Watershed Planning - ERP and Section 404 Perspectives

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July 23, 2014

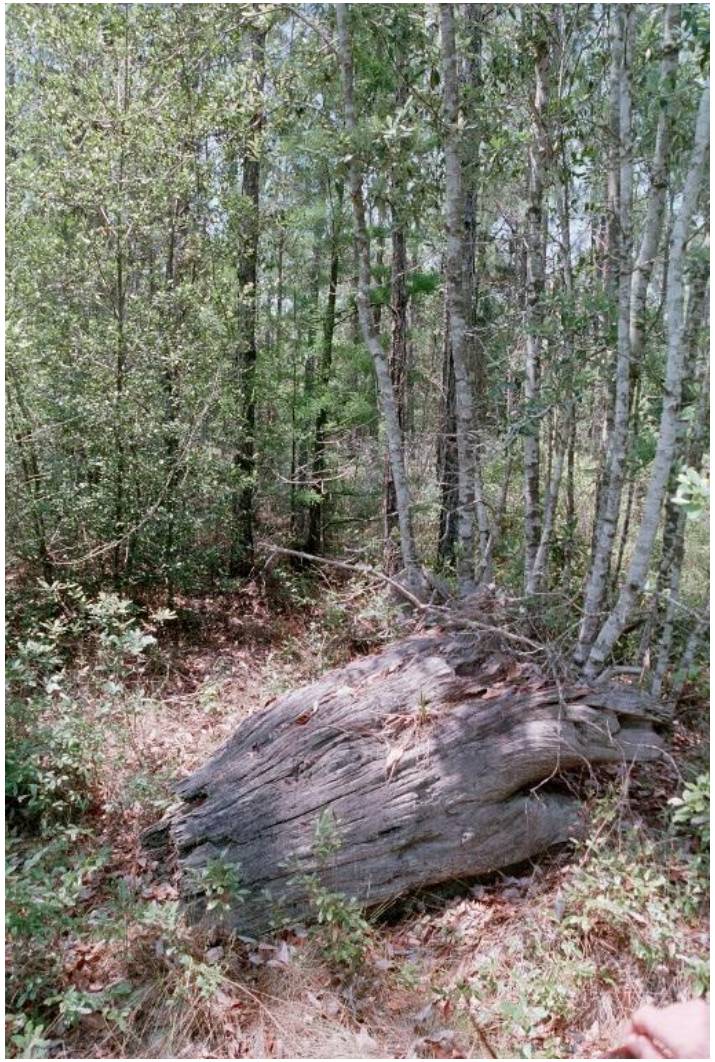
Brown AND Caldwell

Watersheds are getting a lot of attention

- Watershed Approach
  - ERP Permitting
  - Wetlands Mitigation – Sec. 404 Clean Water Act (CWA)
  - Stream Mitigation – Sec. 404 CWA
- Water Quality & Nutrients – Sec. 402 CWA
- Integrated Watershed Approach
  - NPDES Permitting
  - Wastewater Permitting
- Overlaps with watersheds
  - Species – Sec.s 7 & 10 Endangered Species Act
    - Aquatic – watershed-based
    - Non-Aquatic – habitat based (not watershed-specific)

Why a Watershed Approach?

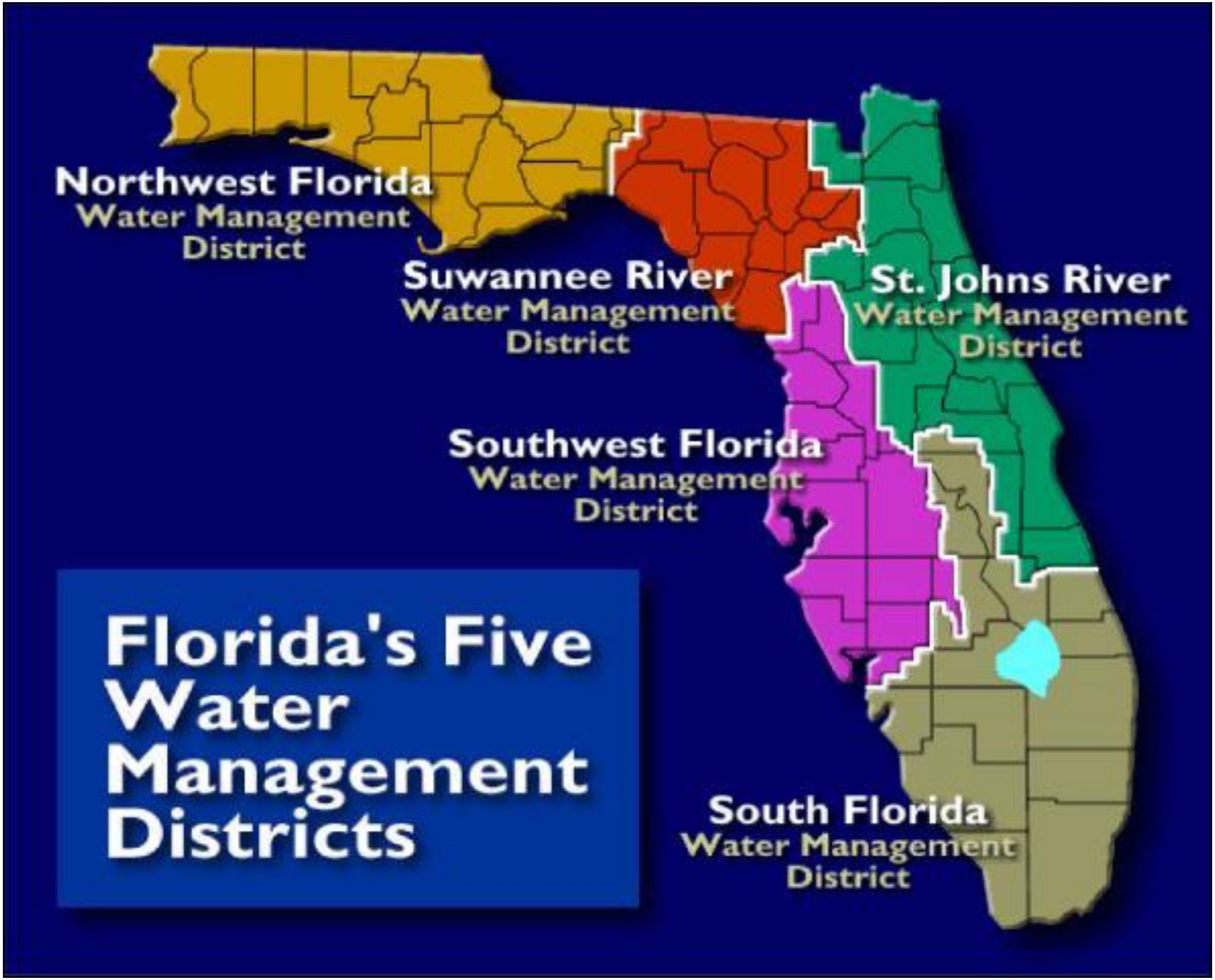
- Magee *et al.* (1999) found that both natural and mitigation wetlands in Portland, Oregon had been degraded due to hydroperiod alteration and land use changes in rapidly urbanizing areas.



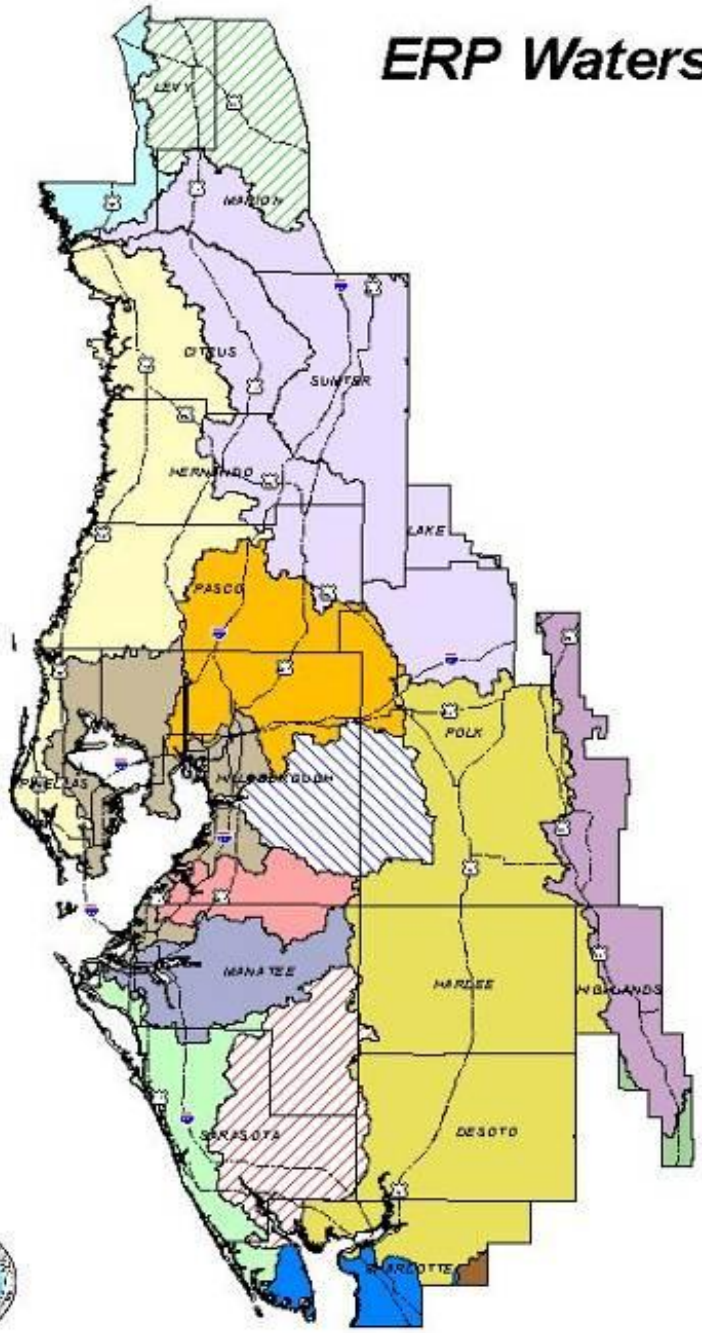
Watershed Approaches in Florida

- "A Watershed approach would Improve permit decision-making." NRC 2001
  - Why? - "Wetland functions must be understood within a watershed framework in order to secure the purposes of the Clean Water Act." (p. 3)
- This has been Florida's way of doing business for many years.

Watershed Approach to Managing Florida's Water Resources


Northwest Florida
Water Management
District
Suwannee River
Water Management
District
St. Johns River
Water Management
District
Southwest Florida
Water Management
District
South Florida
Water Management
District
Florida's Five
Water
Management
Districts

ERP Watersheds/Basins in the S.W.F.W.M.D.

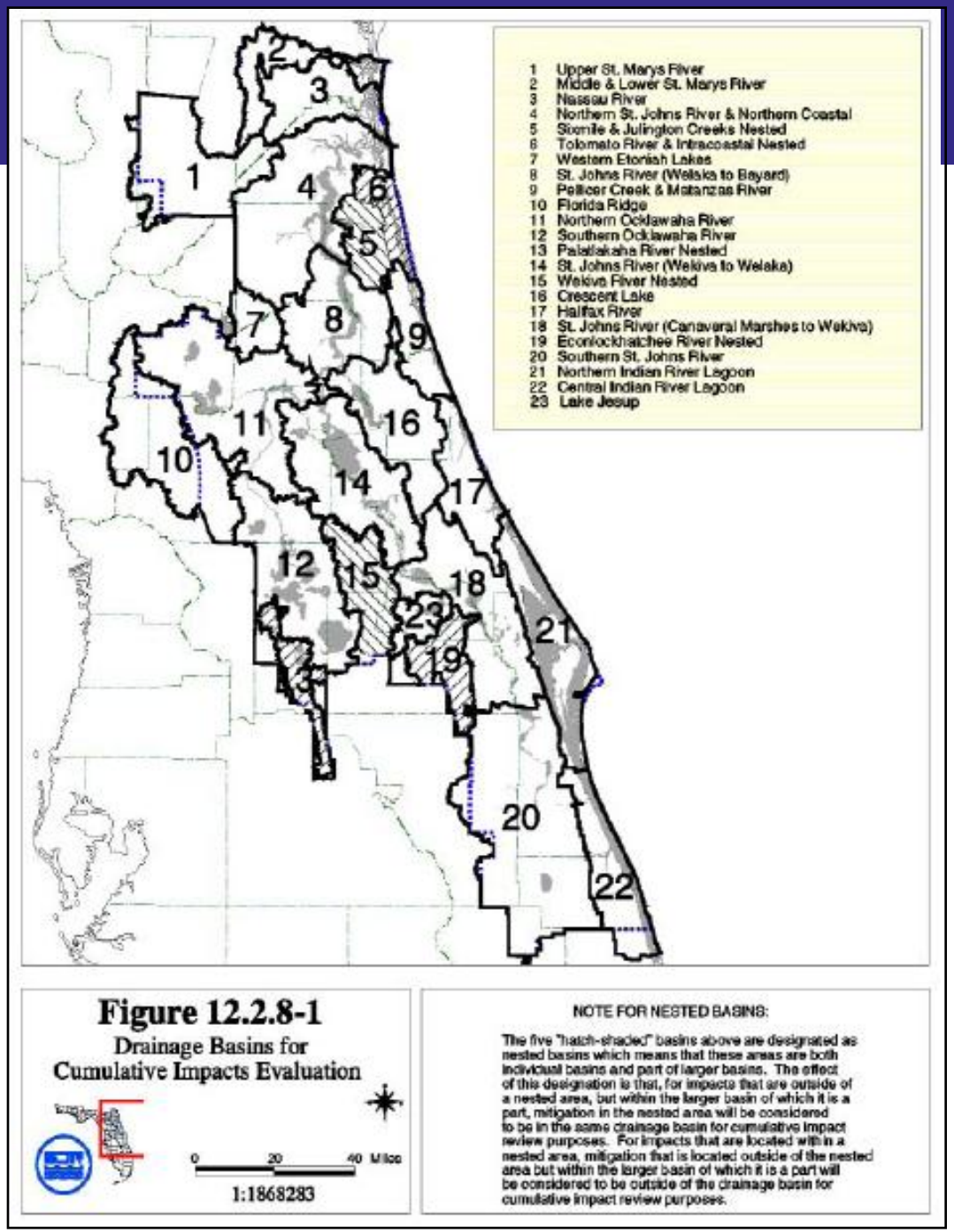


Watersheds

- ALAFIA RIVER BASIN
- CALOOSAHATCHEE RIVER BASIN
- CHARLOTTE HARBOR DRAINAGE
- FISHEATING CREEK BASIN
- HILLSBOROUGH RIVER BASIN
- KISSIMMEE RIVER BASIN
- LITTLE MANATEE RIVER BASIN
- MANATEE RIVER BASIN
- MYAKKA RIVER BASIN
- OCKLAWAHA RIVER BASIN
- PEACE RIVER BASIN
- SARASOTA/LEMON BAY DRAINAGE
- TAMPA BAY AND COASTAL AREAS
- UPPER COASTAL AREAS
- WACCASASSA RIVER BASIN
- WITHLACOOCHEE RIVER BASIN

40 0 40 Miles

St. John's River WMD



- Ecologically-based drainage basins
- Drainage divides as basin boundaries
- Nested basins for significant habitats

Watershed Approach- Federal Mitigation Rules

§332.3/230.93 (c)(1)

"The district engineer must use a watershed approach to establish compensatory mitigation requirements in DA permits ***to the extent appropriate and practicable.***

Where an applicable watershed plan is available, the watershed approach should be based on the existing plan.

Where no such plan is available, the watershed approach should be based on information provided by the project sponsor or available from other sources."

Federal Mitigation Rule

- “Watershed” is mentioned 192 times
- §332.3/230.93 General Requirements
- Watershed approach
  - – Consistent with plan or principles
  - – Considerations and information needs
- • Absence of watershed plan/approach
  - – On-site/in-kind
  - – Off-site/out-of-kind
  - – “near”

Watershed Approach- Federal Mitigation Rules

- §332.3©/230.93© General Requirements
  - (1) “Ultimate goal … is to maintain and improve the quality & quantity of aquatic Resources within watersheds through strategic selection.”
  - (2) Consider landscape position & resource type for functioning & sustainability of aquatic Resources in watershed

Watershed Approach- Federal Rules

- §332.3©/230.93© General Requirements
- (2)(i) Consider:
  - Habitat requirements of “important species”
  - Habitat loss or conversion trends
  - Sources of watershed impairment
  - Current development trends
  - Requirements of other regulatory & non-reg. programs

Watershed Approach- Federal Rules

- §332.3©/230.93© General Requirements
- (2)(ii) Locational factors (hydrology, surrounding land use)
- (2)(iii) may want/need to inventory historic & existing aq. resources & *PRIORITIZE aquatic resources that are important for maintaining & restoring watershed function.*

Watershed Approach- Federal Rules

- §332.3©/230.93© General Requirements
- (3) Information needs- includes:
  - *Current trends habitat loss*
  - *Past cumulative impacts*
  - *Development trends*
  - *Presence & needs of sensitive species*
  - *Site conditions that bolster/hinder performance*
  - *Local goals & priorities*

Florida's Watershed Approach

- Mitigation banking - §373.4135 & .4136, FS
- Regional offsite mitigation areas – §373.4135, FS
- DOT Mitigation - §373.4137, FS
- Wildlife Corridors under various planning processes
  - DRI's - §380.06, FS *(formerly)*
  - Sector Planning - § 163.3177(11)(b) & 163.3245, FS
  - Rural Land Stewardship - § 163.3177(11)(d), FS

All watershed studies have to start somewhere

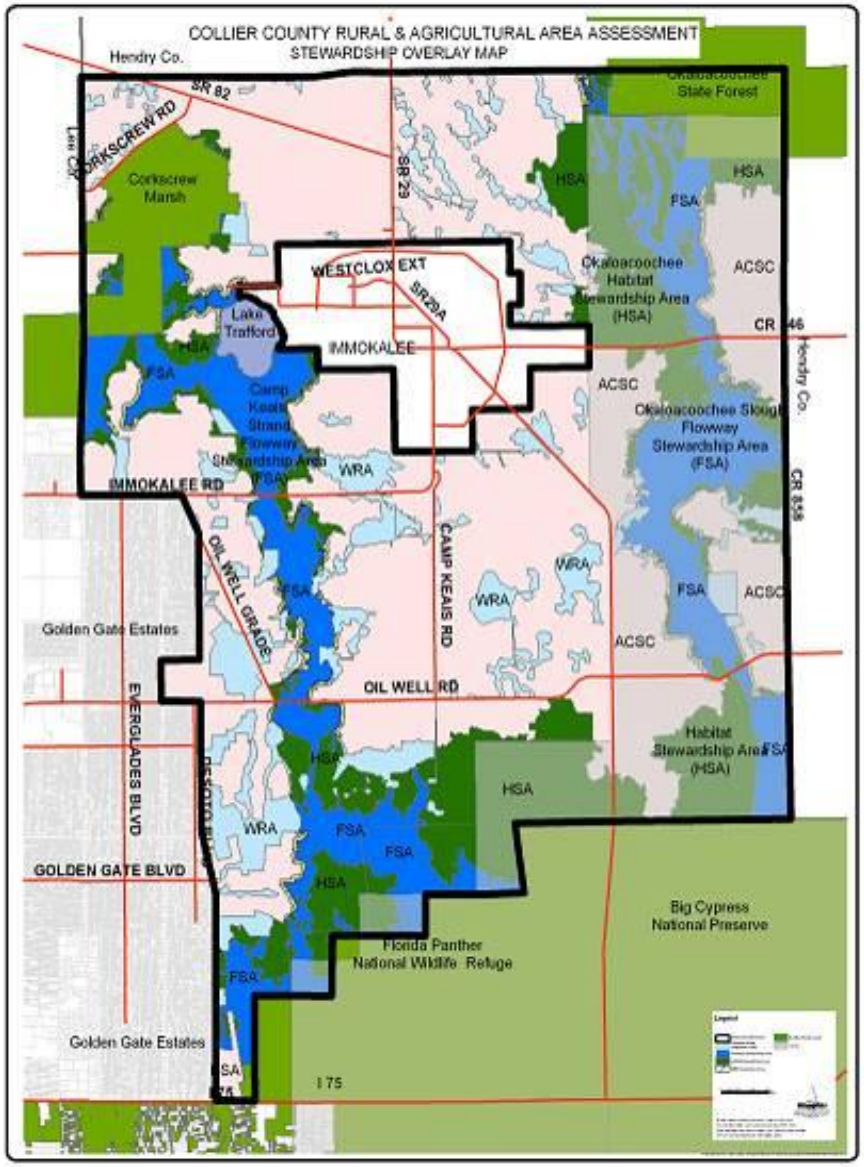
- What are the over-riding ecosystem services and watershed issues?
  - Loss of flood storage?
  - Habitat corridors?
  - Fishery reductions?
  - Pollinator losses?
  - Poor water quality?
  - Flashy runoff due to impervious surfaces
  - Channelized stream corridors
  - Lack of open space
  - Nutrients -> water quality degradation
  - Low biodiversity
  - Safe outdoor spaces
  - *Etc. .....*

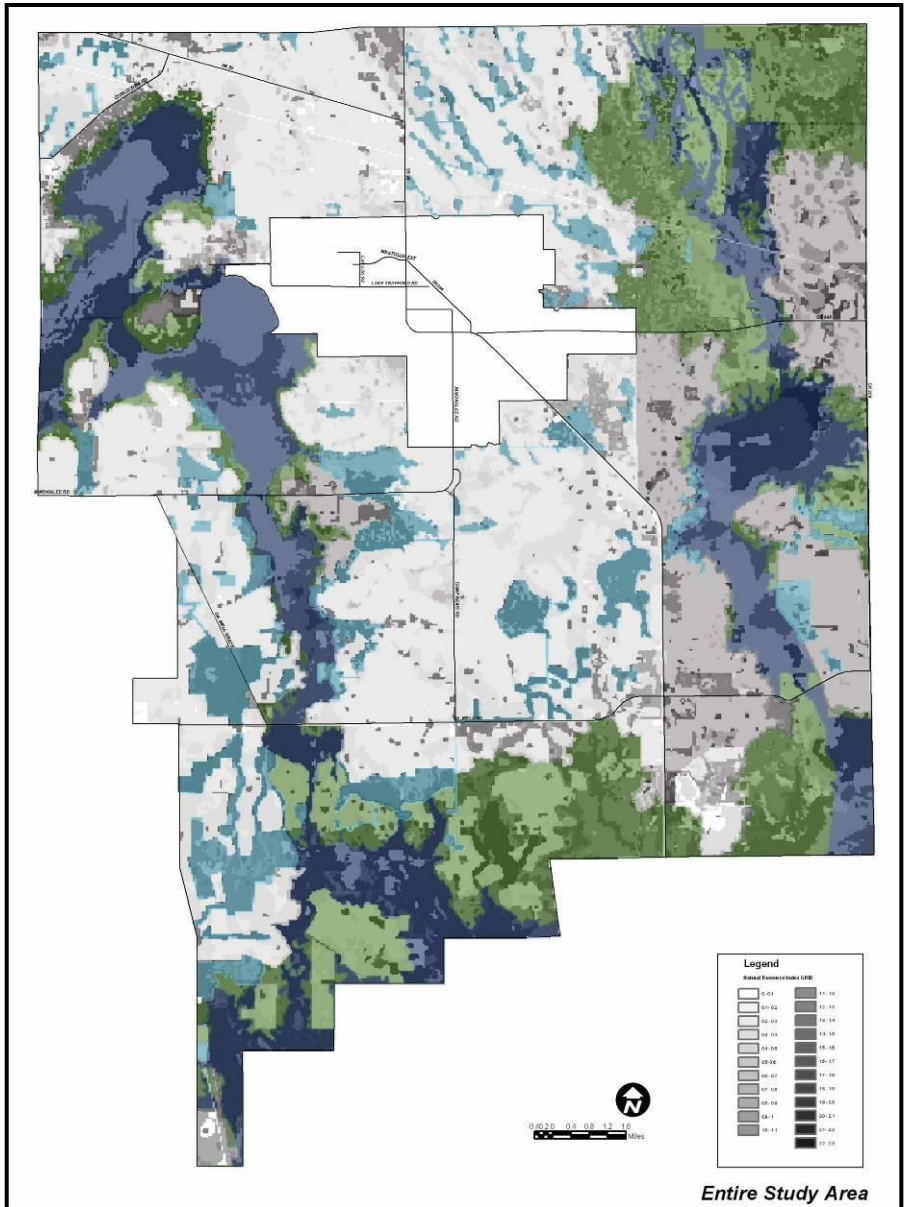
Tampa Bay's Watershed Plan

- Example used by NRC, 2001
- The management plan for 2006 with specific strategies for addressing the five priority problems identified in Tampa Bay:
  - water and sediment quality;
  - bay habitats;
  - fish and wildlife;
  - dredging and dredged material management; and
  - spill prevention and response

Rural Land Stewardship Program Locations - 2008

Collier County Rural Land Stewardship





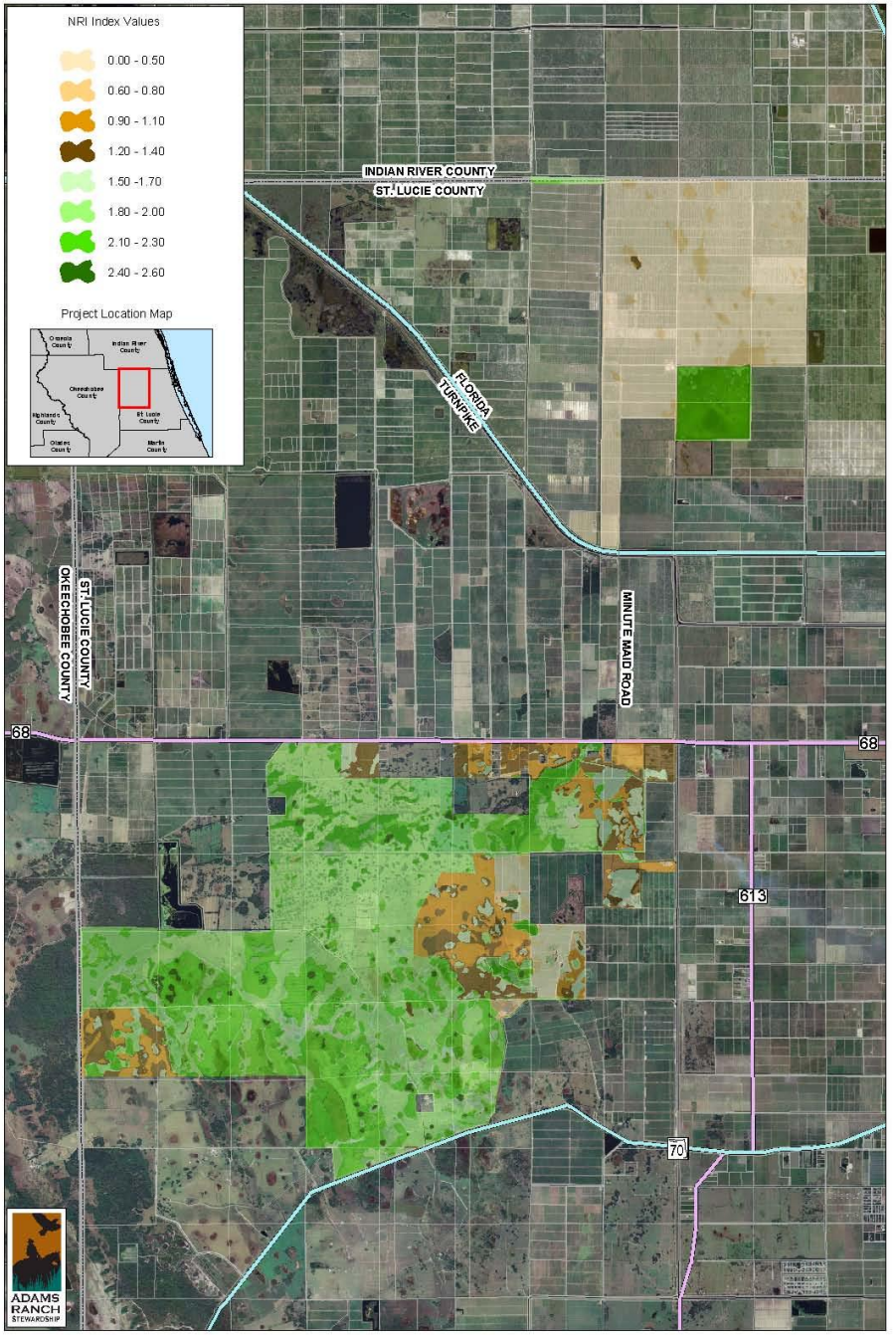
St. Lucie County RLS Natural Resource Index

Based on:

- Habitat Values
- **Water Quality & Quantity**
- Soil Values
- Agriculture

Secondarily encompassed:

- Air quality regulation
- **Climate regulation**
- **Erosion regulation**
- **Water purification**
- Pest regulation
- Pollination
- **Natural hazard regulation**
- **Water regulation**
- Disease regulation
- **Carbon sequestration**



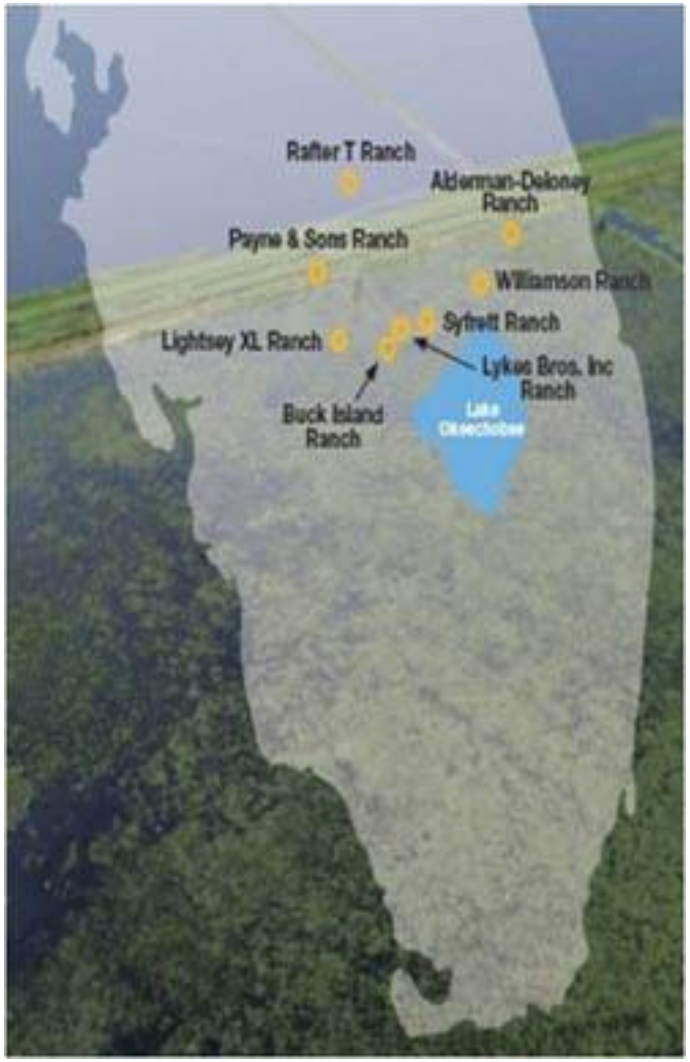
WilsonMiller
New Directions in Planning, Design & Engineering

~~ATTACHMENT C~~ RLSA FIGURE 3
ST. LUCIE COUNTY RURAL LAND STEWARDSHIP AREA
NATURAL RESOURCE INDEX MAP
JUNE 2006

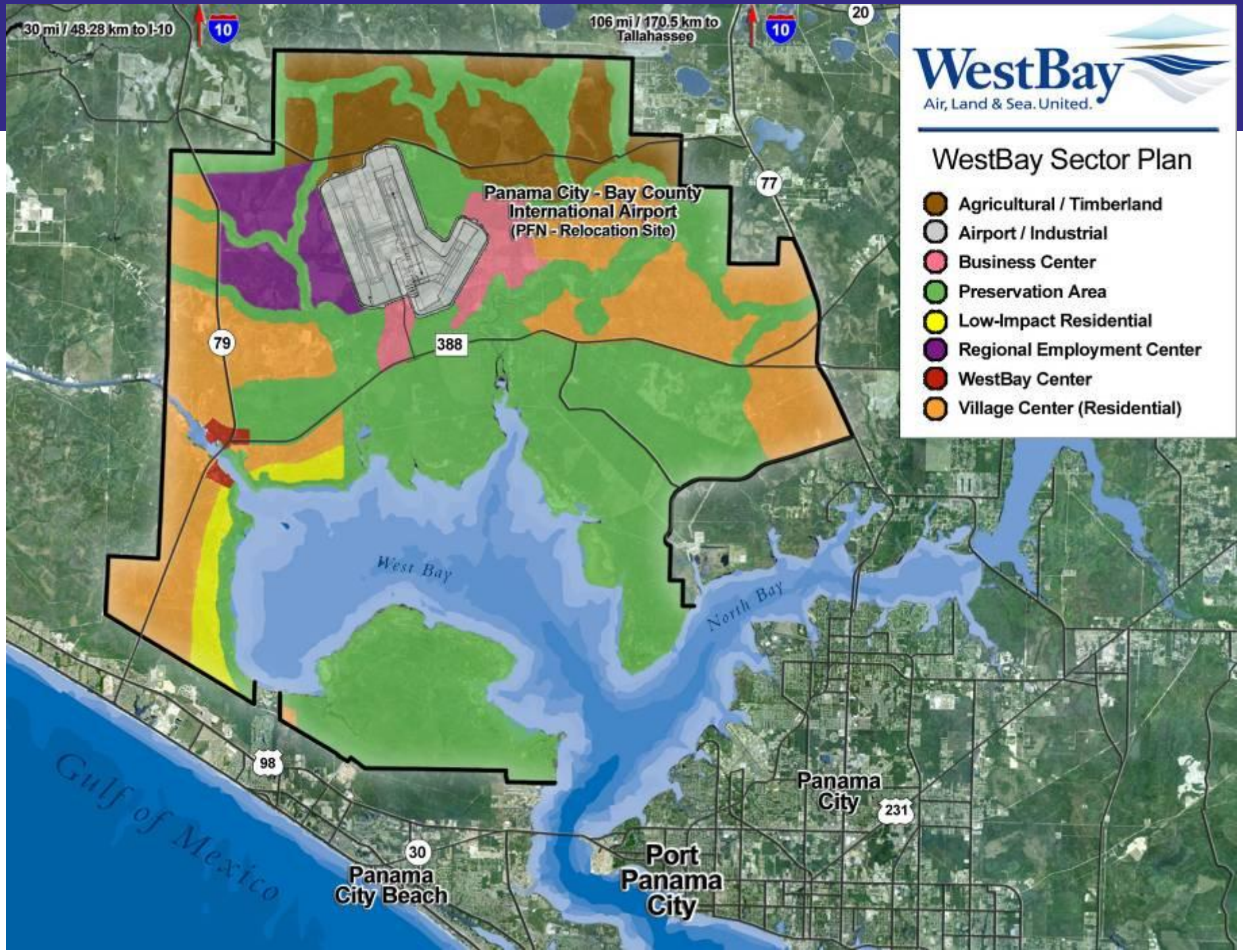
0 3,000 6,000 12,000 Feet
1 inch equals 6,000 feet

Florida Ranchlands Environmental Services Project – "FRESP"

- Dispersed Water Management using ranchlands
- Reduce the volume and rate of flow to Lake Okeechobee
- Help keep the Lake within a preferred stage envelope in both wet and dry years
- Reduce damaging discharges to the estuaries
- Contribute to achievement of the Lake Okeechobee TMDL for total phosphorus & other WQ criteria
- Reduce nutrients entering the estuaries
- Provide for habitat enhancement for multiple species at a watershed scale
- Create a new revenue for ranchers



Graphic from http://www.fresp.org/


30 mi / 48.28 km to I-10
10
106 mi / 170.5 km to Tallahassee
10
20
WestBay
Air, Land & Sea. United.
WestBay Sector Plan
Agricultural / Timberland
Airport / Industrial
Business Center
Preservation Area
Low-Impact Residential
Regional Employment Center
WestBay Center
Village Center (Residential)
Panama City - Bay County International Airport (PFN - Relocation Site)
77
79
388
West Bay
North Bay
Gulf of Mexico
98
30
Panama City Beach
Port Panama City
Panama City
231

St. Joe Ecosystem Management Agreement & Regional General Permit

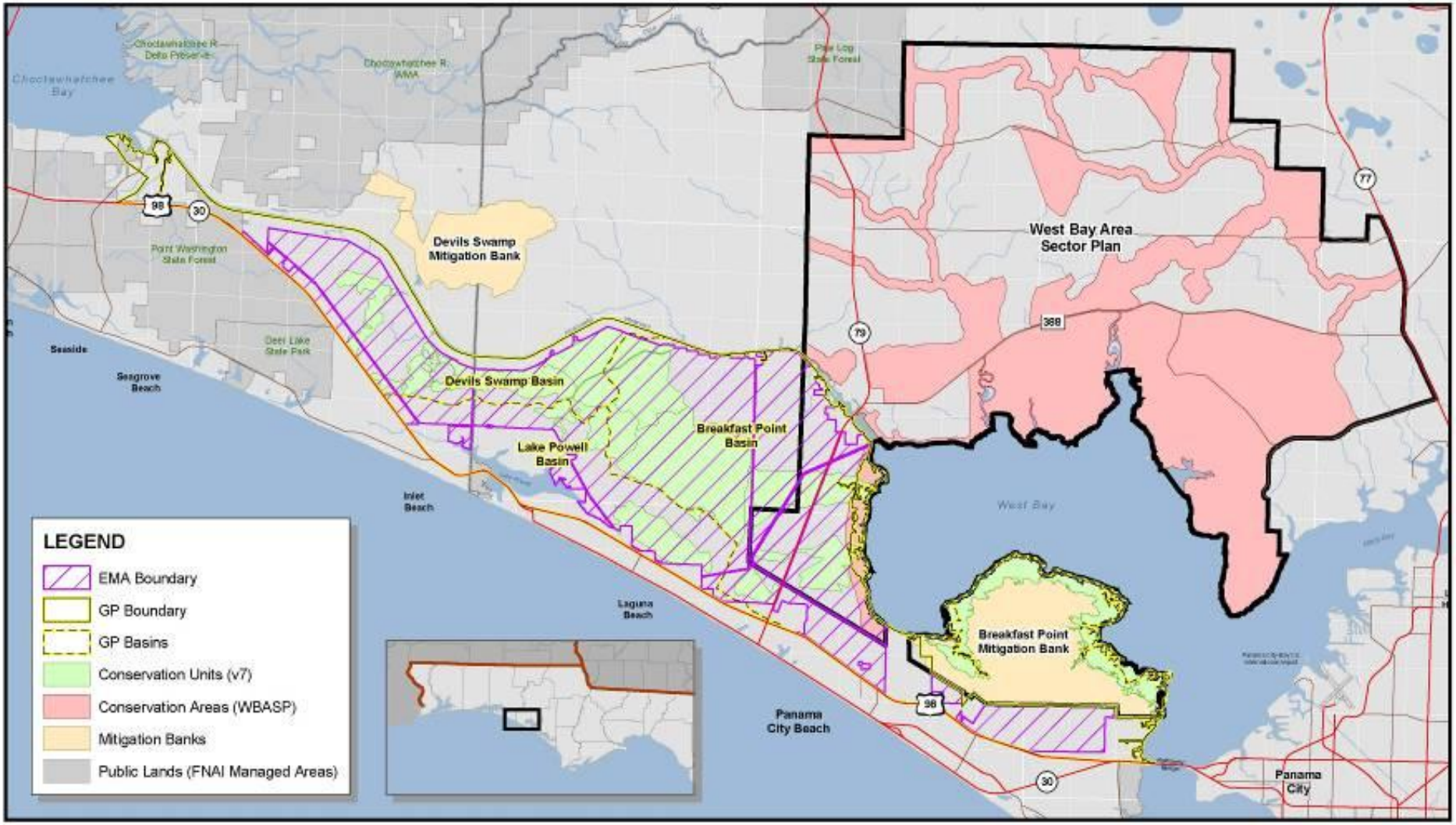
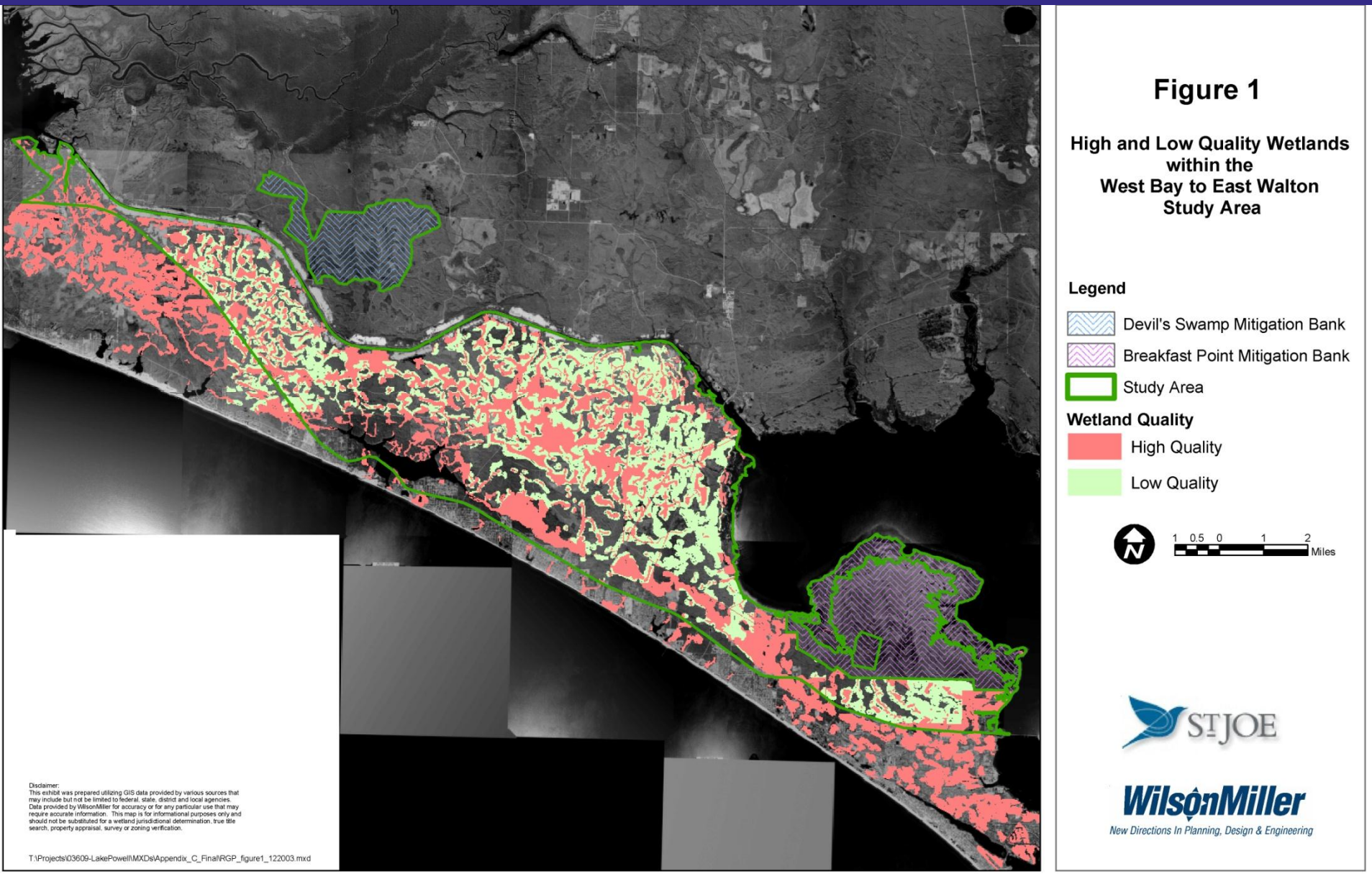
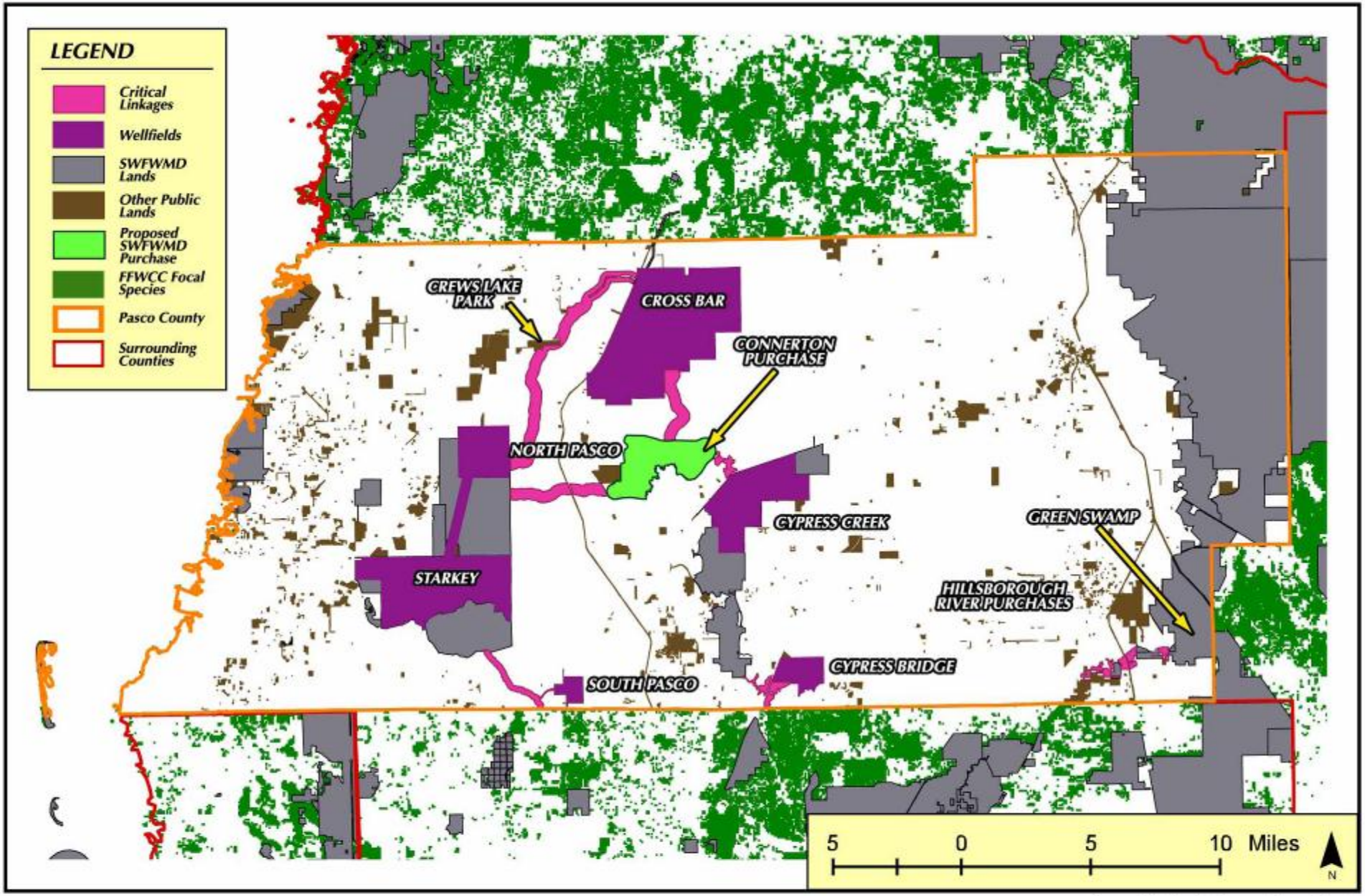


EXHIBIT 04

MITIGATION STRATEGY

GIS Modeling of Ecosystem/Watershed Condition





Source: Glatting Jackson and Pasco County

GLATTING JACKSON KERCHER ANGLIN LOPEZ RINEHART

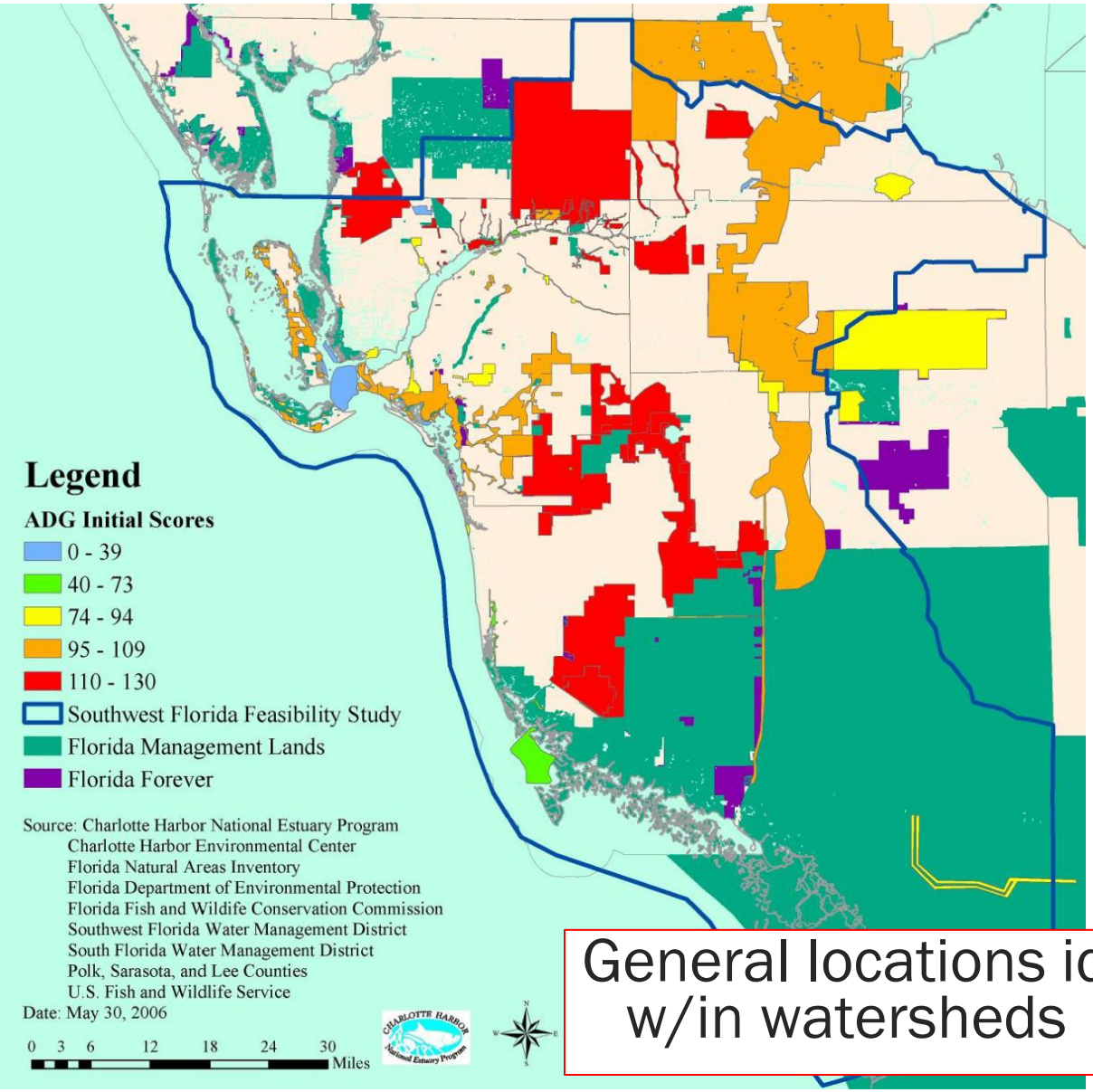
Pasco County, Florida

Figure 7
Critical Linkages (Corridors) of Wildlife Habitat Between Existing Public Lands

Corkscrew Regional Ecosystem Watershed (CREW)

- Watershed divides had been cut through to send water to the gulf MORE quickly (*i.e.* – to drain lands). Result:
  - Drained lands
  - Flashy runoff
  - Freshwater starvation in western Everglades & Fakahatchee Strand
  - Flooding to the west
  - Habitat corridor shifts
  - Altered freshwater flows to Florida Bay
- Long Term plan made to restore historic flow patterns & processes

CREW - Regional Restoration Group Scoring



General locations identified w/in watersheds

Watershed Approach @ CREW

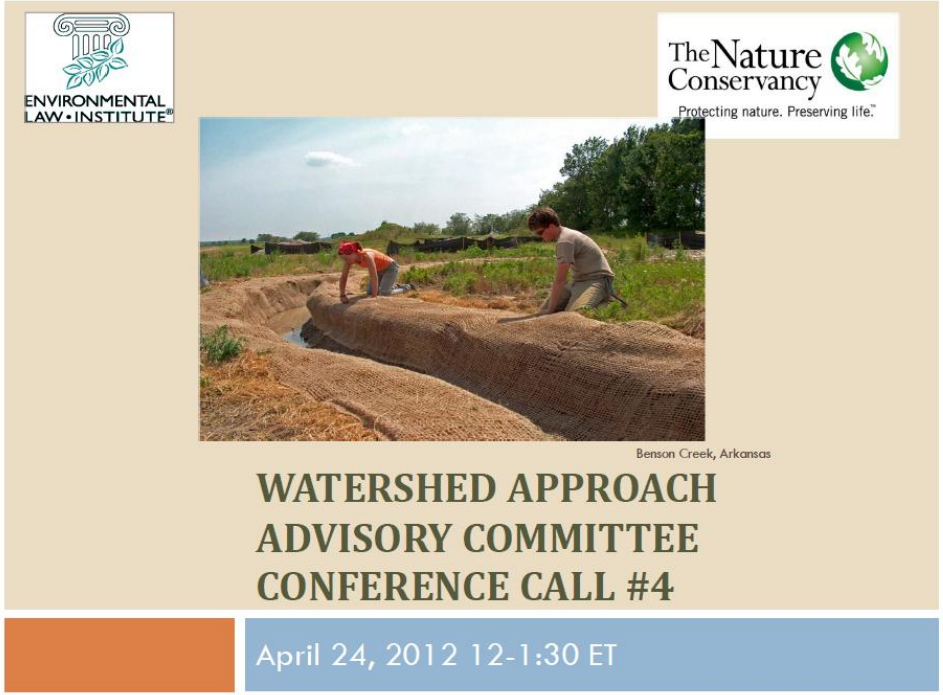
- Audubon's Corkscrew Swamp Sanctuary
- South Florida Water Management District land acquisition
- State of Florida land acquisition
- Local land trust land acquisition
- Two wetland mitigation banks
  - 1 private
  - 1 public

EPA-funded Watershed Approach Project for Section 404 projects

- 5-step process

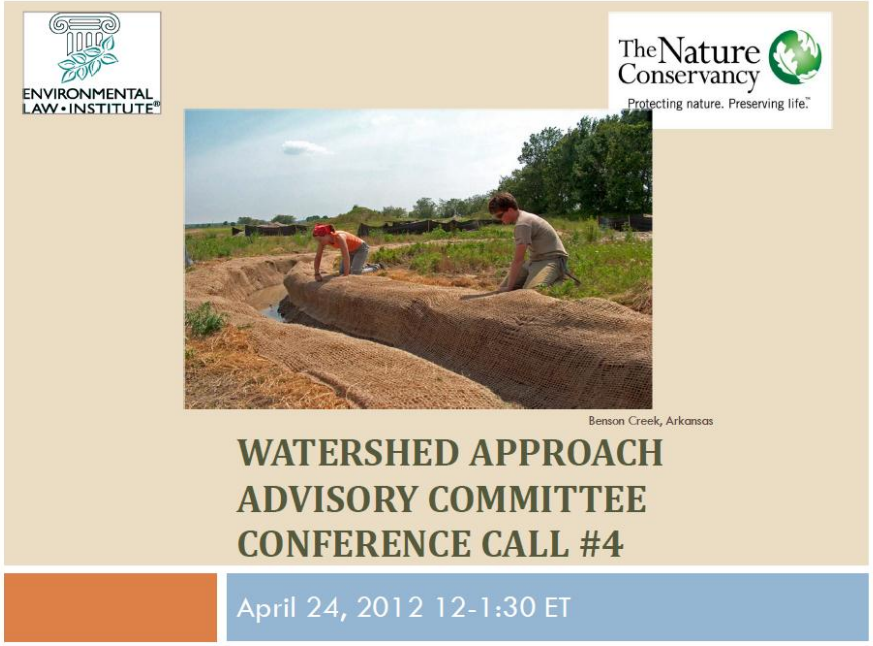
1. Identify watershed needs – *the most often overlooked aspect*
2. Identify measurable outcomes
3. Identify potential sites
4. Assess the potential of sites to sustainably meet watershed needs
5. Prioritize sites, areas, and desired outcomes

- ***Addressing Step 1 will lead to the most effective results***



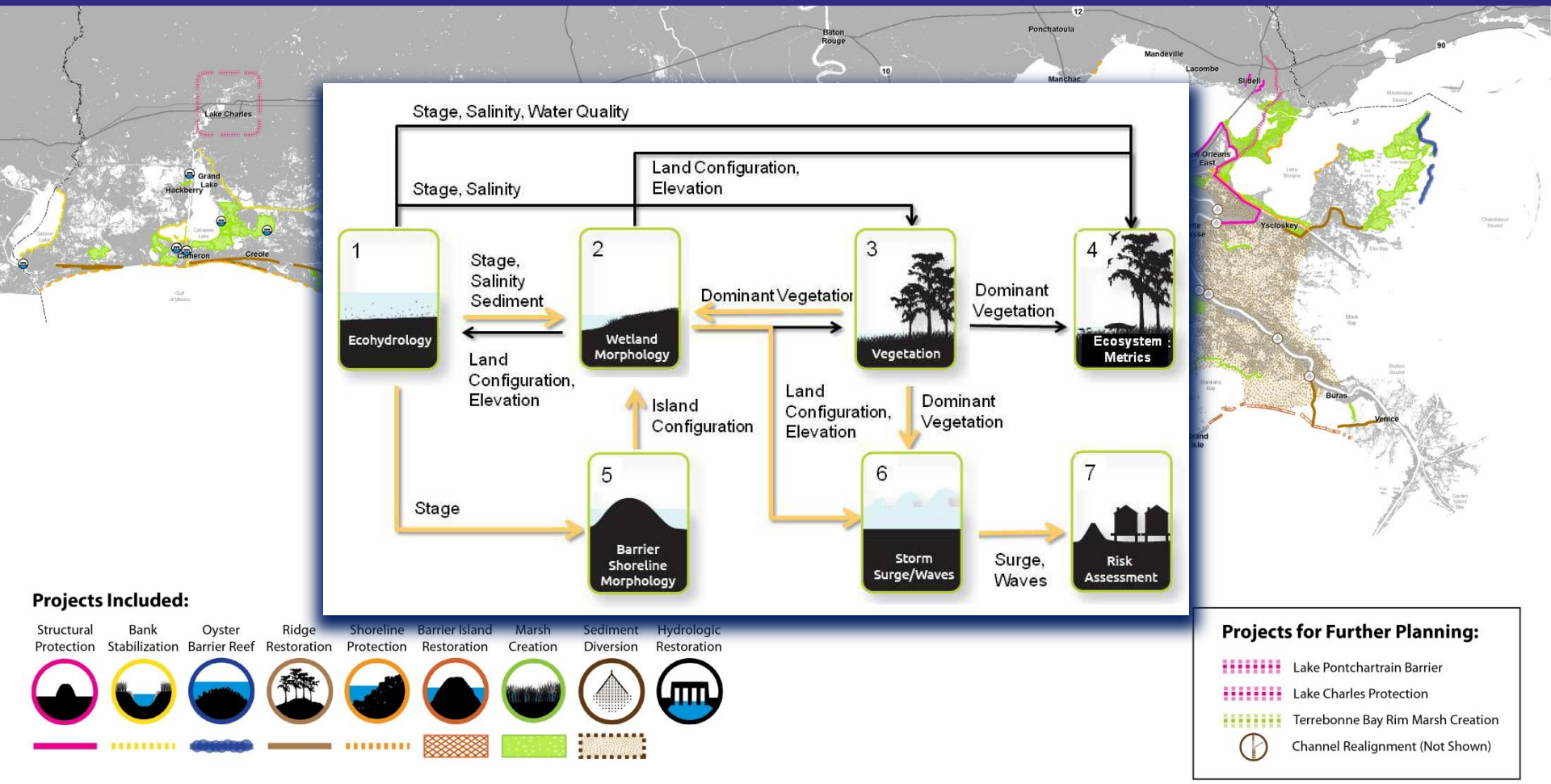
EPA-funded Watershed Approach Project for Section 404 projects

- Watershed needs identified in existing plans, reports, or analyses, such as:
  - CWA 303(d)/305(b) reports and related TMDLs
  - CWA 319 watershed plans
  - USACE Watershed Assessments/Plans
  - CZMA Coastal Zone Management Plans/Measures
  - State Wildlife Action Plans/Comprehensive Wildlife Conservation Strategies
  - State and local flood management and flood hazard mitigation plans



Approaches around the US

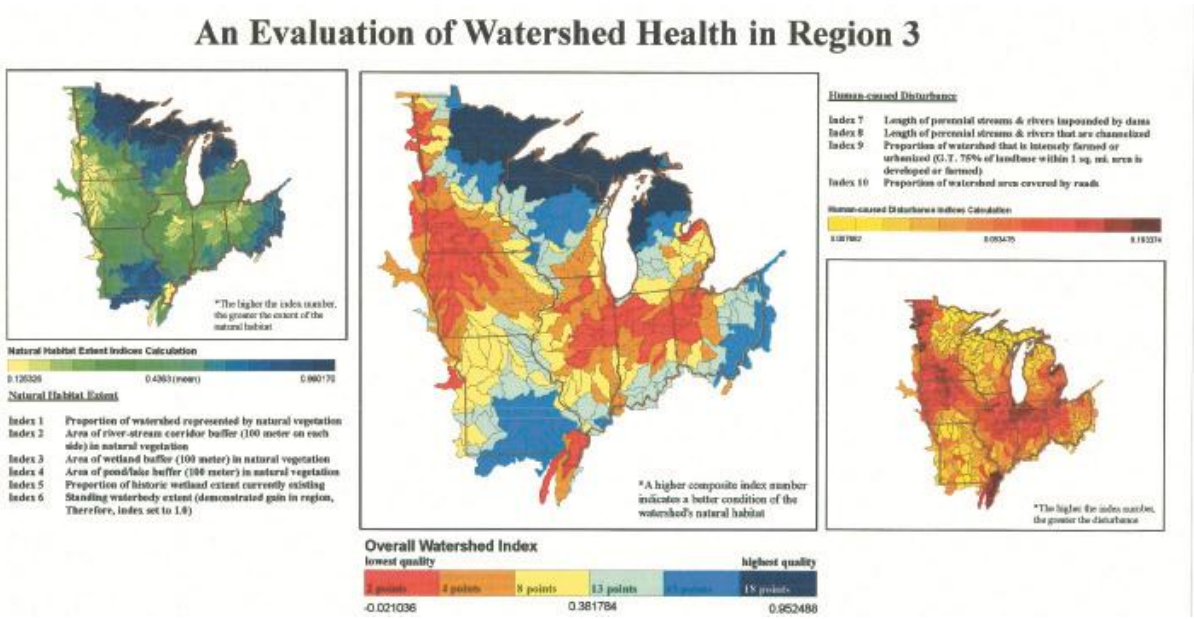
Louisiana Coastal Restoration and Protection Master Plan



- Watershed-informed decision framework
- Goal to ensure a sustainable working coast, 3 major watersheds, Analytic models integrated across the coastal environment

USFWS Watershed-based Assessment of "Natural Habitat Integrity"

Existing data (NWI, land use/land cover, and aerial imagery) used to produce a relatively inexpensive overview of the condition of a watershed.



- Very cost-effective and rapid method for describing the condition of a watershed.
- The approach includes metrics for assessing
  - condition of buffers around wetlands and waterbodies
  - extent of "natural habitat" in a watershed (vs. development)
  - historic wetland area relative to current acreage.

Watershed Analysis: Non-Prescribed outcomes

Watershed–Level WI Study by TNC & ELI

- Water quality objectives to be met via wetland restoration
- Map current functioning wetlands
- **Use GIS to assess low functioning or non-functioning (former) wetlands**

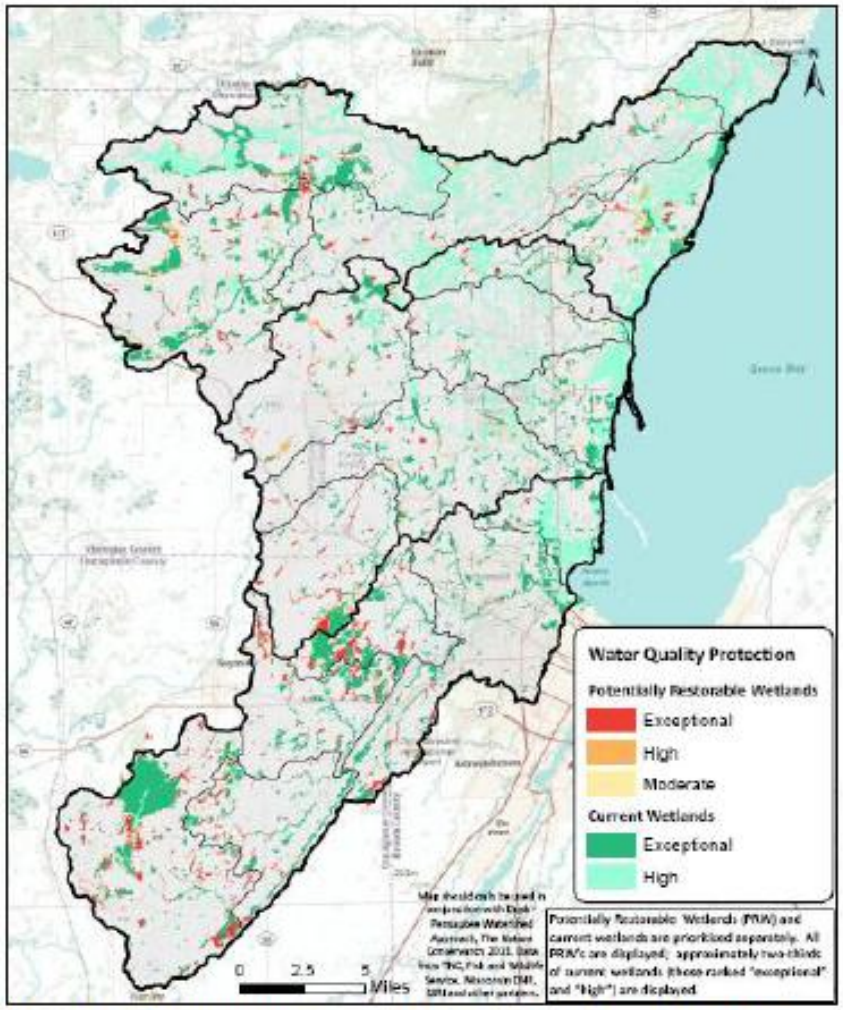


Figure 3: Water quality suitability analysis based on WET, TNC-ELI Duck-Pensaukee, WI watershed approach pilot

Watershed Analysis: Non-Prescribed outcomes

Potentially restorable wetlands - WI

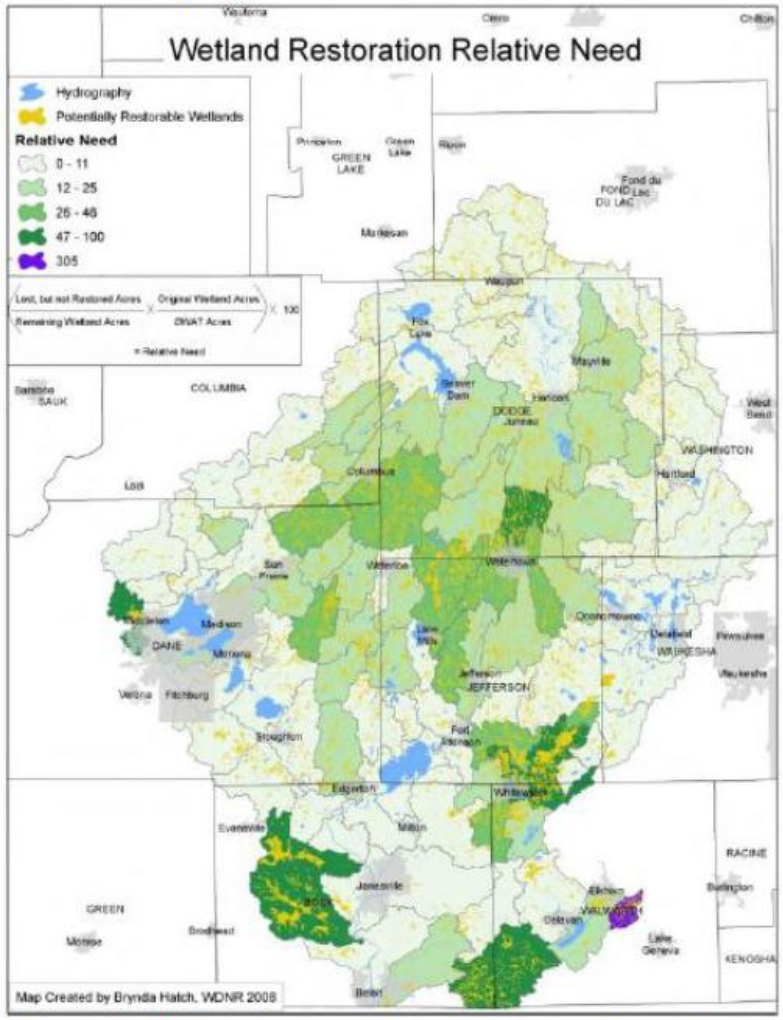


Figure 1: Wetland restoration relative need by subbasin in the Rock River watershed, WI

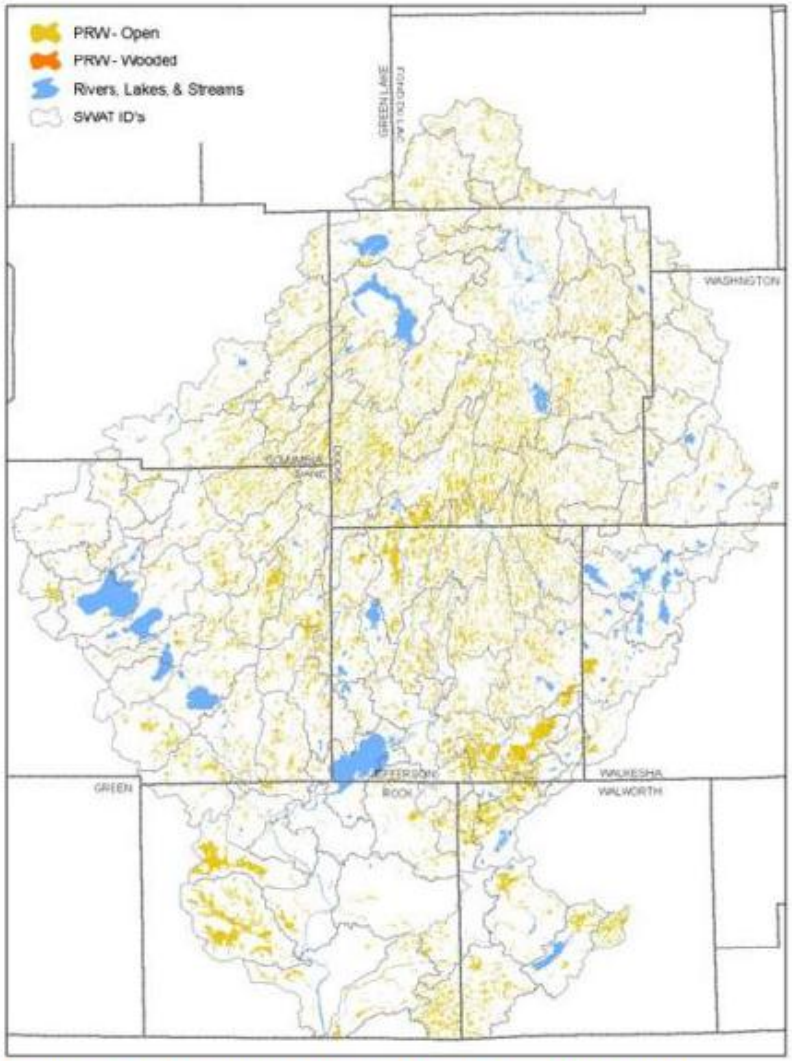


Figure 3: PRW map, Rock River Basin, Wisconsin

Watershed Analysis: Non-Prescribed outcomes

http://dnr.wi.gov/topic/Wetlands/strategy.html

Aquifer-based watershed

Can relate to recharge activities and surface restoration

Meets multiple goals

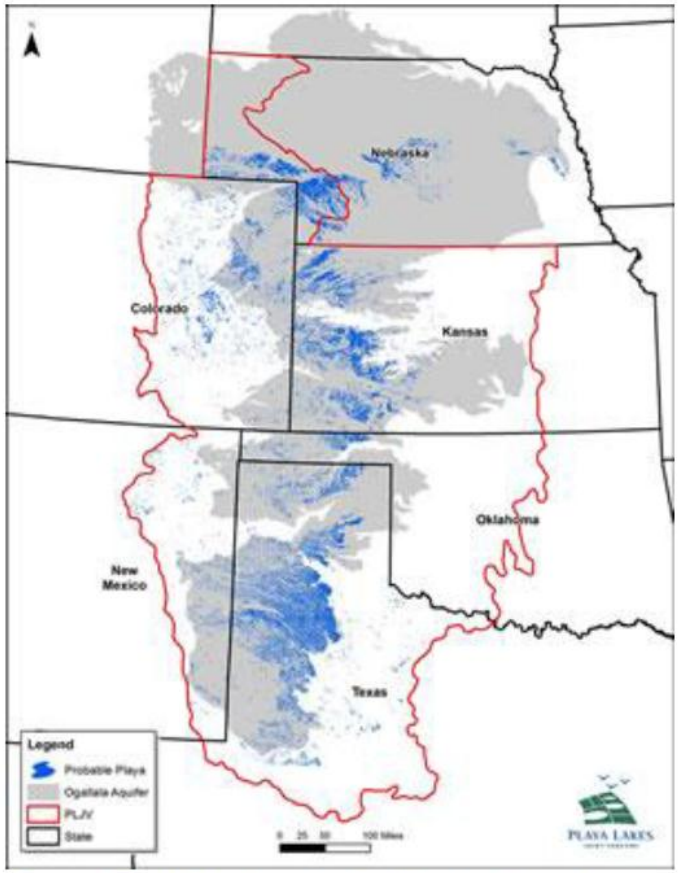
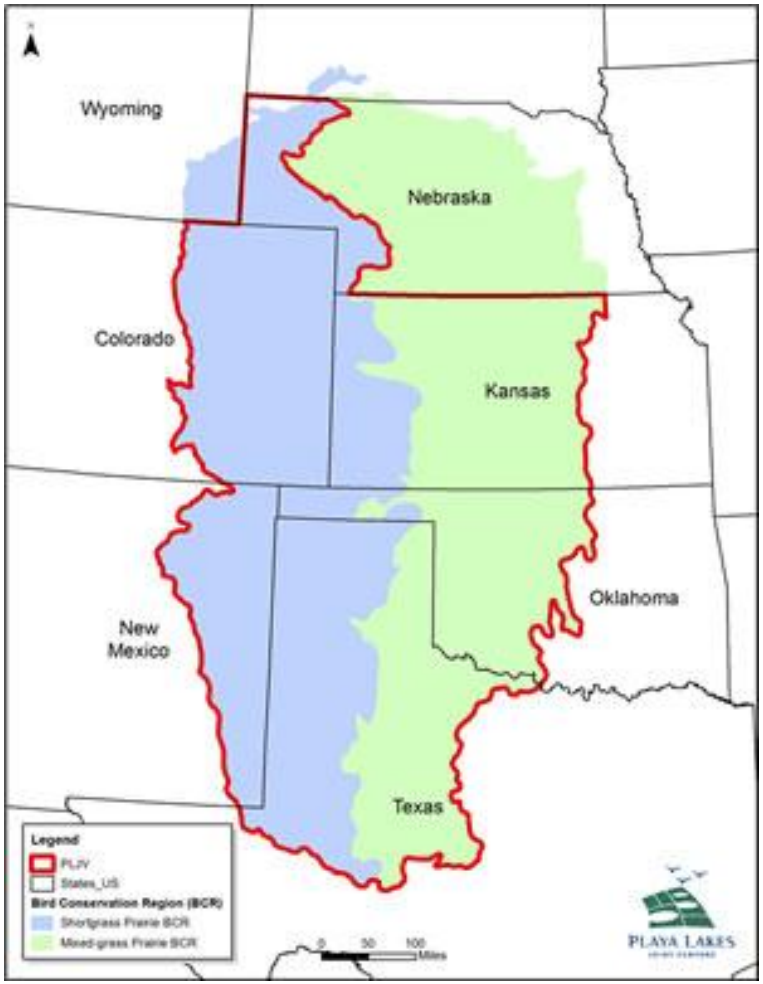


Figure 2: Probable playas in Ogallalla Aquifer region, Playa Lakes Joint Venture

General locations identified

http://www.pljv.org/



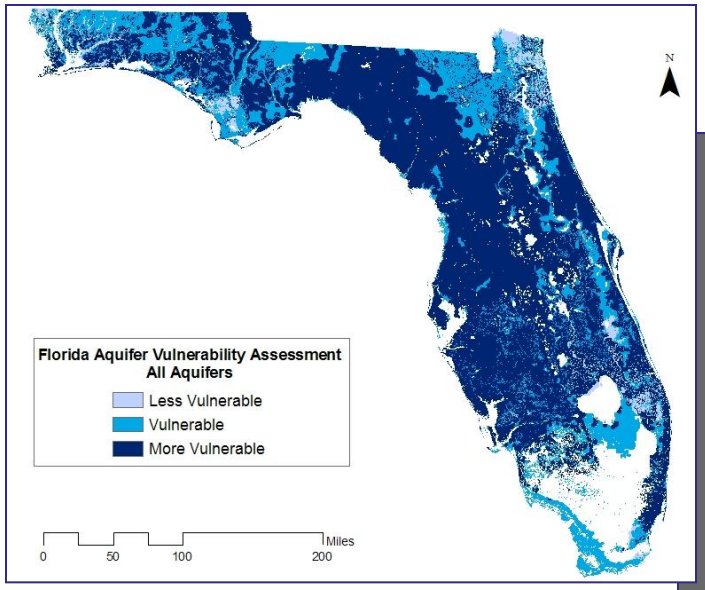
Watershed Analysis: Non-Prescribed outcomes

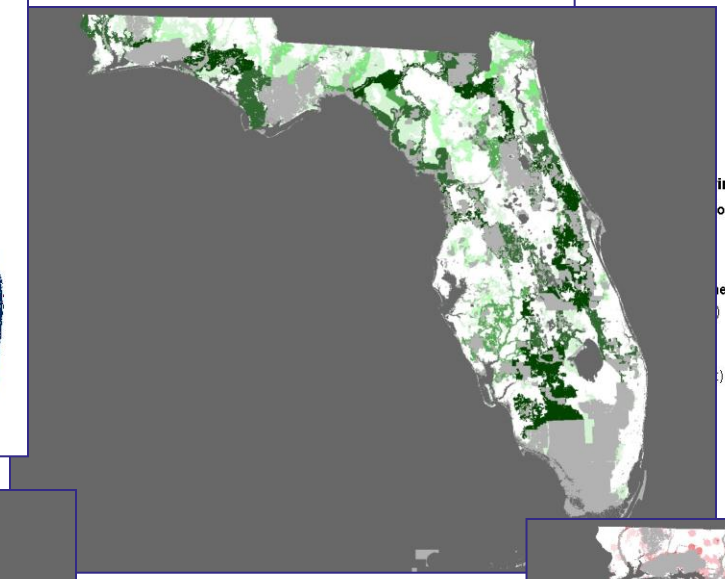
Maryland Water Resources Registry

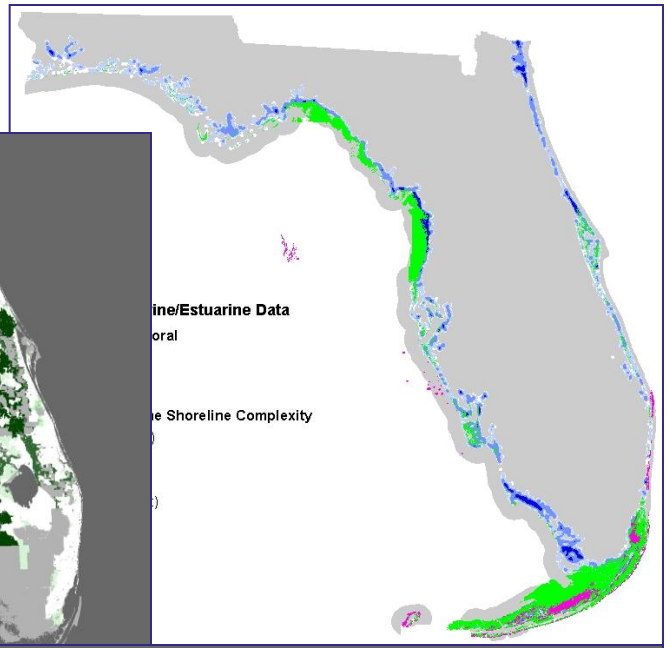
Sites identified w/in watersheds

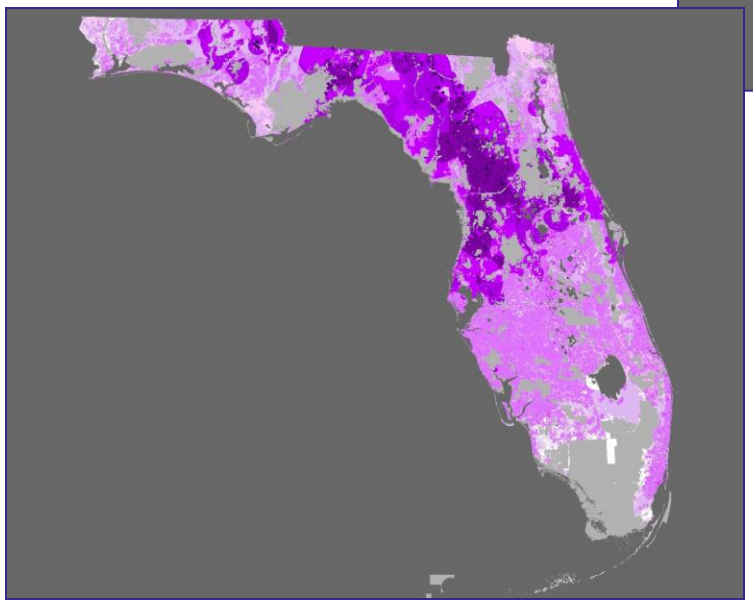
Watershed Analysis: Non-Prescribed outcomes

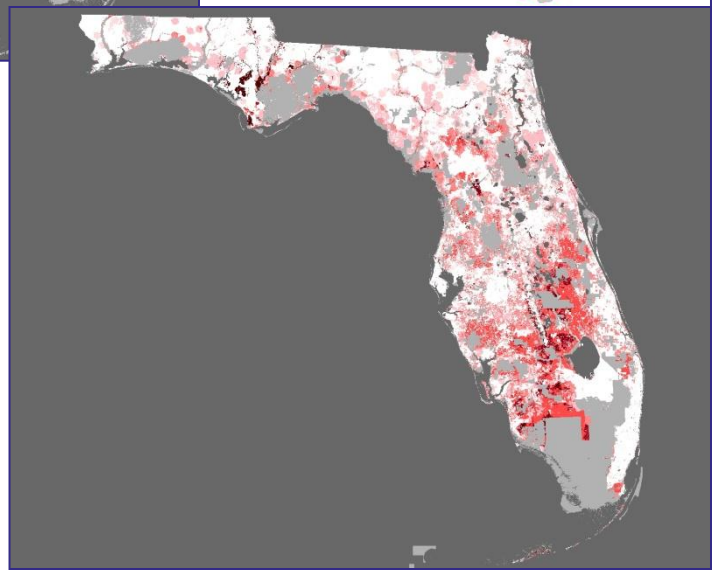
Florida's Critical Lands and Waters Identification Project (CLIP)





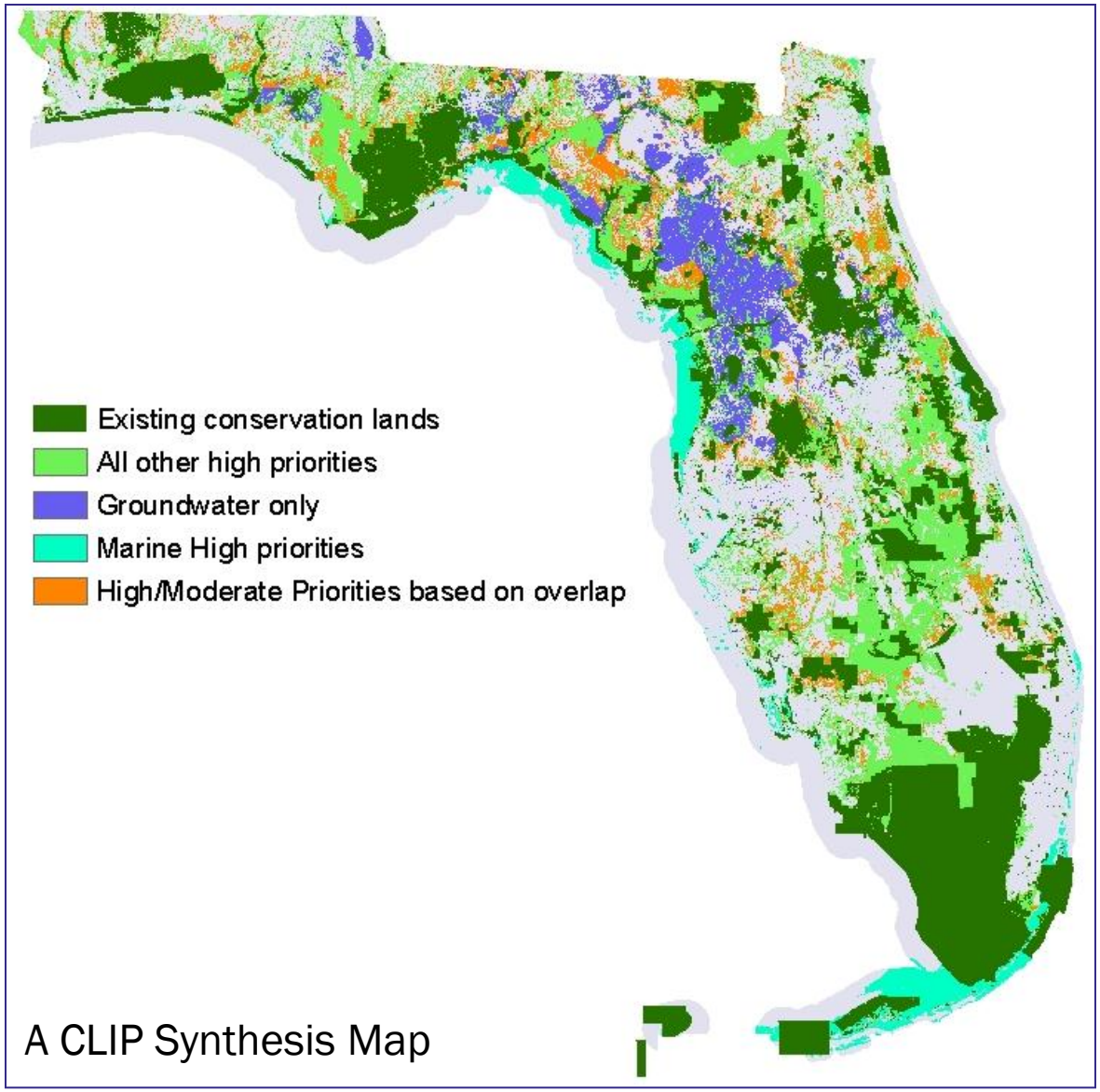






Watershed Approach

- Each area has its own priorities
- Federal and State both focus on watershed as the unit of interest
- Need collaborative watershed plan development
- Use the IRT (Interagency Review Team) model?
- Use techniques relevant to your situation
- <u>Work Together</u>



A CLIP Synthesis Map

Questions?

Graphics provided by:

- ✓ *The CLIP Project*
- ✓ *FRESP*
- ✓ *The St. Joe Company*
- ✓ *TNC*
- ✓ *WilsonMiller*
- ✓ *Family Lands Remembered*
- ✓ *The CLIP project*
- ✓ *Photos by Ann Redmond*

Wiregrass in bloom, Apalachicola National Forest – a sustainably managed forest, formerly bedded pine plantation