations within their own jurisdiction.

Effectiveness for Hazard Mitigation

The Burke County policies and ordinances are rated in Table D-8 as to their effectiveness for hazard mitigation.

Table D-8: Effectiveness of Current Policies and Ordinances

Policies and Programs	Effectiveness for Mitigation (low, medium, high)
Comprehensive Land Use Plan	Medium
Subdivision Regulation	Medium
Flood Damage Prevention Ordinance	High
Zoning Ordinance	Medium
Building Code Enforcement Ordinance	Medium
Water Supply Watershed Ordinance	High
Public Water and Sewer Extension Policies	Low
Catawba River Basin Rules	Medium

Policies That Hinder Hazard Mitigation

Existing County policies and ordinances need to be thoroughly reviewed and, in some cases, amended to strengthen the County's capacity for mitigating damage to lives and property from future hazards. The zoning ordinance in particular, offers good mitigation protection around the lakes and Catawba River, but offers little in other areas. The ordinance could be amended to establish larger minimum lot sizes that reduce the number of dwelling units within hazard prone area, to restrict development in areas with insufficient public services, to preserve natural areas such as floodplains and wetlands that help mitigate against hazards, and to reduce overall density in large areas to reduce evacuation and reduce hazard risks to wildlife.

The development of zoning regulations must always consider the impact on private property rights, on the economic benefits of higher density growth, and on the increase in property values associated with larger lot zoning that may affect affordability and exclude low-income residents from certain areas of the County. However, not moving forward with development of more stringent land use controls that limit development in hazard

prone areas would result in a failure to use all land use regulatory tools available to protect public health, safety, and welfare.

The County's water and sewer line extension policy has little regard for hazard mitigation or growth management as it is currently implemented. Lines are typically extended wherever a grant award mandates it – usually to low-income housing units or public health related problem areas. For the most part, infrastructure extension have not been used to guide growth away from potential natural hazards, and may often encourage growth in these areas. No coordination exists between the Planning Department and the Public Works Department when new water or sewer lines are proposed. Further complicating this matter is the existence of private water providers throughout the county that extend lines without coordinating with local government, or each other.

Burke County intends to create a process by which the requirements of this hazard mitigation plan will be incorporated into other local plans. During the planning process for new and updated local planning documents, the local planner will provide a copy of the hazard mitigation plan to each respective advisory committee member. The local planner will recommend that the advisory committee members to ensure that all goals and strategies of new and updated local planning documents are consistent with the hazard mitigation plan and will not contribute to increased hazards in the jurisdiction. This process will be coordinated with a robust public participation process including ample notice and review time, informal public comment sessions, media resources, and convenient review options to incorporate citizen concerns.

Over the past five years each participating local government has worked to incorporate the mitigation strategy and other information contained in the plan into other planning mechanisms. Planning Boards have utilized the document when reviewing development requests, such as rezonings, subdivisions and conditional use permits. Committees drafting new plans, such as small area plans or comprehensive land use plans have used the information contained in the plan to draft future land use recommendations.

Appendix E: Hazard Mitigation Plan Update Project Schedule

Activity/Task	Timeline
Project Initiation Meeting	Oct 2008
1.0 Hazard Identification and Analysis	Fall 2008
1.1 Identify hazards	Fall 2008
1.2 Analyze each hazard	Fall 2008
1.3 Develop multi-hazard map	2008 Mapping
1.4 Summary Report to Municipalities	Winter 2008
2.0 Vulnerability Assessment	Spring 2008 Planning, Committee
2.1 Inventory critical facilities	Spring, 2008 EMS
2.2 Estimate cost of potential damage	Spring 2008 Mapping, Planning
2.3 Identify and map highly vulnerable populations	Spring, 2008 Mapping
2.4 Identify and map areas of greatest risk	Spring, 2008 Mapping
2.5 Project future vulnerability based on current development trends and land use policies	Spring, 2009 EMS, Planning
2.6 Summary Report to Planning Boards / Public Input	Spring 2009 Planning
3.0 County Capability Assessment	Spring, 2009
3.1 Inventory existing and proposed hazard mitigation and flood damage prevention programs	Spring, 2009 Planning
3.2 Evaluate effectiveness of current programs	Spring, 2009 Planning
3.3 Evaluate technical and fiscal capabilities to implement hazard mitigation objectives	Summer, 2009
3.4 Summary Report to Planning Boards	
4.0 County Goals	Summer 2009
4.1 Identify current hazard mitigation goals/objectives	Summer 2009
4.2 Identify any existing goals that may hinder hazard mitigation	Summer 2009
4.3 Determine need to modify goals and objectives	2009
4.4 Summary Report to Planning Board	
5.0 Mitigation Strategy	summer 2009
5.1 Develop new goals/objectives	summer 2009
5.2 Develop new policies/programs	summer 2009
5.3 Establish responsibility/target dates	summer 2009
5.4 Planning Department to establish schedule/develop procedures to evaluate/update plan using state approved criteria every 5 years	summer 2009
5.5 Staff Review	summer 2009
5.6 Draft Plan to Planning Board	
6.0 Review and Public Input on Hazard Mitigation Plan	
6.1 Public Forum (Planning Board)	Fall, 2009
6.2 Planning Board recommendation	Fall, 2009
6.3 Public Hearing (Board of Commissioners)	Fall, 2010
6.4 Adoption (Board of Commissioners)	Oot 2010

SUPPLEMENTAL ATTACHMENT “A”

Meeting Minutes

Public Notices

Attention: CLASSIFIEDS (Legal Section Block Ad)
PUBLISH:
Monday, April 27th, 2009

PUBLIC HEARING NOTICE:

The Morganton City Council will hold its monthly meeting on **Monday, May 4, 2009** at **6:00 p.m.** in the City Hall Council Chambers located at 305 East Union Street Suite A100. The Council will take public comment on Morganton's Supplement to the Burke County's Natural Hazard Mitigation Plan as required by the State of North Carolina.

This meeting is open to the public and all interested persons are encouraged to attend. For more information please call the City's Development & Design Services Department at (828) 438-5266. Interpreter services for the hearing impaired will be provided. Please call 828-438-5228 at least seventy-two (72) hours prior to the scheduled meeting to arrange for other assisted services.

Lee Anderson
Director of Development & Design Services

REPORT

Draft Update to the Hazard Mitigation Plan. Marc Collins, Planning Director, presented the Draft Update to the Hazard Mitigation Plan, which Planning and Emergency Services are updating. The Federal Emergency Management Agency (FEMA) requires that all local governments maintain and update a Hazard Mitigation Plan to remain eligible for Federal disaster relief funding. Burke County Emergency Services has worked with various County Departments and municipal staff to prepare a draft update to the County's plan.

A public hearing was held on Monday, April 20, 2009 from 6:00 pm – 8:00 pm in the

Commissioners Board Room at 110 North Green Street in Morganton to present the

draft plan to municipal leaders and the public. FEMA requires local governments to adopt a local Hazard Mitigation Plan for jurisdictions to be eligible to receive disaster assistance funding consistent with the Disaster Mitigation Act of 2000. Burke County and its local governments adopted a multi-jurisdiction plan in October 2004, and FEMA requires updates every five years. It has been five years, and a plan is to be done. FEMA requires submission of the plan for approval by October 2009. Currently, Planning and Emergency Services are working with municipalities to get final comments and updates. A draft will be finalized and mailed to the State Emergency Services Department for review. After receiving their comments on the draft, a final update will be done and brought back to the Commissioners for a public hearing before sending to FEMA for approval. Then the final adoption by the Commissioners would come this fall.

CONSENT AGENDA

Chair Suttle asked Ron Lewis to review the consent agenda items. All items on the consent agenda are considered to be routine by the Board and will be enacted by one motion. Mr. Lewis presented the following items.

Consent (A) Approve Capital Project Ordinance for the Taylor Avenue Water Project,

Administrative Contract to WPCOG, and Adopt Policies and Procedures and Plans.

Carson Fisher and Leah Martin requested approval of this ordinance and the other documents.

The Board adopted the Capital Project Ordinance for the North Carolina Rural Center Supplemental Grant for the Taylor Avenue Water Project. Also approved were the Administrative Contract with the Western Piedmont Council of Governments (WPCOG) and Policies and Procedures and Plans.

SUPPLEMENTAL ATTACHMENT “B”

Municipalities Information

NOTE: all jurisdictions have reviewed the updated plan. Only 3 of the 8 jurisdictions have made changes to the plan. The reasoning is that sufficient experiences have not justified the need to change the plan as adopted.

Note: the following table analyzes and summarizes the vulnerability of each jurisdiction in the County.

Natural Hazard Summary Assessment for Burke County and Municipalities Updated 8/2010

Natural Hazard	Burke Co.	Connely Springs	Drexal	Glen Alpine	Hildebran	Morganton *Adopted County's Assessment	Rutherford College	Valdese
Hurricane	Low	Moderate		Moderate	Moderate	Low	Moderate	Moderate
Flood	High		Low	Moderate	Low	High	Low	Moderate
Tornado	Moderate	Moderate	High	High	High	Moderate	High	
Nor'easter	Very Low		Low	Low		Very Low	Low	Low
Thunderstorm	Moderate	High	High	High	Low	Moderate	High	High
Severe Winter Storm	High	High	High	High		High	High	High
Wildfire	Moderate		High	High	High	Moderate	High	High
Earthquake	Moderate	Low		Low	Low	Moderate	Low	Low
Landslide	High		Low	Low	Low	High	Low	Low
Dam Failure	High			Moderate		High		Low
Drought	Moderate			Low	Low	Moderate	Low	Low
Severe Heat								
Hail		High						

**Addendum to Burke County Hazard Mitigation Plan
Connelly Springs, North Carolina
Summary**

The Town of Connelly Springs has participated and contributed significantly to the planning process of the "Burke County Natural Hazards Mitigation Plan." This is a multi-jurisdictional plan assembled to help prepare the county, and the municipalities contained within it, for the probable occurrences of natural hazards and to help alleviate the impact the hazards could have on the area. This plan can help prevent these occurrences from becoming natural disasters through proper preparedness and mitigation strategies. The Town of Connelly Springs is dedicated to helping prevent such events from occurring, wherever possible. The planning process used by the Town addressed not only hazards, but was focused on finding the best solutions, solving more than one problem with a single solution, and maintaining or improving local environmental and economic integrity.

The Hazard Mitigation Plan is intended to improve the Town's ability to prepare for these hazards and identify the most efficient and effective ways to reduce losses. In addition, North Carolina now requires that any community applying for hazard related grants or assistance have a Hazard Mitigation Plan in place. Recognizing that the Town must rely on assistance from Burke County, the State of North Carolina, and the Federal Government to assist when disasters occur, the Town of Connelly Springs has chosen to participate in the development and implementation of this Multi-jurisdictional Hazard Mitigation Plan.

Burke County is the logical choice to serve as the lead planning agency because the resources and capacity of the county government greatly exceeds those of the municipalities, especially smaller ones such as the Town of Connelly Springs. This document is a supplement to the overall plan, and contains information specific to the Town's jurisdiction. Connelly Springs supports the Multi-jurisdictional Hazard Mitigation Plan, has made significant contributions to its development, will help implement its policies, and will work in coordination with the County to ensure proper mitigation strategies are followed within the Town's jurisdiction.

Community Profile

Connelly Springs is located in the foothills of Western North Carolina in eastern Burke County. The Town has a long history extending back to the turn of the Twentieth (20th) Century when it served an important role in the region as a railroad hub and vacation retreat. The Town was originally chartered in 1920 and the charter repealed in 1933, due to failure of the local bank. The modern version of the Town was established (re-chartered) in 1989 with the aim of helping to preserve and maintain the area's rural character that is so highly valued by its citizens. According to the latest estimates by the North Carolina Office of State Planning (9-1-04), there are approximately 1870 residents in the Town. The Town is made up mainly of residential property, with a core group of institutions and small businesses located within the Town limits. The majority of citizens work in the surrounding municipalities and counties which comprise the Greater Hickory Metro area and including the county seat of Morganton. The Town does not have an extraterritorial jurisdiction (ETJ). In 2004, the Town extended its boundaries through voluntary annexation and now has Lake Rhodhiss as its northern boundary.

Plan Development

The current government consists of the Mayor, serving as CEO, and six (6) Aldermen serving as the legislative body. The Town established a four (4) member Hazard Mitigation Committee in 2003 to address the issue of natural hazards and the need to establish a hazard mitigation policy and set of related strategies. The Committee members are reappointed each year at the organizational meeting of the Board of Aldermen and are under the direction of the Governmental

Services Committee, chaired by an Alderman. The Committee members have worked in coordination with Burke County staff and town citizens to help draft the plan. The following are reasons the town believes the plan is important:

- Saving lives and reducing injuries.
- Preventing or reducing property damage.
- Reducing economic losses.
- Minimizing social dislocation and stress.
- Minimizing agricultural losses.
- Maintaining critical facilities in functioning order.
- Protecting infrastructure from damage.
- Protecting mental health.
- Lessening legal liability of government and public officials.
- Providing positive political consequences for government action.

Historically, the Town has dealt with few natural hazards that have had a massive impact or caused extensive damage. A process for prioritization of identified hazard mitigation strategies was performed. The Hazard Mitigation Advisory Committee used the following criteria for prioritization of hazard mitigation strategies:

1. Cost-Benefit review
2. Results of Hazard Identification and Analysis
3. Results of Vulnerability Assessment
4. Effectiveness in meeting hazard mitigation goals and comprehensive plan goals

Public Notice ads for Connelly Springs were published on September 17th and 24th 2003. The public hearing was held at the Connelly Springs Town Hall on October 6, 2003. During the monitoring, evaluation, and updating process there will be continued public involvement and the town will provide ample opportunities for the public to comment and contribute to the plan.

In November of 2008 the Town began to work with Burke County, Rhodhiss, Rutherford College, Hildebran, Valdese, Drexel, Morganton and Glen Alpine in updating the Hazard Mitigation Plan. Town Planner Johnny Wear (November 2006 -) represented the Town on the committee.

The Town of Connelly Springs adopted the final plan on May 4, 2009. Copies of the Resolution(s) to Adopt the Burke County Hazard Mitigation Plan are included.

Risk Assessment

The Multi-jurisdictional plan identifies many natural hazards that could have a significant impact on the county including droughts, earthquakes, , wildfires, , floods, winter storms, hurricanes, thunderstorms, and tornadoes. In Connelly Springs the hazards that are most likely to affect the town, are similar and include those identified through the completion of Worksheet #1 from the document, Keeping Natural Hazards from Becoming Disasters. This plan describes these hazards, discusses the history of these hazards within the Town and County, and identifies the probability of these hazards negatively affecting the Town. (Table 1)

Table 1. Hazard Index for Connelly Springs.

Hazard	Likelihood of Occurrence	Intensity Rating	Potential Impact	Hazard Index Combined Rating
Tornado	Possible	Mild	Critical	5
Thunderstorm	Highly likely	Mild	Limited	2

Hailstorms	Highly likely	Mild	Limited	2
Windstorms	Highly likely	Mild	Limited	2
Snowstorms	Highly likely	Mild	Limited	3
Earthquakes	Unlikely	Mild	Negligible	3
Hurricanes	Likely	Moderate	Critical	5

Town Ordinances

In 1993 Connelly Springs adopted a Watershed Protection Ordinance. The Town also has a resolution on file with Burke County for agreed cooperation and mutual assistance during a declared state of emergency. The Zoning Ordinance and Subdivision Regulations contain provisions for watershed protection, erosion control, and flood mitigation. The Town has completed a Comprehensive Land Use Plan that will help further identify vulnerable property, set the policy for continued hazard mitigation planning, and describes the land use and development trends within the town's jurisdiction. This addendum contains an inventory of existing land use as of April 2009 (Table 2). The Town intends to create a process by which the requirements of this Hazard Mitigation Plan will be incorporated into other local plans. During the planning process for new and updated local planning documents, including the Land Use Plan, the local planner will provide a copy of the Hazard Mitigation Plan to each respective advisory committee member. The planner will recommend the advisory committee members to ensure that all the goals and strategies of new and updated planning documents are consistent with the Hazard Mitigation Plan and will not contribute to increased hazards in the jurisdiction.

Table 2. Value of Developed Facilities and Undeveloped Land¹.

	Number²	Acres	Bldg. Value³	Land Value³	Tax Value
Single-Family Dwelling	506	1133.9	\$43,099,056	\$14,329,354	\$59,107,397
Manufactured Home Park	56	57.8	\$204,162	\$790,659	\$1,568,290
Exempt Property	17	43.4	\$9,410,040	\$870,238	\$10,520,581
Commercial	24	35.3	\$3,212,772	\$830,642	\$4,374,825
Industrial	3	4.4	\$349,564	\$131,700	\$483,144
Other	97	208.2	0	\$1,831,227	\$1,990,555
Vacant	476	1647.6	0	\$46,218,154	\$46,594,821
TOTAL			\$53,384,099	\$65,001,974	\$124,639,613

Source: Burke County GIS, 2009.

1 Total numbers of buildings does not equal addressable structures.

2 Land and building values do not equal total tax value which includes value of accessory and out buildings.

3 Exempt category includes religious, state, county, federal, city, utilities, railroads, subdivision lots not sold, subdivision common areas, clubs and lodges, cemeteries, water and sewer facilities, fire and rescue facilities and recycling centers.

Catawba River Buffer Rules

In May 2001, the North Carolina Environmental Management Commission adopted a pair of rules to protect existing water-side, or riparian, buffers in certain parts of the Catawba River Basin. The buffer protection rule requires maintaining and protecting existing 50-foot wide vegetated riparian (shoreline) areas along the Catawba River below Lake James and along the main stem lake

shorelines from Lake James, thru Lake Rhodhiss to Lake Wylie. This rule does not require the establishment of new buffers unless the existing use in the buffer area changes. The footprints of existing uses such as agriculture, buildings, commercial and other facilities, maintained lawns and utility lines are exempt. Within this 50 feet of buffer, the first 30 feet closest to the water, referred to as Zone 1, is to remain undisturbed with the exception of certain activities. The outer 20 feet, referred to as Zone 2, must be vegetated, but certain additional uses are allowed. The Town of Connelly Springs does require a shoreline protection permit for new construction along Lake Rhodhiss, which is similar to Burke County, review by Burke County Building Inspectors and the Town of Connelly Springs Code Enforcement Officer. Within the Connelly Springs planning area these rules are administered by the North Carolina Division of Water Quality's Asheville Regional Office also.

Flood Damage Prevention Ordinance

Connelly Springs adopted a Flood Damage Prevention Ordinance in October 2003 in conjunction with its application to become a member of the National Flood Insurance Program. A new Flood Damage Prevention Ordinance was adopted in August, 2007 in conjunction with new Flood Insurance Rate Maps provided by FEMA. The purpose of the ordinance is to promote public health, safety, and general welfare and to minimize public and private losses due to flood conditions within flood prone areas by provisions designed hazards to: (1) restrict or prohibit uses which are dangerous to health, safety, and property due to water or erosion, or which result in damaging increases in erosion, flood heights or velocities; (2) require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction; (3) control the alteration of natural floodplains, stream channels, and natural protective barriers, which are involved in the accommodation of flood waters; (4) control filling, grading, dredging, and all other development which may increase erosion or flood damage; and (5) prevent or regulate the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards to other lands.

Phase II Stormwater Ordinance

As required by State Law, the Town of Connelly Springs sought a National Pollutant Discharge Elimination System (NPDES) permit for Stormwater Management. The Town received a waiver from the requirements of the NPDES Permit to administer Phase II Stormwater regulations in 2006.

Effectiveness of Current Regulations for Hazard Mitigation

The Town of Connelly Springs's regulations are rated in Table 3 as to their effectiveness for hazard mitigation.

Table 3. Effectiveness of Current Regulations

Regulations	Effectiveness for Mitigation
Subdivision Ordinance	Medium
Zoning Ordinance	Medium
Water Supply Watershed Protection Ordinance	High
Minimum Housing Ordinance	Low
Catawba River Buffer Rules	Medium

Policies That Hinder Hazard Mitigation

The Town does not have any policies that intentionally conflict with hazard mitigation goals. As policies and ordinances are revised in the future, however, more attention will be paid to how these policies and regulations could be strengthened from a hazard mitigation standpoint. As these rules are being crafted, this process will afford the Town an opportunity to strengthen provisions to minimize and prevent flooding, particularly of new development located along Town-controlled waterways.

Hazard Mitigation Goals

The Town of Connelly Springs Hazard Mitigation Committee has defined its goals for the Hazard Mitigation Plan as follows:

- 12. To protect human life and health,
- 13. To protect natural resources and farmland,
- 14. To increase public awareness of risk and mitigation,
- 15. To minimize expenditure of public money for costly flood control projects,
- 16. To minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public,
- 17. To minimize prolonged business interruptions,
- 18. To minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets, and bridges,
- 19. To help maintain a stable tax base by providing for the sound use and development of flood prone areas,
- 20. To insure that potential home buyers are notified of property flood designation flood area, and
- 21. To do all these things in a manner that is equitable to all citizens of the town.

It is important to take steps to protect the citizens of Connelly Springs from a disaster before it happens. An effective plan will improve the Town's ability to deal with disasters and will document valuable local knowledge on the most efficient and effective ways to reduce losses. Preparing a plan to lessen the impact of a disaster before it happens will provide many benefits to the Town including: 1) reduced costs from damage to public and private property, 2) reduced social, emotional, and economic disruption, 3) better access to funding sources for mitigation projects, and 4) improved ability to implement post-disaster recovery projects.

The Town of Connelly Springs has identified several action items specific to the jurisdiction and the implementation and administration procedures to be followed. These, along with the parties responsible for each strategy are identified in Table 4.

Table 4. Hazard Mitigation Strategies

Strategy	Types of Hazards this Policy will Target	Responsible (and Support) Parties	Funding	Schedule	Priority
Adopt Flood Damage Prevention Ordinance.	Flooding	Board of Aldermen (Planning Board)	Local	8/6/2007	High
Adopt Watershed Protection Ordinance.	Flooding	Board of Aldermen (Planning Board)	Local	10/4/1993	High
Require structures to be built in the flood plain to be constructed 2' above base flood elevation or flood proofed.	Flooding	Planning Burke County Building Inspections	Local	8/6/2007	Low
Track rebuilding activities after severe storms and consider policies to minimize repetitive losses	All Hazards	Board of Aldermen (Planning Board)	Local	Ongoing	Medium

Require flood proofing for structures not elevated 2' above base flood elevation.	Flooding	Planning Burke County Building Inspections	Local	8/6/2007	Low
Require/maintain FEMA elevation certificates for all new permits for buildings or improvements in the floodplain.	Flooding	Board of Aldermen (Planning Board) (Burke County Building Inspections)	Local/State	8/6/2007	Low
Receive and begin using regulatory floodplain maps.	Flooding	Board of Aldermen (Planning Board)	FEMA/State/ Local	8/6/2007	High
Review zoning and subdivision regulations to better control future development in these susceptible areas.	Flooding	Board of Aldermen (Planning Board)	Local	Ongoing	Medium
Prepare Comprehensive Land Use Plan.	All Hazards	Board of Aldermen (Planning Board)	Local	10/5/2005	Medium
Work in cooperation with Burke Co., surrounding local governments, state and federal agencies to continue to develop and maintain appropriate mitigation strategies.	All Hazards	Board of Aldermen (Planning Board)	FEMA/State/ Local	Ongoing	High

Note: Abbreviations used in Table 2-1: Federal Emergency Management Agency (FEMA); North Carolina Division of Emergency Management (NC DEM), North Carolina Department of Environment and Natural Resources (NC DENR), and North Carolina Division of Water Quality (NC DWQ).

PLAN MAINTENANCE PROCESS

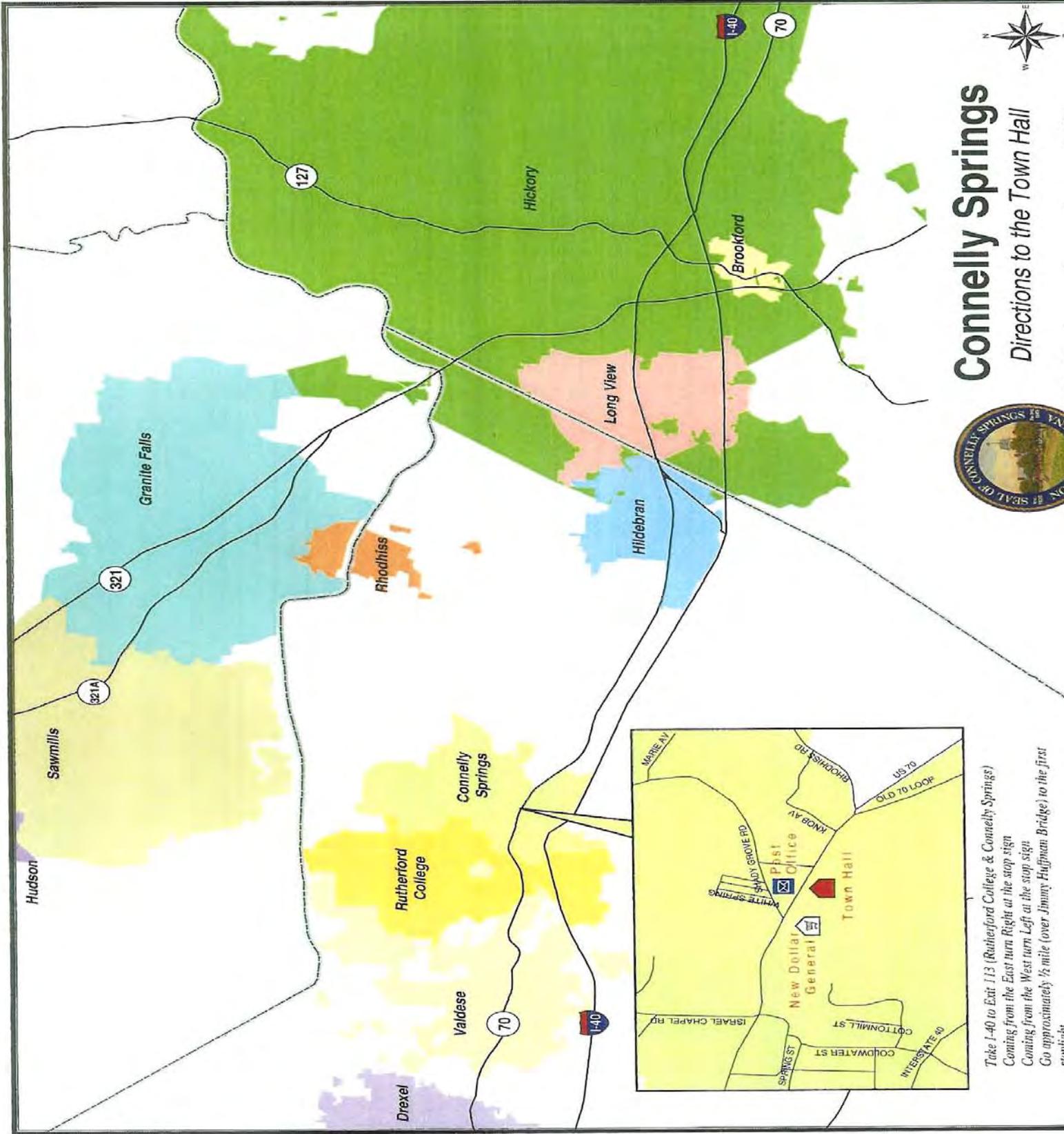
The committee will continue to work with Burke County and Town citizens to review, update, and make recommendations as needed. The Committee meets on an as needed basis and will report recommendations for plan updates to the Board of Aldermen no less than every five years. At the regular five-year updates required by the Disaster Mitigation Act of 2000 the Town will use the following set of questions as criteria for assessing the appropriateness and effectiveness of the plan:

1. Do the goals and objectives address current and expected conditions?
2. Has the nature and magnitude of risks changed?
3. Are the current resources appropriate for implementing the plan?
4. Are there implementation problems or coordination issues with other agencies?
5. Have the outcomes occurred as expected?
6. Did the agencies and other partners participate in the plan and planning process as proposed?

The Town of Connelly Springs will continue to revise and update its Hazard Mitigation Plan as necessary. Many of the Policies and Ordinances affecting hazard mitigation are reviewed yearly and/or updated on a regular basis. Connelly Springs's Mitigation Strategies will also be reviewed and updated on a periodic basis within the five-year cycle. Many of these projects are ongoing, but progress towards mitigation goals will be documented.

The Town of Connelly Springs will continue to advise the public about the threat of natural disasters and the Town's mitigation activities. A copy of the approved Hazard Mitigation Plan will be kept at Town Hall for interested citizens. As changes are made to the plan, town staff will publish notices in the newspaper and make presentations during Planning Board and Board of Aldermen meetings. Public comments, questions, and suggestions are always welcome.

Connelly Springs will continue to attend multi-jurisdictional meetings and work with Burke County and the municipalities of Rhodhiss, Rutherford College, Valdese, Drexel, Morganton and Glen Alpine to update the Hazard Mitigation Plan.

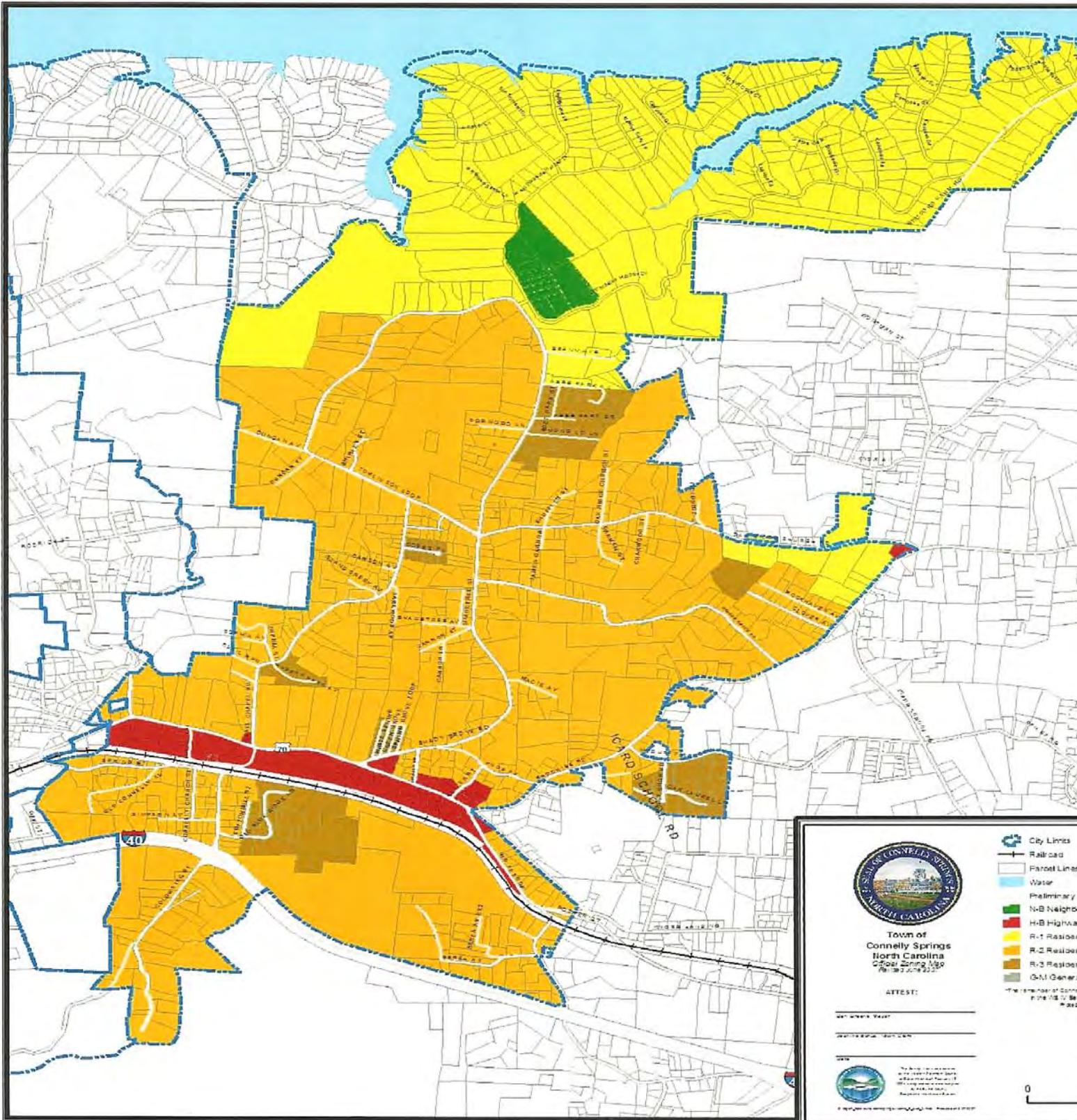


Connelly Springs

Directions to the Town Hall



Take I-40 to Exit 113 (Rutherford College & Connelly Springs)
 Coming from the East turn Right at the stop sign
 Coming from the West turn Left at the stop sign
 Go approximately 1/2 mile (over Jimmy Huffman Bridge) to the first stoplight



**TOWN OF CONNELLY SPRINGS
RESOLUTION OF ADOPTION**

Resolution No. 9002-03

**REVISED ADDENDUM
FOR THE TOWN OF CONNELLY SPRINGS
TO THE
BURKE COUNTY MULTI-JURISDICTIONAL
HAZARD MITIGATION PLAN**

WHEREAS, the citizens and property within the Town of Connelly Springs are subject to the effects of natural hazards and man-made hazard events that pose threats to lives and cause damages to property and with the knowledge and experience that certain areas, i.e., flood hazard areas, are particularly susceptible to flood hazard events; and

WHEREAS, the Town desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the State of North Carolina by General Statutes delegated to local governmental units the responsibility to adopt and amend regulations designed to promote the public health, safety and general welfare of its citizenry; and

WHEREAS, the State of North Carolina by General Statutes that the eligible entity shall have a Hazard Mitigation Plan approved pursuant to the "Stafford Act"; and

WHEREAS, Section 322 of the Federal Disaster Mitigation Act of 2000 states that local government must develop an All-Hazards Mitigation Plan in order to receive future Hazard Mitigation Grand Program Funds; and

WHEREAS, the annexed "Exhibit A" shall constitute the revised addendum for the Town of Connelly Springs to the Burke County Multi-Jurisdictional Hazard Mitigation Plan

WHEREAS, it is the intent of the Board of Aldermen of the Town of Connelly Springs to fulfill this obligation, amend the original Resolution of 2nd day of May, 2005, and amend every five (5) years or as needed, as required by North Carolina General Statutes, in order that the Town will be eligible for state assistance in the event that a state of disaster is declared for a hazard event affecting the Town;

NOW, THEREFORE, BE IT RESOLVED, that the Town of Connelly Springs Board of Aldermen do hereby by unanimous vote, has approved the Revised Addendum for the Town of Connelly Springs to the Burke County Multi-Jurisdictional Hazard Mitigation Plan.

ADOPTED this the 4th day of May, 2009.

(Seal)

Carl C. Greene, Mayor

Attest:

Jeanine Barus, Town Clerk

Hazard Mitigation Plan for the Town of Drexel

Community Profile

Nestled in the Blue Ridge Mountains, Drexel offers small town living with access to larger markets. Its location off Interstate 40 provides quick access to the Morganton and Hickory areas including major industrial and commercial centers. Surrounding Drexel are some of the most visited tourist destinations in North Carolina. The Town was once home to Drexel Heritage Furniture’s headquarters. Drexel continues to be noted for strong, consistent support of industry and business.

Population

	1990	2000	2010
Town of Drexel	1,746	1,938	1,931
Burke County	118,412	89,145	89,354
Hickory MSA	221,700	342,142	348,360

NC State Data Center

Transportation

Drexel is located off I-40, with quick access to I-77. NC 70 connects Drexel to nearby Morganton. The Hickory Regional Airport is 20 minutes away and Charlotte Douglas Int’l Airport is about 1.5 hours.

Taxes

	2009-10	
Town of Drexel	\$0.32	
Burke County	\$0.56	Education and Training

Per \$100 Valuation

Drexel is proud to serve as home for a primary and elementary school; SAT scores for the **Burke School System** surpass both the North Carolina and national averages.

Near Drexel, **Western Piedmont Community College** is part of the North Carolina Community College System, rated first in the nation for industry support and training. The New and Expanding Industry Training Program offers customized, free training to new and expanding industries. The Focused Industrial Training Program provides ongoing training to local companies at a very low cost.

Lenoir-Rhyne College, a co-educational, private liberal arts institution founded in 1891, is located in nearby Hickory. Lenoir-Rhyne offers a rich foundation in the arts, humanities, social sciences, language, religion, and natural sciences. Lenoir-Rhyne enrolls approximately 1,500 students from across the country and around the world.

Quality of Life

Drexel is especially proud of the recreation programs offered at the community center. There is an abundance of parks and outdoor recreation near Drexel. Drexel is served by two area hospitals: Grace Hospital in Morganton and Valdese General in the Town of Valdese. Drexel is home to quality retirement centers. Drexel is home to the Drexel Community Fair, an annual agricultural fair. Nearby Morganton hosts several festivals and arts and cultural programs.

Burke County served as the lead agency in developing this multi-jurisdictional hazard mitigation plan. The County hosted several meeting (see Supplemental Attachment “A”) in which staff representing the County and municipalities within Burke County discussed plan development and individual local government responsibilities. Drexel was represented by Town Manager, Matt Settlemyer on this committee.

Statement of the Problem

Appendix A of the Plan provides a description of the types of hazards that affect Burke County along with historical data on the occurrence, magnitude and likely location of specific natural hazard events. Of the hazards identified in the County’s multi-jurisdiction plan, Drexel is most vulnerable to snow and ice storms and high wind events associated with severe thunderstorms and tropical storms (Table 1). The Town’s susceptibility to flooding is much less compared to Burke County because of the relatively small amount of land contained in the 100-year floodplain (see Map A-1). Two creeks, Howard and Secrest, contain floodplain areas located within the Town’s corporate limits. Very few parcels, however, are potentially affected since the majority of floodplain lands bordering both creeks are undevelopable. A dam failure at Lake James would also have a minimal affect on the Town since the likely inundation area within the Town is small (see Map A-3).

Table 1. Hazard Index for Drexel.

<u>Hazard</u>	<u>Occurrence</u>	<u>Area Affected</u>	<u>Impact</u>	<u>Rating</u>
Drought	Possible	Large	Limited	Moderate
Earthquake	Possible	Large	Negligible	Low
Flood	Possible	Small	Limited	Low
Hurricane	Likely	Large	Critical	High
Landslide	Possible	Small	Negligible	Low
Nor’easter	Possible	Large	Negligible	Low
Thunderstorm	Highly Likely	Large	Negligible	Low
Tornado & High Winds	Highly Likely	Medium	Limited	Moderate
Wildfire	Highly Likely	Medium	Limited	Moderate
Winter Storm	Highly Likely	Large	Critical	High

Repetitive Loss Structures

The Town of Drexel has no recorded repetitive loss structures.

Evaluation of Town of Drexel Policies and Ordinances

Introduction

The Town of Drexel has used its regulatory power to adopt, implement and administer land-use controls that help mitigate the potential harmful effects of natural hazards. These land-use controls include a subdivision ordinance and a zoning ordinance.

These two ordinances establish development regulations for different types of land development including both subdivided and non-subdivided land uses. Each ordinance has a unique and varying affect on hazard mitigation. Although these regulations are not specifically oriented for mitigation purposes, they can be utilized to implement hazard mitigation initiatives. A summary of all current ordinances that may pertain to hazard mitigation is included below.

Town Ordinances

Comprehensive Land Use Plan

The Town of Drexel adopted a Comprehensive Land Use plan in 1998 with the purpose to outline non-range growth and development policies for the incorporated areas of the Town. The 1998 Land Use plan delineated “conservation” areas which consist of areas located within the regulatory flood plains of major streams and the Catawba River (see map B-2 Appendix B). Recommended uses most suitable for this area include open space, recreational, agricultural and low-density residential development. The promotion of these types of land use is typical of current mitigation activities.

Subdivision Ordinance

Subdivision regulations control the division of land into parcels for the purpose of building development or sale. The regulations require the subdivision plans be approved prior to the sale of land. Subdivision regulations are a more limited tool than zoning and only indirectly affect the type of use of land or minimum specifications for structures.

There are three areas of Drexel’s subdivision regulations that pertain to hazard mitigation: identifying environmentally sensitive areas, outlining sediment control plans and restricting development in areas subject to flooding. Each of these three areas is described in greater detail below.

Most subdivision regulations require that certain types of information be identified on a preliminary plat by the developer for assisting staff with their review of the project. The Town of Drexel requires that basic natural drainage features including marshes, swamps, ponds, lakes, and streams appear on the preliminary plat.

The preliminary plat must also depict plans for controlling sediment and providing utility services, including sanitary sewers, storm sewers, water distribution lines, natural gas, and telephone and electric service. Plans for water supply, sewage disposal and sediment control must receive approval by the appropriate County and State authorities including the Burke County Health Department, the North Carolina Division of Land Resources and the North Carolina Division of Water Quality.

Creating lots for residential development subject to flooding is prohibited unless the developer proposes to provide a levee or raise the floor elevations above the flood level, in which case an engineering report must accompany the subdivision application. If there is any stream running through or within 150 feet of the property proposed for subdividing, the prospective subdivider must furnish evidence to the Planning Board that residential lots within the subdivision will not be flooded.

Zoning Ordinance

Drexel updated its zoning ordinance in 1998. This ordinance is currently administered through the Town’s corporate limits as well as the Town’s Extraterritorial Jurisdiction Area. Included among this ordinance’s provisions, this document identifies the types of uses and the intensity of development allowed by zoning district.

Water Supply Watershed Protection Ordinance

The Water Supply Watershed Protection Rules adopted in 1998 required that local governments with land jurisdiction within state-designated water supply watersheds adopt and implement water supply ordinances,

maps and a management plan. The Town of Drexel amended their zoning ordinance in 1998 to include watershed protection provisions consistent with the state’s model watershed protection ordinance.

The entire Town’s planning area occupies a WS-IV watershed and is therefore covered by local watershed regulations. These rules place density restrictions on new development as well as prohibiting certain types of activities from occurring on lands classified as water supply watersheds. New development activities occurring within Town must meet either low or high density requirements. Generally, development exceeding one acre in size that results in 24% or less of newly added built upon area is considered a low density projects. In contrast, development that results in over 24% built upon area is considered high density and must include the installation and maintenance of engineered stormwater control structures, such as a wet detention pond, for treating runoff generated by the project.

Catawba River Buffer Rules

In May 2001, the North Carolina Environmental Management Commission adopted a pair of rules to protect existing water-side, or riparian, buffers in certain parts of the Catawba River Basin. The buffer protection rule requires maintaining and protecting existing 50-foot wide vegetated riparian (shoreline) areas along the Catawba River below Lake James and along the main lake shorelines from Lake James to Lake Wylie. This rule does not require the establishment of new buffers unless the existing use in the buffer area changes. The footprints of existing uses such as agriculture, buildings, commercial and other facilities, maintained lawns and utility lines are exempt. Within this 50 feet of buffer, the first 30 feet closest to the water, referred to as Zone 1, is to remain undisturbed with the exception of certain activities. The outer 20 feet, referred to as Zone 2, must be vegetated, but certain additional uses are allowed. Specific activities are identified in the rule as “exempt”, “allowable”, “allowable with mitigation” or “prohibited”. Within the Drexel planning area these rules are administered by the North Carolina Division of Water Quality’s Asheville Regional Office.

Effectiveness of Current Regulations for Hazard Mitigation

The Town of Drexel’s regulations are rated in Table 3 as to their effectiveness for hazard mitigation.

Table 3. Effectiveness of Current Regulations

Regulations	<u>Effectiveness for Mitigation</u> (low, medium, high)
Comprehensive Land Use Plan	Medium
Subdivision Ordinance	Medium
Zoning Ordinance	Medium
Water Supply Watershed Protection Ordinance	High
Catawba River Buffer Rules	Medium

Policies That Hinder Hazard Mitigation

The Town does not have any policies that intentionally conflict with hazard mitigation goals. As policies and ordinances are revised in the future, however, more attention will be paid to how these policies and regulations could be strengthened from a hazard mitigations standpoint. For example, the Town will be adopting and revising ordinances over the next two years to comply with new federal Phase II stormwater regulations. As these rules are being crafted, this process will afford the Town with an opportunity to strengthen provisions to minimize and prevent flooding, particularly of new development located along Town controlled waterways.

Hazard Mitigation Goals

Hazard mitigation plan goals are broad statements that set community priorities for reducing susceptibility to natural hazards. The goals below, originally identified by the North Carolina Division of Emergency Management, serve as the basis for developing specific plan objectives and hazard mitigation activities. These goals are:

1. Decrease the community’s vulnerability to future hazard events.
2. Increase the community’s resiliency so that recovery can be quicker and less costly.
3. Decrease the likelihood that a future natural hazard becomes a natural disaster.
4. Insure that future development contributes to the community’s sustainability over time.
5. Reduce the hazard risks to citizens’ lives and property.
6. Restore and protect public health, restore degraded ecosystems, and make communities more livable.

Hazard Mitigation Strategies for Drexel

Hazard mitigation strategies or goals for reducing long-term vulnerabilities for specific natural hazards are outlined below in Table 4. This table shows that some strategies are targeted and address specific natural hazards, while other goals are more general in nature and address two or more hazards.

Mitigation strategies that clearly eliminate or reduce a community’s susceptibility to property damage can not be satisfactorily developed for all hazards. For example, there is little a community can do to minimize damage associated with severe ice and snow storms. However, for other hazards, local governments have clear land-use tools available for minimizing or preventing property damage. Flooding does not cause problems in Drexel because of the small number of parcels located within the 100-year floodplain. However, several regulatory strategies exist for restricting development in these low-lying areas.

Table 4: Drexel Hazard Mitigation Activities						
Strategy or Goal	Hazard	Priority	Responsible Party	Resources	Schedule	Status
Require and maintain FEMA evaluation certificates for all new permits for new buildings or improvements to buildings on lots including any portion of the 100-year floodplain (CRS 31)	Flooding	Low	Planning Burke County Building Inspections	Local	Ongoing	Complete
Revise/update regulatory floodplain maps (CRS 410)	Flooding	Low	FEMA NC DENR NC DEM	State	Ongoing	Complete
Revise zoning and subdivision regulations in floodplain areas to better control future development in these hazard	Flooding	Low	Planning Board Town Council (Planning)	Local	2005-2007	Revising zoning and subdivision regulations

susceptible areas						
Prepare and implement a Town-wide storm water management plan to meet new federal Phase II storm water regulations	Flooding	High	Planning Board Town Council Planning (DWQ)	Local	2005-2007	In compliance with Phase II Stormwater regulations
Require 50-foot buffers for new development activities along the Catawba River	Flooding	Low	NC DWQ (Planning)	State	Ongoing	N/A
Maintain backup, portable generator for emergency power needs	All Hazards	High	Town Council	Local	Ongoing	New Generator Installed
Revise subdivision regulations to require all perennial and intermittent streams be shown on plats.	Flooding	Medium	Planning Board Town Council (Planning)	Local	2005-2007	Revising zoning and subdivision regulations

Plan Evaluation

Town staff will meet annually to document progress and to examine ways for improving the effectiveness of the plan. Progress towards achieving plan goals and recommended changes will be reported to the Planning Board and Town Council for their consideration and appropriate action.

Plan Revisions and Updates

Town staff will meet with Burke County and municipal staff periodically to evaluate plan implementation. At the end of each five year cycle, this planning committee with representatives from each jurisdiction will review and update the hazard mitigation plan as needed. Updates or revisions which affect the plan as a whole or impacts any other jurisdiction(s) will require a presentation of findings and recommendations to, and ultimate adoption by, those jurisdictions' boards. Significant changes to the plan will require a minimum of one advertised public hearing before the local government board for allowing public comment on the proposed changes

Table 2.1: Glen Alpine Hazard Mitigation Activities Narrative Update

All local subdivision and zoning ordinances are reviewed annually by staff and the town planning board at monthly meetings, open to the public with public comment time. Minutes are recorded at each meeting.

A Comprehensive Land Use Plan is in the process and should be completed by 2012, funding and staff permitting completion.

Flood Damage Prevention ordinance along with new FIRM(Flood Insurance Rate Maps) were updated and revised in 2008. The Town of Glen Alpine participates in the National Flood Insurance Program.

A Fuel Shortage and Conservation Plan has been implemented due to the possibility of a fuel shortage occurring during a local or national disaster (ie. national hurricane involving refineries & wells, local tornado, wind damage or ice damage preventing delivery to local storage facilities).

Due to the possibility of severe drought and water needs local and state water restrictions plans have been adopted and implemented starting with the drought of 2008.

A terrorism plan has been developed and implemented due to the possibility of a terrorist attack involving an upstream lake or a river running through our jurisdiction.

All plans are revised annually and training of local staff and public officials is ongoing, including adoption of the National Incident Management System (NIMS).

Flood loss occurred in 2004 due to severe rains from hurricanes resulting I loss of a minor street bridge. Replacement cost approximately \$40,000.00. We have had no repetitive property loss due to flood loss. To prevent future flood loss we have adopted more stringent ordinances prohibiting new construction in flood prone areas.

The Town of Glen Alpine Subdivision ordinance is currently enforced within the incorporated areas of the Town and ETJ.

Table D-3: Sections of Subdivision Ordinance pertaining to Hazard Mitigation

<u>Section</u>	<u>Purpose</u>	<u>Objectives</u>
	To regulate land divisions so as to create and maintain conditions essential to protecting the public health, safety and general welfare	<ol style="list-style-type: none"> 1. providing for orderly growth and development of the county; 2. Coordinating proposed streets and roads within subdivisions with existing and planned streets, roads, highways, and other public facilities. 3. Ensuring the dedication or reservation of land, right-of-ways, and easements for public or private facilities, streets, drainage, utilities, common areas, or other related aspects of the subdivision; 4. Distributing population and traffic in manner that will avoid congestion and overcrowding. 5. Ensuring proper recording of land divisions and subsequent revisions or modifications; 6. Providing mechanisms which will guarantee long-term maintenance of necessary improvements; and 7. Encouraging the appropriate design and layout of new development to protect and preserve natural, historical, and culture features and resources
	Site Design Standards	<ol style="list-style-type: none"> 1. Subdivisions should be laid out to avoid an adverse effect on groundwater and aquifer recharge; to reduce site grading and cut and fill; to prevent accelerated erosion; to prevent flooding, to provide adequate access to lots and sites; and to mitigate adverse effects of noise, traffic, drainage, and utilities on neighborhood properties. 2. To the maximum extent practicable, development shall be located to preserve the natural features of the site, to address areas of environmental sensitivity, and to minimize alteration of natural features, except as otherwise permitted by this article. In particular, the following areas or items should be considered for protection or preservation: <ol style="list-style-type: none"> a) Unique or fragile areas, including wetlands, as defined in Section 404, Federal Water Pollution Control Act Amendments of 1972, and field-verified by onsite inspections by the regulatory branch of the US Army Corps of Engineers. b) Lands within flood hazard areas; c) Identified habitats of endangered wildlife; and d) Historically significant structures and sites, as listed on federal or state lists of

	Drainage objectives; and adequate surface and subsurface drainage system shall be designed, installed and maintained to meet the following objectives:	<p>historic places.</p> <ol style="list-style-type: none"> 1. Each lot shall have a suitable building area safe from flooding and erosion, or shall conform to the flood damage prevention ordinance and/or the soil and erosion and sedimentation control ordinance. 2. The drainage system shall be designed to minimize inundation of public and private land during the ten-year storm. It shall also prevent excess infiltration or inundation of surface water and/or groundwater into septic tank nitrification fields. 3. The system of drainage shall protect all roads, driveways, utilities, and other improvements from damage that may be caused by improper storm water management. 4. Drainage ditches, underground tile and swales shall be coordinated with existing and proposed general drainage system. 5. Drainage ditches and swales shall be designed and constructed to avoid excessive rates of flow, erosion, or overflow into developed areas subject to potential damage. Underground tile shall be kept free from obstructions. 6. The drainage system shall be designed so as not to impede the natural drainage of water.
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International Building Code Enforcement

The County enforces the International Building Code within the unincorporated areas of the County and also has the authority to enforce the code in any municipality, which requests by resolution that the County do so within its corporate limits. Currently Burke County enforces the building code in all municipal jurisdictions within the county except the City of Morganton.

Table D-4: Sections of International Building Code Relevant to Hazard Mitigation

Section	Purpose
	<p>Exclusions from the code: Construction, excluding electrical work, or nonresidential farm buildings. Construction of pipelines and storage tanks for LP gas and liquid fertilizer; Construction of power, communication, and utility lines; Prefabricated buildings or pre-assembled outside storage buildings less than 250 square feet (any wiring, plumbing or mechanical system installed to or within are not excluded). Nonstructural repairs or alterations not to exceed \$5,000 in value; Notwithstanding the above, when a property owner improves property at a cost of more than \$2,500 but less than \$5,000, the owner must within 14 days after completion of the work, submit to the County Tax Supervisor, a statement setting forth the nature of the improvement and the total cost thereof.</p>
	<p>No permit shall be issued unless the proposed site conforms to the Subdivision, Manufactured Home Park, Flood Damage Prevention, and Soil Erosion and Sedimentation Control ordinances. Substandard lots of record or exempt.</p>
	<p>No new building or structure or part thereof may be occupied, and not existing building or structure whose use has been changed may be occupied until a Certificate of Occupancy is issued.</p>

Water Supply Watershed Protection Ordinance

The Water Supply Watershed Act of 1989 instituted a statewide program to protect drinking water supply watersheds from inappropriate development. The intent of the program was to protect the quality of surface water supplied from non-point source pollution, and to minimize storm water runoff by regulating

development densities and the amount of built-upon area within the critical and protected areas of affected watersheds. Certain land uses are also prohibited within protected water supply watersheds.

The Town enforces the ordinance within the incorporated areas of the Town and ETJ.

The ordinance applies within areas designated by the North Carolina Environmental Management Commission as the critical or protected area of a surface water supply watershed and as shown on the official watershed map for Burke County.

The ordinance provides for the continuation of existing uses and the reconstruction of buildings and built-upon areas. The ordinance establishes development restrictions for different types of street systems (with and without curb and gutter).

Certain types of fuses are also prohibited. Within the critical and protected areas, the storage of toxic and hazardous materials (unless a spill containment plan is implemented) is prohibited. Landfills and sites for land application of sludge/residuals or petroleum-contaminated soils are prohibited in the critical area.

A minimum of 30' vegetative buffer is required along each side of all perennial waters and no new development is allowed in the buffer area except for water dependent structures and public projects such as road crossings and greenways where no practicable alternative exists.

Public Water and Sewer Extension Policies

Water and sewer services within Glen Alpine are provided by contractual agreement with the City of Morganton. Extension policy is also controlled by contractual agreement.

Catawba River Basin Rules

The North Carolina Division of Water Quality has adopted rules for buffer areas within the Catawba River Basin that will affect development in Glen Alpine. The goal of the rules is to reduce and maintain nutrient loading and to reduce sediment and pollution by controlling the velocity and volume of storm water runoff within this protected river basin.

Burke County's own buffer rules are more strict than the state and therefore supercede the state requirements. These rules apply to all parcels of land in the county's planning jurisdiction that lie within 250' of the high water mark of Lake James, Lake Rhodhiss, Lake Hickory, and the main stem of the Catawba River. The Town of Glen Alpine will enforce the state regulations within their own jurisdiction.

Fuel Conservation Policy

The Town of Glen Alpine has adopted a fuel conservation policy for all Town vehicles to be implemented as needed during a natural disaster.

Drought and Water Conservation Ordinance

The Town of Glen Alpine has adopted and plans to enforce the water shortage and usage guidelines adopted by the City of Morganton due to fact the City of Morganton supplies water to the town.

Terrorism Policy

The Town of Glen Alpine has adopted a terrorism policy to help mitigate damage to local rivers, lakes, and water supply.

Effectiveness for Hazard Mitigation

The Burke county and the Town of Glen Alpine policies and ordinances are rated in Table D-8 to their effectiveness for hazard mitigation.

Table D-8: Effectiveness of Current Policies and Ordinances

Policies and Programs	Effectiveness for Mitigation (low, medium, high)
Comprehensive Land Use Plan	Medium
Subdivision Regulation	Medium
Flood Damage Prevention ordinance	High
Zoning Ordinance	Medium
Building Code Enforcement Ordinance	Medium
Water Supply Watershed Ordinance	High
Public Water and Sewer Extension Policies	Low
Catawba River Basin Rules	Medium
Drought And Water Conservation Ordinance	Medium
Fuel Conservation	Medium
Terrorism Policy	Medium

Policies That Hinder Hazard Mitigation

Existing Town and County policies and ordinances need to be thoroughly reviewed and, in some cases, amended to strengthen the County's capacity for mitigating damage to lives and property from future hazards. The zoning ordinance in particular, offers good mitigation protect around the lakes, but offers little in other areas. The ordinance could be amended to establish larger minimum lot sizes that reduce the number of dwelling units within hazard prone area, to restrict development in areas with insufficient public service, to preserve natural areas such as floodplains and wetlands that help mitigate against hazards, and to reduce overall density in large areas to reduce evacuation and reduce hazard risks to wildlife.

The development of zoning regulations must always consider the impact on private property rights, on the economic benefits of higher density growth, and on the increase in property values associated with larger lot zoning that may affect affordability and exclude low-income residents from certain areas of the County. However, nor moving forward with development of more stringent land use controls that limit development in hazard prone areas would result in a failure to use all land use regulatory tools available to protect public health, safety, and welfare.



ADDENDUM

Hildebran

2009

Town of Hildebran Addendum

EXECUTIVE SUMMARY AND COMMUNITY PROFILE

The Town of Hildebran has agreed to work with Burke County and the municipalities of Rhodhiss, Connelly Springs, Valdese, Drexel, Morganton and Glen Alpine to develop a Multi-jurisdictional Hazard Mitigation Plan. Burke County is the most logical lead agency since most data available is specific to counties instead of small towns. Hildebran also relies on Burke County to perform the building inspections within the town limits, a key component to mitigating flood prone areas.

The Town fully supports the Hazard Mitigation Plan developed in conjunction with Burke County and the municipalities of Rhodhiss, Connelly Springs, Valdese, Drexel, Morganton and Glen Alpine and will work with county, state, and federal agencies as necessary to ensure proper mitigating strategies. The following pages include addendums to the plan that specifically relate to Hildebran.

Hildebran is located in the foothills of North Carolina, nestled in the western part of the state. The Town is located in the eastern part of Burke County along Highway 70 and adjacent to I-40. Hildebran is a small community with a population of 1,753 residents according to the 2008 estimate by the North Carolina Office of State Planning. A few small to medium-sized manufacturing plants exist, as well as a number of community-oriented retail businesses. Although the population has more than doubled from the 790 persons counted by the 1990 Census, Hildebran is currently growing very slowly due to the economic downturn and a heavy loss of manufacturing jobs. There are no areas of rapid growth.

Following this summary are copies of news articles relating to natural hazards that have occurred in the Burke County area that were recorded in the Morganton News Herald (local newspaper). Since weather is constantly changing, the documentation of the past events gives the town some insight to possible future hazards.

The Hazard Mitigation Plan is designed to protect the health, safety, and economical security of the Town by reducing the impact of natural disasters. The plan will also assist future committees in planning for Hildebran's growth and safety. Hildebran's in-house Hazard Mitigation Committee developed the following goals for the plan:

- To protect human life and health,
- To protect natural resources and farmland,
- To increase public awareness of risk and mitigation,
- To minimize expenditure of public money for costly flood control projects,
- To minimize the need for rescue and relief effort associated with flooding and generally undertaken at the expense of the general public,
- To minimize prolonged business interruptions,
- To minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, streets, and bridges,
- To help maintain a stable tax base by providing for the sound use and development of flood prone areas,
- To insure that potential home buyers are notified of property flood designation flood area, and
- To do all these things in a manner that is equitable to all citizens of the Town.

In order to address the Town's portion of the multijurisdictional Hazard Mitigation Plan for 2004 the Town established an in-house Hazard Mitigation Committee in late 2001 to develop mitigation strategies specific to the Town of Hildebran. The Committee Members were Mayor Albert Parkhurst, Councilwoman Nancy Hildebran, Assistant Deputy Clerk Leslie Kale, Planning Board Member Randy Bess, and Town Planner Judy McGuire (2001 – May 2004). Leslie Kale performed the majority of research and summaries for Hildebran. Judy McGuire also attended several workshops discussing the process of developing a Hazard Mitigation Plan.

The Town held Public Hearings to receive comments on the Hazard Mitigation Plan on October 21, 2003 and October 19, 2004. Town Planner Andrea Lytle (July 2004 – June 2007) presented the revised plan to the Hildebran Planning Board on October 12, 2004. Copies of published public notices are included. Hildebran was an active participant in the development of the multi-jurisdictional Hazard Mitigation Plan with Burke County, Rhodhiss, Connelly Springs,

Valdese, Drexel, Morganton and Glen Alpine beginning in March of 2003. Town Planners Judy McGuire and Andrea Lytle represented the Town of Hildebran on this committee.

The Hildebran Town Council adopted the initial version of the Hazard Mitigation Plan on October 21, 2003. After review by the North Carolina Emergency Management agency, Hildebran updated its plan accordingly. The Hildebran Town Council readopted the plan on October 19, 2004. Copies of the Resolution(s) to Adopt the Burke County Hazard Mitigation Plan are included.

In November of 2008 the Town began to work with Burke County, Rhodhiss, Connelly Springs, Valdese, Drexel, Morganton and Glen Alpine in updating the Hazard Mitigation Plan. Town Planner John Kinley (June 2007 -) represented the Town on the committee. A public hearing was held to receive comments on the Hazard Mitigation Plan on March 24, 2009.

The Hildebran Town Council adopted the initial version of this update on March 24, 2009. After review by the North Carolina Emergency Management agency, the Hildebran Town Council adopted the final plan on _____, 2009. Copies of the Resolution(s) to Adopt the Burke County Hazard Mitigation Plan are included.

Town of Hildebran Addendum

INVENTORY OF DEVELOPED FACILITIES AND UNDEVELOPED LAND
Addendum to Table B-1

Most parcels in Hildebran are zoned residential with parcels zoned commercial and manufacturing typically located along US Hwy. 70, South Center St. and I-40 Access Rd. The largest employers in Hildebran include Adden Furniture Industries, Cox Manufacturing, Clean Tek and Hildebran Elementary School.

Class	Number	Land	Building	Other	Total	Acres
Commercial	121	7,131,783	17,613,137	1,310,379	26,055,299	175.21
Dwelling	613	11,609,482	53,347,522	1,694,170	66,651,174	623.95
Exempt	51	3,385,521	13,233,650	1,505,120	18,124,291	174.96
Industrial	36	5,283,308	23,338,718	784,971	29,406,997	297.66
Other	48	817,872		156,585	974,457	76.22
Vacant	171	2,806,060		6,362	2,812,422	253.51

APS Scroll 12-Classification Values Summary
 Burke County GIS, January 27, 2009

Town of Hildebran Addendum

HAZARD INDEX FOR THE TOWN OF HILDEBRAN
Addendum to Appendix A

Burke County's past weather related disasters are rare. The overall climate conditions are moderate with clear days totaling an average of 160 with the sun shining an average of 60 percent a year. Hildebran has been fortunate not to experience many weather disasters. The most common weather hazards are related to rain, wind, and snow. Of the natural disasters mentioned in the Hazard Mitigation Plan, Hildebran is specifically at highest risk to experience damage from hurricanes, tornadoes, and winter storms. While most of these hazards could occur anywhere in Hildebran, Drowning Creek specifically increases Hildebran's risk for flooding.

Hazard	Likelihood of Occurrence	Potential Area Affected	Potential Impact	Hazard Index Combined Rating
Drought	Possible	Large	Limited	Moderate
Earthquake	Possible	Large	Negligible	Low
Flood	Possible	Small	Limited	Low
Hurricane	Likely	Large	Critical	High
Landslide	Possible	Small	Negligible	Low
Nor'easter	Possible	Large	Negligible	Low
Thunderstorm	Highly likely	Large	Negligible	Low
Tornado	Highly likely	Large	Critical	High
Wildfire	Highly likely	Medium	Limited	Moderate
Winter storm	Highly likely	Large	Critical	High

EVALUATION OF POLICIES AND ORDINANCES
Addendum to Appendix D

The Town of Hildebran has used its regulatory power to adopt and implement policies, programs, and ordinances to help mitigate the potential harmful effects of natural hazards. All policies and ordinances will be periodically reviewed and updated as appropriate. As these policies and ordinances are reviewed and updated, staff will consider how to improve the effectiveness of their hazard mitigation.

Policy or Ordinance	Date of Adoption	Effectiveness of Mitigation (High, Medium, Low)
Flood Damage Prevention Ordinance	October 2003	High
National Flood Insurance Program member	June 2004	High
Watershed Protection Ordinance	August 1993	High
Phase II Stormwater Ordinance	September 2007	High
Subdivision Ordinance	May 1994	Medium
Zoning Ordinance	October 1988	Medium
Public Water and Sewer Extension Policies	Ongoing	Low

Flood Damage Prevention Ordinance – Hildebran adopted a Flood Damage Prevention Ordinance in October 2003 in conjunction with its application to become a member of the National Flood Insurance Program. A new Flood Damage Prevention Ordinance was adopted on August 21, 2007 in conjunction with new Flood Insurance Rate Maps provided by FEMA. The purpose of the ordinance is to promote public health, safety, and general welfare and to minimize public and private losses due to flood conditions within flood prone areas by provisions designed hazards to: (1) restrict or prohibit uses which are dangerous to health, safety, and property due to water or erosion, or which result in damaging increases in erosion, flood heights or velocities; (2) require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction; (3) control the alteration of natural floodplains, stream channels, and natural protective barriers, which are involved in the

accommodation of flood waters; (4) control filling, grading, dredging, and all other development which may increase erosion or flood damage; and (5) prevent or regulate the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards to other lands.

National Flood Insurance Program member – As a member of the National Flood Insurance Program, residents of Hildebran are eligible to purchase flood insurance. In addition, Hildebran has greater access to resources for floodplain mapping and management regulations.

Watershed Protection Ordinance – The Water Supply Watershed Protection Rules, adopted by the State of North Carolina in 1992, require that local governments with jurisdiction within state-designated water supply watersheds adopt and implement water supply ordinances, maps and a management plan. Hildebran amended its zoning ordinance in 1993 to include provisions consistent with the state's model watershed protection ordinance.

Phase II Stormwater Ordinance – As required by State Law, the Town of Hildebran sought a National Pollutant Discharge Elimination System (NPDES) permit for stormwater management. The Town adopted a model ordinance provided by Division of Water Quality. The purpose of the ordinance is to regulate and control stormwater and stormwater quality within the Town's jurisdiction. The Town received a waiver from the requirements of the NPDES Permit to administer Phase II Stormwater regulations in December of 2008. However, the Department of Water Quality will still enforce Phase II requirements on new development within the Town's jurisdiction outside of the Watershed Protected Area.

Subdivision Ordinance – Hildebran's Subdivision Ordinance assists with hazard mitigation by requiring the developer to identify environmentally sensitive areas, outline sediment control plans, and limit development in areas subject to flooding. The Town requires preliminary plats to depict basic natural drainage features such as marshes, swamps, ponds, lakes, and streams. Plans for water supply, sewage disposal and sediment control must receive approval by the appropriate County and State authorities.

Zoning Ordinance – Hildebran's Zoning Ordinance was adopted in 1990 and is routinely updated to serve the needs of its citizens. Work began in 2006 to rewrite the Zoning Ordinance with assistance of Town Planner and Planning Board. A new Zoning Ordinance was adopted in February of 2008. The zoning ordinance identifies types of uses and the intensity of development allowed by each zoning district.

Public Water and Sewer Extension Policies – Hildebran recognizes that extending public water and sewer encourages development in areas that gain access to these services. Consequently, the Town considers the appropriateness of the terrain for development prior to extending water and sewer lines into low-lying areas that may be susceptible to flooding.

Town of Hildebran Addendum

HAZARD MITIGATION STRATEGIES
Addendum to Table 2-1

The following table lists mitigation actions for the Town of Hildebran. The in-house Hazard Mitigation Committee prioritized these actions based on their ability to mitigate disasters, cost-effectiveness, and the likelihood of particular disasters occurring.

Many of the Mitigation Actions below relate specifically to flooding. There exists a greater capacity to prevent flood damage than other disasters because flooding tends to be more localized in predictable areas than such disasters as winter storms, severe thunderstorms, etc. The Town of Hildebran adopted new floodplain maps and Flood Damage Prevention Ordinance in August of 2007.

The table also includes the parties and support parties responsible for implementation and a time frame for completion of each proposed mitigation strategy. Costs incurred are expected to be minimal; mainly staff time and/or action by the Town Council is necessary to implement most strategies.

Strategy	Hazard(s) Addressed	Responsible and Support Parties	Resources	Schedule	Priority
Adopt Flood Damage Prevention Ordinance	Flood	Town Council Planning Board Hazard Mitigation Committee Planning staff	Local	COMPLETED Adopted August 2007	High
Review zoning and subdivision regulations in floodplain areas to manage future development	Flood	Town Council Planning Board Hazard Mitigation Committee Planning staff	Local	Ongoing	Low
Require structures to be built in the flood plain to be constructed 2' above base flood elevation or flood proofed.	Flood	Town Council Planning Board Hazard Mitigation Committee Planning staff Burke Co. Bldg. Inspections	Local	Ongoing	Low
Require/maintain FEMA elevation certificates for all new permits for buildings or improvements in the floodplain	Flood	Planning staff Burke Co. Bldg. Inspections Hazard Mitigation Committee	Local, State	Ongoing	Low
Track rebuilding activities after severe storms and consider policies to minimize repetitive losses	Multiple	Town Council Planning Board Hazard Mitigation Committee Planning staff Burke Co. Bldg. Inspections	Local	Ongoing	Medium
Require flood proofing for structures not elevated 2' above base flood elevation.	Flood	Burke Co. Bldg. Inspections Planning Staff	Local	Ongoing	Low
Advise property owners of ways to modify existing buildings and yards to protect their properties from flood damage	Flood	Planning staff Burke Co. Bldg. Inspections	Local	Ongoing	Low
Use and enforce the floodplain boundary shown on the FIRMs	Flood	FEMA NCDENR, NCDEM Planning staff	Federal, State, Local	Ongoing	High

		WPCOG Hazard Mitigation Committee			
Support DWQ in implementing Phase II Stormwater Regulations outside the WS-IV Area.	Flood	Town Council Planning Board Planning NCDWQ	State, Local	Ongoing	High
Work with Burke Co., local governments, state and federal agencies to continue to develop and maintain appropriate mitigation strategies	Multiple	FEMA NCDENR, NCDEM Planning staff WPCOG Hazard Mitigation Committee	Federal, State, Local	Ongoing	Medium

PLAN MAINTENANCE PROCESS
Addendum to Appendix E

The Town of Hildebran will continue revise and update its Hazard Mitigation Plan as necessary. Many of the Policies and Ordinances affecting hazard mitigation are reviewed yearly and/or updated on a regular basis. Hildebran's Mitigation Strategies will also be reviewed and updated on a periodic basis within the five-year cycle. Many of these projects are ongoing, but progress towards mitigation goals will be documented.

The Town of Hildebran will continue to advise the public about the threat of natural disasters and the Town's mitigation activities. A copy of the approved Hazard Mitigation Plan will be kept at Town Hall for interested citizens. As changes are made to the plan, town staff will publish notices in the newspaper and make presentations during Planning Board and Town Council Meetings. Public comments, questions, and suggestions are always welcome.

Hildebran will continue attend annual multi-jurisdictional meetings and work with Burke County and the municipalities of Rhodhiss, Connelly Springs, Valdese, Drexel, Morganton and Glen Alpine to update the Hazard Mitigation Plan.

City of Morganton

Supplemental Attachment “B” Burke County Hazards Mitigation Plan

This Municipal Supplemental Attachment addresses specific ways the City of Morganton, a municipality within Burke County, has and will continue to effectively reduce and eliminate repetitive losses from natural disasters. The City of Morganton has actively participated in FEMA’s National Flood Insurance Program (NFIP) for many years. It has also participated in FEMA’s Community Rating System (CRS) and adopted rules and regulatory controls to prevent land development activities within its jurisdiction. The City has a comprehensive Land Use Plan which guides the governing Council in its adoption of proper land development policies. Hazard reduction strategies are addressed within the Land Development Plan Document and those strategies will be reevaluated as necessary. The City of Morganton’s Supplement to Burke County’s Hazard Mitigation Plan will be updated every five (5) years or as required by the State of North Carolina.

Morganton is Burke County’s largest municipality. The City has recently witnessed first hand how hazard mitigation through appropriate flood damage prevention ordinances can save lives and protect properties against catastrophic property loss. Many Burke County communities do not presently participate in the NFIP or CRS programs. Many of these areas represent future urban growth areas around Morganton. It is in Morganton’s best interest to promote reasonable land use laws and hazard mitigation activities both inside and outside its jurisdiction. This Hazard Mitigation Plan represents an important step toward a coordinated countywide hazard mitigation program. The City has endorsed and accepted Burke County’s Risk Assessment contained within the Plan. The City of Morganton has endorsed and accepted the specific Hazards identified by Burke County including: dam failure, floods, landslides, drought, tornadoes, thunderstorms, severe winter storms, wildfires, earthquakes, nor’Easters, and hurricanes. The City of Morganton also accepts and endorses the efforts currently underway within the County and its other municipalities and offers supplemental efforts to those efforts as described within the City’s Supplement to the Plan. Through these initiatives, Morganton and its surrounding neighbors will collectively protect private property owners from catastrophic losses in the future.

Table 2.1 Supplement: Morganton Hazard Mitigation Activities

Short Range (1-2) Activities (CRS Activity Code)	Responsible Parties	Support Parties	Schedule
I. Review/update Flood Damage Prevention Ordinance to ensure maximum protection from flood hazard events (CRS 430)	Planning Commission, City Council	Development and Design Department	Implemented
A. Track rebuilding and repair activities after severe storms and consider policies/procedures for minimizing repetitive losses	City Council	Development and Design Department	Implemented
B. Continue to require and maintain FEMA elevation certificates for all new permits for new buildings or improvements to buildings on lots including any portion of 100-year floodplain (CRS 31) (See Section VIII. A)	Development and Design Department		Implemented
C. Advise/assist property owners in retrofitting their homes and businesses. Retrofitting means modifying an existing building or yard to protect the property from flood damage.	Development and Design Department		Implemented
II. Revise/update regulatory floodplain maps (CRS 410).	FEMA NCDENR NCDEM	Development and Design Department	Implemented (outside control)
III. Complete Community Rating System Application		Development and Design Department	Implemented
IV. Update 1990 Land Development Plan	Planning Commission City Council	Development and Design Department	Implemented
A. Revise open space plan; target properties for acquisition/fund acquisition program	Planning Commission City Council	Development and Design Department	Implemented
B. Adopt policies that discourage growth in flood hazard areas, including policy on not extending public services and utilities into flood hazard zones.	Planning Commission City Council	Development and Design Department	Implemented
C. Ensure the public is fully informed of the building permit process restrictions on providing service within the 100-year floodplain	Development and Design Department		Implemented
V. Continuation and expansion of E-911 Addressing Program to include all Municipalities (as possible) with goal to cover entire County with one system.	E-911 MIS	Development and Design Department	Implemented
VI. Drainage Systems Management (CRS 540)			

A. Establish coordinating committee to ensure that responsible parties communicate to ensure maximum cooperation in developing and maintaining the City's drainage and storm water systems	City Council	Development and Design Department	Implemented
B. Establish/Maintain coordinated Drainage System inspection program	Development and Design Department	WPCOG GIS Division	Implemented
C. Debris removal program/problem site corrections	City Council	Development and Design Department/Public Works Department	Implemented
D. Prepare countywide storm water management plan covering the Catawba River basin	NCDENR NRCS		Implemented
VII. Early Warning System			
A. Ensure adequate evacuation time in case of major hazard event.	Burke Co. Emergency Services/Morganton Public Safety	NCDOT/Development and Design Department	Implemented
B. Evaluate areas with limited evacuation capacity and pursue methods for improving capacity	Burke Co. Emergency Services/Morganton Public Safety	NCDOT/Development and Design Department	Implemented

Mid Range (3-5 year) Activities (CRS Activity Code)	Responsible Parties	Support Parties	Schedule
VIII. Acquisition of Properties			
A. Identify properties for public acquisition	Development and Design Department	FEMA NCDENR	Implemented
B. Establish list of priority properties for acquisition in the event of another natural disaster.	Development and Design Department	FEMA NCDENR	Implemented
C. Amend Recreation Plan to provide for integration of publicly acquired land into park or greenway system so hazardous areas remain undeveloped in perpetuity (much more effective than removing structures from isolated parcels).	Recreation	FEMA NCDENR	2012
VIII. Capital Improvements Program	City Council	Executive/Finance	2009-2014
A. Establish program for evaluation and improvement of critical services (public and Private) - roads, bridges, water, sewer, electricity, etc. - and critical facilities - fire, rescue, medical, etc.	Public Safety/Public Works/Water Resources/Electric	Emergency Services Power & Gas Companies Hospital NCDOT	Implemented

B. Evaluate flood or access problems for critical facilities, develop recommendations for protecting critical parts, e.g., police and fire command centers. Identify alternate command posts, if necessary	Public Safety	Emergency Services Power & Gas Companies Hospital NCDOT	Implemented
X. Establish program for purchase of development rights for floodplain properties. (possible tax deduction for charitable donation by property owner (s).) (CRS 420)	City Council	Development and Design Department	2010-2014
XI. Develop and implement hazard awareness program (elevation certificates, FIRM data, bulletin on property protection measures and flood insurance, etc.) (CRS 310/320/330/340/440)	Development and Design Department	Banks Real Estate Agents Insurance Agents Chamber of Commerce	Implemented
A. Establish a Flood Awareness Week to publicize hazard and protection measures (CRS 610)	City Council	Schools Media	2012
B. Request that the real estate Multiple Listing Service (MLS) be amended to include notice of flood hazard and the requirement to purchase flood insurance	City Council	Development & Design Department Real Estate Agents	2013
C. Improve Hazard Warning and Response Plan - warning and evacuating critical facilities, getting persons out of flood prone or isolated areas, controlling vehicles on evacuation routes, evacuation of hazard materials. (CRS 610)	Public Safety/Emergency Services	NCDOT/FEMA/NCDEM	Implemented
XII. Plan Implementation			
A. Monitor plans to ensure schedules are met			Implemented
B. Develop tracking system to evaluate progress and revise mitigation activities as necessary	Development and Design Department		Implemented
C. Track benefits in flood loss reduction	Development and Design Department		Implemented
XIII. Produce annual progress report on how plan is being implemented - send with annual CRS recertification	Emergency Services		Implemented

Table 2.2 Supplement: Morganton High Winds Mitigation Activities

Activities	Responsible Parties
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Early Warning System/Dissemination of information regarding need to seek shelter in safe room when high winds expected	Public Safety
Adopt and enforce latest model building codes and national wind engineering standards	Development and Design Department
Ensure that manufactured homes are installed and secured properly	Development and Design Department
Requires residential construction to meet latest wind-resistance standards; encourage replacement of doublewide garage doors to improve wind resistance	Development and Design Department
Encourage use of wind-resistant construction techniques	Development and Design Department

Appendix C: City of Morganton Capability Assessment

The ability of a community to develop an effective hazard mitigation plan depends upon its capability to implement policy and programs. This is accomplished through the legal, technical, and fiscal capabilities of the local government

The City of Morganton is a local government body with under a City Manager form of government. The elected City Council is the decision making body for the City. The appointed Planning Commission serves as an advisory body to the elected officials with regards to planning matters. The City has a number of professional staff departments to serve the citizens of the City and to carry out day-to-day administrative activities

Legal Authority of Local Governments in North Carolina

The City of Morganton has a wide array of powers as a result of North Carolina enabling legislation. These powers allow the City to adopt and implement policies and ordinances that may be used to mitigate the potential harmful effects of natural hazards. Below is a summary of the legal authority and powers that North Carolina has conferred on local governments within the state. These powers fall into four broad categories: regulation, acquisition, taxation and spending.

Regulation

General Police Power

Local governments in North Carolina have been granted broad regulatory powers in their jurisdictions. North Carolina General Statutes (NCGS) permit the general police power on local governments, allowing them to enact and enforce ordinances that define, prohibit, regulate, or abate acts, omissions, or conditions detrimental to the health, safety,

and welfare of the people, and to define and abate nuisances (including public health nuisances). Since hazard mitigation can be included under the police power (as protection of public health, safety and welfare), towns, cities and counties may include requirements for hazard mitigation in local ordinances. Local governments may also use their ordinance-making power to abate "nuisances", which could include, by local definition any activity or condition making people or property more vulnerable to any hazard (NCSG 160A Article 8 (Delegation and Exercise of the General Police Power to Cities and Towns); 153A, Art 6 (Delegation and Exercise of the General Police Power to Counties)).

Building Codes and Building Inspections

Many structural mitigation measures involve constructing and retrofitting homes, businesses and other structures according to standards designed to make the buildings more resilient to the impacts of natural hazards. Many of these standards are imposed through the building code.

North Carolina has a state compulsory building code, which applies throughout the state (NCGS 143-138 (c)); however, municipalities and counties may adopt codes for their respective areas if approved by the state as providing "adequate minimum standards" (NCGS 143-138 (e)). Local regulations cannot be less restrictive than the state code. Exempted from the state code are public utility facilities other than buildings; liquid petroleum gas and liquid fertilizer installations; and farm buildings outside municipal jurisdictions.

Local governments in North Carolina are also empowered to carry out building inspection NCGS 160A, Art 19 Part 5; and 153 A 18, Part 4 empower cities and counties to create an inspection department and enumerate its duties and responsibilities, which include enforcing state and local laws relating to the construction of buildings, installation of plumbing, electrical, heating systems, etc., building maintenance; and other matters.

Land Use

Regulatory powers granted by the state to local governments are the most basic manner in which a local government can control the use of land within its jurisdiction. Through various land use regulatory powers, a local government can control the amount, timing, density, quality, and location of new development All these characteristics of growth can determine the level of vulnerability of the community in the event of a natural hazard. Land use regulatory powers include the power to engage in planning, adopt plans, enact and enforce zoning ordinances, floodplain ordinances, and subdivision controls.

Zoning is the traditional and nearly universal tool available to local governments to control the use of land. Commission enabling authority for municipalities in North Carolina to engage in zoning is granted in NCGS 160A-381; and for counties in NCGS 153A-340 (counties may also regulate inside municipal jurisdiction at the request of a

municipality (NCGS 160A-360 (d)). The statutory purpose for the grant of power is to promote health, safety, morals, or the general welfare of the community. Land Uses controlled by zoning include the type of use (e.g., residential, commercial, industrial) as well as minimum specifications for each use such as lot size, building height and set backs, density of population, and the like. The local government is authorized to divide its territorial Jurisdiction into districts, and to regulate and restrict the erection, construction reconstruction alteration, repair or use of buildings, structures, or land within those districts (NCGS 160A-382). Districts may include general use districts, overlay districts, and special use or conditional use districts. Zoning ordinances consist of maps and written text.

Floodplain Regulation

In the summer of 2000, the North Carolina General Assembly adopted an act entitled "An Act to Prevent Inappropriate Development in the One Hundred-Year Floodplain and to Reduce Flood Hazards". By this act, the North Carolina statutes regulating development within floodways were rewritten to include floodplain regulation (NCGS 143-214.51-214.61).

The purpose of the new law is to:

- (1) Minimize the extent of floods by preventing obstructions that inhibit water flow and increase flood height and damage.
- (2) Prevent and minimize the loss of life, injuries, property damage, and other losses in flood hazard areas.
- (3) Promote the public health, safety, and welfare of citizens of North Carolina in flood hazard areas.

The new statute authorizes local governments to adopt a flood hazard prevention ordinance to regulate uses in flood hazard areas and to grant permits for the use of flood hazard areas that are consistent with the requirements of the statute. The statute provides for certain uses within flood areas without a permit consistent with local land use ordinances. (NCGS 143-215.54).

The statute establishes minimum standards for local ordinances and provides for variances for prohibited uses as follows:

(a) A flood hazard prevention ordinance adopted by a county or City pursuant to this Part shall, at a minimum:

- (1) Meet the requirements for participation in the National Flood Insurance Program (NFIP) and of this section.
- (2) Prohibit new solid waste disposal facilities, hazardous waste management facilities, salvage yards, and chemical storage facilities in the 100-year floodplain except as noted in section (b) below.

(3) Provide that a structure or tank for chemical or fuel storage incidental to a use that is allowed under this section or to the operation of a water treatment plant or waste water treatment facility may be located in a 100-year floodplain only if the structure or tank is either elevated above base flood elevation or designed to be watertight with walls substantially impermeable to the passage of water and with structural components capable of resisting hydrostatic and hydrodynamic loads and the effects of buoyancy.

(b) A flood hazard prevention ordinance may include a procedure for granting variances for uses prohibited under G.S. 143-215.54 (c). A county or city shall notify the Secretary (of Crime Control and Public Safety) of its intention to grant a variance at least 30 days prior to granting the variance. A county or city may grant a variance upon finding that all the following apply:

- 1) The use serves a critical need in the community.
- 2) No feasible location exists for the location of the outside the 100-year floodplain.
- 3) The lowest floor of any structure is elevated above the base flood elevation or is designed to be watertight with walls substantially impermeable to the passage of water and with structural components capable of resisting hydrostatic and hydrodynamic loads and the effects of buoyancy.
- 4) The use complies with all other applicable laws and regulations.

The statute authorizes priority ratings for local government applications for revolving loans or grants based on adoption of a local comprehensive land use plan, a zoning ordinance, or other measure that significantly contributes to the implementation of the comprehensive land use plan and a flood hazard ordinance.

The Floodplain Act also instructed the Environmental Review Commission to study and report its findings to the 2002 General Assembly on the need to:

- 1) Increase the minimum elevation requirements.
- 2) Increase the authority of the Secretary~ of Crime Control and Public Safety to enforce the new statute.
- 3) Increase protection against the potential recurrence of damage to public and private property that resulted from the hurricanes of 1999, and other measures to reduce the likelihood that public assistance will be needed in response to future hurricanes and other storm events.

Planning

In order to exercise the regulatory powers conferred by the General Statutes, local governments in North Carolina are required to create or designate a planning agency (NCGS 160A-3 87). The planning agency may perform a number of duties, including, make studies of the area; determine objectives; develop and recommend policies, ordinances, and administrative means to implement plans; and perform other related duties (NCGS 160A-361~. The importance of the planning powers of local governments is emphasized in NCGS 160A-383, which requires that zoning regulations be made in

accordance with a comprehensive plan While the ordinance itself may provide evidence that zoning is being conducted in "accordance with a plan", the existence of a separate planning document ensures that the government is developing regulations and ordinances that are consistent with the overall goals of the community. Commitment to adequately fund the department and enforce the ordinances are the responsibilities of the City Council.

Subdivision Regulation

Subdivision regulations control the division of land into parcels for the purpose of building development of sale. Flood-related subdivision controls typically require that subdivisions install adequate drainage facilities, and design water and sewer systems to minimize flood damage and contamination. They prohibit the subdivision of land subject to flooding unless flood hazards are overcome through filing or other measures and prohibit filing of floodway areas. They require that subdivision plans be approved prior to the sale of land. Subdivision regulations are a more limited tool than zoning and only indirectly affect the type of use made of land or minimum specifications for structures.

Broad division control enabling authority for municipalities is granted in NCGS 160-371, and in 153-330 for counties outside of municipalities and municipal extraterritorial areas. A subdivision is defined as all divisions of a tract or parcel of land into two or more lots and all divisions involving a new street (NCGS 160A-376). The definition of subdivision does not include the division of land into parcels greater than 10 acres where no street right-of-way dedication is involved (NCGS 160A-376(2)).

The community thus possesses great power (in theory, anyway) to prevent unsuitable development in hazard-prone areas, NCGS 160A, Art. 8 (Delegation and Exercise of the General Police Powers to Cities and Towns); Art. 19 (Planning); Part 3 (Zoning) and 153A, Art. 6 (Delegation and Exercise of the General Police Power to Counties); Art. 18 (Planning and Regulation of Development); Part 2 (Subdivision Regulation); Part 3 (Zoning).

Acquisition

The power of acquisition can be a useful tool for pursuing mitigation goals. Local governments may find the most effective method for completely "hazard-proofing" a particular piece of property or area is to acquire the property (either in fee or a lesser interest, such as easement), thus removing the property- from the private market and eliminating or reducing the possibility of inappropriate development occurring. North Carolina {legislation empowers cities, towns, and counties to acquire property for public purpose by gift, grant, devise, bequest, exchange, purchase, lease or eminent domain. (NCGS 153A, Art 8; 160A Article 1).

Taxation

The power to levy taxes and special assessments is an important tool delegated to local governments by North Carolina law. The power of taxation extends beyond merely the collection of revenue, and can have a profound impact on the [pattern of development in the community. Many communities set preferential tax rates for areas, which are suitable for development (e.g., agricultural land, and wetlands), and can be used to discourage development in hazardous areas.

Local units of government also have the authority to levy special assessments on property owners for all or part of the costs of acquiring, constructing, reconstructing, extending or otherwise building or improving beach erosion control for flood and hurricane protection works within a designated area (NCGS 160A-238) This can serve to increase the cost of building in such areas, thereby discouraging development

Because the usual methods of apportionment seem mechanical and arbitrary, and because the tax burden on a particular piece of property is often quite large, the major constraint in using special assessments is political. Special assessments seem to offer little in terms of control over land use in developing areas. They can, however, be used to finance the provision of necessary services within municipal or county boundaries. In addition, they are useful in distributing to the new property owners the costs of the infrastructure required by new development.

Spending

The fourth major power that has been delegated from the North Carolina General Assembly to local governments is the power to make expenditures in the public interest. Hazard mitigation principles should be made routine part of all spending decisions made by the local government, including annual budgets and a Capital Improvement Plan (CIP).

A CIP is a schedule for the provision of municipal or county services over a specified period of time. Capital programming, by itself, can be used as a growth management technique, with a view to hazard mitigation. By tentatively committing itself to a timetable for the provision of capital to extend services, a community can control its growth to some extent especially where the surrounding area is such that the provision of on-site sewage disposal and water supply are unusually expensive

In addition to formulating a timetable for the provision of services, a local community can regulate the extension of and access to service. A CIP that is coordinated with extension and access policies can provide a significant degree of control over the location and timing of growth. These tools can also influence the cost of growth. If the CIP is effective in directing growth away from environmentally sensitive or high hazard areas, for example, it can reduce environmental costs.

Fiscal Capability

Beyond legal authority and political willpower, fiscal capability is the key component to effectively developing and implementing a hazard mitigation plan. In addition to local tax funds, non-profits and other non-governmental organizations are often interested in helping to implement hazard mitigation projects. And fortunately, local governments can also apply for State and Federal funds to implement hazard mitigation initiatives.

Local Funds

In the State of North Carolina, property taxes provide the primary source of revenue for counties. These taxes are typically used to primarily to finance services that must be available and delivered on a daily basis, such as schools, health and social services, planning, solid waste management, and emergency services, leaving very little, if any, for additional services and projects. Fortunately, State and Federal funds are available to local governments for the development and implementation of hazard mitigation programs.

Non-Governmental Funds

Another source of revenue for local mitigation efforts, are the contribution of non-governmental organizations, such as churches, charities, community relief funds, the Red Cross, hospitals, for non-profit businesses, and nonprofit organizations. A variety of these local organizations can participate in carrying out hazard mitigation initiatives.

State and Federal Funds

The Hazard Mitigation Grant Program (HMGP) provides funding for mitigation measures following a presidential disaster declaration. The HMGP is funded in most part by the Federal government and administered by respective State governments. HMGP funds can be used for such projects as acquisition or relocation, retrofitting, development of local mitigation standards and comprehensive mitigation plans, structural hazard control and the purchase of equipment to improve preparedness and response.

The Flood Mitigation Grant Program (FMAP) is a federally funded program for mitigation assistance to states, communities and individuals for cost-effective measures to reduce or eliminate the long-term risk of flood damage to the built environment and to real property. Unlike the HMGP, it is available to eligible communities on an annual basis. An eligible community must be a participant in the National Flood Insurance Program and must develop a flood mitigation plan. FMAP funds may be used for such projects as elevation and/or dry flood proofing of structures, acquisition of real property, relocation or demolition of structures, and minor structural projects.

The Community Development Block Grant (CDBG) is another source of funding for hazard mitigation initiatives. The objective of the CDBG program is to assist communities in rehabilitating substandard dwelling structures and to expand economic opportunities, primarily for low-to-moderate-income families. However, as a result of a

Presidential declared disaster, CDBG funds may be used for long-term needs such as acquisition, reconstruction, and redevelopment of disaster-affected areas.

Ability to Pay

In recognition of the disparate economic prosperity of the State's one hundred counties, the North Carolina Department of Commerce ranks counties in an economic tier system. The impetus for this system was the William S. Lee Quality Jobs and Business Expansion Act of 1996 which provides for a sliding scale of state tax credits for economic investment. The Lee Act has become the state's main development tool in effort to help smaller rural counties be more economically competitive.

The most economically distressed counties are ranked in Tier I and the most economically prosperous in Tier 5. The rankings are evaluated annually using three factors: population growth, unemployment rate, and per capita income. The 2000 County Tier Designation places Burke County in Tier #2. The tier ranking is now widely used by the State as a measure of an individual county's ability to pay when applying for state and federal grants.

Technical Capability

Effective hazard mitigation initiatives depend largely on a community's technical capability. Small local governments, such as the City of Morganton, have limited technical capabilities and some technical resources available at the regional level through the Western Piedmont Council of Governments.

City of Morganton

The City of Morganton is in the final stages of creating a Geographic Information System (GIS) that will provide essential information and technology for hazard response and mitigation. The GIS system provides detailed data on property ownership, land use type, building data, overlays of utility systems and hazard sensitive areas. Morganton's GIS allows this information to be displayed visually to assist in overall City Hazard Mitigation Planning. The GIS will provide fast access and processing of detailed data that can be used to assist in deployment of resources before, during, and after natural disasters.

Western Piedmont Council of Governments

The Western Piedmont Council of Governments covers a four (4) county region around Morganton including Burke County, Catawba County, Caldwell County, and Alexander County. This regional agency provides technical assistance, planning, housing, economic development, small business services. The City of Morganton has presently contracted with the WPCOG to administer and develop the City's GIS.

State and Federal

Agencies such as the Federal Emergency Management Association (FEMA) and the North Carolina Division of Emergency Management (NCDEM) have made available numerous implementation manuals and other resource documents. These manuals provide information on mitigation techniques for various hazards, including hurricanes, floods, wildfires, tornadoes and earthquakes.

The manuals include information on engineering principles, construction methods, costs and suggestions for how techniques can be financed and implemented. Other Federal agencies such as, the U.S. Army Corps of Engineers and Soil Conservation Service also provides similar services. The North Carolina Division of Emergency Management works in concert with these various Federal agencies to ensure that the State and local governments are prepared to respond to natural disasters. A major effort to improve technical information available to local governments is being undertaken by the State of North Carolina and the Federal Emergency Management Agency.

Statewide Floodplain Mapping Initiative

The State of North Carolina, through the Federal Emergency Management Agency's Cooperating Technical Community partnership initiative, has been designated as a Cooperating Technical State (CTS). The State has assumed primary ownership and responsibility for Flood Insurance Rate Maps (FIRMs) for all North Carolina communities. The project included flood hazard analysis with updated, digital FIRMs (D-FIRMs)

The State has completed this phase of this project for Morganton and Burke County in the Catawba River Basin in 2007. The new study provides current and accurate information to allow communities and property owners better information from which to make appropriate location and design decisions when building new structures and infrastructure. It also assist in the retrofitting of existing structures. The improved mapping dramatically reduces long-term flood losses in North Carolina and areas surrounding the City of Morganton. This mapping has been incorporated into the City's GIS.

Footnotes

1 Local Hazard Mitigation Planning Manual, North Carolina Division of Emergency Management, 1998, Appendix B, pp.61-64.

Appendix D Supplement: Evaluation Of Morganton Policies and Ordinances

Introduction

The City of Morganton has used its regulatory power to adopt and implement policies, programs, and ordinances that help mitigate the potential harmful effects of natural hazards. The City has developed and adopted the following local policies and ordinances:

- Repetitive Loss Structures
- Future Public Buildings
- Zoning Ordinance
- Planning
- Comprehensive Land Development Plan
- Phase II Storm Water Plan
- Recreation Master Plan/Open Space plan
- Flood Damage Prevention Ordinance
- Subdivision Ordinance
- Minimum Housing Ordinance
- Building Code Enforcement Ordinance
- Nuisance Ordinance
- Water Supply Watershed Protection Ordinance

These ordinances establish development regulations for different types of land development including both subdivided and non-subdivided land uses. Each policy, ordinance or regulation has a unique and varying impact on hazard mitigation. Although these policies are not specifically oriented for mitigation purposes, they can be utilized to implemented hazard mitigation initiatives. A summary of current ordinances and policies that may pertain to hazard mitigation is included below.

City of Morganton Policies and Ordinances

Repetitive Loss Structures

The City of Morganton has not experienced repetitive losses due to natural events. The City does contain several areas of existing development where risks are higher for repetitive loss such as structures within Flood Zones. The City has adopted a new Flood Damage Prevention Ordinance which prohibits substantial renovations in the event of damage due to flooding. Morganton's Ordinance defines substantial renovation as being a cost greater than 50% of the fair market value of the structure.

Future Public Buildings

The City of Morganton is in the process of developing major public recreation facilities along and adjacent to the Catawba River and its tributaries. These facilities include athletic fields, greenways, pedestrian bridges, boardwalks, piers, observation areas, picnic shelters, camping areas, etc. as well as associated accessory uses such as bathrooms, concession areas, and utilities. These facilities will be built in accordance with all local, State and Federal guidelines including flood damage prevention measures. It is City policy to construct these facilities to minimize losses due to flooding; however, damage to these facilities can be anticipated if substantial flooding occurs due to storms, hurricanes or dam failure.

Zoning

Zoning, the traditional and nearly universal tool available to local governments to control the use of land, has been adopted in the corporate limits of Morganton and a one mile Extra-Territorial Jurisdiction (ETJ) outside the corporate limits. The zoning permit process allows for varying levels of project review including floodplain and watershed status.

Planning

The City of Morganton has the statutory authority to plan for growth and development including the power to make studies of the city and surrounding area, to determine growth objectives, to prepare and adopt plans for achieving those objectives and to develop policies, ordinances, and the administrative means to implement plans. The Morganton City Council has created and appointed a Planning Commission to serve as an advisory body on planning matters.

Local government enabling legislation requires that zoning regulations when adopted by a county, be made in accordance with a comprehensive land use plan. The existence of a comprehensive plan ensures that the county boards and staff are developing regulations and ordinances that are consistent with the overall goals of the community.

Comprehensive Land Development Plan

The City of Morganton is in the process of adopting a new Mission 2030 Land Development Plan with the purpose to outline long-range growth and development policies for the areas within and surrounding the City. The Plan delineates "open space" areas as well as "flood hazard" area. Most of the open space areas consist of areas located within the regulatory flood plains of major streams and the Catawba River. The Plan recommends land uses that are most suitable for development within these areas such as open space, recreational areas, agricultural and clustered and planned low-density residential development. The promotion of these types of land use is typical of current mitigation initiatives.

Growth and development occurs throughout the City of Morganton. The City has regulated growth since the mid 1900's. Organized planning policies related to zoning,

flood zone protection and building inspections have prevented substantial growth in identified hazard areas.

Table D.1 Supplement: Morganton Specific Hazard Mitigation Goals, Objectives and Relevant Strategies from Mission 2030 Land Development Plan

Category	Goal	Objectives	Relevant Strategies
Growth Management	To insure that the expanding urbanizing area of Morganton develops in an effective and efficient manner	Strengthen development standards in urbanizing areas and establish treaties with the County and other municipal jurisdictions to solve multi-jurisdictional problems	Amend Zoning and Subdivision Regulations to require appropriate open space preservation in hazardous areas, and work with the surrounding jurisdictions to promote consistent land use policies, preserve open space and maintain consistent utility extension policies
Land Use	To insure that residential, commercial, service and industrial land is provided in suitable amounts and appropriate locations to operate efficiently and effectively	Maintain a consistent and defensible policy of land use control by following the approved land use plan map and preventing development from occurring in areas that are hazardous to develop within.	Encourage Planned Developments, adhere to the boundaries on the approved Land Development Plan Map, Revise Ordinance to incorporate specific performance standards.
Recreation, Open Space & Other Public Lands	To assure that suitable land in appropriate locations will be available to meet future active and passive recreation, public service and public protection needs of Morganton citizens	To establish both public and private open space areas and limit development within those areas that are hazardous to develop.	Amend Zoning and Subdivision Regulations to require appropriate open space preservation in hazardous areas, and work with the surrounding jurisdictions to promote consistent land use policies, preserve open space and maintain consistent utility extension p

Flood Damage Prevention Ordinance

North Carolina General Statutes empower counties to regulate designated floodways for the purpose of controlling and minimizing the extent of floods by preventing obstructions which inhibit water flow and increase flood height and damage and other losses -(both

public and private) in flood hazard areas, and to promote the public health, safety and welfare of citizens of North Carolina in flood hazard areas. No permit is required for certain uses, including agricultural, wildlife and related uses; ground level area uses such as parking areas, rotary aircraft ports; lawns, gardens, golf courses, tennis courts, parks open space, and similar private and public recreational uses. Existing artificial obstructions in the floodway may not be enlarged or replaced without a permit. Local governments are empowered to acquire existing obstructions by purchase, exchange, or condemnation, if necessary, to avoid flood damages.

The National Flood Insurance Program (NFIP) is administered by the Federal Emergency Management Agency (FEMA). This program makes flood insurance available to a local community which, in exchange, agrees to adopt and enforce a flood damage prevention ordinance to regulate flood-prone areas to help reduce future flood losses. In addition to the availability of flood insurance, the NFIP supports mitigation through floodplain management measures and the flooded property acquisition program. Enforcement of a local Flood Damage Prevention Ordinance is required for participation in the NFIP. The City of Morganton presently enforces the Flood Damage Prevention Ordinance within its zoning jurisdiction. This ordinance was adopted in 2007.

The Flood Damage Prevention Ordinance regulates development within flood fringe and floodway areas by providing for issuance of development permits for construction, and for the periodic inspections to ensure compliance with the permit. The Flood Damage Prevention Ordinance also provides the authority to issue stop work orders until problems are resolved or corrective actions have been taken, and for revocation of permits in extreme cases. The Flood Damage Prevention Ordinance requires a local permit prior to development work to ensure development will not aggravate the effects of flooding and that structures are flood damage resistant. Section 9-5005 establishes that new construction or substantial improvement of any residential structure (including manufactured homes) shall have the lowest floor, including basement, elevated no lower than the base flood elevation. Following Hurricane Floyd, on recommendation from FEMA, the interpretation of elevation of lowest floor expanded to include all mechanical systems, i.e., heating, ventilation and air conditioning systems, and electrical and plumbing systems.

Subdivision Ordinance

Subdivision regulations control the division of land into parcels for the purpose of building development or sale. The regulations require that subdivision plans be approved prior to the sale of land. Subdivision regulations are a more limited tool than zoning and only indirectly affect the type of use of land or minimum specifications for structures. Flood-related subdivision controls typically require that developers install adequate drainage facilities, and design water and sewer systems to minimize flood damage and contamination. The City of Morganton Subdivision Ordinance prohibits the subdivision of land subject to flooding and also prohibits filling of floodway areas.

The Subdivision Ordinance is also used to ensure storm water drainage facilities in developments are properly installed to protect properties from flooding and to lessen development in areas of high risk. Although these regulations currently provide measures that support mitigation initiatives, the ordinance can be amended to include more restrictive standards to further mitigate the effects of flooding.

The City of Morganton Subdivision Ordinance is currently enforced within the incorporated area of the City and within its ETJ.

TableD-3: Sections of Subdivision Ordinance Pertaining to Hazard Mitigation

Section	Purpose	Objectives
Section 9-3001	Promote orderly growth and development consistent with the goals and objectives and policies of the Land Development Plan	To appropriately regulate all divisions of a tract or parcel of land into two or more lots or building sites for the purpose of sale or building development whether immediate or long term
	Provide for suitable residential and non-residential subdivisions with appropriate building sites	To appropriately locate tracts lots or building sites where all essential public services are readily available and impact of natural hazards are minimized
	Provide for the dedication or reservation of adequate spaces for public lands and buildings	To encourage the dedication or preservation of open space areas where development would be in peril of damage in the event a natural hazard occurs.
	Protect and enhance environmental quality and provide appropriate facilities for storm drainage	To appropriately establish requirements applicable to enclosed and unenclosed streams or drainageways so that public protection is provided in the event of heavy rain or flood

International Building Code Enforcement

The City enforces the International Building Code within the city’s incorporated limits and within its ETJ just as Burke County. (Reference County Table D-4 for relevant purpose)

Water Supply Watershed Protection Ordinance

The Water Supply Watershed Act of 1989 instituted a statewide program to protect drinking water supply watersheds from inappropriate development. The intent of the program was to protect the quality of surface water supplies from non-point source pollution, and to minimize storm water runoff by regulating development densities and the amount of built-upon area within the critical and protected areas of affected

watersheds. Certain land uses are also prohibited within protected water supply watersheds.

The City enforces the ordinance within the corporate limits and within its ETJ. The ordinance applies within areas designated by the North Carolina Environmental Management Commission as the critical or protected area of a surface water supply watershed and as shown on the official Watershed Map for the City of Morganton.

The ordinance provides for the continuation of existing uses and the reconstruction of buildings and built-upon areas. The ordinance establishes impervious development restrictions for various residential and non-residential land uses.

Certain types of uses are also prohibited. Within the critical and protected areas, the storage of toxic and hazardous materials (unless a spill containment plan is implemented) is prohibited. Landfills and sites for land application of sludge/residuals or petroleum-contaminated soils are prohibited in the critical area. A minimum 30' vegetative buffer is required along each side of all perennial waters indicated as solid blue lines in the most recent versions of USGS 1:24,000 topographic maps. No new development is allowed in the buffer area except for water dependent structures and public projects such as road crossings and greenways where no practicable alternative exists. In cases where high-density development will exceed 24% built upon surface areas, a minimum 100-foot vegetative buffer is required.

Phase 2 Storm Water Management Ordinance

The National Pollutant Discharge Elimination System (NPDES) Phase II Storm Water program was created by the passage of the Clean Water Act (CWA). The objective of the CWA was to restore and maintain the chemical, physical, and biological integrity of the nation's surface waters. The Legislature of the State of North Carolina has required local governments to provide for the implementation of storm water runoff rules and regulations. Specifically, N.C.G.S 143-214.7 and the rules promulgated by the Environmental Management Commission there under require cities to implement storm water management programs and N.C.G.S 160A-174 authorizes cities to adopt ordinances to define and regulated conditions detrimental to the health, safety, and welfare.

The City of Morganton was issued a permit to discharge storm water to the nation's surface waters. A requirement of this permit was that the City adopt a Phase II Stormwater Ordinance to control the adverse effects of polluted storm water runoff associated with new development and redevelopment projects. The Phase II Storm water ordinance was effective on December 3, 2007.

Public Water and Sewer Extension Policies

Water and sewer services within is provided by the City of Morganton. Morganton allows the extension of its water and sewer system through policies developed by the City and in accordance with its Land Development Plan, Subdivision Ordinance, and Utility Extension Policy.

Catawba River Basin Rules

The North Carolina Division of Water Quality has adopted rules for buffer areas within the Catawba River Basin that will affect development in City of Morganton. The goal of the rules is to reduce and maintain nutrient loading and to reduce sediment and pollution by controlling the velocity and volume of storm water run off within this protected river basin. A 50 foot vegetative buffer is required to be maintained along the main stem of the Catawba River throughout the City of Morganton's jurisdiction.

Effectiveness for Hazard Mitigation

The City of Morganton's policies and ordinances are rated in Table D-8 as to their effectiveness for hazard mitigation.

Supplemental Table D-8: Effectiveness of Morganton's Current Policies and Ordinances

Policies and Programs	Effectiveness for Mitigation (low,medium,high)
Repetitive Loss Structures	high
Public Structures	high
Zoning Ordinance	high
Planning	medium
Comprehensive Land Development Plan	medium
Phase II Storm Water Plan	medium
Recreation Master Plan/Open Space plan	medium
Flood Damage Prevention Ordinance	high
Subdivision Ordinance	high
Minimum Housing Ordinance	medium
Building Code Enforcement Ordinance	high
Nuisance Ordinance	medium
Water Supply Watershed Protection Ordinance	medium

RESOLUTION TO ENDORSE THE BURKE COUNTY NATURAL HAZARDS MITIGATION PLAN AND APPROVE THE CITY'S SUPPLEMENT TO THAT PLAN

WHEREAS, it has been determined by the State of North Carolina that all local governmental jurisdictions must plan for and mitigate the impacts of natural hazards; and

WHEREAS, the County of Burke and its municipalities have jointly prepared a Natural Hazards Mitigation Plan for the purpose and intent of meeting the State of North Carolinas directive; and

WHEREAS, the plan has been preliminarily reviewed by the State of North Carolina in November of 2003 and a revised plan now incorporates the required changes and additions noted in that review, and

WHEREAS, the City of Morganton has now specifically assessed within its jurisdiction the impact of natural hazards and has prepared a supplement to Burke County's Plan to address the City's mitigation strategies, and

WHEREAS, those mitigation strategies are found reasonable and obtainable within the time frames presented.

NOW, THEREFORE BE IT RESOLVED, by the City Council of the City of Morganton that the it fully adopts and endorses the Burke County Natural Hazards Mitigation Plan and approves the City of Morganton's Supplemental Attachment to that Plan.

ADOPTED this the 4th day of May, 2009.

ATTEST: Sally W. Sandy
City Clerk

Neil Hahn
Mayor



Hazard Mitigation Plan for the Town of Rutherford College

Community Profile

The Town of Rutherford College is located in the eastern part of Burke County, situated between the municipalities of Valdese and Connelly Springs. It is bounded by Lake Rhodhiss to the north and I-40 to the south. The town can be defined centrally by Malcolm Boulevard. The town's land area includes approximately 2.3 square miles, or 1,488 acres. Although the Town has the sense of being rural, it is included as part of the Hickory-Morganton-Lenoir Metropolitan Statistical Area (MSA). The entire town has recently been added to the jurisdiction of Greater Hickory Metropolitan Planning Organization and has been designated as urbanized. The Town has an Extra-territorial Jurisdiction (ETJ) that expands from the northeastern boundary of the Town limits that includes approximately 2.1 square miles, or 1,359 acres.

The Town of Rutherford College is home to a considerable number of people – 1,297 in 2007, according to official estimates by the North Carolina State Demographer. This represents approximately 2 percent of the population of Burke County and equivalent to just under one fourth of the population of Morganton.

Rutherford College is a small bedroom community located between Hickory and Morganton. The Town is dominated with single-family houses and small businesses (Table 1). The tax assessed value of all structures located in Town is over \$54 million.

Table 1. Value of Developed Facilities and Undeveloped Land¹.

	Number ²	Acres	Bldg. Value ³	Land Value ³	Tax Value
Single-Family Dwelling	458	634.8	\$44,139,531	\$10,869,960	\$56,790,500
Multi-Family Dwelling	14	11.5	\$250,077	\$321,801	\$2,864,082
Exempt Property	24	45.6	\$4,495,291	\$2,301,783	\$7,147,121
Commercial	54	126.6	\$10,559,192	\$3,626,132	\$14,929,309
Industrial	6	98.2	\$6,370,124	\$1,312,573	\$7,915,437
Other	43	64.6	0	\$758,496	\$857,762
Vacant	209	413.2	0	\$3,557,184	\$3,557,931
TOTAL			\$65,814,215	\$22,747,929	\$94,062,142

Source: Burke County GIS, 2009.

1 Analysis does not include parcels located within the extra-territorial jurisdiction of Rutherford College.

2 Total numbers of buildings does not equal addressable structures.

3 Land and building values do not equal total tax value which includes value of accessory and out buildings.

4 Exempt category includes religious, state, county, federal, city, utilities, railroads, subdivision lots not sold, subdivision common areas, clubs and lodges, cemeteries, water and sewer facilities, fire and rescue facilities and recycling centers.

Most parcels in Rutherford College are zoned residential with parcels zoned commercial and business typically located along Malcolm Boulevard and US Highway 70 (Map 1). A considerable amount of land within the Town's planning area is still undeveloped and is concentrated in the southern and northeastern portions of Town.

The more contemporary residents of Rutherford College have typically prospered and the region's once flourishing manufacturing economy was based largely on the many local furniture industries. In recent years, the manufacturing economy has faltered and many of the furniture plants have ceased operations. As is the case with much of the surrounding region and state of North Carolina, the Town faces a complex transition from traditional manufacturing to a new economy based largely on technology and services. The Town is currently experiencing a growth in medical services, such as family doctors and clinics, due, in large part, to the expansion of Valdese Hospital.

The Town of Rutherford College has two full time employees (Town Clerk and Deputy Clerk) and three part-time employees. Planning and engineering services are out sourced. Public water and sewer is available throughout Rutherford College with wastes treated at the Valdese wastewater treatment plant.

Plan Development

Burke County served as the lead agency in developing this multi-jurisdictional hazard mitigation plan. Local governments participating in the development of this multi-jurisdiction plan are Burke County along with the municipalities of Connelly Springs, Drexel, Glen Alpine, Hildebran, Morganton, Rutherford College and Valdese. The County hosted several meetings (see Supplemental Attachment "A") in which staff representing the County and these municipalities within Burke County discussed plan development and individual local government responsibilities. Rutherford College was represented by Town Planner Mike Struve on this advisory committee. The plan was locally adopted on November 1, 2004 by formal resolution following an advertised public hearing held before the Rutherford College Town Council. A copy of the legal notice that appeared in the *Morganton News Herald* on October 22 and 29 along with the signed formal resolution appears at the end of this plan.

In November of 2008 the Town began to work with Burke County, Rhodhiss, Connelly Springs, Hildebran, Valdese, Drexel, Morganton and Glen Alpine in updating the Hazard Mitigation Plan. Town Planner Johnny Wear (November 2006 -) represented the Town on the committee.

The Rutherford College Town Council adopted the final plan on May 4th, 2009. Copies of the Resolution(s) to Adopt the Burke County Hazard Mitigation Plan are included.

Statement of the Problem

Appendix A of the Plan provides a description of the types of hazards that affect Burke County along with historical data on the occurrence, magnitude and likely location of specific natural hazard events. Of the hazards identified in the County's multi-jurisdictional plan, Rutherford College is most vulnerable to snow and ice storms, and high wind events associated with severe thunderstorms and tropical storms (Table 2). The Town's susceptibility to flooding is much less than Burke County because of the relatively small amount of land within the 100-year floodplain (see Map A-1). One perennial stream, Hoyle Creek, contains floodplain areas located within the Town's planning area. Very few parcels, however, are potentially affected since the majority of floodplain lands bordering this stream fall outside the Town's planning jurisdiction. A dam failure at Lake James would also have a minimal affect on the Town since the likely inundation area within the Town is small (see Map A-3).

Table 2. Hazard Index for Rutherford College.

Hazard	Likelihood of Occurrence	Potential Area Affected	Potential Impact	Hazard Index Combined Rating
Drought	Possible	Large	Limited	Moderate
Earthquake	Possible	Large	Negligible	Low
Flood	Possible	Small	Limited	Low
Hurricane	Likely	Large	Critical	High
Landslide	Possible	Small	Negligible	Low
Nor'easter	Possible	Large	Negligible	Low
Thunderstorm	Highly likely	Large	Negligible	Low
Tornado & High Winds	Highly likely	Large	Critical	High
Wildfire	Highly likely	Medium	Limited	Moderate
Winter storm	Highly likely	Large	Critical	High

Flood Hazard

According to the Burke County GIS Department records, there are two properties in Rutherford College situated in a 100-year floodplain. These at-risk properties have a collective appraised value of \$77,828. Both properties are free of structures and are owned by the same individual. One property is 13.5 acres in size and has about 50% of the parcel's land area occupying the floodplain. The second property is 21.0 acres in size and contains less than 10% of the parcel in the floodplain. The property owner will be contacted by Town staff to ensure he is aware both parcels contain land within the floodplain.

Repetitive Loss Structures

The Town of Rutherford College has no recorded repetitive loss structures.

Federal Flood Insurance Program

The Town has adopted the required Flood Damage Prevention Ordinance, but recently discovered that they were not listed as members of the Federal Flood Insurance Program. Town staff anticipates the Town Council will take formal action to join the Federal Flood Insurance Program at the Council's May, 2009 meeting.

Evaluation of Town of Rutherford College Policies and Ordinances

Introduction

The Town of Rutherford College has used its regulatory power to adopt, implement and administer land-use controls that help mitigate the potential harmful effects of natural hazards. These land-use controls include a zoning ordinance, watershed protection ordinance and a minimum housing ordinance.

These ordinances establish development regulations for different types of land development including both subdivided and non-subdivided land uses. Each ordinance has a unique and varying affect on hazard mitigation. Although these regulations are not specifically oriented for mitigation purposes, they can be utilized to implement hazard mitigation initiatives. A summary of all current ordinances that may pertain to hazard mitigation is included below.

Town Ordinances

Subdivision Ordinance

Subdivision regulations control the division of land into parcels for the promoting orderly new development and the sale of land. The regulations require that subdivision plans be approved prior to the sale of land. Subdivision regulations are a more limited tool than zoning and only indirectly affect the type of use of land or minimum specifications for structures.

Three areas of Rutherford College's subdivision regulations pertain to hazard mitigation: identifying environmentally sensitive areas, outlining sediment control plans, and restricting development in areas subject to flooding.

Most subdivision regulations require that certain types of information be identified on a preliminary plat by the developer for assisting staff with review of the project. The Town of Rutherford College requires that basic natural drainage features including marshes, swamps, ponds, lakes, and streams appear on the preliminary plat.

The preliminary plat must also depict plans for controlling sediment and providing utility services, including sanitary sewers, storm sewers, water distribution lines, natural gas, and telephone and electric service. Plans for water supply, sewage disposal and sediment control must receive approval by the appropriate County and State authorities including the Burke County Health Department, the North Carolina Division of Land Resources and the North Carolina Division of Water Quality.

Creating lots for residential development subject to flooding is prohibited unless the developer proposes to provide a levee or raise the floor elevations above the flood level, in which case an engineering report must accompany the subdivision application. If there is any stream running through or within 150 feet of the property proposed for subdividing, the prospective subdivider must furnish evidence to the Planning Board that residential lots within the subdivision will not be flooded.

Zoning Ordinance

Rutherford College first adopted a zoning ordinance in 1979. This ordinance is currently administered through the Town's corporate limits as well as the Town's Extraterritorial Jurisdiction Area. Included among this ordinance's provisions are the identification of the types of uses and the intensity of development allowed by zoning district. The Town is currently in the process of drafting a new Zoning Ordinance, and expects to have it adopted in early 2010.

Water Supply Watershed Protection Ordinance

The Water Supply Watershed Protection Rules, adopted in 1992, required that local governments with land jurisdiction within state-designated water supply watersheds adopt and implement water supply ordinances, maps and a management plan. The Town of Rutherford College amended their zoning ordinance in 1993 to include watershed protection provisions consistent with the state's model watershed protection ordinance.

The entire Town's planning area occupies a WS-IV watershed and is therefore covered by local watershed regulations. These rules place density restrictions on new development as well as prohibiting certain types of activities from occurring on lands classified as water supply watersheds. New development activities occurring within Town must meet either low or high density requirements. Generally, development exceeding one acre in size that results in 24% or less of newly added built-upon area is considered a low density projects. In contrast, development that results in over 24% built-upon area is considered high density and must include

the installation and maintenance of engineered stormwater control structures, such as a wet detention pond, for treating runoff generated by the project.

Minimum Housing Ordinance

In 1994 Rutherford College adopted a minimum housing ordinance. This ordinance was adopted to promote public safety, health and general welfare through structural strength, stability, sanitation, adequate light and ventilation, and safety to life and property from fire and other hazards incidental to construction, alteration, repair, removal, demolition, use or occupancy of residential buildings and accessory structures. This ordinance allows the Town to take appropriate legal action on structures that threatened public safety and welfare, including condemnation and razing, at the expense of the property owner, if necessary.

Catawba River Buffer Rules

In May 2001, the North Carolina Environmental Management Commission adopted a pair of rules to protect existing water-side, or riparian, buffers in certain parts of the Catawba River Basin. The buffer protection rule requires maintaining and protecting existing 50-foot wide vegetated riparian (shoreline) areas along the Catawba River below Lake James and along the mainstem lake shorelines from Lake James to Lake Wylie. This rule does not require the establishment of new buffers unless the existing use in the buffer area changes. The footprints of existing uses such as agriculture, buildings, commercial and other facilities, maintained lawns and utility lines are exempt. Within this 50 feet of buffer, the first 30 feet closest to the water, referred to as Zone 1, is to remain undisturbed with the exception of certain activities. The outer 20 feet, referred to as Zone 2, must be vegetated, but certain additional uses are allowed. Within the Rutherford College planning area these rules are administered by the North Carolina Division of Water Quality's Asheville Regional Office.

Flood Damage Prevention Ordinance

Rutherford College adopted a Flood Damage Prevention Ordinance in October 2003 in conjunction with its application to become a member of the National Flood Insurance Program. A new Flood Damage Prevention Ordinance was adopted in August, 2007 in conjunction with new Flood Insurance Rate Maps provided by FEMA. The purpose of the ordinance is to promote public health, safety, and general welfare and to minimize public and private losses due to flood conditions within flood prone areas by provisions designed hazards to: (1) restrict or prohibit uses which are dangerous to health, safety, and property due to water or erosion, or which result in damaging increases in erosion, flood heights or velocities; (2) require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction; (3) control the alteration of natural floodplains, stream channels, and natural protective barriers, which are involved in the accommodation of flood waters; (4) control filling, grading, dredging, and all other development which may increase erosion or flood damage; and (5) prevent or regulate the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards to other lands.

Phase II Stormwater Ordinance

As required by State Law, the Town of Rutherford College sought a National Pollutant Discharge Elimination System (NPDES) permit for stormwater management. Since the municipal limites of Rutherford College are entirely within the WS-IV Critical and Protected area the Town was not required to adopt the model ordinance provided by the Division of Water Quality.

Effectiveness of Current Regulations for Hazard Mitigation

The Town of Rutherford College's regulations are rated in Table 3 as to their effectiveness for hazard mitigation.

Table 3. Effectiveness of Current Regulations

Regulations	Effectiveness for Mitigation
Subdivision Ordinance	Medium
Zoning Ordinance	Medium
Water Supply Watershed Protection Ordinance	High
Minimum Housing Ordinance	Low
Catawba River Buffer Rules	Medium

Policies That Hinder Hazard Mitigation

The Town does not have any policies that intentionally conflict with hazard mitigation goals. As policies and ordinances are revised in the future, however, more attention will be paid to how these policies and regulations could be strengthened from a hazard mitigation standpoint. For example, the Town will be adopting and revising ordinances over the next two years to comply with new federal Phase II stormwater regulations. As these rules are being crafted, this process will afford the Town an opportunity to strengthen provisions to minimize and prevent flooding, particularly of new development located along Town-controlled waterways.

Hazard Mitigation Goals

Hazard mitigation plan goals are broad statements that set community priorities for reducing susceptibility to natural hazards. The goals below, originally identified by the North Carolina Division of Emergency Management, serve as the basis for developing specific plan objectives and hazard mitigation activities. These goals are:

1. Decrease the community's vulnerability to future hazard events.
2. Increase the community's resiliency so that recovery can be quicker and less costly.
3. Decrease the likelihood that future hazards become natural disasters.
4. Insure that future development contributes to the community's sustainability over time.
5. Reduce the hazard risks to citizens' lives and property.
6. Restore and protect public health, restore degraded ecosystems, and make communities more livable.

Hazard Mitigation Strategies for Rutherford College

Hazard mitigation strategies for reducing long-term vulnerabilities for specific natural hazards are outlined below in Table 4. This table shows that some strategies are targeted and address specific natural hazards, while other strategies are more general in nature and address two or more hazards.

Mitigation strategies that clearly eliminate or reduce a community's susceptibility to property damage cannot be satisfactorily developed for all hazards. For example, there is little a community can do to minimize damage associated with severe ice and snow storms. For other hazards, however, local governments have clear land-use tools available for minimizing or preventing property damage. Flooding does not cause problems in Rutherford College because of the small number of parcels located within the 100-year floodplain. Nevertheless, the Town's

capacity to prevent or limit damage associated with flooding is greater for this particular hazard compared to other events such as ice and high winds where the Town's options are more limited. The Town will be monitoring and tracking the progress of this current plan over the next five years and will incorporate appropriate changes to the plan during future updates. These revisions to the plan may include new strategies for avoiding and/or better minimizing damage associated with some of these more problematic natural hazards alluded to above.

Table 4. Hazard Mitigation Strategies

Strategy	Types of Hazards this Policy will Target	Responsible (and Support) Parties	Resources	Schedule	Priority
Require & maintain FEMA elevation certificates for new permits for new buildings or improvements to buildings on lots including portions of the 100-year floodplain (CRS 31).	Flooding	Planning Burke County Building Inspections	Local	Ongoing	Low
Revise/update regulatory floodplain maps (CRS 410).	Flooding	FEMA NC DENR NC DEM	State	Ongoing	Low
Revise zoning and subdivision regulations in floodplain areas to better control future development in these hazard susceptible areas.	Flooding	Planning Board Town Council (Planning)	Local	2009-2010	Low
Prepare and implement a Town-wide stormwater management plan to meet the new federal Phase II stormwater regulations.	Flooding	Planning Board Town Council (Planning) (DWQ)	Local	Ongoing	High
Require 50-foot buffers for new development activities along the Catawba River.	Flooding	NC DWQ (Planning)	State	Ongoing	Low
Administer a minimum housing ordinance	Multiple hazards	Town Council (Planning) (Burke County Building Inspections)	Local	Ongoing	Medium
Maintain backup, portable generator for emergency power needs	Multiple hazards	Town Council	Local	Ongoing	High
Obtain short-wave radio to provide direct communication with Burke County EMS	Multiple hazards	Town Council	Local	Completed 2005	Medium
Revise subdivision regulations to require all perennial and intermittent streams be shown on subdivision plats	Flooding	Planning Board Town Council (Planning)	Local	2009-2010	Medium
Trim trees along town power lines as needed.	Ice storms	Town Council (Planning)	Local	Ongoing	High

Note: Abbreviations used in Table 2-1: Federal Emergency Management Agency (FEMA); North Carolina Division of Emergency Management (NC DEM), North Carolina Department of Environment and Natural Resources (NC DENR), and North Carolina Division of Water Quality (NC DWQ).

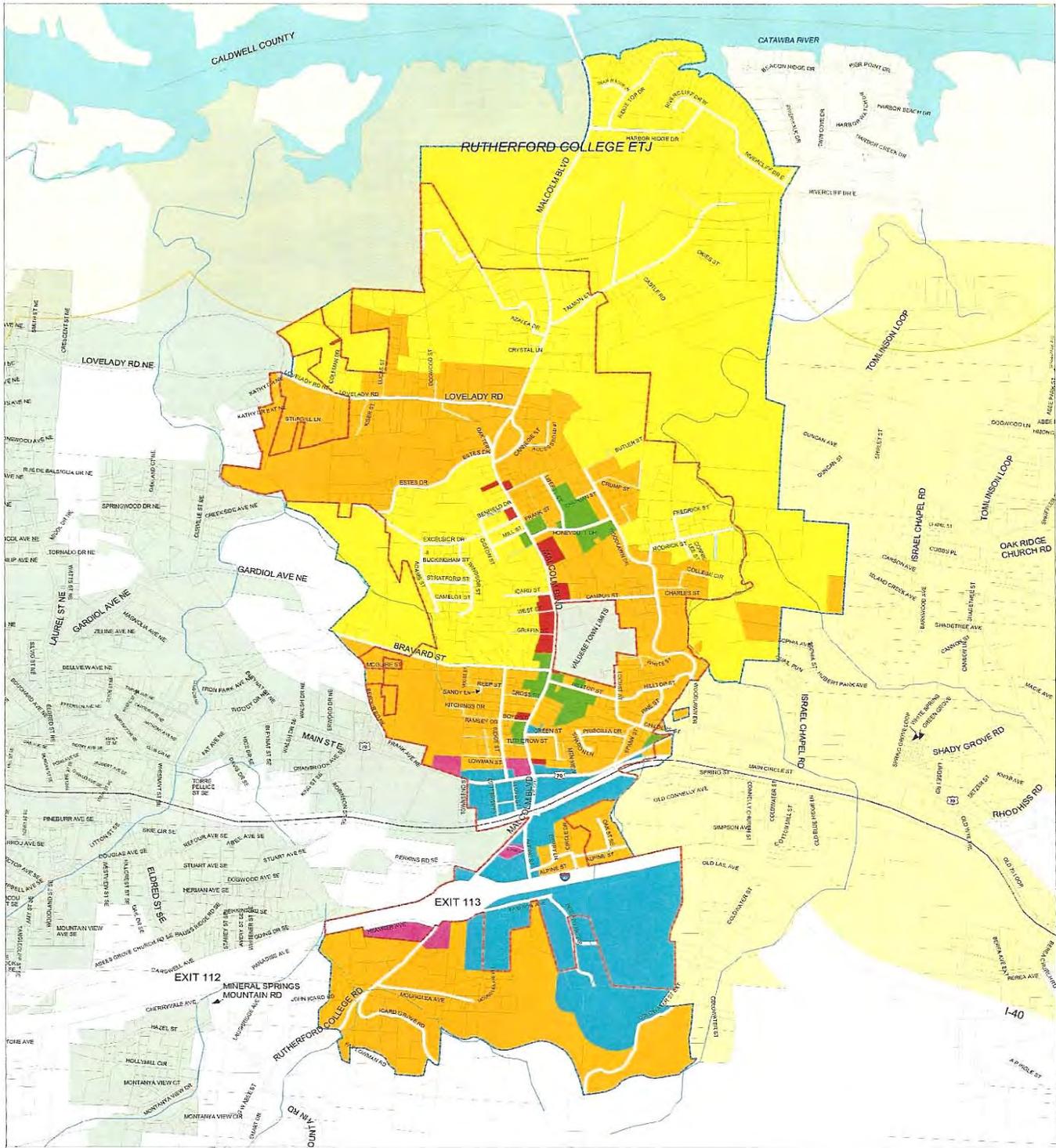
PLAN MAINTENANCE PROCESS

Town staff will meet annually to document progress and to examine ways for improving the effectiveness of the plan. Progress towards achieving plan goals and recommended changes will be reported to the Planning Board and Town Council for their consideration and appropriate action.

The Town of Rutherford College will continue to advise the public about the threat of natural disasters and the Town's mitigation activities. A copy of the approved Hazard Mitigation Plan will be kept at Town Hall for interested citizens. As changes are made to the plan, town staff will publish notices in the newspaper and make presentations during Planning Board and Town Council Meetings. Public comments, questions, and suggestions are always welcome.

Town staff will meet with Burke County and municipal staff periodically to evaluate plan implementation. At the end of each five-year cycle, this planning committee with representatives from each jurisdiction will review and update the plan as needed. Updates or revisions which affect the plan as a whole or impacts any other jurisdiction(s) will require a presentation of findings and recommendations to, and ultimate adoption by, those jurisdictions' boards. Significant changes to the plan will require a minimum of one advertised public hearing before the local government board for allowing public comment on the proposed changes.

Rutherford College will continue to attend annual multi-jurisdictional meetings and work with Burke County and the municipalities of Rhodhiss, Connelly Springs, Valdese, Drexel, Hildebran, Morganton and Glen Alpine to update the Hazard Mitigation Plan.



Zoning Districts

- CB - Central Business
- GM - General Manufacturing
- HB - Highway Business
- O&I - Office and Institutional
- R15 - Residential
- R20 - Residential

Neighboring Municipalities

- Valdese
- Connelly Springs

- County Boundary
- City Limits
- ETJ

Water Supply Watershed
 WS-IV Critical
Note: Remaining municipal limits of Rutherford College are classified as WS-IV Protected.

- Private Roads
- Railroads
- Streams

Official Zoning Map

Town of
Rutherford College



Adopted this the ___ day of _____, 2008

Jimmy O. Huffman, Sr., Mayor Gaynell Donnelly, Town Clerk

Ordinance # _____



This map was created by the Western Piedmont Council of Governments using the latest data provided by the Town of Rutherford College, Burke County GIS, and ESRI, 7/2/07

RESOLUTION OF ADOPTION

Burke County Multi Jurisdictional Hazard Mitigation Plan Revised Addendum Town of Rutherford College

WHEREAS, the citizens and property within the Town of Rutherford College are subject to the effects of natural hazards and man-made hazard events that pose threats to lives and cause damages to property, and with the knowledge and experience that certain areas, i.e., flood hazard areas, are particularly susceptible to flood hazard events; and

WHEREAS, the Town desires to seek ways to mitigate situations that may aggravate such circumstances; and

WHEREAS, the Legislature of the State of North Carolina has in Part 6, Article 21 of Chapter 143; Parts 3, 5, and 8 of Article 19 of Chapter 160A; and Article 8 of Chapter 160A of the North Carolina General Statutes, delegated to local governmental units the responsibility to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry; and

WHEREAS, the Legislature of the State of North Carolina has in Section 1 Part 166A of the North Carolina General Statutes (adopted in Session Law 2001-214—Senate Bill 300 effective July 1, 2001), states in Item (a) (2) “For a state of disaster proclaimed pursuant to G.S. 166A-6(a) after November 1, 2004, the eligible entity shall have a hazard mitigation plan approved pursuant to the Stafford Act”; and

WHEREAS, Section 322 of the Federal Disaster Mitigation Act of 2000 states that local government must develop an All-Hazards Mitigation Plan in order to receive future Hazard Mitigation Grant Program Funds, and

WHEREAS, it is the intent of the Town Council of Rutherford College to fulfill this obligation in order that the Town will be eligible for state assistance in the event that a state of disaster is declared for a hazard event affecting the Town;

WHEREAS, it is the intent of the Town Council of Rutherford College to fulfill this obligation, amend the original resolution of 1st day of November, 2004, and amend every five (5) years or as needed, as required by North Carolina General Statutes, in order that the Town will be eligible for state assistance in the event that a state of disaster is declared for a hazard event affecting the Town;

NOW, therefore, be it resolved that the Town Council of Rutherford College hereby by unanimous vote, has approved the Revised Addendum for the Town of Rutherford College to the Burke County Multi-Jurisdictional Hazard Mitigation Plan.

Adopted this the 4th day of May, 2009

Mayor Jimmy O. Huffman, Sr.
Town of Rutherford College

Attest:

Gaynell Donnelly, Clerk to the Town Council

SEAL

1: Community Profile and Plan Development

Community Profile

The Town of Valdese, located in the foothills region of western North Carolina is just over 7.6 square miles in size, with a population of 5,000. The topography of the Town is consistent with the rolling terrain of the western piedmont. The Town of Valdese is predominately a suburban area consisting of a mixture of industry, business, mercantile, educational and medical facilities, and residential development.

Future growth for the Town of Valdese, following existing trends, will be in the area of residential development. The Town of Valdese is land locked to the east and west by the municipalities of Rutherford College and Drexel, respectfully. This leaves the mountains to the south and Lake Rhodhiss to the north, the only areas susceptible to development. At the present time, we are experiencing residential development in the area of Lake Rhodhiss, located to the north of Town.

The trend for Valdese over the past twenty-five years was for growth to occur on a voluntary basis. There have been no involuntary annexations by the Town in the past twenty-six years. (See attached Zoning and Town Maps)

Since the first adoption of the Hazard Mitigation Plan in 2004, the Town of Valdese has experienced the construction of a new 800 student high school in the northeast section of Town, bringing the total to three public school campuses within the Town's jurisdiction.

Description of Plan Development

This multi-jurisdictional Hazard Mitigation Plan was developed by the Burke County Office of Community Development, Burke County Emergency Services, and various representatives from the following municipalities: Morganton, Valdese, Drexel, Rutherford College, Glen Alpine, Connelly Springs and Hildebran. A variety of stakeholders was involved throughout the plan development process through public meetings held to discuss and review the planning document. Existing land use plans and policies from the county and municipalities were analyzed for information relevant to natural hazard mitigation. Copies of the initial draft document were placed on the County website and placed in the two county libraries. Flyers inviting citizens to attend "drop-in" sessions were placed throughout Burke County and in the local newspaper. Written requests for comments were sent to the Duke Power Company, Rutherford Electric Membership Corporation, Western Piedmont Community College, and Blue Ridge Health Care which operates the two hospitals located in Burke County. The Duke Power Company provided information regarding dam safety and inundation patterns in the event of a dam failure. Finally, formal public hearings (Appendix E Project Schedule) were held as well. (Supplemental Attachment A includes sign-in sheets and public notices.

The plan takes a comprehensive view by identifying and analyzing the natural hazards that could impact Burke County and its municipalities. The bulk of the plan document is contained in the appendices that cover hazard identification and analysis, an assessment of the County's and municipalities vulnerability to natural hazards, an assessment of the County's and municipalities capability to address natural hazards, and evaluation of current County and municipal policies and ordinances that influence hazard mitigation planning such as zoning and land use management.

The essence of the plan is contained in Section Two Hazard Mitigation Strategies, which outlines activities that can be implemented to reduce or eliminate exposure to natural hazards, particularly on reducing exposure to flood damages. Flooding was identified as the natural hazard most likely to impact the greatest number of citizens and the greatest land area. Flooding is also the only natural hazard where the area of impact can be predicted given the rainfall event and the characteristics of the drainage basin. Thus, flood damage prevention has the most potential to reduce citizen exposure to natural hazards.

Now that the plan is complete, the real work effort begins. Over the next several years, the County and municipalities will be implementing the identified hazard mitigation strategies to ensure that the public benefits from this planning effort. As the strategies are implemented, elected and appointed boards and

staff will be promoting the public health, safety and welfare. The plan will also be re-evaluated every five (5) years by a multi-jurisdictional committee of planning and emergency management staff members utilizing information received from well-advertised citizen comment periods and directives from elected and appointed officials. Copies to the approved plan will be posted on the county website and available for public review in the two county libraries and various county / municipal offices.

Statement of the Problem

Appendix A of the Plan provides a description of the types of hazards that affect Burke County and the Town of Valdese, along with historical data on the occurrence, magnitude and likely location of specific natural hazard events. Listed in Table 1 is a specific Hazard Index for the Town of Valdese.

Table 1: Hazard Index for the Town of Valdese

Hazard Type	Likelihood of Occurrence	Potential Area Affected	Potential Impact	Hazard Index Combined Rating
Hurricane	Likely	Medium	Limited	Low
Flood	Likely	Medium	Limited	Moderate
Tornado	Likely	Small	Limited	Low
Thunderstorm	Highly Likely	Medium	Negligible	Moderate
Nor'easter	Possible	Medium	Negligible	Low
Severe Winter Storm	Highly Likely	Medium	Limited	Low
Landslide	Likely	Small	Limited	Low
Dam Failure	Possible	Large	Catastrophic	High
Earthquake	Possible	Medium	Limited	Low
Wild Fire	Highly Likely	Small	Limited	Low
Drought	Possible	Medium	Limited	Low

Calculated occurrence with the Guidelines set forth in the Mitigation Planning Guide for Local Government: Keeping Natural Hazards from Becoming Natural Disasters.

2: Evaluation of Town Policies and Ordinances

Introduction

The Town of Valdese has used its regulatory power to adopt and implement policies, programs, and ordinances that help mitigate the potential harmful effects of natural hazards. The Town has developed and adopted the following local policies and ordinances:

- Comprehensive Land Use Plan / Small Area Plans
- Flood Damage Prevention Ordinance
- Subdivision Ordinance
- Minimum Housing Ordinance
- Building Code Enforcement Ordinance
- Water Supply Watershed Protection Ordinance
- Water Conservation Procedures Ordinance
- Zoning Ordinance

These ordinances establish development regulations for different types of land development including both subdivided and non-subdivided land uses. Each policy, ordinance or regulation has a unique and varying impact on hazard mitigation. Although these policies are not specifically oriented for mitigation purposes, they can be utilized to implemented hazard mitigation initiatives. A summary of current ordinances and policies that may pertain to hazard mitigation is included below.

Town Policies and Ordinances

Zoning

Zoning, the traditional and nearly universal tool available to local governments to control the use of land, has been adopted in all areas of the Town of Valdese. The zoning permit process allows for varying levels of project review including a check on floodplain, watershed status and fire code requirements.

Planning

Valdese has the statutory authority to plan for growth and development including the power to make studies of the Town, to determine growth objectives, to prepare and adopt plans for achieving those objectives and to develop policies, ordinances, and the administrative means to implement plans. The Town Council has created and appointed a Planning Board to serve as an advisory body on planning matters, and employs a fulltime Planning Director. Local government enabling legislation requires that zoning regulations be made in accordance with a comprehensive land use plan. The existence of a comprehensive plan ensures that the Town Board and staff are developing regulations and ordinances that are consistent with the overall goals of the community.

Comprehensive Land Use Plan

The Town of Valdese adopted a Comprehensive Land Use Plan in April of 1968, with the purpose to outline long range growth and development policies for the Town of Valdese. Currently, plans to update the existing Comprehensive Land Use Plan are part to the Town's Five (5) Year Capital Improvement Plan.

Flood Damage Prevention Ordinance

North Carolina General Statutes empower municipalities to regulate designated floodways for the purpose of controlling and minimizing the extent of floods by preventing obstructions which inhibit water flow and increase flood height and damage and other losses (both public and private) in flood hazard areas, and to promote the public health, safety and welfare of citizens of North Carolina in flood hazard areas.

No permit is required for certain uses, including agricultural, wildlife and related uses; ground level area uses such as parking areas, rotary aircraft ports; lawns, gardens, golf courses, tennis courts, parks open space, and similar private and public recreational uses. Existing artificial obstructions in the floodway may not be enlarged or replaced without a permit. Local governments are empowered to acquire existing obstructions by purchase, exchange, or condemnation, if necessary, to avoid flood damages.

The National Flood Insurance Program (NFIP) is administered by the Federal Emergency Management Agency (FEMA). This program makes flood insurance available to a local community which, in exchange, agrees to adopt and enforce a flood damage prevention ordinance to regulate flood-prone areas to help reduce future flood losses. In addition to the availability of flood insurance, the NFIP supports mitigation through floodplain management measures and the flooded property acquisition program. Enforcement of a local Flood Damage Prevention Ordinance is required for participation in the NFIP. The Town of Valdese enforces the Flood Damage Prevention Ordinance (adopted in 1987) for the areas located within its jurisdiction.

The Flood Damage Prevention Ordinance regulates development within floodplains by providing for issuance of development permits for construction, and for the periodic inspections to ensure compliance with the permit. The Flood Damage Prevention Ordinance also provides the authority to issue stop work orders until problems are resolved or corrective actions have been taken, and for revocation of permits in extreme cases.

The Flood Damage Prevention Ordinance requires a local permit prior to development work to ensure development will not aggravate the effects of flooding and that structures are flood damage resistant.

Subdivision Ordinance

Subdivision regulations control the division of land into parcels for the purpose of building development or sale. The regulations require that subdivision plans be approved prior to the sale of land. Subdivision regulations are a more limited tool than zoning and only indirectly affect the type of use of land or minimum specifications for structures.

The Subdivision Ordinance is also used to ensure storm water drainage facilities in developments are properly installed to protect properties from flooding and to lessen development in areas of high risk. Although these regulations currently provide measures that support mitigation initiatives, the ordinance can be amended to include more restrictive standards to further mitigate the effects of flooding.

International Building Code Enforcement

The County enforces the International Building Code within the unincorporated areas of the County and also has the authority to enforce the code in any municipality, which requests by resolution that the County do so within its corporate limits. Currently Burke County enforces the building code in all municipal jurisdictions within the county except the City of Morganton.

Water Supply Watershed Protection Ordinance

The Legislature of the State of North Carolina has, in Chapter 160A, Article 19, Planning and Regulation of Development; and in Chapter 143, Article 21, Watershed Protection Rules, delegated the responsibility or directed local governmental units to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry. Adhering to this legislative mandate, the Town of Valdese, North Carolina enacted into law the Watershed Protection Ordinance.

The provisions of this Ordinance apply to all parcels within the corporate limits and establishes overlay zones (critical and protected) designated as a Public Water Supply Watershed. The overlay zones are defined on the official Zoning Map of the Town of Valdese. Noting applicable exceptions, provisions of the ordinance allows for the continuation of existing development, expansion of structures classified as existing development, and the reconstruction of buildings or built-upon areas.

A minimum one hundred (100) foot vegetative buffer is required for all new development activities that exceed the low density option. Otherwise, a minimum thirty (30) foot vegetative buffer for development activities in the protected area is required along all perennial water, and a minimum one hundred fifty (150) foot vegetative buffer for development activities in the critical area is required along all perennial waters. Artificial stream bank stabilization is permitted. In addition, no new development is allowed in the buffer except for water dependent structures and public projects such as road crossings and greenways and their appurtenances where no practical alternative exists.

Water Conservation Ordinance

The purpose of this ordinance is to maintain and protect the valuable but limited water resources available to the Town for redistribution for essential community and business water uses during droughts and other emergencies that affect the supply of water from the Catawba River and its system of reservoirs. This section seeks to achieve that purpose by providing for the issuance of an official water shortage declaration and the implementation of water conservation controls

during the time when a declaration is in effect. It is intended that the declaration and implementation of water conservation controls shall be consistent throughout the cities, counties and towns having water intakes on the Catawba River, its tributaries and its series of reservoirs.

Public Water and Sewer Extension Policies

Water and sewer services are provided by the Town of Valdese to both areas within the corporate city limits of Valdese and to unincorporated areas of Burke County. The Valdese Town Council maintains control of the water and sewer systems, and has the duty of prescribing and enforcing a full compliance with all rules and regulations governing extension projects and connections to both systems.

Extension of and connection to either water or sewer systems with the Town of Valdese can not be made until proper application has been made and a permit obtained. Such application must be accompanied with a plan or drawing showing the location of the structure, the entire proposed connection from the public lines to the systems terminus.

Catawba River Basin Rules

The North Carolina Division of Water Quality has adopted rules for buffer areas within the Catawba River Basin that will affect development in Burke County. The goal of the rules is to reduce and maintain nutrient loading and to reduce sediment and pollution by controlling the velocity and volume of storm water runoff within this protected river basin.

Burke County’s own buffer rules are more strict than the state rules, and therefore supercede the state requirements. These rules apply to all parcels of land in the county’s planning jurisdiction that lie within 250 feet of the high water mark of Lake James, Lake Rhodhiss, Lake Hickory, and the main stem of the Catawba River. The municipalities enforce the state regulations within their own jurisdiction.

Effectiveness for Hazard Mitigation

The Town of Valdese policies and ordinances are rated in Table 2 as to their effectiveness for hazard mitigation.

Table 2: Effectiveness of Current Policies and Ordinances

Policies and Programs	Effectiveness for Mitigation (low, medium, high)
Comprehensive Land Use Plan	Medium
Subdivision Regulation	Medium
Flood Damage Prevention Ordinance	High
Zoning Ordinance	Medium
Building Code Enforcement Ordinance	Medium
Water Supply Watershed Ordinance	High
Public Water and Sewer Extension Policies	Low
Catawba River Basin Rules	Medium

Policies That Hinder Hazard Mitigation

Existing Town policies and ordinances need to be thoroughly reviewed and, if required, amended to strengthen the Town’s capacity for mitigating damage to lives and property from future hazards.

The development of regulations must always consider the impact on private property rights, on the economic benefits of higher density growth, and on the increase in property values associated with larger lot zoning that may affect affordability and exclude low-income residents from certain areas of the Town. However, not moving forward with development of more stringent land use controls that limit development in hazard prone areas would result in a failure to use all land use regulatory tools available to protect public health, safety, and welfare.

Table 2-1: Hazard Mitigation Activities

Hazard mitigation strategies and goals for reducing long term vulnerabilities for specific natural hazards are outlined in Table 2-1. This table shows that some strategies are targeted and address specific natural hazards, while other goals are more general in nature and address two or more hazards.

Mitigation strategies that clearly eliminate or reduce a community’s susceptibility to property damage can not be satisfactorily developed for all natural hazards. For example, there is little a community can do to minimize damage associated with severe ice and snow storms. However, for other hazards local governments have clear land-use tools available for minimizing or preventing property damage.

Table 2-1:

Note: Abbreviations used in Table 2-1: Federal Emergency Management Agency (FEMA); North Carolina Division of Emergency Management (NC EM), North Carolina Department of Environment and Natural Resources (NC DENR), and North Carolina Division of Water Quality (NC DWQ).

Strategy / Goal	Responsible Parties	Support Parties	Schedule
I. Review/update Flood Damage Prevention Ordinance to ensure maximum protection from flood hazard events (CRS 430) New Flood Ordinance adopted August 6, 2007	Planning Board Town Council	Planning General Services Building Inspections	2003-2006
A. Consider adopting temporary moratorium on new construction and new subdivisions within flood hazard areas until Flood Damage Prevention Ordinance has been updated	N/A	N/A	N/A
B. Raise minimum flood protection level from the base flood elevation (BFE) to minimum 1' or 2' above BFE. All substantially damaged buildings should be elevated to this level. (CRS 430). Consider prohibiting construction or substantial improvement of buildings within the 100-year floodplain	Planning Board Town Council	Planning Building Inspections	Completed Currently at 2' above BFE
C. Track rebuilding and repair activities after severe storms and consider policies/procedures for minimizing repetitive losses.	Planning Town Council Fire Department	Building Inspections General Services	Ongoing
D. Prohibit enclosures to the lower areas of elevated buildings, including breakaway walls. (CRS430)	Building Inspections		Ongoing
E. Continue to require and maintain FEMA elevation certificates for all new permits for new buildings or improvements to buildings on lots including any portion of 100-year floodplain (CRS 31) (See Section VIII.A).	Planning Building Inspections		Ongoing
F. Advise/assist property owners in retrofitting their homes and businesses. Retrofitting means modifying an existing building or yard to protect the property from flood damage.	Planning Building Inspections		Ongoing
II. Revise/update regulatory floodplain maps (CRS 410).	FEMA NCDENR NCDEM	Planning WPCOG	Ongoing (outside control)
III. Complete Community Rating System Application	Planning Board	Planning	Completed
IV. Adopt zoning and subdivision regulations in floodplain areas to better control future development in these hazard susceptible areas.	Planning Board Town Council	Planning	Ongoing Addressed in new Flood Ordinance

V. Acquire destroyed or substantially damaged properties and relocate households (voluntary program) (CRS 520/420).	Not Applicable		
VI. Update 1993 Comprehensive Land Use Plan	Planning Board Town Council	Planning	2007-CIP Awaiting Funding
A. Delineate preferred growth areas and develop area plans for target locations.	Planning Board Town Council	Planning	Ongoing To Be Addressed in Land Use Plan
B. Develop an open space plan; target properties for acquisition/fund acquisition program.	Planning Board Town Council	Planning	Ongoing Awaiting Funding
C. Consider amending subdivision ordinance to provide incentives for clustering to maximize density while preserving flood hazard areas.	Planning Board Town Council	Planning	2003-2006 Addressed in Subdivision Ordinance
D. Adopt policies that discourage growth in flood hazard areas, including policy on not extending public services and utilities into flood hazard zones.	Town Council	General Services	Ongoing Addressed in Subdivision Ordinance
E. Ensure the public is fully informed of the building permit process restrictions on providing service within the 100-year floodplain	Building Inspections	General Services	Ongoing
VII. Step up centralized, coordinated permitting process, including effective filing/permitting system to ensure compliance with floodplain regulations. Count building improvements cumulatively (maintain permit history so when cumulative improvements equal 50% of building value, (substantial improvement) building must be brought up to flood protection standards for new construction). Goal to eventually have all flood hazard endangered buildings brought up to flood protection standards (CRS 430) (Section I. E.).	MIS	Building Inspections Planning Environmental Health Valdese Planning Dept.	2004-2006 Ongoing
VIII. Develop a comprehensive Capital Improvement Plan for public facilities that steers capital projects out of flood prone areas; amend as necessary. Protect new critical facilities by not developing them in designated floodplains.	Town of Valdese	Management All Departments	Ongoing
IX. Maintain library on retrofitting techniques/publicize through bulletins/newsletters (CRS 330/350/360).	Building Inspections FEMA, Corp. of Engineers	FEMA, Corps of Engineers, County Library	Ongoing
X. Continuation and expansion of E-911 Addressing Program to include all municipalities (as possible) with goal to cover entire County with one system.	E-911 MIS	EMS Municipalities	Ongoing
XI. Drainage Systems management (CRS 540).	Town of Valdese Wastewater Dept.	Town of Valdese Planning and Public Works Depts.	Addressed in Watershed Ordinance. Currently in the process of mapping drainage system
A. Establish coordinating committee to ensure that responsible parties communicate to ensure maximum cooperation in developing and maintaining the County's drainage and storm water systems	Planning General Services NRCS Environmental Health		2004-2005 Awaiting Funding at County Level
B. Establish/maintain coordinated inspection program	Building Inspections Planning	General Services NRCS	2004-2006 Currently ongoing within Town of Valdese
C. Debris removal program/problem site corrections	General Services	Planning	Ongoing
D. Prepare countywide storm water management plan covering the Catawba River basin.	NCDENR NRCS	WPCOG	2003-2006 Unknown
XII. Early Warning System A. Ensure adequate evacuation time in case of major hazard event.	Burke Emergency Services Valdese Fire Dept.	NCDOT	Ongoing
B. Evaluate areas with limited evacuation capacity and pursue methods for improving capacity.	Burke Emergency Services Valdese Fire Dept.	NCDOT Planning	Ongoing

Table 2-1: (cont.)

Mid Range (3-5 year) Activities (CRS Activity Code)	Responsible Parties	Support Parties	Schedule
XIII. Acquisition of properties susceptible to flood damage (involuntary program) (CRS 420/510).	Town Council Charitable donations by property owners	NCDENR	2004-2007 Not Applicable
A. Identify properties for public acquisition.	Planning	FEMA NCDENR	2004-2005 On-going
B. Establish list of priority properties for acquisition in the event of another natural disaster.	Planning	FEMA NCDENR	2005 Not Applicable
C. Implement Recreation Plan to provide for integration of publicly acquired land into park or greenway system so hazardous areas remain undeveloped in perpetuity (much more effective than removing structures from isolated parcels).	Planning Parks & Recreation	FEMA NC Parks and Recreation	Ongoing
XIV. Capital Improvements Program	Town Council	Management	2004-2006 Awaiting Funding
A. Develop plan for relocating public infrastructure out of flood hazard areas.	General Services		Not Applicable
B. Establish reserve fund for relocating damaged infrastructure after next natural disaster	Town Council	Management General Services	
C. Establish program for evaluation and improvement of critical services (public and private) – roads, bridges, water, sewer, electricity, etc. – and critical facilities – fire, rescue, medical, etc.	General Services EMS Planning Valdese Fire Dept.	Emergency Services Power & Gas Companies Hospital NCDOT	Ongoing
D. Evaluate flood or access problems for critical facilities, develop recommendations for protecting critical parts, e.g., police and fire command centers. Identify alternate command posts, if necessary	Emergency Services		2004-2007 Ongoing
XV. Establish program for purchase of development rights for floodplain properties. (possible tax deduction for charitable donation by property owner (s).) (CRS 420).	Not Currently Required		
XVI. Develop and implement hazard awareness program (elevation certificates, FIRM data, bulletin on property protection measures and flood insurance, etc.) (CRS 310/320/330/340/440).	Building Inspections	Banks Real Estate Agents Insurance Agents Chamber of Commerce	Ongoing
A. Establish a Flood Awareness Week to publicize hazard and protection measures (CRS 610).	Town Council NC State EM	Emergency Services Schools Media	2005 Addressed in Severe Weather Awareness Week Activities
B. Request that the real estate Multiple Listing Service (MLS) be amended to include notice of flood hazard and the requirement to purchase flood insurance.	Town Council Building Inspections	Planning Real Estate Agents	2004 Not addressed at this time
C. Improve Hazard Warning and Response Plan – warning and evacuating critical facilities, getting persons out of flood prone or isolated areas, controlling vehicles on evacuation routes, evacuation of hazard materials. (CRS 610).	Burke Emergency Services Valdese Fire Dept.	Valdese Police Dept.	Ongoing
XVII. Plan Implementation			
A. Monitor plans to ensure schedules are met.	Valdese Fire Dept. Burke Emergency Services Valdese Planning Dept.	Burke County Planning	Ongoing
B. Develop tracking system to evaluate progress and revise mitigation activities as necessary.	Burke Emergency Services	Planning	Ongoing

C. Track benefits in flood loss reduction	Planning Tax Department Emergency Services	Valdese Planning Dept.	Ongoing
XVIII. Produce annual progress report on how plan is being implemented – send with annual CRS recertification.	Emergency Services	Town of Valdese	Annual

High Wind Activities

The second highest ranked potential natural hazard threat to Burke County and the Valdese area is damage from high winds. There are a number of natural hazards that have the potential to include high wind damage – hurricanes, tornadoes, nor'easters, severe winter storms, and thunderstorms. In 1997, the Federal Emergency Management Agency instituted a new program to help communities and property owners deal with the impact of tornadoes and other high-wind natural hazards.

A list of recommendations to help reduce the devastating effects of high winds is included in Table 2-2. It should be noted that any of these recommendations that go beyond the construction requirements of the North Carolina Building Code may require approval by the North Carolina Building Code Council before they can be legally enforced.

Table 2-2: High Winds Mitigation Activities

Activities	Responsible Parties
Early Warning System/Dissemination of information regarding need to seek shelter in safe room when high winds expected	Emergency Services
Adopt and enforce latest model building codes and national wind engineering standards.	Building Inspections
Ensure that manufactured homes are installed and secured properly.	Building Inspections
Encourage insurance companies to offer lower premium rates to owners who install manufactured homes on permanent foundations or who anchor homes securely.	Chamber of Commerce - Private Housing Committee
Require residential construction to meet latest wind-resistance standards; encourage replacement of doublewide garage doors to improve wind resistance.	Building Inspections
Require new masonry chimneys >6' above roof to have continuous vertical reinforcing steel to help resist high winds. Retrofit existing chimneys.	Building Inspections
Ensure doorframes are securely anchored, especially double doors that can be very dangerous in high winds if not securely fastened.	Building Inspections
Make sure that architectural features are designed, manufactured and installed to limit the creation of wind-borne debris.	Building Inspections
Encourage use of wind-resistant construction techniques.	Building Inspections

3. Hazard Mitigation Plan Evaluation / Revisions and Up-Dates

Evaluation

Town of Valdese staff will meet annually to document progress and to examine ways for improving the effectiveness of the plan. Progress towards achieving plan goals and recommended changes will be reported to the Planning Board, Zoning Board and the Town Council for their consideration and appropriate action.

Plan Revisions and Up-Dates

Town Planning Staff will meet with Burke County and other municipal staff periodically to evaluate plan implementation. At the end of each five year cycle, the planning committee with representatives from each jurisdiction will review and update the Hazard Mitigation Plan as needed. Updates or revisions which affect the plan as a whole or impact any other jurisdiction(s) will require a presentation of findings and recommendations to, and ultimate adoption by, those jurisdiction(s) board(s). Significant changes to the plan will require a minimum of one advertised public hearing before the local government board for allowing public comment on the proposed changes.

Valdese Hazard Mitigation Plan RECORD OF REVISIONS / UP-DATES

PAGE NO.	SECTION	REVISION / UP-DATE
1	1	Update to Community Profile as related to square miles, new areas of development and construction of new high school.
3	2	Addition of Water Conservation Procedures Ordinance
6	2	Summary of Water Conservation Procedures Ordinance
8	Table 2.1	Hazard Mitigation Activities Strategy/Goals
9		Section I Section IV Section VI Section VI.A Section VI.B Section VI.C Section VI.D Section VII Section XI Section XI.A Section XI.B Section XI.C Section XI.D
10		Section XIII

Section XIII.A
Section XIII.B
Section XIV
Section XVI
Section XVI.A
Section XVI.B

ATTACHMENTS:

Attachment One
Attachment Two
Attachment Three

Subdivision Ordinance
Flood Damage Prevention Ordinance
Water Conservation Ordinance

Town of Valdese North Carolina Draft Zoning Map



Zoning Districts:

- D-1 General Business
- D-2 General Business
- D-3 Neighborhood Business
- M-1 General Manufacturing
- O-1 Office Institutional
- R-1 Residential
- R-2A Residential
- R-3 Neighborhood Residential



VALDESE TOWN LIMITS
Water Supply Watershed Critical Area



Adopted this _____ day of

_____ 20__

Mayor _____

Town Manager _____

Planning Board Chairman _____



