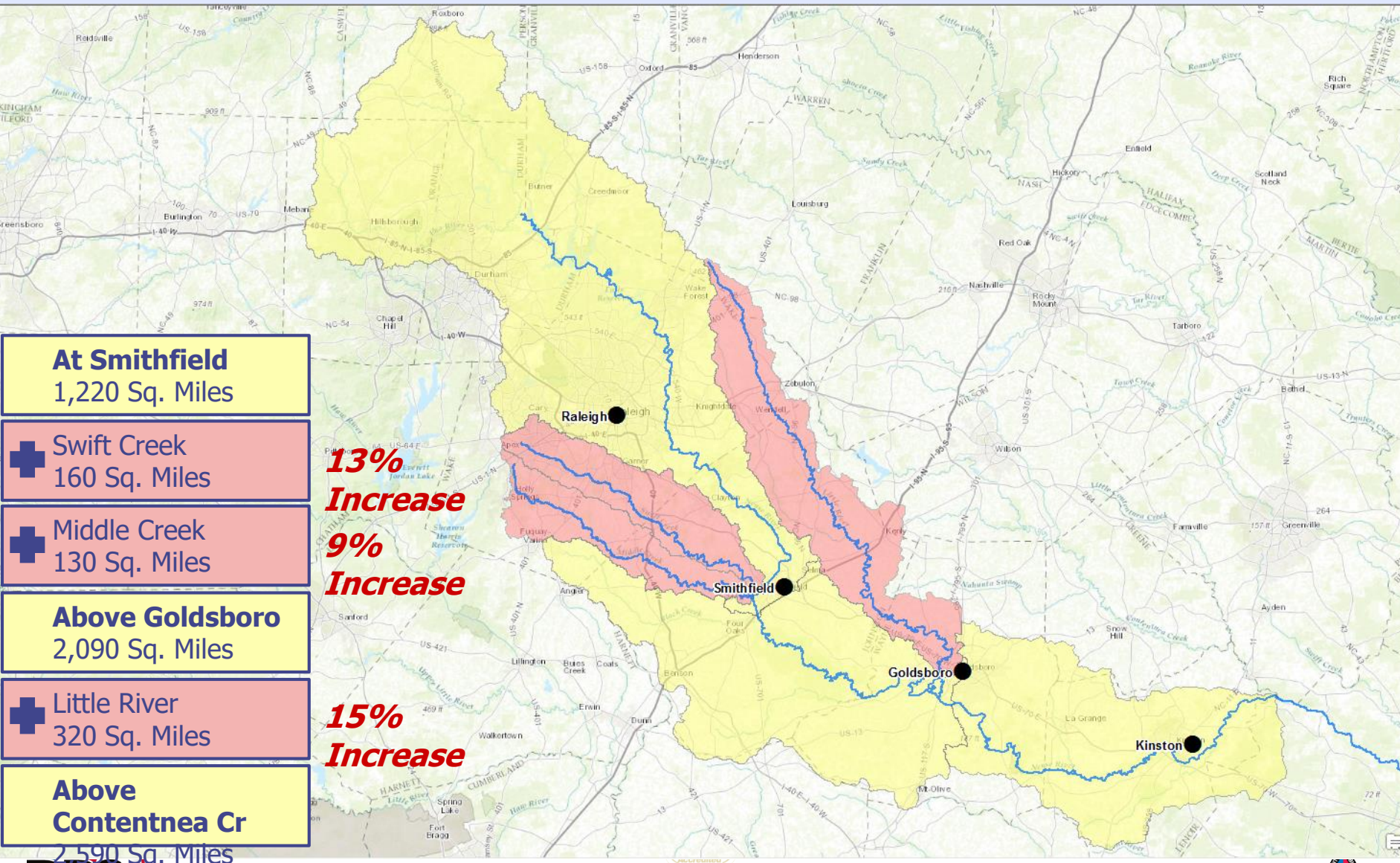


Neuse River Basin Roundtable

August 24, 2017

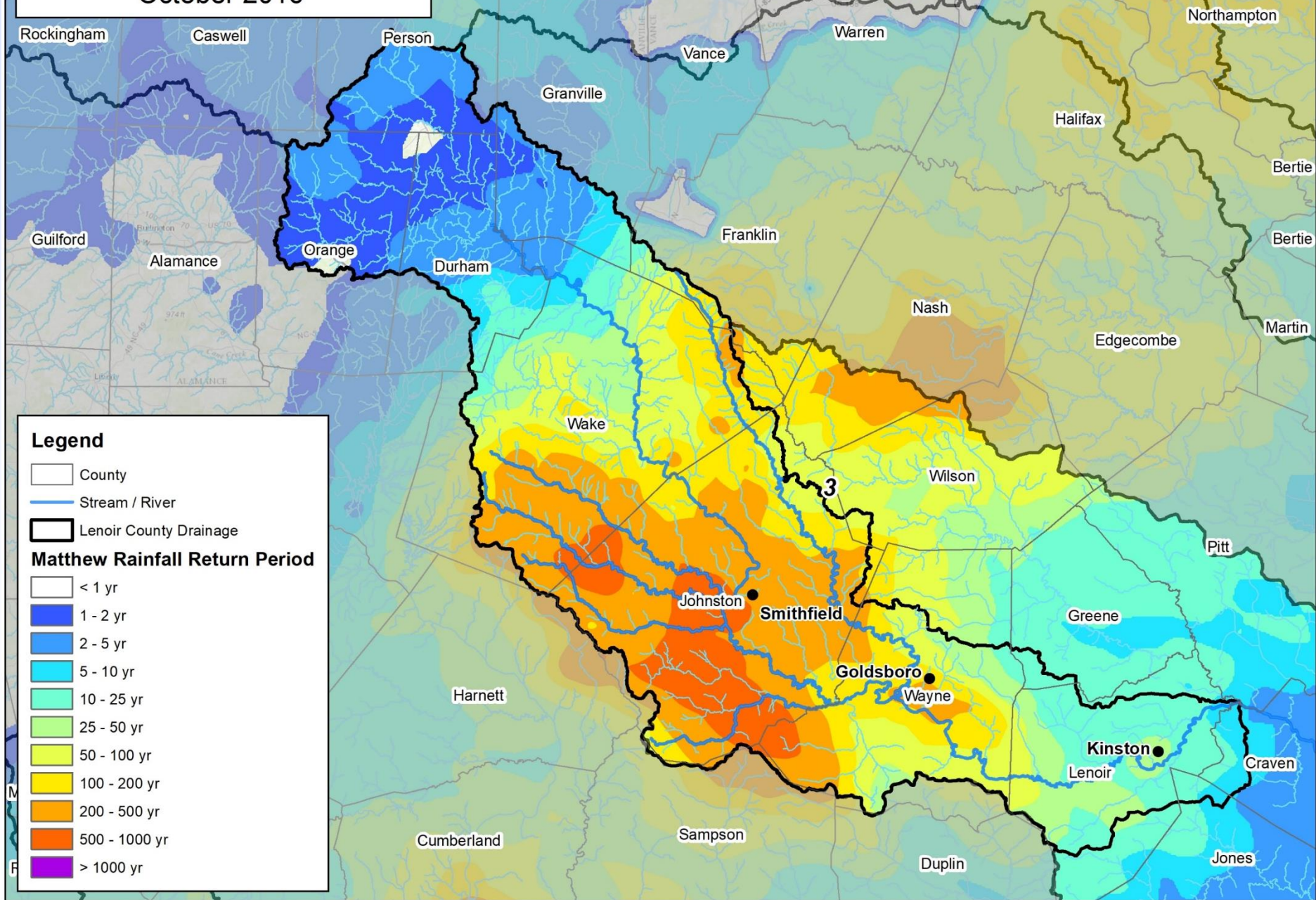
Major Contributors to Neuse Watershed



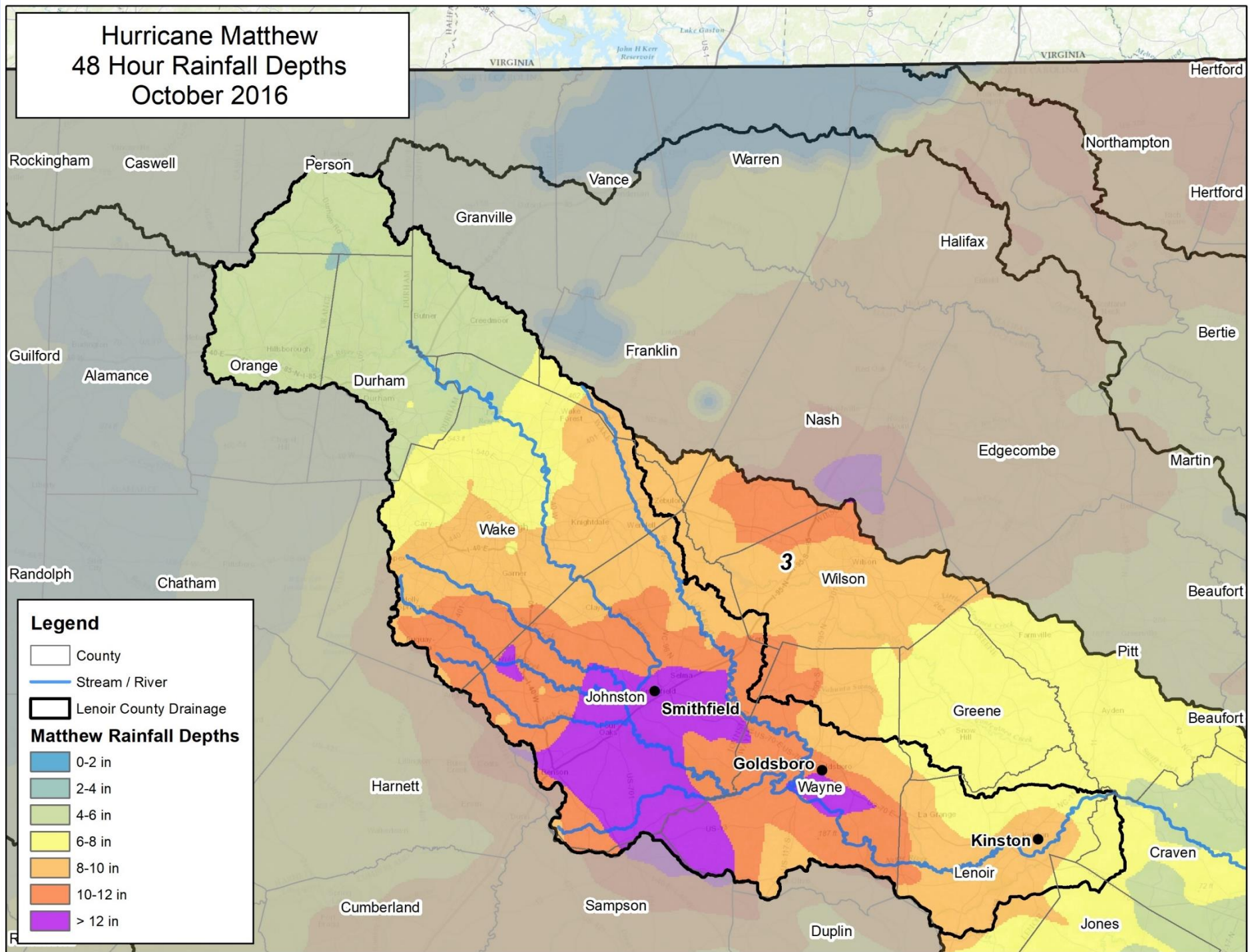
Hurricane Matthew

48 Hour Rainfall Return Periods

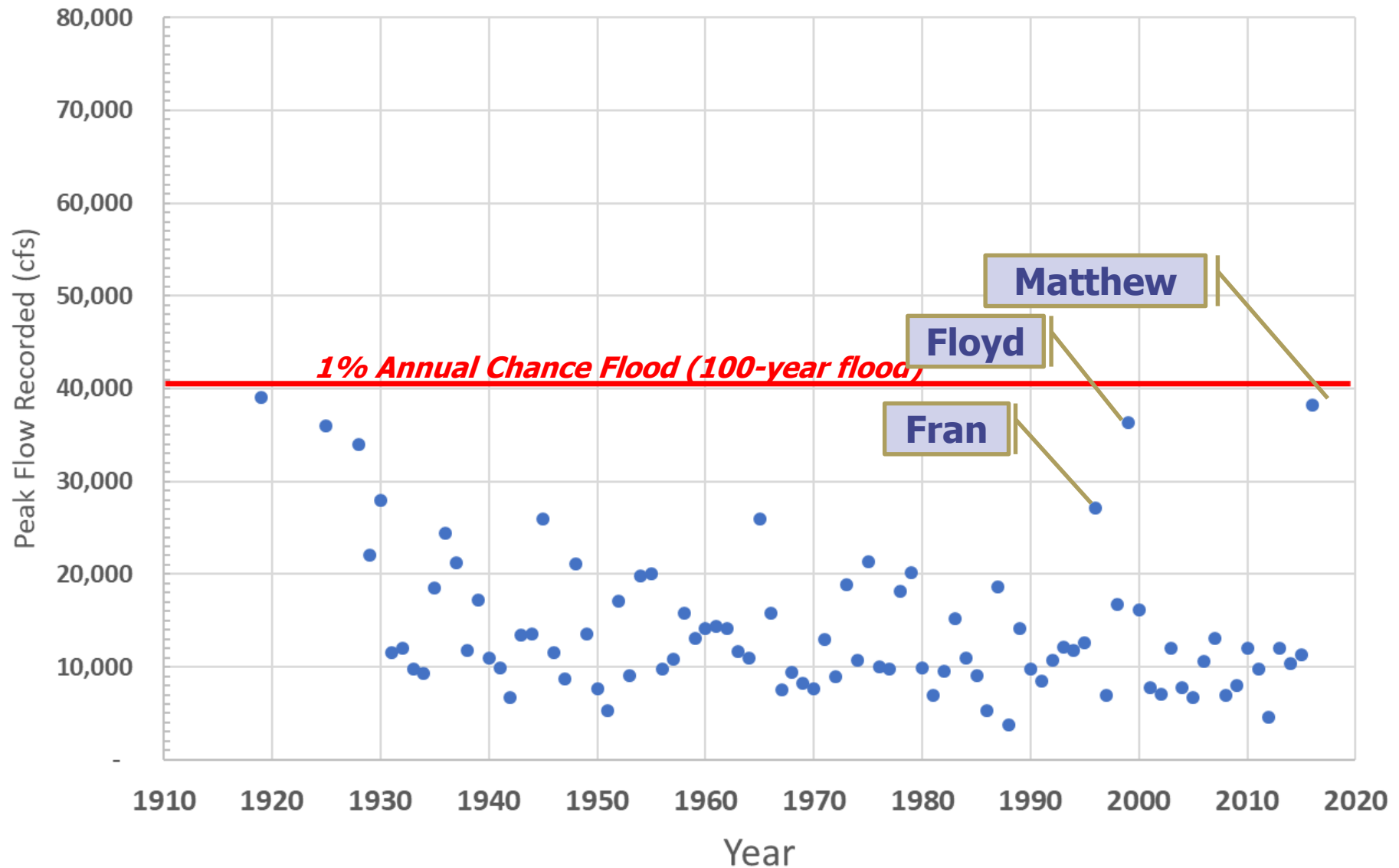
October 2016



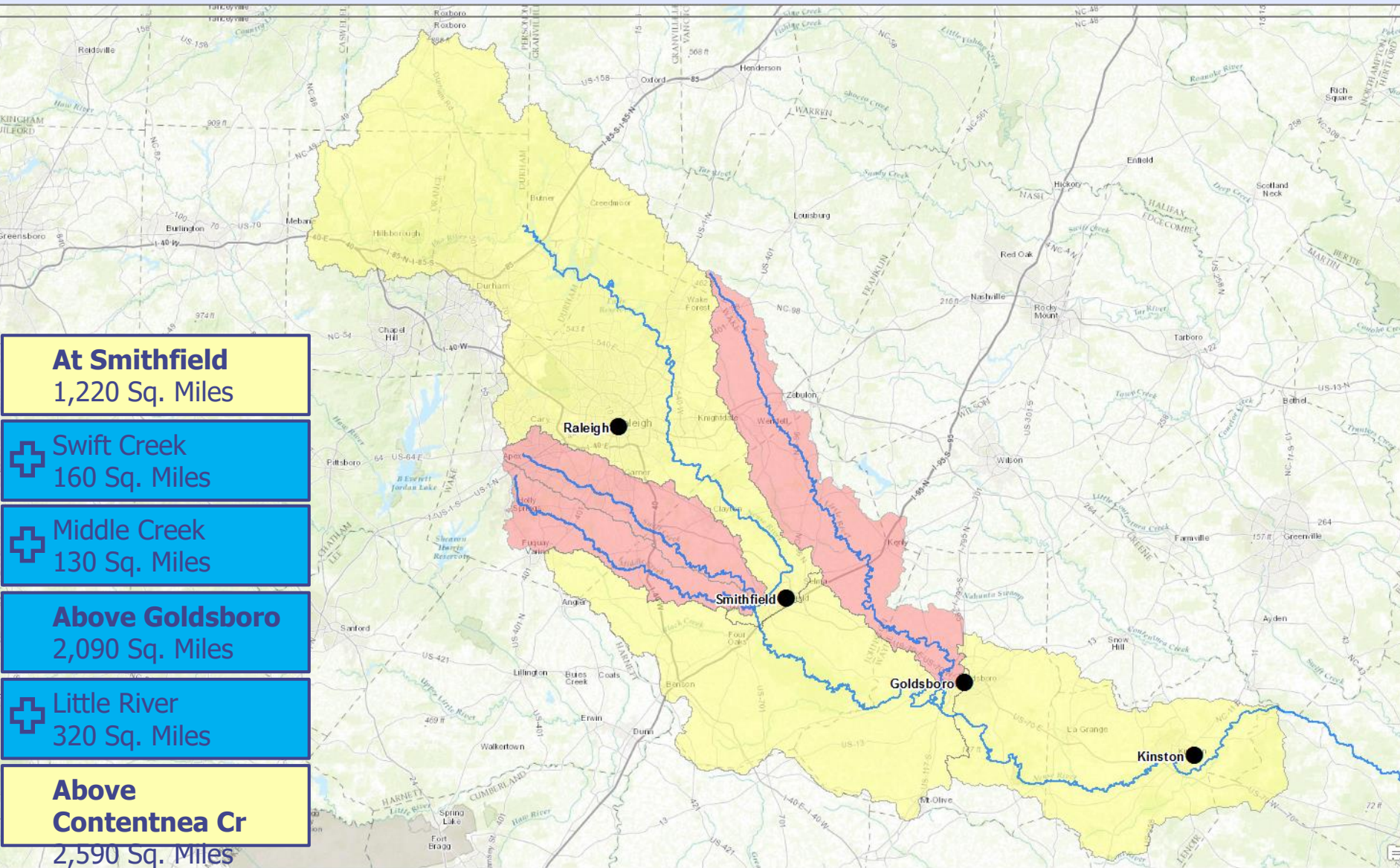
Hurricane Matthew 48 Hour Rainfall Depths October 2016



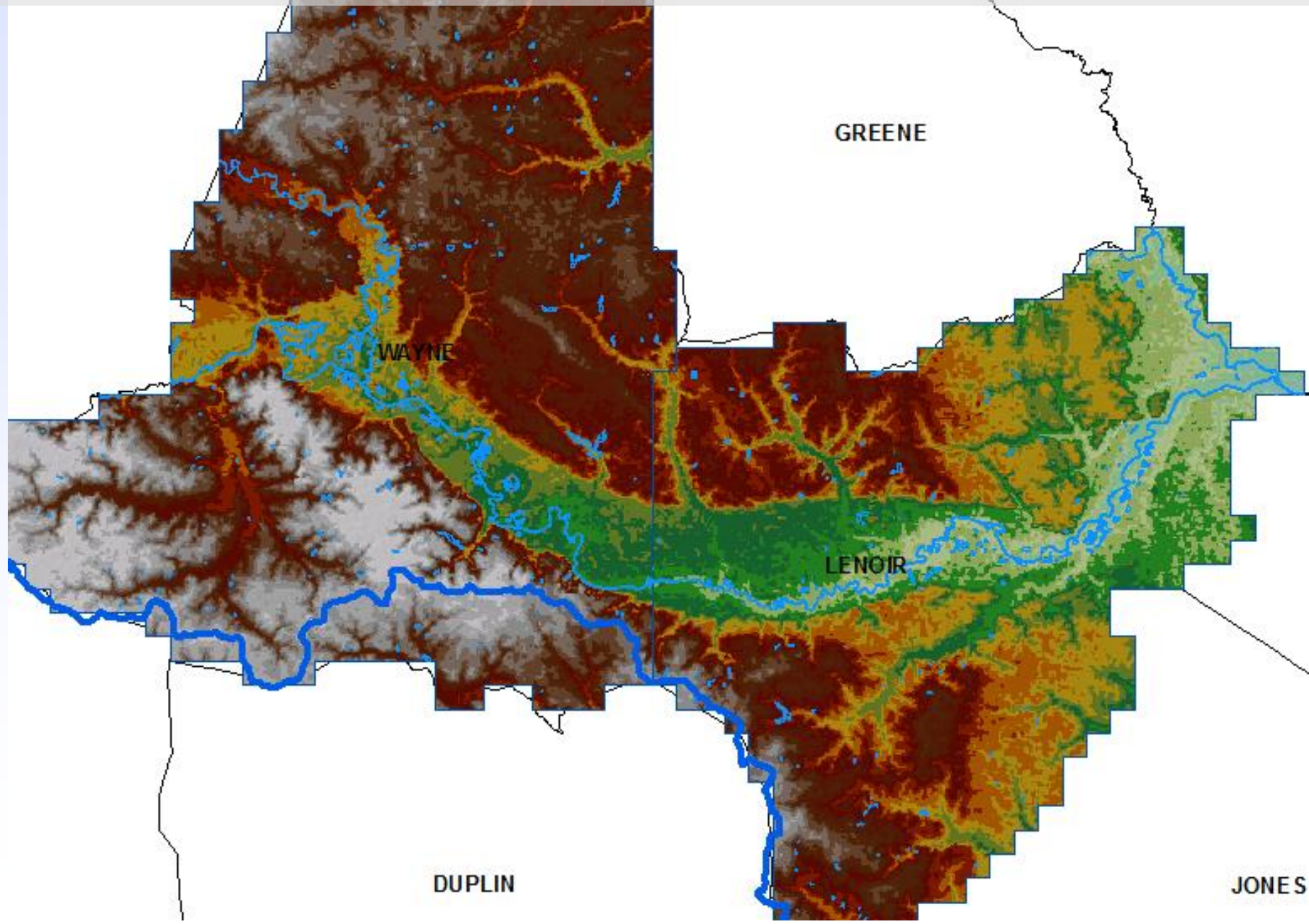
Neuse River: 97 Years of Flooding in Kinston



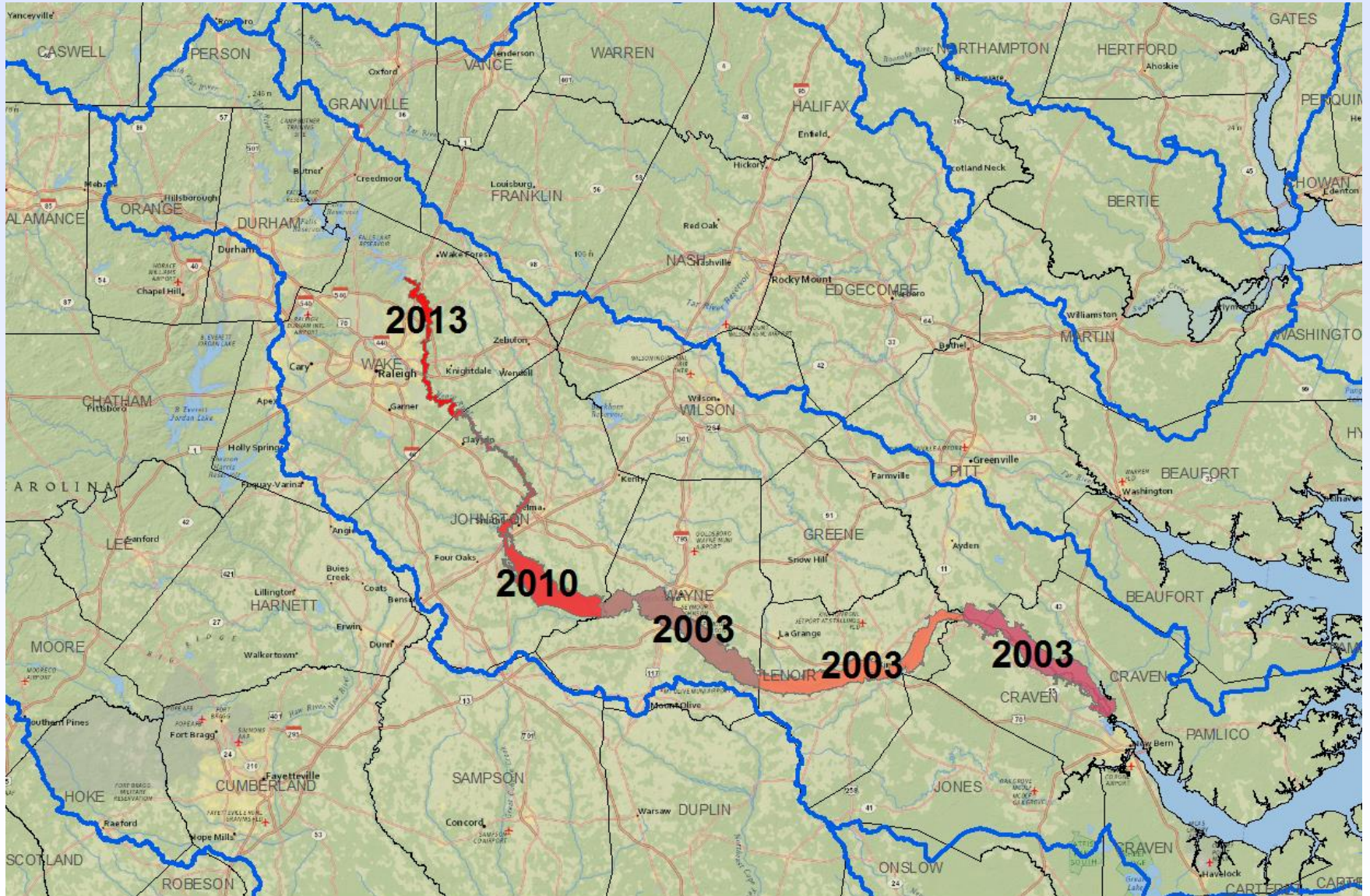
Hurricane Matthew - Major Contributors to Neuse



Neuse River Basins - Topography



NCFMP Neuse River Flood Studies



NCFMP Neuse River Flood Studies

- Hydraulics
 - HEC-RAS hydraulic models for the entire river in 5 segments downstream of Falls of Neuse (2003-2013)
 - 10, 25, 50, 100 and 500-year storm events and Hurricane Floyd in model runs
- Hydrology
 - Falls of Neuse Reservoir discharges provided by the US Army Corps of Engineers
 - Regression analysis and gage analyses used to determine downstream discharges in models

NCFMP FIMAN Library Models

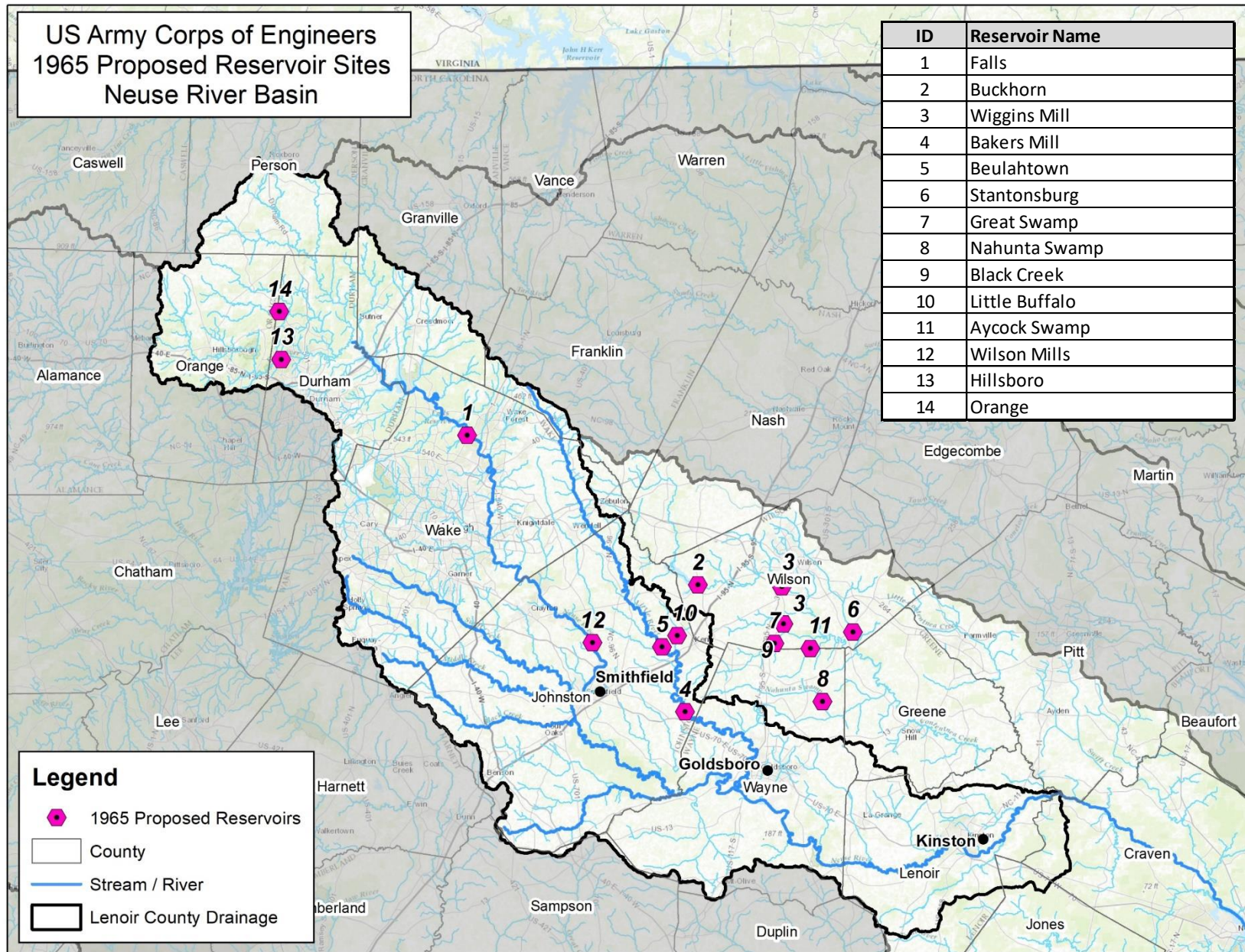
- Hydraulics
 - HEC-RAS hydraulic models for:
 - Neuse River at Clayton
 - Neuse River at Smithfield
 - Neuse River at Goldsboro
 - Neuse River at Kinston
 - Extend approximately 0.5-1.5 mile upstream and downstream of gage
 - Flood boundaries 0.5-ft increments – 10-yr to 500-year events

Lenoir County and Kinston Summary of Neuse River Total Building Damages

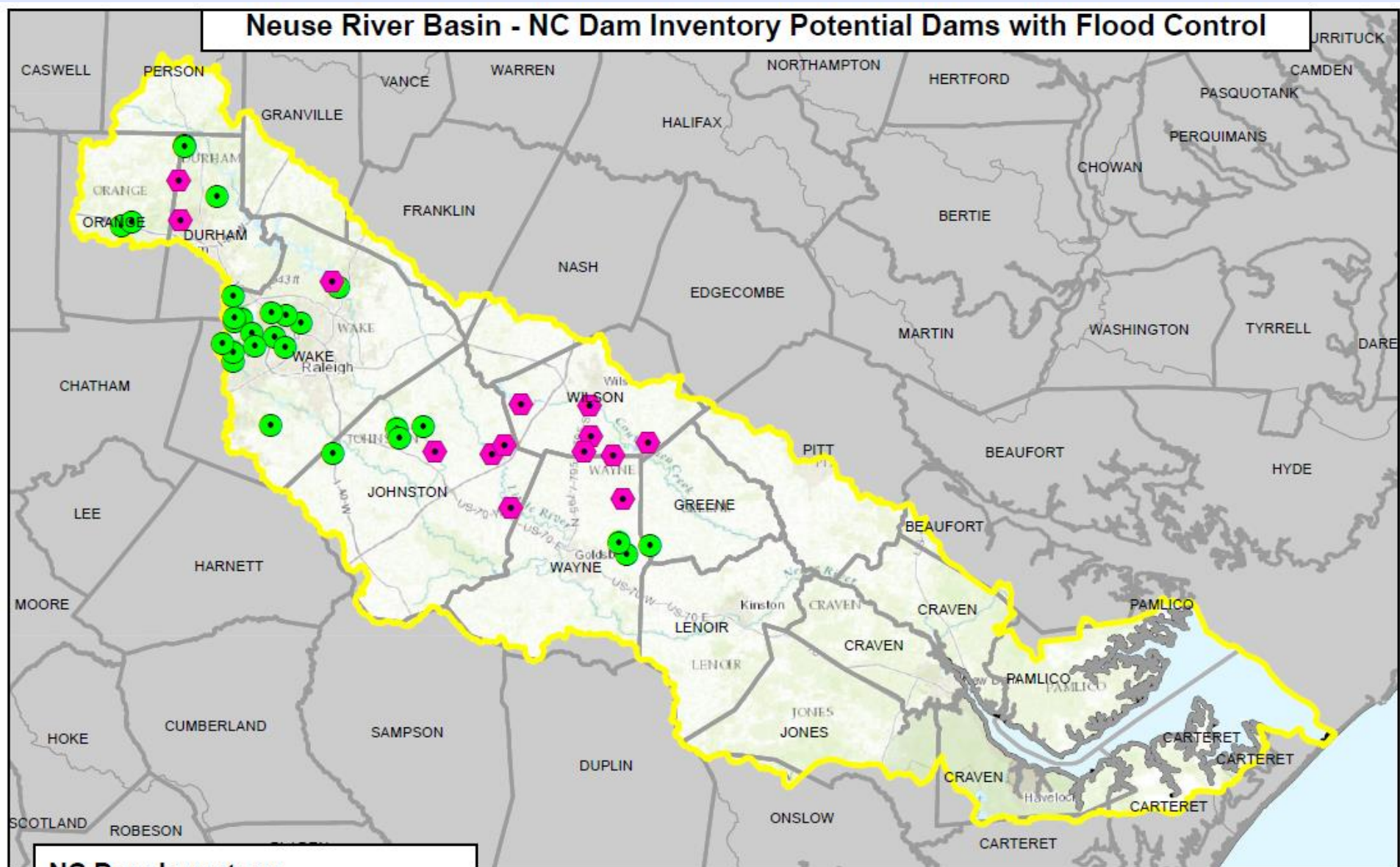
Frequency	Flow (cfs)	Neuse River Lenoir County Total Building Damages			
		Commercial	Public	Residential	Total
10	22,600	\$ 17,290,000	\$ 1,310,000	\$ 3,366,000	\$ 21,966,000
25	29,300	\$ 33,409,000	\$ 1,527,000	\$ 7,098,000	\$ 42,034,000
50	34,700	\$ 59,682,000	\$ 1,675,000	\$ 13,039,000	\$ 74,396,000
100	40,500	\$ 89,545,000	\$ 2,235,000	\$ 21,532,000	\$ 113,312,000
500	55,600	\$ 153,906,000	\$ 4,509,000	\$ 52,200,000	\$ 210,615,000

Kinston Total Building Damages			
Commercial	Public	Residential	Total
\$ 17,034,000	\$ 1,310,000	\$ 2,629,000	\$ 20,973,000
\$ 32,698,000	\$ 1,527,000	\$ 5,755,000	\$ 39,980,000
\$ 57,349,000	\$ 1,675,000	\$ 9,308,000	\$ 68,332,000
\$ 84,916,000	\$ 2,235,000	\$ 14,768,000	\$ 101,919,000
\$ 143,792,000	\$ 4,222,000	\$ 30,715,000	\$ 178,729,000

1965 Corps Recommended Reservoirs



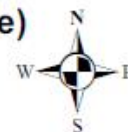
Neuse River Basin - NC Dam Inventory Potential Dams with Flood Control



NC Dam Inventory

- ◆ 1965 USACE Proposed Reservoirs
- Dam Inventory - Flood Control Structures
- Neuse Watershed
- County

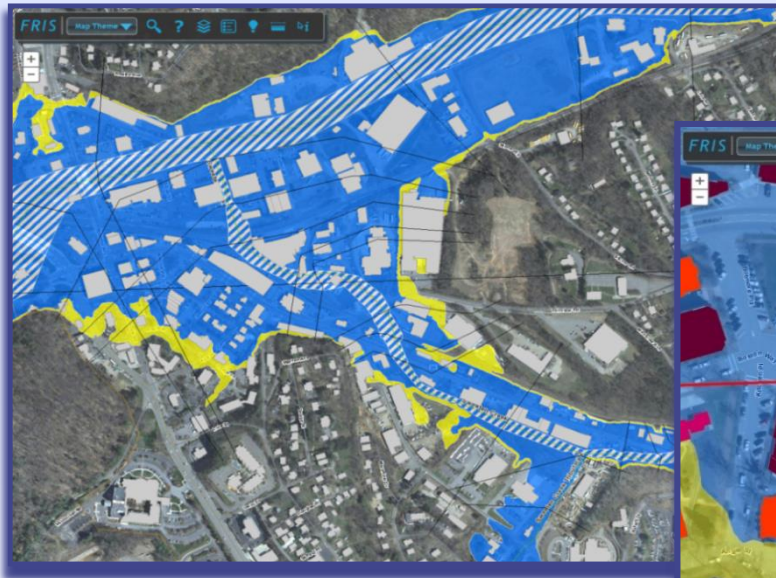
Neuse Dams with Flood Control
 28 Existing Dams (162 Statewide)



Potential Flood Mitigation Strategies

- Few strategies that would be utilized based on the level of protection required:
 - Creek Clean-out and Beaver Management;
 - Extended dry detention for flood control;
 - Diversion or By-Pass Channels;
 - Reservoirs / Detention Basins (Tulsa, Oklahoma);
 - Levees;
 - Agriculture and Timber Water Storage (slowing down the water);
 - and,
 - Infrastructure Support (Roads).

- NCEM – Risk Management prepared to support analysis.



Questions?

John.dorman@ncdps.gov

Neuse River Historical Studies

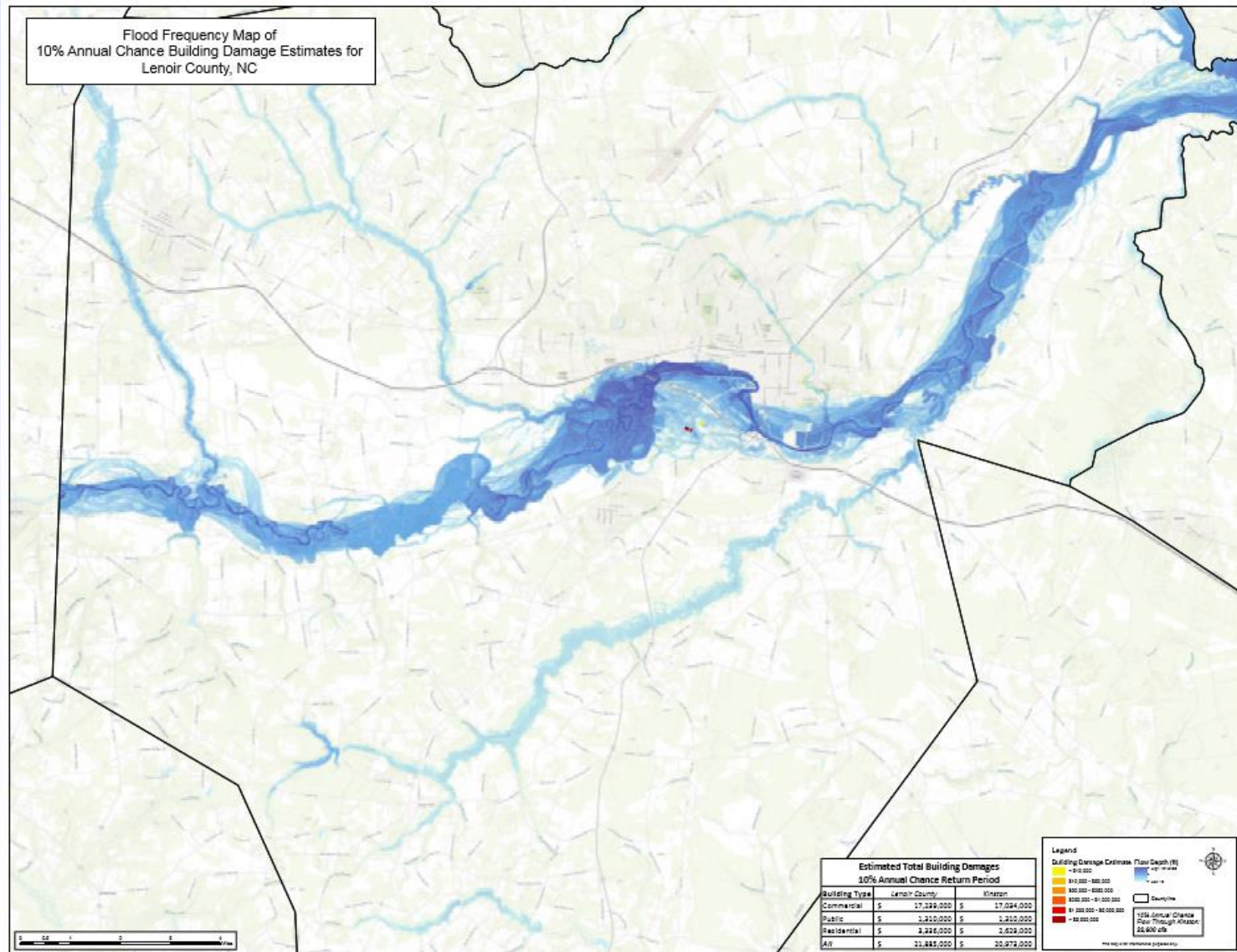
- US Army Corps of Engineers
 - **1963 Neuse River Basin, North Carolina, Survey Report**
 - Reconnaissance Report, Neuse River Basin, North Carolina. (May 1984)
 - Detailed Project Report and Environmental Assessment on Flood Damage Reduction, Adkin Branch, Kinston, NC. (December 1991)
 - Detailed Project Report and Environmental Assessment on Flood Damage
 - Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for the Demolition and Removal of the Pleasant Green Road Dam, on the Eno River, in Orange County, North Carolina. (October 2005)
 - The Reconnaissance Report, Neuse River Basin, North Carolina. (July 1999) – Basin-wide improvement to flood risk management

Neuse River Historical Studies

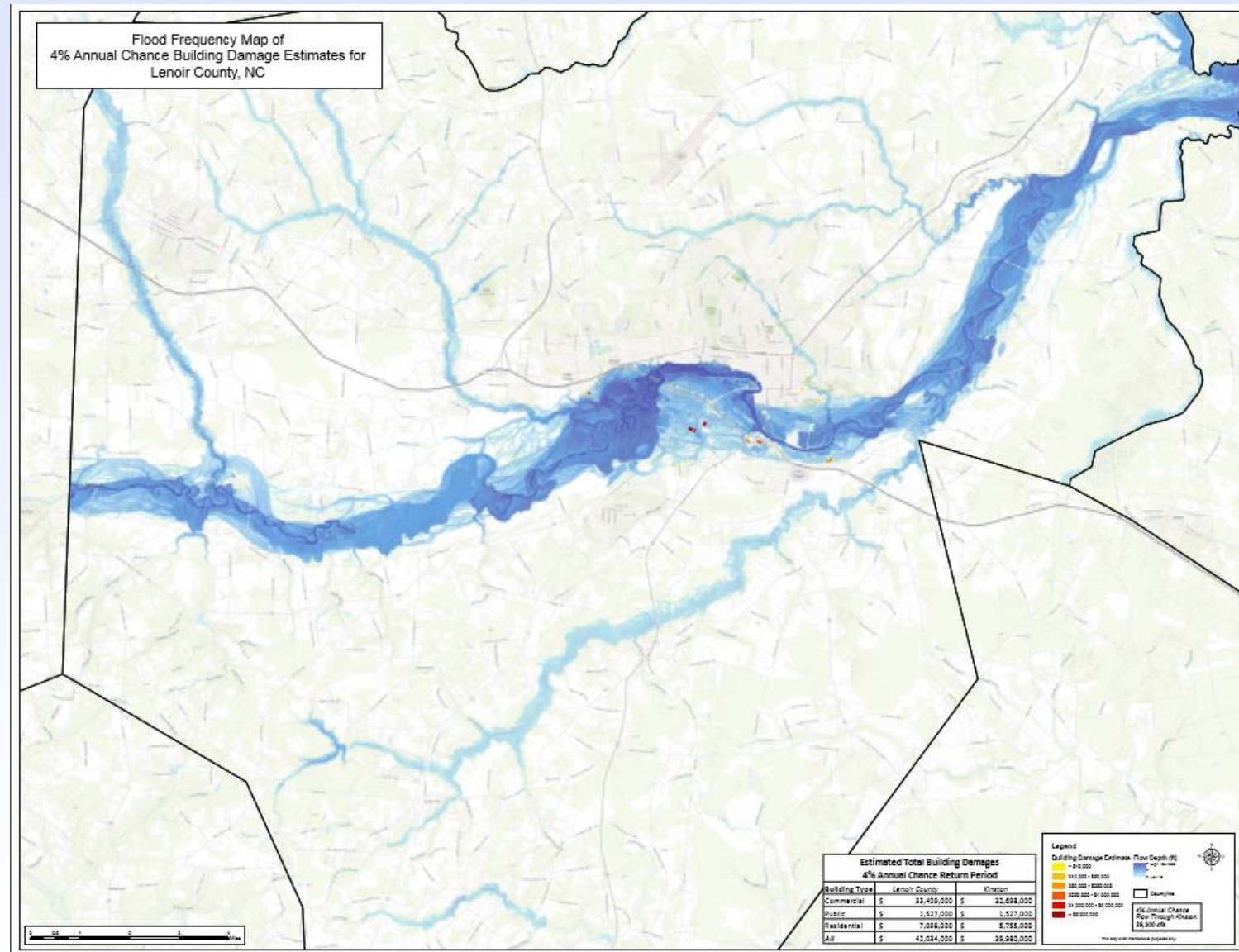
■ Other Studies

- Neuse River Basin-wide Water Quality Plan (NCDWQ)
- Neuse River Basin-wide Water Quality Plan and the Coastal Habitat Protection Plan (CHPP)
- Environmental Assessment and Finding of No Significant Impact for the Demolition and Removal of the Rains Mill Dam, on the Little River, in Johnston County, North Carolina. (October 1999)
- USEPA Albemarle-Pamlico National Estuary Program (APNEP)
- Neuse River Basin Wide Water Quality Plan 2009. (State of NC)
- The Kinston Waterfront–Now! (NC State University)
- Neuse River Estuary Modeling and Monitoring Project (University of North Carolina)
- Mapping of Neuse River Estuary (East Carolina University)
- Neuse River Education Team. (East Carolina University)
- The Nature Conservancy oyster restoration efforts in the Basin

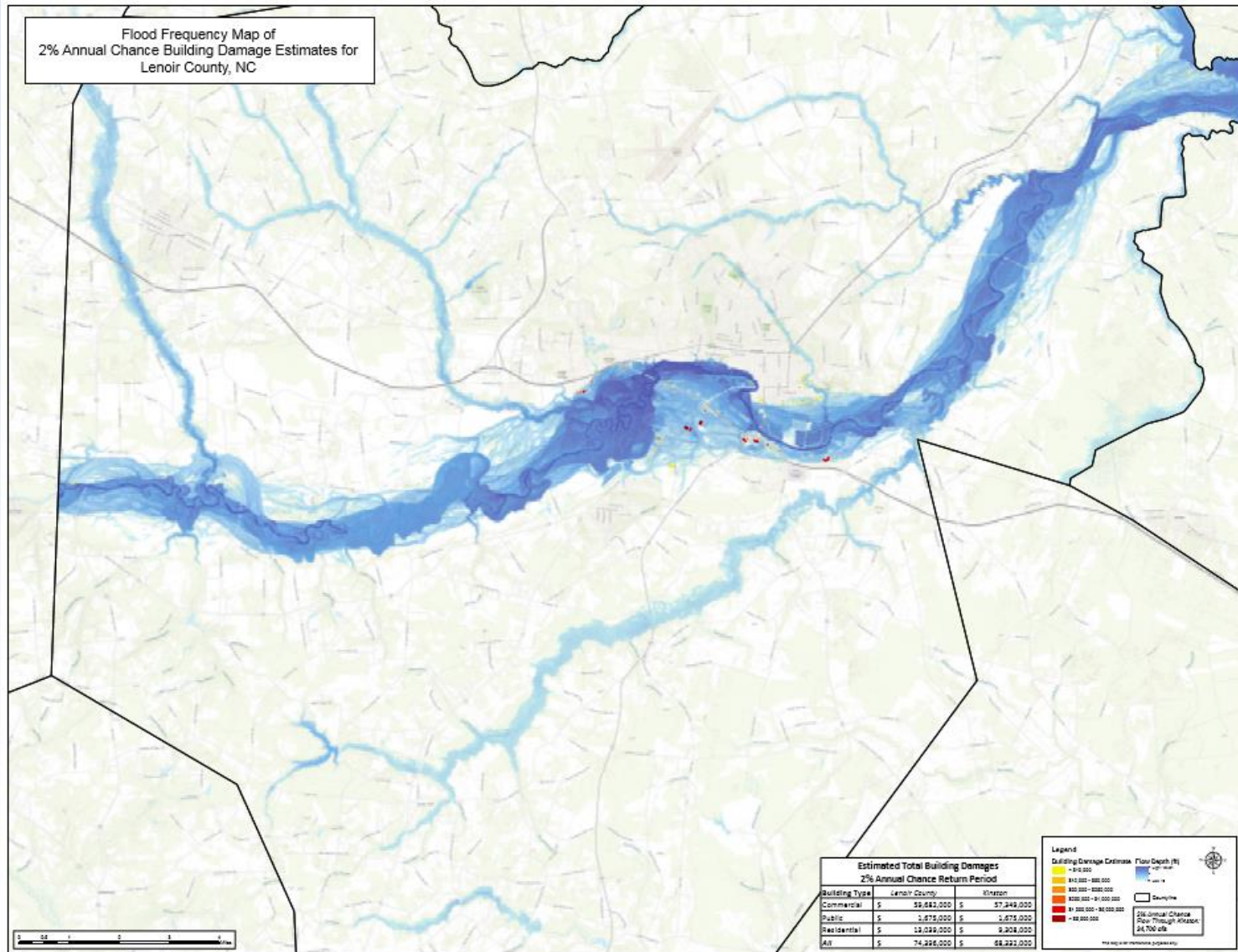
Lenoir County Neuse River Total Building Damages – 10% Annual Chance Event



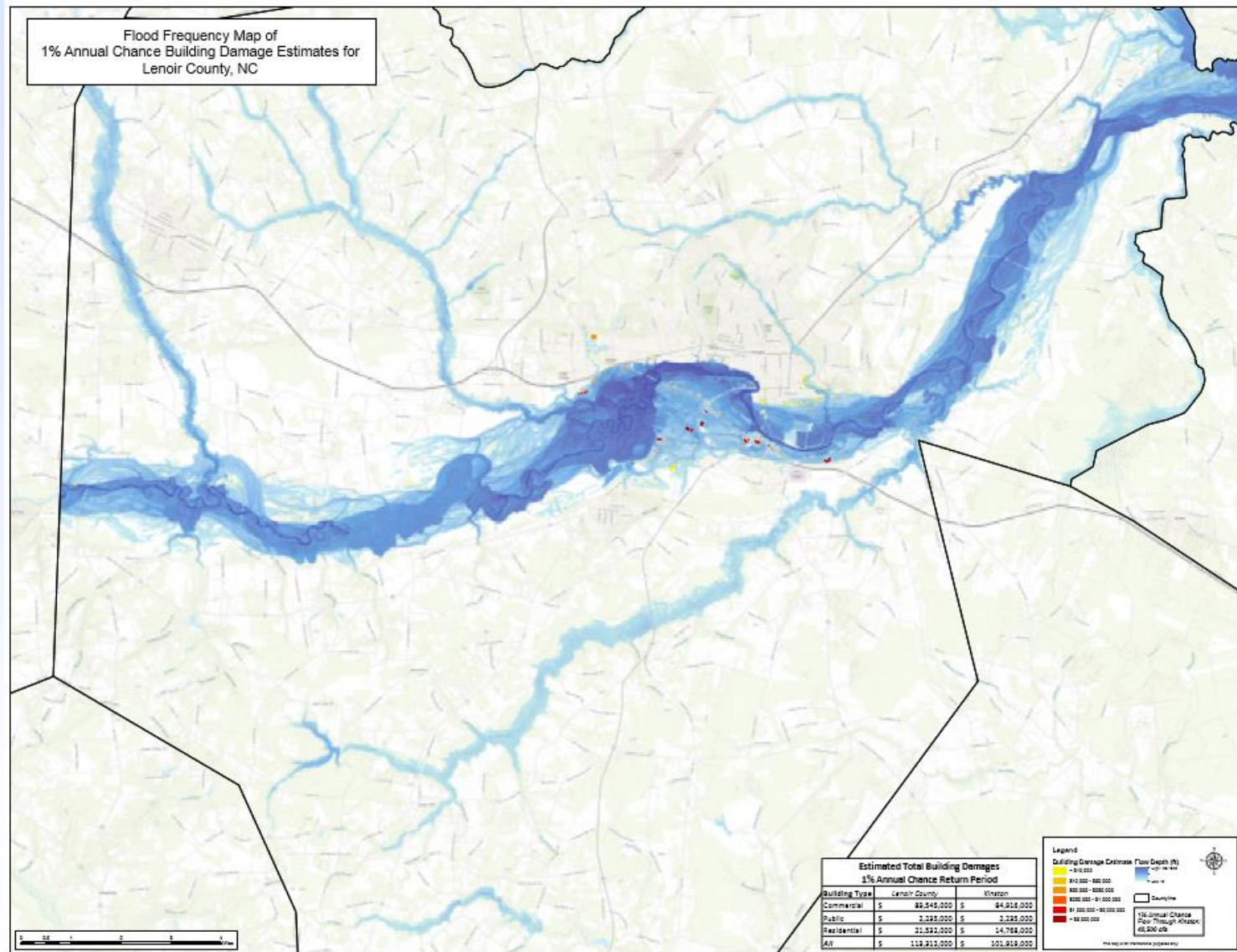
Lenoir County Neuse River Total Building Damages – 4% Annual Chance Event



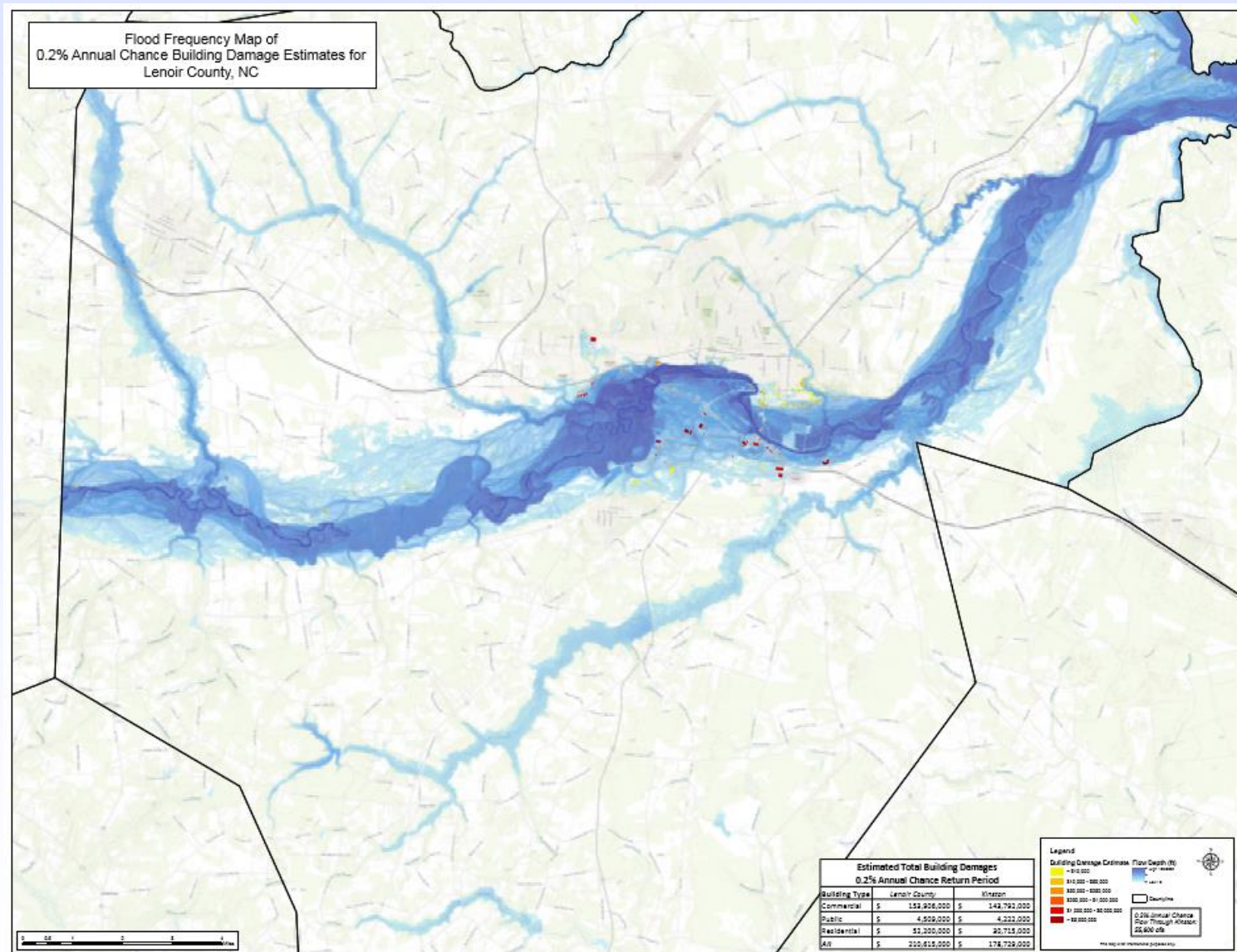
Lenoir County Neuse River Total Building Damages – 2% Annual Chance Event



Lenoir County Neuse River Total Building Damages – 1% Annual Chance Event



Lenoir County Neuse River Total Building Damages – 0.2% Annual Chance Event



NCFMP FIMAN Library Models

