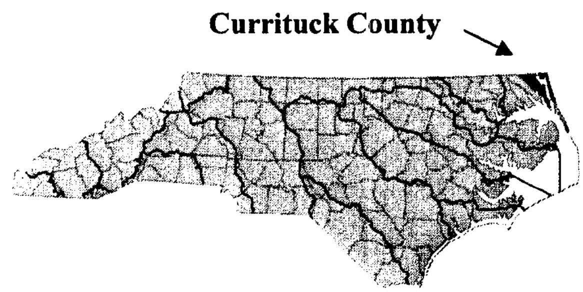
FLOOD INSURANCE STUDY

A Report of Flood Hazards in



CURRITUCK COUNTY, NORTH CAROLINA

AND INCORPORATED AREAS

Community Name	Community Number	River Basin
Currituck County (Unincorporated Areas)	370078	Pasquotank

Cooperating Technical State

FEMA'S COOPERATING TECHNICAL PARTNER

December 16, 2005

Federal Emergency Management Agency
State of North Carolina

Flood Insurance Study Number
37053CV000A

www.fema.gov and www.ncfloodmaps.com

FOREWORD

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

NOTICE TO FLOOD INSURANCE STUDY USERS

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

Flood hazard information shown outside of Currituck County is for informational purposes only. Until the FIRM panels are revised to officially include all counties shown on it, flood insurance policies outside of Currituck County must be based on the separately printed Flood Insurance Rate Maps for the appropriate surrounding counties.

Part of this FIS may be revised by the Letter of Map Revision process, which does not involve republication or redistribution of the FIS. It is, therefore, the responsibility of the user to consult with community officials and to check the community repository to obtain the most current FIS components.

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:

December 16, 2005

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

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

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Section 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/nfip/index.htm.

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

Table 1—Jurisdictions in Currituck County

Community	Included in this FIS	Not Included in this FIS	If Not Included, Location of Flood Hazard/Flood Insurance Rate Data
Currituck County (Unincorporated Areas)	X		

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.

Flood Insurance Rate Map

The FIRM shows 1% annual chance (100-year) and 0.2% annual chance (500-year) floodplains, using tints, screens, and symbols. Floodways, the locations of selected cross sections used in the hydraulic analyses and floodway computations, and Velocity Zones are shown where applicable. The FIRM for North Carolina has been produced digitally, and there are separate data layers that are available in the public domain via the Internet.

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.

Flood Profiles

A Flood Profile is provided for every stream studied in detail, showing the continuum of calculated flood elevations of various recurrence periods along the studied reaches. Flood Profiles are the documents that serve as a basis for determining flood insurance rate zones.

Section 2.0 – Floodplain Management Applications

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

2.1 Floodplains

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

2.2 Floodways

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

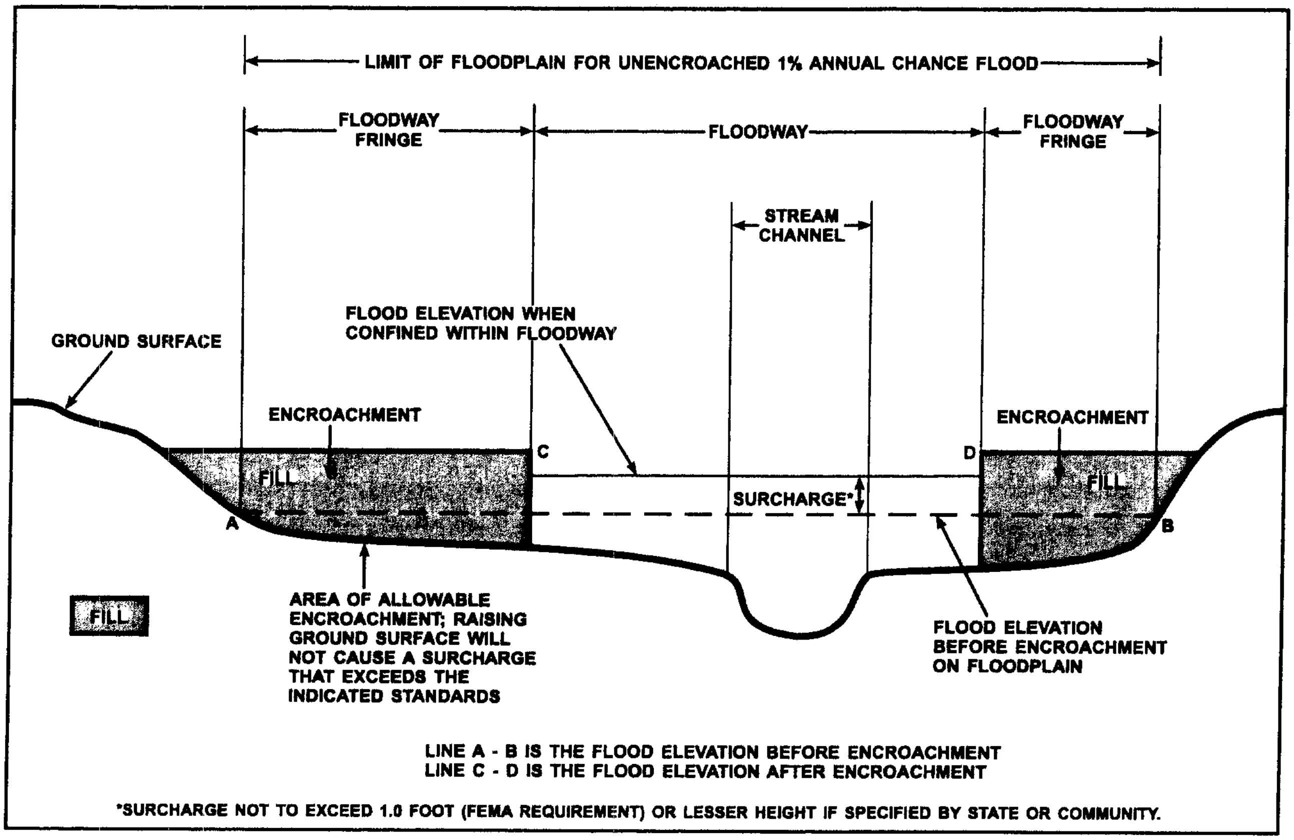

Figure 1—Floodway Schematic

2.3 Base Flood Elevations

Base Flood Elevations (BFEs) are shown on the FIRM and represent rounded, whole-foot elevations at selected locations along flooding sources that have been studied in detail. Flood Profiles in this FIS Report provide a comprehensive and definitive tool to determine specific flood elevations along a stream studied by detailed methods. In order to reduce the risk of damage from floods up to the base (1% annual chance) flood, communities are advised to consider these elevations when issuing building permits for structures.

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 exceedence) in any 50-year period is approximately 40% (4 in 10), but for any 90-year period, the risk increases to approximately 60% (6 in 10).

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

Data Validity and Reliability

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

Developmental and Topographic Changes Over Time

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

Erosion, Deposition, and Debris Flow

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

Meandering and Lateral Migration

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

Section 3.0 – Insurance Applications

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

Table 2—Flood Zone 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.

Table 2—Flood Zone Designations

Zone	Description
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.
D	Zone D is the flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.

3.1 Coastal Barrier Resources System

The FIRM for North Carolina includes areas designated by Congress as units of the Coastal Barrier Resources System (CBRS), where federally backed flood insurance is not available.

The Coastal Barrier Resources Act of 1982 and the Coastal Barrier Improvement Act of 1990 define and establish a system of protected coastal areas (including the Great Lakes) known as the CBRS. The Acts define areas within the CBRS as depositional geologic features consisting of unconsolidated sedimentary materials; subject to wave, tidal, and wind energies; and protecting landward aquatic habitats from direct wave attack. The Acts further define coastal barriers as "all associated aquatic habitats, including the adjacent wetlands, marshes, estuaries, inlets and nearshore waters, but only if such features and associated habitats contain few manmade structures and these structures and man's activities on such features, and within such habitats do not significantly impede geomorphic and ecological processes." The Acts provide protection to CBRS areas by prohibiting most expenditures of Federal funds within them. These prohibitions refer to "any form of loan, grant, guarantee, insurance, payment, rebate, subsidy or any other form of direct or indirect Federal assistance," with specific and limited exceptions. The CBRS boundaries depicted on the FIRM for North Carolina were adopted into public law by Acts of Congress and are, therefore, considered final and not subject to appeal.

In addition to the CBRS, the Coastal Barrier Improvement Act of 1990 established Otherwise Protected Areas (OPAs). OPAs are undeveloped coastal barriers within the boundaries of an area established under Federal, State, or local law, or held by a qualifying organization, primarily for wildlife refuge, sanctuary, recreational, or natural resource conservation purposes.

Congress designated the initial CBRS areas in 1982. Subsequent modifications of the CBRS are introduced as legislation to be acted on by Congress, and originate from State and local requests, as well as recommendations made by the U.S. Fish and Wildlife Service. After Congress approves additions to the CBRS, the new areas are assigned a unique effective date, after which Federal assistance prohibitions apply. In cooperation with the U.S. Department of the Interior, FEMA transfers CBRS boundaries to FIRMs using Congressionally adopted source maps titled *Coastal Barrier Resources System*. FIRMs clearly depict the different CBRS areas and their effective dates with special map notes and symbols. It should be noted that although FEMA shows CBRS areas on FIRMs, only Congress may authorize a revision of CBRS boundaries.

Within CBRS boundaries, Federal flood insurance is not available for structures built or substantially improved on or after the date that the subject area was added to the CBRS. To assist map users in determining the correct insurance prohibition date in CBRS areas, each separate CBRS unit is clearly identified on the FIRM. It is important to note that insurance for structures in OPAs may be obtained if written documentation is provided, which certifies that the structures are used in a manner consistent with the purpose for which the area is protected.

Section 4.0 – Area Studied

4.1 Basin Characteristics

Pasquotank River Basin

The Pasquotank River Basin is located in the northeast corner of North Carolina's Coastal Plain region and covers approximately 3,700 square miles. A small portion of the basin extends north into Virginia. The basin is bordered by the Roanoke River Basin to the west, the Chowan River Basin to the west and northwest, Virginia to the north, the Atlantic Ocean to the east, and the Tar-Pamlico River Basin to the southwest and south. The Pasquotank River Basin is part of the Albemarle-Pamlico Estuarine system, one of the largest estuarine systems in the United States.

The Pasquotank River Basin is made up of many smaller watersheds that flow into Albemarle, Currituck, Croatan, Roanoke, and northeastern Pamlico Sounds. The basin is named for the Pasquotank River, a tributary to Albemarle Sound. The Pasquotank River flows along the border between Pasquotank and Camden Counties. Upstream of Elizabeth City the river is freshwater, but downstream it is brackish and tidally influenced.

The land area encompassed by the Pasquotank River Basin is low-lying with extensive open waters. The total distance of freshwater flooding sources is approximately 475 miles. The total area of saltwater in the basin is approximately 868,800 acres.

Included in the many natural wetland ecosystems are various endangered and threatened mammals, fish, and birds. The basin contains two State Parks, two State Natural Areas, five National Wildlife Refuges, many Significant Natural Heritage Areas, as designated by the North Carolina Natural Heritage Program, and other protected areas.

The Pasquotank River Basin includes 10 counties and 11 municipalities in North Carolina. Based upon 2000 census data, the population in the basin is approximately 125,021 with the population density being greatest in Elizabeth City and the Kill Devil Hills-Nags Head area.

Land cover in the basin consists mainly of open water area. In addition, a significant amount of land cover is agricultural land, which relies largely on the use of drainage canals, wetlands, and forestland. Land use in the basin also consists of federally owned land that is designated as National Wildlife Refuge land.

Agriculture and commercial fishing largely support the economy of the Pasquotank River Basin. Other strong industries include tourism and recreation, especially in the Outer Banks region of the basin. Construction and manufacturing are also important to the economy.

Given the historical impact of hurricanes, tropical storms, and northeasters on the coastal plain of North Carolina, both riverine and coastal flooding are significant problems. Flooding in the Pasquotank River Basin occurs as both flooding due to rain and, in areas near the coastline, flooding due to wind-driven surges that are generated by tropical storms and hurricanes in the Atlantic Ocean.

4.2 Principal Flood Problems

The dominant source of flooding in Currituck County is storm surge generated in the Atlantic Ocean by tropical storms and hurricanes. In addition, this surge propagates into Albemarle Sound and further propagates into the North River and Currituck Sound where high winds associated

with tropical storms can produce high waves. The wave action associated with storm surge can be much more damaging than the higher water level. Not all storms which pass close to the study area produce extremely high tides. Similarly, storms which 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 extratropical 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 and over long distances for several days (Baker, 1978). In addition to hurricanes and tropical storms, northeasters were found to have a significant impact on the storm surge elevations determined for Currituck County particularly in the Outer Bank areas.

4.3 Historic Flood Elevations

October 5 to 18, 1954 (Hurricane Hazel)
Hurricane Hazel 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, South Carolina to Cedar Island, North Carolina, was destroyed. The waterfront between the South Carolina-North Carolina state line and Cape Fear was completely destroyed. Grass-covered dunes, some 20 feet high, along and behind which beach homes had been built in a continuous line 5 miles long, simply disappeared – dunes, houses, and all. From Cape Fear to Cape Lookout the degree of devastation was not as great, but ocean front property was damaged an average of 50 percent along this entire reach. North of Cape Lookout damage was relatively light.

Storm Surge of 16.6 feet National Geodetic Vertical Datum of 1929 (NGVD) were observed at Holden Beach Bridge and Calabash, North Carolina. 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 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 rainfall. Nineteen people were killed and 200 injured during this storm.

August 3 to 14, 1955 (Hurricane Connie)
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 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 a 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.

August 7 to 21, 1955 (Hurricane Diane)
Five days after Hurricane Connie, and before the damage from that storm could be estimated, Hurricane Diane struck the coast near Carolina Beach at 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 floor 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 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.

September 10 to 23, 1955 (Hurricane Ione)
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 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.

September 21 to October 3, 1958 (Hurricane Helene)
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 to 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 the 27th. There was some beach erosion due to the seas and tides, but this erosion was minimized by the fact that the storm occurred at a 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 shifted as the storm center passed it brought the tides 7 to 8 feet above normal.

August 29 to September 13, 1960 (Hurricane Donna)
Hurricane Donna crossed the North Carolina Coast between Wilmington and Morehead City on September 11. 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.

September 13, 1984 (Hurricane Diana)
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.

September 26, 1985 (Hurricane Gloria)
The landfall location of Gloria was Cape Hatteras, with 90 knot winds and a storm surge of approximately 6-8 feet.

July 12, 1996 (Hurricane Bertha)
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.

September 5, 1996 (Hurricane Fran)
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.

August 26, 1998 (Hurricane Bonnie)
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.

September 16, 1999 (Hurricane Floyd)
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.

There are no Historic Flood Elevations in Currituck County.

4.4 Flood Protection Measures

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

To provide safe flood protection and be mapped as such, FEMA specifies that all levees must: have a minimum of three feet of freeboard against the 1% annual chance flood event; be equipped with closure devices at every opening; be constructed with embankments and foundations that are certified not to fail due to erosion, seepage, or instability; and be certified against future loss of freeboard due to settling. For additional requirements, please refer to 44 CFR 65.10.

There are no structural flood protection measures in Currituck County except for some seawalls located at various locations throughout the county (Tice, 1983). The only notable non-structural flood protection measure is the Public Warning System for severe weather conditions operated by the National Oceanic and Atmospheric Administration, through the National Weather Service in cooperation with various state, county, and local officials. This system can provide some measure of flood protection by alerting coastal residents to take the necessary precautions in the event of a major storm.

4.5 Scope of Study

In order to determine the areas studied by detailed and limited detailed methods in this FIS, initial research and community coordination was necessary. Initial scoping meetings were held in Currituck County to present the results of initial research to the county and communities within the county and to discuss their flood mapping needs. The county and communities were asked to provide input on proposed study priorities and analysis methods. Those meetings resulted in the identification of flooding sources having a flood mapping need. 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 Currituck 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 the FIRM. Please see Table 3, "Flooding Sources Studied by Detailed Methods: Revised or Newly Studied," for a list of flooding sources that were revised or newly studied by detailed methods for this FIS.

Table 3—Flooding Sources Studied by Detailed Methods: Revised or Newly Studied

Source	Riverine Sources From	To	Affected Communities
Atlantic Ocean	Currituck/Dare County boundary on the Barrier Islands	Currituck/Virginia State boundary	Currituck County (Unincorporated Areas)
Currituck Sound	Currituck/Dare County boundary on the Barrier Islands	Currituck/Virginia State boundary	Currituck County (Unincorporated Areas)
Currituck Sound	Approximately 16.8 miles up shore of Point Harbor	Approximately 12 miles down shore of the Currituck/Virginia State boundary	Currituck County (Unincorporated Areas)
Currituck Sound	Live Oak Point	Approximately 0.6 miles north of Live Oak Point	Currituck County (Unincorporated Areas)
Moyock Run	Approximately 160 feet upstream of South Mills Road	Approximately 1.1 miles upstream of South Mills Road	Currituck County (Unincorporated Areas)

Table 4, "Flooding Sources Studied by Detailed Methods: Redelineated," contains a list of flooding sources that were studied by detailed methods for previous FISs, but were only partially revised in the current study. Their effective analyses remain valid; however, their floodplain delineations have been revised on the current FIRM.

Table 4—Flooding Sources Studied by Detailed Methods: Redelineated

Source	Riverine Sources From	To	Affected Communities
Albemarle Sound/North River/Great Swamp	Point Harbor	Currituck/Virginia State boundary	Currituck County (Unincorporated Areas)
Currituck Sound	Southern tip of Knotts Island	Currituck/Virginia State boundary	Currituck County (Unincorporated Areas)
Currituck Sound	Point Harbor	Approximately 16.8 miles up shore of Point Harbor	Currituck County (Unincorporated Areas)
Currituck Sound	Approximately 12 miles down shore of the Currituck/Virginia State boundary	Currituck/Virginia State boundary	Currituck County (Unincorporated Areas)

Table 4—Flooding Sources Studied by Detailed Methods: Redelineated

Source	Riverine Sources From	To	Affected Communities
Moyock Run	Approximately 2.2 miles downstream of Tulls Creek Road	Approximately 160 feet upstream of South Mills Road	Currituck County (Unincorporated Areas)
Moyock Run Tributary 2	Confluence with Moyock Run	Approximately 0.4 mile upstream of the confluence with Moyock Run	Currituck County (Unincorporated Areas)
North Landing River	Southern tip of Knotts Island	Approximately 0.6 mile north of Live Oak Point	Currituck County (Unincorporated Areas)
North Landing River	Live Oak Point	Currituck/Virginia State boundary	Currituck County (Unincorporated Areas)

Section 5.0 – Engineering Methods

For the flooding sources studied in detail in the county, standard hydrologic and hydraulic methods were used to determine the flood hazard data required for this FIS.

5.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationship for each flooding source studied in detail affecting the county.

Pre-Countywide Analyses

Currituck County had a previously printed FIS Report describing the county's hydrologic analyses. Those analyses have been compiled from the FIS Report and are summarized below. These analyses remain valid for those flooding sources listed in Table 4, "Flooding Sources Studied by Detailed Methods: Redelineated."

The previously printed FIS for Currituck County does not include any riverine hydrologic analyses. All flooding sources studied in the previously printed FIS are dominated by the effects of coastal flooding.

Revised Analyses for Countywide FIS

The hydrologic analyses for the Pasquotank River basin, except for flooding sources with stream gages, were performed using the urban and rural regression equations developed by the USGS. The urban equations were published in "Estimation of Flood-Frequency Characteristics of Small Urban Streams in North Carolina," Water Resources Investigations Report 96-4084 (U.S. Department of the Interior, 1996). The rural equations were published in "Estimating the Magnitude and Frequency of Floods in Rural Basins in North Carolina, - Revised," Water Resources Investigations Report 01-4207 (U.S. Department of the Interior, 2001). Regression equations are mathematical formulas that relate the flow in the stream to physical factors such as the area of the basin and the percentage of the surface that is impervious (paved). Regression equations are developed by fitting a line through the center of the points on a graph that compares flood flows to basin area. The results reflect the "statistical average" of the data. If a gage station is located on the stream being studied, data from that station can be used to adjust the regression results to more accurately estimate the flood flow. There are three separate regional regression equations that cover North Carolina. Currituck County is located in the hydrologic region known as the Coastal Plain region. The Coastal Plain equation was used to estimate the 1% annual chance flow for the streams in Currituck County. Analyses of historical high-water marks obtained from interviews of county residents were used to confirm the accuracy of the regression equation estimates.

A summary of the drainage area-peak discharge relationships for the flooding sources studied by detailed methods is shown in Table 5, "Summary of Discharges."

Table 5—Summary of Discharges

Flooding Source	Location	Drainage Area *(square miles)*	Discharges *(cfs)* 10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Moyock Run	Just upstream of South Mills Road	2.64	341	644	811	1,304
	Approximately .75 mile upstream of South Mills Road	2.14	301	571	721	1,166
	Approximately 1.11 miles upstream of South Mills Road	1.20	210	407	518	851
Moyock Run Tributary 2	At mouth	2.20	350	735	966	1,646

There are no U.S. Geological Survey stream gages in Currituck County.

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. For stream segments for which BFEs were computed, selected cross-section locations are also shown on the FIRM. Flood profiles 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 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.

Pre-Countywide Analyses

Currituck County had previously printed FIS Report describing the county's hydraulic analyses. Those analyses have been compiled and are summarized below. These analyses remain valid for those flooding sources listed in Table 4, "Flooding Sources Studied by Detailed Methods: Redelineated."

The previously printed FIS for Currituck County does not include any riverine hydraulic analyses. All flooding sources studied in the previously printed FIS are dominated by the effects of coastal flooding.

Revised Analyses for Countywide FIS

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 version 3.0 (U.S. Army Corps of Engineers, 2001). The hydraulic analyses were based on unobstructed flow. The flood elevations shown on the profiles 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 4,000' 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 6, "Roughness Coefficients."

Table 6—Roughness Coefficients

Stream	Channel "n"	Overbank "n"
Moyock Run	0.03-0.045	0.06-0.20

There are no flooding sources studied by limited detailed methods in the county.

5.3 Coastal Analyses

Users of the FIRM should be aware that 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 on 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.

Pre-Countywide Analyses

Coastal Inundation above the usual astronomic tide level from the Atlantic Ocean, caused by the passage of storms (storm surge), was determined using the joint probability method (U.S. Department of Commerce, April 1970). The storm populations were described by probability distributions of five parameters that influence surge heights. These five parameters are central pressure depression (which measures the intensity of the storm), radius to maximum winds, forward speed of the storm, shoreline crossing point, and crossed angle. These characteristics were described statistically based on an analysis of storms that have passed near the southern coast of North Carolina. Primary sources of data for these analyses were the National Weather Service and the Mariners Weather Log. The National Weather Service provided information on tropical cyclones of the North Atlantic Ocean from 1871 to 1977, and on storms from 1886 through 1979 (U.S. Department of Commerce, January 1978; U.S. Department of Commerce, June 1978; U.S. Department of Commerce, 1975). The Mariners Weather Log provided information on North Atlantic Tropical Cyclones in 1978 and 1979 (Lawrence, 1979; Hebert, 1980). A summary of parameters used for Currituck County is presented in Table 7, "Parameter Values for Surge Elevation."

Maximum wave crest elevations associated with the 10% and 1% annual chance events were determined using the method recommended by the National Academy of Sciences (1977).

For areas subject to flooding directly from the Atlantic Ocean, the Federal Emergency Management Agency's standard coastal surge model was used to simulate the coastal surge generated by any chosen storm (that is, any combination of the five storm parameters previously defined). Performing such simulations for a large number of storms, each of known total probability, permits one to establish the frequency distribution of surge height as a function of coastal location. These distributions incorporate large scale surge behavior, but do not include an analysis of the added effects associated with much finer scale wave phenomena such as wave height, set up, or run up. (The added effects associated with wave height were later analyzed and added to the Stillwater storm surge elevations – see below.) The astronomic tide for the region is then statistically combined with the computed storm surge to yield recurrence intervals of total water level (Tetra Tech, Inc., 1981). The storm surge elevations for the 10%, 2%, 1%, and 0.2% annual chance floods are shown in Table 8, "Summary of Coastal Stillwater Elevations."

The surge model uses grid patterns that approximate the geographical features of the study area. Simulations were first performed for the Currituck County area using an open coast grid having an element size of 5 nautical miles (nm). Surge is then propagated through a second 2 nm grid covering an extensive portion of coastal North Carolina including the outer barrier islands and the entire Albemarle and Currituck Sound Systems. Finally, a finer 1 nm grid was used to adequately represent conditions (through model calibration/verification runs) in the study area (Tetra Tech, Inc., 1981).

Although northeasters (winter storms) are more diffuse and less intense than hurricanes, they occur more frequently and cover larger areas and longer coastal reaches at one time. The effects of northeasters were analyzed through a two step procedure. The first step was to perform a statistical analysis of the tide gauge data for winter storms at Hampton Roads, Virginia. The second was to develop a spatial correlation of the northeaster induced water elevations between Hampton Roads and each of the selected locations along the coast of the study through numerical model simulations.

The northeaster analysis let to two significant conclusions. First, the effects of northeasters on the 1% annual chance storm surge elevations are significant only along the ocean side of the Outer Bank areas north of Cape Hatteras. Second, the effects are most significant in Currituck County where northeasters typically contribute between 1 and 1.5 feet to the 10% annual chance surge elevations and generally less than 0.5 foot to the 1% annual chance surge elevations. These contributions refer to the added effects of northeasters above surge computations which consider only the effects of hurricanes and other tropical storms plus astronomical tides.

Table 7—Parameter Values for Surge Elevations

Currituck County, NC – Atlantic Ocean North of Hatteras Inlet

Central Pressure Depression (*Milibars*)										
Parameter Value		5	15	25	35	45	55	65	75	85
Probabilities*	I:	0.144	0.137	0.138	0.121	0.161	0.139	0.061	0.088	0.011
	II:	0.144	0.136	0.139	0.119	0.159	0.143	0.060	0.089	0.011
	III:	0.247	0.240	0.246	0.086	0.063	0.055	0.023	0.033	0.007

Storm Radius to Maximum Winds (*Nautical Miles*)		
Parameter Value	20	35
Probabilities	0.51	0.49

Maximum Forward Speed (*Knots*)				
Parameter Value		10	20	30
Probabilities*	I:	0.647	0.235	0.118
	II:	0.396	0.377	0.226
	III:	0.448	0.431	0.121

Direction of Storm Path (Degrees from True North)**					
Parameter Value	276	312	348	24	60
Probability	0.016	0.016	0.102	0.414	0.453
Rate (Storms/Nautical Miles/Year)***	0.090	0.076	0.49	2.32	2.06

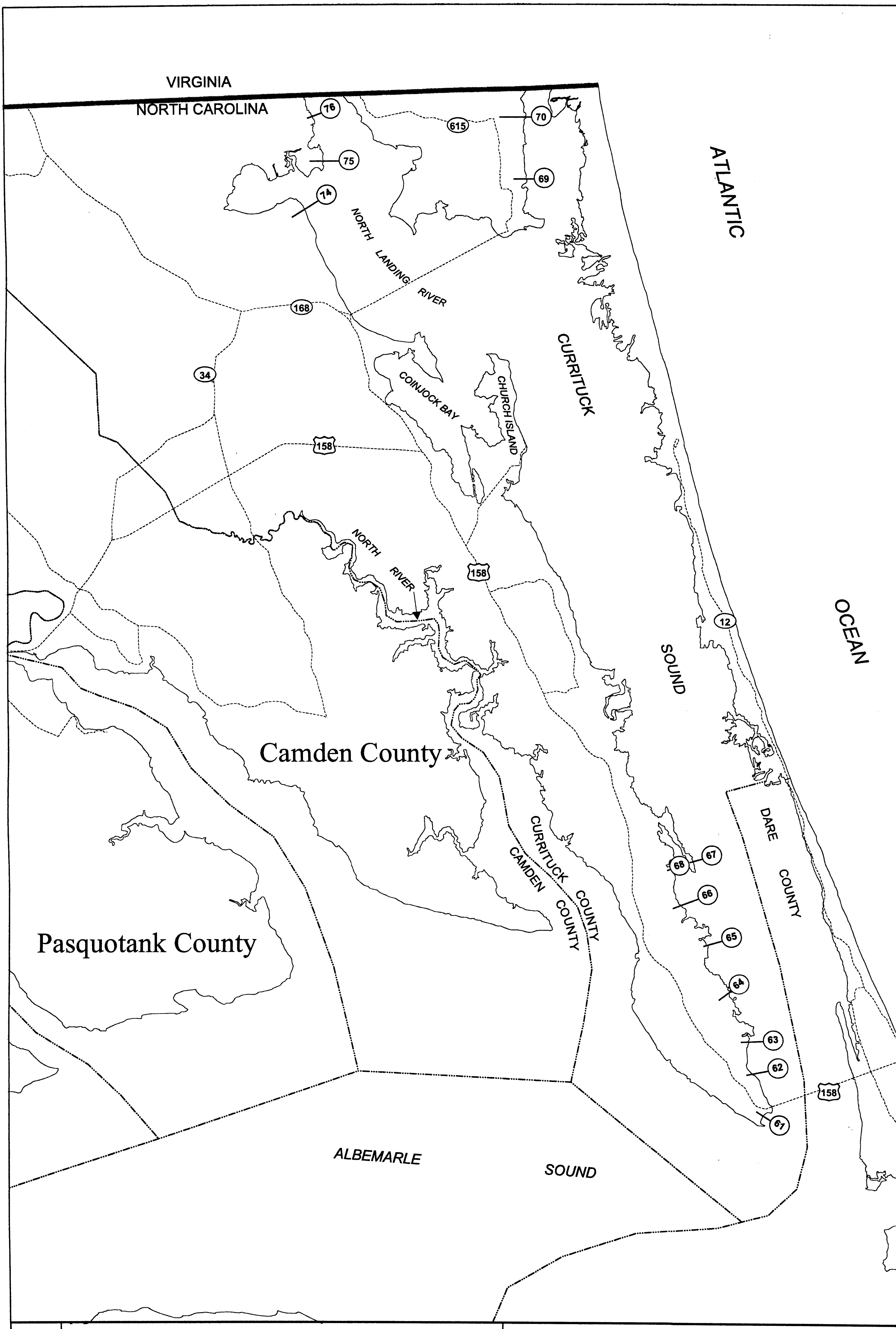

FIGURE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CURRITUCK COUNTY, NC
AND INCORPORATED AREAS

APPROXIMATE SCALE

0 1 2 4 6 8 Miles

TRANSECT LOCATION MAP

Table 8—Summary of Coastal Stillwater Elevations

		Elevations *(feet NAVD)*			
Flooding Source	FIRM Panel Number(s)	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Atlantic Ocean	3721901300 3721902000 3721902100 3721902200 3721902300	5.4	7.0	10.3	9.2
Atlantic Ocean	3720992800 3720992900 3720993800 3720993900 3721902000 3721902100	5.3	6.8	10.1	8.9
Atlantic Ocean	3720993500 3720993600 3720993700 3720993800 3720994300 3720994400 3720994500	5.2	6.6	9.9	8.7
Atlantic Ocean	3720994200 3720994300 3720994400 3720995100 3720995200	5.1	6.5	9.7	8.6
Atlantic Ocean/ Albemarle Sound	3720982700 3720982800 3720982900 3720983600 3720983700 3720983800 3720983900 3720984700 3720984800 3720990000 3720992000	5.0	6.6	7.2	8.1

Table 8—Summary of Coastal Stillwater Elevations

		Elevations *(feet NAVD)*			
Flooding Source	FIRM Panel Number(s)	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Atlantic Ocean/ Albemarle Sound/ North River	3720982700 3720982800 3720982900 3720983700 3720983800 3720992000	5.0	6.6	7.1	8.3
Atlantic Ocean/ Albemarle Sound/ North River	3710990000 3720990200 3720992000	4.9	6.4	6.9	8.0
Atlantic Ocean/ Albemarle Sound	3720982700 3720983600 3720983700 3710984600 3720984700	4.9	6.3	6.9	8.0
Atlantic Ocean/ Currituck Sound	3720983700 3720983800 3720983900 3710984600 3720984700 3720984800	4.3	5.7	6.3	7.5
Atlantic Ocean/ Albemarle Sound/ North River	3710990000	4.6	5.9	6.3	7.4
Atlantic Ocean/ Currituck Sound	3720994100 3720994200 3720995100 3720995200	3.7	5.3	5.9	6.9
Atlantic Ocean/ Albemarle Sound/ North River	3710898200 3720898400 3720898600 3720990200 3720990400	4.2	5.3	5.9	6.8

Table 8—Summary of Coastal Stillwater Elevations

Flooding Source	FIRM Panel Number(s)	Elevations *(feet NAVD)* 10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Atlantic Ocean/ Currituck Sound	3720993200 3720993300 3720994200 3720994300	3.7	5.2	5.8	6.8
Atlantic Ocean/ Currituck Sound	3721806200 3721808200	4.4	5.4	5.7	6.0
Atlantic Ocean/ Currituck Sound	3720993200 3720993300 3720994200 3720994300	3.3	4.8	5.4	6.4
Atlantic Ocean/ Currituck Sound	3720894800 3720896600 3720896800 3720898900 3721802200 3721802300 3721803100 3721803200 3721803300 3721804000 3721804200 3721806000 3721806200 3721808000 3721808100 3721808200 3721809100	4.1	5.1	5.4	6.2

Table 8—Summary of Coastal Stillwater Elevations

Flooding Source	FIRM Panel Number(s)	Elevations *(feet NAVD)* 10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Atlantic Ocean/ Albemarle Sound/ North River	3720894400 3720894600 3720894800 3720896400 3720896600 3720896800 3720898400 3720898600 3721804000 3721806000	4.1	5.1	5.4	6.1
Atlantic Ocean/ Currituck Sound	3720991900 3720992900 3721900000 3721900100 3721900200 3721900300 3721901000 3721901100 3721901200 3721901300 3721902000 3721902100 3721902200	3.8	5.0	5.3	6.4
Atlantic Ocean/ Currituck Sound	3720983700 3720983800 3720983900 3720984700 3720984800 3720992000 3720992100 3720992200 3720993000 3720993100 3720993200 3720994100	3.5	4.8	5.3	6.3

Table 8—Summary of Coastal Stillwater Elevations

Flooding Source	FIRM Panel Number(s)	Elevations *(feet NAVD)* 10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Atlantic Ocean/ Currituck Sound	3720992000 3720992100 3720992200 3720993000 3720993100 3720993200 3720994100 3720994200 3720995100	3.3	4.5	5.1	6.0
Atlantic Ocean/ Currituck Sound	3720992200 3720992300 3720992400 3720992500 3720992700 3720993200 3720993300 3720993400 3720993500 3720993600 3720993700 3720994300 3720994400	3.0	4.5	5.0	5.7
Atlantic Ocean/ Currituck Sound	3721808100 3721808200 3721809100 3721900100	3.3	4.7	5.0	5.4
Atlantic Ocean/ Currituck Sound	3720992100 3720992200	3.1	4.3	4.8	5.6
Atlantic Ocean/ Currituck Sound	3720992100 3720992200 3720992300	3.2	4.2	4.7	5.2
Atlantic Ocean/ Currituck Sound	3721800100 3721808100 3721808200 3721809100	3.4	4.3	4.7	5.1

Table 8—Summary of Coastal Stillwater Elevations

		Elevations *(feet NAVD)*			
Flooding Source	FIRM Panel Number(s)	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Atlantic Ocean/ Currituck Sound	3721808000 3721808100 3721808200 3721809100 3721900100 3721900200 3721900300	3.0	3.8	4.3	5.0

Table 8—Summary of Coastal Stillwater Elevations

		Elevations *(feet NAVD)*			
Flooding Source	FIRM Panel Number(s)	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Atlantic Ocean/ Currituck Sound	3720896800 3720898400 3720898600 3720898800 3720898900 3720899800 3720899900 3720990200 3720990400 3720990600 3720990800 3720991900 3720992200 3720992300 3720992400 3720992500 3720992700 3720992800 3720992900 3720993700 3720993800 3721806000 3721808000 3721808100 3721809100 3721900000 3721900100 3721900200 3721901000 3721901100 3721901200 3721902000	2.5	3.7	4.2	5.3

The methodology for analyzing the effects of wave heights associated with coastal storm surge flooding is described in the National Academy of Sciences report (1977). This methodology is based on the following major concepts. First, depth-limited waves in shallow water reach a maximum breaking height that is equal to 0.78 times the Stillwater depth. The wave crest is 70 percent of the total wave height above the Stillwater level. The second major concept is that wave height may be diminished by dissipation of energy due to the presence of obstructions such as sand dunes, dikes and seawalls, buildings, and vegetation. The amount of energy dissipation is a function of the physical characteristics of the obstruction and is determined by procedures prescribed in the Users Manual for Wave Height Analysis (Federal Emergency Management Agency, April 1981). The third major concept is that wave height can be regenerated in open fetch areas due to the transfer of wind energy to the water. This added energy is related to fetch length and depth.

Wave heights were computed along transects (cross section lines) that were located along the coastal areas, as illustrated in Figure 2, "Transect Location Map," (Federal Emergency Management Agency, April 1981). The transects were located with consideration give to the physical and cultural characteristics of the land so that they would closely represent conditions in their locality. Transects were spaced close together in areas of complex topography and dense development. In areas having more uniform characteristics, they were spaced at larger intervals. It was also necessary to locate transects in areas where unique flooding existed and in areas where computed wave heights varied significantly between adjacent transects.

Each transect was taken perpendicular to the shoreline and extended inland to a point where wave action ceased. Along each transect, wave heights and elevations were computed considering the combined effects of changes in ground elevation, vegetation, and physical features. The stillwater elevations for the 1% annual chance flood were used as the starting elevations for these computations. Wave heights were calculated to the nearest 0.1 foot, and wave elevations were determined at whole-foot increments along the transects. The location of the 3-foot breaking wave for determining the terminus of the V Zone (area with velocity wave action) was also computed at each transect.

Table 9, "Summary of Coastal Analyses," includes transect descriptions, stillwater elevations, maximum wave crest, and other information derived from the analyses.

Figure 3 is a profile for a hypothetical transect showing the effects of energy dissipation or regeneration on a wave as it moves inland. This figure shows the wave elevations being decreased by obstructions, such as buildings, vegetation, and rising ground elevations, and being increased by open, unobstructed wind fetches. Actual wave conditions in Currituck County may not necessarily include all the situations illustrated in Figure 3.

Figure 2—Transect Location Map

Table 9—Summary of Coastal Analyses

Transect			Stillwater Elevations in feet NAVD 88				Wave Runup Analysis	Wave Height Analysis	
No	Location	Flooding Source	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	Zone Designation and BFE in feet NAVD 88	Zone Designation and BFE in feet NAVD 88[2]	Primary Frontal Dune Identified
1	On the Currituck/Dare County Border	Atlantic Ocean	5.1	6.5	9.7[1]	8.6	N/A	VE 12-15 AE 10-12	YES
			5.1	6.5	7.0	8.6	N/A	AE 7-9	N/A
		Atlantic Ocean / Currituck Sound	3.7	5.3	5.9	6.9	N/A	VE 8-9 AE 6-8	N/A
2	Approximately 2,600 feet north of the Currituck/Dare County Border	Atlantic Ocean	5.1	6.5	9.7[1]	8.6	N/A	VE 12-15 AE 10-12	YES
			5.1	6.5	7.0	8.6	N/A	AE 7-9	N/A
		Atlantic Ocean / Currituck Sound	3.7	5.3	5.9	6.9	N/A	VE 8-10 AE 6-8	N/A
	Approximately 400 feet north of Garrenton Road	Currituck Sound	3.3	4.5	5.1	6.0	N/A	VE 7-8 AE 5-7	N/A
3	Approximately 0.9 mile north of the Currituck/Dare County Border	Atlantic Ocean	5.1	6.5	9.7[1]	8.6	N/A	VE 12-15 AE 10-12	YES
		Atlantic Ocean / Currituck Sound	3.7	5.3	5.9	6.9	N/A	VE 8 AE 6-8	N/A

Table 9—Summary of Coastal Analyses

Transect			Stillwater Elevations in feet NAVD 88				Wave Runup Analysis	Wave Height Analysis	
No.	Location	Flooding Source	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	Zone Designation and BFE in feet NAVD 88	Zone Designation and BFE in feet NAVD 88	Primary Frontal Dune Identified
4	Approximately 1,100 feet south of Pine Point	Atlantic Ocean	5.1	6.5	9.7[1]	8.6	N/A	VE 12-15 AE 10-12	YES
			5.1	6.5	7.0	8.6	N/A	AE 7-9	N/A
		Atlantic Ocean / Currituck Sound	3.7	5.3	5.9	6.9	N/A	VE 8-10 AE 6-8	N/A
	Approximately 1,500 feet north of Red Dog Lane	Currituck Sound	3.3	4.5	5.1	6.0	N/A	VE 7-8 AE 5-7	N/A
5	Approximately 1,000 feet north of White's Point	Atlantic Ocean	5.1	6.5	9.7[1]	8.6	N/A	VE 12-15 AE 10-12	YES
			5.1	6.5	7.0	8.6	N/A	AE 7-9	N/A
		Atlantic Ocean / Currituck Sound	3.7	5.2	5.8	6.8	N/A	VE 8-9 AE 6-8	N/A

Table 9—Summary of Coastal Analyses

Transect No.	Transect Location	Flooding Source	Stillwater Elevations in feet NAVD 88: 10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	Wave Runup Analysis: Zone Designation and BFE in feet NAVD 88	Wave Height Analysis: Zone Designation and BFE in feet NAVD 88[2]	Primary Frontal Dune Identified
6	Along the eastern part of Audubon Drive	Atlantic Ocean	5.1	6.5	9.7[1]	8.6	N/A	VE 12-15 AE 10-12	YES
		Atlantic Ocean / Currituck Sound	3.6	5.1	5.6	6.7	N/A	VE 8-10 AE 6-8	N/A
	Approximately 350 feet south of Mallard Lane	Currituck Sound	3.3	4.4	4.9	5.6	N/A	VE 7 AE 5-7	N/A
7	Along Pine Gate Road	Atlantic Ocean	5.1	6.5	9.7[1]	8.6	N/A	VE 12-15 AE 10-12	YES
		Atlantic Ocean / Currituck Sound	3.5	5.0	5.5	6.6	N/A	AE 6-7	N/A
8	Approximately 700 feet south Black Pine Road	Atlantic Ocean	5.1	6.5	9.7[1]	8.6	N/A	VE 12-15 AE 10-12	YES
		Atlantic Ocean / Currituck Sound	3.4	4.9	5.5	6.5	N/A	VE 7-9 AE 5-7	N/A
	Approximately 150 feet north of Woodhouse Drive	Currituck Sound	3.2	4.2	4.7	5.2	N/A	VE 7 AE 5-7	N/A

Table 9—Summary of Coastal Analyses

Transect No	Transect Location	Flooding Source	Stillwater Elevations in feet NAVD 88: 10% Annual Chance	Stillwater Elevations in feet NAVD 88: 2% Annual Chance	Stillwater Elevations in feet NAVD 88: 1% Annual Chance	Stillwater Elevations in feet NAVD 88: 0.2% Annual Chance	Wave Runup Analysis: Zone Designation and BFE in feet NAVD 88	Wave Height Analysis: Zone Designation and BFE in feet NAVD 88	Primary Frontal Dune Identified
9	Approximately 100 feet north of the northern end of Island Lead Road	Atlantic Ocean	5.1	6.5	9.7[1]	8.6	N/A	VE 12-15 AE 10-12	YES
			5.1	6.5	7.0	8.6	N/A	AE 7-9	N/A
	Approximately 500 feet north of the northern end of Island Lead Road	Atlantic Ocean / Currituck Sound	3.3	4.8	5.4	6.4	N/A	VE 7-9 AE 5-7	N/A
	Approximately 0.4 mile north of Larry Avenue	Currituck Sound	3.1	4.1	4.6	5.2	N/A	VE 7 AE 5-7	N/A
10	Along Brown Pelican Court	Atlantic Ocean	5.1	6.5	9.7[1]	8.6	N/A	VE 12-15 AE 10-12	YES
			5.1	6.5	7.1	8.6	N/A	AE 7-9	N/A
		Atlantic Ocean / Currituck Sound	3.0	4.5	5.0	5.7	N/A	VE 7 AE 5-6	N/A
	Approximately 780 feet south of Neals Creek Lane	Currituck Sound	3.0	4.0	4.5	5.2	N/A	VE 7 AE 5-7	N/A

Table 9—Summary of Coastal Analyses

Transect			Stillwater Elevations in feet NAVD 88				Wave Runup Analysis	Wave Height Analysis	
No	Location	Flooding Source	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	Zone Designation and BFE in feet NAVD 88	Zone Designation and BFE in feet NAVD 88[2]	Primary Frontal Dune Identified
11	Approximately 300 feet north of Ocean Way	Atlantic Ocean	5.1	6.5	9.7[1]	8.6	N/A	VE 12-15 AE 10-12	YES
		Atlantic Ocean / Currituck Sound	3.0	4.5	5.0	5.7	N/A	VE 7 AE 5-7	N/A
	Approximately 1,400 feet north of Neals Creek Lane	Currituck Sound	2.8	3.9	4.4	5.3	N/A	VE 7 AE 4-7	N/A
12	Approximately 300 feet south of Sandhill Lane	Atlantic Ocean	5.1	6.5	9.7[1]	8.6	N/A	VE 12-15 AE 10-12	YES
		Atlantic Ocean / Currituck Sound	3.0	4.5	5.0	5.7	N/A	VE 7 AE 5-7	N/A
	Approximately 0.7 mile north of Neals Creek Lane	Currituck Sound	2.7	3.8	4.3	5.3	N/A	VE 6 AE 4-6	N/A

Table 9—Summary of Coastal Analyses

Transect			Stillwater Elevations in feet NAVD 88				Wave Runup Analysis	Wave Height Analysis	
No.	Location	Flooding Source	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	Zone Designation and BFE in feet NAVD 88	Zone Designation and BFE in feet NAVD 88[2]	Primary Frontal Dune Identified
13	Approximately 400 feet north of Marlin Way	Atlantic Ocean	5.1	6.5	9.7[1]	8.6	N/A	VE 12-15 AE 10-12	YES
13	Approximately 400 feet north of Marlin Way	Atlantic Ocean / Currituck Sound	3.0	4.5	5.0	5.7	N/A	VE 7 AE 5-7	N/A
13	Approximately 0.7 mile south of the Poplar Branch Road/Poplar Bay Road intersection	Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6-7 AE 4-6	N/A
14	Approximately 500 feet south of Sand Fiddler Trail	Atlantic Ocean	5.1	6.5	9.7[1]	8.6	N/A	VE 12-15 AE 10-12	YES
14	Approximately 500 feet south of Sand Fiddler Trail	Atlantic Ocean / Currituck Sound	3.0	4.5	5.0	5.7	N/A	VE 7 AE 5-7	N/A
14	Approximately 0.4 mile south of the Poplar Branch Road/Poplar Bay Road intersection	Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6 AE 4-6	N/A

Table 9—Summary of Coastal Analyses

Transect			Stillwater Elevations in feet NAVD 88				Wave Runup Analysis	Wave Height Analysis	
No.	Location	Flooding Source	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	Zone Designation and BFE in feet NAVD 88	Zone Designation and BFE in feet NAVD 88[2]	Primary Frontal Dune Identified
15	Approximately 450 feet south of Tern Court	Atlantic Ocean	5.1	6.5	9.7[1]	8.6	N/A	VE 12-15 AE 10-12	YES
		Atlantic Ocean / Currituck Sound	3.0	4.5	5.0	5.7	N/A	VE 7-9 AE 5-7	N/A
	Approximately 220 feet north of the Poplar Branch Road/Poplar Bay Road intersection	Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6 AE 4-6	N/A
16	Along Myrtlewood Court	Atlantic Ocean	5.1	6.5	9.8[1]	8.6	N/A	VE 12-15 AE 10-12	YES
			5.1	6.5	8.0	8.6	N/A	AE 8-10	N/A
		Atlantic Ocean / Currituck Sound	3.0	4.5	5.0	5.7	N/A	VE 7-9 AE 5-7	N/A
	Approximately 0.5 mile north of the Poplar Branch Road/Poplar Bay Road intersection	Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6 AE 4-6	N/A

Table 9—Summary of Coastal Analyses

Transect			Stillwater Elevations in feet NAVD 88				Wave Runup Analysis	Wave Height Analysis	
No.	Location	Flooding Source	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	Zone Designation and BFE in feet NAVD 88	Zone Designation and BFE in feet NAVD 88[2]	Primary Frontal Dune Identified
17	Along Starfish Court	Atlantic Ocean	5.2	6.6	9.9[1]	8.7	N/A	VE 12-15 AE 10-12	YES
			5.2	6.6	9.0	8.7	N/A	AE 9	N/A
		Atlantic Ocean / Currituck Sound	3.0	4.5	5.0	5.7	N/A	VE 7-9 AE 5-7	N/A
	Approximately 0.9 mile north of the Poplar Branch Road/Poplar Bay Road intersection	Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6 AE 4-6	N/A
18	Along Albacore Street	Atlantic Ocean	5.2	6.6	9.9[1]	8.7	N/A	VE 12-15 AE 10-12	YES
		Atlantic Ocean / Currituck Sound	3.0	4.5	5.0	5.7	N/A	VE 7-9 AE 5-7	N/A
	Approximately 0.3 mile south of Bayview Drive	Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6 AE 4-6	N/A

Table 9—Summary of Coastal Analyses

Transect			Stillwater Elevations in feet NAVD 88				Wave Runup Analysis	Wave Height Analysis	
No.	Location	Flooding Source	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	Zone Designation and BFE in feet NAVD 88	Zone Designation and BFE in feet NAVD 88[2]	Primary Frontal Dune Identified
19	Approximately 200 feet south of the eastern end of Marlin Street	Atlantic Ocean	5.2	6.6	9.9[1]	8.7	N/A	VE 12-15 AE 10-12	YES
	Approximately 270 feet south of the western end of Marlin Street	Atlantic Ocean / Currituck Sound	3.0	4.5	5.0	5.7	N/A	AE 5-6	N/A
20	Approximately 400 feet north of the eastern end of Sailfish Street	Atlantic Ocean	5.2	6.6	9.9[1]	8.7	N/A	VE 12-15 AE 10-12	YES
	Approximately 200 feet north of the western end of Sailfish Street	Atlantic Ocean / Currituck Sound	3.0	4.5	5.0	5.7	N/A	VE 7-9 AE 5-7	N/A
	Approximately 0.4 mile north of Bayview Drive	Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6 AE 4-6	N/A

Table 9—Summary of Coastal Analyses

Transect			Stillwater Elevations in feet NAVD 88				Wave Runup Analysis	Wave Height Analysis	
No.	Location	Flooding Source	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	Zone Designation and BFE in feet NAVD 88	Zone Designation and BFE in feet NAVD 88[2]	Primary Frontal Dune Identified
21	Along Bonito Street	Atlantic Ocean	5.2	6.6	9.9[1]	8.7	N/A	VE 12-15 AE 10-12	YES
			5.2	6.6	9.0	8.7	N/A	AE 9	N/A
		Atlantic Ocean / Currituck Sound	3.0	4.5	5.0	5.7	N/A	VE 7-9 AE 5-6	N/A
	Crosses the north end of Tabernacle Lane	Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6 AE 4-6	N/A
22	Approximately 150 feet south of the eastern end of Perch Street	Atlantic Ocean	5.2	6.6	9.9[1]	8.7	N/A	VE 12-15 AE 10-12	YES
	Approximately 300 feet south of the western end of Perch Street	Atlantic Ocean / Currituck Sound	3.0	4.5	5.0	5.7	N/A	AE 5	N/A

Table 9—Summary of Coastal Analyses

Transect			Stillwater Elevations in feet NAVD 88				Wave Runup Analysis	Wave Height Analysis	
No.	Location	Flooding Source	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	Zone Designation and BFE in feet NAVD 88	Zone Designation and BFE in feet NAVD 88[2]	Primary Frontal Dune Identified
23	Approximately 800 feet north of the eastern end of Herring Street	Atlantic Ocean	5.2	6.6	9.9[1]	8.7	N/A	VE 12-15 AE 10-12	YES
	Approximately 550 feet north of the western end of Herring Street	Atlantic Ocean / Currituck Sound	3.0	4.5	5.0	5.7	N/A	VE 7-9 AE 5-7	N/A
	Approximately 0.2 mile south of Lighthouse View	Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6 AE 4-6	N/A
24	Approximately 220 feet north of the eastern end of Sturgeon Street	Atlantic Ocean	5.2	6.6	9.9[1]	8.7	N/A	VE 12-15 AE 10-12	YES
	Approximately 70 feet north of the western end of Sturgeon Street	Atlantic Ocean / Currituck Sound	3.0	4.5	5.0	5.7	N/A	AE 5	N/A

Table 9—Summary of Coastal Analyses

Transect			Stillwater Elevations in feet NAVD 88				Wave Runup Analysis	Wave Height Analysis	
No.	Location	Flooding Source	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	Zone Designation and BFE in feet NAVD 88	Zone Designation and BFE in feet NAVD 88[2]	Primary Frontal Dune Identified
25	Approximately 400 feet south of the eastern end of Shad Street	Atlantic Ocean	5.2	6.6	9.9[1]	8.7	N/A	VE 12-15 AE 10-12	YES
	Approximately 620 feet south of the western end of Shad Street	Atlantic Ocean / Currituck Sound	3.0	4.5	5.0	5.7	N/A	VE 7-9 AE 5-7	N/A
	Approximately 440 feet south of Windy Hill Court	Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6 AE 4-6	N/A
26	Approximately 850 feet north of the eastern end of Morris Drive	Atlantic Ocean	5.2	6.6	9.9[1]	8.7	N/A	VE 12-15 AE 10-12	YES
	Approximately 800 feet north of the western end of Morris Drive	Atlantic Ocean / Currituck Sound	3.0	4.5	5.0	5.7	N/A	AE 5-6	N/A

Table 9—Summary of Coastal Analyses

Transect			Stillwater Elevations in feet NAVD 88				Wave Runup Analysis	Wave Height Analysis	
No.	Location	Flooding Source	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	Zone Designation and BFE in feet NAVD 88	Zone Designation and BFE in feet NAVD 88[2]	Primary Frontal Dune Identified
27	Approximately 80 feet south of the eastern end of Corolla Village Road	Atlantic Ocean	5.2	6.6	9.9[1]	8.7	N/A	VE 12-15 AE 10-12	YES
	Approximately 660 feet south of the western end of Corolla Village Road	Atlantic Ocean / Currituck Sound	3.0	4.5	5.0	5.7	N/A	VE 7-9 AE 5-7	N/A
	Approximately 0.6 mile north of Windy Hill Court	Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6 AE 4-6	N/A
28	Approximately 100 feet south of the eastern end of Persimmon Drive	Atlantic Ocean	5.2	6.6	9.9[1]	8.7	N/A	VE 12-15 AE 10-12	YES
	Approximately 990 feet south of the western end of Persimmon Drive	Atlantic Ocean / Currituck Sound	3.0	4.5	5.0	5.7	N/A	VE 7-9 AE 5-7	N/A
	Approximately 0.8 mile north of Windy Hill Court	Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6 AE 4-6	N/A

Table 9—Summary of Coastal Analyses

Transect			Stillwater Elevations in feet NAVD 88				Wave Runup Analysis	Wave Height Analysis	
No.	Location	Flooding Source	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	Zone Designation and BFE in feet NAVD 88	Zone Designation and BFE in feet NAVD 88[2]	Primary Frontal Dune Identified
29	Approximately 300 feet north of Bismark Drive	Atlantic Ocean	5.2	6.6	9.9[1]	8.7	N/A	VE 12-15 AE 10-12	YES
		Atlantic Ocean / Currituck Sound	2.9	4.4	4.9	5.7	N/A	VE 7-9 AE 5-7	N/A
	Approximately 1.1 miles north of Windy Hill Court	Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6 AE 4-6	N/A
30	Along Tasman Drive	Atlantic Ocean	5.2	6.6	9.9[1]	8.7	N/A	VE 12-15 AE 10-12	YES
			5.2	6.6	7.1	8.7	N/A	AE 7-9	N/A
		Atlantic Ocean / Currituck Sound	2.9	4.3	4.8	5.6	N/A	VE 7-9 AE 5-7	N/A
	Approximately 1.0 mile south of the Waterlilly Road/South Waterlilly Road intersection	Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6 AE 4-6	N/A

Table 9—Summary of Coastal Analyses

Transect			Stillwater Elevations in feet NAVD 88				Wave Runup Analysis	Wave Height Analysis	
No.	Location	Flooding Source	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	Zone Designation and BFE in feet NAVD 88	Zone Designation and BFE in feet NAVD 88[2]	Primary Frontal Dune Identified
31	Approximately 400 feet south of the northern end of Sandcastle Drive	Atlantic Ocean	5.2	6.7	10.0[1]	8.8	N/A	VE 12-15 AE 10-12	YES
		Atlantic Ocean / Currituck Sound	2.8	4.2	4.7	5.5	N/A	VE 7-9 AE 5-7	N/A
	Approximately 0.7 mile south of the Waterlilly Road/South Waterlilly Road intersection	Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6 AE 4-6	N/A
32	Approximately 600 feet north of the northern end of North Access Road	Atlantic Ocean	5.3	6.7	10.0[1]	8.8	N/A	VE 12-15 AE 10-12	YES
		Atlantic Ocean / Currituck Sound	2.8	4.1	4.6	5.5	N/A	VE 7-9 AE 5-7	N/A
	Approximately 0.4 mile south of the Waterlilly Road/South Waterlilly Road intersection	Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6 AE 4-6	N/A

Table 9—Summary of Coastal Analyses

Transect			Stillwater Elevations in feet NAVD 88				Wave Runup Analysis	Wave Height Analysis	
No.	Location	Flooding Source	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	Zone Designation and BFE in feet NAVD 88	Zone Designation and BFE in feet NAVD 88[2]	Primary Frontal Dune Identified
33	Approximately 2,600 feet north of the northern end of North Access Road	Atlantic Ocean	5.3	6.8	10.1[1]	8.9	N/A	VE 12-16 AE 10-12	YES
		Atlantic Ocean / Currituck Sound	2.7	3.9	4.4	5.4	N/A	VE 6-9 AE 4-6	N/A
	Approximately 790 feet south of the Waterlilly Road/South Waterlilly Road intersection	Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6-7 AE 4-6	N/A
34	Approximately 0.8 mile north of the northern end of North Access Road	Atlantic Ocean	5.3	6.8	10.1[1]	8.9	N/A	VE 12-16 AE 10-12	YES
			5.3	6.8	6.0	8.9	N/A	AE 6-10	N/A
		Atlantic Ocean / Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6-10 AE 4-6	N/A
	Approximately 0.3 mile north of the Waterlilly Road/South Waterlilly Road intersection	Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6-7 AE 4-6	N/A

Table 9—Summary of Coastal Analyses

Transect			Stillwater Elevations in feet NAVD 88				Wave Runup Analysis	Wave Height Analysis	
No.	Location	Flooding Source	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	Zone Designation and BFE in feet NAVD 88	Zone Designation and BFE in feet NAVD 88[2]	Primary Frontal Dune Identified
35	Approximately 2,100 feet south of the southern end of Ocean Pearl Road	Atlantic Ocean	5.3	6.8	10.1[1]	8.9	N/A	VE 12-16 AE 10-12	YES
		Atlantic Ocean / Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6-9 AE 4-6	N/A
	At the intersection of B And B Lane and Waterlilly Road	Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6 AE 4-6	N/A
36	Approximately 800 feet north of the southern end of Ocean Pearl Road	Atlantic Ocean	5.3	6.8	10.1[1]	8.9	N/A	VE 12-16 AE 10-12	YES
		Atlantic Ocean / Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6-9 AE 4-6	N/A
	Approximately 0.8 mile south of Neversail Way	Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6-7 AE 4-6	N/A
37	Approximately 850 feet south of Munson Lane	Atlantic Ocean	5.3	6.8	10.1[1]	8.9	N/A	VE 12-16 AE 10-12	YES
		Atlantic Ocean / Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6-9 AE 4-6	N/A
	Approximately 0.4 mile south of Neversail Way	Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6-8 AE 4-6	N/A

Table 9—Summary of Coastal Analyses

Transect No.	Transect Location	Flooding Source	Stillwater Elevations in feet NAVD 88: 10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	Wave Runup Analysis: Zone Designation and BFE in feet NAVD 88	Wave Height Analysis: Zone Designation and BFE in feet NAVD 88[2]	Primary Frontal Dune Identified
38	Approximately 1,800 feet north of Munson Lane	Atlantic Ocean	5.3	6.8	10.1[1]	8.9	N/A	VE 12-16 AE 10-12	YES
			5.3	6.8	7.0	8.9	N/A	AE 7-9	N/A
		Atlantic Ocean / Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6-9 AE 4-6	N/A
	Approximately 710 feet north of Neversail Way	Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6-8 AE 4-6	N/A
39	Approximately 0.6 mile south of Canary Lane	Atlantic Ocean	5.3	6.8	10.1[1]	8.9	N/A	VE 12-16 AE 10-12	YES
			5.3	6.8	7.5	8.9	N/A	AE 8-9	N/A
		Atlantic Ocean / Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6-9 AE 4-6	N/A
	Approximately 0.7 mile north of Neversail Way	Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6-8 AE 4-6	N/A
40	Approximately 500 feet south of Canary Lane	Atlantic Ocean	5.3	6.8	10.1[1]	8.9	N/A	VE 12-16 AE 10-12	YES
		Atlantic Ocean / Currituck Sound	2.5	3.7	4.2	5.3	N/A	AE 4-6	N/A

Table 9—Summary of Coastal Analyses

Transect			Stillwater Elevations in feet NAVD 88				Wave Runup Analysis	Wave Height Analysis	
No.	Location	Flooding Source	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	Zone Designation and BFE in feet NAVD 88	Zone Designation and BFE in feet NAVD 88[2]	Primary Frontal Dune Identified
41	Approximately 250 feet south of Bobolink Lane	Atlantic Ocean	5.3	6.8	10.1[1]	8.9	N/A	VE 12-16 AE 10-12	YES
		Atlantic Ocean / Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6-9 AE 4-6	N/A
	Approximately 340 feet south of the southern end of Bells Island Road	Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6 AE 4-6	N/A
42	Approximately 100 feet south of Albatross Lane	Atlantic Ocean	5.3	6.8	10.1[1]	8.9	N/A	VE 12-16 AE 10-12	YES
		Atlantic Ocean / Currituck Sound	2.8	4.0	4.3	5.6	N/A	VE 6-9 AE 4-6	N/A
	Approximately 1,150 feet north of the southern end of Bells Island Road	Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6 AE 4-6	N/A

Table 9—Summary of Coastal Analyses

Transect			Stillwater Elevations in feet NAVD 88				Wave Runup Analysis	Wave Height Analysis	
No.	Location	Flooding Source	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	Zone Designation and BFE in feet NAVD 88	Zone Designation and BFE in feet NAVD 88[2]	Primary Frontal Dune Identified
43	Approximately 1,400 feet north of Albatross Lane	Atlantic Ocean	5.3	6.8	10.1[1]	8.9	N/A	VE 12-16 AE 10-12	YES
		Atlantic Ocean / Currituck Sound	3.1	4.3	4.4	5.8	N/A	VE 6-9 AE 4-6	N/A
	Approximately 310 feet north of the Bells Island Road/ Canvasback Drive	Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6 AE 4-6	N/A
44	Approximately 0.55 mile north of Albatross Lane	Atlantic Ocean	5.3	6.8	10.1[1]	8.9	N/A	VE 12-16 AE 10-12	YES
		Atlantic Ocean / Currituck Sound	3.3	4.5	4.7	6.0	N/A	VE 7-9 AE 5-7	N/A
	Approximately 200 feet south of Mallard Drive	Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6 AE 4-6	N/A

Table 9—Summary of Coastal Analyses

Transect			Stillwater Elevations in feet NAVD 88				Wave Runup Analysis	Wave Height Analysis	
No.	Location	Flooding Source	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	Zone Designation and BFE in feet NAVD 88	Zone Designation and BFE in feet NAVD 88[2]	Primary Frontal Dune Identified
45	Approximately 0.8 mile north of Albatross Lane	Atlantic Ocean	5.3	6.8	10.1[1]	8.9	N/A	VE 12-16 AE 10-12	YES
			5.3	6.8	7.0	8.9	N/A	AE 7-9	N/A
		Atlantic Ocean / Currituck Sound	3.6	4.8	5.0	6.2	N/A	VE 7-9 AE 5-7	N/A
	Approximately 1,370 feet north of Mallard Drive	Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6 AE 4-6	N/A
46	Approximately 1.1 miles north of Albatross Lane	Atlantic Ocean	5.3	6.8	10.1[1]	8.9	N/A	VE 12-16 AE 10-12	YES
			5.3	6.8	7.0	8.9	N/A	AE 7-9	N/A
		Atlantic Ocean / Currituck Sound	3.8	5.0	5.3	6.4	N/A	VE 7-9 AE 5-7	N/A
	Approximately 0.5 mile north of Mallard Drive	Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6 AE 4-6	N/A

Table 9—Summary of Coastal Analyses

Transect			Stillwater Elevations in feet NAVD 88				Wave Runup Analysis	Wave Height Analysis	
No.	Location	Flooding Source	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	Zone Designation and BFE in feet NAVD 88	Zone Designation and BFE in feet NAVD 88[2]	Primary Frontal Dune Identified
47	Approximately 1.4 miles north of Albatross Lane	Atlantic Ocean	5.3	6.8	10.1[1]	8.9	N/A	VE 12-16 AE 10-12	YES
		Atlantic Ocean / Currituck Sound	3.8	5.0	5.3	6.4	N/A	VE 7-10 AE 5-7	N/A
	Approximately 350 feet north of the Skippers Lane/Nautical Lane intersection	Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6 AE 4-6	N/A
48	Approximately 0.7 mile south of Daffodil Lane	Atlantic Ocean	5.3	6.8	10.1[1]	8.9	N/A	VE 12-16 AE 10-12	YES
		Atlantic Ocean / Currituck Sound	3.8	5.0	5.3	6.4	N/A	VE 7-10 AE 5-7	N/A
	Approximately 1,420 feet south of the northern end of Ed Brumsey Road	North Landing River	2.5	3.7	4.2	5.3	N/A	VE 6 AE 4-6	N/A

Table 9—Summary of Coastal Analyses

Transect			Stillwater Elevations in feet NAVD 88				Wave Runup Analysis	Wave Height Analysis	
No.	Location	Flooding Source	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	Zone Designation and BFE in feet NAVD 88	Zone Designation and BFE in feet NAVD 88[2]	Primary Frontal Dune Identified
49	Approximately 0.25 mile south of Daffodil Lane	Atlantic Ocean	5.3	6.9	10.2[1]	9.0	N/A	VE 12-16 AE 10-12	YES
		Atlantic Ocean / Currituck Sound	3.8	5.0	5.3	6.4	N/A	VE 7-10 AE 5-7	N/A
	Approximately 180 feet south of the southern end of Courthouse Road	North Landing River	2.5	3.7	4.2	5.3	N/A	VE 6 AE 4-6	N/A
50	Along Coneflower Lane	Atlantic Ocean	5.4	6.9	10.2[1]	9.1	N/A	VE 12-16 AE 10-12	YES
		Atlantic Ocean / Currituck Sound	3.8	5.0	5.3	6.4	N/A	VE 7-10 AE 5-7	N/A
	Approximately 950 feet south of Currituck Sound Drive	North Landing River	2.5	3.7	4.2	5.3	N/A	VE 6 AE 4-6	N/A

Table 9—Summary of Coastal Analyses

Transect No.	Transect Location	Flooding Source	Stillwater Elevations in feet NAVD 88: 10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	Wave Runup Analysis: Zone Designation and BFE in feet NAVD 88	Wave Height Analysis: Zone Designation and BFE in feet NAVD 88[2]	Primary Frontal Dune Identified
51	Approximately 150 feet south of Anemone Lane	Atlantic Ocean	5.4	7.0	10.3[1]	9.2	N/A	VE 12-16 AE 10-12	YES
		Atlantic Ocean / Currituck Sound	3.8	5.0	5.3	6.4	N/A	VE 7-10 AE 5-7	N/A
	Approximately 0.4 mile north of Currituck Sound Drive	North Landing River	2.5	3.7	4.2	5.3	N/A	VE 6 AE 4-6	N/A
52	Approximately 270 feet south of Crane Road	Atlantic Ocean	5.4	7.0	10.3[1]	9.2	N/A	VE 12-16 AE 10-12	YES
		Atlantic Ocean / Currituck Sound	3.8	5.0	5.3	6.4	N/A	VE 7-8 AE 5-7	N/A
53	Approximately 350 feet south of Gulfhawk Boulevard	Atlantic Ocean	5.4	7.0	10.3[1]	9.2	N/A	VE 12-16 AE 10-12	YES
			5.4	7.0	7.0	9.2	N/A	AE 7-9	N/A
		Atlantic Ocean / Currituck Sound	3.8	5.0	5.3	6.4	N/A	VE 7-8 AE 5-7	N/A
54	Approximately 330 feet south of Mallard Road	Atlantic Ocean	5.4	7.0	10.3[1]	9.2	N/A	VE 12-16 AE 10-12	YES
		Atlantic Ocean / Currituck Sound	3.8	5.0	5.3	6.4	N/A	VE 7 AE 5-7	N/A

Table 9—Summary of Coastal Analyses

Transect			Stillwater Elevations in feet NAVD 88				Wave Runup Analysis	Wave Height Analysis	
No.	Location	Flooding Source	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	Zone Designation and BFE in feet NAVD 88	Zone Designation and BFE in feet NAVD 88[2]	Primary Frontal Dune Identified
55	Approximately 100 feet south of Bonita Lane	Atlantic Ocean	5.4	7.0	10.3[1]	9.2	N/A	VE 12-16 AE 10-12	YES
			5.4	7.0	7.0	9.2	N/A	AE 7-9	N/A
		Atlantic Ocean / Currituck Sound	3.8	5.0	5.3	6.4	N/A	VE 7-8 AE 5-7	N/A
56	Approximately 350 feet south of Sturgeon Lane	Atlantic Ocean	5.4	7.0	10.3[1]	9.2	N/A	VE 12-16 AE 10-12	YES
		Atlantic Ocean / Currituck Sound	3.8	5.0	5.3	6.4	N/A	AE 5-7	N/A
57	Along Shad Lane	Atlantic Ocean	5.4	7.0	10.3[1]	9.2	N/A	VE 12-16 AE 10-12	YES
		Atlantic Ocean / Currituck Sound	3.8	5.0	5.3	6.4	N/A	AE 5-7	N/A
58	Approximately 320 feet north of Marlin Lane	Atlantic Ocean	5.4	7.0	10.3[1]	9.2	N/A	VE 12-16 AE 10-12	YES
		Atlantic Ocean / Currituck Sound	3.8	5.0	5.3	6.4	N/A	VE 7-8 AE 5-7	N/A

Table 9—Summary of Coastal Analyses

Transect			Stillwater Elevations in feet NAVD 88				Wave Runup Analysis	Wave Height Analysis	
No.	Location	Flooding Source	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	Zone Designation and BFE in feet NAVD 88	Zone Designation and BFE in feet NAVD 88[2]	Primary Frontal Dune Identified
59	Approximately 100 feet south of Bluefish Lane	Atlantic Ocean	5.4	7.0	10.3[1]	9.2	N/A	VE 12-16 AE 10-12	YES
		Atlantic Ocean / Currituck Sound	3.8	5.0	5.3	6.4	N/A	VE 7-8 AE 5-7	N/A
60	At Virginia/North Carolina Border	Atlantic Ocean	5.4	7.0	10.3[1]	9.2	N/A	VE 12-16 AE 10-12	YES
			5.4	7.0	7.0	9.2	N/A	AE 7-9	N/A
		Atlantic Ocean / Currituck Sound	3.8	5.0	5.3	6.4	N/A	VE 7-8 AE 5-7	N/A
61	Approximately 400 feet south of Acorn Lane	Albemarle Sound	5.0	6.6	7.2	8.1	N/A	VE 9 AE 7-9	N/A
62	At the intersection of Oakwood Trail and Water Street	Currituck Sound	4.3	5.7	6.3	7.5	N/A	VE 8 AE 6-8	N/A
63	Approximately 0.7 mile north of Halls Harbor Road	Currituck Sound	4.3	5.7	6.3	7.5	N/A	VE 8 AE 6-8	N/A
64	Approximately 0.7 mile east of the eastern end of Foster Forbes Road	Currituck Sound	4.3	5.7	6.3	7.5	N/A	VE 8 AE 6-8	N/A

Table 9—Summary of Coastal Analyses

Transect			Stillwater Elevations in feet NAVD 88				Wave Runup Analysis	Wave Height Analysis	
No.	Location	Flooding Source	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	Zone Designation and BFE in feet NAVD 88	Zone Designation and BFE in feet NAVD 88[2]	Primary Frontal Dune Identified
65	Approximately 0.2 mile north of Webster Creek	Currituck Sound	4.3	5.7	6.3	7.5	N/A	VE 8 AE 6-8	N/A
66	Approximately 0.4 mile north of the Newbern Road/White Acres Drive intersection	Currituck Sound	3.5	4.8	5.3	6.3	N/A	VE 7 AE 5-7	N/A
67	Approximately 0.5 mile east of the Jarvisburg Road/Cat Tail Lane intersection	Currituck Sound	3.5	4.8	5.3	6.3	N/A	VE 7 AE 5-7	N/A
68	Approximately 0.3 mile north of the southern end of Dews Quarter Island	Currituck Sound	3.5	4.8	5.3	6.3	N/A	VE 7 AE 5-7	N/A
69	Approximately 400 feet north of Brumley Road	Currituck Sound	2.5	3.7	4.2	5.3	N/A	AE 4-6	N/A
70	Approximately 680 feet north of Capps Creek Lane	Currituck Sound	3.8	5.0	5.3	6.4	N/A	AE 5-6	N/A

Table 9—Summary of Coastal Analyses

Transect			Stillwater Elevations in feet NAVD 88				Wave Runup Analysis	Wave Height Analysis	
No.	Location	Flooding Source	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	Zone Designation and BFE in feet NAVD 88	Zone Designation and BFE in feet NAVD 88[2]	Primary Frontal Dune Identified
71	Approximately 0.4 mile north of the southern tip of MacKay Island	Currituck Sound	2.5	3.7	4.3	5.3	N/A	VE 6-7 AE 4-6	N/A
72	Approximately 0.7 mile north of the southern tip of MacKay Island	Currituck Sound	2.5	3.7	4.3	5.3	N/A	VE 6-7 AE 4-6	N/A
73	Along the northern part of Elizabeth Circle	Currituck Sound	2.5	3.7	4.2	5.3	N/A	VE 6 AE 4-6	N/A
74	Approximately 1,080 feet north of Tice Road	Currituck Sound	2.5	3.7	4.2	5.3	N/A	AE 4-6	N/A
75	Approximately 800 feet north of Troublesome Point	Currituck Sound	4.1	5.1	5.4	6.2	N/A	AE 5-8	N/A
76	Approximately 1,400 feet north of White Hurst Creek	Currituck Sound	4.1	5.1	5.4	6.2	N/A	AE 5-8	N/A

N/A – Not Applicable

[1]Includes wave setup of 2.6 feet

[2]Because of map scale limitations, BFEs shown on FIRM represent average elevations for zones depicted

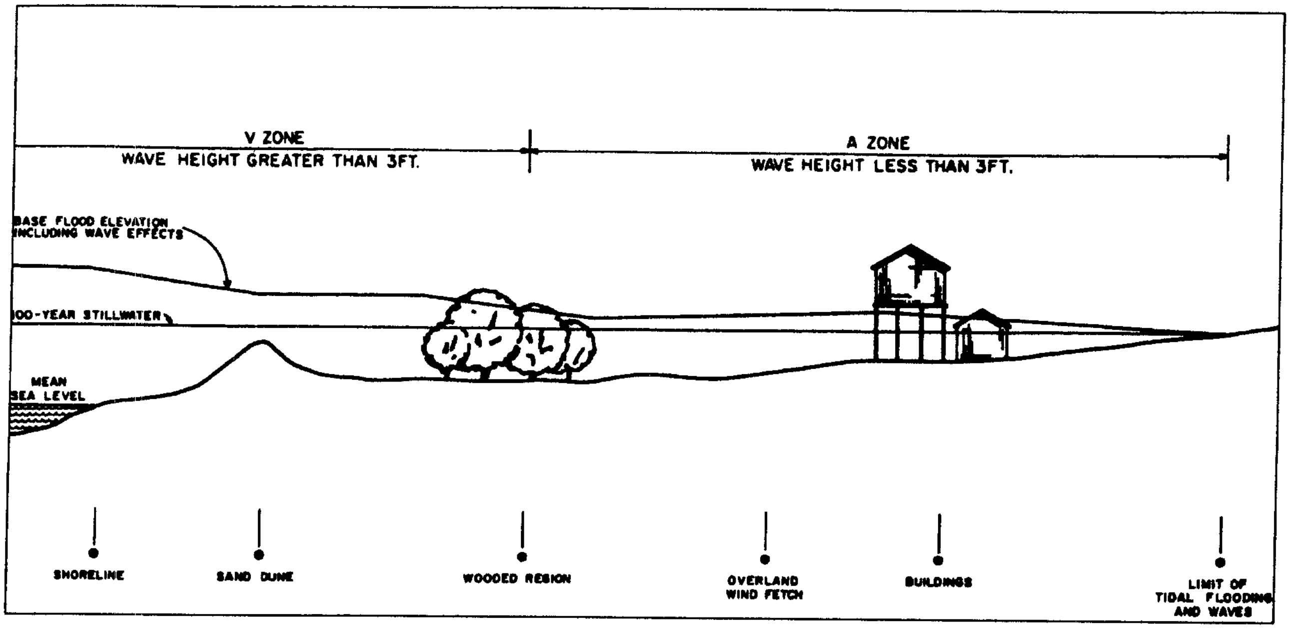

Figure 3—Transect Schematic

Data for the model grid systems and the wave height calculations were obtained from USGS quadrangle sheets, NOAA nautical charts, and from aerial photographs (U.S. Department of the Interior, 1954; U.S. Department of Commerce, 1980; Currituck County, 1980).

Revised Analyses for Countywide FIS

For this revision, coastal flooding from the Atlantic Ocean and Currituck Sound was restudied using detailed methods. New analyses of wave setup, wave heights, and storm induced erosion were performed using the stillwater elevations for the Atlantic Ocean and Currituck Sound printed in the previously effective FIS for Currituck County. This revision also incorporates the definitions for the coastal high hazard area and primary frontal dune found in 44 Code of Federal Regulation (CFR) 59.1.

The wave setup calculation is based upon wave behavior over a sloping beach. Using methods specified in the *Shore Protection Manual* (U.S. Army Corps of Engineers, 1984) the maximum wave setup at the outer coast was determined to be 2.6 feet; owing to limited fetch and extremely shallow water in Currituck Sound, setup was not added anywhere inside the Outer Banks.

In most areas of the Currituck County shoreline, the existing dunes were found to be insufficient in size to sustain wave attack during a 100-year storm. Frontal dunes with reservoirs exceeding 540 square feet are considered to experience only dune retreat, while those with reservoirs of less than 540 square feet are considered to experience dune removal. Using FEMA's standard erosion analysis procedures outlined in the *Guidelines and Specifications for Wave Elevation Determination and V Zone Mapping*, the protection afforded by the dunes with less than a 540 square-foot sand reservoir is removed from the coastal analysis, resulting in a low beach profile slope (Federal Emergency Management Agency, 1995). The majority of dunes in Currituck

County were treated by dune removal. Wave runup on dune faces was also considered where appropriate, but was found to be less than wave setup and so was not added for this study.

Wave crest elevations were added to the stillwater storm surge elevations using the methodology recommended by the National Academy of Sciences (Federal Emergency Management Agency, 1995). This methodology considers maximum conditions associated with the 100-year flood and performs wave propagation analysis along transects oriented perpendicularly to the shoreline to determine wave crest elevations from the coast and inland bays to the limits of the 100-year floodplain. The transects used in this study are shown on the FIRM and were chosen based on topography, vegetation, and cultural development.

For this revision, information describing the transects was obtained from Light Detection and Ranging (LIDAR) topographic data converted to the North American Vertical Datum of 1988 (NAVD 88); high resolution aerial imagery for the County; and site visit reconnaissance.

Based on the eroded beach and dune profiles, and the effective FIS stillwater elevations (adjusted to include wave setup), the wave crest envelope was computed for each transect. The wave crest envelope represents the vertical extent of wave activity and includes the storm surge, the wave setup, and the wave crest elevation above the surge and setup. The computer program *Wave Height Analysis for Flood Insurance Studies* (WHAFIS; FEMA, 1995) provided the maximum expected wave crest elevation along each transect accounting for fetch length, submerged bathymetry, and type and extent of the land cover along each transect which blocks or reduces wave heights. Density, type, and physical dimensions of rigid and flexible vegetation, buildings, and other structures were considered based on field inspection and high resolution aerial photography.

For limited coastal areas which were not restudied using detailed methods, the existing mapping was adjusted according to the new LIDAR topographic data in order to accurately reflect the position of the transition from Zone VE to Zone AE and the inland limit of the 1% annual chance flood zone; the intermediate zones in those areas were obtained from the previously effective FIRMs. For these redelineated coastal flooding reaches, any existing FEMA-issued Letters of Map Change (LOMCs) were incorporated, as appropriate.

Commencing in 1989, FEMA identifies a "coastal high hazard area" as an area of special flood hazards extending from offshore to the inland limit of a primary frontal dune along the open coast, or any other area subject to high-velocity wave action (i.e., wave heights greater than or equal to 3 feet) from storms or seismic sources. The "primary frontal dune" is defined as a continuous or nearly continuous mound or ridge of sand with relatively steep seaward and landward slopes, immediately landward and adjacent to the beach and subject to erosion and overtopping from high tides and waves during major coastal storms. The inland limit of the primary frontal dune occurs at the landward point where there is a distinct change from a relatively steep landward dune slope to a relatively mild slope. The entirety of this primary frontal dune high hazard area is designated as Zone VE.

For coastal areas not receiving a new detailed study, the inland limit of the 1% annual chance floodplain and the location of the Zone VE/Zone AE boundary may have been adjusted using new elevation data obtained for producing the updated FIRM panels. The intermediate zones in Currituck County were obtained from the previously effective FIRMs. The inland limit of the V zone may have been adjusted as appropriate based on the definitions for the coastal high hazard area and primary frontal dune in 44 CFR 59.1. Whole-foot BFEs from the previously effective

FIRMs were converted to NAVD 88 and included for these areas. For redelineated coastal flooding reaches, FEMA-issued LOMCs were incorporated, as appropriate.

Section 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. Until recently, the standard vertical datum in use for newly created or revised FISs was the National Geodetic Vertical Datum of 1929 (NGVD 29). With the finalization of the North American Vertical Datum of 1988 (NAVD 88), many FISs are being prepared using NAVD 88 as the referenced vertical datum.

All flood elevations shown on the FIRM for Currituck 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 may be referenced to NGVD 29. This may result in BFE differences across political boundaries between the communities.

Prior versions of this FIS were referenced to NGVD 29. When a datum conversion is effected for an FIS, the Flood Profiles, BFEs, and bench marks reflect the new datum values. To compare structural and ground elevations to 1% annual chance flood elevations shown in this FIS, the subject structural and ground elevations must be referenced to the new datum values.

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 Currituck County is -0.91 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 10, "Datum Conversion Locations and Values," is shown below.

Table 10—Datum Conversion Locations and Values

Latitude	Longitude	Conversion from NGVD 29 to NAVD 88 (feet)
36.500	76.250	-0.93
36.500	76.125	-0.90
36.500	76.000	-0.92
36.500	75.875	-0.93
36.375	76.125	-0.91
36.375	76.000	-0.91
36.375	75.875	-0.90
36.250	76.000	-0.89
36.250	75.875	-0.87
36.250	75.750	-0.94
36.125	75.875	-0.87
Average conversion in Currituck County from NGVD 29 to NAVD 88 = -0.91 feet		

The 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 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 Currituck 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)

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

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

- GPS surveying of permanent 3-D survey monuments to 5-centimeter or better local network accuracy guidelines, in accordance with NOAA Technical Memorandum NOS NGS-58

"Guidelines for Establishing GPS-Derived Ellipsoid Heights (Standards: 2 cm and 5 cm)," and conversion to NAVD 88 orthometric heights using NGS' latest geoid mode;

- Requiring a stability classification of "C" or better; and
- Submitting GPS files and station descriptions to NCGS.

To obtain current information for cataloging local bench marks in the NSRS, please visit the Data Sheet page of the NGS website at http://www.ngs.noaa.gov/datasheet.html, or contact the NGS Information Services Branch at (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 USGS Digital Orthophoto Quadrangles (DOQs), based on 1998 and 1999 aerial photography, are used as the base maps for digital FIRM production for Currituck County. The base maps are supplemented with stream centerlines, shoreline, and political boundaries, and road name data from other sources.

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.

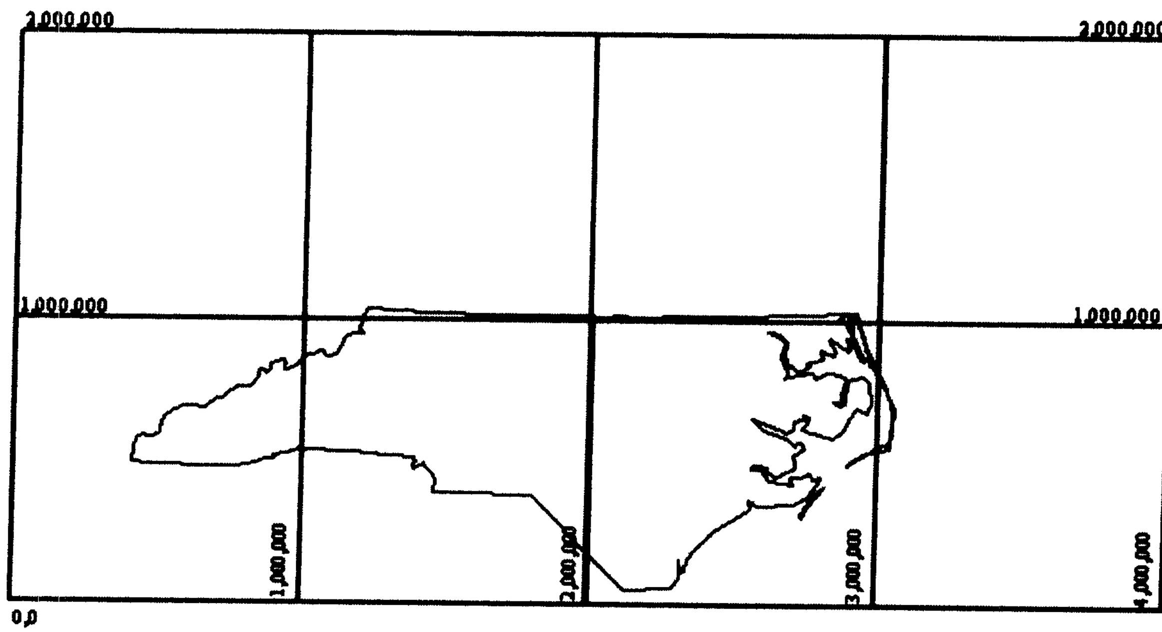

Figure 4—North Carolina's State Plane Coordinate System

6.3 Floodplain and Floodway Delineation

Floodplain Delineation

For streams restudied by detailed and limited detailed methods, the 1% and 0.2% annual chance floodplains were delineated using flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic data acquired using airborne Light Detection and Ranging (LIDAR). This LIDAR data was acquired during the winter 2000-2001 flying season.

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

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.

For streams in Currituck County studied by approximate methods, the 1% annual chance floodplain boundaries were delineated using the effective FIRMs (FEMA, 1984).

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 11, "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.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Moyock Run								
114	11,430	100	433	4.3	5.4	3.1[2]	3.4	0.3
119	11,900	160	915	2.0	5.4	3.7[2]	4.4	0.7
122	12,200	300	1,190	1.6	5.4	4.7[2]	4.7	0.0
131	13,100	300	1,327	1.4	5.4	5.2[2]	5.2	0.0
149	14,900	250	1,280	1.3	6.4	6.4	6.7	0.3
163	16,300	150	843	2.0	6.8	6.8	7.3	0.5
170	16,990	200	785	1.7	7.2	7.2	7.9	0.7
177	17,670	300	1,674	0.8	10.1	10.1	10.5	0.4
180	18,000	348	2,359	0.3	10.1	10.1	10.5	0.4
185	18,500	350	2,248	0.4	10.1	10.1	10.6	0.5
190	19,000	310	2,078	0.4	10.2	10.2	10.6	0.4
195	19,500	310	2,046	0.4	10.2	10.2	10.6	0.4
200	20,000	305	1,863	0.4	10.2	10.2	10.6	0.4
205	20,500	270	1,472	0.6	10.3	10.3	10.7	0.4
210	21,022	250	1,215	0.7	10.3	10.3	10.8	0.5
215	21,509	295	1,191	0.6	10.4	10.4	10.8	0.4
220	22,009	295	1,196	0.6	10.6	10.6	10.9	0.3
225	22,509	340	1,491	0.5	10.7	10.7	11.0	0.3
230	23,009	300	1,128	0.6	10.8	10.8	11.1	0.3
234	23,395	370	935	0.6	10.9	10.9	11.2	0.3

[1]Feet above mouth

[2]Elevation computed without consideration of backwater effects from Northwest River

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

CURRITUCK COUNTY, NC AND INCORPORATED AREAS

FLOODWAY DATA

MOYOCK RUN

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD 88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Moyock Run Tributary 2								
006	580	85	313	3.1	7.0	5.0[2]	5.7	0.7
020	2,000	98	355	2.7	7.9	7.9	8.4	0.5

[1]Feet above mouth

[2]Elevation computed without consideration of backwater effects from Moyock Run

TABLE 11

FEDERAL EMERGENCY MANAGEMENT AGENCY

CURRITUCK COUNTY, NC AND INCORPORATED AREAS

FLOODWAY DATA

MOYOCK RUN TRIBUTARY 2

Section 7.0 – Revising the FIS

This FIS is based on the most up-to-date data available to FEMA or the State at the time of production; however, flood hazard conditions change over time. Communities or private parties may request flood map revisions at any time; certain types of revisions will require the submission of supporting data. FEMA or the State may also initiate a revision. FIS revisions may take several forms; these include Letters of Map Amendment (LOMAs), Letters of Map Revision - based on Fill (LOMR-Fs), Letters of Map Revision (LOMRs), Physical Map Revisions (PMRs), and FEMA or the State-contracted restudies.

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 Assistance Center 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 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 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 before construction takes place. This assures communities participating in the NFIP that proposed projects meet minimum NFIP requirements. The result of FEMA's review 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).

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 Assistance Center 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.

7.4 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 more information regarding FEMA-contracted restudies, please contact the FEMA Map Assistance Center 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 Currituck 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 December 16, 2005, North Carolina Statewide FIRM, which includes Currituck County, are presented in Table 12, "Community Map History."

Information pertaining to revised and unrevised flood hazards within Currituck 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 Currituck County.

Table 12—Community Map History

Community Name	Initial Identification Date	FHBM Revision Date	FIRM Effective Date	FIRM Revision Date
Currituck County (Unincorporated Areas)	January 31, 1975	None	November 1, 1984	November 1, 1984 November 4, 1992 July 3, 1995 May 5, 2003 December 16, 2005

Section 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 previous FISs for the geographic area of Currituck County. Table 13, "Authority and Acknowledgments," includes information, as compiled from the previously printed FIS Reports. The table also includes information for this revision.

Table 13—Authority and Acknowledgments

Community	FIS Dated	Study Contracted by	Data Source *(Study Contractor or Source of Data)*	Contract or Inter-Agency Agreement (IAA) Number	Work Completed in *(month and/or year)*
Currituck County and Incorporated Areas	December 16, 2005	FEMA	North Carolina Floodplain Mapping Program	N/A	February 2004
Currituck County (Unincorporated Areas)	October 3, 1984	FEMA	Tetra Tech, Inc.	EMW-C-0344	April 1984

N/A – Not Applicable

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 were produced by Watershed Concepts, under contract with the State of North Carolina.

In August 2000, the North Carolina General Assembly allocated $23 million to Phase I of the Program. FEMA has contributed an additional $10.0 million towards the Program, as well as in-kind contributions of engineering, mapping, and program management services.

8.2 Consultation Coordination Officer's Meetings/Scoping Meetings

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

For each FIS produced by the State of North Carolina and FEMA's unique partnership, an Initial Scoping Meeting is held with representatives from FEMA, the county, the incorporated communities, and the State of North Carolina. A Final Scoping meeting is held to review the

Draft Basin Plan and finalize the streams to be studied by detailed methods. This information is then used to create the Final Basin Plan.

The dates of the initial and final CCO meetings held for Currituck County were compiled from their previous FIS Reports and are shown in Table 14, "Consultation Coordination Officer's Meetings."

Table 14—Consultation Coordination Officer's Meetings

Community Name	For FIS Dated	Initial CCO Date	Attended by	Final CCO Date	Attended by
Currituck County (Unincorporated Areas)	October 3, 1984	*	*	May 23, 1984	Representatives of the study contractor, FEMA, and community officials

*Data Not Available

The dates of the Initial and Final Scoping Meetings held for Currituck County are shown in Table 15, "Scoping Meetings."

Table 15—Scoping Meetings

Community Name	Basin	Initial Scoping Date	Attended by	Final Scoping Date	Attended by
Currituck County (Unincorporated Areas)	Pasquotank	December 12, 2000	Representatives of FEMA, Dewberry, and Currituck County	May 17 and 18, 2001	Representatives of FEMA, Dewberry, and Currituck County

Section 9.0 – Guide to Additional Information

Countywide FISs to accompany the Statewide FIRM are being prepared for Camden County and Incorporated Areas (FEMA, 1985) and Dare County and Incorporated Areas (FEMA, 2003). 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 16, "Additional Information," contains useful contact information regarding this FIS, the FIRM, and data.

Table 16—Additional Information

FEMA and the NFIP	
FEMA website	www.fema.gov
NFIP Internet website	www.fema.gov/nfip/
Other Federal Agencies	
USGS website	www.usgs.gov/
Hydraulic Engineering Center website	www.hec.usace.army.mil/
State Agencies and Organizations	
CGIA website	www.cgia.state.nc.us/cgia/
NCGS website	www.ncgs.state.nc.us/
NCFMP website	www.ncfloodmaps.com

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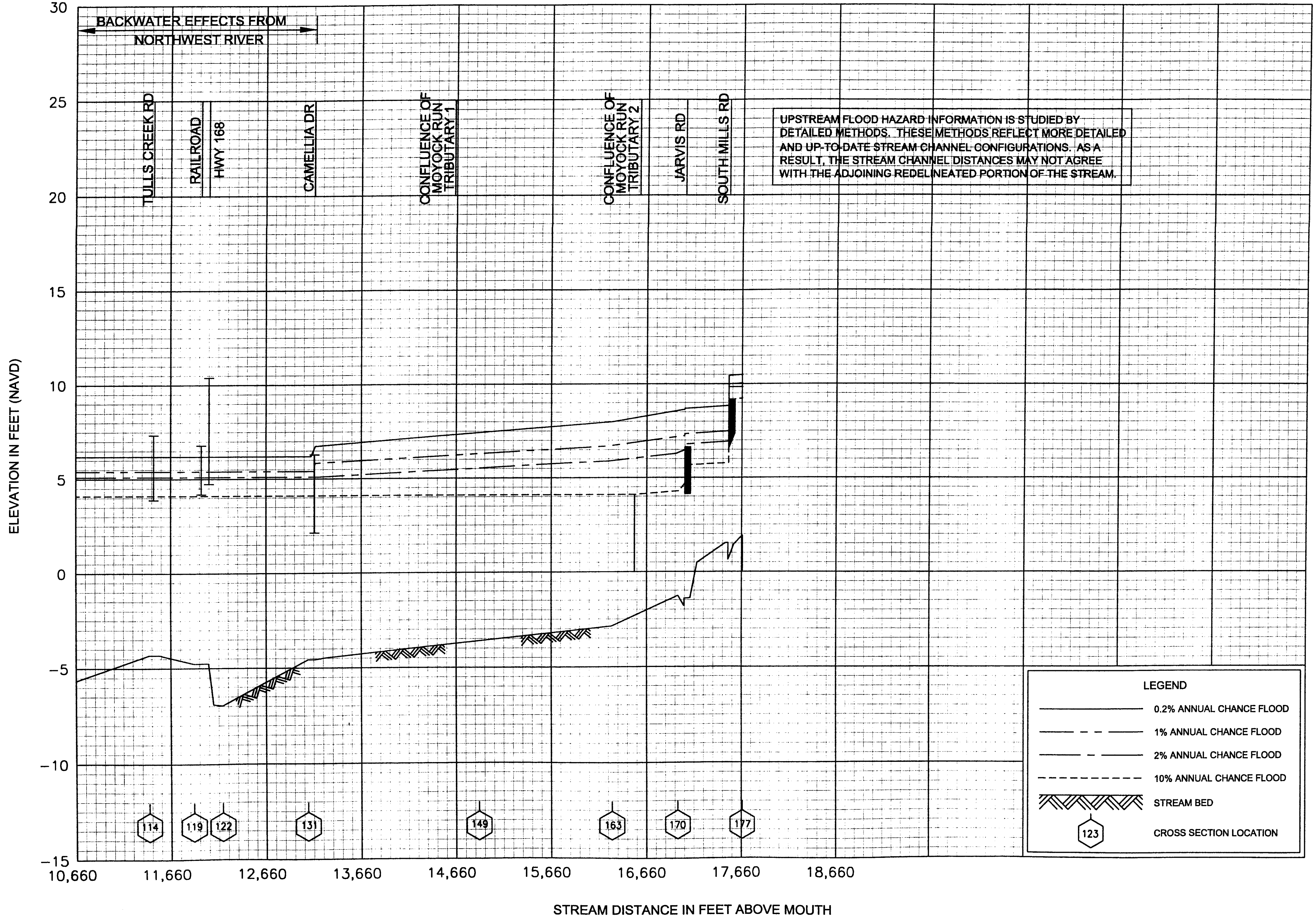

FLOOD PROFILES

MOYOCK RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

CURRITUCK COUNTY, NC
(AND INCORPORATED AREAS)

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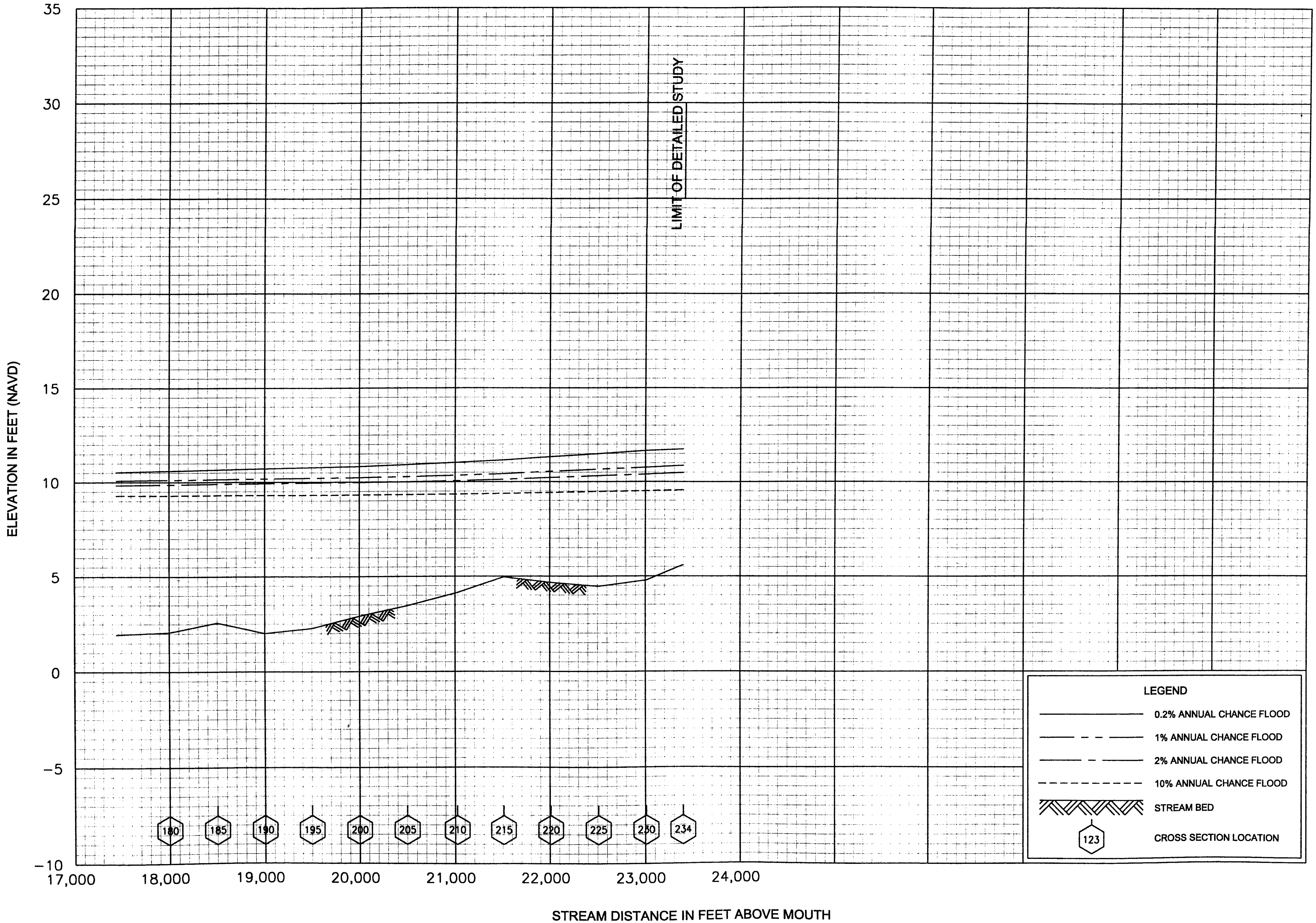

FLOOD PROFILES

MOYOCK RUN

FEDERAL EMERGENCY MANAGEMENT AGENCY

CURRITUCK COUNTY, NC
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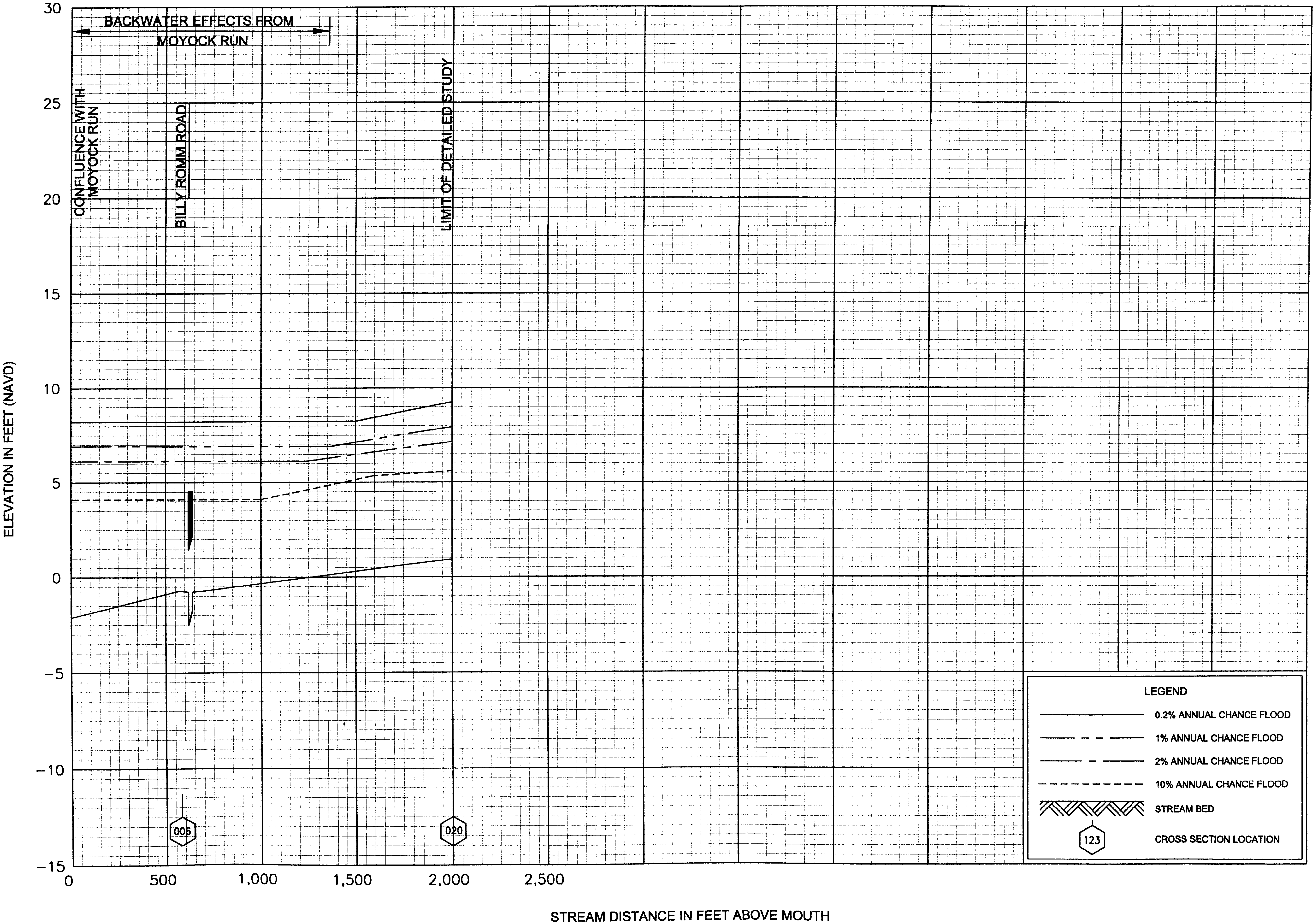

FLOOD PROFILES

MOYOCK RUN TRIBUTARY 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CURRITUCK COUNTY, NC
(AND INCORPORATED AREAS)

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