NORTH CAROLINA
Department of Transportation

North Carolina
Department of Transportation
HIGHWAY FLOODPLAIN PROGRAM

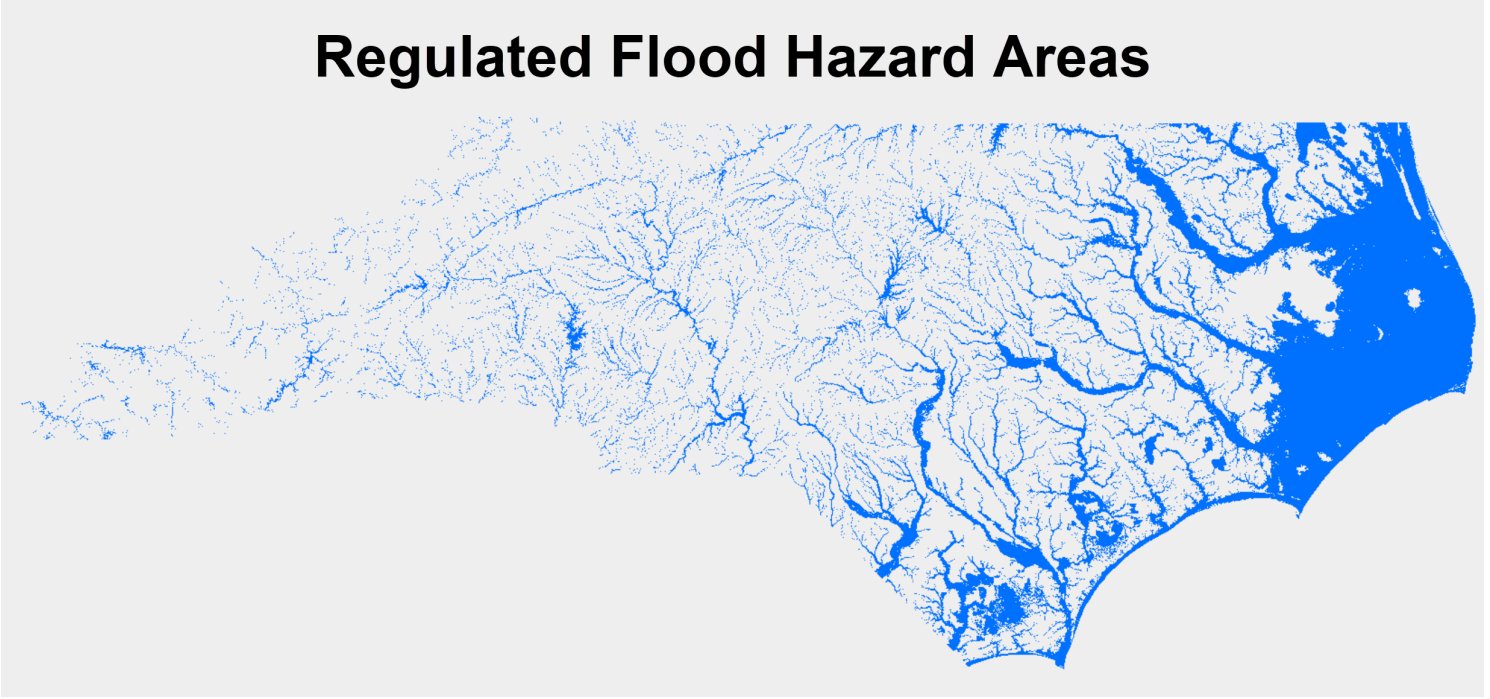
Navigating FEMA Regulated Streams

National Floodplain Insurance Program Compliance for NCDOT

Connecting people, products and places safely and efficiently with customer focus, accountability and environmental sensitivity to enhance the economy and vitality of North Carolina

Introduction

- The goal of the National Flood Insurance Program (NFIP) is to reduce the impact of flooding on private and public structures.
- Approximately 61% of the streams across the State are designated as being in a FEMA Flood Hazard Area.
- Any work within a designated Flood Hazard Area must be in compliance with the National Flood Insurance Program (NFIP).



- No road or structure including its members, shall be constructed, improved, or removed within a designated regulatory floodway or non-encroachment area without a regulatory review and approval. This includes longitudinal encroachment, such as a roadway that is constructed parallel to a stream.

Why Communities Regulate the Floodplain

- Protect people and property
- To ensure federal flood insurance and disaster assistance are available
- To save tax dollars. Every flood disaster affects your community's budget.
- To reduce future flood losses to North Carolina communities.

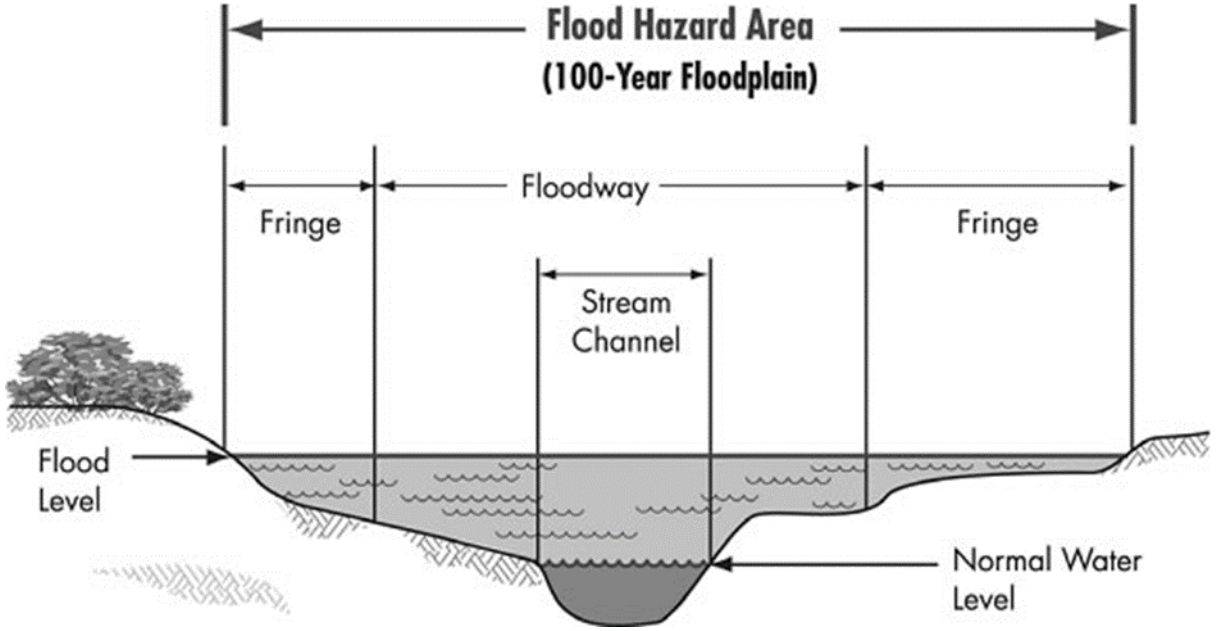
How the NFIP is Enforced

Key Regulations, Orders and Agreements

- Title 44 CFR parts 59, 60, 65 and 70
  - Contains the Code of Federal Regulations that define the NFIP.
- Federal Executive Order 11988
  - States all federal agencies shall follow the NFIP guidelines and work with FEMA to do so.
- NC Executive Order 123 and 266
  - The DOT shall apply appropriate standards and management to comply with the floodplain management policy relevant to highway construction within floodplains.
- Memorandum of Agreement (MOA) between NCDOT and NCDPS
  - Ensures compliance with Federal and State Regulations while streamlining the process for the management of no-rise, decreases or increases in the Base Flood Elevation (BFE) and associated flood map changes.

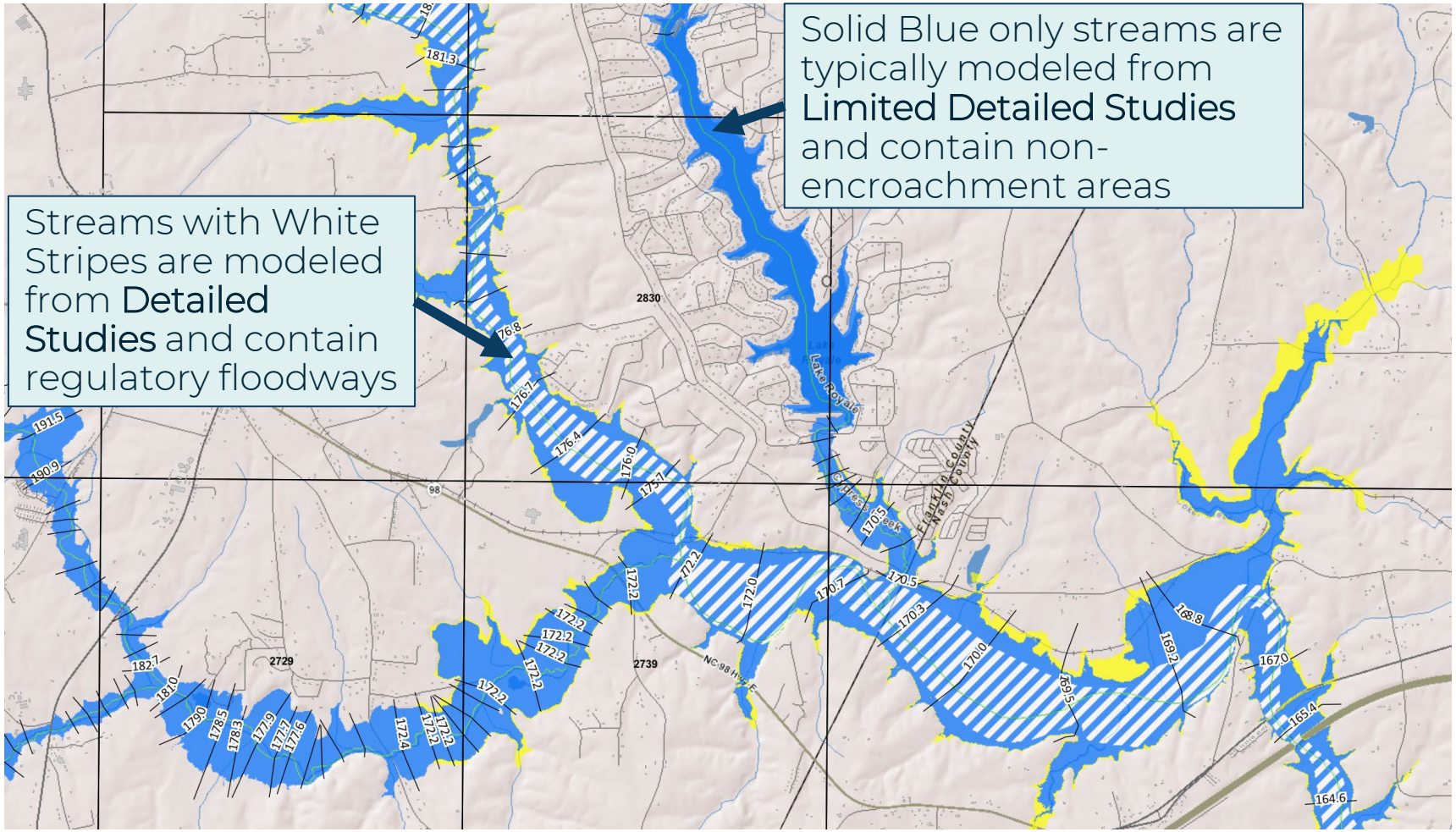
NFIP 101
Special Flood Hazard Area (SFHA) Definitions

- Special Flood Hazard Area (SFHA) is the land in the floodplain subject to a one percent (1%) or greater chance of being flooded in any given year.
- Floodplain Any land area susceptible to being inundated by floodwaters from any source.
- Floodway Channel of a stream plus the adjacent floodplain areas that must be kept free of encroachments in order to contain the 1% annual chance flood.



- Non-Encroachment Area (not shown on the maps) serve the same function as a floodway in *Limited Detailed Studies*. Construction, placement of fill, or similar alteration of topography may be prohibited by a community due to the effects such development would have on the conveyance of discharge.

NFIP 101
Special Flood Hazard Area (SFHA) Mapped



Legend

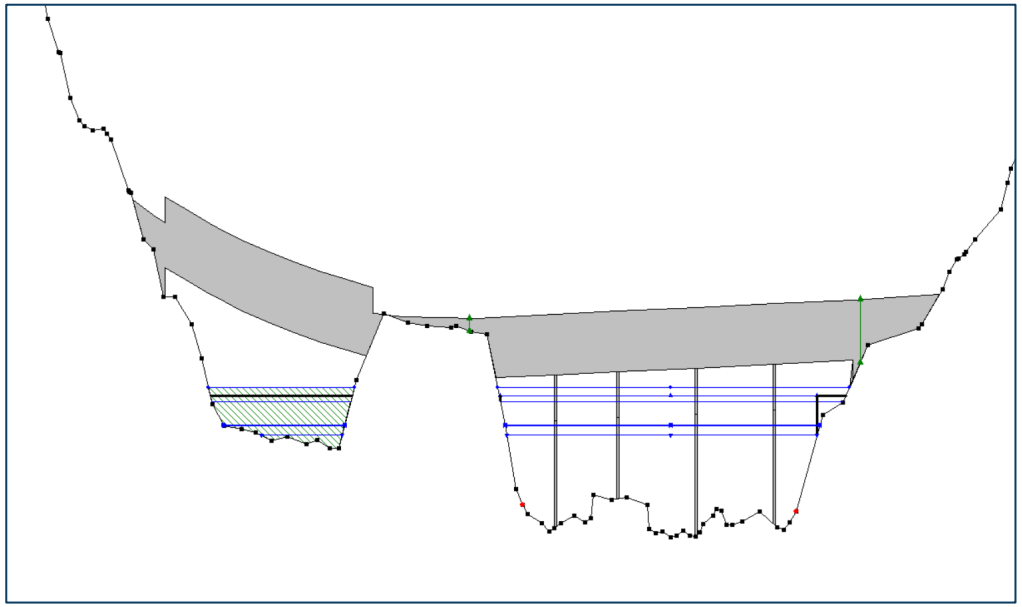
Solid Blue Areas:
SFHA or 100-yr (1% annual flood chance) Floodplain

White striped Areas:
Regulatory Floodway

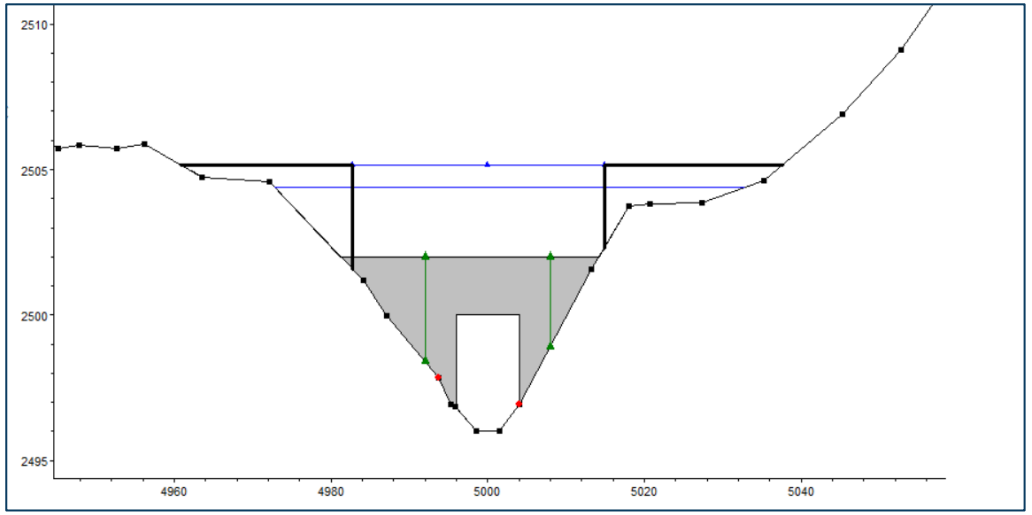
Yellow Areas:
500-yr (0.2% annual flood chance) Floodplain

NFIP 101
Types of Flood Studies

- **Detailed Study** methods involve determining specific channel profiles, bridge and culvert opening geometry, and floodplain characteristics using traditional field surveys. A regulated floodway is determined.



- **Limited Detailed Study** methods of calculating Base Flood Elevations using cross section information from available topography readily available data (with limited or no surveyed field data). A "non-encroachment area" is determined, which are regulated like a floodway.

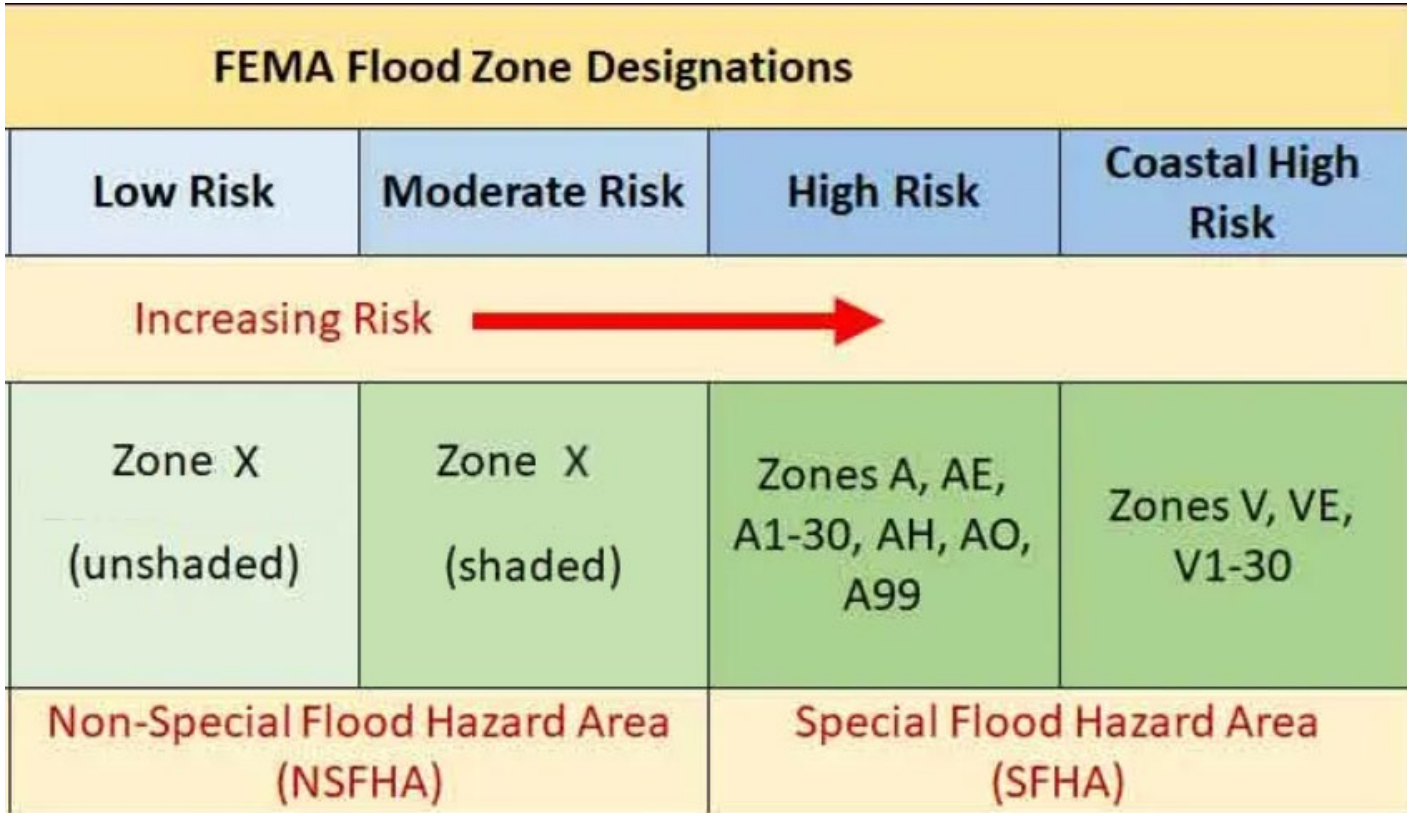


NFIP 101
Flood Zones

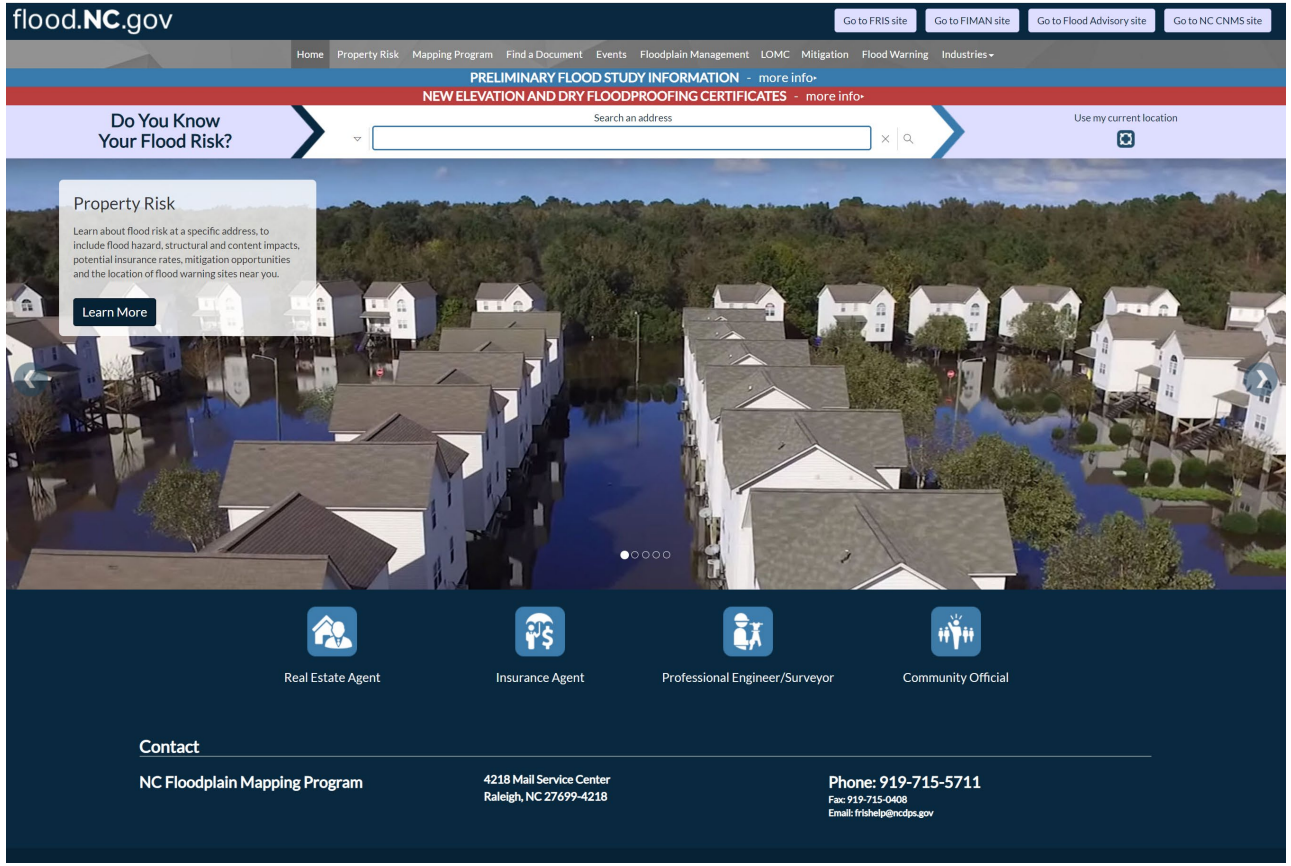
The Flood Study type will typically be the controlling factor when obtaining compliance for NCDOT projects.

However, FEMA Flood maps also contain Flood Zones to show areas of high and moderate-to low flood risk. They are defined below for your knowledge.

- Zones beginning with the letters 'A' or 'V' are high-risk areas
- Zone X (Shaded) or (Unshaded) are moderate-to-low risk areas.



NFIP 101
NC Floodplain Mapping Program

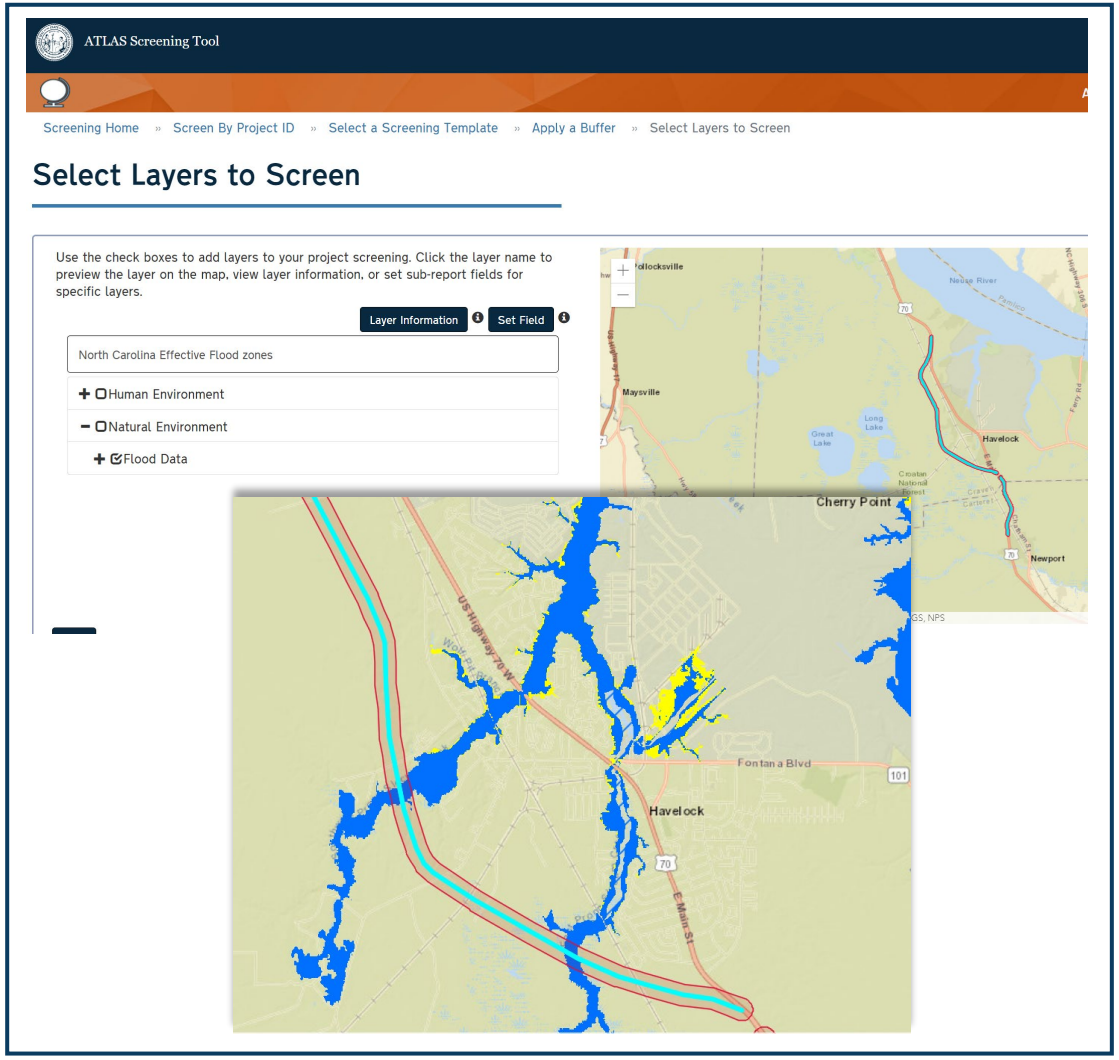


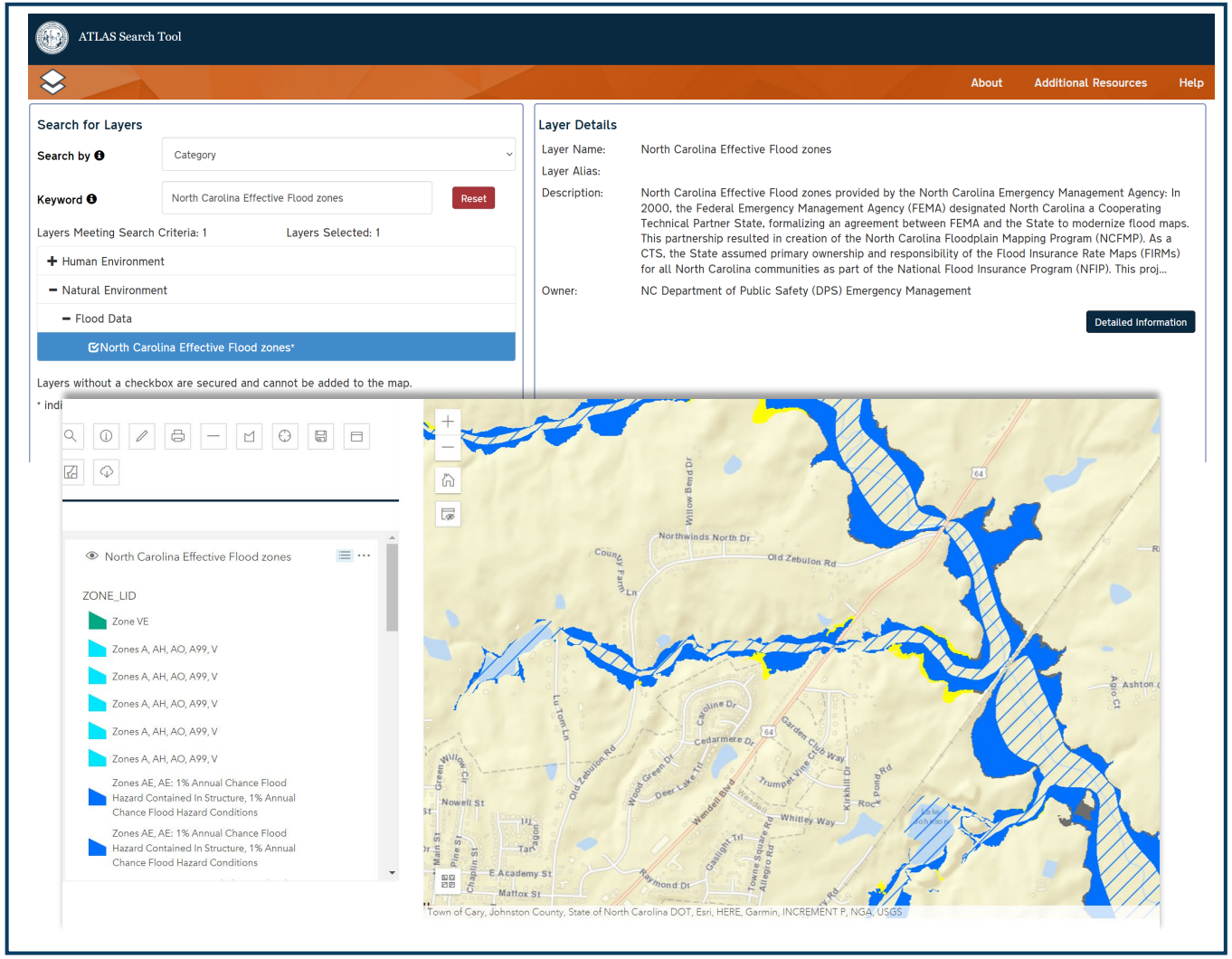
- The NC Floodplain Mapping Program (**NCFMP**) is a department of NCDPS-NCEM
- NCFMP administers the three key components of the NFIP:
  - Flood Insurance
  - Floodplain Management
  - Flood Hazard Mapping

The State of North Carolina is designated as a Cooperating Technical State (CTS) which means NCFMP assumes primary ownership and responsibility of the NFIP in place of FEMA.

Identifying Flood Hazard Areas using ATLAS

Select layer titled North Carolina Effective Flood zones in *Screening Tool* or *Search Tool*

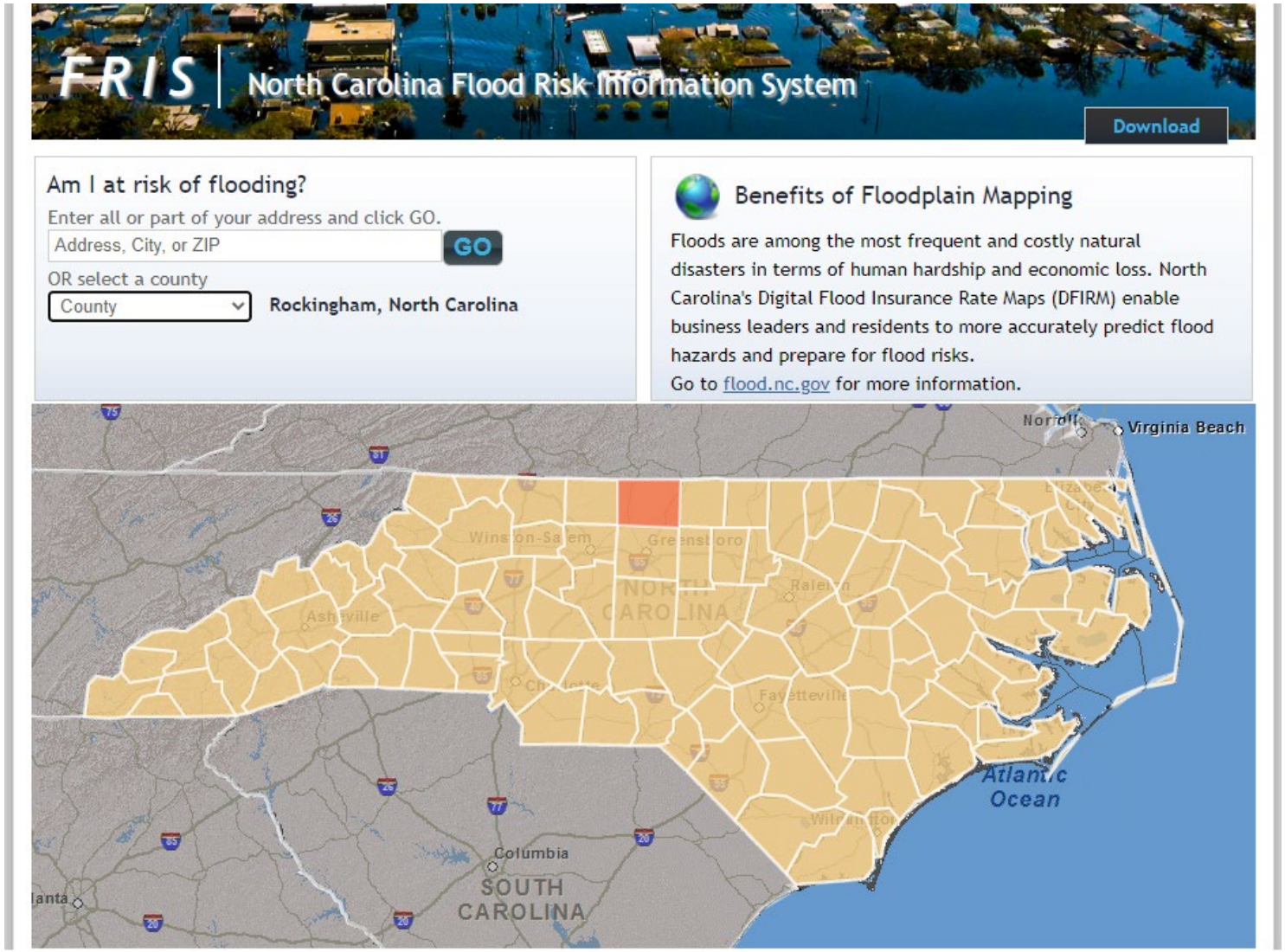




Identifying Flood Hazard Areas using FRIS (and Obtaining Data)

http://fris.nc.gov/fris/

The **Flood Risk Information System** (FRIS) contains digitally accessible flood hazard data, models, maps, risk assessments and reports that are database driven.
This site also provides geospatial base map data, imagery, LiDAR data, along with hydraulic and hydrologic models that is available for download and use.



NCDOT Responsibilities to the NFIP

All development (including adding, changing, replacing, or removing any structure/material) on or adjacent to a FEMA regulated stream(aka in a Special Flood Hazard Area(SFHA)) must be documented and receive approval through State Floodplain Compliance (SFC) or CLOMR.

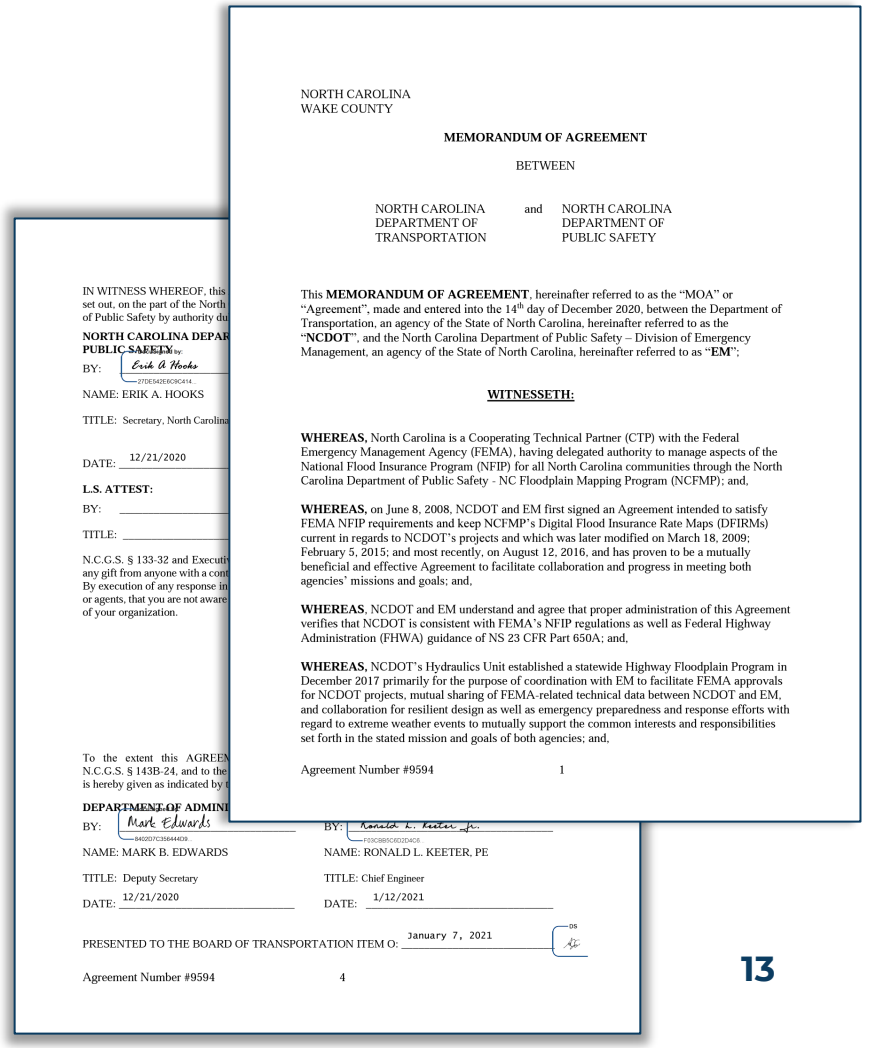
Committed to:

- Manage the review of all projects in a SFHA
- Receive NFIP Compliance for all projects in a SFHA

How NCDOT meets its Responsibilities to the NFIP

A Memorandum of Agreement (MOA) between NCDOT and NCDPS was created to ensures compliance with Federal and State Floodplain Regulations while streamlining the process.

Reminder: NC Floodplain Mapping Program is a Department under NCDPS – Division of Emergency Management



NORTH CAROLINA
WAKE COUNTY

MEMORANDUM OF AGREEMENT

BETWEEN

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION and NORTH CAROLINA DEPARTMENT OF PUBLIC SAFETY

This **MEMORANDUM OF AGREEMENT**, hereinafter referred to as the "MOA" or "Agreement", made and entered into the 14th day of December 2020, between the Department of Transportation, an agency of the State of North Carolina, hereinafter referred to as the "**NCDOT**", and the North Carolina Department of Public Safety – Division of Emergency Management, an agency of the State of North Carolina, hereinafter referred to as "**EM**";

WITNESSETH:

WHEREAS, North Carolina is a Cooperating Technical Partner (CTP) with the Federal Emergency Management Agency (FEMA), having delegated authority to manage aspects of the National Flood Insurance Program (NFIP) for all North Carolina communities through the North Carolina Department of Public Safety - NC Floodplain Mapping Program (NCFMP); and,

WHEREAS, on June 8, 2008, NCDOT and EM first signed an Agreement intended to satisfy FEMA NFIP requirements and keep NCFMP's Digital Flood Insurance Rate Maps (DFIRMs) current in regards to NCDOT's projects and which was later modified on March 18, 2009; February 5, 2015; and most recently, on August 12, 2016, and has proven to be a mutually beneficial and effective Agreement to facilitate collaboration and progress in meeting both agencies' missions and goals; and,

WHEREAS, NCDOT and EM understand and agree that proper administration of this Agreement verifies that NCDOT is consistent with FEMA's NFIP regulations as well as Federal Highway Administration (FHWA) guidance of NS 23 CFR Part 650A; and,

WHEREAS, NCDOT's Hydraulics Unit established a statewide Highway Floodplain Program in December 2017 primarily for the purpose of coordination with EM to facilitate FEMA approvals for NCDOT projects, mutual sharing of FEMA-related technical data between NCDOT and EM, and collaboration for resilient design as well as emergency preparedness and response efforts with regard to extreme weather events to mutually support the common interests and responsibilities set forth in the stated mission and goals of both agencies; and,

Agreement Number #9594 1

IN WITNESS WHEREOF, this
set out, on the part of the North
of Public Safety by authority du

NORTH CAROLINA DEPAR
PUBLIC SAFETY

BY: Erik A Hooks
NAME: ERIK A. HOOKS

TITLE: Secretary, North Carolina

DATE: 12/21/2020

L.S. ATTEST:

BY:

TITLE:

N.C.G.S. § 133-32 and Executi
any gift from anyone with a cont
By execution of any response in
or agents, that you are not aware
of your organization.

To the extent this AGREE
N.C.G.S. § 143B-24, and to the
is hereby given as indicated by

DEPARTMENT OF ADMINI

BY: Mark Edwards
NAME: MARK B. EDWARDS

TITLE: Deputy Secretary

DATE: 12/21/2020

BY: Ronald L. Keeter, Jr.
NAME: RONALD L. KEETER, PE

TITLE: Chief Engineer

DATE: 1/12/2021

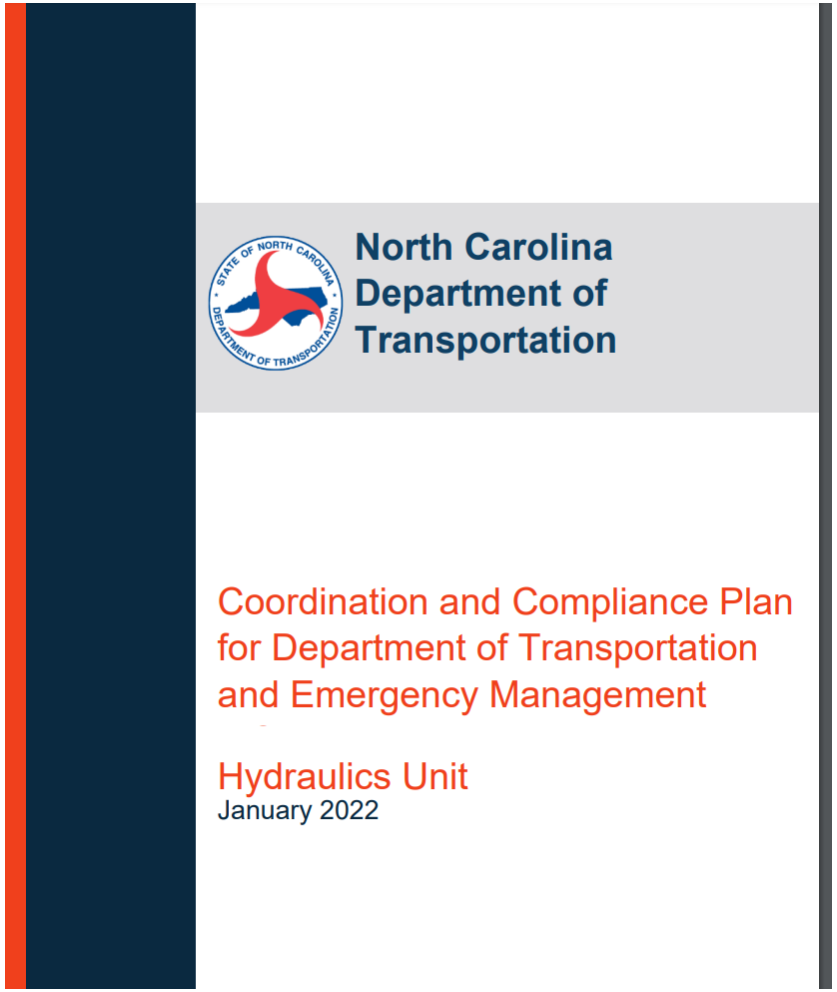
PRESENTED TO THE BOARD OF TRANSPORTATION ITEM O: January 7, 2021

Agreement Number #9594 4

MOA Highlights

- Establishes NCDOT's Highway Floodplain Program as responsible to facilitate NFIP reviews and approvals for NCDOT highway projects meeting criteria established in a Coordination & Compliance Plan (CCP)
- Provides NCDOT-funded positions at NCDPS-EM
- Assists in the development of flood warning tools and monitoring systems

How we Coordination with NC Floodplain Mapping Program



Interagency coordination and compliance requirements are described in the Coordination & Compliance Plan (CCP)

Projects must obtain State Floodplain Compliance (SFC) or CLOMR approval to satisfy NFIP requirements.

COORDINATION & COMPLIANCE PLAN (CCP)

Communicate and Manage Program

NFIP Approval

Guidance

Contents

Criteria Required for SFC and NFIP Approval

- A BFE increase (measured to the hundredths of a foot) that impacts an existing structure located outside of the right-of-way is not allowed under any circumstance.
- In order to achieve NFIP approval, a project must meet the criteria of an SFC Type A or B; or be processed as a CLOMR.

SFC Types

Type A classifications applies to a project that meets any of the following criteria:

- no change in BFE at any location (measured to hundredth of a foot)
- any BFE changes (increase or decrease) that are contained solely within the Department's rights-of-way
- a BFE increase of up to 1.00 foot on a Limited Detailed Study reach, as allowed under 44 CFR 60.3 (c) (10), provided no structures outside the Department's rights-of-way are impacted by any BFE increase (when measured to the hundredth of a foot).

Type B classification applies to a project that results in a BFE decrease outside of NCDOT rights-of-way.

SFC Types

Type C classification applies to a project that cannot be classified as Type A or B.

- Basically, a BFE increase measured to 0.01 in a Detailed Study.
- The BFE increase (measured to the hundredths of a foot) that impacts an existing structure located outside of the right-of-way is still not allowed under any circumstance.
- Project must obtain a CLOMR to meet NFIP compliance.

CLOMR

A Conditional Letter of Map Revision, or **CLOMR**, is a letter from FEMA commenting on whether a proposed project, if built as proposed, would meet the minimum NFIP requirements (see 44 CFR Parts 60, 65, and 72).

The HFP Group will coordinate with NCFMP to submit a request through FEMA to process the project as a **CLOMR.**

NOTE: Requirements for a CLOMR are more rigorous than SFC Type A or B requirements.

SFC Deliverables

The list to the right displays the SFC deliverables along with the submittal package structure and deliverable descriptions. (list also found in CCP).

It is the Hydraulic Design Engineers responsibility to make sure all required data is provided.

CLOMR deliverables are described in [FEMA's Guidance for Flood Risk Analysis and Mapping - MT-2 Requests]

SFC Project.zip (name following the SFC and HEC-RAS Nomenclature guidance)

Effective Model
Copy of the Effective Model

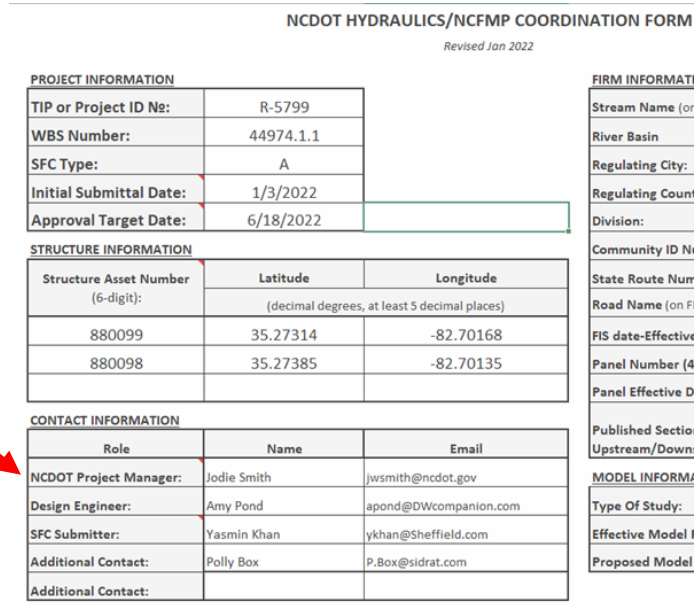
SFC Model
Model Files

SFC Files (Forms found on the Hydraulics/FEMA Coordination site)

- **FEMA Coordination Form** (submit as Excel form)
- **Title Sheet or Vicinity Map** (Make sure R/W and Let dates are current)
- **CADD File** (name file: "yyyymmdd_TIP_SFC.dgn") Include: existing and proposed roadway alignment, existing and proposed bridge, slope stakes, TOPO (w/any buildings, etc.), contours, stream alignment, and HEC RAS cross-section locations (with sections labeled)
- **TIN File**
- **NCDOT Bridge / Culvert Survey Report** (signed, sealed and NCDOT-approved)
- **Hydraulic Model Narrative** (describe model changes as progression takes place from Duplicate Effective Model to Corrected Effective Model (to Existing Conditions Model if needed) to the Revised Model.)
- **Output Comparison Table** (Excel format) - Spreadsheet should cover the area from downstream tie to upstream tie. Highlight the maximum WSEL increase or decrease.
- **Parcel / Property Owner Information** (CADD file) - Parcel boundary electronic file with deed book & page numbers, Not required for Type A submittals
- **Documentation of FMP concurrence, if applicable**
- **Other Files, if applicable**

SFC/CLOMR Submittal Process

1. The Design Team shall designate an individual to coordinate with the HFP group (aka the SFC Submitter on the Coordination Form).



NCDOT HYDRAULICS/NCFMP COORDINATION FORM

Revised Jan 2022

PROJECT INFORMATION

TIP or Project ID №:	R-5799
WBS Number:	44974.1.1
SFC Type:	A
Initial Submittal Date:	1/3/2022
Approval Target Date:	6/18/2022

STRUCTURE INFORMATION

Structure Asset Number (6-digit):	Latitude (decimal degrees, at least 5 decimal places)	Longitude (decimal degrees, at least 5 decimal places)
880099	35.27314	-82.70168
880098	35.27385	-82.70135	

CONTACT INFORMATION

Role	Name	Email
NCDOT Project Manager:	Jodie Smith	jwsmith@ncdot.gov
Design Engineer:	Amy Pond	apond@DWcompanion.com
SFC Submitter:	Yasmin Khan	ykhan@Sheffield.com
Additional Contact:	Polly Box	P.Box@sidrat.com
Additional Contact:		

FIRM INFORMATI

Stream Name (or
River Basin
Regulating City:
Regulating Count
Division:
Community ID N
State Route Num
Road Name (on F
FIS date-Effective
Panel Number (4
Panel Effective D
Published Sectio
Upstream/Down

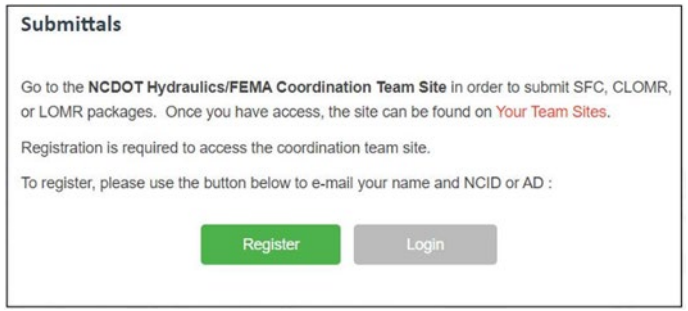
MODEL INFORMA

Type Of Study:
Effective Model I
Proposed Model

Include PM

2. Submit SFC/CLOMR package via the Highway Floodplain Program website.

   a. From the Hydraulics Connect site go to the Highway Floodplain Program (HFP) site.



Submittals

Go to the **NCDOT Hydraulics/FEMA Coordination Team Site** in order to submit SFC, CLOMR, or LOMR packages. Once you have access, the site can be found on Your Team Sites.

Registration is required to access the coordination team site.

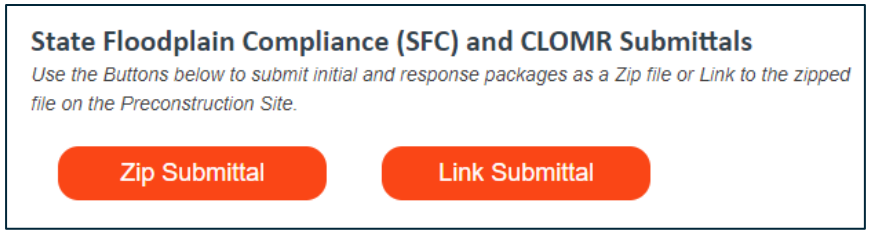
To register, please use the button below to e-mail your name and NCID or AD :

Register Login

SFC/CLOMR Submittal Process (continued)

b. Select Login. All NCDOT personnel have access. Consultant firms will need to **Register** initially to request access to the site.

c. Once on the Highway Floodplain Program Coordination Site, SFC packages can be submitted as a zip file or a link to the file on the Preconstruction site. (see CCP for further details)



c. A confirmation email will be sent once the HFP team receives the package. The Coordination Team will contact you if any questions or additional information is required.

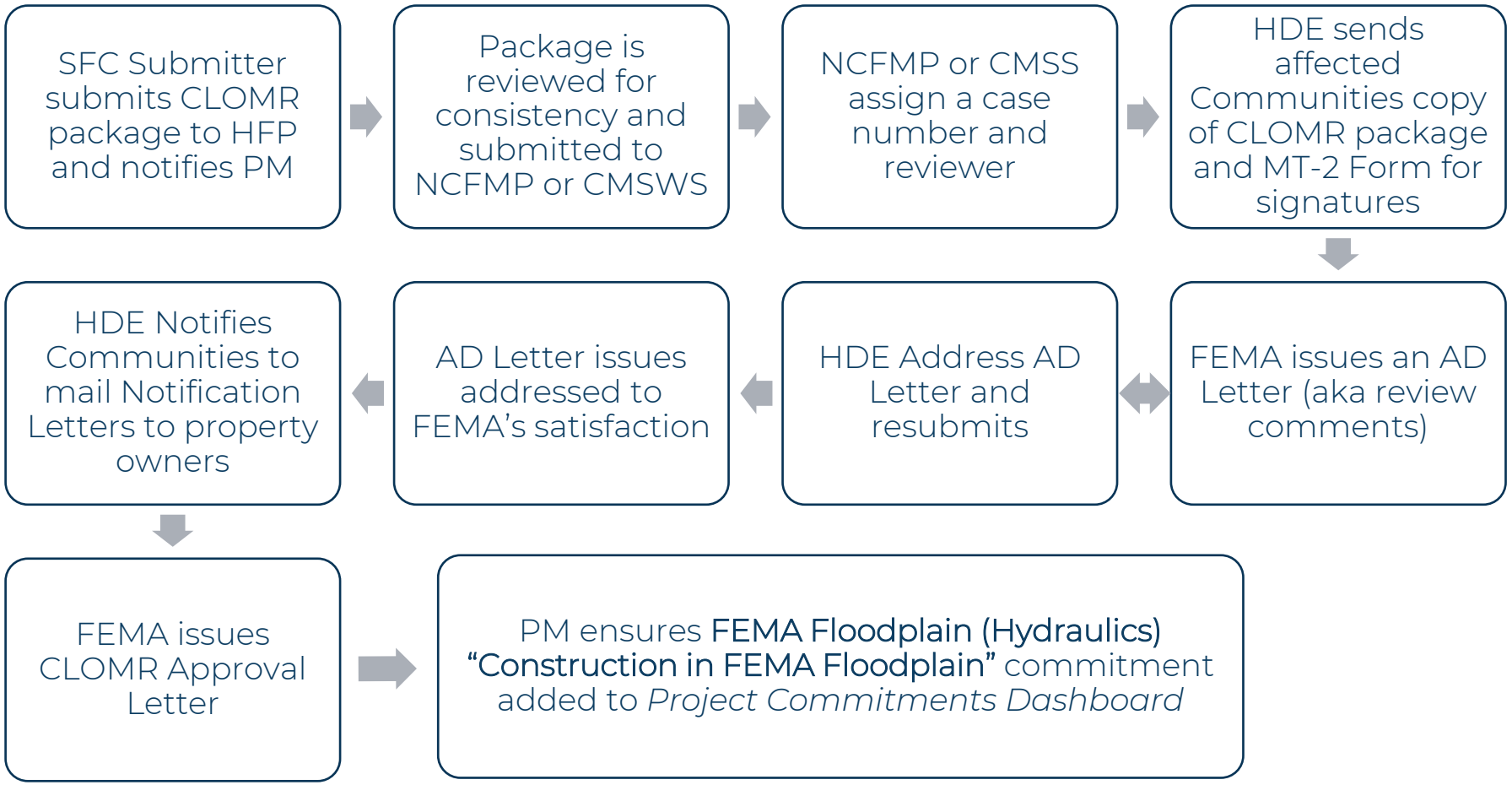
SFC Review/Approval Process

1. Highway Floodplain Program team assigns submittal for review.
2. HFP team will send review comments to the SFC Submitter and others identified on the Coordination Sheet.
3. Design Engineer will address comments and create an updated SFC/CLOMR package.
4. The SFC submitter will resubmit the package with the response to comments.

   Steps 2 through 4 will repeat until all comments have been addressed.
5. Once the approval has been achieved, HFP will send an approval email to all individuals listed on coordination form.
6. Project Manager will ensure that the FEMA Floodplain (Hydraulics) "Construction in FEMA Floodplain" commitment is documented on the *Project Commitments Dashboard*. See Special Project Commitment Guidance for additional information.

CLOMR Approval Process

Simplified CLOMR Flowchart



View expanded Flowchart

Acronyms

AD	Additional Data
CMSWS	Charlotte-Mecklenburg Storm Water Services
FEMA	Federal Emergency Management Administration
HFP	Highway Floodplain Program
HDE	Hydraulics Design Engineer
NCFMP	North Carolina Floodplain Mapping Program
PM	Project Manager

Processing Time and Direct Costs

Type A or B projects will receive approval in typically 3 to 5 months.
$1,650 Fee

CLOMR approval often requires 8 months to more then a year for processing and approval.
$6,750 Fee

Key Message to Remember

A project must obtain State Floodplain Compliance (SFC) or CLOMR approval if any portion of a project is in a FEMA Special Flood Hazard Zone.

References:

Memorandum of Agreement (MOA) between NCDOT and NCDPS (NCEM)

NCDOT *Guidelines for Drainage Studies and Hydraulic Design, Chapter* 15 Floodplain Management

Websites:

NCDOT Hydraulics/FEMA Coordination Connect Site

Contact:

Brian Radakovic, PE CFM

bmradakovic@ncdot.gov

919-707-6747

North Carolina Department of Transportation
HIGHWAY FLOODPLAIN PROGRAM