

# Legal Issues for Local Government Infrastructure Affected by Sea Level Rise

*Advancing Understanding of Risk*

Shana Jones and J. Scott Pippin  
Carolinas Climate Resilience Conference  
October 30, 2018



UNIVERSITY OF  
**GEORGIA**

Marine Extension and Georgia Sea Grant  
Carl Vinson Institute of Government



  
**Sea Grant**

# **I. Overview of Project**

- Data Development and Analysis
- Community Engagement

# **II. Legal Findings & Regional Assessment**

- Roads
- Sewer/Septic

# **III. Resilience Work: What's Next? Successes & Lessons Learned**

# Project Overview: Relevance

Coastal communities are increasingly becoming aware of the risks to their ecosystems, homes, and economies because of increased flooding, more extreme storm surges, and sea level rise.

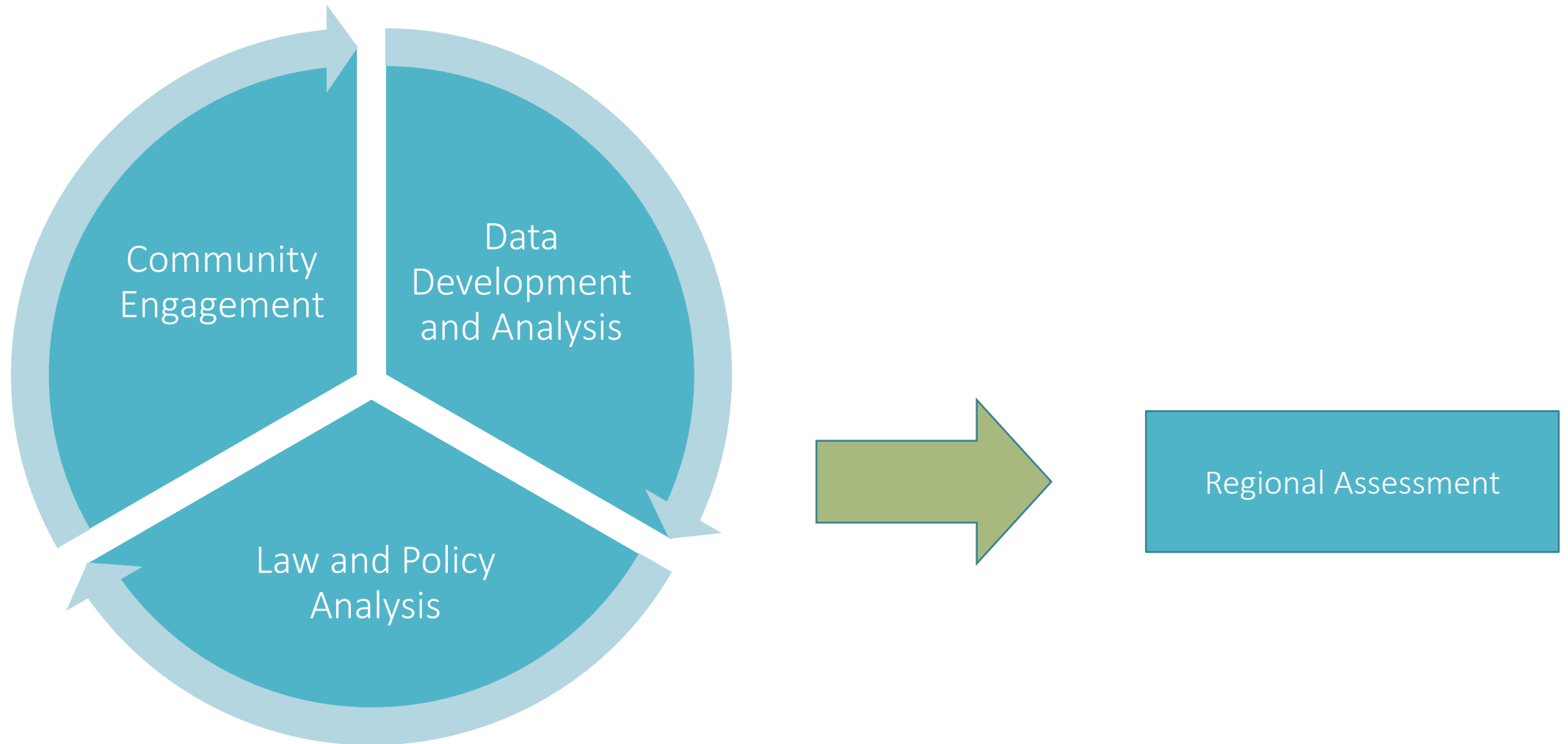
Reducing risk on the coast will be achieved by means of a variety of approaches, including policy and regulatory changes, natural resource protection, structural and non-structural intervention and investment, and relocation.

# Project Overview: Response













In 2015, NOAA, Florida Sea Grant, Georgia Sea Grant, South Carolina Sea Grant, and North Carolina Sea Grant funded a participatory process to build local government capacity in a four-state coastal region, to better visualize and understand local coastal hazard risks, and analyze the legal and policy factors that impact adaptation responses.

Project No.: FY2014-2018: NA14OAR4170084. The statements, findings, conclusions, and recommendations are those of the authors and do not necessarily reflect the views of NOAA or the U.S. Department of Commerce.

# Project Overview: Methodology



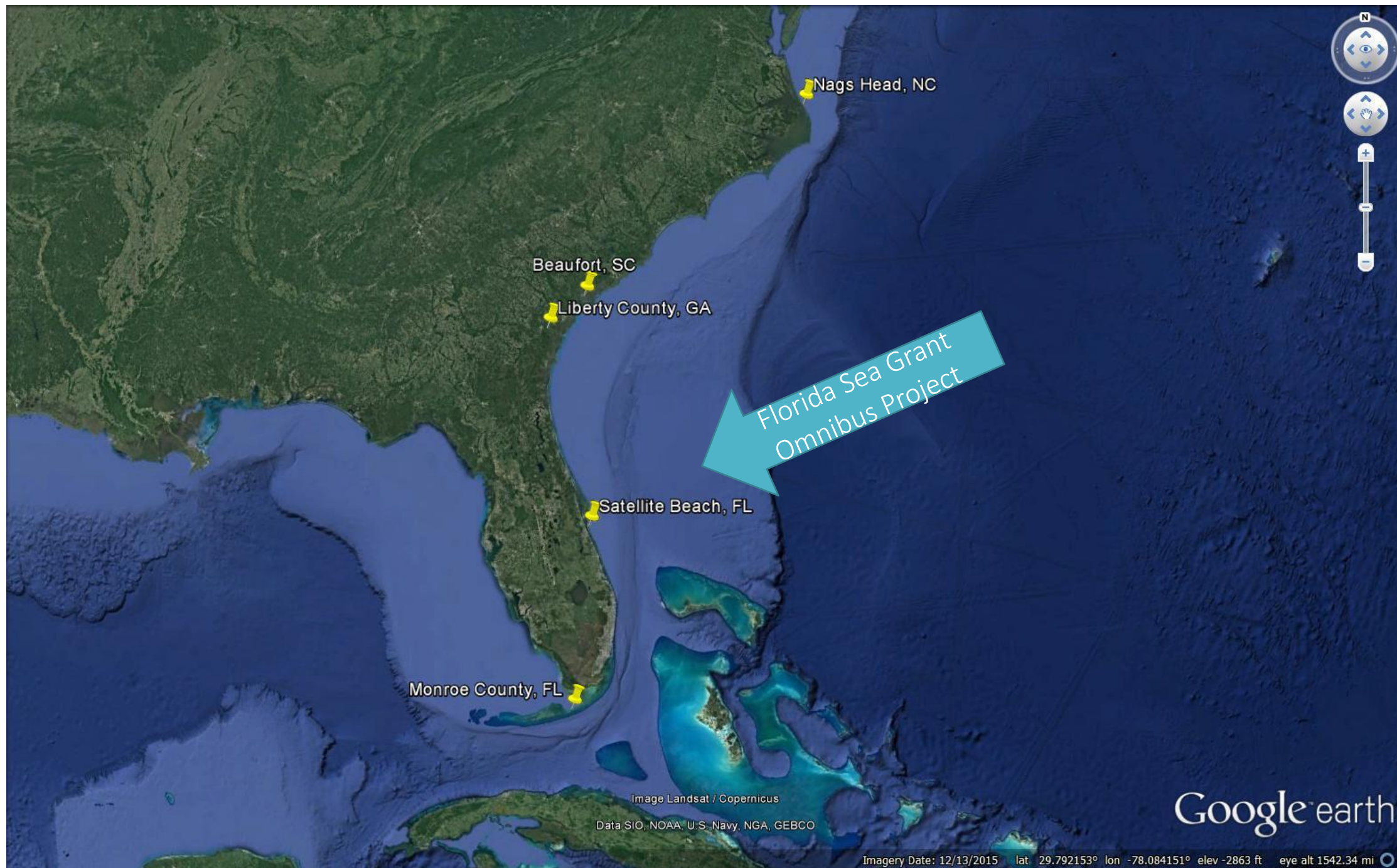
# Project Overview: Team

North Carolina	South Carolina	Georgia	Florida
   	 	    	  

# Project Overview: Students

North Carolina	South Carolina	Georgia	Florida
Rebecca Neubauer (Law) Ian Brown (Law) Paul Sukenik (Law) Christian Kamrath, UNC City and Regional Planning Kyla Bloyer, NCSU Climate and Society (unpaid, leveraged a project)	Eleanor Davis (Geography)	Paul Wildes (Law) Mandi Moroz (Law) Danielle Goshen (Law) Julia Shelburne (Law) Ben Wilde (Law)	Emily Niederman (Enviro Sci) Savannah Hardisky (Enviro Sci) Taylor Hague (Enviro Sci) Charles Abbatantuono (Enviro Sci) Riley Bibaud (Enviro Sci) Eilyn Mitchell (Enviro Sci)





Beaufort, SC

Liberty County, GA

Florida Sea Grant  
Omnibus Project

Satellite Beach, FL

Monroe County, FL

Image Landsat / Copernicus

Data SIO, NOAA, U.S. Navy, NGA, GEBCO

Google earth

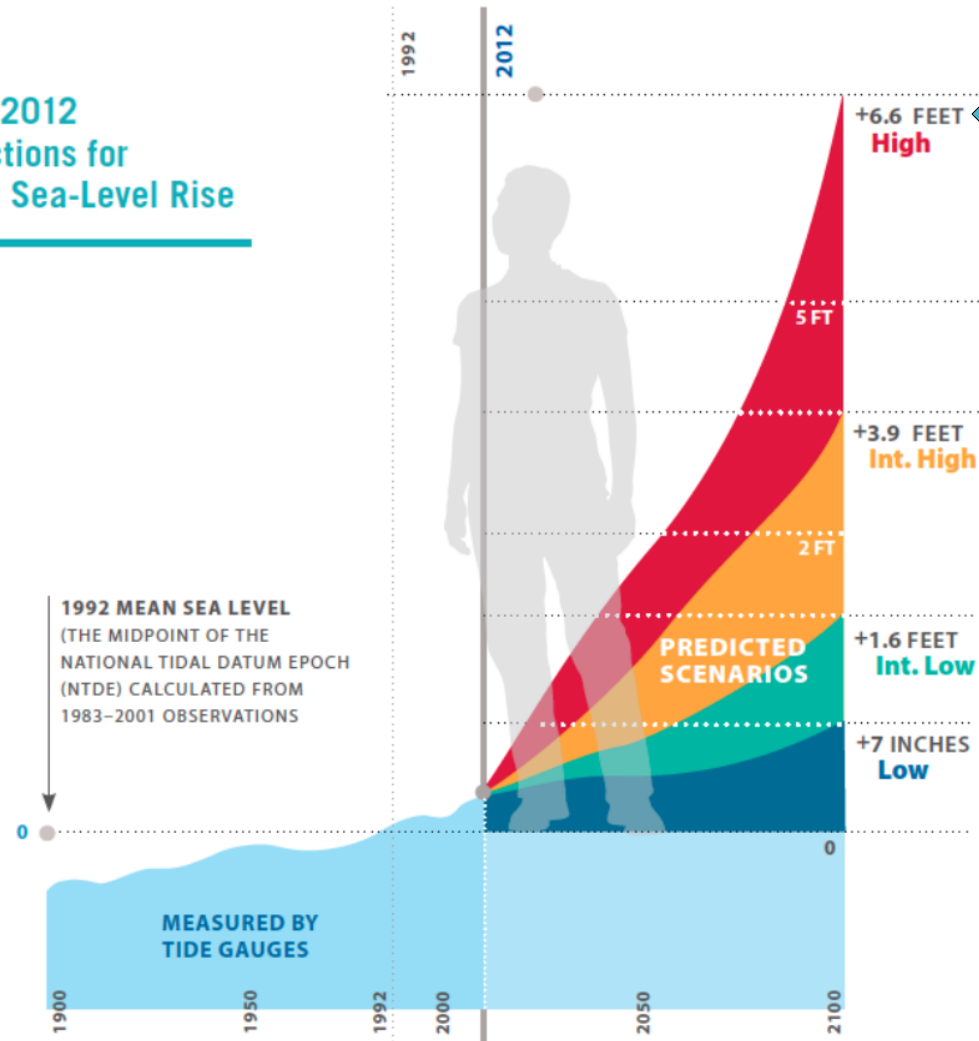
Imagery Date: 12/13/2015 lat 29.792153° lon -78.084151° elev -2863 ft eye alt 1542.34 mi

# Data Development & Analysis

1. Vulnerability Assessments-Options
2. HAZUS – What is it?
3. Data development – Why HAZUS is limited
4. Data development – Stormwater
5. Data development – SLR and Roads

# What to do????

## NOAA 2012 Predictions for Global Sea-Level Rise



Or maybe this?

## Vulnerability Assessment

Plan for this?



Marine Extension and  
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UNIVERSITY OF GEORGIA



[ga.coast.uga.edu](http://ga.coast.uga.edu)

# Building support through community conversations with VCAPS

Vulnerability, Consequences, and Adaptation Planning Scenarios  
conceptual framework structures thinking, discussions

Real-time diagramming supports understanding, information-sharing

Self-generated scenarios more credible to local decision-makers

Results informing hazards and climate vulnerability analysis and adaptation decisions



Vulnerability, Consequences, and Adaptation Planning Scenarios

# Data Development & Analysis

1. Vulnerability Assessments-Options
2. HAZUS – What is it?
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5. Data development – SLR and Roads

# Federal Policy Context

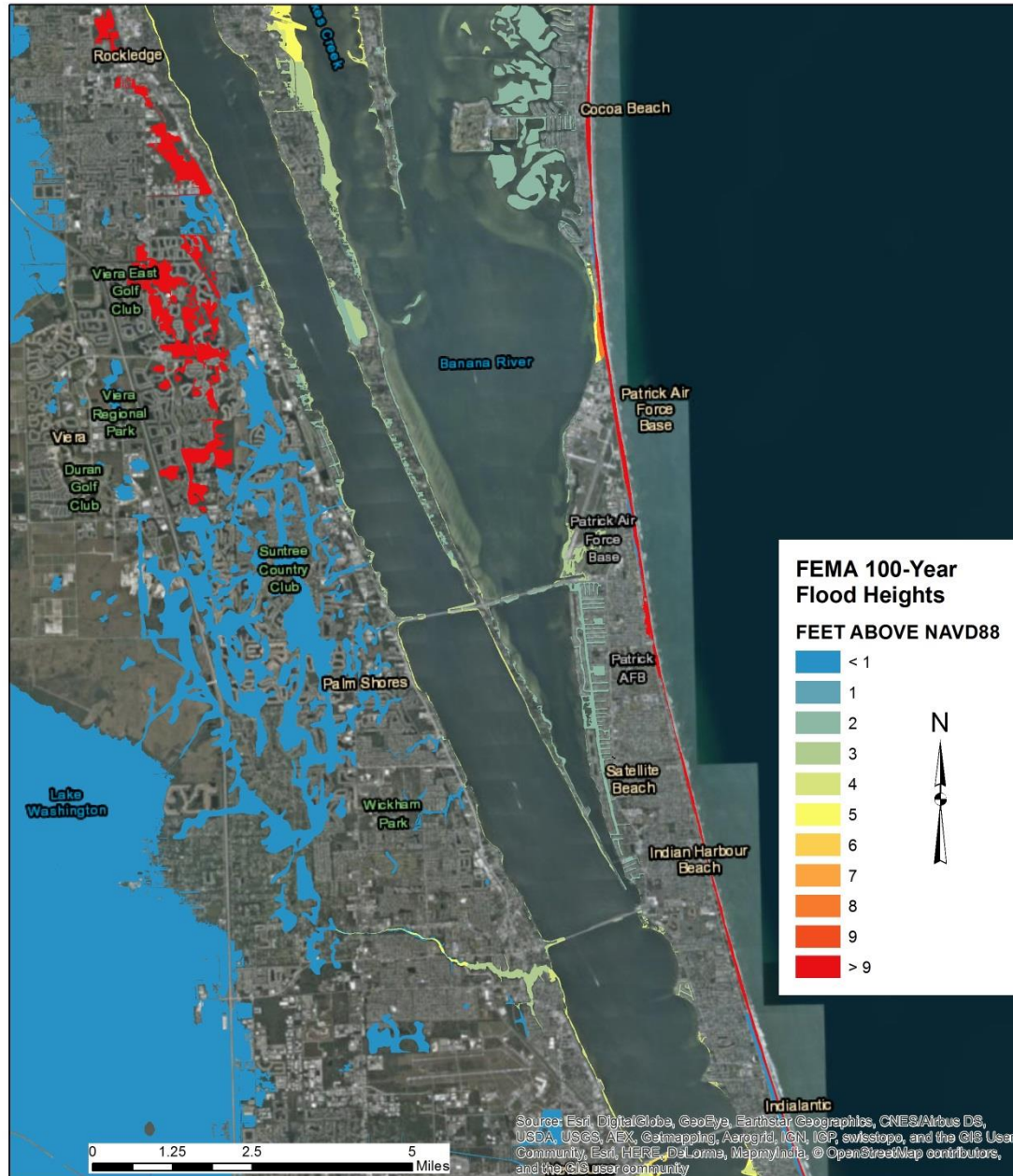
Flood exposure maps produced by the National Flood Insurance Program explicitly DO NOT take into account:

- 1) Climate change
- 2) Local stormwater infrastructure conditions

*Local governments in the coastal zone are right at the front line of trying to understand, plan for, and pay for future flood management in a time of climate change*



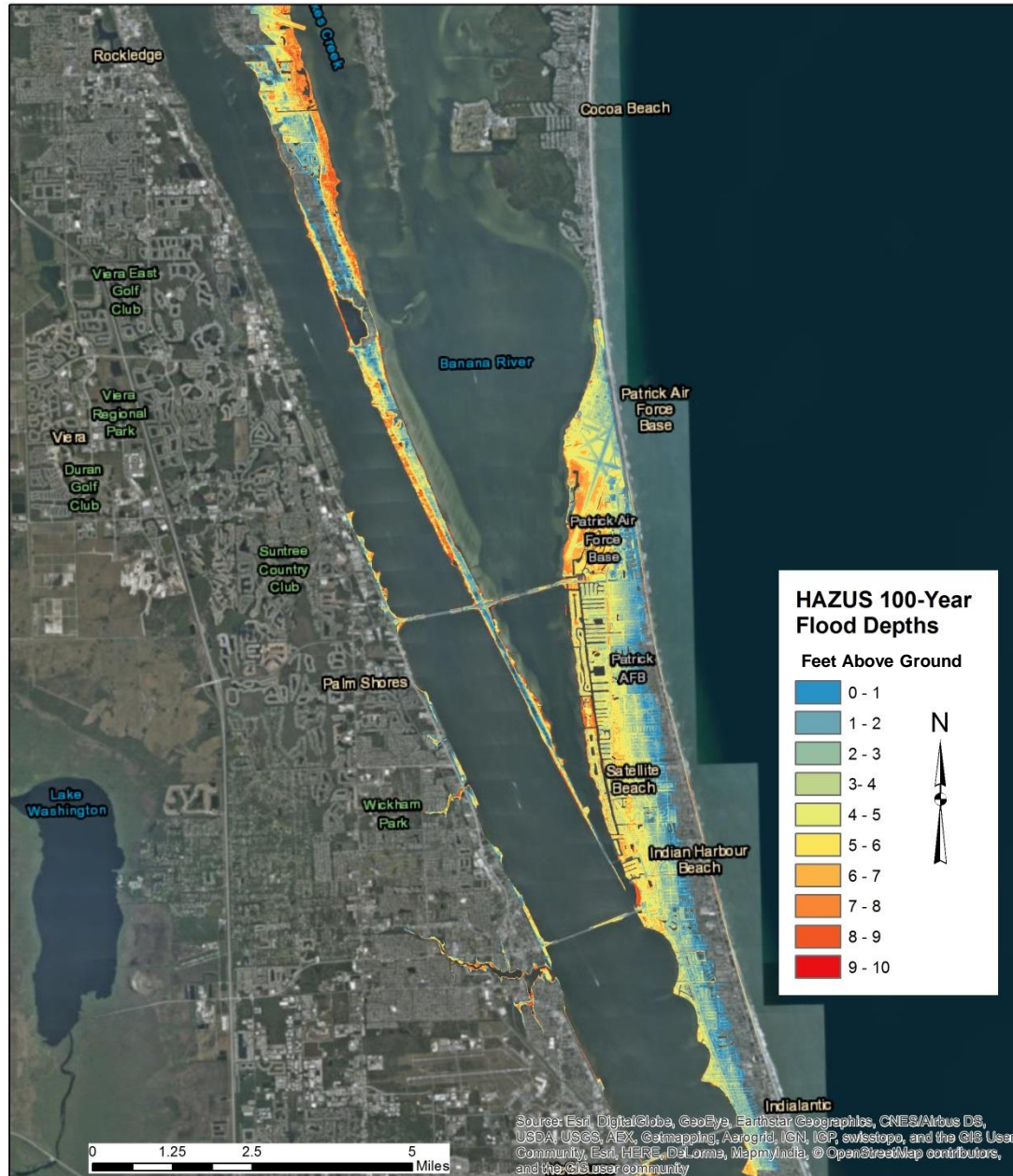
## Current Flood Insurance Rate Maps Southern Brevard County, FL



Problems with  
flood-mapping

FEMA  
regulatory 100-  
year flood zone

# HAZUS 100-Year Coastal Flooding Depth Grid Southern Brevard County, FL

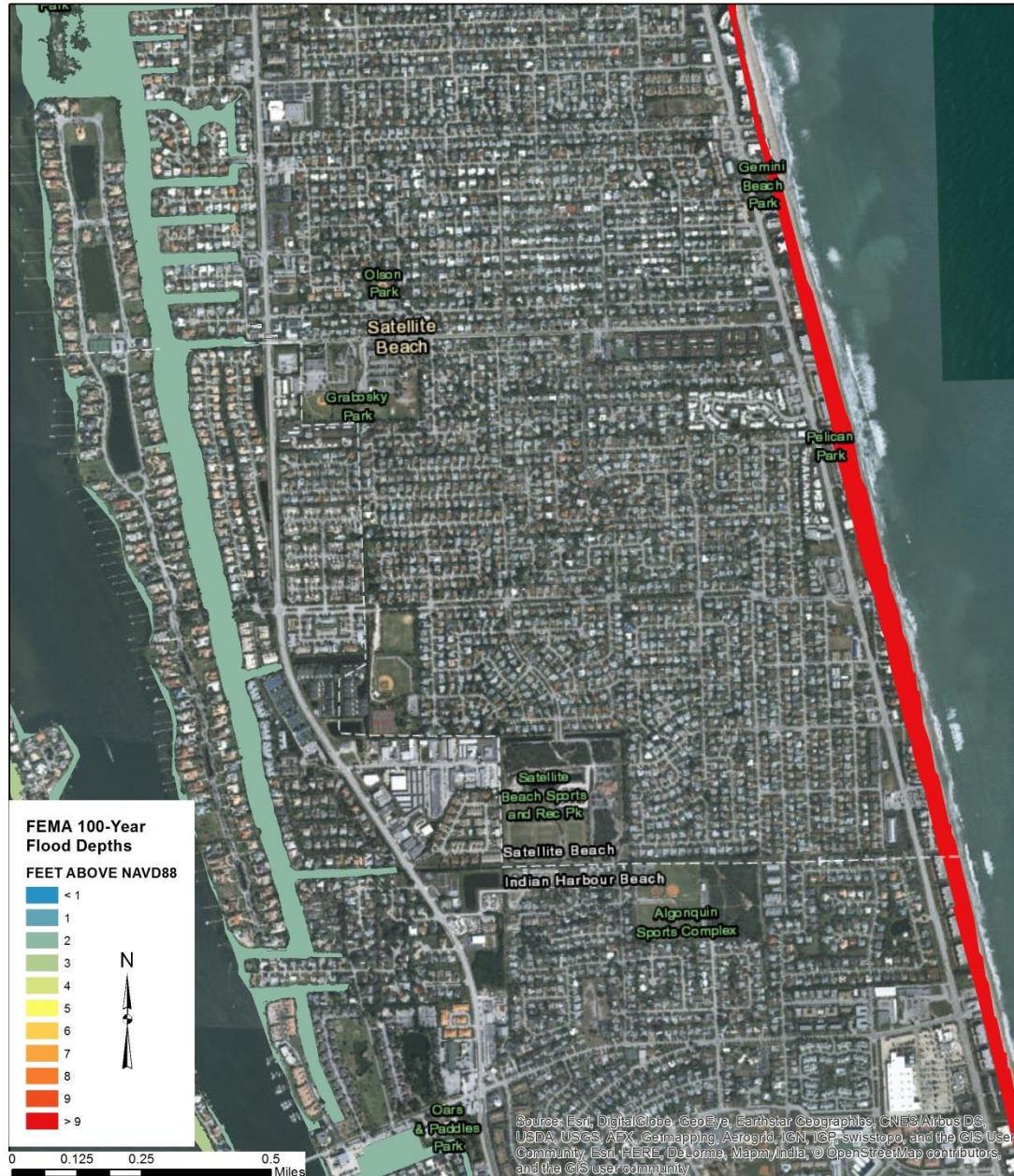


100-Year  
Depth Grid  
Using HAZUS-  
MH software

(A FEMA  
Product!)



Current Flood Insurance Rate Map  
Satellite Beach, FL



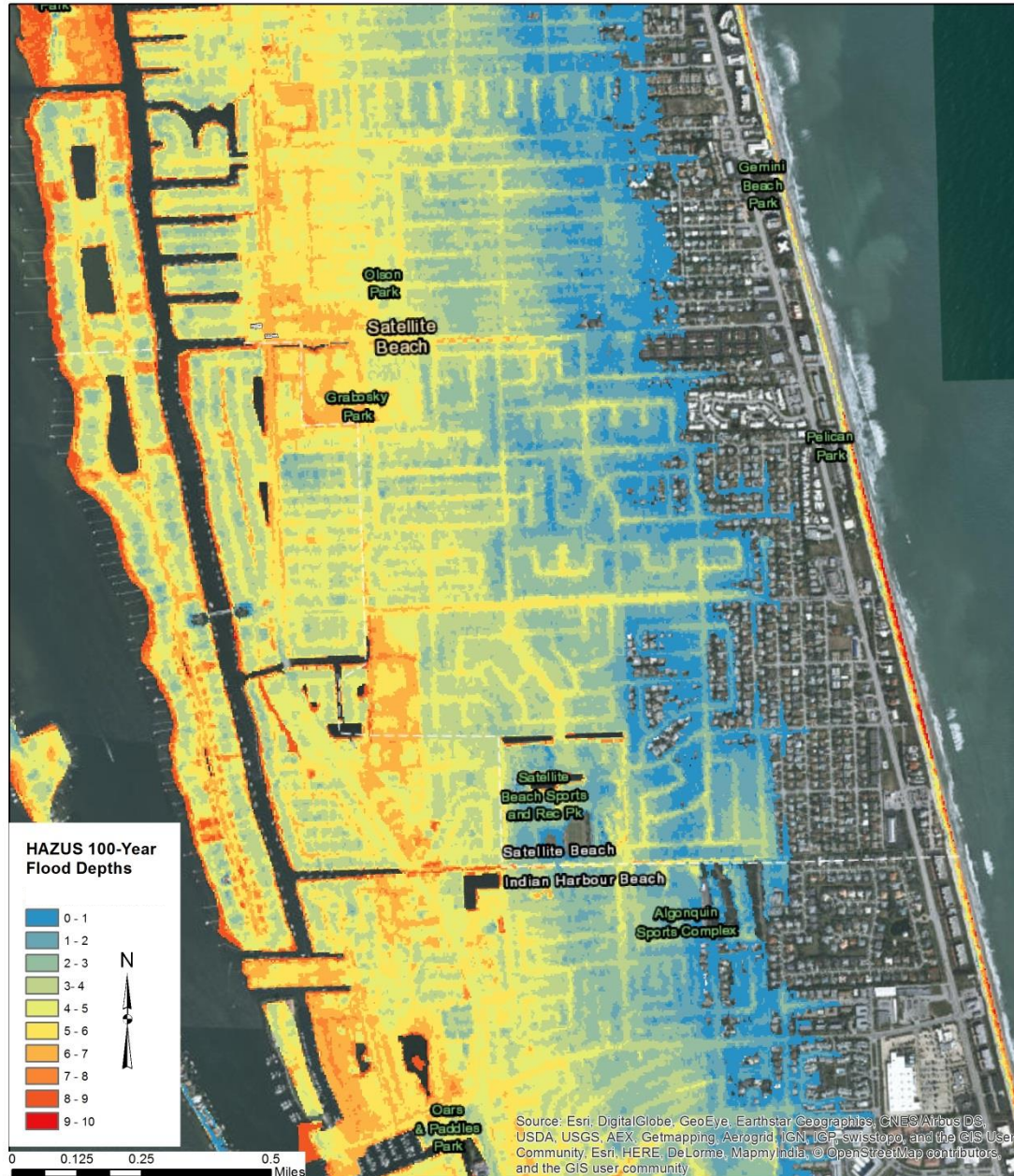
Problems with  
flood-mapping

FEMA  
regulatory 100-  
year flood zone

Satellite Beach,  
FL



# HAZUS 100-Year Coastal Flooding Depth Grid Satellite Beach, FL

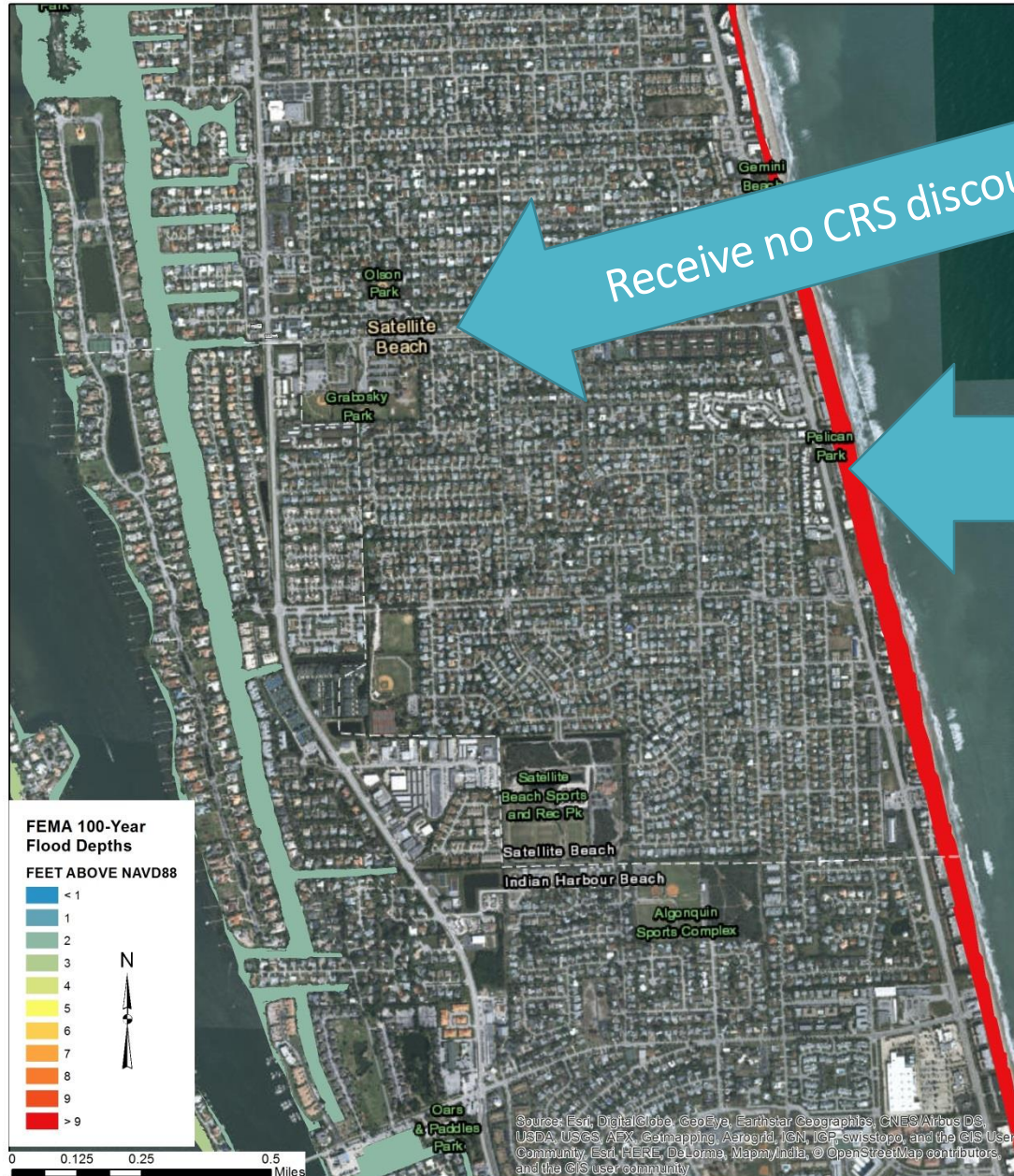


100-Year Depth  
Grid Using  
FEMA HAZUS-  
MH software

Satellite Beach,  
FL



Current Flood Insurance Rate Map  
Satellite Beach, FL



Receive no CRS discount

Receive CRS Discount

1858 flood policies in  
City of Satellite Beach  
outside of the official  
flood zone

VS.  
624 policies in the FEMA  
flood zone (flood  
insurance required for  
most mortgages)

# Some thoughts about HAZUS

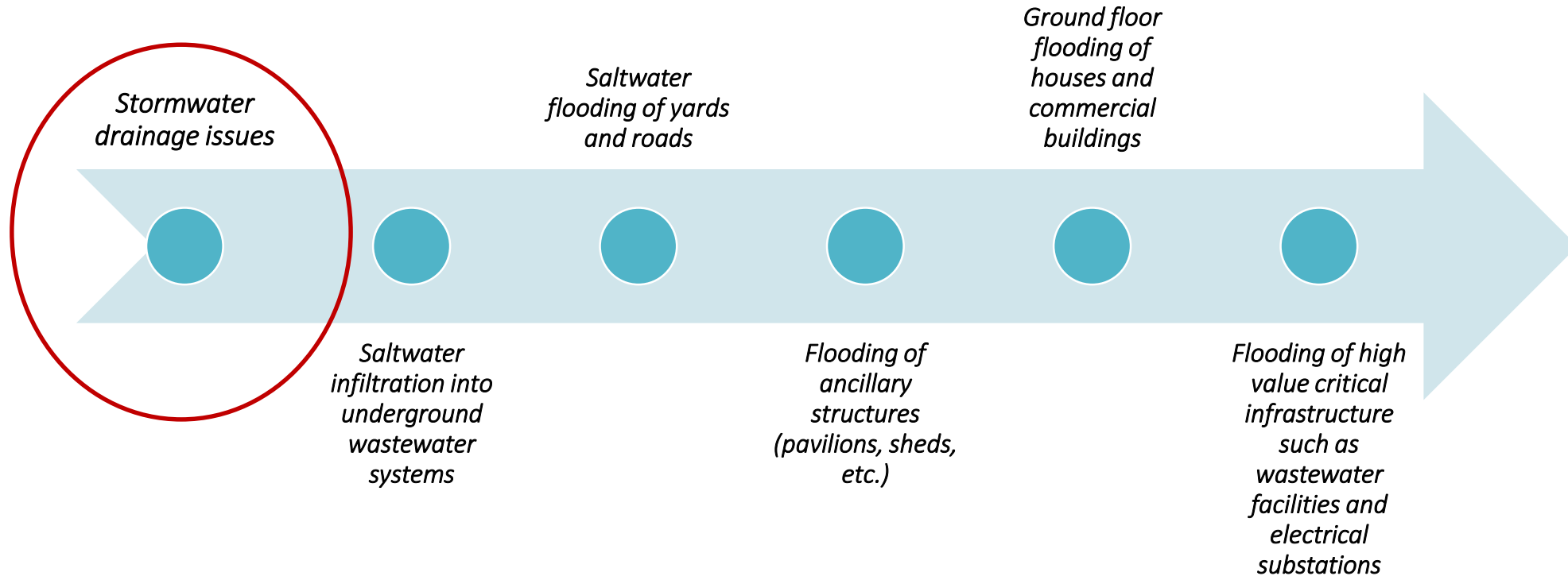
The Hazus-MH software is an INCREDIBLY finicky “black box”

For example, we have learned that the Hazus coastal flood module has a lot of trouble dealing with island geometry - ?\*^&?!!Q!

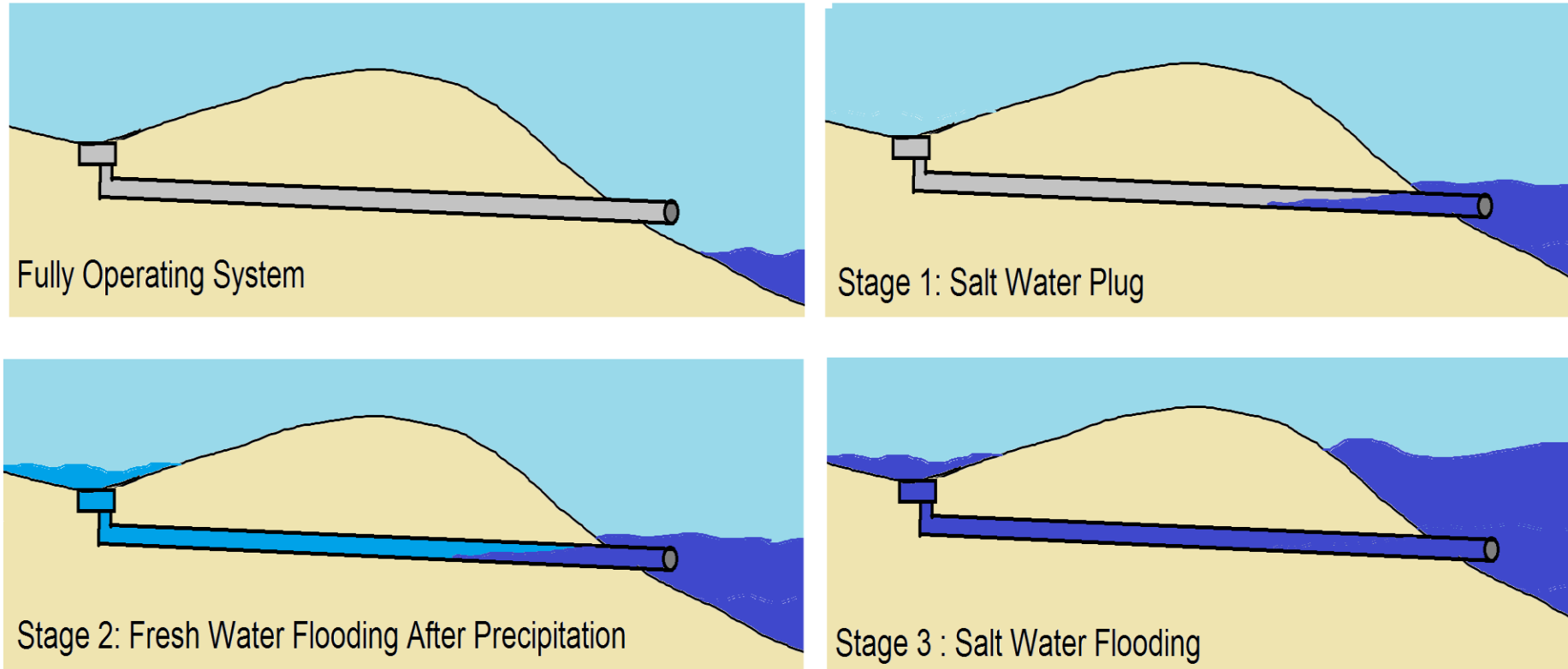
Colleagues and collaborators at UF GeoPlan, UGA ITOS, etc. all are in agreement that Hazus is great for state hazard mitigation planning...

But the “buggy-ness” and black box complexity of the software make it very difficult to use for flood resilience planning tool at the local level.

# General Timeline of Sea Level Rise Impacts on the Built Environment



# Stages of Stormwater Infrastructure Failure due to Sea Level Rise



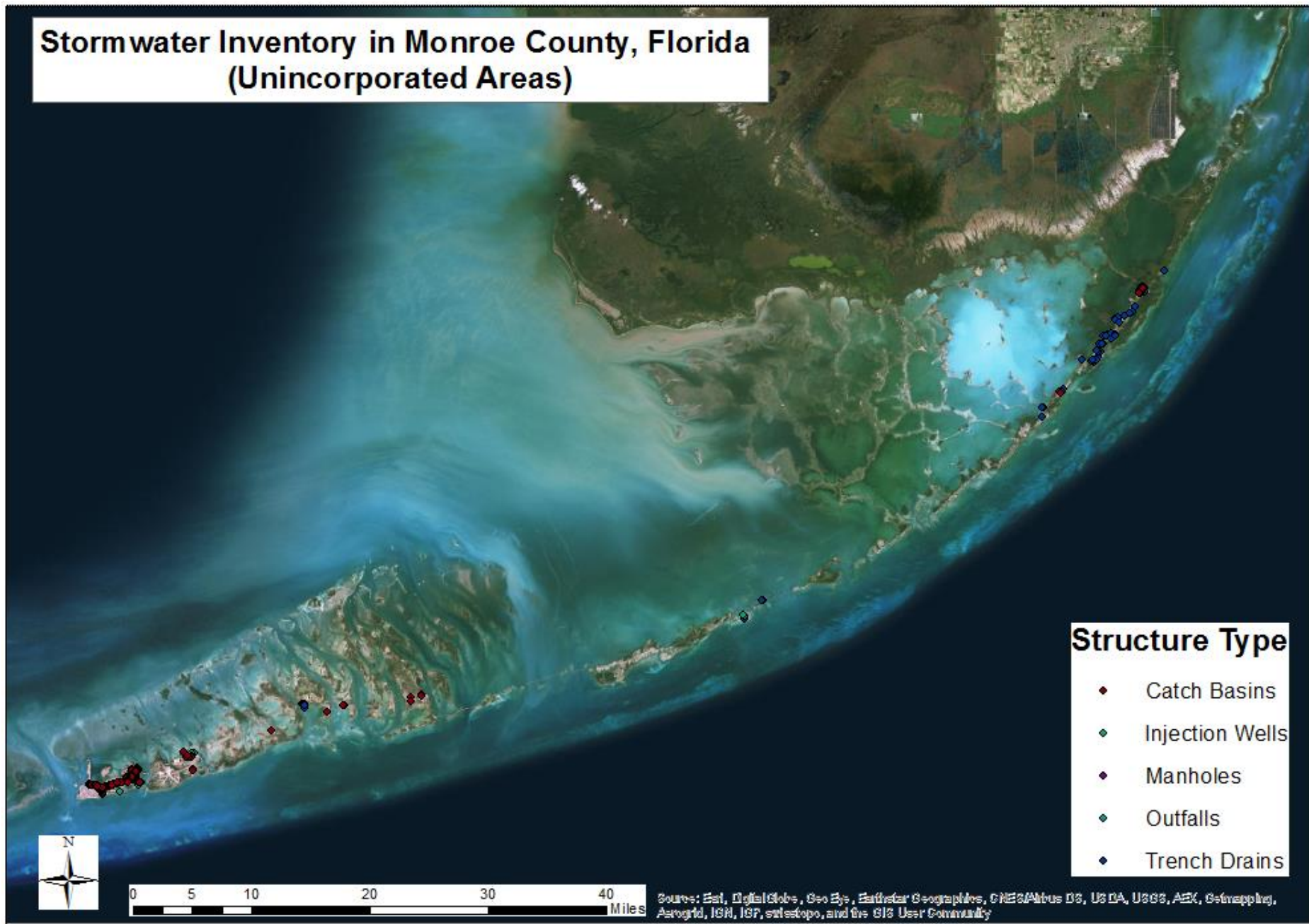
## Legend



Figure by Emily Niederman, Stetson University (Class of 2017)



## Stormwater Inventory in Monroe County, Florida (Unincorporated Areas)



OMB No. 1660-0022  
Expires: March 31, 2020

National Flood Insurance Program  
Community Rating System

# Coordinator's Manual

FIA-15/2017



FEMA

*Credits that can take a community from Class 5 down to Class 4 can be achieved through development of Watershed Management Plans that include:*

- 1. Modeling and analysis of local stormwater drainage capacity*
- 2. “Future hydrologic conditions,” including at least 3.9 feet of sea-level rise through 2100*



# Liberty County

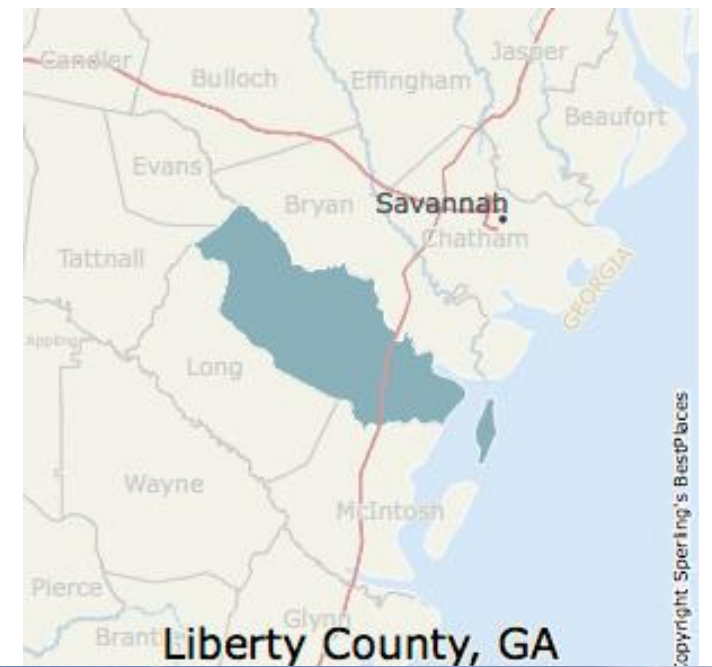
Established in 1777

Population appx. 63,000.

Located on the Georgia coast south of Savannah.

Includes 7 cities: Hinesville, Flemington, Riceboro, Midway, Gum Branch, Wathourville, and Allenhurst.

Encompasses Saint Catherine's Island, the Isle of Wight, and Sunbury.



# Local Engagement

Liberty County Unified Planning Commission & Staff

Engineering Staff

Building Inspector & Code Enforcement

Emergency Management Department

Ag Extension Agent

City of Hinesville Downtown Development Authority

Fort Stewart – Fish & Wildlife Branch

SERPPAS, DoD, & USACE (via IRIS partnership)

Focused on community resilience using green infrastructure & natural systems.

Emphasize dealing with storm surge, SLR, and environmental changes by protecting natural and economic resources:

- Working Forests
- Coastal Marshes

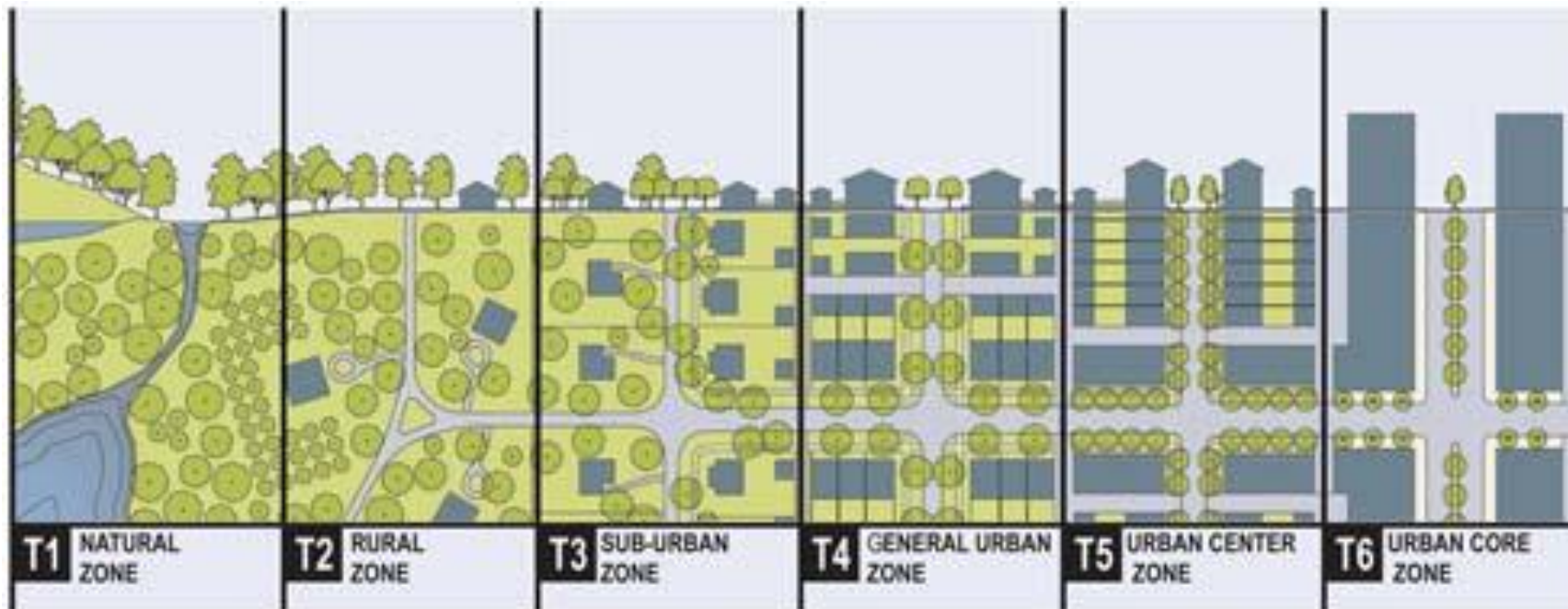
Identified Peacock Creek as a source of vulnerability and an opportunity to improve resilience.

# Develop a plan to implement green infrastructure in Liberty County.

Problem of context and scale

Develop **Transect-Based Green Infrastructure Plan**

- Review opportunities for green infrastructure implementation.
- Work with local leaders to develop a plan to implement green infrastructure.

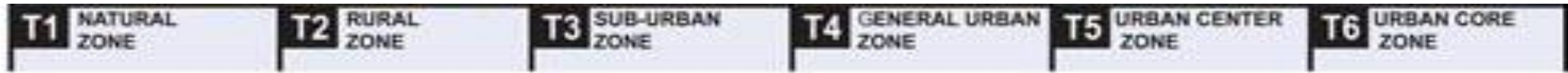




Rural

Suburban

Urban



Land Conservation



Bioswale



Better Street  
Design



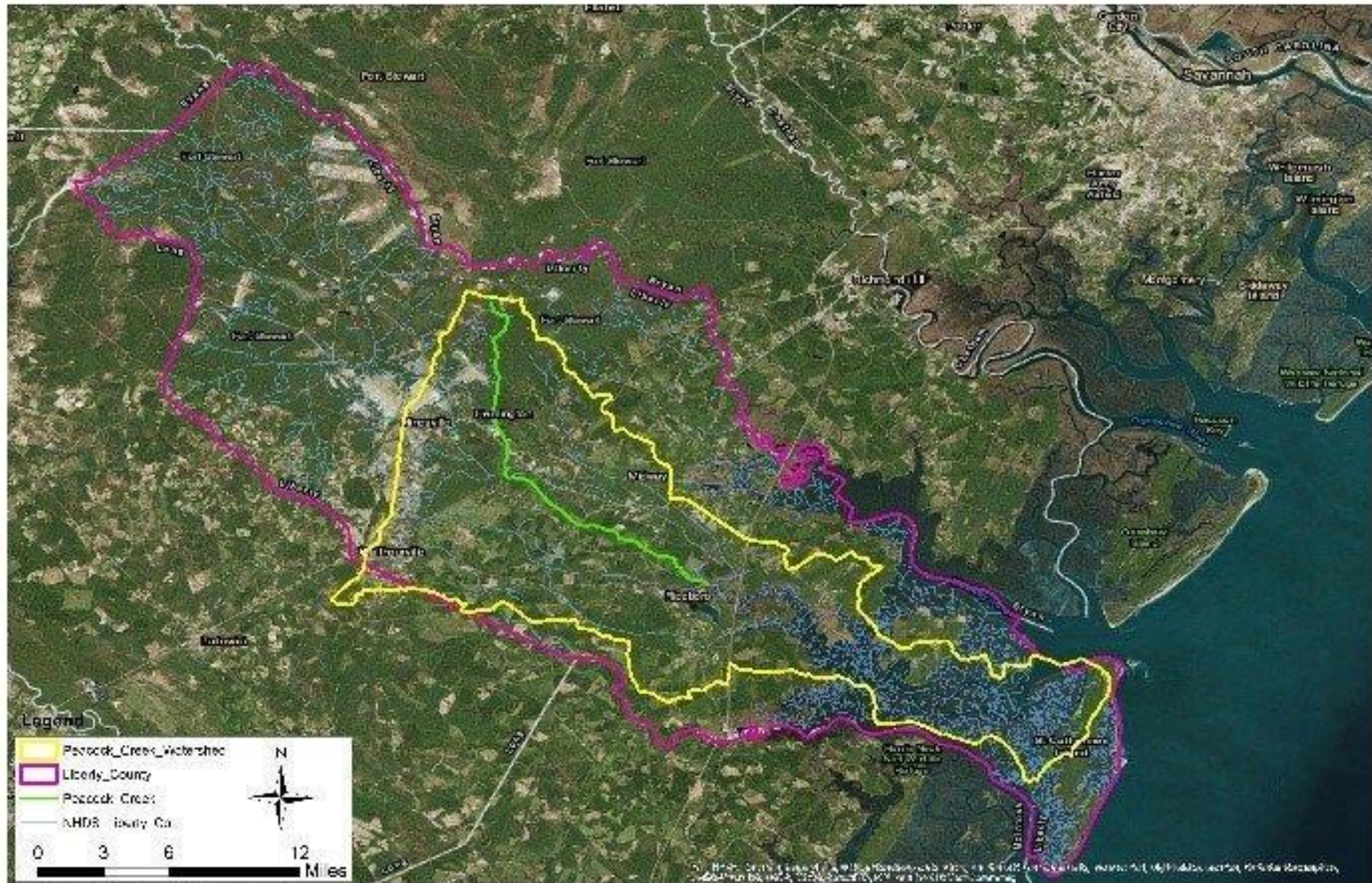
Rain Garden



Green Roof



## Peacock Creek Watershed Green Infrastructure Planning





# Georgia Sea Grant Legal Fellow Research

- Review local planning documents, federal and state law requirements, and local land use and zoning codes.
- Assess barriers and opportunities to use green infrastructure solutions in public and private projects.

## OPPORTUNITIES: EXAMPLES

### Stormwater Ordinance

- Urban transect – cluster development, offsite drainage
- Stormwater Utility

### Zoning Ordinance

- Reduce tech requirements with open space preservation
- Allow setback/frontages on adjoining lots to be reduced by owner agreement
- Allow irregular lot shapes

# Rural

# Suburban

# Urban



Land Conservation



Bioswale



Better Street  
Design



Rain Garden



Green Roof

Local funding  
Georgia EPD 319 Proposal  
Georgia CRD Coastal Incentive Grant Proposal  
NFWF Coastal Resilience Funding  
Others?

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# Coastal Roads are Susceptible to Flooding



State?

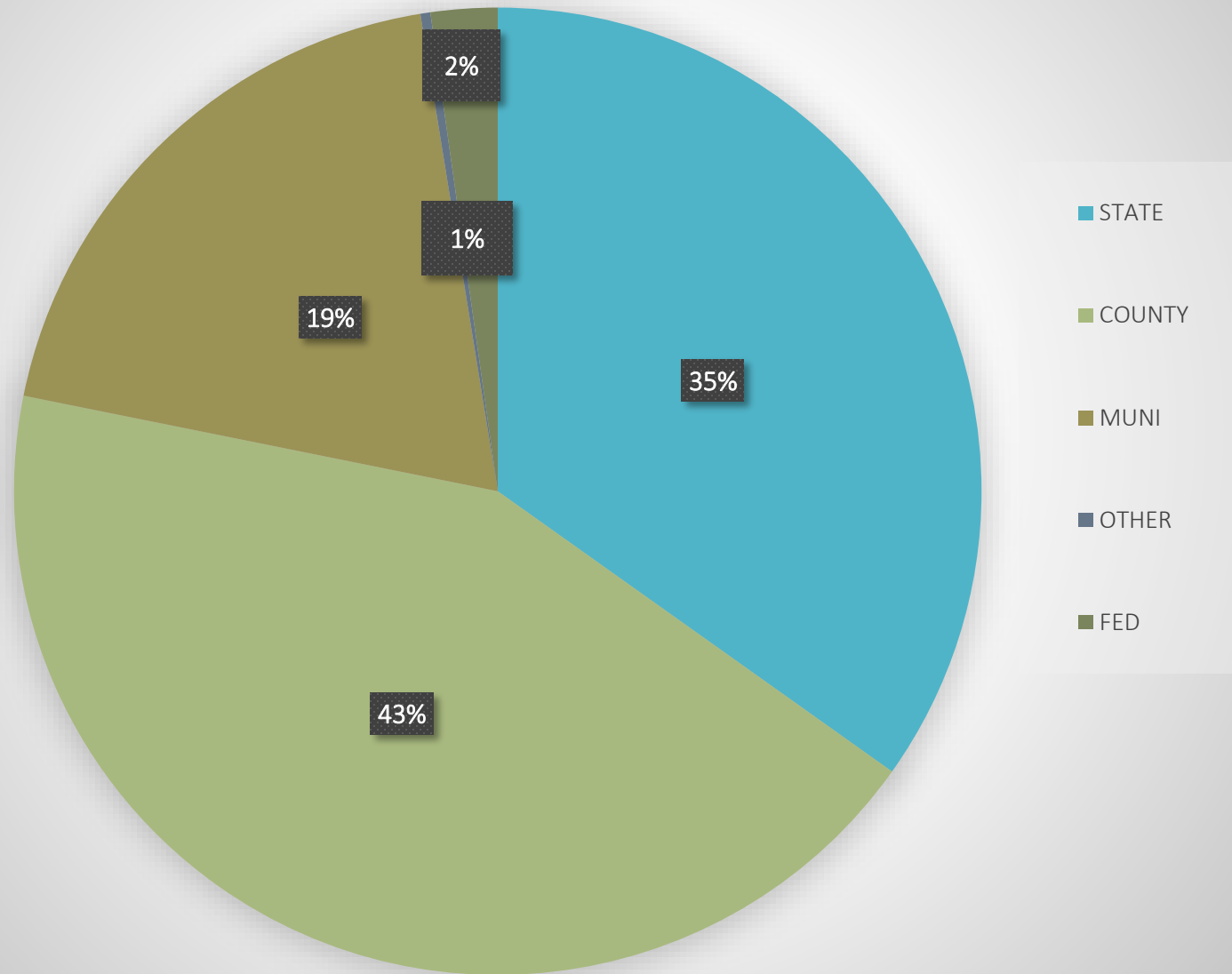
County?

Municipality?

Federal?

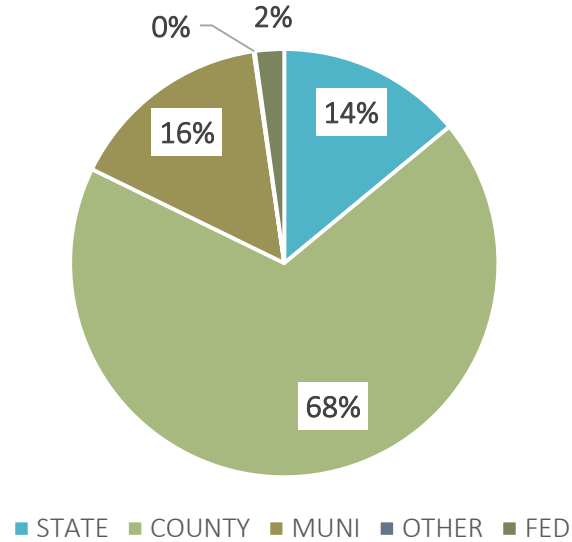
Private?

The FL, GA, SC, NC Study Area:  
Total Percentages of Road Ownership

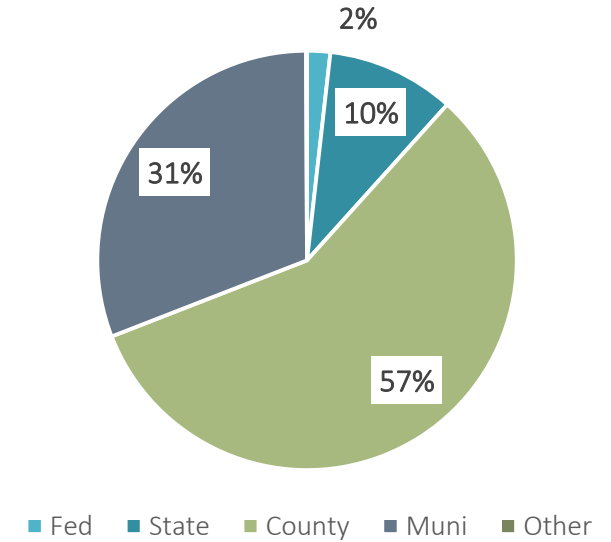


# Ownership by % of Road Miles

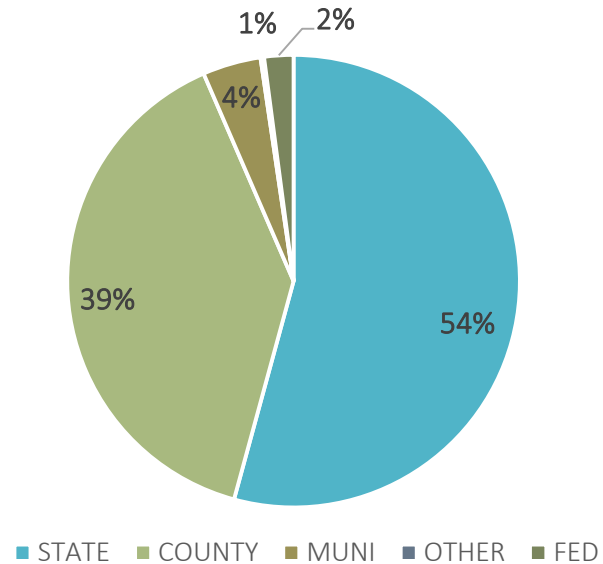
Georgia



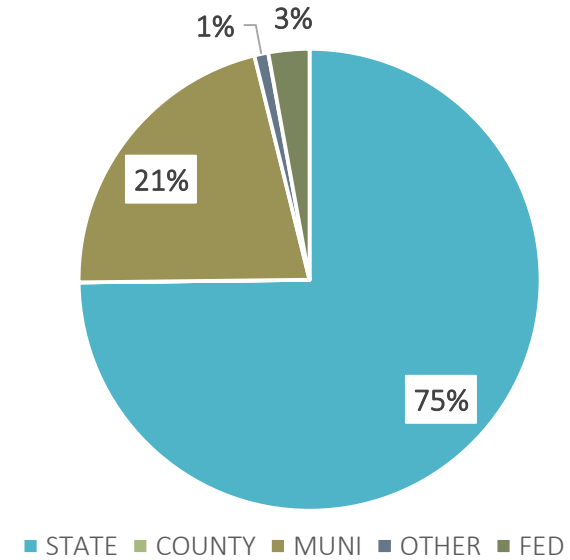
Florida



South Carolina



North Carolina



	RURAL						URBAN						TOTAL
	State	County	Town/ Muni	Other	Fed	Rural Total	State	County	Town/ Muni	Other	Fed	Urban Total	
FL	5,643	26,454	2,578	81	1,733	36,489	6,473	43,981	35,251	5	459	86,170	122,659
GA	12,588	58,257	4,078	90	2,775	77,788	5,361	29,156	15,757	31	41	50,346	128,134
NC	59,229	-	2,375	1,017	2,881	65,502	20,330	-	20,310	22	170	40,832	106,334
SC	29,792	25,583	523	194	1,589	57,681	11,567	4,345	2,654	1	3	18,569	76,250

Florida is the only state in our study area with more urban than rural road miles, with twice as many urban road miles as rural. South Carolina, on the other hand, has almost three times as many rural road miles as urban.

## ANNUAL VEHICLE - MILES BY FUNCTIONAL SYSTEM (IN MILLIONS)

	RURAL	URBAN	TOTAL
Florida	20,289	88,856	109,145
Georgia	14,816	45,608	60,424
North Carolina	15,258	38,935	54,193
South Carolina	12,782	16,733	29,515

Large numbers of people often travel on a concentrated number of roads. Urban roadways in all of the states in our study area carry a larger percentage of vehicle traffic, with Florida and Georgia having significantly higher percentages of vehicle miles in urban areas than North Carolina and South Carolina

Inventorying high traffic areas and essential transportation infrastructure therefore will be critical for addressing climate impacts on road infrastructure.

# South Carolina: Roads Overview

Miles of South Carolina Roads by Jurisdiction												
RURAL						URBAN						TOTAL
State	Cty	Town/ Muni	Oth	Fed	Rural Total	State	Cty	Town/ Muni	Oth	Fed	Urban Total	
29,792	25,583	523	194	1,589	57,681	11,567	4,345	2,654	1	3	18,569	76,250

In South Carolina, the majority – roughly 54 percent – of its roads are state-owned. In the 1950s, in order to ensure maximum access to federal highway funding, lawmakers created a process for allowing local roads to be placed into the state system with consent from SCDOT.

Counties own approx. 39% of the roadways. Municipalities own approx. 5%.





## SEA LEVEL RISE VIEWER

Enter an address or city



SEA LEVEL  
RISE



LOCAL  
SCENARIOS



MAPPING  
CONFIDENCE



MARSH  
MIGRATION



VULNERABILITY



HIGH TIDE  
FLOODING



WATER  
LEVEL

10ft

9ft

8ft

7ft

6ft

5ft

4ft

3ft

2ft

1ft

Current  
MHHW

UNITS



VIEW BY SCENARIO

VIEW BY YEAR

?

2100 : 6.33ft

2080 : 4.33ft

2060 : 2.76ft

2040 : 1.54ft

2020 : 0.69ft

Extreme

High

Intermediate  
High

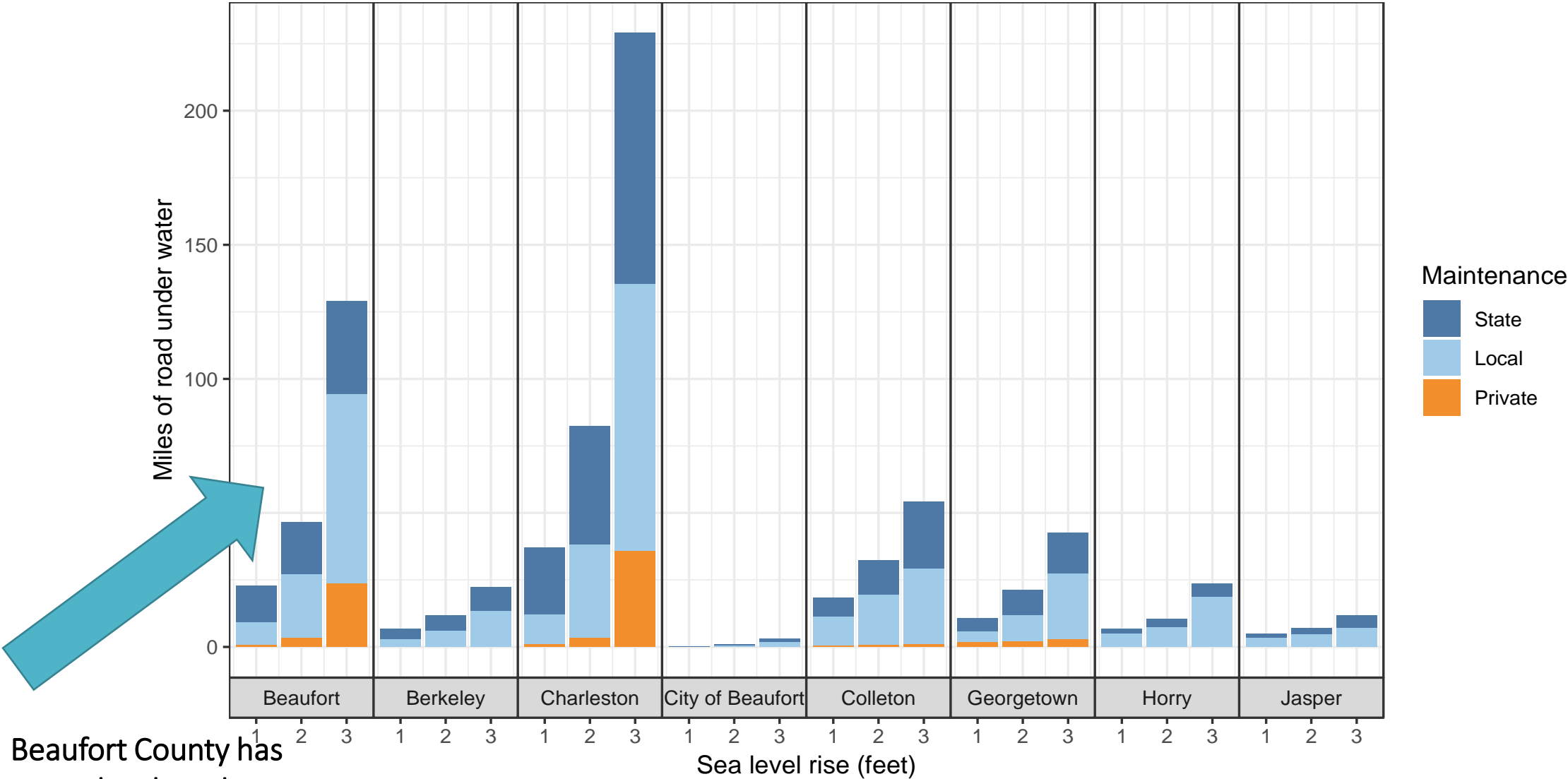
Intermediate

Intermediate  
Low

**CHARLESTON, SC**  
FOR INTERMEDIATE HIGH SCENARIO



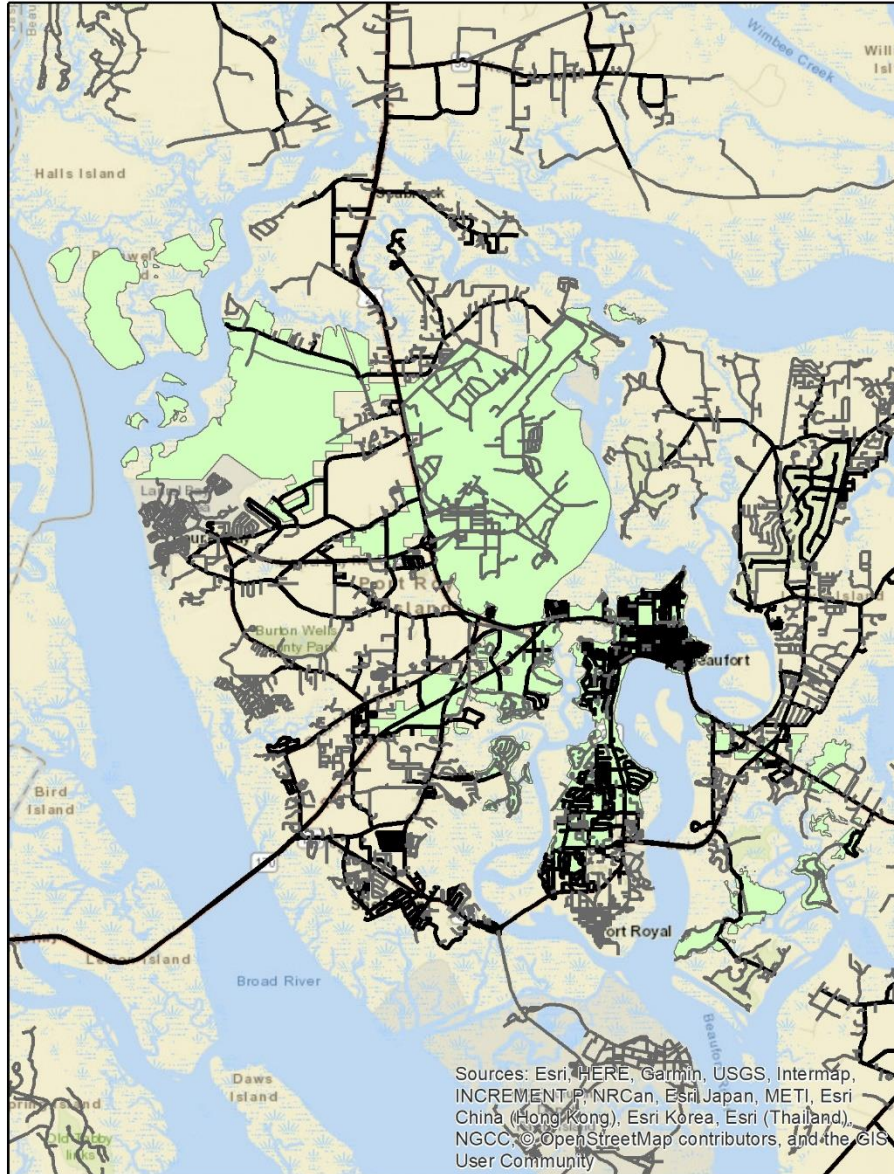
South Carolina – Counties with More than One Mile Inundated



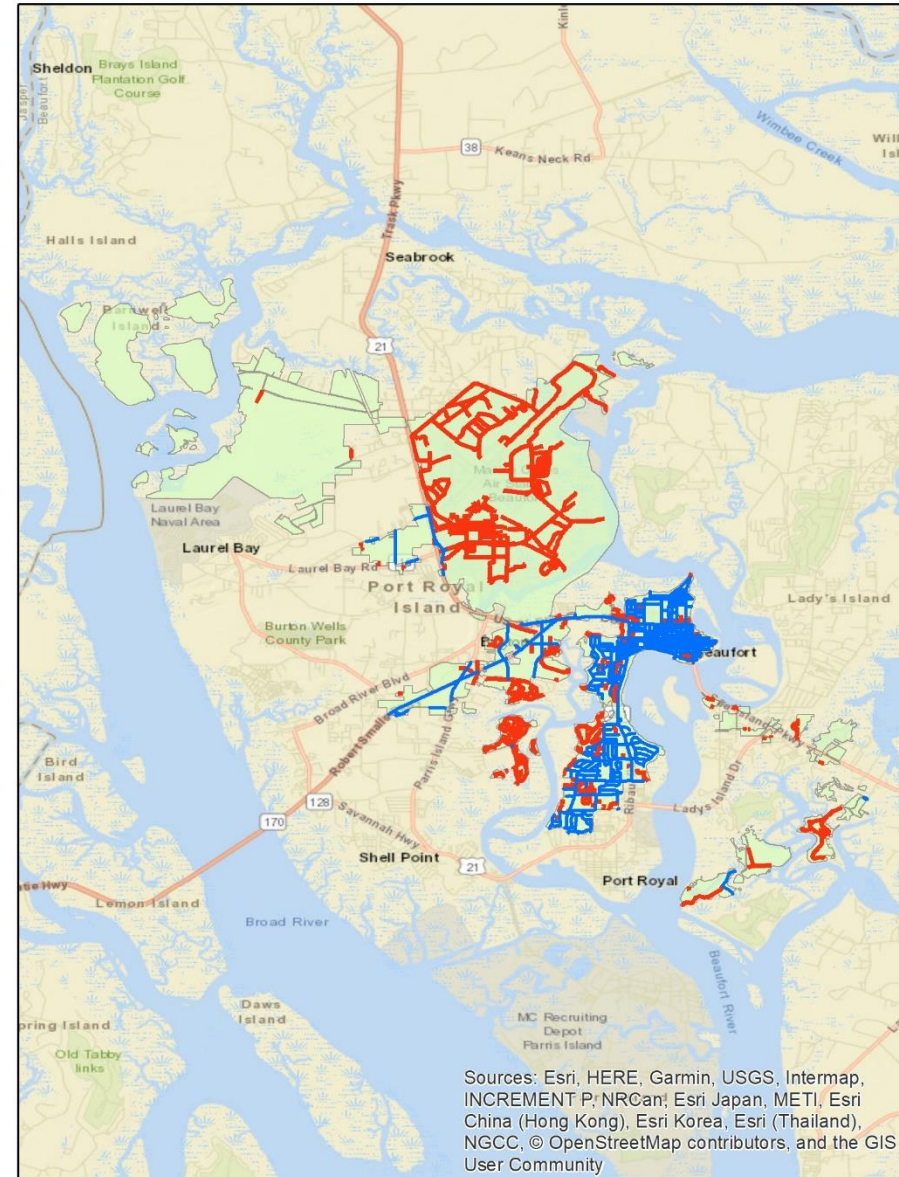
Beaufort County has more local roads at risk than state roads.



Existing Road Network



Inundation 3ft SLR



Beaufort, South Carolina

# South Carolina: Roads and SLR

Why modeling SLR at the local level matters....

- While the state owns the majority of roads in South Carolina, several coastal counties have more miles of road-length at risk from sea level rise than the state does.
- Additionally, even where the state may have the largest number of miles of risk, local governments also have significant numbers of miles of risk as well.
- The state has recently made efforts to transfer more state roads to local governments.

# South Carolina: Observations

- Wide variability in the local impacts. Charleston County and Beaufort County confront the greatest exposure to potential road flooding by a wide margin. This is likely a result of geographic conditions such as elevation and topography as well as development patterns promoting infrastructure construction in more vulnerable areas.
- In most cases, the state is responsible for the majority of the road miles inundated, though that is not the case for all jurisdictions. There are more locally maintained roads in Colleton, Horry, and Jasper counties, for example, projected to be inundated by sea level rise than state-maintained roads.
- Adaptation planning must be highly localized. While a “birds-eye” view of road ownership statewide is helpful, cities and counties will not be affected in the same way by sea level rise nor will their responsibility for roads in their jurisdictions necessarily reflect statewide trends.
- Our work is very timely because there is state-level interest in our work from the transportation planning side.

# Policy/Law Big Picture

Adaptation planning to address sea-level rise is often described in three different categories: protect/defend, accommodate/adapt, or relocate.

Sometimes it seems as if these categories are described as plausible options, which implies both that proactive planning is occurring and that the authority exists to implement such options.

Our premise is that rising sea-levels challenge governmental duties and immunities – both with the public welfare of the entire community as well as individual property owners.



# Regional Study

How roads are managed in our four-state study leads us to conclude that, even if a governmental entity wanted to make an adaptive choice – say repair, upgrade, or abandon a road – the laws as they exist make such choices difficult.

State and local governments have a duty to maintain roads. When they fail to do so, they can be liable in tort for negligence. Road abandonment procedures also exist. However abandonment can lead to takings claims, because property owners abutting a public road lose access to their property as a result.

# Causes of Action

<i>Cause</i>	<i>Type of Action</i>
<b>Compel action.</b> <u>Do something</u> about the road.	Mandamus action.
<b>Compel action.</b> <u>Do something</u> about the road because doing nothing is causing harm.	Nuisance action. Possible negligence action?
<b>Action caused harm.</b> <u>Don't like what you did or didn't do</u> about the road.	Negligence action.
<b>Action reduced my property values.</b> <u>Don't like what you did</u> about the road because it changed my access, use of property.	Constitutional claim/"Takings."

# Mandamus: Do Something

In all four states, a citizen may petition the court for **a writ of mandamus to compel a governmental entity to fulfill its duty to repair and maintain a road**. However, mandamus actions are generally reserved for extraordinary circumstances and are not readily issued by courts. In North Carolina, for example, there are several required elements:

1. the plaintiff must have a clear legal right to the act requested;
2. the governmental official must have a legal duty to perform the act requested;
3. the duty must be clear and not reasonably debatable;
4. the duty must be ministerial in nature and not discretionary; the governmental official must have neglected or refused to perform the act; and
5. the time for performing the act has expired.

# Mandamus: Do Something

Florida, Georgia, and South Carolina have similar requirements, although distinctions arise with respect to ministerial and discretionary duties. While mandamus actions are universally available for failing to perform a ministerial duty, the standard and results of mandamus actions for discretionary duties varies.

- In Georgia, a mandamus suit may be brought to compel performance of a discretionary duty if the exercise of discretion is capricious and arbitrary or a gross abuse of discretion.
- In North Carolina and Florida, a mandamus suit can compel a governmental official to make a discretionary decision but cannot compel the outcome of that decision.
- In South Carolina, a mandamus suit is limited to ministerial duties.



# Nuisance: Do Something

Nuisance claims are commonly brought **to remedy environmental harms and damage, including impounded water caused by a highway bypass and other road structures that cause flooding or water overflow onto private property.**

In Florida, Georgia, and North Carolina, if a governmental entity fails to maintain or repair a road damaged by sea-level rise, storms, flooding, or erosion, a plaintiff could allege that the entity is maintaining a nuisance and seek an injunction.

Governmental entities in South Carolina, on the other hand, are not liable for nuisances.

To our knowledge, this approach has not been used in Florida, Georgia, or North Carolina in the context of failure to maintain a road or in the context of governmental responsibility for repairing damage caused by flooding or other natural causes. More often used with sewer cases.

# Stop and Talk

*Do you have stories in your communities related to facts that could lead to a cause of action **to compel** action because of extreme weather events and/or sea level rise?*

*Can you imagine stories in your communities related to facts that could lead to a cause of action to **compel action** because of extreme weather events and/or sea level rise?*

# Negligence

When government entities fail to maintain or design these roads adequately, they may face tort liability if harm to human life or property results, often under a negligence claim.

Negligence is “conduct which falls below the standard established by law for the protection of others against unreasonable risk of harm.”

Four elements must be satisfied to prove negligence: **duty, breach, causation, and damages**. For the purposes of our analysis, we focused on the question of whether the government owes a duty either to the users or local roads or the community at large to provide roads.

# Roads and Duties in Four States: A Doctrinal Stew

Comparing four states, and the counties and municipalities within these states, reveals a range of **duties** imposed on governments for maintaining and designing roads as well as **immunities** shielding these governments from liability.



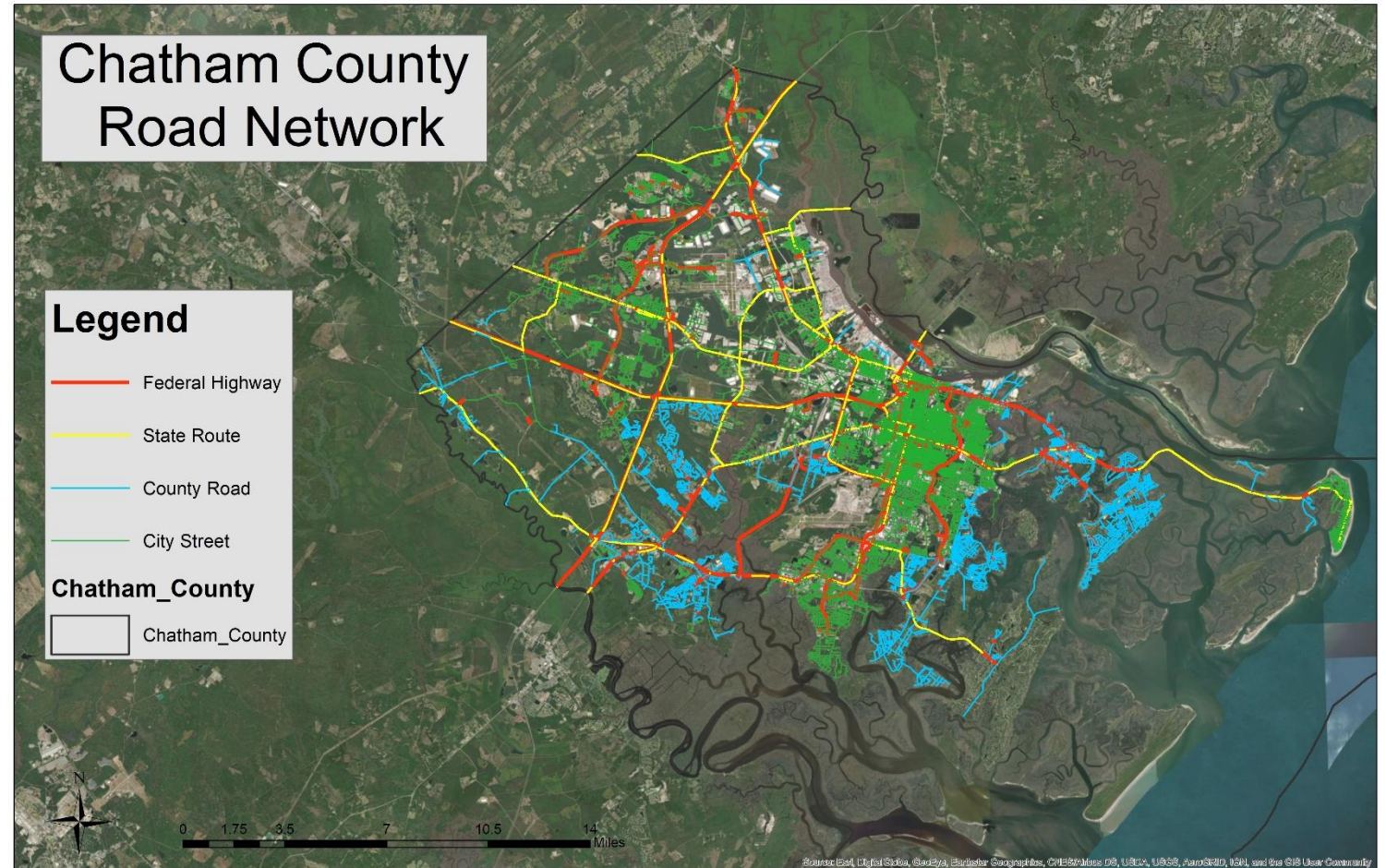
	FLORIDA	GEORGIA	NORTH CAROLINA	SOUTH CAROLINA
<b>State</b>	FDOT has a duty to maintain roads under its control.	GDOT has a duty to improve, manage, and maintain the state highway system.	NCDOT has a duty to establish, construct, and maintain a statewide system of hard-surfaced and other dependable highways running to all county seats and to all principal towns.	SCDOT has a duty to maintain the state highway system in a safe and serviceable condition.
<b>County</b>	A county has a duty to keep roads in good order and provide a reasonable level of maintenance that affords meaningful access.	A county has a duty to maintain county roads in a condition so that they can be continuously used for ordinary loads with ordinary ease and facility.	Counties do not have maintenance duties. A county may enter into an agreement with NCDOT to repair, maintain, or improve a road.	A county has a duty to repair roads in unincorporated areas of the county.
<b>Muni</b>	A municipality has a duty to maintain roads in a reasonably safe condition.	A municipality has a duty to keep roads in repair and reasonably safe from dangerous conditions.	A municipality has an affirmative duty for municipalities to keep roads in proper repair and open for travel and free from unnecessary obstructions.	A municipality with a population greater than 1000 has a duty to keep streets open, in good repair, and in reasonably safe condition for public travel. Towns with populations less than 1000 must keep open and in good repair all streets and ways which may be necessary for public use within the limits of the town.

Do these distinctions matter?

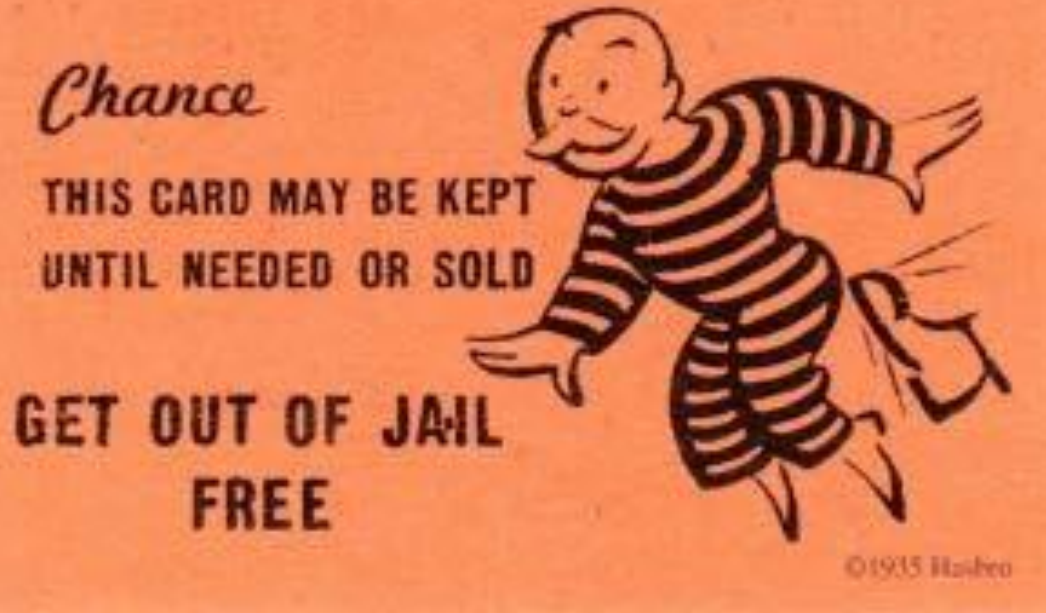
# Patchwork

Confusing “patchwork” of obligations and protections.

What happens when a road length involving several jurisdictions becomes repeatedly flooded because of increasingly higher tides, especially when cities and counties have differing levels of immunity protections?



# Sovereign immunity – What is it?



That the king can do no wrong is a necessary and fundamental principle of the English constitution.

~ William Blackstone

AZ QUOTES

“Simply put, the constitutional doctrine of sovereign immunity forbids our courts to entertain a lawsuit against the State without its consent.”

Judge Blackwell, Georgia Supreme Court

# Sovereign Immunity: More Patchworks

In both Florida and North Carolina, immunity does not apply to road maintenance, which is considered an operational or proprietary function.

Georgia counties and municipalities, in the meantime, are split in their levels of protection: counties are protected by sovereign immunity for failing to maintain but municipalities are not.

Immunity, however, applies to road maintenance in South Carolina, precisely because it is *not* considered an operational function but is considered discretionary.



# Sovereign Immunity: Additional Wrinkles

Georgia distinguishes between discretionary (sovereign immunity applies) and ministerial duties (no immunity). In Georgia, courts have generally held that a duty related to roads is ministerial if it is mandatory or becomes necessary after a discretionary decision making body delegates the duty to a county official by **enacting a policy**.

In other words, if a policy is in place, the duty is considered ministerial, sovereign immunity is waived, and a suit may go forward. **Arguably, this factor – the presence of a policy – creates a perverse incentive for counties to decline to adopt policies related to road maintenance and sea level rise.** Otherwise, they expose themselves to liability.

North Carolina and South Carolina have cases illustrating the how governments may not be shielded by immunity defenses in cases where improper maintenance causes flood hazards, a situation that is likely to increase as flooding increases due to sea level rise. ***Knowing about the hazard seemed to make the difference.***

# Stop and Talk

*Do you have stories in your communities related to facts that could lead to a **negligence action** in part because of extreme weather events and/or sea level rise?*

*Can you imagine stories in your communities related to facts that could lead to a **negligence action** because of extreme weather events and/or sea level rise?*

# Abandonment Authority in Four States

While “retreat” is a relatively recent term used widely in adaptation planning, “abandonment” is the term of art utilized in our four-state study area to describe the government process of deserting roads.



	FLORIDA	GEORGIA	NORTH CAROLINA	SOUTH CAROLINA
<b>State</b>	FDOT may redesignate or relocate a road or undertake a project that closes or modifies existing access to a road.	GDOT may abandon a road if the agency determines that the road no longer serves a substantial public purpose or abandoning the road is in the best public interest.	NCDOT may abandon a road when the agency determines that public good requires the road to be abandoned.	SCDOT may abandon a public road that is no longer required as a public road or for departmental purposes.
<b>County</b>	A county may vacate, abandon, discontinue, or close a road but may not act to harm the public welfare.	A county may abandon a road if the board of commissioners determines that the road no longer serves a substantial public purpose or abandoning the road is in the best public interest.	A county may permanently close any public road if it is not contrary to public interest and if no adjacent landowner would be deprived of reasonable means of access.	A county governing body may discontinue a public road found to be useless.
<b>Muni</b>	A municipality may abandon or vacate a public road under its powers to perform municipal functions but may not act to harm the public welfare.	A municipality may abandon a road if the governing board determines that the road no longer serves a substantial public purpose or abandoning the road is in the best public interest.	A municipality may close a public road if closing the road is not contrary to public interest and if no adjacent landowner would be deprived of reasonable means of access.	A municipal council may close a street when, in its judgment, it may be necessary for the improvement of the municipality.

Do these distinctions matter?



# Abandonment Authority

North Carolina seems more individualistic as no adjacent landowner should be “deprived of reasonable means of ingress and egress” to her property.

*Yet -- Kirkpatrick v. Town of Nags Head*, the court upheld the town’s decision to stop repairing and rebuilding a road that was repeatedly washed away by storms. The court rejected the plaintiff’s attempt to hold the town liable for economic injuries because, by doing so, the court “would effectively be depriving a municipality . . . of its discretion to determine the identity of the streets upon which travel should be allowed at all.”

Further, “accepting Plaintiffs’ argument would effectively require a municipality to compensate a landowner or other person adversely affected by a street or roadway closure decision for economic losses arising from the closure of the road in question.”

# Eliminating a Property Owner's Access to a Road: Issues and Distinctions

Authority to  
Abandon Does  
Not Eliminate  
Potential  
Takings Claims



# Takings Clause

*"...nor shall private property be taken for public use, without just compensation. "*

*AMENDMENT V*

- Eminent Domain
- Regulatory Takings
- Inverse  
Condemnations



# Eminent Domain

# Regulatory Takings





# Inverse Condemnation



## So in the road context....

- “Takings” claims -- successfully maintain that property owners abutting the abandoned road are owed compensation.
- Often a complete loss of access to the property is not necessary for property owners to recover.
- If an entity abandons a public road that abuts a landowner’s property, and such abandonment substantially interferes with the landowner’s ability to enter and exit his property via that public road, a compensable taking of private property may have occurred.

# Eliminating a Property Owner's Access to a Road: Issues and Distinctions

FL: Eliminating or interfering with the right to access constitutes a taking if the property owner's right of access was *substantially diminished*.

GA and SC: the right to enter and exit one's property by using a public road is usually referred to by courts as an "easement of access." In Georgia, if abandonment only results in an inconvenience of access, that inconvenience is not compensable unless the inconvenience is special to the landowner.

NC: eliminating *direct access* to property can trigger a takings claim, but providing reasonable alternative access may negate or mitigate a takings claim. Reasonable alternative access is not, in NC, an indirect, 1.5-mile detour through residential streets. Access to a service or frontage road would likely not rise to a compensable taking.

# Eliminating a Property Owner's Access to a Road: South Carolina took a turn for the worse in 2018

- Prior to a South Carolina Supreme Court decision that was issued in August 2018, **all reasonable means of ingress and egress from the property must have been distinguished to amount to a taking and, if only one point of access had been eliminated or the government has provided an alternative access easement, the landowner would not be compensated for a taking.**
- In *SCDOT v. Powell*, the South Carolina Supreme Court **held that if access has been substantially restricted *related to a physical appropriation of land*, the landowner may be compensated for a taking.**

In a case involving a property owner's indirect loss of access to a bypass, the South Carolina Supreme Court held that, after a physical taking for a road project has occurred, any diminution in property value related to traffic control or road access may be considered in the amount of compensation.

The dissenting opinion concluded that South Carolina eminent domain law has changed significantly, as essentially a property owner's "increased remoteness" and "increased complexity" in accessing his property may now support a takings claim.

*The trend toward compensating landowners even when the quality of access to their property is diminished is not a good sign for adaptation planning.*

# Stop and Talk

*Have your communities considered abandonment as an adaptation response?*

*Can you imagine scenarios where your communities are likely to consider abandonment as an adaptation response?*



# Policy Solutions

Towards an Adaptive Duty to Maintain Road Systems: Adopting a Resilience Standard

Towards an Adaptive Authority to Abandon: Property Rights and Roads

State-level duties and authorities to deal with state/county/city patchwork, provide consistency



# Monroe County.....

Lead by Erin Deady with support from Thomas Ruppert, Monroe County, Florida recently undertook a Pilot Road Project, which was a more **targeted vulnerability assessment to identify and characterize tidal and storm impacts on county-owned roadways in two neighborhoods** that have suffered sea level rise and related flooding: in Big Pine Key and Key Largo.

The project provided a technical basis for:

- Harmonizing future sea-level rise impacts with necessary current and future county capital expenditures,
- Studying past events and flood recurrence;
- Characterizing sea-level rise impacts on the selected neighborhoods;
- Developing engineered response strategies for high risk road segments; and,
- Identifying desirable design alternatives for each community.



January, 2017

## MONROE COUNTY PILOT ROADS PROJECT:

THE SANDS AND TWIN LAKES COMMUNITIES



Prepared for:

**Monroe County, Florida**

Prepared by:

ERIN L. DEADY, P.A. 

and



**PARSONS  
BRINCKERHOFF**



# Monroe County.....

It used a three-pronged approach for potential road improvement projects in the two selected neighborhoods:

1. Define a target “Design Criteria” for future road updates,
2. Evaluate alternatives of various road elevations to determine cost, pros and cons of each alternative, and
3. Explore a policy approach for developing flood-risk based level of service determinations for roads in Monroe County.

The project also included a draft ordinance which could be used to establish future design criteria and standards for existing county roads, provide for the designation of “environmentally challenging locations” for repeatedly damaged roads, and determine what should be considered “meaningful access” in the environmentally challenged locations.

Contains elements of Thomas Ruppert’s Model Ordinance, which is similar to one adopted in St. Johns County.



# Addition Elements of Note

- Specific signage requirements to address potential tort liability for “failure to warn” and in accordance with states utilizing “minimum maintenance standards;”
- A focus on due process by providing detailed notice to potentially affected property owners;
- Examples of a possible policy delineating a level of service based on the level of maintenance possible with a situationally determined maximum budget to protect local government finances;
- Specific procedures for affected property owners to request assistance in self-generating additional maintenance funding; and
- Abandonment procedures in harmony with state laws.





# Stop and Talk

*What do you think about the proposed?*

*What policy solutions do you see?*

# **I. Overview of Project**

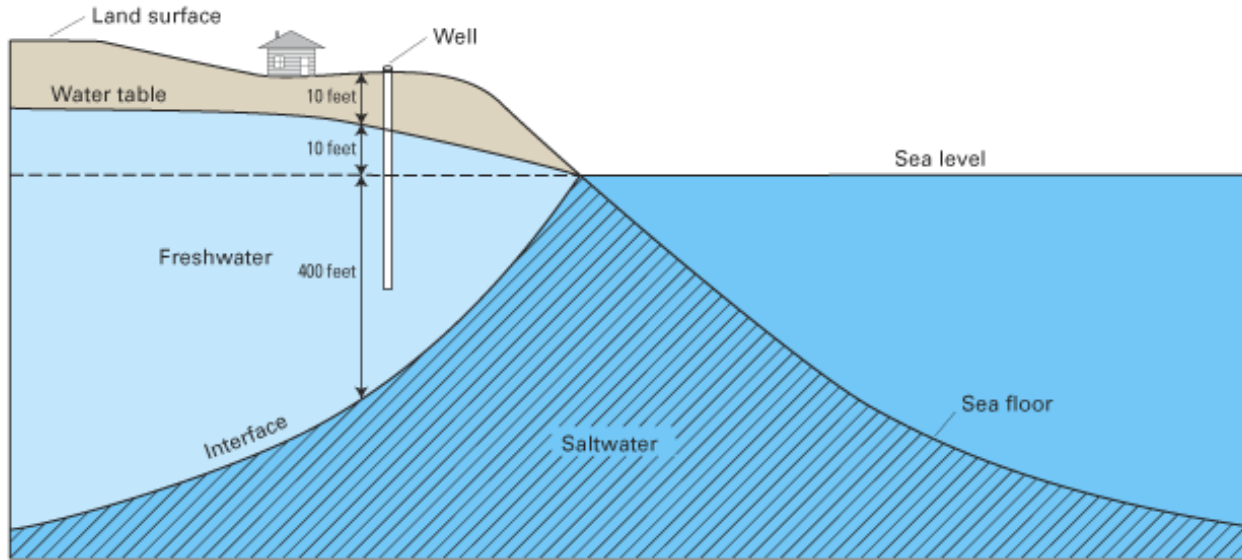
- Data Development and Analysis
- Community Engagement

# **II. Legal Findings & Regional Assessment**

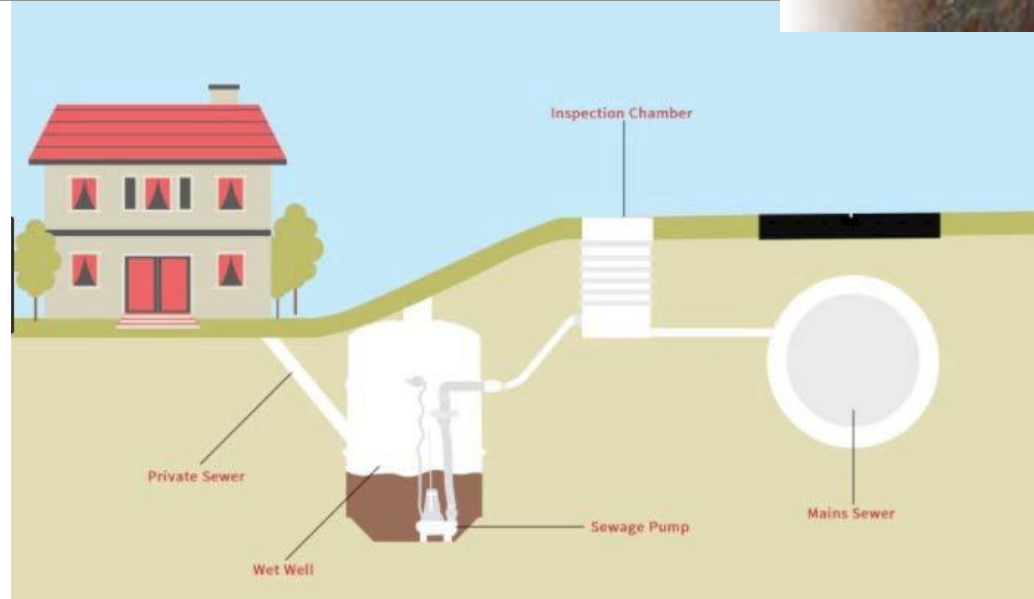
- Roads
- Sewer/Septic

# **III. Resilience Work: What's Next? Successes & Lessons Learned**

# Sea Level Rise: Sewer Systems



→ Rising Water Tables



→ Corrosion of Pipes

→ Changes Underground Pressure Gradients

# Sea Level Rise: Household impacts



➤ Sewage backup into homes



➤ Sewage backup into yards



▶ Sea level rise results in:

- ▶ Coastal Flooding
- ▶ Saltwater Intrusion



▶ Which in turn leads to:

- ▶ Sewage backing up into homes and yards



▶ Legal Implications:

- ▶ NPDES (CWA) permit violations
- ▶ Civil Liability



# Sewer Findings

Munis, counties, and local governmental utility providers (service districts, authorities, etc.) have the duty to maintain the sewers they operate in good working order.

***As sea levels rise, sewage overflows and other issues will become more common in coastal areas.*** Service providers facing lawsuits over sewer overflows or other issues may face monetary damages *and* a court order requiring them to fulfill their duty of providing proper sewer service. Sovereign immunity may shield service providers from suit in some situations where the damages are the result of a “discretionary” or “planning level” decision, but these cases will be fact-specific.

Even if service providers are immune from suit, they will not be immune from takings (inverse condemnation) claims.

# Sewer Findings

***At some point, it will become too expensive or impossible to continue to maintain some sewer lines or other infrastructure.*** Communities and service providers may consider discontinuing maintenance or service or abandoning facilities altogether.

If the decision to stop maintaining a sewer line or other infrastructure is seen by a court as a “discretionary” or “planning level” decision, sovereign immunity may apply.

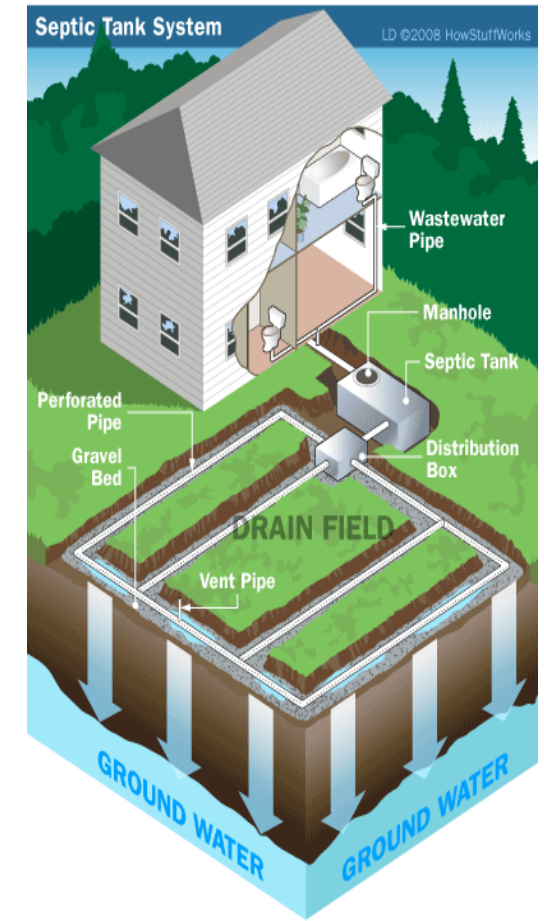
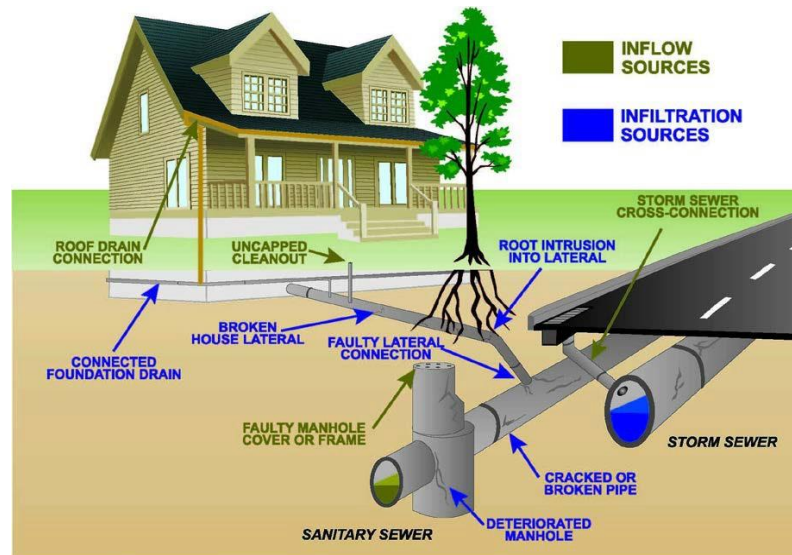
It is, however, unclear how courts will treat sewer abandonment in coastal communities. ***In particular, it is unclear whether courts will require service providers to maintain service despite carefully considered abandonment plans.***

***Even if courts did not require continuation of service, local governments and other utility providers may still be liable for a taking of private property (inverse condemnation).*** This may be determined by whether or not there is alternative wastewater infrastructure available (i.e., whether a septic or other onsite system can be approved on that site or if there is another option such as a mid-sized community/cluster system).

# Sewer Findings

Regardless of the answer to any of these issues, it is going to be exceptionally expensive and complicated for many coastal communities to contend with sea level rise impacts, and *a lack of clear guidance concerning liabilities may make communities less willing to invest in expensive adaptation planning.*

*It may be necessary for state legislatures to provide a clear path forward for communities.*







- Home
- Dowdy Park Events
- Beach Nourishment
- Stormwater/Storms/Flooding
- News & Information
- FAQs
- Beach/Sound Accesses/Parks
- Mayor/Board Page
- Customer/Online/Tax Services
- Contact Us
- Contact Town Officials/Staff
- Town Departments
  - Administration
  - Administrative Services
  - Fire & Rescue
  - Planning & Development
    - Planning and Zoning
    - Hazard Mitigation Planning
    - 2010 Land Use Plan
    - 2012 Parks and Recreation Plan
    - Dare County

## Coastal Resiliency and Sea Level Rise Planning

The impacts of a changing climate, which includes sea level rise, present potentially enormous future challenges to municipalities across the world, especially those with a close connection to the ocean like Nags Head. The Town of Nags Head wants to improve its resilience to preserve the core values and quality of life despite current and future hazards.



A resilient Nags Head means our community will be better able to *withstand, respond to, and recover rapidly from disruptions due to hazards without long-term damage to our economy or environment*. It means the town will ideally require less government and/or private funding to recover, rebuild, and redevelop after a hazard occurs. Sustaining natural systems improves resilience by providing ecosystem services that directly or indirectly support our community's survival and quality of life. As stressors like accelerating sea level rise alter the damage we see from future hazards, it may not be enough to repeat actions the town has used in the past to recover. Therefore, we must identify, study, and implement adaptations – the actions the town, its residents, and business owners need to take to maintain and improve our resilience.

### VCAPS Report- Adaptation Planning in the Town of Nags Head

View the **adopted VCAPS report** on adaptation planning.

### Comprehensive Plan

View sections of the **Comprehensive Plan on hazard mitigation, vulnerability, and sea level rise**.

VCAPS number one priority was maintaining and expanding the Septic Health Initiative.

Two other priority actions concerned septic systems: developing higher standards for water table separation from drainfields and utilizing offsite septic or shared/cluster systems for small neighborhoods.

# Nags Head -- Septics

Nags Head started its Septic Health Initiative in 2000; four major components:

- Pumping and inspection program – inspections are free of charge and pumping gets you a \$30 credit on water bill (avg. 300 inspections/100 pumpouts per year)

- Water quality monitoring – bacteria and nutrients at 16 surface and 7 groundwater sites

- Education

- Low interest loan – up to \$7,500 for repairs or replacements; loaned over \$350K to date

Also have a decentralized wastewater management plan - A Technical Report developed for the Plan found that older substandard systems were impacting the environment without necessarily causing surface failures, areas with shallow seasonal high water tables are impacting the environment, and properties with high water use may be overloading systems and impacting treatment

***State law almost certainly preempts Nags Head from regulating the use of septic systems.***



# Nags Head -- Septics

*State law almost certainly preempts Nags Head from regulating the use of septic systems.*

## NAGS HEAD

AUTHORITY TO REGULATE SEPTIC SYSTEMS

Marine Extension and Georgia Sea Grant | Carl Vinson Institute of Government



FALL 2018

# Nags Head -- Septics

Other alternatives for Nags Head include:

- Encourage the Dare County Department of Health and Human Services (DHHS) and state DHHS to study the use of septic systems and the effectiveness of current rules in coastal communities.
- Initiate a third-party review of Dare County DHHS septic permitting.
- Encourage the Dare County DHHS to adopt stricter rules.
- Request a local act giving Nags Head authority to regulate septic systems.
- Establish a septic and/or decentralized system utility (voluntary or use power of eminent domain to own systems to manage them; could also include community/cluster systems in this program (for new developments and as replacement infrastructure in some areas where possible))
- If anyone asks, setting up centralized sewer on Nags Head is apparently extremely cost prohibitive

# Cross-cutting challenges

Local long-term data vs. impact on decision-making without such data

How will small towns fund adaptation?

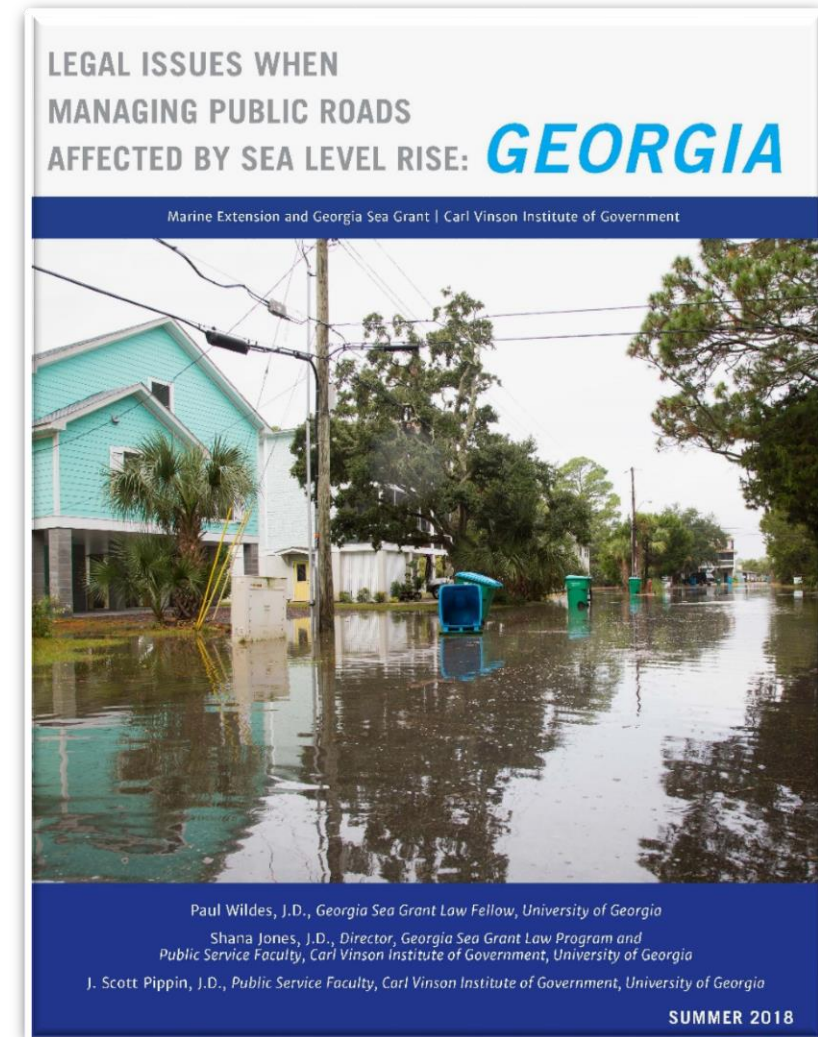
- Maintenance
- Cross-scale collaboration to apply for funding

What about issues not within a town or County's jurisdiction?

Decisions made in nearby jurisdictions will affect communities .... Regional approach?



ROADS			Due Dates
Legal Issues When Managing Public Roads Affected by Sea Level Rise: Georgia	Paul Wildes, Shana Jones, Scott Pippin	Reviewed by Thomas Ruppert, Heather Payne, Scott Pippin and Yee Huang.	Completed. In design.
Legal Issues When Managing Public Roads Affected by Sea Level Rise: Florida	Thomas Ruppert, Erin Deady, Julia Shelburne	Needs review by Thomas Ruppert and Erin Deady. Thomas reviewing by 6/29.	Completed. In design.
Article for Florida Bar Journal -- Legal Issues When Managing Public Roads Affected by Sea Level Rise: Florida	Thomas Ruppert, Erin Deady		In progress, based on white paper
Legal Issues When Managing Public Roads Affected by Sea Level Rise: South Carolina	Rebecca Neubauer, Heather Payne	Reviewed by Heather Payne, Shana Jones, Yee Huang.	Completed. In design.
Legal Issues When Managing Public Roads Affected by Sea Level Rise: North Carolina	Ian Brown, Heather Payne	Reviewed by Heather Payne, Shana Jones, Yee Huang.	Completed. In design.
Road vulnerabilities to projected sea level rise by county in North Carolina, South Carolina, and Georgia	Eleanor Davis, Kirstin Dow	Reviewed by Jason Evans.	Completed. Shana added intro. Kirstin reviewing. Then design.
Roads to Nowhere in Four States: State and Local Governments in the Southeast Facing Sea Level Rise	Shana Jones, Thomas Ruppert, Erin L. Deady, Heather Payne, Scott Pippin, Ling-Yee Huang, and Jason M. Evans	Drafting now.	Final article accepted by <i>Columbia Journal of Environmental Law</i>





SEWER SERVICES			
Georgia sewer services paper.	Danielle Goshen, Katie Hill	Reviewed by Shana Jones, Scott Pippin. Currently being source-checked and edited by Katie Hill.	Completed 10/8. Need to review Katie’s edits.
South Carolina sewer services paper.	Ian Brown, Katie Hill	Reviewed by Heather Payne. Currently being source-checked and edited by Katie Hill.	Completed 10/8. Need to review Katie’s edits.
North Carolina sewer services paper.	Paul Sukenik, Katie Hill	Reviewed by Heather Payne. Currently being source-checked and edited by Katie Hill.	Completed 10/8. Need to review Katie’s edits.
Florida sewer services paper.	Danielle Goshen, Katie Hill	Reviewed by Shana Jones. Currently being source-checked and edited by Katie Hill. Needs to be reviewed by Thomas Ruppert and Erin Deady.	
Four-state comparison and chart	Shana Jones	In development with Scott Pippin and Katie Hill	TBD
The Clean Water Act Submerged: The Clean Water Act Submerged: Sewers and Sea Level Rise in Four South Atlantic States	Shana Jones, Scott Pippin & Katie Hill	In development with Scott Pippin and Katie Hill	Goal January 2019
ADDITIONAL WORK PRODUCT in Progress – White Papers and Articles			
Town of Nags Head: Authority to Regulate Septic Systems	Katie Hill	Reviewed by Jess Whitehead and Holly White.	Katie doing last revisions; then ready for design
Historical Preservation Laws: Challenges for Adaptation	Rebecca Neubauer, NC-Chapel Hill	Rebecca presented on her work at Maryland Sea Level Rise Conference	Finalize for formatting – 7/18
Sewer, Septic, and Sea Level Rise: Few Options for the Town of Nags Head	Katie Hill	In progress	
Historical Preservation Laws & Rising Sea Levels: Options for Beaufort, South Carolina	Danielle Goshen	In development	Draft by Oct. 3
Liberty County: Assessing Resilience in County Ordinances and Plans	Ben Wilde	In development	Final draft submitted; Ben revising.