

Northwest Florida Water Management District



Gulf Coast Resource Restoration: Needs, Opportunities, and Criteria

Escambia County RESTORE Advisory Committee

October 21, 2013



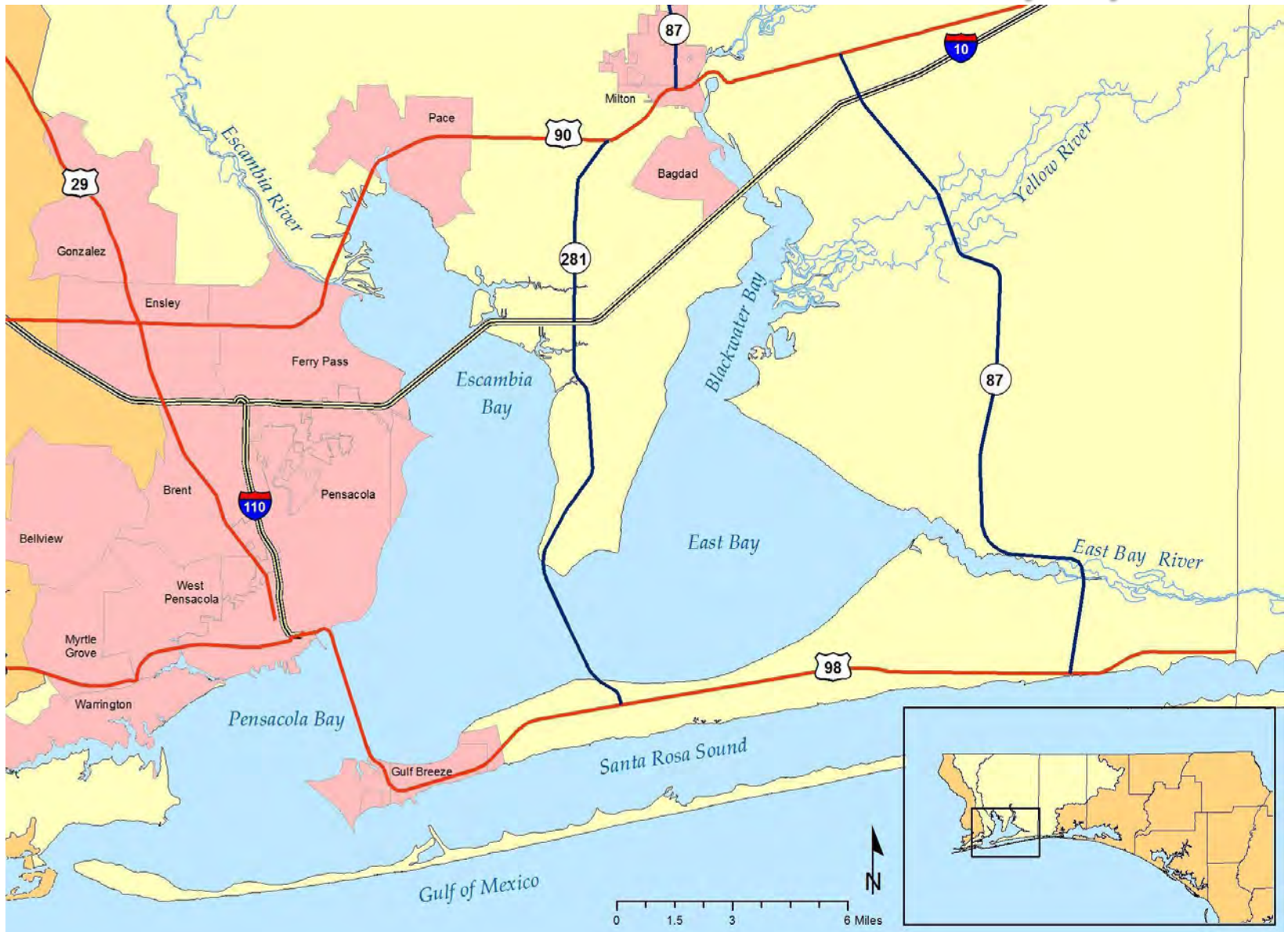
Pensacola Bay System

Watershed of the Pensacola Bay System





Pensacola Bay System



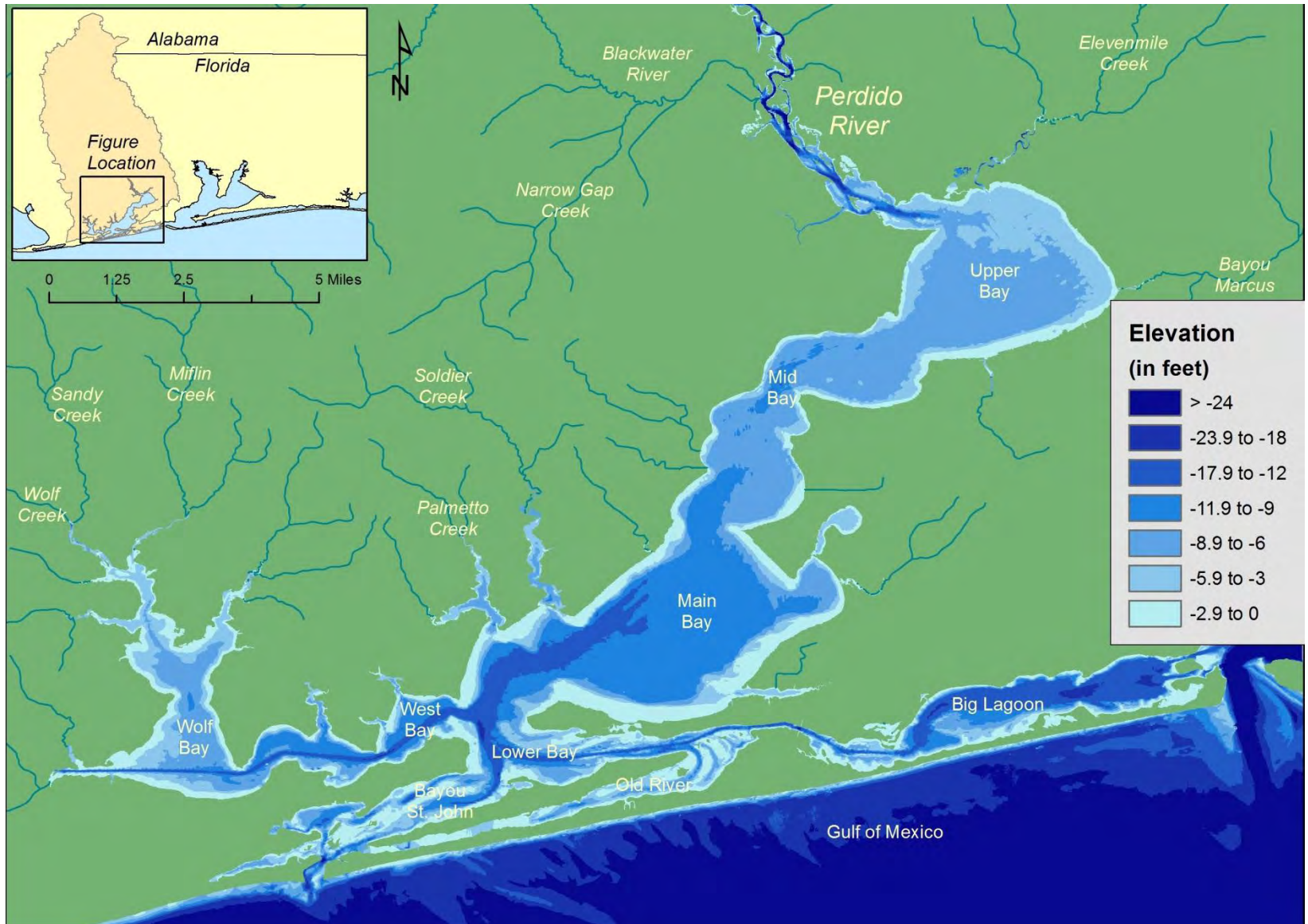


Perdido River and Bay Watershed





Perdido River and Bay Watershed





Watershed Challenges and Responsive Strategies



Challenges and Responsive Strategies

General Challenges	Corresponding Project Strategies
Stormwater runoff and nonpoint source pollution	<ul style="list-style-type: none">• Urban stormwater retrofit• Stormwater best management practices• Agricultural best management practices• Riparian buffer zone protection
Domestic and industrial wastewater	<ul style="list-style-type: none">• Advanced wastewater treatment• Reuse of reclaimed water• Connection of areas served by septic systems to central sewer• Improved on-site systems• Facility improvements to prevent inflow and infiltration and sanitary sewer overflows



NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT



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Imagery Date: Feb 2, 2013

© 2013 Google
30°22'58.45" N 87°16'30.71" W elev 3 ft

Eye alt 522 ft



Challenges and Responsive Strategies

General Challenges	Corresponding Project Strategies
Sedimentation from unpaved roads	<ul style="list-style-type: none">• Unpaved road stabilization, including hilltop-to-hilltop paving• Pervious pavement• Appropriate maintenance
Sedimentation from active erosion sites	<ul style="list-style-type: none">• Site stabilization, recontouring, and replanting• Stream and wetland habitat restoration



WEIGHT
LIMIT
22
TONS



Challenges and Responsive Strategies

General Challenges	Corresponding Project Strategies
Loss of shoreline and littoral habitat due to shoreline alteration, armoring, and erosion	<ul style="list-style-type: none">• Shoreline protection and restoration, to protect and restore:<ul style="list-style-type: none">- Water quality- Habitat- Shoreline stability• Tidal wetland restoration• Riparian buffer zones







Challenges and Responsive Strategies

General Challenges	Corresponding Project Strategies
<p>Lost or degraded seagrass habitats</p>	<ul style="list-style-type: none">• Water quality improvement<ul style="list-style-type: none">- Stormwater treatment- AWT wastewater treatment- Elimination of direct surface water discharge- Riparian buffer zones- Shoreline and wetland restoration- Correction of basinwide erosion, turbidity, and sedimentation• Direct seagrass restoration



Seagrasses (FWC Fish and Wildlife Research Institute, 2007)

-  CONTINUOUS
-  DISCONTINUOUS

High resolution 30 cm Imagery, ESRI, 2010

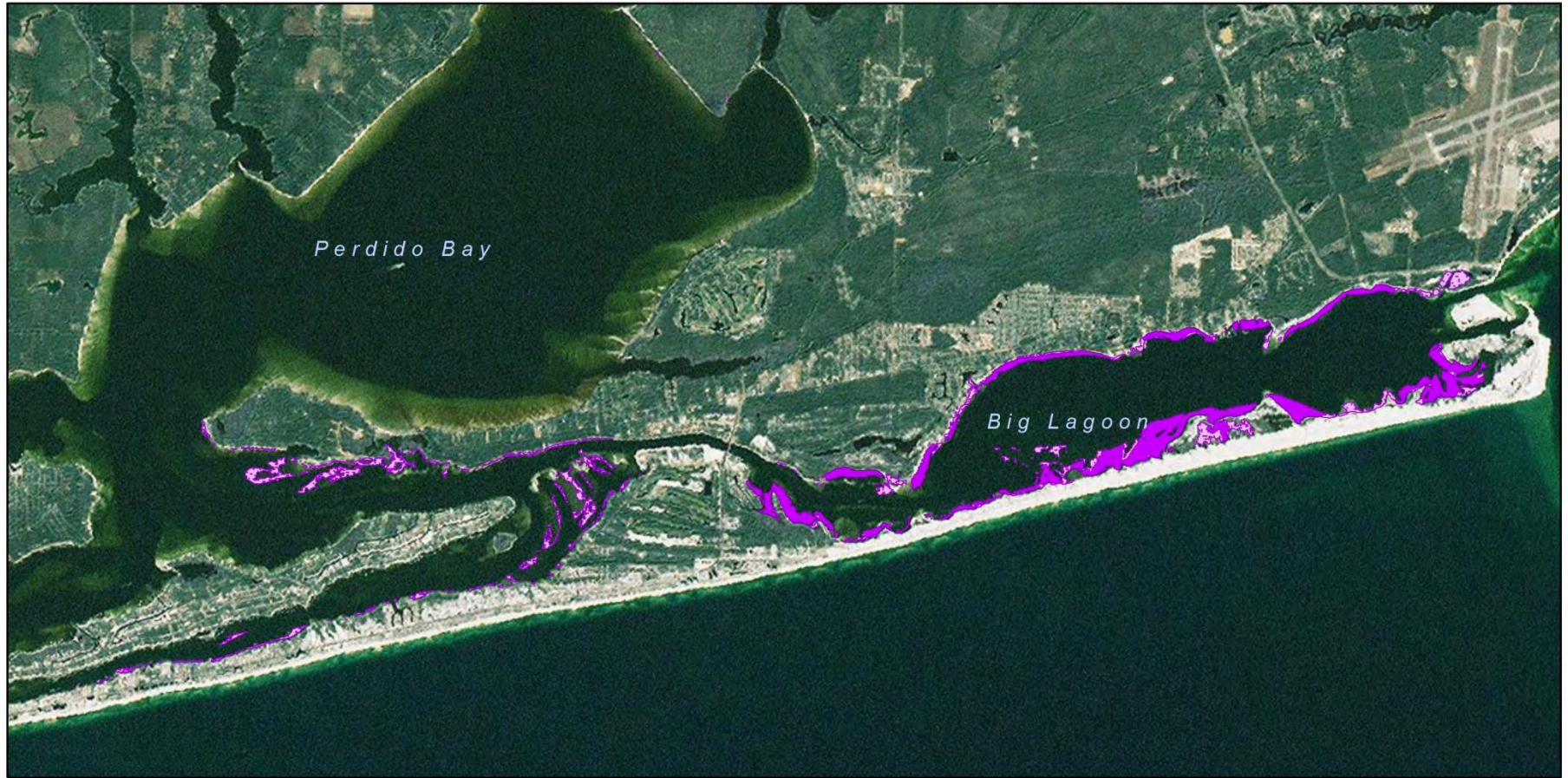
Pensacola Bay Seagrasses

October 2, 2013





0 5 Miles





Seagrasses (FWC Fish and Wildlife Research Institute, 2007)

-  CONTINUOUS
-  DISCONTINUOUS

High resolution 30 cm Imagery, ESRI, 2010

Perdido Bay and Big Lagoon Seagrasses

October 21, 2013



0 2 Miles





Challenges and Responsive Strategies

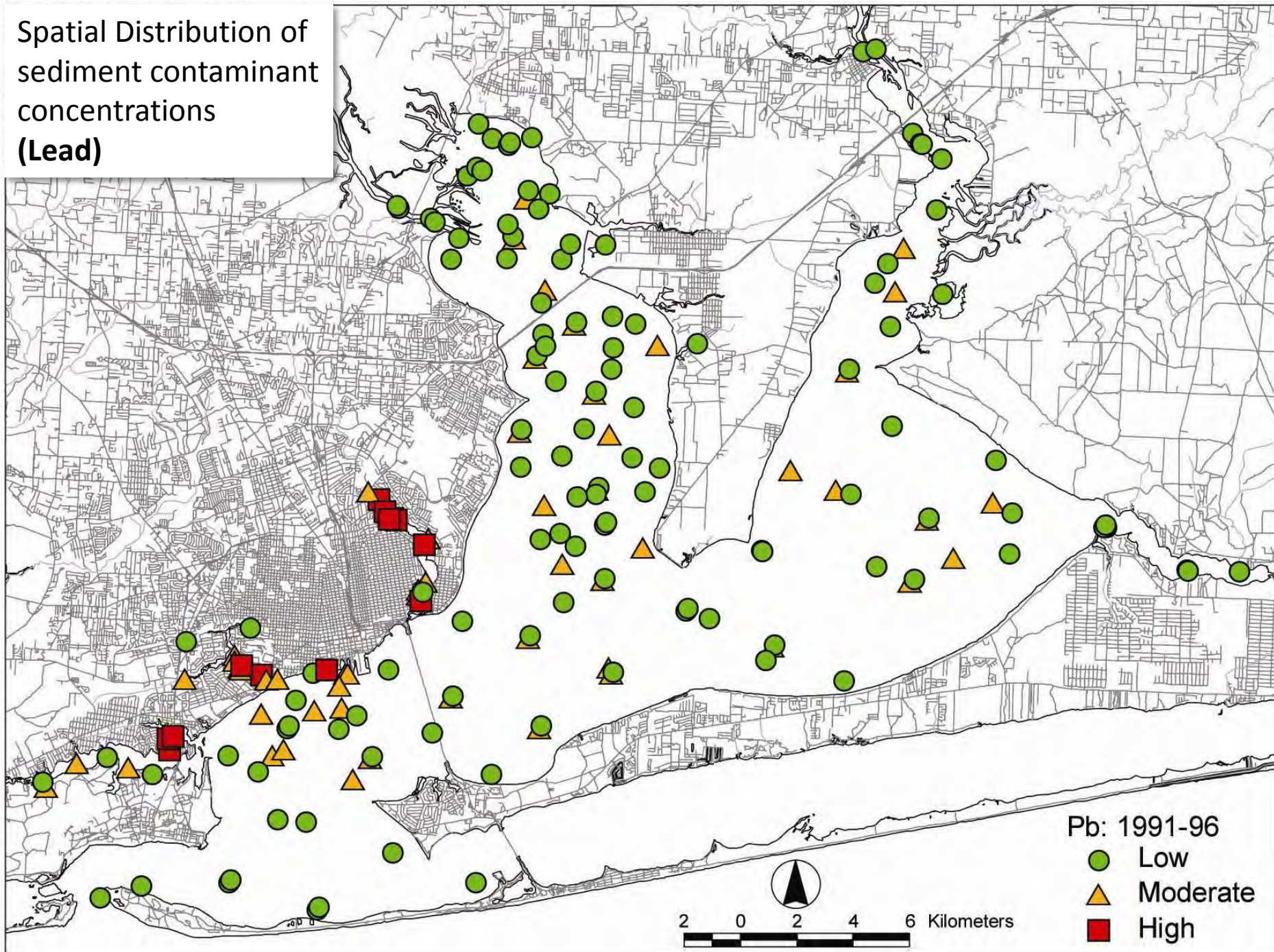
General Challenges	Corresponding Project Strategies
Degraded urban bayous, including impacts to water quality, sediment quality, and aquatic habitat	<ul style="list-style-type: none">• Bayou basin planning• Urban stormwater treatment• Habitat restoration – shorelines, wetlands, tidal creeks• Sediment removal
Degraded urban tributary streams	<ul style="list-style-type: none">• Urban stormwater treatment• Floodplain restoration and reconnection• Wetland restoration• Stream restoration using natural channel design techniques• Riparian habitat restoration



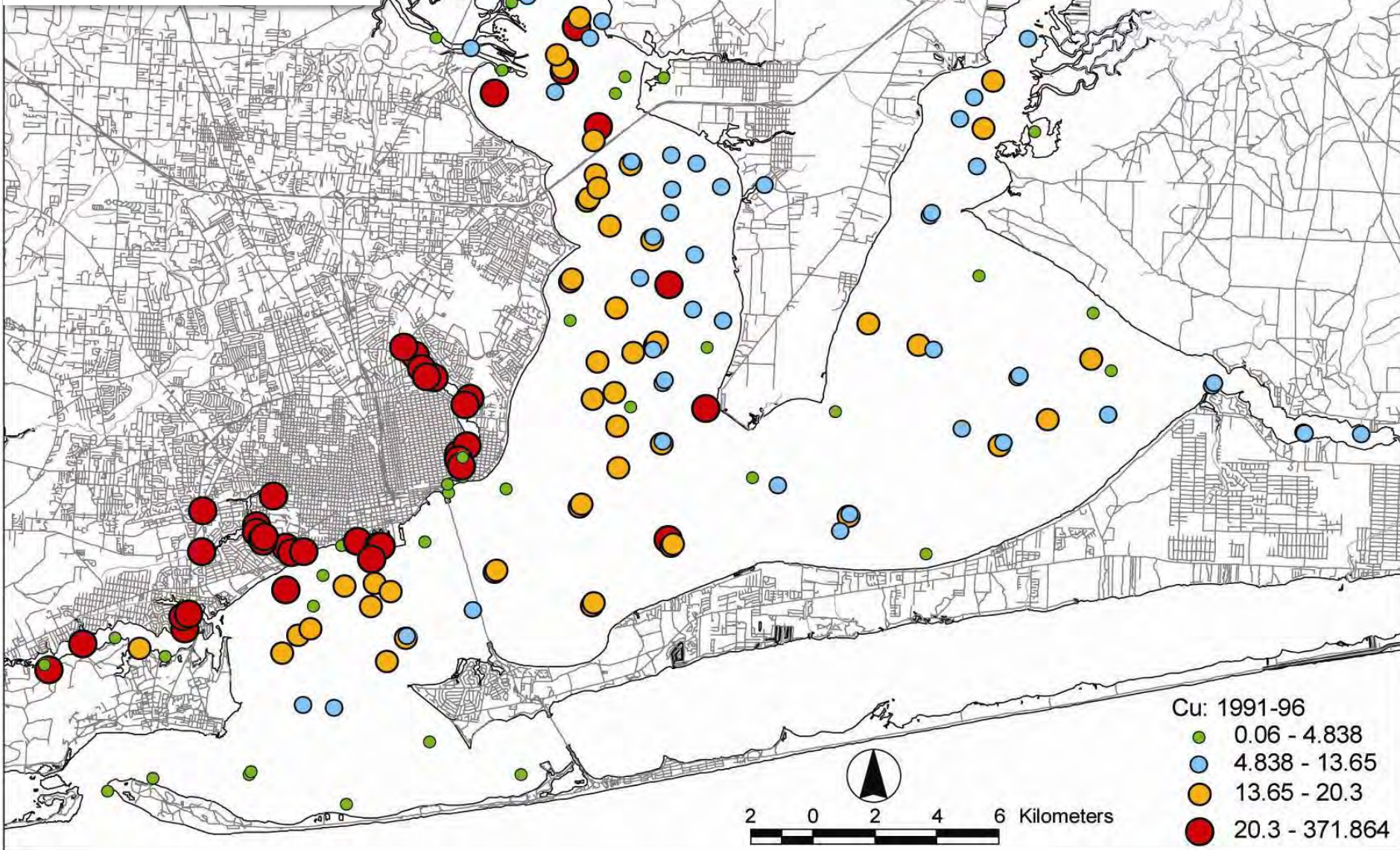
Challenges and Responsive Strategies

General Challenges	Corresponding Project Strategies
Impacted rural tributaries	<ul style="list-style-type: none">• Riparian buffer zones• Unpaved road stabilization• Agricultural best management practices• Stream restoration using natural channel design techniques• Floodplain and wetland restoration
Potential marine invasive species in bays and estuaries	<ul style="list-style-type: none">• Assessment of potential for marine invasive species problems<ul style="list-style-type: none">- Biofouling- Commercial vessel ballast water

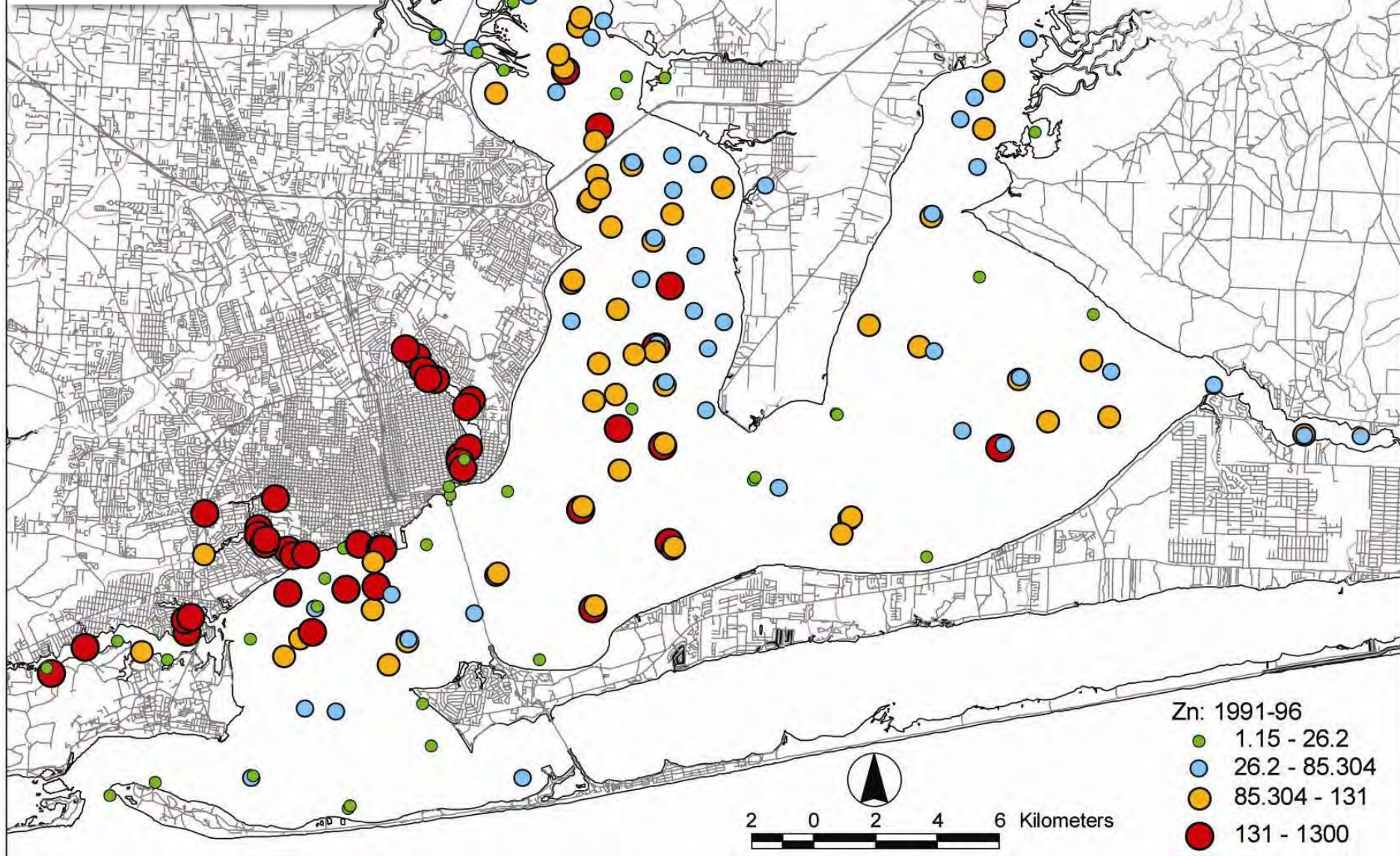
Spatial Distribution of sediment contaminant concentrations (Lead)



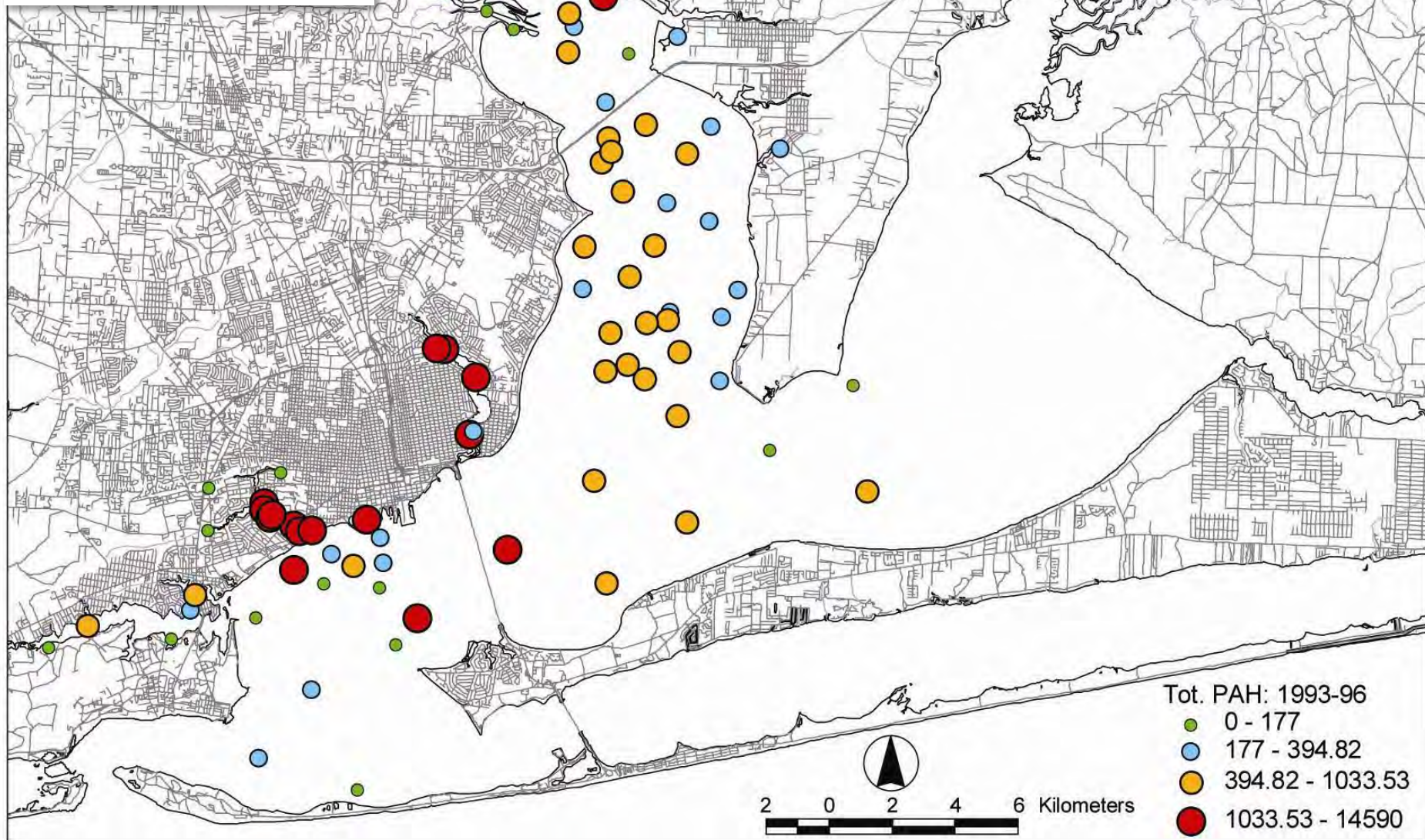
Spatial Distribution of sediment contaminant concentrations (Copper)



Spatial Distribution of sediment contaminant concentrations (Zinc)



Spatial Distribution of
sediment contaminant
concentrations
(Polycyclic Aromatic
Hydrocarbons - PAHs)





Suggested Project Criteria

- Address a well defined need or problem
- Clearly identified outcome
- Feasibility
- Readiness for implementation
- Ability to operate and maintain
- Financial need



Suggested Criteria

Does the project address a clearly defined need or problem?

- How was the problem identified and defined?
- What are the affected resources?

Examples:

- Seagrasses
- Tidal marsh
- Barrier Island
- Water Quality
- Sediment Quality
- Public Access



Suggested Criteria

Is the project outcome clearly identified?

- What outcomes will be achieved, and how do they differ from the current status or trend? Can they be measured?
- Identify at the planning stage what data will be required to document success.
- Will there be monitoring for validation and adaptation?



Suggested Criteria

Clearly identified outcome

Examples:

- Pollutant load reduction
- Restoration area
- Anticipated water quality change
- Accomplishment of other compatible objectives, such as flood hazard reduction and community development



Suggested Criteria

How feasible is the project?

- Does property need to be acquired?
- Are there unique permitting challenges?
- Do utilities need to be relocated; will other infrastructure be impacted?



Suggested Criteria

Is the project ready for implementation?

- Consider the status of:
 - Planning
 - Engineering
 - Permitting
 - Property ownership



Suggested Criteria

Is long-term operation and maintenance provided for?

- Is the long-term project/facility ownership and responsibility clear?
- Is there a dedicated, sufficient funding source for long-term operation and maintenance?



Suggested Criteria

Is there clearly a financial need for funding augmentation?

- Is there an alternative source of funding?
- Would this project likely be accomplished in the foreseeable future using local or other sources of funding?



Thank You

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