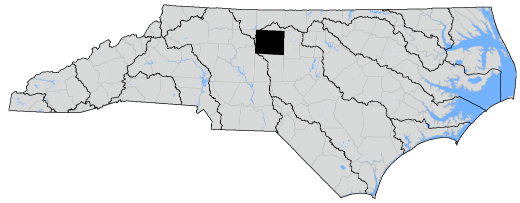
PRELIMINARY FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

A Report of Flood Hazards in

GUILFORD COUNTY, NORTH CAROLINA AND INCORPORATED AREAS



Community Name	Community Number
CITY OF GREENSBORO	375351
CITY OF HIGH POINT	370113
GUILFORD COUNTY	370111
TOWN OF JAMESTOWN	370114
TOWN OF OAK RIDGE	370596
TOWN OF PLEASANT GARDEN	370618
TOWN OF SEDALIA	370614
TOWN OF STOKESDALE	370489
TOWN OF SUMMERFIELD	370622
TOWN OF WHITSETT	370639

NORTH CAROLINA
Cooperating Technical State
FEMA'S COOPERATING TECHNICAL PARTNER

PRELIMINARY: 8/30/2013

REVISED: 8/30/2013

Federal Emergency Management Agency

State of North Carolina

Flood Insurance Study Number

37081CV000

www.fema.gov and www.ncfloodmaps.com

FOREWORD

This countywide Flood Insurance Study (FIS) Report was produced through a unique cooperative partnership between the State of North Carolina and the Federal Emergency Management Agency (FEMA). The State of North Carolina has implemented a long-term approach to floodplain management to decrease the costs associated with flooding. This is demonstrated by the State's commitment to map floodplain areas at the state level. As a part of this effort, the State of North Carolina has joined with FEMA in a Cooperating Technical State (CTS) agreement to produce and maintain this FIS Report and the accompanying digital Flood Insurance Rate Map (FIRM) for North Carolina.

NOTICE TO FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

This FIS has been produced as part of the North Carolina Floodplain Mapping Program. Guilford County, North Carolina, falls under the administrative jurisdiction of Region IV of the Federal Emergency Management Agency (FEMA). Questions concerning this FIS may be directed to the North Carolina Floodplain Mapping Program at www.ncfloodmaps.com, the FEMA Map Assistance Center by calling the toll-free information line at 1-877-FEMA MAP (1-877-336-2627), or by contacting the FEMA Regional Office at the following address:

FEMA, Federal Insurance and Mitigation Administration
Koger Center - Rutgers Building
3003 Chamblee Tucker Road
Atlanta, Georgia 30341
(770) 220-5400

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1.0 Introduction

1.1 The National Flood Insurance Program

In 1968, Congress created the National Flood Insurance Program (NFIP) in response to the rising cost of taxpayer-funded disaster relief for flood victims and the increasing amount of damage caused by floods. The NFIP makes federally backed flood insurance available in communities that agree to adopt and enforce floodplain management ordinances to reduce future flood damage. Federally backed flood insurance is available in more than 19,000 communities across the United States and its territories.

The NFIP is managed by the Federal Insurance and Mitigation Administration of the Federal Emergency Management Agency (FEMA). The Federal Insurance and Mitigation Administration manages the insurance component of the NFIP and oversees the flood hazard mapping and the floodplain management aspects of the program.

The NFIP, through involvement with communities, the insurance industry, and the lending industry, helps reduce flood damage by nearly $800 million a year. Further, buildings constructed in compliance with NFIP building standards suffer approximately 80% less damage annually than those not built in compliance. In addition, every $3 paid in flood insurance claims saves $1 in disaster assistance payments. The NFIP is self-supporting for the average historical loss year, which means that operating expenses and flood insurance claims are not paid by the taxpayer, but through premiums collected for flood insurance policies.

Additional information of interest to homeowners, community officials, insurance companies, lenders, and study contractors is available in Section 9.0 of this FIS Report and on the NFIP Internet homepage at http://www.fema.gov/business/nfip/.

1.2 Purpose of this Flood Insurance Study

Flood Insurance Studies (FISs) are one of the primary means by which the NFIP administers the National Flood Insurance Act of 1968, the Flood Disaster Protection Act of 1973, and the National Flood Insurance Reform Act of 1994. FISs develop flood risk data that are used to establish actuarial flood insurance rates. The information in this FIS Report will also be used by Guilford County and the jurisdictions therein (hereinafter referred to collectively as Guilford County) to facilitate the adoption and maintenance of floodplain management ordinances, which form the basis of communities' continued participation in the NFIP. Minimum requirements for participation in the NFIP are set forth in Title 44, Part 60, Section 3 of the Code of Federal Regulations (44 CFR 60.3). In some States and/or communities, floodplain management criteria or regulations may exist that are more restrictive than the minimum Federal requirements. In such cases, the more restrictive criteria will take precedence, and the State and/or community (or other jurisdictional agency) will be able to explain them.

This FIS investigates the existence and severity of flood hazards in, or revises and updates previous FISs for, the geographic area of Guilford County, North Carolina, including the jurisdictions listed in Table 1.

Table 1 - Jurisdictions in Guilford County

Community	Included in this FIS	If Not Included, Location of Flood Hazard/Flood Insurance Rate Data
CITY OF GREENSBORO	Yes	*
CITY OF HIGH POINT	Yes	*
GUILFORD COUNTY	Yes	*
TOWN OF JAMESTOWN	Yes	*
TOWN OF OAK RIDGE	Yes	*
TOWN OF PLEASANT GARDEN	Yes	*
TOWN OF SEDALIA	Yes	*
TOWN OF STOKESDALE	Yes	*
TOWN OF SUMMERFIELD	Yes	*
TOWN OF WHITSETT	Yes	*

1.3 FIS Components

A Flood Insurance Study (FIS) is an analysis of flood hazards, typically presented as a set of Flood Insurance Rate Map (FIRM) panels and the FIS Report, which includes a set of Flood Profiles and/or Water-surface elevation rasters.

Flood Insurance Study Report

The FIS Report provides a context for the information shown on the FIRM, as well as a summary of the data upon which the analyses are based. It also includes an index of sources of additional information on the NFIP.

2.0 Floodplain Management Applications

Flood events of a magnitude expected to occur with a 10%, 2%, 1%, or 0.2% annual chance have been selected as having special significance for developing sound floodplain management programs. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10%, 2%, 1%, and 0.2% chance, respectively, of being equaled in any given year. Therefore, FIS Reports typically determine water-surface elevations for floods with these probabilities. The FIRM delineates 1% and 0.2% annual chance floodplains and 1% annual chance floodway boundaries, and depicts 1% annual chance flood elevations, rounded to the nearest foot, to assist in developing floodplain management measures.

2.1 Floodplains

To provide a national standard without regional discrimination, the 1% annual chance flood has been adopted by FEMA as the base flood for floodplain management purposes. A 1% annual chance flood, or base flood, is defined as that having a 1% chance of being equaled or exceeded in any given year. The 1% annual chance floodplains shown on the FIRM identify areas that are expected to be inundated by the 1% annual chance flood. This 1% annual chance floodplain is also called a Special Flood Hazard Area (SFHA), where the NFIP’s floodplain management regulations must be enforced by the community as a condition of participation in the NFIP. The 0.2% annual chance floodplain is employed to indicate additional areas of flood risk associated with exceptionally severe floods.

2.2 Floodways

Encroachment on floodplains such as that caused by placement of structures and fill reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, floodways are provided as a tool to assist local communities in this aspect of floodplain management. Under this concept, the 1% annual chance riverine floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights. Figure 1, “Floodway Schematic,” illustrates this principle. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this FIS are presented to local agencies as a minimum standard that can be adopted directly or that can be used as a basis for additional encroachment studies.

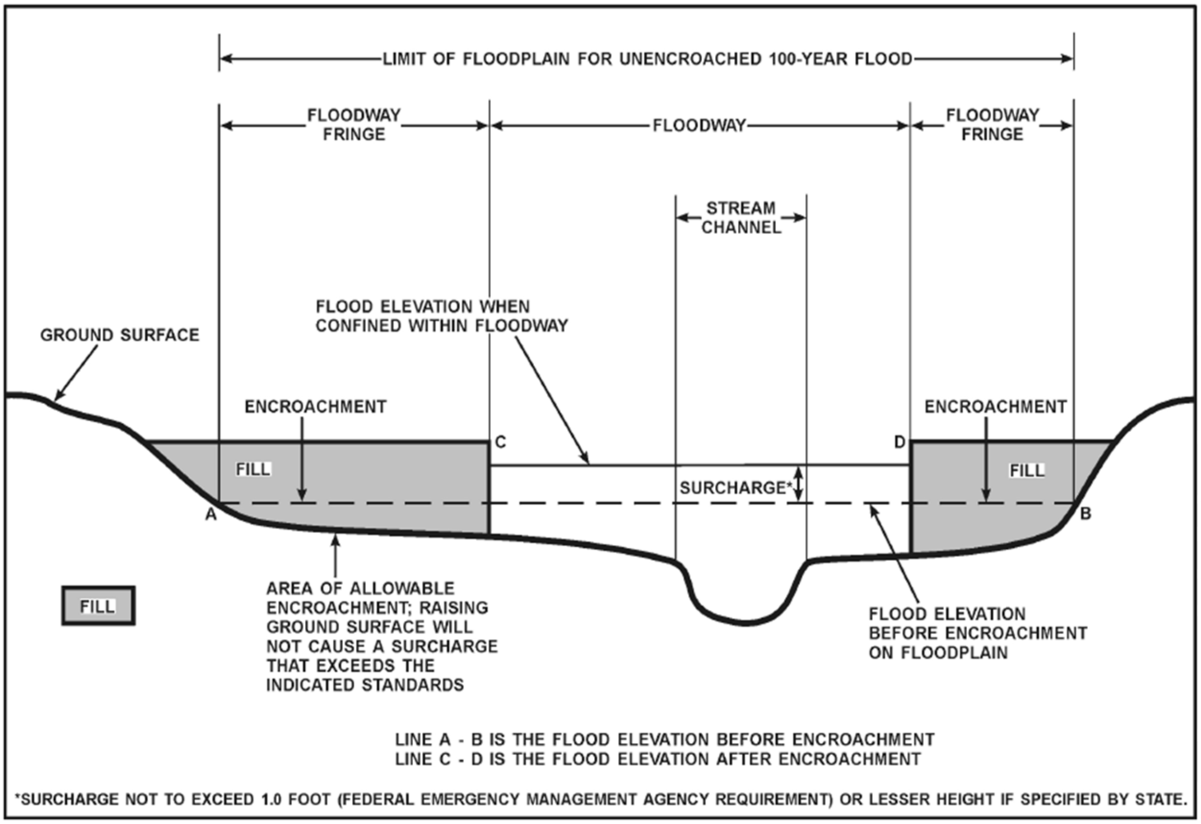

Figure 1- Floodway Schematic

2.3 Base Flood Elevations

The hydraulic characteristics of flooding sources were analyzed to provide estimates of the elevations of floods of the selected recurrence intervals. The Base Flood Elevation (BFE) is the elevation of the 1% annual chance flood. These BFEs are most commonly rounded to the whole foot, as shown on the FIRM, but in certain circumstances or locations they may be rounded to 0.1 foot. Cross section lines shown on the FIRM may also be labeled with the BFE rounded to 0.1 foot. Whole-foot BFEs derived from engineering analyses that apply to coastal areas, areas of ponding, or other static areas with little elevation change may also be shown at selected intervals on the FIRM. Cross sections with BFEs shown on the FIRM correspond to the cross sections shown in the Floodway Data table and Flood Profiles in this FIS Report. BFEs are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM.

2.4 Watershed Characteristics

Because a FIS is a probability analysis that may not account for some of the factors listed below, communities are strongly encouraged to consider adopting more restrictive or higher floodplain management criteria or ordinances than the minimum Federal requirements. Communities may also increase the validity of their flood hazard data by investing in continuous maintenance of river gages (see the Data Validity and Reliability paragraph below). If the U.S. Geological Survey (USGS) or other agencies do not maintain gages on the flooding sources of interest, partnerships with the USGS may be pursued, or local gages may be installed. For more information, see Section 9.0 of this report.

This flood hazard study represents an analysis of certain watershed characteristics, some of which are summarized as follows:

Drainage Area

In general, streams that drain larger areas have greater flood hazards. FISs, in North Carolina, do not typically analyze flood hazards in places with rural drainage areas of less than one square mile and within urban drainage areas of less than ½ square mile.

Soil Permeability and Infiltration

Differences in the types of soil and the amount of vegetation in a watershed have a significant effect on the amount of water that the soil can absorb; soils with a high sand content absorb much more water than soils with a high clay content. The presence of vegetation increases infiltration; the presence of pavement decreases infiltration and also speeds runoff to receiving waters. As soil permeability and infiltration decrease, the volume and rate of overland flow increases.

Soil Moisture Conditions

In addition to soil permeability and infiltration, the level of the water table helps determine the saturation point, beyond which no water is absorbed. As rainfall duration increases, the height of the water table increases.

Channel and Floodplain Geometry

The geometric contour of a streambed, termed channel geometry, and the geometric contour of a floodplain determine the volume of water that a channel can hold and partially determine the rate at which water flows through it.

Channel and Floodplain Roughness

The roughness of a surface affects the characteristics of runoff whether the water is on the surface of the watershed or in the channel.

FIS Reports include analyses of how these factors will combine to produce overland flow patterns during floods that have a certain probability of occurring in any given year. Although the recurrence interval represents the long-term average period between floods of a specific magnitude, rare floods could occur at shorter intervals or even within the same year. The risk of experiencing a rare flood increases when longer periods are considered. For example, the risk of having a flood which equals or exceeds the 1% annual chance flood (1% chance of annual exceedence) in any 50-year period is approximately 40% (4 in 10), but for any 90-year period, the risk increases to approximately 60% (6 in 10).

It is important to note that the 1% annual chance flood is used as the national standard to allow a consistent approach to floodplain management, flood hazard assessment, and flood hazard mapping. In any given community, a number of factors may result in flooding characteristics that do not conform to predicted conditions. Therefore, the determination that an area is not shown on the FIRM as being within a Special Flood Hazard Area is no guarantee that it will not flood during a 1% annual chance flood. Examples of these factors include Data Validity and Reliability; Developmental and Topographic Changes Over Time; Erosion, Deposition, and Debris Flow; and Meandering and Lateral Migration.

Data Validity and Reliability

Certain types of analysis methods yield more justifiable characterizations of flood hazards. For example, a gage analysis, to determine peak discharges, is based on actual measurements of watershed conditions over time and, therefore, is typically considered the most accurate method of hydrologic analysis. However, it is not feasible to install enough gages to gather data on every stream. In addition, for many of the gage sites that do exist, there are interruptions in the period of record. The usefulness of gage data for the purpose of predicting flooding behavior decreases with interruptions in the period of record; predicted flooding conditions over a 100-year period based on 20 years of measurements spread over a 35-year period are less valid than those based on 30 years of continuous measurements. A regression analysis is typically considered the best method in the absence of gage data, as it uses gage data from watersheds with similar characteristics to estimate flood frequency and magnitude in an ungaged watershed. Regression equations reflect average conditions for a region; therefore, the results will not exactly match the results of a gage analysis at a particular location. The standard errors of the North Carolina rural regression equations range from 44 to 51 percent for estimates of the 1% annual chance flood. That means the difference between the results of the regression equation and the gage analysis for approximately two-thirds of the locations that gage data exists are within 44 to 51 percent of the gage analysis results. A rainfall-runoff hydrologic analysis may be used for gaged or ungaged watersheds, and can estimate the effects of storage areas and flood control structures and measures. This method is most valid when calibrated against historical data.

Developmental and Topographic Changes Over Time

A FIRM is based on the best topographic and planimetric information available to FEMA and the State of North Carolina at the time the study is produced. In time, however, development and/or natural phenomena can alter the physical characteristics of a watershed and its drainage channels, resulting in changes in the flood hazards in those areas. For example, constructing a housing subdivision reduces the amount of soil that is available to absorb water; this in turn causes an increase in the volume of surface water that flows into the channel.

Erosion, Deposition, and Debris Flow

The flood hazards shown on a FIRM are based on the assumption of unobstructed flow. The FIRM does not reflect an analysis of areas that are subject to erosion caused by the increased water-surface elevations and velocities that occur during flooding. In addition to the risks of landslides or a weakening of the ground underneath roads or structures, any sediment that is removed from one location will be deposited in another; accumulated deposits may have a pronounced effect on flood hazards in those areas. Similarly, debris such as fallen trees or branches, litter, or other items may obstruct stream channels or hydraulic structures, increasing water-surface elevations, velocities, and floodplain width.

Meandering and Lateral Migration

FISs are based on the assumption that channel geometry will remain stable during normal drainage and during flood events. This assumption is valid for most streams, which flow over bedrock or between bedrock outcroppings that form non-alluvial channels. However, alluvial streams change the channel geometry with time, significantly so during flood events. Alluvial streams are subject to erosion and deposition, which may result in braided or meandering channels. Streams of this type may be characterized by lateral migration, or channel shifting, in which the stream may change course entirely during a flood. Whenever clear evidence is available, a FIRM will identify the alluvial nature of a studied flooding source and designate wider floodways to allow for potential migration. However, these floodways are based on qualitative assessments and not on quantitative geomorphic and engineering analyses.

3.0 Insurance Applications

For flood insurance applications, the FIRM designates flood insurance rate zones and, in 1% annual chance floodplains that were studied by detailed methods, shows selected whole-foot BFEs or average depths. Insurance agents use the zones and BFEs in conjunction with information on structures and their contents to assign premium rates for flood insurance policies. Table 2, “Flood Zone Designations,” includes a description of each type of flood hazard zone.

Table 2 - Flood Designations

Zone	Description
A	Zone A is the flood insurance rate zone that corresponds to the 1% annual chance floodplains that are determined in the FIS Report by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no Base Flood Elevations or depths are shown within this zone.
AE	Zone AE is the flood insurance rate zone that corresponds to the 1% annual chance floodplains that are determined in the FIS Report by detailed methods. In most instances, whole-foot Base Flood Elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.
AH	Zone AH is the flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot Base Flood Elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.
AO	Zone AO is the flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the detailed hydraulic analyses are shown within this zone.
AR	Zone AR is the flood insurance rate zone that corresponds to areas that were formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
A99	Zone A99 is the flood insurance rate zone that corresponds to areas of the 1% annual chance floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No Base Flood Elevations or depths are shown within this zone.
V	Zone V is the flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Because approximate hydraulic analyses are performed for such areas, no Base Flood Elevations are shown within this zone.
VE	Zone VE is the flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Whole-foot Base Flood Elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.
X	Zone X is the flood insurance rate zone that corresponds to areas outside the 0.2% annual chance floodplain, areas within the 0.2% annual chance floodplain, and to areas of 1% annual chance flooding where average depths are less than 1 foot, areas of 1% annual chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1% annual chance flood by levees. No Base Flood Elevations or depths are shown within this zone.
X (Future)	Zone X (Future Base Flood) is the flood insurance risk zone that corresponds to the 1-percent-annual-chance floodplains that are determined based on future-conditions hydrology. No BFEs or base flood depths are shown within this zone.
D	Zone D is the flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.

3.1 Coastal Barrier Resources System

This section is not applicable to this FIS project.

4.0 Area Studied

Guilford County is found in the Piedmont region of North Carolina. It is surrounded by Rockingham County to the north, Alamance County to the east, Randolph County to the south, Davidson County to the southwest, and Forsyth County to the west.

4.1 Basin Description

Table 3, “Basin Description” contains a description of the characteristics of the HUC-8 sub-basins within which each community falls. The table includes the main flooding sources within each basin, a brief description of the basin, and its area.

Table 3 - Basin Description

HUC-8 Sub-Basin Name	HUC-8 Sub-Basin Number	Primary Flooding Source	Description	HUC Area (square miles)
Deep	03030003	Deep River	The Deep River Basin flows out of southeast Forsyth County. From there it continues southeast, draining parts of Guilford, Randolph, Moore, and Lee Counties before emptying into the Cape Fear River in Chatham County.	1,450
Haw	03030002	Haw River	The Haw River Basin begins in eastern Forsyth County, flowing across low, rolling hills. The basin drains large portions of Guilford, Alamance, and Chatham counties before entering B. Everett Jordan Lake at the headwaters of the Cape Fear River.	1,707
Lower Yadkin	03040103	Yadkin River	The Lower Yadkin River Basin begins in the Southeast corner of Forsyth County and drains southeast across the North Carolina Piedmont Region including significant portions of Davidson, Randolph, and Rowan Counties ending at the Upper Pee Dee River Basin.	1,190
Upper Dan	03010103	Dan River	The Upper Dan River Basin begins in Franklin County, Virginia, and then follows the Dan River draining areas near Stokes and Rockingham Counties in North Carolina. The basin breaks along the Dan River near Danville, Virginia.	2,056

4.2 Principal Flood Problems

Table 4, “Principal Flood Problems” is not applicable in Guilford County.

4.3 Historic Flood Elevations

Hurricane Floyd

(9/16/1999)

Hurricane Floyd made landfall near Wilmington with category two winds of 105 to 110 mph. Rainfall totals from Floyd were as high as 15 to 20 inches over portions of eastern North Carolina; with a record of 23.45 inches of rain falling in the month of September at Wilmington, NC. This breaks the previous record of 21.12 inches set in July 1886. These rains combined with saturated ground from previous rain events, including Hurricane Dennis, to produce an inland flood disaster. There were 74 deaths in the United States, including 52 in North Carolina, due to drowning from flood waters. This makes Floyd the deadliest U.S. hurricane since Agnes in 1972. Data from the USGS indicate that eleven of their stream gage monitoring sites in North Carolina (Ahoskie, Rocky Mount, Hilliardston, White Oak, Enfield, Tarboro, Lucama, Hookerton, Trenton, Chinquapin, and Freeland) exceeded 0.2% annual chance flood levels due to Floyd. Total losses in North Carolina approach $5 billion with an estimated $3.5 billion in damages to North Carolina homes, businesses, roads, and infrastructure. Floyd passed relatively close to the entire U.S. east coast, justifying hurricane warnings from Florida to Massachusetts and requiring an estimated two million people to evacuate. The last hurricane to require warnings for as large a stretch of coastline was Hurricane Donna in 1960.

Hurricane Bonnie

(8/26/1998)

The landfall location of Bonnie was in southern North Carolina near Cape Fear very close to landfall of both Hurricanes Bertha and Fran in 1996. Even though a powerful storm, damage from Bonnie was much less than Fran, which was also Category 3. Winds gusted up to 100 knots and storm tides of 5 to 8 feet above normal were reported mainly in eastern beaches of Brunswick County, while a storm surge of 6 feet was reported at Pasquotank and Camden Counties in the Albemarle Sound.

Hurricane Fran

(9/5/1996)

The landfall location of Fran near the city of Wilmington and its progression into the Raleigh-Durham area caused an estimated $1.275 billion in damage in North Carolina alone. Fran hit with gusts up to 105 mph and a storm surge of approximately 16 feet. Over $1 billion in damage was reported in North Topsail Beach and Surf City and 23 people were killed.

Hurricane Bertha

(7/12/1996)

1996 was a damaging year in the hurricane history of North Carolina. Tropical Storm Arthur, Hurricane Bertha, and Hurricane Fran all made direct landfall on the North Carolina coastline. It was the most active tropical cyclone season in the state since 1955, when Hurricanes Connie, Diane, and Ione all hit the coast. Bertha entered North Carolina in North Topsail Beach with 105 mph gust and a storm surge of approximately 5 feet.

Hurricane Gloria

(9/26/1985)

The landfall location of Gloria was Cape Hatteras, with 90 knot winds and a storm surge of approximately 6-8 feet.

Hurricane Diana

(9/13/1984)

The landfall location of Diana was 38 miles south of Wilmington with 90 mph winds at its closest approach to Wilmington. Diana had 115 mph sustained winds before landfall. Storm surge was approximately 5-6 feet.

Table 5, "Historic Flood Elevations" is not applicable in Guilford County.

4.4 Flood Protection Measures

Flood protection measures may be structural (such as levees, dams, and reservoirs) or non-structural (such as land-use management ordinances, policies, or practices).

Table 6, "Non-Levee Flood Protection Measures" is not applicable in Guilford County.

Table 7, "Levees" is not applicable in Guilford County.

4.5 Scope of Study

For this map maintenance revision, a scoping meeting was held in Guilford County to present the results of initial research to the county and communities within the county and to discuss their floodplain mapping needs. The county and communities were asked to provide input on proposed study priorities and analysis methods. These meetings resulted in the identification of flooding sources having a floodplain mapping need. Map Maintenance Plans were developed based on the results of the scoping meetings and were both mailed to each jurisdiction within Guilford County and posted to the State's website at www.ncfloodmaps.com.

Draft basin plans were developed based on the results of the initial scoping meetings. Final scoping meetings were held by the State and FEMA to provide counties and communities an overview of the draft basin plans, including the proposed scope and schedule for the project, and to provide an opportunity for additional county and community input. After the final scoping meeting was held, the Final Basin Plans were produced.

This FIS covers the geographic area of Guilford County, North Carolina, and all jurisdictions therein. The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction. Limits of detailed study are indicated on the Flood Profiles and/or Water-surface elevation rasters and/or the FIRM.

Table 8P, "Flooding Sources Studied by Detailed Methods: Revised or Newly Studied (Preliminary)" is not applicable in Guilford County.

Table 9P, "Flooding Sources Studied by Detailed Methods: Redelineated (Preliminary)" is not applicable in Guilford County.

Table 10P, "Flooding Sources Studied by Detailed Methods: Limited Detailed (Preliminary)", lists flooding sources that were newly studied by limited detailed methods or were previously studied by limited detailed methods and had a change in backwater elevation due to flooding effects from a newly studied flooding source.

Table 10P - Flooding Sources Studied by Detailed Methods: Limited Detailed (Preliminary)

Source	Riverine Sources		Affected Communties
	From	To	
Stinking Quarter Creek	The confluence with Stinking Quarter Creek	Approximately 1 mile downstream of Kimesville Road	Guilford County

Table 8, "Flooding Sources Studied by Detailed Methods", lists all flooding sources within the county that were studied by detailed methods for this FIS and previous FISs.

Table 8 - Flooding Sources Studied by Detailed Methods: Revised or Newly Studied

Source	Riverine Sources		Affected Communties
	From	To	
Back Creek	Approximately 50 feet downstream of the confluence of Back Creek Tributary (Stream No. 90)	Approximately 185 feet upstream of NC 100	City Of Burlington Guilford County Town Of Gibsonville

Table 9, “Flooding Sources Studied by Detailed Methods: Redelineated”, lists all flooding sources that were studied by detailed methods for the pre-statewide FIS and redelineated for previous FISs. These flooding sources were not part of this revision and their effective analyses remain valid.

Table 9 - Flooding Sources Studied by Detailed Methods: Redelineated

Source	Riverine Sources		Affected Communties
	From	To	
Big Alamance Creek	Approximately 2.1 miles upstream of confluence of Gunn Creek	Approximately 75 feet upstream of the confluence of West Back Creek	City Of Burlington Guilford County
Haw River	The Chatham / Alamance County boundary	The upstream side of Stigall Road	City Of Burlington
North Little Alamance Creek (Stream No. 72)	The confluence with Big Alamance Creek (Stream No. 68)	Approximately 150 feet upstream of US Route 421	Guilford County

Table 10, “Flooding Sources Studied by Detailed Methods: Limited Detailed”, lists all flooding sources within the county that were studied by limited detailed methods for either this FIS or previous FISs.

Table 10 - Flooding Sources Studied by Detailed Methods: Limited Detailed

Source	Riverine Sources		Affected Communties
	From	To	
Back Creek Tributary 2	Confluence with Back Creek	Approximately 0.7 mile upstream of Alamance/Guilford County boundary	Guilford County
Beaver Creek	Confluence with Lake MacIntosh	Alamance/Guilford County boundary	Guilford County
Big Alamance Creek	The confluence of Big Alamance Creek Tributary 1 (Stream No. 69)	Approximately 1.4 miles upstream of Minden Road	City Of Burlington Guilford County
Chocolate Creek	The confluence with North Prong Stinking Quarter Creek (Stream No. 88)	Approximately 850 feet downstream of Ball Road	Guilford County
Haw River Tributary 15	The confluence with Haw River (Stream No. 44)	Approximately 0.6 mile upstream of Lee Lewis Road	Guilford County
North Prong Stinking Quarter Creek	Confluence with Stinking Quarter Creek	Alamance/Guilford County boundary	Guilford County
North Prong Stinking Quarter Creek Tributary	The confluence with North Prong Stinking Quarter Creek (Stream No. 88)	Approximately 250 feet upstream of Coble Church Road	Guilford County
South Prong Stinking Quarter Creek Tributary 1	The confluence with Stinking Quarter Creek	Approximately 1.1 miles upstream of Smithwood Road	Guilford County
Stinking Quarter Creek	Approximately 350 feet upstream of the confluence with Rock Creek	The confluence with South Prong Stinking Quarter Creek	Guilford County
Stinking Quarter Creek	The confluence with Stinking Quarter Creek	Approximately 1 mile downstream of Kimesville Road	Guilford County
Stinking Quarter Creek	The confluence with Stinking Quarter Creek	The Guilford/Randolph County boundary	Guilford County
Stinking Quarter Creek Tributary 2	The confluence with Stinking Quarter Creek	Approximately 0.7 mile upstream of the confluence with Stinking Quarter Creek	Guilford County
Stinking Quarter Creek Tributary 3	The Randolph/Guilford County boundary	Approximately 1.0 mile upstream of Richland Church Road	Guilford County

Table 11, “Stream Name Changes” is not applicable in Guilford County.

Table 12, “Letters of Map Revision” is not applicable in Guilford County.

5.0 Engineering Methods

For the flooding sources in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that are expected to be equaled or exceeded at least once on the average during any 10-, 25-, 50-, 100-, or 500-

year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 25-, 50-, 100-, and 500-year floods, have a 10-, 4-, 2-, 1-, and 0.2% annual chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 100-year flood (1-percent chance of annual exceedance) during the term of a 30-year mortgage is approximately 26 percent (about 3 in 10); for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

5.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak elevation-frequency relationships for floods of the selected recurrence intervals for each flooding source studied. Hydrologic analyses are typically performed at the watershed level. Depending on factors such as watershed size and shape, land use and urbanization, and natural or man-made storage, various models or methodologies may be applied. For details on the county's hydrologic analyses, the hydrologic report is available by request.

A summary of the drainage area-peak discharge relationships for the flooding sources studied by detailed methods is shown in Table 13, "Summary of Discharges".

Table 13 - Summary of Discharges

Flooding Source		Discharges (cfs)			
Location	Drainage Area (square miles)	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Back Creek					
Eastern county boundary	6.30	*	*	2,400	*
Approximately 1,000 feet downstream of Springwood Church Road (State Route 2748)	5.60	*	*	2,320	*
Approximately 150 feet upstream of Springwood Church Road (SR 2748)	4.70	926	1,600	1,950	2,950
Approximately 300 feet upstream of US Hwy 70/Burlington Road	3.20	725	1,270	1,550	2,360
Approximately 0.4 mile upstream of US Hwy 70/Burlington Road	2.90	673	1,180	1,440	2,200
Approximately 0.4 mile downstream of NC 61/100	1.90	507	899	1,110	1,700
Back Creek Tributary (Stream No. 90)					
At mouth	1.30	530	1,070	1,420	2,600
Sewage Treatment Plant	1.00	450	920	1,210	2,240
Back Creek Tributary 2					
Alamance/Guilford County boundary	0.90	*	*	939	*
Beaver Creek					
At the Guilford/Alamance County boundary	9.00	*	*	3,370	*
Approximately 0.6 mile upstream of Holts Store Road	3.60	*	*	1,900	*
Approximately 0.9 mile downstream of Mount Hope Church Road	2.90	*	*	1,660	*
Approximately 0.6 mile downstream of Mount Hope Church Road	1.80	*	*	1,230	*
Approximately 2,000 feet upstream of Mount Hope Church Road	1.30	*	*	995	*
Big Alamance Creek					
At the Guilford/Alamance County boundary	114.00	*	*	17,200	*
Just upstream of confluence of North Little Alamance Creek (Stream No. 72)	50.50	*	*	11,150	*
Chocolate Creek					
At mouth	4.00	*	*	2,050	*
Approximately 0.5 mile downstream of NC 62	3.90	*	*	2,000	*
Approximately 1.0 mile upstream of NC 62	2.90	*	*	1,670	*
Approximately 2.1 miles upstream of NC 62	1.90	*	*	1,280	*
Haw River Tributary 15					
Alamance/Guilford County boundary	0.90	*	*	680	*

Table 13 - Summary of Discharges

Flooding Source		Discharges (cfs)			
Location	Drainage Area (square miles)	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
North Little Alamance Creek (Stream No. 72)					
At mouth	62.00	*	*	12,400	*
North Prong Stinking Quarter Creek					
Approximately 0.5 mile downstream of Ferguson Road	18.00	*	*	5,210	*
Approximately 300 feet upstream of Ferguson Road	17.00	*	*	5,040	*
Approximately 25 feet upstream of confluence of Chocolate Creek	12.30	*	*	4,100	*
Approximately 420 feet downstream of Alamance Church Road	12.00	*	*	4,050	*
Approximately 1,100 feet downstream of Phillippi Road	11.00	*	*	3,840	*
Approximately 0.6 feet upstream of Phillippi Road	10.30	*	*	3,670	*
Approximately 25 feet upstream of confluence with North Prong Stinking Quarter Creek Tributary 1	6.20	*	*	2,680	*
Approximately 1,100 feet downstream of Bowman Dairy Road (SR 3360)	5.20	*	*	2,410	*
Approximately 0.7 mile upstream of Bowman Dairy Road	4.20	*	*	2,110	*
Approximately 600 feet upstream of Smithwood Road	3.00	*	*	1,690	*
Approximately 0.9 mile downstream of Bulb	1.00	*	*	868	*
North Prong Stinking Quarter Creek Tributary					
At mouth	3.00	*	*	1,720	*
Approximately 100 feet upstream of Bowman Dairy Road	2.90	*	*	1,650	*
Approximately 2,000 feet downstream of NC 62	1.80	*	*	1,220	*
Approximately 70 feet upstream of NC 62	1.60	*	*	1,130	*
Approximately 30 feet upstream of Coble Church Road	1.20	*	*	983	*
South Prong Stinking Quarter Creek					
At mouth	7.50	*	*	3,010	*
Approximately 900 feet upstream of mouth	6.40	*	*	2,730	*
Approximately 1,300 feet upstream of mouth	6.30	*	*	2,710	*
Approximately 0.7 mile downstream of Smithwood Road	5.30	*	*	2,430	*
Approximately 130 feet downstream of Smithwood Road	4.30	*	*	2,140	*
South Prong Stinking Quarter Creek Tributary 1					
At mouth	5.70	*	*	2,550	*
Approximately 1,500 feet downstream of Kimesville Road	5.30	*	*	2,430	*
Approximately 1,900 feet downstream of Humble Road	4.40	*	*	2,170	*
Approximately 1,100 feet upstream of Humble Road	3.50	*	*	1,870	*
Approximately 150 feet upstream of Layton Road	2.70	*	*	1,580	*
Approximately 0.6 mile upstream of Layton Road	1.80	*	*	1,260	*
Stinking Quarter Creek					
Approximately 0.7 mile downstream of Alamance Church	14.30	*	*	4,530	*
Approximately 600 feet upstream of Alamance Church Road	14.20	*	*	4,500	*
Stinking Quarter Creek Tributary 2					
At mouth	2.30	*	*	1,440	*
Approximately 0.7 mile upstream of mouth	1.50	*	*	1,100	*

Table 14, “Summary of Stillwater Elevations” is not applicable in Guilford County.

Table 15, “Gage Information”, lists the stream gages located in Guilford County, including the drainage area of the flooding source at the gage and the period of record available at the time of the publication of this FIS Report.

Table 15 - Gage Information

Gage Number	Flooding Source	Site Name	Drainage Area (square miles)	Period of Record	
				From	To
02096700	Big Alamance Creek	USGS 02096700 BIG ALAMANCE CREEK NEAR ELON COLLEGE, NC	116.00	1945	1980
02096500	Haw River	Haw River at Haw River	606.00	1929	2011
02096960	Haw River	Haw River near Bynum, NC	1275.00	1974	2011
02098198	Haw River	HAW R BELOW B. EVERETT JORDAN DAM NR MONCURE NC	1690.00	1980	1992

5.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the flood elevations for the selected recurrence intervals. Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles and/or Water-surface elevation rasters. For stream segments for which BFEs were computed, selected cross-section locations are also shown on the FIRM. Flood Profiles and/or Water-surface elevation rasters were developed showing computed water-surface elevations for floods of the selected recurrence intervals.

Users should be aware that flood elevations shown on the FIRM represent rounded whole-foot elevations and may not exactly reflect the elevations shown on the Flood Profiles and/or Water-surface elevation rasters or in the Floodway Data tables in the FIS Report. For construction and/or floodplain management purposes, users are encouraged to use the flood elevation data presented in the FIS in conjunction with the data shown on the FIRM.

The hydraulic analyses for this FIS were based on unobstructed flow. The flood elevations shown on the Flood Profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

For details on the county's hydraulic analyses, the hydraulic report is available by request.

For the streams studied by detailed methods, water surface elevations of floods of the selected recurrence intervals were computed through use of the Army Corps of Engineers' HEC RAS step backwater computer program . The hydraulic analyses were based on unobstructed flow. The flood elevations shown on the Profiles and/or Water-surface elevation rasters are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail. The computer models were calibrated using historic high water data collected during field investigations.

The cross section geometries were obtained from a combination of digital elevation data obtained by Light Detection and Ranging (LIDAR) and field surveys. All bridges, dams, and culverts were field surveyed to obtain elevation data and structural geometry. Natural floodplain cross sections were surveyed approximately every 4000 feet along the detail study reaches to obtain the channel geometry between bridges and culverts. Overbank cross section data for the backwater analyses were obtained from recently flown LIDAR data.

Channel roughness factors (Manning's "n") used in the hydraulic computations were made in the field by an engineer where stream access was possible, with orthophotos used to supplement areas that could not be accessed. The channel and overbank "n" values for all of the streams studied by detailed methods are shown in Table 16, "Roughness Coefficients".

Table 16 - Roughness Coefficients

Stream	Channel "n"	Overbank "n"
Back Creek	0.038 to 0.046	0.080 to 0.200
Back Creek Tributary 2	0.040 to 0.060	0.120 to 0.155
Beaver Creek	0.035 to 0.055	0.140 to 0.160
Big Alamance Creek	0.035 to 0.060	0.050 to 0.200
Chocolate Creek	0.045	0.135 to 0.145
Haw River	0.030 to 0.140	0.045 to 0.200
Haw River Tributary 15	0.030 to 0.050	0.040 to 0.150
North Little Alamance Creek (Stream No. 72)	0.060	0.120
North Prong Stinking Quarter Creek	0.050	0.100 to 0.150
North Prong Stinking Quarter Creek Tributary	0.040	0.100 to 0.150
Poppaw Creek	0.010 to 0.080	0.100 to 0.150
Reedy Fork	0.030 to 0.060	0.050 to 0.150
South Prong Stinking Quarter Creek Tributary 1	0.050	0.140
Stinking Quarter Creek	0.035 to 0.060	0.050 to 0.200
Stinking Quarter Creek Tributary 2	0.050	0.140
Stinking Quarter Creek Tributary 3	0.045	0.145
Tickle Creek	0.040 to 0.065	0.050 to 0.200
Travis Creek	0.050 to 0.060	0.050 to 0.200

Table 16 - Roughness Coefficients

Stream	Channel "n"	Overbank "n"
Tributary A to Travis Creek	0.050 to 0.060	0.080 to 0.150

For flooding sources studied by limited detailed methods in the county, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this report and the FIRM panels. This method entails developing a HEC-RAS hydraulic model, resulting in the calculation of BFEs and the delineation of the 1% annual chance floodplain (designated as Zone AE). Cross sections for the flooding sources studied by limited detailed methods were obtained using digital elevation data obtained with LIDAR technology developed as part of the North Carolina Statewide Floodplain Mapping Program. The hydraulic model is prepared using this digital elevation data, without surveying bathymetric or structural data. Where bridge or culvert data are readily available, such as from the North Carolina Department of Transportation, these data have been reflected in the hydraulic model. If these structural data are not readily available, field measurements of these structures were made to approximate their geometry in the hydraulic models. In addition, this method does not include field surveys that determine specifics on channel and floodplain characteristics. A limited detailed study is a “buildable” product that can be upgraded to a fully detailed study at a later date by verifying stream channel characteristics, bridge and culvert opening geometry, and by analyzing multiple recurrence intervals.

The results of the HEC-RAS computations are tabulated for all cross sections (Table 17, “Limited Detailed Flood Hazard Data”). Flood Profiles have not been developed for streams studied by limited detailed methods. Water-surface elevation rasters were developed for steams studied by limited detailed methods. In addition, floodways for streams studied by limited detailed methods are not delineated on the FIRM. However, the 1% annual chance water-surface elevations, flood discharges, and non-encroachment widths from the limited detailed studies for every modeled cross section are given in Table 17. The non-encroachment widths given at modeled cross sections can be used by communities to enforce floodplain management ordinances that meet the requirement defined in 44 CFR 60.3(c)(10).

Between cross sections for streams studied by limited detailed methods, 1% annual chance water-surface elevations can be calculated by mathematical interpolation using the distance along the stream centerline. Non-encroachment widths and, therefore, the location of a non-encroachment area boundary between cross sections should be determined based on either 1) mathematical interpolation, or 2) the non-encroachment width at the upstream or downstream cross section, whichever is larger. If the width determined by this second method is wider than the Special Flood Hazard Area (SFHA) or the 1% annual chance floodplain delineated on the FIRM for this location along the stream, the non-encroachment area shall be considered to be coincident with the SFHA. A full detailed study incorporating field survey data in the HEC-RAS hydraulic model may be submitted for a Letter of Map Revision (LOMR) request to map a regulatory floodway along a section of a stream in lieu of applying the non-encroachment widths listed in Table 17.

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet)
Back Creek Tributary 2				
002	238	939	590.6	6 / 8
006	627	939	596.8	6 / 8
008	815	939	600.7	15 / 15
009	915	939	610.1	16 / 16
015	1,500	939	610.8	60 / 60
018	1,799	939	611.5	244 / 208
020	2,000	939	614.9	33 / 27
025	2,500	939	620.2	44 / 13
032	3,167	939	624.9	71 / 11
037	3,707	939	628.0	59 / 9
042	4,170	939	631.4	22 / 29
045	4,500	939	633.6	32 / 51
051	5,057	939	636.3	78 / 30
055	5,500	939	639.3	37 / 39
060	6,000	939	643.1	33 / 71
065	6,451	939	646.1	30 / 55
068	6,838	939	649.2	20 / 104
Beaver Creek				
176	17,624	3,370	569.1	70 / 20

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet)
182	18,157	3,370	570.2	57 / 31
184	18,371	3,370	571.1	20 / 176
189	18,859	3,370	571.5	38 / 24
192	19,244	3,370	572.5	20 / 63
267	26,721	2,580	600.8	50 / 17
272	27,176	2,580	603.8	324 / 18
275	27,525	2,580	604.1	59 / 18
281	28,104	2,580	607.1	90 / 18
287	28,686	2,580	608.5	24 / 187
293	29,272	2,580	609.3	167 / 115
297	29,682	2,580	609.8	291 / 108
301	30,148	2,580	610.3	160 / 21
306	30,593	2,580	611.5	26 / 19
306	30,638	2,580	612.1	26 / 19
315	31,500	2,580	614.7	76 / 41
322	32,176	2,580	616.0	69 / 89
327	32,670	2,580	616.9	58 / 88
331	33,132	2,580	617.7	106 / 42
338	33,753	2,580	618.7	58 / 176
345	34,493	1,900	619.6	93 / 49
350	35,036	1,900	620.3	123 / 137
355	35,491	1,900	620.6	50 / 78
360	35,958	1,900	621.8	55 / 128
366	36,608	1,900	623.3	41 / 77
371	37,141	1,900	624.7	49 / 32
377	37,669	1,900	626.2	47 / 24
381	38,058	1,900	627.4	19 / 36
386	38,622	1,900	629.9	99 / 18
392	39,241	1,900	632.1	18 / 88
398	39,788	1,660	633.6	22 / 96
402	40,230	1,660	634.7	157 / 16
408	40,797	1,230	636.0	38 / 71
412	41,196	1,230	637.6	70 / 95
416	41,590	1,230	638.8	71 / 87
422	42,158	1,230	640.4	28 / 113
426	42,645	1,230	642.1	64 / 48
432	43,187	1,230	644.5	54 / 14
436	43,609	1,230	646.7	136 / 14
439	43,855	1,230	647.2	94 / 20
439	43,937	1,230	652.7	94 / 20
442	44,232	1,230	652.7	255 / 91
446	44,577	1,230	652.8	14 / 172
450	44,980	1,230	653.3	119 / 14
454	45,445	1,230	654.6	157 / 28
460	45,983	1,230	656.3	79 / 24

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet)
465	46,527	995	661.5	79 / 44
472	47,166	995	664.0	30 / 67
477	47,698	995	665.7	25 / 137
483	48,290	995	667.8	74 / 22
Big Alamance Creek				
706	70,590	16,500	557.0[1]	594 / 504
Chocolate Creek				
007	690	2,050	616.2[1]	209 / 155
011	1,143	2,050	616.2[1]	6 / 162
016	1,566	2,050	614.3	15 / 15
016	1,611	2,050	616.2[1]	15 / 15
020	2,009	2,050	617.0	167 / 159
024	2,450	2,050	617.5	79 / 180
030	3,004	2,000	618.6	5 / 279
034	3,414	2,000	619.4	93 / 101
038	3,795	2,000	621.0	61 / 15
045	4,504	2,000	624.4	50 / 38
048	4,796	2,000	626.0	30 / 26
049	4,882	2,000	633.4	30 / 26
055	5,504	2,000	633.7	178 / 207
061	6,071	2,000	633.8	250 / 25
065	6,504	2,000	634.0	105 / 125
069	6,899	2,000	634.6	130 / 100
076	7,562	2,000	635.5	150 / 82
080	8,004	2,000	636.2	100 / 30
085	8,542	2,000	640.1	217 / 5
091	9,141	2,000	642.1	25 / 100
095	9,504	2,000	643.2	108 / 140
100	10,004	2,000	644.2	23 / 142
105	10,504	1,670	646.1	76 / 88
110	11,004	1,670	647.6	206 / 4
115	11,527	1,670	649.4	146 / 12
120	12,004	1,670	651.3	126 / 75
125	12,535	1,670	652.7	35 / 130
130	13,004	1,670	654.2	122 / 87
135	13,504	1,670	655.6	208 / 4
139	13,913	1,670	656.7	212 / 24
145	14,515	1,670	658.4	35 / 44
150	15,028	1,670	660.6	143 / 42
154	15,427	1,670	661.1	84 / 131
160	16,004	1,280	661.8	236 / 77
Haw River Tributary 15				
005	473	1,626	635.1[1]	26 / 31
008	760	1,626	635.1[1]	28 / 79
008	822	1,626	635.1[1]	28 / 79
011	1,098	1,626	635.1[1]	65 / 55

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet)
015	1,500	1,626	635.1[1]	85 / 10
020	1,980	1,626	635.1[1]	55 / 27
025	2,471	680	635.1[1]	26 / 18
031	3,075	680	641.5	7 / 13
034	3,388	680	647.8	33 / 38
035	3,470	680	659.7	75 / 85
036	3,594	680	659.7	103 / 53
042	4,202	680	659.7	32 / 87
047	4,685	680	659.8	26 / 6
North Prong Stinking Quarter Creek				
410	40,978	5,390	589.1	92 / 139
416	41,646	5,390	590.2	62 / 93
417	41,686	5,390	591.1	62 / 93
425	42,461	5,390	592.8	16 / 64
431	43,114	5,390	594.8	98 / 16
435	43,461	5,390	595.8	75 / 31
440	43,961	5,390	596.9	24 / 52
446	44,558	5,390	598.5	66 / 37
450	44,961	5,390	599.2	92 / 16
455	45,461	5,390	600.1	105 / 16
459	45,940	5,390	601.1	78 / 104
463	46,311	5,210	601.3	51 / 35
468	46,813	5,210	602.4	20 / 107
473	47,325	5,210	603.1	85 / 135
480	47,993	5,210	603.5	69 / 74
485	48,546	5,210	604.1	109 / 15
490	48,979	5,210	605.0	65 / 150
490	49,018	5,210	606.1	65 / 150
500	49,991	5,040	607.2	48 / 53
504	50,449	5,040	608.1	14 / 104
514	51,412	5,040	609.5	134 / 61
518	51,825	5,040	610.0	98 / 107
525	52,461	5,040	610.7	112 / 160
529	52,927	5,040	610.9	14 / 226
534	53,356	5,040	611.2	34 / 114
538	53,828	5,040	611.9	73 / 85
545	54,453	5,040	612.6	70 / 101
550	54,961	5,040	613.3	58 / 53
555	55,461	5,040	614.4	43 / 74
558	55,758	5,040	615.0	27 / 185
565	56,483	5,040	615.5	39 / 136
571	57,064	5,040	616.0	116 / 192
576	57,610	5,040	616.2	449 / 229
582	58,181	4,100	616.3	188 / 269
586	58,639	4,100	616.3	235 / 255

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet)
591	59,115	4,100	616.4	213 / 52
596	59,576	4,100	616.7	276 / 41
601	60,098	4,100	616.9	132 / 58
606	60,582	4,100	617.5	101 / 17
610	61,022	4,050	618.3	80 / 44
612	61,239	4,050	618.9	123 / 180
613	61,283	4,050	619.3	123 / 180
617	61,651	4,050	619.4	81 / 96
622	62,187	4,050	619.9	220 / 42
634	63,381	4,050	620.5	11 / 221
641	64,061	4,050	621.0	119 / 359
648	64,796	4,050	621.4	261 / 11
653	65,327	4,050	621.9	156 / 35
659	65,899	4,050	622.6	256 / 85
664	66,419	4,050	622.9	305 / 55
668	66,831	4,050	623.1	350 / 34
674	67,402	4,050	623.2	44 / 110
679	67,907	4,050	624.1	51 / 201
685	68,461	4,050	624.6	60 / 114
690	68,951	3,840	625.8	66 / 227
694	69,431	3,840	626.4	99 / 142
701	70,079	3,840	627.3	68 / 110
701	70,119	3,840	627.6	68 / 110
705	70,461	3,840	628.0	180 / 115
708	70,835	3,840	628.2	269 / 18
714	71,393	3,840	628.6	163 / 34
720	71,961	3,840	629.2	359 / 21
724	72,378	3,840	629.4	428 / 11
731	73,121	3,840	629.9	438 / 47
738	73,817	3,670	630.4	200 / 50
746	74,586	3,670	632.0	217 / 11
750	75,004	3,670	632.7	249 / 87
756	75,615	3,670	633.5	78 / 132
760	75,991	3,670	634.0	49 / 114
766	76,598	3,670	635.2	198 / 26
770	76,961	3,670	635.5	286 / 210
773	77,287	3,670	635.7	339 / 176
779	77,859	3,670	635.9	336 / 61
782	78,206	3,670	636.2	124 / 135
788	78,829	3,670	636.8	335 / 70
798	79,814	2,680	637.4	117 / 337
806	80,552	2,680	637.9	8 / 434
811	81,099	2,680	638.3	135 / 193
816	81,622	2,680	638.9	76 / 96
821	82,085	2,680	640.2	120 / 21

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet)
825	82,502	2,680	641.4	44 / 112
829	82,884	2,680	642.0	114 / 185
829	82,930	2,680	642.4	114 / 185
833	83,326	2,680	642.6	43 / 263
838	83,821	2,680	643.2	149 / 161
842	84,198	2,680	643.8	123 / 196
847	84,709	2,680	644.5	54 / 312
853	85,303	2,680	645.4	247 / 103
858	85,807	2,680	646.1	8 / 329
862	86,248	2,680	647.0	58 / 161
867	86,731	2,410	648.2	152 / 15
871	87,099	2,410	649.0	43 / 163
876	87,575	2,410	649.5	50 / 167
876	87,621	2,410	650.3	50 / 167
880	87,956	2,410	650.4	171 / 161
884	88,402	2,110	650.6	156 / 195
889	88,855	2,110	650.9	31 / 249
894	89,364	2,110	651.7	33 / 270
898	89,841	2,110	652.7	6 / 223
906	90,563	2,110	655.0	114 / 57
911	91,080	2,110	656.0	231 / 28
915	91,499	2,110	656.6	71 / 210
919	91,868	2,110	657.1	60 / 60
919	91,915	2,110	658.5	60 / 60
924	92,374	1,690	659.1	156 / 108
931	93,054	1,690	659.6	132 / 41
935	93,529	1,690	661.5	7 / 205
939	93,898	1,690	662.6	65 / 189
944	94,403	1,690	664.1	19 / 67
949	94,897	1,690	666.4	24 / 175
957	95,736	1,690	667.8	105 / 41
966	96,615	1,690	670.7	96 / 19
971	97,064	1,690	671.7	145 / 26
976	97,551	1,690	672.5	122 / 20
983	98,344	1,690	675.6	152 / 4
989	98,950	1,690	678.0	15 / 197
995	99,539	1,690	680.4	81 / 55
1002	100,214	868	683.1	91 / 35
1004	100,388	868	683.6	37 / 51
1004	100,428	868	684.4	37 / 51
1008	100,808	868	686.7	6 / 105
1015	101,526	868	688.9	80 / 3
1022	102,210	868	692.3	48 / 28
1027	102,679	868	695.2	28 / 44
1032	103,225	868	698.4	12 / 101

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet)
1041	104,125	868	703.1	48 / 20
1047	104,698	868	707.3	49 / 20
1049	104,850	868	707.6	50 / 50
1049	104,912	868	707.8	50 / 50
1053	105,287	868	709.3	10 / 30
1060	105,956	868	718.1	21 / 28
1067	106,652	868	722.0	40 / 48
1072	107,241	868	725.5	45 / 20
1075	107,522	868	729.1	44 / 45
1076	107,587	868	731.0	44 / 45
1078	107,845	868	732.6	58 / 22
1083	108,303	868	734.6	4 / 67
North Prong Stinking Quarter Creek Tributary				
005	487	1,720	636.6	128 / 129
010	979	1,720	636.8	80 / 50
017	1,706	1,720	639.3	100 / 59
021	2,107	1,720	640.0	115 / 42
024	2,450	1,720	640.6	25 / 25
025	2,498	1,720	644.5	25 / 25
027	2,671	1,650	645.3	158 / 94
031	3,092	1,650	645.4	50 / 65
036	3,600	1,650	646.2	188 / 15
041	4,133	1,650	646.7	14 / 46
048	4,821	1,650	650.8	54 / 86
053	5,280	1,650	652.0	78 / 44
058	5,794	1,220	653.6	86 / 97
065	6,550	1,220	654.9	85 / 24
070	6,971	1,220	658.3	85 / 25
071	7,133	1,220	659.6	61 / 23
072	7,191	1,220	660.6	61 / 23
074	7,427	1,130	660.8	50 / 47
079	7,867	1,130	662.0	20 / 55
083	8,287	1,130	664.1	30 / 40
084	8,352	983	666.8	30 / 40
085	8,528	983	667.0	35 / 25
Parks Creek				
046	4,622	1,046	632.9	29 / 21
050	5,000	1,046	635.0	48 / 39
055	5,455	1,046	636.6	24 / 19
057	5,733	1,046	638.9	29 / 20
064	6,384	763	642.8	11 / 22
069	6,875	763	645.4	20 / 25
073	7,288	763	649.8	10 / 10
077	7,670	763	656.4	10 / 13
South Prong Stinking Quarter Creek				
000	0	4,500	574.9	158 / 510

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet)
006	637	3,010	575.2	18 / 338
013	1,331	2,730	575.9	124 / 116
022	2,154	2,710	578.0	186 / 21
027	2,730	2,710	579.5	18 / 150
031	3,121	2,710	580.6	25 / 116
038	3,836	2,710	582.4	164 / 54
044	4,376	2,710	583.3	40 / 177
048	4,816	2,710	584.2	111 / 77
052	5,244	2,710	584.7	45 / 22
059	5,913	2,710	587.4	51 / 207
067	6,724	2,710	587.9	24 / 60
072	7,157	2,710	589.6	18 / 59
076	7,575	2,710	591.0	26 / 49
083	8,296	2,710	592.7	74 / 45
088	8,803	2,710	593.6	122 / 116
093	9,264	2,430	594.0	150 / 273
097	9,676	2,430	593.6	34 / 94
101	10,080	2,430	596.9	60 / 23
106	10,629	2,430	599.2	19 / 78
114	11,390	2,430	600.9	36 / 83
120	11,990	2,430	603.2	23 / 133
124	12,419	2,430	604.7	26 / 103
125	12,535	2,430	606.4	82 / 61
126	12,581	2,140	607.6	82 / 61
128	12,784	2,140	608.0	110 / 25
130	13,030	2,140	608.6	28 / 28
134	13,379	2,140	612.6	104 / 87
137	13,702	2,140	613.2	16 / 131
143	14,291	2,140	615.0	43 / 30
147	14,747	2,140	618.6	16 / 151
152	15,194	2,140	619.6	16 / 149
155	15,478	2,140	620.3	25 / 67
158	15,783	2,140	621.3	16 / 122
164	16,380	2,140	624.1	92 / 76
172	17,168	1,590	627.1	61 / 67
South Prong Stinking Quarter Creek Tributary 1				
001	100	2,550	574.9[1]	126 / 161
005	500	2,550	574.9[1]	28 / 83
010	1,000	2,550	575.9	81 / 58
015	1,500	2,550	576.7	76 / 115
020	2,022	2,550	577.4	41 / 48
025	2,500	2,550	578.9	80 / 12
030	3,000	2,550	580.0	64 / 112
035	3,500	2,550	580.8	21 / 97
040	4,000	2,550	581.8	221 / 21

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet)
045	4,500	2,430	582.7	107 / 43
050	5,000	2,430	584.2	115 / 14
054	5,450	2,430	584.9	113 / 100
056	5,550	2,430	587.5	113 / 100
060	6,000	2,430	587.7	125 / 51
065	6,500	2,430	588.3	69 / 94
070	7,000	2,430	589.1	38 / 52
075	7,500	2,430	590.4	49 / 27
079	7,938	2,430	592.2	12 / 90
085	8,538	2,430	595.3	33 / 91
089	8,922	2,430	596.0	56 / 142
095	9,500	2,170	597.0	100 / 100
100	10,049	2,170	598.4	110 / 11
105	10,500	2,170	601.5	130 / 11
110	11,000	2,170	603.2	143 / 11
114	11,425	2,170	604.3	47 / 125
115	11,466	2,170	604.4	47 / 125
120	12,000	2,170	605.8	40 / 90
125	12,500	1,870	607.4	109 / 50
130	13,000	1,870	608.3	136 / 153
136	13,604	1,870	609.0	26 / 84
136	13,644	1,870	610.0	26 / 84
145	14,500	1,580	612.6	9 / 162
150	15,000	1,580	614.2	73 / 14
154	15,414	1,580	616.5	9 / 84
160	16,000	1,580	620.4	25 / 30
165	16,500	1,580	624.7	55 / 15
170	17,000	1,260	627.7	20 / 28
175	17,500	1,260	630.7	21 / 56
181	18,108	1,260	633.2	89 / 8
185	18,500	1,260	634.6	51 / 69
190	18,951	1,260	636.3	30 / 47
195	19,500	1,260	640.7	79 / 21
201	20,101	1,260	643.5	10 / 43
207	20,665	1,260	646.0	41 / 30
207	20,738	1,260	651.3	41 / 30
215	21,500	1,260	651.6	22 / 103
220	22,000	1,260	652.5	8 / 108
225	22,500	1,260	654.5	34 / 59
232	23,165	1,260	657.3	95 / 95
235	23,536	1,260	658.6	158 / 8
240	23,986	1,260	660.9	20 / 123
243	24,332	1,260	662.7	126 / 25
250	24,980	1,260	665.9	36 / 52
254	25,438	1,260	668.2	26 / 93

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet)
258	25,795	1,260	670.0	16 / 54
263	26,305	1,260	673.2	51 / 43
267	26,730	1,260	676.1	9 / 55
Stinking Quarter Creek				
703	70,331	5,160	555.8	263 / 25
711	71,130	5,160	556.8	361 / 25
721	72,094	5,160	558.0	161 / 25
729	72,912	4,530	559.9	86 / 27
734	73,364	4,530	560.9	151 / 23
739	73,923	4,530	561.6	84 / 86
744	74,398	4,530	562.4	98 / 87
750	74,981	4,530	563.1	144 / 90
759	75,943	4,530	564.0	52 / 45
760	76,001	4,500	564.7	52 / 45
769	76,949	4,500	565.6	156 / 215
777	77,678	4,500	565.7	81 / 46
782	78,239	4,500	566.7	83 / 71
787	78,692	4,500	567.3	119 / 102
792	79,249	4,500	567.6	155 / 155
797	79,716	4,500	567.8	202 / 191
801	80,062	4,500	567.9	212 / 133
808	80,842	4,500	568.2	71 / 101
815	81,516	4,500	569.3	37 / 110
821	82,071	4,500	572.0	137 / 23
826	82,649	4,500	573.5	278 / 23
832	83,192	4,500	573.9	154 / 458
835	83,547	4,500	574.1	156 / 508
835	83,547	4,500	574.9	156 / 508
Stinking Quarter Creek Tributary 2				
002	163	1,440	559.7[1]	223 / 8
006	578	1,440	559.7[1]	13 / 23
012	1,233	1,440	565.5	36 / 19
015	1,534	1,440	567.2	45 / 24
020	1,983	1,440	569.3	64 / 29
023	2,296	1,440	570.6	52 / 11
026	2,643	1,440	572.4	48 / 87
032	3,228	1,100	574.3	87 / 7
036	3,567	1,100	575.6	145 / 7
039	3,856	1,100	577.1	49 / 10
Stinking Quarter Creek Tributary 3				
001	125	995	624.4[1]	66 / 48
Tickle Creek				
150	15,000	1,241	646.8	23 / 62
155	15,453	1,241	648.2	45 / 110
161	16,063	1,241	649.6	102 / 16
167	16,669	1,241	651.7	124 / 16

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet)
171	17,086	1,241	653.1	44 / 59
178	17,814	1,241	655.6	184 / 16
187	18,715	1,241	657.3	124 / 87
195	19,514	1,241	659.4	98 / 26
Travis Creek				
260	26,044	1,287	615.9	61 / 131
265	26,457	1,224	617.1	14 / 31
267	26,669	1,224	620.7	13 / 41
268	26,822	1,224	631.6	73 / 92
273	27,300	1,224	631.6	107 / 82
278	27,761	1,224	631.7	129 / 110
286	28,582	1,224	633.5	79 / 13
293	29,252	1,224	638.2	31 / 81
295	29,500	1,224	638.8	13 / 83
301	30,116	1,224	641.4	58 / 55
306	30,643	1,224	644.4	32 / 89
312	31,154	1,224	646.8	13 / 194
317	31,655	1,224	649.7	83 / 25
318	31,807	1,224	650.6	75 / 75
319	31,891	1,224	653.7	75 / 75
323	32,338	1,224	654.1	13 / 143
329	32,854	1,224	655.8	33 / 43
335	33,517	1,224	658.8	154 / 20
343	34,309	1,224	661.8	18 / 67
348	34,842	1,224	664.7	13 / 117
351	35,131	1,224	665.7	21 / 76
352	35,194	1,224	667.6	21 / 76
362	36,163	1,224	670.0	27 / 150
Tributary A to Travis Creek				
025	2,500	941	625.1	17 / 22
030	3,000	941	628.3	70 / 13
035	3,500	941	631.6	16 / 75
040	4,000	941	635.9	27 / 26
045	4,500	941	640.0	25 / 30
050	4,999	941	643.4	113 / 13
051	5,056	941	643.4	40 / 19
051	5,138	941	647.3	40 / 19
056	5,574	941	648.2	30 / 30
064	6,416	765	651.2	34 / 42
071	7,111	765	654.2	25 / 22
077	7,683	765	659.3	12 / 84
079	7,914	765	669.1	12 / 84
083	8,308	765	669.1	67 / 54
087	8,683	765	669.2	19 / 49
088	8,849	765	671.0	86 / 17
089	8,909	765	674.1	86 / 17

Table 17 - Limited Detailed Flood Hazard Data

Cross Section	Stream Station	Flood Discharge (cfs)	1% Annual Chance Water-Surface Elevation (feet NAVD 88)	Non-Encroachment Width (feet)
095	9,487	765	674.2	62 / 80
099	9,913	765	674.2	40 / 33

[1]Elevation includes backwater effects

5.3 Coastal Analyses

This section is not applicable to this FIS project. Table 18 "Summary of Coastal Stillwater Elevations" and Table 19 "Summary of Coastal Analyses" do not apply to Guilford County.

6.0 Mapping Methods

6.1 Vertical and Horizontal Control

Vertical Datum

All FISs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. With the finalization of the North American Vertical Datum of 1988 (NAVD 88), all North Carolina FISs have been prepared using NAVD 88 as the referenced vertical datum.

All flood elevations shown on the FIRM for Guilford County are referenced to NAVD 88. Structure and ground elevations in the county must, therefore, be referenced to NAVD 88. It is important to note that FISs for adjacent communities in neighboring states may be referenced to NGVD 29. This may result in BFE differences across political boundaries between the communities.

As noted above, the elevations shown in this FIS are referenced to NAVD 88. Ground, structure, and flood elevations may be compared and/or referenced to NGVD 29 by applying a standard conversion factor. The conversion factor for Guilford County is # feet. The locations used to establish the conversion factor were USGS quadrangle corners that fell within the county, as well as those that were within 2.5 miles outside the county. The benchmarks are referenced to NAVD 88. Table 20, "Datum Conversion Locations and Values," is shown below.

Table 20, "Datum Conversion Locations and Values."

Table 20 - Datum Conversion Locations and Values

Latitude	Longitude	Conversion from NGVD29 to NAVD88 (feet)
36.25	-80.00	-0.63
36.25	-79.88	-0.74
36.12	-80.00	-0.68
36.12	-79.88	-0.71
36.13	-79.75	-0.77
36.13	-79.62	-0.81
36.00	-80.00	-0.73
36.00	-79.88	-0.76
36.00	-79.75	-0.76
36.00	-79.63	-0.81
Average conversion in Guilford County from NGVD 29 to NAVD 88 = -0.74 feet		

The vertical datum conversion factor for all flooding sources which run along a county boundary are in accordance with the conversion factor used in those contiguous counties.

BFEs shown on the FIRM represent whole-foot rounded values. For example, a 1% annual chance water-surface elevation of 102.4 feet will appear as 102 on the FIRM and 102.6 feet will appear as 103. Therefore, users who wish to convert the elevations in this FIS to NGVD 29 should apply the stated conversion factor(s) to elevations shown on the Flood Profiles and/or Water-surface elevation rasters and supporting data tables in the FIS Report, which are shown, at a minimum, to the nearest 0.1 foot.

For more information on NAVD 88, see Converting the National Flood Insurance Program to the North American Vertical Datum of 1988, or contact the Vertical Network Branch, National Geodetic Survey, Coast and Geodetic Survey, National Oceanic and Atmospheric Administration, Rockville, Maryland 20910 (http://www.ngs.noaa.gov).

Vertical Control Monuments

Qualifying bench marks within Guilford County that are cataloged by the National Geodetic Survey (NGS) and entered into the National Spatial Reference System (NSRS) as First or Second Order Vertical, with a vertical stability classification of A, B, or C, are shown and labeled on the FIRM with their 6-character NSRS Permanent Identifier (PID).

The National Geodetic Survey establishes precisely located monuments on the North Carolina Grid System and Bench Marks referenced to a vertical datum (NGVD 1929 and NAVD 1988).

Bench marks cataloged by the NGS and entered into the NSRS vary widely in vertical stability classification. NSRS vertical stability classifications are as follows:

- Stability A: Monuments of the most reliable nature, expected to hold position/elevation well (e.g., mounted in bedrock)
- Stability B: Monuments which generally hold their position/elevation well (e.g., concrete bridge abutment)
- Stability C: Monuments which may be affected by surface ground movements (e.g., concrete monument below frost line)
- Stability D: Mark of questionable or unknown vertical stability (e.g., concrete monument above frost line, or steel witness post)

Monuments with a Stability D classification may be used as Elevation Reference Marks (ERMs) when a Stability C or better monument is not an option. These ERMs must be approved by NCGS and can be set and used as elevation bench marks to establish vertical control and produce NC DFIRMs. Including such ERMs will greatly augment North Carolina's useable vertical control network.

In addition, when local jurisdictions have established their own vertical monument network, these monuments may also be shown on the FIRM with the appropriate designations. Local monuments will be placed on the FIRM if the community has requested that they be included and if the monuments meet the aforementioned criteria.

North Carolina Geodetic Survey (NCGS) and contractor surveyed vertical control monuments will be shown on the FIRM panels. Those cataloged by NCGS meet similar requirements to the NGS monuments as described above. Most monuments that have been cataloged by NCGS have been established to NGS standards, but have not been submitted to NGS for inclusion into the NSRS. The qualifying criteria for depicting bench marks established by the State's contractors on the new digital FIRM panels include:

- GPS surveying of permanent 3-D survey monuments to 5-centimeter or better local network accuracy guidelines, in accordance with NOAA Technical Memorandum NOS NGS-58 "Guidelines for Establishing GPS-Derived Ellipsoid Heights (Standards: 2 cm and 5 cm)," and conversion to NAVD 88 orthometric heights using NGS' latest geoid mode;
- Requiring a stability classification of "C" or better; and
- Submitting GPS files and station descriptions to NCGS.

To obtain current information for cataloging local bench marks in the NSRS, please visit the Data Sheet page of the NGS website at http://www.ngs.noaa.gov/cgi-bin/datasheet.prl, or contact the NGS Information Services Branch at:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-32822
(301) 713-3242

Information regarding the NCGS or State contractor bench marks can be obtained through the NCGS website at www.ncgs.state.nc.us, or by phone at (919) 733-3836.

It is important to note that temporary vertical monuments, sometimes called Elevation Reference Marks, are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the FIRM, interested individuals may contact FEMA to access this information.

Horizontal Datum and Control

The digital files that comprise the FIRM are georeferenced to an established coordinate system. The coordinate system used for the production of this FIRM is North Carolina State Plane (FIPSZONE 3200) referenced to the North American Datum of 1983 (NAD83), GRS80 ellipsoid.

6.2 Base Map

The FIRMs and FIS Report for this project have been produced in a digital format. The flood hazard information was converted to a Geographic Information System (GIS) format that meets FEMA's FIRM database specifications and geographic information standards. This information is provided in a digital format so that it can be incorporated into a local GIS and be accessed more easily by the community. The FIRM Database includes most of the tabular information contained in the FIS Report in such a way that the data can be associated with pertinent spatial features.

The projection used in the preparation of this map was the North Carolina State Plane Coordinate System. The horizontal datum was NAD83, GRS80 spheroid. Differences in datum, spheroid, or projection used in the production of FIRMs for adjacent states may result in slight positional differences in map features across the state boundary. These differences do not affect the accuracy of this FIRM.

As part of the North Carolina CTS Initiative, North Carolina digital FIRM panel numbers are consistent with the North Carolina Land Records Management Program (LRMP).

The 11-digit digital FIRM panel numbering system for North Carolina is: SS MM LLLL PP X, where SS = State Federal Information Processing Code (37); MM = Easting-Northing (EN) 1,000,000-foot coordinates; LLLL = LRMP map numbers to include the EN 100,000-foot coordinates, and the EN 10,000-foot coordinates; PP = place holders for additional EN 1,000-foot coordinates; and X = suffix ("J" for the initial edition). North Carolina's State Plane Coordinate System origin is outside the State boundary to the southwest (in Georgia), the eastings range from approximately 0,404,000 (Tennessee border) to 3,040,000 (Atlantic Ocean); and the northings range from approximately 0,045,000 (South Carolina border) to 1,043,000 (Virginia border). Digital FIRM panels were compiled at either 1"=1,000', covering an area of 20,000 feet x 20,000 feet (20" x 20" panels); or at 1"=500', covering an area of 10,000 feet x 10,000 feet (20" x 20" panels). An additional 2 digits (both zeros) are held in reserve as a "place holder" in the event that future FIRMs are printed at a larger scale; e.g., 1"=250', covering an area of 5,000 feet x 5,000 feet for which the 1,000-foot coordinates would either be 0 or 5.

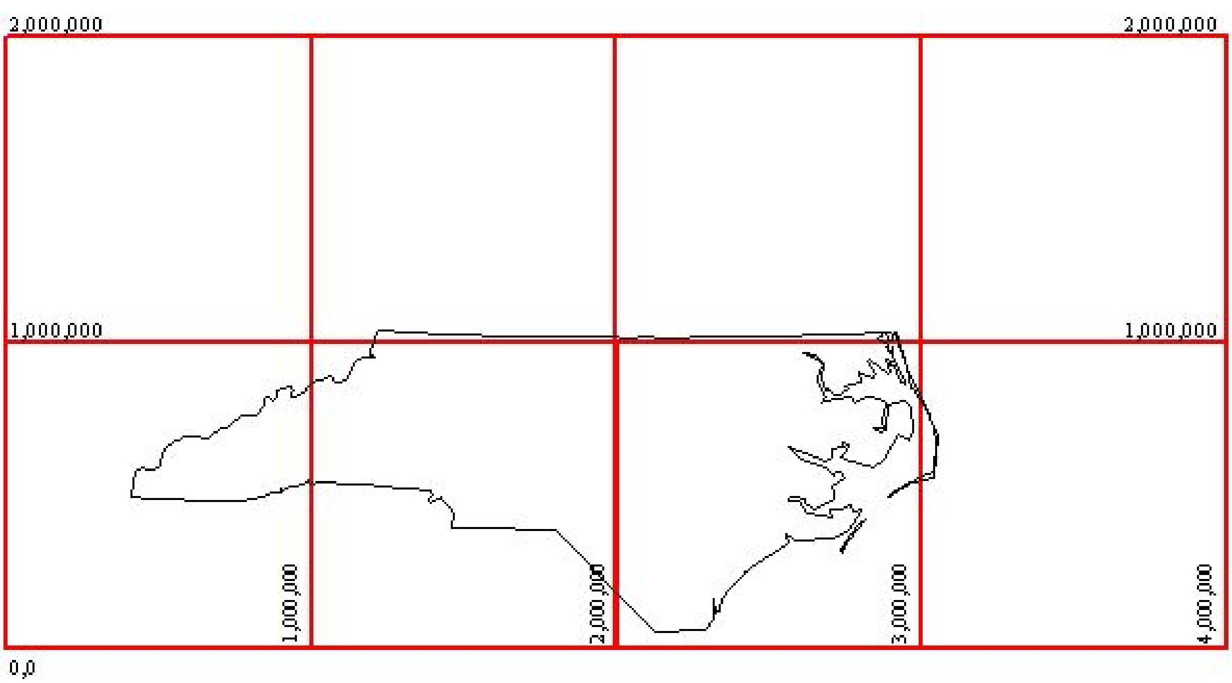

Figure 3 - North Carolina's State Plane Coordinate System

6.3 Floodplain and Floodway Delineation

Floodplain Delineation

For streams restudied by detailed and limited detailed methods, the 1% and 0.2% annual chance floodplains were delineated using flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic data acquired using airborne Light Detection and Ranging (LIDAR). This LIDAR data was acquired during the (insert date from basin plan and update for map maintenance, if necessary) flying season.

The topographic data satisfies a vertical root-mean-square error (RMSE) accuracy standard of 20 cm (1.3 feet accuracy at the 95% confidence limit) for the Outer Banks and 25 cm (1.6 feet accuracy at the 95% confidence limit) for those portions of the basin lying west of the Outer Banks. These data could be contoured at roughly a 2-foot vertical contour interval. All elevations were referenced to the NAVD 88 and reflect orthometric heights. Variably spaced, bare-earth digital topographic data in ASCII point file format were combined with imagery (either flown concurrently with the LIDAR data or using existing digital orthophotos) to establish a Triangulated Irregular Network (TIN) of digital elevation points, which include selected breaklines to be used for hydraulic modeling. Furthermore, a uniformly spaced sampling of the TIN resulted in uniformly spaced Digital Elevation Models (DEMs), with 20 ft x 20 ft post spacing, which was generated in multiple file formats.

The 1% annual chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones VE, AO, AH, A99, AR, A, and AE), and the 0.2% annual chance floodplain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% annual chance floodplain boundaries have been shown.

Floodway Delineation

The floodways presented in this FIS were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations are tabulated for selected cross sections (Table 21, “Floodway Data”). The computed floodway is shown on the FIRM. In cases where the floodway and 1% annual chance floodplain boundaries are either close together or collinear, only the floodway boundary is shown. In areas where the top of the bridge or road is higher than the 1.0-percent annual chance (100-year) flood, the FIRM will show the flood discharge as contained within the structure for emergency management purposes. It is important to note that FEMA and community floodway regulations still apply in and around those areas.

Table 21 - Floodway Data

Floodway Source		Floodway			Water Surface Elevation			
Cross Section	Distance (Feet Above Mouth)	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet Per Second)	Regulatory	Without Floodway	With Floodway	Increase
Back Creek								
067	6,712	135	330	4.7	607.3	607.3	607.4	0.0
071	7,065	171	407	3.8	612.5	612.5	612.6	0.1
077	7,718	75	471	3.3	616.2	616.2	616.2	0.0
082	8,227	60	285	5.1	616.8	616.8	617.1	0.4
086	8,634	33	195	7.4	617.2	617.2	618.2	0.9
092	9,172	43	210	6.9	620.6	620.6	620.6	0.0
099	9,850	45	236	6.1	623.1	623.1	623.4	0.4
106	10,606	45	297	4.9	624.9	624.9	625.5	0.6
112	11,192	80	270	5.4	626.4	626.4	627.3	0.9
116	11,593	135	607	2.4	629.2	629.2	630.0	0.8
128	12,804	65	335	3.3	633.4	633.4	634.4	1.0
132	13,200	65	313	3.5	634.4	634.4	635.3	1.0
138	13,796	40	219	5.0	636.1	636.1	637.1	1.0
146	14,648	100	560	2.0	643.9	643.9	644.9	1.0
Haw River								
3070	306,959	279	4,550	3.8	624.1	624.1	625.0	0.8
3079	307,870	409	6,203	2.8	624.9	624.9	625.7	0.8
3085	308,470	430	5,577	2.6	626.4	626.4	627.2	0.8
3096	309,598	371	5,536	3.1	625.8	625.8	626.6	0.8
Reedy Fork								
146	14,552	638	6,264	3.3	616.4	616.4	617.4	0.9
159	15,900	505	6,014	3.5	617.6	617.6	618.3	0.7
Tickle Creek								

Table 21 - Floodway Data

Floodway Source		Floodway			Water Surface Elevation			
Cross Section	Distance (Feet Above Mouth)	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet Per Second)	Regulatory	Without Floodway	With Floodway	Increase
153	15,254	97	488	2.6	644.7	644.7	645.2	0.5
159	15,924	85	410	3.1	646.8	646.8	647.5	0.6

7.0 Revising the FIS

7.1 Letters of Map Amendment and Letters of Map Revision - Based on Fill

LOMAs and LOMR-Fs are documents issued by FEMA that officially remove a property and/or a structure from a Special Flood Hazard Area (SFHA), if data supporting the removal are submitted. LOMAs and LOMR-Fs are generally determinations regarding areas that are too small to be shown on a FIRM panel; consequently, the changes they describe become official without revising the FIRM or the FIS Report.

NFIP regulations require that the lowest adjacent grade (the lowest ground touching the structure) be at or above the 1% annual chance flood elevation for a LOMA to be issued. Currently, there is no fee for FEMA's review of a LOMA request, but the requester of a LOMA is responsible for providing all the information needed for the review, which may include structure and/or property elevations certified by a licensed land surveyor or professional engineer. Therefore, LOMA requesters may need to retain the services of a land surveyor or engineer.

A LOMA cannot be used for property on which fill has been placed. For those situations, a LOMR-F must be used. As a participant in the NFIP, a local government must adopt ordinances that meet the minimum Federal floodplain management standards, which are outlined in Section 60.3 of the NFIP regulations. For a number of reasons, these ordinances generally vary from community to community. Nonetheless, because the placement of fill within the floodplain can affect flood hazards in the surrounding area, additional information is needed before FEMA can process a LOMR-F request. Among the data required for a LOMR-F is the community acknowledgment form. This form is FEMA's assurance that all appropriate Federal, State, and local floodplain management requirements have been met. Furthermore, NFIP regulations require that the lowest adjacent grade (the lowest ground touching the structure) be at or above the 1% annual chance flood elevation for a LOMR-F to be issued removing the structure from the floodplain. Because LOMR-F requests are the result of changed physical conditions rather than limitations of scale or topographic definition, FEMA charges a fee for the review of a LOMR-F request. As with the LOMA, the requester of a LOMR-F is responsible for providing all supporting information, including structure and/or property elevation data.

In cases where property owners plan to add fill in the SFHA, NFIP regulations require plans and technical information to be submitted for review by FEMA before construction takes place. FEMA will issue a conditional LOMR-F stating how flood hazards would change and what portions of the property, if any, would remain in the SFHA if the project were built according to the submitted plans.

The issuance of a LOMA or LOMR-F ends the property owner's obligation to purchase flood insurance as a condition of Federal or federally backed financing. However, the property owner's mortgage company maintains the prerogative to require flood insurance as a condition of providing financing. Before attempting to obtain a LOMA or LOMR-F, property owners are advised to consult their mortgage companies regarding this policy. Even if the mortgage company indicates that it will require flood insurance if a LOMA or LOMR-F is issued, it may be advantageous for property owners to request a LOMA or LOMR-F because flood insurance premiums are lower for properties removed from the SFHA than for properties that remain within the SFHA.

For additional information regarding LOMAs, LOMR-Fs, conditional LOMR-Fs, or current application fees, please call the FEMA Map Information eXchange (FMIX) toll-free information line at 1-877-FEMA MAP (1-877-336-2627).

7.2 Letters of Map Revision

A Letter of Map Revision (LOMR) is a document issued by FEMA and the NCFMP that revises an FIS Report and/or FIRM. A LOMR is used to change flood risk zones, floodplain and/or floodway delineations, flood elevations, or planimetric features such as road systems or corporate limits. A LOMR provides FEMA and the NCFMP with a cost-effective means of revising the FIS information without physically changing and reprinting the map or report itself. A portion of the FIRM panel or FIS Report showing the revised information is issued with the LOMR. The LOMR is sent to all affected communities and is archived in the communities' NFIP map repository for public reference.

In cases where a proposed project (such as construction in the 1% annual chance floodplain) would result in a significant rise in 1% annual chance water-surface elevations, NFIP regulations require the community to submit plans and technical information for review by FEMA and the NCFMP before construction takes place. This assures communities participating in the NFIP that proposed projects meet minimum NFIP requirements. The result of FEMA and the NCFMP reviews is documented in a conditional LOMR.

For additional information regarding LOMRs, conditional LOMRs, or current application fees, please call the FEMA Map Assistance Center toll-free information line at 1-877-FEMA MAP (1-877-336-2627) or the NCFMP at 919-715-5711.

7.3 Physical Map Revisions

Physical Map Revisions (PMRs) are processed to incorporate information concerning conditions present in the community that are not reflected in the FIS, and involve distributing republished FISs that supersede the most current NFIP data in the community repository. PMRs may be initiated by a request from a community resident or agency, or FEMA may initiate a PMR to incorporate one or more LOMRs, to reflect significant changes in corporate limits, to correct errors, or to update flood hazards to match new information from an adjacent community's FIS. Due to the costs associated with updating and distributing FISs, map revisions will be processed as LOMRs rather than PMRs whenever possible. For more information regarding PMRs, please contact the FEMA Map Information eXchange (FMIX) toll-free information line at 1-877-FEMA MAP (1-877-336-2627), the FEMA Regional Office at the address listed on the Notice to Flood Insurance Study Users page at the front of this report, or the NCFMP at 919-715-5711.

7.4 Contracted Restudies

The NFIP provides for a periodic review and restudy of flood hazards in a given community. FEMA accomplishes this through a national mapping needs assessment process that assigns priorities and allocates funds to sponsor or subsidize new flood hazard analyses used to update FIS Reports. For map maintenance restudies within the state of North Carolina, scoping will be performed by county approximately 2.5-3.5 years after the previous effective date. Scoping will focus on streams with restudy needs within those previously effective counties rather than on full countywide restudies. A restudy refers specifically to updating or reevaluating engineering analyses that were performed for a flood mapping project that directly impact BFEs and/or flood hazard boundary extents or analysis of previously unstudied flood prone areas. Restudy project evaluation triggers and prioritization values are an essential component of the map maintenance program. For more information regarding NCFMP-contracted restudies, please contact the NCFMP at 919-715-5711 or at www.ncfloodmaps.com. For more information regarding FEMA-contracted restudies, please contact the FEMA Map Information eXchange (FMIX) toll-free information line at 1-877-FEMA MAP(1-877-336-2627) or the FEMA Regional Office at the address listed on the Notice to Flood Insurance Study Users page at the front of this report.

7.5 Map Revision History

The current FIRM is a subset of the Statewide FIRM, showing flood hazard information for the entire geographic area of Guilford County. Previously, separate Flood Hazard Boundary Maps (FHBMs), Flood Boundary and Floodway Maps (FBFMs), and/or FIRMs were prepared for each identified flood prone jurisdiction within the county. Historical data relating to the NFIP maps prepared for each community prior to and including the 6/18/2007 North Carolina Statewide FIRM, which includes Guilford County, are presented in Table 22, "Community Map History."

Information pertaining to revised and unrevised flood hazards for each jurisdiction within Guilford County has been compiled into this FIS. Therefore, this FIS supersedes all previously printed FIS Reports, FHBMs, FIRMs, and/or FBFMs for all of the incorporated and unincorporated jurisdictions within Guilford County.

Table 22 - Map Revision History

Community	Initial Identification Date	Initial FIRM Effective Date	FIS Revision Date
CITY OF ARCHDALE	3/1/1974	7/16/1981	None
CITY OF BURLINGTON	6/21/1974	4/1/1981	Sep 06, 2006
CITY OF GREENSBORO	4/16/1971	4/16/1971	None
CITY OF HIGH POINT	6/28/1974	11/1/1979	None
GUILFORD COUNTY	4/16/1971	6/4/1980	None
TOWN OF GIBSONVILLE	6/10/1977	5/15/1980	Sep 06, 2006
TOWN OF JAMESTOWN	12/7/1973	3/4/1980	None
TOWN OF KERNERSVILLE	5/27/1977	10/20/1998	None
TOWN OF OAK RIDGE	1/17/1975	6/4/1980	None
TOWN OF PLEASANT GARDEN	6/18/2007	6/18/2007	None
TOWN OF SEDALIA	6/18/2007	6/18/2007	None

Table 22 - Map Revision History

Community	Initial Identification Date	Initial FIRM Effective Date	FIS Revision Date
TOWN OF STOKESDALE	1/17/1975	12/5/1989	None
TOWN OF SUMMERFIELD	1/17/1975	6/4/1980	None
TOWN OF WHITSETT	6/18/2007	6/18/2007	None

8.0 Study Contracting and Community Coordination

8.1 Authority and Acknowledgments

The sources of authority for this FIS are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

This FIS revises and updates the previous countywide FIS for the geographic area of Guilford County and Incorporated Areas. Table 23, “Authority and Acknowledgments,” includes information for the previous countywide FIS and for this revision. This table also includes information for the single-jurisdiction FISs published for each community included in this countywide FIS (if available) as compiled from their previously printed FIS Reports

Table 23 — Authority and Acknowledgments

Community	FIS Dated	Study Contracted By	Data Source	Contract or IAA Number	Work Completed In
CITY OF ARCHDALE	6/18/2007	NCFMP	NCFMP	286-0000-23	8/8/8888
CITY OF BURLINGTON	6/18/2007	NCFMP	NCFMP	286-0000-23	8/8/8888
CITY OF GREENSBORO	6/18/2007	NCFMP	NCFMP	286-0000-23	8/8/8888
CITY OF HIGH POINT	6/18/2007	NCFMP	NCFMP	286-0000-23	8/8/8888
GUILFORD COUNTY	6/18/2007	NCFMP	NCFMP	286-0000-23	8/8/8888
TOWN OF GIBSONVILLE	6/18/2007	NCFMP	NCFMP	286-0000-23	8/8/8888
TOWN OF JAMESTOWN	6/18/2007	NCFMP	NCFMP	286-0000-23	8/8/8888
TOWN OF KERNERSVILLE	6/18/2007	NCFMP	NCFMP	286-0000-23	8/8/8888
TOWN OF OAK RIDGE	6/18/2007	NCFMP	NCFMP	286-0000-23	8/8/8888
TOWN OF PLEASANT GARDEN	6/18/2007	NCFMP	NCFMP	286-0000-23	8/8/8888
TOWN OF SEDALIA	6/18/2007	NCFMP	NCFMP	286-0000-23	8/8/8888
TOWN OF STOKESDALE	6/18/2007	NCFMP	NCFMP	286-0000-23	8/8/8888
TOWN OF SUMMERFIELD	6/18/2007	NCFMP	NCFMP	286-0000-23	8/8/8888
TOWN OF WHITSETT	6/18/2007	NCFMP	NCFMP	286-0000-23	8/8/8888

This FIS Report was produced through a unique cooperative partnership between the State of North Carolina and FEMA. The State of North Carolina, through FEMA’s Cooperating Technical Partner (CTP) Initiative, has become the first Cooperating Technical State (CTS) and will assume primary ownership of the NFIP FIRM panels for all North Carolina communities. This role has traditionally been fulfilled by FEMA. The North Carolina Floodplain Mapping Program is conducting flood hazard analyses and producing updated, digital FIRM panels. The hydrologic and hydraulic analyses and the FIRM panels for the initial statewide mapping for Guilford County were produced by NCFMP under contract with the State of North Carolina and issued on effective 8/30/2013. For this revision, the hydrologic and hydraulic analyses and the FIRM panels were produced by NCFMP, under contract with the State of North Carolina.

8.2 Consultation Coordination Officer's Meetings/Scoping Meetings

In general, for each FIS an initial Consultation Coordination Officer’s (CCO) meeting is held with representatives from FEMA, the communities, and the study contractors to explain the nature and purpose of the FIS and to identify the streams to be studied by detailed methods. A final CCO meeting is held with representatives from FEMA, the communities, and the study contractors to review the results of the study

The dates of the initial and final CCO meetings held for Guilford County and Incorporated Areas were compiled from the previous countywide FIS Report and are shown in Table 24, “Consultation Coordination Officer’s Meetings

Table 24 — Consultation Coordination Officer’s Meetings

Community	For FIS Dated	Initial CCO Date	Attended By	Final CCO Date	Attended By
CITY OF ARCHDALE	1/16/1981	7/1/1977	Study contractor, FIA, Randolph County, and the Cities of Archdale and Asheboro	8/13/1980	Study contractor, FIA, Randolph County, and the City of Asheboro

Table 24 — Consultation Coordination Officer's Meetings

Community	For FIS Dated	Initial CCO Date	Attended By	Final CCO Date	Attended By
CITY OF ARCHDALE	1/16/1981	7/1/1977	Study contractor, FIA, Randolph County, and the Cities of Archdale and Asheboro	8/14/1980	Study contractor, FIA, Randolph County, and the City of Archdale
CITY OF ARCHDALE	1/16/1981	7/1/1977	Study contractor, FIA, Randolph County, and the Cities of Archdale and Asheboro	8/14/1980	Study contractor, FIA, Randolph County, and the county
CITY OF GREENSBORO	12/5/1989	2/28/1984	Representatives from FEMA, City of Greensboro, and U.S. Army Corps of Engineers	12/3/1987	NP
CITY OF GREENSBORO	12/5/1989	2/28/1984	Representatives from FEMA, City of Greensboro, and U.S. Army Corps of Engineers	12/3/1987	Representatives from the Study Contractor, FEMA, and the community
CITY OF GREENSBORO EXTRATERRITORIAL JURISDICTION	12/5/1989	2/28/1984	Representatives from FEMA, City of Greensboro, and U.S. Army Corps of Engineers	12/3/1987	NP
CITY OF GREENSBORO EXTRATERRITORIAL JURISDICTION	12/5/1989	2/28/1984	Representatives from FEMA, City of Greensboro, and U.S. Army Corps of Engineers	12/3/1987	Representatives from the Study Contractor, FEMA, and the community
CITY OF HIGH POINT	5/18/1998	8/9/1993	Representatives from the state, U.S. Army Corps of Engineers, the City of High Point, and FEMA	2/11/1997	Representatives from the state, U.S. Army Corps of Engineers, the City of High Point, and FEMA
CITY OF HIGH POINT EXTRATERRITORIAL JURISDICTION	5/18/1998	8/9/1993	Representatives from the state, U.S. Army Corps of Engineers, the City of High Point, and FEMA	2/11/1997	Representatives from the state, U.S. Army Corps of Engineers, the City of High Point, and FEMA
TOWN OF JAMESTOWN	9/1/1979	11/20/1975	USACE, FIA, the NCDNR and Community Development, town officials and local residents	11/9/1978	Representatives from the state, U.S. Army Corps of Engineers, the FIA, and local officials
TOWN OF JAMESTOWN	9/1/1979	11/20/1975	USACE, FIA, the NCDNR and Community Development, town officials and local residents	1/25/1979	FIA, Wilmington District USACE, community officials
TOWN OF JAMESTOWN	9/1/1979	11/20/1975	USACE, FIA, the NCDNR and Community Development, town officials and local residents	1/25/1979	Study contractor and city officials
TOWN OF JAMESTOWN EXTRATERRITORIAL JURISDICTION	9/1/1979	11/20/1975	USACE, FIA, the NCDNR and Community Development, town officials and local residents	11/9/1978	Representatives from the state, U.S. Army Corps of Engineers, the FIA, and local officials
TOWN OF JAMESTOWN EXTRATERRITORIAL JURISDICTION	9/1/1979	11/20/1975	USACE, FIA, the NCDNR and Community Development, town officials and local residents	1/25/1979	FIA, Wilmington District USACE, community officials
TOWN OF JAMESTOWN EXTRATERRITORIAL JURISDICTION	9/1/1979	11/20/1975	USACE, FIA, the NCDNR and Community Development, town officials and local residents	1/25/1979	Study contractor and city officials
TOWN OF KERNERSVILLE	10/20/1998	8/8/8888	NP	4/3/1996	Representatives of Bethania, Kernersville, Winston-Salem, the county, USACE, and FEMA
TOWN OF KERNERSVILLE	10/20/1998	8/8/8888	NP	5/2/1996	Notified by FEMA in a letter.
TOWN OF KERNERSVILLE	10/20/1998	8/8/8888	NP	8/8/8888	NP

For each FIS produced during the initial phase of statewide, an Initial Scoping Meeting was held with representatives from FEMA, the county, the incorporated communities, and the State of North Carolina. A Final Scoping meeting was held to review the Draft Basin Plan and finalize the streams to be studied by detailed methods. This information was then used to create the Final Basin Plan.

For map maintenance revisions, only one scoping meeting was held to identify the streams to be newly studied by detailed methods, redelineated, or to be studied by limited detailed methods. This information was then used to create the Map Maintenance Plan.

The historical dates of the Initial and Final Scoping Meetings held during the first round of statewide mapping for Guilford County are shown in Table 25, "Scoping Meetings." Meetings held for the map maintenance revision are also included below for Guilford County.

Table 25 — Scoping Meetings

Community	Riverbasin	Initial Scoping Date	Attended By	Final Scoping Date	Attended By
CITY OF GREENSBORO	CAPE FEAR	12/5/2000	Representatives from FEMA, NCDEM, Dewberry and Community Officials	3/6/2001	Representatives from FEMA, NCDEM, Dewberry and Community Officials
CITY OF GREENSBORO EXTRATERRITORIAL JURISDICTION	CAPE FEAR	12/5/2000	Representatives from FEMA, NCDEM, Dewberry and Community Officials	3/6/2001	Representatives from FEMA, NCDEM, Dewberry and Community Officials
CITY OF HIGH POINT	CAPE FEAR	12/5/2000	Representatives from FEMA, NCDEM, Dewberry and Community Officials	3/6/2001	Representatives from FEMA, NCDEM, Dewberry and Community Officials
CITY OF HIGH POINT EXTRATERRITORIAL JURISDICTION	CAPE FEAR	12/5/2000	Representatives from FEMA, NCDEM, Dewberry and Community Officials	3/6/2001	Representatives from FEMA, NCDEM, Dewberry and Community Officials
TOWN OF JAMESTOWN	CAPE FEAR	12/6/2000	Representatives from FEMA, NCDEM, Dewberry and Community Officials	3/6/2001	Representatives from FEMA, NCDEM, Dewberry and Community Officials
TOWN OF JAMESTOWN EXTRATERRITORIAL JURISDICTION	CAPE FEAR	12/6/2000	Representatives from FEMA, NCDEM, Dewberry and Community Officials	3/6/2001	Representatives from FEMA, NCDEM, Dewberry and Community Officials

Preliminary Meetings are held in each county to disseminate and review the FIS Report and FIRM panels. This meeting is required by FEMA. Public Participation Meetings are not required by FEMA, but provide an opportunity to review and discuss the FIS Report and FIRM panels for each jurisdiction in a public setting. The dates for the preliminary and public participation meetings are shown in Table 26, "Preliminary and Public Participation Meetings."

Table 26 — Preliminary and Public Participation Meetings

Community	For FIS Dated	Meeting Location	Preliminary Meeting Date	Attended By	Public Meeting Date	Attended By
CITY OF GREENSBORO	6/18/2007	City of Greensboro	10/6/2005	Officials from Guilford county, NCDEM, Dewberry and Watershed Concepts	11/3/2005	The Public
CITY OF GREENSBORO EXTRATERRITORIAL JURISDICTION	6/18/2007	City of Greensboro	10/6/2005	Officials from Guilford county, NCDEM, Dewberry and Watershed Concepts	11/3/2005	The Public

9.0 Guide to Additional Information

9.1 Additional Information

All FIRM panels created for the State of North Carolina are produced in a seamless statewide format; however, FIS Reports are produced for individual counties.

Copies of FIRM panels are available for a nominal fee. To obtain a copy of the current flood map for a specific community, contact the FEMA Map Service Center at 1-800-358-9616. To facilitate the processing of your request, please review the current flood map on file at your local community repository and obtain the panel number in which you are interested. If necessary, users may also order a FIRM Index from the Map Service Center to determine the appropriate panel numbers. The Map Service Center also accepts orders for the Community Status Book and the Flood Insurance Manual. The FIS Report, FIRM panels, and digital data used to produce the FIRM panels are available online at www.ncfloodmaps.com.

Information concerning the data used in the preparation of this FIS, contained in an Engineering Study Data Package, may be obtained by contacting the FEMA Regional Office at the address listed on the Notice to Flood Insurance Study Users page at the front of this report.

Table 27, "Additional Information" is not applicable in Guilford County.

10.0 Appendix

10.1 Bibliography

All bibliography and reference information associated within this Flood Insurance Study are maintained and accessible within the geodatabase structure and associated metadata. Users requiring more specific information should contact the North Carolina Floodplain Mapping Program (NCFMP) at www.ncfloodmaps.com under the Contacts menu