

Restoration

Science and Project Priorities

for Southwest Florida

By

Southwest FL Regional Restoration Coordination Team

Today's Speakers:

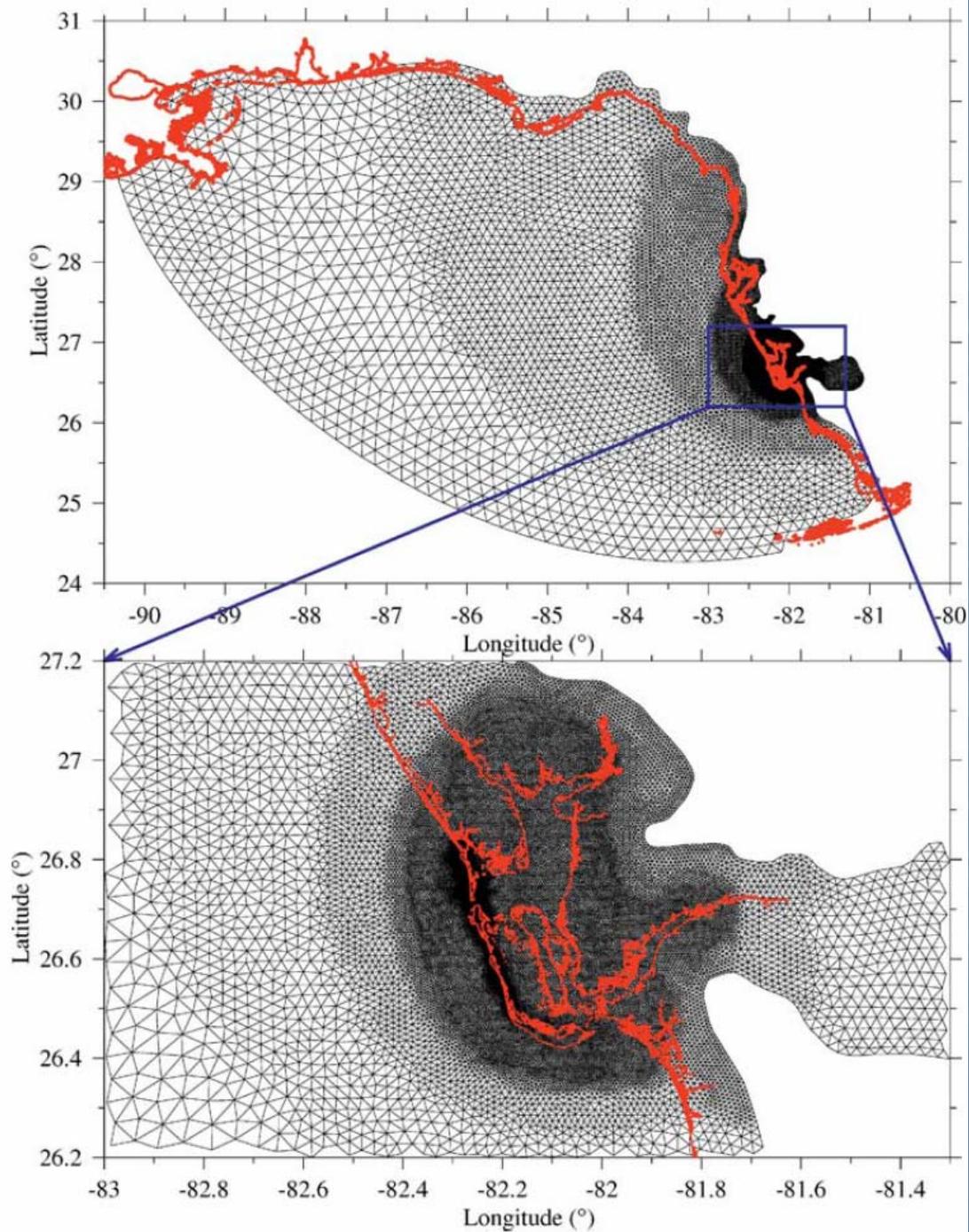
Lisa B. Beever, Charlotte Harbor National Estuary Program

Bob Sobczak, Big Cypress National Preserve

Daryl Thomas, US Fish and Wildlife Service

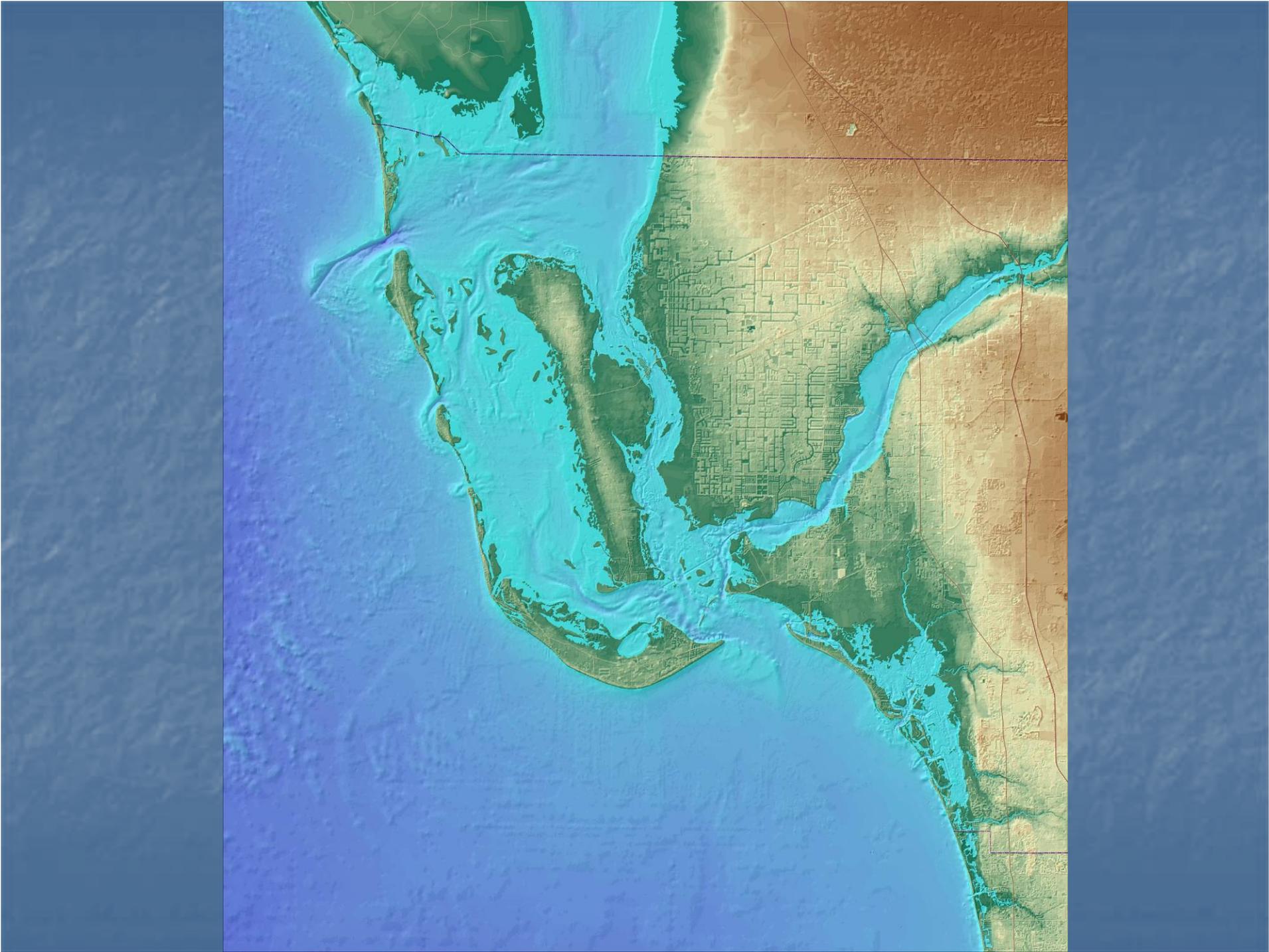
Restoration Science Priorities

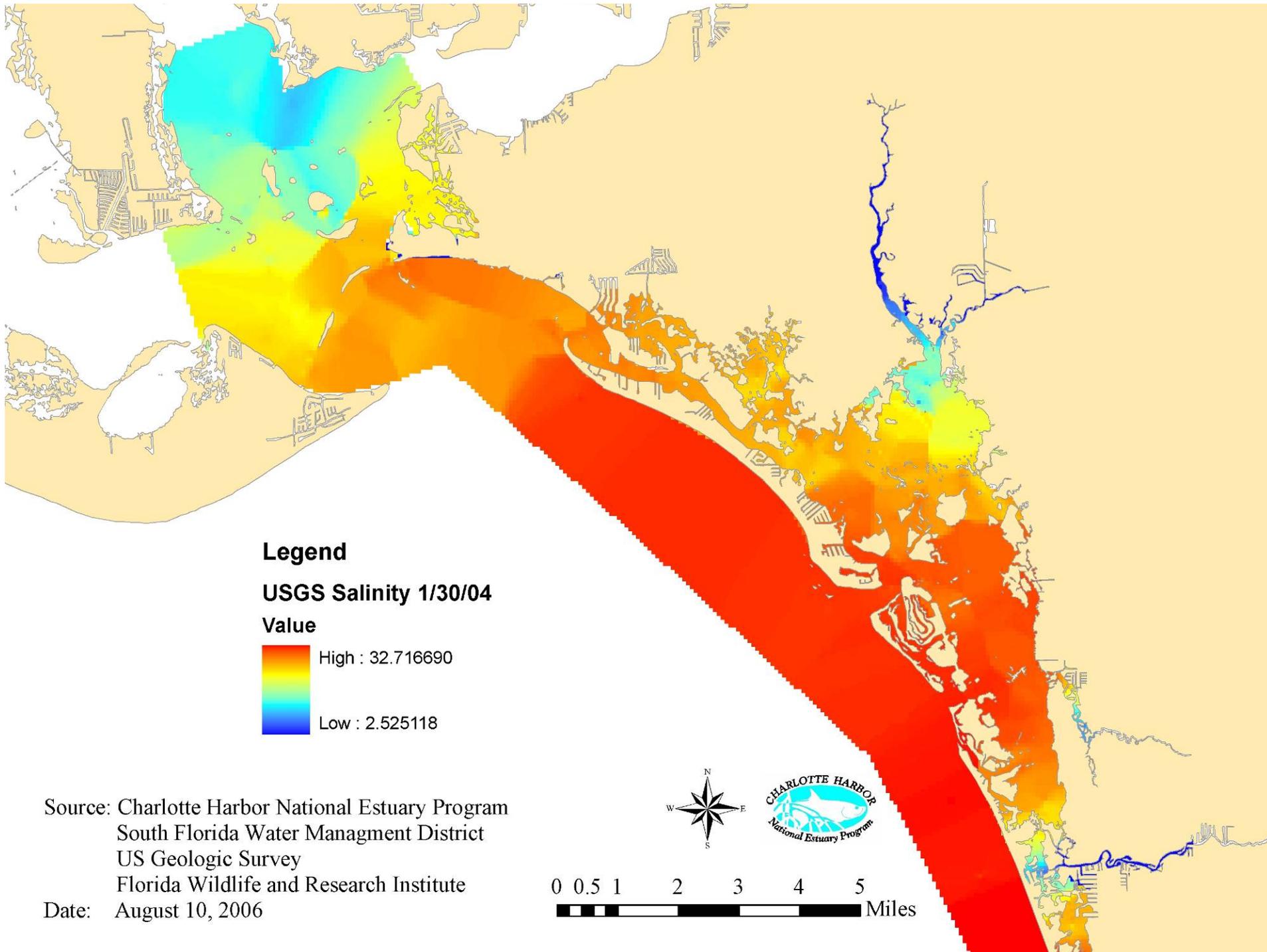
- Estuarine flow and mixing models
- (Sub-) regional water & nutrient budgets
- Algal Blooms
- Functional ecology of ephemeral wetlands
- Hydrologic monitoring feedback

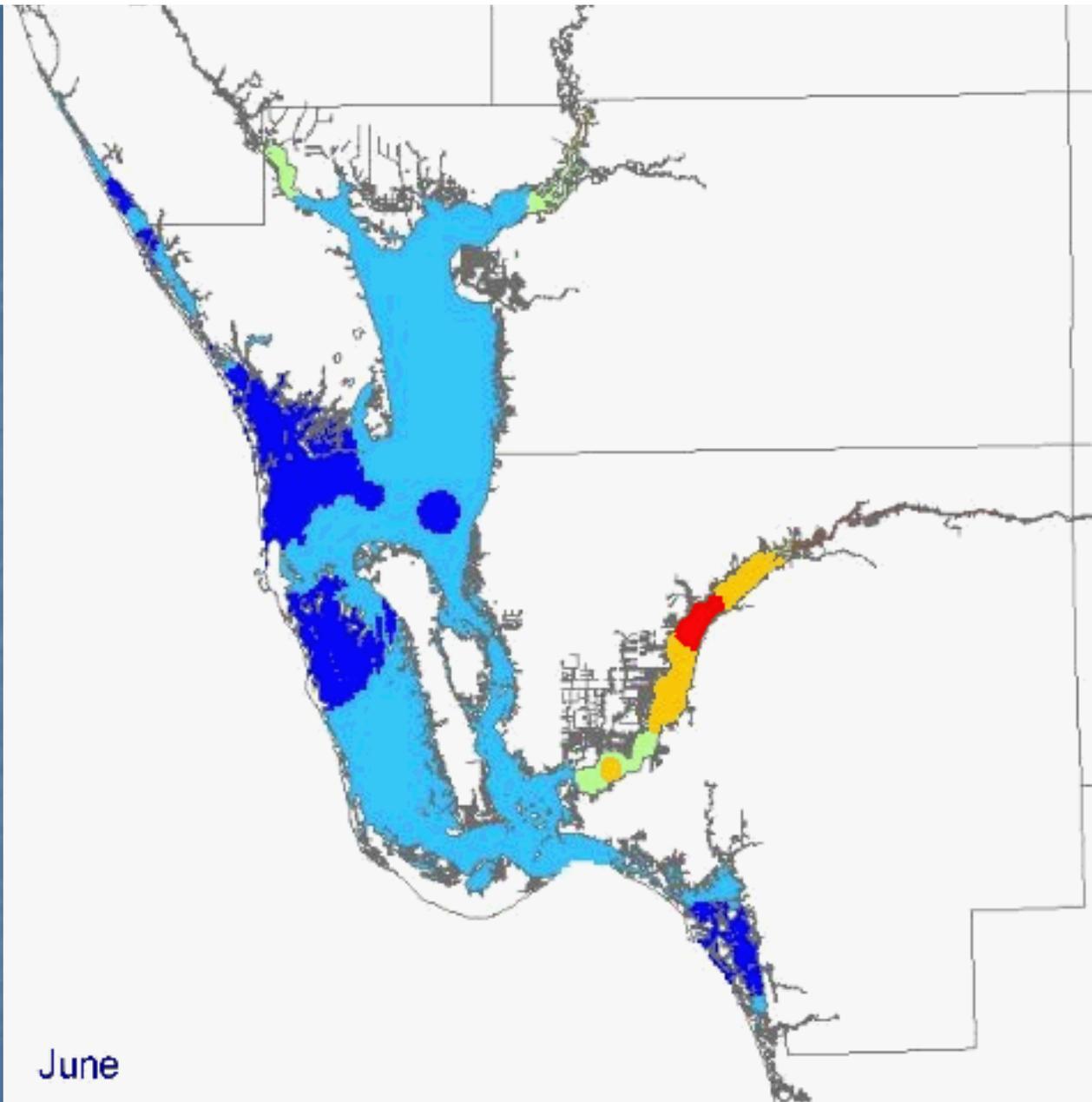


Estuarine Flows and Mixing Model

ROBERT H. WEISBERG
AND LIANYUAN ZHENG
College of Marine Science,
University of South Florida







Fresh Oligohaline

Mesohaline

Polyhaline

Marine

< 0.5

0.5 to 5

5 to 18

18 to 32

> 32

Salt
Parts Per Thousand

Source: Charlotte Harbor Environmental Center Watershed Resource Center



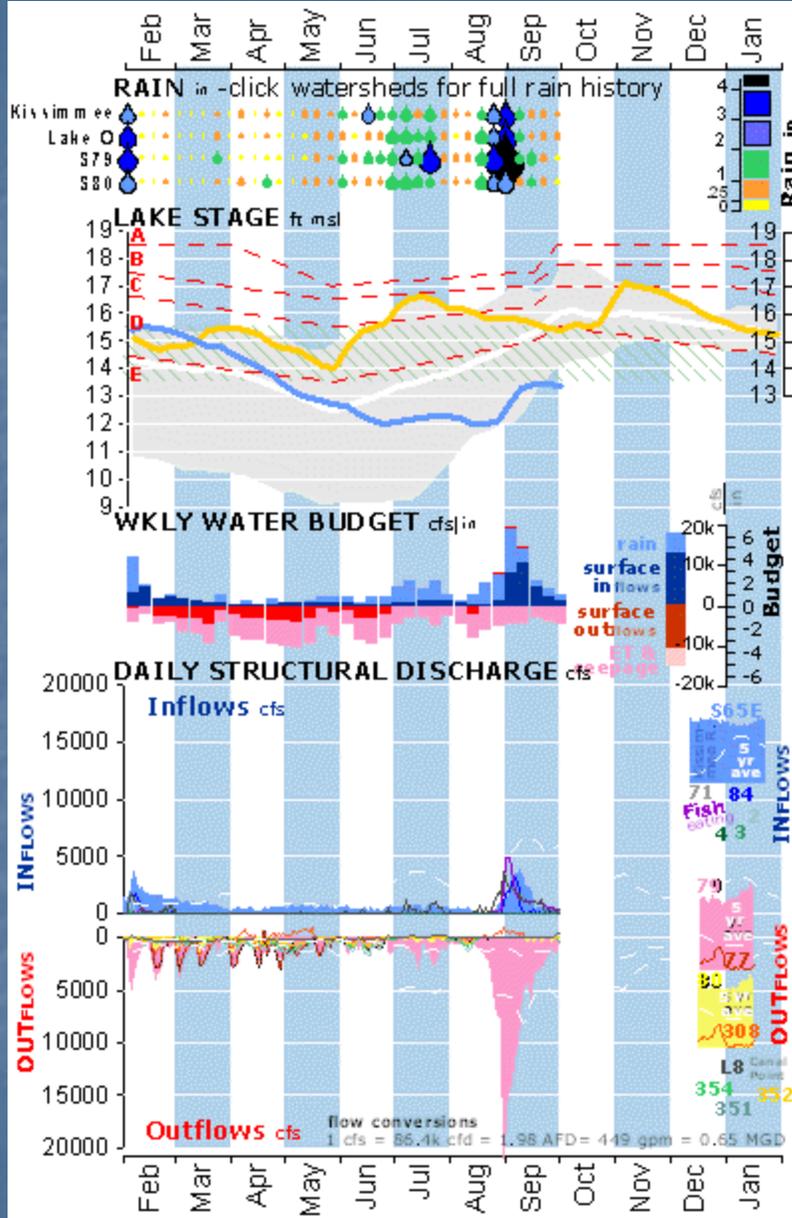
Regional/Subregional Water & Nutrient Budgets



Functional Ecology of Ephemeral Wetlands

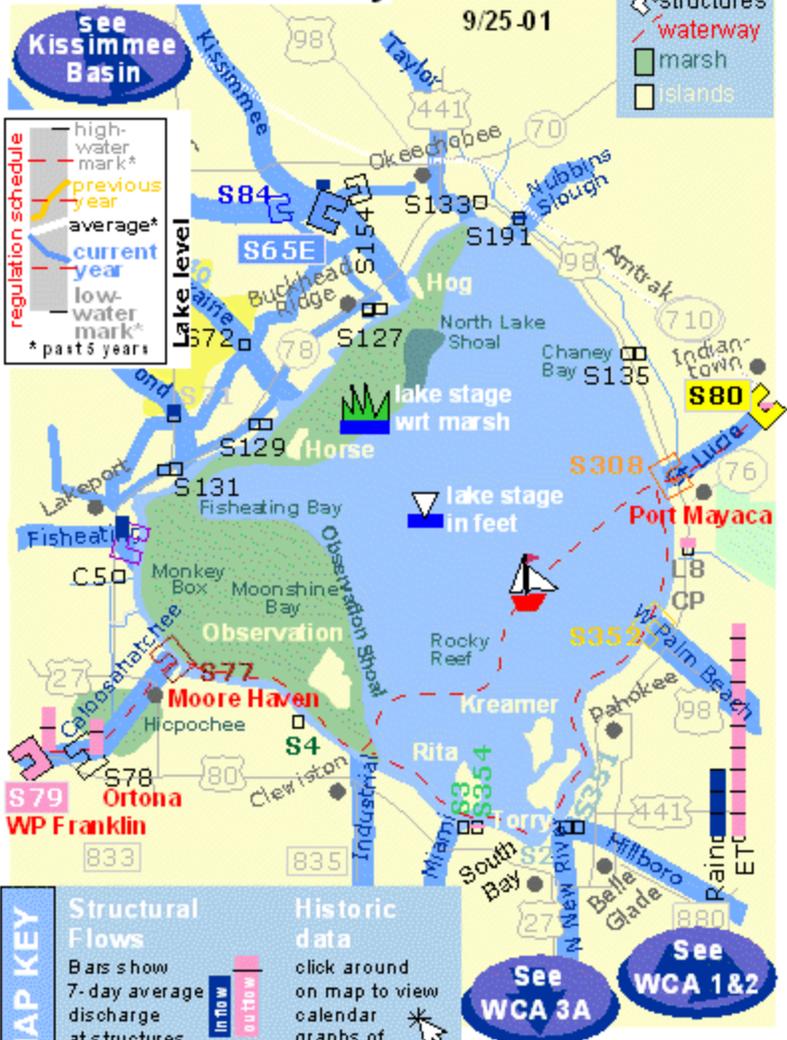
Hydrological flow models

The emphasis of this need is to make sure that data is being collected in the right places, that telemetry is being used wherever possible, and that data is being routinely tracked and analyzed to foster good decision-making with respect to management of our watersheds and downstream estuaries.



Lake Okeechobee watershed summary

Interactive Map for the week of 9/25-01



data provided by USACE
 graph provided by Big Cypress NP

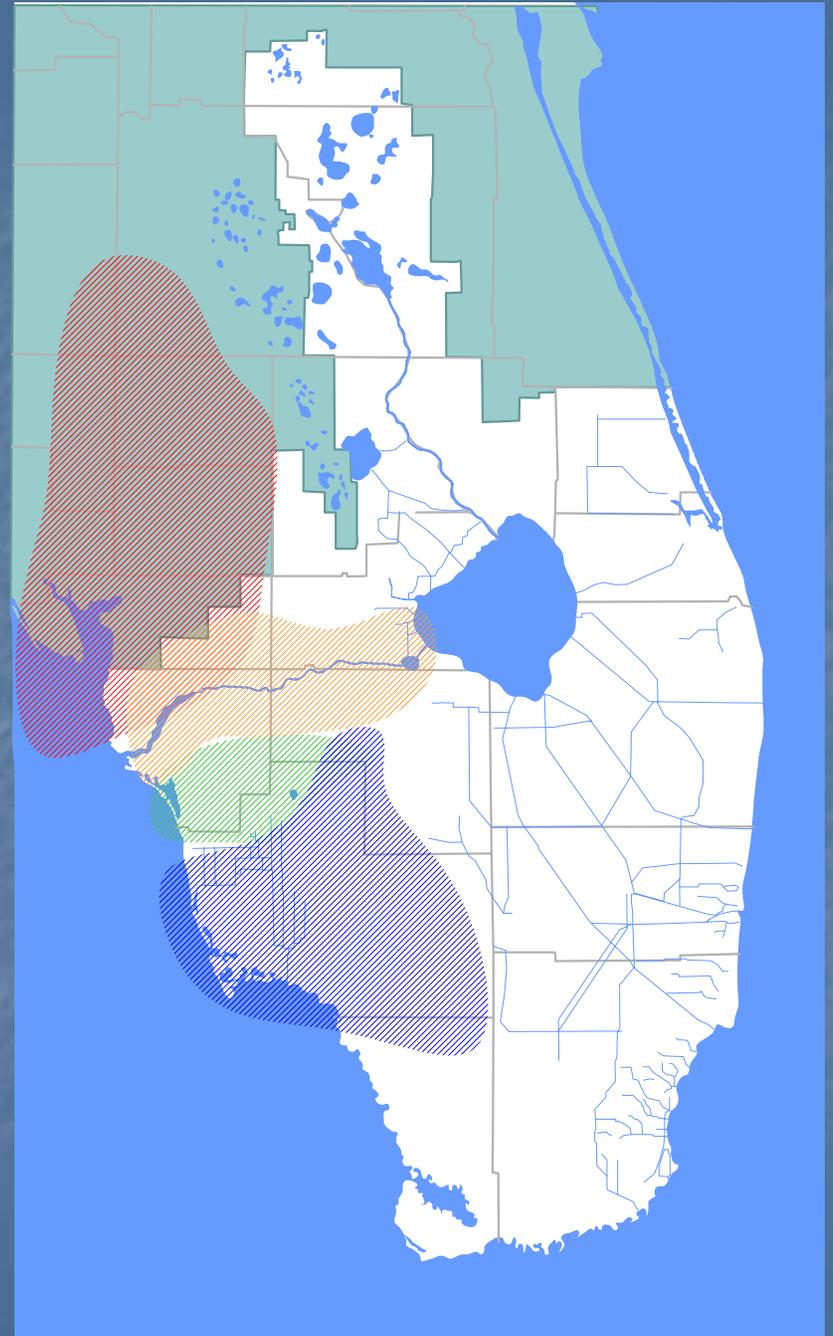
Restoration Project Priorities

• **Charlotte Harbor Basin**

Caloosahatchee Basin

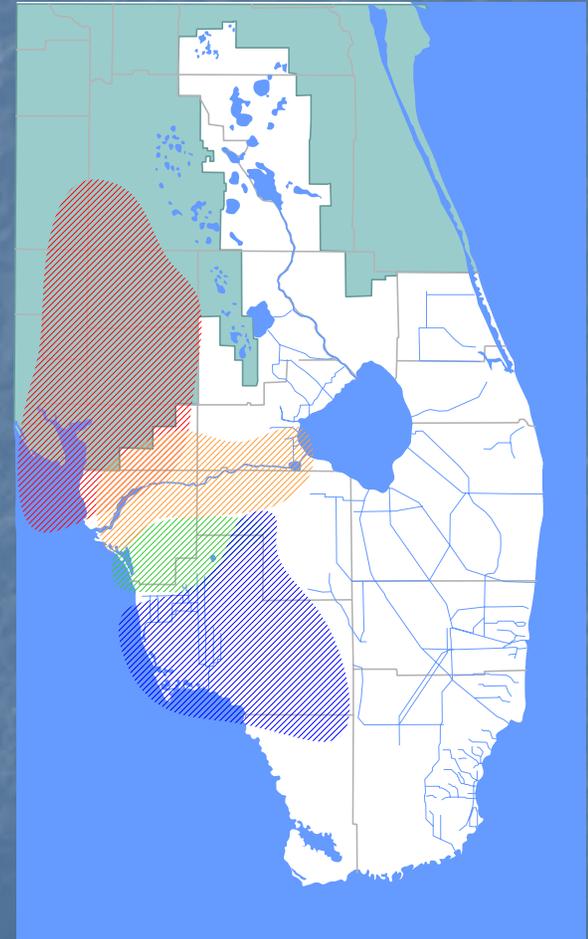
Estero Bay Basin

Big Cypress Basin

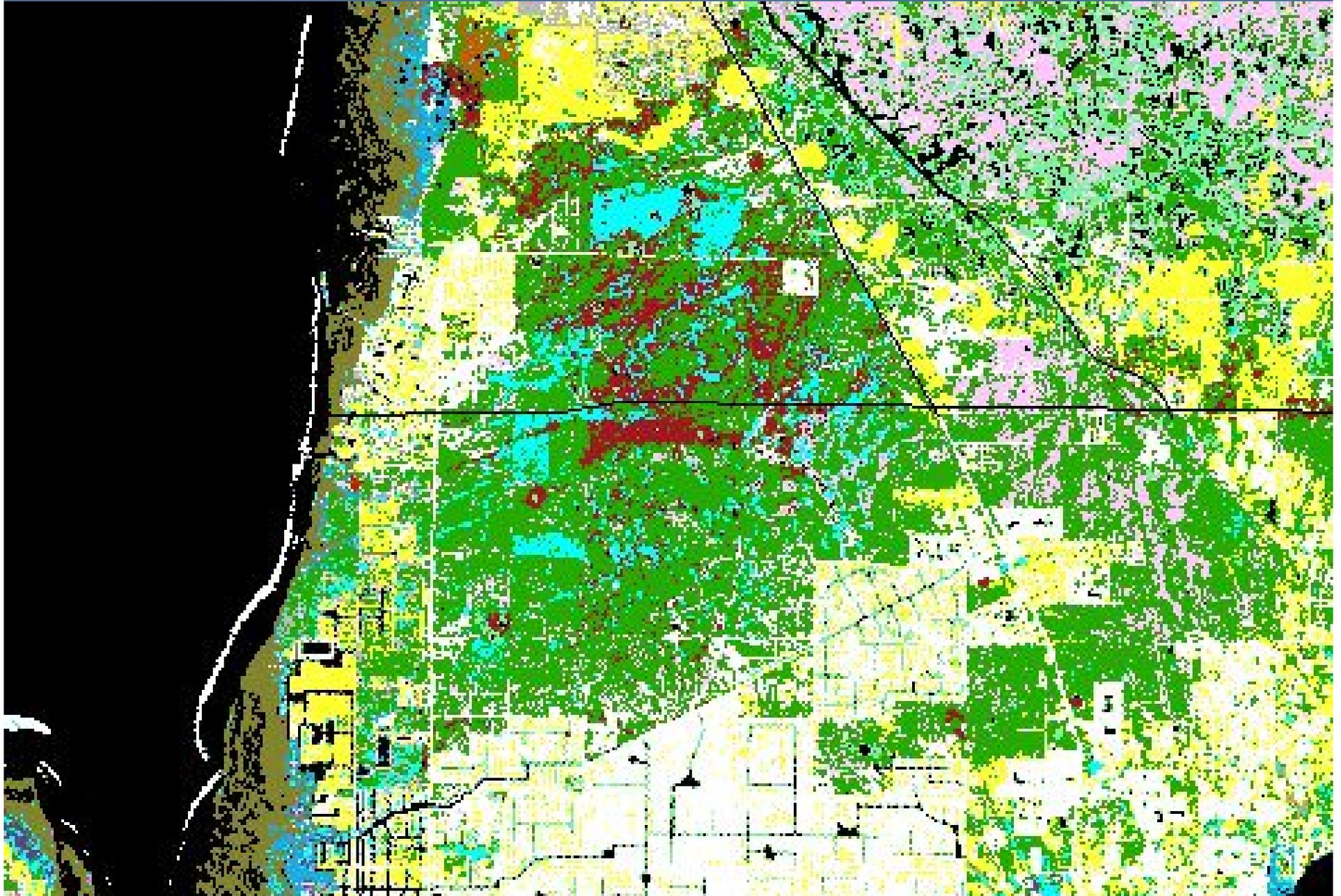


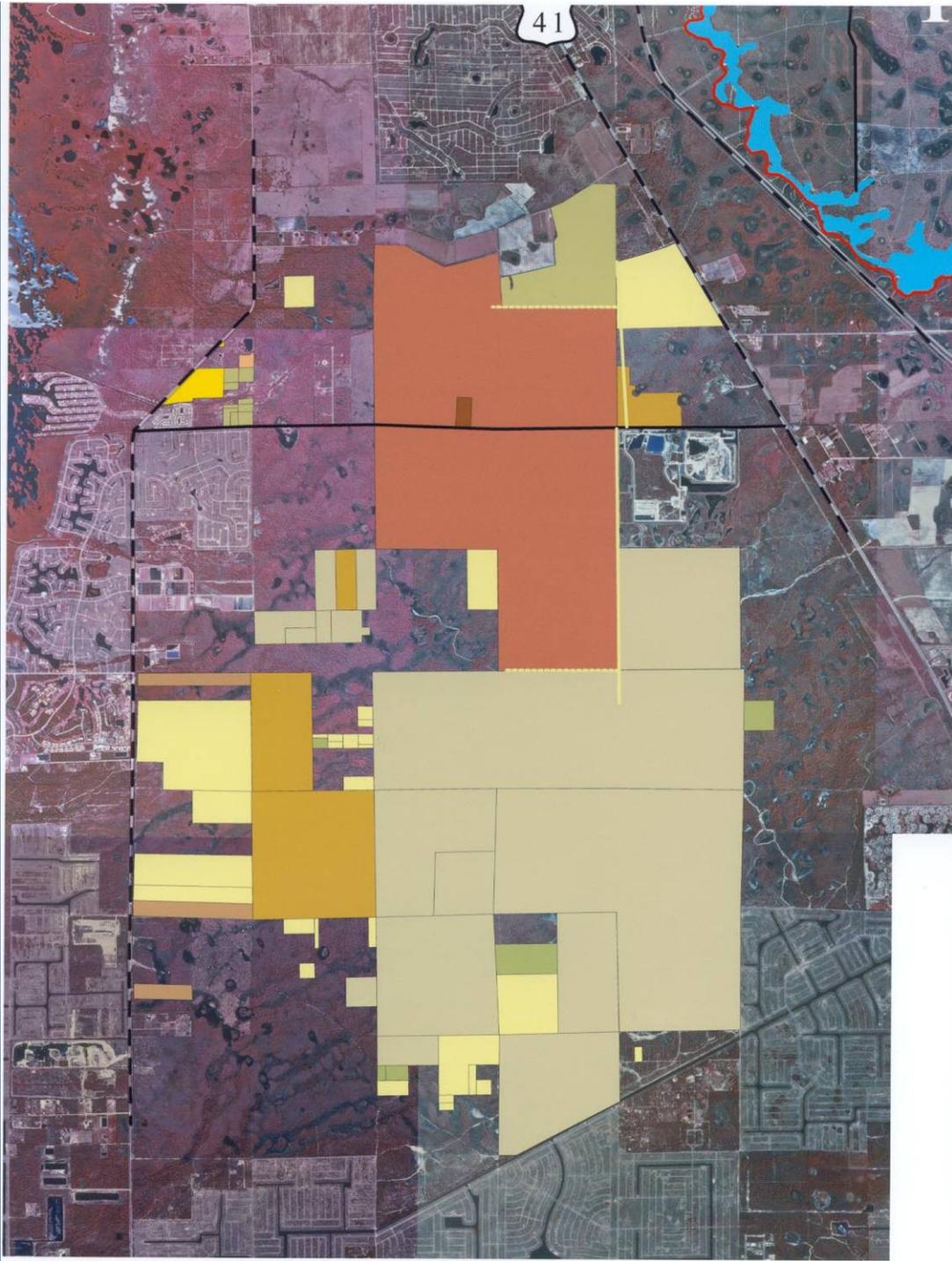
Charlotte Harbor Basin

- Yucca Pens/Charlotte Harbor Flatwoods
- Charlotte Harbor State Buffer Preserve
- Hydrological Restoration of Sanibel Causeway Effects
- Restoration of Historic Oyster Bars
- Nile Monitor Lizards

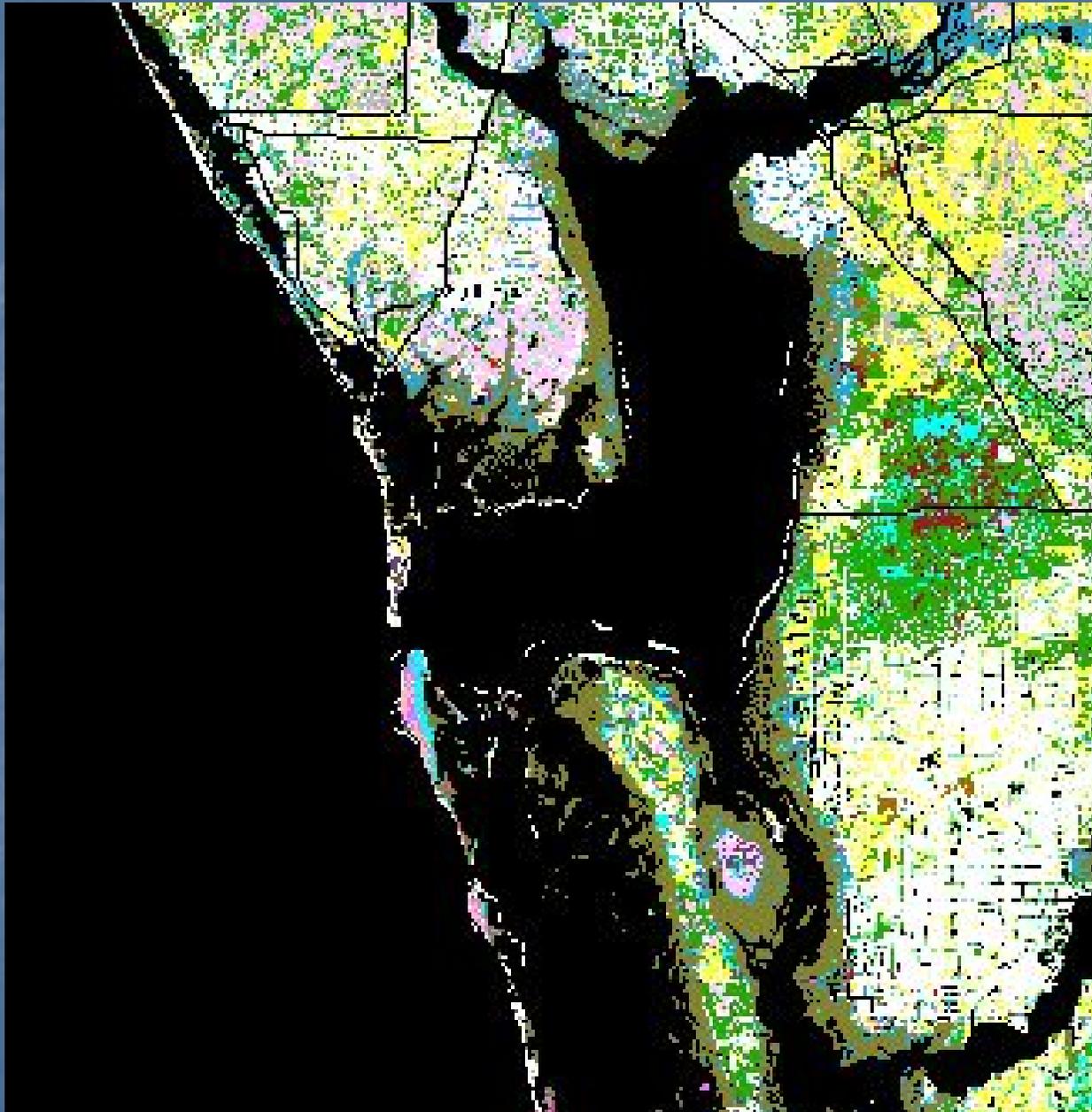


Yucca Pens/CH Flatwoods





Charlotte Harbor State Buffer Preserve

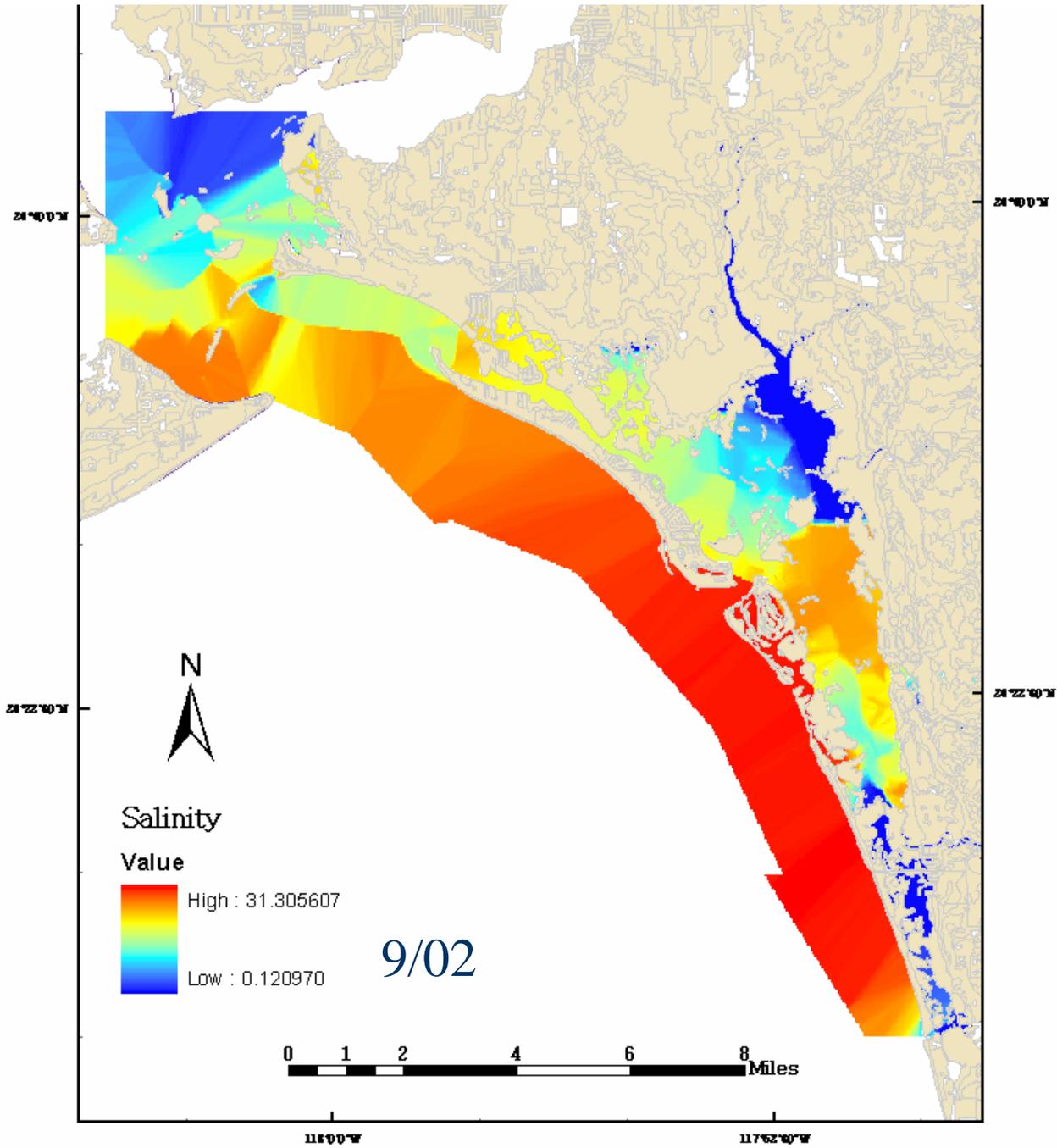




Duplicate image

Hydrological Restoration of Sanibel Causeway Effects

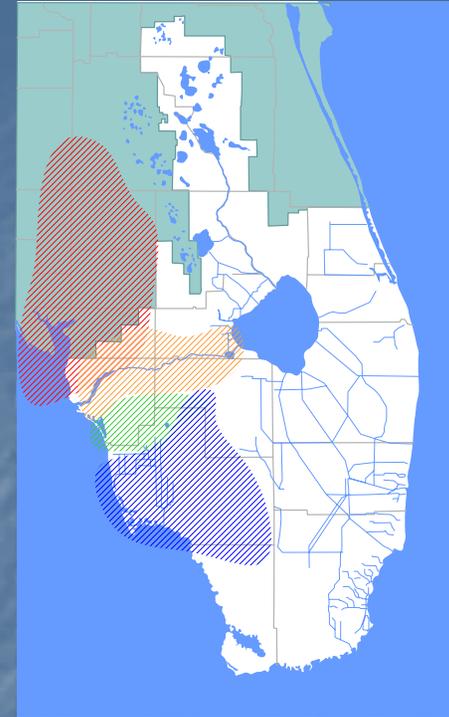
Photo Courtesy of Johnson Engineering, Inc.



Restoration of Historic Oyster Bars

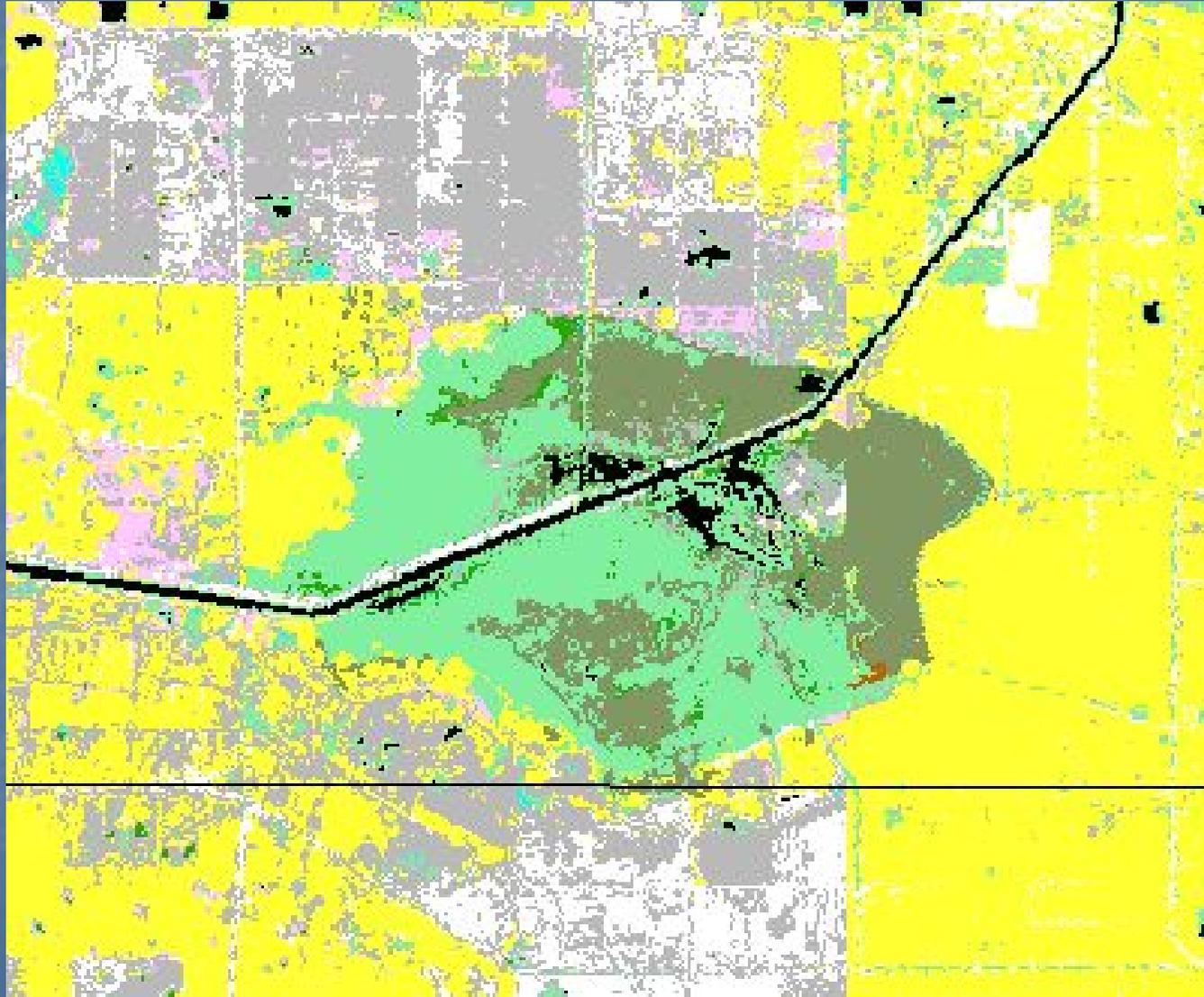


Caloosahatchee River Basin

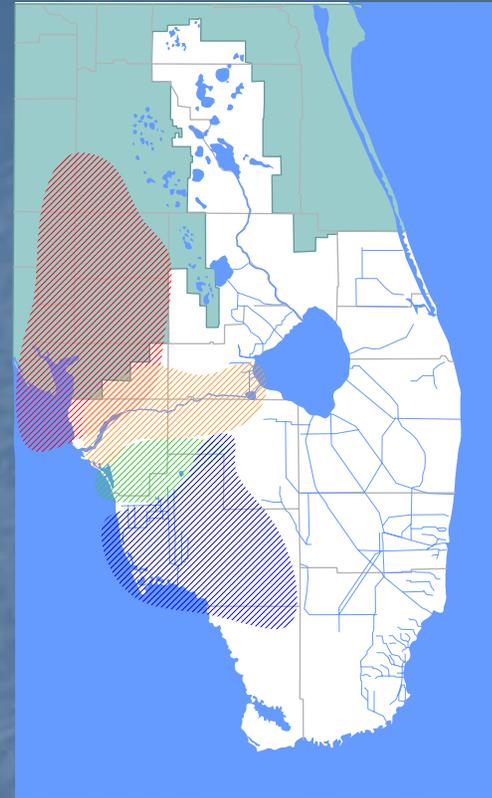


- Water Quality Treatment Areas (eg C43)
- Linden Pens/Caloosahatchee EcoScape
- Improve Stormwater Mgmt Systems
- Restore Lake Hicpochee

Restore Lake Hicpochee



Estero Bay Basin



- Agripartners
- Corkscrew Woodstork Flow-ways
- CREW
- Restoration of Natural Tributaries to Estero Bay

Agripartners Acquisition and Restoration

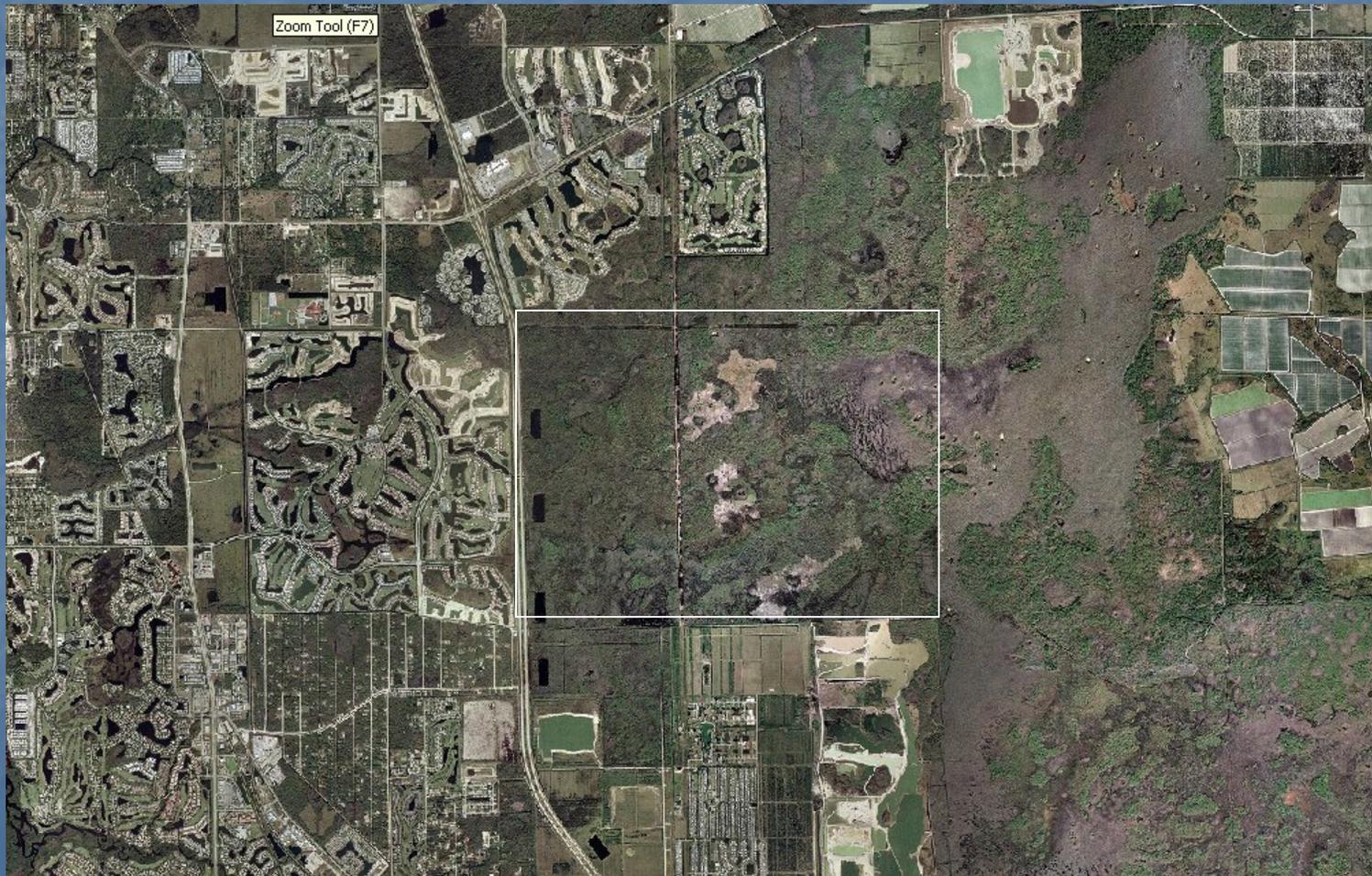
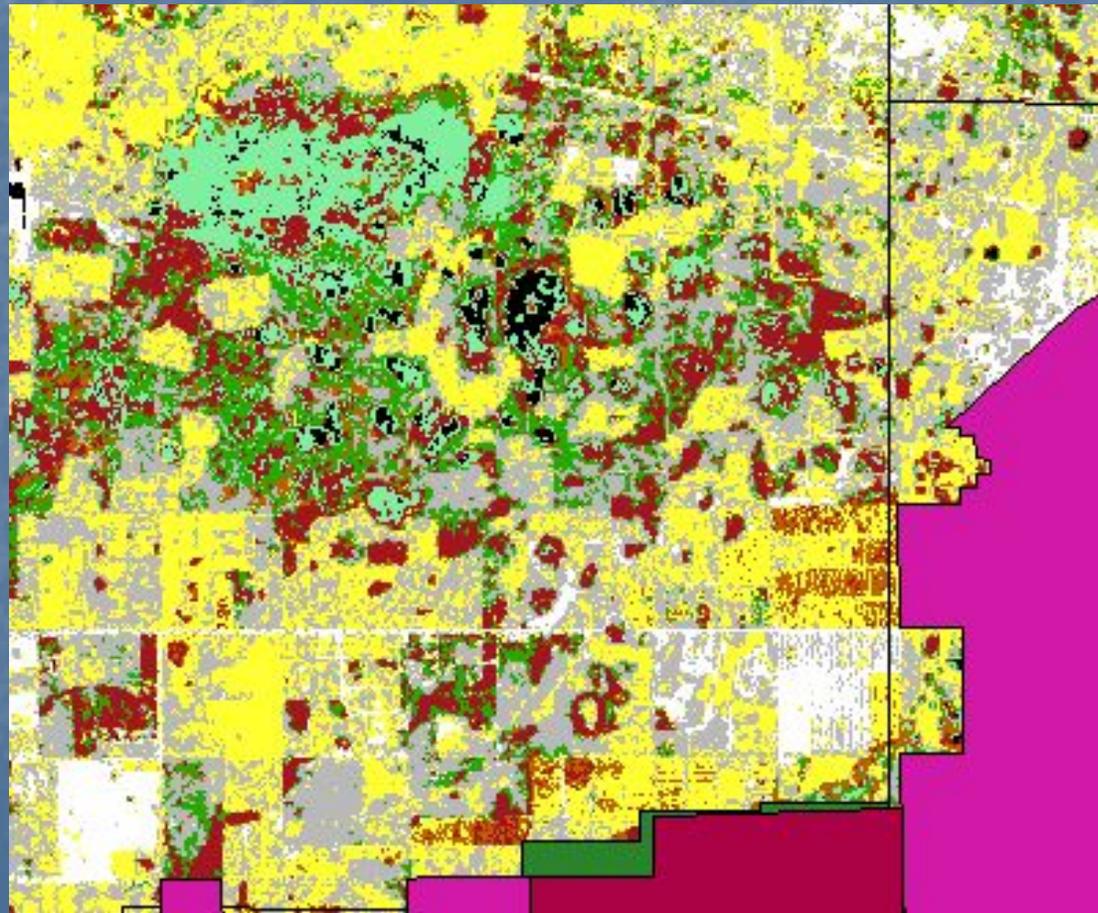


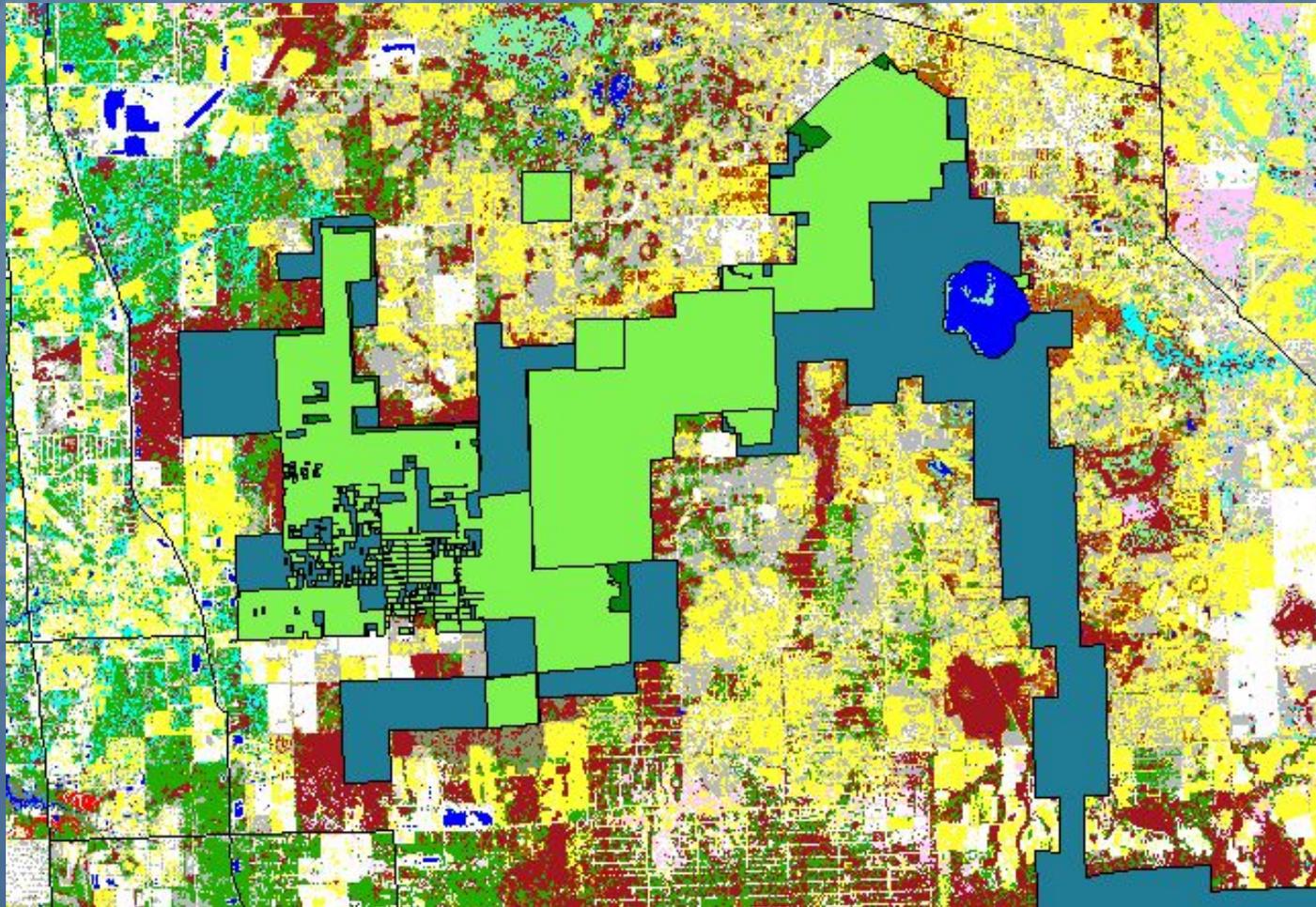
Photo Courtesy of Johnson Engineering, Inc.



Corkscrew Woodstork Flow- ways Acquisition and Restoration



Corkscrew Regional Ecosystem Watershed Acquisition and Restoration



Restoration of Natural Tributaries to Estero Bay



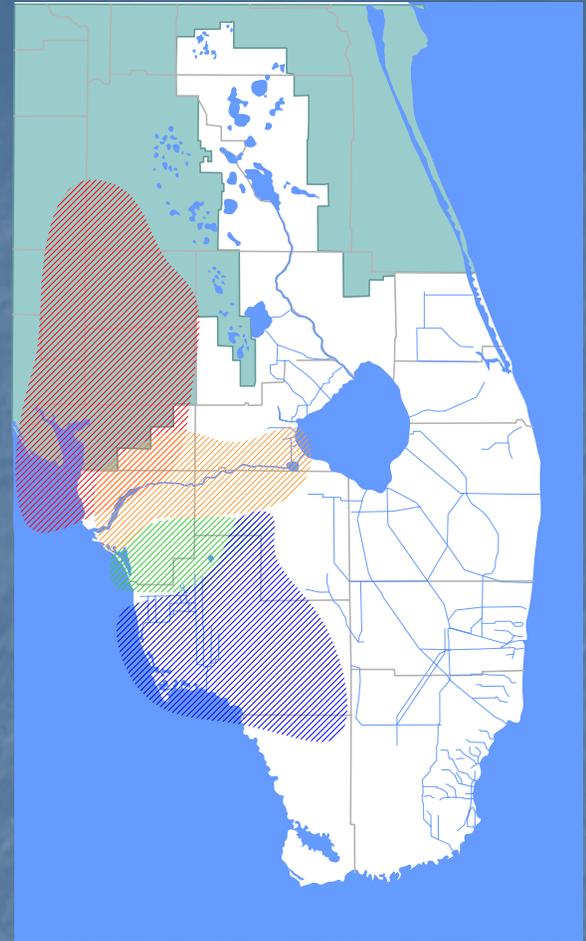
Imperial River

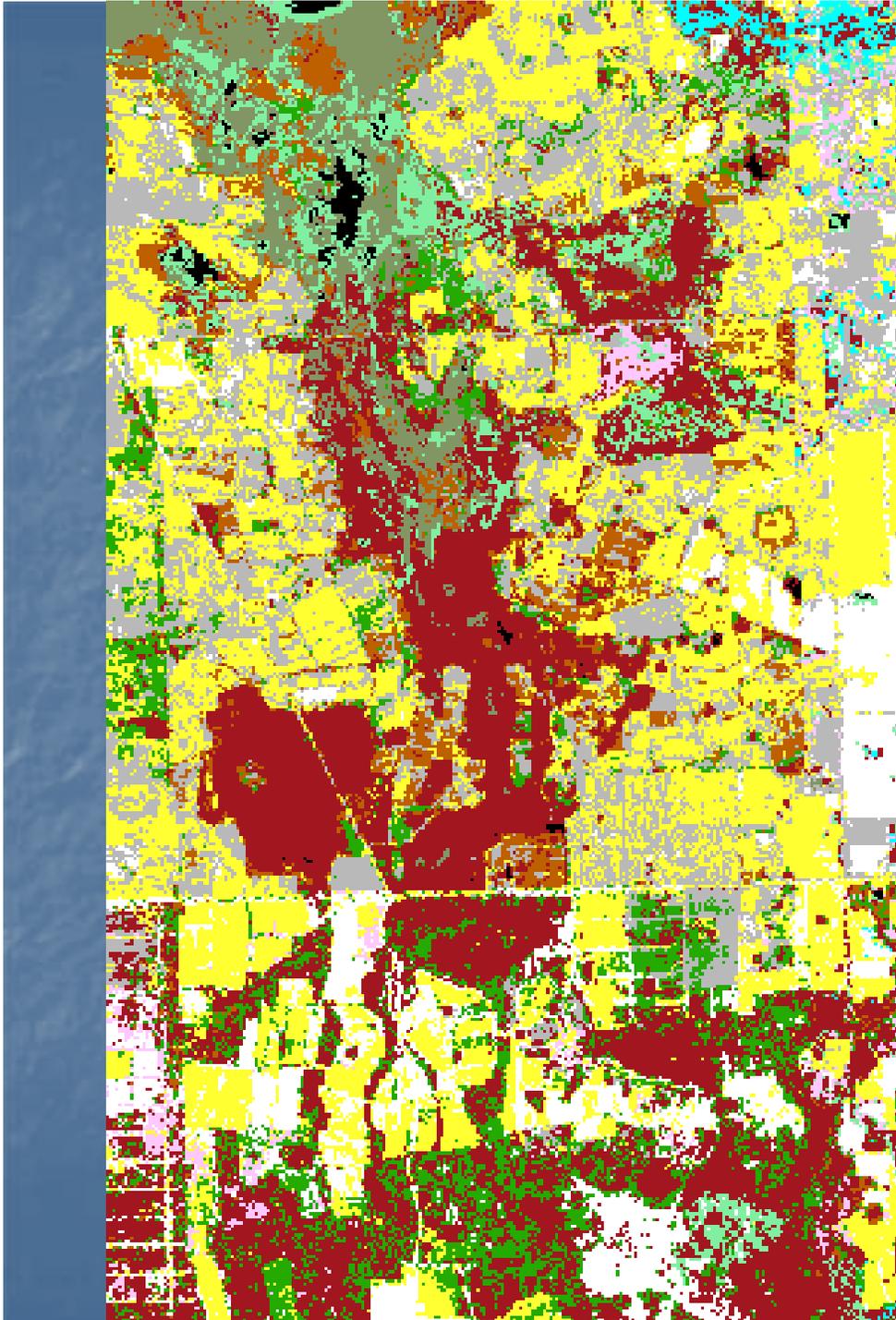


Freshwater Restoration at Winkler Point
Hendry Creek Headwaters

Big Cypress Basin

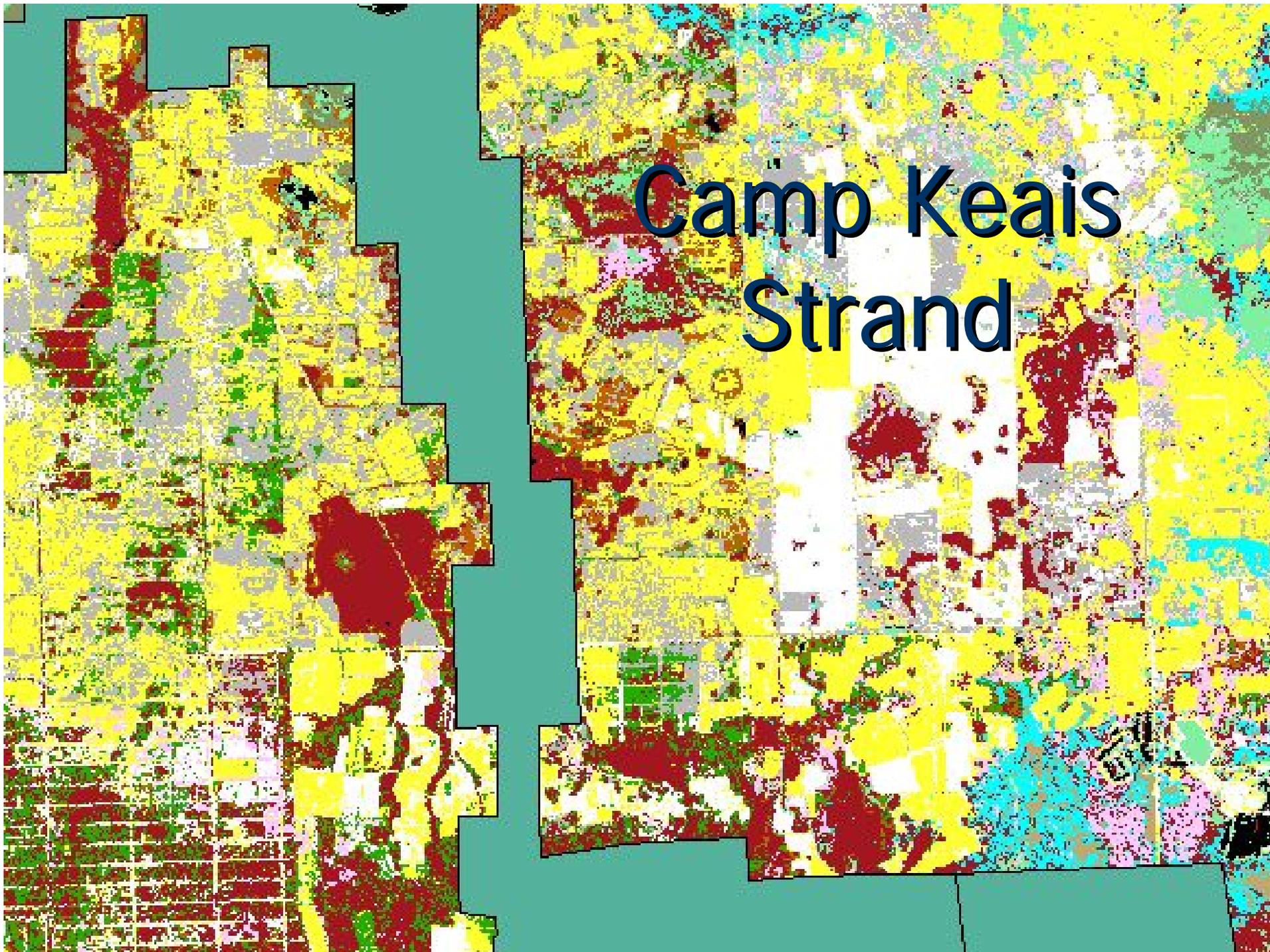
- Northern Golden Gate Estates Wetlands
- Belle Meade
- Camp Keais Strand
- Naples Bay
- Okaloacoochee Slough
- Tamiami and Loop Road Culverts





Camp Keais Strand

Camp Keais Strand



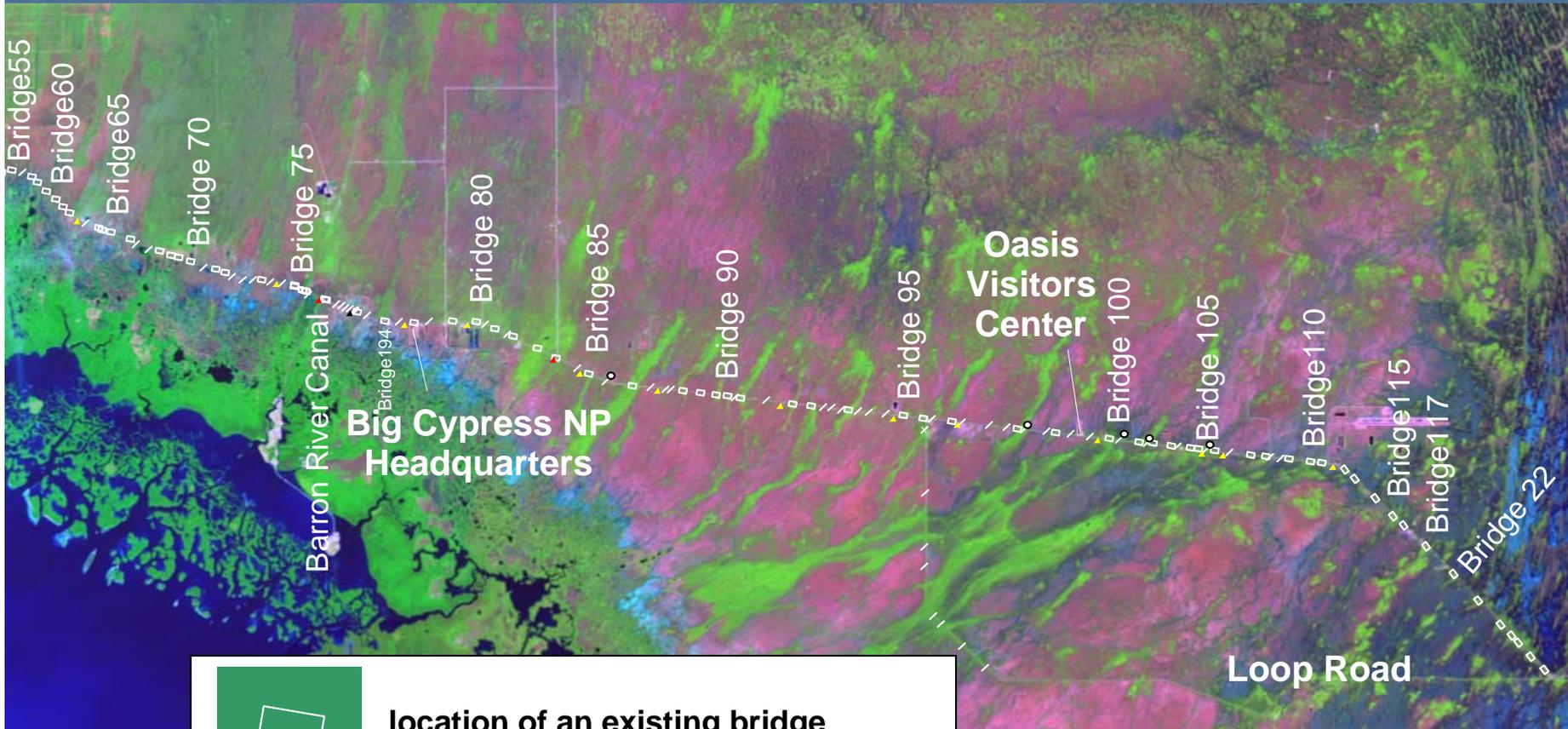
Naples Bay Restoration Initiative



Okaloacoochee Slough

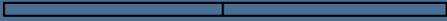


Tamiami Trail Culverts Project



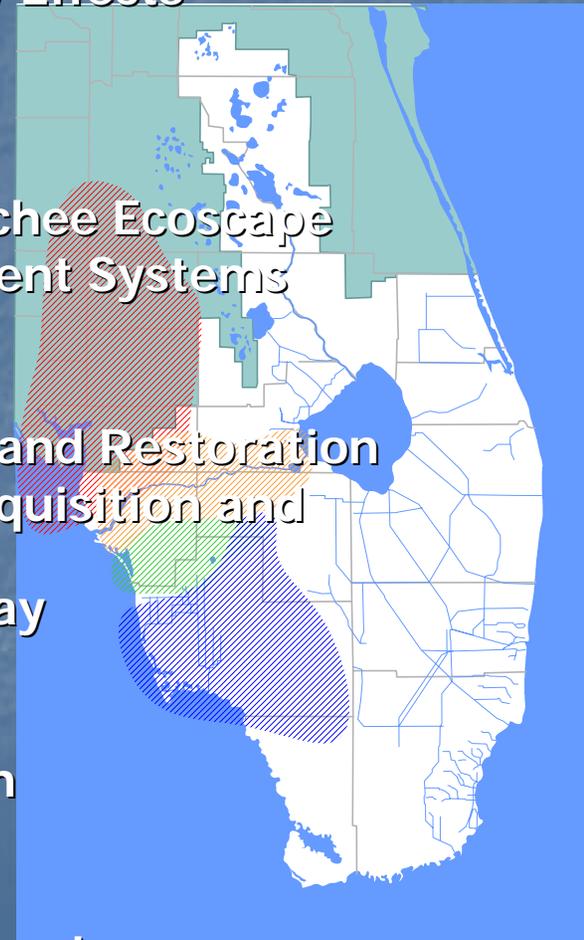
| | |
|---|--|
|  | location of an existing bridge |
|  | future location of a culvert, to be installed in 2002-04. (Box culverts indicated by circles) |
|  | location of an earthen canal plug: red=existing, yellow=future (2002-04), black=site was withdrawn |

10 miles total, 5 mile increments



Summary of the 19 RRCT Priority Restoration Projects

- Acquire and Restore Yucca Pens/Charlotte Harbor Flatwoods
- Complete Acquisition and Restoration of Charlotte Harbor State Buffer Preserve
- Hydrological Restoration of Sanibel Causeway Effects
- Restoration of Historic Oyster Bars
- Eradicate Nile Monitor Lizards
- Construct Water Quality Treatment Areas
- Acquire and Restore Linden Pens/Caloosahatchee Ecoscape
- Improve Urban and Ag Stormwater Management Systems
- Restore Lake Hicpochee
- Agripartners Acquisition and Restoration
- Corkscrew Woodstork Flow-ways Acquisition and Restoration
- Corkscrew Regional Ecosystem Watershed Acquisition and Restoration
- Restoration of Natural Tributaries to Estero Bay
- Northern Golden Gate Estates Wetlands
- Belle Meade
- Camp Keais Strand Protection and Restoration
- Naples Bay Restoration Initiative
- Acquire and Restore Okaloacoochee Slough
- Install additional Tamiami and Loop Road Culverts



**Southwest Florida
Feasibility Study
&
The RRCT**

Legend

-  RRCT Acq & Restoration Projects
-  Southwest Florida Feasibility Study
-  Florida Management Lands
-  Florida Forever

Source: Charlotte Harbor National Estuary Program
Charlotte Harbor Environmental Center
Florida Natural Areas Inventory
Florida Department of Environmental Protection
Florida Fish and Wildlife Conservation Commission
Southwest Florida Water Management District
South Florida Water Management District
Polk, Sarasota, and Lee Counties
U.S. Fish and Wildlife Service

Date: May 30, 2006

0 3 6 12 18 24 30
Miles



Legend

ADG Initial Scores

0 - 39

40 - 73

74 - 94

95 - 109

110 - 130

Southwest Florida Feasibility Study

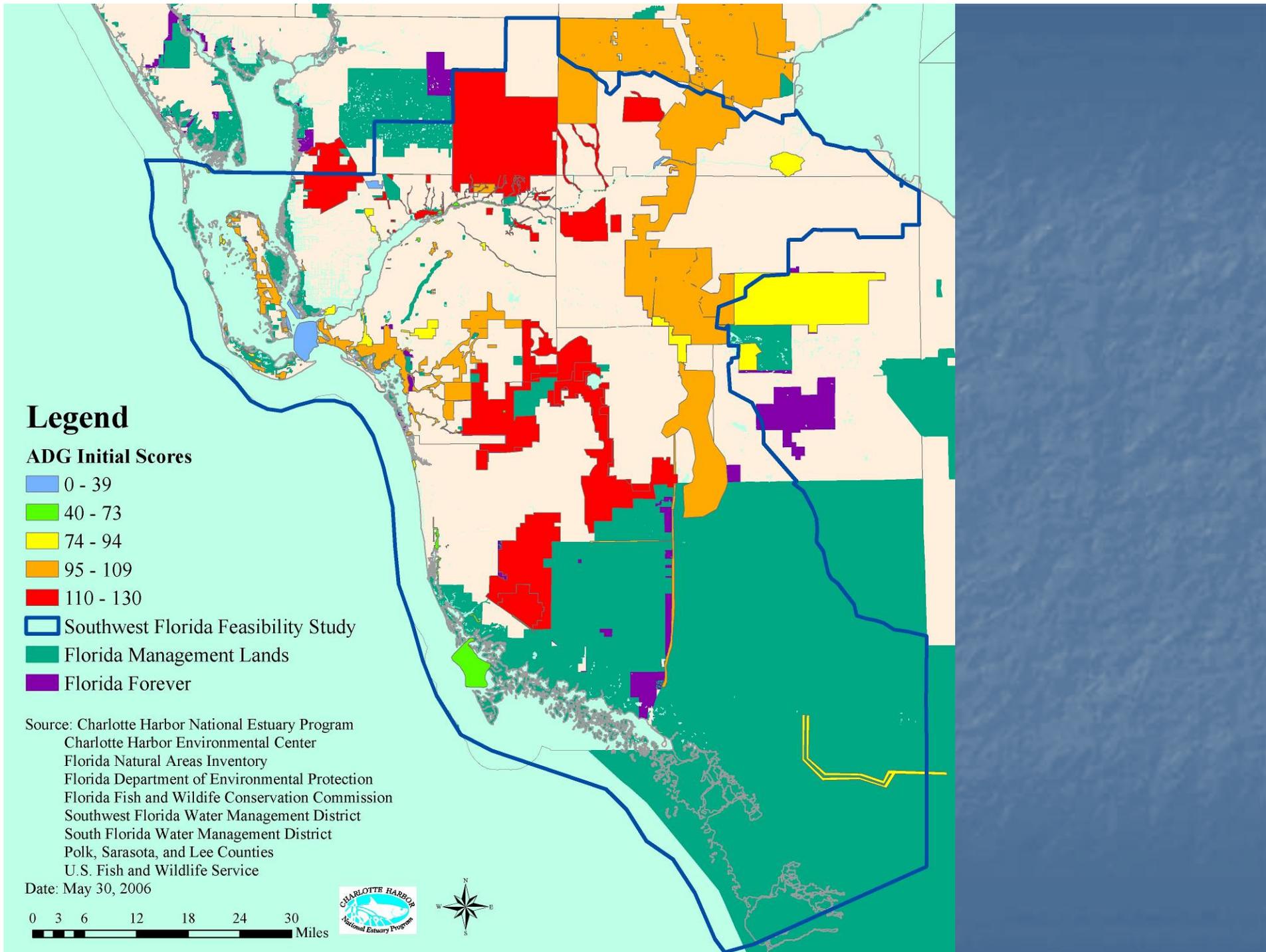
Florida Management Lands

Florida Forever

Source: Charlotte Harbor National Estuary Program
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Date: May 30, 2006

0 3 6 12 18 24 30
Miles



Benefits Analysis Team

| 1 | Name | Problem | Fix | Change | | | | Units | Benefits | | | | | | |
|----|---|---|---|----------|------------------------|--------------|-----------------|--|--------------|-----------|----------------|-----------|--------------------------------|--|-----------------------------|
| | | | | Existing | Future Without Project | With Project | Pre-Development | | In MIKE SHE? | Hydrology | Nat Land Cover | Estuarine | VQ | Index | Units |
| 4 | SR 29 Basin / Barron River Canal Flowway | Diverting flows along SR 29 and Copeland Canals | Fill 50% of SR 29 and Copeland Canal; Pump & Spreader Canal | 85.0 | 85.0 | 0.0 | 0.0 | % of flow is channelized (exponential) | Y | Y | Y | Y | PMs | N/A | Adjacent subwatersheds |
| 5 | Turner River / Halfway Creek / Deep Lake Strand Watershed | Impeding flows across and diverting flows along Birdon and Turner River roads | Fill 50% of canals and add culverts | 50.0 | 50.0 | 0.0 | 0.0 | % of flow is channelized (exponential) | N | N | Y | N | 100%=0.0; 0%=1.0 | % of flow is channelized (exponential) | Watershed |
| 6 | Loop Rd., Monroe Station to Sweetwater | Impeding flows across and diverting flows along Loop road | Fill 50% of canal and add culverts | 95.0 | 90.0 | 0.0 | 0.0 | % of flow is channelized (exponential) | N | N | N | N | 100%=0.0; 0%=1.0 | % of flow is channelized (exponential) | Watershed |
| 7 | Loop Rd., Sweetwater to Pinecrest | Impeding flows across and diverting flows along Loop road | Fill 50% of canal and add culverts | 50.0 | 45.0 | 0.0 | 0.0 | % of flow is channelized (exponential) | N | N | N | N | 100%=0.0; 0%=1.0 | % of flow is channelized (exponential) | Watershed |
| 8 | I-75 BCNP | Diverting flows along I-75 | Add plugs | 25.0 | 25.0 | 0.0 | 0.0 | % of flow is channelized (exponential) | N | N | N | N | 100%=0.0; 0%=1.0 | % of flow is channelized (exponential) | Watershed |
| 9 | Bear Island Road Network | Impeding flows across and diverting flows | Degrade roads and canals and add culverts | 75.0 | 75.0 | 100.0 | 100.0 | use exponential curve to get % restoration | N/N | N | N | N | 0%=0.0; 100%=1.0 (exponential) | % of Length of Roads | Watershed |
| 10 | Bundschu Grade | Impeding flows across and diverting flows | Degrade roads and canals and add culverts | 50.0 | 50.0 | 100.0 | 100.0 | use exponential curve to get % restoration | N/N | N | N | N | 0%=0.0; 100%=1.0 (exponential) | % of Length of Roads | Watershed |
| 11 | BCNP Addition Lands Road Network | Impeding flows across and diverting flows | Degrade roads and canals and add culverts | 50.0 | 50.0 | 100.0 | 100.0 | use exponential curve to get % restoration | N/N | N | N | N | 0%=0.0; 100%=1.0 (exponential) | % of Length of Roads | Watershed |
| 12 | Delnor Wiggins State Park Spoil Berm Removal | Impeding Hydrologic Exchange with Adjacent | Spoil Berm Removal | 4000.0 | 4000.0 | 0.0 | 0.0 | Length (ft) | N/N | N | Y | Y | 0%=0.0; 100%=1.0 (exponential) | % of Length of Berm | 4,000 ft |
| 13 | Vanderbilt Lagoon / Inner Clam Bay Connector | Lack of hydrologic Exchange | Add equalizer culverts | X*40% | X*15% | X | X | cfs | N/N | N | Y | Y | 0%=0.0; 100%=1.0 | cfs | Area (ac) of Inner Clam Bay |
| 14 | James Wachs / Gordon River Restoration | Spoil Berm Impeding Hydrologic Exchange with | Spoil Berm Removal | 1900.0 | 1900.0 | 0.0 | 0.0 | Length (ft) | N/N | N | Y | Y | 0%=0.0; 100%=1.0 (exponential) | % of Length of Berm | 1,900 ft |

SWRRCT Will Continue to Coordinate with SWFFS

- Complete Identification And Development Of Restoration Projects
- Complete Project Ranking
- Develop A Set Of Alternatives
- Run The Alternatives Through The Models
- Determine Which Restoration Projects Can Be Modeled By Mike She
- Determine Additional Methods To Mike She
- Conduct The Modeling
- Output Into Habitat Suitability Indices
- Estuarine And Inland Benefits Determination
- Develop Tentatively Selected Plan (TSP)
- Alternative Formulation Briefing (AFB)
- To Congress For Funding \$\$\$\$
- Implement Restoration