Crisis at the Indian River Lagoon and Everglades Planning
An Ongoing Crisis, An Emerging Solution

August 28, 2013

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An Ongoing Crisis,
An Emerging Solution

- Wednesday, August 28, 2013, 12:00-1:30
- Applied for 1.5 AICP CM Credits for Planners
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- This PowerPoint is available for downloading at www.1000friendsofflorida.org.

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- Founded in 1986, 1000 Friends of Florida is a 501(c)(3) nonprofit membership organization.
- We work to save special places, fight sprawl and build better communities.
- We educate, advocate and negotiate to protect Florida's high quality of life.
- Our bipartisan board of directors includes advocates and experts from across the state.
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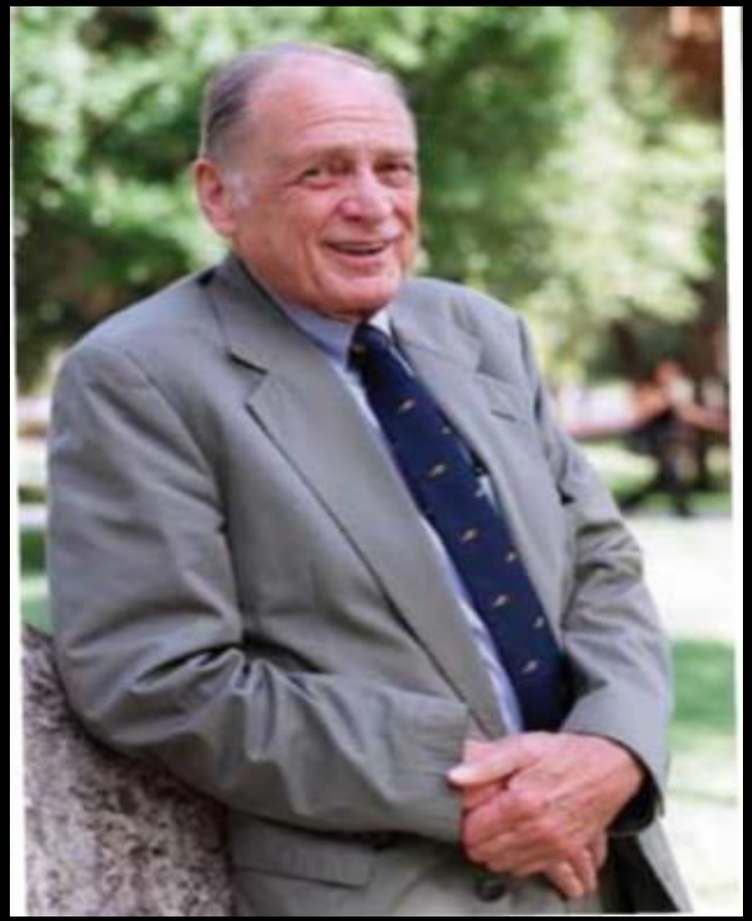
Dr. John M. DeGrove, 1924-2012

- 

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Presenters

About Stephen Davis III

- Wetland Ecologist with the Everglades Foundation
- Focuses on mangrove wetland biogeochemistry and carbon dynamics
- More than a decade of wetland research
- Previously Assistant then Associate professor at Texas A&M University for 8 years
- Ph.D. from Florida international University

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http://www.evergladesfoundation.org

EVERGLADES FOUNDATION

The Everglades Foundation

- Support efforts to restore and protect the greater Everglades ecosystem through:
  - Science
  - Education and Outreach
  - Partnerships

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Foundation scientists present at the National Conference on Ecosystem Restoration

Everglades Foundation scientists Dr. Stephen Davis, Wetland Ecologist and Aida Arik, Ecological Engineer, attended the National Conference on Ecosystem Restoration… READ MORE

U.S. Rep. Mario Diaz Balart recognizes Mary Barley for her dedication to protecting America's Everglades

PALMETTO BAY, FL– On July 29, 2013, U.S. Rep. Mario Diaz Balart, R-FL, paid tribute Monday to longtime Everglades advocate Mary Barley for… READ MORE

Moving forward: CEPP and the future of Everglades restoration

Critical legislation is moving through the Congress that will have a direct impact on the continued efforts of Everglades protection. … READ MORE

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EVERGLADES BREAKING NEWS

Analysis: Floridan Aquifer can only handle 6% more pumping before serious environmental harm
Aug 25: Orlando Sentinel, Kevin Spear

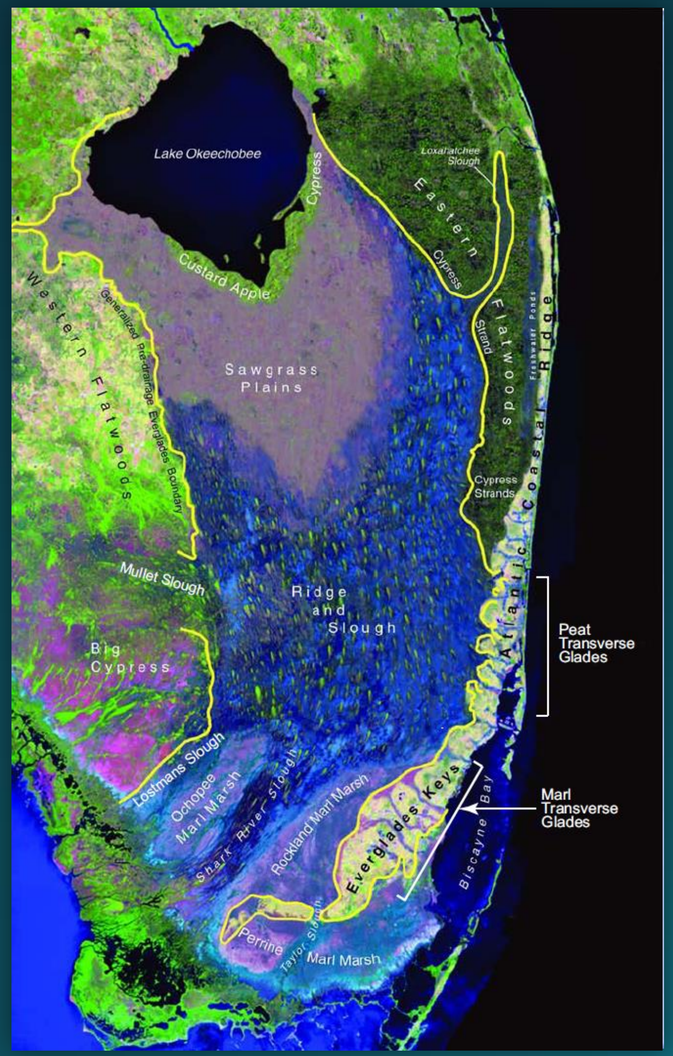
Carl Hiaasen: Clueless to crisis in our environment
Aug 24: Miami Herald, Carl Hiaasen

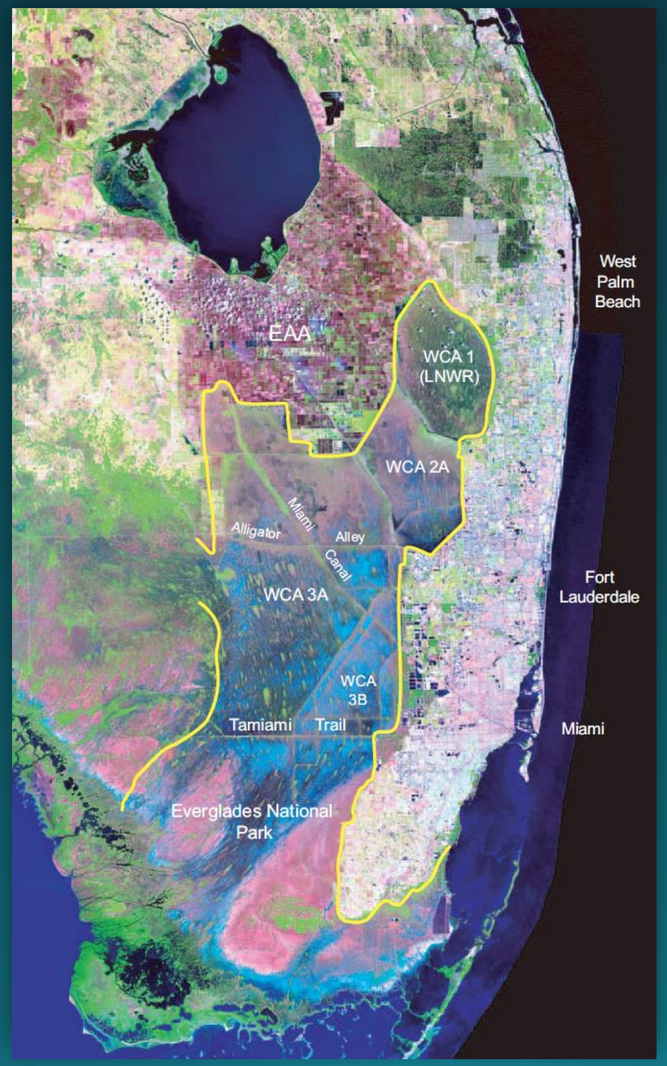
Homestead starts trolley service to national parks

Saving the Everglades = Protecting our Water Supply

The more than 7 million residents of South Florida (about 1 out of 3 Floridians) rely on the Everglades for their water supply.
The future of our state, our businesses and our homes depends on maintaining and protecting our source of clean, fresh water.

Everglades: Then and Now





- Central & South Florida Project: designed to work this way
- Supports about 7 million
  - Water supply
  - Flood control
- Ecological collapse
- WRDA 2000: CERP

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What Are the Issues?

- Two Problems:
  - Water Quantity
  - Water Quality

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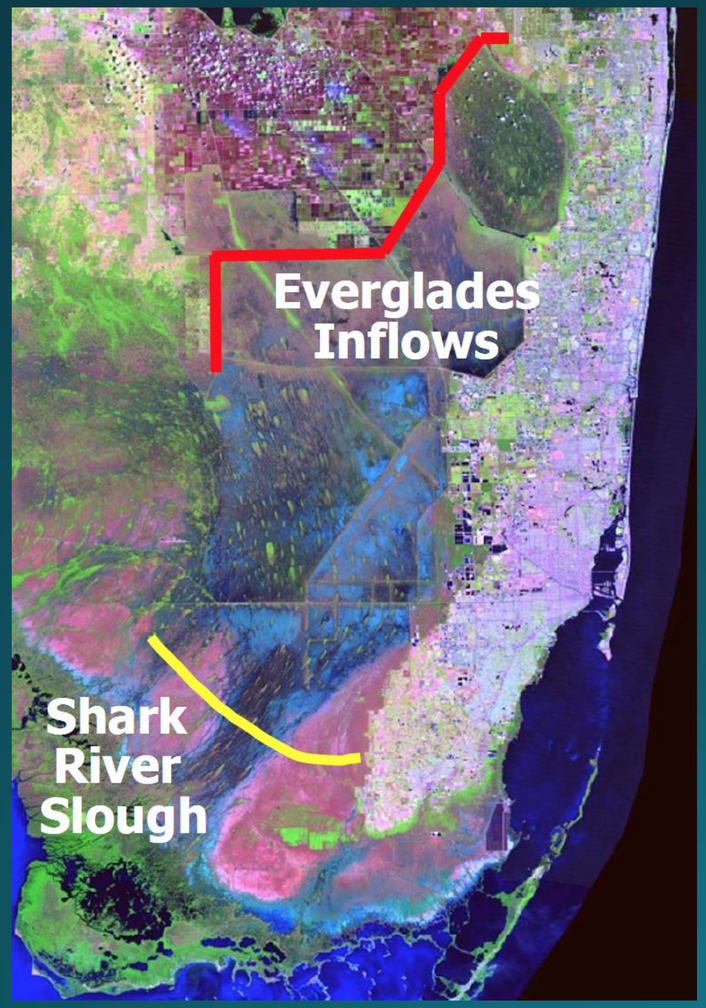
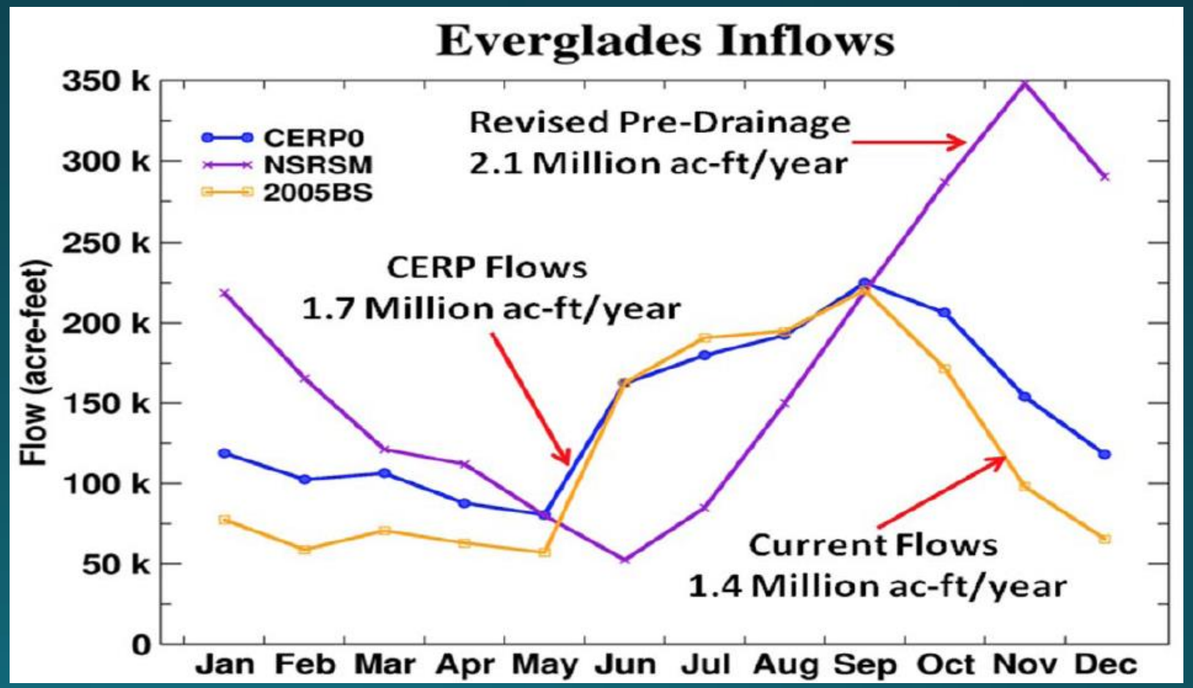
That water used to flow south





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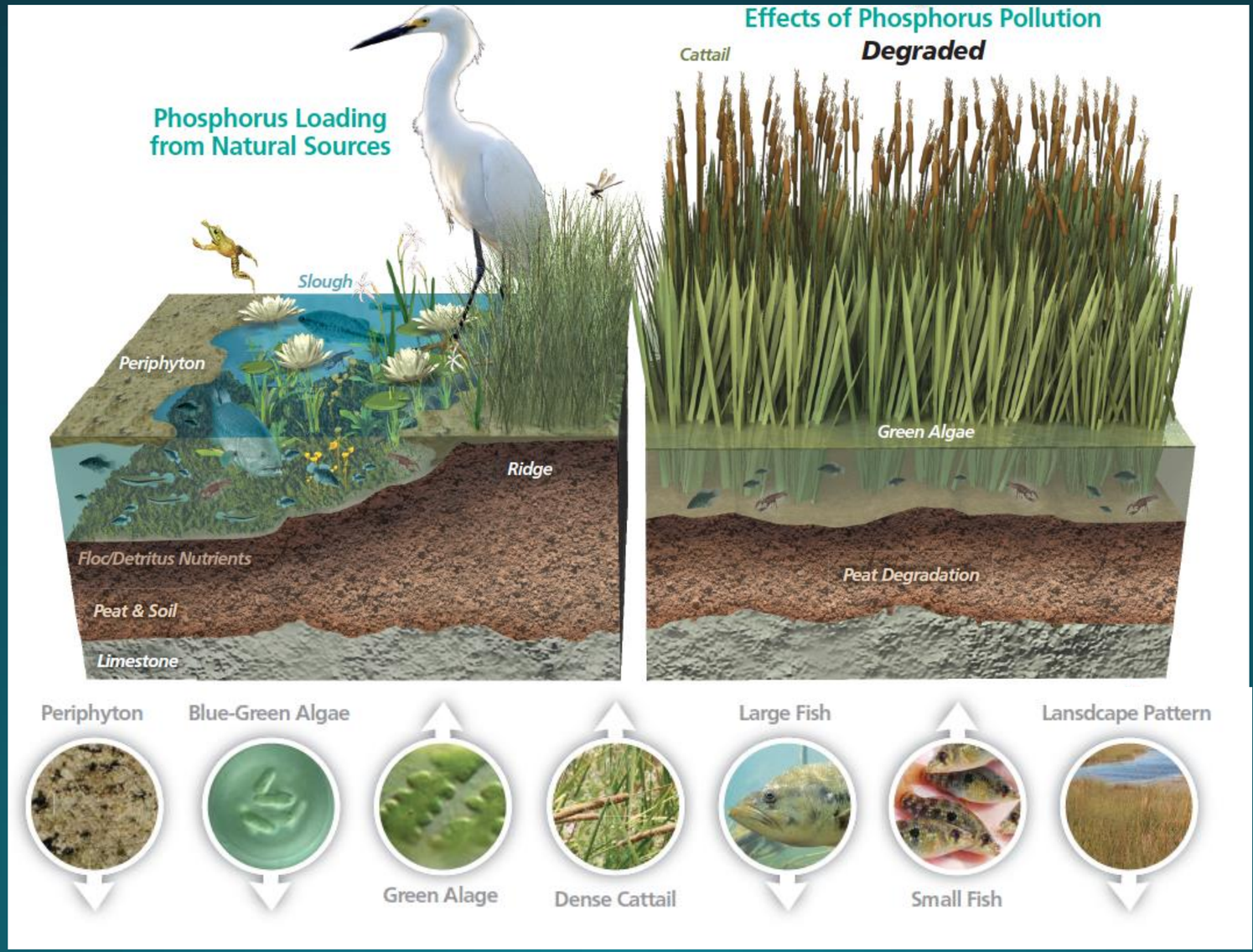
Water quality also impacts marsh



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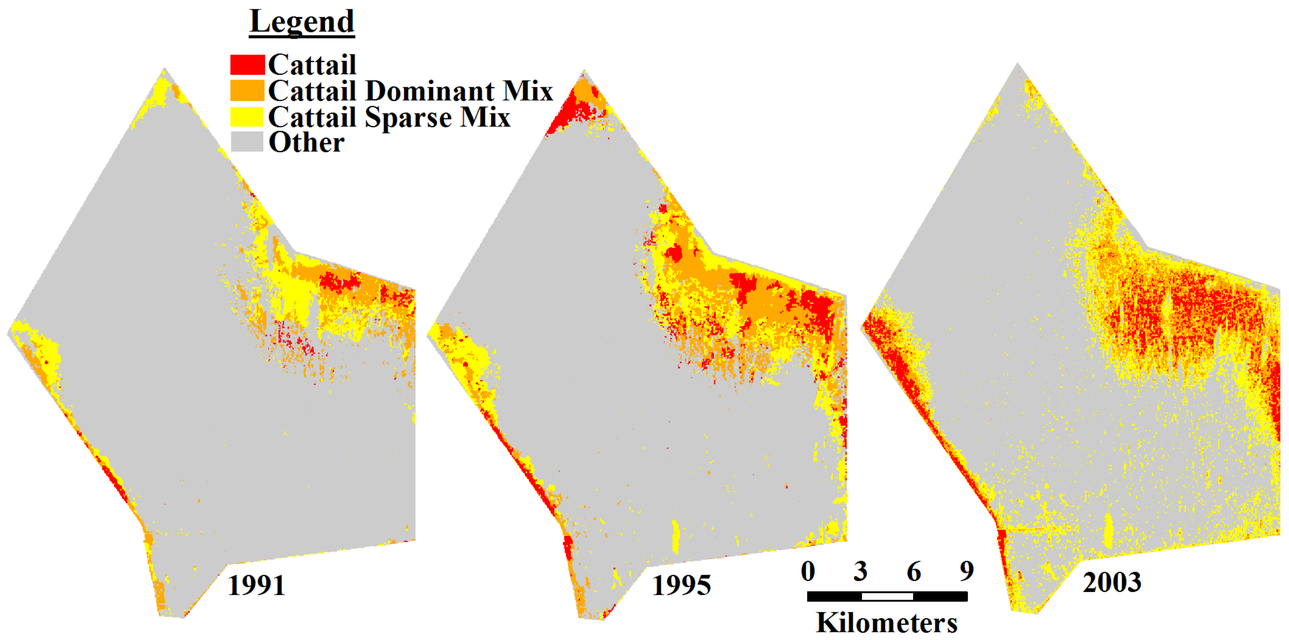
SFWMD mapping cattail expansion

WCA-2A Cattail Trend Maps (1991 - 2003)



	Cattail	Cattail Dominant Mix	Cattail Sparse Mix	Total Cattail	Change between mapping efforts	Average yearly change
1991	422	2287	2761	5470		
1995	1646	3944	3722	9312	3842	961
2003	1979	3833	5996	11808	2496	312

*Number are in hectares

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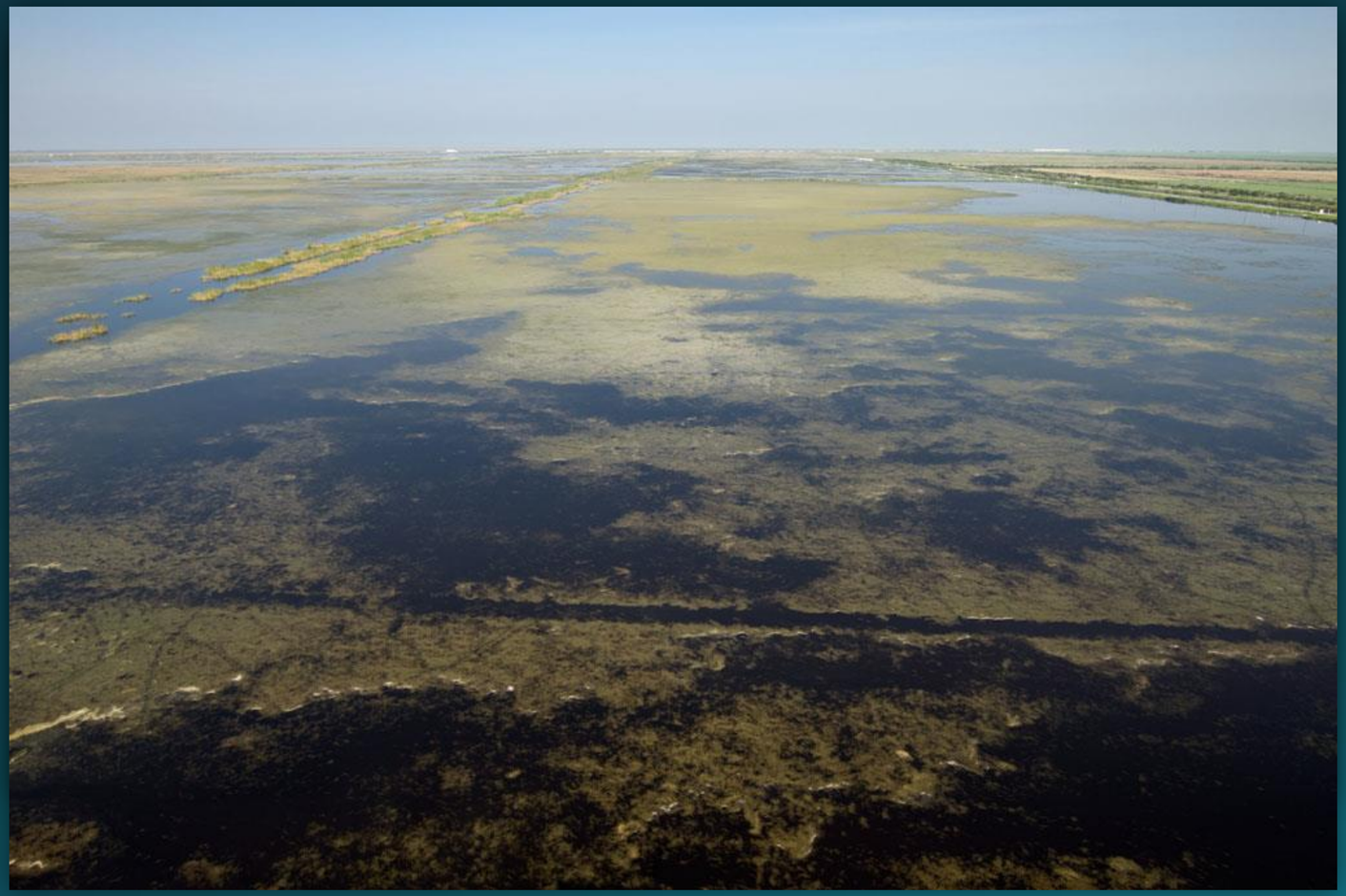
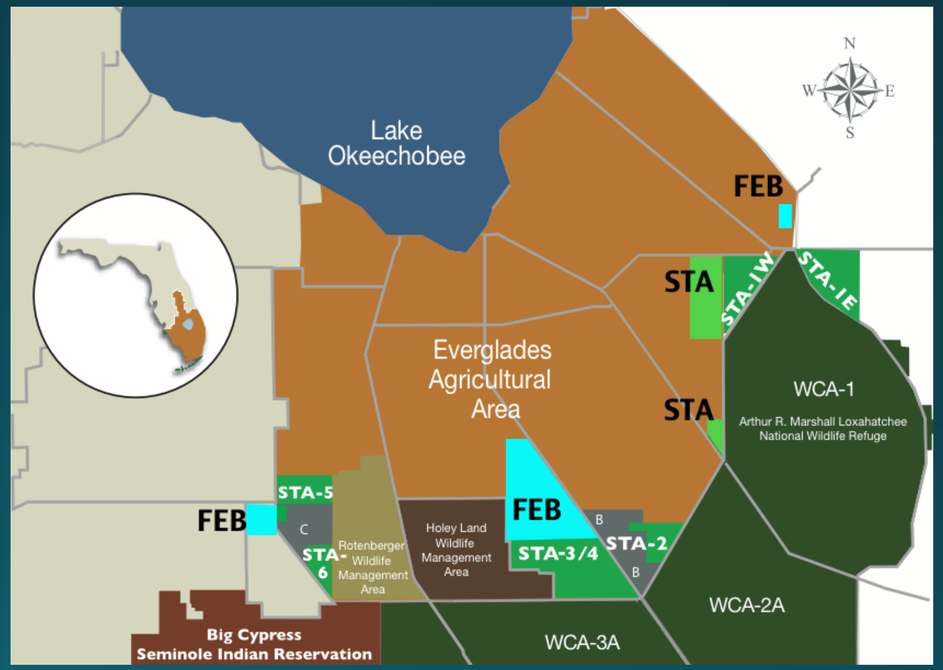
Stormwater Treatment Areas (STAs)





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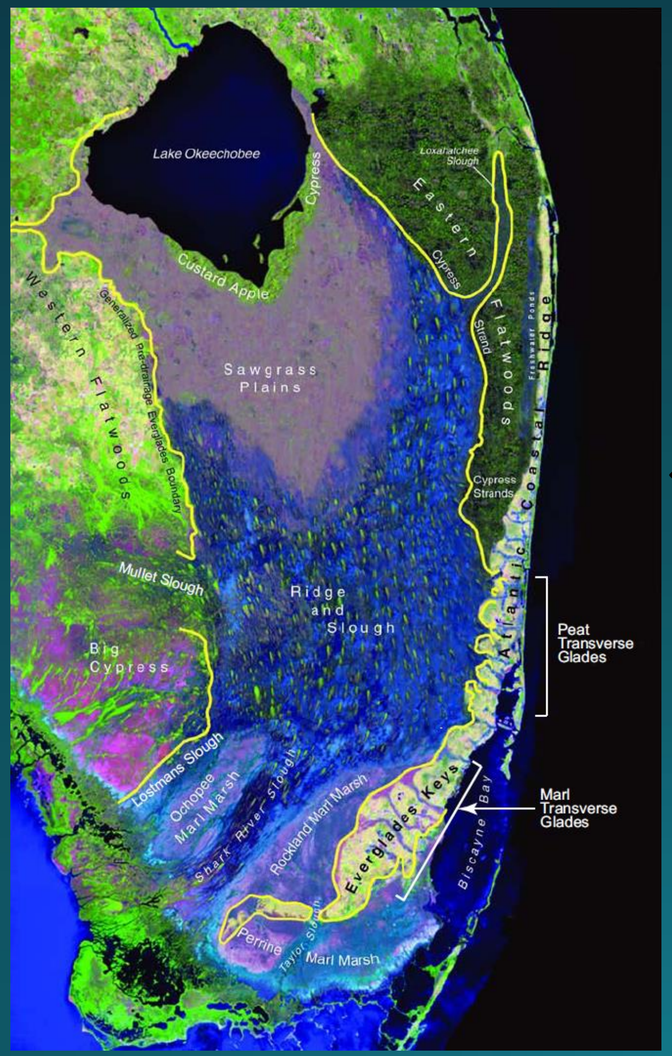
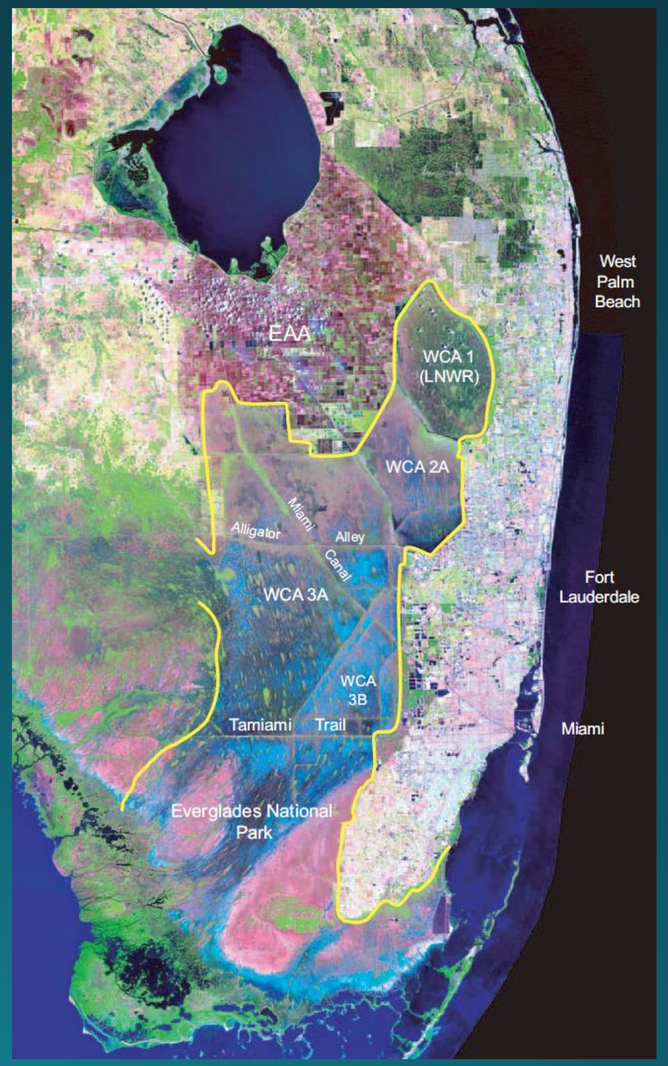
How to fix a broken system?





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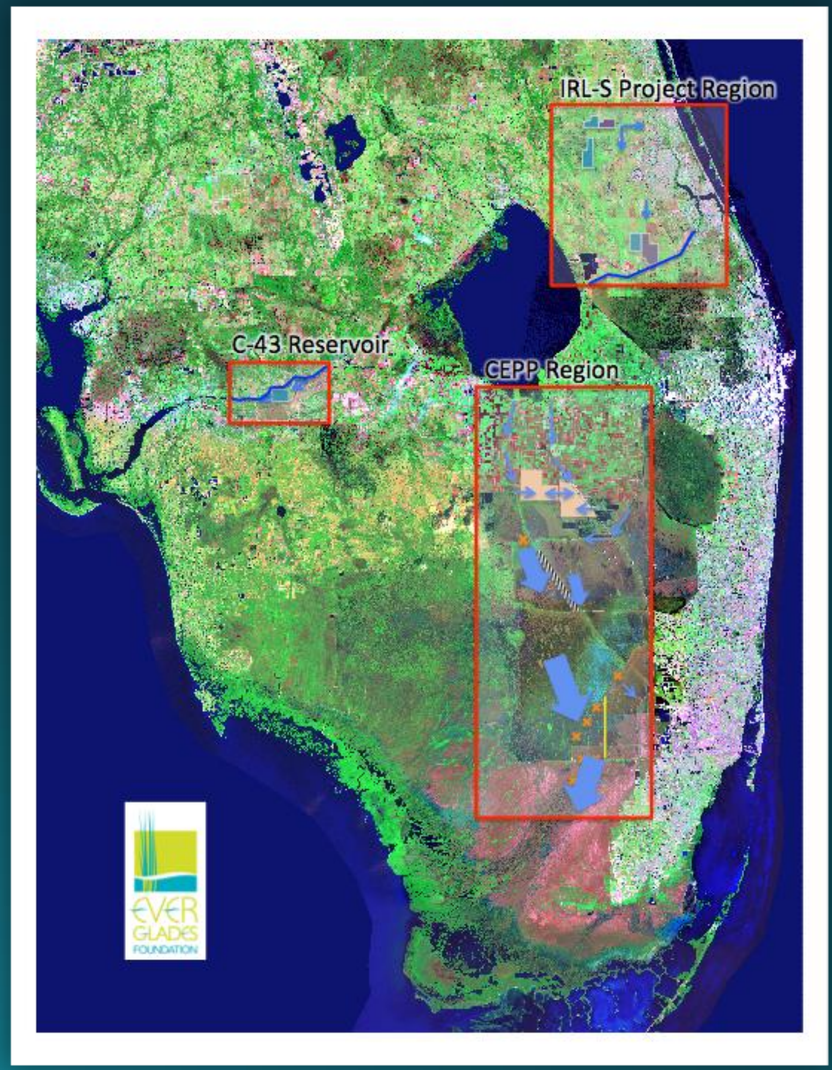
Short-Term Solutions

- Short-term responses are very limited
  - basin storage
  - will not change duration of events significantly
- We have no solutions we can implement in next 6 months that will significantly change situation
- Best short-term action is to begin long-term efforts

Photo: SFWMD

Long Term Solutions

- Greatest needs are:
  - New outlet southward from Lake Okeechobee
  - Local basin storage and treatment
- Central Everglades Planning Project (CEPP) & Tamiami Trail provides new outlet south from Lake Okeechobee
- C-43 and C-44 projects are focused the local basin



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Everglades Restoration

- Comprehensive Everglades Restoration Plan (CERP) was launched in 2000
- Central Everglades Planning Project (CEPP) is a partial implementation of five CERP projects
- The Central Everglades Plan
  - diverts water currently going out estuaries southward to Everglades
  - cleans that water
  - opens new outlets in the Everglades

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Since WRDA 2000

- System-wide performance measures
- Used to evaluate and assess
- Science-based indicators of attributes
- Targets as desired conditions
- Robust and feasible

October 17, 2007

Development and Application of Comprehensive Everglades Restoration Plan System-wide Performance Measures

RESTORATION COORDINATION AND VERIFICATION

COMPREHENSIVE EVERGLADES RESTORATION PLAN

CENTRAL AND SOUTHERN FLORIDA PROJECT

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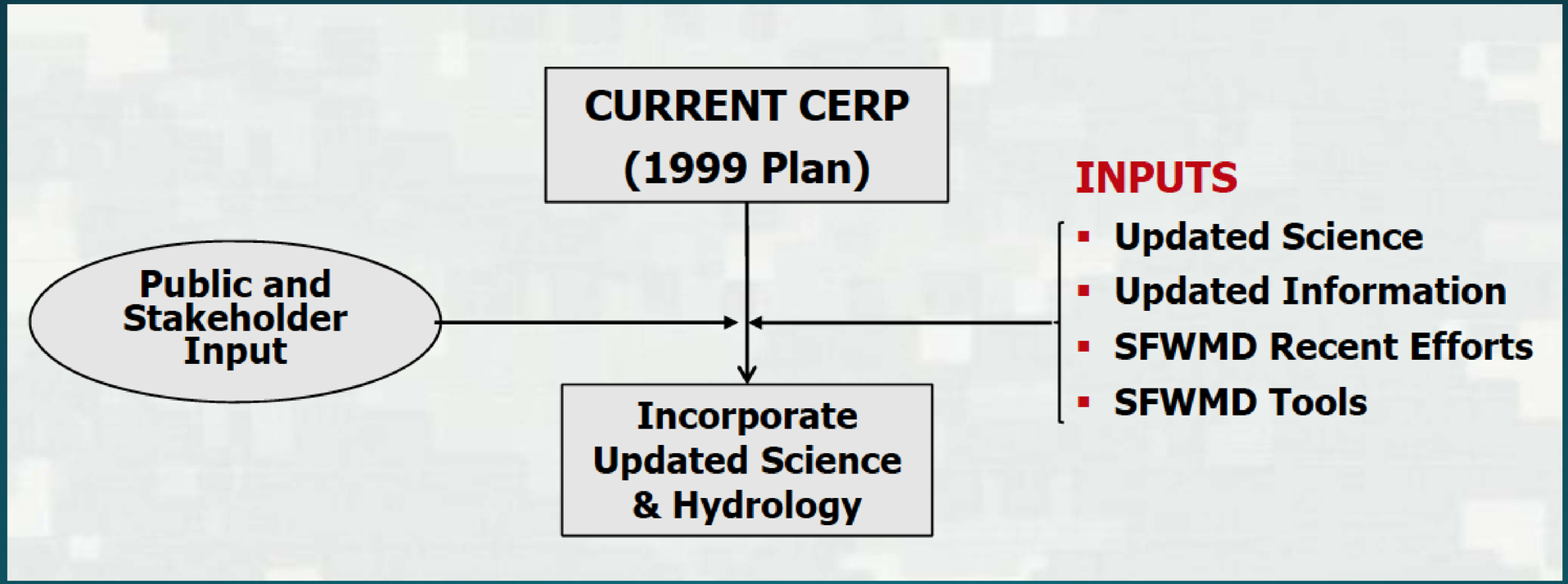
CEPP is CERP



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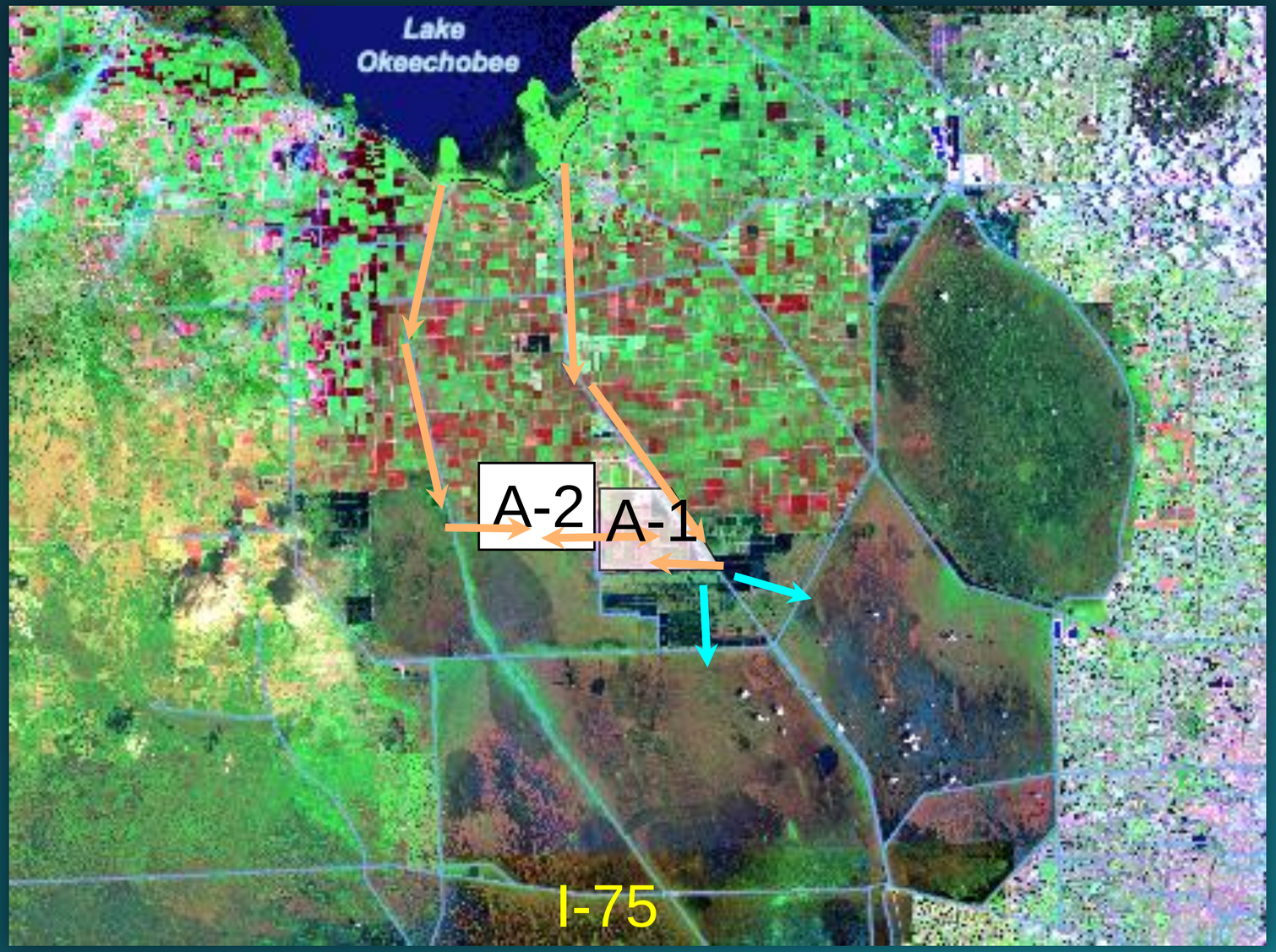
CEPP: Everglades Agricultural Area



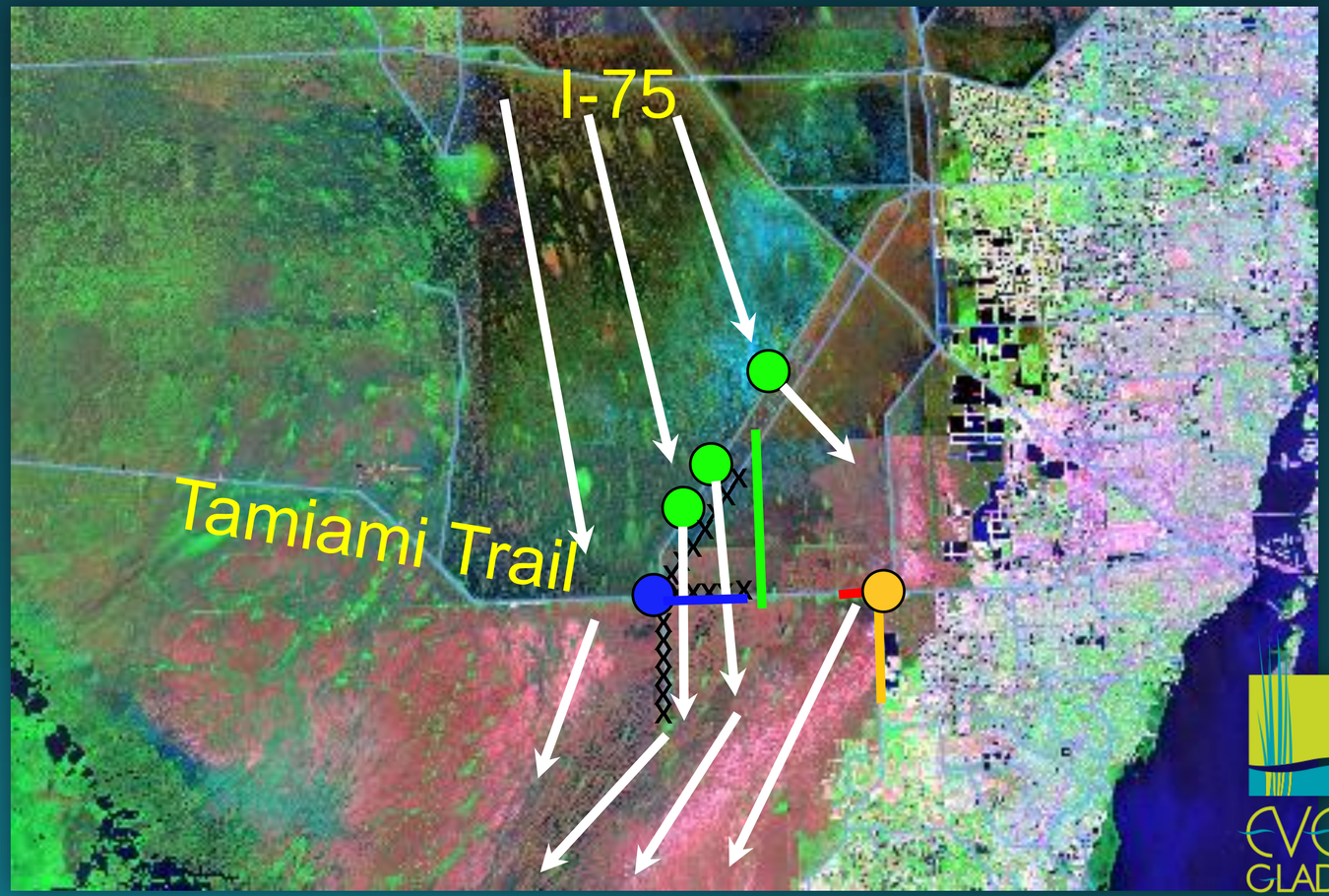
- Water flows from Lake in existing canals to new treatment feature
- CEPP builds on components in “Restoration Strategies” water quality plan

CEPP: Northern WCA-3A

- CEPP has features that restore sheetflow in Water Conservation Area 3A
  - Elements to spread the clean water across landscape
  - Miami Canal backfill

CEPP: Southern Everglades

- Add new outlet structures from WCA3A
- Remove dams
- 2.6-mile Tamiami Trail bridge (not CEPP element but essential)
- Seepage control



Ridge-Slough: habitat vs. hydrology

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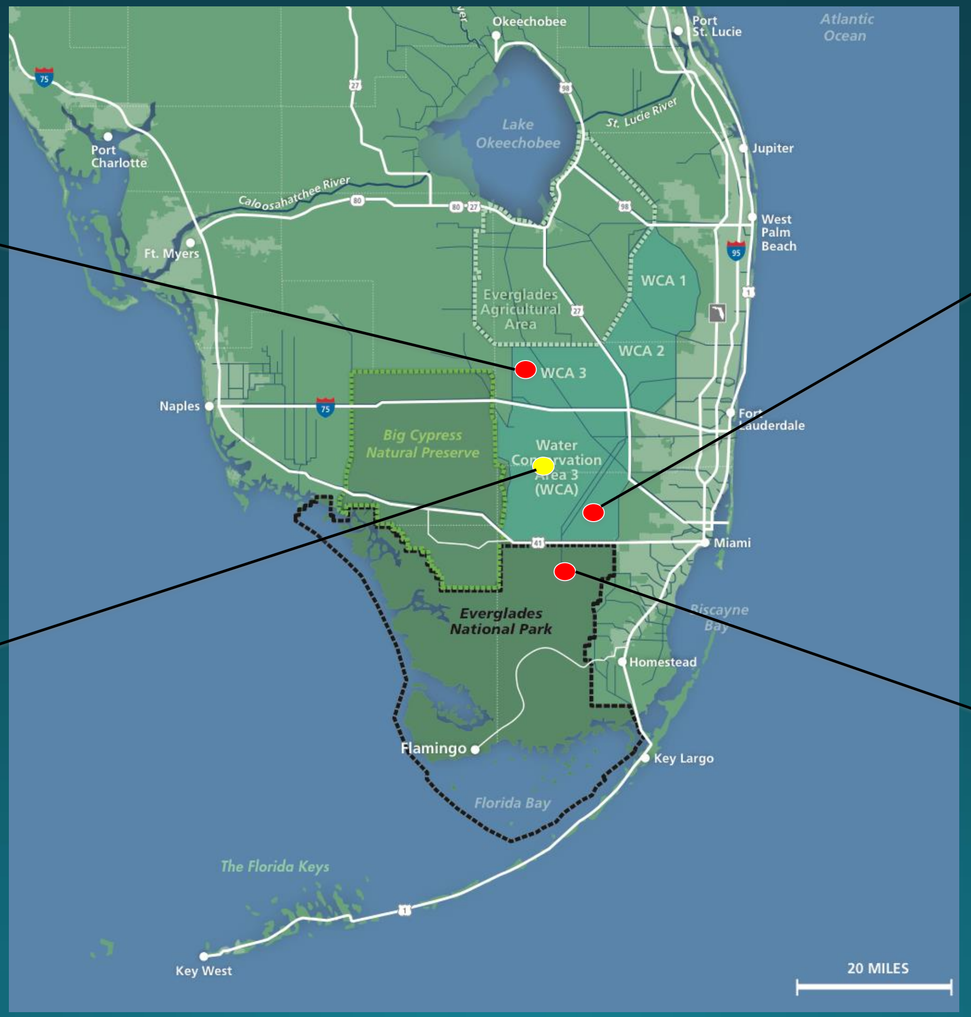
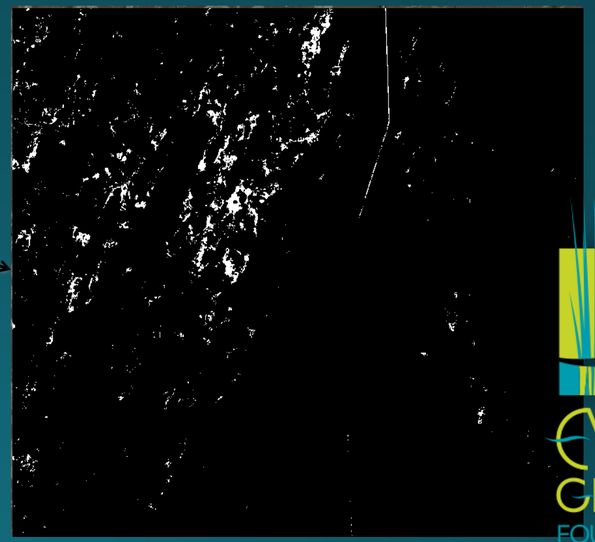
Losing landscape patterning





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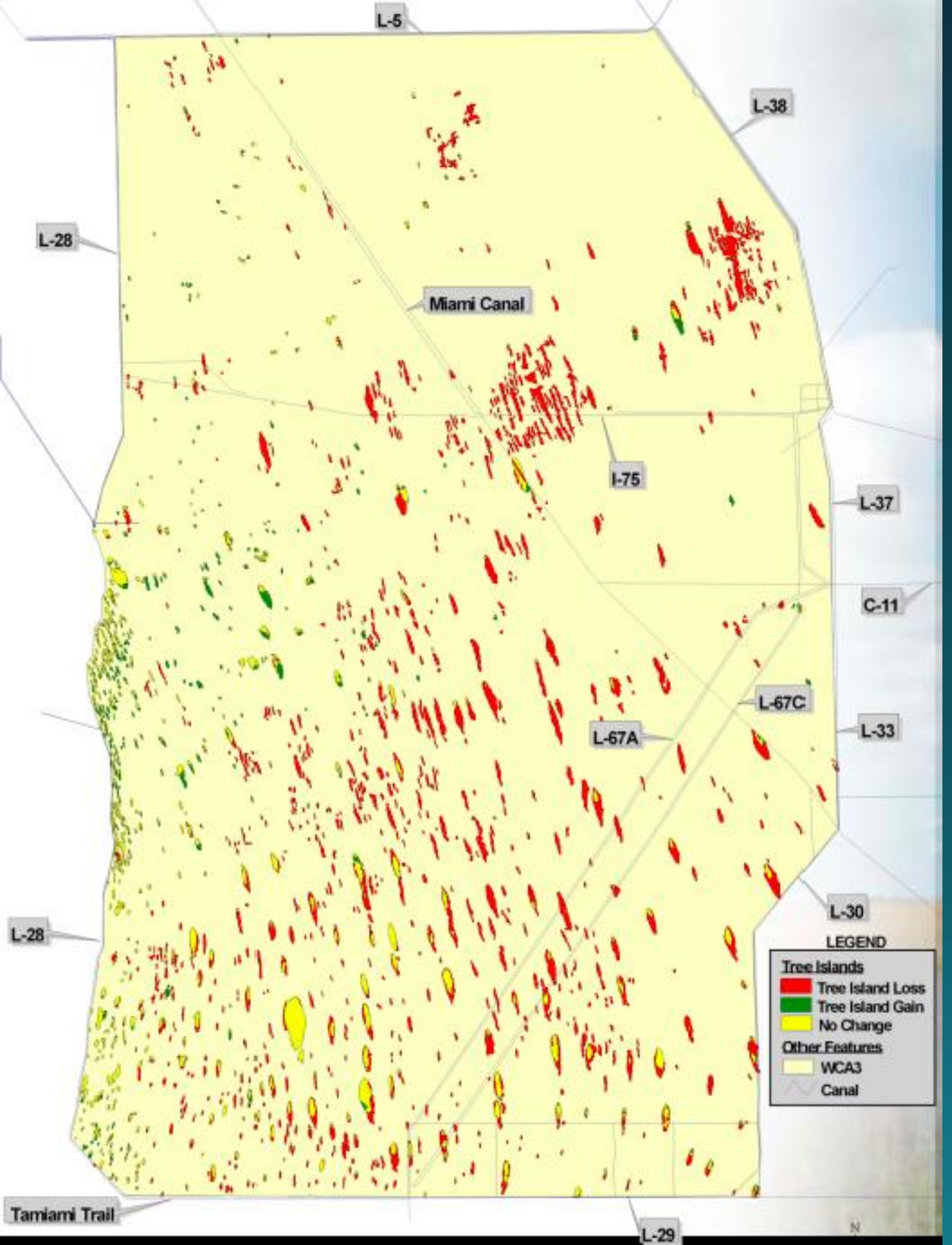
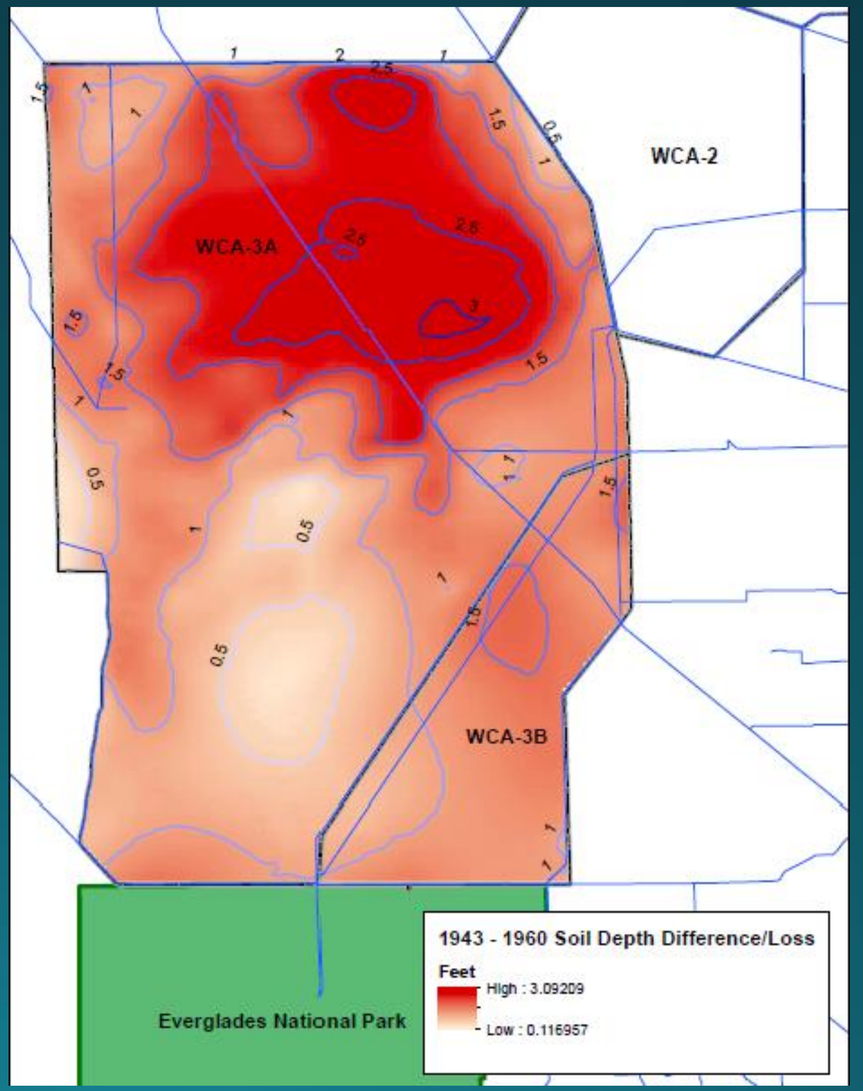
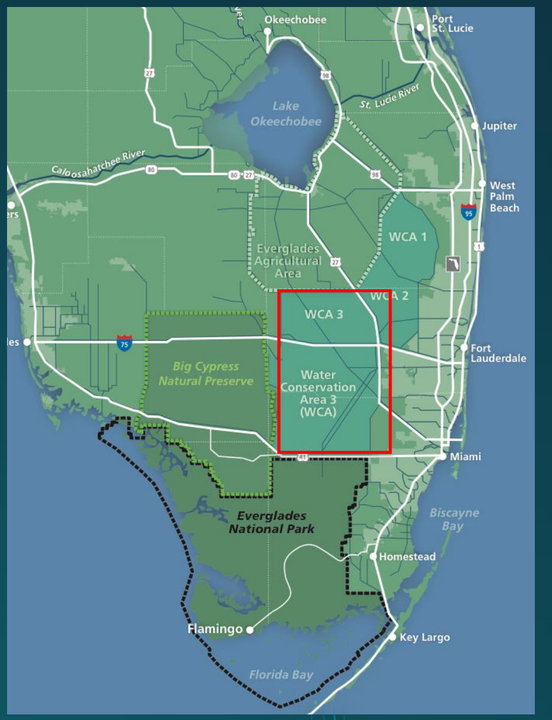
Tree islands and soil







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Central Everglades Plan

- Product of a groundbreaking joint federal/state cooperative effort
- South Florida Water Management District approved draft plan
- Focus is now on Corps of Engineers to develop final “Chief’s Report” to submit to Congress
- Senate has passed Water Resources Development Act, House will take up soon.
- House has told us that if Chief’s Report is submitted before the House acts, it will be included.

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“Local Basin” CERP Projects

- Lake Okeechobee, St. Lucie, and Caloosahatchee basins all have CERP projects
- Example: Indian River Lagoon South is a CERP project designed to control and treat local basin run-off
- Constructs reservoirs and Stormwater Treatment Areas
- Includes “natural storage and treatment areas”
- C-44 component was one of the CERP projects started

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Longer Term Solutions

- These projects will make significant improvements, but are not a final restoration solution.
- CEPP is a partial implementation of five CERP projects, not a complete implementation of CERP
- Final projects will require:
  - additional lands for storage & treatment.
  - removal of barriers to flow in the Everglades.
  - no adverse effects to other water users.

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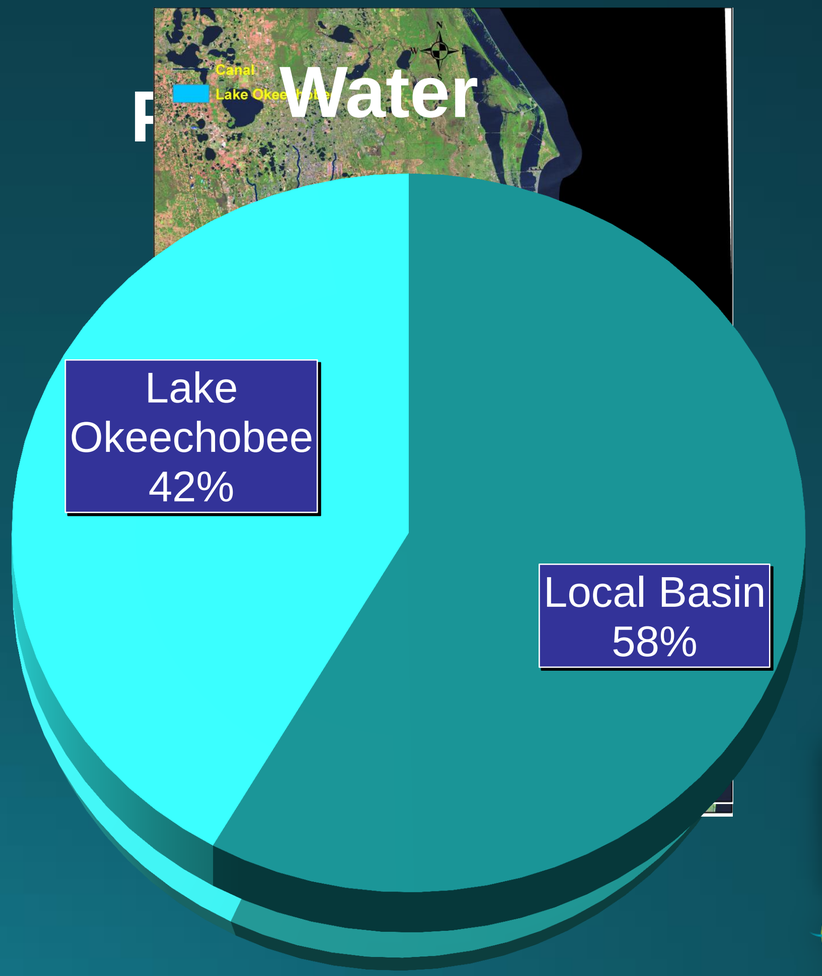
Water Quality

- Water quality problems in
  - Local basin
  - Lake Okeechobee basin
  - Water quality is a state responsibility
- St. Lucie watershed itself contributes water and nutrients
- With discharges from Lake Okeechobee, area that contributes water and nutrients grows dramatically
- Lake contributes 42% of water, 24% of phosphorus, 43% of nitrogen



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Past Actions

- Scientific Investigations
  - decades of research to identify effects of nutrients and pollution load limits
- Legislature passed “Lake Okeechobee Protection Act” (2000) and “Lake Okeechobee and Estuary Recovery Program” (2005)
  - Set limits for phosphorus loads to Lake Okeechobee
  - Protection plans for Lake Okeechobee and estuaries
  - Permits for Lake structures implement TMDL by Jan. 2015
  - Lake Okeechobee Trust Fund

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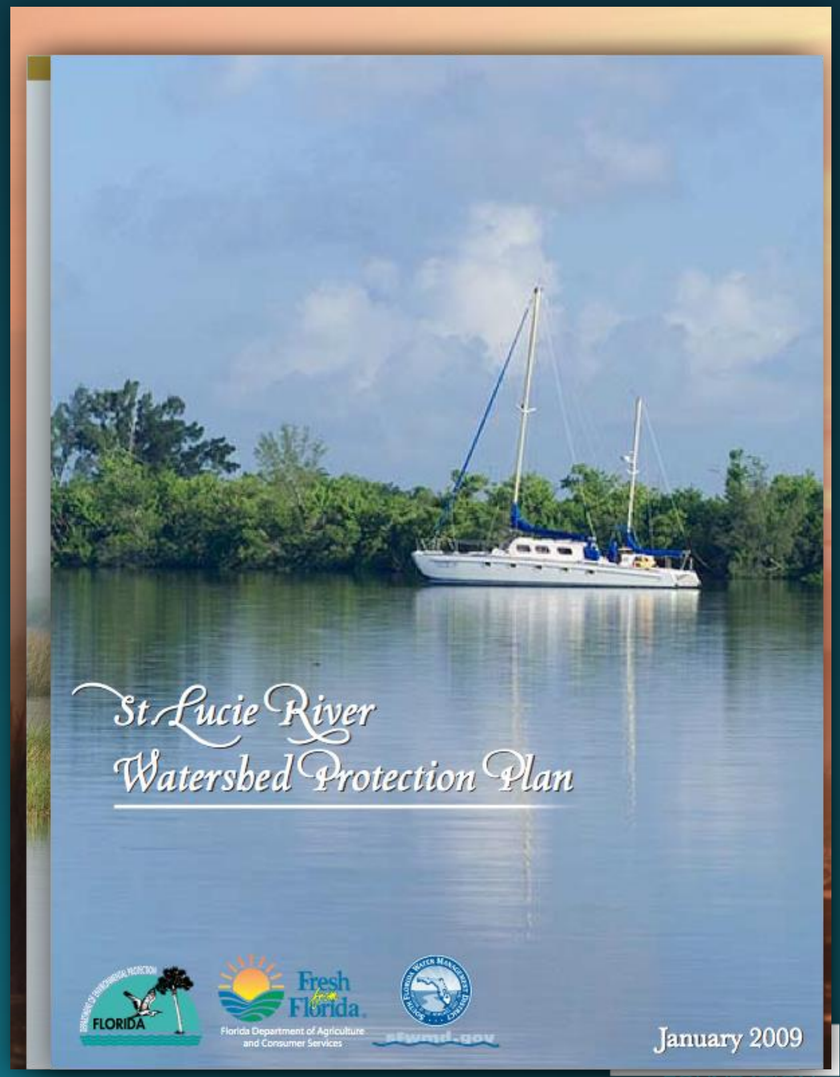
Watershed Protection Plans

- Lake Okeechobee plans include
  - Phase II Technical Plan (2008)
  - Lake Okeechobee Protection Plan (2011)
  - Plans spell out actions needed to reach nutrient loading limits
- St Lucie Watershed Protection Plan (2009) and BMAP (2013)
- Caloosahatchee Watershed Protection Plan (2009)



Caloosahatchee Protection Plan

- Has near-term and long-term phases
- Agricultural “Best Management Practices” - $3 million
- Urban “Best Management Practices” - $663 million
- CERP C-43 Reservoir - $524 million
- Non-CERP storage/treatment - $117 million
- Monitoring - $5 million
- Rule revisions
- CERP project is cost-shared with federal government, remainder is state and local funding

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Protection Plans

- Studies done and plans developed to address water quality problems
- Plans await implementation
- Plans all have same basic elements tailored to basin:
  - Urban and Ag “Best Management Practices”
  - Stormwater Treatment Areas
  - Storage (CERP and non-CERP)
  - Monitoring to determine if actions are working
- Some elements are CERP (federal cost-share); most are state and local.
- Each protection plan identifies more than $200 million in required investment for “near-term” phases.

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Environment and Economics

- Recreational fishing in Florida is a $5 billion/year industry.
- Recreational boating in Florida is a $10 billion/year industry.
- Combined expenditures for recreational use of Indian River Lagoon is about $3 billion/year
- More than $700 million/year in Martin and St. Lucie Counties
- Florida Keys fishing generates about $740 million/year

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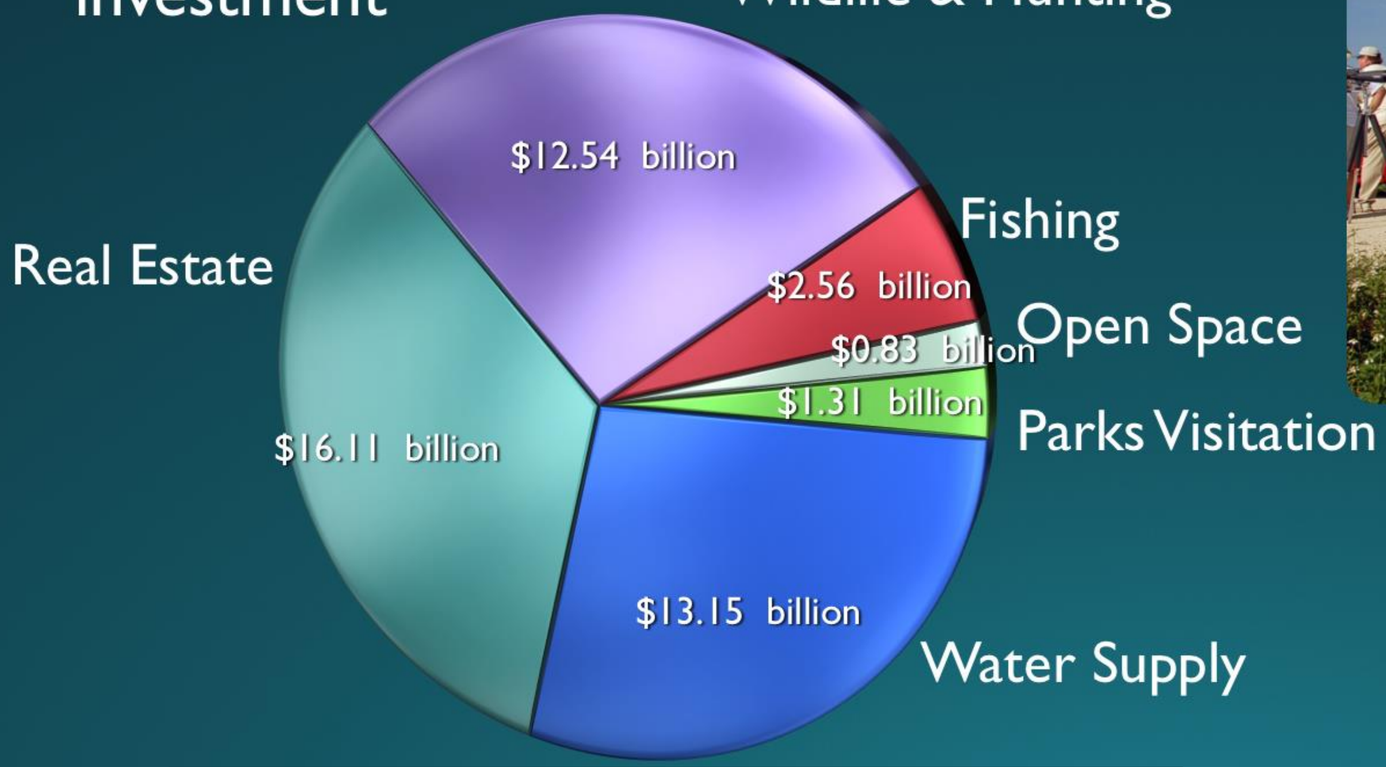
Economics of Restoration

4:1 return on investment



> 400,000 jobs created

"Measuring the Economic Benefits of America's Everglades Restoration" by Mather Economics

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Summary

- Issues are both water quantity and water quality
- Water quantity solutions – joint federal/state
  - no easy short-term solutions
  - long term solutions require CERP projects, like CEPP and C-43/C-44
  - final fixes will require additional CERP projects
- Water quality solutions – primarily state/local
  - are spelled out in “Watershed Protection Plans”
  - need implementation schedules with funding requests
- It is worth it!

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Fact Sheets

EVERGLADES RESTORATION FACT SHEET

Central Everglades Planning Project (CEPP) Estuarine Benefits

STORAGE • WATER QUALITY • FLOW RESTORATION • SEEPAGE & FLOOD CONTROL

The Central Everglades Planning Project (CEPP) is the next phase of the Comprehensive Everglades Restoration Program, and the CEPP plan is the first major step towards restoring the heart of the Everglades. The Plan will bring clean, "new" water to the central Everglades restoring nearly two million acres of wetland. At the same time it will provide significant benefits to estuaries around the greater Everglades ecosystem (see map at right), including:

- Diverting harmful, polluting Lake Okeechobee discharges away from the Caloosahatchee and St. Lucie Estuaries during the wet season, while maintaining essential dry season flows.
- Increasing the flow of clean water to the Everglades by **70 billion gallons per year** (217,000 acre-feet).
- Improving habitat quality by **30%** across the entire area.
- Restoring needed flow of freshwater to Florida Bay and the mangrove estuaries along the SW coast.
- Protecting existing canal inflows to Biscayne Bay.

Algae blooms in the C-43 canal.

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EVERGLADES RESTORATION FACT SHEET

Indian River Lagoon - South: C-44

STORAGE • WATER QUALITY • FLOW RESTORATION • SEEPAGE & FLOOD CONTROL

There is quite possibly no better example of how environmental health translates to regional economic health than the Indian River Lagoon, an ecosystem spanning more than 150 miles of Florida's Atlantic Coast from Volusia County to Martin County. The Indian River Lagoon is the most diverse estuary in North America and an important economic driver with direct annual expenditures for fishing, lodging, boating and other recreational and commercial uses nearing $3 billion. In Martin and St. Lucie Counties alone, surrounding the southern end of the Indian River Lagoon and including the St. Lucie River Estuary, the economic value exceeds $700 million. Unfortunately, decades of development and nutrient pollution have degraded the health of this once productive coastal ecosystem.

At the southern end, these pollution problems are compounded by the massive (often exceeding 1 billion gallons per day!) regulatory discharge of polluted water from Lake Okeechobee into the St. Lucie River nearly every wet season. When Lake Okeechobee water levels are high, this polluted freshwater is released downstream, impairing water quality and upsetting the salinity balance of the St. Lucie Estuary and the southern Indian River Lagoon. These excessive pulses of water and nutrients (nitrogen and phosphorus) often end in algae blooms, toxic water, and fish kills across the estuary.

The Indian River Lagoon-South (IRL-South) Restoration Project is now underway to reverse this trend and restore the environmental and economic health of this region. This project has strong support in Martin County; the residents even taxed themselves to purchase the lands for the project.

CONTINUED ON OTHER SIDE

Aerial view downstream showing the plume of polluted lake water extending offshore.

Massive release of polluted Lake Okeechobee water at the St. Lucie Lock (S-80).

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http://www.protectourrivers.com/our_fight

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