FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

A Report of Flood Hazards in

CRAVEN COUNTY, NORTH CAROLINA AND INCORPORATED AREAS

Community Name	Community Number
CITY OF HAVELOCK	370265
CITY OF NEW BERN	370074
CRAVEN COUNTY	370072
TOWN OF BRIDGETON	370436
TOWN OF COVE CITY	370601
TOWN OF DOVER	370664
TOWN OF RIVER BEND	370432
TOWN OF TRENT WOODS	370434
TOWN OF VANCEBORO	370075

NORTH CAROLINA
Cooperating Technical State
FEMA'S COOPERATING TECHNICAL PARTNER

REVISED: 6/15/2022

Federal Emergency Management Agency

State of North Carolina

Flood Insurance Study Number

37049CV000D

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.

Flood Insurance Study (FIS) means an examination, evaluation, and determination of flood hazards, corresponding water surface elevations, flood hazard risk zones, and other flood data in a community issued by the North Carolina Floodplain Mapping Program (NCFMP). The Flood Insurance Study (FIS) is comprised of the following products used together: the Digital Flood Hazard Database, the Water Surface Elevation Rasters, the digitally derived, autogenerated Flood Insurance Rate Map and the Flood Insurance Survey Report. A Flood Insurance Survey is a compilation and presentation of flood risk data for specific watercourses, lakes, and coastal flood hazard areas within a community. This report contains detailed flood elevation data, data tables and FIRM indices. When a flood study is complete for the National Flood Insurance Program (NFIP), the digital information, reports and maps are assembled into a FIS. Information shown on in the FIS is provided in digital format by the NCFMP.

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 North Carolina Floodplain Mapping Program. It is advisable to use https://fris.nc.gov or contact the community repository for any additional data.

The following is a list of the publication dates of this Countywide FIS Report starting with the initial Report accompanying the North Carolina Statewide FIRM:

Date	Reason
7/2/2004	Initial Countywide FIS Report Effective Date
5/16/2008	Index and Panel Updates
4/16/2013	Countywide FIS Report Effective Date
6/19/2020	Countywide FIS Report Effective Date
6/15/2022	Countywide FIS Report Effective Date

This FIS has been produced as part of the North Carolina Floodplain Mapping Program. Craven 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

3005 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 Craven County and the jurisdictions therein (hereinafter referred to collectively as Craven 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 Craven County, North Carolina, including the jurisdictions listed in Table 1.

Table 1 - Jurisdictions in Craven County

Community	Included in this FIS	If Not Included, Location of Flood Hazard/Flood Insurance Rate Data
CITY OF HAVELOCK	Yes	*
CITY OF NEW BERN	Yes	*
CRAVEN COUNTY	Yes	*
TOWN OF BRIDGETON	Yes	*
TOWN OF COVE CITY	Yes	*
TOWN OF DOVER	Yes	*
TOWN OF RIVER BEND	Yes	*
TOWN OF TRENT WOODS	Yes	*
TOWN OF VANCEBORO	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.

1.4 Considerations for Using this Flood Insurance Study Report

The NFIP encourages State and local governments to implement sound floodplain management programs. To assist in this endeavor, each FIS Report provides floodplain data, which may include a combination of the following: 10-, 4-, 2-, 1-, and 0.2-percent annual chance flood elevations (the 1% annual chance flood elevation is also referred to as the Base Flood Elevation (BFE)); delineations of the 1% annual chance and 0.2% annual chance floodplains; and 1% annual chance floodway. This information is presented on the FIRM and/or in many components of the FIS Report, including Flood Profiles, Floodway Data tables, Summary of Non-Coastal Stillwater Elevations tables, and Coastal Transect Parameters tables (not all components may be provided for a specific FIS).

It is, therefore, the responsibility of the user to consult with community officials by contacting the community repository to obtain the most current FIS Report components. Communities participating in the NFIP have established repositories of flood hazard data for floodplain management and flood insurance purposes. Community map repository addresses are provided in Table 28, "Map Repositories," within this FIS Report.

New FIS Reports are frequently developed for multiple communities, such as entire counties. A countywide FIS Report incorporates previous FIS Reports for individual communities and the unincorporated area of the county (if not jurisdictional) into a single document and supersedes those documents for the purposes of the NFIP.

The Initial Countywide FIS Report for Craven became Effective on 7/2/2004. Refer to Table 24 for information about subsequent revisions to FIRMs.

Selected FIRM panels for the community may contain information (such as floodways and cross sections) that was previously shown separately on the corresponding Flood Boundary and Floodway Map panels. In addition, former flood hazard zone designations have been changed as follows:

Old Zone	New Zone
A1 through A30	AE
V1 through V30	VE
B	X (shaded)
C	X (unshaded)

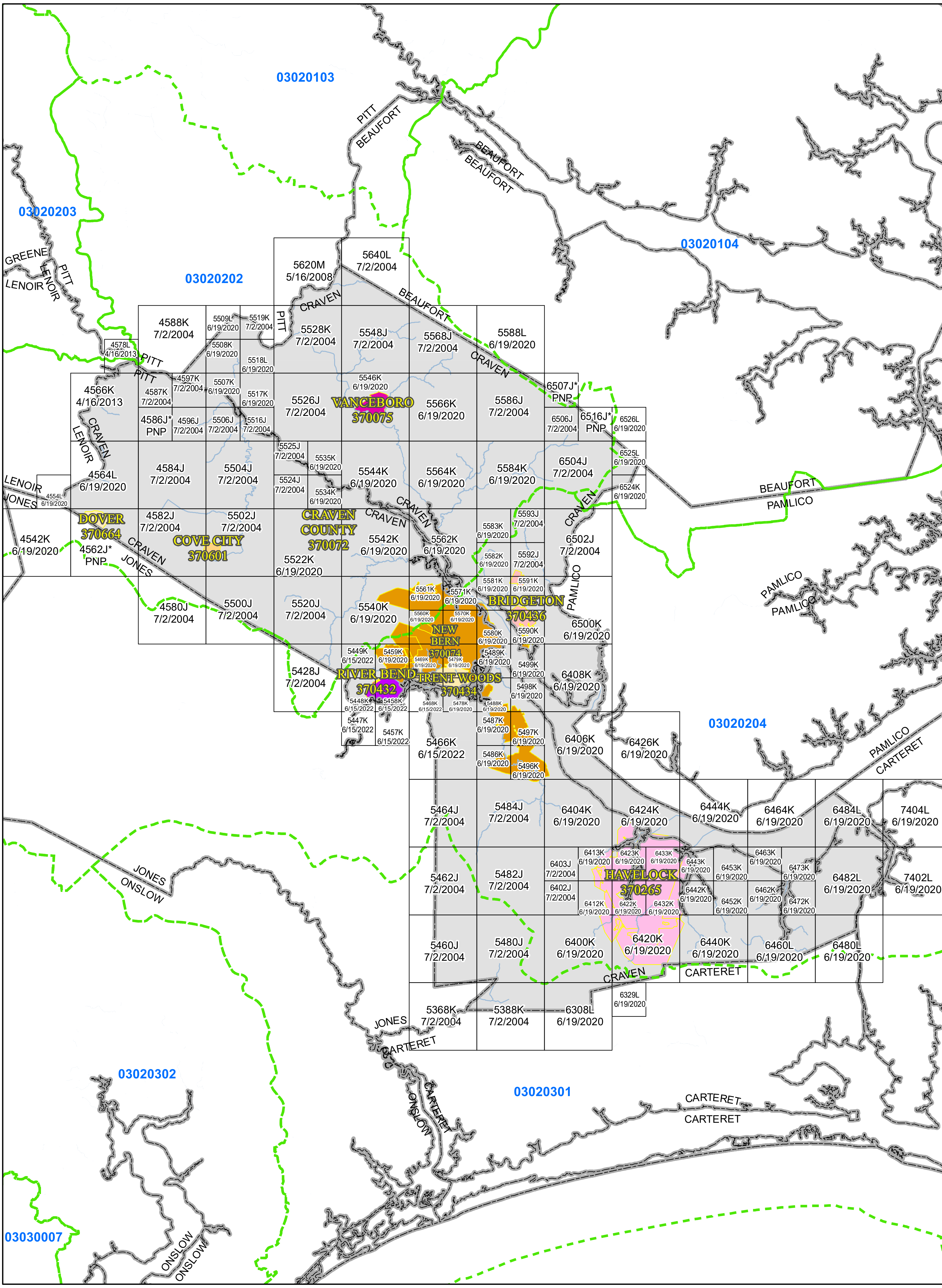
FEMA does not impose floodplain management requirements or special insurance ratings based on Limit of Moderate Wave Action (LiMWA) delineations at this time. The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. If the LiMWA is shown on the FIRM, it is being provided by FEMA as information only. For communities that do adopt Zone VE building standards in the area defined by the LiMWA, additional Community Rating System (CRS) credits are available. Refer to Section 2.5.4 for additional information about the LiMWA.

The CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. Visit the FEMA Web site at http://www.fema.gov or contact your appropriate FEMA Regional Office for more information about this program.

Previous FIS Reports and FIRMs may have included levees that were accredited as reducing the risk associated with the 1% annual chance flood based on the information available and the mapping standards of the NFIP at that time. For FEMA to continue to accredit the identified levees, the levees must meet the criteria of the Code of Federal Regulations, Title 44, Section 65.10 (44 CFR 65.10), titled "Mapping of Areas Protected by Levee Systems.

Since the status of levees is subject to change at any time, the user should contact the appropriate agency for the latest information regarding levees presented in Table 7 of this FIS Report. For levees owned or operated by the U.S. Army Corps of Engineers (USACE), information may be obtained from the USACE national levee database. For all other levees, the user is encouraged to contact the appropriate local community.

FEMA has developed a Guide to Flood Maps (FEMA 258) and online tutorials to assist users in accessing the information contained on the FIRM. These include how to read panels and step-by-step instructions to obtain specific information. To obtain this guide and other assistance in using the FIRM, visit the FEMA Web site at http://www.fema.gov.



Map Projection:
North Carolina State Plane Projection Feet (Zone 3200)
Datum: NAD 1983 (Horizontal), NAVD 1988 (Vertical)

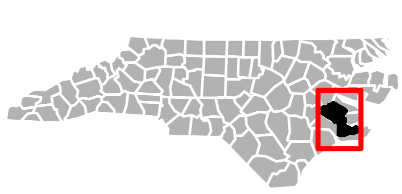
The corporate limits shown on this FIRM Index are based on the best information available at the time of publication. As such, they may be more current than those shown on FIRM panels previously issued under the North Carolina Seamless paneling scheme

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTPS://FRIS.NC.GOV/FRIS
HTTPS://MSC.FEMA.GOV

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION
*PANEL NOT PRINTED

COUNTY LOCATOR



NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

CRAVEN COUNTY, NORTH CAROLINA And Incorporated Areas

PANELS PRINTED:
4542, 4554, 4564, 4566, 4578, 4580, 4582, 4584, 4587, 4588, 4596, 4597, 5368, 5388, 5428, 5447, 5448, 5449, 5457, 5458, 5459, 5460, 5462, 5464, 5466, 5468, 5469, 5478, 5479, 5480, 5482, 5484, 5486, 5487, 5488, 5489, 5496, 5497, 5498, 5499, 5500, 5502, 5504, 5506, 5507, 5508, 5509, 5516, 5517, 5518, 5519, 5520, 5522, 5524, 5525, 5526, 5528, 5534, 5535, 5540, 5542, 5544, 5546, 5548, 5560, 5561, 5562, 5564, 5566, 5568, 5570, 5571, 5580, 5581, 5582, 5583, 5584, 5586, 5588, 5590, 5591, 5592, 5593, 5620, 5640, 6308, 6329, 6400, 6402, 6403, 6404, 6406, 6408, 6412, 6413, 6420, 6422, 6423, 6424, 6426, 6432, 6433, 6440, 6442, 6443, 6444, 6452, 6453, 6460, 6462, 6463, 6464, 6472, 6473, 6480, 6482, 6484, 6500, 6502, 6504, 6506, 6524, 6525, 6526, 7402, 7404

FEMA

MAP NUMBER
37049CIND0E

MAP REVISED
6/15/2022

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 2, "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.

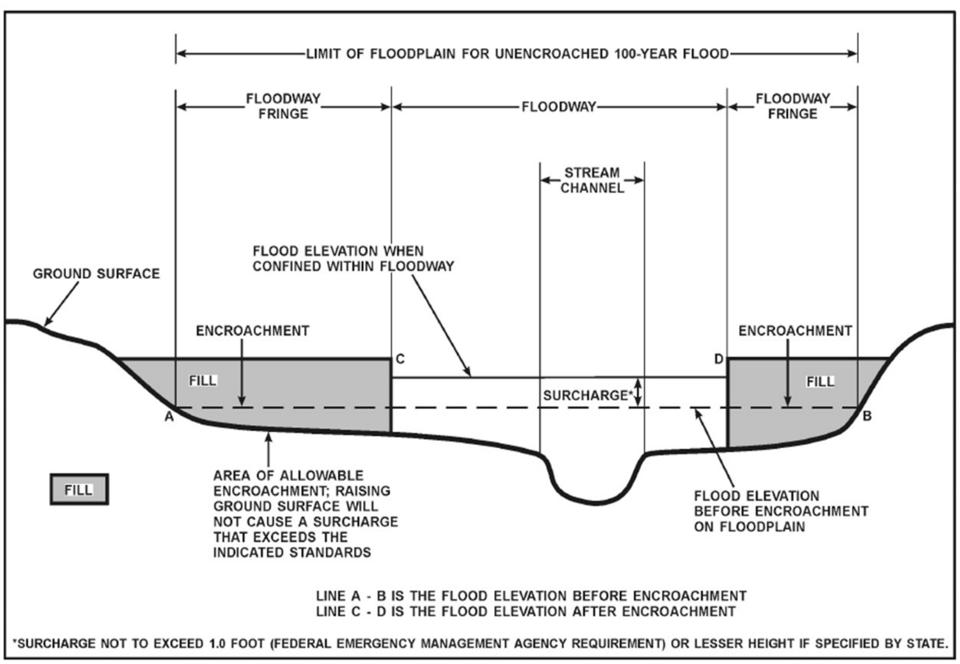


Figure 2 - Floodway Schematic

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 if applicable in the 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.

Coastal flood elevations are provided in the Summary of Coastal Stillwater Elevations table in this report. If the elevation on the FIRM is higher than the elevation shown in this table, a wave height, wave runup and/or wave setup component likely exists, in which case, the higher elevation should be used for construction and/or floodplain management purposes.

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 exceedance) 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.

2.5 Coastal Flood Hazard Areas

For most areas along rivers, streams, and small lakes, BFEs and floodplain boundaries are based on the amount of water expected to enter the area during a 1% annual chance flood and the geometry of the floodplain. Floods in these areas are typically caused by storm events. However, for areas on or near ocean coasts, large rivers, or large bodies of water, BFE and floodplain boundaries may need to be based on additional components, including storm surges and waves. Communities on or near ocean coasts face flood hazards caused by offshore seismic events as well as storm events.

Coastal flooding sources that are included in this Flood Risk Project are shown in Table 18.

2.5.1 Water Elevations and the Effects of Waves

Specific terminology is used in coastal analyses to indicate which components have been included in evaluating flood hazards.

The stillwater elevation (SWEL or still water level) is the surface of the water resulting from astronomical tides, storm surge, and freshwater inputs, but excluding wave setup contribution or the effects of waves.

- *Astronomical tides* are periodic rises and falls in large bodies of water caused by the rotation of the earth and by the gravitational forces exerted by the earth, moon and sun.
- *Storm surge* is the additional water depth that occurs during large storm events. These events can bring air pressure changes and strong winds that force water up against the shore.
- *Freshwater inputs* include rainfall that falls directly on the body of water, runoff from surfaces and overland flow, and inputs from rivers.

The 1% annual chance stillwater elevation is the stillwater elevation that has been calculated for a storm surge from a 1% annual chance storm. The 1% annual chance storm surge can be determined from analyses of tidal gage records, statistical study of regional historical storms, or other modeling approaches. Stillwater elevations for storms of other frequencies can be developed using similar approaches.

The total stillwater elevation (also referred to as the mean water level) is the stillwater elevation plus wave setup contribution but excluding the effects of waves.

- *Wave setup* is the increase in stillwater elevation at the shoreline caused by the reduction of waves in shallow water. It occurs as breaking wave momentum is transferred to the water column.

Like the stillwater elevation, the total stillwater elevation is based on a storm of a particular frequency, such as the 1% annual chance storm. Wave setup is typically estimated using standard engineering practices or calculated using models, since tidal gages are often sited in areas sheltered from wave action and do not capture this information.

Coastal analyses may examine the effects of overland waves by analyzing storm-induced erosion, overland wave propagation, wave runup, and/or wave overtopping.

- *Storm-induced erosion* is the modification of existing topography by erosion caused by a specific storm event, as opposed to general erosion that occurs at a more constant rate.
- *Overland wave propagation* describes the combined effects of variation in ground elevation, vegetation, and physical features on wave characteristics as waves move onshore.
- *Wave runup* is the uprush of water from wave action on a shore barrier. It is a function of the roughness and geometry of the shoreline at the point where the stillwater elevation intersects the land.
- *Wave overtopping* refers to wave runup that occurs when waves pass over the crest of a barrier.

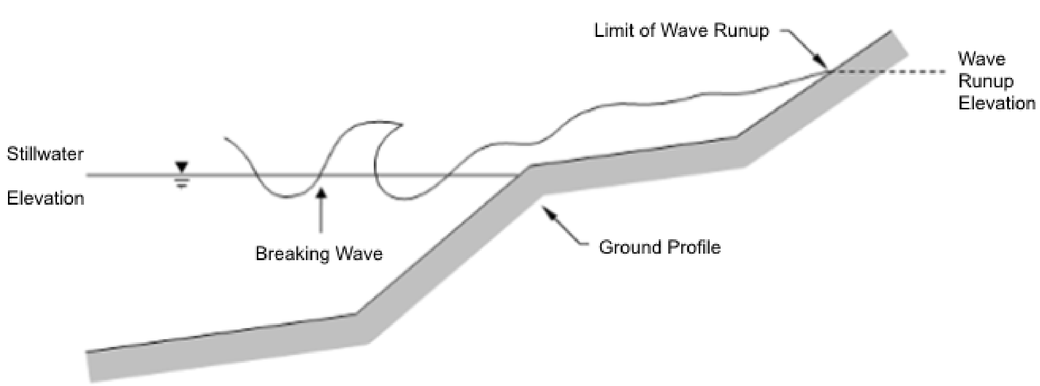


Figure 3: Wave Runup Transect Schematic

2.5.2 Floodplain Boundaries and BFEs for Coastal Areas

For coastal communities along the Atlantic and Pacific Oceans, the Gulf of Mexico, the Great Lakes, and the Caribbean Sea, flood hazards must take into account how storm surges, waves, and extreme tides interact with factors such as topography and vegetation. Storm surge and waves must also be considered in assessing flood risk for certain communities on rivers or large inland bodies of water.

Beyond areas that are affected by waves and tides, coastal communities can also have riverine floodplains with designated floodways, as described in previous sections.

Floodplain Boundaries

In many coastal areas, storm surge is the principle component of flooding. The extent of the 1% annual chance floodplain in these areas is derived from the total stillwater elevation (stillwater elevation including storm surge plus wave setup) for the 1% annual chance storm. The methods that were used for calculation of total stillwater elevations for coastal areas are described in Section 5.3 of this FIS Report. Location of total stillwater elevations for coastal areas are shown in Table 20, “Coastal Transect Parameters.”
In some areas, the 1% annual chance floodplain is determined based on the limit of wave runup or wave overtopping for the 1% annual chance storm surge. The methods that were used for calculation of wave hazards are described in Section 5.3 of this FIS Report.

Table 18 and 18P presents the types of coastal analyses that were used in mapping the 1% annual chance floodplain in coastal areas.

Coastal BFEs

Coastal BFE’s are calculated as the total stillwater elevation (stillwater elevation including storm surge plus wave setup) for the 1% annual chance storm plus the additional flood hazard from overland wave effects (storm-induced erosion, overland wave propagation, wave runup and wave overtopping).

Where they apply, coastal BFEs are calculated along transects extending from offshore to the limit of coastal flooding onshore. Results of these analyses are accurate until local topography, vegetation, or development type and density within the community undergoes major changes.

Parameters that were included in calculating coastal BFEs for each transect included in this FIS Report are presented in Table 20, “Coastal Transect Parameters.” The locations of transects are shown in Figure 5, “Transect Location Map.” More detailed information about the methods used in coastal analyses and the results of intermediate steps in the coastal analyses are presented in Section 5.3 of this FIS Report. Additional information on specific mapping methods is provided in Section 6.4 of this FIS Report.

2.5.3 Coastal High Hazard Areas

Certain areas along the open coast and other areas may have higher risk of experiencing structural damage caused by wave action and/or high-velocity water during the 1% annual chance flood. These areas will be identified on the FIRM as Coastal High Hazard Areas.

- *Coastal High Hazard Area (CHHA)* is a SFHA extending from offshore to the inland limit of the primary frontal dune (PFD) or any other area subject to damages caused by wave action and/or high-velocity water during the 1% annual chance flood.
- *Primary Frontal Dune (PFD)* is a continuous or nearly continuous mound or ridge of sand with relatively steep slopes immediately landward and adjacent to the beach. The PFD is subject to erosion and overtopping from high tides and waves during major coastal storms.

CHHAs are designated as “V” zones (for “velocity wave zones”) and are subject to more stringent regulatory requirements and a different flood insurance rate structure. The areas of greatest risk are shown as VE on the FIRM. Zone VE is further subdivided into elevation zones and shown with BFEs on the FIRM.

The landward limit of the PFD occurs at a point where there is a distinct change from a relatively steep slope to a relatively mild slope; this point represents the landward extension of Zone VE. Areas of lower risk in the CHHA are designated with Zone V on the FIRM. More detailed information about the identification and designation of Zone VE is presented in Section 6.4 of this FIS Report.

Areas that are not within the CHHA but are SFHAs may still be impacted by coastal flooding and damaging waves; these areas are shown as “A” zones on the FIRM.

Figure 4 - "Coastal Transect Schematic," illustrates the relationship between the base flood elevation, the 1% annual chance stillwater elevation, and the ground profile as well as the location of the Zone VE and Zone AE areas in an area without a PFD subject to overland wave propagation. This figure also illustrates energy dissipation and regeneration of a wave as it moves inland.

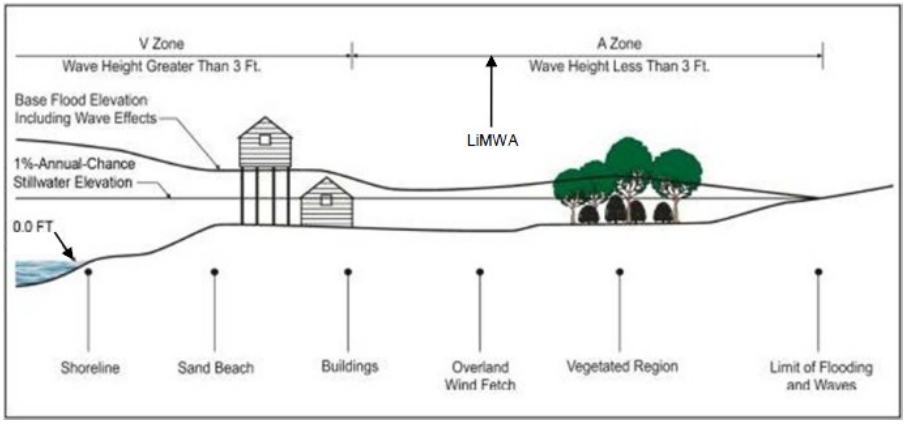


Figure 4 - Coastal Transect Schematic

Methods used in coastal analyses in this Flood Risk Project are presented in Section 5.3 and mapping methods are provided in Section 6.4 of this FIS Report.

In many cases, the BFE on the FIRM is higher than the stillwater elevations shown in Table 21 due to the presence of wave effects. The higher elevation should be used for construction and/or floodplain management purposes.

2.5.4 Limit of Moderate Wave Action

Laboratory tests and field investigations have shown that wave heights as little as 1.5 feet can cause damage to and failure of typical Zone AE building construction. Wood-frame, light gage steel, or masonry walls on shallow footings or slabs are subject to damage when exposed to waves less than 3 feet in height. Other flood hazards associated with coastal waves (floating debris, high velocity flow, erosion, and scour) can also damage Zone AE construction. Therefore, a LiMWA boundary may be shown on the FIRM as an informational layer to assist coastal communities in safe rebuilding practices. The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. The location of the LiMWA relative to Zone VE and Zone AE is shown in Figure 4, Coastal Transect Schematic.

The effects of wave hazards in Zone AE between Zone VE (or the shoreline where Zone VE is not identified) and the limit of the LiMWA boundary are similar to, but less severe than, those in Zone VE where 3-foot or greater breaking waves are projected to occur during the 1% annual chance flooding event. Communities are therefore encouraged to adopt and enforce more stringent floodplain management requirements than the minimum NFIP requirements in the LiMWA. The NFIP Community Rating System provides credits for these actions.

Where wave runup elevations dominate over wave heights, there is no evidence to date of significant damage to residential structures by runup depths less than 3 feet. Examples of these areas include areas with steeply sloped beaches, bluffs, or flood protection structures that lie parallel to the shore. In these areas, the FIRM shows the LiMWA immediately landward of the VE/AE boundary. Similarly, in areas where the zone VE designation is based on the presence of a primary frontal dune or wave overtopping, the LiMWA is delineated immediately landward of the Zone VE/AE boundary.

3.0 Insurance Applications

3.1 National Flood Insurance Program Insurance Zones

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.

4.0 Area Studied

Craven County is found in the Coastal Plain region of North Carolina. It is surrounded by Lenoir, Pitt, and Beaufort Counties to the north, Pamlico County to the east, Carteret County to the south, and Jones 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)
Lower Neuse	03020204	Neuse River	The Lower Neuse River Basin reaches up into Lenoir County, North Carolina and then drains east into the Pamlico Sound. The basin drains significant portions of Carteret, Craven, Jones, and Pamlico Counties.	1,583
Middle Neuse	03020202	Neuse River	The Middle Neuse River Basin headwaters are in Wayne and Pitt Counties. The basin also drains significant portions of Beaufort, Greene, Jones, and Lenoir Counties and ends near New Bern, North Carolina in Craven County.	1,065
Pamlico	03020104	Pamlico River	The Pamlico River Basin covers the reach of Pamlico River in Beaufort County between Tar River and the Pamlico Sound. The basin also drains portions of Craven, Hyde, Pamlico, Tyrell, and Washington Counties.	1,306
White Oak River	03020301	White Oak River	The White Oak River Basin drains southern portions of Jones and Craven Counties. The basin also includes coastal regions of Carteret and Onslow Counties.	932

4.2 Principal Flood Problems

Table 4, "Principal Flood Problems" contains a list of principal flooding problems in Craven County.

Table 4 - Principal Flood Problems

Flooding Source	Problem
All Sources	The dominant sources of flooding in Craven County are storm surge and riverine flooding. Storm surge from the Atlantic Ocean propagates into Pamlico Sound, which further propagates into the Neuse River, Hancock Creek, Jack Smith Creek, Lawson Creek, Pamlico River, downstream portions of Rocky Run/Samuels Creek, Slocum Creek, Southwest Prong Slocum Creek, and the Trent River; riverine flooding from heavy rainfall occurs on Clubfoot Creek, East Prong Slocum Creek and Tributary, Jimmies Creek, Maple Cypress, Mauls Swamp, Mills Branch, Mills Branch Tributary, Morris Branch, Mosley Creek, Mosley Creek Tributary, Samuels Creek/Rocky Run, Scotts Creek, Snake Branch, Southwest Prong Slocum Creek, Swift Creek, Trent River Tributary, Tucker Creek, Village Creek, and Wilson Creek. Not all storms that pass close to the study area produce extremely high surge. Similarly, storms that produce flooding conditions in one area may not necessarily produce flooding conditions in other parts of the study area. North Carolina experiences hurricanes, tropical storms, and severe extra-tropical cyclones usually referred to as northeasters. Unlike a hurricane, which may pass over a coastal location in a fraction of a day, a northeaster may blow from the same direction over long distances for several days (Baker, 1978). The contribution from northeasters to the overall storm surge elevation in the Craven County area was found to be insignificant compared to hurricanes; therefore, only the effects of hurricane and tropical storm induced surge elevations were considered. In other areas of North Carolina, particularly the Outer Banks area of the northern part of the state, northeasters were found to provide a significant contribution to the overall storm surge. The primary flooding problem in the Town of Vanceboro is the overflow of Swift Creek and Mauls Swamp that results from heavy rains.

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.

Hurricane Donna
(8/29/1960)
Hurricane Donna crossed the North Carolina coast between Wilmington and Morehead City of September 11, 1960. The center of the storm passed a few miles east of Wrightsville Beach, although Wilmington and Wrightsville Beach were each in the eye for about an hour. The lowest barometric pressure recorded during this storm was 962 mb at Wilmington. High tides, 6 to 8 feet above normal, together with high winds, caused severe damage at many points. Winds of hurricane force, up to 97 mph, were reported from Wilmington. During the night of September 11, the storm center moved northward, parallel, and slightly east of a line drawn between Wilmington and Norfolk. Wind gusts were in excess of 97 mph and tides were 4 to 8 feet above normal. High tides of 10.3 and 8.3 feet NGVD were reported at Atlantic Beach and Wrightsville Beach, respectively. Coastal communities from Wilmington to Nags Head suffered heavy structural damage and considerable beach erosion. Eight deaths and approximately 100 injuries were attributed to the storm. Damages were estimated at millions of dollars.

Hurricane Helene
(9/21/1958)
Hurricane Helene was one of the most powerful storms of recent history. Fortunately for the people of North Carolina, the storm center was well out at sea as it moved north on September 26 and 27. Nevertheless, high winds were recorded at Wilmington, with the highest winds measured at 85 mph and peak gusts recorded at 135 mph. The lowest reported central pressure of the storm was 932 mb; this measurement was recorded south-southeast of Cape Fear early on the morning of September 27. There was some beach erosion due to seas and tides, but this erosion was minimized by the fact that the storm occurred at the time of low astronomical tides. High tides were estimated at 3 to 5 feet above normal; a high tide of 5.1 feet NGVD was reported at Wrightsville Beach. Tides were higher on the southern edge of Pamlico Sound, when the wind shift as the storm center passed brought the tides 7 to 8 feet above normal.

Hurricane Ione
(9/10/1955)
Hurricane Ione moved up from the south and crossed the North Carolina coast near Salter Path, 10 miles west of Morehead City, at about 5 a.m. on September 19. It then slowly curved to the northeast and went out to sea near the Virginia border early on September 20. When Ione entered North Carolina, winds gusted to over 100 mph. Wind speeds of 75 mph with gusts to 107 mph were recorded at Cherry Point. The minimum barometric pressure recorded over North Carolina during this storm was 960 mb. Heavy rains also accompanied Ione. At the same time, prolonged easterly winds drove tidal water onto beaches and into sounds and estuaries to heights of 3 to 10 feet above normal. The result was the largest inundation of eastern North Carolina ever known to have occurred. At New Bern, the depth of the flood was the greatest ever recorded, about 10.5 feet above mean low water; forty city blocks were flooded, several hundred homes were washed away, and thousands more were flooded with up to 4 feet of water. A high tide of 6.9 feet NGVD was reported at Atlantic Beach, North Carolina, and an estimated 5.3 feet NGVD at Wrightsville Beach.

Hurricane Diane
(8/7/1955)
Five days after Hurricane Connie, and before the damage from that storm could be estimated, Hurricane Diane struck the coast near Carolina Beach about 6 a.m. on August 17. The highest wind speed reported during this storm was 74 mph at Wilmington Airport. Storm tides ranged from 5 to 9 feet above mean low water on the beaches (6.8 feet NGVD at Wrightsville Beach), and in some areas of sounds and rivers emptying into sounds, estimated water levels were 5 to 9 feet above normal. Water was 3 feet above flood level in the business district of Belhaven and “waist deep” in parts of Washington and New Bern. Diane caused severe beach erosion along the North Carolina coast. The total damage caused in North Carolina by both Connie and Diane was estimated to be in excess of $90 million. No deaths or injuries in North Carolina were attributed to either of the storms.

Hurricane Connie
(8/3/1955)
Hurricane Connie entered North Carolina close to Cape Lookout at about 8:30 a.m. on August 12. The prolonged pounding of high waves against the coast caused tremendous beach erosion, probably worse than that caused by Hazel in 1954. Storm tides along the coast from Southport to Nags Head were reported to be about 7 feet NGVD (6.9 feet NGVD at Wrightsville Beach and 7.5 feet NGVD at Kure Beach). Water in sounds and near the mouths of rivers was 5 to 8 feet above normal. At Wilmington, winds were reported at 72 mph, gusting to 83 mph. At Fort Macon, winds of 75 mph, gusts of 100 mph, and barometric pressure of 962 mb were reported. The storm also brought torrential rains with the maximum rainfall, around 12 inches in 48 hours, occurring near Morehead City. Total damage throughout the state was estimated at $50 million.

Hurricane Hazel
(10/5/1954)
Hurricane Hazel was the most destructive storm in the history of North Carolina. The storm crossed the coast just north of Myrtle Beach, South Carolina, as hurricane winds hit the Atlantic coast between Georgetown, South Carolina, and Cape Lookout, North Carolina. Storm tides (i.e., hurricane surge) devastated the immediate ocean front of this stretch of coast. Every fishing pier along 170 miles of coast, from Myrtle Beach to Cedar Island, North Carolina, was destroyed. The waterfront between the South Carolina/North Carolina state boundary and Cape Fear was destroyed. Beach homes, which had been built in a continuous line five miles long behind and along grass-covered dunes (some of which were 20 feet high), simply disappeared – dunes, houses, and all. From Cape Fear to Cape Lookout, the degree of devastation was not as great, but oceanfront property was damaged an average of 50 percent along this entire stretch. To the north of Cape Lookout, the damage was relatively light. Storm surges of 16.6 feet above NGVD were observed at Holden Beach Bridge and Calabash, North Carolina. The highest tide of record was observed during Hurricane Hazel, when ocean tide levels reached approximately 10 feet NGVD at Wrightsville Beach and 11 feet NGVD at Carolina Beach. The lowest recorded barometric pressure of the storm was 938 millibars (mb), reported at Little River Inlet on the North Carolina/South Carolina border. Maximum wind speeds were 83 miles per hour (mph), with gusts recorded at 98 mph at Wilmington, North Carolina, 106 mph at Myrtle Beach, South Carolina, and an estimated 150 mph at Cape Fear. The storm continued inland through North Carolina, causing widespread damage due to high winds and record rainfalls. Nineteen people were killed and 200 injured during this storm.

Table 5, “Historic Flood Elevations”, lists selected flooding sources in Craven County with records of past stages. The table shows the historic peak, a location description, approximate stream station, the date of the historic peak, and approximate recurrence interval of the flood elevation. The approximate recurrence interval for a flood is often estimated based on an analysis of rainfall amounts from a storm and /or stream gage data.

Table 5 - Historic Flood Elevations

Flooding Source/Tropical Storm	Location Description	Approx. Stream Station	Historic Peak (Feet NAVD 88)	Date	Approximate Recurrence Interval (in years)
East Prong Slocum Creek / Heavy Rain	Mark is 120 feet East of culvert crossing Wood Haven Drive; 40 feet West of sewer R/W	9653	7.5	*	*
East Prong Slocum Creek / Unknown	Base of fence at gate in backyard	14492	11.1	*	*
Maple Cypress / Hurricane Floyd	Water rose 4.5 feet above the top of Maple Cypress Road	3478	21.1	9/16/1999	*
Maple Cypress / Unknown	Water came about 25 feet past channel banks into field	17371	25.4	*	*
Neuse River / Hurricane Floyd	Upstream face of Weyerhaeuser Road	57075	10.6	9/1/1999	100
Neuse River / Hurricane Floyd	Downstream face of West Craven Middle School Road	65300	11.7	9/1/1999	100
Neuse River / Hurricane Floyd	400 feet southwest of intersection of River Road and Cowpens Landing Road	76975	14.6	9/1/1999	100
Neuse River / Hurricane Floyd	Approximately 1.0 mile upstream of intersection of River Road and State Camp Road	94750	17.7	9/1/1999	100
Neuse River / Hurricane Floyd	Backwater up Core Creek (approximately 2.9 miles downstream of NC 55)	127000	18.7	9/1/1999	100
Neuse River / Hurricane Floyd	Backwater up Village Creek (downstream face of Biddle Road)	135000	22.2	9/1/1999	100
Neuse River / Hurricane Floyd	Approximately 0.25 mile downstream of confluence of Contentnea Creek	149375	23.8	9/1/1999	100
Neuse River / Hurricane Floyd	Approximately 0.70 mile southeast of intersection of Saw Mill and Tick Bite Road	180773	27.1	9/1/1999	500
Neuse River / Hurricane Floyd	Approximately 400 feet southwest of intersection of East New Bern Road and Trenton Highway	253195	35.8	9/1/1999	100
Neuse River / Hurricane Floyd	Downstream face of State Highway 11	265071	37.4	9/1/1999	100
Neuse River / Hurricane Floyd	Upstream face of U.S. Highway 70/Queen St.	258355	37.6	9/1/1999	100
Neuse River / Hurricane Floyd	Upstream face of New Bern Road	278765	39.3	9/1/1999	100
Neuse River / Hurricane Floyd	State Highway 11	286920	39.4	9/1/1999	100
Neuse River / Hurricane Floyd	Upstream face of Hardy Bridge Road	360288	50.2	9/1/1999	100
Neuse River / Hurricane Floyd	Downstream face of Main Street	591830	54.9	9/1/1999	50
Neuse River / Hurricane Floyd	Downstream face of NC 111	636585	61.7	9/1/1999	50
Neuse River / Hurricane Floyd	Upstream face of SR 1915	694195	71.1	9/1/1999	50
Neuse River / Hurricane Floyd	160 feet Southeast of Bryan Boulevard	710650	72.8	9/1/1999	50
Scotts Creek / Hurricane Fran	10 feet south of house	2183	6.5	9/5/1996	*
Scotts Creek / Hurricane Fran	Water rose up to trees in front yard	10236	14.5	9/5/1996	*
Swift Creek / Hurricane Floyd	Upstream side of Country Club Drive	197387	43.6	9/1/1999	500
Swift Creek / Hurricane Floyd	Upstream side of Hines Drive	204183	46.8	9/1/1999	500
Swift Creek / Hurricane Floyd	Upstream side of Highway 903	223971	53.7	9/1/1999	500
Trent River / Hurricane Floyd	Trent River	94770	16.4	10/1/1999	100
Trent River / Hurricane Floyd	Trent River	198194	28.3	10/18/1999	100
Wilson Creek / Hurricane Floyd	Concrete landing of deck	*	6.3	9/17/2008	500

* Data Not Available

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 Craven County.

Table 7, “Levees” is not applicable in Craven County.

4.5 Scope of Study

For this map maintenance revision, a scoping meeting was held in Craven 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 Craven 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 Craven 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 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

Source	Riverine Sources		Affected Communities
	From	To	
Deep Gully	The confluence with Trent River	Approximately 1.7 miles upstream of the confluence with Trent River	Craven County
East Prong Slocum Creek	Approximately 0.5 mile downstream of confluence of East Prong Slocum Creek Tributary	Approximately 100 feet downstream of Railroad Street	City Of Havelock
East Prong Slocum Creek Tributary	The confluence with East Prong Slocum Creek	Approximately 0.6 mile upstream of Cunningham Boulevard	City Of Havelock
Jimmies Creek	The confluence with Wilson Creek	Approximately 140 feet upstream of Trent Road	City Of New Bern Town Of Trent Woods
Little Swift Creek	The confluence with Swift Creek	The confluence of Beaverdam Swamp	Craven County
Maple Cypress	The confluence with Neuse River	Approximately 620 feet upstream of Harris Road	Craven County
Mills Branch Tributary	The confluence with Mills Branch	Approximately 100 feet upstream of Old Vanceboro Road	Craven County
Morris Branch	The confluence with Wilson Creek	Approximately 1,170 feet upstream of Greenleaf Cemetery Road	City Of New Bern Town Of Trent Woods
Mosley Creek	The confluence with Neuse River	The confluence of Tracey Swamp	Craven County
Mosley Creek Tributary	The confluence with Mosley Creek (into Neuse River)	Approximately 150 feet downstream of State Highway 55	Craven County
Neuse River	Approximately 2.17 miles downstream of the confluence of Swift Creek	Craven/Lenoir/Pitt County boundary	Craven County
Neuse River	Craven/Lenoir/Pitt County boundary	Wayne/Lenoir County boundary	Craven County
Reedy Branch	The confluence with Trent River	Approximately 0.4 mile upstream of Crump Farm Road	Craven County
Samuels Creek/Rocky Run	The confluence with Trent River	Approximately 0.7 mile upstream of Deerfield Drive	City Of New Bern Craven County Town Of River Bend
Scotts Creek	The confluence with Neuse River	Approximately 1,830 feet upstream of Airport Road	Craven County
Swift Creek	The confluence with Neuse River	Approximately 1.5 miles upstream of the confluence of Mauls Swamp	Craven County Town Of Vanceboro
Trent River	The confluence with Neuse River	Approximately 1,015 feet upstream of the confluence of Raccoon Creek	Craven County Town Of River Bend
Trent River Tributary	The confluence with Trent River	Approximately 330 feet upstream of Canterbury Road	Town Of Trent Woods
Wilson Creek	Approximately 300 feet downstream of the confluence of Morris Branch	Approximately 1,100 feet upstream of Yarmouth Road	City Of New Bern

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 Communities
	From	To	
Mauls Swamp	Confluence with Swift Creek	Mill Pond Road	Craven County Town Of Vanceboro
Mills Branch	The confluence with Neuse River	Approximately 0.1 mile upstream of U.S. Highway 17	Craven County
Snake Branch	The confluence with Mitchell Creek	Temples Point Road	Craven County
Tucker Creek	The confluence with Slocum Creek	Approximately 0.6 mile upstream of U.S. Highway 70	City Of Havelock Craven County
Village Creek	Confluence with Neuse River	NC Highway 55	Craven County

Table 10, “Flooding Sources Studied by Limited Detailed Methods”, 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 Limited Detailed Methods

Source	Riverine Sources		Affected Communities
	From	To	
Bachelor Creek	Washington Post Road	Approximately 1.6 miles upstream of Craven/Jones County boundary	Craven County
Beaverdam Branch	Confluence with Bachelor Creek	0.4 mile upstream of Hyman Road	Craven County
Beaverdam Swamp	The confluence with Little Swift Creek	Approximately 1.81 miles upstream of the confluence of Fisher Swamp	Craven County
Black Swamp Creek	At the confluence with White Oak River	Approximately 0.90 mile upstream of Catfish Lake Road	Craven County
Brice Creek	Old Airport Road	The confluence of East Prong Brice Creek	City Of New Bern Craven County
Bushy Fork	Confluence with Little Swift Creek	0.35 mile upstream of Aurora Road	Craven County
Cahoogue Creek	Approximately 0.5 mile downstream of NC Highway 306	Approximately 0.34 mile upstream of NC Highway 101	Craven County
Clayroot Swamp	Confluence with Swift Creek	Approximately 1,300 feet upstream of V.O.A. Site B Road	Craven County
Clubfoot Creek	NC Highway 101	Craven/Carteret County boundary	Craven County
Clubfoot Creek Tributary	Approximately 0.75 mile upstream of the confluence with Clubfoot Creek	Approximately 0.1 mile upstream of George Road	Craven County
Core Creek	Confluence with Neuse River	0.8 mile upstream of Trenton Road	Craven County
Creeping Swamp	Confluence with Clayroot Swamp	Approximately 0.9 mile upstream of Cayton Road	Craven County
Deep Branch	Confluence with Bachelor Creek	0.5 mile downstream of Clarks Road	Craven County
East Prong Brice Creek	Confluence with Brice Creek	1.9 miles upstream of the confluence with Brice Creek	Craven County
East Prong Mortons Mill Pond	The confluence with Mortons Mill Pond	Approximately 0.3 mile upstream of NC Highway 101	Craven County
East Prong Slocum Creek	0.40 mile upstream of Gray Fox Road	3.00 miles upstream of confluence of East Prong Slocum Creek Tributary	City Of Havelock Craven County
Fisher Swamp	The confluence with Beaverdam Swamp	Approximately 3.33 miles upstream of Hills Neck Road	Craven County
Flat Branch	Confluence with Core Creek	Approximately 100 feet downstream of Barwick Road	Craven County
Great Branch	Confluence with Brice Creek	1.0 mile upstream of Tebo Road	Craven County
Hancock Creek	NC Highway 101	Approximately 1.5 miles upstream of Mococks Branch	Craven County
Hollis Branch	Confluence with Bachelor Creek	Approximately 800 feet upstream of Craven/Jones County boundary	Craven County
Hunters Creek	Confluence with White Oak River	Approximately 750 feet upstream of confluence of Wolf Swamp	Craven County
Jumping Run	The confluence with Bachelor Creek	Approximately 1.8 miles upstream of the confluence with Bachelor Creek	Craven County
Little Swift Creek	Approximately 350 feet upstream of U.S. Highway 17	Approximately 0.1 mile upstream of Beaver Dam Road	Craven County
Mauls Swamp	Mill Pond Road	1.1 miles upstream of the confluence of Mauls Swamp Tributary 2	Craven County Town Of Vanceboro
Mauls Swamp Tributary 1	Confluence with Mauls Swamp	0.74 mile upstream of the confluence with Mauls Swamp	Craven County
Mauls Swamp Tributary 2	Confluence with Mauls Swamp	0.9 mile upstream of the confluence with Mauls Swamp	Craven County
Mill Branch	Confluence with Core Creek	4.5 miles upstream of the confluence with Core Creek	Craven County
Mococks Branch	The confluence with Hancock Branch	Approximately 0.6 mile upstream of the confluence with Hancock Branch	Craven County
Morgan Swamp	Confluence with Upper Broad Creek	0.95 mile upstream of Morgan Swamp Road	Craven County
Mosley Creek Tributary	Approximately 150 feet downstream of State Highway 55	Approximately 1.1 miles upstream of State Highway 55	Craven County
Palmetto Swamp	Confluence with Swift Creek	1.46 miles upstream of Palmetto Swamp Tributary 4	Craven County
Palmetto Swamp Tributary 1	Confluence with Palmetto Swamp	0.9 mile upstream of the confluence with Palmetto Swamp	Craven County
Palmetto Swamp Tributary 2	Confluence with Palmetto Swamp	150 feet upstream of Clark Road	Craven County
Palmetto Swamp Tributary 3	Confluence with Palmetto Swamp	0.6 mile upstream of the confluence with Palmetto Swamp	Craven County
Palmetto Swamp Tributary 4	Confluence with Palmetto Swamp	800 feet upstream of Gray Road	Craven County
Pine Tree Swamp	Confluence with Little Swift Creek	Cayton Road	Craven County

Table 10 - Flooding Sources Studied by Limited Detailed Methods

Source	Riverine Sources		Affected Communities
	From	To	
Pollard Swamp	Confluence with Creeping Swamp	Beaufort/Craven County Boundary	Craven County
Rollover Creek	Confluence with Bachelor Creek	0.7 mile upstream of Rollover Creek Road	Craven County
Round Tree Branch	The confluence with Bachelor Creek	Approximately 1.2 miles upstream of the confluence with Bachelor Creek	Craven County
South Canal	Confluence with Hunters Creek	Approximately 0.9 miles upstream of the confluence with Hunters Creek	Craven County
Southwest Prong Slocum Creek	Miller Boulevard	Approximately 0.3 mile upstream of Miller Boulevard	City Of Havelock Craven County
Spe Branch	Confluence with Cahoogue Creek	0.7 mile upstream of the confluence with Cahoogue Creek	Craven County
Swift Creek	1.1 miles upstream of Streets Ferry Road	Approximately 0.3 mile downstream of the confluence of Fork Swamp	Craven County Town Of Vanceboro
Tracey Swamp	The confluence with Moseley Creek (into Neuse River)	Approximately 370 feet upstream of Burkett Road	Craven County
Upper Broad Creek	Approximately 2.5 miles downstream of the confluence of Sasses Branch	Approximately 2.9 miles upstream of the confluence of Possum Swamp	Craven County
Upper Broad Creek	At the confluence with Durham Creek	Approximately 3.3 miles upstream of the confluence with Durham Creek	Craven County
Upper Broad Creek	The confluence with Durham Creek	Approximately 3.3 miles upstream of the confluence with Durham Creek	Craven County
Village Creek	NC Highway 55	Approximately 400 feet upstream of NC 55	Craven County
West Prong Brice Creek	Confluence with Brice Creek	6.9 miles upstream of the confluence with Brice Creek	Craven County
West Prong Mortons Mill Pond	The confluence with Mortons Mill Pond	Approximately 1.3 miles upstream of NC Highway 101	Craven County

Additional Flooding Sources included in this FIS Report studied by Other Methods

Source	Riverine Sources		Affected Communities	Study Type
	From	To		
Ellis Simon Lake	1.9 miles upstream of the confluence with Brice Creek	Approximately 0.4 mile upstream of Ellis Simon Lake	Craven County	APPROXIMATE STUDY
Long Lake	1.9 miles upstream of the confluence with Brice Creek	Approximately 0.4 mile upstream of Ellis Simon Lake	Craven County	APPROXIMATE STUDY
West Prong Brice Creek	The confluence with West Prong Brice Creek	Approximately 300 feet upstream of the Jones/Craven County boundary	Craven County	APPROXIMATE STUDY

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

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

Please note that Table 12, Letters of Map Revision, only includes LOMCs that have been issued on the FIRM Panels updated in any given revision. Table 12 is not applicable to this FIS Report as there were no LOMCs issued on the FIRM Panels updated in this report. For all other areas within this county, users should be aware that revisions to the FIS Report made by prior LOMRs may not be reflected herein and users will need to continue to use the previously issued LOMRs to obtain the most current data.

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-year, 25-year, 50-year, 100-year, or 500-year period (recurrence interval in years) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-year, 25-year, 50-year, 100-year, 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 and limited 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
Bachelor Creek					
Approximately 0.3 mile downstream of Washington Post Road	54.87	*	*	6180	*
Approximately 0.3 mile upstream of Washington Post Road	49.80	*	*	5850	*
Approximately 0.2 mile upstream of the confluence with Round Tree Branch	47.38	*	*	5690	*
Approximately 0.1 mile downstream of the confluence with Jumping Run	38.93	*	*	5090	*
Approximately 0.7 mile downstream of N.C. Highway 55	38.39	*	*	5050	*
At the confluence with Beaverdam Branch	31.59	*	*	4520	*
Approximately 0.3 mile upstream of Old U.S. Highway 70	30.90	*	*	4470	*
Approximately 325 feet upstream of U.S. Highway 70	26.79	*	*	3820	*
Approximately 0.7 mile upstream of U.S. Highway 70	24.90	*	*	3540	*
At confluence with Rollover Creek	12.96	*	*	2000	*
Approximately 0.6 mile downstream of Tuscarora Rhems Road	10.38	*	*	1760	*
Approximately 0.2 mile upstream of Tuscarora Rhems Road	6.76	*	*	1380	*
At the confluence with Hollis Branch	3.37	*	*	931	*
Beaverdam Branch					
At the confluence with Bachelor Creek	5.67	*	*	1250	*
Approximately 0.3 mile upstream of Hyman Road	4.65	*	*	1120	*
Beaverdam Swamp					
At the confluence with Little Swift Creek	31.38	*	*	3290	*
Approximately 0.4 mile upstream of the confluence with Little Swift Creek	31.24	*	*	3280	*
Approximately 0.6 mile upstream of the confluence with Little Swift Creek	30.81	*	*	3260	*
At the confluence of Fisher Swamp	6.18	*	*	1310	*
Approximately 0.6 mile upstream of confluence with Fisher Swamp	5.90	*	*	1280	*

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
Beaverdam Swamp					
Approximately 0.6 mile downstream of Hudnell Road	5.51	*	*	1230	*
Approximately 0.2 mile downstream of Hudnell Road	4.41	*	*	1080	*
Black Swamp Creek					
Approximately 1.7 miles upstream of Catfish Lake Road	4.91	*	*	1720	*
Approximately 1.8 miles upstream of Catfish Lake Road	3.08	*	*	1320	*
Brice Creek					
Approximately 0.6 mile downstream of Old Airport Road	40.88	*	*	316	*
Approximately 1.7 miles downstream of Old Airport Road	40.38	*	*	463	*
Approximately 0.5 mile upstream of Riverdale Road	39.40	*	*	427	*
Approximately 0.4 mile upstream of Riverdale Road	37.24	*	*	193	*
At the confluence with West Prong Brice Creek	37.03	*	*	467	*
At the confluence with East Prong Brice Creek	14.44	*	*	57	*
Bushy Fork					
At the confluence with Little Swift Creek	6.21	*	*	1320	*
Approximately 70 feet downstream of Bushy Fork Bridge	5.95	*	*	1280	*
Approximately 0.2 mile upstream of Bushy Fork Bridge	4.34	*	*	1070	*
Cahoogue Creek					
Approximately 0.5 mile upstream of N.C. Highway 306	2.30	*	*	356	*
At the confluence with Spe Branch	0.90	*	*	360	*
Approximately 0.3 mile upstream of N.C. Highway 101	0.27	*	*	224	*
Clayroot Swamp					
At the confluence with Swift Creek	80.20	*	*	5596	*
Approximately 0.3 mile upstream of Country Home Road	78.20	*	*	5517	*
Approximately 0.4 mile downstream of Clay Root Road	45.60	*	*	4065	*
Approximately 850 feet downstream of Cal Jones Road	43.60	*	*	3964	*
Approximately 1.5 miles downstream of N.C. Highway 102	40.20	*	*	3784	*
Approximately 0.8 mile downstream of N.C. Highway 102	37.80	*	*	3655	*
Approximately 960 feet upstream of N.C. Highway 102	36.60	*	*	3589	*
Approximately 0.5 mile upstream of N.C. Highway 102	34.80	*	*	3492	*
Approximately 0.6 mile upstream of N.C. Highway 102	32.80	*	*	3373	*
Approximately 0.9 mile downstream of the confluence with Indian Well Swamp	30.01	*	*	3210	*
Approximately 0.9 mile downstream of the confluence with Indian Well Swamp	30.00	*	*	3209	*
Approximately 0.4 mile downstream of the confluence with Indian Well Swamp	29.20	*	*	3158	*
Approximately 0.2 mile upstream of the confluence with Indian Well Swamp	12.10	*	*	1921	*
Approximately 0.3 mile upstream of N.C. Highway 43	11.60	*	*	1876	*
Approximately 0.3 mile downstream of Blackjack-Simpson Road	8.60	*	*	1578	*
Approximately 850 feet upstream of Blackjack-Simpson Road	8.30	*	*	1547	*
Approximately 0.3 mile downstream of the confluence with Thorofare Swamp	6.30	*	*	1324	*
Approximately 830 feet upstream of the confluence with Thorofare Swamp	3.80	*	*	1002	*
Approximately 0.5 mile upstream of the confluence with Thorofare Swamp	3.70	*	*	978	*
Approximately 0.7 mile upstream of the confluence with Thorofare Swamp	1.40	*	*	561	*
Approximately 1.2 miles upstream of the confluence with Thorofare Swamp	1.20	*	*	512	*
Approximately 1.4 miles upstream of the confluence with Thorofare Swamp	0.30	*	*	234	*

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
Clubfoot Creek					
Approximately 0.2 mile downstream of the confluence with Mitchell Creek	23.40	*	*	3276	*
Approximately 1.1 miles downstream of Adams Creek Road	12.10	*	*	2297	*
Approximately 625 feet upstream of Adams Creek Road	1.71	*	*	294	497
Approximately 275 feet downstream of Adams Creek Road	1.70	*	*	634	*
Approximately 560 feet upstream of Adams Creek Road	1.30	*	*	535	*
Approximately 2,000 feet upstream of Hodge Road	1.27	*	*	220	377
Clubfoot Creek Tributary					
Approximately 0.4 mile downstream of Adams Creek Road	1.20	*	*	506	*
Approximately 140 feet upstream of George Road	0.25	*	*	213	*
Contentnea Creek					
At the confluence with Neuse River	1007.20	12800	19800	23200	32300
Core Creek					
At the confluence with Flat Branch	64.02	*	*	7000	*
Approximately 1.6 miles upstream with confluence of Flat Branch	63.09	*	*	6939	*
Approximately 0.7 mile downstream of N.C. Highway 55	60.33	*	*	6770	*
Approximately 1.0 mile upstream of N.C. Highway 55	56.37	*	*	6510	*
Approximately 1.4 miles upstream of N.C. Highway 55	53.60	*	*	6330	*
Approximately 2.2 miles upstream of N.C. Highway 55	52.95	*	*	6280	*
Approximately 1.8 miles downstream of confluence with Mill Branch	50.23	*	*	6099	*
Approximately 1.2 miles downstream of confluence with Mill Branch	43.40	*	*	5610	*
At confluence with Mill Branch	36.50	*	*	5090	*
At Dover Road	35.26	*	*	4990	*
Approximately 1.0 mile upstream of Dover Road	30.38	*	*	4590	*
Approximately 0.8 mile downstream of Sunset Boulevard	26.94	*	*	4290	*
Approximately 0.4 mile downstream of Sunset Boulevard	25.37	*	*	4140	*
Approximately 0.3 mile downstream of Trenton Road	20.28	*	*	3650	*
Approximately 0.6 mile upstream of Trenton Road	19.55	*	*	3580	*
Creeping Swamp					
At the confluence with Clayroot Swamp	32.30	*	*	3590	*
Approximately 0.3 mile downstream of N.C. Highway 43	30.20	*	*	3490	*
Approximately 0.8 mile upstream of N.C. Highway 43	27.90	*	*	3430	*
Approximately 1.3 miles upstream of N.C. Highway 43	24.80	*	*	3040	*
Approximately 1.4 miles downstream of Craven/Pitt/Beaufort County Boundary	20.20	*	*	2630	*
Approximately 1.2 miles downstream of Craven/Pitt/Beaufort County Boundary	15.40	*	*	2180	*
Deep Branch					
At the confluence with Bachelor Creek	3.13	*	*	892	*
Deep Gully					
Just upstream of confluence with Trent River	3.47	400	750	950	1510
Approximately 180 feet upstream of Railroad	2.74	350	660	830	1330
Approximately 950 feet upstream of U.S. Highway 17	2.22	310	580	740	1190

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
East Prong Brice Creek					
At the confluence with Brice Creek	10.93	*	*	345	*
Approximately 0.5 mile upstream of the confluence with Brice Creek	10.35	*	*	461	*
Approximately 1.4 miles upstream of the confluence with Brice Creek	7.43	*	*	1460	*
East Prong Mortons Mill Pond					
At the confluence with Mortons Mill Pond	2.90	*	*	853	*
East Prong Slocum Creek					
Just upstream of confluence with Slocum Creek	10.93	1779	2885	3310	4542
Approximately 2,985 feet upstream of confluence with Slocum Creek	10.74	1761	2859	3281	4503
Just downstream of confluence with Sandy Branch	9.99	1562	2592	2994	4169
Just upstream of confluence with East Prong Slocum Creek Tributary	8.06	1011	1825	2160	3182
Approximately 230 feet downstream of Railroad	7.56	905	1667	1985	2965
Approximately 2,170 feet downstream of Gray Fox Road	5.05	509	937	1170	1850
Approximately 120 feet downstream of Railroad	4.22	456	844	1057	1679
Approximately 1,800 feet upstream of Railroad	2.93	364	684	860	1380
Approximately 0.72 miles upstream of Railroad	2.73	349	657	826	1329
Approximately 1.2 miles upstream of Gray Fox Road	2.70	*	*	826	*
Approximately 0.98 miles upstream of Railroad	0.81	165	324	415	689
Approximately 1.4 miles upstream of Gray Fox Road	0.80	*	*	415	*
East Prong Slocum Creek Tributary					
Just upstream of confluence with East Prong Slocum Creek	1.72	920	1506	1701	2248
Approximately 800 feet downstream of Cunningham Boulevard	1.68	914	1495	1688	2229
Approximately 750 feet downstream of Cunningham Boulevard	0.69	710	1150	1282	1645
Approximately 2,285 feet upstream of Cunningham Boulevard	0.54	632	1032	1150	1477
Fisher Swamp					
At the confluence with Beaverdam Swamp	24.23	*	*	2840	*
Approximately 550 feet upstream of Hills Neck Road	24.07	*	*	2830	*
Approximately 0.7 mile upstream of Hills Neck Road	23.71	*	*	2810	*
Approximately 1.2 miles upstream of Hills Neck Road	23.48	*	*	2790	*
Approximately 2.0 miles upstream of Hills Neck Road	22.18	*	*	2700	*
Approximately 2.5 miles upstream of Hills Neck Road	21.76	*	*	2680	*
Flat Branch					
At confluence with Core Creek	9.14	*	*	2330	*
Approximately 0.5 mile downstream of N.C. Highway 55	8.17	*	*	2190	*
Approximately 1.1 miles upstream of N.C. Highway 55	7.53	*	*	2090	*
Approximately 0.6 mile upstream of N.C. Highway 55	6.48	*	*	1920	*
Approximately 1.7 miles upstream of N.C. Highway 55	5.29	*	*	1700	*
Great Branch					
At the confluence with Brice Creek	3.48	*	*	313	*
Approximately 0.5 mile upstream of the confluence with Brice Creek	2.99	*	*	436	*
Hancock Creek					
At N.C. Highway 101	5.50	*	*	1230	*
Approximately 325 feet downstream of the confluence with Mococks Branch	3.10	*	*	412	*

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
Hancock Creek					
Approximately 575 feet upstream of the confluence with Mococks Branch	2.31	*	*	451	*
Approximately 1.2 miles upstream of the confluence with Mococks Branch	1.37	*	*	559	*
Hollis Branch					
At the confluence with Bachelor Creek	2.54	*	*	793	*
Approximately 0.4 mile upstream of the confluence with Bachelor Creek	1.66	*	*	624	*
Hunters Creek					
Approximately 2.1 miles upstream of the confluence with Wolf Swamp	7.59	*	*	2210	*
Approximately 0.6 mile downstream of Carteret-Craven County boundary	7.10	*	*	2130	*
Approximately 4.0 miles upstream of the confluence with Wolf Swamp	6.26	*	*	1980	*
Island Creek					
Approximately 95 feet upstream of confluence with Trent River	14.84	990	1750	2150	3310
Jimmies Creek					
Just upstream of confluence with Wilson Creek	0.63	539	923	1047	1396
Approximately 1,575 feet downstream of Trent Road	0.11	121	256	305	457
Jumping Run					
At the confluence with Bachelor Creek	7.84	*	*	1500	*
Approximately 1.0 mile upstream of the confluence with Bachelor Creek	6.83	*	*	1390	*
Little Swift Creek					
At the confluence with Swift Creek	69.32	*	*	5150	*
Approximately 2.3 miles upstream of the confluence with Swift Creek	67.32	*	*	5069	*
At the confluence with Beaverdam Swamp	31.53	*	*	3300	*
Approximately 0.3 mile downstream of Great Swamp Road	27.96	*	*	3080	*
Approximately 0.7 mile upstream of Great Swamp Road	27.35	*	*	3040	*
Approximately 1.1 miles upstream of Great Swamp Road	26.11	*	*	2970	*
Approximately 2.0 miles upstream of Great Swamp Road	24.44	*	*	2860	*
Approximately 0.5 mile downstream of the confluence with Pine Tree Swamp	22.91	*	*	2750	*
At the confluence with Pine Tree Swamp	17.22	*	*	2340	*
Approximately 0.4 mile downstream of High Bridge Road	15.77	*	*	2230	*
Approximately 0.4 mile upstream of High Bridge Road	14.71	*	*	2140	*
At the confluence with Bushy Fork	4.83	*	*	1140	*
Approximately 365 feet upstream of Beaver Dam Road	4.68	*	*	1121	*
Maple Cypress					
At confluence with Neuse River	7.84	667	1209	1501	2345
Approximately 1,575 feet upstream of confluence with Neuse River	6.97	621	1130	1405	2202
Approximately 3,000 feet upstream of confluence with Neuse River	6.87	615	1120	1393	2184
Approximately 685 feet downstream of River Road	6.76	609	1110	1381	2166
Approximately 525 feet upstream of River Road	6.40	589	1075	1339	2103
Approximately 1,100 feet upstream of River Road	1.95	283	540	682	1107
Approximately 1,600 feet downstream of Ward Road	1.51	243	466	592	966
Approximately 140 feet upstream of Ward Road	1.10	199	387	493	813
Approximately 650 feet downstream of N.C. Highway 118	0.83	168	330	422	701

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
Maple Cypress					
Just downstream of Harris Road	0.68	148	294	377	629
Approximately 3,050 feet upstream of Harris Road	0.60	138	274	352	589
Mauls Swamp					
At the confluence with Swift Creek	219.60	*	*	10976	*
Approximately 0.5 mile downstream of the confluence with Mill Pond Road	11.67	*	*	1880	*
Approximately 150 feet upstream of U.S. Highway 17	9.51	*	*	1670	*
Approximately 0.8 mile upstream of U.S. Highway 17	8.55	*	*	1580	*
At the confluence with Mauls Swamp Tributary 1	4.37	*	*	1080	*
Approximately 0.8 mile upstream of the confluence with Mauls Swamp Tributary 1	3.58	*	*	963	*
At the confluence with Mauls Swamp Tributary 2	2.02	*	*	696	*
Approximately 0.3 mile upstream of the confluence with Mauls Swamp Tributary 2	0.99	*	*	465	*
Approximately 0.9 miles upstream of the confluence with Mauls Swamp Tributary 2	0.64	*	*	363	*
Mauls Swamp Tributary 1					
At the confluence with Mauls Swamp	2.48	*	*	782	*
Approximately 0.4 mile upstream of the confluence with Mauls Swamp	2.08	*	*	709	*
Approximately 0.7 mile upstream of the confluence with Mauls Swamp	1.28	*	*	539	*
Mauls Swamp Tributary 2					
At the confluence with Mauls Swamp	0.66	*	*	369	*
Approximately 0.6 mile upstream of the confluence with Mauls Swamp	0.48	*	*	308	*
Mill Branch					
Approximately 0.3 mile upstream of confluence with Core Creek	5.45	*	*	1730	*
Approximately 0.4 mile upstream of Wintergreen Road	4.54	*	*	1560	*
Approximately 1.3 miles upstream of Wintergreen Road	3.54	*	*	1360	*
Approximately 1.87 miles upstream of Wintergreen Road	2.76	*	*	1179	*
Approximately 3.0 miles upstream of Wintergreen Road	1.44	*	*	817	*
Mills Branch					
Approximately 0.4 mile upstream of the confluence with Neuse River	10.50	*	*	2120	*
Mills Branch Tributary					
Approximately 270 feet upstream of the confluence with Mills Branch	1.72	262	502	635	1034
Approximately 165 feet downstream of Old Vanceboro Road	1.45	237	456	579	946
Approximately 0.58 miles upstream of Old Vanceboro Road	0.80	164	322	412	684
Approximately 0.9 miles upstream of Old Vanceboro Road	0.64	143	284	364	608
Mococks Branch					
Approximately 465 feet upstream of the confluence with Hancock Creek	2.30	*	*	748	*
Approximately 0.4 mile upstream of the confluence with Hancock Creek	1.80	*	*	643	*
Morgan Swamp					
At the confluence with Upper Broad Creek	13.92	*	*	2080	*
Approximately 525 feet upstream of Stapleford Road	10.12	*	*	1730	*
Approximately 0.7 mile upstream of Stapleford Road	9.57	*	*	1680	*
Approximately 0.4 mile downstream of Saints Delight Church Road	8.71	*	*	1590	*
Approximately 0.6 mile upstream of Saints Delight Church Road	8.03	*	*	1520	*
Approximately 0.2 mile downstream of Morgan Swamp Road	7.27	*	*	1440	*

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
Morgan Swamp					
Approximately 225 feet upstream of Morgan Swamp Road	4.80	*	*	1140	*
Approximately 0.3 mile upstream of Morgan Swamp Road	4.35	*	*	1080	*
Approximately 0.5 mile upstream of Morgan Swamp Road	3.25	*	*	911	*
Approximately 0.8 mile upstream of Morgan Swamp Road	2.57	*	*	798	*
Morris Branch					
Approximately 615 feet upstream of confluence with Wilson Creek	2.17	456	894	1071	1625
Approximately 0.6 miles downstream of River Road	1.72	417	819	980	1481
Approximately 15 feet downstream of River Road	1.30	294	613	745	1169
Moseley Creek (into Neuse River)					
At the confluence with Neuse River	52.10	*	*	5045	*
At the confluence with Neuse River	48.90	2060	3490	4230	6290
Approximately 0.4 mile upstream of the confluence with Neuse River	48.10	2040	3460	4190	6230
Approximately 1,610 feet downstream of William Pearce Road	44.80	1950	3320	4030	6000
Approximately 0.4 mile upstream of William Pearce Road	44.00	1930	3280	3990	5940
Approximately 1.5 miles upstream of William Pearce Road	43.10	1900	3240	3940	5880
Approximately 1.5 miles downstream of NC Highway 55	35.70	1700	2910	3540	5310
Approximately 1.1 miles downstream of NC Highway 55	34.90	1670	2870	3500	5250
Approximately 0.5 mile downstream of NC Highway 55	34.50	1660	2850	3470	5210
Just upstream of NC Highway 55	31.80	1580	2720	3320	4990
Approximately 1,680 feet upstream of NC Highway 55	31.70	1570	2710	3310	4980
Approximately 1.5 miles upstream of NC Highway 55	29.60	1510	2610	3180	4800
Approximately 2.1 miles upstream of NC Highway 55	27.00	1430	2480	3030	4570
Approximately 2.1 miles downstream of Dover Fort Barnwell Road	26.90	1420	2470	3020	4560
Approximately 1.8 miles downstream of Dover Fort Barnwell Road	25.90	1390	2420	2960	4470
Approximately 1.6 miles downstream of Dover Fort Barnwell Road	25.10	1360	2370	2900	4390
Approximately 0.9 mile downstream of Dover Fort Barnwell Road at the Lenoir/ Craven County Line	9.70	760	1370	1690	2630
Mosley Creek Tributary					
At the confluence with Mosley Creek	8.00	725	1420	1835	3130
Approximately 0.3 mile upstream of N.C. Highway 55	3.14	*	*	1110	*
Neuse River					
Approximately 2.7 miles downstream of the confluence with Swift Creek	4468.60	*	*	52900	*
Approximately 1.0 mile downstream of the confluence with Swift Creek	4407.50	*	*	52500	*
Approximately 0.2 mile upstream of the confluence with Swift Creek	4066.21	*	*	50100	*
Approximately 5.7 miles upstream of N.C. Highway 43	4045.56	*	*	50000	*
At the confluence with Core Creek	3955.63	*	*	49300	*
Approximately 1.0 mile upstream of the confluence with Core Creek	3951.38	*	*	49300	*
At the confluence with Village Creek	3943.00	*	*	49300	*
Approximately 0.6 mile downstream of Craven/Pitt County Boundary	3911.80	*	*	49000	*
Palmetto Swamp					
At the confluence with Swift Creek	24.91	*	*	4370	*
Approximately 0.3 mile downstream of N.C. Highway 43	24.38	*	*	4390	*
Approximately 0.2 mile upstream of N.C. Highway 43	23.82	*	*	4410	*

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
Palmetto Swamp					
At the confluence with Palmetto Swamp Tributary 1	20.76	*	*	3700	*
At the confluence with Palmetto Swamp Tributary 2	18.56	*	*	3220	*
Approximately 0.6 mile upstream of the confluence with Palmetto Swamp Tributary 2	18.30	*	*	3161	*
Approximately 0.4 mile downstream of the confluence with Palmetto Swamp Tributary 3	17.54	*	*	3000	*
At the confluence with Palmetto Swamp Tributary 3	16.26	*	*	2740	*
Approximately 0.1 mile upstream of Old Washington Road	15.71	*	*	2630	*
Approximately 0.3 miles downstream of the confluence with Palmetto Swamp Tributary 4	14.14	*	*	2320	*
At confluence with Palmetto Swamp Tributary 4	12.04	*	*	1920	*
Approximately 0.6 mile upstream of the confluence with Palmetto Swamp Tributary 4	5.25	*	*	1200	*
Approximately 1.1 miles upstream of the confluence with Palmetto Swamp Tributary 4	4.61	*	*	1110	*
Approximately 1.5 miles upstream of the confluence with Palmetto Swamp Tributary 4	4.31	*	*	1069	*
Palmetto Swamp Tributary 1					
At the confluence with Palmetto Swamp	2.98	*	*	868	*
Approximately 0.9 mile upstream of the confluence with Palmetto Swamp	2.67	*	*	815	*
Palmetto Swamp Tributary 2					
At the confluence with Palmetto Swamp	1.84	*	*	661	*
Palmetto Swamp Tributary 3					
At the confluence with Palmetto Swamp	1.06	*	*	484	*
Approximately 0.4 mile upstream of the confluence with Palmetto Swamp	0.46	*	*	303	*
Palmetto Swamp Tributary 4					
At the confluence with Palmetto Swamp	1.98	*	*	688	*
Approximately 0.3 mile upstream of the confluence with Palmetto Swamp	1.84	*	*	660	*
Approximately 0.6 mile upstream of the confluence with Palmetto Swamp	0.81	*	*	416	*
Approximately 0.1 mile upstream of Gray Road	0.65	*	*	368	*
Pine Tree Swamp					
At the confluence with Little Swift Creek	4.28	*	*	1070	*
Approximately 0.4 mile upstream of Aurora Road	3.97	*	*	1020	*
Approximately 0.9 mile upstream of Aurora Road	3.54	*	*	958	*
At Cayton Road	3.10	*	*	887	*
Pollard Swamp					
At the confluence with Creeping Swamp	4.31	*	*	1070	*
Approximately 0.1 mile upstream of Pollard Swamp Road	3.02	*	*	875	*
Approximately 0.5 mile upstream of Pollard Swamp Road	2.75	*	*	829	*
Approximately 0.3 mile downstream of Craven/Beaufort County Boundary	2.44	*	*	775	*
Reedy Branch					
Approximately 1,500 feet upstream of confluence with Trent River	5.04	510	940	1170	1850
Approximately 1,670 feet upstream of Crump Farm Road	3.31	390	730	920	1470
Approximately 650 feet downstream of Murphy Road	2.69	350	650	820	1320
Approximately 2,560 feet upstream of Murphy Road	1.89	280	530	670	1090
Approximately 2,150 feet upstream of Island Creek Road	1.27	220	420	540	880

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
Rollover Creek					
At the confluence with Bachelor Creek	11.42	*	*	1860	*
Approximately 0.4 mile downstream of Tuscarora Rhems Road	9.78	*	*	1700	*
Approximately 0.5 mile downstream of Rollover Creek Road	8.11	*	*	1530	*
Approximately 0.4 mile upstream of Rollover Creek Road	5.97	*	*	1290	*
Round Tree Branch					
At the confluence with Bachelor Creek	1.83	*	*	658	*
Approximately 0.8 mile upstream of the confluence with Bachelor Creek	1.68	*	*	627	*
Samuels Creek/Rocky Run					
Approximately 1.2 miles downstream of U.S. Highway 17	4.77	491	907	1133	1794
Approximately 500 feet upstream of U.S. Highway 17	4.41	468	866	1083	1719
Approximately 1,015 feet downstream of Deerfield Drive	1.02	191	372	474	782
Approximately 1,550 feet upstream of Deerfield Drive	0.89	175	343	438	725
Scotts Creek					
At confluence with Neuse River	1.33	432	770	900	1160
Approximately 900 feet downstream of Williams Road	0.85	85	128	152	270
Approximately 1,440 feet upstream of Williams Road	0.56	48	71	84	128
Just upstream of confluence with Scotts Creek West Channel	0.37	48	71	84	128
Scotts Creek West Channel					
Just upstream of confluence with Scotts Creek	0.18	160	329	391	580
Slocum Creek					
Downstream of the confluence with East Prong Slocum Creek and Southwest Prong Slocum Creek	25.50	*	*	3170	*
Snake Branch					
At Temples Point Road	0.60	*	*	465	*
South Canal					
Confluence with Hunters Creek	5.15	*	*	1770	*
Approximately 0.4 mile upstream of the confluence with Hunters Creek	5.08	*	*	1770	*
Southwest Prong Slocum Creek					
Approximately 750 feet downstream of Greenfield Heights Boulevard	22.88	*	*	360	*
Approximately 0.5 mile upstream of Greenfield Heights Boulevard	22.25	*	*	395	*
Approximately 0.5 mile upstream of Greenfield Heights Boulevard	21.51	*	*	465	*
Approximately 1.3 miles upstream of Greenfield Heights Boulevard	20.50	*	*	1950	*
Approximately 1.4 miles upstream of Greenfield Heights Boulevard	12.47	*	*	226	*
Upstream of the confluence with Slocum Creek	11.60	*	*	2240	*
At railroad	9.50	*	*	2020	*
At Miller Boulevard	9.10	*	*	1965	*
Approximately 2.0 miles upstream of Greenfield Heights Boulevard	7.99	*	*	1520	*
Swift Creek					
At the confluence with Neuse River	339.76	*	*	13900	*
At the confluence with Little Swift Creek	267.70	*	*	12200	*
Approximately 1.6 miles upstream of Weyerhaeuser Road	260.88	*	*	12000	*
Approximately 2.0 miles upstream of Weyerhaeuser Road	251.18	*	*	11700	*

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
Swift Creek					
Approximately 3.3 miles upstream of Weyerhaeuser Road	246.32	*	*	11600	*
Approximately 0.1 mile downstream of Streets Ferry Road	227.22	*	*	11100	*
Approximately 1.3 miles upstream of Streets Ferry Road	222.58	*	*	11000	*
At N.C. Highway 118	214.77	*	*	9780	*
At the confluence with Palmetto Swamp	187.54	*	*	9050	*
Approximately 0.2 mile downstream of Butler Ford Road	184.89	*	*	8981	*
Approximately 1.5 miles upstream of Butler Ford Road	180.43	*	*	8500	*
Approximately 2.1 miles upstream of Butler Ford Road	179.20	*	*	8120	*
Approximately 2.6 miles upstream of Butler Ford Road	178.00	*	*	8799	*
Approximately 1.5 miles downstream of Beaver Dam Road	97.80	*	*	6264	*
Approximately 0.7 mile downstream of Beaver Dam Road	94.50	*	*	6143	*
Approximately 0.1 mile downstream of Pughtown Road	91.40	*	*	6028	*
Tracey Swamp					
Approximately 365 feet downstream of Seth West Road	14.90	*	*	2160	*
Approximately 0.4 mile upstream of Seth West Road	13.60	*	*	2050	*
Approximately 1.0 mile upstream of Seth West Road	12.80	*	*	1980	*
Approximately 1.7 miles upstream of Seth West Road	8.30	*	*	1550	*
Approximately 2.0 miles upstream of Seth West Road	7.60	*	*	1480	*
Approximately 1.2 miles downstream of U.S. Highway 70	7.20	*	*	1430	*
At Craven/Jones/Lenoir County Boundary	6.50	*	*	1350	*
Trent River					
At U.S. Highway 70	497.40	*	*	14700	*
Approximately 2,375 feet downstream of confluence with Wilson Creek	449.91	8050	12600	14900	20800
Just upstream of confluence with Reed Branch	441.26	7960	12500	14700	20600
Approximately 0.7 miles upstream of confluence with Samuels Creek/Rocky Run	431.72	7850	12300	14500	20300
Approximately 0.82 miles downstream of confluence with Island Creek	430.17	7830	12300	14500	20300
Approximately 400 feet upstream of confluence with Island Creek	414.86	7660	12000	14200	19900
Approximately 160 feet upstream of confluence with Deep Gully	408.42	7590	11900	14100	19800
Trent River Tributary					
Just upstream of confluence with Trent River	0.72	227	480	582	909
Approximately 1,015 feet upstream of Wedgewood Drive	0.50	204	430	520	803
Approximately 1,555 feet upstream of Wedgewood Drive	0.20	125	274	332	518
Tucker Creek					
Approximately 0.7 mile upstream of the confluence with Slocum Creek	9.10	*	*	1961	*
At U.S. Highway 70	4.50	*	*	1345	*
Upper Broad Creek					
Approximately 3.6 miles downstream of N.C. Highway 55	49.47	*	*	4260	*
Approximately 3.2 miles downstream of N.C. Highway 55	46.92	*	*	4130	*
Approximately 2.3 miles downstream of N.C. Highway 55	42.38	*	*	3900	*
At the confluence with Sasses Branch	40.50	*	*	3800	*
At N.C. Highway 55	37.96	*	*	3670	*
At the confluence with Morgan Swamp	21.67	*	*	2670	*
At the confluence with Deep Run 2	20.03	*	*	2550	*

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
Upper Broad Creek					
Approximately 0.9 mile upstream of the confluence with Deep Run 2	19.31	*	*	2500	*
Approximately 0.4 mile downstream of Old Cross Road	18.44	*	*	2440	*
At confluence with Possum Swamp	8.57	*	*	1580	*
Approximately 0.5 mile upstream of the confluence with Possum Swamp	8.05	*	*	1520	*
Approximately 1.4 miles upstream of the confluence with Possum Swamp	4.96	*	*	1160	*
Approximately 2.5 miles upstream of the confluence with Possum Swamp	1.41	*	*	569	*
Village Creek					
At the confluence with Neuse River	3.51	*	*	953	*
At Biddle Road	3.00	*	*	1080	*
At N.C. Highway 55	0.63	*	*	362	*
West Prong Brice Creek					
At the confluence with Brice Creek	21.59	*	*	437	*
Approximately 1.4 miles upstream of the confluence with Brice Creek	18.62	*	*	136	*
Approximately 1.6 miles upstream of the confluence with Brice Creek	18.51	*	*	467	*
Approximately 2.1 miles upstream of the confluence with Brice Creek	17.51	*	*	468	*
Approximately 2.2 miles upstream of the confluence with Brice Creek	16.51	*	*	413	*
Approximately 2.6 miles upstream of the confluence with Brice Creek	15.71	*	*	388	*
Approximately 3.8 miles upstream of the confluence with Brice Creek	10.55	*	*	328	*
Approximately 4.4 miles upstream of the confluence with Brice Creek	7.34	*	*	389	*
Approximately 0.9 mile downstream of Catfish Lake Road	4.76	*	*	430	*
Approximately 0.4 mile upstream of Catfish Lake Road	1.35	*	*	556	*
West Prong Mortons Mill Pond					
Approximately 0.4 mile downstream of the confluence with Mortons Mill Pond	6.30	*	*	1322	*
At the confluence with Mortons Mill Pond	2.80	*	*	834	*
Approximately 0.8 mile upstream of N.C. Highway 101	0.60	*	*	365	*
Wilson Creek					
Approximately 915 feet upstream of confluence with Trent River	7.07	938	1705	2020	2983
Approximately 110 feet upstream of Trent Woods Drive	6.96	934	1697	2010	2967
Approximately 1,685 feet upstream of Trent Woods Drive	6.85	929	1689	2000	2950
Approximately 305 feet upstream of confluence with Morris Branch	4.55	722	1347	1602	2387
Approximately 65 feet upstream of confluence with Jimmies Creek	3.88	708	1311	1553	2291
Approximately 2,560 feet downstream of Trent Road	3.85	706	1307	1548	2284
Approximately 340 feet upstream of M L King Boulevard	3.27	533	1040	1250	1910
Approximately 2,240 feet upstream of Yarmouth Road	0.65	230	481	581	899

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

Table 15, “Gage Information”, lists the stream gages located in Craven 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
02092120	Bachelor Creek	BACHELOR CREEK NEAR NEW BERN, N.C.	33.60	1953	1971
02091970	Creeping Swamp	CREEPING SWAMP NEAR VANCEBORO, NC	27.00	1971	1985
02092020	Palmetto Swamp	PALMETTO SWAMP NEAR VANCEBORO, NC	24.00	1953	1975

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"
Bachelor Creek	0.045	0.130
Beaverdam Branch	0.045	0.130
Beaverdam Swamp	0.045 to 0.050	0.150 to 0.160
Black Swamp Creek	0.045 to 0.050	0.135 to 0.150
Brice Creek	0.024 to 0.045	0.150
Bushy Fork	0.042 to 0.050	0.130 to 0.150
Cahoogue Creek	0.045	0.150
Clayroot Swamp	0.042 to 0.045	0.120 to 0.140
Clubfoot Creek	0.045	0.150
Clubfoot Creek Tributary	0.050	0.150
Core Creek	0.045 to 0.050	0.130
Creeping Swamp	0.047	0.130 to 0.150
Deep Branch	0.045	0.130
Deep Gully	0.050	0.045 to 0.090
East Prong Brice Creek	0.045	0.150
East Prong Mortons Mill Pond	0.045	0.150
East Prong Slocum Creek	0.030 to 0.110	0.080 to 0.200
East Prong Slocum Creek Tributary	0.045	0.060
Fisher Swamp	0.042 to 0.050	0.130 to 0.150
Flat Branch	0.045	0.150
Great Branch	0.024 to 0.045	0.150
Hancock Creek	0.045 to 0.050	0.150
Hollis Branch	0.045	0.130
Hunters Creek	0.043 to 0.045	0.120 to 0.150

Table 16 - Roughness Coefficients

Stream	Channel "n"	Overbank "n"
Jimmies Creek	0.042 to 0.050	0.030 to 0.150
Jumping Run	0.045	0.130
Little Swift Creek	0.043 to 0.045	0.120 to 0.200
Maple Cypress	0.014 to 0.070	0.080 to 0.200
Mauls Swamp	0.014 to 0.070	0.120 to 0.200
Mauls Swamp Tributary 1	0.040 to 0.050	0.100 to 0.150
Mauls Swamp Tributary 2	0.045 to 0.050	0.150
Mill Branch	0.040 to 0.050	0.100 to 0.150
Mills Branch Tributary	0.050 to 0.060	0.060 to 0.150
Mococks Branch	0.045	0.130
Morgan Swamp	0.045 to 0.050	0.130 to 0.150
Morris Branch	0.040 to 0.045	0.035 to 0.150
Mosley Creek	0.050	0.035 to 0.090
Mosley Creek Tributary	0.014 to 0.070	0.120 to 0.200
Neuse River	0.035 to 0.060	0.055 to 0.250
Palmetto Swamp	0.045 to 0.050	0.120 to 0.150
Palmetto Swamp Tributary 1	0.043	0.140
Palmetto Swamp Tributary 2	0.045 to 0.050	0.150
Palmetto Swamp Tributary 3	0.045	0.150
Palmetto Swamp Tributary 4	0.041 to 0.050	0.120 to 0.150
Pine Tree Swamp	0.041 to 0.042	0.110 to 0.150
Pollard Swamp	0.041 to 0.050	0.120 to 0.150
Reedy Branch	0.032 to 0.050	0.045 to 0.090
Rollover Creek	0.045	0.130
Round Tree Branch	0.045	0.130
Samuels Creek/Rocky Run	0.045 to 0.050	0.035 to 0.150
Scotts Creek	0.040 to 0.045	0.035 to 0.150
South Canal	0.050	0.150
Southwest Prong Slocum Creek	0.030 to 0.060	0.150 to 0.200
Spe Branch	0.045	0.150
Swift Creek	0.025 to 0.060	0.035 to 0.220
Tracey Swamp	0.014 to 0.070	0.100 to 10.000
Trent River	0.045 to 0.063	0.032 to 0.200
Trent River Tributary	0.035 to 0.050	0.035 to 0.150
Upper Broad Creek	0.040 to 0.045	0.130 to 0.150
Village Creek	0.014 to 0.070	0.120 to 0.200
West Prong Brice Creek	0.045	0.150
West Prong Mortons Mill Pond	0.050	0.150
Wilson Creek	0.035 to 0.050	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) Left/Right from Stream Centerline
Bachelor Creek				
646	64563.2	5050.0	9.1	23.0 / 654.0
653	65335.2	5050.0	9.3	35.0 / 213.0
664	66385.5	5050.0	9.7	155.0 / 463.0
674	67354.1	4520.0	9.9	482.0 / 24.0
681	68128.4	4520.0	10.1	115.0 / 703.0
687	68651.1	4520.0	10.1	302.0 / 410.0
692	69164.6	4520.0	10.2	395.0 / 185.0
697	69692.2	4520.0	10.4	574.0 / 171.0
703	70345.9	4520.0	10.5	332.0 / 565.0
712	71159.0	4520.0	10.7	203.0 / 580.0
717	71670.8	4520.0	10.8	370.0 / 196.0
724	72434.2	4470.0	11.0	66.0 / 697.0
729	72934.3	4470.0	11.2	379.0 / 228.0
733	73334.5	4470.0	11.3	598.0 / 361.0
744	74421.9	4470.0	12.3	739.0 / 57.0
751	75101.9	4470.0	12.4	1057.0 / 20.0
757	75693.2	4470.0	12.5	569.0 / 283.0
765	76469.0	4470.0	12.7	290.0 / 446.0
769	76942.0	4470.0	12.8	197.0 / 493.0
778	77815.2	4470.0	13.6	242.0 / 659.0
783	78298.5	4470.0	13.7	175.0 / 501.0
798	79835.7	3820.0	15.0	541.0 / 183.0
807	80745.4	3820.0	15.1	271.0 / 293.0
813	81300.9	3820.0	15.3	610.0 / 270.0
820	82000.0	3820.0	15.4	589.0 / 77.0
829	82893.8	3540.0	15.5	484.0 / 234.0
834	83438.3	3540.0	15.6	300.0 / 101.0
841	84083.9	3540.0	15.9	415.0 / 115.0
847	84667.5	3540.0	16.0	287.0 / 287.0
852	85168.3	3540.0	16.2	134.0 / 144.0

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) Left/Right from Stream Centerline
Bachelor Creek				
858	85821.0	3540.0	16.5	401.0 / 88.0
864	86404.2	3540.0	16.7	409.0 / 289.0
870	86969.9	3540.0	16.8	417.0 / 221.0
875	87537.5	3540.0	17.0	26.0 / 1019.0
887	88674.5	2000.0	17.3	356.0 / 45.0
892	89224.7	2000.0	17.5	437.0 / 43.0
901	90076.9	2000.0	17.9	141.0 / 203.0
906	90644.6	2000.0	18.2	329.0 / 22.0
911	91105.6	2000.0	18.4	245.0 / 174.0
916	91642.6	2000.0	18.7	205.0 / 235.0
922	92201.7	2000.0	19.1	250.0 / 208.0
928	92773.6	2000.0	19.4	336.0 / 147.0
933	93304.4	2000.0	19.7	90.0 / 337.0
939	93858.5	2000.0	20.0	100.0 / 422.0
945	94488.6	1760.0	20.4	201.0 / 463.0
951	95134.0	1760.0	20.7	419.0 / 25.0
957	95685.2	1760.0	21.1	101.0 / 278.0
963	96287.2	1760.0	21.4	121.0 / 374.0
969	96930.2	1760.0	21.8	107.0 / 483.0
975	97496.0	1760.0	22.3	397.0 / 59.0
987	98729.0	1760.0	24.6	238.0 / 120.0
994	99378.4	1380.0	24.9	237.0 / 69.0
1002	100207.9	1380.0	25.1	366.0 / 95.0
1008	100809.2	1380.0	25.3	15.0 / 314.0
1014	101387.9	1380.0	25.5	48.0 / 173.0
1020	102004.4	1380.0	25.9	185.0 / 137.0
1029	102925.7	931.0	26.5	96.0 / 153.0
1038	103806.1	931.0	27.2	6.0 / 146.0
1042	104249.0	931.0	27.7	83.0 / 129.0
1049	104868.7	931.0	28.2	120.0 / 82.0
1053	105270.8	931.0	28.4	67.0 / 235.0
1057	105686.5	931.0	28.6	5.0 / 190.0
1063	106255.0	931.0	29.0	75.0 / 133.0
1069	106889.1	931.0	29.4	73.0 / 194.0
Beaverdam Branch				
006	573.8	1250.0	9.8[1]	52.0 / 198.0
011	1069.0	1250.0	9.8[1]	329.0 / 224.0
018	1842.5	1250.0	9.8[1]	96.0 / 136.0
022	2202.2	1250.0	9.8[1]	55.0 / 152.0
027	2677.9	1250.0	9.8[1]	113.0 / 17.0
039	3870.2	1250.0	10.7	196.0 / 14.0
044	4435.6	1250.0	11.1	28.0 / 211.0
049	4941.6	1118.0	11.4	54.0 / 111.0
055	5522.1	1118.0	11.9	103.0 / 31.0

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) Left/Right from Stream Centerline
Beaverdam Swamp				
022	2229.0	3291.0	10.0[1]	156.0 / 253.0
025	2522.8	3283.0	10.0[1]	110.0 / 265.0
033	3257.3	3257.0	10.0[1]	375.0 / 250.0
040	4043.3	3257.0	10.0[1]	235.0 / 220.0
047	4722.8	3257.0	10.0[1]	135.0 / 300.0
056	5551.0	1312.0	10.0[1]	285.0 / 200.0
068	6757.6	1312.0	10.0[1]	143.0 / 177.0
074	7373.0	1312.0	10.0[1]	130.0 / 200.0
078	7827.6	1312.0	10.0[1]	80.0 / 220.0
084	8439.0	1312.0	10.2	100.0 / 140.0
090	9018.4	1278.0	10.5	180.0 / 100.0
095	9544.9	1278.0	10.7	125.0 / 85.0
099	9938.6	1278.0	10.9	18.0 / 283.0
105	10500.0	1278.0	11.2	80.0 / 173.0
112	11226.1	1278.0	11.9	134.0 / 93.0
119	11911.4	1278.0	12.8	100.0 / 115.0
128	12763.7	1230.0	13.8	100.0 / 170.0
134	13449.2	1230.0	14.6	23.0 / 176.0
143	14319.1	1230.0	15.3	195.0 / 30.0
148	14793.8	1084.0	15.6	50.0 / 120.0
164	16351.8	1084.0	16.6	85.0 / 95.0
Black Swamp Creek				
406	40647.1	3360.0	30.2	714.0 / 127.0
411	41103.5	3360.0	30.5	532.0 / 17.0
418	41801.1	3360.0	30.9	96.0 / 566.0
426	42599.1	3360.0	31.3	300.0 / 435.0
435	43495.5	2250.0	32.0	302.0 / 205.0
452	45212.4	1720.0	34.1	489.0 / 224.0
460	46022.8	1320.0	34.5	476.0 / 4.0
466	46571.3	1320.0	34.9	379.0 / 167.0
471	47087.2	1320.0	35.3	259.0 / 78.0
482	48215.4	1320.0	36.4	1119.0 / 78.0
491	49088.7	1320.0	36.9	1548.0 / 4.0
Brice Creek				
644	64381.3	3796.0	9.1	446.0 / 441.0
649	64883.6	3796.0	9.1	341.0 / 404.0
656	65607.9	3796.0	9.2	110.0 / 436.0
659	65931.6	3796.0	9.3	198.0 / 391.0
664	66419.1	3796.0	9.4	285.0 / 334.0
671	67107.7	3796.0	9.5	554.0 / 305.0
675	67505.0	3744.0	9.5	385.0 / 216.0
680	67958.0	3744.0	9.6	167.0 / 74.0
685	68511.3	3744.0	10.0	208.0 / 156.0
690	68953.6	3744.0	10.2	92.0 / 138.0
692	69230.2	3744.0	10.4	62.0 / 141.0

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) Left/Right from Stream Centerline
Brice Creek				
701	70071.5	3744.0	11.0	36.0 / 254.0
717	71707.2	3744.0	11.7	372.0 / 251.0
725	72536.1	3744.0	11.8	36.0 / 323.0
729	72882.5	3744.0	11.9	36.0 / 458.0
751	75135.6	3744.0	12.6	36.0 / 267.0
760	75958.8	3744.0	12.9	255.0 / 185.0
772	77177.7	3744.0	13.1	280.0 / 138.0
780	77987.3	3744.0	13.2	118.0 / 769.0
796	79573.1	3626.0	13.3	439.0 / 439.0
801	80103.8	3626.0	13.4	35.0 / 393.0
813	81336.3	3626.0	14.2	283.0 / 452.0
817	81743.7	3626.0	14.2	362.0 / 325.0
823	82346.9	3626.0	14.3	315.0 / 491.0
827	82744.1	3626.0	14.3	129.0 / 474.0
831	83144.5	3614.0	14.4	363.0 / 435.0
839	83945.3	3614.0	14.4	395.0 / 340.0
844	84424.4	3614.0	14.5	168.0 / 235.0
849	84882.6	3614.0	14.6	352.0 / 213.0
853	85305.1	3614.0	14.6	262.0 / 431.0
859	85929.1	3614.0	14.7	207.0 / 453.0
866	86581.7	3614.0	14.8	419.0 / 419.0
874	87401.3	3614.0	14.8	338.0 / 391.0
881	88077.1	3614.0	14.9	93.0 / 645.0
886	88557.2	3614.0	15.0	326.0 / 305.0
893	89312.8	2121.0	15.1	581.0 / 333.0
Bushy Fork				
005	537.1	1315.0	23.2[1]	20.0 / 65.0
010	1000.0	1315.0	23.5	25.0 / 53.0
015	1492.8	1315.0	24.6	32.0 / 68.0
020	2000.0	1315.0	25.3	110.0 / 21.0
025	2500.0	1315.0	26.0	50.0 / 125.0
036	3606.8	1284.0	27.6	100.0 / 17.0
042	4214.8	1075.0	27.9	42.0 / 100.0
Cahoogue Creek				
185	18537.2	441.0	9.7	67.0 / 121.0
189	18902.7	441.0	9.8	53.0 / 87.0
195	19510.5	441.0	9.9	125.0 / 40.0
200	19996.9	441.0	10.0	72.0 / 14.0
203	20314.8	441.0	10.4	30.0 / 35.0
206	20592.1	441.0	11.0	63.0 / 14.0
208	20823.7	441.0	11.5	47.0 / 23.0
215	21546.1	441.0	14.6	22.0 / 14.0
223	22328.1	441.0	18.4	46.0 / 19.0
230	23039.1	441.0	18.7	14.0 / 133.0
238	23792.1	224.0	18.9	16.0 / 14.0

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) Left/Right from Stream Centerline
Clayroot Swamp				
010	1032.4	5596.0	19.4[1]	60.0 / 595.0
019	1857.3	5596.0	19.4[1]	285.0 / 388.0
032	3189.2	5596.0	19.4[1]	445.0 / 177.0
042	4238.9	5596.0	19.4[1]	50.0 / 879.0
066	6605.3	5596.0	20.3	290.0 / 450.0
073	7258.8	5517.0	20.4	175.0 / 670.0
080	7953.3	5517.0	20.5	840.0 / 305.0
Clubfoot Creek				
424	42390.0	535.0	7.2	31.9 / 66.7
426	42617.0	535.0	7.6	60.2 / 13.5
427	42690.0	535.0	8.0	60.2 / 13.5
429	42897.0	535.0	8.5	78.9 / 15.5
434	43424.0	535.0	8.9	38.5 / 60.3
440	44004.0	535.0	9.6	49.0 / 32.9
446	44602.0	535.0	10.5	12.0 / 104.7
Clubfoot Creek Tributary				
069	6870.2	506.0	7.9	12.0 / 26.0
073	7263.6	506.0	9.6	71.0 / 39.0
079	7908.0	506.0	11.2	42.0 / 21.0
088	8754.5	213.0	12.9	68.0 / 26.0
Core Creek				
043	4294.7	7000.0	18.5[1]	703.0 / 156.0
055	5500.0	7000.0	18.5[1]	702.0 / 796.0
063	6339.0	7000.0	18.5[1]	748.0 / 226.0
075	7546.0	7000.0	18.5[1]	340.0 / 586.0
083	8333.7	7000.0	18.5[1]	43.0 / 625.0
094	9446.6	7000.0	18.5[1]	622.0 / 756.0
101	10060.7	7000.0	18.5[1]	245.0 / 737.0
126	12561.1	6940.0	18.5[1]	759.0 / 86.0
136	13647.2	6940.0	18.5[1]	137.0 / 462.0
141	14139.2	6940.0	18.5[1]	43.0 / 172.0
146	14642.6	6940.0	18.5[1]	104.0 / 103.0
152	15151.2	6940.0	18.5[1]	294.0 / 43.0
157	15671.7	6940.0	18.5[1]	603.0 / 43.0
172	17240.1	6940.0	18.5[1]	43.0 / 707.0
181	18059.2	6940.0	18.5[1]	694.0 / 183.0
189	18853.7	6940.0	18.5[1]	619.0 / 128.0
196	19572.8	6940.0	18.5[1]	510.0 / 43.0
204	20385.5	6940.0	18.5[1]	134.0 / 423.0
213	21317.4	6940.0	18.5[1]	43.0 / 647.0
227	22725.2	6940.0	18.5[1]	485.0 / 51.0
234	23411.0	6940.0	18.5[1]	57.0 / 855.0
241	24143.5	6940.0	18.5[1]	105.0 / 343.0
247	24718.6	6940.0	18.5[1]	123.0 / 722.0
262	26213.4	6940.0	18.5[1]	759.0 / 134.0

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) Left/Right from Stream Centerline
Core Creek				
271	27091.9	6760.0	18.5[1]	566.0 / 273.0
280	27986.4	6760.0	18.5[1]	596.0 / 155.0
292	29213.4	6760.0	18.5[1]	136.0 / 44.0
301	30077.7	6760.0	18.7	112.0 / 87.0
307	30690.2	6760.0	19.1	43.0 / 419.0
315	31549.7	6760.0	19.5	43.0 / 416.0
320	31958.6	6760.0	19.6	43.0 / 444.0
323	32331.8	6760.0	19.7	156.0 / 186.0
330	32992.6	6760.0	19.8	177.0 / 85.0
338	33826.1	6760.0	20.1	329.0 / 88.0
344	34363.7	6760.0	20.3	418.0 / 92.0
350	35049.4	6760.0	20.4	223.0 / 417.0
357	35687.0	6760.0	20.6	229.0 / 327.0
362	36211.4	6760.0	20.7	128.0 / 415.0
367	36679.4	6760.0	20.9	110.0 / 158.0
376	37550.3	6760.0	21.3	238.0 / 511.0
381	38136.0	6500.0	21.4	472.0 / 83.0
387	38655.0	6500.0	21.5	183.0 / 276.0
392	39207.4	6500.0	21.7	357.0 / 327.0
398	39750.7	6500.0	21.8	336.0 / 127.0
403	40347.5	6330.0	21.9	42.0 / 357.0
409	40857.9	6330.0	22.1	217.0 / 728.0
418	41804.6	6330.0	22.2	190.0 / 42.0
424	42417.5	6330.0	22.5	42.0 / 56.0
431	43111.0	6330.0	23.2	347.0 / 42.0
437	43668.8	6330.0	23.4	187.0 / 42.0
441	44117.1	6330.0	23.6	160.0 / 102.0
451	45129.7	6290.0	24.0	41.0 / 413.0
462	46186.1	6290.0	24.2	450.0 / 41.0
470	47000.0	6290.0	24.4	41.0 / 100.0
475	47535.5	6290.0	24.8	76.0 / 113.0
481	48123.8	6290.0	25.1	181.0 / 127.0
487	48651.5	6290.0	25.3	118.0 / 68.0
491	49106.1	6290.0	25.6	275.0 / 297.0
499	49902.3	6290.0	25.6	119.0 / 42.0
505	50546.8	6290.0	26.0	180.0 / 740.0
510	51000.0	6290.0	26.1	587.0 / 675.0
517	51724.2	6110.0	26.1	206.0 / 298.0
522	52172.6	6110.0	26.1	171.0 / 41.0
527	52654.3	6110.0	26.4	455.0 / 41.0
532	53193.3	6110.0	26.5	305.0 / 77.0
537	53691.1	6110.0	26.6	170.0 / 76.0
543	54300.2	6110.0	26.8	128.0 / 210.0
549	54934.4	6110.0	27.0	333.0 / 276.0

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) Left/Right from Stream Centerline
Core Creek				
557	55717.8	5610.0	27.1	334.0 / 40.0
565	56532.3	5610.0	27.3	310.0 / 354.0
572	57188.4	5610.0	27.4	106.0 / 160.0
580	57978.6	5610.0	27.7	285.0 / 40.0
587	58720.5	5610.0	27.9	697.0 / 226.0
594	59424.5	5610.0	27.9	198.0 / 39.0
601	60137.8	5610.0	28.3	624.0 / 71.0
606	60606.6	5610.0	28.4	667.0 / 122.0
612	61241.2	5610.0	28.5	297.0 / 343.0
619	61934.9	5100.0	28.6	380.0 / 205.0
627	62737.8	5100.0	28.9	651.0 / 133.0
638	63823.9	5100.0	29.2	292.0 / 32.0
648	64843.6	5100.0	29.5	649.0 / 456.0
656	65580.5	5100.0	29.5	82.0 / 139.0
661	66075.6	5100.0	29.8	338.0 / 81.0
666	66642.7	5100.0	30.0	178.0 / 236.0
673	67300.4	5100.0	30.1	467.0 / 568.0
693	69323.2	5000.0	30.5	714.0 / 355.0
702	70206.3	5000.0	30.6	342.0 / 627.0
710	71000.0	5000.0	30.7	657.0 / 458.0
718	71799.4	5000.0	30.8	243.0 / 609.0
726	72644.5	5000.0	30.9	272.0 / 609.0
736	73620.8	5000.0	31.0	341.0 / 446.0
749	74858.5	4590.0	31.2	46.0 / 821.0
757	75711.9	4290.0	31.4	28.0 / 677.0
766	76647.6	4290.0	31.6	376.0 / 439.0
774	77438.7	4150.0	31.8	631.0 / 27.0
783	78280.9	4150.0	32.0	415.0 / 218.0
800	79977.2	4150.0	33.2	479.0 / 148.0
809	80919.0	4150.0	33.5	392.0 / 284.0
819	81851.3	4150.0	33.9	145.0 / 426.0
829	82922.2	3650.0	34.4	67.0 / 294.0
840	84026.4	3650.0	36.3	321.0 / 381.0
850	85000.0	3650.0	36.5	202.0 / 375.0
861	86069.0	3650.0	36.8	571.0 / 184.0
869	86935.7	3580.0	37.1	49.0 / 426.0
877	87680.4	3580.0	37.4	89.0 / 194.0
Creeping Swamp				
027	2654.5	3590.0	20.9	42.0 / 514.0
035	3524.9	3590.0	21.6	600.0 / 150.0
044	4409.6	3590.0	22.1	99.0 / 310.0
050	5008.3	3590.0	22.8	134.0 / 181.0
055	5479.2	3590.0	23.3	225.0 / 95.0
063	6268.7	3590.0	24.2	554.0 / 168.0

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) Left/Right from Stream Centerline
Creeping Swamp				
076	7588.1	3490.0	26.0	800.0 / 100.0
084	8417.6	3490.0	26.1	600.0 / 300.0
092	9248.1	3490.0	26.2	125.0 / 600.0
103	10293.0	3430.0	26.4	600.0 / 250.0
113	11254.4	3430.0	26.7	400.0 / 400.0
124	12361.8	3430.0	27.0	400.0 / 400.0
140	13961.6	3040.0	27.4	327.0 / 403.0
154	15360.5	3040.0	27.9	230.0 / 852.0
162	16218.4	3040.0	28.1	87.0 / 1018.0
172	17155.9	3040.0	28.3	372.0 / 662.0
182	18234.3	3040.0	28.7	404.0 / 440.0
194	19447.6	3040.0	29.3	591.0 / 384.0
217	21666.9	2630.0	29.9	476.0 / 749.0
228	22766.3	2630.0	30.3	647.0 / 234.0
237	23730.1	2630.0	30.9	369.0 / 411.0
249	24855.0	2630.0	31.6	99.0 / 658.0
263	26292.8	2630.0	32.6	335.0 / 370.0
Deep Branch				
027	2720.7	892.0	13.7[1]	93.0 / 242.0
033	3345.2	892.0	13.7[1]	40.0 / 200.0
040	3991.5	892.0	13.7[1]	11.0 / 148.0
044	4406.6	892.0	13.7[1]	32.0 / 176.0
East Prong Brice Creek				
012	1249.3	1812.0	15.1[1]	419.0 / 87.0
018	1796.1	1812.0	15.1[1]	172.0 / 193.0
022	2175.3	1812.0	15.1[1]	100.0 / 191.0
028	2793.8	1812.0	15.1[1]	138.0 / 403.0
034	3369.4	1812.0	15.1[1]	96.0 / 556.0
043	4257.1	1757.0	15.4	263.0 / 267.0
049	4935.2	1757.0	16.1	415.0 / 97.0
061	6081.2	1757.0	17.0	106.0 / 746.0
067	6714.4	1757.0	17.3	558.0 / 101.0
073	7348.5	1757.0	17.7	101.0 / 301.0
080	8044.5	1757.0	18.2	123.0 / 364.0
088	8752.1	1757.0	18.5	377.0 / 240.0
093	9305.3	1757.0	18.7	315.0 / 208.0
099	9908.8	1456.0	18.9	388.0 / 162.0
East Prong Mortons Mill Pond				
022	2162.4	853.0	9.5	364.0 / 34.0
027	2715.1	853.0	9.9	148.0 / 39.0
East Prong Slocum Creek				
176	17604.8	1057.0	15.2	212.0 / 214.0
181	18056.2	1057.0	15.3	310.0 / 108.0
189	18928.2	860.0	15.6	429.0 / 18.0
195	19507.6	860.0	16.0	260.0 / 18.0

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) Left/Right from Stream Centerline
East Prong Slocum Creek				
198	19840.1	860.0	16.3	181.0 / 79.0
203	20313.9	860.0	16.7	110.0 / 141.0
207	20700.4	860.0	16.9	108.0 / 161.0
211	21103.1	826.0	17.1	127.0 / 99.0
219	21908.4	826.0	17.5	214.0 / 45.0
224	22444.0	415.0	17.6	157.0 / 136.0
229	22915.4	415.0	17.7	15.0 / 185.0
239	23882.2	415.0	18.4	15.0 / 94.0
247	24685.6	415.0	19.3	15.0 / 133.0
Fisher Swamp				
007	732.9	2843.0	10.0[1]	227.0 / 29.0
015	1549.1	2843.0	10.0[1]	315.0 / 185.0
027	2741.4	2833.0	10.0[1]	139.0 / 88.0
034	3404.0	2833.0	10.4	31.0 / 192.0
039	3898.8	2833.0	10.8	138.0 / 123.0
048	4844.2	2833.0	11.3	205.0 / 131.0
053	5328.1	2833.0	11.5	31.0 / 256.0
059	5898.6	2833.0	11.9	123.0 / 206.0
065	6531.1	2808.0	12.3	32.0 / 219.0
072	7163.8	2808.0	12.8	29.0 / 246.0
077	7669.6	2808.0	13.3	81.0 / 254.0
083	8348.7	2808.0	13.8	238.0 / 29.0
090	9000.0	2793.0	14.4	28.0 / 213.0
098	9780.2	2793.0	15.2	93.0 / 235.0
103	10317.1	2793.0	15.5	46.0 / 229.0
112	11173.8	2793.0	16.2	83.0 / 114.0
118	11793.8	2793.0	16.8	28.0 / 254.0
128	12803.7	2793.0	17.6	148.0 / 28.0
134	13418.3	2793.0	18.4	154.0 / 157.0
141	14078.7	2704.0	18.8	220.0 / 185.0
149	14921.0	2704.0	19.4	113.0 / 136.0
156	15563.3	2704.0	20.0	140.0 / 77.0
164	16367.2	2704.0	20.8	264.0 / 28.0
171	17120.4	2676.0	21.3	210.0 / 292.0
181	18115.8	2676.0	21.9	207.0 / 67.0
Flat Branch				
020	2000.0	2329.0	18.5[1]	240.0 / 164.0
027	2736.3	2329.0	18.5[1]	366.0 / 191.0
036	3618.2	2329.0	18.5[1]	34.0 / 99.0
044	4425.3	2329.0	18.5[1]	9.0 / 120.0
050	5042.8	2329.0	18.5[1]	248.0 / 128.0
057	5739.4	2329.0	18.5[1]	310.0 / 193.0
078	7836.6	2187.0	18.5[1]	190.0 / 120.0
085	8471.3	2187.0	18.5[1]	480.0 / 100.0
090	9047.8	2187.0	18.5[1]	260.0 / 150.0

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) Left/Right from Stream Centerline
Flat Branch				
102	10205.3	2187.0	19.3	268.0 / 40.0
110	11000.0	2187.0	19.8	8.0 / 404.0
116	11640.0	2187.0	20.2	8.0 / 322.0
122	12211.3	2187.0	20.9	8.0 / 304.0
129	12933.5	2087.0	21.6	12.0 / 246.0
137	13686.3	2087.0	22.5	67.0 / 173.0
143	14288.2	2087.0	23.3	132.0 / 66.0
150	15000.0	2087.0	24.0	173.0 / 182.0
157	15730.3	2087.0	24.6	349.0 / 55.0
165	16500.0	1917.0	25.6	199.0 / 94.0
172	17157.8	1917.0	26.7	142.0 / 94.0
179	17885.5	1917.0	27.9	60.0 / 232.0
186	18564.9	1917.0	28.7	67.0 / 279.0
193	19343.5	1704.0	29.8	139.0 / 66.0
201	20063.6	1704.0	30.8	83.0 / 187.0
Great Branch				
003	343.5	948.0	15.1[1]	200.0 / 175.0
010	1001.0	948.0	15.1[1]	194.0 / 100.0
016	1615.2	948.0	15.1[1]	46.0 / 100.0
020	2011.6	948.0	15.1[1]	50.0 / 100.0
024	2360.7	948.0	15.1[1]	6.0 / 238.0
027	2719.9	948.0	15.1[1]	27.0 / 158.0
034	3427.0	869.0	15.6	144.0 / 22.0
041	4099.6	869.0	16.3	199.0 / 4.0
048	4838.9	869.0	17.0	42.0 / 143.0
056	5627.0	869.0	17.7	63.0 / 164.0
064	6403.3	869.0	19.0	15.0 / 131.0
064	6438.3	869.0	19.0	15.0 / 131.0
073	7270.5	869.0	19.3	4.0 / 190.0
Hancock Creek				
442	44173.8	888.0	8.1	56.0 / 189.0
446	44563.2	888.0	8.3	128.0 / 124.0
450	45035.7	751.0	8.7	52.0 / 152.0
455	45485.0	751.0	9.3	106.0 / 61.0
464	46357.7	751.0	10.7	59.0 / 142.0
469	46912.3	751.0	11.6	126.0 / 25.0
476	47582.0	751.0	13.3	89.0 / 111.0
485	48543.1	751.0	14.1	60.0 / 101.0
496	49598.3	751.0	16.1	103.0 / 21.0
502	50207.0	751.0	18.1	28.0 / 78.0
508	50839.7	559.0	19.3	52.0 / 238.0
514	51420.4	559.0	20.5	12.0 / 168.0
Hollis Branch				
005	500.0	793.0	26.5	64.0 / 17.0
011	1056.7	793.0	28.1	42.0 / 15.0

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) Left/Right from Stream Centerline
Hollis Branch				
015	1500.0	793.0	29.4	90.0 / 69.0
021	2065.5	793.0	30.5	104.0 / 14.0
025	2500.0	793.0	31.2	72.0 / 43.0
030	3018.5	624.0	31.7	530.0 / 13.0
034	3416.6	624.0	31.9	12.0 / 39.0
042	4244.0	624.0	34.1	12.0 / 278.0
051	5116.1	624.0	35.3	19.0 / 265.0
062	6202.9	624.0	35.6	588.0 / 12.0
Hunters Creek				
472	47173.0	3500.0	23.7	416.0 / 152.0
478	47846.0	3500.0	24.5	424.0 / 64.0
484	48384.8	3500.0	25.3	303.0 / 173.0
490	48992.9	3440.0	26.2	233.0 / 307.0
499	49893.2	3440.0	27.1	199.0 / 193.0
506	50563.2	3440.0	27.6	116.0 / 389.0
510	51026.3	3440.0	27.9	196.0 / 271.0
517	51660.2	3440.0	28.4	100.0 / 273.0
523	52326.9	3110.0	29.2	126.0 / 297.0
529	52904.5	3110.0	29.7	131.0 / 258.0
534	53369.4	3110.0	30.1	84.0 / 343.0
540	53982.0	3110.0	30.6	149.0 / 325.0
545	54466.2	3110.0	30.9	225.0 / 303.0
551	55084.1	3110.0	31.4	79.0 / 229.0
556	55644.1	3110.0	32.1	238.0 / 234.0
562	56154.5	3110.0	32.5	259.0 / 294.0
567	56701.1	3110.0	33.1	274.0 / 121.0
573	57310.7	2210.0	34.0	174.0 / 219.0
577	57680.4	2210.0	34.2	161.0 / 723.0
582	58201.2	2210.0	34.5	230.0 / 135.0
587	58693.2	2210.0	34.7	187.0 / 1633.0
594	59413.0	2210.0	35.0	250.0 / 350.0
603	60287.8	2210.0	35.6	634.0 / 507.0
611	61117.4	2130.0	36.6	350.0 / 200.0
620	62004.1	2130.0	37.3	750.0 / 550.0
627	62749.6	2130.0	38.2	200.0 / 350.0
635	63476.6	2130.0	38.8	592.0 / 593.0
643	64253.8	2130.0	39.0	824.0 / 411.0
652	65225.4	2130.0	39.4	224.0 / 877.0
661	66053.8	2130.0	39.8	825.0 / 75.0
668	66786.6	2130.0	40.0	308.0 / 1264.0
690	69015.4	1980.0	40.1	1968.0 / 2272.0
Jumping Run				
073	7299.4	1389.0	9.1	195.0 / 77.0
079	7893.9	1389.0	9.7	18.0 / 248.0
086	8578.9	1389.0	10.5	133.0 / 154.0

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) Left/Right from Stream Centerline
Jumping Run				
090	9045.7	1389.0	11.0	105.0 / 128.0
096	9626.4	1389.0	11.7	176.0 / 18.0
102	10227.9	1389.0	12.7	106.0 / 51.0
110	11031.1	1389.0	13.9	142.0 / 89.0
115	11545.8	1389.0	14.5	19.0 / 155.0
Little Swift Creek				
212	21247.8	4892.0	10.0[1]	100.0 / 150.0
226	22621.1	3300.0	10.0[1]	260.0 / 850.0
237	23747.4	3300.0	10.0[1]	500.0 / 120.0
250	25000.0	3083.0	10.0[1]	155.0 / 600.0
266	26570.0	3083.0	10.0[1]	548.0 / 321.0
273	27300.7	3083.0	10.0[1]	285.0 / 566.0
280	28044.2	3083.0	10.0[1]	225.0 / 645.0
289	28859.6	3083.0	10.0[1]	348.0 / 475.0
295	29506.8	3045.0	10.0[1]	244.0 / 223.0
301	30102.6	3045.0	10.0[1]	310.0 / 410.0
308	30844.7	3045.0	10.0[1]	259.0 / 410.0
317	31709.6	2966.0	10.0[1]	253.0 / 267.0
323	32295.3	2966.0	10.0[1]	427.0 / 382.0
331	33055.6	2966.0	10.0[1]	275.0 / 258.0
338	33829.6	2966.0	10.0[1]	312.0 / 286.0
347	34682.6	2966.0	10.1	342.0 / 210.0
352	35181.6	2966.0	10.2	290.0 / 411.0
358	35835.1	2966.0	10.3	385.0 / 218.0
365	36503.6	2857.0	10.4	379.0 / 281.0
374	37388.3	2857.0	10.6	312.0 / 180.0
381	38087.8	2857.0	10.8	249.0 / 399.0
388	38768.5	2857.0	10.9	299.0 / 350.0
396	39550.0	2857.0	11.1	29.0 / 440.0
404	40398.9	2857.0	11.5	125.0 / 221.0
411	41080.3	2857.0	12.0	300.0 / 245.0
415	41549.2	2857.0	12.1	196.0 / 488.0
421	42145.4	2857.0	12.3	257.0 / 160.0
429	42857.7	2754.0	12.8	105.0 / 250.0
436	43583.8	2754.0	13.1	85.0 / 200.0
444	44389.2	2754.0	13.5	113.0 / 42.0
449	44912.1	2754.0	13.9	60.0 / 200.0
457	45705.1	2754.0	14.4	310.0 / 101.0
470	47000.0	2344.0	16.6	150.0 / 120.0
478	47766.8	2344.0	16.9	75.0 / 100.0
486	48641.6	2344.0	17.2	100.0 / 185.0
493	49344.4	2344.0	17.5	200.0 / 215.0
499	49947.8	2344.0	17.8	350.0 / 60.0
507	50684.2	2344.0	18.0	300.0 / 95.0

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) Left/Right from Stream Centerline
Little Swift Creek				
514	51372.2	2230.0	18.3	24.0 / 272.0
519	51906.4	2230.0	18.6	60.0 / 250.0
526	52643.8	2230.0	18.9	60.0 / 345.0
542	54210.2	2230.0	20.2	158.0 / 188.0
550	55000.0	2230.0	20.7	200.0 / 120.0
559	55903.2	2143.0	21.2	109.0 / 152.0
568	56813.3	2143.0	21.8	384.0 / 23.0
578	57824.4	2143.0	22.5	218.0 / 218.0
590	59000.0	2143.0	23.0	220.0 / 90.0
600	59978.1	1141.0	23.5	115.0 / 60.0
607	60703.7	1141.0	23.8	45.0 / 55.0
620	62032.0	1121.0	24.6	60.0 / 100.0
Mauls Swamp				
076	7584.0	1574.0	15.3	300.0 / 250.0
080	7985.0	1574.0	15.4	200.0 / 100.0
087	8728.0	1574.0	15.5	140.0 / 125.0
096	9581.1	1574.0	15.5	130.0 / 350.0
101	10096.7	1574.0	15.6	100.0 / 180.0
113	11280.2	1336.0	16.4	130.0 / 92.0
120	11964.8	1336.0	16.6	119.0 / 198.0
126	12556.7	1336.0	16.7	155.0 / 307.0
131	13146.7	1336.0	16.7	220.0 / 98.0
138	13766.6	1336.0	16.8	123.0 / 210.0
146	14563.3	1336.0	16.9	188.0 / 196.0
150	15045.3	1217.0	17.0	108.0 / 294.0
156	15593.5	1217.0	17.1	217.0 / 275.0
162	16194.7	1217.0	17.2	254.0 / 117.0
169	16904.5	1217.0	17.5	117.0 / 219.0
177	17742.9	1217.0	18.1	107.0 / 187.0
186	18587.6	1217.0	18.8	270.0 / 17.0
193	19297.9	1217.0	19.3	70.0 / 203.0
199	19850.7	1217.0	19.8	136.0 / 113.0
205	20485.1	1217.0	20.5	256.0 / 17.0
209	20940.6	1217.0	20.9	275.0 / 40.0
215	21528.2	1217.0	21.2	240.0 / 40.0
221	22062.7	1217.0	21.6	176.0 / 182.0
226	22572.0	1217.0	21.8	346.0 / 20.0
233	23329.4	1217.0	22.3	170.0 / 226.0
249	24867.9	984.0	22.9	267.0 / 132.0
254	25398.5	984.0	23.2	15.0 / 321.0
260	26027.7	984.0	23.6	65.0 / 310.0
274	27423.4	984.0	24.6	245.0 / 109.0
282	28218.6	984.0	25.4	15.0 / 269.0
293	29280.4	859.0	26.2	169.0 / 96.0

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) Left/Right from Stream Centerline
Mauls Swamp				
302	30195.3	859.0	26.8	55.0 / 200.0
308	30840.4	859.0	27.3	77.0 / 207.0
326	32618.1	696.0	28.5	260.0 / 125.0
339	33886.6	465.0	29.5	234.0 / 58.0
355	35538.1	465.0	31.4	243.0 / 52.0
375	37535.0	363.0	33.6	229.0 / 14.0
Mauls Swamp Tributary 1				
006	572.4	782.0	22.9	47.0 / 54.0
011	1065.9	782.0	23.7	22.0 / 72.0
021	2138.3	782.0	27.0	60.0 / 37.0
029	2920.6	709.0	28.0	115.0 / 13.0
036	3558.0	709.0	28.8	150.0 / 17.0
044	4423.4	539.0	29.7	40.0 / 92.0
Mauls Swamp Tributary 2				
004	357.4	308.0	28.6	70.0 / 14.0
017	1663.5	308.0	31.8	71.0 / 14.0
023	2337.8	308.0	32.7	90.0 / 25.0
029	2873.4	308.0	33.5	140.0 / 50.0
036	3581.7	308.0	34.0	205.0 / 100.0
043	4313.5	308.0	34.4	115.0 / 145.0
050	4999.6	308.0	34.7	90.0 / 155.0
Mill Branch				
009	912.3	1732.0	28.6[1]	131.0 / 37.0
017	1700.2	1732.0	28.6[1]	64.0 / 123.0
027	2698.9	1732.0	28.6[1]	133.0 / 39.0
039	3897.8	1732.0	30.2	91.0 / 68.0
045	4500.0	1732.0	31.3	43.0 / 93.0
051	5052.7	1732.0	32.5	90.0 / 52.0
057	5656.5	1732.0	34.0	56.0 / 92.0
070	6953.8	1732.0	38.4	90.0 / 120.0
076	7577.1	1732.0	39.5	30.0 / 192.0
082	8193.8	1732.0	40.2	22.0 / 57.0
090	9037.2	1562.0	43.0	6.0 / 102.0
097	9741.1	1562.0	44.7	49.0 / 115.0
106	10557.4	1562.0	46.4	40.0 / 120.0
113	11267.7	1562.0	48.9	25.0 / 120.0
120	12000.0	1562.0	52.0	40.0 / 24.0
127	12687.0	1562.0	53.1	532.0 / 54.0
139	13909.2	1360.0	53.3	397.0 / 398.0
150	15000.0	1360.0	53.5	149.0 / 14.0
163	16265.1	1360.0	54.2	13.0 / 593.0
175	17530.1	1180.0	54.4	584.0 / 304.0
193	19305.7	1180.0	54.5	4.0 / 602.0
205	20500.0	1180.0	54.7	586.0 / 4.0
217	21655.0	1180.0	54.8	4.0 / 198.0

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) Left/Right from Stream Centerline
Mill Branch				
232	23228.6	817.0	55.4	177.0 / 392.0
248	24822.8	817.0	55.8	451.0 / 521.0
Mococks Branch				
009	859.3	748.0	8.4	20.0 / 23.0
019	1930.8	748.0	10.6	24.0 / 179.0
023	2314.5	748.0	11.1	16.0 / 130.0
032	3181.3	643.0	12.3	61.0 / 98.0
037	3688.8	643.0	13.5	60.0 / 22.0
Morgan Swamp				
008	823.5	2078.0	9.9[1]	59.0 / 443.0
014	1385.9	2078.0	9.9[1]	200.0 / 340.0
018	1833.2	2078.0	9.9[1]	356.0 / 256.0
024	2350.5	2078.0	9.9	209.0 / 329.0
039	3911.3	1735.0	11.2	43.0 / 810.0
051	5136.2	1735.0	11.5	274.0 / 70.0
058	5785.2	1735.0	11.8	401.0 / 240.0
065	6500.0	1735.0	12.1	86.0 / 314.0
070	7000.0	1735.0	12.4	196.0 / 270.0
075	7500.0	1735.0	12.7	221.0 / 281.0
080	8000.0	1681.0	13.0	283.0 / 106.0
085	8500.0	1681.0	13.3	300.0 / 76.0
090	9000.0	1593.0	13.6	268.0 / 123.0
094	9414.1	1593.0	13.8	182.0 / 330.0
099	9903.1	1593.0	14.1	72.0 / 280.0
106	10617.5	1593.0	14.6	70.0 / 275.0
120	12000.0	1593.0	16.9	20.0 / 336.0
125	12500.0	1593.0	17.1	182.0 / 230.0
130	13000.0	1593.0	17.3	349.0 / 165.0
135	13500.0	1593.0	17.4	217.0 / 211.0
139	13904.8	1593.0	17.5	57.0 / 375.0
145	14500.0	1593.0	17.7	290.0 / 162.0
152	15161.0	1593.0	17.9	323.0 / 90.0
156	15599.4	1593.0	18.0	191.0 / 210.0
160	16000.0	1522.0	18.1	79.0 / 363.0
165	16500.0	1522.0	18.2	292.0 / 104.0
170	17000.0	1522.0	18.3	251.0 / 189.0
176	17559.9	1522.0	18.5	449.0 / 21.0
180	18036.4	1522.0	18.6	366.0 / 45.0
186	18599.8	1522.0	18.8	262.0 / 185.0
190	19000.0	1522.0	18.9	164.0 / 306.0
196	19633.3	1438.0	19.2	93.0 / 347.0
201	20081.6	1438.0	19.3	199.0 / 253.0
213	21325.5	1137.0	19.9	388.0 / 198.0
222	22203.7	1137.0	20.1	122.0 / 280.0
231	23103.9	1076.0	20.4	10.0 / 390.0

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) Left/Right from Stream Centerline
Morgan Swamp				
235	23500.0	1076.0	20.5	47.0 / 376.0
240	24000.0	1076.0	20.6	15.0 / 414.0
246	24551.1	911.0	20.8	111.0 / 274.0
250	25000.0	911.0	21.0	82.0 / 408.0
255	25500.0	798.0	21.2	130.0 / 244.0
261	26134.5	798.0	21.6	68.0 / 291.0
265	26500.0	798.0	21.9	90.0 / 245.0
270	27000.0	798.0	22.3	110.0 / 227.0
Mosley Creek Tributary				
052	5157.0	1070.0	29.5	38.0 / 102.0
053	5311.0	1070.0	29.7	15.0 / 21.0
054	5415.0	1070.0	31.2	32.0 / 31.0
056	5627.0	1070.0	31.5	65.0 / 35.0
060	6046.0	1070.0	31.8	78.0 / 42.0
065	6545.0	1070.0	32.4	109.0 / 51.0
072	7187.0	680.0	32.8	120.0 / 40.0
076	7599.0	680.0	32.9	76.0 / 34.0
081	8111.0	680.0	33.4	116.0 / 19.0
085	8502.0	680.0	33.9	40.0 / 80.0
091	9051.0	680.0	34.6	110.0 / 40.0
095	9460.0	680.0	35.1	30.0 / 120.0
101	10095.0	680.0	35.7	136.0 / 24.0
107	10727.0	680.0	36.2	65.0 / 75.0
Palmetto Swamp				
010	1048.4	4370.0	16.6[1]	112.0 / 118.0
015	1500.0	4370.0	16.6[1]	303.0 / 127.0
020	2000.0	4370.0	16.6[1]	375.0 / 75.0
025	2500.0	4370.0	16.6[1]	311.0 / 299.0
030	3000.0	4370.0	16.6[1]	384.0 / 285.0
036	3589.1	4370.0	16.6[1]	38.0 / 331.0
041	4133.3	4370.0	16.6[1]	136.0 / 399.0
045	4500.0	4370.0	16.6[1]	119.0 / 626.0
050	5000.0	4370.0	16.6[1]	157.0 / 708.0
056	5621.9	4390.0	16.6[1]	35.0 / 600.0
061	6058.7	4390.0	16.6[1]	60.0 / 390.0
065	6547.2	4390.0	16.6[1]	65.0 / 400.0
069	6946.0	4390.0	16.6[1]	25.0 / 200.0
076	7587.3	4390.0	16.9	125.0 / 125.0
085	8527.7	4410.0	17.9	94.0 / 148.0
092	9165.8	4410.0	18.6	79.0 / 289.0
099	9855.0	3700.0	19.1	75.0 / 135.0
106	10630.3	3700.0	19.8	205.0 / 185.0
113	11262.4	3220.0	20.0	14.0 / 399.0
126	12594.7	3220.0	20.5	518.0 / 163.0
131	13138.1	3220.0	20.6	412.0 / 220.0

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) Left/Right from Stream Centerline
Palmetto Swamp				
137	13691.3	3220.0	20.8	274.0 / 322.0
144	14359.5	3220.0	21.0	423.0 / 43.0
148	14764.0	3220.0	21.2	515.0 / 48.0
154	15424.9	3160.0	21.4	260.0 / 75.0
163	16303.6	3160.0	21.9	281.0 / 142.0
167	16668.8	3160.0	22.1	292.0 / 69.0
170	17015.6	3160.0	22.2	435.0 / 60.0
175	17532.1	3160.0	22.4	239.0 / 232.0
181	18121.1	3160.0	22.7	173.0 / 264.0
190	18957.1	3000.0	23.2	385.0 / 188.0
208	20793.5	2740.0	24.2	440.0 / 195.0
221	22112.4	2740.0	25.0	390.0 / 260.0
229	22895.9	2740.0	25.4	152.0 / 488.0
235	23452.3	2740.0	27.2	460.0 / 690.0
252	25193.7	2630.0	27.6	125.0 / 923.0
263	26312.5	2630.0	27.7	560.0 / 220.0
271	27083.4	2630.0	28.0	120.0 / 345.0
278	27789.9	2630.0	28.4	417.0 / 300.0
291	29112.4	2630.0	28.8	166.0 / 490.0
298	29768.3	2320.0	29.0	718.0 / 77.0
305	30471.2	2320.0	29.1	523.0 / 254.0
315	31500.0	1913.0	29.4	327.0 / 571.0
320	32037.6	1913.0	29.4	350.0 / 400.0
329	32907.7	1913.0	29.6	265.0 / 300.0
336	33608.8	1913.0	29.9	318.0 / 155.0
341	34074.2	1913.0	30.1	138.0 / 229.0
348	34848.8	1196.0	30.4	205.0 / 375.0
355	35487.9	1196.0	30.5	128.0 / 245.0
360	36000.4	1196.0	30.7	7.0 / 453.0
365	36534.8	1196.0	31.0	205.0 / 266.0
371	37132.4	1196.0	31.4	36.0 / 342.0
382	38212.0	1112.0	32.0	203.0 / 321.0
391	39094.1	1069.0	32.3	163.0 / 412.0
Palmetto Swamp Tributary 1				
007	724.4	868.0	18.7[1]	80.0 / 50.0
015	1530.5	868.0	18.7[1]	52.0 / 50.0
023	2269.0	868.0	20.7	40.0 / 65.0
029	2915.6	868.0	22.6	85.0 / 15.0
037	3660.2	868.0	24.3	60.0 / 40.0
043	4329.9	868.0	25.7	30.0 / 120.0
049	4911.8	815.0	26.5	20.0 / 190.0
Palmetto Swamp Tributary 2				
007	679.3	661.0	20.2[1]	150.0 / 50.0
014	1437.0	661.0	20.3	55.0 / 41.0
019	1944.4	661.0	21.8	24.0 / 92.0
026	2568.4	661.0	26.1	127.0 / 87.0

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) Left/Right from Stream Centerline
Palmetto Swamp Tributary 3				
007	675.9	484.0	23.8[1]	105.0 / 180.0
011	1116.0	484.0	23.8[1]	160.0 / 74.0
018	1754.7	484.0	23.8[1]	165.0 / 100.0
022	2212.3	484.0	24.0	15.0 / 100.0
028	2812.4	484.0	26.9	65.0 / 50.0
032	3156.1	303.0	28.0	40.0 / 40.0
Palmetto Swamp Tributary 4				
008	768.8	688.0	29.3[1]	180.0 / 45.0
014	1390.5	688.0	29.3[1]	155.0 / 94.0
019	1942.9	660.0	29.3[1]	300.0 / 45.0
025	2541.1	660.0	30.1	15.0 / 185.0
034	3367.9	416.0	32.8	110.0 / 18.0
041	4114.6	416.0	34.6	33.0 / 38.0
048	4795.0	416.0	36.4	92.0 / 20.0
060	6042.7	368.0	38.8	75.0 / 15.0
Pine Tree Swamp				
003	333.9	1066.0	14.3	33.0 / 152.0
007	743.5	1066.0	14.6	110.0 / 15.0
020	2021.2	1066.0	17.1	107.0 / 18.0
026	2624.0	1066.0	17.6	99.0 / 6.0
030	3025.0	1066.0	18.0	150.0 / 18.0
035	3500.0	1021.0	18.4	159.0 / 54.0
041	4068.0	1021.0	18.9	55.0 / 58.0
047	4699.8	1021.0	19.6	23.0 / 109.0
054	5391.5	1021.0	20.3	119.0 / 6.0
060	6000.0	1021.0	21.3	60.0 / 10.0
067	6728.0	958.0	22.3	58.0 / 64.0
075	7490.4	958.0	23.2	5.0 / 103.0
081	8130.9	958.0	24.1	135.0 / 55.0
086	8643.8	887.0	24.5	176.0 / 16.0
Pollard Swamp				
010	1016.6	1070.0	29.8	491.0 / 83.0
020	2000.0	1070.0	30.5	359.0 / 23.0
027	2731.8	1070.0	31.4	193.0 / 81.0
036	3579.2	1070.0	32.1	459.0 / 16.0
044	4385.1	1070.0	32.6	301.0 / 97.0
059	5935.9	875.0	34.3	340.0 / 14.0
066	6601.8	875.0	34.8	310.0 / 32.0
072	7169.9	875.0	35.4	74.0 / 139.0
077	7740.4	829.0	36.2	171.0 / 129.0
083	8274.0	829.0	36.8	164.0 / 118.0
093	9312.6	829.0	37.8	14.0 / 348.0
101	10144.3	829.0	38.6	81.0 / 112.0
110	11000.0	775.0	39.4	191.0 / 146.0
118	11806.2	775.0	40.0	209.0 / 85.0
124	12367.6	775.0	40.6	300.0 / 50.0

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) Left/Right from Stream Centerline
Rollover Creek				
010	954.3	1857.0	17.7	166.0 / 286.0
015	1539.7	1857.0	18.1	300.0 / 101.0
020	2000.0	1857.0	18.4	154.0 / 159.0
027	2679.9	1857.0	19.1	171.0 / 174.0
031	3099.2	1857.0	19.4	156.0 / 322.0
037	3711.6	1857.0	19.7	246.0 / 385.0
042	4154.0	1857.0	19.9	282.0 / 140.0
049	4867.5	1857.0	20.6	47.0 / 361.0
052	5248.7	1701.0	21.1	54.0 / 242.0
060	5986.9	1701.0	22.4	233.0 / 23.0
065	6485.8	1701.0	23.3	162.0 / 92.0
074	7448.5	1701.0	25.1	226.0 / 213.0
082	8172.0	1701.0	25.5	339.0 / 142.0
087	8745.3	1701.0	26.0	280.0 / 14.0
094	9387.4	1701.0	26.8	332.0 / 14.0
100	10000.0	1701.0	27.3	155.0 / 146.0
106	10602.2	1701.0	27.9	170.0 / 130.0
112	11183.6	1701.0	28.4	135.0 / 134.0
117	11661.5	1701.0	28.9	91.0 / 128.0
124	12409.5	1701.0	29.5	178.0 / 185.0
131	13079.1	1701.0	30.0	109.0 / 212.0
138	13753.7	1701.0	30.5	60.0 / 341.0
142	14209.0	1701.0	30.7	170.0 / 268.0
146	14637.8	1701.0	31.0	191.0 / 89.0
153	15332.4	1530.0	31.7	61.0 / 274.0
158	15763.3	1530.0	32.1	14.0 / 317.0
163	16293.1	1530.0	32.4	93.0 / 290.0
169	16870.0	1530.0	32.8	129.0 / 205.0
176	17564.9	1530.0	33.5	81.0 / 127.0
185	18532.4	1530.0	35.3	159.0 / 267.0
191	19092.4	1530.0	35.4	297.0 / 101.0
197	19684.2	1530.0	35.6	345.0 / 36.0
202	20195.0	1530.0	36.0	307.0 / 14.0
207	20714.3	1287.0	36.4	27.0 / 199.0
213	21327.0	1287.0	36.8	34.0 / 165.0
220	21956.4	1287.0	37.3	160.0 / 32.0
Round Tree Branch				
061	6085.2	627.0	9.0[1]	48.0 / 89.0
066	6642.4	627.0	9.6	80.0 / 31.0
071	7145.6	627.0	10.4	93.0 / 13.0
076	7561.1	627.0	10.9	164.0 / 13.0
South Canal				
006	594.5	1770.0	33.3[1]	324.0 / 113.0
013	1266.2	1770.0	33.8	321.0 / 92.0
019	1888.2	1760.0	34.9	332.0 / 162.0

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) Left/Right from Stream Centerline
South Canal				
026	2616.8	1760.0	35.8	96.0 / 676.0
040	4005.5	1760.0	37.4	963.0 / 527.0
048	4817.3	1760.0	37.8	231.0 / 997.0
Southwest Prong Slocum Creek				
113	11283.4	2709.0	8.3	351.0 / 215.0
119	11869.1	2658.0	8.6	321.0 / 376.0
127	12657.2	2658.0	9.0	301.0 / 218.0
131	13106.5	2658.0	9.3	145.0 / 260.0
136	13580.4	2658.0	9.9	115.0 / 245.0
140	14044.1	2658.0	10.9	192.0 / 126.0
146	14555.6	2658.0	11.9	304.0 / 68.0
149	14945.9	2658.0	12.4	226.0 / 165.0
154	15404.3	2658.0	12.8	137.0 / 221.0
157	15739.8	2658.0	13.2	189.0 / 328.0
166	16597.1	1952.0	14.1	101.0 / 399.0
173	17342.6	1952.0	15.1	121.0 / 12.0
178	17820.9	1952.0	16.4	80.0 / 106.0
183	18315.4	1952.0	17.0	224.0 / 111.0
188	18790.3	1952.0	17.4	40.0 / 355.0
192	19224.8	1952.0	17.9	83.0 / 152.0
198	19804.8	1952.0	19.4	56.0 / 107.0
204	20393.0	1679.0	20.7	102.0 / 83.0
210	20957.7	1679.0	21.6	153.0 / 68.0
214	21377.4	1679.0	22.1	65.0 / 59.0
219	21922.3	1679.0	23.6	45.0 / 64.0
224	22421.9	1679.0	25.0	59.0 / 100.0
228	22784.6	1679.0	25.6	202.0 / 52.0
234	23392.2	1679.0	26.1	19.0 / 433.0
240	23953.2	1679.0	26.4	251.0 / 219.0
246	24596.8	1679.0	26.8	46.0 / 608.0
251	25122.5	1517.0	27.2	155.0 / 364.0
257	25667.9	1517.0	27.4	116.0 / 45.0
Spe Branch				
006	588.7	407.0	9.6[1]	51.0 / 112.0
009	867.8	407.0	9.6[1]	97.0 / 21.0
013	1346.7	407.0	9.6[1]	41.0 / 75.0
018	1826.7	407.0	9.6[1]	14.0 / 14.0
024	2426.2	407.0	10.6	14.0 / 38.0
038	3842.7	407.0	15.4	44.0 / 14.0
Swift Creek				
713	71304.8	11000.0	13.9	1050.0 / 800.0
754	75445.2	11000.0	14.2	130.0 / 2000.0
814	81421.0	11000.0	14.6	950.0 / 460.0
820	82042.2	11000.0	14.6	478.0 / 736.0
839	83864.6	11000.0	14.8	750.0 / 450.0

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) Left/Right from Stream Centerline
Swift Creek				
850	84953.6	11000.0	14.8	800.0 / 400.0
866	86614.6	11000.0	15.1	65.0 / 800.0
886	88629.3	11000.0	15.4	350.0 / 800.0
895	89490.0	11000.0	15.4	500.0 / 600.0
910	91000.0	11000.0	15.5	800.0 / 180.0
917	91714.4	11000.0	15.6	1000.0 / 254.0
933	93269.2	10800.0	15.9	600.0 / 900.0
939	93896.1	10800.0	15.9	488.0 / 1111.0
950	95000.0	10800.0	16.0	539.0 / 1045.0
959	95903.6	10800.0	16.0	1140.0 / 467.0
965	96478.8	10800.0	16.1	900.0 / 500.0
978	97838.0	10800.0	16.1	700.0 / 500.0
986	98598.6	10800.0	16.2	500.0 / 650.0
1001	100105.4	10800.0	16.3	400.0 / 700.0
1010	101015.8	10800.0	16.4	600.0 / 250.0
1016	101592.8	10800.0	16.5	278.0 / 700.0
1030	102994.5	9510.0	16.7	700.0 / 500.0
1036	103578.6	9510.0	16.8	200.0 / 1100.0
1045	104455.0	9510.0	16.9	1200.0 / 625.0
1056	105626.7	9510.0	16.9	1630.0 / 110.0
1063	106311.3	9510.0	17.1	800.0 / 630.0
1070	106980.7	9510.0	17.1	600.0 / 500.0
1077	107747.2	8980.0	17.2	75.0 / 570.0
1087	108720.5	8980.0	17.5	302.0 / 925.0
1093	109332.1	8980.0	17.5	510.0 / 822.0
1098	109819.8	8980.0	17.6	609.0 / 477.0
1103	110287.4	8980.0	17.6	626.0 / 351.0
1111	111095.0	8980.0	17.7	838.0 / 464.0
1125	112479.9	8980.0	17.9	375.0 / 821.0
1136	113572.0	8980.0	18.0	717.0 / 422.0
1148	114834.7	8980.0	18.1	650.0 / 641.0
1155	115468.9	8980.0	18.2	405.0 / 739.0
1161	116059.8	8500.0	18.3	300.0 / 750.0
1165	116500.0	8500.0	18.3	432.0 / 440.0
1173	117265.0	8500.0	18.4	468.0 / 210.0
1180	117979.3	8500.0	18.5	717.0 / 498.0
1188	118842.4	8500.0	18.7	800.0 / 400.0
1197	119703.8	8120.0	18.8	1200.0 / 125.0
1204	120358.7	8120.0	18.9	943.0 / 627.0
1210	121034.7	8120.0	18.9	918.0 / 560.0
1219	121918.8	7690.0	19.0	398.0 / 1021.0
1230	123010.6	7690.0	19.2	250.0 / 750.0
1238	123836.5	7690.0	19.3	550.0 / 335.0
1256	125585.2	6210.0	19.8	1000.0 / 250.0

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) Left/Right from Stream Centerline
Swift Creek				
1266	126559.9	6210.0	20.0	833.0 / 404.0
1270	126979.0	6210.0	20.0	432.0 / 666.0
1282	128193.5	6210.0	20.3	412.0 / 249.0
1294	129375.2	6120.0	20.7	300.0 / 550.0
1303	130297.8	6120.0	20.9	375.0 / 590.0
1309	130915.2	6120.0	21.0	300.0 / 500.0
1320	131990.3	6120.0	21.3	250.0 / 450.0
1336	133607.5	6120.0	22.2	770.0 / 455.0
1341	134058.8	6120.0	22.3	800.0 / 320.0
1351	135109.1	6120.0	22.5	365.0 / 381.0
1361	136081.8	6120.0	22.9	304.0 / 612.0
1366	136642.8	6120.0	23.0	556.0 / 290.0
1381	138058.3	6120.0	23.4	135.0 / 505.0
1403	140252.0	6030.0	24.1	525.0 / 320.0
1417	141737.4	6030.0	24.4	500.0 / 500.0
1427	142709.1	6030.0	24.6	47.0 / 588.0
1434	143370.2	6030.0	24.8	100.0 / 500.0
1442	144207.4	6030.0	25.1	300.0 / 475.0
1454	145397.6	6030.0	25.4	450.0 / 500.0
1468	146770.0	6030.0	25.9	100.0 / 500.0
1482	148180.5	6030.0	26.4	90.0 / 320.0
1490	149008.5	6030.0	26.7	250.0 / 125.0
1505	150519.2	6030.0	27.5	700.0 / 300.0
Tracey Swamp				
002	230.5	2156.0	38.8	23.1 / 915.5
004	429.7	2156.0	38.8	25.8 / 1314.3
005	499.7	2156.0	38.8	25.8 / 1314.3
010	993.0	2156.0	38.9	910.9 / 661.7
025	2520.0	2156.0	39.1	489.1 / 1065.0
036	3627.8	2046.0	39.3	1979.7 / 22.3
045	4537.2	2046.0	39.4	1422.8 / 89.7
058	5804.1	1981.0	39.6	139.7 / 205.1
074	7371.4	1981.0	40.6	24.2 / 889.6
086	8552.9	1981.0	41.0	21.8 / 1020.8
104	10412.6	1550.0	41.4	1166.6 / 504.6
125	12476.9	1426.0	41.9	165.4 / 208.6
138	13811.4	1426.0	42.6	18.4 / 590.0
157	15677.2	1350.0	43.2	870.0 / 45.0
Upper Broad Creek				
071	7082.4	1420.0	30.8	34.8 / 1041.1
076	7583.1	1420.0	30.9	72.9 / 627.4
081	8138.4	1420.0	31.1	108.4 / 910.1
086	8607.4	1420.0	31.2	219.0 / 792.6
091	9138.0	1420.0	31.4	49.9 / 700.1
097	9745.2	1420.0	31.8	51.9 / 630.9

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) Left/Right from Stream Centerline
Upper Broad Creek				
106	10600.3	1230.0	32.4	466.2 / 161.0
112	11215.7	1230.0	32.7	339.1 / 324.1
117	11698.7	1230.0	33.0	425.2 / 230.1
122	12201.9	1230.0	33.2	600.0 / 50.0
124	12392.0	1230.0	33.3	121.8 / 520.6
124	12437.0	1230.0	33.3	121.8 / 520.6
130	12987.9	604.0	33.6	105.9 / 360.8
136	13636.9	604.0	33.8	214.0 / 93.9
142	14214.4	604.0	34.4	184.5 / 79.1
148	14839.8	604.0	34.8	228.6 / 93.9
152	15176.2	604.0	35.1	84.9 / 31.7
157	15685.2	604.0	35.6	239.4 / 25.6
157	15730.2	604.0	35.6	239.4 / 25.6
160	16011.3	604.0	35.8	174.7 / 20.3
167	16676.3	604.0	36.3	250.1 / 99.9
173	17325.7	604.0	36.5	200.0 / 100.0
350	35000.0	4132.0	8.0	605.0 / 378.0
360	36000.0	3901.0	8.1	589.0 / 290.0
372	37169.2	3901.0	8.2	846.0 / 622.0
380	38000.0	3901.0	8.2	1007.0 / 382.0
389	38943.6	3901.0	8.3	820.0 / 393.0
399	39924.2	3901.0	8.3	641.0 / 372.0
410	41000.0	3802.0	8.4	778.0 / 507.0
423	42287.0	3802.0	8.4	465.0 / 456.0
440	44000.0	3802.0	8.5	206.0 / 704.0
449	44945.1	3802.0	8.6	383.0 / 215.0
460	46000.0	3802.0	8.7	569.0 / 197.0
475	47500.0	3802.0	8.8	309.0 / 448.0
490	49000.0	3666.0	9.0	466.0 / 473.0
500	50000.0	3666.0	9.1	395.0 / 543.0
511	51110.7	3666.0	9.1	592.0 / 235.0
520	52000.0	3666.0	9.2	464.0 / 653.0
528	52829.4	3666.0	9.3	314.0 / 485.0
540	54000.0	3666.0	9.5	623.0 / 180.0
550	55000.0	3666.0	9.7	301.0 / 639.0
561	56053.0	3666.0	9.8	320.0 / 359.0
570	57000.0	2669.0	10.1	28.0 / 680.0
577	57690.3	2669.0	10.2	148.0 / 347.0
587	58736.6	2669.0	10.6	223.0 / 144.0
606	60568.4	2553.0	11.3	161.0 / 394.0
625	62500.0	2553.0	11.9	147.0 / 575.0
635	63500.0	2553.0	12.3	623.0 / 113.0
645	64500.0	2553.0	12.6	529.0 / 813.0
656	65601.4	2500.0	13.0	239.0 / 120.0

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) Left/Right from Stream Centerline
Upper Broad Creek				
666	66611.3	2500.0	13.8	26.0 / 552.0
675	67500.0	2500.0	14.3	26.0 / 509.0
685	68500.0	2500.0	14.8	418.0 / 69.0
696	69613.7	2500.0	15.2	204.0 / 491.0
710	71000.0	2436.0	15.7	646.0 / 28.0
721	72085.4	2436.0	16.1	366.0 / 235.0
735	73453.2	2436.0	17.0	418.0 / 261.0
753	75304.4	1579.0	17.6	133.0 / 261.0
767	76670.2	1579.0	18.2	430.0 / 37.0
778	77823.7	1524.0	18.8	141.0 / 288.0
791	79066.3	1524.0	20.0	180.0 / 161.0
807	80688.0	1524.0	21.4	183.0 / 166.0
825	82474.5	1159.0	22.3	64.0 / 449.0
845	84468.3	1159.0	23.6	171.0 / 133.0
864	86416.2	1159.0	26.0	23.0 / 278.0
881	88069.1	1159.0	27.2	408.0 / 213.0
897	89667.1	569.0	28.5	100.0 / 15.0
Village Creek				
180	18001.5	970.0	44.8	87.0 / 87.0
185	18534.6	362.0	44.8	87.0 / 87.0
West Prong Brice Creek				
012	1196.7	2664.0	15.0[1]	635.0 / 142.0
020	2023.4	2664.0	15.0[1]	171.0 / 288.0
027	2705.8	2664.0	15.0[1]	334.0 / 215.0
032	3202.7	2664.0	15.0[1]	450.0 / 260.0
039	3931.3	2664.0	15.0[1]	174.0 / 203.0
044	4356.6	2664.0	15.0[1]	93.0 / 329.0
052	5187.6	2664.0	15.5	55.0 / 377.0
063	6321.6	2664.0	16.1	108.0 / 707.0
071	7074.8	2664.0	16.4	459.0 / 158.0
078	7831.5	2449.0	16.9	487.0 / 162.0
084	8423.7	2449.0	17.3	343.0 / 157.0
090	8995.0	2441.0	17.7	312.0 / 337.0
101	10088.6	2441.0	18.4	338.0 / 163.0
108	10819.2	2441.0	18.9	700.0 / 53.0
116	11622.3	2366.0	19.3	738.0 / 50.0
122	12198.3	2288.0	19.6	609.0 / 143.0
130	12993.6	2288.0	20.1	758.0 / 130.0
140	14014.0	2288.0	20.9	558.0 / 31.0
149	14905.9	2224.0	21.9	157.0 / 294.0
157	15681.2	2224.0	22.5	323.0 / 378.0
165	16540.9	2224.0	23.2	201.0 / 193.0
176	17554.9	2224.0	24.0	336.0 / 46.0
183	18310.0	2224.0	24.5	164.0 / 284.0
189	18897.6	2224.0	24.8	225.0 / 333.0

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) Left/Right from Stream Centerline
West Prong Brice Creek				
196	19649.1	2224.0	25.3	156.0 / 412.0
203	20261.6	2224.0	25.8	255.0 / 352.0
208	20842.6	2224.0	26.2	96.0 / 477.0
215	21503.0	1776.0	26.5	229.0 / 353.0
221	22067.3	1776.0	26.8	378.0 / 141.0
227	22663.6	1776.0	27.1	502.0 / 175.0
232	23192.3	1776.0	27.4	341.0 / 206.0
242	24224.3	1776.0	27.9	115.0 / 565.0
258	25772.1	1446.0	28.7	403.0 / 222.0
268	26837.8	1446.0	29.6	270.0 / 99.0
277	27718.2	1446.0	30.5	397.0 / 65.0
286	28588.8	1446.0	31.3	274.0 / 91.0
296	29567.0	1131.0	32.0	194.0 / 338.0
305	30473.3	1131.0	32.5	278.0 / 224.0
315	31529.0	1131.0	33.3	196.0 / 268.0
366	36550.4	556.0	36.2	885.0 / 522.0
West Prong Mortons Mill Pond				
019	1869.4	834.0	9.5	50.0 / 173.0
026	2614.4	834.0	9.9	30.0 / 192.0
040	4042.2	834.0	11.3	32.0 / 170.0
047	4744.0	834.0	12.5	90.0 / 62.0
054	5375.7	365.0	13.3	14.0 / 182.0
064	6377.7	365.0	14.6	34.0 / 14.0
070	6953.7	365.0	17.1	89.0 / 22.0
075	7529.6	365.0	18.0	14.0 / 94.0

[1]Elevation includes backwater effects

5.3 Coastal Analyses

For the areas of Craven County that are impacted by coastal flooding processes, coastal flood hazard analyses were performed to provide estimates of coastal BFEs. Coastal BFEs reflect the increase in water levels during a flood event due to extreme tides and storm surge as well as overland wave effects.

The following subsections provide summaries of how each coastal process was considered for the FIS Report. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation. Table 18 summarizes the methods and/or models used for each of the coastal analyses. Refer to Section 2.5.1 for descriptions of the terms used in this section.

Table 18, "Summary of Coastal Analyses"

Table 18 - Summary of Coastal Analyses

Flooding Source	Study Limits From	Study Limits To	Hazard Evaluated	Model or Method Used	Date Analysis Was Completed
Neuse River	The confluences of South River and Neuse River	Approximately 1.1 miles upstream of the confluence with Swift Creek	*	ADCIRC	1/22/2013
Neuse River	The confluences of South River and Neuse River	Approximately 1.1 miles upstream of the confluence with Swift Creek	*	CHAMP / RUNUP 2.0 (2007)	1/24/2014
Neuse River	The confluences of South River and Neuse River	Approximately 1.1 miles upstream of the confluence with Swift Creek	*	CHAMP 2.0	1/24/2014

Table 18 - Summary of Coastal Analyses

Flooding Source	Study Limits From	Study Limits To	Hazard Evaluated	Model or Method Used	Date Analysis Was Completed
Neuse River	The confluences of South River and Neuse River	Approximately 1.1 miles upstream of the confluence with Swift Creek	*	WHAFIS 4.0	1/24/2014
Pamlico Sound	*	*	*	*	*

5.3.1 Total Stillwater Elevations

The total stillwater elevations (stillwater including storm surge plus wave setup) for the 1% annual chance flood were determined for areas subject to coastal flooding. The models and methods that were used to determine storm surge and wave setup are listed in Table 18. The stillwater elevation that was used for each transect in coastal analyses is shown in Table 20, “Coastal Transect Parameters.”

Astronomical Tide

Astronomical tidal statistics were generated directly from local tidal constituents by sampling the predicted tide at random times throughout the tidal epoch.

Storm Surge Statistics

Storm surge is modeled based on characteristics of actual storms responsible for significant coastal flooding. The characteristics of these storms are typically determined by statistical study of the regional historical record of storms or by statistical study of tidal gages.

When historic records are used to calculate storm surge, characteristics such as the strength, size, track, etc., of storms are identified by site. Storm data was used in conjunction with numerical hydrodynamic models to determine the corresponding storm surge levels. An extreme value analysis was performed on the storm surge modeling results to determine a stillwater elevation for the 1% annual chance event.

Tidal gages can be used instead of historic records of storms when the available tidal gage record for the area represents both the astronomical tide component and the storm surge component. Table 19 provides the gage name, managing agency, gage type, gage identifier, start date, end date, and statistical methodology applied to each gage used to determine the stillwater elevations. For areas between gages, peak stillwater elevations for selected recurrence intervals were estimated by combining interpolation between gages and observed high water marks during major storms. A regionalized statistical approach was applied to the gage data so that stillwater elevations in areas between gages could be identified.

Table 19, “Tide Gage Analysis Specifics” is not applicable in Craven County.

Combined Riverine and Tidal Effects

Riverine and surge rates for the lower reaches of the Inundation River were combined by developing curves for rate of occurrence vs. flood level for each flood source.

Wave Setup Analysis

Wave setup was computed during the storm surge modeling through the methods and models listed in Table 18 and included in the frequency analysis for the determination of the total stillwater elevations. The oscillating component of wave setup, dynamic wave setup, was calculated for areas subject to wave runup hazards.

5.3.2 Waves

A coastal wave model (Coastal State University 2007) was used to calculate the nearshore wave fields required for the addition of wave setup effects. Three nested grids were used to obtain sufficient nearshore resolution to represent the radiation stress gradients required as ADCIRC inputs. Radiation stress fields output from the inner grids are used by ADCIRC to estimate the contribution of breaking waves (wave setup effects) to the total stillwater elevation.

5.3.3 Coastal Erosion

A single storm episode can cause extensive erosion in coastal areas. Storm-induced erosion was evaluated to determine the modification to existing topography that is expected to be associated with flooding events. Erosion was evaluated using the methods listed in Table 18. The post-event eroded profile was used for the subsequent transect-based onshore wave hazard analyses.

5.3.4 Wave Hazard Analyses

Overland wave hazards were evaluated to determine the combined effects of ground elevation, vegetation, and physical features on overland wave propagation and wave runup. These analyses were performed at representative transects along all shorelines for which waves were expected to be present during the floods of the selected recurrence intervals. The results of these analyses were used to determine elevations for the 1% annual chance flood.

Transect locations were chosen with consideration given to the physical land characteristics as well as development type and density so that they would closely represent conditions in their locality. Additional consideration was given to changes in the total stillwater elevation. Transects were spaced close together in areas of complex topography and dense development or where total stillwater elevations varied. In areas having more uniform characteristics, transects were spaced at larger intervals. Transects shown in Figure 9, "Transect Location Map," are also depicted on the FIRM. Table 17 provides the location, stillwater elevations, and starting wave conditions for each transect evaluated for overland wave hazards. In this table, "starting" indicates the parameter value at the beginning of the transect.

Wave Height Analysis

Wave height analyses were performed to determine wave heights and corresponding wave crest elevations for the areas inundated by coastal flooding and subject to overland wave propagation hazards. Wave heights and wave crest elevations were modeled using the methods and models listed in Table 18, "Summary of Coastal Analyses."

Wave Runup Analysis

Wave runup analyses were performed to determine the height and extent of runup beyond the limit of stillwater inundation for the 1% annual chance flood. Wave runup elevations were modeled using the methods and models listed in Table 15.

Table 20, "Coastal Transect Parameters"

Table 20: Coastal Transect Parameters

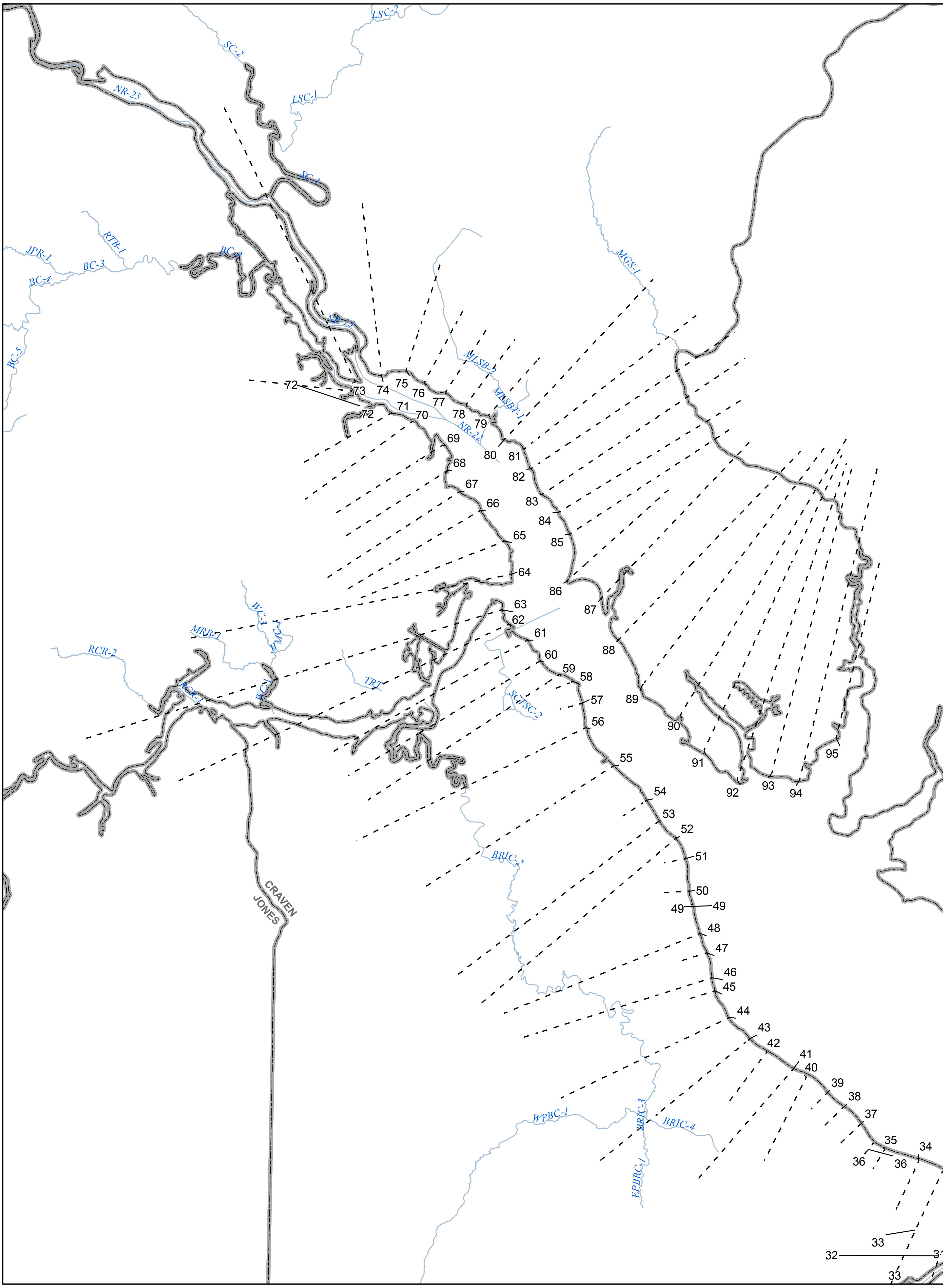
Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
	Significant Wave Height Hs (ft)	Peak Wave Period Tp (sec)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	.2% Annual Chance
Neuse River		**From The confluences of South River and Neuse River**			**To Approximately 1.1 miles upstream of the confluence with Swift Creek**		
1	5.4	4.2	*	*	*	6.2	7.7
			*	*	*	6.2 - 6.7	7.7 - 8.1
3	5.4	4.2	*	*	*	6.1	7.7
			*	*	*	6.1 - 7.3	7.7 - 8.8
5	5.4	4.2	*	*	*	6.4	8.0
			*	*	*	6.4 - 6.7	8.0 - 8.1
7	5.4	4.2	*	*	*	6.6	8.2
			*	*	*	6.6 - 6.8	8.2 - 8.3
9	5.4	4.2	*	*	*	6.8	8.5
			*	*	*	6.8 - 6.8	8.5 - 8.5
11	5.4	4.2	*	*	*	6.9	8.7
			*	*	*	6.9 - 7.4	8.7 - 9.3
13	5.4	4.2	*	*	*	6.9	8.6
			*	*	*	6.9 - 6.9	8.6 - 8.6
15	5.4	4.2	*	*	*	6.9	8.6
			*	*	*	6.9 - 6.9	8.6 - 8.6
17	5.4	4.2	*	*	*	6.9	8.7
			*	*	*	6.9 - 6.9	8.7 - 8.7
19	5.4	4.2	*	*	*	6.9	8.7
			*	*	*	6.9 - 6.9	8.7 - 8.7
21	5.4	4.2	*	*	*	7.2	9.0
			*	*	*	7.2 - 7.5	9.0 - 9.4
23	5.4	4.2	*	*	*	7.3	9.3
			*	*	*	7.3 - 7.5	9.3 - 9.4

Table 20: Coastal Transect Parameters

Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
	Significant Wave Height Hs (ft)	Peak Wave Period Tp (sec)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	.2% Annual Chance
25	5.4	4.2	*	*	*	7.3	9.2
			*	*	*	7.3 - 7.5	9.2 - 9.4
27	5.4	4.2	*	*	*	7.4	9.4
			*	*	*	7.4 - 7.4	9.3 - 9.4
29	5.4	4.2	*	*	*	7.7	9.6
			*	*	*	7.7 - 7.7	9.6 - 9.7
31	5.4	4.2	*	*	*	7.7	9.6
			*	*	*	7.7 - 7.8	9.6 - 9.8
33	5.4	4.2	*	*	*	7.7	9.6
			*	*	*	7.7 - 7.8	9.6 - 9.8
35	5.4	4.2	*	*	*	7.8	9.8
			*	*	*	7.8 - 7.8	9.7 - 9.8
37	5.4	4.2	*	*	*	7.8	9.8
			*	*	*	7.8 - 7.8	9.8 - 9.8
39	5.4	4.2	*	*	*	8.0	9.9
			*	*	*	8.0 - 8.0	9.9 - 9.9
41	5.4	4.2	*	*	*	8.0	9.9
			*	*	*	8.0 - 8.0	9.9 - 9.9
43	5.4	4.2	*	*	*	8.2	10.1
			*	*	*	8.2 - 8.2	10.1 - 10.1
45	5.4	4.2	*	*	*	8.2	10.1
			*	*	*	8.2 - 8.2	10.1 - 10.1
47	5.4	4.2	*	*	*	8.2	10.1
			*	*	*	8.2 - 8.2	10.1 - 10.1
49	5.4	4.2	*	*	*	8.2	10.1
			*	*	*	8.2 - 8.2	10.1 - 10.1
51	3.8	3.4	*	*	*	8.3	10.1
			*	*	*	8.3 - 8.3	10.1 - 10.1
53	3.8	3.4	*	*	*	8.2	10.1
			*	*	*	8.2 - 8.9	10.1 - 10.8
55	3.8	3.4	*	*	*	8.2	10.1
			*	*	*	8.2 - 8.9	10.1 - 10.8
57	2.9	2.9	*	*	*	8.2	10.1
			*	*	*	8.2 - 8.2	10.1 - 10.1
59	2.9	2.9	*	*	*	8.2	10.1
			*	*	*	8.2 - 8.8	10.1 - 10.8
61	2.9	2.9	*	*	*	8.3	10.3
			*	*	*	8.3 - 9.0	10.3 - 11.0
63	2.9	2.9	*	*	*	8.4	10.4
			*	*	*	8.4 - 9.0	10.4 - 11.0
65	2.9	2.9	*	*	*	8.4	10.4
			*	*	*	8.4 - 8.5	10.4 - 10.5
67	2.9	2.9	*	*	*	8.5	10.5
			*	*	*	8.5 - 8.6	10.5 - 10.6
69	1.8	2.4	*	*	*	8.6	10.6
			*	*	*	8.6 - 8.6	10.6 - 10.6
71	1.8	2.4	*	*	*	8.6	10.7
			*	*	*	8.6 - 8.7	10.7 - 10.8
73	1.8	2.4	*	*	*	8.6	10.7
			*	*	*	8.5 - 8.6	10.6 - 10.7
75	1.8	2.4	*	*	*	8.6	10.7
			*	*	*	8.6 - 8.6	10.7 - 10.7
77	1.8	2.4	*	*	*	8.6	10.6
			*	*	*	8.6 - 8.6	10.6 - 10.6
79	1.8	2.4	*	*	*	8.5	10.5
			*	*	*	8.5 - 8.5	10.5 - 10.5
81	2.8	2.9	*	*	*	8.4	10.3
			*	*	*	7.6 - 8.4	9.3 - 10.4
83	2.8	2.9	*	*	*	8.3	10.2

Table 20: Coastal Transect Parameters

Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
	Significant Wave Height Hs (ft)	Peak Wave Period Tp (sec)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	.2% Annual Chance
			*	*	*	7.6 - 8.3	9.3 - 10.2
85	2.8	2.9	*	*	*	8.2	10.1
			*	*	*	7.6 - 8.2	9.3 - 10.1
87	2.8	2.9	*	*	*	8.1	9.9
			*	*	*	7.6 - 8.1	9.3 - 9.9
89	2.8	2.9	*	*	*	8.1	9.9
			*	*	*	7.6 - 8.1	9.3 - 9.9
91	4.5	3.7	*	*	*	8.0	9.9
			*	*	*	7.6 - 8.0	9.3 - 9.9
93	4.5	3.7	*	*	*	7.8	9.6
			*	*	*	7.6 - 7.9	9.3 - 9.7
95	4.5	3.7	*	*	*	7.6	9.4
			*	*	*	7.5 - 7.6	9.3 - 9.4
Pamlico Sound		**From NP**			**To NP**		



N

1 in = 1.5 miles

0 0.25 0.5 1 1.5 Miles

Map Projection:
Lambert Conformal Conic
North American Datum 1983

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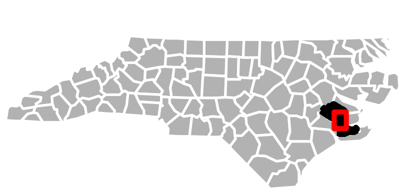
COUNTY LOCATOR



NATIONAL FLOOD INSURANCE PROGRAM

TRANSECT LOCATOR MAP

CRAVEN COUNTY, NORTH CAROLINA

PANELS WITH TRANSECTS:

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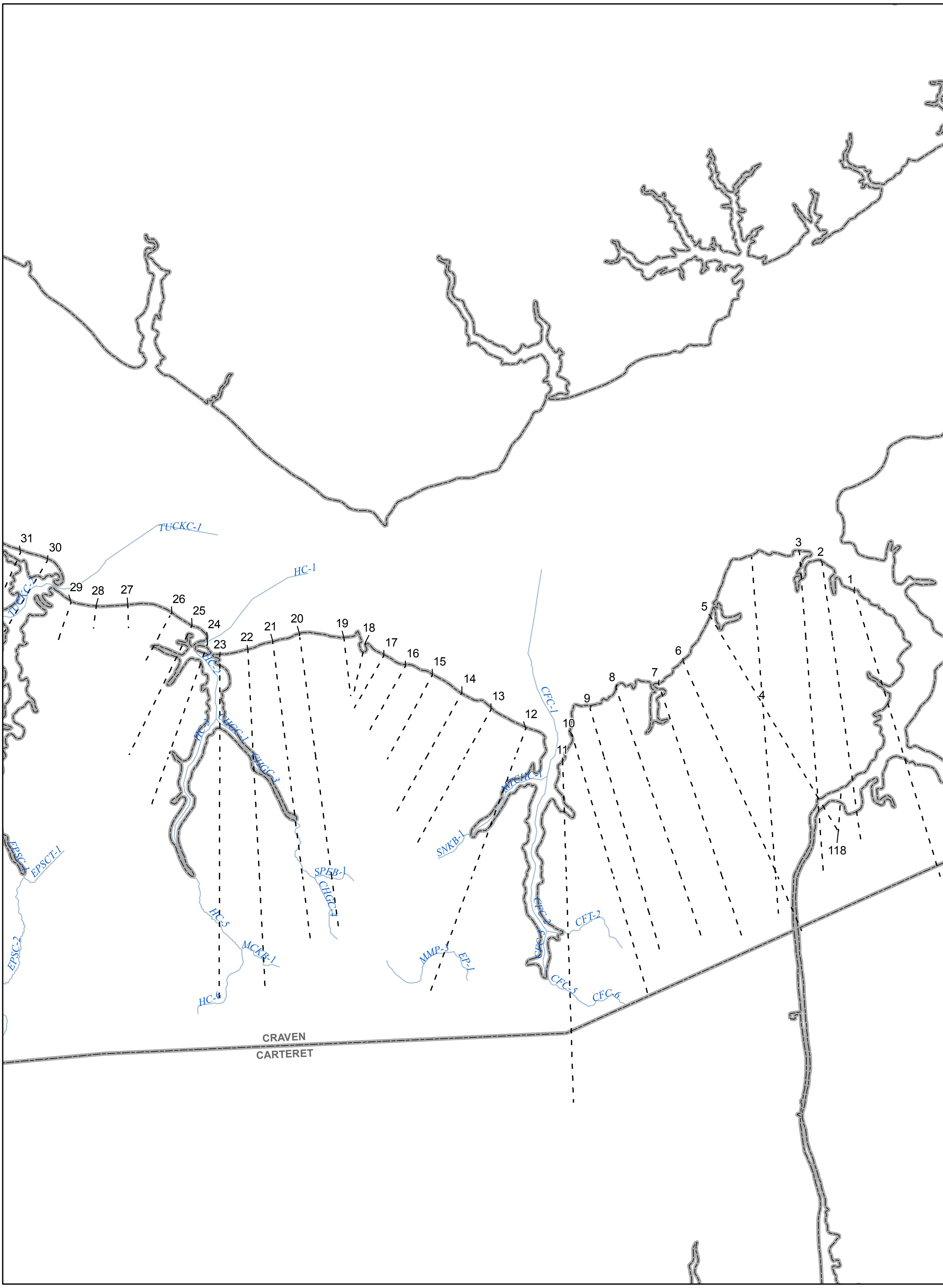
FEMA

Figure 5 - Coastal Transect Map



1 in = 1.5 miles

0 0.25 0.5 1 1.5 Miles

Map Projection:
Lambert Conformal Conic
North American Datum 1983

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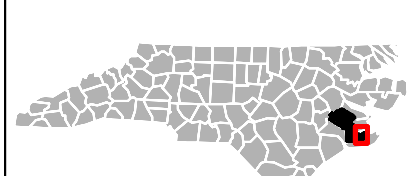
COUNTY LOCATOR



NATIONAL FLOOD INSURANCE PROGRAM

TRANSECT LOCATOR MAP

CRAVEN COUNTY, NORTH CAROLINA
PANELS WITH TRANSECTS:

6432, 6442, 6452, 6462, 6472, 5562, 6502, 5582, 5592, 5561, 5571, 5581, 5591, 6500, 5570, 5580, 5590, 5469, 5479, 5489, 5499, 6408, 5458, 5468, 5478, 5488, 5498, 5466, 5487, 5497, 6406, 6426, 5486, 5496, 5484, 6404, 6424, 6444, 6464, 6484, 7404, 6413, 6423, 6433, 6443, 6453, 6463, 6473, 6482, 7402, 6440, 6460, 6480

FEMA

Figure 5 - Coastal Transect Map

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 Craven 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 Craven 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 21, "Datum Conversion Locations and Values," is shown below.

Table 21, "Datum Conversion Locations and Values."

Table 21 - Datum Conversion Locations and Values

Latitude	Longitude	Conversion from NGVD29 to NAVD88 (feet)
35.37	-77.13	-1.10
35.25	-77.38	-1.21
35.25	-77.25	-1.19
35.25	-77.13	-1.12
35.25	-77.00	-1.08
35.12	-77.25	-1.14
35.13	-77.12	-1.11
35.12	-77.00	-1.06
35.00	-77.00	-1.05
34.87	-77.00	-1.04
34.88	-76.87	-1.03
34.88	-76.75	-1.00
Average conversion in Craven County from NGVD 29 to NAVD 88 = -1.09 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 Craven 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 https://geodesy.noaa.gov/datasheets/, or contact the NGS Information Services Branch at:

Communications and Outreach Branch,
NOAA, N/NGS12
National Geodetic Survey
SSMC3 #8716
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(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.

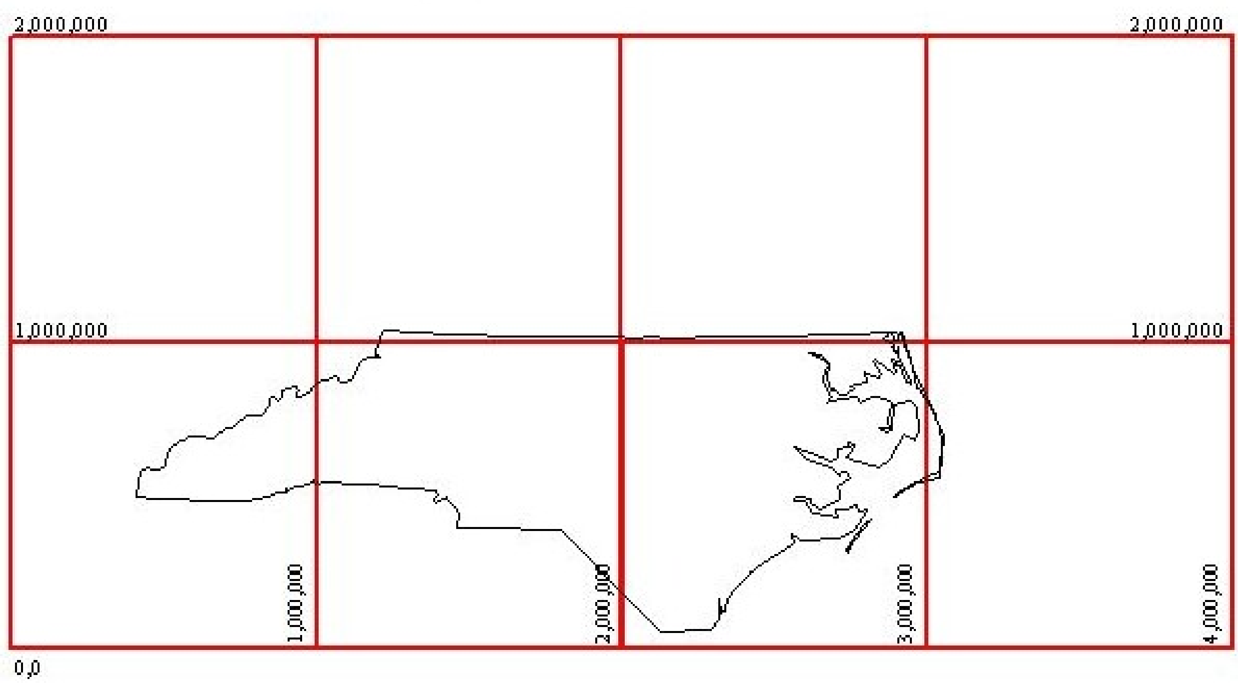


Figure 6 - North Carolina's State Plane Coordinate System

6.3 Floodplain and Floodway Delineation

Floodplain Boundaries

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).

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.

For coastal floodplains, after analyzing wave heights along each transect, wave elevations were interpolated between transects. Various source data were used in the interpolation, including topographic data described above. Controlling features affecting the elevations were identified and considered in relation to their positions at particular transect and their variation between transects. •

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 22, "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 22 - 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
Deep Gully								
036	3,630	70.0	278.0	3.4	9.8[1]	9.5	10.1	0.6
042	4,204	70.0	340.0	2.8	11.3[1]	11.2	11.5	0.3
045	4,511	75.0	418.0	2.0	11.7[1]	11.6	12.0	0.4
052	5,224	75.0	289.0	2.9	12.3[1]	12.2	12.8	0.6
058	5,757	70.0	260.0	3.2	13.1[1]	13.1	14.1	1.0
065	6,455	45.0	201.0	4.1	15.6	15.6	16.3	0.7
066	6,614	33.0	189.0	4.4	16.1	16.1	16.8	0.7
068	6,843	37.0	271.0	3.1	17.1	17.1	17.7	0.6
070	6,954	47.0	215.0	3.9	17.4	17.4	17.9	0.5
071	7,103	64.0	349.0	2.4	17.7	17.7	18.3	0.6
East Prong Slocum Creek								
049	4,893	410.0	1726.0	4.6	8.1[1]	4.1	4.2	0.1
058	5,812	510.0	2276.0	4.2	8.1[1]	4.8	5.0	0.2
068	6,783	500.0	2225.0	4.0	8.1[1]	5.4	5.7	0.3

Table 22 - 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
East Prong Slocum Creek								
080	7,998	119.0	679.0	5.5	8.2[1]	6.4	6.8	0.4
087	8,691	175.0	1641.0	3.1	11.2[1]	11.0	11.0	0.0
093	9,272	210.0	2133.0	2.2	11.6[1]	11.4	11.5	0.1
100	9,998	290.0	3419.0	1.7	13.8[1]	13.8	14.1	0.3
108	10,765	210.0	2367.0	2.2	13.8	13.8	14.2	0.4
113	11,313	270.0	2924.0	1.9	13.8	13.8	14.3	0.5
120	12,003	270.0	2813.0	2.0	13.9	13.9	14.3	0.4
125	12,532	230.0	2265.0	1.5	13.9	13.9	14.4	0.5
131	13,070	230.0	2174.0	1.7	13.9	13.9	14.4	0.5
136	13,638	190.0	1782.0	2.0	13.9	13.9	14.5	0.6
141	14,121	220.0	1981.0	1.8	13.9	13.9	14.5	0.6
146	14,560	200.0	1684.0	1.9	13.9	13.9	14.6	0.7
147	14,683	240.0	2111.0	1.6	14.0	14.0	14.6	0.6
151	15,145	290.0	2315.0	1.6	14.0	14.0	14.6	0.6
157	15,695	340.0	2538.0	1.4	14.0	14.0	14.7	0.7
166	16,643	270.0	1802.0	1.9	14.1	14.1	14.8	0.7
173	17,279	52.0	387.0	3.5	14.2	14.2	14.9	0.7
East Prong Slocum Creek Tributary								
004	407	50.0	592.0	3.2	11.4	11.4	12.0	0.6
006	633	45.0	458.0	5.2	11.4	11.4	12.1	0.7
008	760	45.0	401.0	5.6	11.4	11.4	12.2	0.8
009	931	55.0	659.0	3.9	16.9	16.9	17.6	0.7
011	1,139	80.0	719.0	3.6	16.9	16.9	17.7	0.8
015	1,511	155.0	801.0	3.8	17.2	17.2	17.9	0.7
019	1,869	265.0	895.0	2.9	17.3	17.3	18.1	0.8
022	2,163	420.0	1989.0	1.7	19.5	19.5	20.3	0.8
024	2,394	355.0	1747.0	2.0	19.5	19.5	20.4	0.9
027	2,652	340.0	1615.0	2.1	19.6	19.6	20.4	0.8
027	2,737	320.0	1303.0	2.9	19.6	19.6	20.4	0.8
030	3,014	150.0	1032.0	2.1	19.7	19.7	20.5	0.8
034	3,405	195.0	988.0	2.5	19.7	19.7	20.6	0.9
067	3,665	240.0	790.0	3.5	19.8	19.8	20.7	0.9
040	4,039	215.0	1074.0	2.2	19.9	19.9	20.8	0.9
043	4,347	125.0	863.0	1.9	20.0	20.0	20.9	0.9
044	4,440	81.0	363.0	4.9	20.2	20.2	20.9	0.7
048	4,790	60.0	316.0	5.3	20.7	20.7	21.3	0.6
053	5,348	50.0	322.0	4.9	21.8	21.8	22.2	0.4
Jimmies Creek								
014	1,436	82.0	512.0	2.0	9.5[1]	9.1	10.0	0.9
017	1,673	94.0	549.0	1.9	9.9[1]	9.7	10.5	0.8
019	1,873	85.0	474.0	2.2	10.4[1]	10.2	11.0	0.8
021	2,103	109.0	625.0	1.7	11.0[1]	10.9	11.7	0.8
024	2,392	77.0	409.0	0.8	11.4[1]	11.3	12.2	0.9
026	2,591	40.0	147.0	2.1	11.4[1]	11.3	12.2	0.9

Table 22 - 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
Jimmies Creek								
027	2,716	25.0	72.0	4.2	11.7[1]	11.6	12.3	0.7
028	2,809	25.0	86.0	3.5	12.7[1]	12.7	13.2	0.5
030	3,012	31.0	126.0	2.4	13.4[1]	13.4	14.2	0.8
031	3,124	25.0	113.0	2.7	14.1	14.1	14.9	0.8
033	3,273	25.0	93.0	3.3	14.8	14.8	15.6	0.8
035	3,471	25.0	97.0	3.1	15.6	15.6	16.4	0.8
036	3,563	32.0	115.0	2.7	15.8	15.8	16.7	0.9
037	3,663	35.0	105.0	2.9	16.1	16.1	17.0	0.9
039	3,936	58.0	234.0	1.3	17.4	17.4	18.3	0.9
Little Swift Creek								
133	13,262	650.0	3677.0	1.4	10.0[2]	4.5	5.5	1.0
147	14,652	1100.0	6541.0	0.8	10.0[2]	5.2	6.2	1.0
176	17,599	1260.0	8167.0	0.6	10.0[2]	5.9	6.9	1.0
199	19,869	580.0	4276.0	1.2	10.0[2]	6.6	7.6	1.0
212	21,248	250.0	2296.0	2.2	10.0[2]	8.5	9.0	0.5
Maple Cypress								
033	3,313	320.0	1425.0	3.2	20.1[3]	9.3	10.3	1.0
040	4,000	180.0	627.0	6.6	20.2[3]	10.3	11.2	0.9
045	4,500	129.0	595.0	6.1	20.2[3]	12.2	12.7	0.5
050	4,954	117.0	616.0	7.3	20.2[3]	13.2	13.9	0.7
050	4,993	117.0	489.0	4.5	20.2[3]	13.2	14.1	0.9
051	5,113	120.0	647.0	5.4	20.2[3]	13.6	14.3	0.7
053	5,264	136.0	839.0	4.4	20.2[3]	13.8	14.6	0.8
055	5,500	134.0	782.0	4.7	20.3[3]	14.0	14.9	0.9
060	6,010	142.0	822.0	4.6	20.3[3]	14.6	15.5	0.9
062	6,207	163.0	989.0	3.4	20.3[3]	14.7	15.7	1.0
065	6,515	133.0	806.0	3.7	20.3[3]	14.9	15.9	1.0
068	6,772	93.0	579.0	4.4	20.3[3]	15.1	16.1	1.0
071	7,075	120.0	642.0	4.5	20.3[3]	15.5	16.4	0.9
073	7,262	230.0	978.0	3.8	20.3[3]	15.7	16.7	1.0
073	7,338	230.0	1192.0	2.3	20.3[3]	17.3	17.9	0.6
075	7,500	191.0	1185.0	2.2	20.2[2]	17.3	17.9	0.6
079	7,937	101.0	543.0	4.9	20.2[2]	17.4	18.1	0.7
083	8,325	142.0	826.0	3.1	20.2[2]	17.9	18.6	0.7
085	8,511	139.0	700.0	1.9	20.2[2]	18.0	18.8	0.8
086	8,559	139.0	621.0	2.2	20.2[2]	18.0	18.8	0.8
088	8,764	75.0	332.0	3.6	20.2[2]	18.1	18.9	0.8
090	9,000	70.0	310.0	4.0	20.2[2]	18.5	19.3	0.8
096	9,627	58.0	255.0	4.7	20.2[2]	20.0	20.5	0.5
100	10,000	73.0	282.0	3.6	20.7	20.7	21.2	0.5
104	10,427	125.0	335.0	3.6	21.2	21.2	21.8	0.6
109	10,888	220.0	498.0	2.5	21.4	21.4	22.4	1.0
115	11,500	260.0	727.0	1.7	21.7	21.7	22.7	1.0
120	12,020	132.0	355.0	2.7	22.0	22.0	22.9	0.9

Table 22 - 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
Maple Cypress								
123	12,321	90.0	305.0	3.2	22.6	22.6	23.2	0.6
124	12,374	90.0	268.0	3.4	23.7	23.7	23.9	0.2
127	12,692	69.0	266.0	3.4	24.2	24.2	24.3	0.1
130	13,000	39.0	189.0	3.0	24.4	24.4	24.7	0.3
134	13,406	70.0	303.0	3.0	24.5	24.5	25.0	0.5
138	13,770	125.0	497.0	1.9	24.6	24.6	25.3	0.7
138	13,828	175.0	547.0	1.8	24.6	24.6	25.3	0.7
142	14,170	264.0	459.0	3.0	24.6	24.6	25.5	0.9
144	14,435	330.0	772.0	2.0	24.7	24.7	25.7	1.0
152	15,157	185.0	493.0	2.1	25.0	25.0	26.0	1.0
156	15,560	180.0	561.0	1.3	25.2	25.2	26.2	1.0
159	15,902	252.0	563.0	1.5	25.3	25.3	26.2	0.9
160	15,976	456.0	686.0	1.5	25.3	25.3	26.3	1.0
163	16,344	411.0	801.0	1.3	25.5	25.5	26.4	0.9
167	16,711	214.0	552.0	1.8	25.6	25.6	26.4	0.8
170	17,020	114.0	283.0	2.9	25.8	25.8	26.5	0.7
173	17,285	114.0	272.0	3.0	26.1	26.1	26.8	0.7
174	17,370	114.0	273.0	2.9	27.0	27.0	27.5	0.5
176	17,625	104.0	277.0	2.5	27.1	27.1	27.7	0.6
180	18,000	164.0	588.0	1.3	27.2	27.2	27.8	0.6
185	18,500	316.0	921.0	1.0	27.2	27.2	27.9	0.7
189	18,868	265.0	610.0	1.5	27.2	27.2	27.9	0.7
192	19,171	264.0	512.0	1.8	27.2	27.2	28.0	0.8
200	19,982	225.0	433.0	2.0	27.4	27.4	28.3	0.9
202	20,158	170.0	464.0	1.7	27.5	27.5	28.4	0.9
207	20,675	280.0	723.0	1.5	27.7	27.7	28.5	0.8
212	21,250	270.0	692.0	1.5	27.7	27.7	28.7	1.0
Mauls Swamp								
001	100	282.0	2260.0	1.4	13.6	13.6	14.6	1.0
006	620	426.0	4969.0	0.6	13.7	13.7	14.7	1.0
037	3,670	701.0	5026.0	0.6	14.4	14.4	15.4	1.0
066	6,629	589.0	4029.0	0.7	15.2	15.2	16.1	0.9
Mills Branch								
055	5,543	84.0	638.0	2.4	9.9[1]	9.6	10.2	0.6
085	8,500	310.0	1957.0	0.8	10.6[1]	10.4	11.3	0.9
103	10,343	395.0	2043.0	0.7	10.8[1]	10.6	11.5	0.9
128	12,773	318.0	1230.0	1.2	11.6[1]	11.6	12.5	0.9
140	13,950	341.0	1522.0	0.9	12.5[1]	12.5	13.3	0.8
167	16,680	290.0	1112.0	1.1	15.1	15.1	16.0	0.9
193	19,270	340.0	1330.0	0.7	16.2	16.2	17.2	1.0
Mills Branch Tributary								
025	2,470	105.0	915.0	1.1	11.1[1]	11.1	11.9	0.8
029	2,858	105.0	721.0	1.7	11.2[1]	11.1	12.0	0.9
031	3,124	105.0	771.0	1.4	11.2[1]	11.2	12.0	0.8

Table 22 - 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
Mills Branch Tributary								
037	3,664	215.0	1176.0	1.5	11.2[1]	11.2	12.1	0.9
042	4,230	136.0	629.0	2.2	11.3[1]	11.3	12.2	0.9
044	4,389	85.0	451.0	2.7	11.4[1]	11.4	12.3	0.9
045	4,512	70.0	401.0	2.4	11.5[1]	11.5	12.4	0.9
046	4,576	70.0	363.0	2.5	11.6[1]	11.5	12.4	0.9
046	4,639	75.0	420.0	2.9	11.6[1]	11.6	12.5	0.9
Morris Branch								
055	5,503	50.0	304.0	3.2	9.0[1]	7.8	8.8	1.0
060	5,979	72.0	412.0	2.4	10.0[1]	9.6	10.4	0.8
062	6,211	89.0	568.0	1.7	10.2[1]	9.9	10.8	0.9
063	6,308	98.0	549.0	1.8	10.2[1]	9.9	10.9	1.0
065	6,549	74.0	466.0	2.1	10.3[1]	10.1	11.1	1.0
067	6,721	130.0	824.0	1.2	10.6[1]	10.4	11.3	0.9
071	7,102	95.0	775.0	1.3	13.4	13.4	14.1	0.7
074	7,405	75.0	537.0	1.4	13.5	13.5	14.2	0.7
077	7,690	90.0	604.0	1.2	13.5	13.5	14.3	0.8
078	7,846	90.0	568.0	1.3	13.6	13.6	14.4	0.8
084	8,404	75.0	487.0	1.5	15.5	15.5	16.3	0.8
088	8,824	72.0	458.0	1.6	15.6	15.6	16.5	0.9
093	9,253	50.0	250.0	3.0	15.8	15.8	16.8	1.0
Moseley Creek (into Neuse River)								
020	1,957	265.0	3276.0	1.3	24.8[2]	19.4	20.4	1.0
060	6,017	465.0	4375.0	1.0	24.8[2]	20.0	21.0	1.0
078	7,784	395.0	3661.0	1.1	24.8[2]	20.6	21.5	0.9
100	9,994	365.0	1927.0	2.1	24.8[2]	22.2	23.0	0.8
114	11,373	120.0	1015.0	4.0	24.8[2]	23.1	23.8	0.7
129	12,944	510.0	3557.0	1.1	24.8[2]	24.0	24.9	0.9
149	14,865	570.0	4746.0	0.8	24.8[2]	24.3	25.2	0.9
167	16,689	470.0	3298.0	1.2	24.8[2]	24.5	25.5	1.0
192	19,223	490.0	2838.0	1.4	25.2	25.2	26.2	1.0
223	22,252	380.0	2222.0	1.8	26.2	26.2	27.1	0.9
263	26,341	460.0	1626.0	2.2	27.6	27.6	28.6	1.0
283	28,330	425.0	1817.0	1.9	29.4	29.4	30.3	0.9
307	30,675	105.0	1262.0	2.8	31.8	31.8	32.3	0.5
326	32,595	450.0	2324.0	1.4	32.6	32.6	33.5	0.9
345	34,499	525.0	2364.0	1.4	33.2	33.2	34.1	0.9
370	36,974	450.0	2151.0	1.5	33.7	33.7	34.6	0.9
396	39,621	425.0	1798.0	1.8	34.9	34.9	35.7	0.8
427	42,727	590.0	2246.0	1.4	35.7	35.7	36.7	1.0
458	45,782	660.0	2258.0	1.3	37.2	37.2	38.2	1.0
483	48,308	725.0	2162.0	1.3	38.1	38.1	39.0	0.9
539	53,924	449.0	460.0	3.7	40.8	40.8	41.5	0.7
553	55,281	420.0	830.0	2.0	44.9	44.9	45.7	0.8
578	57,768	290.0	1036.0	1.6	45.8	45.8	46.8	1.0

Table 22 - 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
Mosley Creek Tributary								
018	1,812	105.0	488.0	2.3	25.4[2]	25.1	26.0	0.9
027	2,684	55.0	382.0	3.0	26.3	26.3	27.2	0.9
039	3,863	60.0	432.0	2.6	28.2	28.2	29.0	0.8
Neuse River								
604	60,351[4]	2762.0	33598.0	1.5	10.5[1]	10.1	11.0	0.9
642	64,163[4]	2825.0	33246.0	1.5	11.1[1]	10.9	11.8	0.9
665	66,528[4]	3360.0	41279.0	1.2	11.6[1]	11.4	12.3	0.9
697	69,723[4]	3899.0	51865.0	1.0	12.0[1]	11.9	12.9	1.0
748	74,823[4]	3694.0	52367.0	1.0	12.6[1]	12.5	13.5	1.0
780	78,000[4]	4148.0	57304.0	0.9	12.9[1]	12.9	13.9	1.0
826	82,584[4]	3631.0	53262.0	0.9	13.4[1]	13.4	14.3	0.9
868	86,846[4]	2950.0	46308.0	1.1	13.9[1]	13.9	14.8	0.9
912	91,200[4]	4026.0	61134.0	0.8	14.4[1]	14.4	15.4	1.0
948	94,762[4]	3800.0	58065.0	0.9	14.8	14.8	15.8	1.0
989	98,897[4]	3625.0	54639.0	0.9	15.3	15.3	16.2	0.9
1038	103,752[4]	3640.0	55608.0	0.9	16.0	16.0	17.0	1.0
1083	108,266[4]	4320.0	67127.0	0.7	16.5	16.5	17.4	0.9
1128	112,762[4]	3425.0	54810.0	0.9	16.9	16.9	17.8	0.9
1182	118,200[4]	3107.0	45864.0	1.1	17.5	17.5	18.5	1.0
1229	122,874[4]	3373.0	57858.0	0.9	18.1	18.1	19.1	1.0
1260	125,991[4]	3871.0	59096.0	0.9	18.4	18.4	19.4	1.0
1311	131,090[4]	3680.0	52411.0	0.9	19.0	19.0	20.0	1.0
1349	134,862[4]	2980.0	44255.0	1.1	19.5	19.5	20.5	1.0
1388	138,787[4]	3525.0	62275.0	0.8	20.3	20.3	21.3	1.0
1419	141,866[4]	3450.0	60782.0	0.8	20.7	20.7	21.7	1.0
1433	143,279[4]	3335.0	58530.0	0.8	20.9	20.9	21.9	1.0
1445	144,535[4]	3283.0	55496.0	0.9	21.1	21.1	22.1	1.0
1461	146,079[4]	3225.0	54216.0	0.9	21.3	21.3	22.3	1.0
1475	147,517[4]	3261.0	54288.0	0.9	21.6	21.6	22.5	0.9
1494	149,376[4]	3175.0	54508.0	0.9	21.8	21.8	22.8	1.0
1510	151,037[4]	3227.0	50334.0	1.0	22.1	22.1	23.1	1.0
1530	152,990[4]	2821.0	47966.0	1.0	22.4	22.4	23.4	1.0
1546	154,640[4]	2605.0	42303.0	1.2	22.7	22.7	23.7	1.0
1564	156,388[4]	2804.0	45979.0	1.1	23.0	23.0	24.0	1.0
1581	158,070[4]	2750.0	49144.0	1.0	23.3	23.3	24.3	1.0
1598	159,831[4]	3760.0	67696.0	0.7	23.5	23.5	24.5	1.0
1614	161,425[4]	3811.0	63726.0	0.8	23.7	23.7	24.7	1.0
1626	162,580[4]	3890.0	65823.0	0.7	23.9	23.9	24.9	1.0
1642	164,224[4]	4052.0	67741.0	0.7	24.1	24.1	25.1	1.0
1658	165,767[4]	4104.0	69932.0	0.7	24.3	24.3	25.3	1.0
1673	167,281[4]	4400.0	81486.0	0.6	24.4	24.4	25.4	1.0
Reedy Branch								
084	8,427	83.0	354.0	3.3	9.31	8.3	8.6	0.3
086	8,560	90.0	425.0	2.8	9.61	8.8	9.0	0.2

Table 22 - 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
Reedy Branch								
087	8,664	100.0	504.0	2.3	9.61	8.9	9.2	0.3
088	8,781	112.0	506.0	2.3	9.61	9.0	9.4	0.4
089	8,948	112.0	549.0	2.1	9.71	9.1	9.7	0.6
091	9,094	109.0	458.0	2.6	9.81	9.3	9.9	0.6
092	9,221	112.0	417.0	2.8	9.91	9.5	10.1	0.6
094	9,397	115.0	527.0	2.2	10.11	9.7	10.5	0.8
096	9,552	125.0	549.0	2.1	10.21	9.9	10.8	0.9
097	9,674	133.0	685.0	1.7	10.31	10.0	10.9	0.9
098	9,817	140.0	712.0	1.6	10.41	10.1	11.0	0.9
100	10,019	128.0	679.0	1.7	10.41	10.2	11.1	0.9
104	10,361	125.0	662.0	1.4	10.71	10.4	11.4	1.0
108	10,813	125.0	577.0	1.6	10.91	10.7	11.6	0.9
114	11,392	130.0	539.0	1.7	11.41	11.3	12.2	0.9
120	12,036	130.0	533.0	1.7	12.21	12.2	13.2	1.0
Samuels Creek/Rocky Run								
125	12,500	56.0	362.0	3.1	10.2[1]	9.2	9.4	0.2
128	12,818	75.0	461.0	2.4	10.3[1]	9.4	9.9	0.5
131	13,071	61.0	378.0	2.9	10.4[1]	9.6	10.2	0.6
132	13,229	70.0	404.0	2.7	10.5[1]	9.8	10.5	0.7
137	13,728	101.0	718.0	1.5	12.4[1]	12.3	13.3	1.0
141	14,125	137.0	970.0	1.1	12.7[1]	12.6	13.6	1.0
146	14,617	94.0	595.0	0.8	12.9[1]	12.8	13.8	1.0
148	14,781	84.0	457.0	1.0	12.9[1]	12.9	13.8	0.9
150	15,048	52.0	263.0	1.8	13.1[1]	13.1	14.0	0.9
157	15,659	87.0	615.0	0.8	16.9	16.9	17.8	0.9
159	15,910	83.0	551.0	0.9	16.9	16.9	17.8	0.9
162	16,205	70.0	444.0	1.1	17.0	17.0	17.9	0.9
165	16,500	80.0	418.0	1.1	17.1	17.1	18.1	1.0
167	16,716	99.0	511.0	0.9	17.3	17.3	18.3	1.0
170	17,000	53.0	227.0	1.9	17.6	17.6	18.5	0.9
174	17,412	74.0	334.0	1.3	18.6	18.6	19.5	0.9
175	17,548	56.0	259.0	1.7	18.9	18.9	19.7	0.8
178	17,812	61.0	245.0	1.8	19.4	19.4	20.3	0.9
180	18,000	53.0	228.0	1.9	19.9	19.9	20.8	0.9
183	18,257	33.0	148.0	3.0	20.7	20.7	21.6	0.9
186	18,565	36.0	186.0	2.4	21.8	21.8	22.8	1.0
187	18,679	33.0	168.0	2.6	22.2	22.2	23.1	0.9
188	18,798	26.0	111.0	3.9	22.5	22.5	23.4	0.9
189	18,905	33.0	154.0	2.8	23.2	23.2	24.0	0.8
192	19,154	22.0	104.0	4.2	24.8	24.8	25.6	0.8
Scotts Creek								
097	9,727	13.0	22.0	3.8	9.4[1]	9.0	9.0	0.0
103	10,293	8.0	17.0	5.0	10.9[1]	10.9	10.9	0.0

Table 22 - 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
Scotts Creek								
113	11,285	25.0	31.0	2.7	15.3[1]	15.3	15.3	0.0
121	12,063	29.0	71.0	1.2	18.0[1]	18.0	18.5	0.5
Snake Branch								
032	3,175	52.0	244.0	1.8	12.2	12.2	12.8	0.6
Swift Creek								
237	23,677	2500.0	21240.0	0.6	10.2[3]	7.3	8.3	1.0
265	26,539	1671.0	16411.0	0.7	10.5[3]	7.6	8.6	1.0
305	30,546	1925.0	19207.0	0.6	10.9[2]	8.4	9.2	0.8
329	32,932	1925.0	19813.0	0.6	10.9[2]	8.5	9.4	0.9
368	36,780	2150.0	20996.0	0.6	10.9[2]	8.7	9.7	1.0
392	39,188	1900.0	17401.0	0.7	10.9[2]	8.9	9.9	1.0
423	42,316	2665.0	23947.0	0.5	10.9[2]	9.1	10.1	1.0
449	44,920	2460.0	22981.0	0.5	10.9[2]	9.3	10.3	1.0
489	48,866	2530.0	26055.0	0.4	10.9[2]	9.6	10.6	1.0
518	51,832	1150.0	9859.0	1.2	10.9[2]	10.0	10.9	0.9
544	54,410	825.0	9902.0	1.2	10.9[2]	10.5	11.5	1.0
579	57,858	488.0	5328.0	2.2	11.1	11.1	12.1	1.0
596	59,555	488.0	6739.0	1.7	11.9	11.9	12.8	0.9
684	68,377	1050.0	14461.0	0.8	13.6	13.6	14.6	1.0
713	71,305	1850.0	20197.0	0.5	13.9	13.9	14.9	1.0
Trent River Tributary								
045	4,478	91.0	365.0	1.6	9.0[1]	8.4	9.3	0.9
050	5,038	120.0	238.0	2.2	9.7[1]	9.5	10.5	1.0
055	5,519	111.0	475.0	0.7	10.2[1]	10.1	11.0	0.9
059	5,929	128.0	458.0	0.7	10.3[1]	10.2	11.2	1.0
064	6,411	136.0	415.0	0.8	10.7[1]	10.6	11.6	1.0
068	6,839	90.0	333.0	1.0	11.0[1]	10.9	11.9	1.0
074	7,441	140.0	702.0	0.5	13.4[1]	13.4	14.0	0.6
076	7,620	143.0	577.0	0.6	13.4[1]	13.4	14.0	0.6
Tucker Creek								
163	16,328	112.0	694.0	1.9	9.7	9.7	10.3	0.6
170	17,025	100.0	357.0	3.1	12.0	12.0	12.5	0.5
172	17,200	276.0	1275.0	0.9	13.8	13.8	14.5	0.7
198	19,800	100.0	486.0	2.1	19.8	19.8	20.6	0.8
Village Creek								
001	60	174.0	1042.0	0.9	20.0[2]	18.5	18.8	0.3
057	5,700	74.0	182.0	4.3	27.1	27.1	27.9	0.8
084	8,400	29.0	193.0	3.4	37.8	37.8	38.7	0.9
109	10,900	84.0	236.0	2.3	44.0	44.0	44.8	0.8
Wilson Creek								
089	8,910	140.0	780.0	2.0	9.0[1]	7.3	7.9	0.6
092	9,168	123.0	705.0	2.2	9.1[1]	7.6	8.2	0.6
094	9,401	80.0	360.0	4.3	9.1[1]	7.7	8.3	0.6
096	9,597	93.0	476.0	3.3	9.3[1]	8.3	9.2	0.9

Table 22 - 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
Wilson Creek								
099	9,850	65.0	284.0	5.5	9.7[1]	9.0	9.8	0.8
111	11,124	80.0	1012.0	1.2	17.9	17.9	17.9	0.0
116	11,605	80.0	944.0	1.3	17.9	17.9	18.0	0.1
121	12,141	80.0	797.0	1.6	18.0	18.0	18.2	0.2
126	12,574	90.0	943.0	1.3	18.0	18.0	18.3	0.3
131	13,135	120.0	1519.0	0.8	20.2	20.2	21.1	0.9
135	13,507	120.0	1484.0	0.8	20.2	20.2	21.1	0.9
140	13,968	120.0	1390.0	0.9	20.3	20.3	21.2	0.9

[1]Elevation includes combined probability effects

[2]Elevation includes backwater effects

[3]Elevation includes flooding controlled by Neuse River

[4]Feet above US Highway 17

6.4 Coastal Flood Hazard Mapping

Flood insurance zones and BFEs including the wave effects were identified on each transect based on the results from the onshore wave hazard analyses. Between transects, elevations were interpolated using topographic maps, land-use and land-cover data, and knowledge of coastal flood processes to determine the aerial extent of flooding. Sources for topographic data are shown in Table 23. Zone VE is subdivided into elevation zones and BFEs are provided on the FIRM.

The limit of Zone VE shown on the FIRM is defined as the farthest inland extent of any of these criteria (determined for the 1% annual chance flood condition):

- *The primary frontal dune* zone is defined in 44 CFR Section 59.1 of the NFIP regulations. The primary frontal dune represents a continuous or nearly continuous mound or ridge of sand with relatively steep seaward and landward slopes that occur immediately landward and adjacent to the beach. The primary frontal dune zone is subject to erosion and overtopping from high tides and waves during major coastal storms. The inland limit of the primary frontal dune zone occurs at the point where there is a distinct change from a relatively steep slope to a relatively mild slope.

- *The wave runup zone* occurs where the (eroded) ground profile is 3.0 feet or more below the 2-percent wave runup elevation.

- *The wave overtopping splash zone* is the area landward of the crest of an overtopped barrier, in cases where the potential 2-percent wave runup exceeds the barrier crest elevation by 3.0 feet or more.

- *The breaking wave height zone* occurs where 3-foot or greater wave heights could occur (this is the area where the wave crest profile is 2.1 feet or more above the total stillwater elevation).

- *The high-velocity flow zone* is landward of the overtopping splash zone (or area on a sloping beach or other shore type), where the product of depth of flow times the flow velocity squared (hv2) is greater than or equal to 200 ft3/sec2. This zone may only be used on the Pacific Coast.

The SFHA boundary indicates the limit of SFHAs shown on the FIRM as either “V” zones or “A” zones.

Table 23: Summary of Coastal Transect Mapping Considerations

Source	Coastal Transect	Primary Frontal Dune (PFD) Identified	Wave Runup Analysis	Wave Height Analysis	Zone VE Limit	SFHA Boundary
			Zone Designation and BFE (ft NAVD 88)	Zone Designation and BFE (ft NAVD 88)		
Adams Creek	1	*	*	AE 0-5 VE 3-5	WHAFIS	SWEL
	2	*	*	AE 4 VE 3-5	WHAFIS	SWEL
	3	*	*	AE 4 VE 2-5	WHAFIS	SWEL
Atlantic Ocean	118	*	*	AE 4 VE 8	PFD	SWEL
Neuse River	4	*	*	AE 4 VE 4-5	WHAFIS	SWEL
	5	*	*	AE 2 VE 4-6	WHAFIS	SWEL
	6	*	*	AE 3 VE 4-6	WHAFIS	SWEL
	7	*	*	AE 3 VE 3-6	WHAFIS	SWEL
	8	*	*	AE 3 VE 4-6	WHAFIS	SWEL
	9	*	*	AE 0-4 VE 3-6	WHAFIS	SWEL
	10	*	*	AE 4 VE 5-6	WHAFIS	SWEL
	11	*	*	AE 4 VE 5-6	WHAFIS	SWEL
	12	*	*	AE 3 VE 3-6	WHAFIS	SWEL
	13	*	*	AE 1-4 VE 4-6	WHAFIS	SWEL
	14	*	*	VE 1-6	WHAFIS	SWEL
	15	*	*	AE 2 VE 2-6	WHAFIS	SWEL
	16	*	*	AE 4 VE 3-6	WHAFIS	SWEL
	17	*	*	AE 4 VE 4-6	WHAFIS	SWEL
	18	*	*	AE 4 VE 1-6	WHAFIS	SWEL
	19	*	*	VE 6	WHAFIS	SWEL
	20	*	*	AE 3 VE 1-6	WHAFIS	SWEL

Table 23: Summary of Coastal Transect Mapping Considerations

Source	Coastal Transect	Primary Frontal Dune (PFD) Identified	Wave Runup Analysis	Wave Height Analysis	Zone VE Limit	SFHA Boundary
			Zone Designation and BFE (ft NAVD 88)	Zone Designation and BFE (ft NAVD 88)		
Neuse River	21	*	*	AE 1 VE 0-6	WHAFIS	SWEL
	22	*	*	AE 2 VE 6	WHAFIS	SWEL
	23	*	*	AE 4 VE 3-7	WHAFIS	SWEL
	24	*	*	AE 4 VE 3-6	WHAFIS	SWEL
	25	*	*	AE 1 VE 6	WHAFIS	SWEL
	26	*	*	AE 1 VE 0-9	WHAFIS	SWEL
	27	*	*	AE 1-4 VE 4-6	WHAFIS	SWEL
	28	*	*	VE 6	WHAFIS	SWEL
	29	*	*	AE 1 VE 6	WHAFIS	SWEL
	30	*	*	AE 4 VE 6	WHAFIS	SWEL
	31	*	*	AE 4 VE 3-6	WHAFIS	SWEL
	32	*	*	AE 2 VE 2-6	WHAFIS	SWEL
	33	*	*	AE 2 VE 0-6	WHAFIS	SWEL
	34	*	*	VE 0-6	WHAFIS	SWEL
	35	*	*	VE 3-7	WHAFIS	SWEL
	36	*	*	VE 7	WHAFIS	SWEL
	37	*	*	VE 2-7	WHAFIS	SWEL
	38	*	*	AE 1 VE 0-7	WHAFIS	SWEL
	39	*	*	VE 0-7	WHAFIS	SWEL
	40	*	*	AE 4 VE 3-7	WHAFIS	SWEL
	41	*	*	VE 0-7	WHAFIS	SWEL
	42	*	*	AE 3 VE 4-7	WHAFIS	SWEL
	43	*	*	VE 1-7	WHAFIS	SWEL
	44	*	*	AO 1 VE 1-7	WHAFIS	SWEL

Table 23: Summary of Coastal Transect Mapping Considerations

Source	Coastal Transect	Primary Frontal Dune (PFD) Identified	Wave Runup Analysis	Wave Height Analysis	Zone VE Limit	SFHA Boundary
			Zone Designation and BFE (ft NAVD 88)	Zone Designation and BFE (ft NAVD 88)		
Neuse River	45	*	*	VE 2-7	WHAFIS	SWEL
	46	*	*	VE 7	WHAFIS	SWEL
	47	*	*	AE 4 VE 6	WHAFIS	SWEL
	48	*	*	VE 7	WHAFIS	SWEL
	49	*	*	VE 1-7	WHAFIS	SWEL
	50	*	*	AE 1 VE 3-7	WHAFIS	SWEL
	51	*	*	VE 6	WHAFIS	SWEL
	52	*	*	AE 1 VE 6	WHAFIS	SWEL
	53	*	*	AE 0 VE 6	WHAFIS	SWEL
	54	*	*	VE 0-6	WHAFIS	SWEL
	55	*	*	AE 1 VE 5	WHAFIS	SWEL
	56	*	*	AE 1 VE 6	WHAFIS	SWEL
	57	*	*	VE 6	WHAFIS	SWEL
	58	*	*	VE 0-5	WHAFIS	SWEL
	59	*	*	AE 3 VE 5	WHAFIS	SWEL
	60	*	*	AE 2 VE 5	WHAFIS	SWEL
	61	*	*	AE 4 VE 2-6	WHAFIS	SWEL
	62	*	*	AE 4 VE 0-5	WHAFIS	SWEL
	63	*	*	AE 4 VE 6	WHAFIS	SWEL
	64	*	*	AE 4 VE 3-5	WHAFIS	SWEL
	65	*	*	AE 0-3 VE 4-5	WHAFIS	SWEL
	66	*	*	AE 4 VE 3-5	WHAFIS	SWEL
	67	*	*	AE 3 VE 3-5	WHAFIS	SWEL
	68	*	*	AE 4	WHAFIS	SWEL
	69	*	*	AE 4	WHAFIS	SWEL

Table 23: Summary of Coastal Transect Mapping Considerations

Source	Coastal Transect	Primary Frontal Dune (PFD) Identified	Wave Runup Analysis	Wave Height Analysis	Zone VE Limit	SFHA Boundary
			Zone Designation and BFE (ft NAVD 88)	Zone Designation and BFE (ft NAVD 88)		
Neuse River	70	*	*	AE 4	WHAFIS	SWEL
	71	*	*	AE 0-4	WHAFIS	SWEL
	72	*	*	AE 4	WHAFIS	SWEL
	73	*	*	AE 4	WHAFIS	SWEL
	74	*	*	AE 4	WHAFIS	SWEL
	75	*	*	AE 4	WHAFIS	SWEL
	76	*	*	AE 4	WHAFIS	SWEL
	77	*	*	AE 4	WHAFIS	SWEL
	78	*	*	AE 4	WHAFIS	SWEL
	79	*	*	AE 4 VE 3-4	WHAFIS	SWEL
	80	*	*	AE 4 VE 3-5	WHAFIS	SWEL
	81	*	*	AE 4 VE 3-5	WHAFIS	SWEL
	82	*	*	AE 4 VE 3-5	WHAFIS	SWEL
	83	*	*	AE 4 VE 3-5	WHAFIS	SWEL
	84	*	*	AE 4 VE 3-5	WHAFIS	SWEL
	85	*	*	AE 3 VE 4-5	WHAFIS	SWEL
	86	*	*	AE 4 VE 3-5	WHAFIS	SWEL
	87	*	*	AE 4 VE 5	WHAFIS	SWEL
	88	*	*	AE 4 VE 4	WHAFIS	SWEL
	89	*	*	AE 4 VE 5	WHAFIS	SWEL
	90	*	*	AE 4 VE 3-5	WHAFIS	SWEL
	91	*	*	AE 4 VE 3-6	WHAFIS	SWEL
	92	*	*	AE 4 VE 2-5	WHAFIS	SWEL
	93	*	*	AE 4 VE 5	WHAFIS	SWEL

Table 23: Summary of Coastal Transect Mapping Considerations

Source	Coastal Transect	Primary Frontal Dune (PFD) Identified	Wave Runup Analysis	Wave Height Analysis	Zone VE Limit	SFHA Boundary
			Zone Designation and BFE (ft NAVD 88)	Zone Designation and BFE (ft NAVD 88)		
Upper Broad Creek	94	*	*	AE 4 VE 5	WHAFIS	SWEL
	95	*	*	AE 4 VE 3-6	WHAFIS	SWEL

A LiMWA boundary has also been added in coastal areas subject to wave action for use by local communities in safe rebuilding practices. The LiMWA represents the approximate landward limit of the 1.5-foot breaking wave. In areas where the Zone VE designation is based on the presence of a primary frontal dune the LiMWA was not delineated.

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 Craven 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 7/2/2004 North Carolina Statewide FIRM, which includes Craven County, are presented in Table 24, "Map Revision History."

Information pertaining to revised and unrevised flood hazards for each jurisdiction within Craven 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 Craven County.

Table 24 - Map Revision History

Community	Initial Identification Date	Initial FIRM Effective Date	FIRM Revision Date
CITY OF HAVELOCK	9/13/1974	5/4/1987	06/19/2020
CITY OF HAVELOCK	9/13/1974	5/4/1987	04/162013
CITY OF HAVELOCK	9/13/1974	5/4/1987	07/02/2004
CITY OF NEW BERN	2/22/1974	5/4/1987	06/15/2022
CITY OF NEW BERN	2/22/1974	5/4/1987	06/19/2020
CITY OF NEW BERN	2/22/1974	5/4/1987	4/16/2013
CITY OF NEW BERN	2/22/1974	5/4/1987	07/02/2004
CRAVEN COUNTY	12/20/1974	5/4/1987	06/15/2022
CRAVEN COUNTY	12/20/1974	5/4/1987	06/19/2020
CRAVEN COUNTY	12/20/1974	5/4/1987	04/16/2013
CRAVEN COUNTY	12/20/1974	5/4/1987	070/2/2004

Table 24 - Map Revision History

Community	Initial Identification Date	Initial FIRM Effective Date	FIRM Revision Date
TOWN OF BRIDGETON	2/8/1974	5/4/1987	06/19/2020
TOWN OF BRIDGETON	2/8/1974	5/4/1987	04/16/2013
TOWN OF BRIDGETON	12/20/1974	5/4/1987	07/02/2004
TOWN OF COVE CITY	7/2/2004	7/2/2004	
TOWN OF DOVER	7/2/2004	7/2/2004	
TOWN OF RIVER BEND	5/14/1982	8/19/1986	06/15/2022
TOWN OF RIVER BEND	5/14/1982	8/19/1986	06/19/2020
TOWN OF RIVER BEND	5/14/1982	8/19/1986	04/16/2013
TOWN OF RIVER BEND	5/14/1982	8/19/1986	07/02/2004
TOWN OF TRENT WOODS	5/4/1987	5/4/1987	06/15/2022
TOWN OF TRENT WOODS	5/4/1987	5/4/1987	06/19/2020
TOWN OF TRENT WOODS	5/4/1987	5/4/1987	04/16/2013
TOWN OF TRENT WOODS	5/4/1987	5/4/1987	07/02/2004
TOWN OF VANCEBORO	3/1/1974	8/4/1988	06/19/2020
TOWN OF VANCEBORO	3/1/1974	8/4/1988	04/16/2013
TOWN OF VANCEBORO	3/1/1974	8/4/1988	07/02/2004

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 Craven County and Incorporated Areas. Table 25, “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 25 — Authority and Acknowledgments

Community	FIS Dated	Study Contracted By	Data Source	Contract or IAA Number	Work Completed In
CRAVEN COUNTY	7/2/2004	NCFMP	NCFMP	N/A	May 2003
CRAVEN COUNTY	04/16/2013	NCFMP	NCFMP	N/A	September 2009
CRAVEN COUNTY	06/19/2020	NCFMP	NCFMP	EMA-2009-CA5933	9/5/2018
CRAVEN COUNTY	06/22/2022	NCFMP	NCFMP	EMA-2009-CA5933	9/15/2018

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 Craven County were produced by NCFMP under contract with the State of North Carolina and issued on effective 6/19/2020. 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

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 Craven County are shown in Table 26, "Scoping Meetings." Meetings held for the map maintenance revision are also included below for Craven County.

Table 26 — Scoping Meetings

Community	River Basin	Initial Scoping Date	Attended By	Final Scoping Date	Attended By
CRAVEN COUNTY	NEUSE	10/26/2000	Representatives of the State, FEMA, Dewberry, and Craven County	4/25/2001	Representatives of the State, FEMA, Dewberry, and Craven County
CRAVEN COUNTY	NEUSE	9/25/2007	Representatives of Craven County, The Incorporated Communities of Craven County and the North Carolina Floodplain Mapping Program	N/A	N/A

Consultation Coordination Officer's 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 consultation coordination officer's and public participation meetings are shown in Table 27, "Consultation Coordination Officer's and Public Participation Meetings."

Table 27 — Consultation Coordination Officer's and Public Participation Meetings

Community	For FIS Dated	Meeting Location	Preliminary Meeting Date	Attended By	Public Meeting Date	Attended By
CRAVEN COUNTY	7/2/2004	New Bern	9/4/2003	Representatives from the State, Dewberry, Watershed Concepts, and Craven County	10/28/2003	Representatives from Craven County and Craven County incorporated areas, The North Carolina Floodplain Mapping Program and the Public
CRAVEN COUNTY	4/16/2013	Kinston	6/29/2011	Representatives from Craven County and Craven County incorporated areas, The North Carolina Floodplain Mapping Program	10/20/2011	Representatives from Craven County and Craven County incorporated areas, The North Carolina Floodplain Mapping Program and the Public
CRAVEN COUNTY	6/19/2020	New Bern	8/11/2016	Representatives from Craven County and Craven County incorporated areas, The North Carolina Floodplain Mapping Program	11/2/2016	Representatives from Craven County and Craven County incorporated areas, The North Carolina Floodplain Mapping Program and the Public
CRAVEN COUNTY	6/15/2022	New Bern	8/11/2016	Representatives from Craven County and Craven County incorporated areas, The North Carolina Floodplain Mapping Program	11/2/2016	Representatives from Craven County and Craven County incorporated areas, The North Carolina Floodplain Mapping Program and the Public

9.0 Guide to Additional Information

Information concerning the pertinent data used in the preparation of this FIS Report can be obtained by submitting an order with any required payment to the FEMA Engineering Library. For more information on this process, see http://www.fema.gov.

The Map Repositories table below lists locations where FIRMs for Craven County can be viewed. Please note that the maps at these locations are for reference only and are not for distribution. Also, please note that only the maps for the community listed in the table are available at that particular repository. A user may need to visit another repository to view maps from an adjacent community.

Table 28 — Map Repositories

Community	Address	City	State	Zip Code
Town of Cove City	204 South Main Street	Cove City	NC	28523
Town of Dover	105 North Main Street	Dover	NC	28526
Craven County	Craven County GIS/Mapping Dept, 226 Pollock Street	New Bern	NC	28560
Town of Bridgeton	Bridgeton Town Hall, 201 Highway 17 North	Bridgeton	NC	28519
City of Havelock	City of Havelock Planning Department, 199 Cunningham Boulevard	Havelock	NC	28532
City of New Bern	New Bern City Hall, 300 Pollock Street	New Bern	NC	28560
Town of River Bend	River Bend Town Hall, 45 Shoreline Drive	River Bend	NC	28562
Town of Trent Woods	Trent Woods Town Hall, 912 Country Club Drive	Trent Woods	NC	28562
Town of Vanceboro	Craven County Planning Department, 2828 Neuse Boulevard	New Bern	NC	28562

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 29, “Additional Information” is not applicable in Craven 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:

NC Floodplain Mapping Program
4218 Mail Service Center
Raleigh, NC 27699-4218
Phone: 919-715-5711
Fax: 919-715-0408
Email: frishelp@ncdps.gov