

# Living on a Barrier Island – A Virtual Workshop for Real Estate Professionals

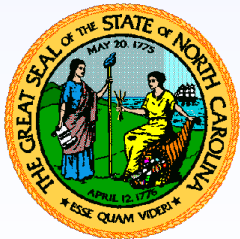
NFIP Overview  
Developing in Compliance w/ the NFIP

March 2, 2022

Eryn Futral, AICP, CFM, CZO

NFIP Eastern Branch Planner

NC Emergency Management, Risk Management



**North Carolina Emergency Management**





# NATIONAL FLOOD INSURANCE PROGRAM



- Identifies & maps flood hazard areas
- Provides a framework for floodplain management regulations
- Makes flood insurance available in Communities that participate in the NFIP



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# NFIP Goals

- Reduce loss of life & property
- Reduce rising disaster relief costs
- Increase importance of hazard mitigation (flood resistant construction, guide future development, & prohibit development in floodplains that would increase flood levels)
- Restore & protect natural resources & functions of floodplains
- Decrease taxpayer-funded disaster costs
- Make Federally backed insurance coverage available to property owners



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# Community Participation in the NFIP



A **VOLUNTARY** program based on a mutual agreement between the Federal government and the local community:

In exchange for adopting, implementing and enforcing a Floodplain Management Ordinance, Federally-backed flood insurance is made available to property owners throughout the community.



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# Role of NFIP Participating Community

- Review floodplain development permit applications and issue/deny floodplain development permits
- **Inspect ALL development to ensure compliance with local ordinances**
- Maintain floodplain development records
- Assist in preparation & revision of floodplain maps
- Help citizens obtain information on flood hazards, floodplain map data, flood insurance, & proper construction measures



# Benefits of Participation

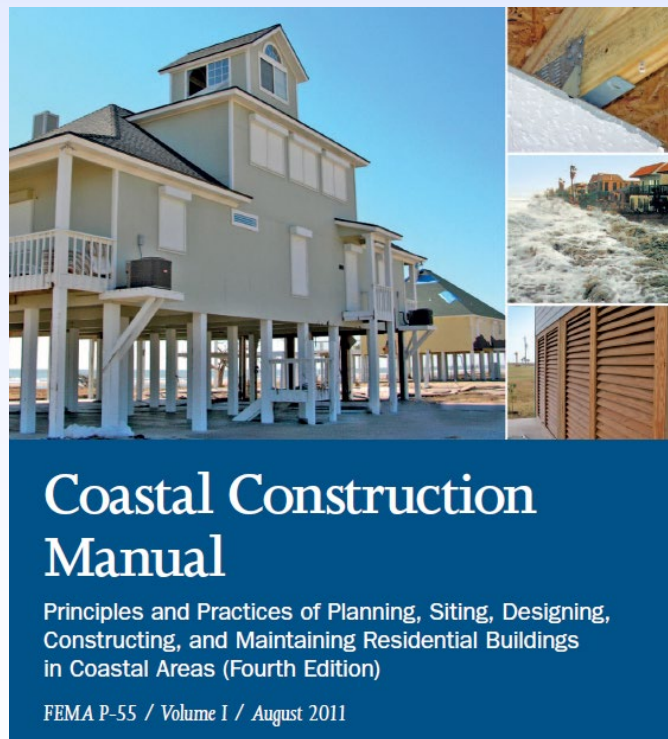
## The availability of:

- Federal grants or loans for development in Special Flood Hazard Areas (SFHAs) under Federal programs
- Federal disaster assistance to repair insurable buildings located in SFHAs
- Federal mortgage insurance/loan guarantees in SFHAs

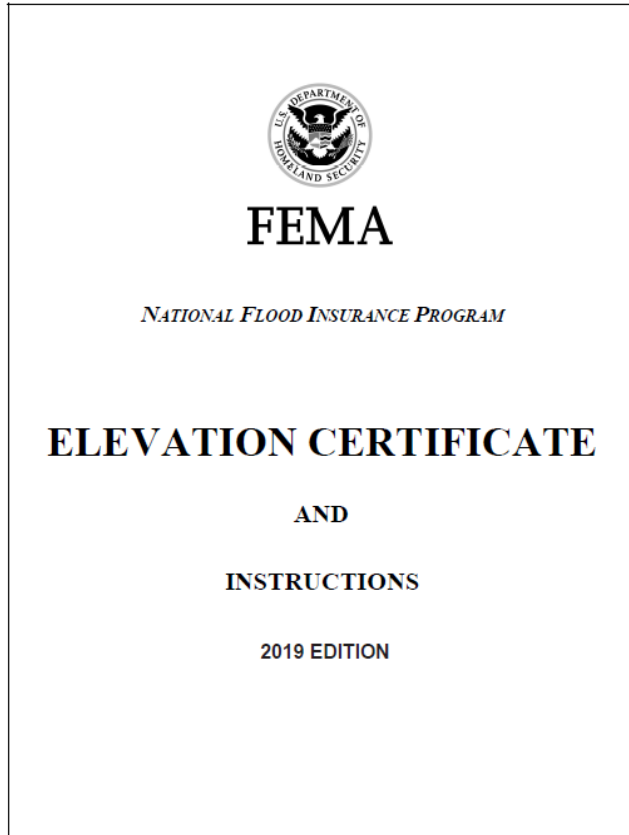


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# Development Standards and Mitigation Measures



# Elevation Certificate Form



- Verify Regulatory Compliance
- Supporting documentation for map revision & amendment applications
- Provide better/recent data to insurance companies to see if a better rate is available

**NOTE:** Data collected on this form is for the construction & utility service to a single STRUCTURE only – not the lot or other improvements.



# The Community's EC Review

Community Officials MUST review Elevation Certificate's (ECs) before accepting them to ensure:

- **Completeness**
- **Reasonableness/Accuracy**
- **Compliance**

NFIP requires the Finished Construction EC for all:

- **New Construction**
- **Additions**
- **Substantial Improvements**

of structures located in the Special Flood Hazard Area.



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# Question????????????????????

A property owner needs a copy of the elevation certificate for their structure.



# Answer...

- ✓ The local permitting jurisdiction
- ✓ Surveyor

State NFIP staff do NOT have a database of ECs.



# Protecting Existing Structures

## Purchase Flood Insurance

## Lower Your Flood Risk

- ✓ Elevate utilities (include duct work)
- ✓ Install flood openings
- ✓ Elevate building
- ✓ Flood proof (non-residential only)
- ✓ Relocate





# Flood Openings

**Permanent Opening** in a Wall that Allows the Free Passage of Water in Both Directions, **AUTOMATICALLY**, without Human Intervention.

A Window, a Door, or a Garage Door is **NOT** Considered an Opening.

Vents MAY be located in a door or garage door.

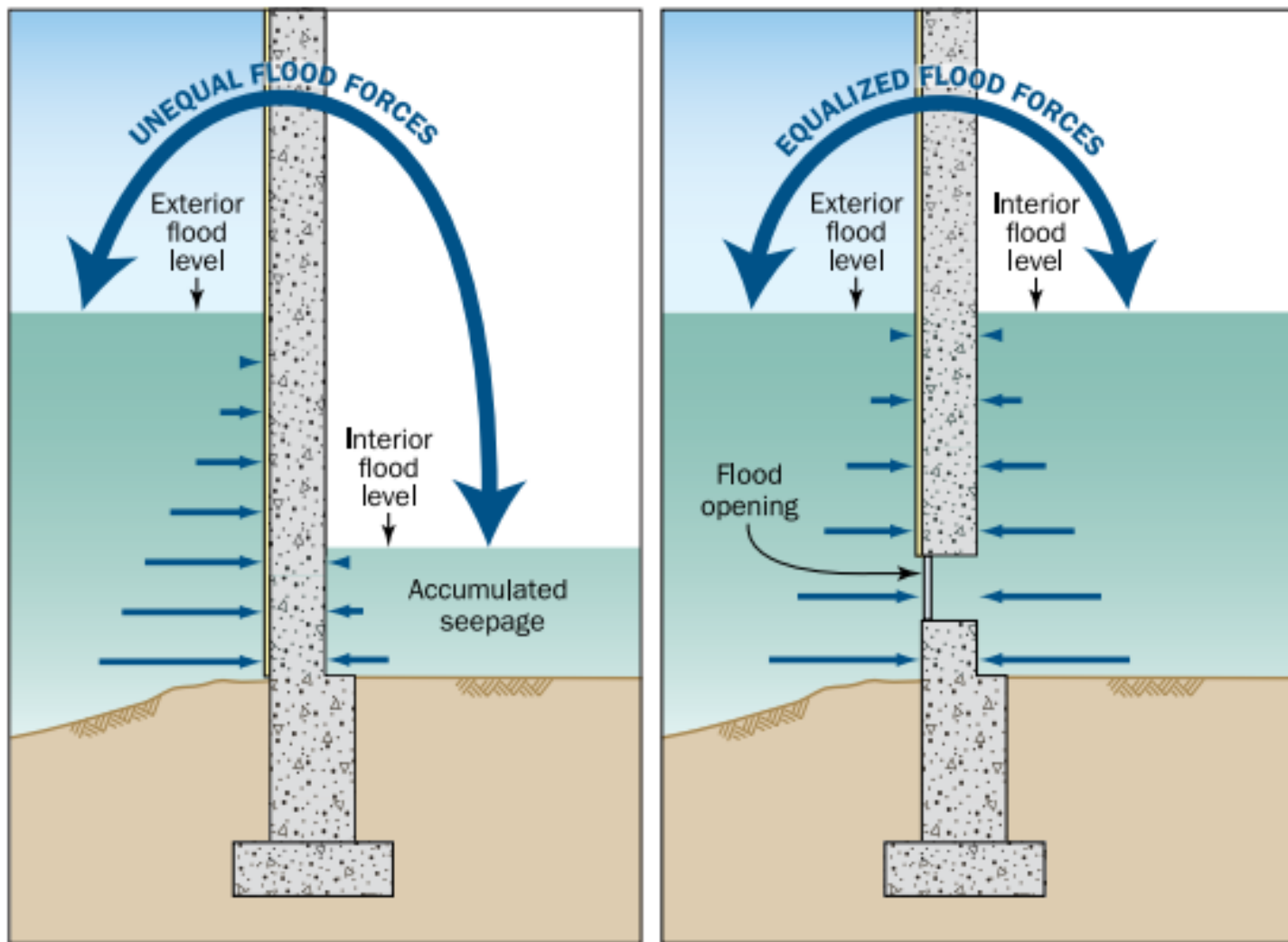


Figure 1: Equalizing flood forces (hydrostatic loads) on exterior walls

# Flood Openings

Small Low-cost storage Buildings



# Minimum Requirements for Foundation Openings

- Minimum of **two openings** on different sides of EACH enclosed area.
- The total net area of all openings must be at least **one (1) square inch for each square foot** of enclosed area.
- The bottom of all required openings shall be no higher than **one foot** above the adjacent grade at each opening.
- Openings may be equipped with screens, louvers, or other **"automatic"** coverings or devices, provided they permit the automatic flow of floodwaters in **both** directions.



Net area?

Is this flood opening code compliant?

*Non-compliant*

The image shows a close-up of a building's exterior wall. The wall is covered in light-colored, horizontal siding. A rectangular, louvered vent is mounted on the wall. Below the vent, there is a large, rectangular area filled with light-colored, rounded stones, possibly for drainage or landscaping. The text "Non-compliant" is overlaid in red, italicized font across the bottom of the image.

*Non-compliant*

Within 1 foot of grade?







This is complaint





This is complaint





**Plexiglas cover. This is a violation!!**





**Spray foam insulation. This is a violation!!**



# Engineered Openings/Vents

## Plastic – No Rust or Rot Crawspace Flood Vent for Homes (New Construction & Replacement)

Easy Access • Modular Use • Can Be Painted

Model Number	Opening Sizes (HxW)	Non Eng. (Sq. In.)	Eng. (Sq. In.)	Net-Free Air (Sq. In.)
D0816	8" X 16"	120	230	95
D1220	12" X 20"	240	425	175
D1232	12" X 32"	380	705	290
D1616	16" X 16"	255	485	200
D1624	16" X 24"	380	695	285
D1632	16" X 32"	510	935	385
D2032	20" X 32"	640	1,225	505
D2424	24" X 24"	575	1,065	435
D2436	24" X 36"	860	1,620	665



### Flood Vent (No Cover)

One-piece ventplate with easy to insert vermin screen and fixed louver. Made of durable PVC/ABS plastic (no rust or rot) with a UV retardant treatment.

FEMA compliant. No cover to allow the automatic entry and exit of floodwaters.

Quick and easy to install.



**Crawl Space Door Systems**  
INCORPORATED  
Plastic Crawspace Doors & Vents  
Plastic Crawspace Louvers/Screens  
Plastic FEMA Flood Vents

3700 Shore Drive, Virginia Beach, VA 23455  
757.363.0005 • 1.800.230.9598 • www.crawspacedoors.com

**N+C**  
**DPS**  
DEPARTMENT OF PUBLIC SAFETY

	16" x 16"	16" x 24"	16" x 32"	20" x 32"	24" x 24"	24" x 36"
D1616	120	255	510	640	575	860
D1624	240	380	705	860	695	1,065
D1632	380	510	935	1,225	1,065	1,620
D2032	510	695	1,225	1,620		
D2424	695	1,065	1,620			
D2436	1,065	1,620				

#### Installation Limitations and Instructions

Each individual opening, and any louvers, screens, or other covers, shall be designed to allow automatic entry and exit of floodwaters during design flood or lesser flood conditions; there shall be a minimum of two different sides of each enclosed area; if a structure has more than one enclosed area below the DFE, each area shall have openings; openings shall not be less than 3 in. in any direction in the plane of the wall, the bottom of each required opening shall be no more than 1 ft above the adjacent ground level; the difference between the exterior floodwater level shall not exceed 1 ft; in the absence of reliable data on the rates of rise and fall, assume a minimum rate of rise and fall of 5 ft/h.

Signature: *Richard H. P.C.*  
Title: **PRESIDENT, ROUSE ENGINEERING P.C.**  
Type of License: **PROFESSIONAL ENGINEER**  
License Number: **24740**



## SMART VENT



### Flood Openings (TB 1 – August 2008)

100 LOUVER, Patent No. US 5,883,042, dated December 16, 2008 and owned by and sized in accordance with Federal Emergency Management Agency's National Flood Insurance Program, Technical Bulletin (TB) 1-August 2008 will allow floodwaters to enter and exit buildings on exterior walls by allowing for entry and exit of floodwater during floods up to

Engineered, Net-Free Air and Engineered Opening size for each model and size of the opening is listed in the table below. The Engineered size opening calculation was performed in accordance with FEMA's Flood Resistance Design and Construction. I measured the opening in the Foundation Walls for Buildings Located in Special Flood Hazard Areas in accordance with ASCE/SEI 24-05, Flood Resistance Design and Construction. I measured the opening to determine the Non-Engineered and Net-Free Air opening size for each model. Aug 2008 to determine the Engineered opening size for each model. I used the required (in2); 0.033 = coefficient corresponding to a factor of safety of 5.0 (in2 - 1.22) rectangular, long axis horizontal, short axis vertical unobstructed during design flood; R = 5 ft/hr worst case rate of rise and fall; and A<sub>0</sub> = 1 ft<sup>2</sup>.

$$0.033 [1/0.40] 5 = .4125 \text{ in}^2$$

$$D0816: = 95 / .4125 = 230$$

Engineered (Sq. In.)	Net-Free Air (Sq. In.)	Engineered (Sq. In.)
120	95	230
240	175	425
380	290	705
510	485	935
640	505	1,225
575	435	1,065
860	665	1,620

**Smart VENT**  
877-441-8368  
www.smartvent.com

### DETAIL DIAGRAM MODEL 1540-520 FLOOD VENT INSULATED

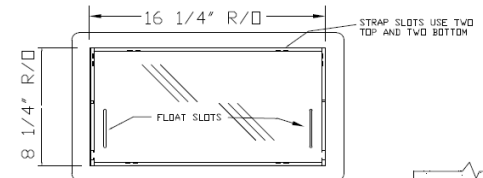


FIGURE 1  
Front View

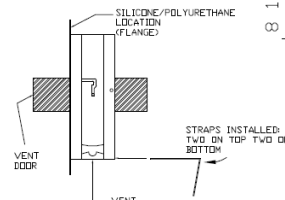


FIGURE 2  
Side View

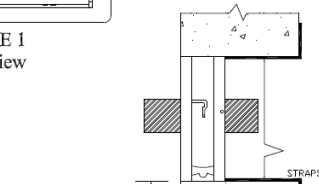


FIGURE 3  
Side View

STRAP DETAIL.  
TEETH MUST CLICK IN TIGHT TO INSURE SECURE INSTALLATION.



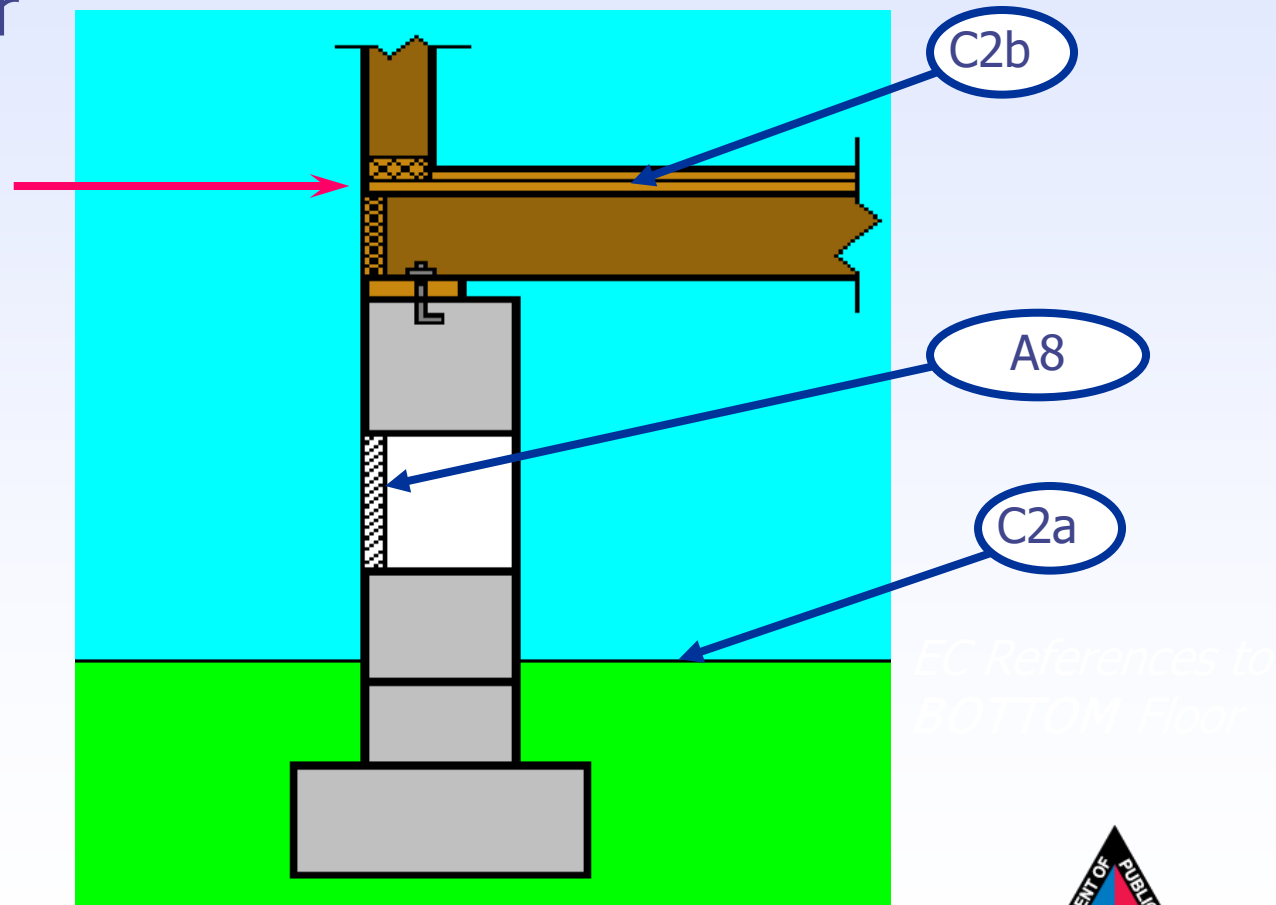
TELEPHONE: 800-441-8368 FAX: 800-441-8368 WWW: www.smartvent.com	SMART VENT 877-441-8368 www.smartvent.com	SMART VENT Foundation Flood Vents 450 Andover Dr., Suite 5B Princeton, NJ 08540
USE: A	DWG NO: 1540-520	DATE: 8-10-09
SHEET 1 OF 2		

# Flood Proofing (Non-residential Only)



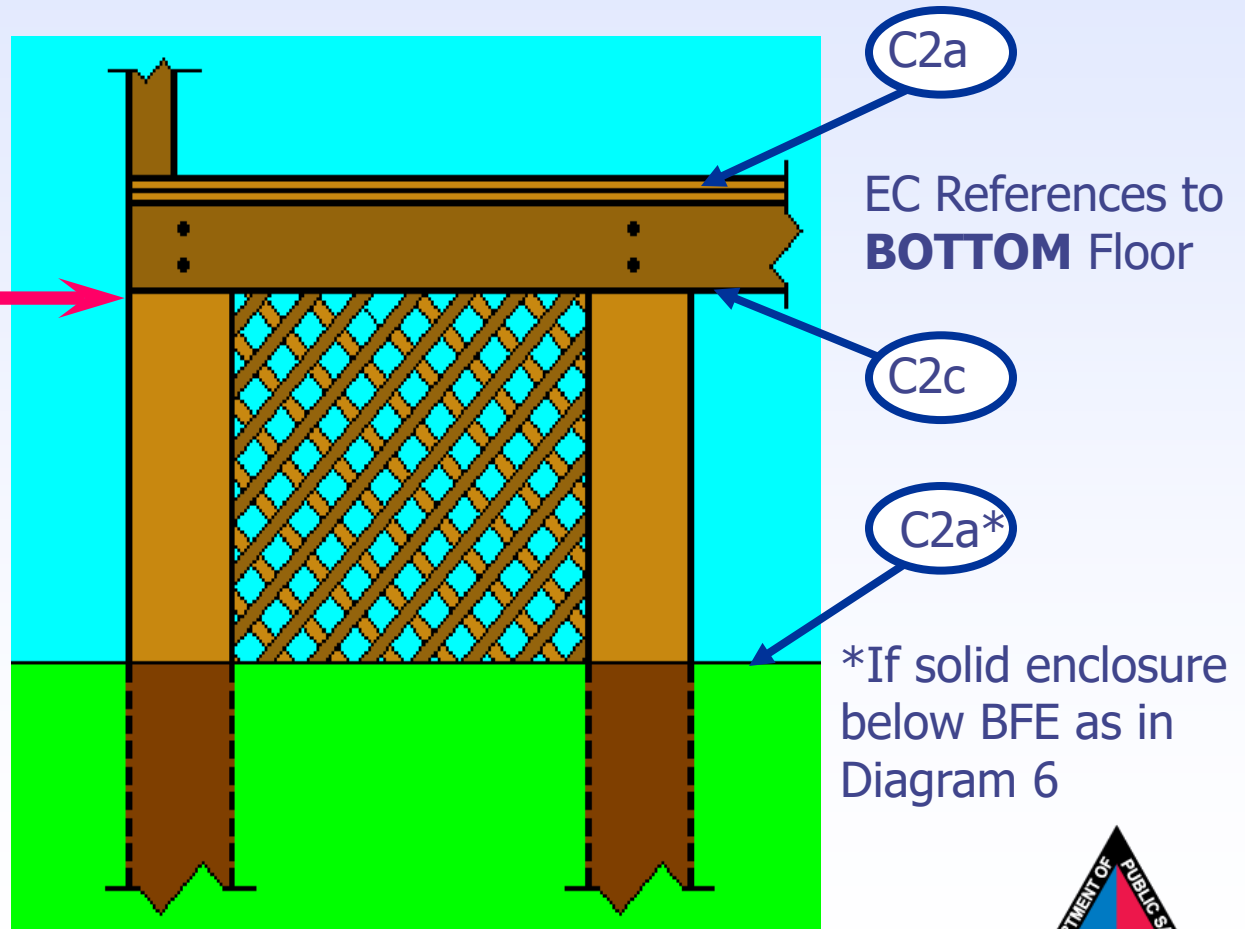
# Lowest Floor in ZONE A, AE, AH, & AO

The lowest floor is measured at the top of the sub-floor, slab or grade for regulatory & flood insurance purposes



# Lowest Floor in ZONE V & VE

Bottom of the lowest horizontal structural member supporting the lowest floor





# Regulatory Flood Protection Elevation (RFPE)

- Base Flood Elevation PLUS Freeboard (BFE + Freeboard)
- Freeboard – the elevation required by a local jurisdiction above the base flood elevation
- Higher standard adopted by the local jurisdiction
  - Higher level of protection for structures
  - Community Rating System (CRS) Points = increased flood insurance discounts (in the SFHA and out)

Example: BFE of 9' + 2' local freeboard =  
RFPE of 11'

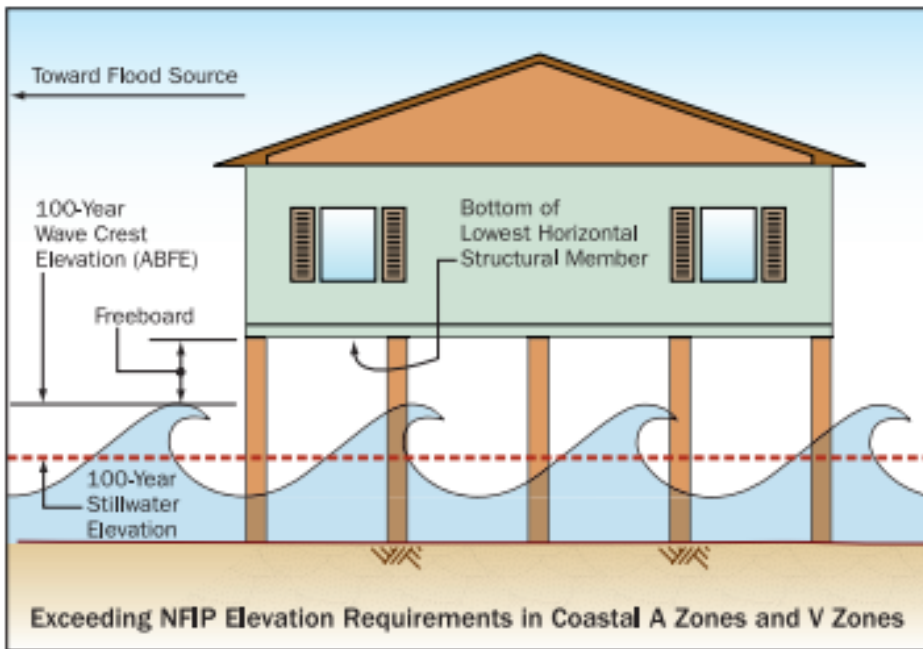


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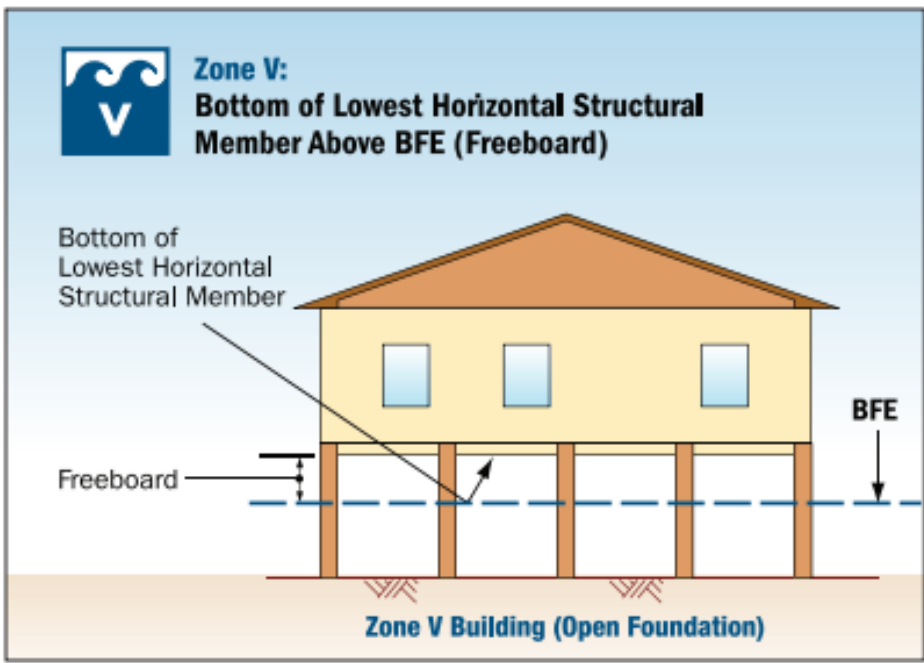








**Figure 7. Recommended construction in Coastal A zones and V zones.**



# Bolivar Peninsula, TX 2008



**Figure 2. Bolivar Peninsula, TX, V-zone house constructed with the lowest floor (bottom of floor beam) at the BFE (dashed line). The estimated wave crest level during Ike (solid line) was 3 to 4' above the BFE at this location.**



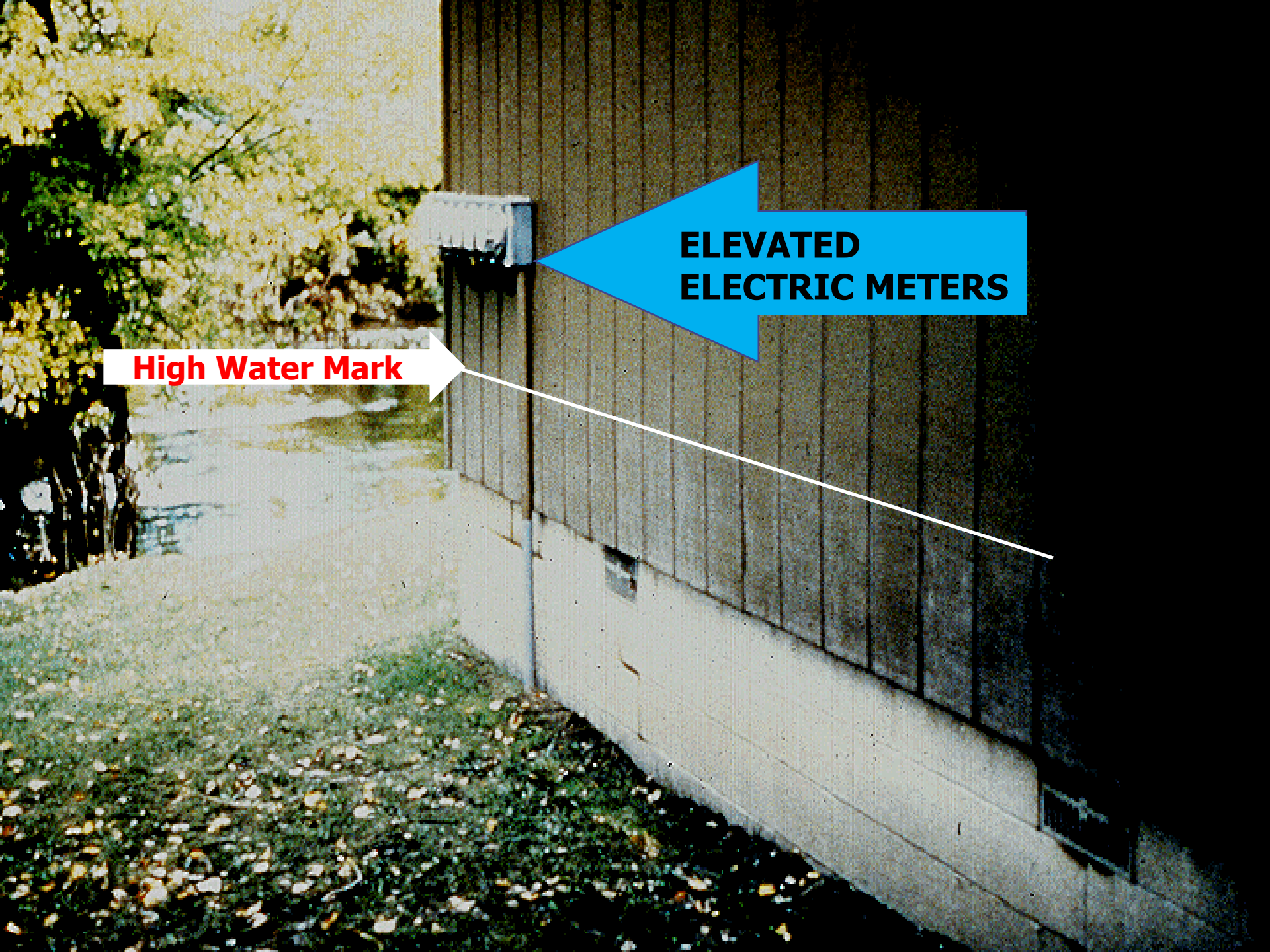


**ELEVATED  
AIR CONDITIONER**





**ELEVATED  
WATER HEATER**



**ELEVATED  
ELECTRIC METERS**

**High Water Mark**





Properly anchored propane tank



# Question????????????????????

If you need flood zone/risk information  
for a property, where do you  
personally go to find that information?



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# Online Resources

ReadyNC – <http://readync.org>

Flood.NC.gov – <http://flood.nc.gov>

FRIS – <http://fris.nc.gov>

FIMAN – <http://fiman.nc.gov>

FloodSmart - <http://floodsmart.gov>

FEMA – <http://fema.gov>



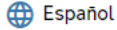
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# ReadyNC.org

[Home](#) [Plan And Prepare ▾](#) [Stay Informed ▾](#) [Recover And Rebuild ▾](#) [Get Involved ▾](#) [News](#)

## Insurance

 Español

One of the best things for homeowners, renters and business owners against any type of natural disaster is a good insurance policy. Be aware that homeowner's insurance does not cover flood damage. You **need** a separate flood insurance policy. Homeowners, renters and business owners can buy flood insurance even if they reside in a high, low or moderate risk area. Policies are available for both residential and commercial buildings as long as the community joins in the National Flood Insurance Program.

For more [North Carolina Insurance Information](#)  , call 800-546-5664 or 919-807-6750.

For information about the National Flood Insurance Program, call 888-379-9531.

### Plan and Prepare

- [Evacuating](#)
- [Functional Needs](#)
- [Get a Kit](#)
- [Hurricane Guide](#)
- Insurance**
- [Make a Plan](#)
- [Pets and Service Animals](#)
- [Protect Your Home](#)
- [Seniors](#)
- [Vital Records](#)



# Flood.NC.gov

flood.NC.gov

Go to FRIS site

Go to FIMAN site

Home Property Risk Mapping Program Find a Document Events Floodplain Management LOMC Mitigation Flood Warning Industries

Do You Know  
Your Flood Risk?

Search an address

Use my current location

## Property Risk

Learn about flood risk at a specific address, to include flood hazard, structural and content impacts, potential insurance rates, mitigation opportunities and the location of flood warning sites near you.

Learn More



Real Estate Agent



Insurance Agent



Professional Engineer/Surveyor



Community Official



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# Flood.NC.gov

flood.NC.gov

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Property Risk  
ESTIMATOR



Calculate Risk Level



Insurance Costs  
ESTIMATOR



Calculate Premiums



Events & Training

[See More >](#)

## Real Estate Agents

### For Agents Who Sell Real-Estate in a Flood-Hazard Area

*"Potential buyers want to know how to mitigate flood hazards on property within the flood plain."*

#### Important Links:

[NC Flood Risk Information System](#)  
[FEMA Map Service Center](#)  
[North Carolina NFIP Updates](#)  
[Find Meetings & Training](#)



[More Answers from the Quick Guide](#)

[See All >](#)

## Frequently Asked Questions

- ? How do I determine if the structure is in the SFHA?  
Check the Flood Risk Information System Website: [FRIS](#)
- ? Will an elevation certificate be required?  
A Post-FIRM structure should have an elevation certificate completed at the time of construction. An EC is required for rating the flood insurance policy.
- ? Do Pre-FIRM structures require an elevation certificate?



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# Flood Risk Information System



Am I at risk of flooding?

General Public 

Enter all or part of your address and click GO.

Address, City, or ZIP

GO

OR select a county

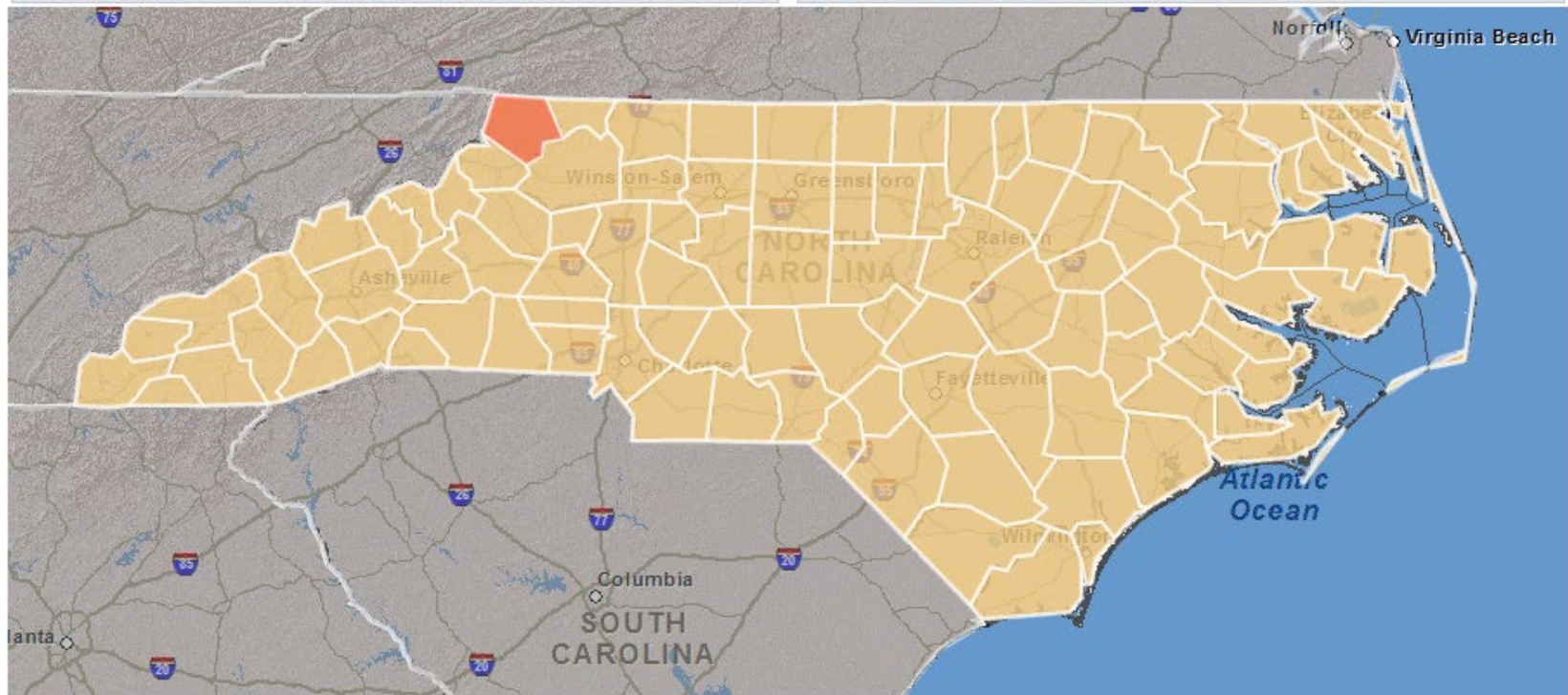
County  Ashe, North Carolina



## Benefits of Floodplain Mapping

Floods are among the most frequent and costly natural disasters in terms of human hardship and economic loss. North Carolina's Digital Flood Insurance Rate Maps (DFIRM) enable business leaders and residents to more accurately predict flood hazards and prepare for flood risks.

Go to [flood.nc.gov](http://flood.nc.gov) for more information.





## FRIS



Effective ▾

**i** Click the map to view information.

Flood Zone: 0.2% Annual Chance Flood Hazard 

Base Flood Elevation: Not available for this area.

County: Edgecombe

**Jurisdiction:** Town of Tarboro

Panel: 4738

Effective Date: 11/03/04

Longitude: -77.52971

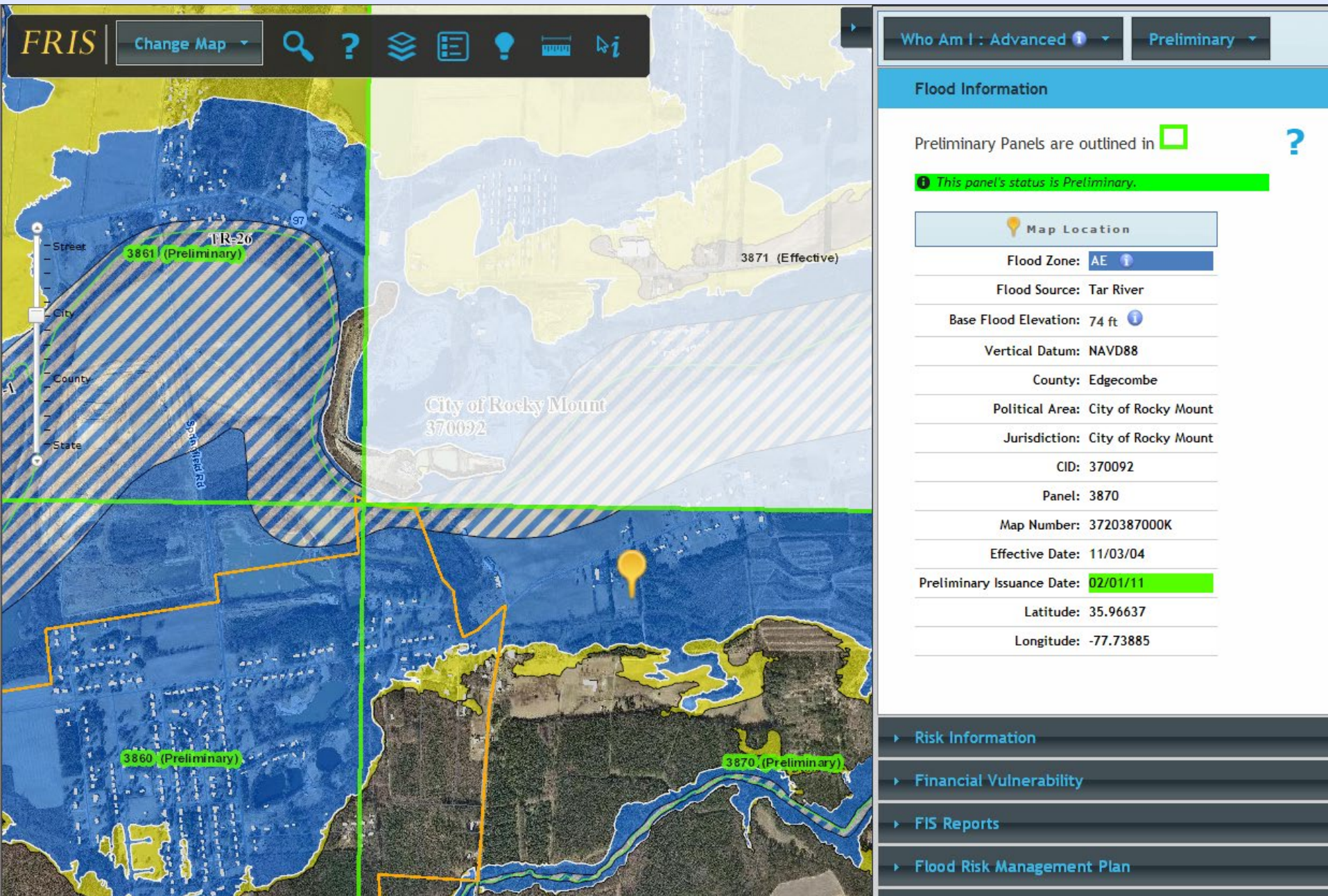
## Flood Zones



0.2 PCT ANNUAL CHANCE  
FLOOD HAZARD

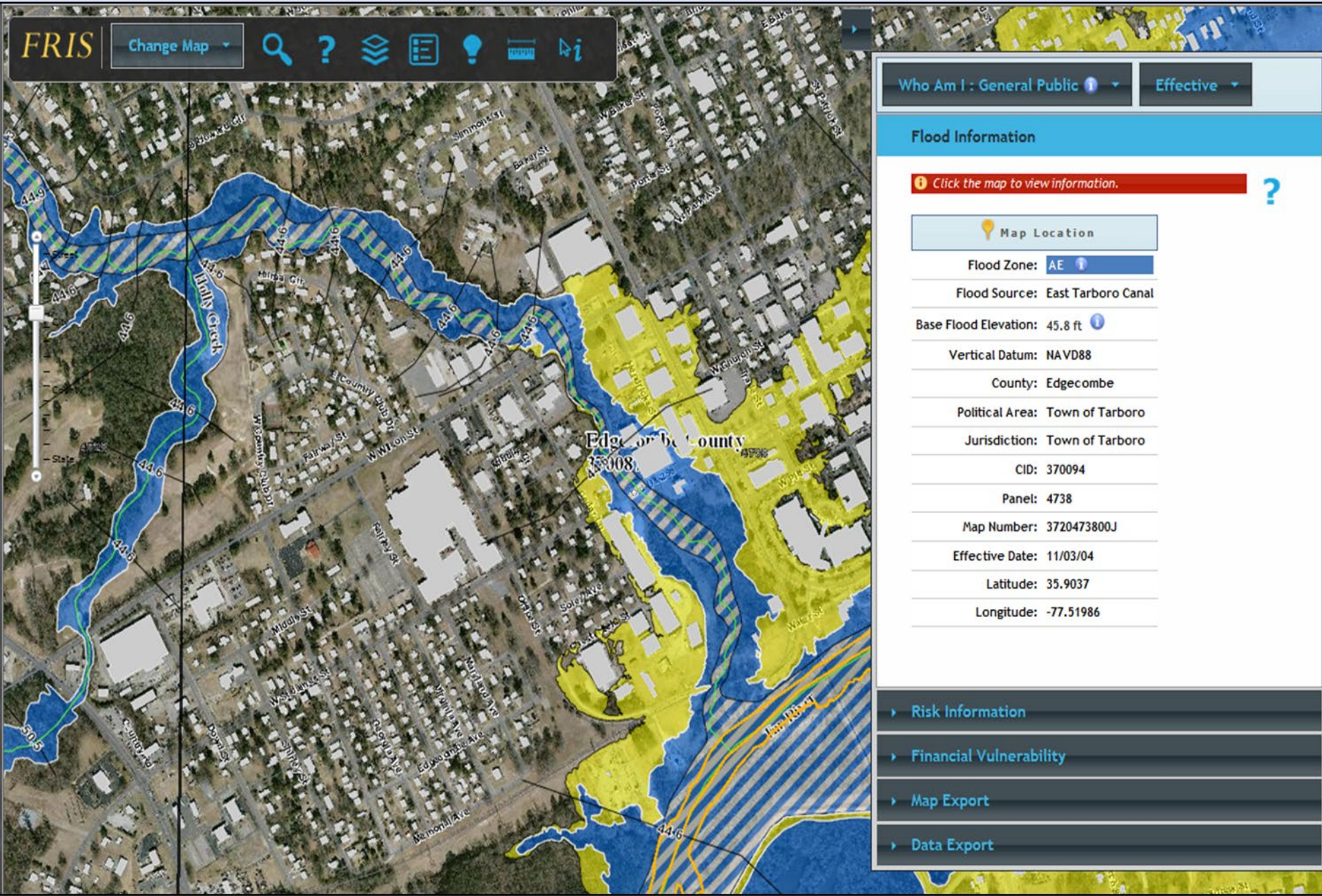


# FRIS Preliminary DFIRM



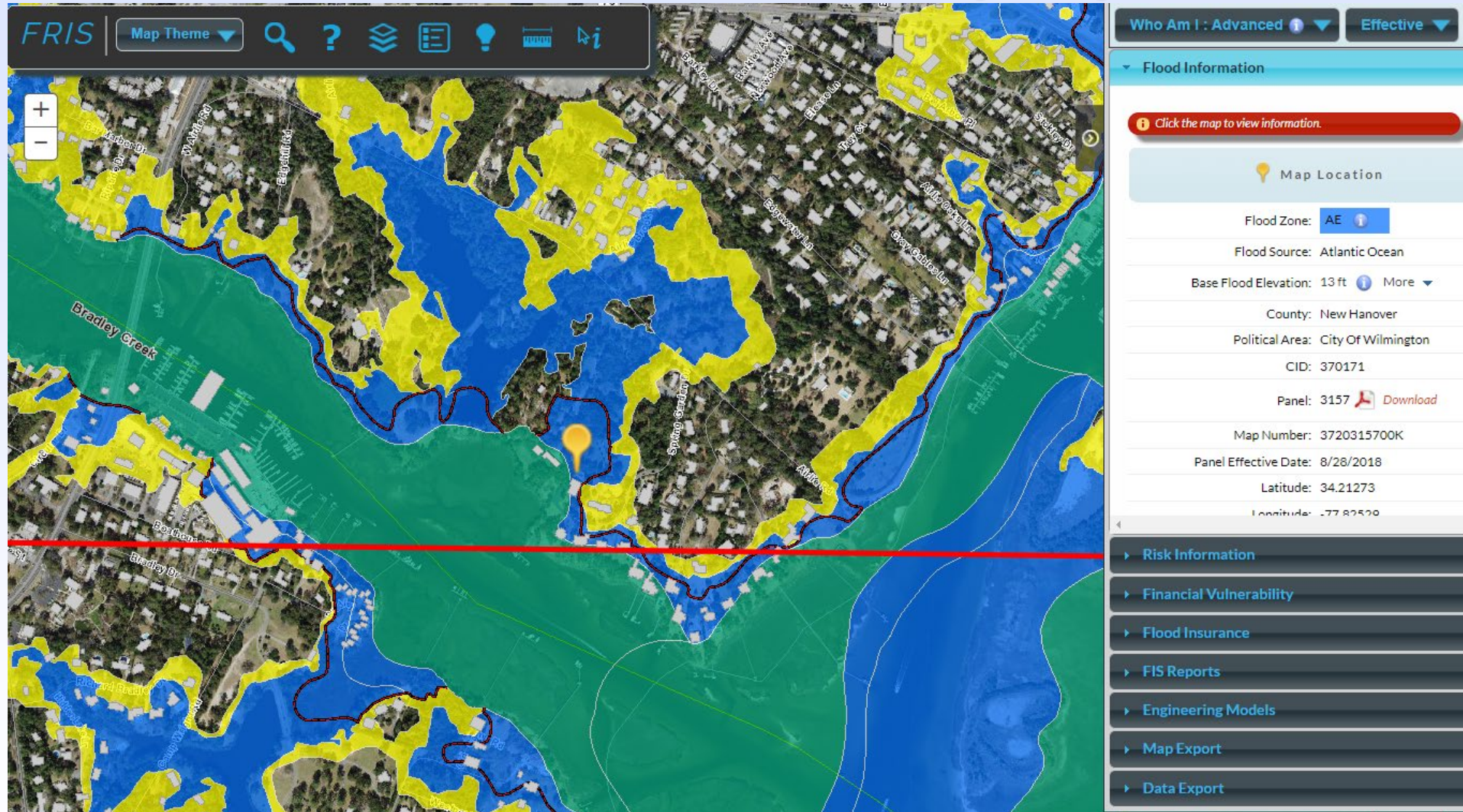


# FRIS DFIRM Display



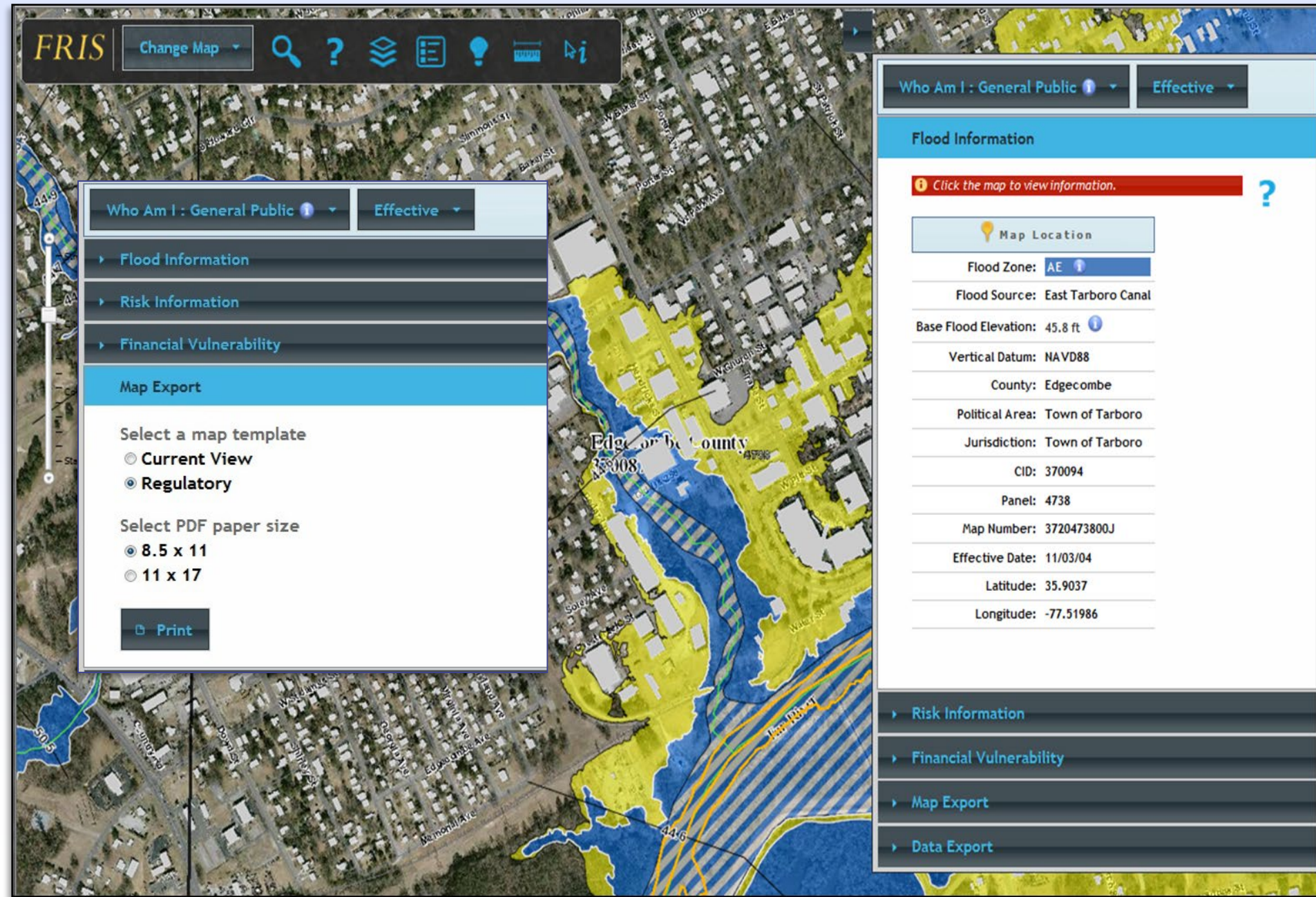


# FRIS DFIRM Display





# FRIS Display View/Print/Map Export





# FIMAN



**FIMAN** Flood Inundation Mapping  
and Alert Network

[ABOUT](#) [MAP](#) [SUBSCRIBE](#) [UNSUBSCRIBE](#) [ACCOUNT](#) [LOG OUT](#)

2

Search for location ...

## Gage Level

### Gage Symbols

- Current Condition
- Forecast Peak Condition

### Risk Ratings

- Normal
- Monitor
- Minor Flooding
- Moderate Flooding
- Major Flooding
- Not Risk Rated
- Out of Service

### Trend

- Rising
- Falling
- Constant

## Bogue Sound at Beaufort, NC - Pivers Island

Last updated: Jul 28, 2020 at 2:54 PM Gage datum: -2.1ft NAVD88 Site ID: 8656483  
Owner: NOAA

Elevation: 1.9 ft  
NAVD 88

Stream Elevation

Rising

Peak Stage: 2.1 ft  
7/30 5:00 PM  
No Data Available

Forecasted Peak

No Damages Assessed

Damages



Impact



Photos

Report

Showing 372 Gages

Show All Gages

# FloodSmart.gov

Visit FloodSmart for Agents



[Buying a Policy](#) ▾

[Renewing a Policy](#) ▾

[Flood Risks and Costs](#) ▾

[Before and After a Flood](#) ▾

[Flood Zones and Maps](#) ▾

## This is an official site of the National Flood Insurance Program.

The NFIP offers flood insurance to help you protect the life you've built and recover more quickly after a flood.

[Get Coverage](#)



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# Highlights of RISK Rating 2.0



# RISK RATING 2.0

- Fundamental Change in Policy Rating
- Incorporate Multiple Characteristics
  - Distance to the coast, river, lake, or other flooding source
  - Types of flooding
  - Cost of rebuilding (fairer rates to owners of lower-value homes)
  - Structure characteristics (vents, Foundation type, etc)
- Fully Effective
  - April 1, 2022: All policies



# RISK RATING 2.0

## ■ Data Sources

- FEMA (mapping data, policy and claim data)
- Other Federal Government Agencies (USGS, NOAA, USACE)
- Third party sources (Commercially-available structural and replacement cost data and catastrophe flood models)

## ■ Credits for mitigation actions

- Install flood openings
- Elevation on posts, piles, or piers – available in all zones including X
- Elevate utilities, machinery, and equipment above the lowest floor



# RISK RATING 2.0

## 1. Sticking Around

- HFIAA (2014) rate increases still in place
- CRS Discounts
- Submit-for-Rate
- Elevation Certificates
- Mandatory Purchase Requirement

## 2. Eliminating (more or less)

- Pre-FIRM rates
- Grandfathering rates
- Preferred Risk Policy rates

## 3. Prior Claim History

- Will be considered

<https://www.fema.gov/flood-insurance-reform>

# Hurricane Dorian - 2019



# Contact Information

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**NFIP Engineer**  
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[Jintao.Wen@ncdps.gov](mailto:Jintao.Wen@ncdps.gov)



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# Questions?

## Thank You for having me!



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