A background image of a coastal landscape featuring a body of water in the foreground, a line of marshland or wetlands in the middle ground, and a distant shoreline with trees under a clear sky.

# Adaptive Strategies Workshop

*Planning for Coastal Change in Levy County*

July 11, 2013  
Yankeetown-Inglis

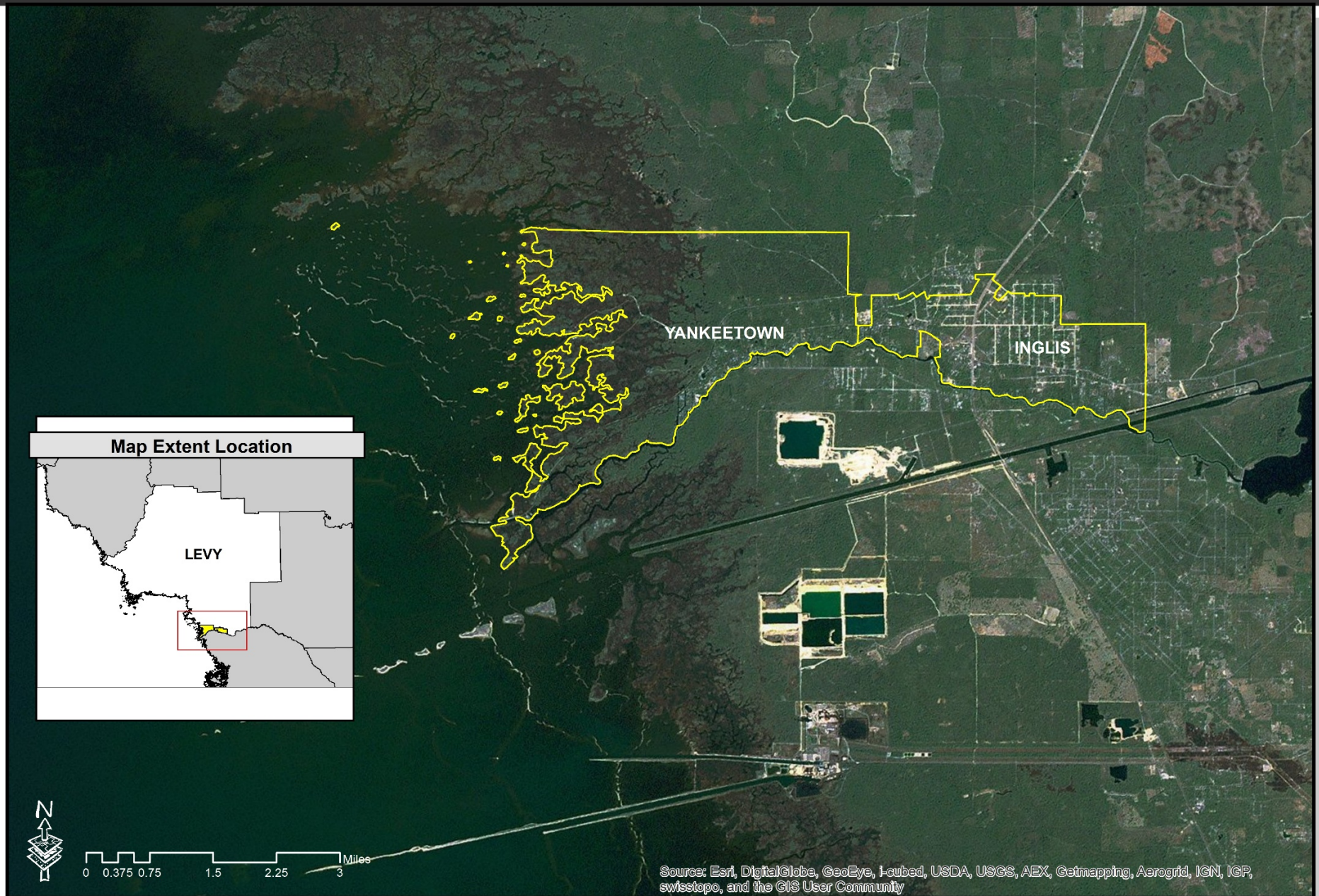


# Welcome and Workshop Goals

- Dr. Kathryn Frank, Principal Investigator
- Michael Volk, Project Manager
- Graduate Assistants
  - Rong Zeng
  - Sean Reiss
  - Jana Rosenbloom
- Goals: Collaboration
  - Provide you with specific information about coastal change issues in the Yankeetown-Inglis area
  - Receive your input of local knowledge, priorities, and ideas for adaptive strategies
  - To guide our adaptive design recommendations



## Study Area: Levy County - Yankeetown-Inglis Area





# Workshop Agenda

- Project Update and Coastal Change Background
- Participant Introductions
- Detailed Geographic Analyses for Yankeetown-Inglis
- Strengths, Weaknesses, Opportunities, and Threats (SWOT)
- Adaptive Planning and Strategies Overview
- Adaptive Strategies Game
- Closing Remarks and Next Steps



# Project Update

Activity	Time
Research	Ongoing
Cedar Key Summer Youth Program	Summer 2012
Levy County outreach	Fall 2012
Cedar Key-Rosewood adaptive design	Spring 2013
Oral environmental histories	Spring 2013
Yankeetown-Inglis adaptive design	Summer 2013
Arts exhibit and project wrap-up	Fall 2013





# Coastal Change and Impacts of Sea Level Rise

- **Habitat** and species changes
- More frequent **flooding** at high tide
- **Erosion** and **corrosion** of infrastructure
- Release of **pollutants**
- Saltwater intrusion into **aquifers**
- **Storm surges** farther inland





# Participant Introductions

- Name and affiliation
- Why should people plan for coastal change in small towns and rural areas?



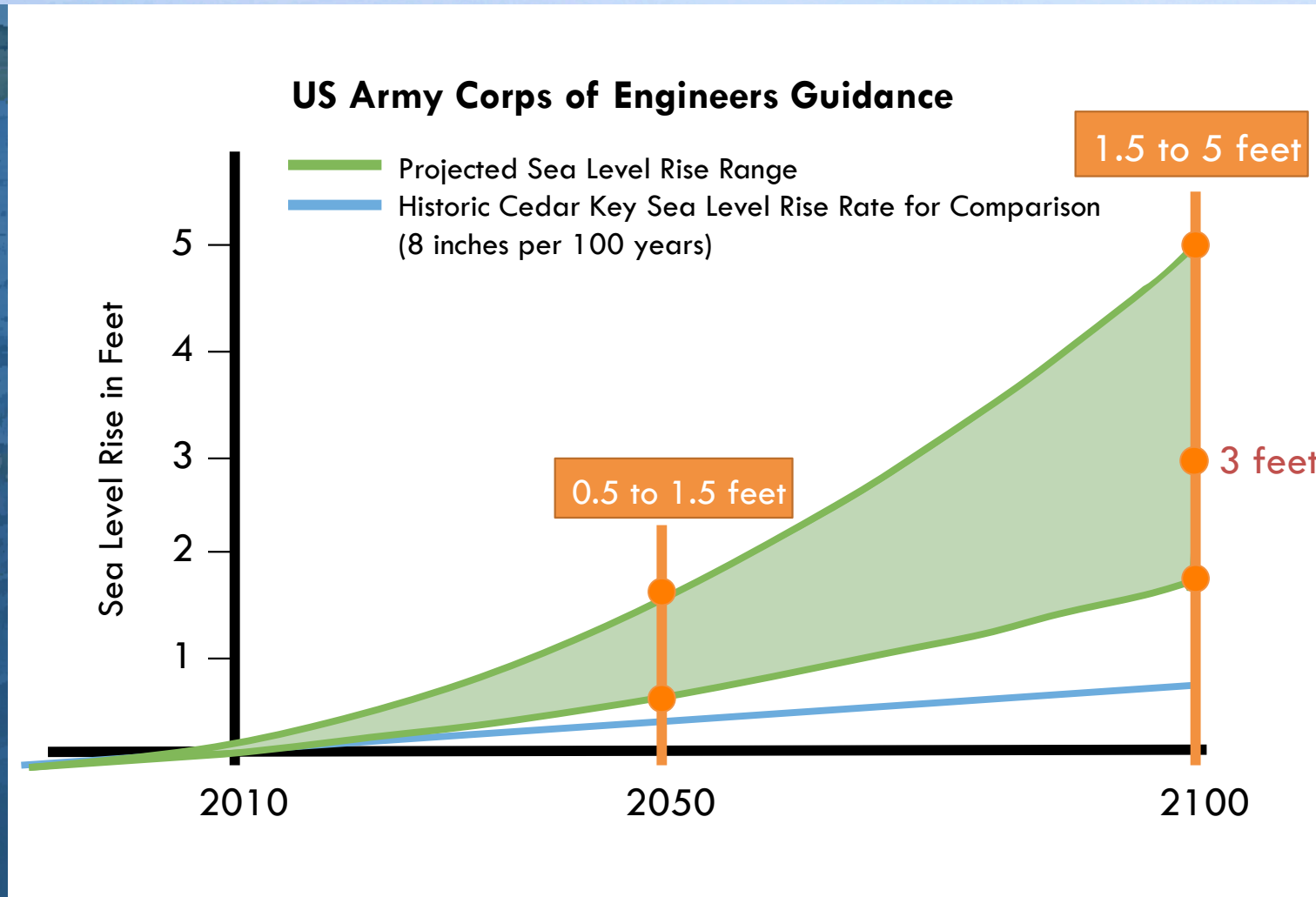
# Why We're Here

- Coastal change is happening now.
- Coastal change will accelerate.
- Planning is slow, so need to start now.
- Responsible and responsive leadership.
- Opportunities to reduce costs, explore new markets, and plan better overall.





# Sea Level Rise Projections for Levy County







# Vulnerabilities & coastal hazards



# Analysis of Sea Level Rise Impacts

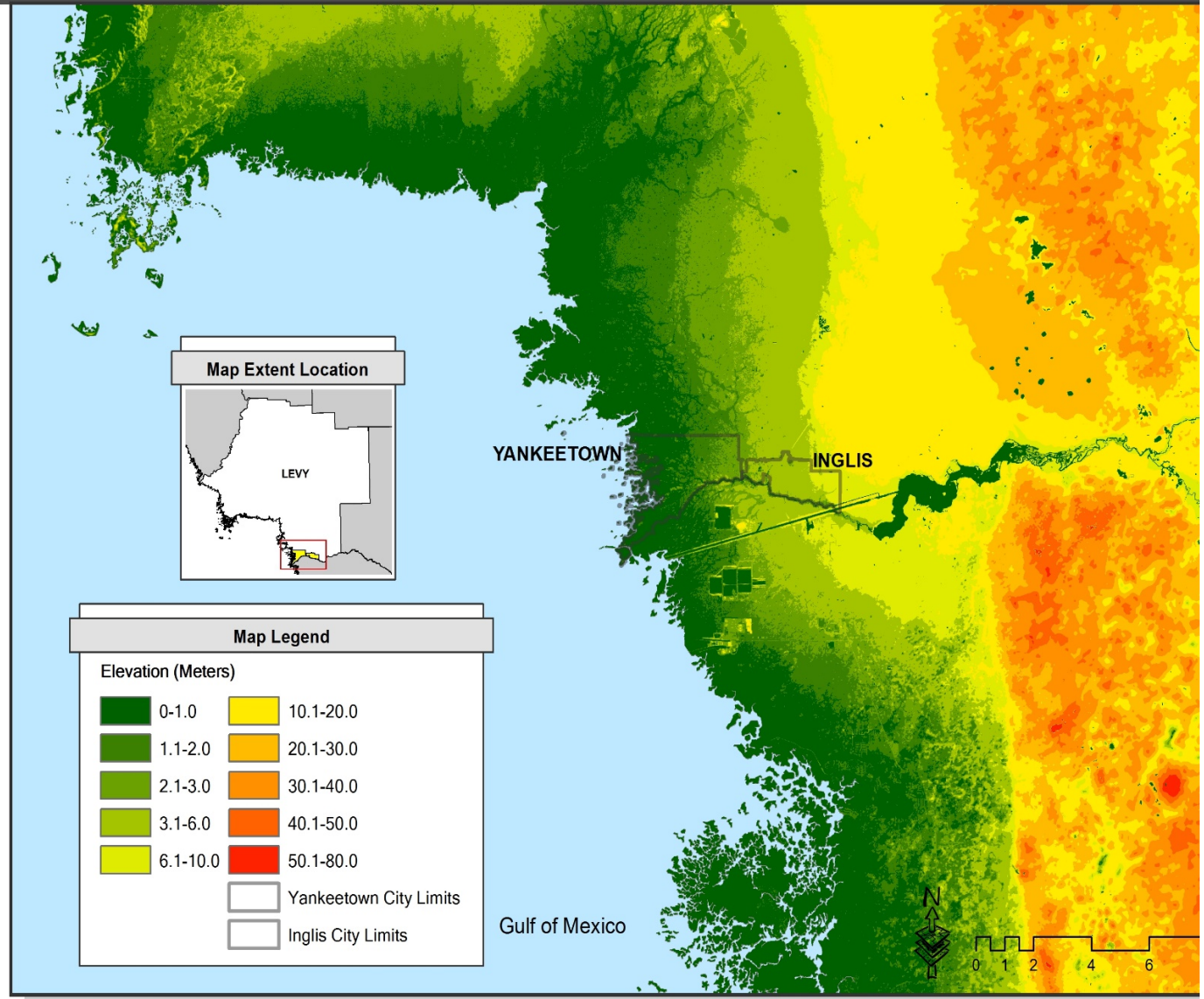
Vulnerable Areas Due To:	Elevation Model	Habitat Changes Model: SLAMM	Storm Surge Model: Hazus	Local Knowledge and Tailored Studies
Habitat and species changes		✓		✓
Increased flooding frequency	✓	✓	✓	✓
Greater coastal erosion and pollutants				✓
Saltwater intrusion into aquifers				✓
Higher storm surges			✓	✓



## Key Observations

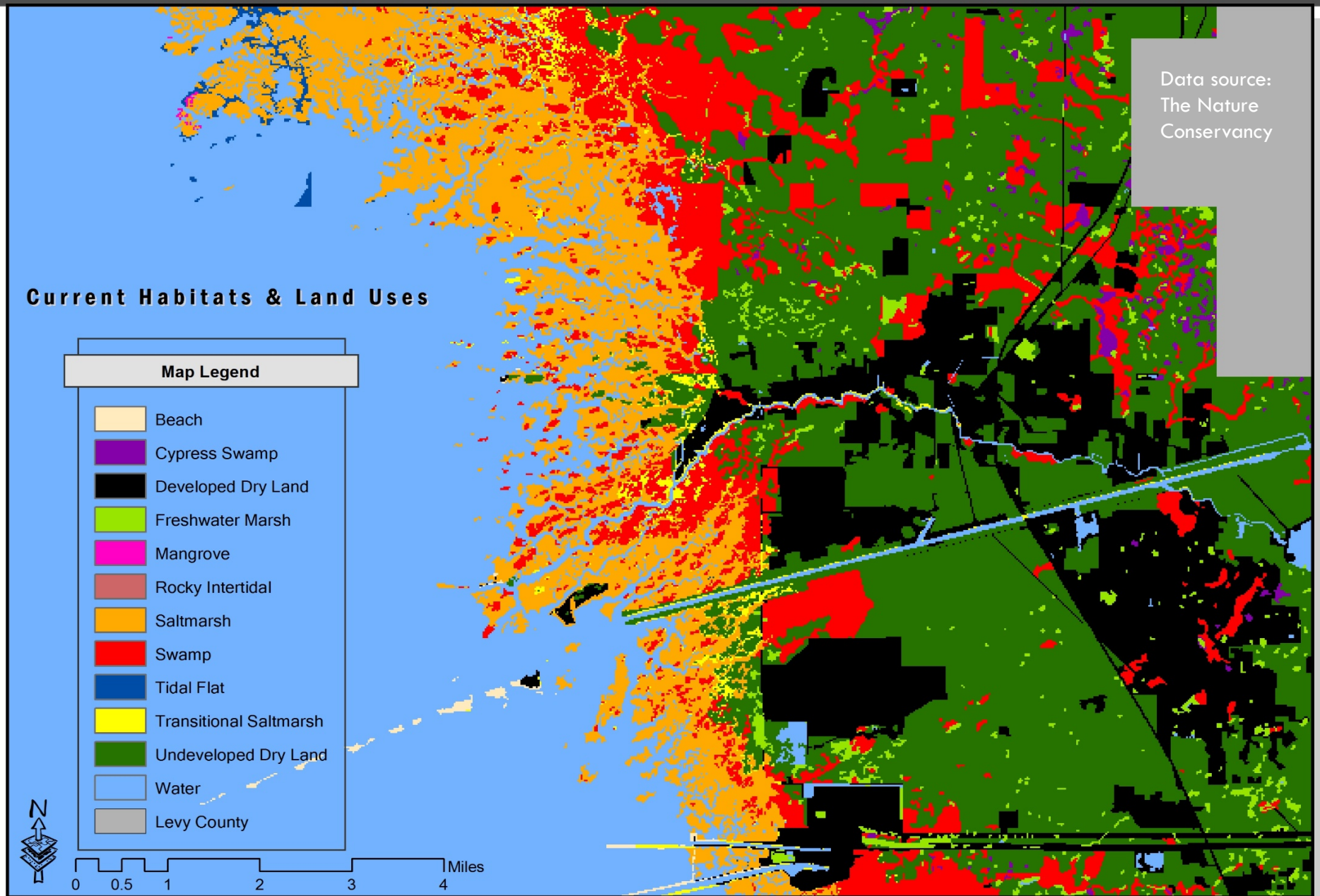
- Gradually sloping coastline
- Extensive low-lying areas along the coast
- Porous substrate and karst geology
- Freshwater flows

### Levy Area - 10 meter Digital Elevation Model



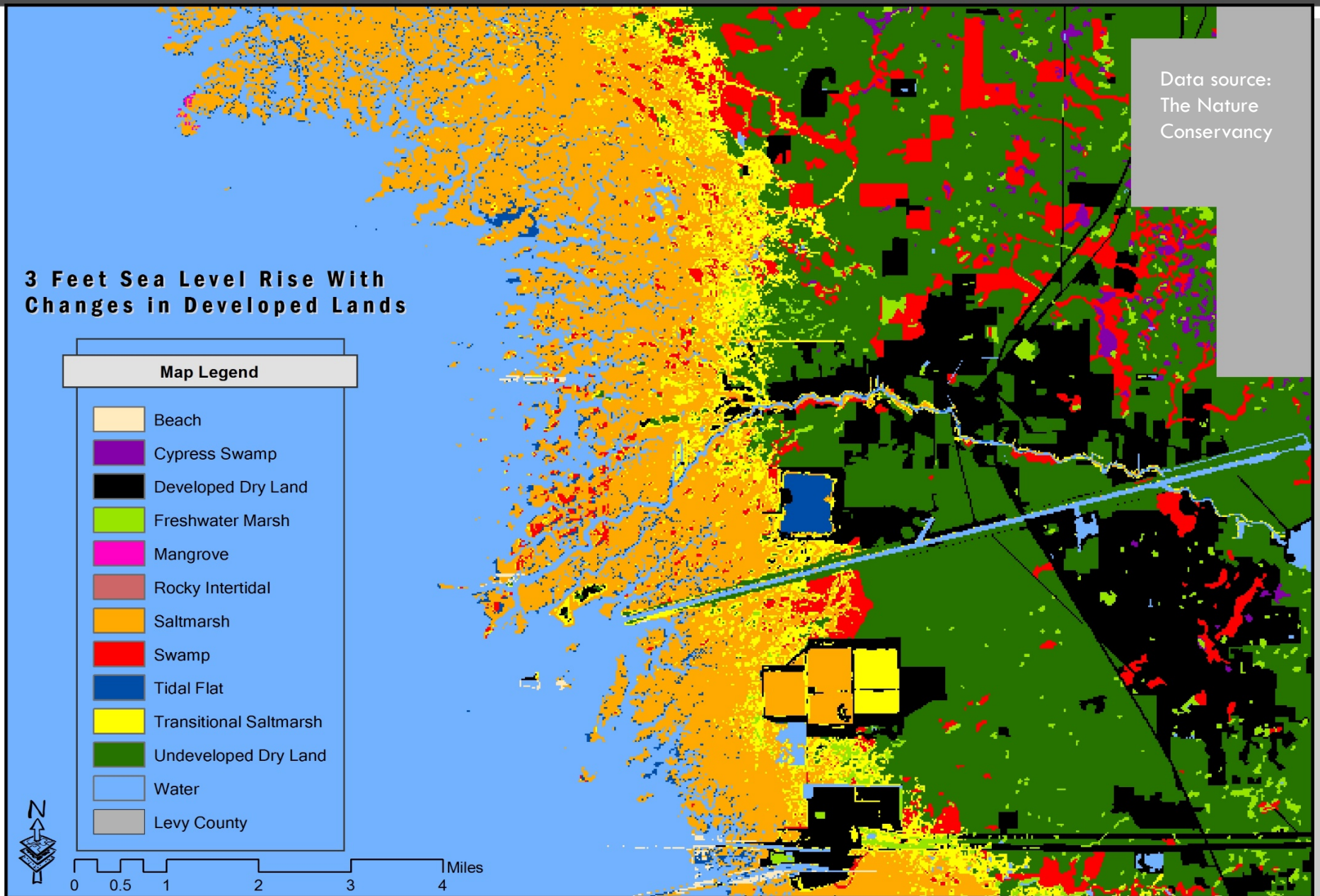


## Yankeetown-Inglis Area - SLAMM Map





## Yankeetown-Inglis Area - SLAMM Map



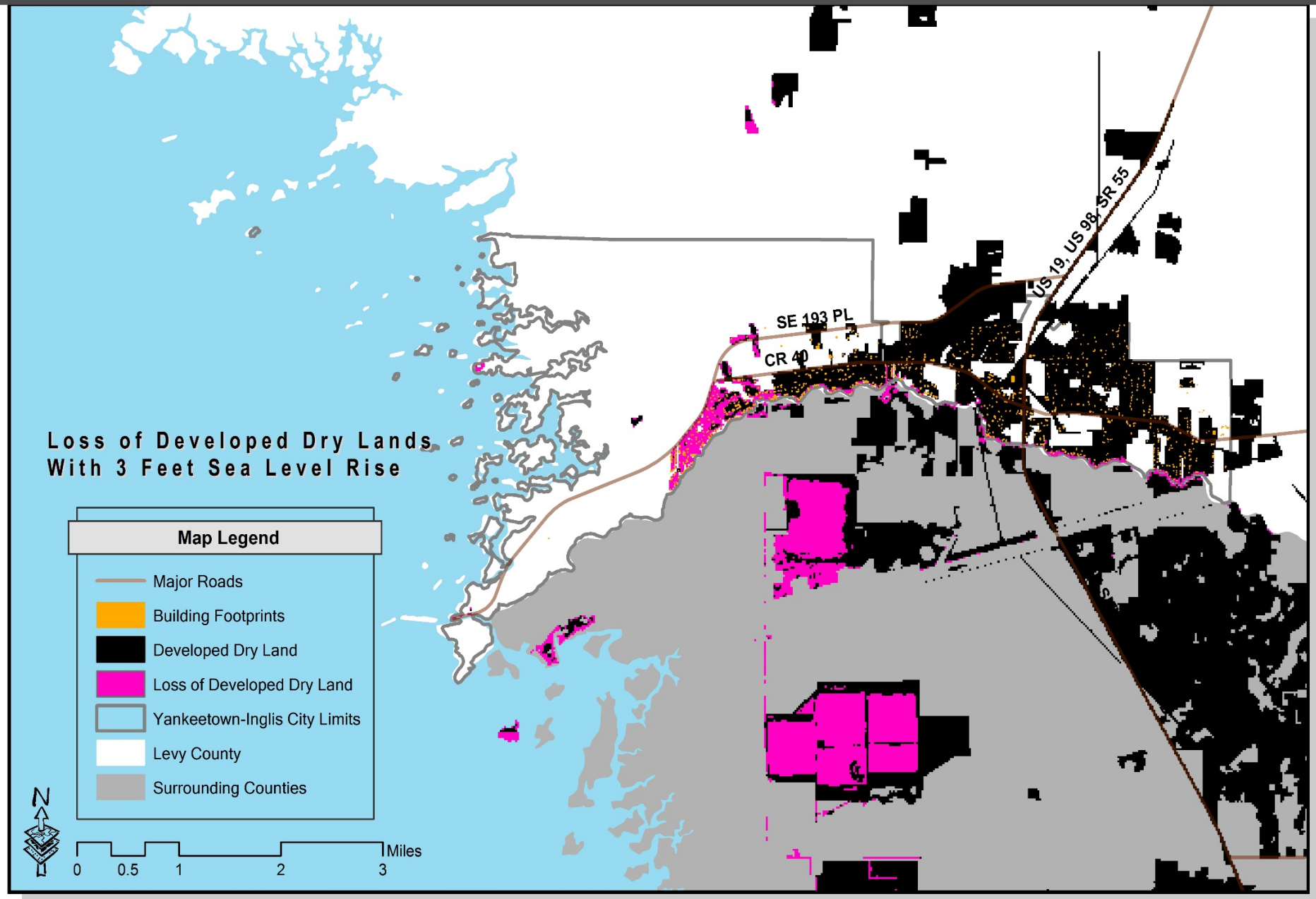


## Yankeetown-Inglis Area - SLAMM Map



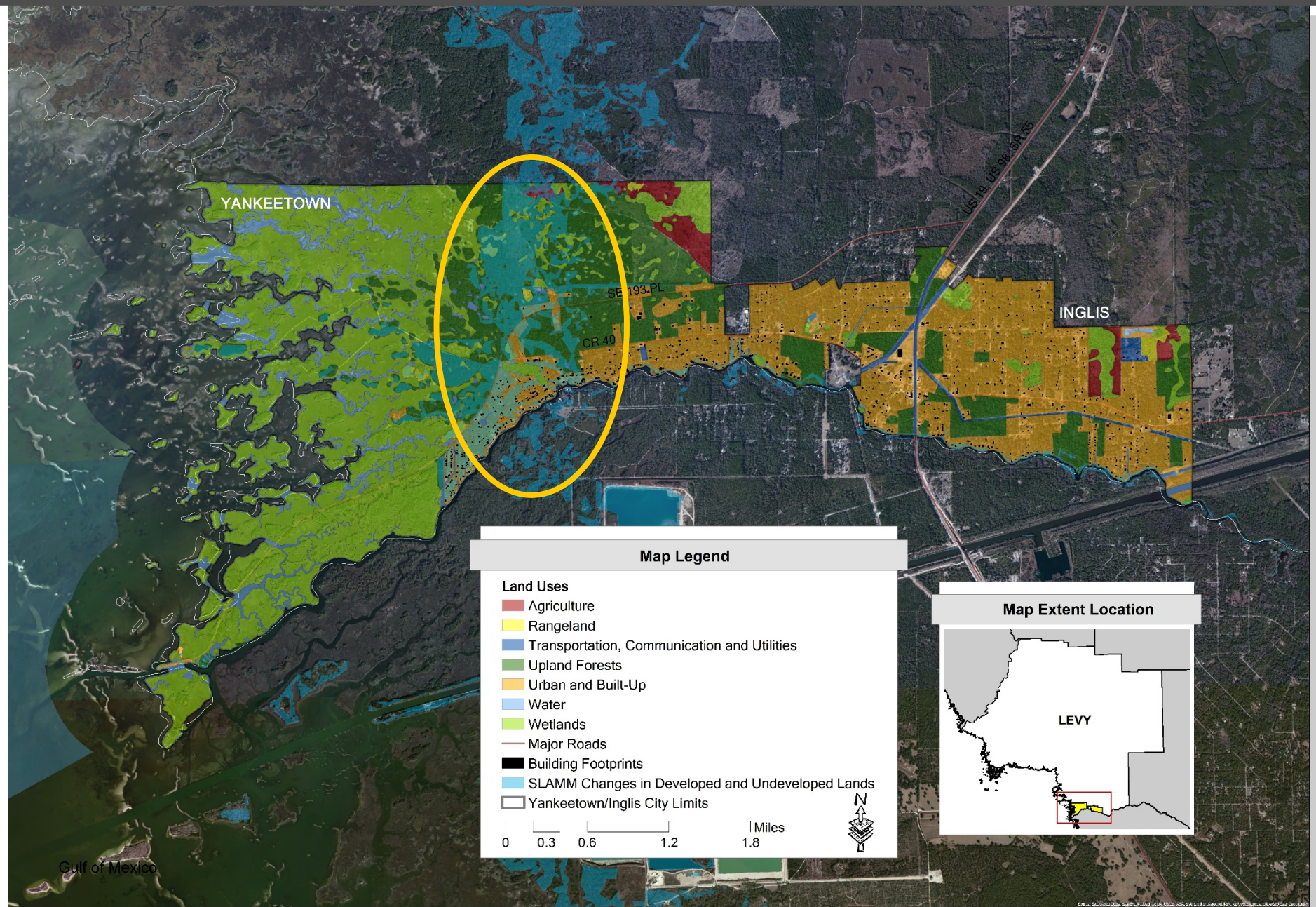


## Yankeetown-Inglis Area - SLAMM Map





# YANKEETOWN-INGLIS EXISTING LAND USE MAP



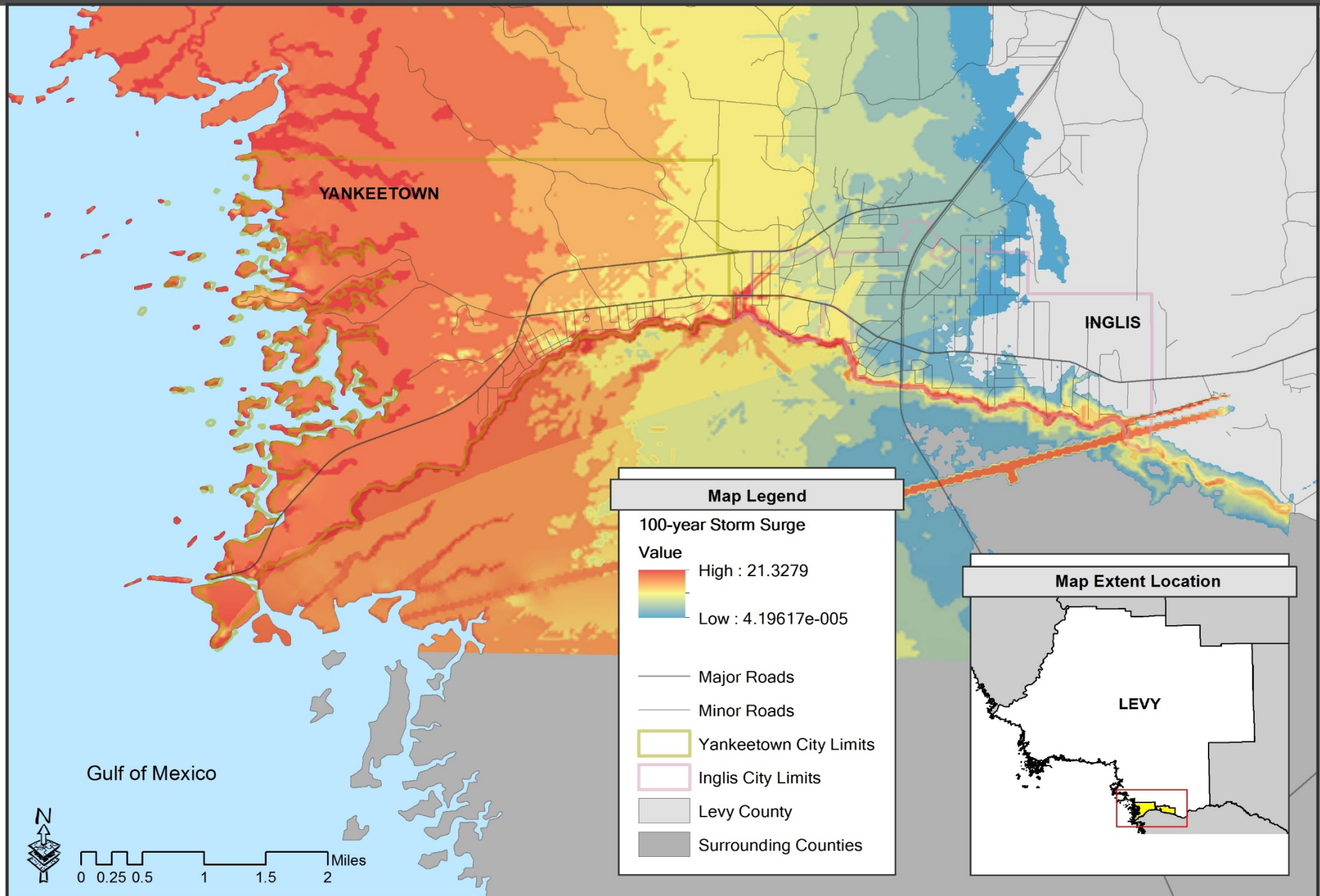


# Storm Surge and flooding

- Forces us to reevaluate existing and future development in light of hazards in an integrated manner - safe growth audit
  - Are our building codes robust enough?
  - Yankeetown and Inglis have a large number of older structures – is existing development capable of withstanding current hazards? What about new or more frequent hazards?
  - Is new development being directed to safer areas?
  - Are we thinking about hazards when we make capital improvement decisions?
  - Are we preserving protective ecosystems?



# Yankeetown-Inglis Area - 100-year Storm Surge Map





# Local economy and infrastructure

- We need to consider how current decisions will be affected by rising seas → wise future investment
- What does this mean for:
  - Drinking water supply?
  - Capital investments/improvements?
    - Roads, real estate, buildings, future development, etc.
  - Infrastructure and utilities?
  - Tourism?
  - Other industries?





# SWOT Analysis





# Adaptive Planning and Strategies



# Adaptation Strategies

- Options, not recommendations
  - Urban and regional planning
    - Protection
    - Accommodation
    - Retreat
  - Environmental and natural resource planning
- Types of Places
    - Coastal and Waterfront Developed Areas
    - Coastal and Waterfront Natural Areas
    - Upland Areas



# Coastal and Waterfront Developed Areas

Sea/River Walls and Raised Buildings  
(protection and accommodation)





# Coastal and Waterfront Developed Areas

Living Shoreline





# Coastal and Waterfront Developed Areas

Relocation:  
Atsena Otie near Cedar Key  
(retreat)





# Coastal and Waterfront Natural Areas

Natural Areas Conservation  
- Withlacoochee Gulf Preserve





# Coastal and Waterfront Natural Areas

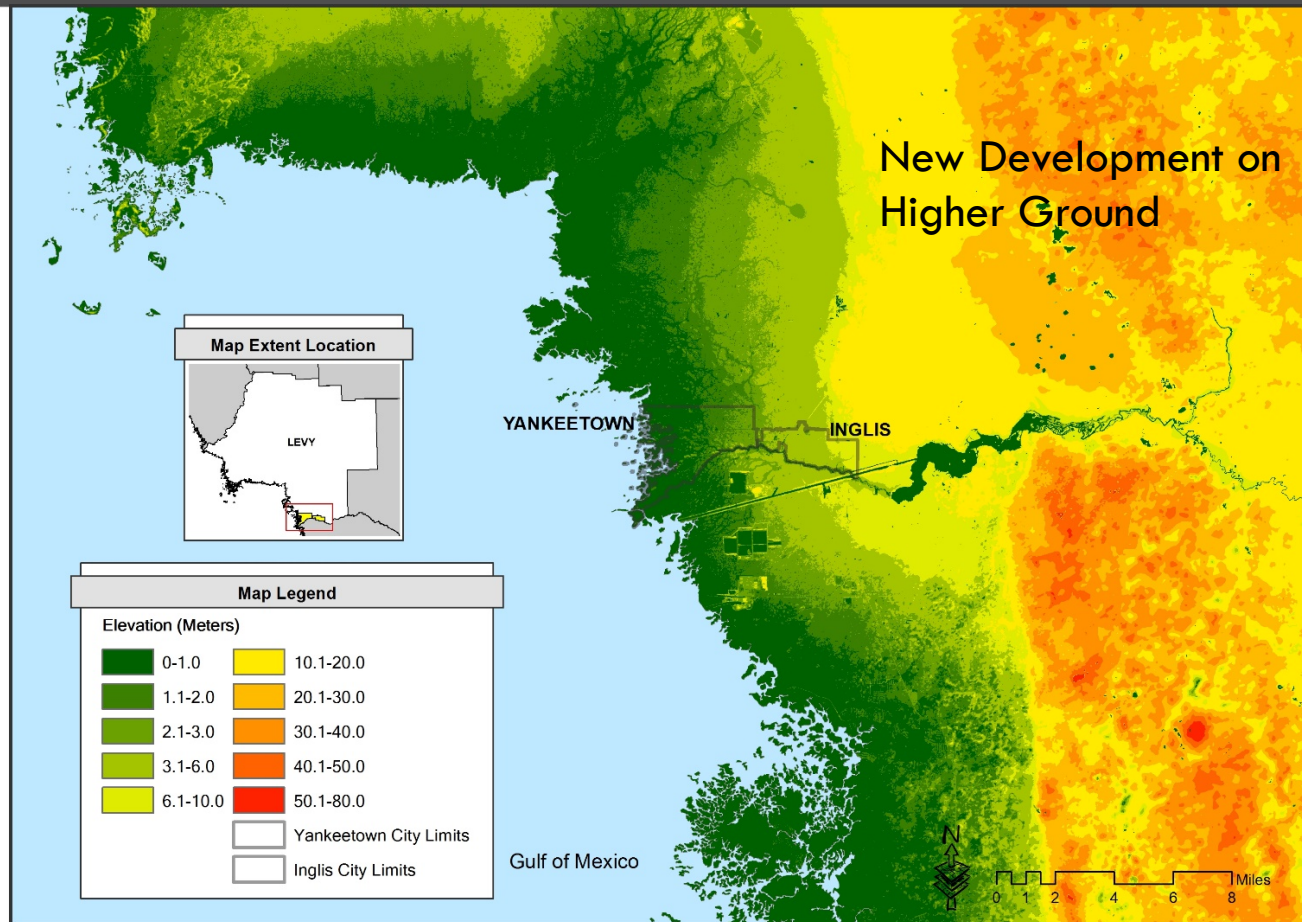
Riparian Conservation  
- Withlacoochee River





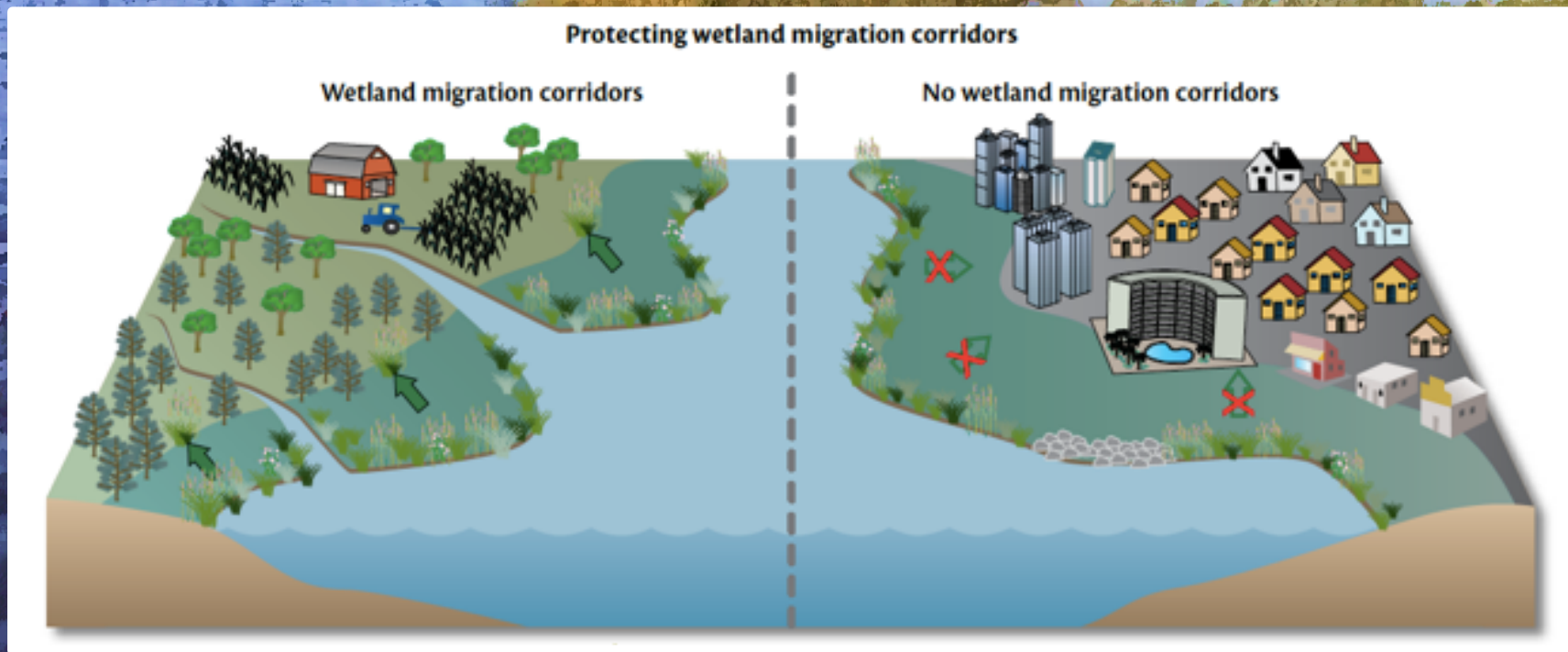
# Upland Areas

Levy Area - 10 meter Digital Elevation Model



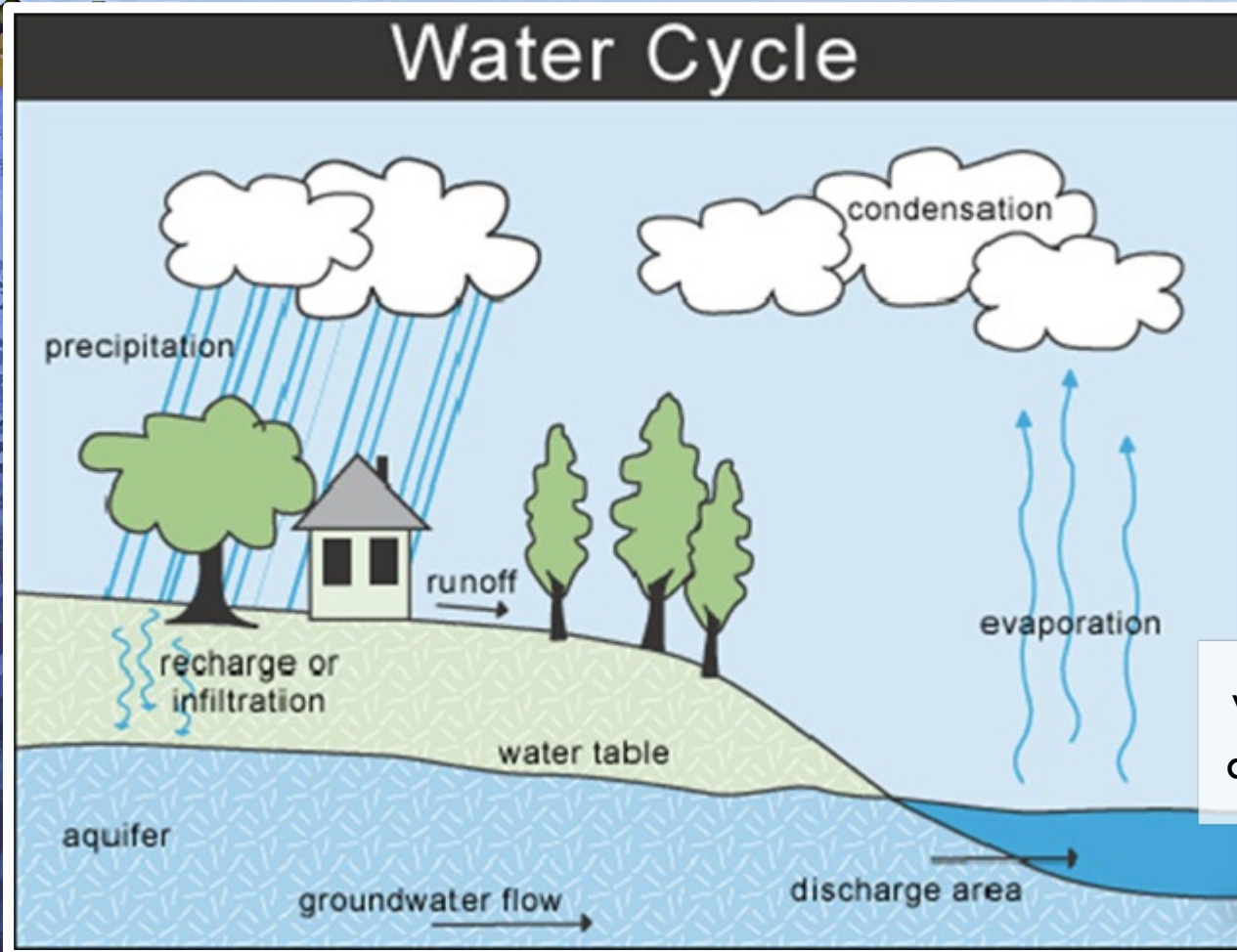


# Upland Areas





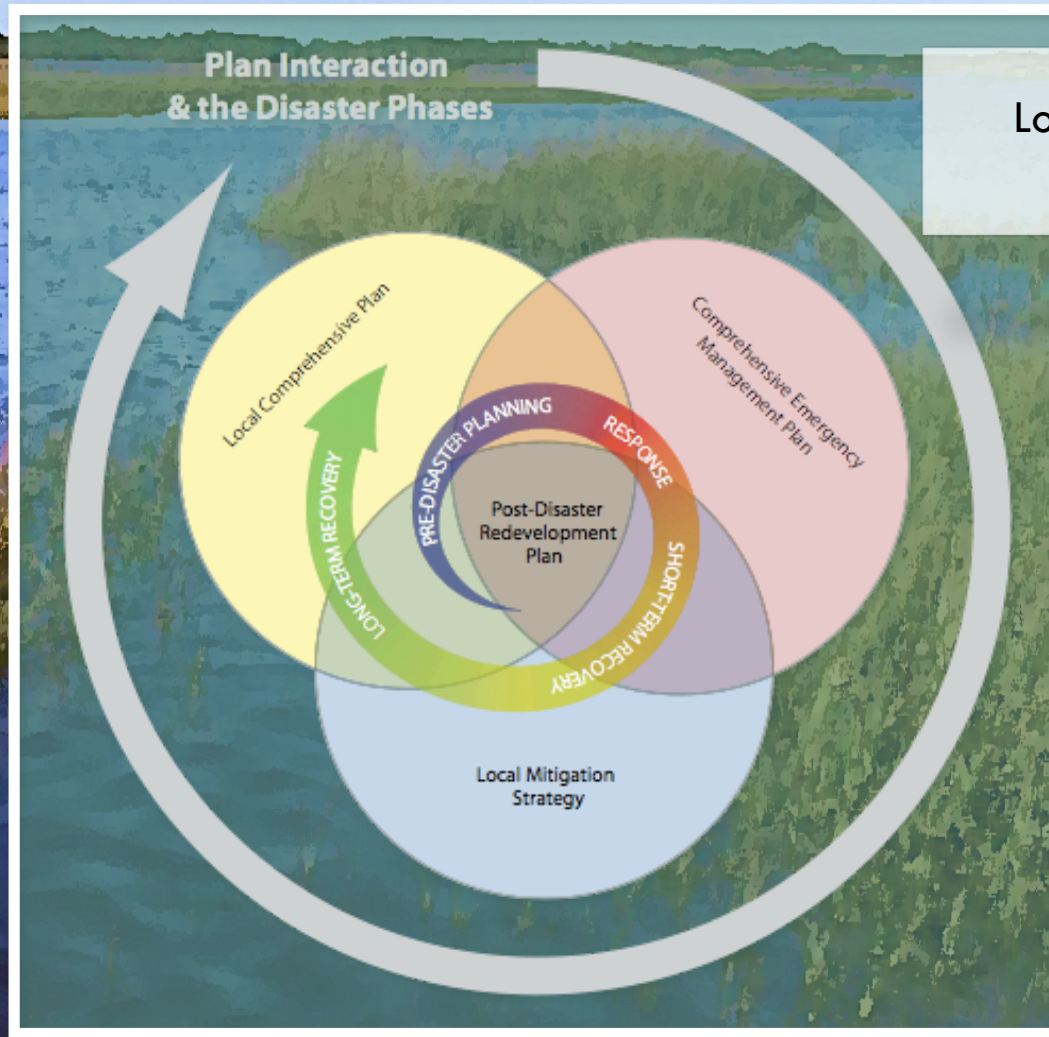
# Upland Areas



Watershed Protection  
and Aquifer Recharge



# All Areas



Local Plans and Programs





# Adaptive Strategies Game



# Closing Remarks and Next Steps

[ChangingLevyCoast.org](http://ChangingLevyCoast.org)