



Failing Systems:  
Desperate Measures for Desperate Times

*Department of Environmental Quality*



# Desperate Measures for Desperate Times

Kim Colson, Division of Water Infrastructure, NC  
Department of Environmental Quality

Jeff Hughes, Environmental Finance Center,  
University of North Carolina at Chapel Hill

Halloween Eve, 2017

Indianapolis

# Topics

1. Common causes of despair and hardship
2. A case study
3. Solutions

What causes the desperate situations in your state?



# Overview

- State Water Infrastructure Authority
  - Master plan
  - Troubled System Protocol
- Hurricane Matthew
- Fair Bluff – all three above come together ...

A couple of themes throughout:

- Multiple organizations working together
- Water infrastructure issues are a significant source of financial stress for small systems
- Funding programs can provide comprehensive assistance

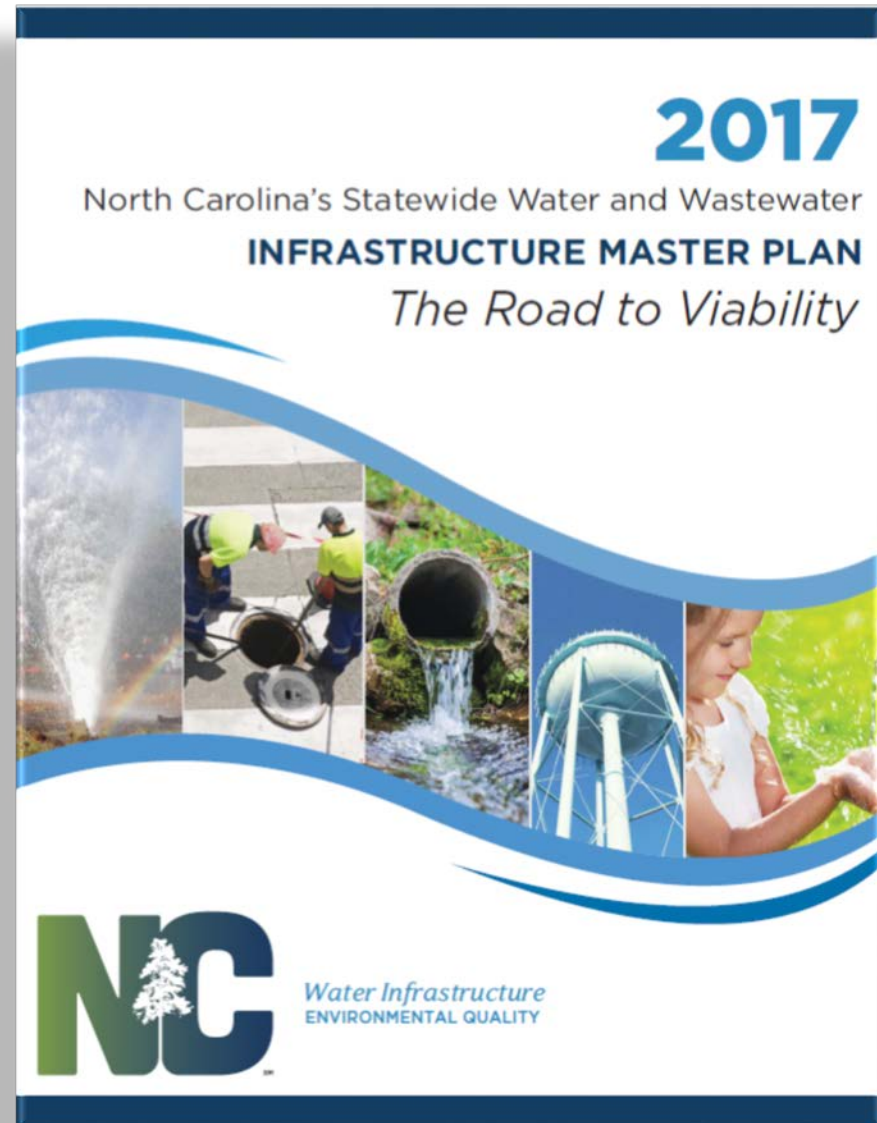
# *Fostering Partnerships*

- UNC School of Government / Environmental Finance Center
- NC Rural Water Association
- NC AWWA-WEA
- NC Councils of Government (COGs)
- NC Local Government Commission
- Buried Asset Management Institute – International
- NC Dept. of Commerce – Rural Economic Development
- US Dept. of Agriculture – Rural Development
- NC League of Municipalities
- NC Association of County Commissioners
- Southeast Rural Community Assistance Project (SERCAP)

# Master Plan Vision

The state will best be able to meet its water infrastructure needs by ensuring individual utilities are, or are on a path to be, viable systems

A viable system is one that functions as a long-term, self-sufficient business enterprise, establishes organizational excellence, and provides appropriate levels of infrastructure maintenance, operation, and reinvestment that allow the utility to provide reliable water services now and in the future



# Best Practices in Utility Management



## Infrastructure management

- Proactive approaches
- Life-cycle costs
- Risk management



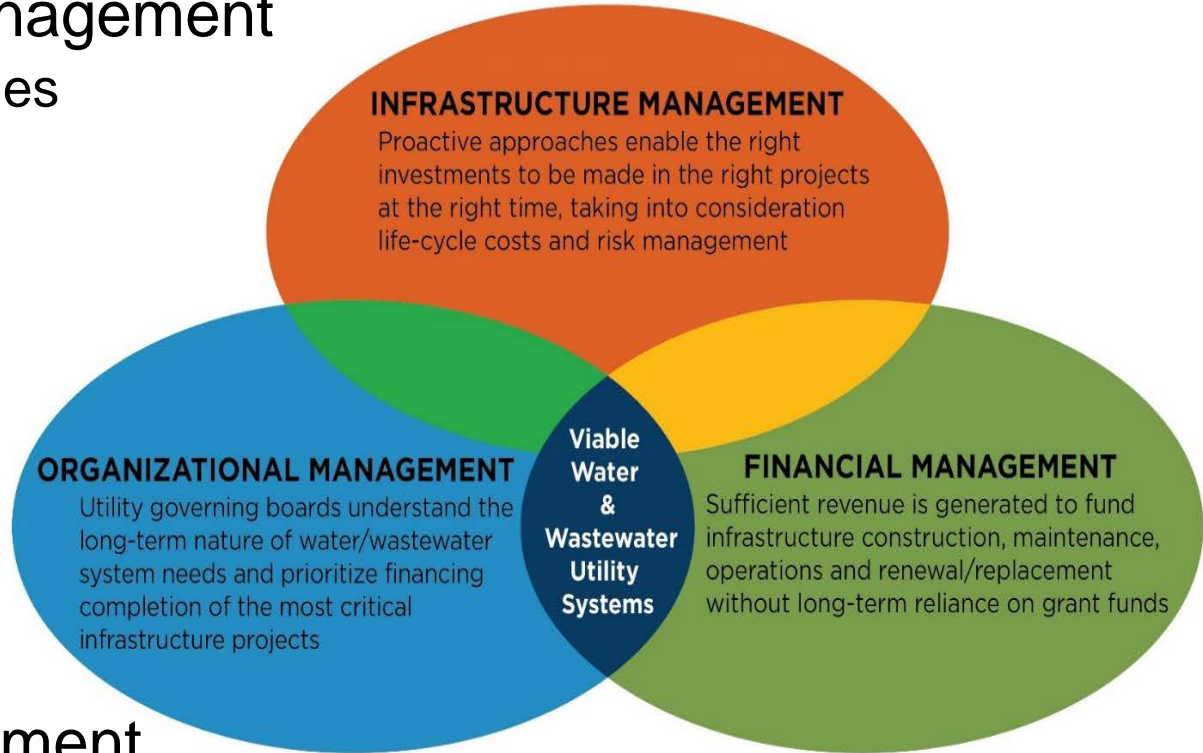
## Organizational management

- Long-term nature of system needs
- Governing boards prioritize the most critical projects



## Financial management

- Sufficient revenue generation for O&M, renewal/replacement, reserves
- Permanent local funding solutions



# Operating as an Enterprise System?

## Local Government-Owned Water and Wastewater Utilities' Cost Recovery in FY 2016

- Operating revenues < operating expenditures (10%)
- ◆ Operating revenues < operating expenditures + principal + interest on long-term debt (10%)
- Operating revenues > operating expenditures + principal + interest on long-term debt (81%)

Number of service connections	# of utilities	■	◆	●
< 1,000	143	17%	11%	72%
1,000 - 10,000	163	2%	10%	87%
> 10,000	48	0%	4%	96%

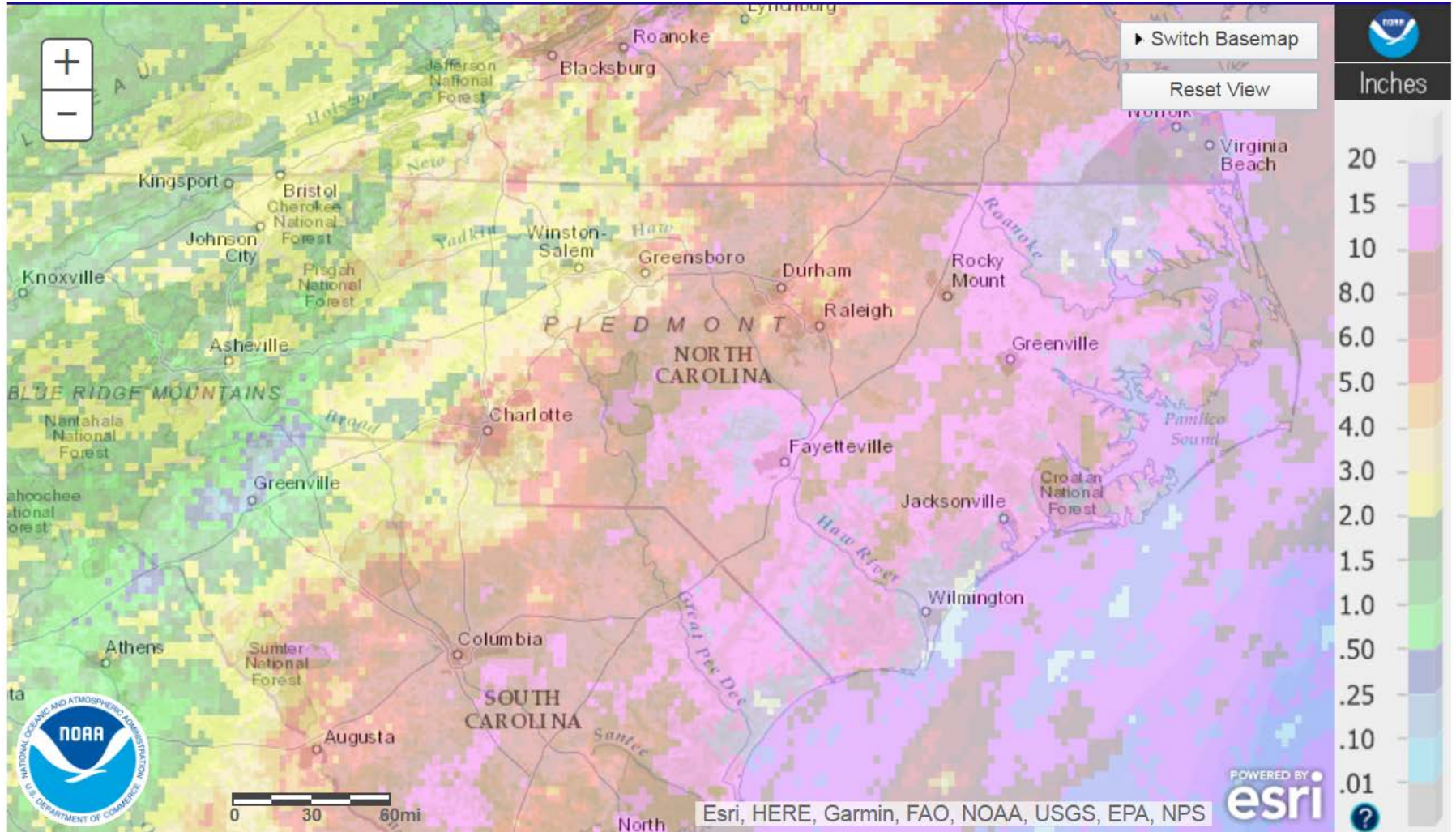
Source: UNC-CH Environmental Finance Center

# *Troubled System Protocol*

- Authority statutory task; follow up to master plan
- Started with ‘what is a troubled system?’
- Work with Local Government Commission
- Hired contractor –
  - Retired utilities director
  - Former town manager
  - Certified finance officer
- Working to define troubled systems and the protocol when ...  
Hurricane Matthew - 2016

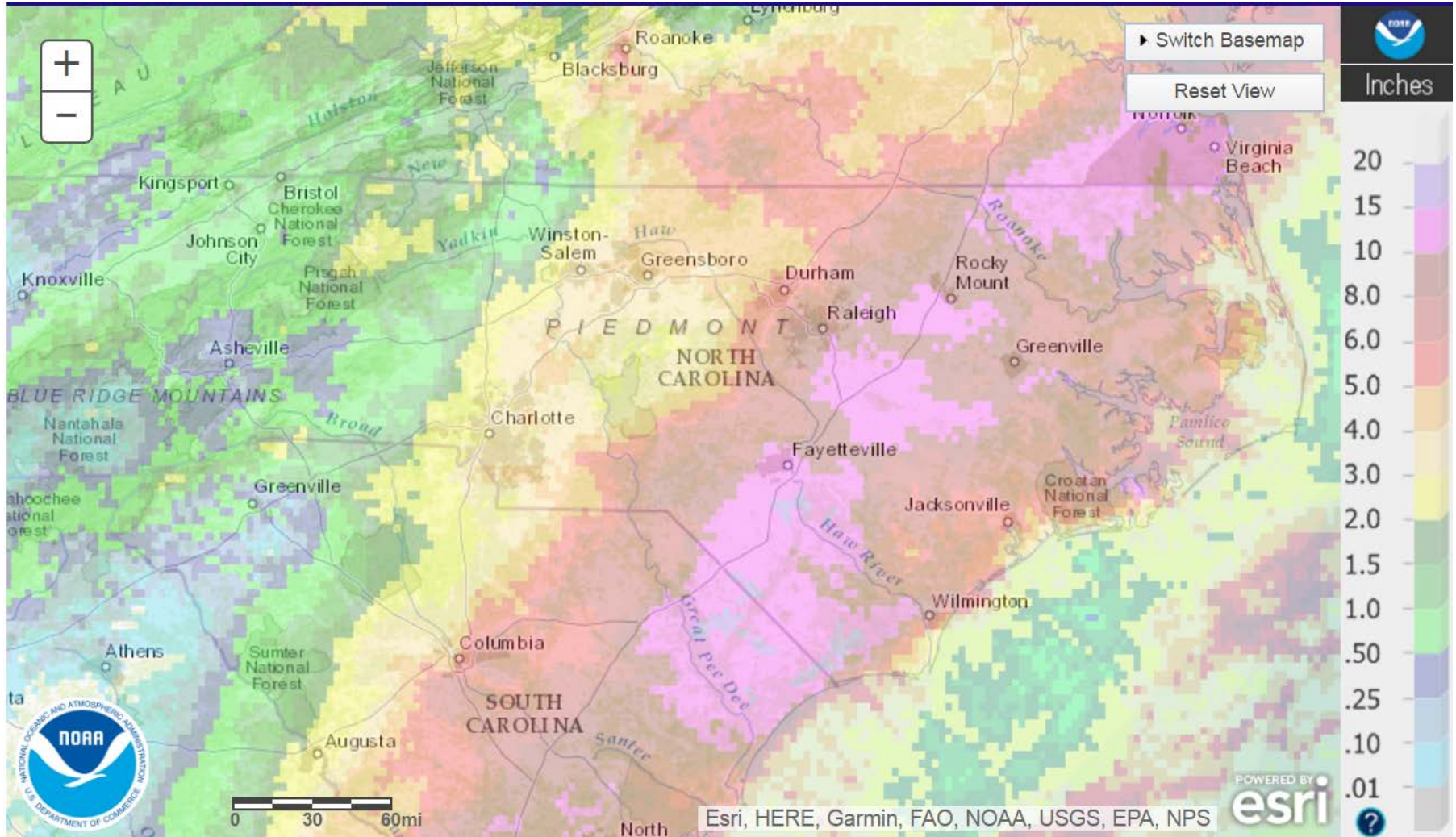
# September 2016 – Monthly Precipitation

*1/2 - 2/3 of the rainfall occurred September 29*



# October 2016 – Monthly Precipitation

*Most of the rainfall occurred in a two day period – Oct 8-9*



# *Fair Bluff, NC*



# *Small System Assistance*

- **Governor's Recovery Office**
  - Routine meeting with various funders
  - April - May, 2017 – Fairmont may not may debt service payment
- **Response to Hurricane Matthew – Fair Bluff**
  - Enterprise fund losing money (before hurricane)
  - Connected to other town for treatment
  - Most of town flooded with many customers leaving – revenue down 30%
- **Long-term solution**
  - Comprehensive assessment with recommendations to town(s)
  - Team: DWI staff, contractor, Environmental Finance Center, Local Government Commission, and engineering firm (tbd)

# *Fair Bluff, NC*



# Fast Moving Storm

PHOTO BY THE PEREZ FAMILY

**NORTH CAROLINA NEWS STORM TEAM** WNCN.com

NEWS ▾ WEATHER ▾ INVESTIGATES WHAT'S THE DEAL SPORTS ▾ WHAT'S ON ▾ ABOUT US ▾ EXP

## McCrory says Matthew now poses deadly threat; Hurricane warnings issued in NC

By CBS North Carolina  
Published: October 7, 2016, 4:52 pm | Updated: October 10, 2016, 5:00 pm

Advertisement:



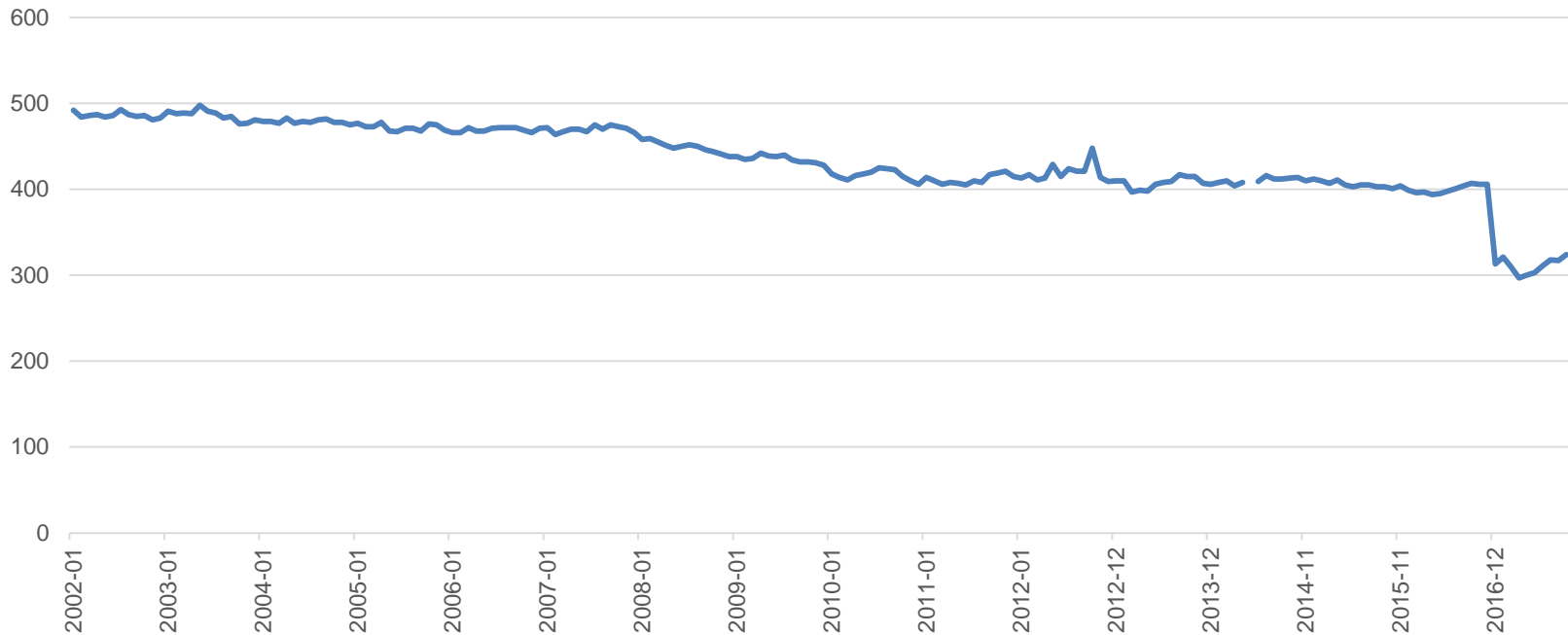
Trending

- Watch
- Resid assist
- Boy ju kills dr
- Paul M counts

RALEIGH, N.C. (WNCN) — Gov. Pat McCrory said Hurricane Matthew has shifted and

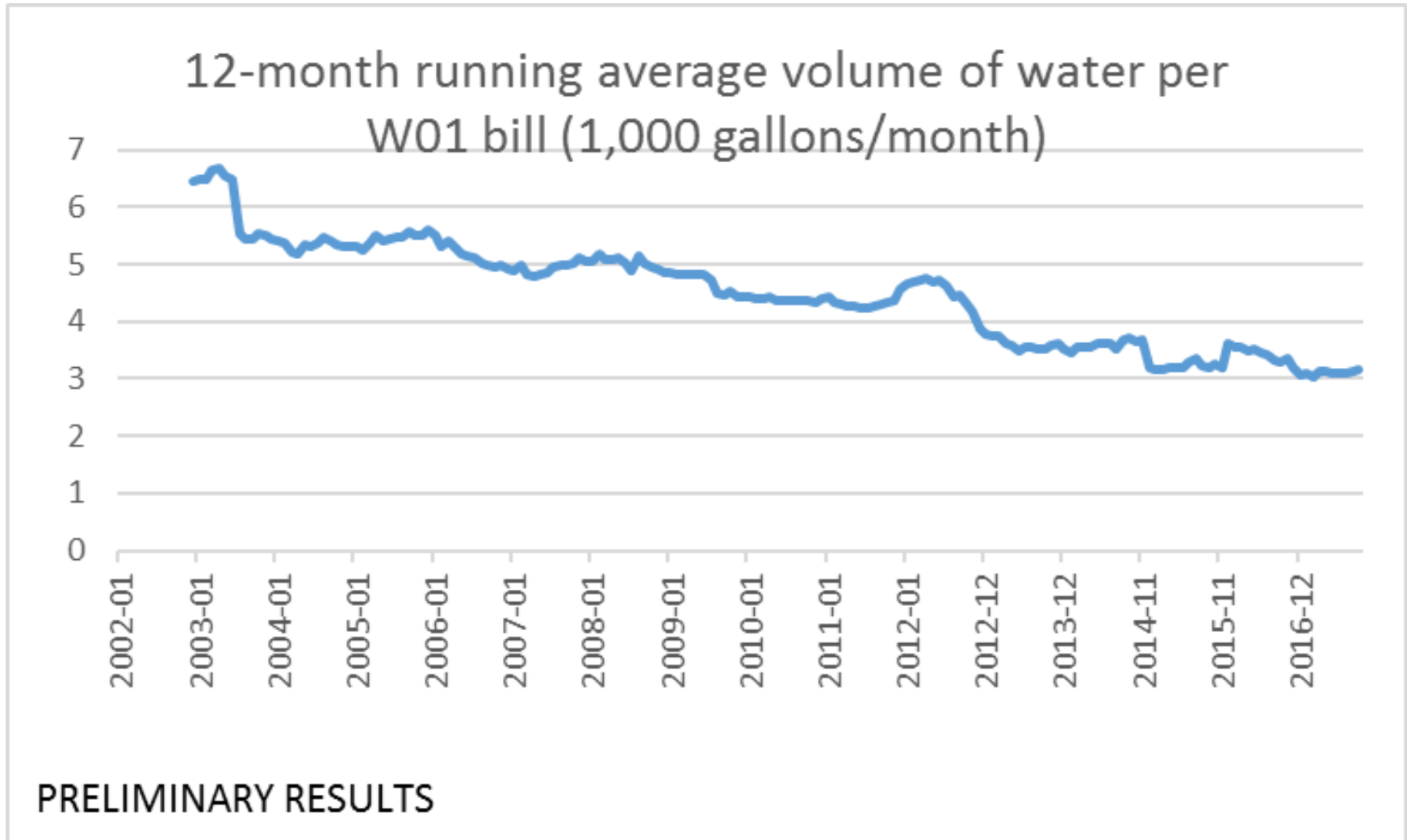
# Slow Moving Storm

Number of W01 water bills

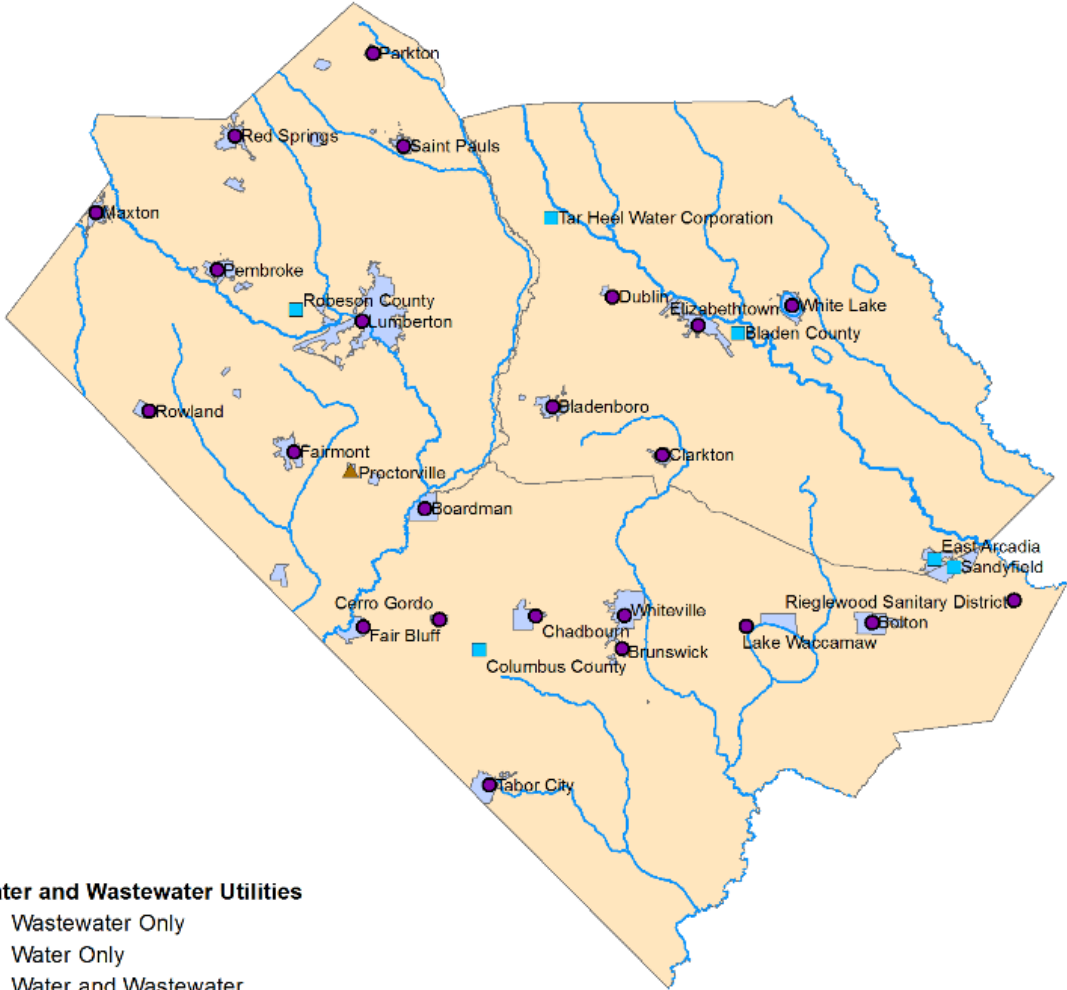


PRELIMINARY RESULTS

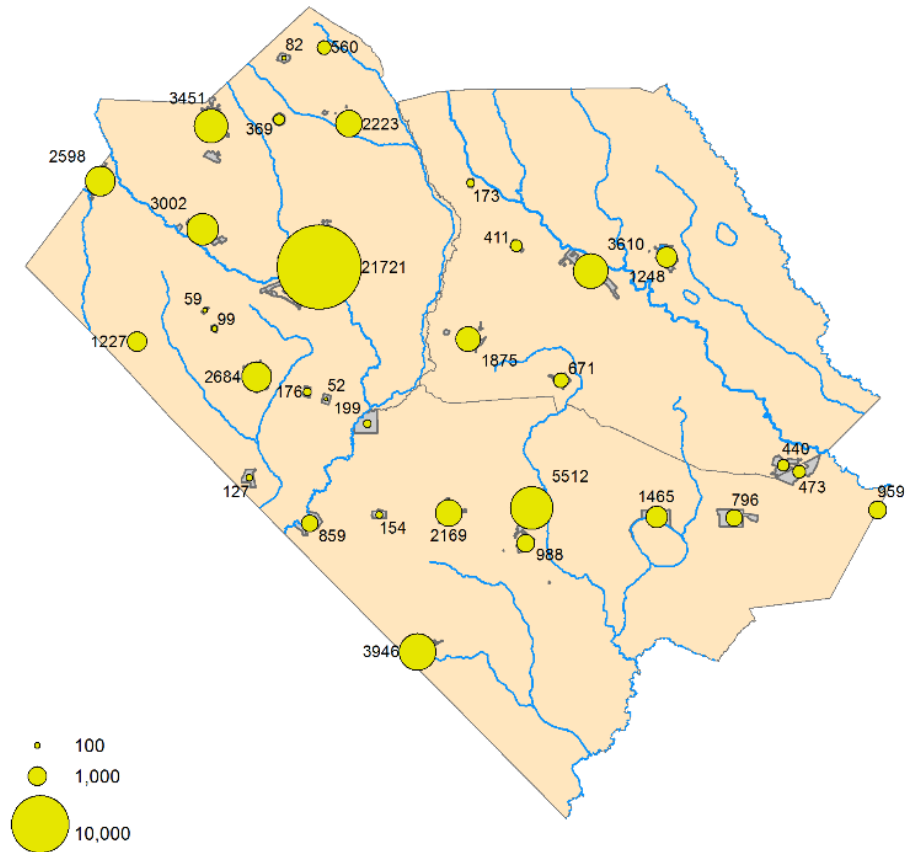
# Slow Moving Storm



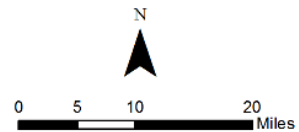
# Active Water and Wastewater Utilities in the Area



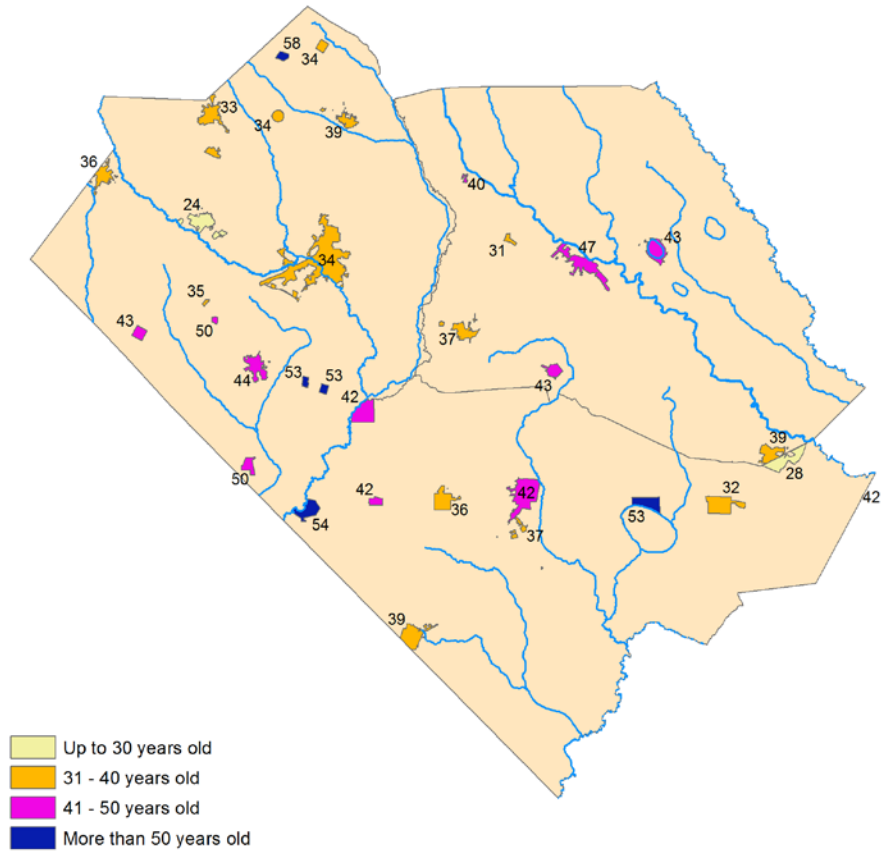
# Population Estimate in 2015



Sources: U.S. Census Bureau's 2011-2015 American Community Surveys,  
Environmental Finance Center at the UNC School of Government,  
NC Center for Geographic Information and Analysis (NC OneMap).

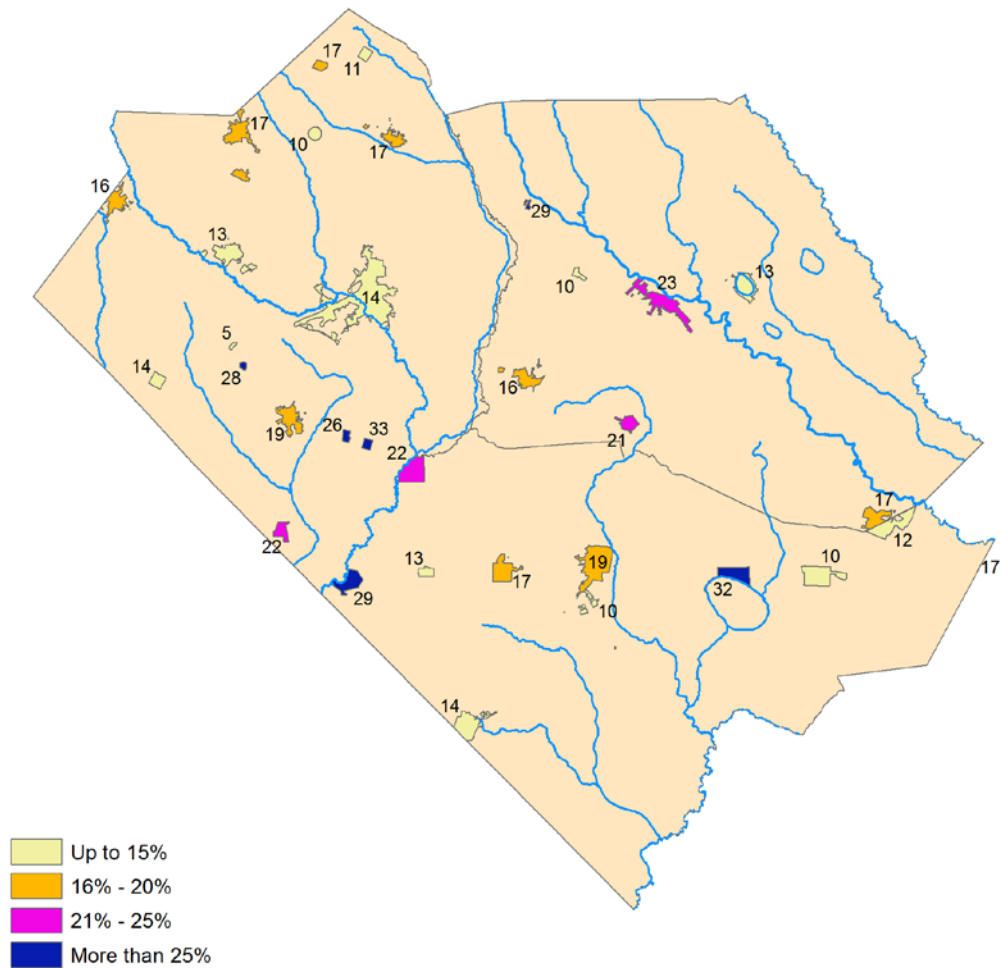


# Median Age of the Population in 2015

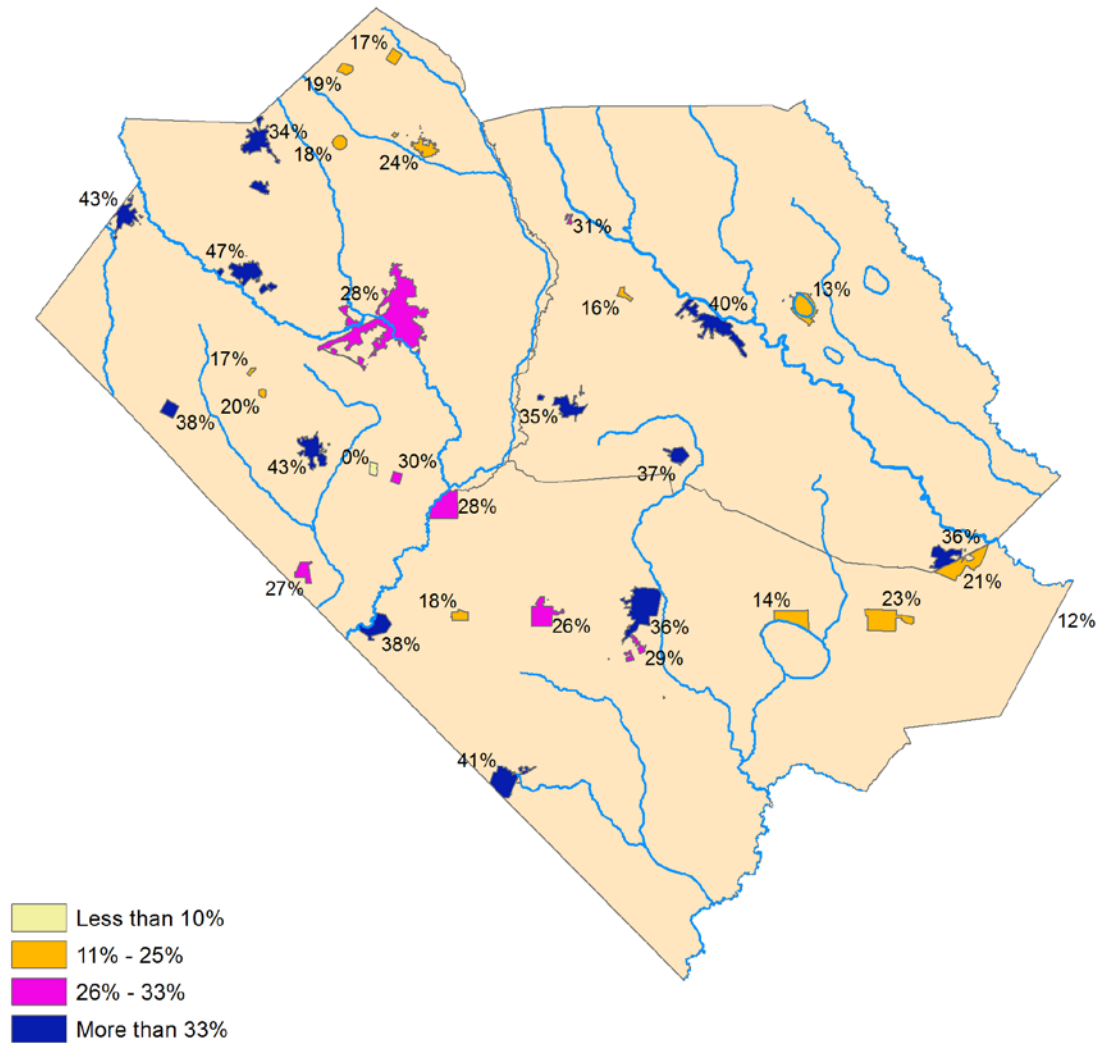


Sources: U.S. Census Bureau's 2011-2015 American Community Surveys, Environmental Finance Center at the UNC School of Government, NC Center for Geographic Information and Analysis (NC OneMap).

# Percent of Population Above the Age of 65 Years in 2015



# Percent of Households with Income Less than \$15,000 in 2015



# Not Just a Small Community Problem



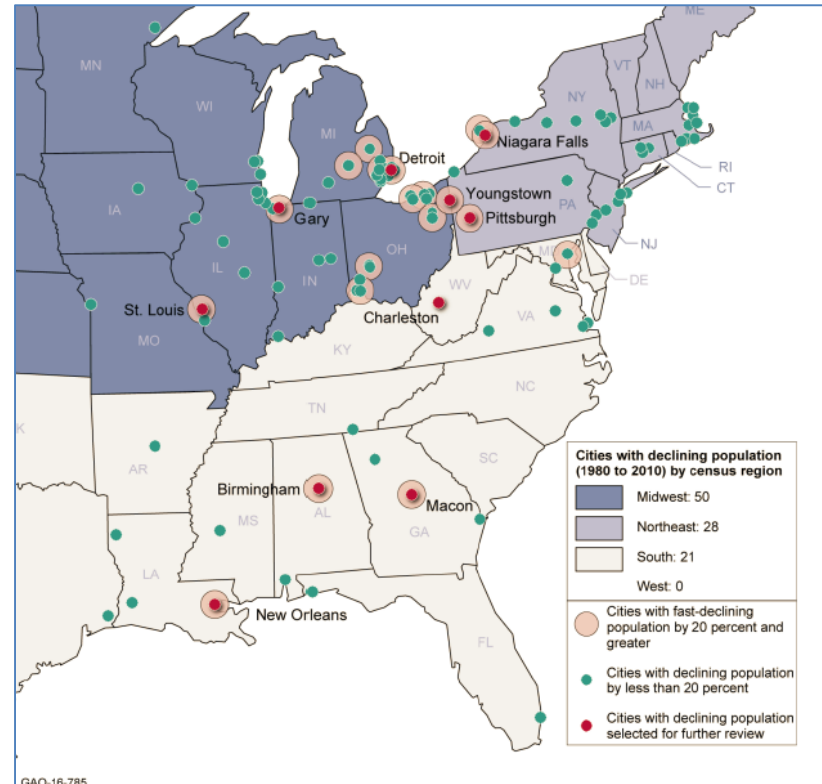
United States Government Accountability Office

Report to the Ranking Member,  
Subcommittee on Environment and the  
Economy, Committee on Energy and  
Commerce, House of Representatives

September 2016

## WATER INFRASTRUCTURE

Information on  
Selected Midsize and  
Large Cities with  
Declining Populations



GAO-16-785

# GAO Report

**Table 7: Economic Characteristics of 10 Selected Cities**

Selected city	Economic characteristics, 5-year estimates (2010 through 2014)								
	Percentage of population change, 1980-2010	Percentage of poverty	Percentage of unemployment	Median household income (dollars)	Per capita income (dollars)	Percentage of vacant housing	Median home value (dollars)	Median year housing stock was built	Percentage of households with food stamp benefits
Birmingham, AL	-25.4	31.0	14.5	\$31,217	19,640	20.2	86,100	1963	25.7
Charleston, WV	-19.7	19.0	6.5	\$48,959	34,944	11.8	142,800	1956	16.3
Detroit, MI	-40.7	39.8	27.2	\$26,095	14,984	30.0	45,100	1947	42.7
Gary, IN	-47.2	38.7	18.8	\$27,458	15,983	26.6	65,500	1955	36.1
Macon, GA <sup>a</sup>	-21.9	35.0 <sup>a</sup>	8.9 <sup>a</sup>	\$25,773 <sup>a</sup>	16,051 <sup>a</sup>	22.5 <sup>a</sup>	87,400 <sup>a</sup>	1964 <sup>a</sup>	30.2 <sup>a</sup>
New Orleans, LA	-38.3	27.7	11.6	\$36,964	27,255	21.4	184,100	1957	21.2
Niagara Falls, NY	-29.7	25.3	11.6	\$33,009	20,643	19.2	67,600	1939	26.8
Pittsburgh, PA	-27.9	22.8	9.2	\$40,009	27,435	14.6	91,500	1939	18.6
St. Louis, MO	-29.5	27.8	14.2	\$34,800	23,244	20.5	118,600	1939	26.1
Youngstown, OH	-42.0	37.4	19.7	\$24,361	14,742	21.2	45,400	1947	38.2

Source: GAO analysis of U.S. Census Bureau's American Community Survey data (5-year estimates, 2010 through 2014) and decennial census data. | GAO-16-785

# Partial Solutions....

- New regional treatment facilities when capacity already exists in the region
- Funding projects for community with declining customer base
- Funding projects based on optimistic growth (or stable) projections
- Creating a “regional” system without considering key issues

# Going Beyond Project Financing

- Inter-agency collaboration
- Creation of better forecasting models
- Promote purchase of capacity and consolidation over new projects
- Incentivize system to take over failing system
- Creation of statewide receiver-ship program
- Incentive acquisition by multi-system private owners
- Forced transfer to another utility....

# Mandatory Consolidation or Extension of Service for Disadvantaged Communities<sup>1</sup>

Effective June 24, 2015, [Senate Bill 88](#) (Statutes 2015, Chapter 27) added sections 116680-116684 to the California Health and Safety Code, allowing the State Water Board to require certain water systems that consistently fail to provide safe drinking water to consolidate with, or receive an extension of service from, another public water system. The consolidation can be physical or managerial. Although for many years the Drinking Water program has encouraged -- and will continue to encourage -- voluntary consolidations of public water systems, the new authority will allow it to mandate consolidation of water systems where appropriate. Please note that extension of service to domestic wells is authorized only when agreed to by the well owner. The changes to the Health and Safety Code give the Division of Drinking Water authority to mandate such consolidations or extension of service following a series of specific actions. The State Water Board's Division of Drinking Water will issue letters to water systems to consolidate with, or seek an extension of service, from a public water system. The recipients of such letters have up to six months from the date the letter is issued to voluntarily consolidate with, or receive extension of service from, a public water system. As letters to public water systems are issued, they are made publicly available on this resource page. See the links to the letters below.

## [Frequently Asked Questions on Mandatory Consolidation or Extension of Service for Public Water Systems](#)

2017	Water Systems	Consolidation Letter	Mandatory consolidation Order
10/24/2017	Hillview Water Company Yosemite High School	<a href="#">Letter</a> <a href="#">Letter</a>	
08/23/2017	City of Ceres Ceres West Mobile Home Park	<a href="#">Letter</a> <a href="#">Letter</a>	



**Division of Water Infrastructure**  
<http://portal.ncdenr.org/web/wi/home>

**State Water Infrastructure Authority**  
<http://portal.ncdenr.org/web/wi/authority>

