

FIMAN-T

NCEM & NCDOT's Response Tool for Managing Flood Impacts



Hurricane Matthew and Florence



RESILIENCE?



Road Crossing Failures



FIMAN T Objectives

Leverage Data

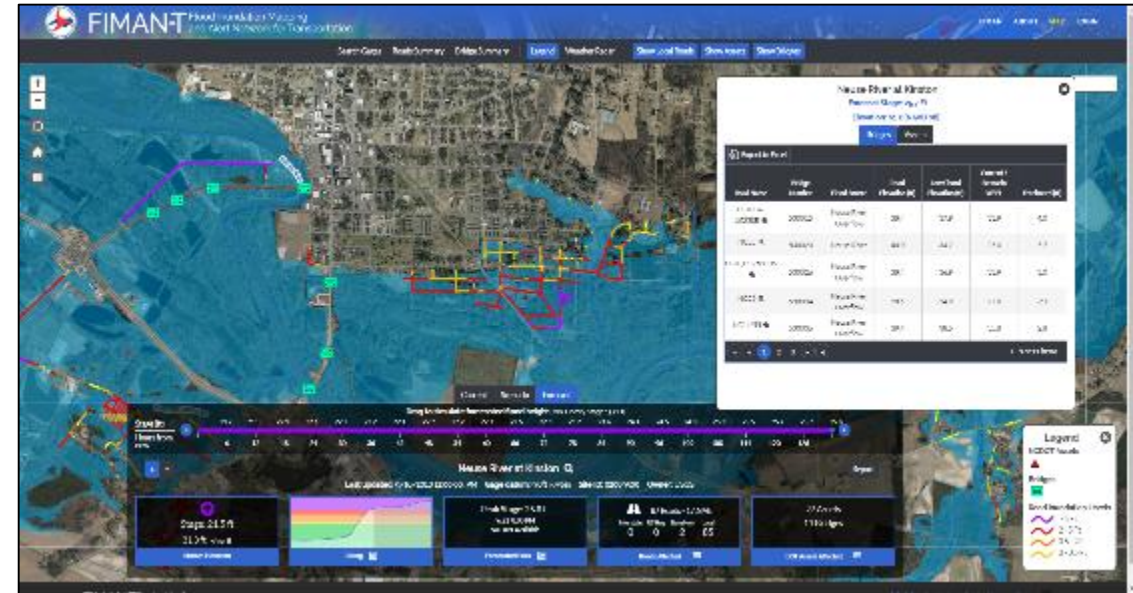
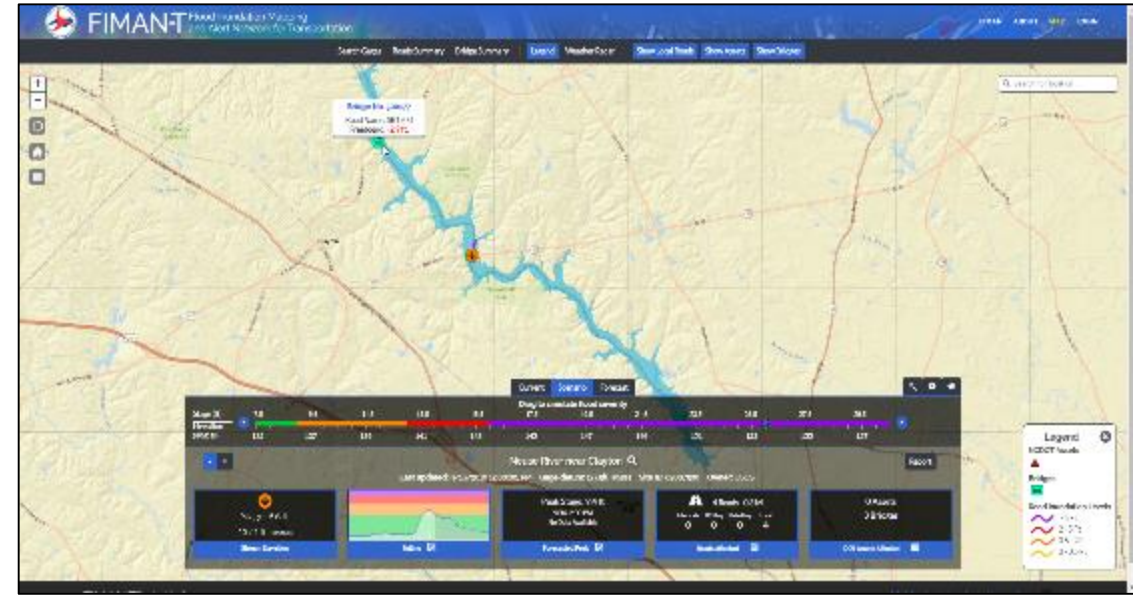
- 3D QL1/2 LIDAR Roadway Data
- FIMAN Infrastructure
- NCDOT Bridge Information Databases
- Existing Flood Inundation Modeling and Mapping
- NCDOT Asset Location

Software Goals

- FIMAN-T Enhancements
- Isolated from FIMAN Production
- Visualization Options for roads, bridges, assets
- New Reporting Tools for EOC

2019 Season Pilot Study

- Neuse River Corridor (Clayton to New Bern)
- Expanded Inundation Libraries
- FIMAN-T Functionality
- Beta = Development Server – not open to public



FIMAN-T



FIMAN



FIMAN Production Database



FIMAN-T Pilot Database

FIMAN-T DATABASE (BETA)

FEATURE CLASSES

S_DOT_ASSETS
OBJECTID
GAGE_ID
ASSET_ID
ASSET_TYPE
ASSET_NAME
DESCRIPTION
SHAPE

S_DOT_HYDCROSSINGS
OBJECTID
BRDG_NBR
FTR_INTRSC
F_CARRIED
BRDG_TYP_NM
COUNTY
ROUTE
RTE_ID
BSIP_BRDG_NBR
DIVISION
FUNC_CLASS
SUPERSTRUC
SUBSTRUCTU
B_LOWCHORDEL
DRAINAGE_AREA
GAGE_ID
DECK_EL
SHAPE

S_ROAD_INUNDATION
OBJECTID
Division
LocCntyCode
RouteClass
RouteName
StreetName
Depth_Cat
Max_Depth
GAGE_ID
Level_ID
UNIQUE_ID
LAT
LONG
AADT_2016
SCEN_ELEV
FEET
SHAPE
Shape_Length

TABLES

L_INUNDATION_HYDCROSSINGS
OBJECTID
BRIDGE_NUMBER
GAGE_ID
LEVEL_ID
B_LOWCHORDEL
LOC_WSEL
FREEBOARD

L_ROAD_INUNDATION_ROLLUP
OBJECTID
GAGE_ID
LEVEL_ID
Depth_Cat
Tot_Count
Tot_Miles
Int_Count
Int_Miles
US_Count
US_Miles
NC_Count
NC_Miles
Local_Count
Local_Miles

FIMAN PRODUCTION DATABASE

(USED TABLES)

FEATURE CLASSES

- S_GAGES_ALL
- S_FLOOD_INUNDATION

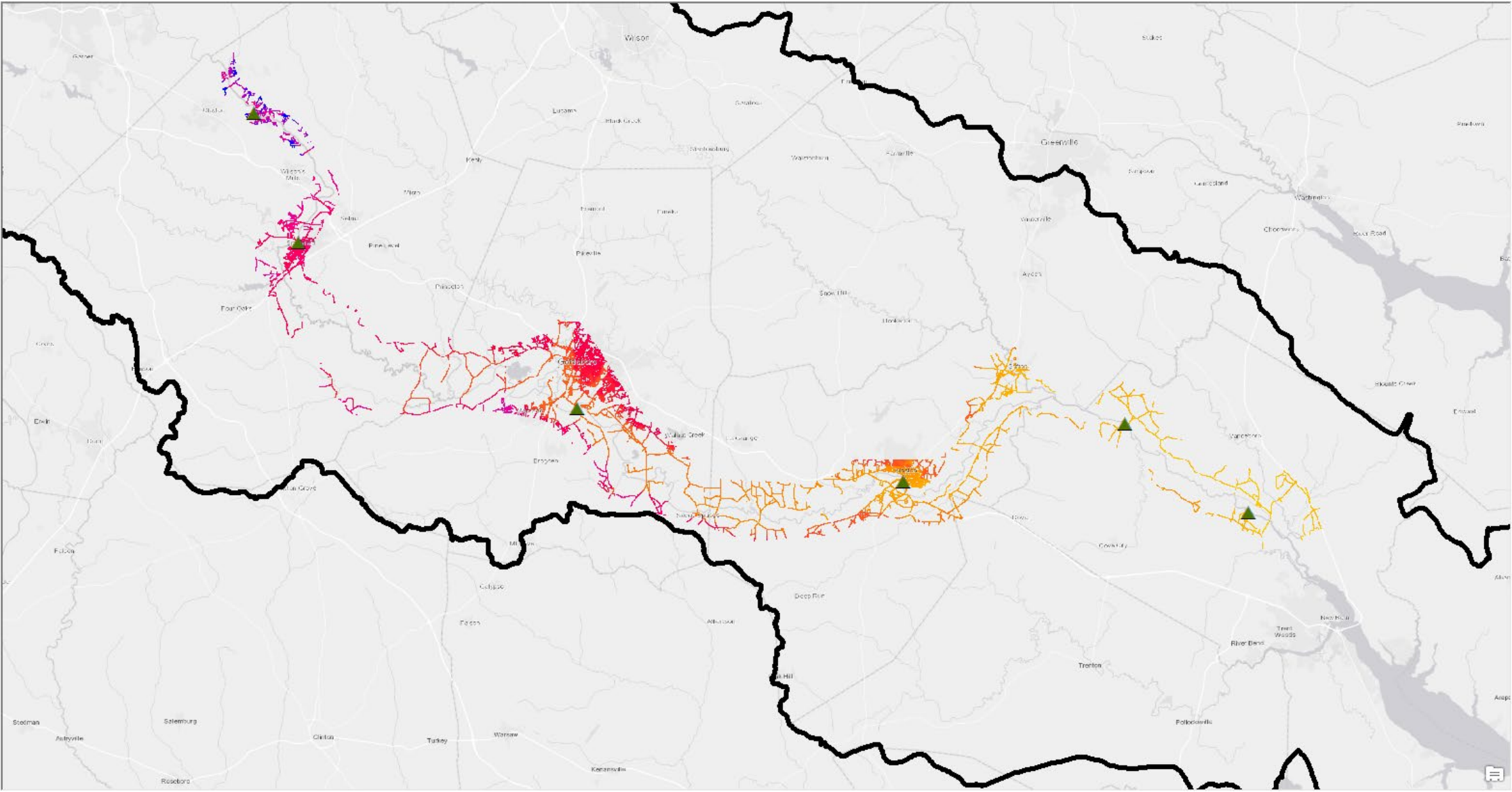
TABLES

- FIMAN_ROVER_LOG
- GAGE_TREND_CALC
- HYDRO_ALL
- HYDRO_FORECAST
- L_IMG_FILE_TYPE
- PIN_IMAGES
- SYMBOL_IMAGES
- TREND_HISTORY

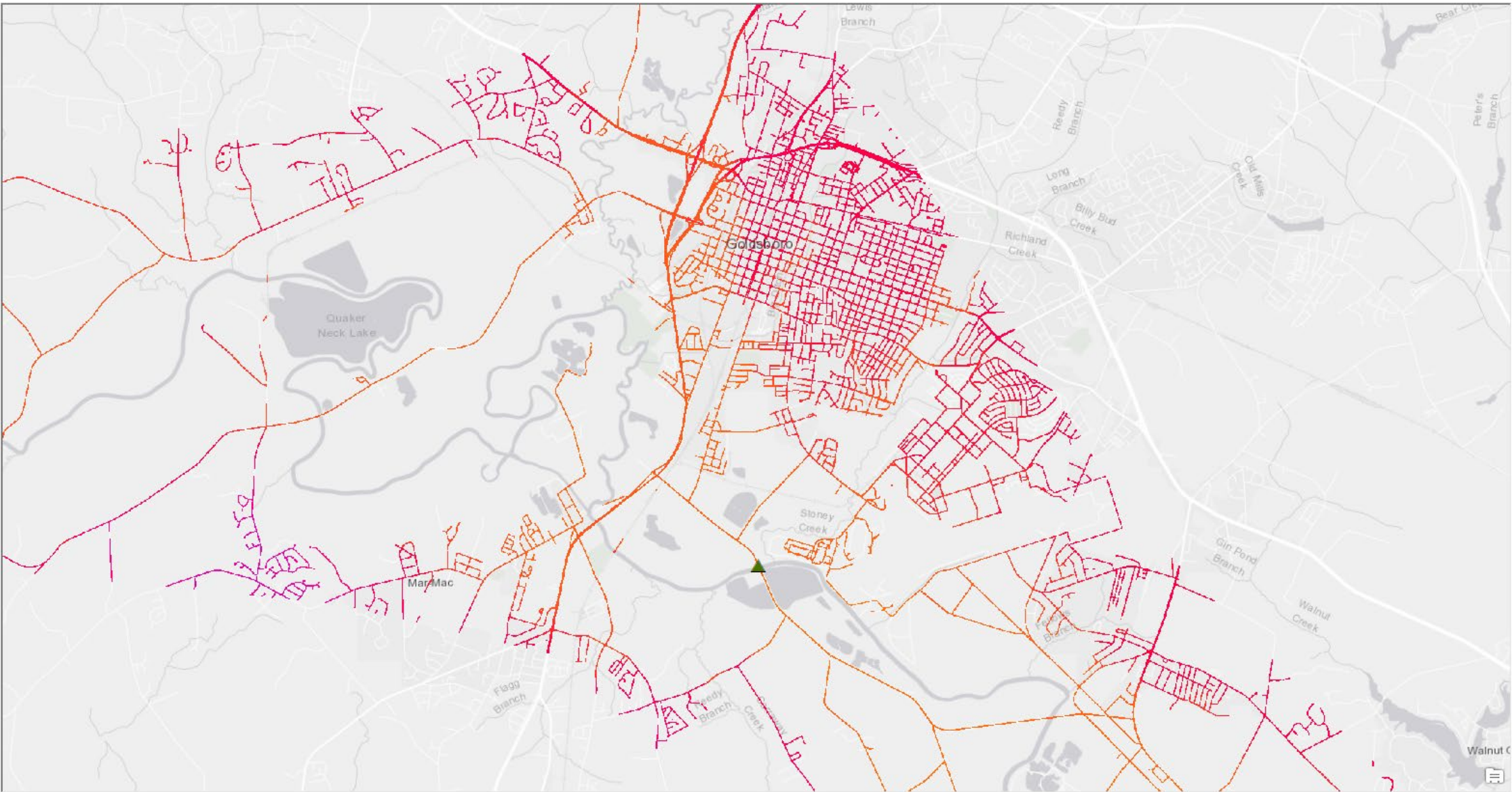
Foundational Data

FROM BUILDINGS (FIMAN) TO TRANSPORTATION INFRASTRUCTURE (FIMAN-T)

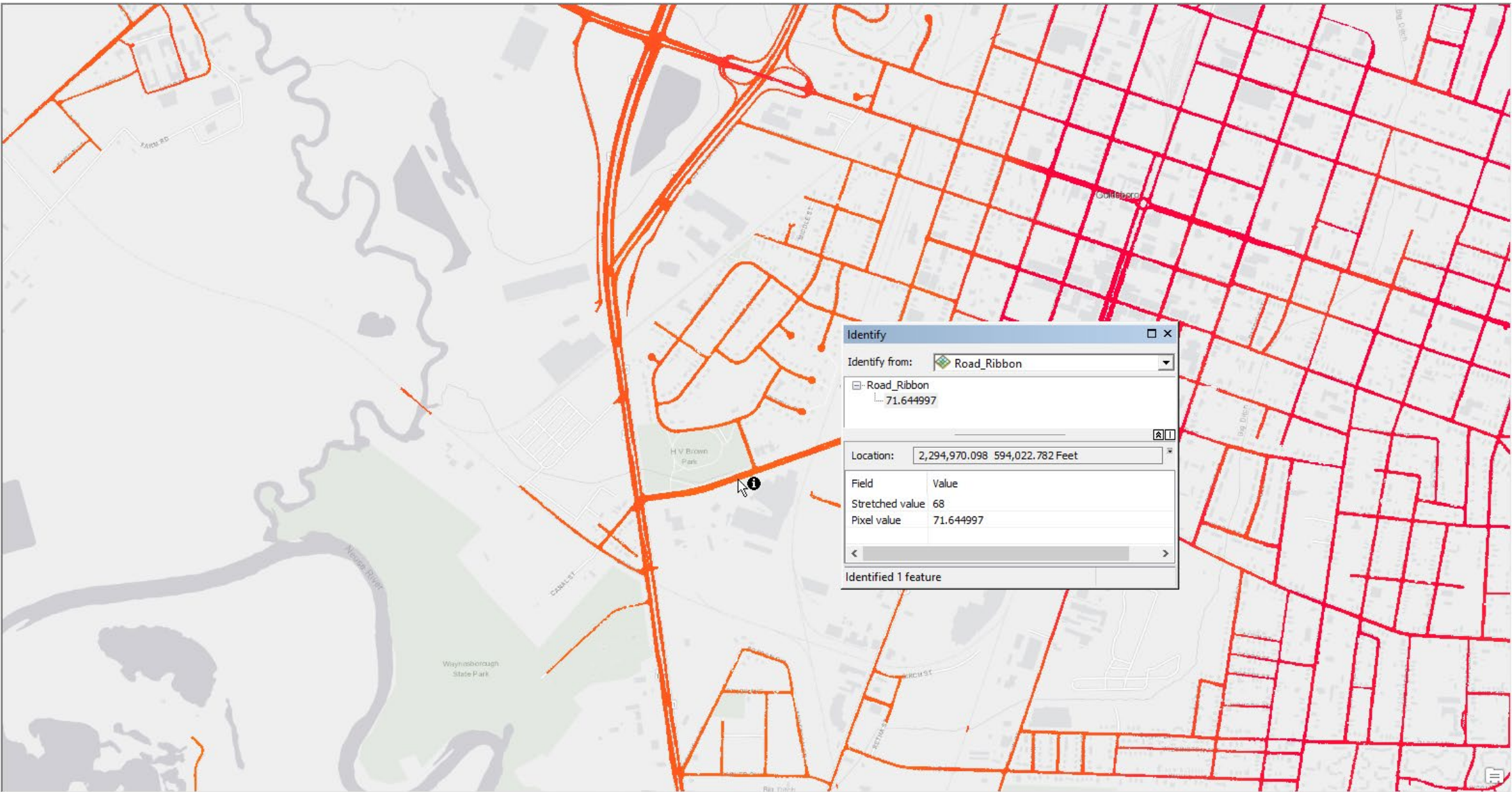
Lidar Derived 3D Road Elevation Grids



Lidar Derived 3D Road Elevation Grids



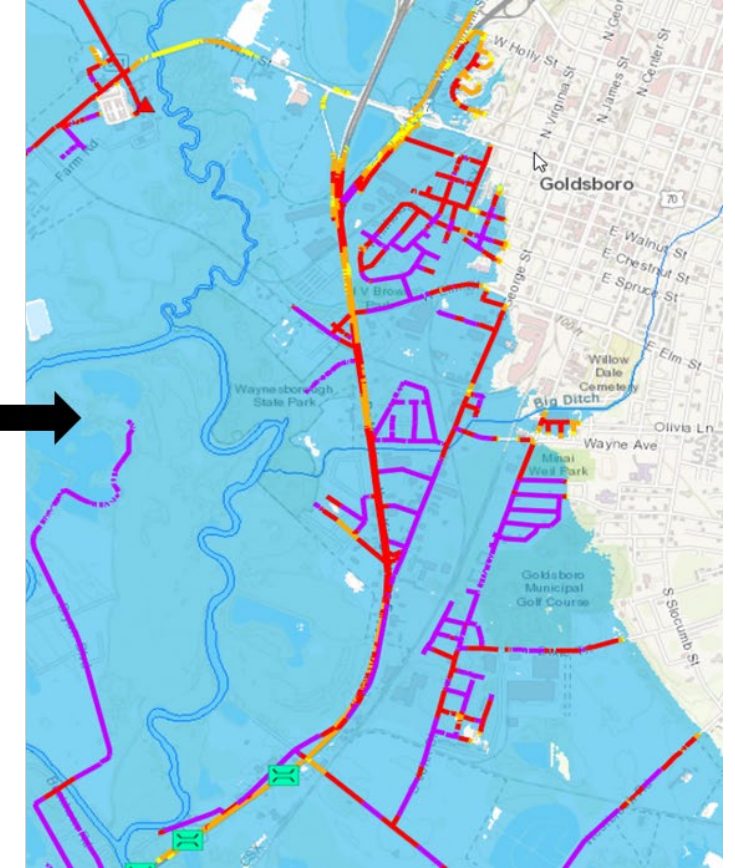
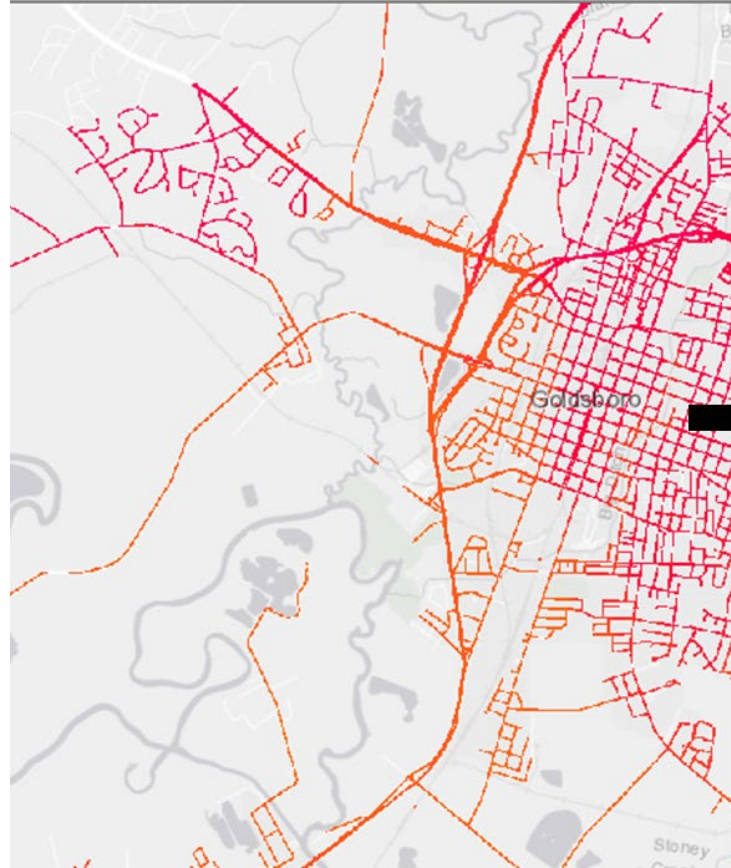
Lidar Derived 3D Road Elevation Grids



Raster to Polyline Routines

Why polylines?

- Conflate LRS polyline data with raster to ***leverage*** attributes:
 - Road Name
 - Road Type
 - NCDOT Class
 - AADT
 - Feature Lengths
- Ability to query, search, aggregate
- Smaller file size



For the Geeks

- FIMAN Foundation (*shared data – separate app*)
- ASP.NET web application within .NET Framework (*v4.5*)
- Languages used: HTML, CSS/Bootstrap, Javascript, C#, SQL, Python, ArcGIS Javascript API
- Spatial Data published (*ArcGIS Web Services*)
- Kendo and amCharts (*tables, slider bar, hydrographs, etc.*)
- Scheduled tasks extracting Contrail and NWS Forecast (*every 15 min*)
- Weather radar loop (*every 5 min*)



FIMAN-T Login Page

The screenshot displays the FIMAN-T web application interface. At the top left is the FIMAN-T logo with the text "Flood Inundation Mapping and Alert Network for Transportation". The top right navigation bar includes links for "FIMAN", "ABOUT", "MAP", and "USER". A search bar is located in the top right corner with the placeholder text "Search for location ...".

The main area features a map of the Neuse River basin, divided into 14 divisions (Div. 1 to Div. 14). The map is overlaid with a color-coded risk rating system. A white login overlay is centered on the map, titled "WELCOME TO FIMAN-T". It contains the text "Enter Your NCID Credentials:" followed by two input fields: "NCID Username" and "NCID Password". Below these fields is a circular button with a right-pointing arrow.

In the bottom right corner, there is a "Legend" panel with the following sections:

- Gage Symbols:**
 - Green circle: Current Condition
 - Light green circle: Forecast Peak Condition
- Risk Ratings:**
 - Green: Normal
 - Yellow: Monitor
 - Orange: Minor Flooding
 - Red: Moderate Flooding
 - Purple: Major Flooding
 - Light blue: Not Risk Rated
 - Grey: Out of Service
- Trend:**
 - Upward arrow: Rising
 - Downward arrow: Falling
 - Horizontal line: Constant

At the bottom of the map, a dark grey banner contains the text: "This is the site for FIMAN-T with select river gages along the Neuse River basin. Click a division to view active gages within." The bottom right corner of the map area shows "Radar Time: 15 min. ago".

The footer of the page includes the FIMAN-T logo on the left, copyright information "Copyright © 2015 All Rights Reserved by NC Floodplain Mapping Program" in the center, and links for "Administrator Login" and "Contact Information" on the right.

User Administration Module

Please Select Either A User ID Or Email To Search By From The Drop-Down Menu:

Search...

Email

[Export to Excel](#)

	Name	Username	Email	Administrator
Remove User	Greg Corbett	gcorbett	gcorbett@ncdot.gov	✓
Remove User	Hope S Morgan	hsmorgan	hope.morgan@ncdps.gov	✓
Remove User	Mathew C Hornack	mhornack	mhornack@espassociates.com	✓
Remove User	Matthew Dudley	mbdudley	mdudley@espassociates.com	✓
Remove User	Matthew B Dudley	mbdudleyESP	mdudley@espassociates.com	✓
Remove User	Matthew S Lauffer	mslauffer	mslauffer@ncdot.gov	✓
Remove User	William N Slaughter	nate_sl	nslaughter@espassociates.com	✓
Remove User	Sarah C Stephens	scstephens2	sstephens@espassociates.com	✗
Remove User	Shelby deJongh	smdejong	sdejongh@espassociates.com	✗
Remove User	Thomas Westfall	twestfall	twestfall@espassociates.com	✗

FIMAN-T Flood Inundation Mapping and Alert Network for Transportation
 Copyrights © 2015 All Rights Reserved by NC Floodplain Mapping Program
[Administrator Logout](#) [Contact Information](#)

Current Users and Administrator View

Add User Tools

Please Select Either A User ID Or Email To Search By From The Drop-Down Menu:

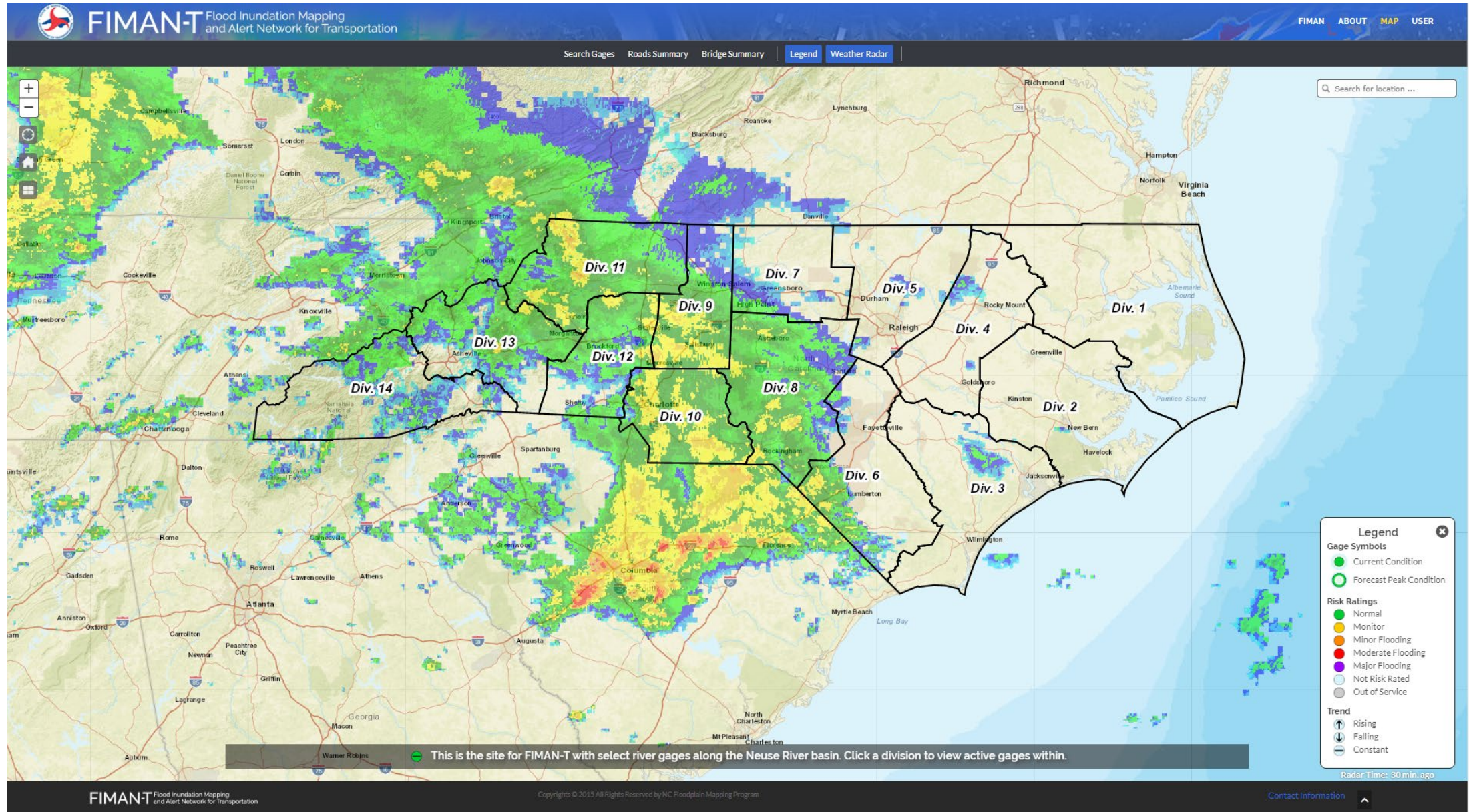
sachan

Email

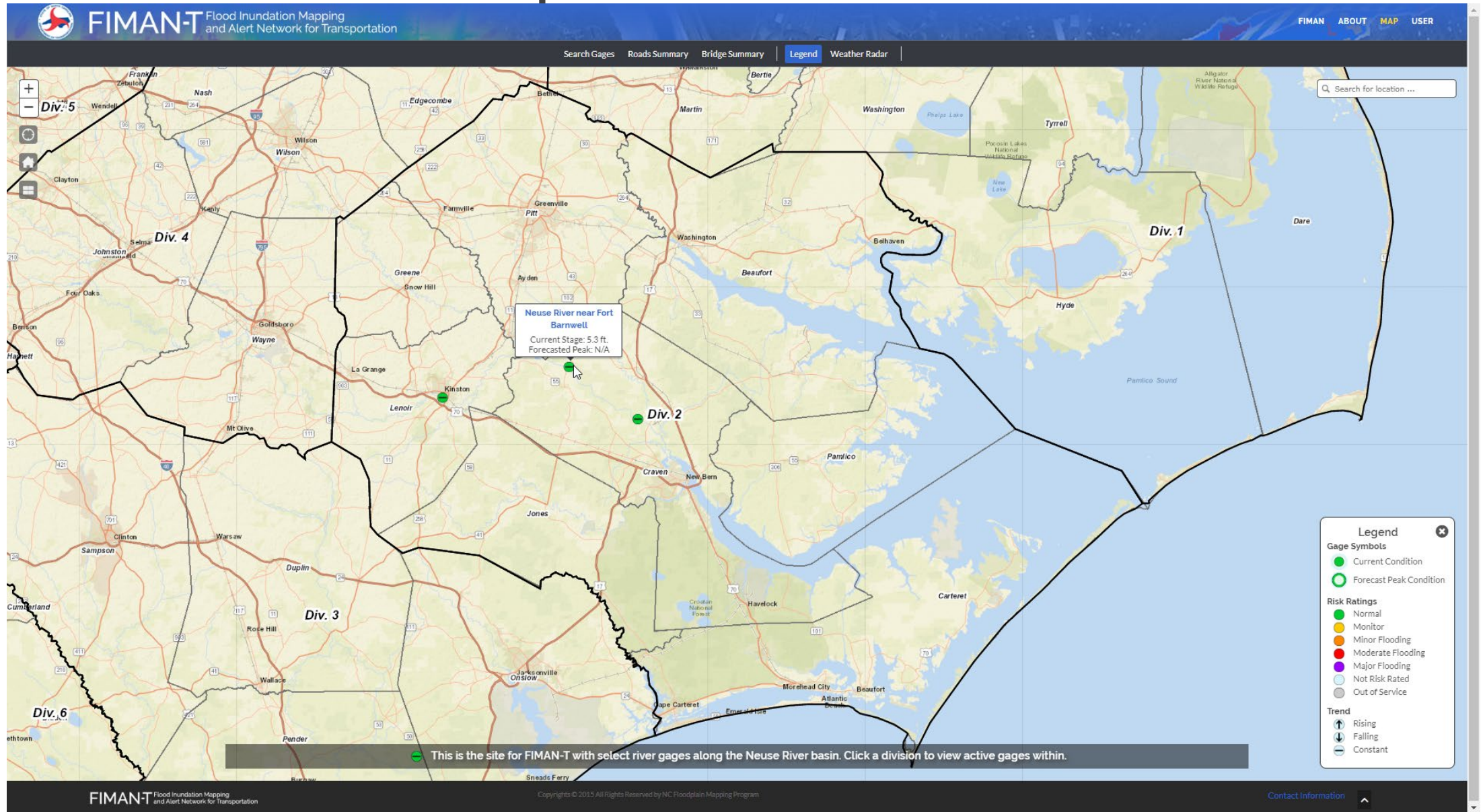
User	Administrator	Name	E-Mail	Username
<input type="button" value="ADD USER"/>	<input type="button" value="ADD ADMIN"/>	Amit Sachan	amitsachan@atkingloba...	amitsachan
<input type="button" value="ADD USER"/>	<input type="button" value="ADD ADMIN"/>	Amit Sachan	asachan@ncdot.gov	asachan
<input type="button" value="ADD USER"/>	<input type="button" value="ADD ADMIN"/>	CARRISSA L CHANNELL	carrissachannell@gmail.c...	Carrissa3
<input type="button" value="ADD USER"/>	<input type="button" value="ADD ADMIN"/>	Elisa Akins	elisachantel@yahoo.com	elisachantel
<input type="button" value="ADD USER"/>	<input type="button" value="ADD ADMIN"/>	Latoya A Chandler	randusachandler@yahoo...	Yamyamchick1020
<input type="button" value="ADD USER"/>	<input type="button" value="ADD ADMIN"/>	Lisa I Chang	lisachang@mindspring.co...	lchang
<input type="button" value="ADD USER"/>	<input type="button" value="ADD ADMIN"/>	Lisa M Chansuthus	lisachansuthus@gmail.com	lmchansuthus

FIMAN-T Flood Inundation Mapping and Alert Network for Transportation
 Copyrights © 2015 All Rights Reserved by NC Floodplain Mapping Program
[Administrator Logout](#) [Contact Information](#)

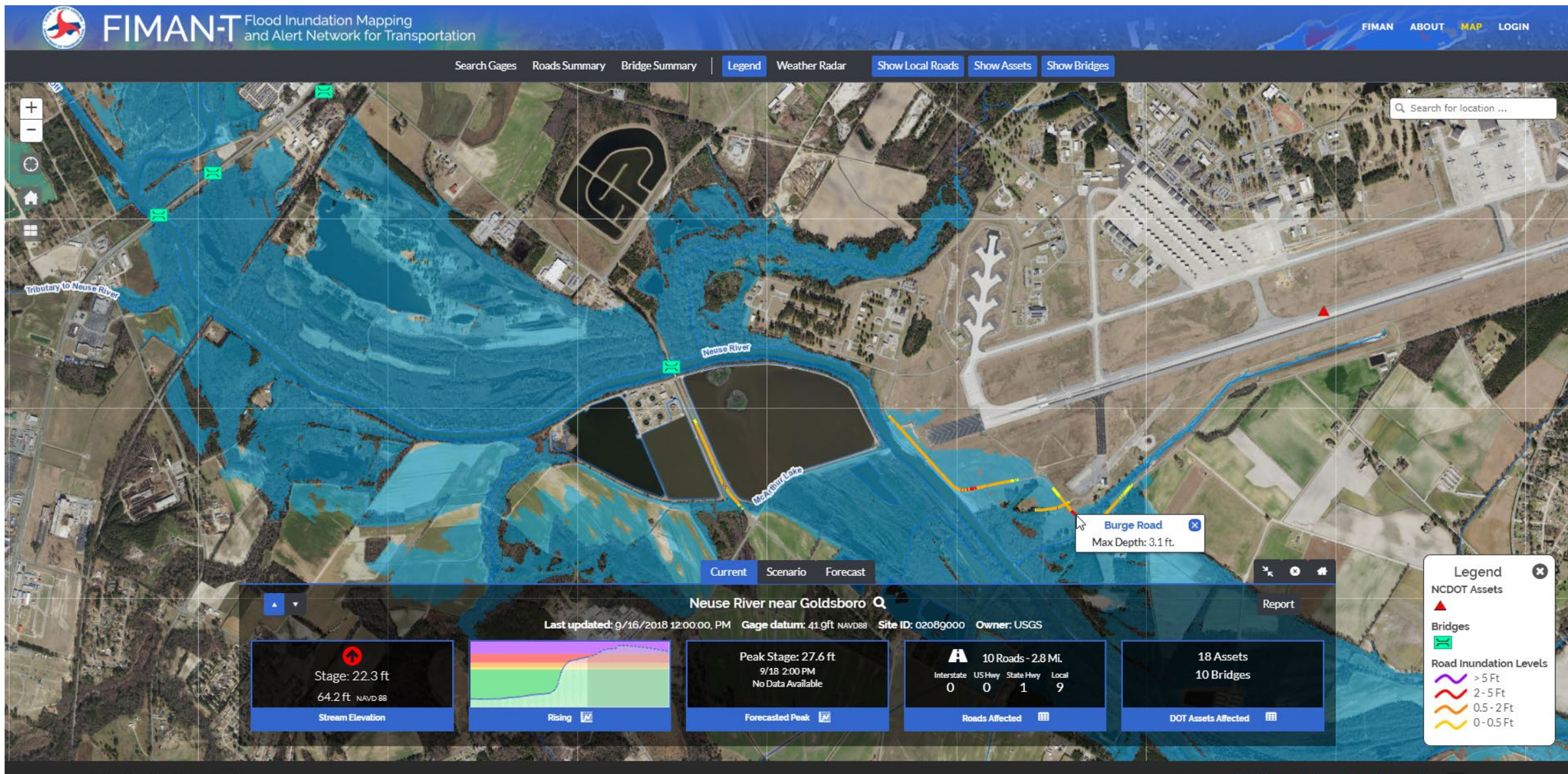
FIMAN-T: Pilot Area Home Screen



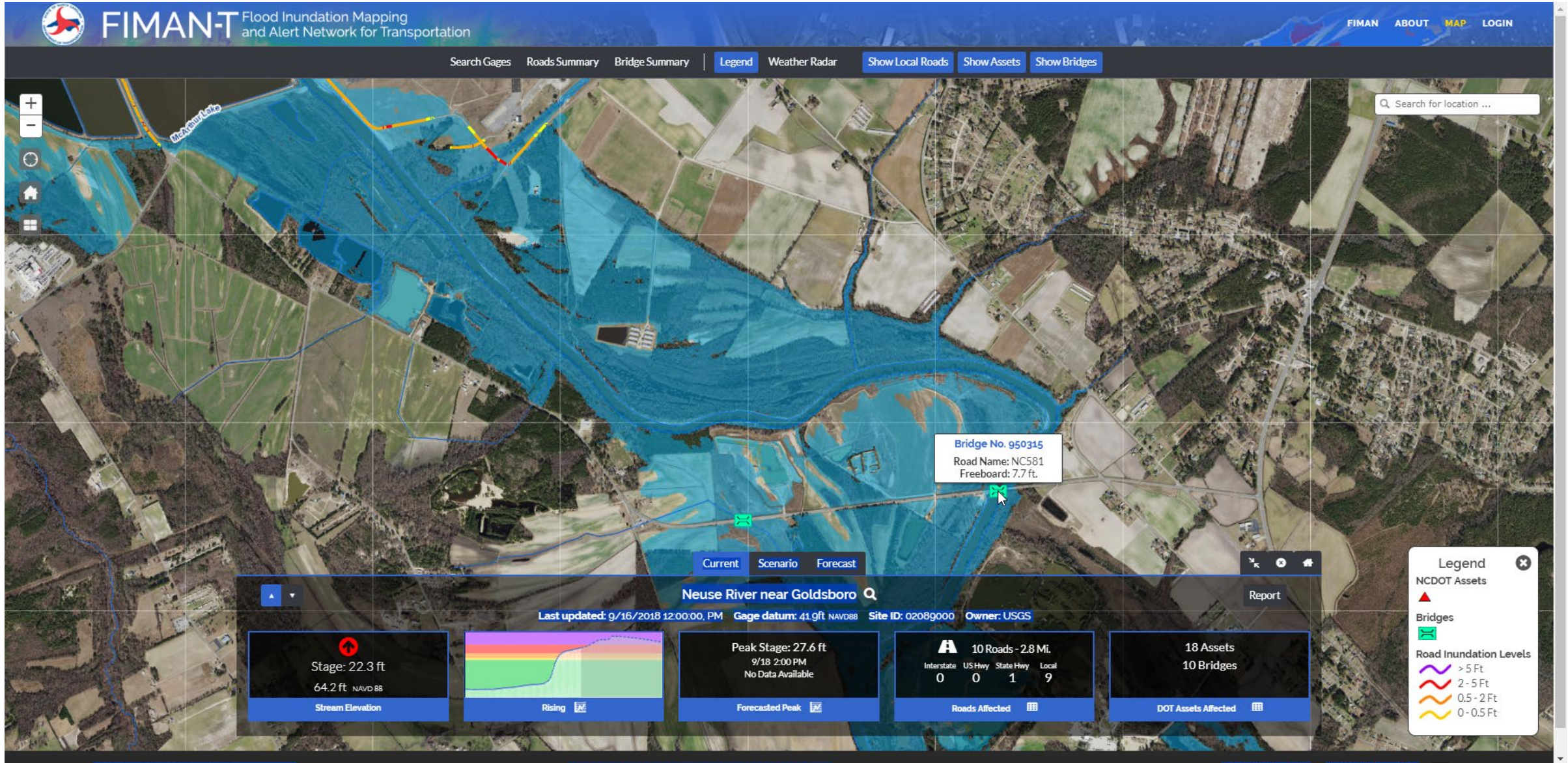
FIMAN-T: Division Map



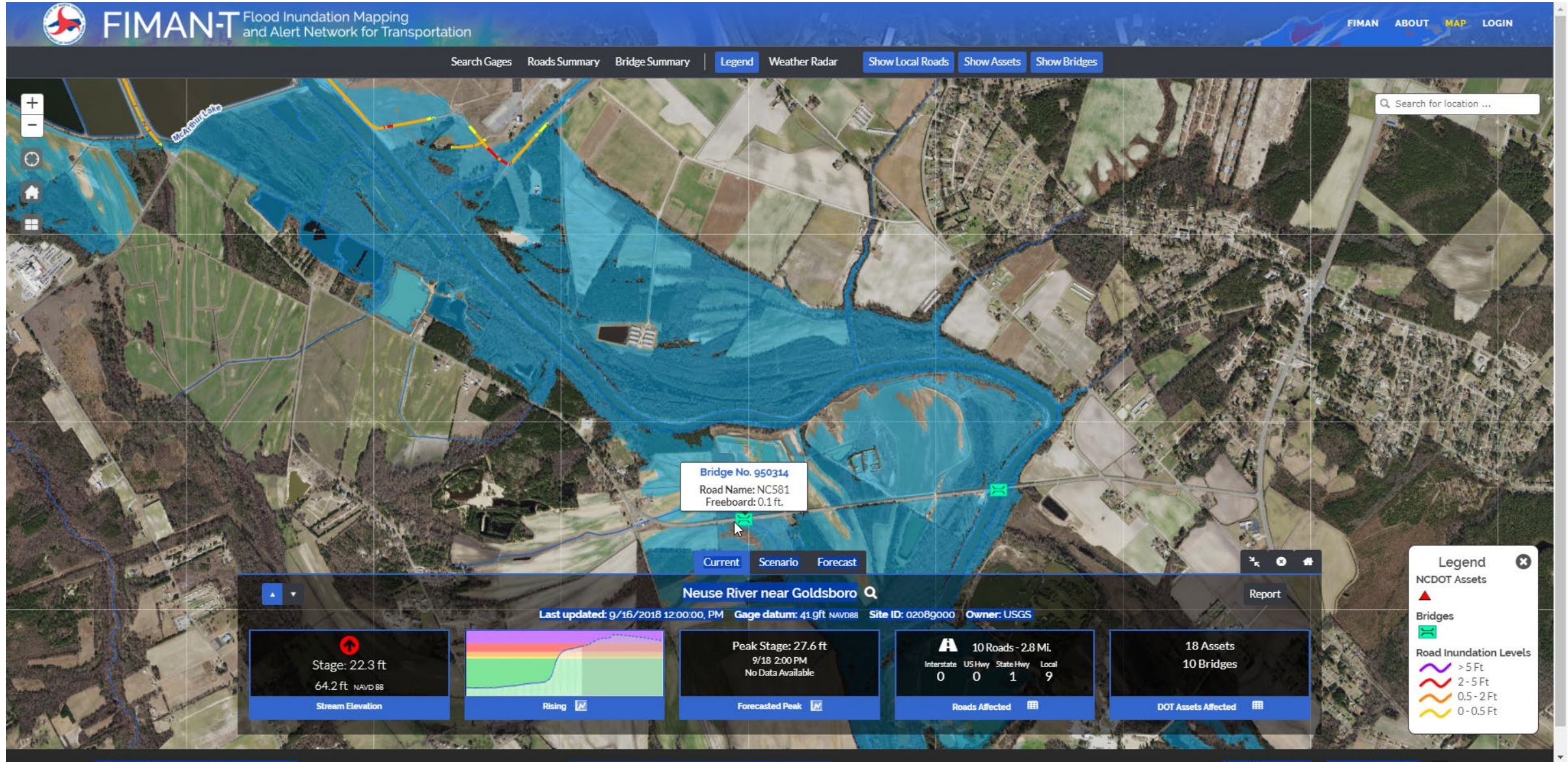
Current Conditions (Inundation and Road Flooding)



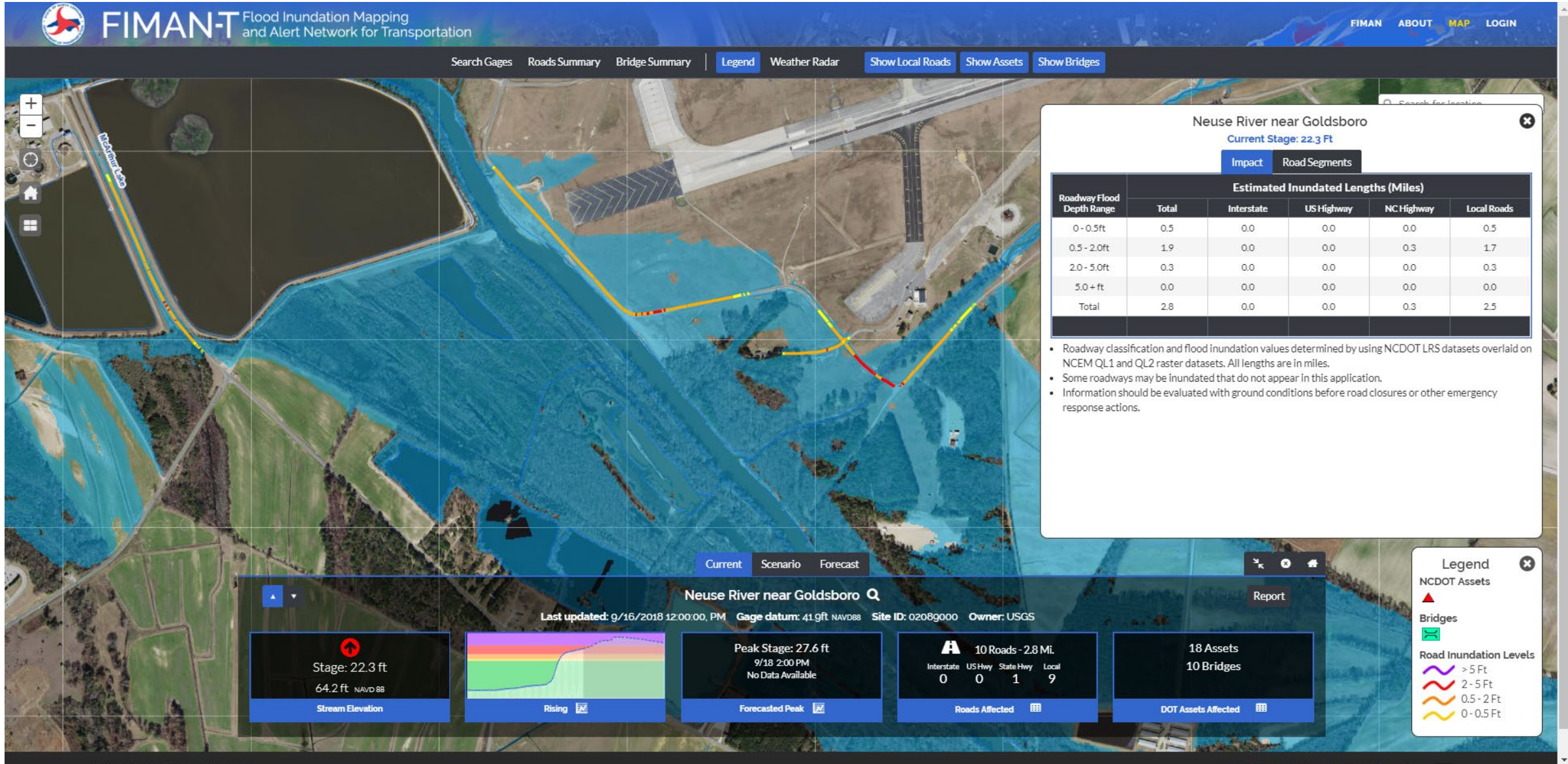
Current Conditions (Bridge Performance)



Current Conditions (Bridge Performance)



Current Conditions: Road Impact - Summary



Current Conditions: Road Impacts – Details

FIMAN-T Flood Inundation Mapping
and Alert Network for Transportation

FIMAN ABOUT MAP LOGIN

[Search Gages](#) [Roads Summary](#) [Bridge Summary](#) | [Legend](#) [Weather Radar](#) [Show Local Roads](#) [Show Assets](#) [Show Bridges](#)

Neuse River near Goldsboro
Current Stage: 22.3 Ft

Impact **Road Segments**

Export to Excel
Export KMZ
Filter by Road Type: All

Road	AADT	Max Flood Depth (ft)	Segment Length (ft)	Inundation Range	Road Type
Bryan Boulevard	0	4.6	372	2.0 - 5.0ft	Local Road
Rock Road	0	3.3	134	2.0 - 5.0ft	Local Road
Burge Road	0	3.1	251	2.0 - 5.0ft	Local Road
Burge Road	0	2.9	7	2.0 - 5.0ft	Local Road
Burge Road	0	2.9	135	2.0 - 5.0ft	Local Road

1 - 5 of 167 items

- Roadway classification and flood inundation values determined by using NCDOT LRS datasets overlaid on NCEM QL1 and QL2 raster datasets. All lengths are in miles.
- Some roadways may be inundated that do not appear in this application.
- Information should be evaluated with ground conditions before road closures or other emergency response actions.

Current Scenario Forecast

Neuse River near Goldsboro

Last updated: 9/16/2018 12:00:00, PM Gage datum: 41.9ft NAVD88 Site ID: 02089000 Owner: USGS

Stage: 22.3 ft

64.2 ft NAVD 88

Stream Elevation

Rising

Peak Stage: 27.6 ft

9/18 2:00 PM
No Data Available

Forecasted Peak

10 Roads - 2.8 Mi.

Interstate	US Hwy	State Hwy	Local
0	0	1	9

Roads Affected

18 Assets

10 Bridges

DOT Assets Affected

Legend

NCDOT Assets
▲ Triangle
 Bridges
■ Bridge
 Road Inundation Levels
~ > 5 Ft
~ 2 - 5 Ft
~ 0.5 - 2 Ft
~ 0 - 0.5 Ft

https://fiman.nc.gov

Current Conditions: Road Impacts – Details

FIMAN-T Flood Inundation Mapping
and Alert Network for Transportation

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Neuse River near Goldsboro
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Legend

- NCDOT Assets
- ▲ Bridge
- Legend
- Bridges
- Road Inundation Levels
- > 5 Ft
- 2 - 5 Ft
- 0.5 - 2 Ft
- 0 - 0.5 Ft

Neuse River near Goldsboro

Last updated: 9/16/2018 12:00:00, PM Gage datum: 41.9ft NAVD88 Site ID: 02089000 Owner: USGS

Stage: 22.3 ft
64.2 ft NAVD 88

Stream Elevation

Peak Stage: 27.6 ft
9/18 2:00 PM
No Data Available

Forecasted Peak

10 Roads - 2.8 Mi.

Interstate 0 US Hwy 0 State Hwy 1 Local 9

Roads Affected

18 Assets
10 Bridges

DOT Assets Affected

Current Conditions: Road Impacts – Details

FIMAN-T Flood Inundation Mapping
and Alert Network for Transportation

FIMAN ABOUT MAP LOGIN

[Search Gages](#) [Roads Summary](#) [Bridge Summary](#) | [Legend](#) [Weather Radar](#) [Show Local Roads](#) [Show Assets](#) [Show Bridges](#)

Neuse River near Goldsboro
Current Stage: 22.3 Ft

Impact **Road Segments**

Export to Excel
Export KMZ
Filter by Road Type: State Highway

Road	AADT	Max Flood Depth (ft)	Segment Length (ft)	Inundation Range	Road Type
Arrington Bridge Road	0	2.2	6	2.0 - 5.0ft	State Highway
Arrington Bridge Road	0	2.1	9	2.0 - 5.0ft	State Highway
Arrington Bridge Road	0	2.1	12	2.0 - 5.0ft	State Highway
Arrington Bridge Road	0	2.1	6	2.0 - 5.0ft	State Highway
Arrington Bridge Road	0	2.0	6	2.0 - 5.0ft	State Highway

1 - 5 of 16 items

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 • Some roadways may be inundated that do not appear in this application.
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Legend

NCDOT Assets

Bridges

Road Inundation Levels

- ~ > 5 Ft
- ~ 2 - 5 Ft
- ~ 0.5 - 2 Ft
- ~ 0 - 0.5 Ft

Neuse River near Goldsboro

Last updated: 9/16/2018 12:00:00, PM Gage datum: 41.9ft NAVD88 Site ID: 02089000 Owner: USGS

Stage: 22.3 ft

64.2 ft NAVD 88

Stream Elevation

Peak Stage: 27.6 ft

9/18 2:00 PM

No Data Available

Forecasted Peak

10 Roads - 2.8 Mi.

Interstate US Hwy State Hwy Local

0 0 1 9

Roads Affected

18 Assets

10 Bridges

DOT Assets Affected

https://espgis.com/fiman_t/#

Current Conditions: Road Segment Inspector

FIMAN-T Flood Inundation Mapping and Alert Network for Transportation

Search Gages Roads Summary Bridge Summary Legend Weather Radar Show Local Roads Show Assets Show Bridges

Neuse River near Goldsboro
Current Stage: 22.3 Ft

Impact Road Segments

Export to Excel Export KMZ Filter by Road Type: State Highway

Road	AADT	Max Flood Depth (ft)	Segment Length (ft)	Inundation Range	Road Type
Arrington Bridge Road	0	2.2	6	2.0 - 5.0ft	State Highway
Arrington Bridge Road	0	2.1	9	2.0 - 5.0ft	State Highway
Arrington Bridge Road	0	2.1	12	2.0 - 5.0ft	State Highway
Arrington Bridge Road	0	2.1	6	2.0 - 5.0ft	State Highway
Arrington Bridge Road	0	2.0	6	2.0 - 5.0ft	State Highway

1 - 5 of 16 items

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Legend
NCDOT Assets
Bridges
Road Inundation Levels
 > 5 Ft
 2 - 5 Ft
 0.5 - 2 Ft
 0 - 0.5 Ft

Neuse River near Goldsboro
Last updated: 9/16/2018 12:00:00, PM Gage datum: 41.9ft NAVD88 Site ID: 02089000 Owner: USGS

Current Scenario Forecast

Stage: 22.3 ft
64.2 ft NAVD 88
Stream Elevation

Rising

Peak Stage: 27.6 ft
9/18 2:00 PM
No Data Available
Forecasted Peak

10 Roads - 2.8 Mi.
Interstate 0 US Hwy 0 State Hwy 1 Local 9
Roads Affected

18 Assets
10 Bridges
DOT Assets Affected

Current Conditions: Bridge Performance

FIMAN-T Flood Inundation Mapping
and Alert Network for Transportation

FIMAN ABOUT MAP LOGIN

[Search Gages](#) [Roads Summary](#) [Bridge Summary](#) | [Legend](#) [Weather Radar](#) [Show Local Roads](#) [Show Assets](#) [Show Bridges](#)

Bridge No. 950314
Road Name: NC581
Freeboard: 0.1ft.

Neuse River near Goldsboro

Current Stage: 22.3 Ft
Elevation: 95.1 (NAVD 88)

Bridges Assets

Export to Excel

Road Name	Bridge Number	Flood Source	Road Elevation (ft)	Low Chord Elevation (ft)	Current / Scenario WSEL	Freeboard (ft)
NC581	950314	Neuse River Overflow	65.2	60.7	60.7	0.1
NC111	950042	Neuse River Overflow	63.0	59.8	56.1	3.6
NC581	950018	Neuse River	72.5	69.1	64.7	4.4
NC111	950054	Pond Off Neuse River	63.9	60.7	56.1	4.6
SR1008	950072	Neuse River	79.7	77.4	72.5	4.9

1 - 5 of 10 items

Neuse River near Goldsboro

Last updated: 9/16/2018 12:00:00, PM Gage datum: 41.9ft NAVD88 Site ID: 02089000 Owner: USGS

↑

Stage: 22.3 ft
64.2 ft NAVD 88

Stream Elevation

Rising

Peak Stage: 27.6 ft
9/18 2:00 PM
No Data Available

Forecasted Peak

A 10 Roads - 2.8 Mi.

Interstate	US Hwy	State Hwy	Local
0	0	1	9

Roads Affected

18 Assets
10 Bridges

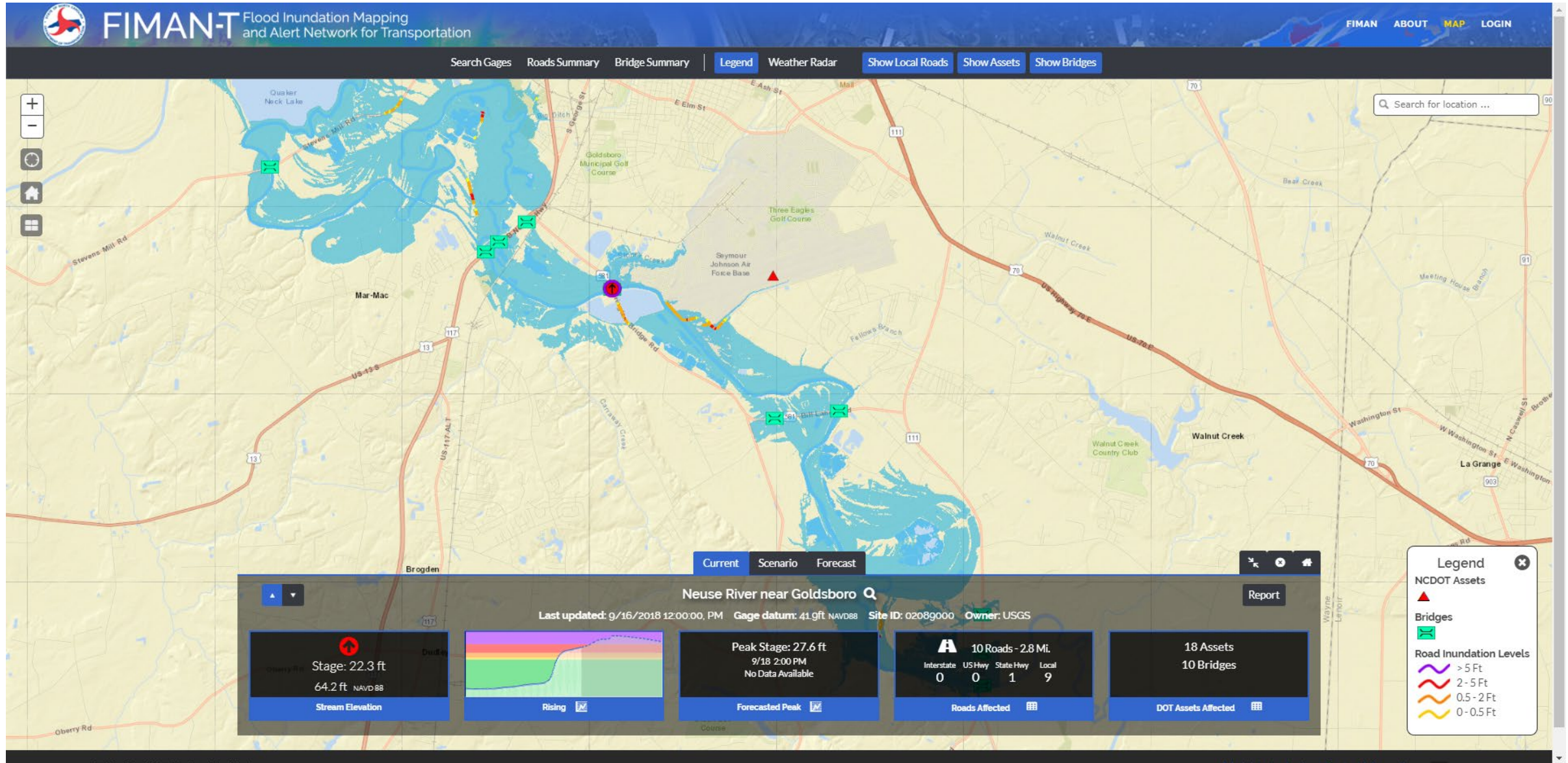
DOT Assets Affected

Legend

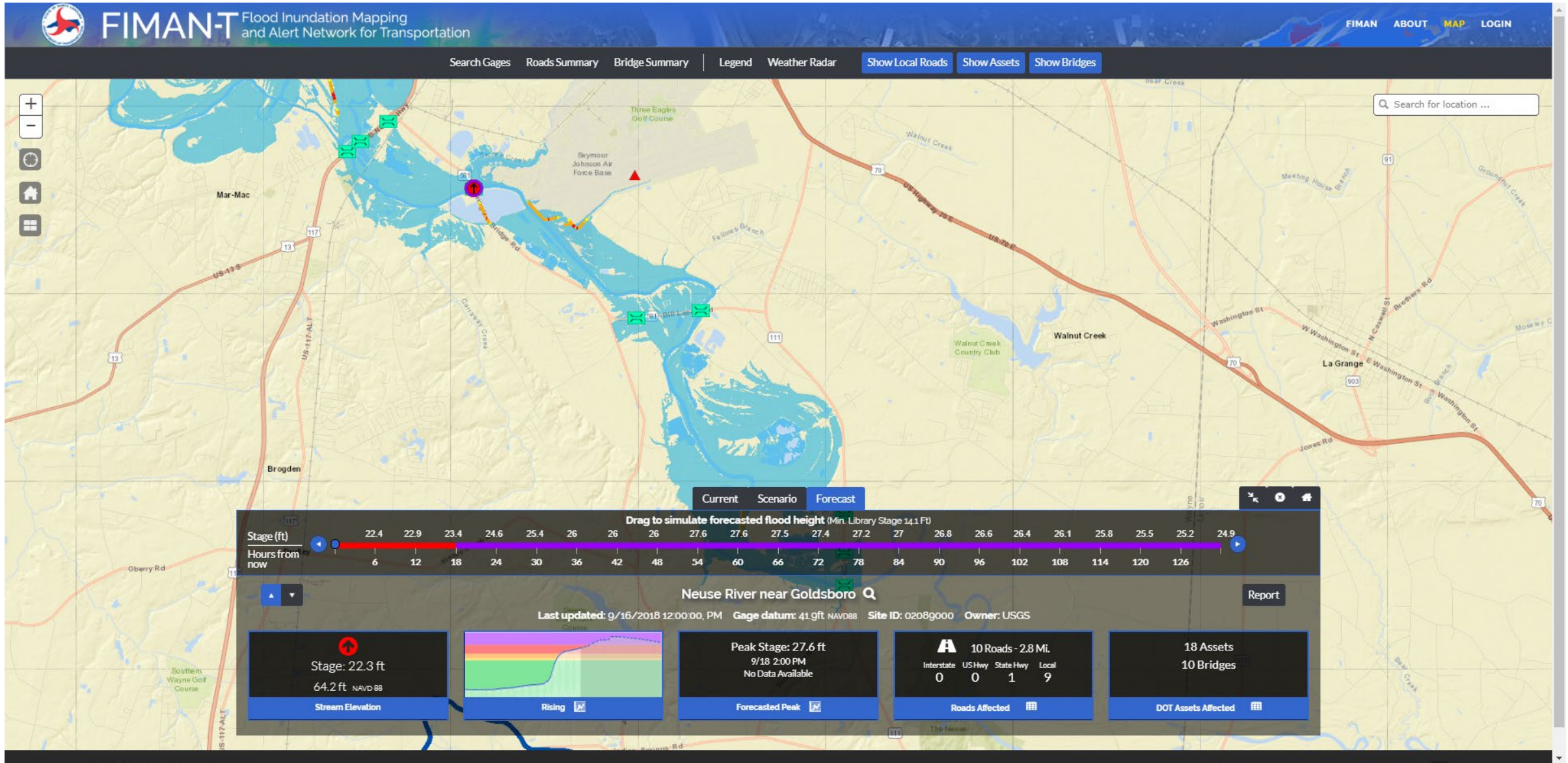
NCDOT Assets

- ▲ Report
- Bridges
- Road Inundation Levels**
- ~ > 5 Ft
- ~ 2 - 5 Ft
- ~ 0.5 - 2 Ft
- ~ 0 - 0.5 Ft

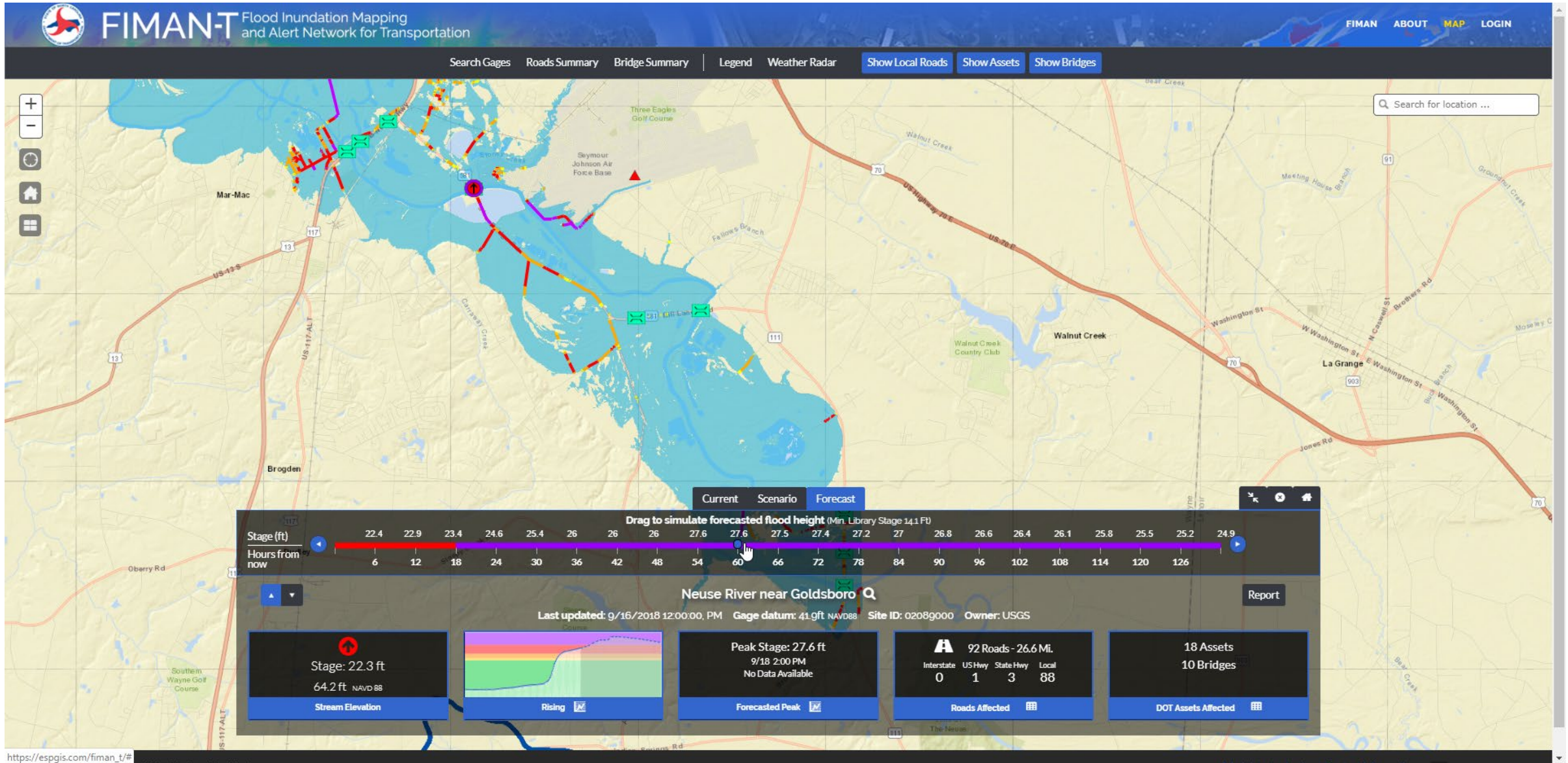
Current Conditions: Goldsboro



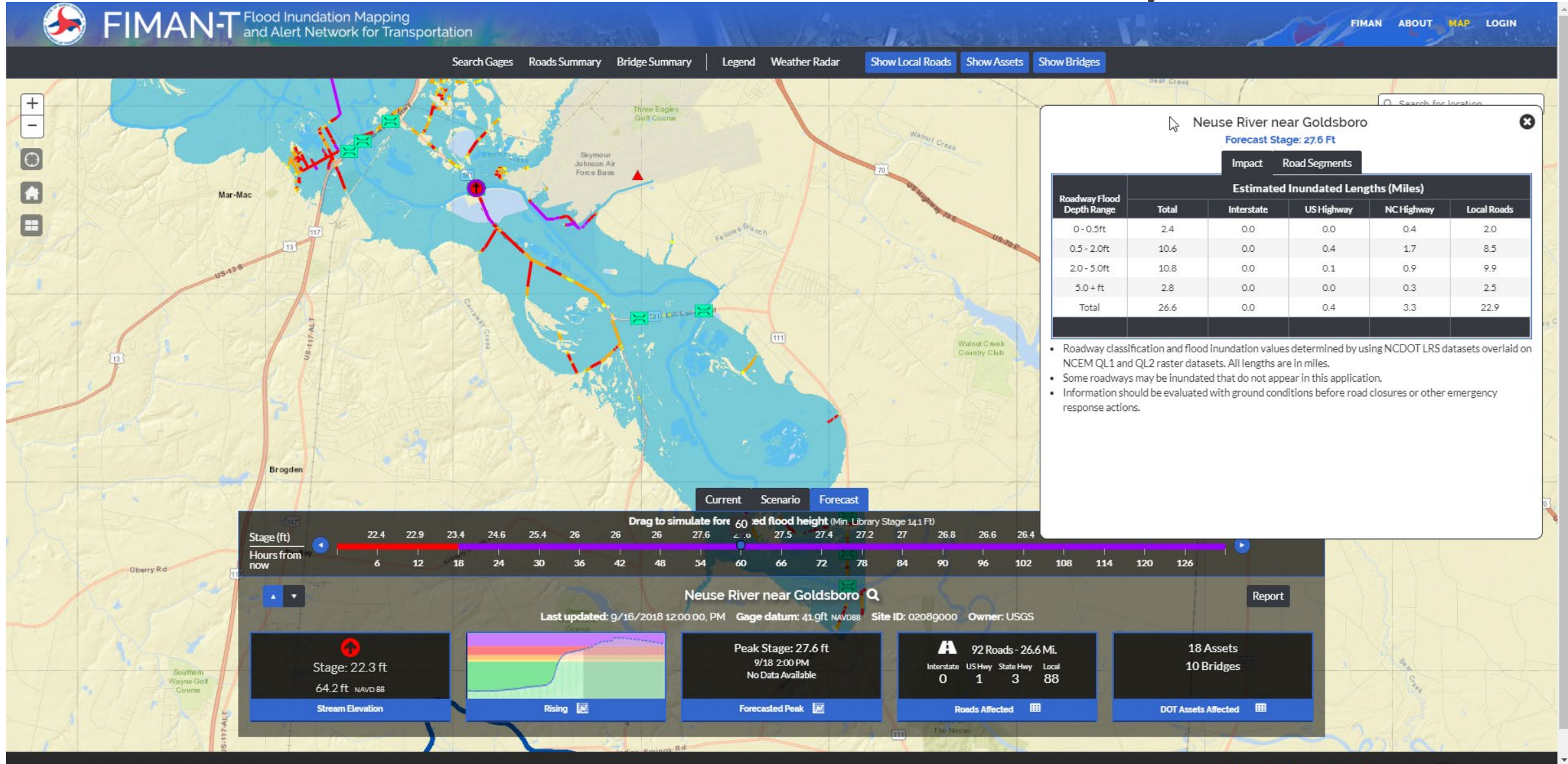
FIMAN-T Forecast Tab: Goldsboro



Forecasted Peak: Goldsboro



Forecasted Peak: Road Inundation Summary



Forecasted Peak: Interactive Road Inundation (Zoom to)

FIMAN-T Flood Inundation Mapping
and Alert Network for Transportation

FIMAN ABOUT MAP LOGIN

[Search Gages](#) | [Roads Summary](#) | [Bridge Summary](#) | [Legend](#) | [Weather Radar](#) | [Show Local Roads](#) | [Show Assets](#) | [Show Bridges](#)

Neuse River near Goldsboro

Forecast Stage: 27.6 Ft

Impact
Road Segments

Export to Excel | Export KMZ | Filter by Road Type: US Highway

Road	AADT	Max Flood Depth (ft)	Segment Length (ft)	Inundation Range	Road Type
South US 117 Highway	0	3.4	129	2.0 - 5.0ft	US Highway
South US 117 Highway	0	2.3	47	2.0 - 5.0ft	US Highway
South US 117 Highway	0	2.3	28	2.0 - 5.0ft	US Highway
South US 117 Highway	0	2.1	14	2.0 - 5.0ft	US Highway
South US 117 Highway	0	2.1	12	2.0 - 5.0ft	US Highway

1 - 5 of 31 items

- Roadway classification and flood inundation values determined by using NCDOT LRS datasets overlaid on NCEM QL1 and QL2 raster datasets. All lengths are in miles.
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Stage (ft) 22.4 22.9 23.4 24.6 25.4 26 26 27.6 27.5 27.4 27.2 27 26.8 26.6 26.4

Hours from now 6 12 18 24 30 36 42 48 54 60 66 72 78 84 90 96 102 108 114 120 126

Drag to simulate forecasted flood height (Min. Library Stage 14.1 Ft)

Neuse River near Goldsboro

Last updated: 9/16/2018 12:00:00, PM Gage datum: 41.9ft NAVD88 Site ID: 02089000 Owner: USGS

Report

Stage: 22.3 ft

64.2 ft NAVD 88

Stream Elevation

Rising

Peak Stage: 27.6 ft

9/18 2:00 PM

No Data Available

Forecasted Peak

92 Roads - 26.6 Mi.

Interstate	US Hwy	State Hwy	Local
0	1	3	88

Roads Affected

18 Assets

10 Bridges

DOT Assets Affected

Forecasted Peak: Google Earth Export

FIMAN-T Flood Inundation Mapping and Alert Network for Transportation

Search Gages Roads Summary Bridge Summary Legend Weather Radar Show Local Roads Show Assets Show Bridges

Neuse River near Goldsboro
Forecast Stage: 27.6 Ft

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Current Scenario Forecast

Drag to simulate forecasted flood height (Min. Library Stage 14.1 Ft)

Stage (ft) 22.4 22.9 23.4 24.6 25.4 26 26 26 27.6 27.6 27.5 27.4 27.2 27 26.8 26.6 26.4

Hours from now 6 12 18 24 30 36 42 48 54 60 66 72 78 84 90 96 102 108 114 120 126

Neuse River near Goldsboro

Last updated: 9/16/2018 12:00:00, PM Gage datum: 41.9ft NAVD88 Site ID: 02089000 Owner: USGS

Stage: 22.3 ft
64.2 ft NAVD 88
Stream Elevation

Rising

Peak Stage: 27.6 ft
9/18 2:00 PM
No Data Available
Forecasted Peak

92 Roads - 26.6 Mi.
Interstate 0 US Hwy 1 State Hwy 3 Local 88
Roads Affected

18 Assets
10 Bridges
DOT Assets Affected

https://espgis.com/fiman_t/#

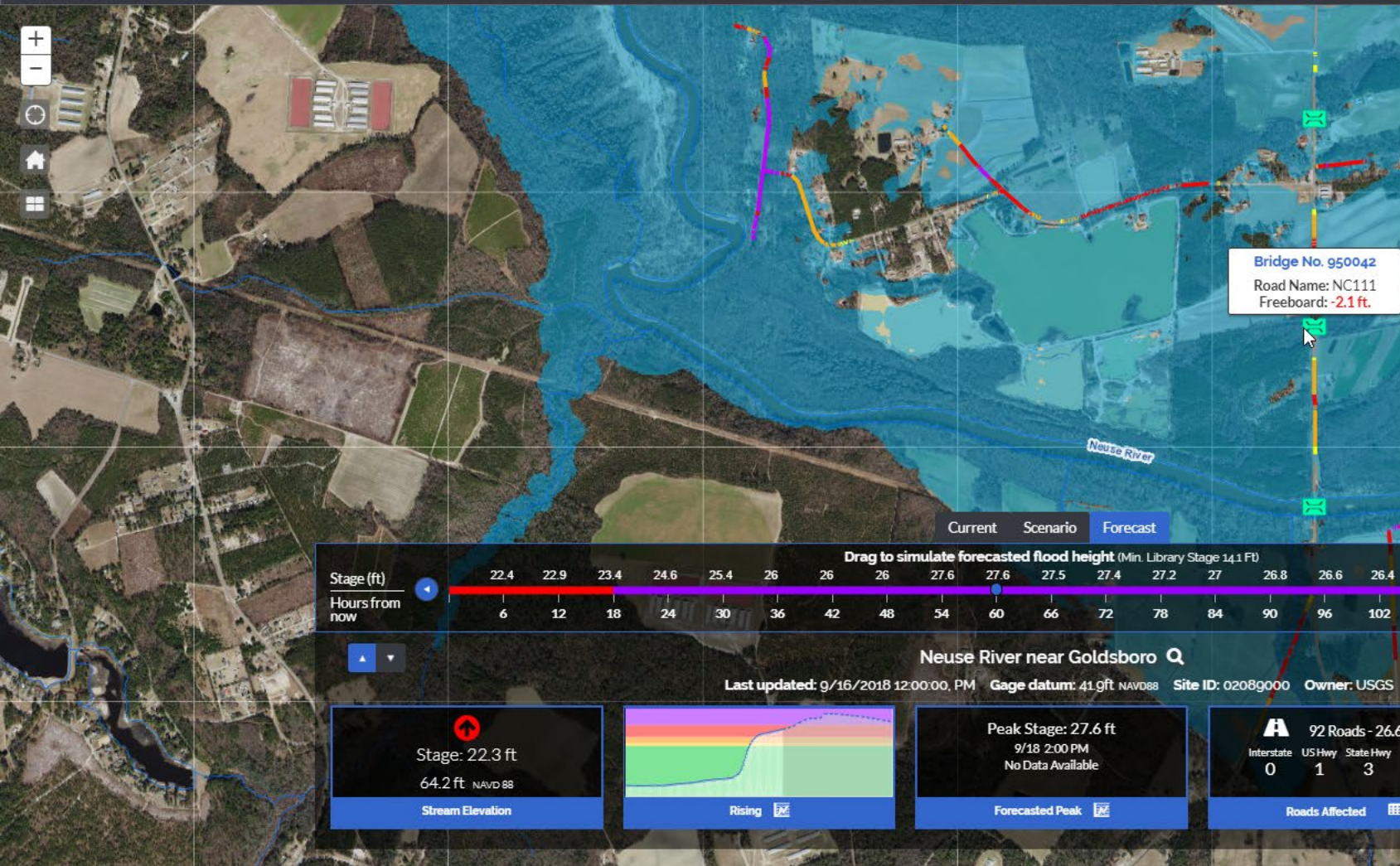
Forecasted Peak: Bridge Performance Table



FIMANT Flood Inundation Mapping and Alert Network for Transportation

FIMAN ABOUT MAP LOGIN

Search Gages Roads Summary Bridge Summary Legend Weather Radar Show Local Roads Show Assets Show Bridges



Neuse River near Goldsboro
Forecast Stage: 27.6 Ft
Elevation: 97.1 (NAVD 88)

Bridges Assets

Export to Excel

Road Name	Bridge Number	Flood Source	Road Elevation (ft)	Low Chord Elevation (ft)	Current / Scenario WSEL	Freeboard (ft)
NC581	950314	Neuse River Overflow	65.2	60.7	65.5	-4.8
NC111	950042	Neuse River Overflow	63.0	59.8	61.9	-2.1
NC111	950054	Pond Off Neuse River	63.9	60.7	61.9	-1.2
NC581	950018	Neuse River	72.5	69.1	69.7	-0.6
US13/US117	950052	Neuse River Overflow	74.4	72.2	72.6	-0.4

1 - 5 of 10 items

Legend

- NCSDOT Assets
- Bridges
- Road Inundation Levels
 - > 5 Ft
 - 2 - 5 Ft
 - 0.5 - 2 Ft
 - 0 - 0.5 Ft

Neuse River near Goldsboro

Last updated: 9/16/2018 12:00:00, PM Gage datum: 41.9ft NAVD88 Site ID: 02089000 Owner: USGS

Stage: 22.3 ft
64.2 ft NAVD 88

Stream Elevation

Rising

Forecasted Peak: 27.6 ft
9/18 2:00 PM
No Data Available

Forecasted Peak

Roads Affected: 92 Roads - 26.6 Mi.
Interstate: 0 US Hwy: 1 State Hwy: 3 Local: 88

Roads Affected

DOT Assets Affected: 18 Assets, 10 Bridges

DOT Assets Affected

Forecasted Peak: Bridge Performance Excel Export



Search Gages Roads Summary Bridge Summary Legend Weather Radar Show Local Roads Show Assets Show Bridges

ExportFimanTHydroCrossings (2).xlsx - Excel David Key

File Home Insert Page Layout Formulas Data Review View Help Nitro Pro Acrobat Tell me Share

C6 X ✓ fx Neuse River

FIMANT: Bridge Performance Summary						
Neuse River near Goldsboro						
This report was generated using an elevation of 69.5 ft. and a stage of Forecast Stage: 27.6 ft.						
Road Name	Bridge Number	Flood Source	Road Elevation (ft)	Low Chord Elevation (ft)	Current / Scenario / Forecast WSEL	Freeboard (ft)
NC581	950018	Neuse River	72.5	69.1	69.7	-0.6
NC111	950027	Neuse River	65.5	62.8	61.9	0.9
US13/US117 SBL	950033	Neuse River	77.6	74.8	72.6	2.2
NC111	950042	Neuse River Overflow	63.0	59.8	61.9	-2.1
US13/US117	950052	Neuse River Overflow	74.4	72.2	72.6	-0.4
NC111	950054	Pond Off Neuse River	63.9	60.7	61.9	-1.2
US13N & US117N	950058	Neuse River Overflow	75.7	72.4	72.6	-0.2
SR1008	950072	Neuse River	79.7	77.4	75.3	2.1
NC581	950314	Neuse River Overflow	65.2	60.7	65.5	-4.8
NC581	950315	Neuse River	72.1	68.4	65.5	2.9

Sheet1



Neuse River near Goldsboro
Forecast Stage: 27.6 Ft
Elevation: 97.1 (NAVD 88)

Bridges Assets

Export to Excel

Road Name	Bridge Number	Flood Source	Road Elevation (ft)	Low Chord Elevation (ft)	Current / Scenario WSEL	Freeboard (ft)
NC581	950018	Neuse River	72.5	69.1	69.7	-0.6
NC111	950027	Neuse River	65.5	62.8	61.9	0.9
US13/US117 SBL	950033	Neuse River	77.6	74.8	72.6	2.2
NC111	950042	Neuse River Overflow	63.0	59.8	61.9	-2.1
US13/US117	950052	Neuse River Overflow	74.4	72.2	72.6	-0.4

1 - 5 of 10 items

Neuse River near Goldsboro

Last updated: 9/16/2018 12:00:00, PM Gage datum: 41.9ft NAVD88 Site ID: 02089000 Owner: USGS

Stage: 22.3 ft
64.2 ft NAVD 88

Stream Elevation

Rising

Peak Stage: 27.6 ft
9/18 2:00 PM
No Data Available

Forecasted Peak

92 Roads - 26.6 Mi.

Interstate 0 US Hwy 1 State Hwy 3 Local 88

Roads Affected

18 Assets
10 Bridges

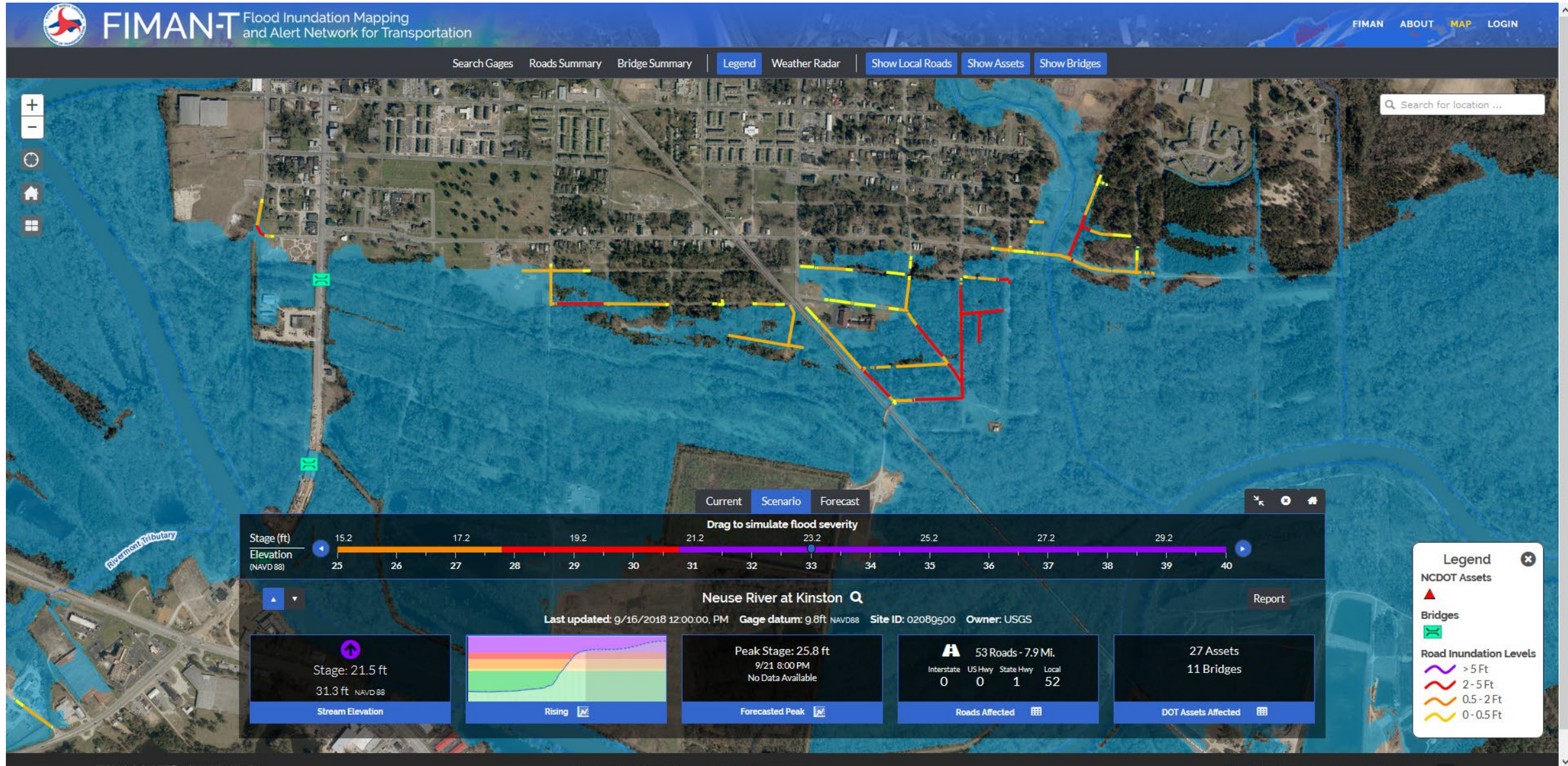
DOT Assets Affected

Legend

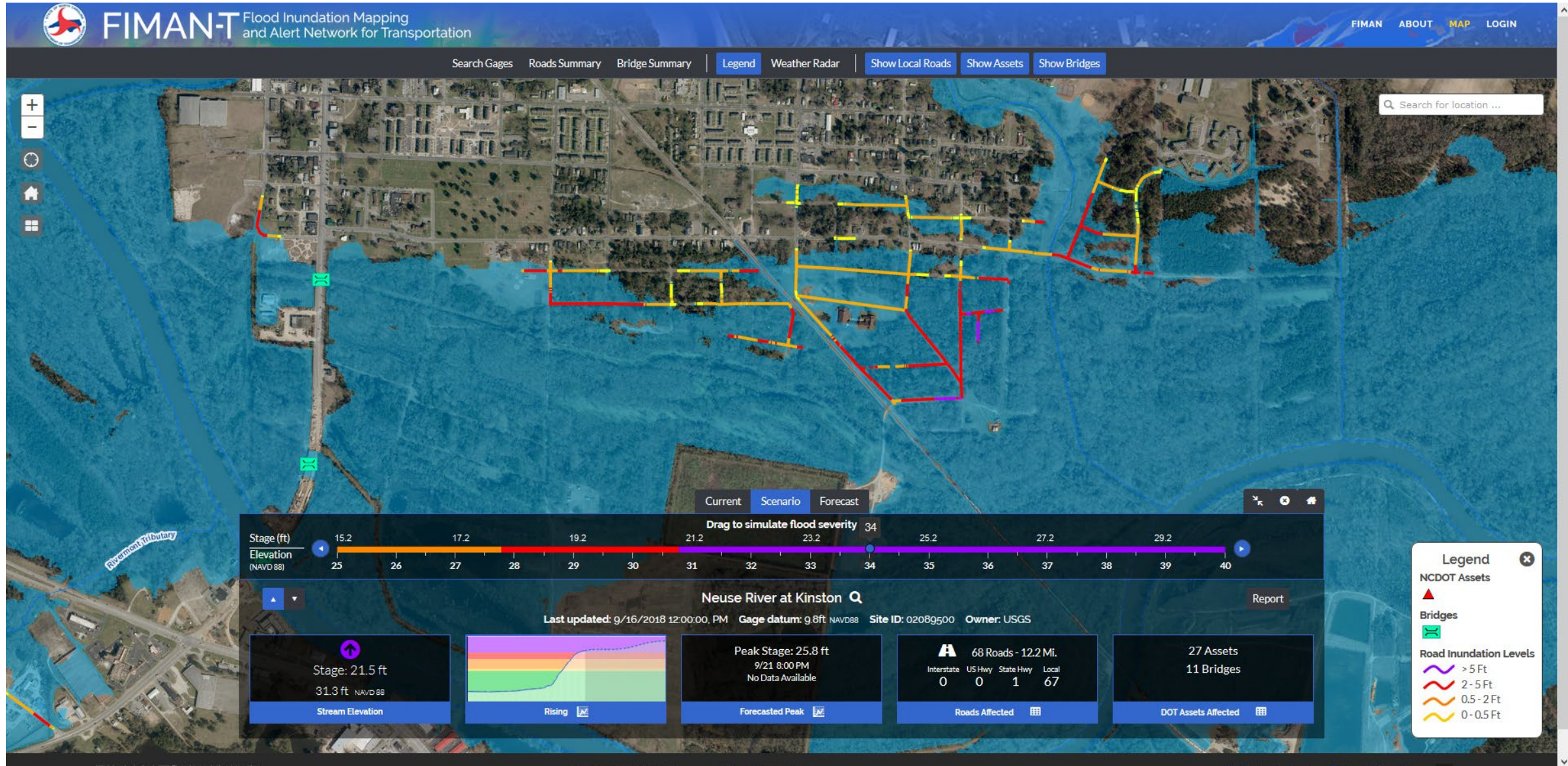
NCDOT Assets

- Bridges
- Road Inundation Levels
- > 5 Ft
- 2 - 5 Ft
- 0.5 - 2 Ft
- 0 - 0.5 Ft

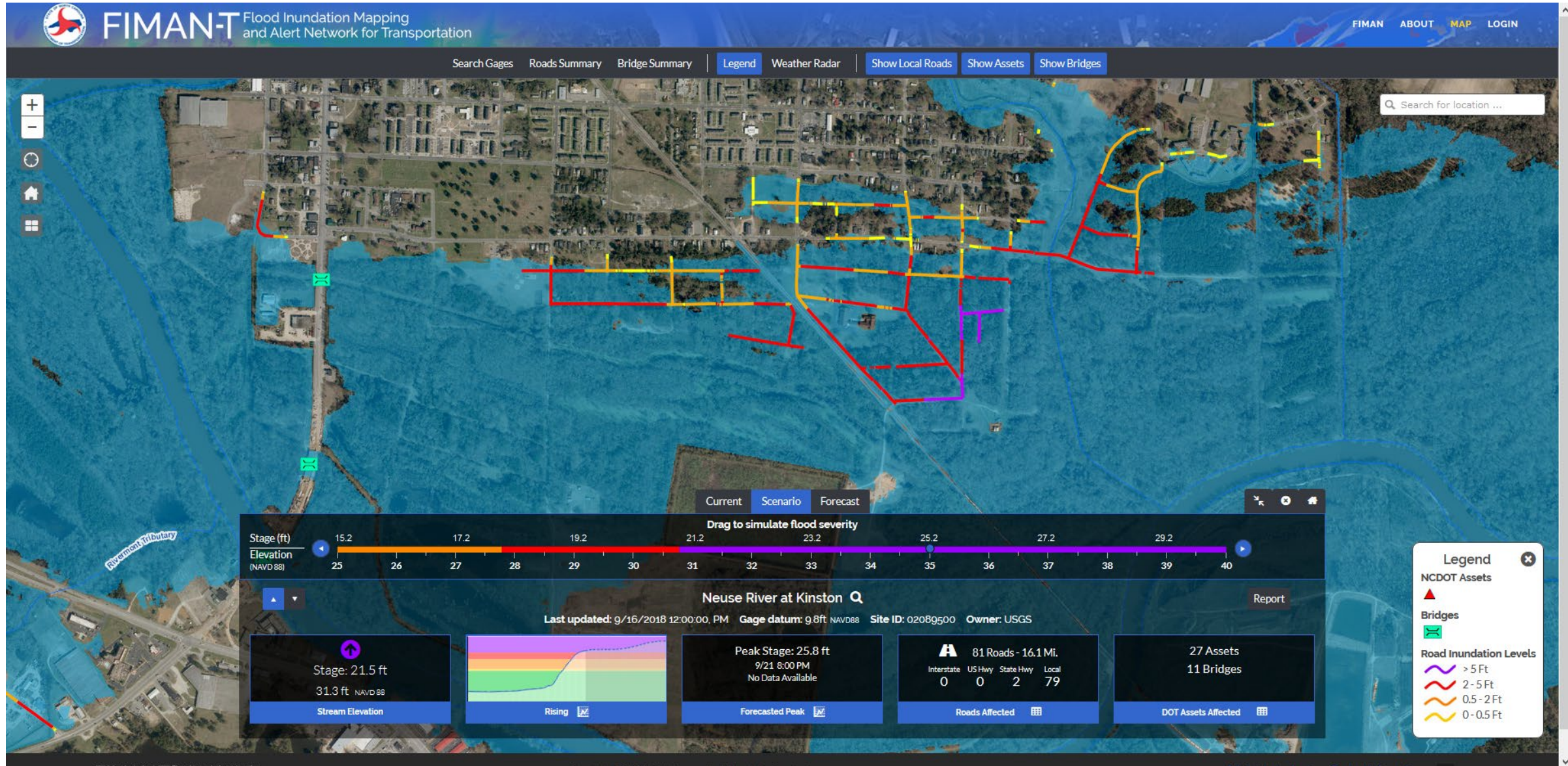
Scenario Modes for Planning: Kinston (33-ft)



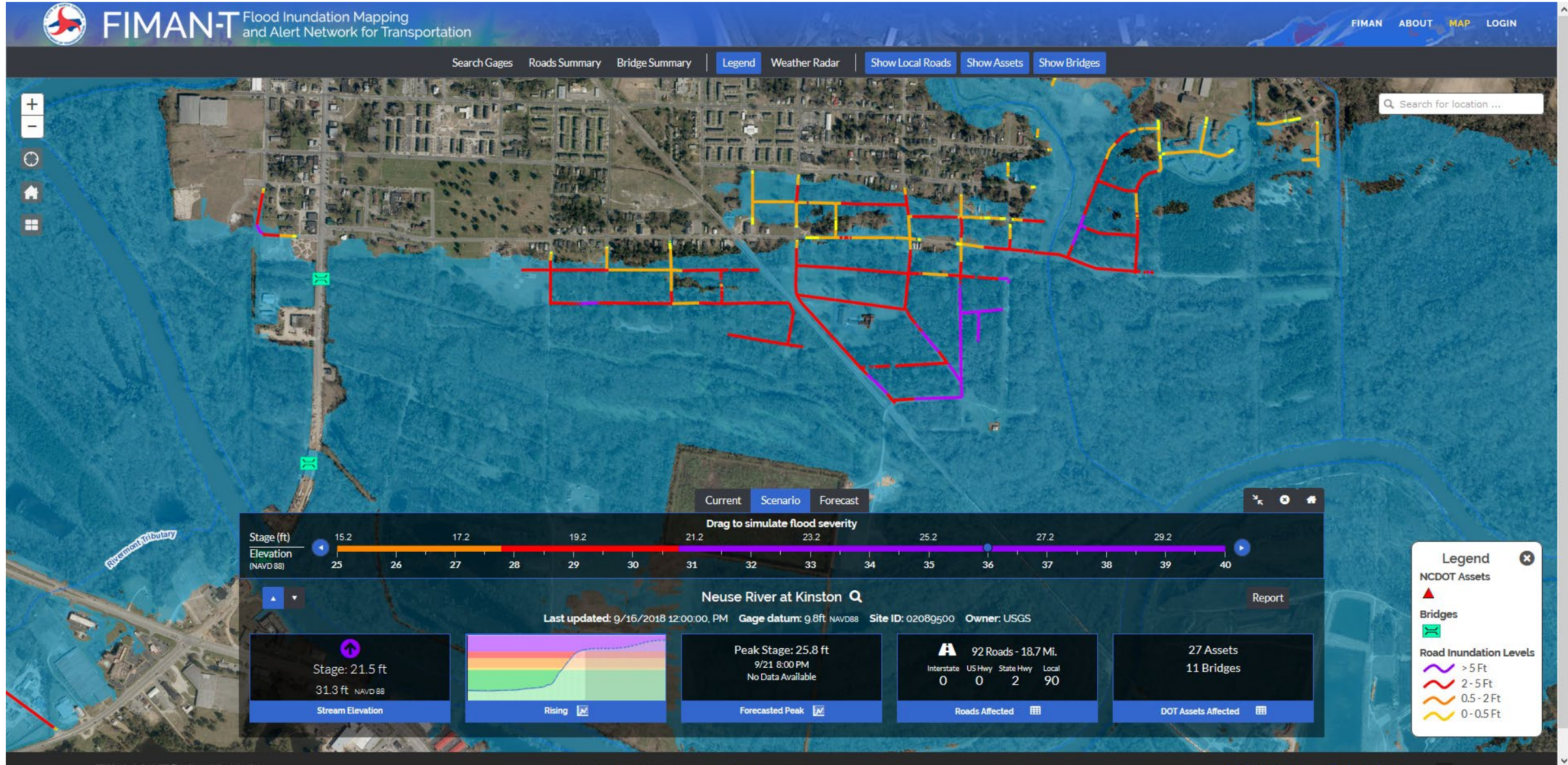
Scenario Modes for Planning: Kinston (34-ft)



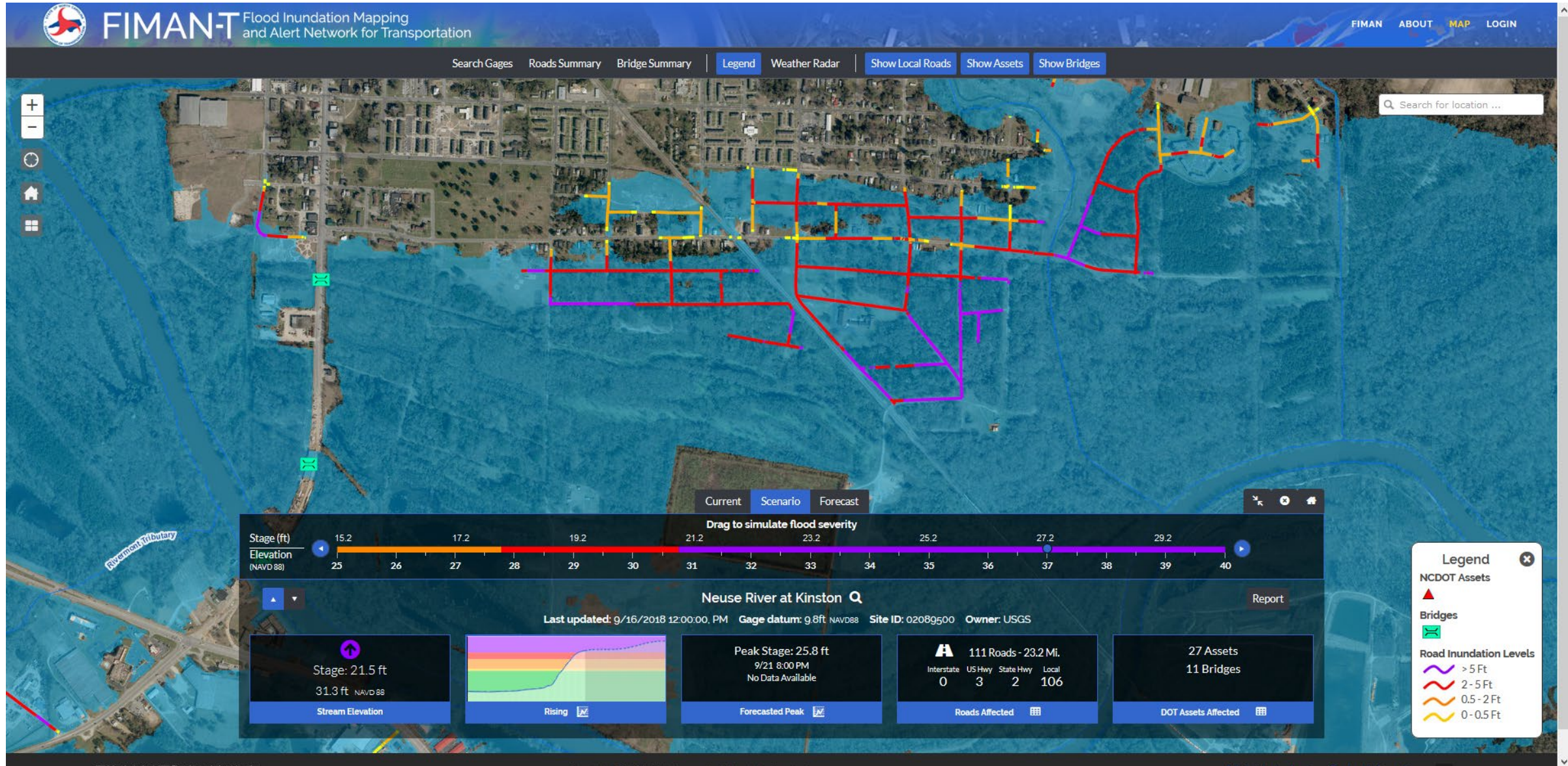
Scenario Modes for Planning: Kinston (35-ft)



Scenario Modes for Planning: Kinston (36-ft)



Scenario Modes for Planning: Kinston (37-ft)

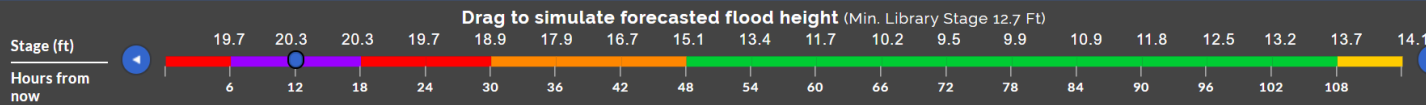


Version 2 Enhancement

Hydraulic Performance Dashboards

Current Scenario Forecast

1



US70B Over Neuse River

Return Home Last Updated: Feb 7, 2020 at 5:15 PM Gage Datum: g8.3ft NAVD88 Associated Gage: 02087570 - Neuse River at Smithfield Bridge ID: 500040

Hydraulic Performance Variables

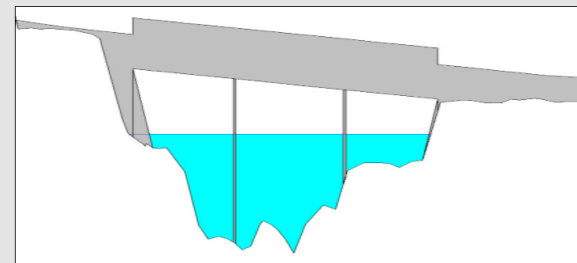
(Forecast Conditions)

Variable	Value	Variable	Value
Stage (ft)	20.3	Deck Elev (ft)	131.8
Elevation (NAVD88)	119.0	Superstructure Elevation (ft)	125.4
Avg Velocity - Inside Bridge Opening (ft/s)	2.4	Overtopping Freeboard (ft)	12.8
Avg Velocity - Main Channel (ft/s)	3.5	Superstructure Freeboard (ft)	6.4

2

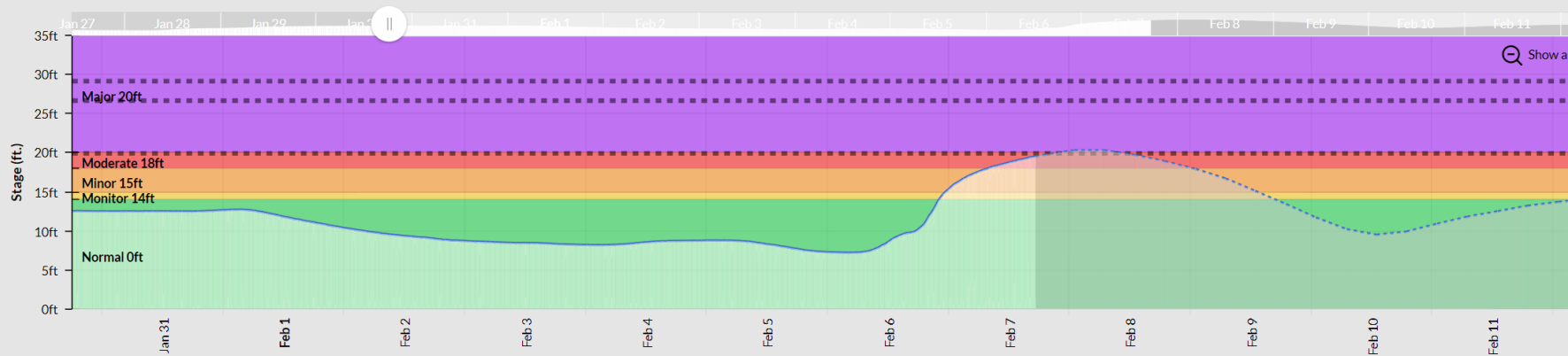
Bridge Cross Section

(Forecast Conditions)



3

Hydrograph



4

Ground Truthing Opportunity

NC 581 over Neuse River Prices Landing Boat Ramp

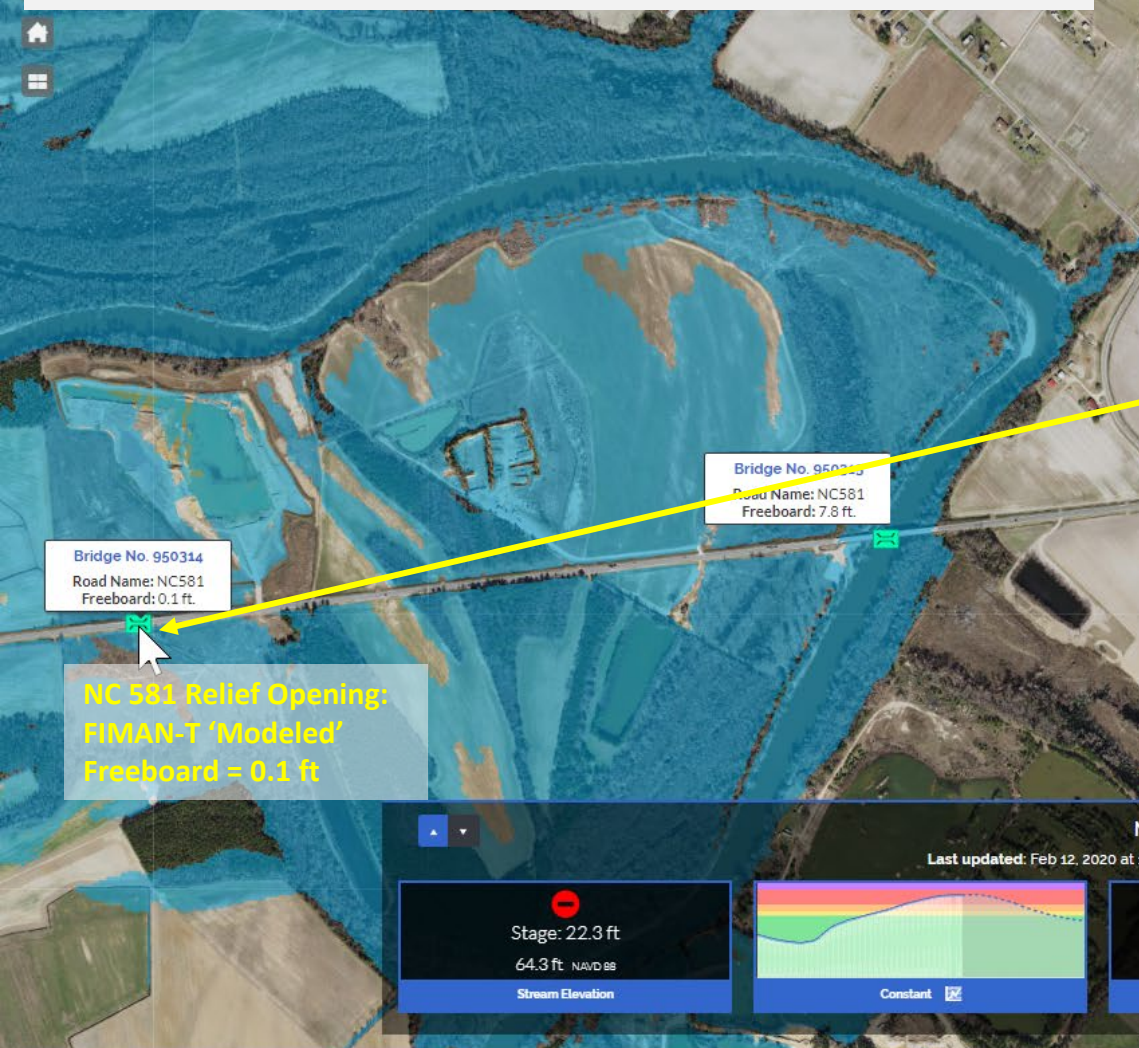
4.25 miles from FIMAN Gage

Date: 2/12/20
Time: 9:30am
Neuse Stage: 22.4



NC 581 over Neuse River FIMAN-T Bridge Freeboard Ground Truth

4.25 miles from FIMAN Gage



Summary Legend Weather Radar Show Local Roads Show Assets Show Bridges

Search for location ...

Observed Freeboard
0.5 ft (+/-)

NC 581 Bridge 950314
Photo Taken: 2/12/20 at 9:20am

Current Scenario Forecast

Neuse River near Goldsboro

Last updated: Feb 12, 2020 at 1:15 PM Gage datum: 41.9ft NAVD88 Site ID: 0208g000 Owner: USGS

Stage: 22.3 ft
64.3 ft NAVD88
Stream Elevation

Constant

Forecasted Peak
2/12 7:00 PM
No Data Available

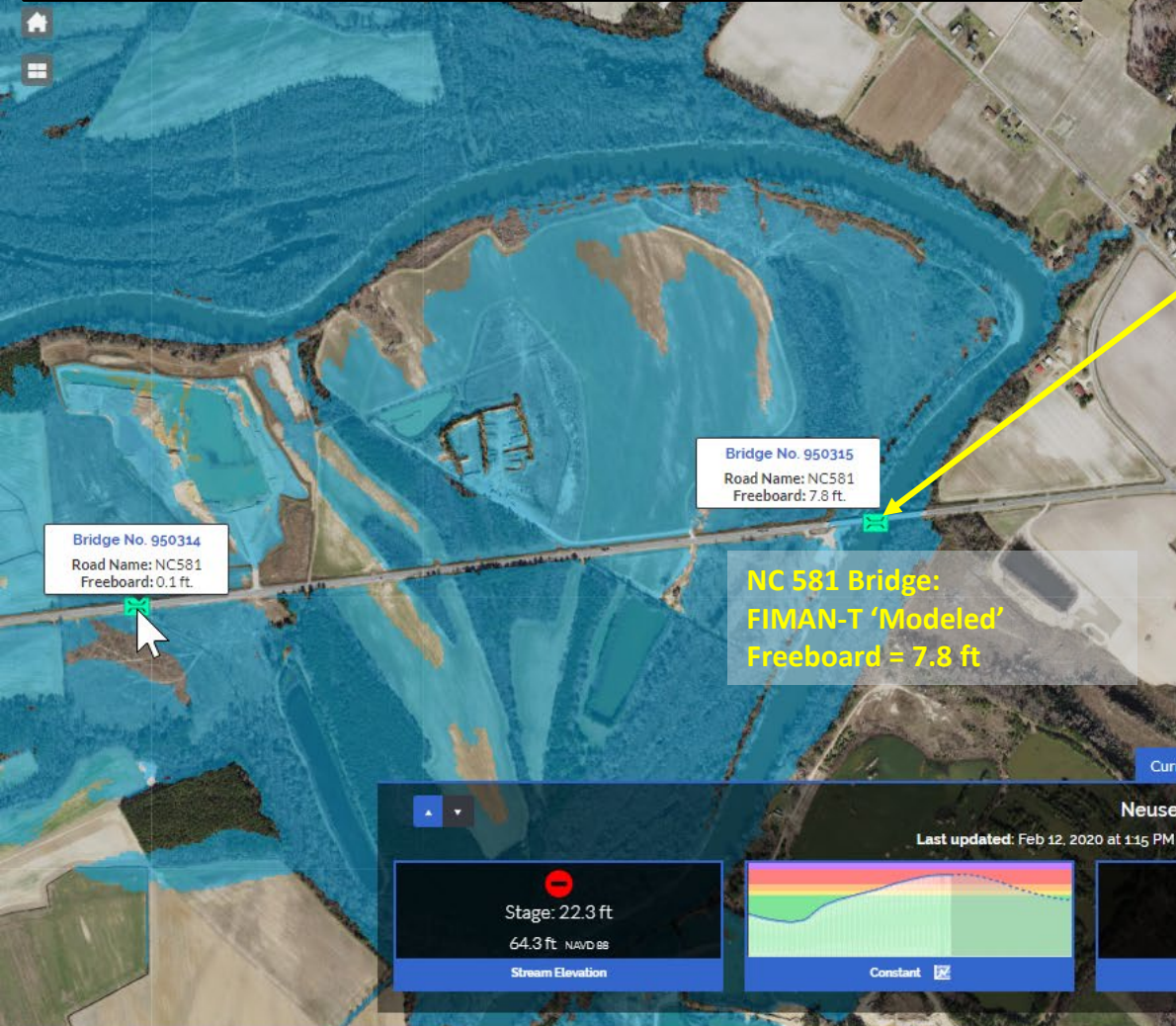
10 Roads - 2.8 Mi.
Interstate US Hwy State Hwy Local
0 0 1 9
Roads Affected

18 Assets
10 Bridges
DOT Assets Affected

Legend
NCDOT Assets
Bridges
Road Inundation Levels
> 5 Ft
2-5 Ft
0.5-2 Ft
0-0.5 Ft

NC 581 over Neuse River FIMAN-T Bridge Freeboard Ground Truth

4.25 miles from FIMAN Gage



Current Scenario Forecast

Neuse River near Goldsboro

Last updated: Feb 12, 2020 at 1:15 PM Gage datum: 41.9ft NAVD88 Site ID: 02089000 Owner: USGS

Stage: 22.3 ft 64.3 ft NAVD88 Stream Elevation	Constant	Forecasted Peak 2/12 7:00 PM No Data Available	10 Roads - 2.8 Mi. Interstate: 0 US Hwy: 0 State Hwy: 1 Local: 9 Roads Affected	18 Assets 10 Bridges DOT Assets Affected
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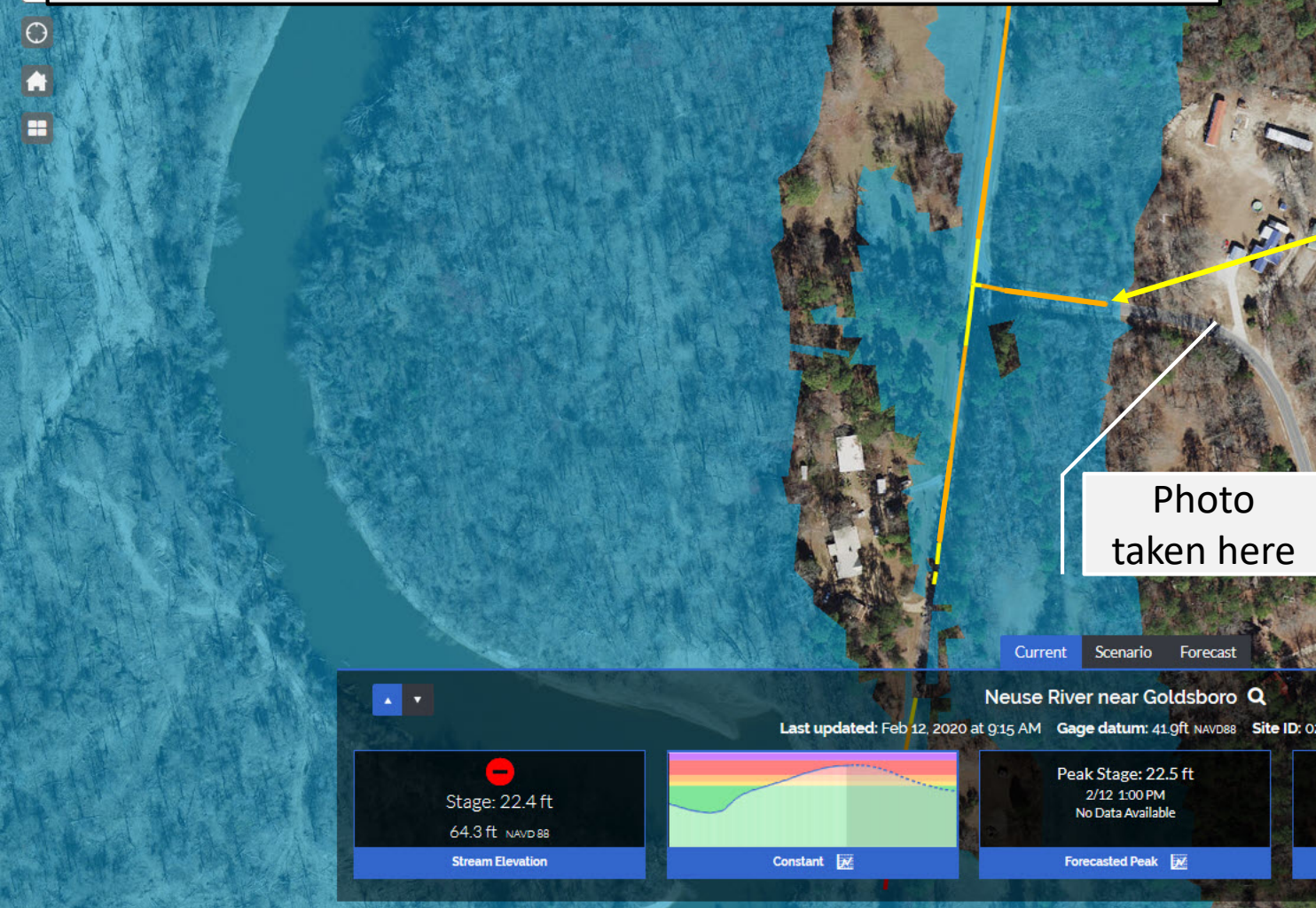
Legend

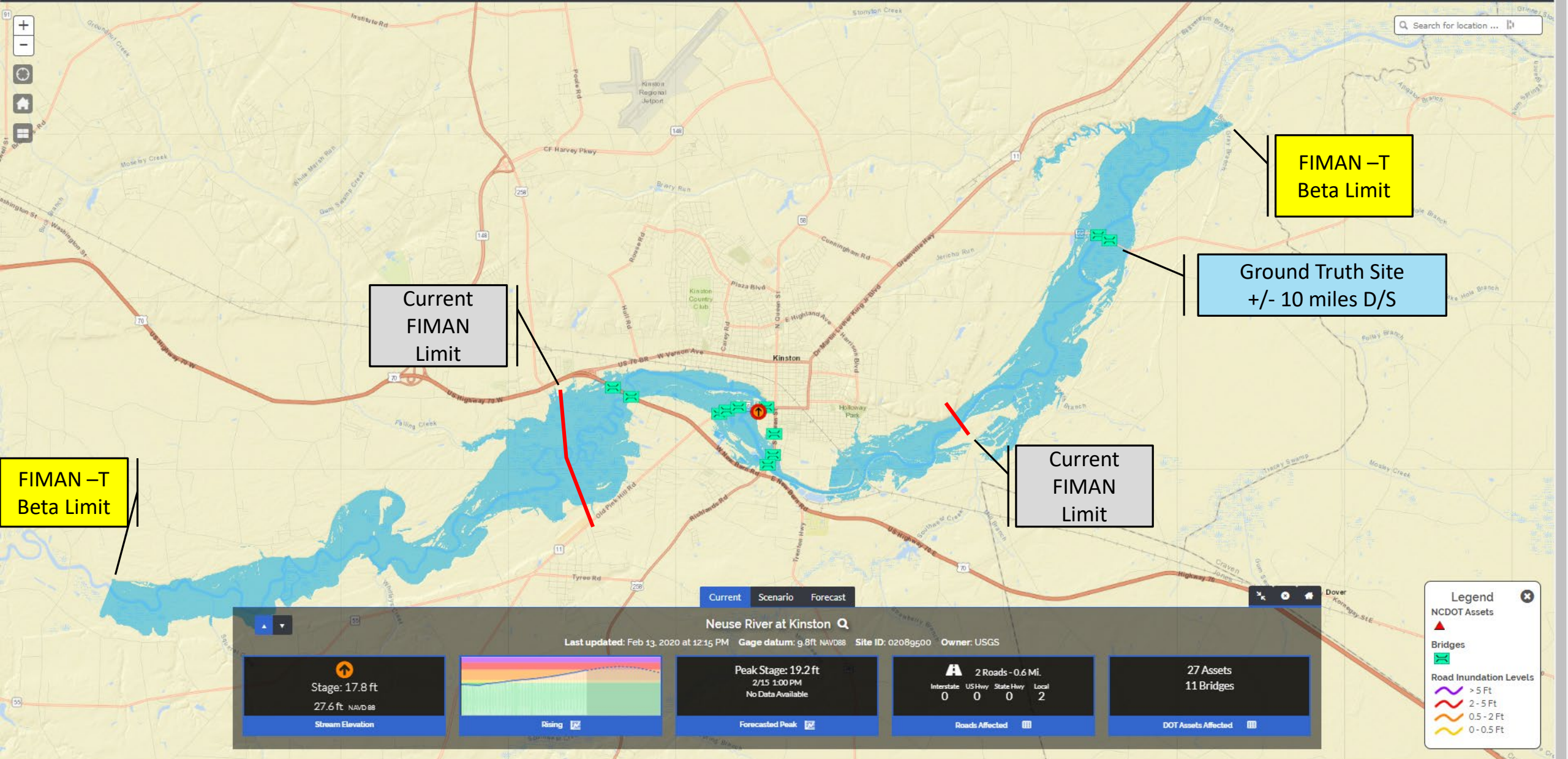
- NC DOT Assets
- Bridges
- Road Inundation Levels
 - > 5 Ft
 - 2-5 Ft
 - 0.5-2 Ft
 - 0-0.5 Ft

Slick Rock Road downstream of Goldsboro

FIMAN-T Inundation and Road Flooding Depth Ground Truth

Note: **8.3 miles** downstream from FIMAN Gage





Current Scenario Forecast

Neuse River at Kinston

Last updated: Feb 13, 2020 at 12:15 PM Gage datum: 9.8ft NAVD88 Site ID: 02089500 Owner: USGS

<p>Stage: 17.8 ft</p> <p>27.6 ft NAVD88</p> <p>Stream Elevation</p>	<p>Rising</p>	<p>Peak Stage: 19.2 ft</p> <p>2/15 1:00 PM</p> <p>No Data Available</p> <p>Forecasted Peak</p>	<p>2 Roads - 0.6 Mi.</p> <table border="1"> <tr> <td>Interstate</td> <td>US Hwy</td> <td>State Hwy</td> <td>Local</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>2</td> </tr> </table> <p>Roads Affected</p>	Interstate	US Hwy	State Hwy	Local	0	0	0	2	<p>27 Assets</p> <p>11 Bridges</p> <p>DOT Assets Affected</p>
Interstate	US Hwy	State Hwy	Local									
0	0	0	2									

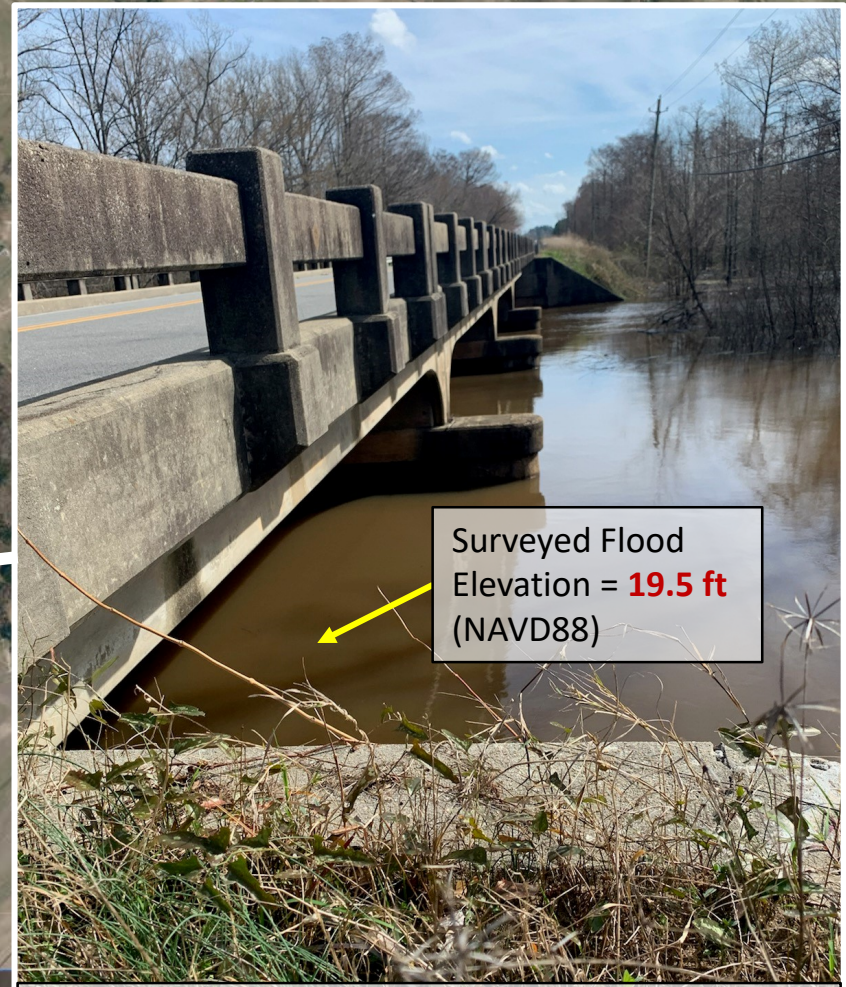
NC 55 over Neuse River Lenoir County

9.7 miles from FIMAN Kinston Gage

Date: 2/13/20
Time: 12:45pm
Kinston Stage: 17.8

Bridge No. 530034
Road Name: NCS5
Freeboard: 4.5 ft.

FIMAN Library
Elevation = **20.0 ft**



Surveyed Flood
Elevation = **19.5 ft**
(NAVD88)

Photo Taken and Survey Collected 2/13/20 –
12:45pm

Current Scenario Forecast

Neuse River at Kinston

Last updated: Feb 13, 2020 at 12:15 PM Gage datum: 9.8ft NAVD88 Site ID: 02089500 Owner: USGS

<p>Stage: 17.8 ft</p> <p>27.6 ft NAVD 88</p> <p>Stream Elevation</p>	<p>Rising</p>	<p>Peak Stage: 19.2 ft</p> <p>2/15 1:00 PM</p> <p>No Data Available</p> <p>Forecasted Peak</p>	<p>2 Road</p> <p>Interstate US Hwy St</p> <p>0 0 0 2</p> <p>Roads Affected</p>	<p>DOT Assets Affected</p>
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2-5 Ft
0.5-2 Ft
0-0.5 Ft

FIMAN-T: Planned Next Steps

- Integration with Production FIMAN
- Bridge Hydraulics Dashboards
- FIMAN-T Coastal Surge Module
- Multi-Modal Integration
- System Coverage Expansion (Phase 2)
 - Gage Installations
 - North East Cape Fear River / Wallace / I-40
 - Lumberton / I-95
 - Tar-Pamlico Basin
 - Roanoke / Chowan Basin
 - Statewide Implementation
- Divisional Training/Engagement/Feedback



+



=



Flood Resilient

FIMANT Flood Inundation Mapping and Alert Network for Transportation

Search Gages Roads Summary Bridge Summary Legend Weather Radar Show Local Roads Show Assets Show Bridges

Neuse River near Goldsboro
Forecast Stage: 27.6 ft
Elevation: 67.4 (NAVD 88)

Road Name	Bridge Number	Flood Source	Road Elevation (ft)	Low Road Elevation (ft)	Current/Scenario WSE	Forecast (ft)
NC 516	950014	Neuse River Overflow	63.0	60.7	63.0	4.8
NC 111	950015	Neuse River Overflow	63.0	60.7	63.0	2.3
NC 111	950016	Pond Off Neuse River	63.9	60.7	61.9	-1.9
NC 504	950018	Neuse River	72.5	69.3	69.3	-3.2
US 22/US 117	950019	Neuse River Overflow	76.4	72.2	72.2	-4.2

Legend
NCDOT Assets
Bridges
Road Inundation Levels
0.5 ft
1 ft
2 ft
3 ft

WEBINAR ATTENDEES QUESTIONS?



(PLEASE USE CHAT WINDOW IN SKYPE IF POSSIBLE)





Webinar Attendees Questions?



(please use chat window in Skype if possible)



Attendance Roster and Continuing Education Credits

- Please visit the link provided in the Webinar Chat window
- https://docs.google.com/forms/d/e/1FAIpQLSdeAOgYgdZmAlMXhOp42WGMIzMri2j08VRpophA_E0DqW2U7g/viewform?usp=sf_link
- Complete the roster and fill in applicable CFM, PE and PLS information

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3/25/20

Thank you for attending the FIMAN-T webinar. In order to track participant attendance, please complete the information below. Non-applicable fields can be left blank.

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Your answer _____

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PE #

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