NORTH CAROLINA
Department of Transportation

BridgeWatch, FIMAN-T, FIMAN-T Surge

METTS East

March 30th, 2022

Three Flood Awareness Products from Hydraulics Unit Will Be Available in the Future for Direct Use by Division Personnel

1) BridgeWatch

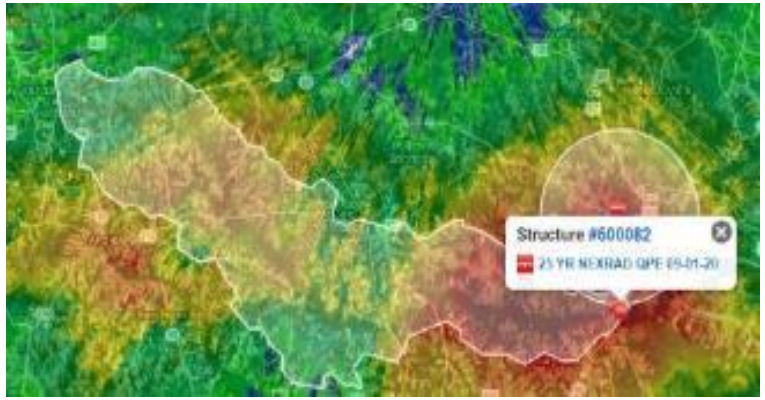
2) FIMAN-T

3) FIMAN-T Surge

How BridgeWatch Works to Send Alerts

- 450 Gauged Bridges with Pre-Set Elevations Triggering:
  - Overtopping Alerts
  - Low Chord Alerts (Bottom of Girder)
  - Freeboard Alerts (2ft Below Girder)

- Rainfall Alerts (25-year Storm and Greater) from Weather Radar; About 7000 Bridges

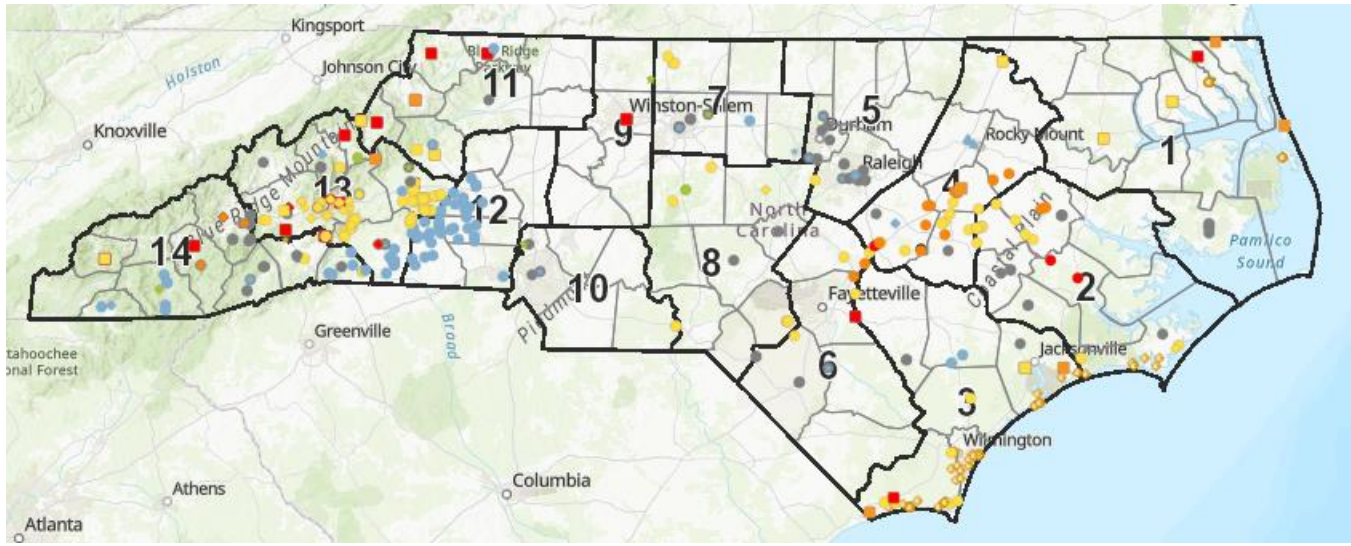


BridgeWatch Output

1) Flood Alerts Direct to Text or Email

2) Flood Alerts Displayed on Online Map

3) Summary of Alerts in Excel Format



[External] BridgeWatch - Device Alert

NCBridgeWatch@ncdot.bridgewatch.us
To Smith, Charles R

You forwarded this message on 2/24/2022 7:14 AM.
If there are problems with how this message is displayed, click h

CAUTION: External email. Do not click links or open attachments

Structure Overtopping bridges: 780045 (In Rockingham)

NCEM Structure Overtopping
Bridge: 780045
County: Rockingham
Road: SR2282
Stream: DAN RIVER
Lat\Long: 36.485,-79.763
Gage: 30020
Time: 2022-02-24 06:16:01 UTC
Event Value: 49.02
Threshold Exceeded: 45.4
Confirmation:Yes

(USGS Alert) USGS Structure Overtopping Br 990040 (Yancey)@ NC197 & CANE RIVER Lat\long: 35.830,-82.318 Time: 2021-12-03 15:30:00.0 17.77 > 17.06

FIMAN-T and FIMAN

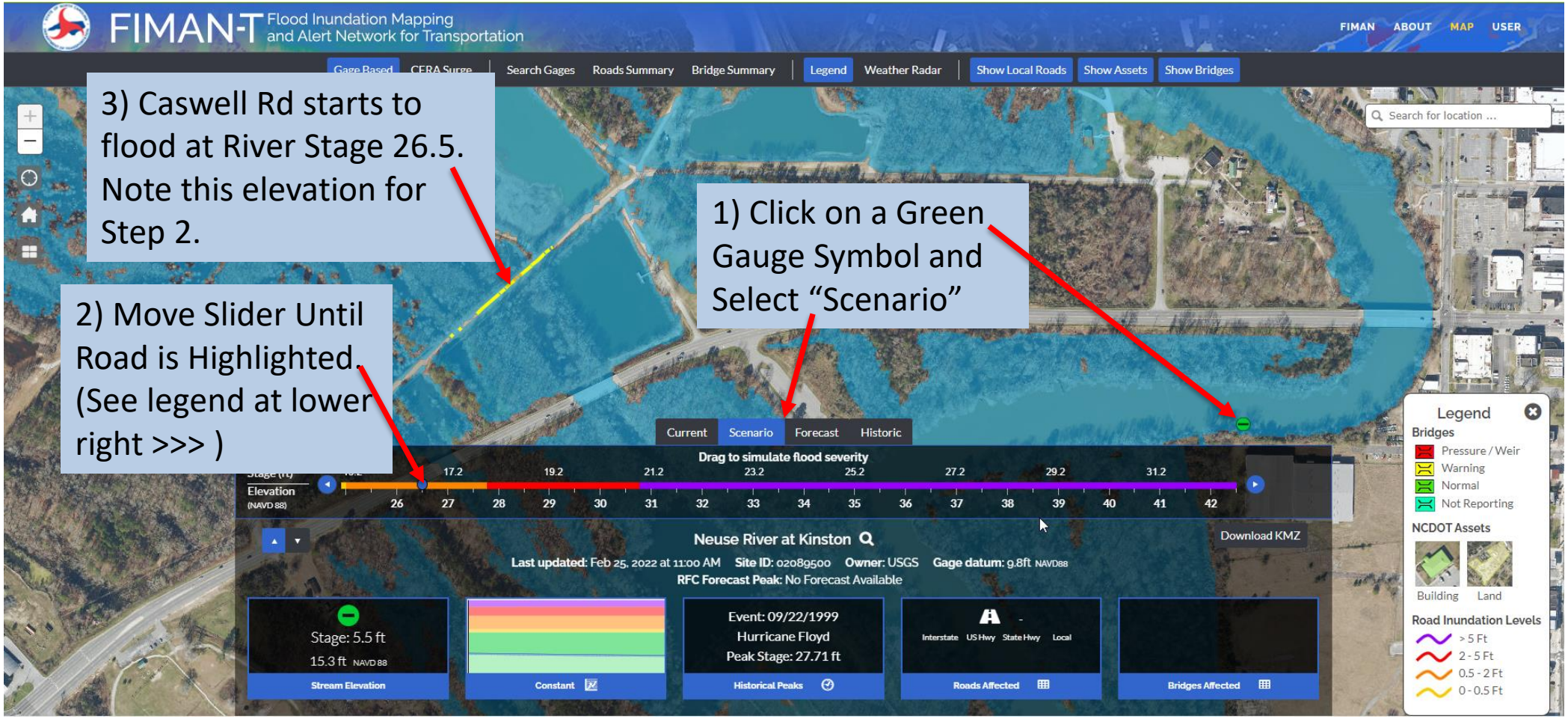
Flood Inundation Mapping and Alert Network for Transportation

Gauges and River Water Surface Models Are Used To Show Current and Forecasted Flooding from Rivers and Coastal Areas

Users will Investigate Roads of Interest, then Sign Up for Pre-Set and Custom Flooding Alerts by Text and Email, Using a Two-Step Process

(Also note that an Excel-based FIMAN-T summary is in development)

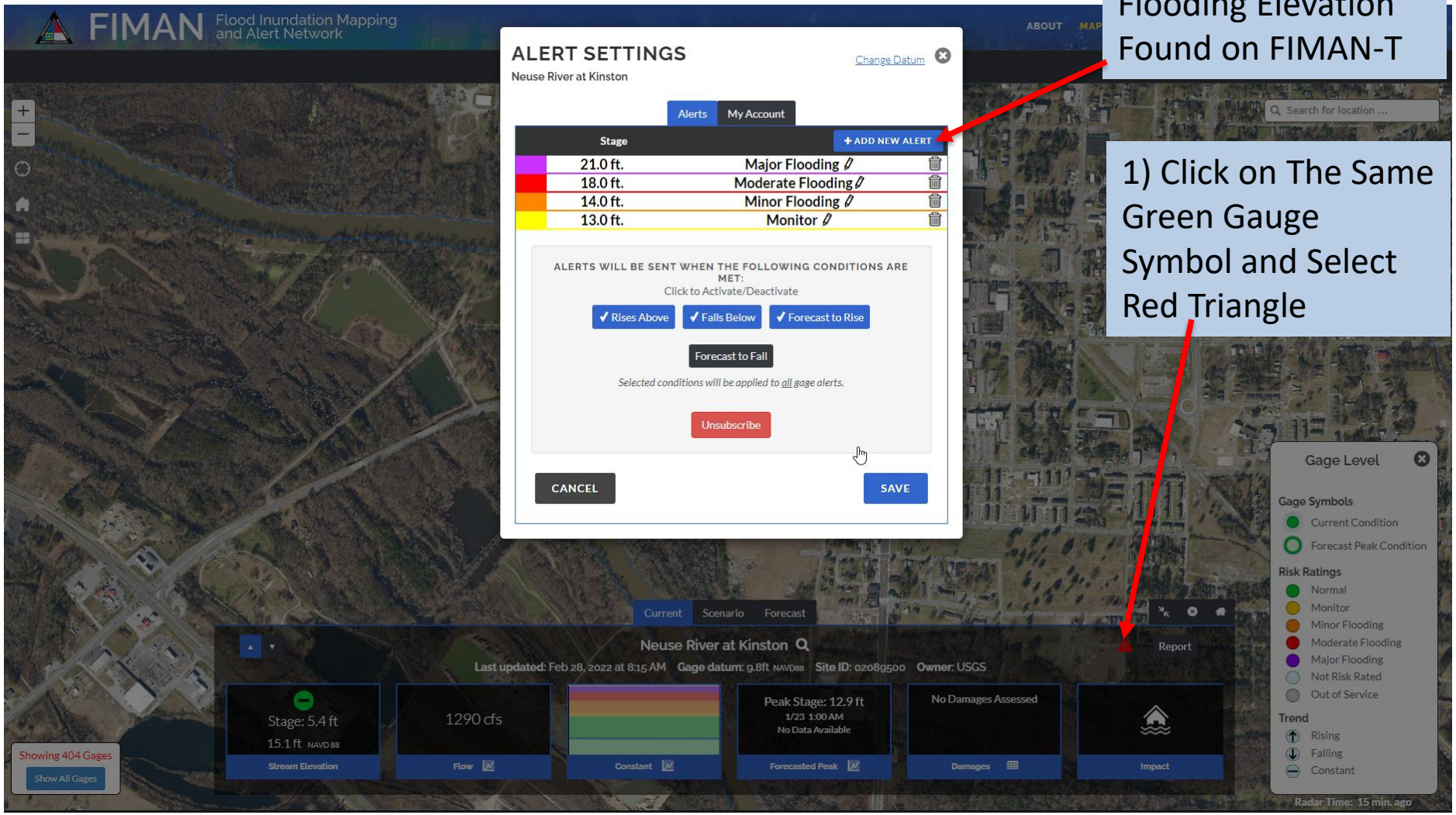
Subscribing to FIMAN Alerts
Step 1 - Start on FIMAN-T Website



Subscribing to FIMAN Alerts
Step 2 – Set Alerts on FIMAN Website

2) Set a Custom Alert at the Road Flooding Elevation Found on FIMAN-T

1) Click on The Same Green Gauge Symbol and Select Red Triangle



FIMAN-T Surge

Road Flooding Forecasts Based On Hurricane Storm Surge

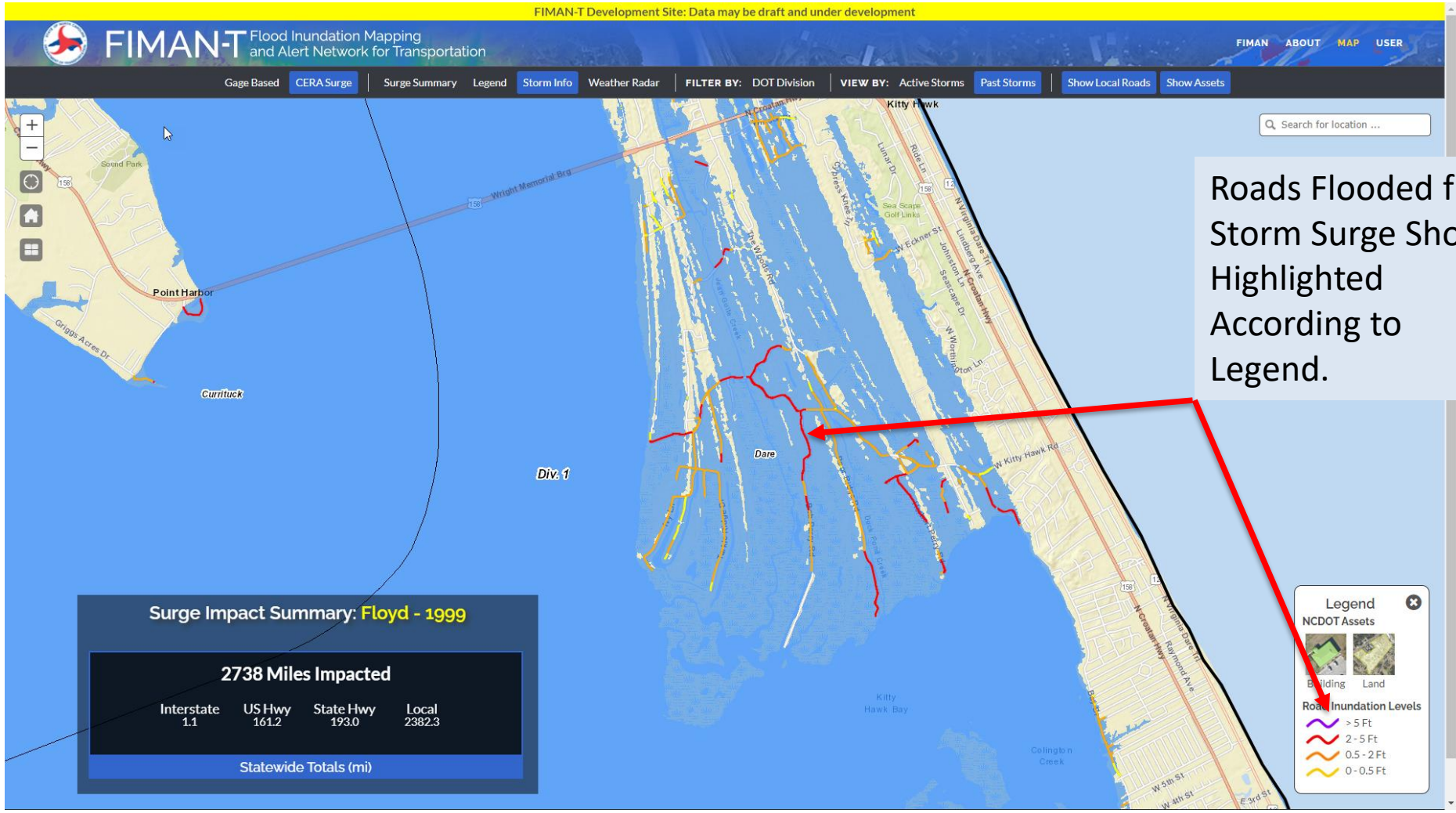
The CERA (Coastal Emergency Risks Assessment) model provides the storm surge water elevation.

CERA Coastal Emergency Risks Assessment
Storm Surge - Wave - Compound Flood Guidance

FIMAN-T Surge imports CERA water elevations and overlays with Road and Bridge LIDAR.

Roads forecast for flooding are highlighted according to the FIMAN-T Surge legend.

FIMAN-T Surge, Predicted Flooding from Floyd (1999)



Hydraulics Flood Warning Tools

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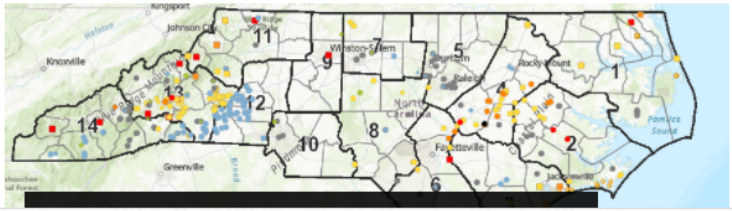
BETA SITE UNDER DEVELOPMENT

BridgeWatch | FIMAN-T & FIMAN | FIMAN-T SURGE

BridgeWatch

Bridgewatch is a real-time bridge flooding warning system that relies on stream gauges and weather radar to indicate when bridges and culverts are near flooding, actively flooding, or weather conditions are favorable for flooding. Users can subscribe to text and/or email alerts, or view flooding statuses on a GIS map. Uses for Bridgewatch include: Closing and Reopening flooded roadways, compiling inspection list for flooded bridges, relief and resupply route finding.

Users wanting to monitor gauges of interest that are not currently triggering alerts should use FIMAN.



BridgeWatch Alert Descriptions

NON-GAUGE ALERTS: SLOSH, NEXRAD, & QPF

Forecast Coastal Storm Surge SLOSH (Watch-Yellow)

SLOSH ALERT IS ISSUED WHEN HURRICANE STORM SURGE HAS A 10% CHANCE OF EXCEEDING BRIDGE LOW CHORD ELEVATIONS. SLOSH ALERTS INDICATE FAVORABLE CONDITIONS FOR FLOODING - NOT THAT FLOODING IS IMMINENT OR OCCURING.

Charles Smith
crsmith1@ncdot.gov

https://ncconnect.sharepoint.com/sites/HydroFloodWarningTools

Additional training planned for June