

# Introduction for the SFWMD Water Resources Advisory Commission

July 3, 2008 Agenda Item

This is not an official government project  
**All comments are welcome**

To: Forest Michael, [fgmichael@transystems.com](mailto:fgmichael@transystems.com)

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GLADES AND HENDRY COMMUNITIES

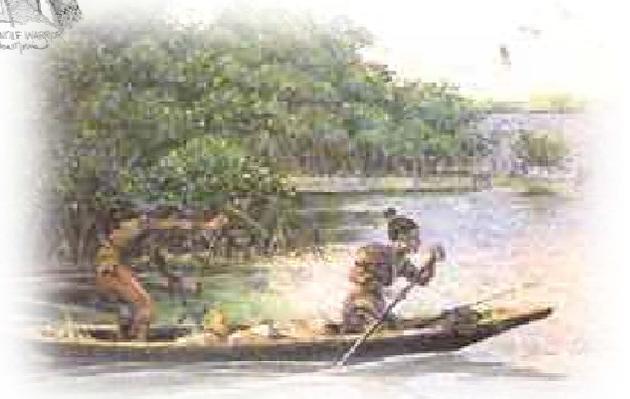


LEE COMMUNITIES

Interpretative and concessionaire opportunity for the past and present; potentially involving the Florida Tribes



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Seminole Tribe Museum;  
Theodore Morris, Artist;  
Florida Tribes Artists; and the



SEMINOLE, MICCOSUKEE, ORTONA AND CALUSA



US Army Corps  
Of Engineers®  
Jacksonville District

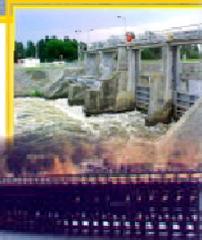
## Ortona Lock & Dam Fact Sheet



The U.S. Army Corps of Engineers welcomes you to Ortona Lock and Dam, located on the Okeechobee Waterway. Stretching out from both directions, the waterway extends to the Gulf of Mexico using the Caloosahatchee River and to the Atlantic Ocean using the St. Lucie Canal. Covering 152 miles, the waterway serves as both a commercial and recreational link with several overnight-docking facilities along the way. The Corps constructed and currently manages five locks along the Waterway. Ortona Lock and Dam were constructed in 1937 for navigation purposes.

### Ortona Facts

- Waterway distances: 15.5 miles east to Moore Haven Lock and 27.9 miles west to W.P. Franklin Lock
- Cost of construction: Approximately \$1.1 million
- Lockage: Approximately 9,500 vessels lock through annually; of these about 96% are recreational vessels.
- Commodities: Approximately 13,300 tons of manufactured goods, equipment, crude materials, food, and petroleum products locked annually.
- Lock usage: Operating hours 6:00 am to 9:30 pm, 365 days a year, unless otherwise noted in the Coast Guard published, "Notice to Mariners". Lockage usual.



\* Navigation locks information, call (



Enhance Safety - Okeechobee Waterway 1937



Wildlife & Habitat Restoration



Lake Manatee State Park

Lake Talquin State Park

**BABCOCK**  
WILDERNESS ADVENTURES



**FLORIDA**  
State Parks  
...the Real Florida™  
Created on 09/07



...the Real Florida™  
National Gold Medal Winner  
Florida State Parks - "America's First Two-Time Winner"

Nature-Based ReCreation & EcoTourism

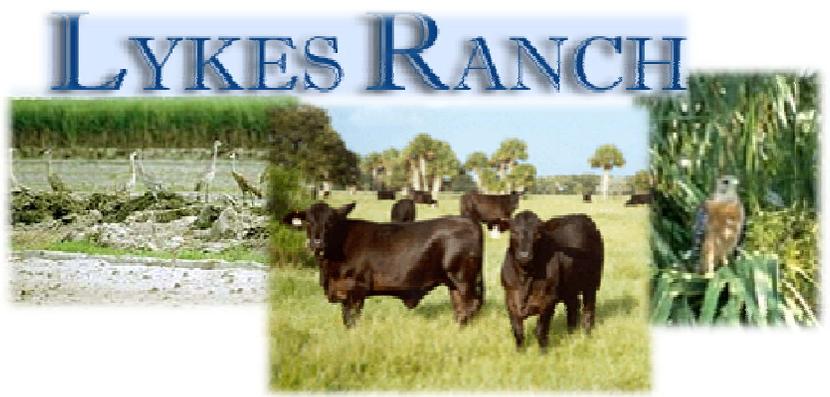


Rural Land  
Stewardship Area Program  
2007 Annual Report  
to the Legislature  
December 31, 2007



**STATE-OF-THE-ART AGRIBUSINESS**  
U.S. Sugar is one of America's premier, globally competitive agribusiness companies practicing the most efficient and progressive farming techniques.  
[READ MORE >>](#)

Southern Gardens Citrus



Florida Agriculture Partnerships are Desired

# Caloosahatchee Riverway

## 5 new lakes

same storage; 3 affordable phases; costs less;

recreation; commerce; water quality;

agricultural stewardship; habitat restoration;

1937 Ortona Lock upgraded

Quality of Life *for* Glades – Hendry – Lee

# Introduction

## Caloosahatchee Riverway

Restore Lakes Flirt, Bonnet, Lettuce, Hicpochee  
and construct the hybrid Lake Labelle

Estuary....."Hybrid .....Ortona .....Upper Chain.....Lake  
 Lake LaBelle" Falls of Lakes Okeechobee

# Caloosahatchee Riverway Lake Okeechobee to the Gulf Estuaries

## Ecosystems, navigation, stormwater management, agriculture, parks and commerce

CONFIDENTIAL - IN PROGRESS DIAGRAM FOR DISCUSSION - NOT CURRENTLY ENDORSED BY THE GOVERNMENT



MAY 12, 2008  
 0 5  
 Graphic Scale.....miles  
 TranSystems  
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 ABBREVIATIONS: FDEP Florida Department of Environmental Protection, FNTS Florida National Science Trust, NAD North American Vertical Datum, SFWMD South Florida Water Management District.

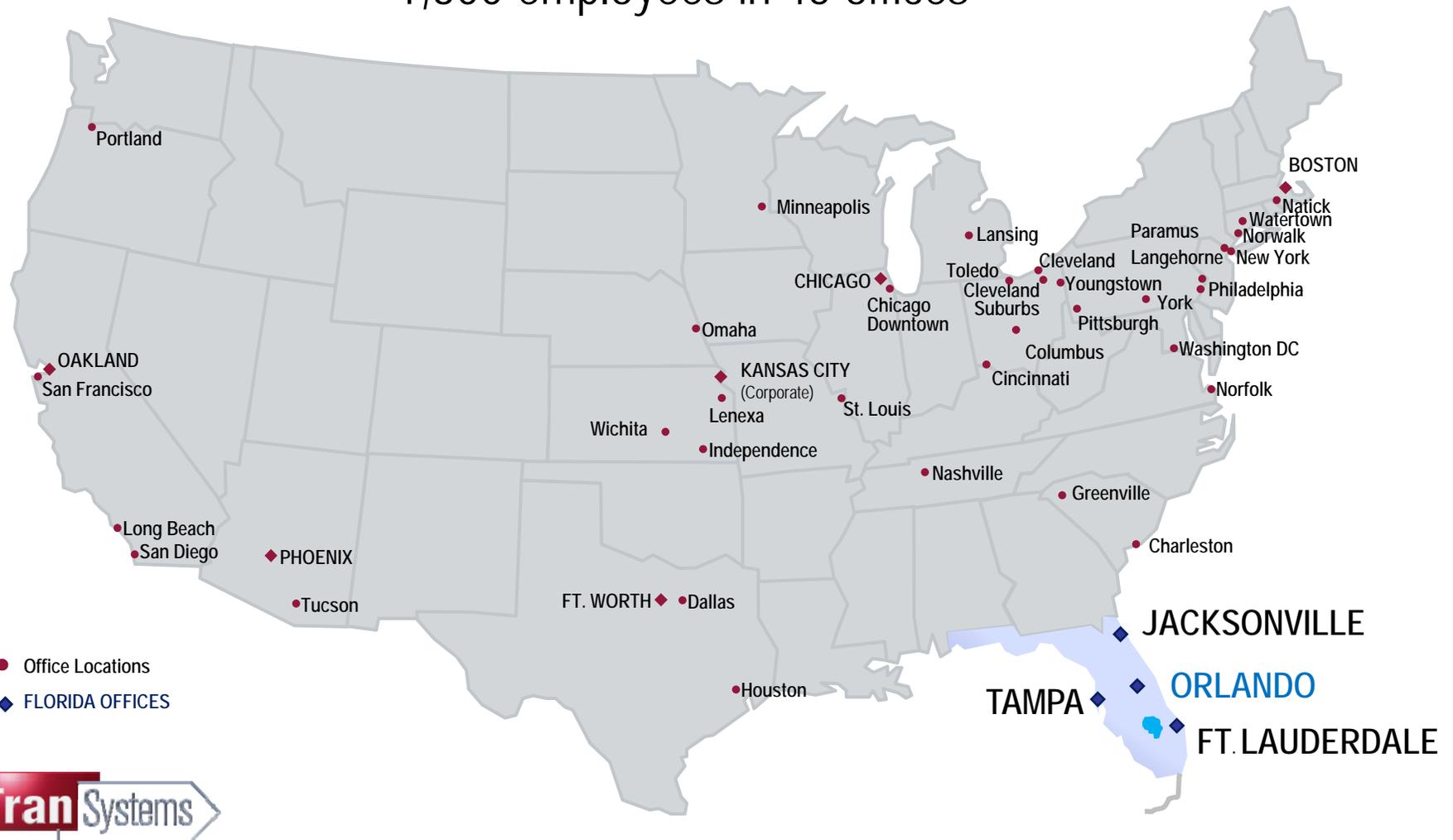
**NORTHERN EVERGLADES:** a potential community-oriented Riverway - a modification to the C-43 West Reservoir for estuary and agricultural water supply/quality; restoring the upper lakes and waterfall channelized in the 1880s; increasing local revenues and commerce with waterfront parks and development at the historic towns; including flood protection and rural land stewardship

Riverway Alternative will restore the Riverway  
 (Combined with current local and District projects)

# TranSystems is full service focused on linear systems

Orlando focuses on Florida ecosystem-based projects

1,300 employees in 45 offices



# Experience in the Florida Heartland & Southwest



- ▶ **Lake Okeechobee FNST** (FDOT, FDEP, SFWMD, DOI, USACE, FHREDI, FDEP, USDA, BIA, Brighton, Glades, Hendry, Okeechobee)
- ▶ **Babcock Ranch Greenway**
- ▶ **Caloosahatchee Riverway**
- ▶ **Big Cypress National Preserve**
- ▶ **Everglades National Park**
- ▶ **Kissimmee River**
- ▶ **Tamiami Trail, Fakahatchee Strand, 10,000 Islands**
- ▶ **Florida Keys and Florida Bay**
- ▶ **Florida Greenways Commission** (Central FL Task Force Chair)

# EcoReservoirs, integrated multiple-use

## Caloosahatchee Riverway Alternative

integrates the cost saving 2007 invention, “EcoReservoir Program” with the best practices of the FDEP, SFWMD, USACE and others... **a new approach to Florida reservoirs.**

TranSystems respects the quality CERP scientists and engineers. **We wish to collaboratively integrate that experience with the multi-use EcoReservoir approach for the Riverway.**



# 2007 Testimony

**GAO**

United States Government Accountability Office

Testimony

Before the Subcommittee on International Operations and Organizations, Democracy and Human Rights, Committee on Foreign Relations, U.S. Senate

For Release on Delivery  
Expected at 3:00 p.m. EDT  
Wednesday, September 19, 2007

## **SOUTH FLORIDA ECOSYSTEM**

**Some Restoration Progress  
Has Been Made, but the  
Effort Faces Significant  
Delays, Implementation  
Challenges, and Rising  
Costs**

Statement of Anu K. Mittal, Director  
Natural Resources and Environment

# Northern Everglades Caloosahatchee Riverway



lower cost; ecological;

affordable phases;

long-term benefits for  
communities offsetting  
Sugar sale impacts

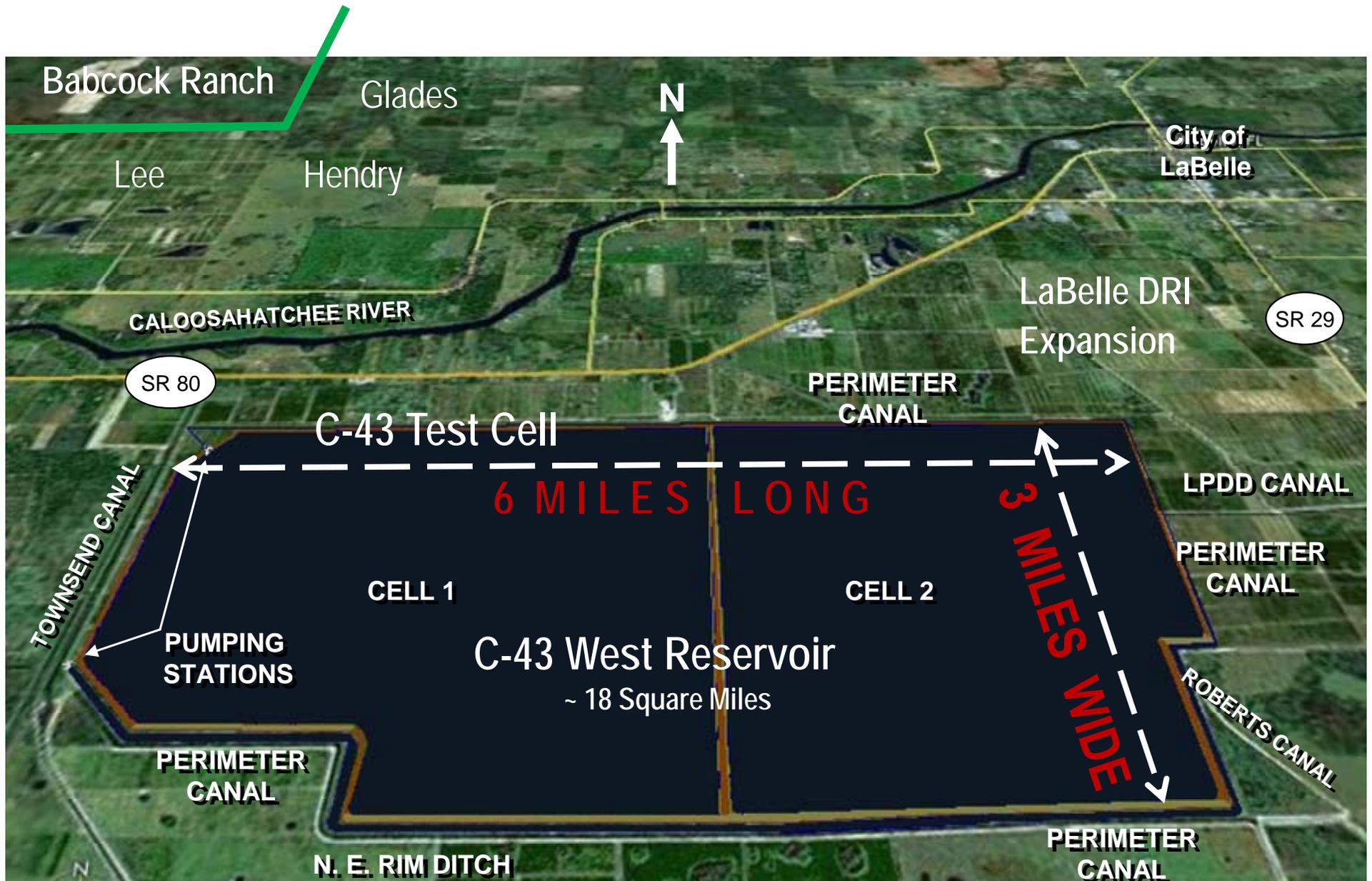
**Current:** Caloosahatchee C-43 West Reservoir



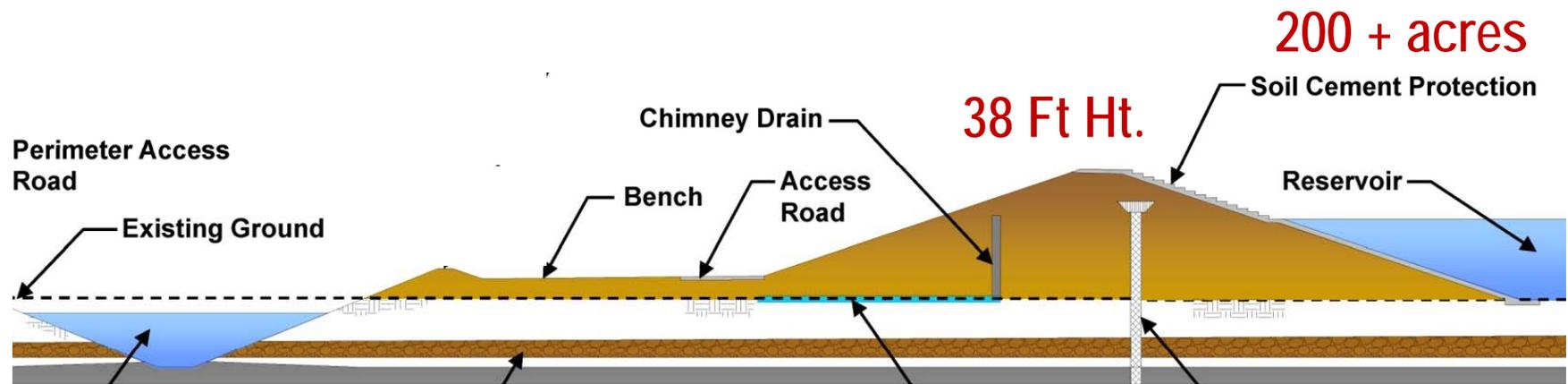
C-43 West Reservoir "Test Cell"

**Single Function: Water Storage**

# Current: C-43 West Reservoir next to LaBelle



# Current: Dam Construction (C-43 West Reservoir)



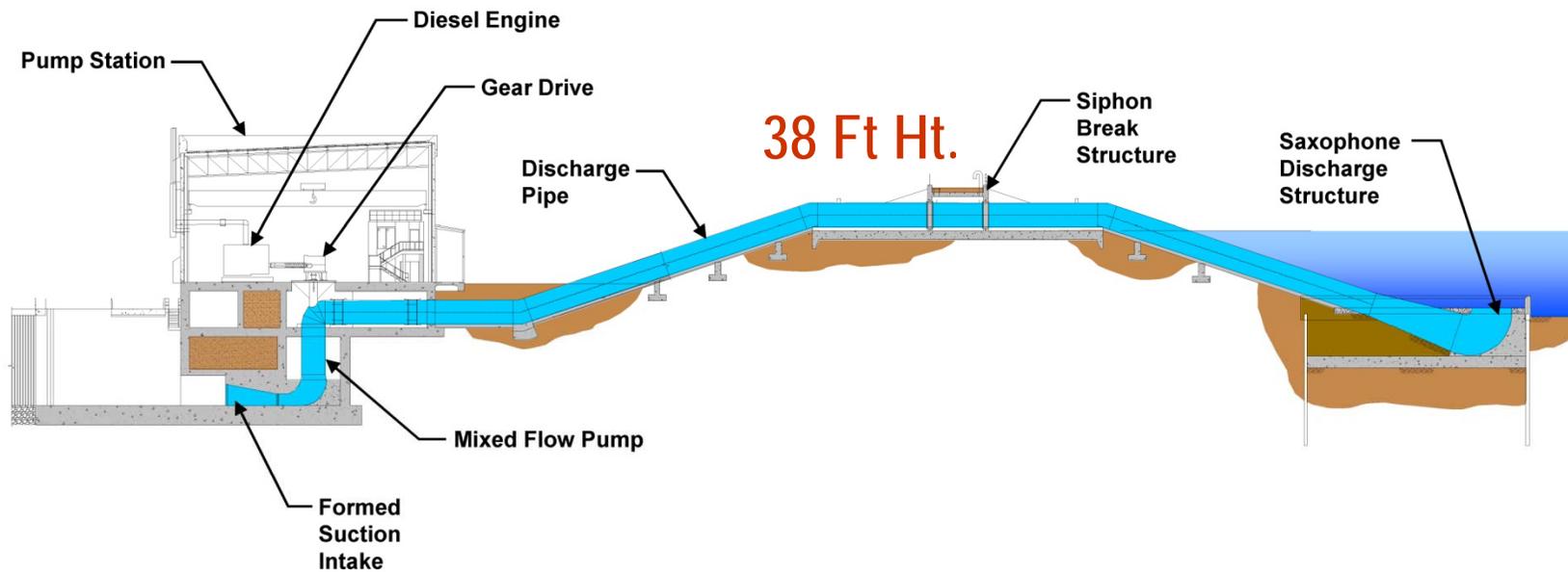
Approx. 300 Ft. Wide and 18 Miles Long

# Current: Construction Technique (EAA A-1 Reservoir)



# Current: Pump Station Construction (C-43 West Reservoir)

5 Stories Tall





Current C-43 West Reservoir relies on sophisticated pumps with heavy O&M and Capital expenses – to stem freshwater pulses



# Riverway Alternative for financial and ecological sustainability



# Models for the Caloosahatchee Riverway Alternative





## Caloosahatchee Riverway

Native American  
culture and native  
habitat, hydrating  
lakes, commerce and  
waterway, agriculture  
and Quality of Life

Florida Model: "Great State Seal"

# Florida Model: State Parks and Restoration



Florida State Parks 2007 Photo Contest  
[www.FloridaStateParks.org](http://www.FloridaStateParks.org)

Photo By Jasmine Marsden  
De Leon Springs State Park

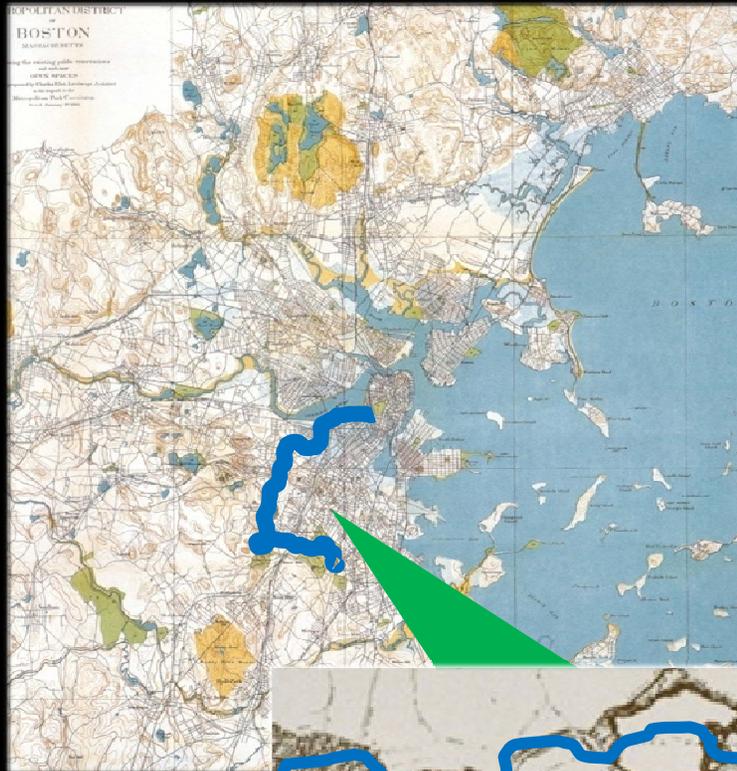
Contest  
Photo By Lou Garofaldest  
Edward Ball Wakulla Springs State Park

Photo By Paul Strauss  
Savannas Preserve State Park

# Florida Model: SFWMD Kissimmee River Restoration

- 
- re-establish historic hydrologic conditions
  - recreate the historical river/floodplain connectivity
  - recreate the historic mosaic of wetland plant communities
  - restore the historic biological diversity and functionality

(Download)



# TRADITIONAL URBAN MODEL:

## 1893 Boston's Regional Reservoirs

"greatest good for the greatest number"

Olmsted and Eliot, Landscape Architects

## Emerald Necklace



“Sanitary stormwater engineering”  
serving as a public park



Dr. Bruce Stephenson and  
Professor David Schuyler

Emerald Necklace

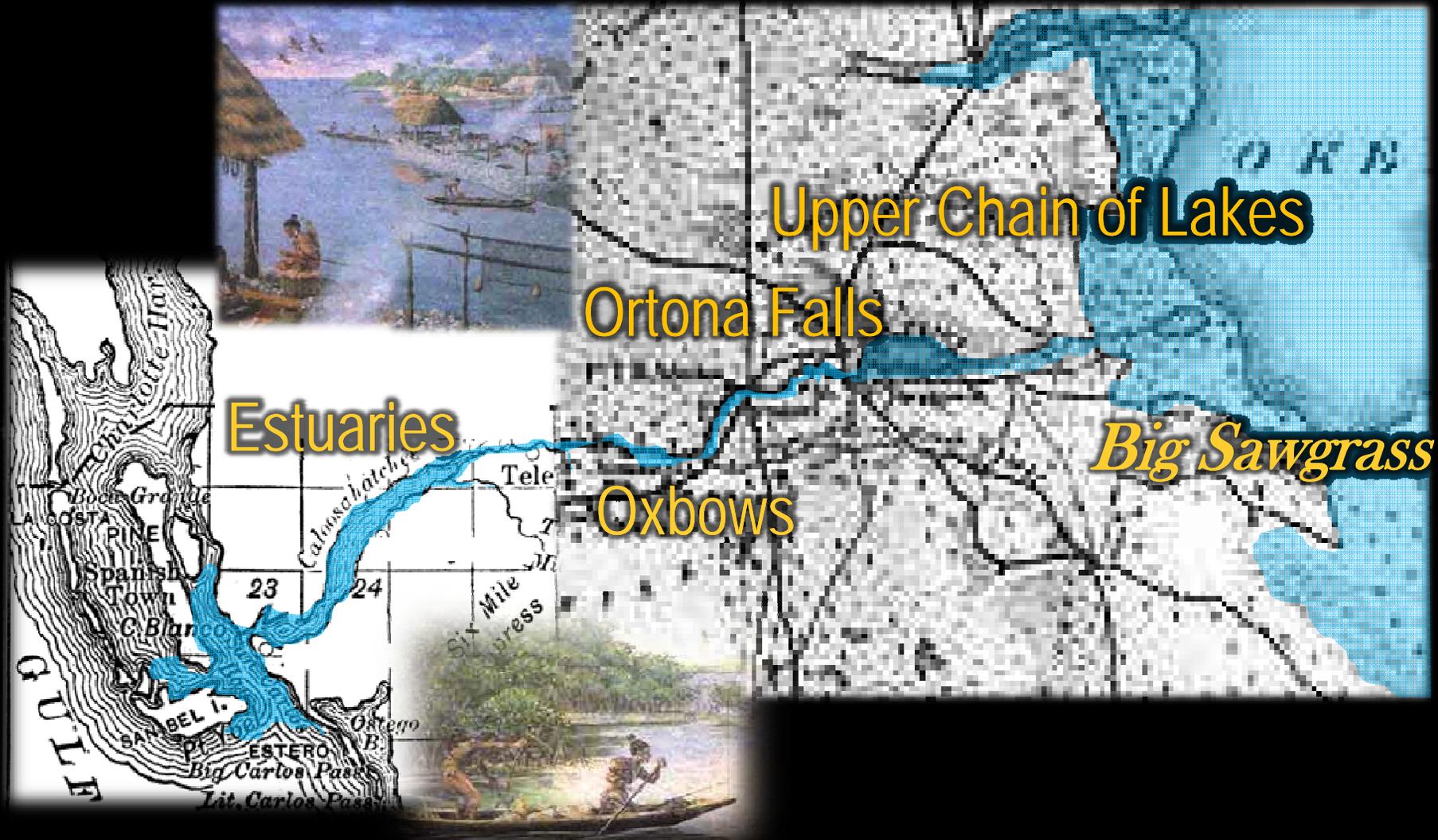
# Riverway components.....

"Greatest good for the greatest number"

- Naturalistic Stormwater Systems
- Naturalistic Reservoirs
- Ecosystem Restoration
- Stormwater Quality
- Parks & Recreation
- EcoTourism
- Historical Interpretation - Native American Opportunity
- Region-wide Local Commerce
- Rural Land Stewardship and WQ for Agriculture
- Okeechobee Waterway Safety Enhancement



## Best Practices



Upper Chain of Lakes

Ortona Falls

Estuaries

Oxbows

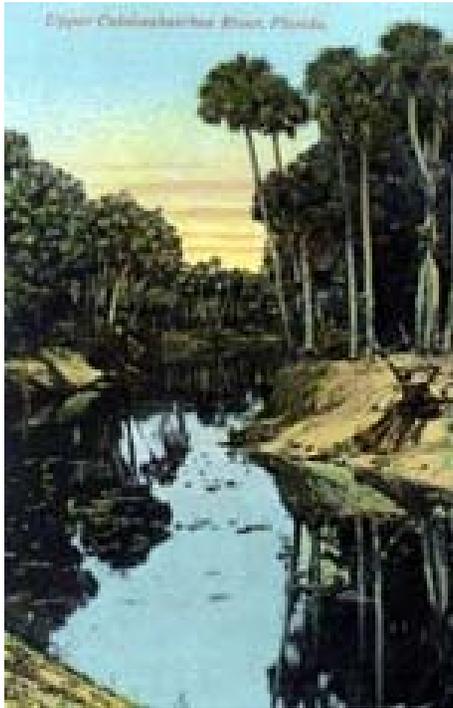
*Big Sawgrass*

# “Caloosa Hatchee”

# Caloosahatchee Riverway



Estuaries



River Oxbows



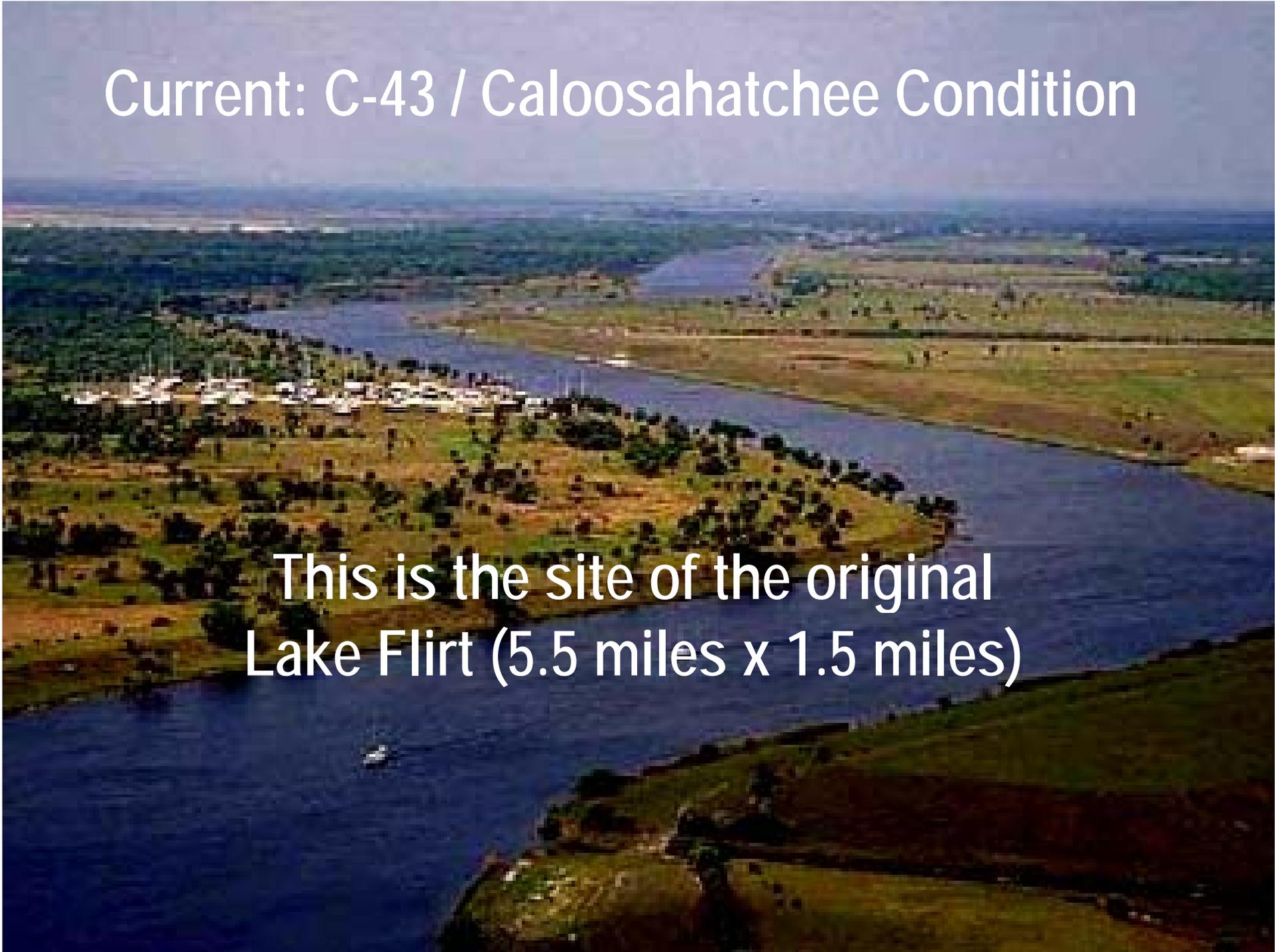
Ortona Waterfalls



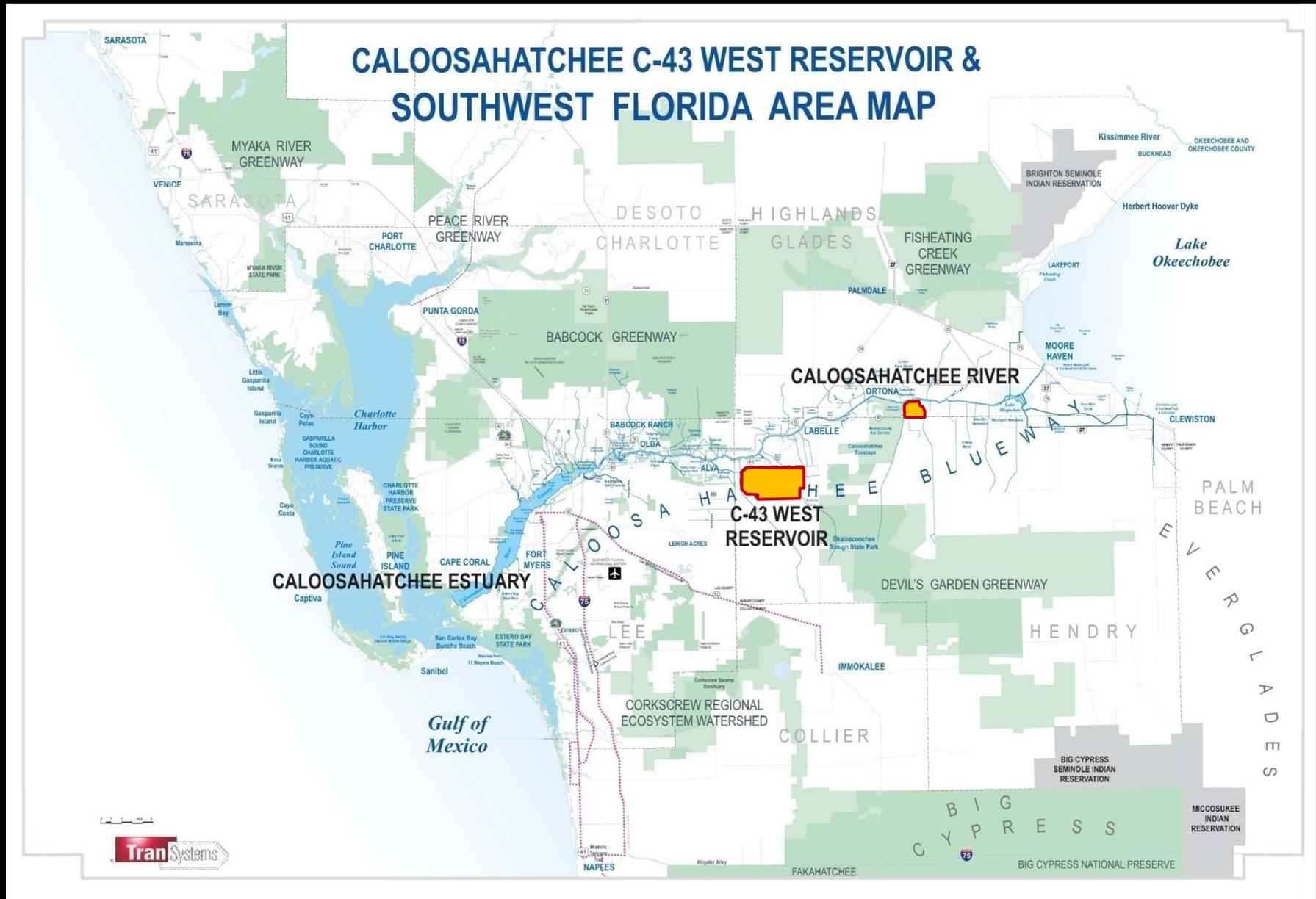
Upper Chain of Lakes

Current: C-43 / Caloosahatchee Condition

This is the site of the original  
Lake Flirt (5.5 miles x 1.5 miles)



# Current Approach will not restore the "Riverway"



*Estuary.....“Hybrid .....Ortona .....Upper Chain.....Lake  
 Lake LaBelle” Falls of Lakes Okeechobee*

**CaloosaHatchee Riverway** Lake Okeechobee to the Gulf Estuaries  
 Ecosystems, navigation, stormwater management, agriculture, parks and commerce

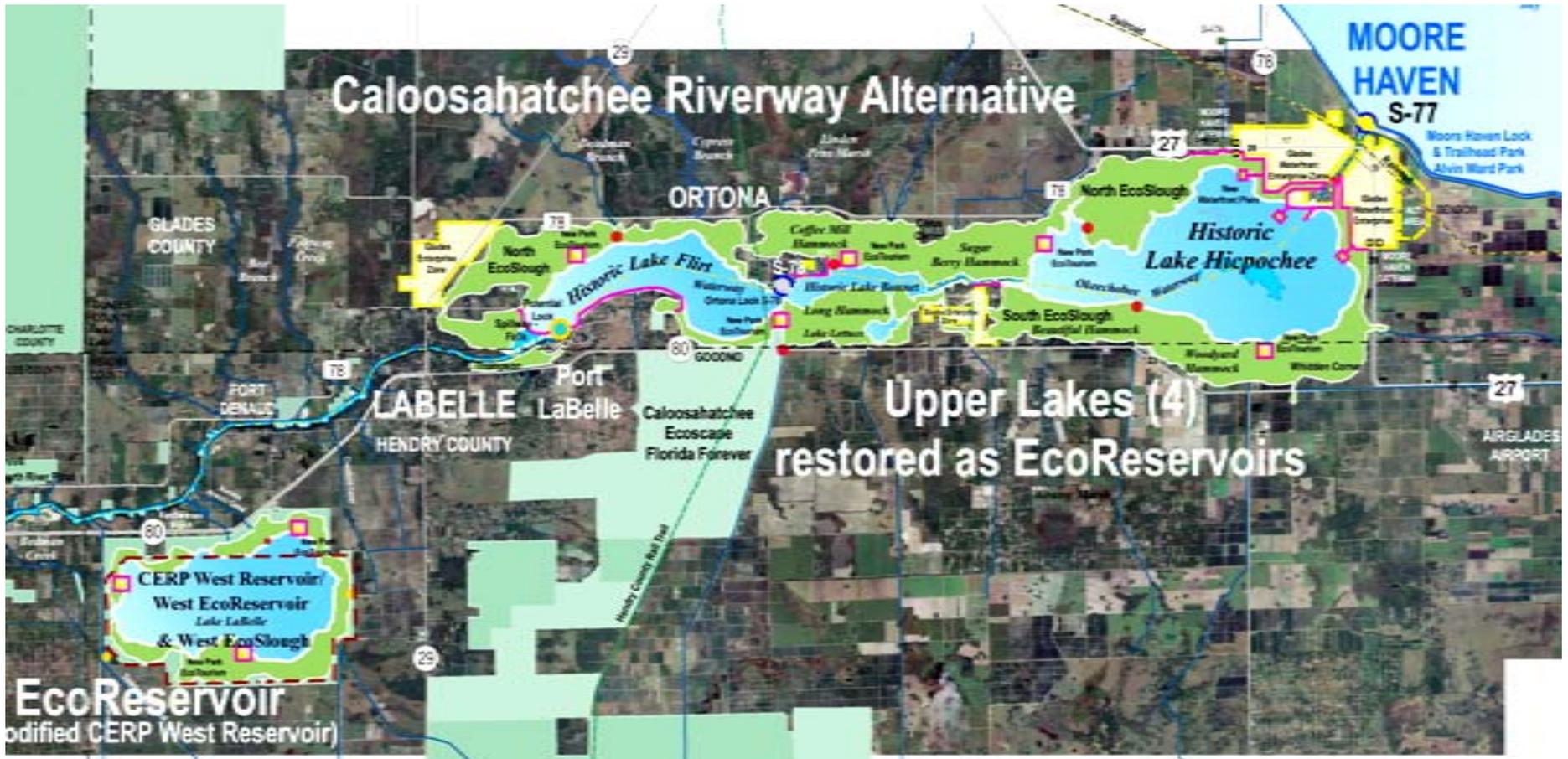
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**NORTHERN EVERGLADES:** a potential community-oriented Riverway - a modification to the C-43 West Reservoir for estuary and agricultural water supply/quality; restoring the upper lakes and waterfall channelized in the 1880s; increasing local revenues and commerce with waterfront parks and development at the historic towns; including flood protection and rural land stewardship

**Riverway Alternative will restore the Riverway  
 (Combined with current local and District projects)**

# 5 Lakes as EcoReservoirs provides the same water storage as the C-43 West Storage Reservoir for less cost and more benefit



West Reservoir.....  
*hybrid* Lake Labelle

restore 4 historic Upper Lakes  
and hammocks

## CERP C-43 West Reservoir Currently Single -use

- Water Storage Reservoir

## Caloosahatchee Riverway Alternative Multi - use

- Riverway - Naturalistic EcoReservoir System *Restoration*
- Ecosystem Restoration & Panther Habitat *Restoration*
- Historic Upper Lakes Flirt, Bonnet, Lettuce & Hicpochee *Restoration*
- Pre-1880s Waterfalls *Restoration*
- New Lake LaBelle
- Stormwater Quality – Estuary *Restoration*
- Local Parks & Recreation
- EcoTourism & Region-wide Commerce
- Native American Opportunity
- Agricultural Rural Land Stewardship & Water Quality
- Real Estate Land Value & Revenue Increase
- Okeechobee Waterway Safety and Operational Improvement
- Caloosahatchee Regional Mitigation Bank as *Restoration?*
- Caloosahatchee Riverway State Park as *Restoration?*
- Northern Everglades “Big Sawgrass” *Restoration*

“Greatest good  
for the greatest  
number”

A Florida Reservoir Model

# FINANCIAL Sustainability (how?)

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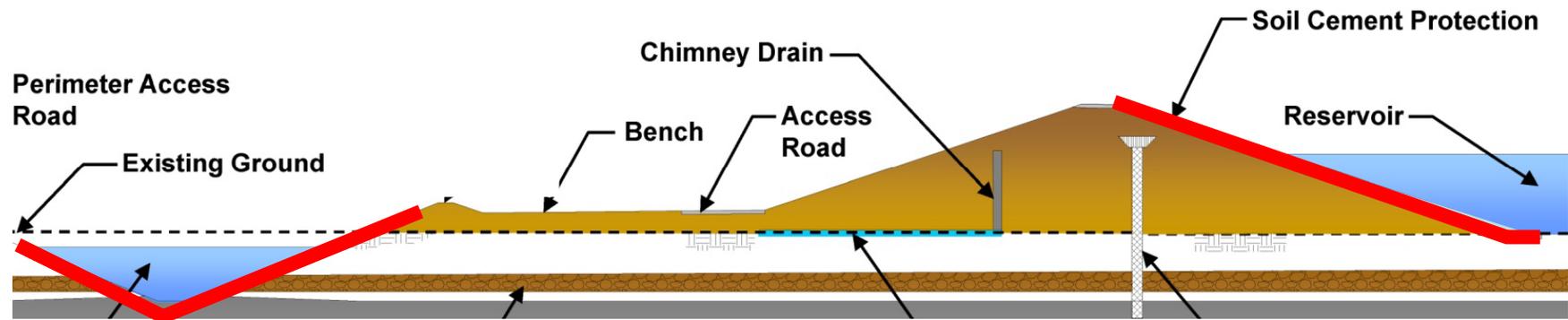
- Lower cost approach
- Increased revenue to the counties
  - More benefits to local businesses
  - Greater quality of life for residents
  - Benefits to agriculture

# FINANCIAL Sustainability (how?)

- Lower cost approach – Reduce Structures

- ~ \$50 million construction savings

- ~ \$200 million in 30-year savings



18 miles of canals .....+.....Concrete @ 100 Ft wide x 18 miles = 200 + acres



**Average State Park annual O&M is \$850,000;  
West Reservoir annual O&M is \$3.5 million**

**Lake Talquin Reservoir and State Park, Tallahassee**

# FINANCIAL Sustainability (how?)

- Lower cost approach – Reduce reservoir O&M



**\$3.5 million annual O&M (West Reservoir)**  
**= \$105 million 30-year O&M (West Reservoir)**  
**+ 30-year capital costs? (West Reservoir)**

**Riverway Alternative: \$1 million annual O&M**  
**= \$2.5 million annual O&M Savings**  
**= \$75 million 30-year O&M Savings**

# FINANCIAL Sustainability (how?)

- Lower cost alternative on same land
- Increase revenue to the Local Governments

Benefits to local businesses

Benefits to agriculture

Community benefits = Quality of Life

## COST SAVINGS SUMMARY

<b>TOTAL RIVERWAY PROGRAM INITIAL COST SAVINGS</b>	<b>\$ 65,593,600</b>	APPROXIMATED
<b>TOTAL RIVERWAY PROGRAM 30-YEAR COST SAVINGS</b>	<b>\$ 235,198,000</b>	APPROXIMATED

### Operations and Maintenance Savings (Riverway)

Annual Operations & Maintenance Savings	\$ 2,500,000	APPROXIMATED
30-Year Operations & Maintenance Savings	\$ 75,000,000	APPROXIMATED
30-Year Capital Cost Savings (Pumping Equipment)	\$ 39,000,000	APPROXIMATED

### EcoTourism Direct Benefit (Riverway)

EcoReservoir Annual EcoTourism Benefit	\$ 2,003,600	APPROXIMATED
EcoReservoir 30-Year EcoTourism Benefit	\$ 60,108,000	APPROXIMATED

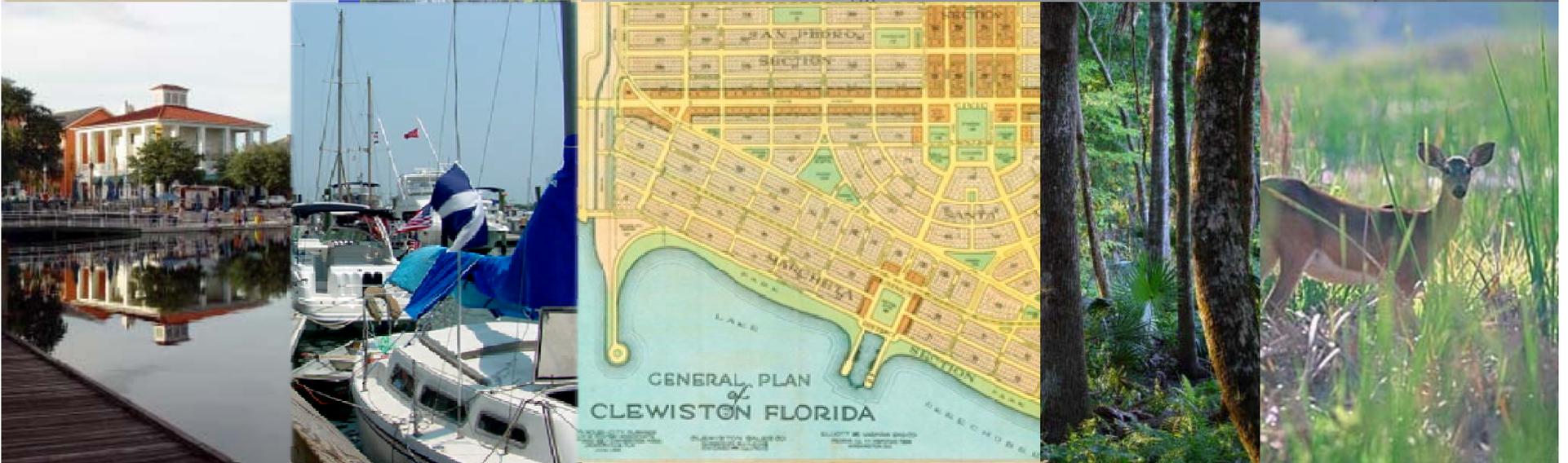
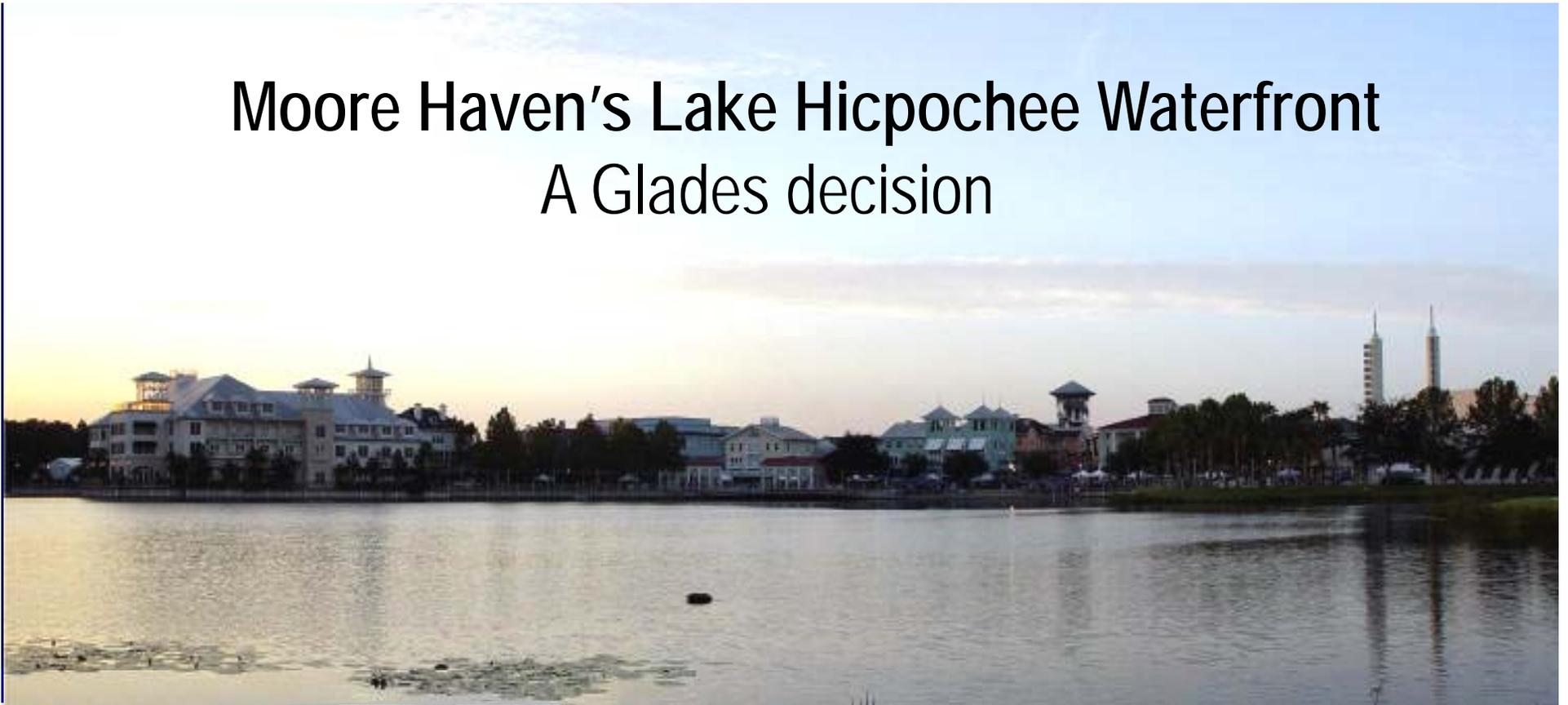
### Construction Cost Savings (Riverway)

EcoReservoir Construction Cost Savings	\$ 61,090,000	APPROXIMATED
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Note: additional planning, design and estimating is needed to verify all approximated costs

# Moore Haven's Lake Hicpochee Waterfront

## A Glades decision



# Riverway Phase 1

Acre-feet summary

Real Estate cost summary

# Water Storage

Current C-43 West Reservoir @ 170,000 acre-ft

Caloosahatchee Riverway @ 170,000 acre-ft

The Caloosahatchee Riverway  
has integral Water Quality too!

<b>CALOOSAHATCHEE RIVERWAY ECORESERVOIR ALTERNATIVE</b>		Sq Miles (640 ac/mi)	Facility Agerage	Avg Depth		SOUTH RV. Acre-Feet	LAKES Acre-Feet	NORTH RV. Acre-Feet		<b>PHASE 1</b>	
<b>WATER STORAGE - LAKE SYSTEM</b>										Average Land Cost Per Acre	<b>\$ 15,000.00</b>
LAKE LABELLE West EcoReservoir	WSR	10	6,400	6.15			39,360			See Const Costs	
LAKE FLIRT EcoReservoir	WSR	7	4,480	6.00			26,880			\$ 67,200,000	
LAKE BONNET/LETTUCE EcoReservoir	WSR	2	1,280	6.00			7,680			\$ 19,200,000	
LAKE HICPOCHEE EcoReservoir	WSR	14	8,960	6.00			53,760			\$ 134,400,000	
Already Florida-Owned / Boma		5	3,200	6.00	Florida-Owned		19,200	Florida-Owned		0	
		<b>38</b>	<b>24,320</b>				<b>146,880</b>			<b>\$ 220,800,000</b>	

<b>WATER QUALITY / STORAGE - NORTH SYSTEM</b>										
ALVA North EcoSlough	WQ	14.00	8,960	3.00				26,880		
LAKE FLIRT North EcoSlough	WQ	7.50	4,800	3.00				14,400		
LAKE BONNET North EcoSlough	WQ	4.50	2,880	3.00				8,640		
LAKE HICPOCHEE North EcoSlough	WQ	7.50	4,800	3.00				14,400		
<b>WATER QUALITY / STORAGE - SOUTH SYSTEM</b>										
<b>C-43 WEST Water Quality</b>	WQ	7	4,480	3.60		16,128				See Const Costs
LAKE FLIRT South EcoSlough	WQ	1	480	3.00		1,440				\$ 7,200,000
LAKE BONNET South EcoSlough	WQ	1	640	3.00		1,920				\$ 9,600,000
LAKE HICPOCHEE South EcoSlough	WQ	10	6,189	3.50		21,661				
Already Florida-Owned (Boma)		2	1,280	3.00		3,840			Florida-Owned	0
		<b>7</b>	<b>6,880</b>			<b>23,328</b>				<b>\$ 16,800,000</b>

<b>31,200</b>	<b>SUBTOTAL</b>	<b>23,328</b>	<b>146,880</b>
<b>TOTAL PHASE 1 ACRE- FEET</b>	<b>170,208</b>	<b>PHASE 1 REAL ESTATE</b>	<b>\$ 237,600,000</b>

**Riverway Ps 1 @  
170,000 acre-ft**

# Riverway Phase 1

Cost Summary to be provided at  
WRAC Meeting July 3, 2008

Items	Unit of Measure	Current	Alternative	
		C-43 West Reservoir	Riverway Program	Riverway Differences
<b>Comparison</b>				
<b>CERP NEEDS</b>				
CERP Goals Compliance		Limited	Improved	More Benefits
Funding Potential		Limited	Improved	Phasing Potential
Storage Volume (footprint)	Acre	11000 ac	31,000 ac	Lakes Restored
Storage Volume	Acre-feet	170,000	170,000	Improved WQ
Alternative Water Supply		Yes	Improved	Improved WQ
<b>ECOSYSTEM QUALITY</b>				
Estuary Protection		Yes (limited)	Improved	Ecosystem gain
Stormwater Quality (WQ) Enhancement		None	Improved	Ecosystem gain
Total Maximum Daily Load (TMDL)		None	Improved	Ecosystem gain
Agricultural and Urban Canal Filtration		None	Improved	Ecosystem gain
Wetlands Destruction	Acres	Requires mitigation	Improved	Gain Wetlands
Panther Habitat Protection	Acres	Minus 11,000 ac	Plus 31,000 ac	Ecosystem gain
EcoSystem Habitat Restored	Acres	None	Plus 31,000 ac	Ecosystem gain
Historic Lakes Restored (Pre 1880s)	Acres	None	Lakes restored	Ecosystem and EcoTourism gain
Historic Falls Restored (Pre 1880s)	Unit	None	Falls restored	EcoTourism gain
Historic Hammocks & Slough Restoration		None	Improved	Ecosystem gain
EcoReservoir Cost Savings (See next pg)	General	High Cost	Less Cost	Less Cost
<b>COMMUNITY</b>				
Property values and local revenue from new waterways		None	Improved	Value Gain
Estuary Protection will help SW FL EcoTourism		Limited	Improved	Value Gain
Family Recreation (Fishing, watercraft, trails, etc.)		Artificial	Significant	Value Gain
Community and Regional Legacy		None	Significant	Value Gain
<b>AGRICULTURE</b>				
Water Supply and Quality		Yes	Yes	Value Gain
Water Quality		No	Yes	Value Gain
Rural Land Stewardship		No	Yes	Value Gain
Agricultural Legacy		No	Yes	Value Gain

# Summary:

What amount of cost savings and public benefits justifies evaluating a more current, multi-use and sustainable approach?

## COST SAVINGS SUMMARY

RIVERWAY PROGRAM INITIAL COST SAVINGS	\$ 65,593,600	APPROX
RIVERWAY PROGRAM 30-YEAR COST SAVINGS	\$ 235,198,000	APPROX

# Introductory Discussions:

THIS IS NOT CURRENTLY A PUBLIC PROJECT SO NO COMMITMENTS HAVE BEEN SOUGHT FROM ANY PERSON OR ENTITY TO DATE

## STATE OF FLORIDA

- FL Dept. of Environmental Protection, Everglades Restoration
- Office of Greenways and Trails, Director & Land Manager
- SFWMD Deputy Director, CERP and Acceler8
- SFWMD Assistant Deputy Executive Director, EERR Area
- SFWMD Northern Everglades, Program Manager
- SFWMD Lower West Coast, Director
- SFWMD Everglades Engineering Director
- SFWMD Northern Everglades Engineering Program Director
- SFWMD Okeechobee Service Center, Upper Lakes PM
- FDOT District One / REDI & Community Liaison
- Florida Tourism Community Program, REDI

## SEMINOLE and MICCOSUKEE TRIBES

- Communication will occur soon

## US GOVERNMENT

- US Department of Interior
- USACE, Jacksonville District, C-43 PM
- USACE EAA A-1 Reservoir PM
- USACE Everglades Recreational Plan PM /Comments
- USACE EAA A-1 Pump Station PM

## GLADES COUNTY

- Glades County Commissioner Butch Jones
- Glades County Commissioner Russell Echols
- Glades County Manager

## HENDRY COUNTY

- Hendry County Commission (July 22, 2008)
- Hendry County Managers and Staff

## LEE COUNTY

- Lee County Chairman Ray Judah
- Lee County Manager's Office and Staff

## REGIONAL

- Florida Heartland Rural Development Initiative FHREDI
- Florida's Freshwater Frontier, FHREDI
- Southwest Florida Regional Planning Council Staff

## NON-GOVERNMENTAL ENTITIES & PRIVATE

- Glades County Economic Development Inc.
- 10 County Coalition Glades Representative
- US Sugar Corporation, Director (Future discussion)
- Lykes Ranches (Landowner) and Chairman, Glades EDC
- Duda Agriculture (Future discussion)
- Kitson Babcock Holdings
- Florida Wildlife Federation SW Office (Re: Panthers)
- The Nature Conservancy (Ag Land Acquisition)
- The Trust for Public Land (River Land Acquisition)
- 1000 Friends of Florida (Rural Land S. Program)
- Caloosahatchee Riverwatch
- Southwest Watershed Council
- Audubon of Florida



# Thank you

## We welcome your Questions

Contact: Forest Michael, [fgmichael@transystems.com](mailto:fgmichael@transystems.com)

# Caloosahatchee Riverway

Restore Lakes Flirt, Bonnet, Lettuce, Hicpochee  
and construct the hybrid Lake Labelle

**Tran** Systems

# Lakes managed for pre-1880s hydrology

(With latest agency recommendations integrated)



Dry season



Wet season

Integrates “lake stage buffers” and community area waterfront parks with flood protection

“Hybrid .....Ortona .....Upper Chain  
 Lake LaBelle” Lock & Falls of Lakes

**Caloosahatchee Riverway** Lake Okeechobee to the Gulf Estuaries  
 Ecosystems, navigation, stormwater management, agriculture, parks and commerce

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 MAY 12, 2008  
 0 5  
 Graphic Scale.....miles  
 ABBREVIATIONS: FDEP Florida Department of Environmental Protection; FNTS Florida National Science Trust; NAWD North American Wetland Datum; SFWMD South Florida Water Management District.

1 Lock = Regional Benefit (in budget)



US Army Corps  
Of Engineers®  
Jacksonville District

## Ortona Lock & Dam

Fact Sheet



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- Commodities: Approximately 13,300 tons of manufactured goods, equipment, crude materials, food, and petroleum products locked annually.

## Economic benefit

13,300 tons manufactured goods & 9,500 vessels locked & 96% are recreational .....more?

**1937** Pre – WW II  
Ortona is **71** years  
With a 50 year life cycle;  
is it still safe in floods?

O&M costs are up and  
construction is down



US Army Corps  
of Engineers®

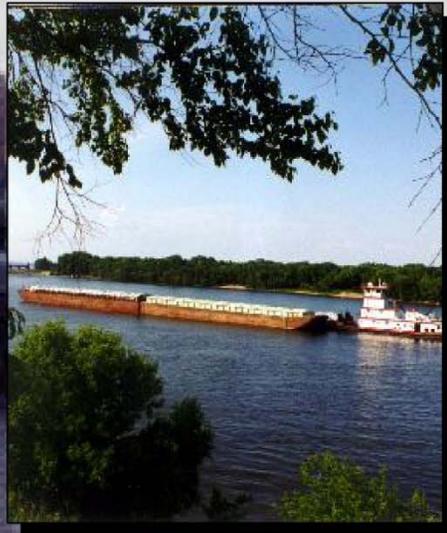
### *Budget & Appns Comparison*

	FY06	FY07	FY08	FY09
	\$ Millions			
Investigations	95	94	90	91
Operation & Maint.	1,979	2,258	2,471	2,475
Construction	1,637	1,555	1,523	1,402
MISS. RIVER & TRDS.	270	278	260	240



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# Navigation and Ecosystem Sustainability Program



**Navigation**

**Environment**

**Comparable Progress**

Download from: Gary Loew, Chief, Programs Integration Division, Directorate of Civil Works, US Army Corps of Engineers, 26 February 2008

*One Team: Relevant, Ready, Responsive, Reliable*