

# Restoration Challenges



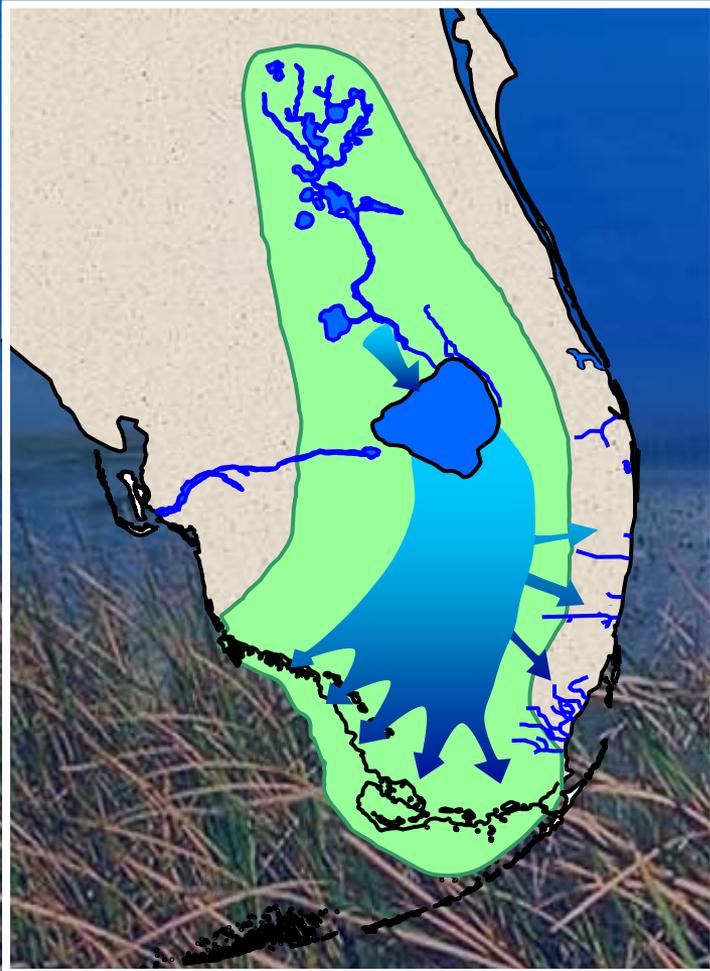
# Topics

- **Historical System**
- **Man Made Alterations**
- **What's Left**
- **What's Happening**
- **Challenges**



# The "Original" Everglades Ecosystem

## "River of Grass"



- Water connected the system, from top to bottom
- 9 million acres of wetlands providing a variety of habitat
- Diverse mosaic of landscapes and seascapes

# The Diverse Ecosystem



**St. Lucie Canal Constructed  
1916 - 1928**

● **Stuart**

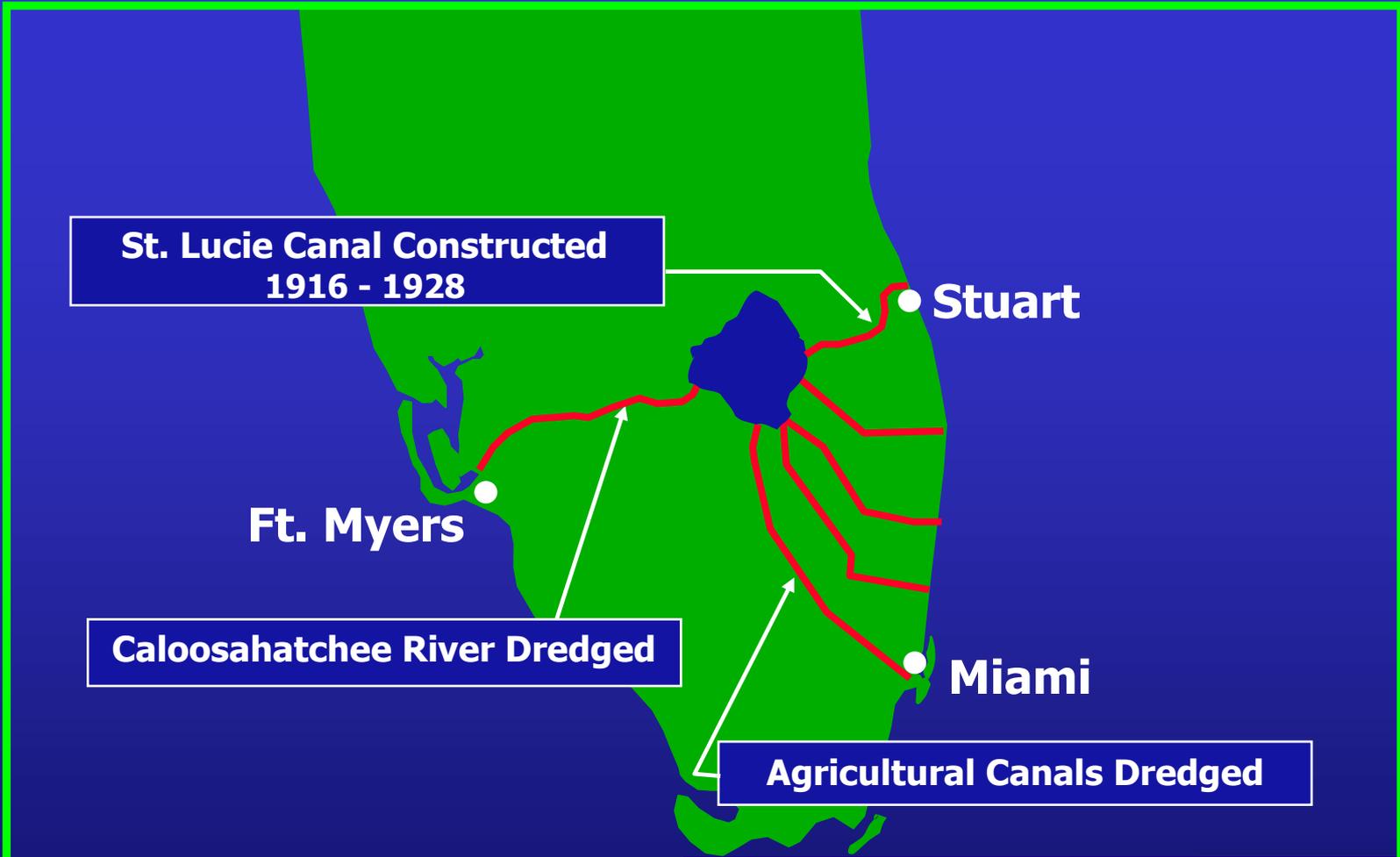
**Ft. Myers**

**Caloosahatchee River Dredged**

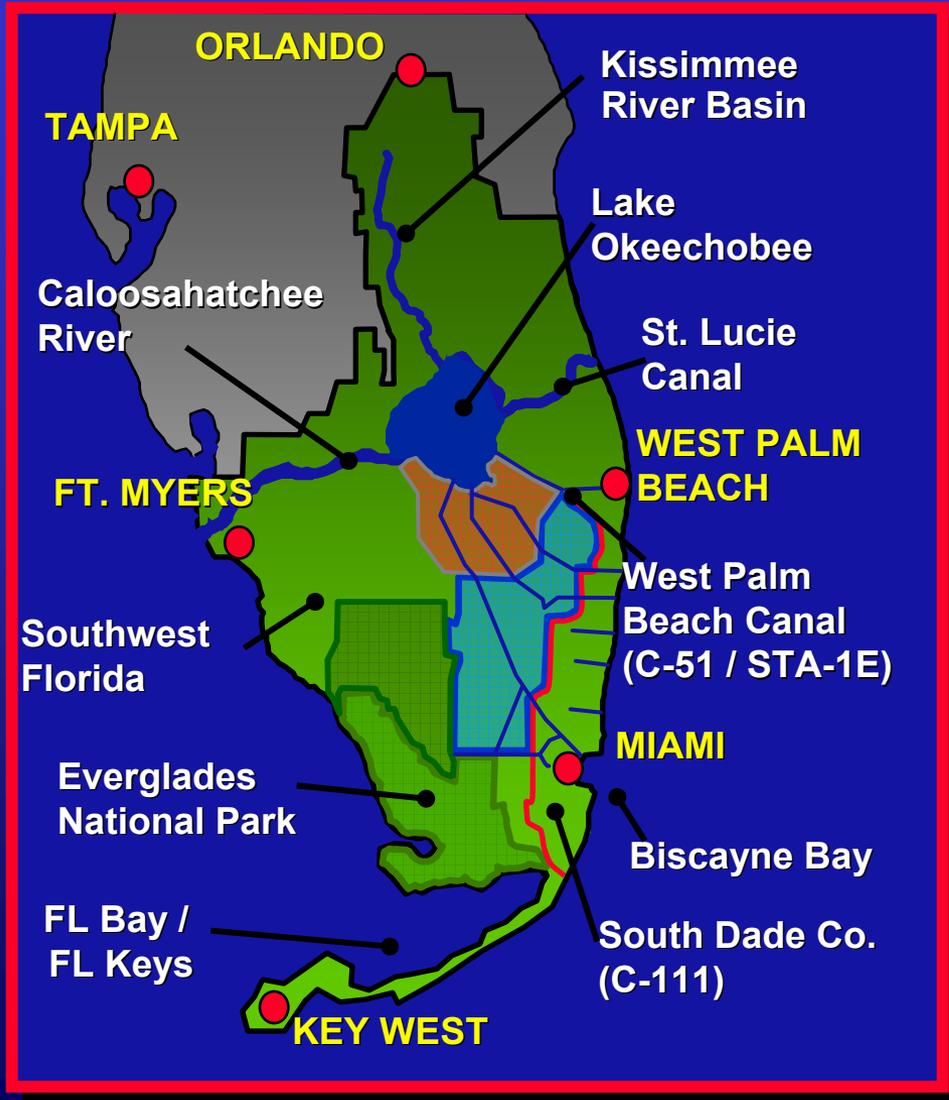
● **Miami**

**Agricultural Canals Dredged**

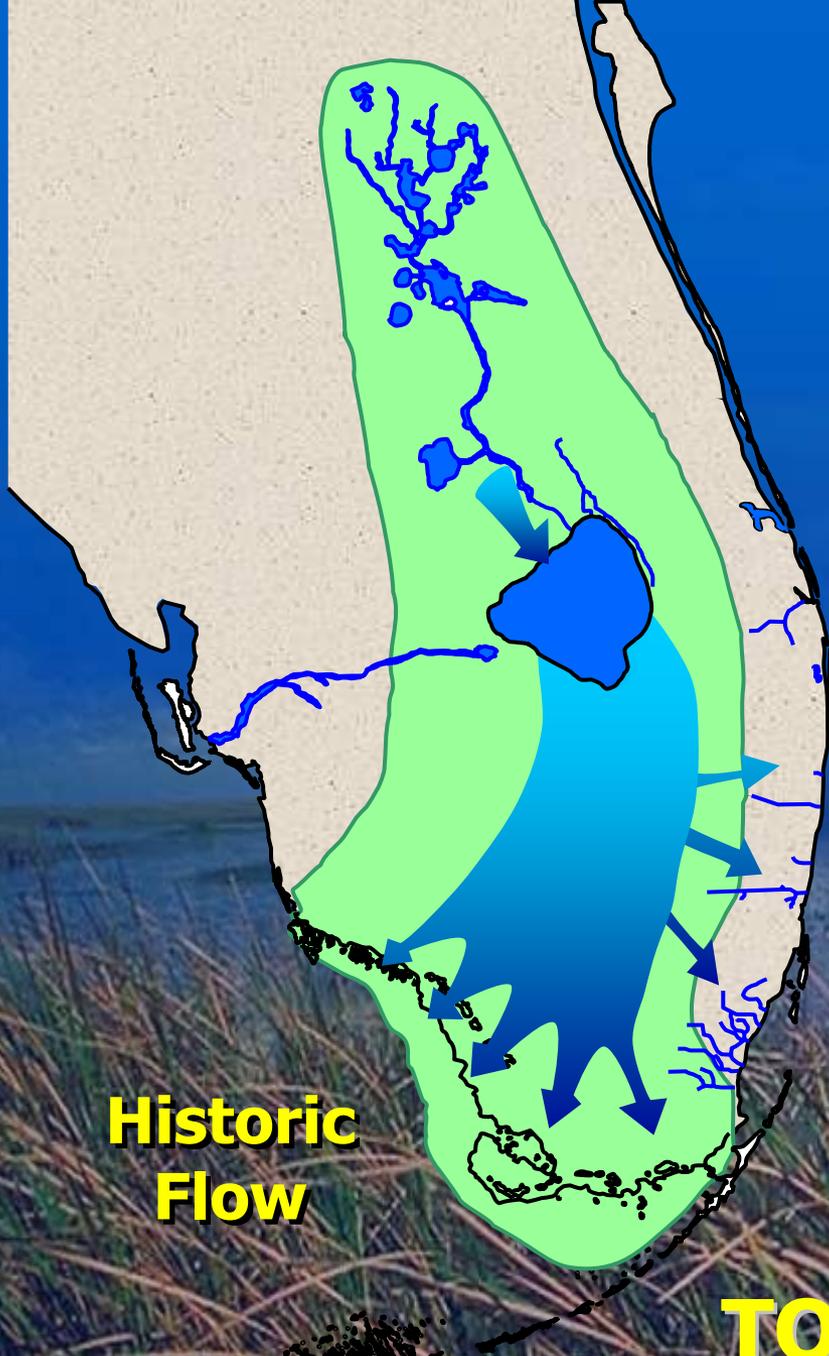
**Everglades Drainage  
District Works  
1905-1928**



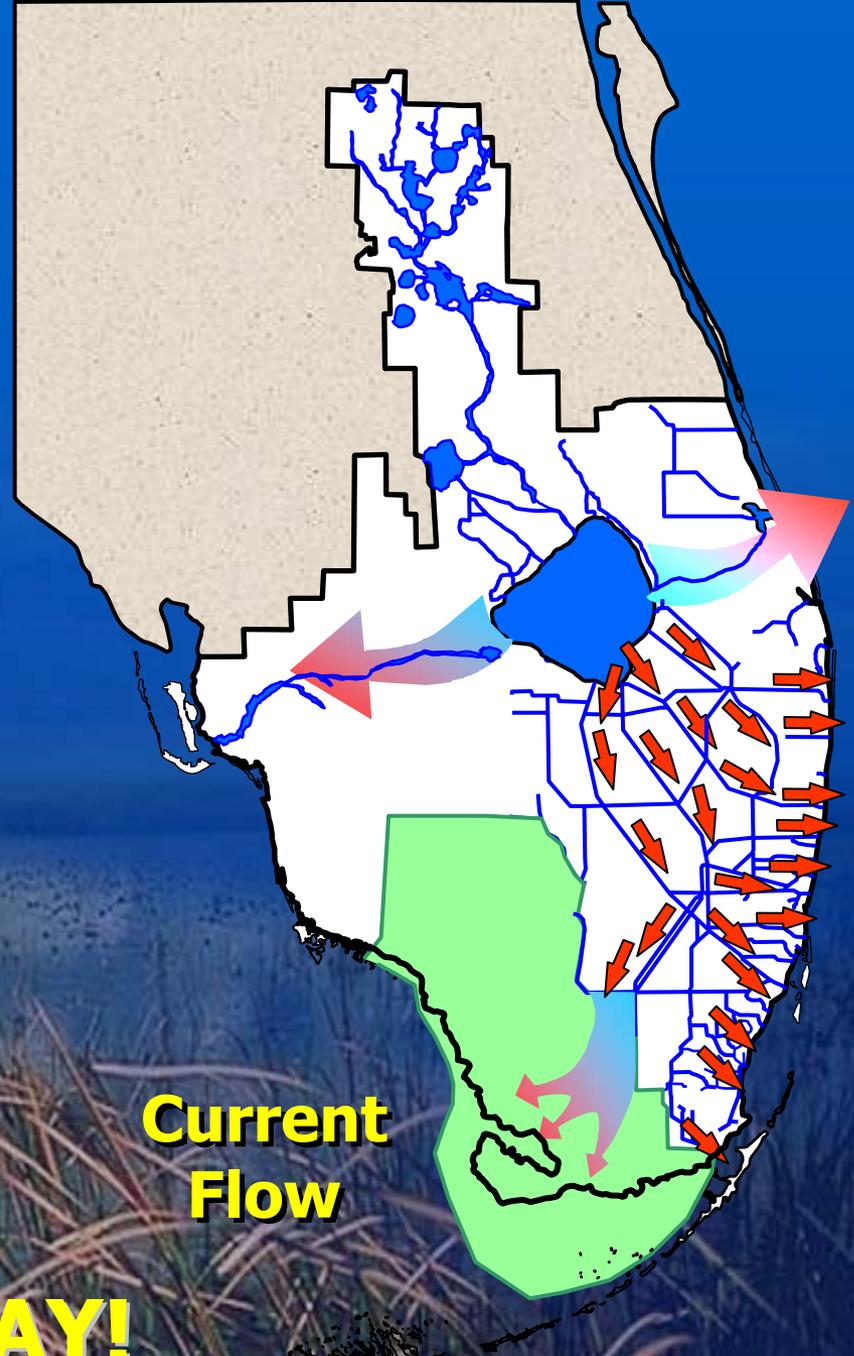
# Central & Southern Florida Project (C&SF)



- **Authorization:** Flood Control Act of 1948 +
- **Purpose:** Flood Control, Water Conservation & Control, Salt Water Intrusion, F&W, Water Supply to ENP, FL Bay/FL Keys, & Environmental Restoration
- **Features:** 46 bridges, 10 locks, 670 miles of canals, 809 miles of levees, 130 control & diversion structures, & 16 pump stations
- **Project Cost:** \$2.9B
- **Cost Share:** Varies
- **Local Sponsor:** Various



**Historic  
Flow**

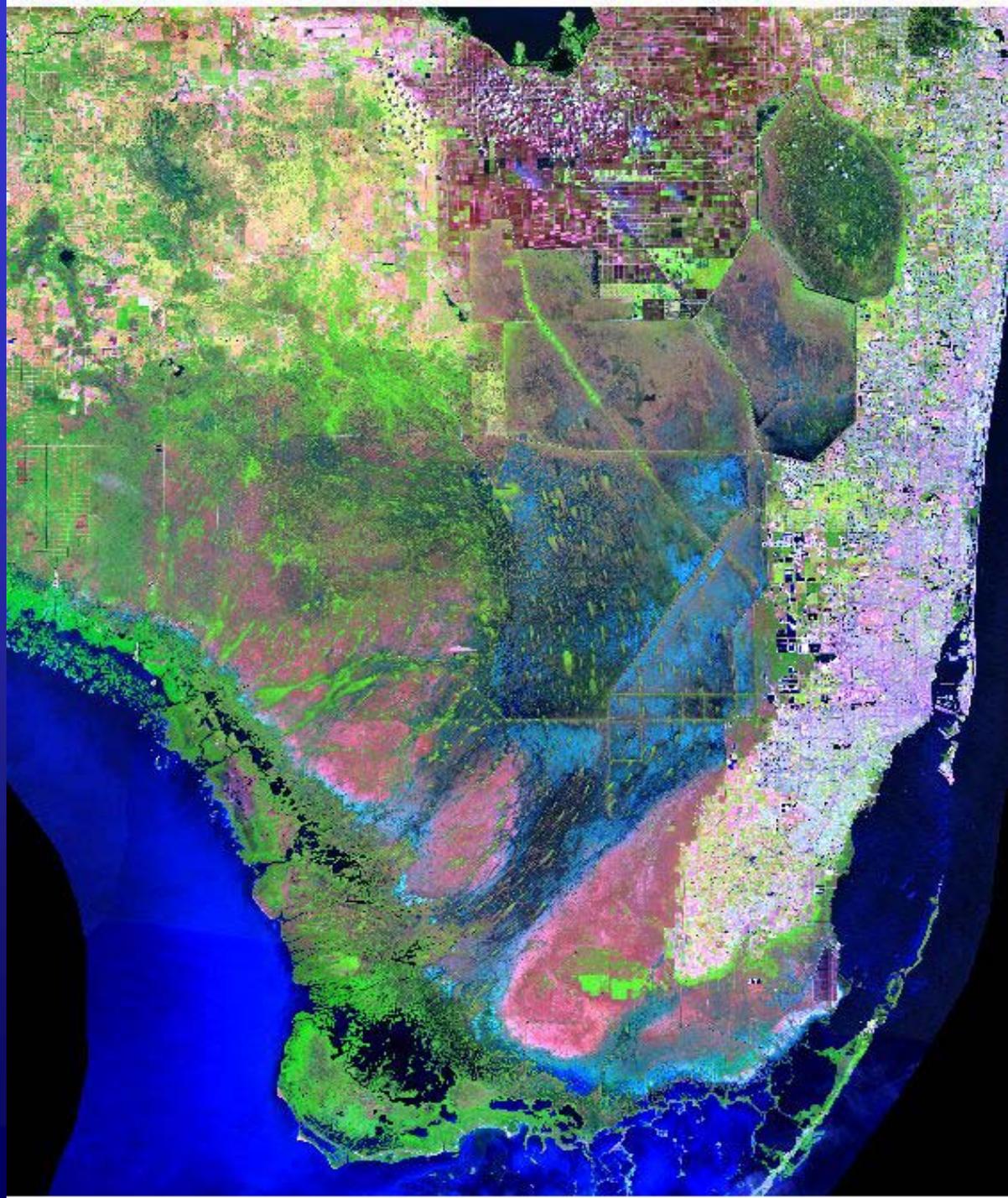


**Current  
Flow**

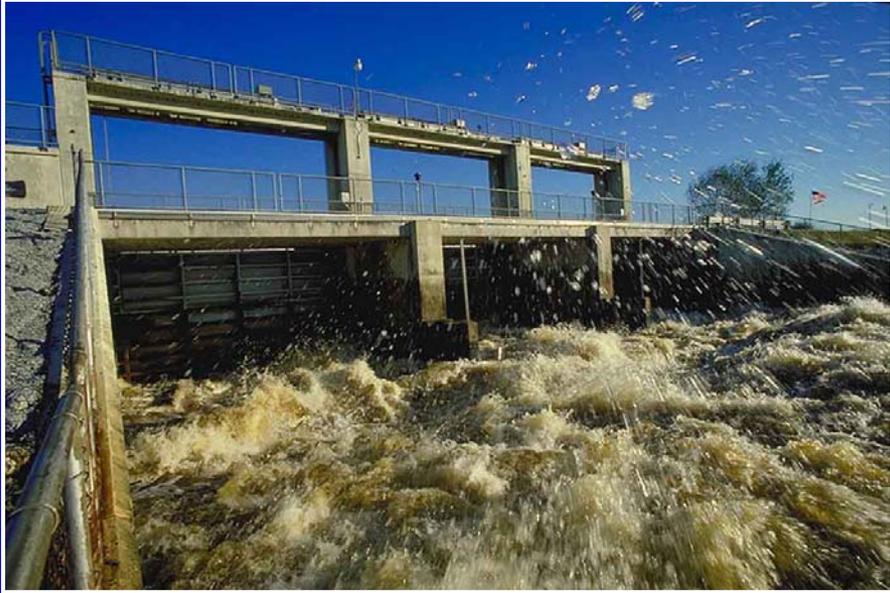
**TODAY!**

# Current Conditions

- Greatly altered landscape
- Flow interrupted by canals and levees
- Timing and distribution of flow changed



# Problems: Water Quantity



# Problems: Timing & Distribution



# Problems: Water Quality





**Expanding population  
with demands for land,  
flood control, and  
water Supply**



# **Ever Changing Needs and Priorities**

**Flood Control  
Water Supply  
Economic Growth  
Transportation  
Tourism  
Recreation  
Environmental Protection  
Restoration**

# CERP is all about Getting The Water Right

Quantity

Quality

Q

Q

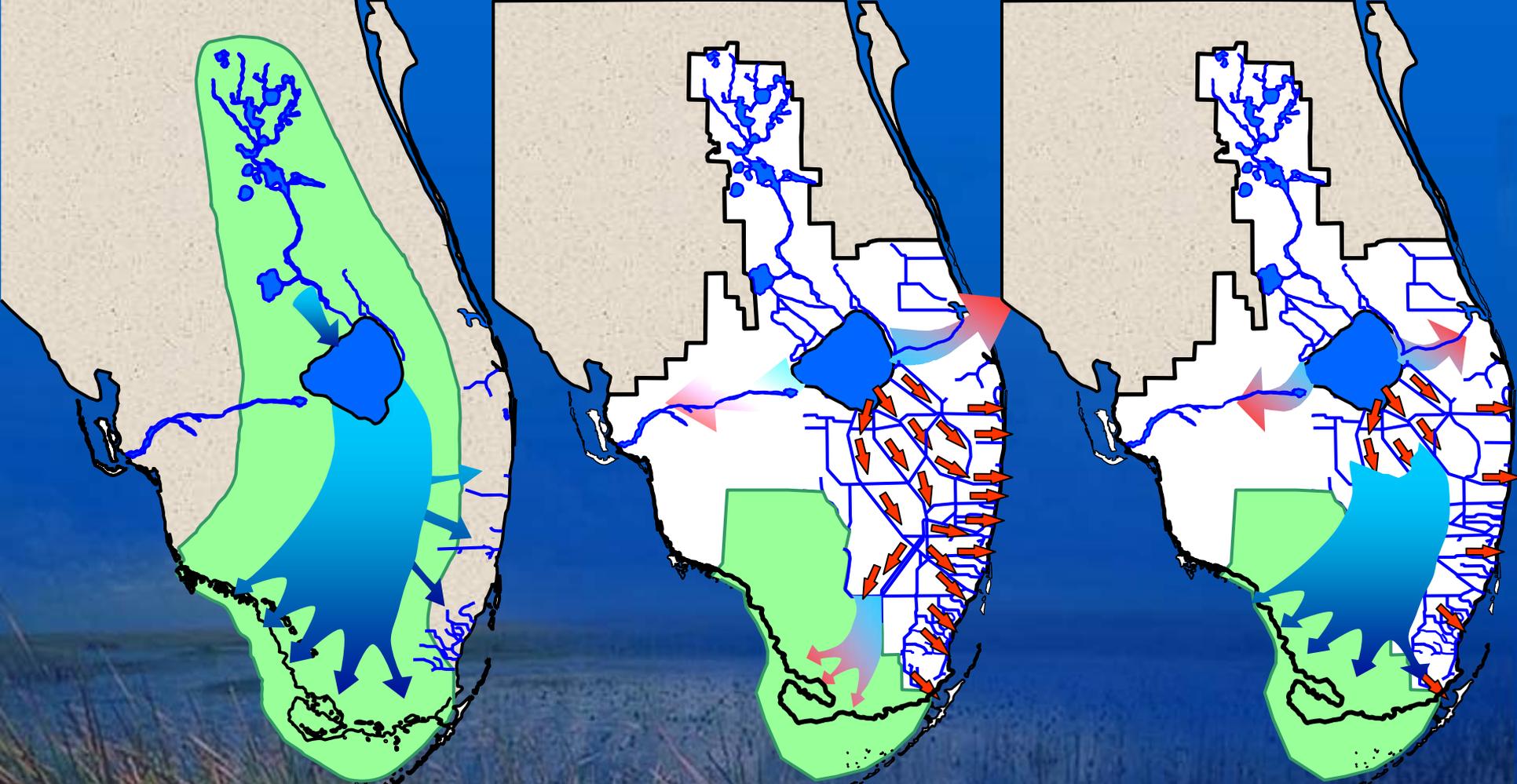
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Timing

Distribution





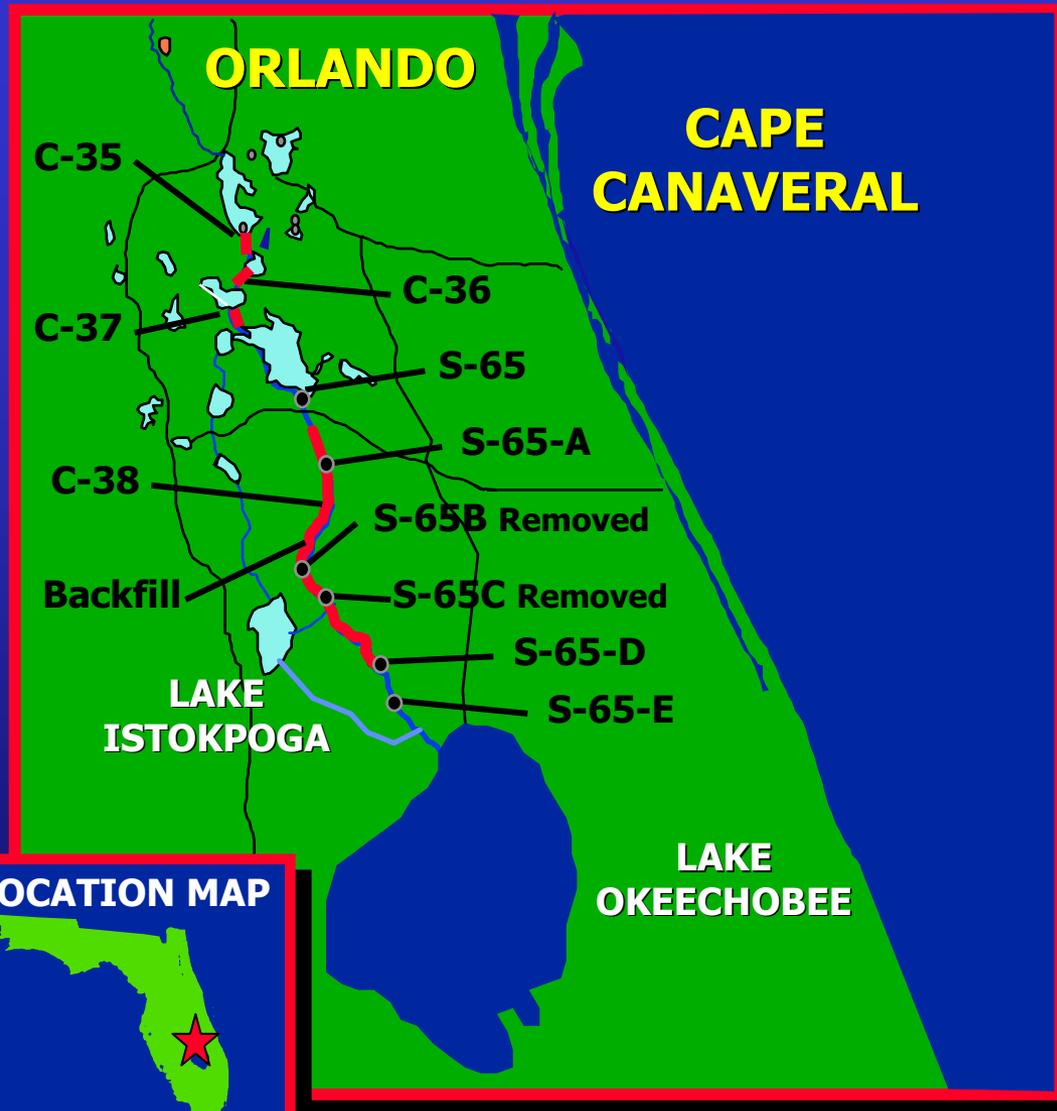
**Historic  
Flow**

**Current  
Flow**

**Future  
Flow**

# The Goal

# Where it all Starts!



**KISSIMMEE RIVER, FLORIDA**

# Program Challenges



# Timeline for Restoration

## Challenges

- Funding for public projects.
- Biological response time
- Long term Monitoring
- Burden of Federal Process
- Holding Consensus
- 68 components, 50+ projects and linkage to A8

# Restoration Funding

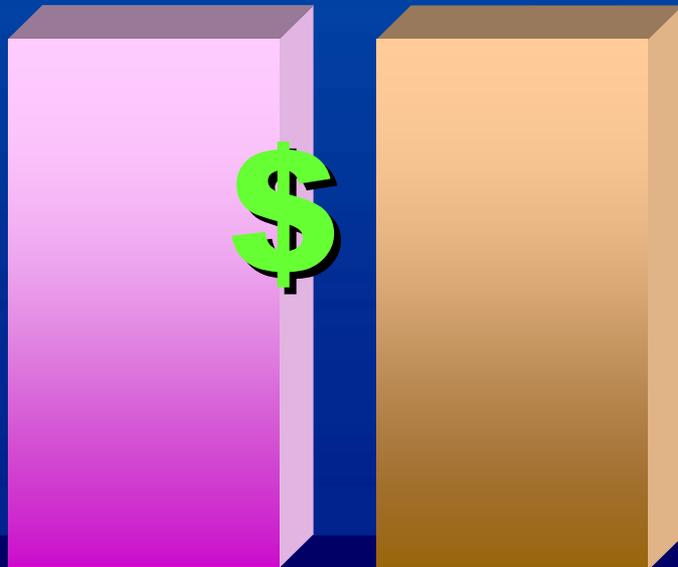
- **Challenges**

- Perception of cash flow issues
- Lack of WRDA's and PIR timing
- Political will to move projects forward

## The Plan

FEDERAL  
50%

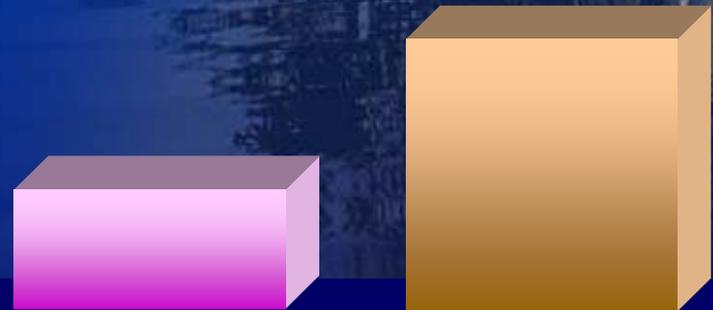
STATE  
50%



## Current Expenditures

FEDERAL

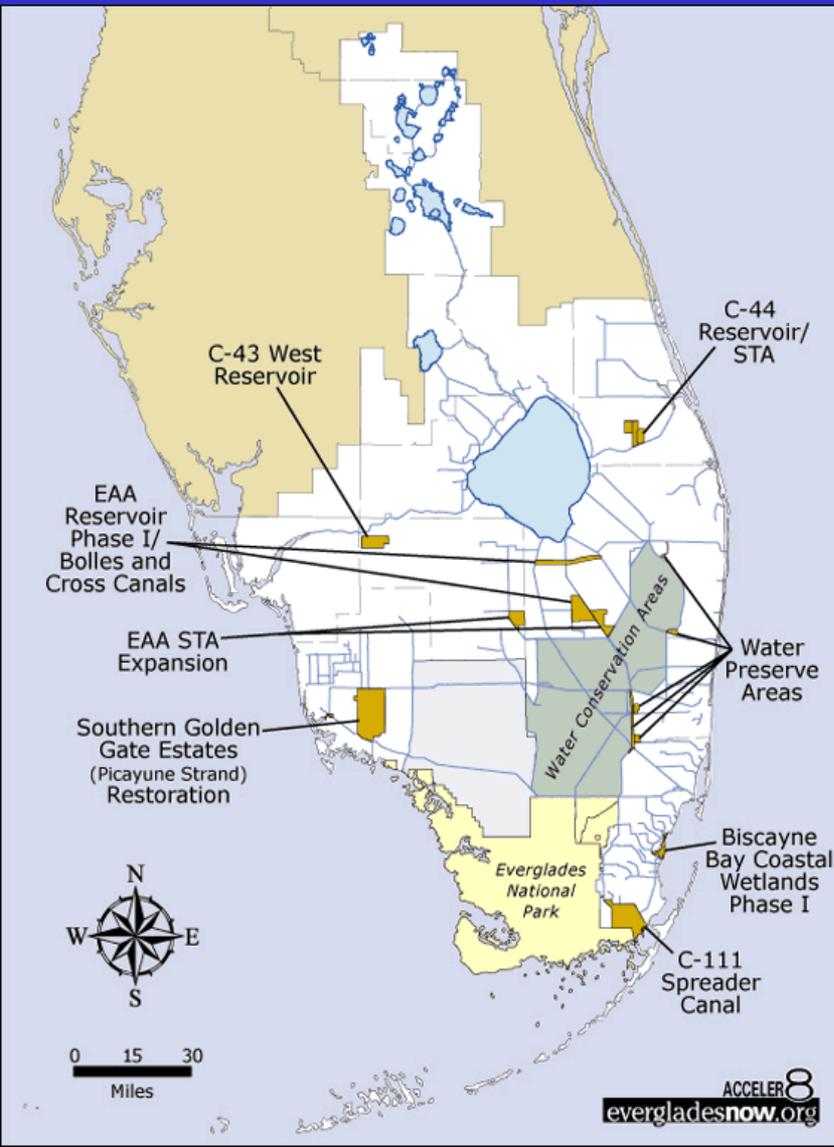
STATE



# State of Florida Accelerate Program

## Challenges

- Linkage to Federal Plan
- Funding as costs escalate
- Linkage to existing C&SF
- The 404 Permit Challenge
- Holding the consensus  
And trust



# Water Quality

- **Challenges**

- Implementation BMP's throughout system
- Fuel for mistrust
- Nitrogen
- Reflux in reservoirs
- Pesticides, Mercury, Heavy metals
- Extent of treatment in place and/or planned
- Federal Role

# Recreation

A white egret stands in a marshy area with tall grasses and water in the background. The bird is facing right, with its long neck curved downwards. The background shows a body of water and a distant horizon under a clear sky.

## Challenges

- **Public Access**
- **Trust**
- **Preserving Benefits**
- **Existing vs future use**
- **Facilities**
- **Use during operations**
- **Balance between amount, Type, purpose**

# Restoration Coordination and Verification



## Challenges

- Evolving Science
- Modeling ability
- New models
- Embracing Adaptive Management
- Success indicators & Interim Goals
- Management & Science

# Communications

## Challenges

- PDT's – Public Interaction?
- Continued outreach
- Trust

# Basin Challenges



# Kissimmee Basin

- **Challenges**

- Rapid Growth and Development
- Long term water management and Upper Chain of Lakes Operation
- Establishment of TMDL's and Contributions to Lake Okeechobee
- Biosolid transport and accumulation
- Implementation of BMP throughout basin
- Coordination of Kissimmee Restoration with CERP

# Lake Okeechobee Basin

- **Challenges**

- Herbert Hoover Dike
- Persistent High Lake Levels
- Sediments and impacts on Lake Water Quality
- Littoral function and balancing improvement in littoral shelf
- Forward Pump proposal
- Water Supply Issues

# St Lucie Basin

- **Challenges**

- Peak Discharges from Lake
- Water quality
- Local Runoff
- Continuing Growth in Basin
- Impacts of high discharges on tourism and economy and passion that invokes
- C-44 basin plan has limited storage for Lake discharges
- Perception that \$1.2 Billion IRL-S plan fixes Lake discharges
- Establishing “Right” flows to estuary
- Historical connection between St Lucie and North Palm Beach Basins

# Caloosahatchee Basin

- **Challenges**

- Peak Discharges from Lake
- Water quality, Phos and Nitrogen
- Local Runoff
- Continuing Growth in Basin
- Impacts of high discharges on tourism and economy and passion that invokes
- Basin over drainage
- Component of the S-4 Basin yet to be addressed
- Utilization of traditional recharge areas
- Benefits of Additional Lock on River at elevation

# Everglades Agricultural Area

- **Challenges**

- Last stop before remaining Everglades and direct impact on ability to achieve rain driven operations
- Long term growth, land use change, and transportation infrastructure
- Traditional battleline focus changing from BMP implementation to restoration of flow ways
- Water quality
- Future development
- Long term use of Rotenberger and Holeyland tracts

# East Coast Basins

- **Challenges**

- Implementation of alternative water supply sources
- Continuing urbanization – no cohesive plan
- How to move excess water in north to south while balancing other needs
- Salt water intrusion
- Seepage management along East coast protective levee
- Rapidly rising land cost and lost opportunities
- Biscayne Bay Quantity of Freshwater

# Lower Southwest Coast Basin

- **Challenges**

- Completion of Southwest Feasibility Study and long term implications
- Continued growth and development
- Fire management
- Panther habitat and management

# Central Everglades Basin

- **Challenges**

- Water management in Water Conservation Areas keep to restoration and preservation
- Tree Island ecology
- Sheet flow restoration
- Environmental equity between north and side south of Trail
- Subsidence and topography change impacts on restoration of sheet flow
- Sparrow, snail kite, panther long term recovery
- Development adjacent to ENP
- Continued airboat access to ENP

# Florida Keys

- **Challenges**

- Waste water management (lack of central sewer)
- Hurricane evacuation
- Impacts of growth
- Connection between corals, sea grasses and estuaries
- Restoration of freshwater flows to Florida Bay

# Summary.....

- Many issues before us
- Must work together and focus on resolution of issues and challenges
- PDT's need clear direction in how to deal with these issues



**Thank You?**

