



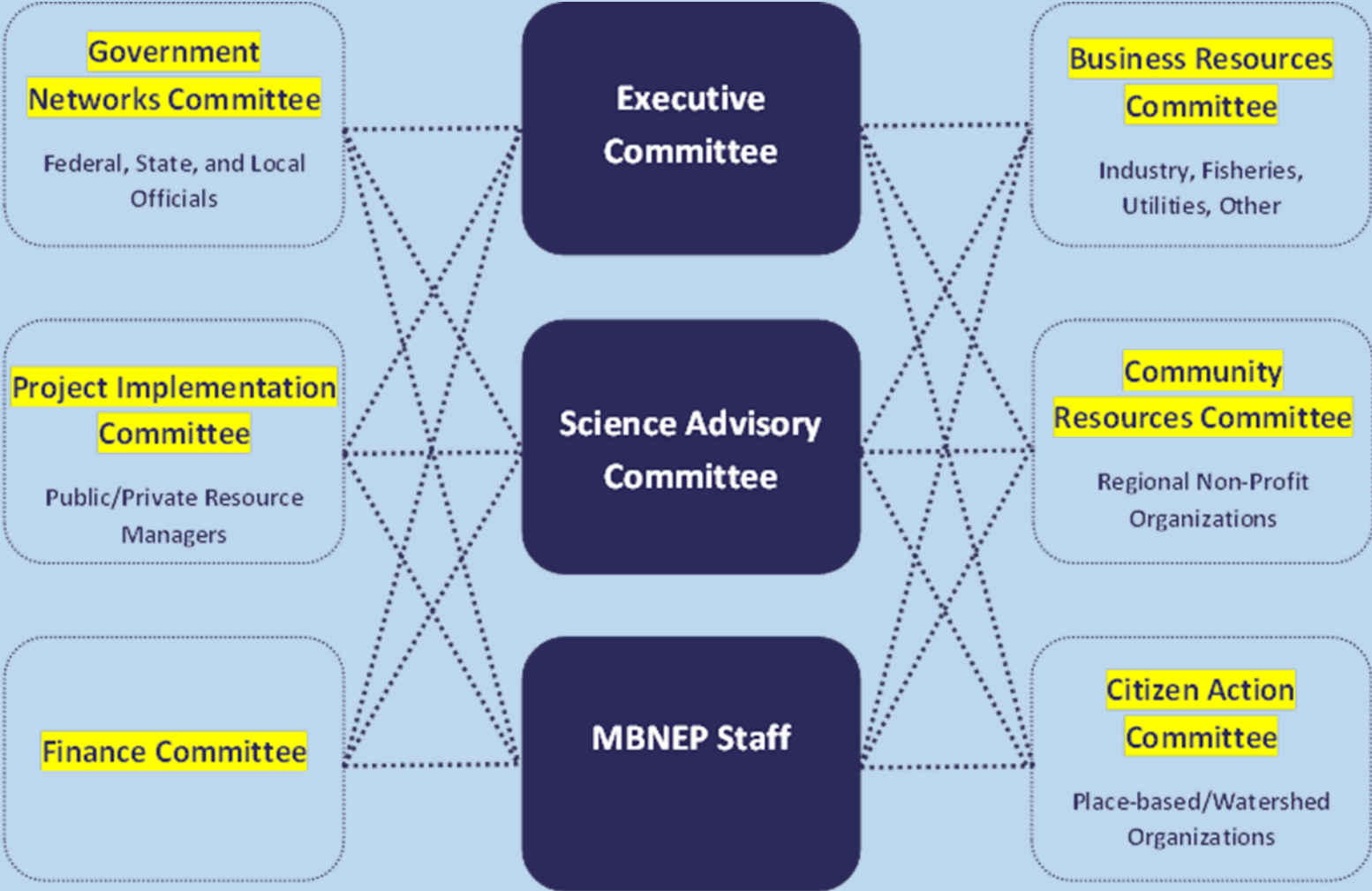
# Using Science to Engage Communities in Adaptively Managing Growth



Tom Herder  
Watershed Protection Coordinator  
Mobile Bay National Estuary Program

# Making Science Matter to Community Influencers:

## The Mobile Bay Estuary National Estuary Program Management Conference









Comprehensive Conservation & Management Plan  
for Alabama's Estuaries & Coast

2013-2018



***The Comprehensive  
Conservation and  
Management Plan  
for Alabama's  
Estuaries and Coast  
2013-2018***

***Respect the Connect***

# The Connection:

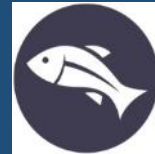
What people value  
most about living in  
coastal Alabama...



Access to Water and Open Spaces



Coastlines  
(Beaches and Other Shorelines)



Fish



Heritage and Culture



Environmental Health and  
Resilience



Water Quality

# Assessing Stressors on Ecosystem Services Provided by a Suite of Priority Habitats

Habitat	Eco-Service	Chemical Contamination	Dredging/Filling	Fire Suppression	Fragmentation	Invasive Species	Land Use Change	Nutrient Enrichment	Pathogens	Sedimentation	Sea Level Rise	Climate Variability	Freshwater Discharge	Resource Extraction	Total
Freshwater Wetlands	Biodiversity	1.9	2.3	0.9	2.3	2.4	2.6	1.6	1.1	2.2	1.6	1.8	2	1.6	24.3
Freshwater Wetlands	Carbon Sequestration	1	2	0.7	1.7	1.5	2.3	1.4	0.7	2.1	1.5	1.5	1.5	0.9	18.8
Freshwater Wetlands	Fisheries habitat	1.8	2.5	0.5	2.1	2.1	2.4	1.9	1	2.2	1.7	1.8	2.2	1.4	23.6
Freshwater Wetlands	Flood control	0.6	2.4	0.5	1.9	1.1	2.4	0.8	0.5	2.2	1.8	1.4	1.9	1.1	18.6
Freshwater Wetlands	Groundwater replenishment	1.3	2.1	0.4	1.8	0.9	2.2	1.3	1	1.7	1.7	1.4	2.1	1.2	19.1
Freshwater Wetlands	Nesting habitat for birds and turtles	1.7	2.5	1.2	2.5	2.1	2.7	1.5	1.3	1.9	2	1.7	2.1	1.5	24.7
Freshwater Wetlands	Oyster production	0.8	1	0.2	0.8	0.8	1.1	1	0.8	1	0.6	0.7	1	0.6	10.4
Freshwater Wetlands	Primary production	1.3	2.1	0.8	1.9	1.9	2.6	1.9	0.7	2.1	1.7	1.5	1.9	1.2	21.6
Freshwater Wetlands	Sediment and nutrient retention and export	0.9	2.3	0.6	1.9	1.2	2.6	2.1	0.6	2.6	1.5	1.5	2	1.6	21.4
Freshwater Wetlands	Storm buffer/hazard protection	0.7	2.4	0.5	2.2	1.1	2.7	0.8	0.4	2.2	1.8	1.7	1.6	1.2	19.3
Freshwater Wetlands	Water quality enhancement	2	2.5	0.6	2	1.2	2.4	2.4	1.6	2.1	1.4	1.3	2	1.7	23.2
Freshwater Wetlands	Wildlife habitat	1.7	2.5	1.1	2.3	2.3	2.5	1.8	0.9	1.9	1.8	1.6	1.9	1.6	23.9
<b>Freshwater Wetlands Total</b>		<b>15.7</b>	<b>26.6</b>	<b>8</b>	<b>23.4</b>	<b>18.6</b>	<b>28.5</b>	<b>18.5</b>	<b>10.6</b>	<b>24.2</b>	<b>19.1</b>	<b>17.9</b>	<b>22.2</b>	<b>15.6</b>	<b>248.9</b>

2013-2018

# Comprehensive Conservation and Management Plan for Alabama's Estuaries and Coast

## The Science:

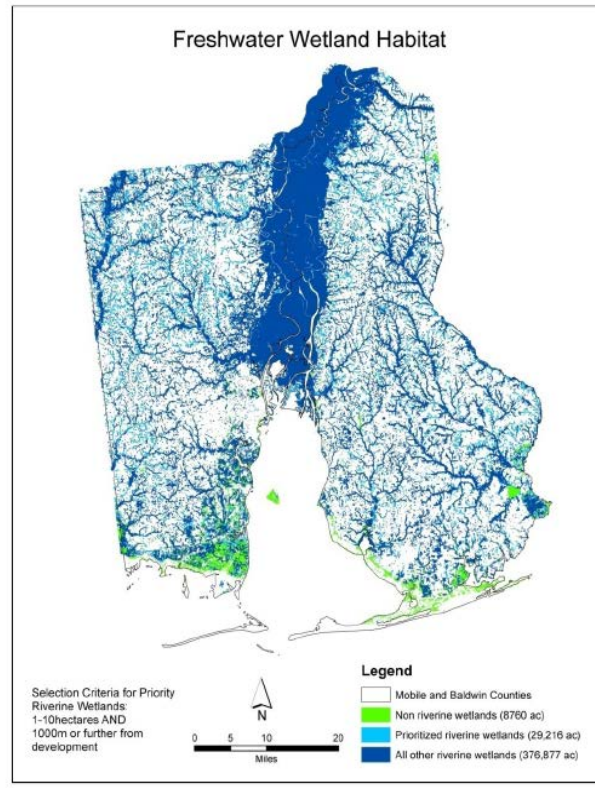
## Highest Ranking Habitats, Ecosystem Services and Stresses

Habitat	Ecosystem Services Most Stressed	Top Stress Impacts	Values
Freshwater Wetlands	Nesting for birds and turtles Biodiversity Wildlife, Fisheries	Land Use Change Fragmentation Dredging and Filling	Access Fish Heritage Resilience Water Quality
Intertidal Marshes and Flats	Biodiversity Fisheries Wildlife Water Quality	Sediment Sea Level Rise Fragmentation	Access Beaches Fish Heritage Resilience Water Quality
Streams and Rivers (Riparian Buffers)	Fish Biodiversity Water Quality Sediment	Freshwater discharge Land Use Change Sediments	Access Fish Heritage Resilience Water Quality



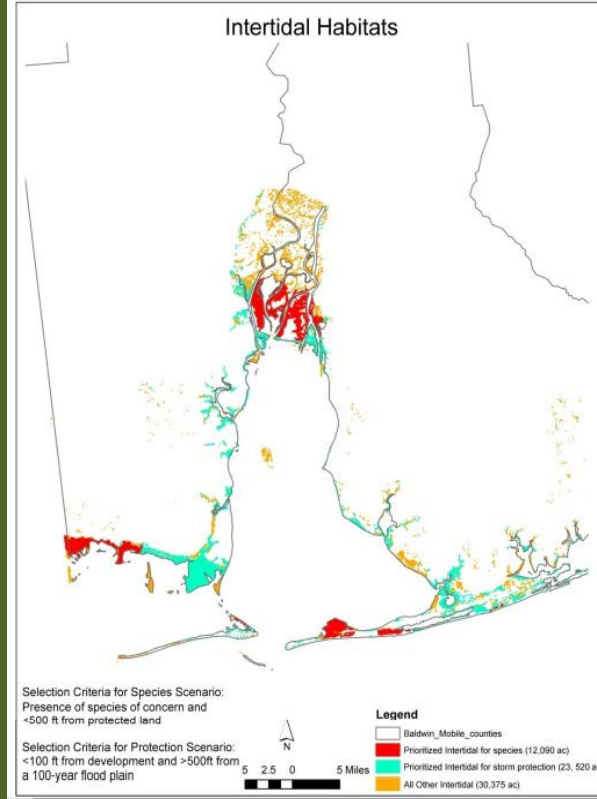
# Where do we focus our efforts?

Figure 3: Prioritized Freshwater Wetlands



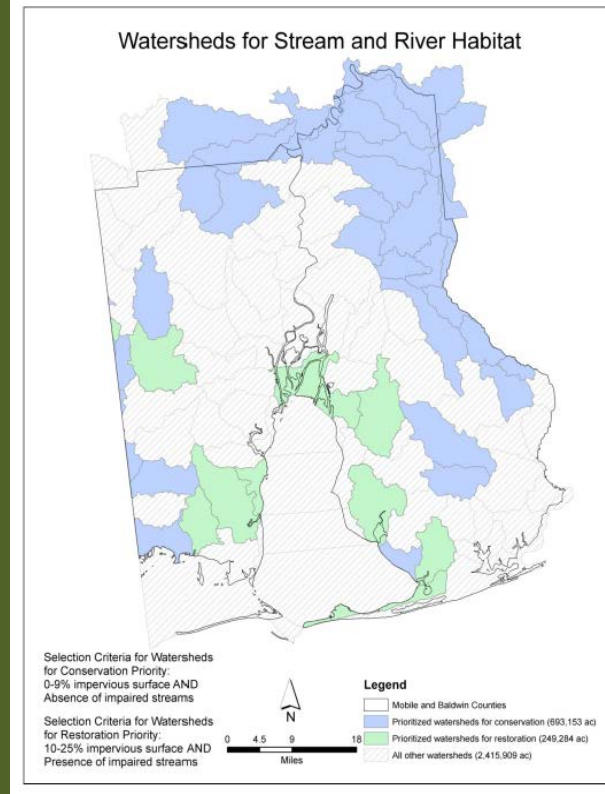
- Size
- Proximity to developed areas

Figure 7: Prioritized Intertidal Marshes and Flats



- Proximity to protected lands, developed areas, flood zones
- Presence of Species of Concern

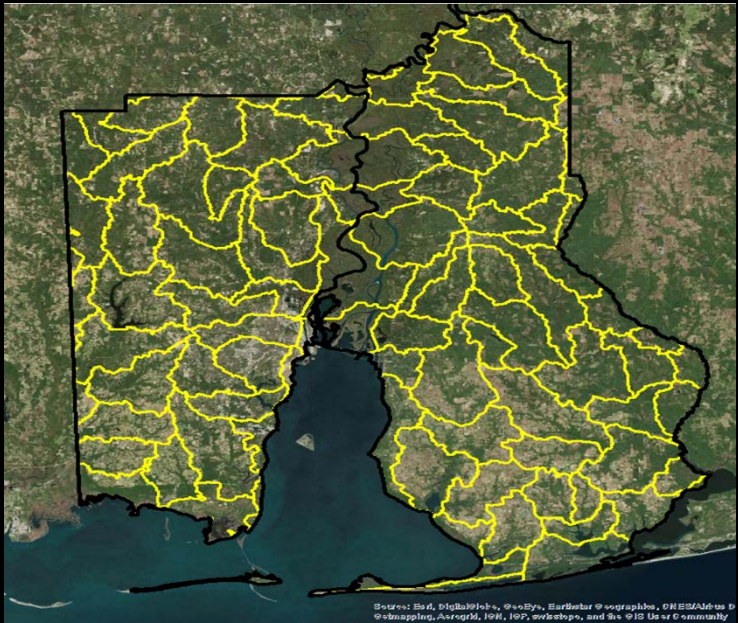
Figure 11: Prioritized Watersheds



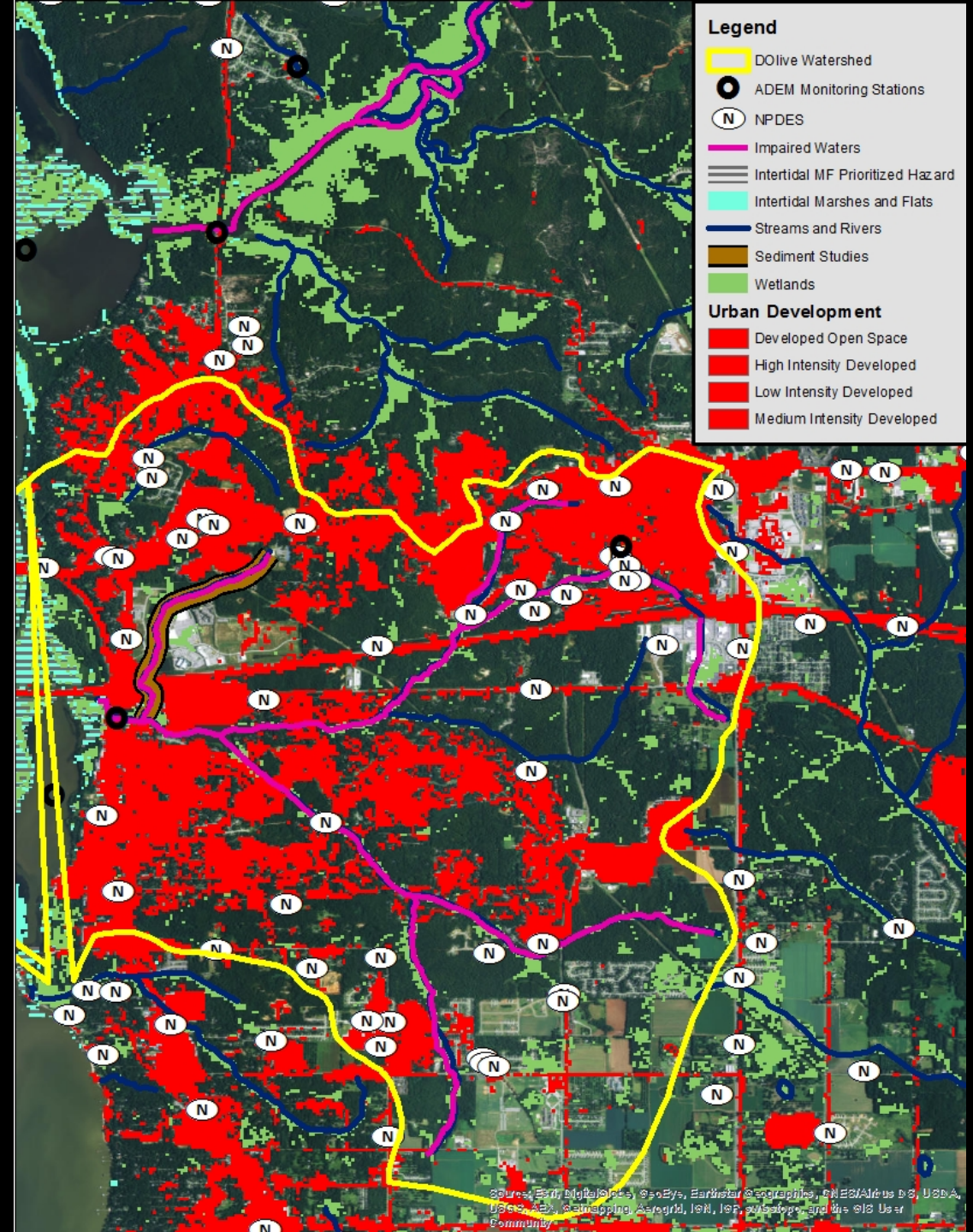
- % of Impervious Area
- Presence of Impaired waters



# The Methodology: *A Watershed Approach*



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, IGP, swisstopo, and the GIS User Community



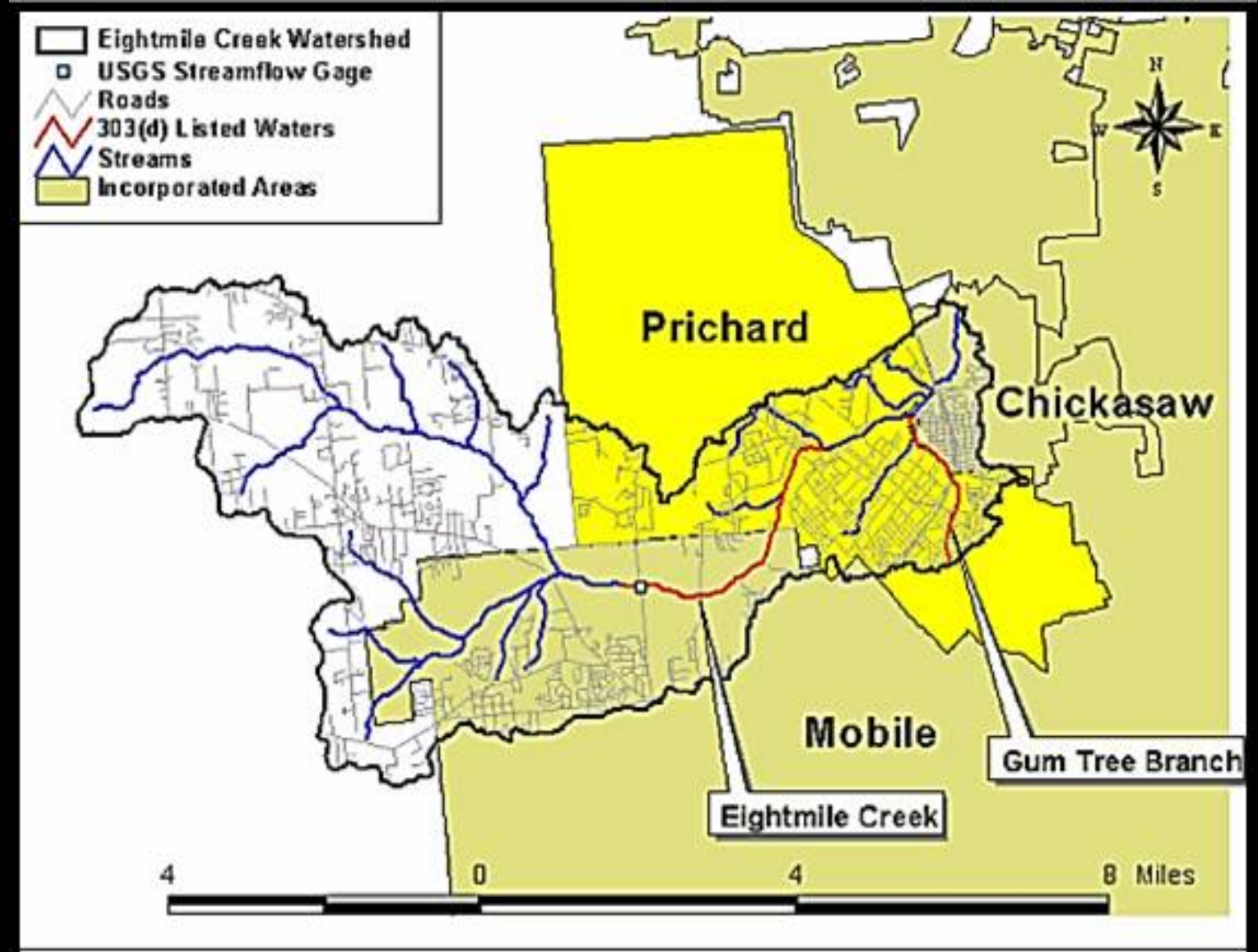


**Traditional Approach...**

**Manage the consequences downstream**

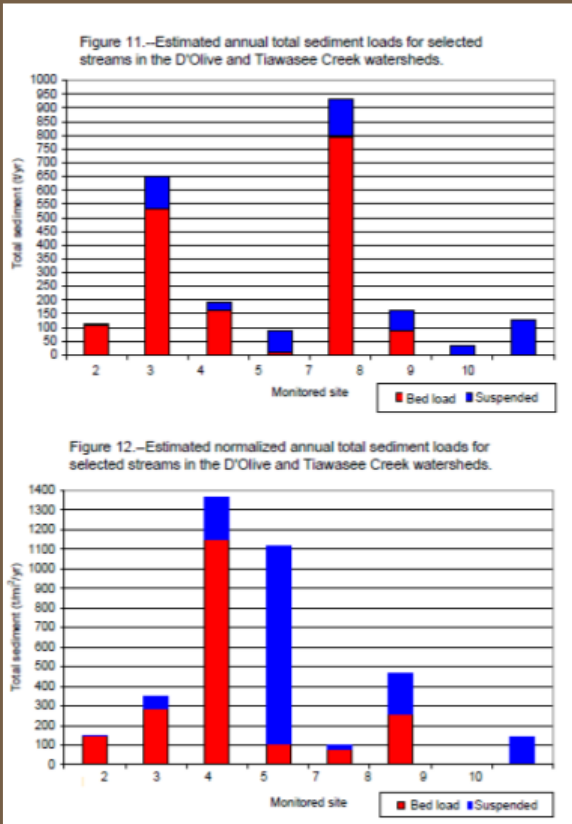
**Watershed Approach...**

**Manage the system closest to the source**



# The Model: D'Olive Watershed

## BASELINE



## PLAN

Watershed Management Plan:  
D'Olive Creek, Tiawasee Creek,  
and Joe's Branch Watersheds

Daphne, Spanish Fort, and Baldwin County, Alabama

FINAL - August 2010

thompson  
ENGINEERING

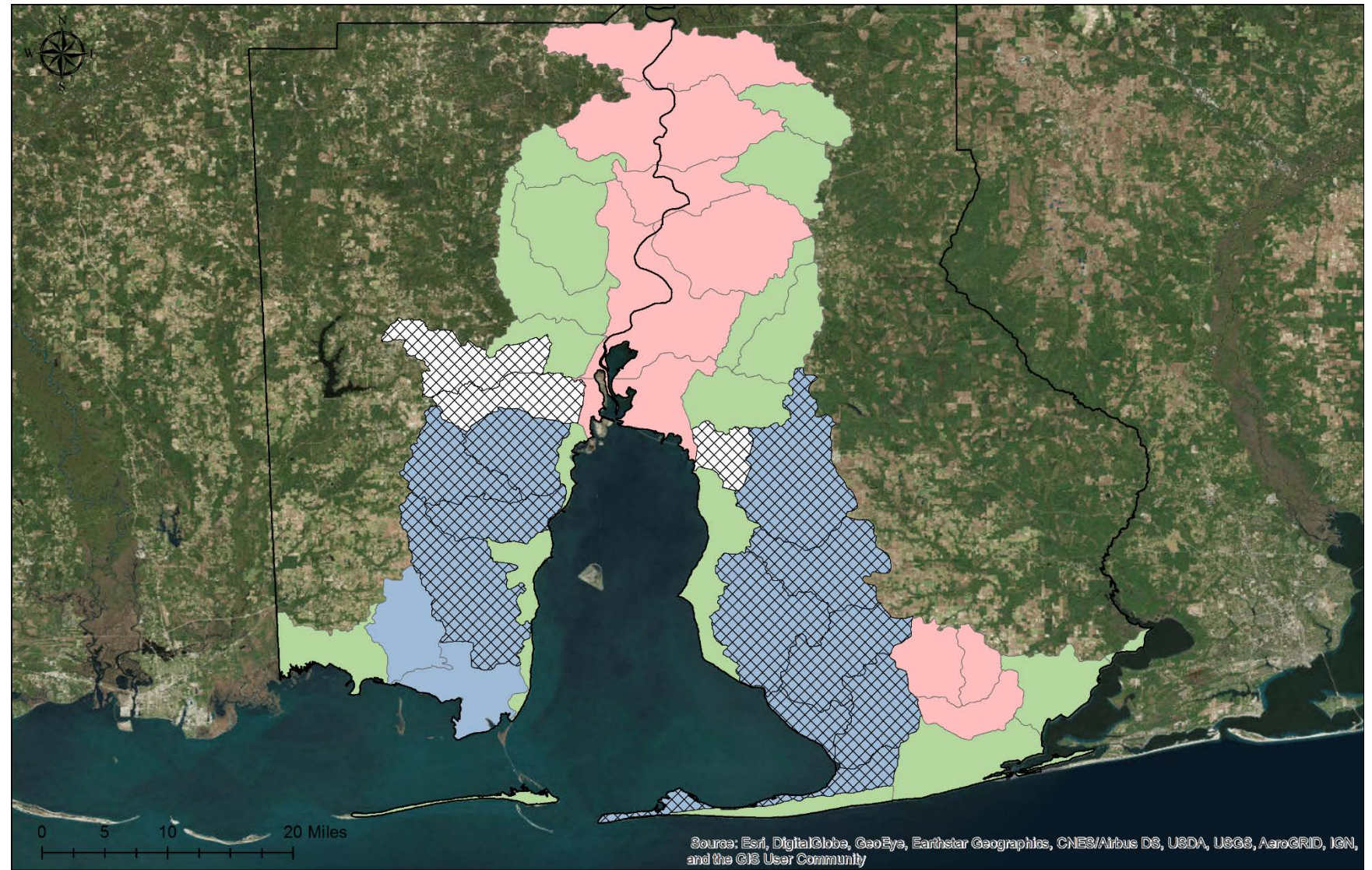
## IMPLEMENTATION





# Taking a look

- Bayou La Batre
- West Fowl River
- Fowl River
- Dog River Complex
- Three Mile Creek
- Tensaw Apalachee
- D'Olive
- Weeks Bay Complex
- Bon Secour Complex
- Wolf Bay



- NFWF Funded
- Federal Restore Funded
- NFWF & Federal Restore Funded
- Completed Watershed Plans
- Mobile and Baldwin County



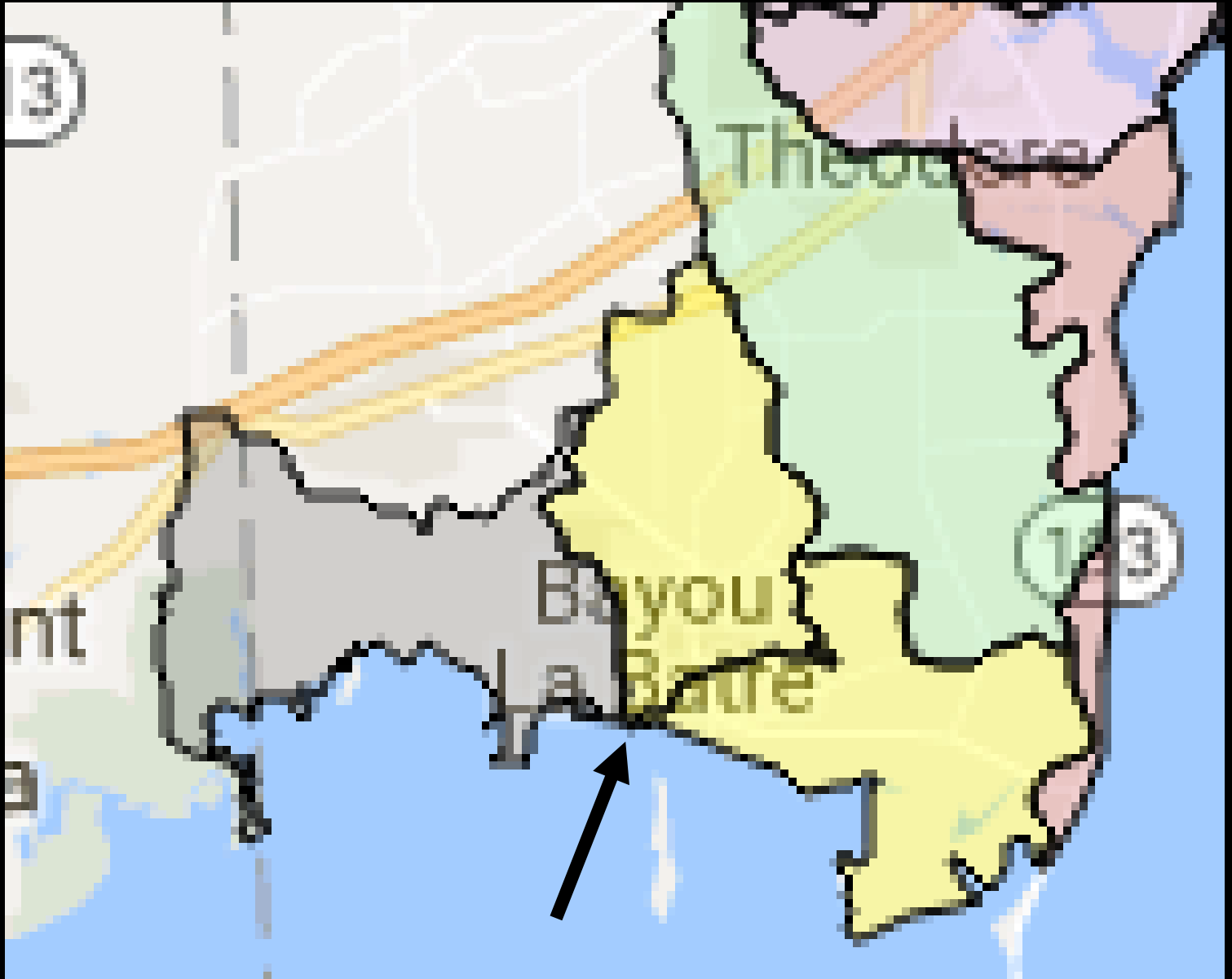
# Bayou La Batre

## Stressors

- Sea Level Rise/Storm Surge
- Altered Hydrology
- Waste Water Conveyance System

## Issues

- Adaptation/Retreat (Public Facilities)
- Coastal Economy- Fishing, Ecotourism, Working Waterfront
- Wastewater Treatment Outfall Extension



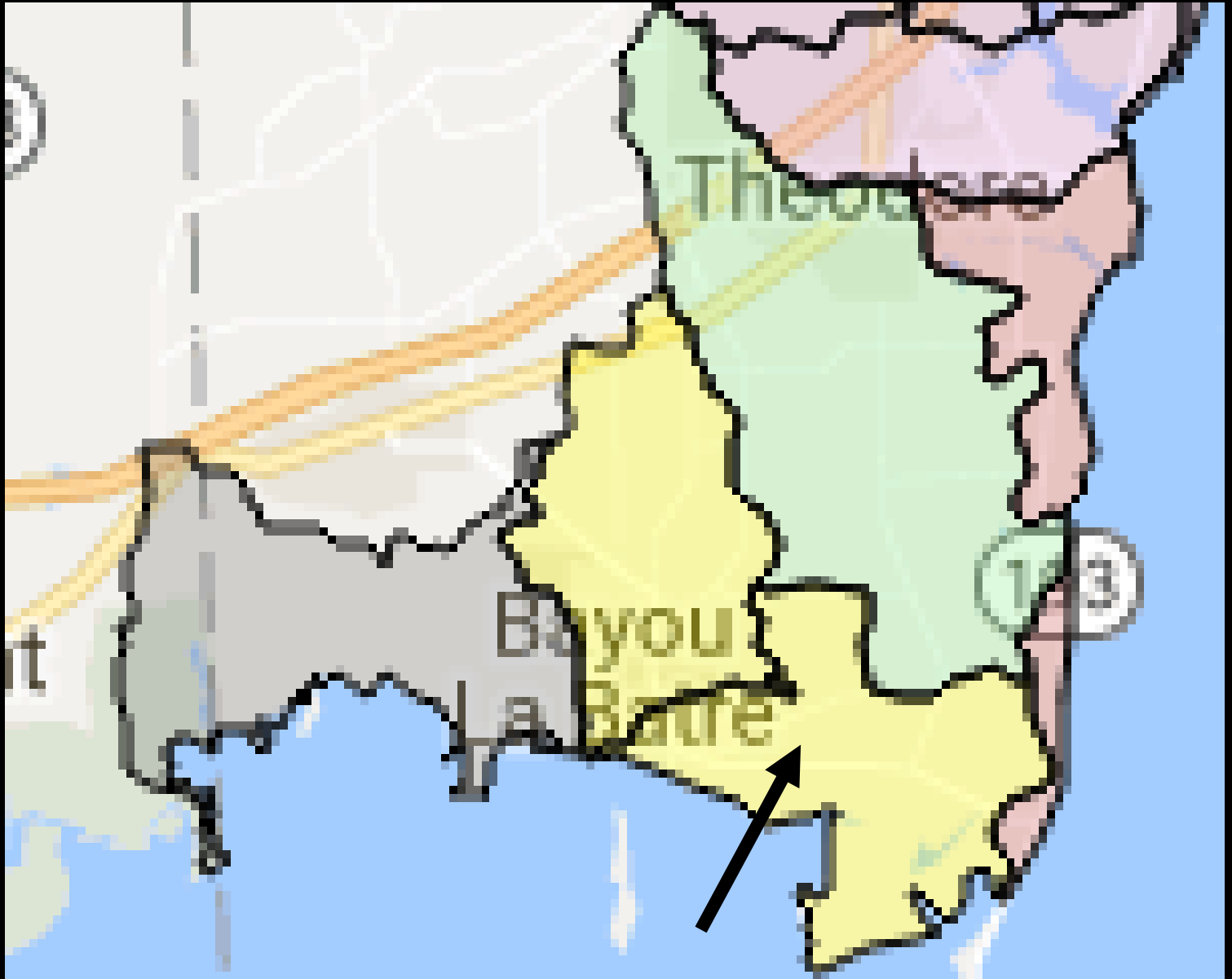
# West Fowl River

## Stressors

- Sea Level Rise/Storm Surge
- Altered Hydrology
- Waste Water Conveyance System

## Issues

- Pathogens/Water Closures for Oyster Farming
- Wastewater Treatment Outfall Extension





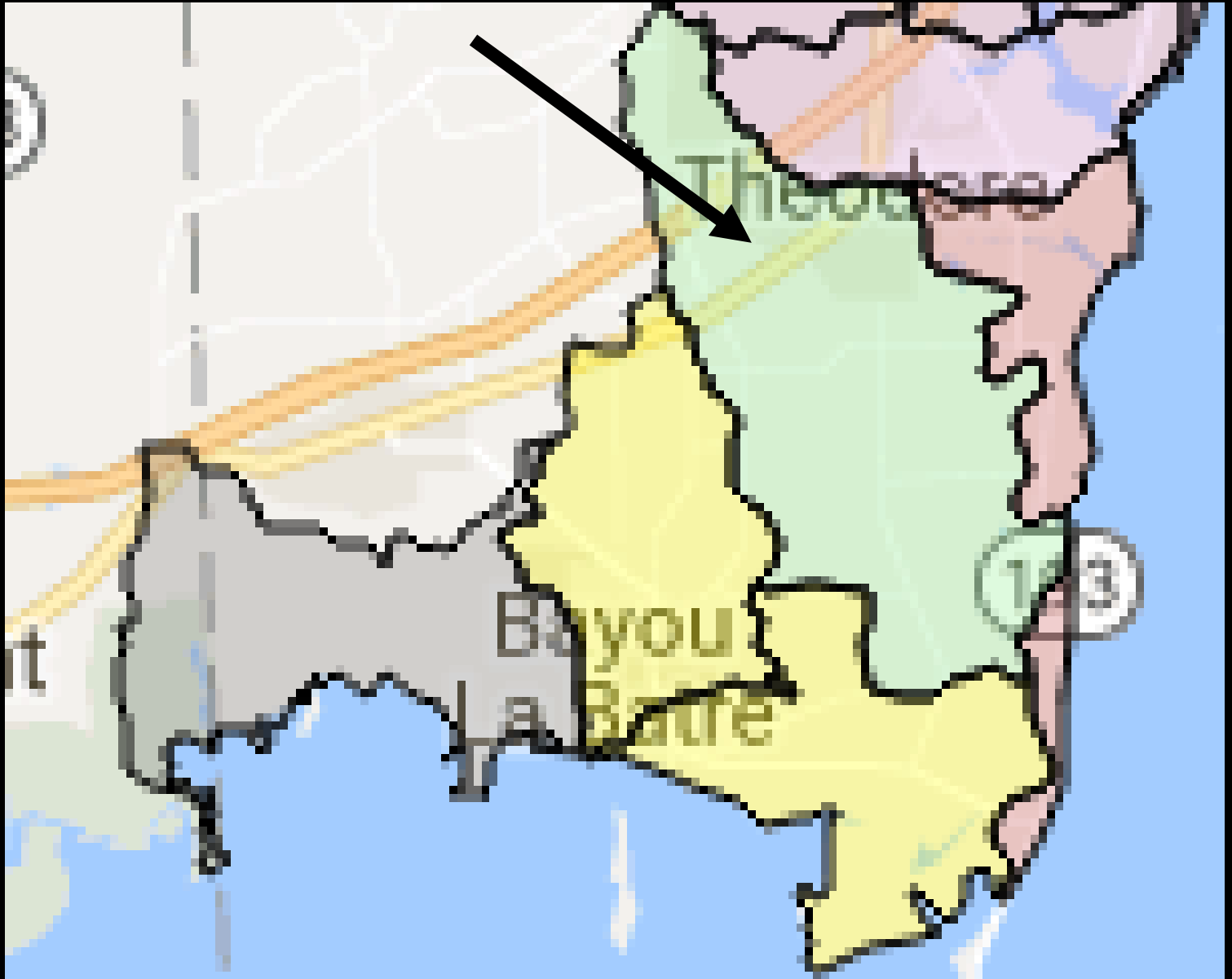
# Fowl River

## Stressors

- Boat Wakes, Storm Surge
- Stormwater Runoff

## Issues

- Altered Hydrology
- Transition zone marsh health



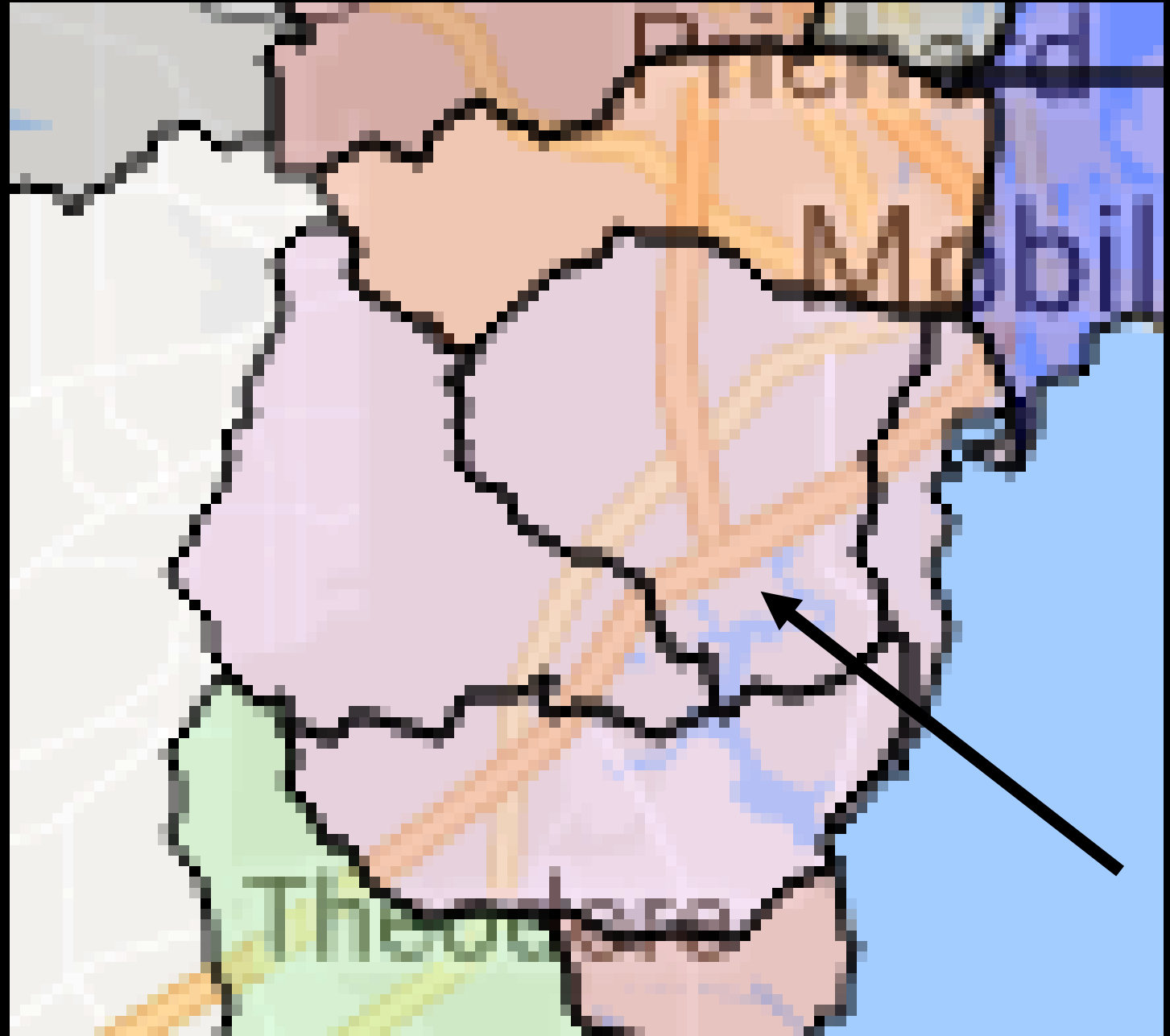
# Dog River

## Stressors

- Boat Wakes
- Stormwater Runoff
- Sediment Loading
- Pathogens/SSOs

## Issues

- Litter
- Ecotourism Opps
- Wastewater Treatment Improvements



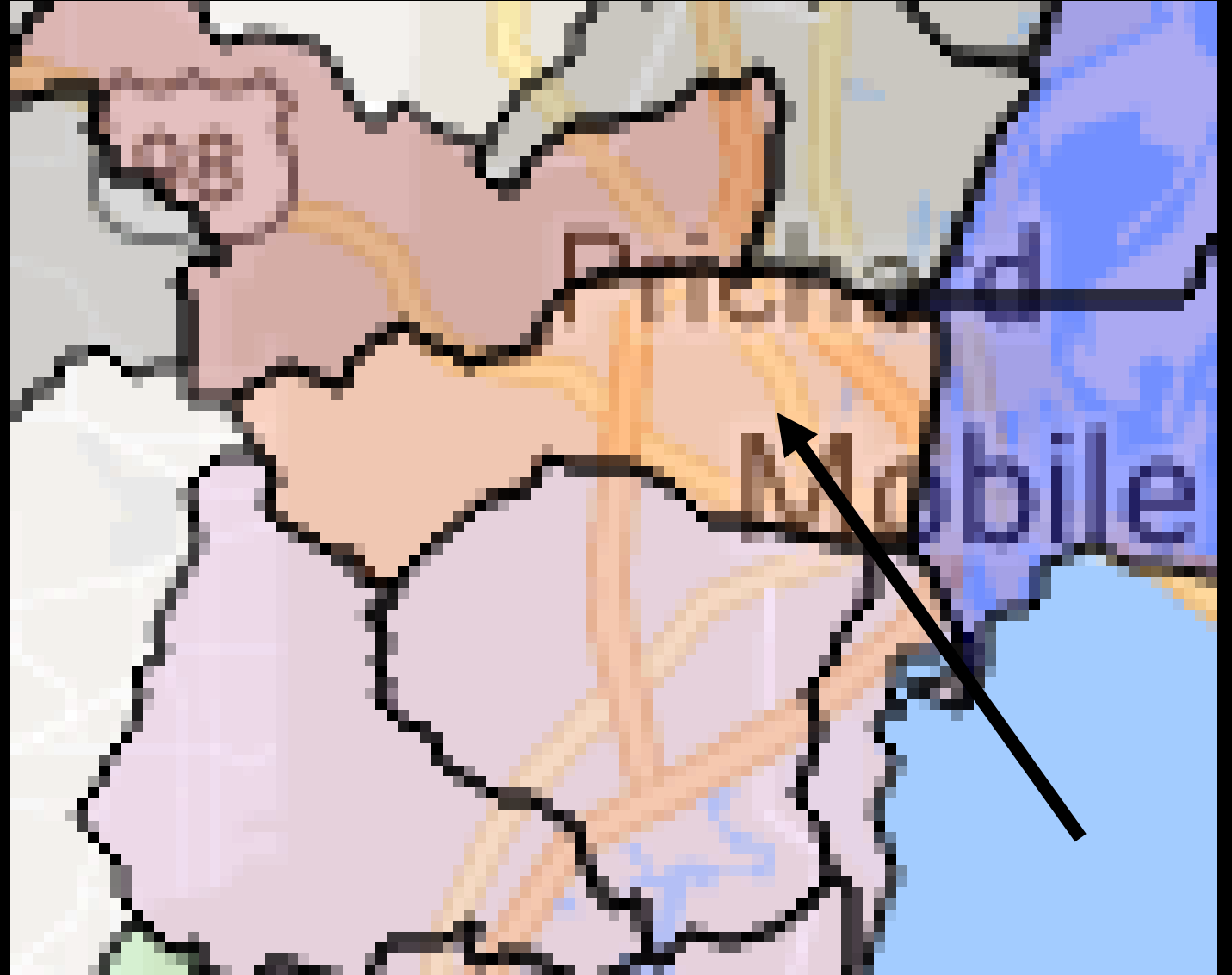
# Three Mile Creek

## Stressors

- Sediment
- Stormwater Runoff
- Invasive Species

## Issues

- Greenway /blueway development
- Economic Impact of Improved Stormwater Management
- Litter reduction
- Unique Partnership





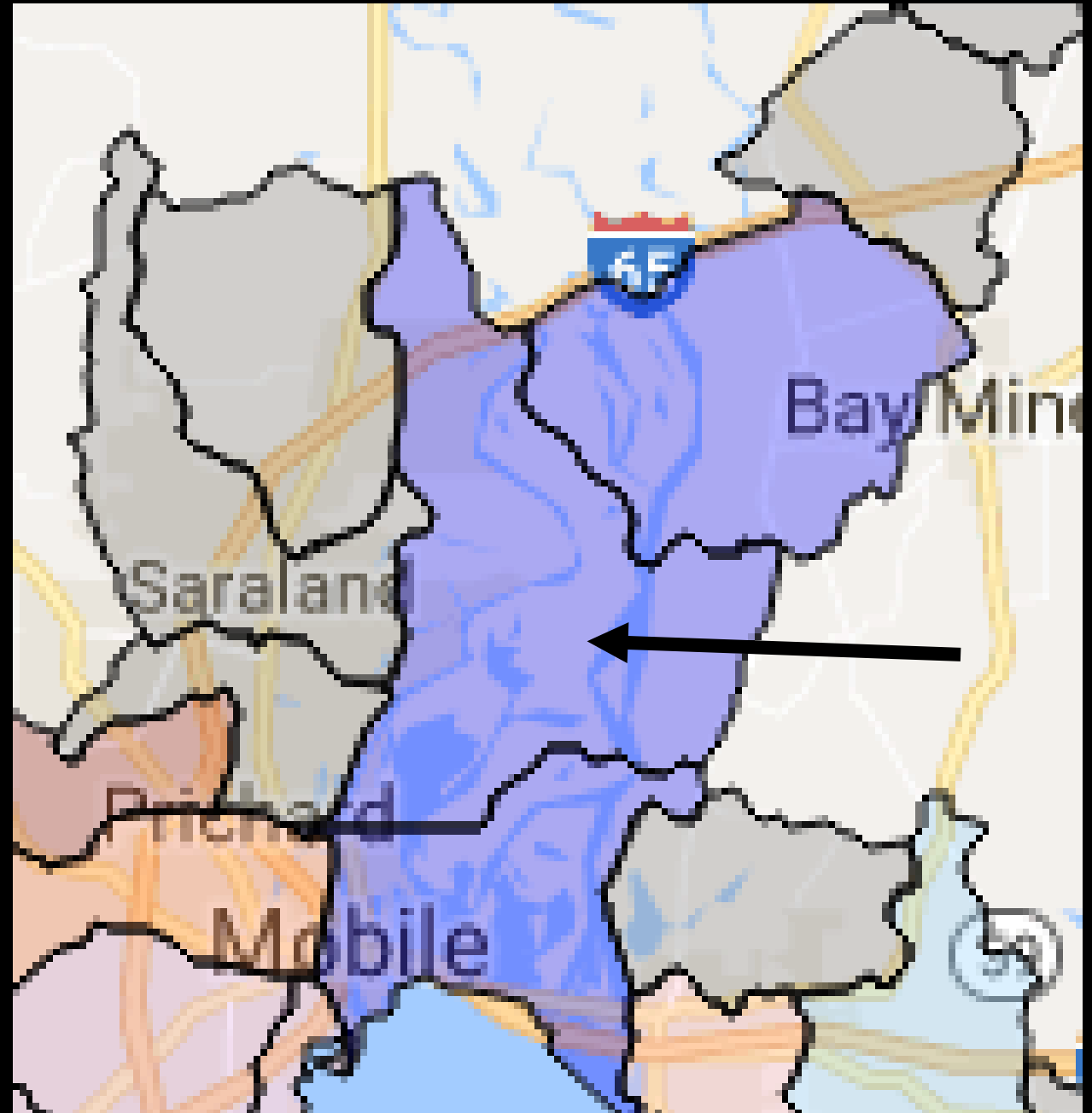
# Tensaw-Apalachee

## Stressors

- Invasive Species
- Altered Hydrology
- Sedimentation
- Sea Level Rise

## Issues

- Much already protected
- Habitat Management Funding
- Freshwater Inflow maintenance
- Sediment Management/  
Beneficial Use
- Access/controversy over  
management



# D'Olive, Joes Branch, Tiawasee

## Stressors

- Stormwater Runoff
- Altered Hydrology
- Sedimentation

## Issues

- Regulatory (LID)
- Dam
- Wetlands analysis



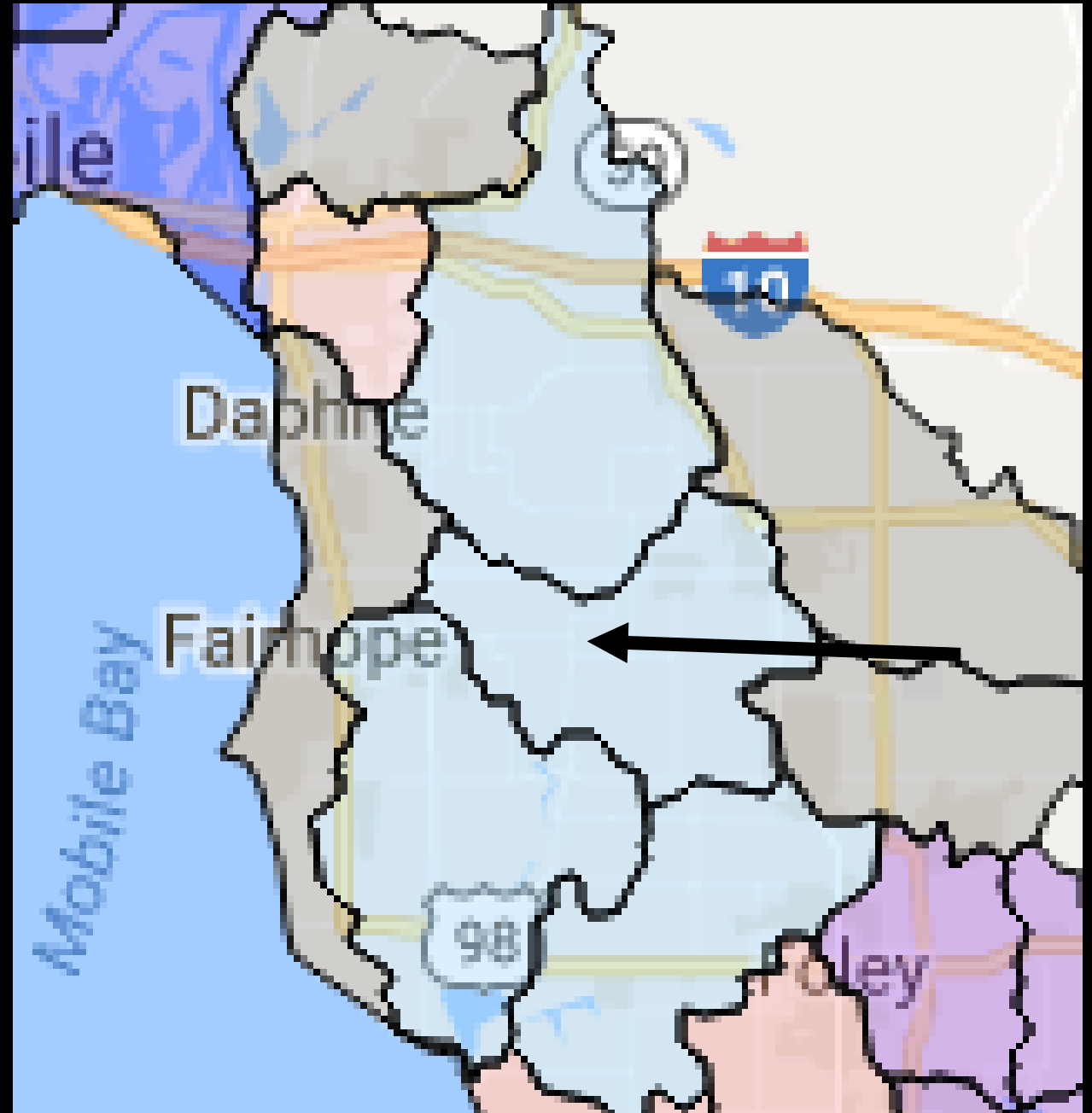
# Weeks Bay

## Stressors

- Nutrients
- Agriculture
- Urbanization
- Impairments

## Issues

- Organizational/Coordinating Structure





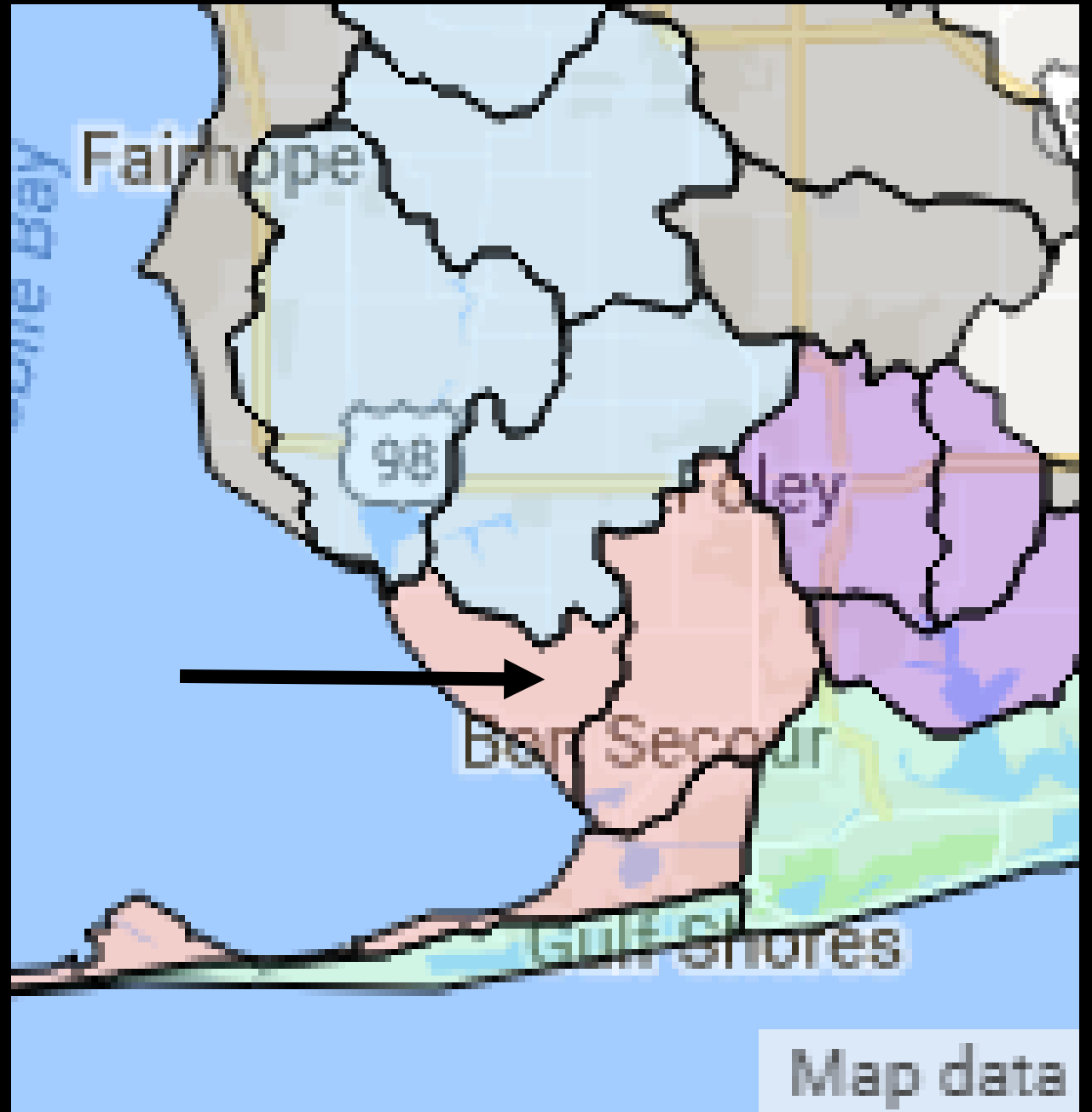
# Bon Secour

## Stressors

- Agriculture
- Sediment

## Issues

- Land Acquisitions
- Litter
- Stormwater Management



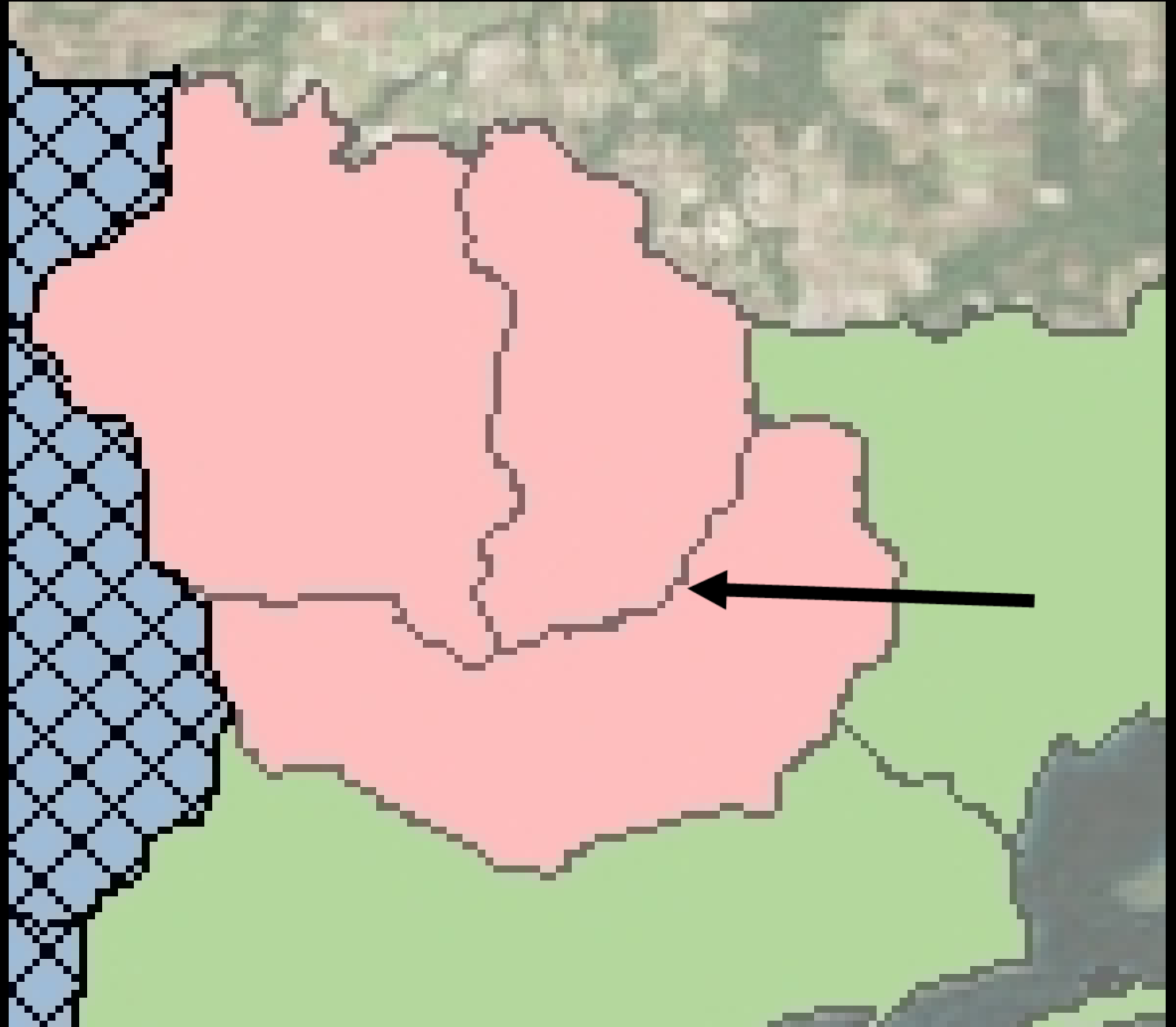
# Wolf Bay

## Stressors

- **Development**

## Issues

- Access
- Groundwater protection
- OAW status
- Stormwater Management



# Watershed Restoration and Conservation

- Streambank & riparian buffer restoration
- Freshwater wetland restoration & conservation
- Shoreline stabilization/living shorelines
- Green infrastructure retrofits
- Invasive species management
- Trash management
- Tidal marsh restoration & conservation





# Watershed Intergovernmental Cooperation

## ***D'Olive Watershed Intergovernmental Task Force***

- Consistent subdivision regulations changes
- Inclusion of LID practices in subdivision regulations
- Intergovernmental cooperation and use of resources

## **Three Mile Creek Watershed Public-Private Partnership**

- Improved litter enforcement
- Incentives for LID

## ***Fowl River Watershed Task Force***

- Investigation of new water use category- “Outstanding Coastal Water”
- Establishment of Volunteer Monitoring Corps

## ***Fish River Watershed Management Authority***

- Regional Stormwater Management
- Consistency in sub-division regulations



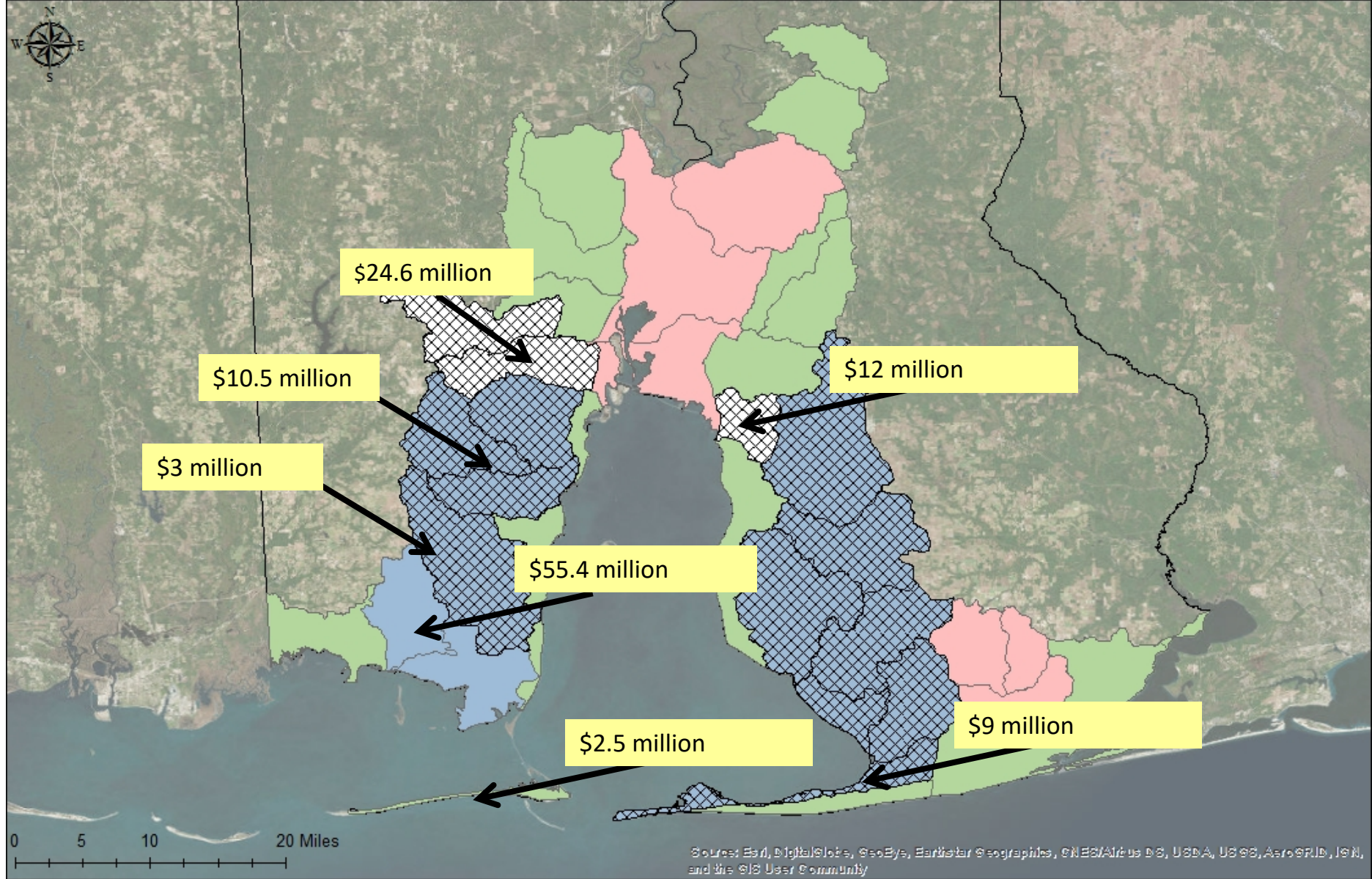
# Watershed Community Buy-In

- Volunteer WQ monitoring
- Rain barrel workshops
- Litter clean-ups
- Paddle trips
- Watershed signage





# \$117 million in BP Spill-related Funding and counting...



-  NFWF Funded
-  Federal Restore Funded
-  NFWF & Federal Store Funded
-  Completed Watershed Plans

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[www.MobileBayNEP.com](http://www.MobileBayNEP.com)

as of: 12/7/2017






**Public  
Awareness  
and  
Stormwater  
Plan  
Compliance**



No Service 10:41 AM cleanwaterfuture.com 74%

HOME CLEAN WATER TIPS POLLUTANTS ABOUT US NEWS RESOURCES CONTACT BECOME A PARTNER



# If we want to keep our water clean, we need to know what makes it dirty... and do something about it




Email me updates

f t y p G+

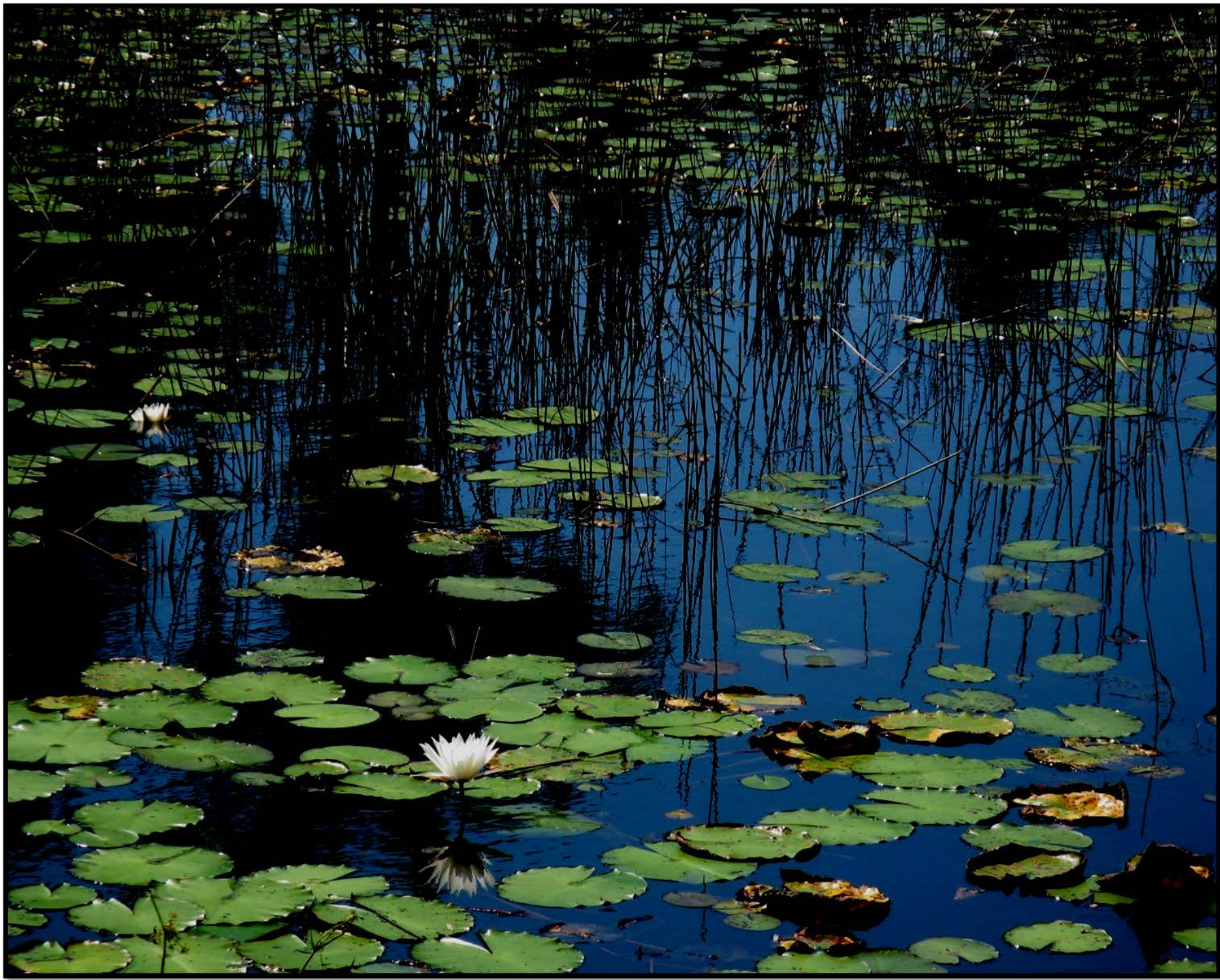
## Stormwater:

When rain rushes over roofs, roads, and parking lots, it carries everything it touches into storm drains that empty into our streams, rivers, and bays. The good news: there are many simple ways we can all help eliminate the litter and plastic debris, vehicle and household chemicals, leaves and grass clippings, and other pollutants that wind up in our waterways.

## Your Challenge:

 Chose your category below  Commit to one or more simple tips  Become a CLEAN WATER CREATOR





Together,  
we will



Thank you.