

Water Resource Management Lee County & South Florida

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Lee County Board of County Commissioners
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Presentation Overview

- Lee County Water Quality/Storage Initiatives
- Regional Initiatives
- Current Conditions
- Moving Forward

Lee County Initiatives

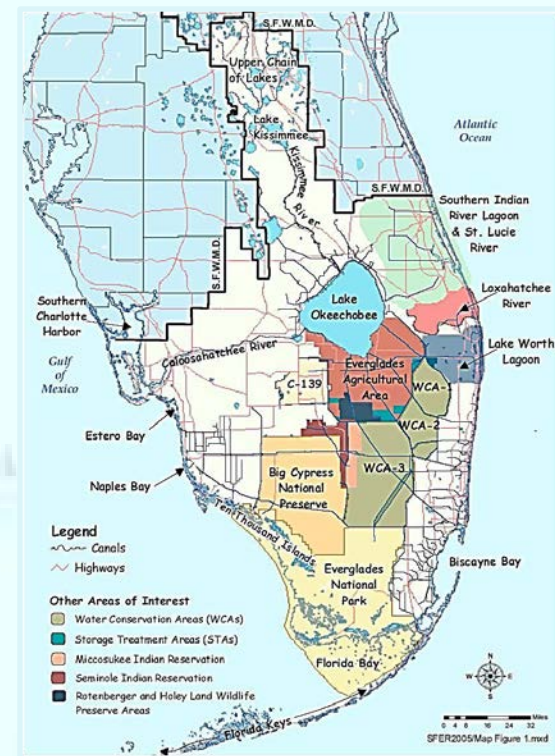
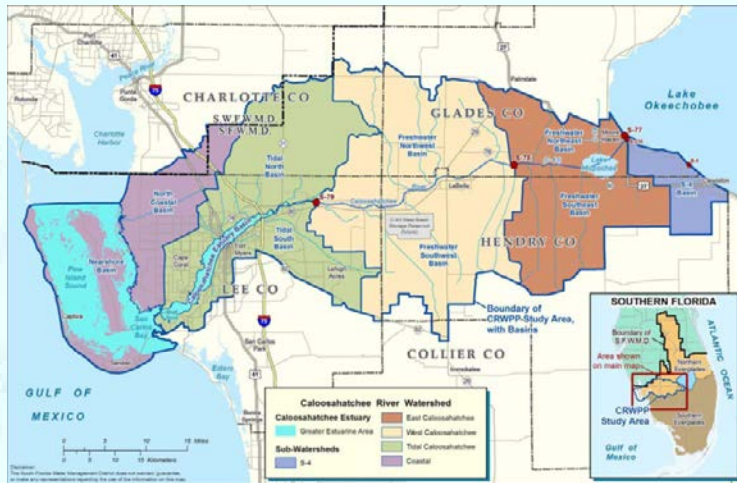
Proactive Role in addressing the quality, quantity, timing and distribution of surface waters in Lee County

- **Capital Improvements**
- **TMDLs projects/programs**
- **Conservation Land**

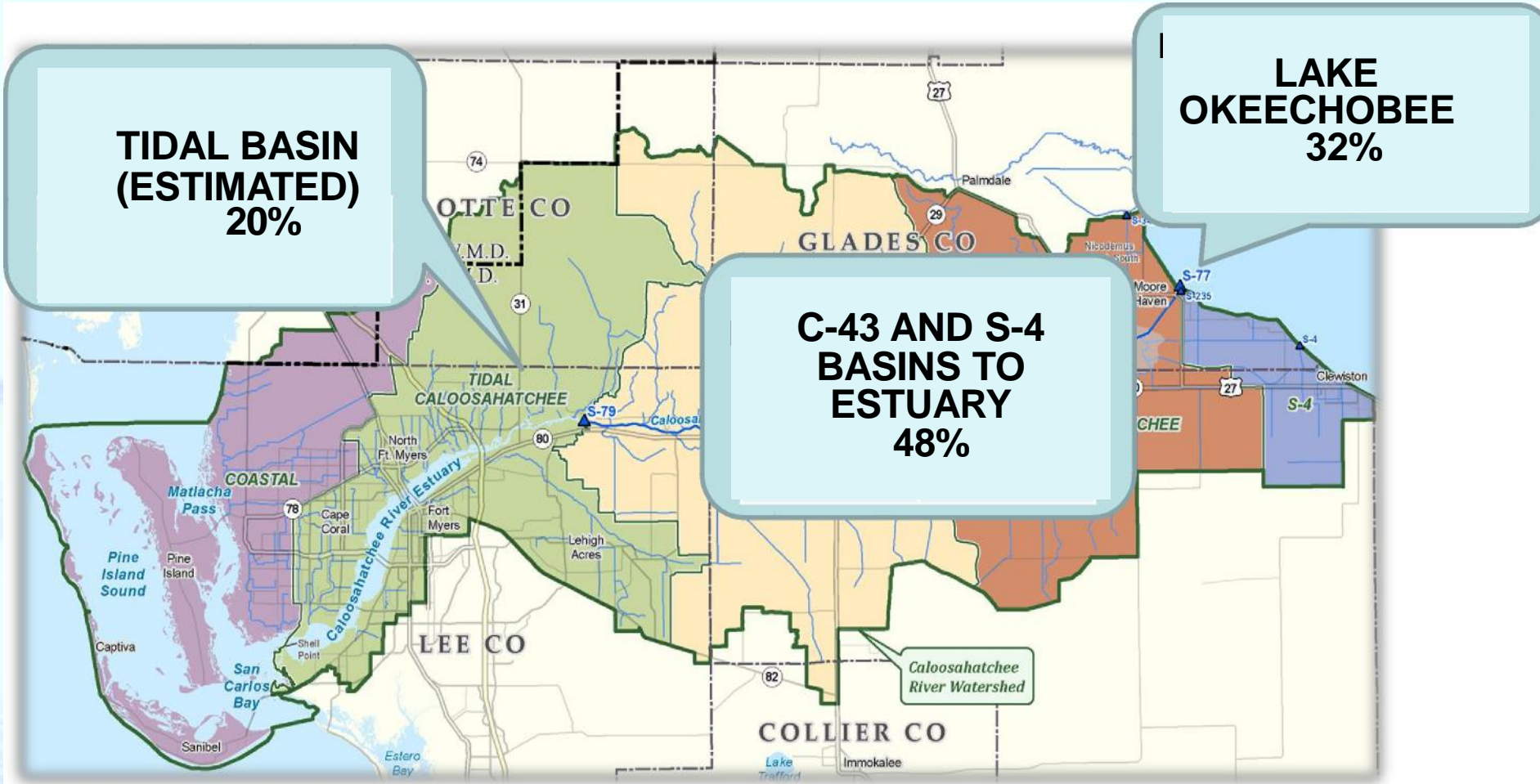


Caloosahatchee Watershed

- Caloosahatchee River - 70 miles, Moore Haven to Shell Point
- 1,400 square mile watershed
 - Shrinks during droughts
 - Expands with wet conditions
- Estuary of National and State Significance



Where the nutrients come from (based on 2011-15 Nitrogen data)



BoCC commitment to Water Quality/ Storage Improvements

<u>Local Water Quality/ Storage Projects Completed in the Last Five Years</u>	<u>Project Cost</u>
• Briarcliff / Fiddlesticks Water Quality Improvements	\$ 2,125,588
• Lakes Park Water Quality Project Filter Marsh	\$ 3,073,620
• Lakes Park Water Quality Project Structure Mod	\$ 613,821
• North Fort Myers Surface Water Improvements (various small projects)	\$ 32,761
• Palmona Park Water Quality Improvements	\$ 554,535
• Popash Creek Preserve	\$ 1,554,319
• Powell Creek Hydrological Restoration	\$ 2,773,402
• Powell Creek Weir / Valencia	\$ 50,000
• Spanish Creek Restoration (re-hydration and pond phase1)	\$ 613,672
• <u>Ten Mile Canal Filter Marsh - Phase II</u>	<u>\$ 2,128,886</u>
• Total	\$ 13,520,604

BoCC commitment to Water Quality/ Storage Improvements

<u>Local Water Projects Currently Underway</u>	<u>Total Spent to Date</u>	<u>Est Balance To Complete</u>
• Fichter's Creek Restoration	\$ 403,722	\$ 1,400,000
• FPL Powerline Easement Project (Study Only)	-	\$ 300,000
• Halfway Creek Filter Marsh (Three Oaks)	\$ 417,102	\$ 60,000
• Hendry Creek West Branch Water Quality Improvements	-	\$ 2,500,000
• Nalle Grade Storm Water Park	\$ 245,933	\$ 2,750,000
• Prairie Pines Restoration	\$ 207,835	\$ 400,000
• Spanish Creek Restoration Project (pond phase 2)	-	\$ 300,000
• <u>Yellow Fever Creek / Gator Slough Improvements</u>	<u>\$ 208,614</u>	<u>\$ 500,000</u>
• Total	\$1,483,206	\$ 8,210,000

BoCC commitment to Water Quality/ Storage Improvements

<u>Future Local Water Improvement Projects</u>	<u>Estimated Cost</u>
• Deep Lagoon Preserve	\$ 3,000,000
• Lakes Park Littoral Zones	\$ 400,000
• <u>Sunniland / Nine Mile Run</u>	<u>\$ 600,000</u>
• Total	\$ 4,000,000

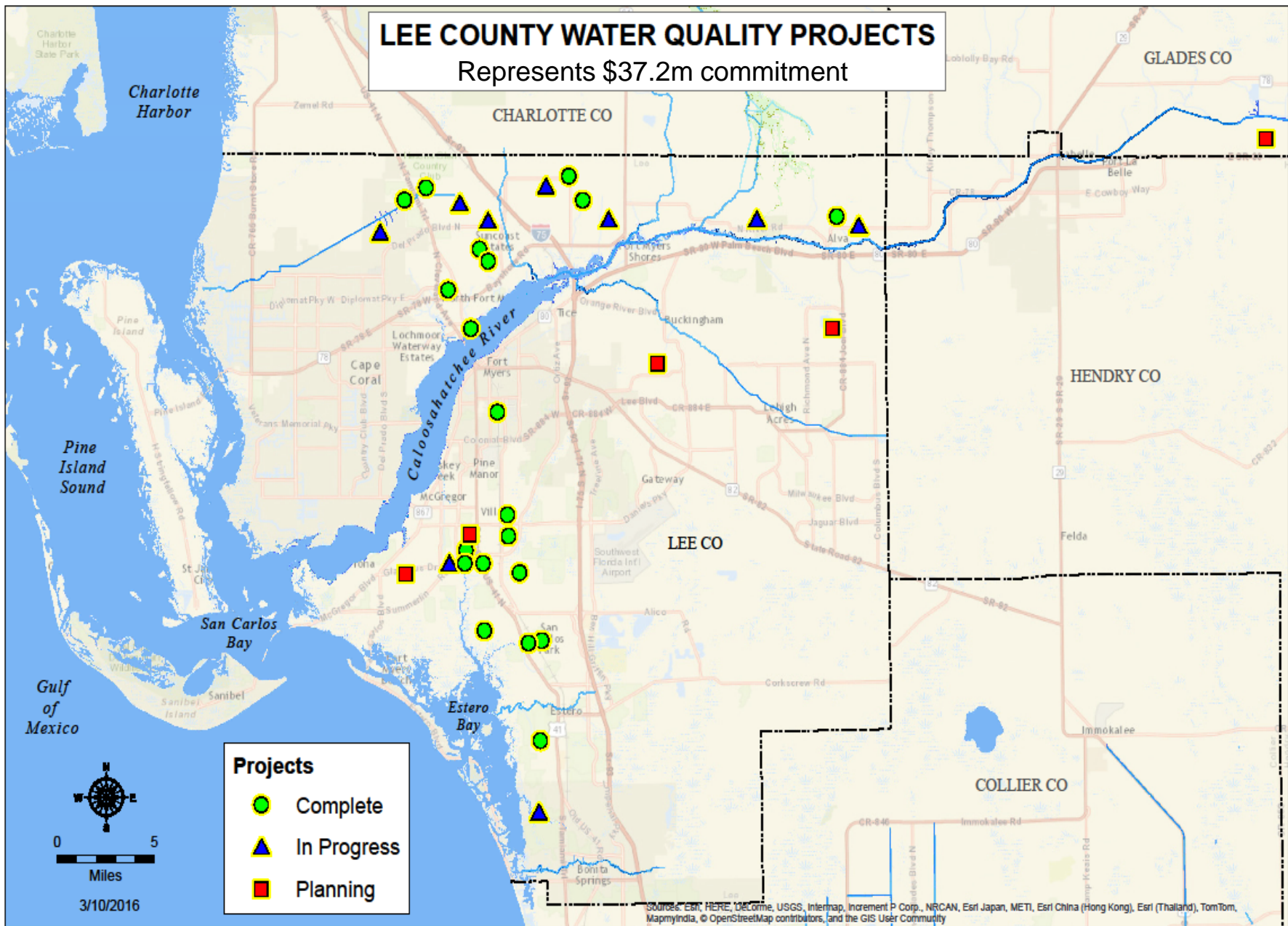
<u>Future Regional Water Improvement Projects</u>	<u>Spent to date</u>	<u>Total Cost</u>
• Caloosahatchee Crosslinks/GS-10 Project (w/ LAMSID)	\$40,000	\$ TBD
• Boma (Caloosahatchee C-43 Water Quality Facility) (w/ SFWMD) (1700 acre land purchase in 2007)	\$10,000,000	\$ TBD

Lee County prior projects (> 5 yrs)

<u>Prior Water Project</u>	<u>Cost</u>
• Ten Mile Canal Filter Marsh Phase 1	\$2,020,000
• Ten Mile Canal Hanson Improvements	\$313,988
• Island Park Filter Marsh	\$1,600,000
• East Mulloch Drainage District – floating vegetation islands	\$55,050
• East Mulloch Drainage District – weir replacement and littoral planting	\$595,820
• Gator Slough Flow-way (Phase I&II Improvements)	\$1,672,136
• Gator Slough Channel Improvements	\$3,250,916
• Powell Creek Algal Turf Scrubber pilot	\$427,000
• <u>Halfway Creek Filter Marsh (FPL site)</u>	<u>\$211,512</u>
• Total	\$10,146,422

LEE COUNTY WATER QUALITY PROJECTS

Represents \$37.2m commitment



Ten Mile Canal Filter Marsh



Gator Slough



Lakes Park Flow-way



Water Quality Source Control Lee County Fertilizer Ordinance



CONSERVATION LANDS

C2020 \$316m, 25,000 acres

State/Federal and other conservation lands /preserves: 69,536 acres

Private: 3605 acres

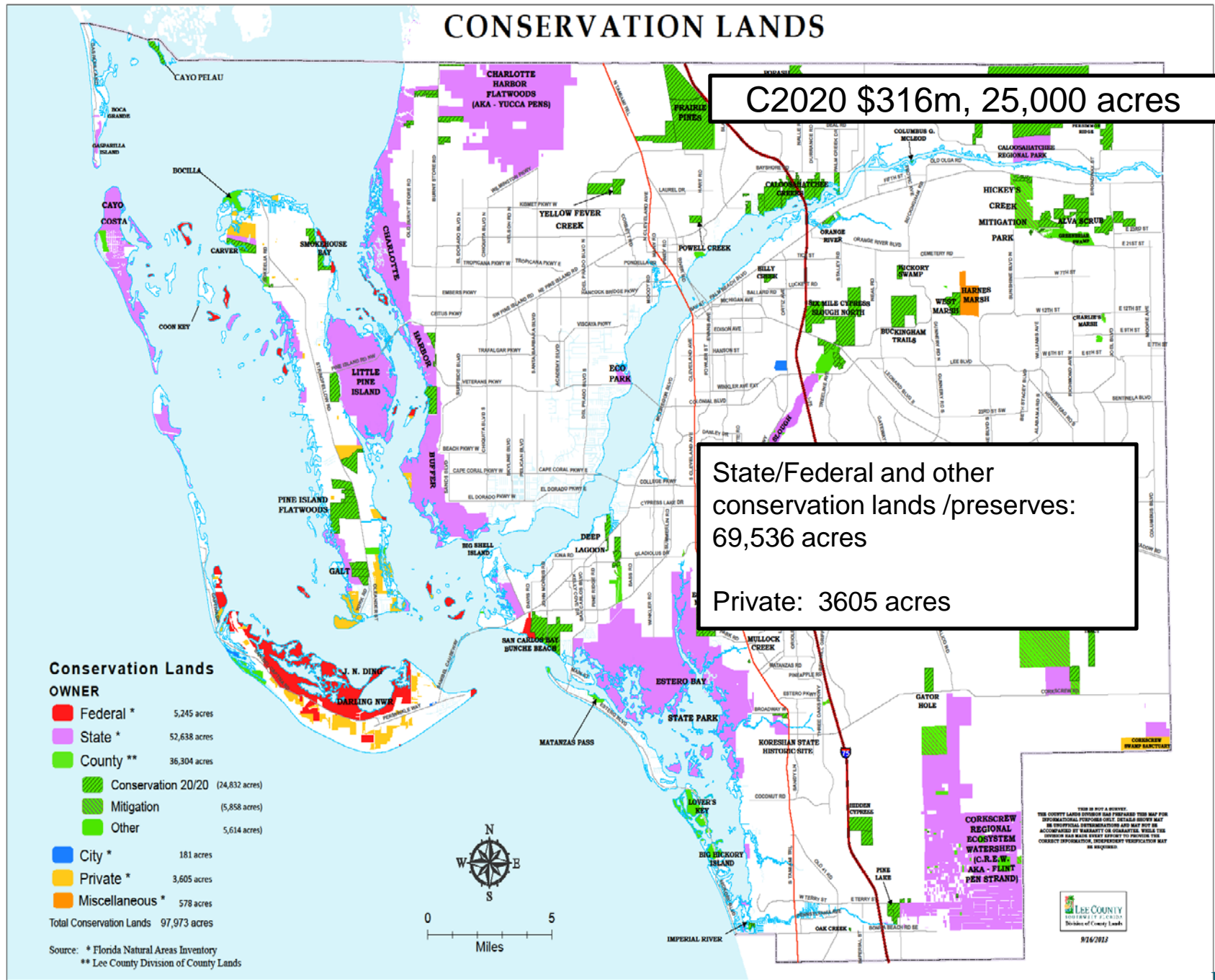
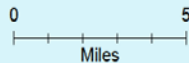
Conservation Lands

OWNER

■ Federal *	5,245 acres
■ State *	52,638 acres
■ County **	36,304 acres
■ Conservation 20/20	(24,832 acres)
■ Mitigation	(5,858 acres)
■ Other	5,614 acres
■ City *	181 acres
■ Private *	3,605 acres
■ Miscellaneous *	578 acres

Total Conservation Lands 97,973 acres

Source: * Florida Natural Areas Inventory
 ** Lee County Division of County Lands



THIS IS NOT A SURVEY.
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9/16/2013

20/20 Lands

- County staff investigated opportunities to store water
- Most parcels were wet due to local rainfall
- **Additional storage would entail extensive physical alterations with associated costs and permitting of infrastructure**
 - **Additional 1 foot of storage on all 20/20 lands within Caloosahatchee watershed would add 14,000 acre-feet of water – or 22 hours of Lake Okeechobee releases**
- Threat to existing ecosystems and adjacent property owners

C2020 Storage – February 12, 2016

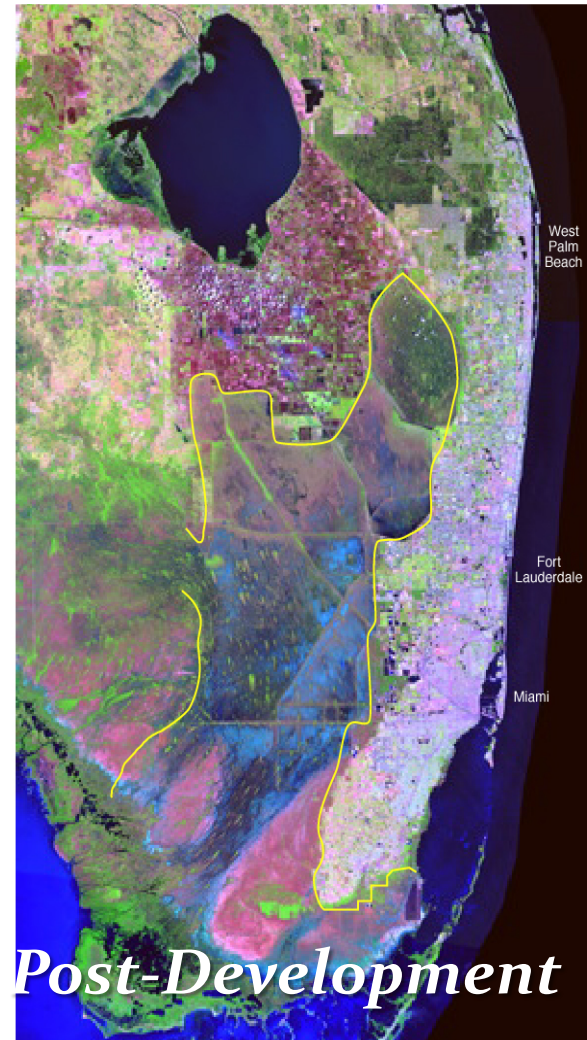
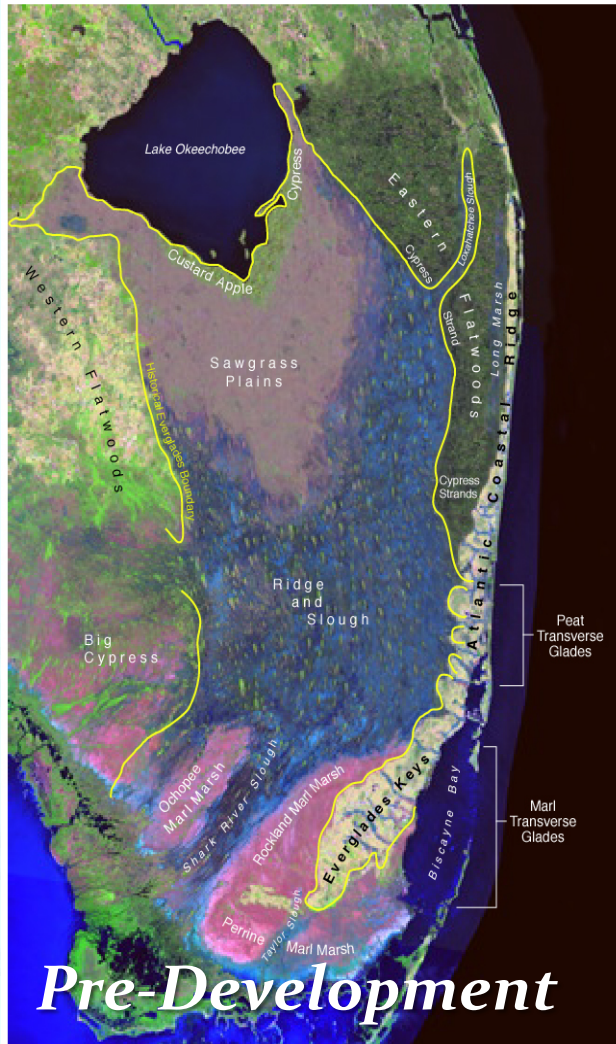


Popash Creek Preserve



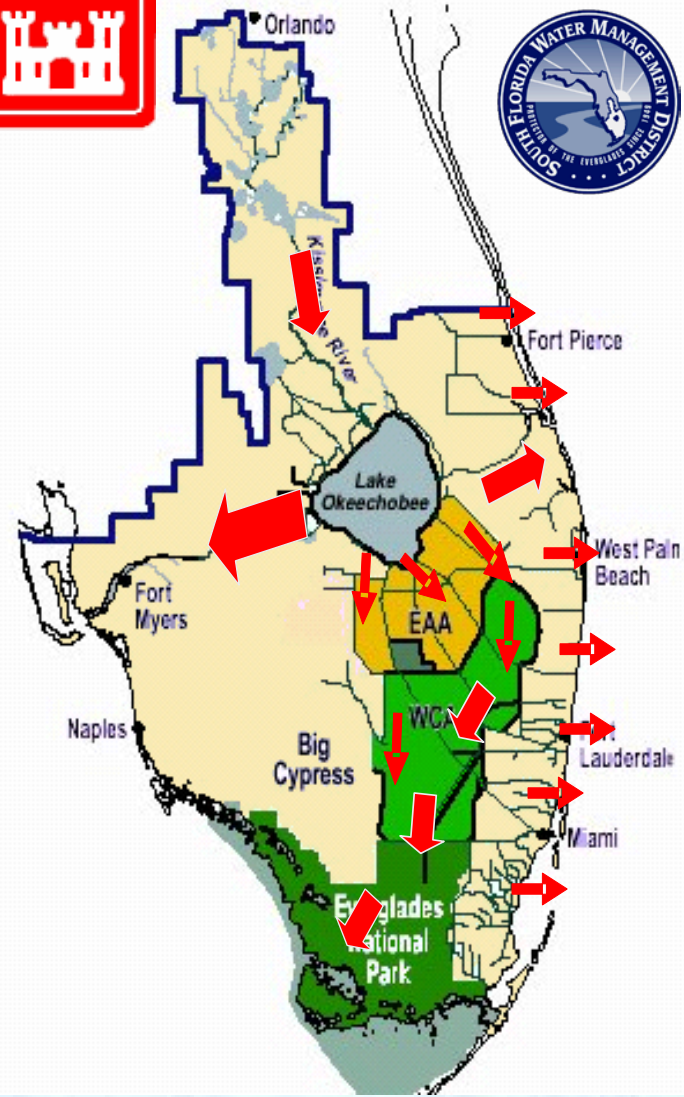
Daniels Preserve

Regional Issues



Central & South Florida (C&SF) Project

- Designed for multiple purposes
 - Flood Control
 - Water Supply
 - Navigation
 - Prevention of Saltwater Intrusion
 - Protection of Fish & Wildlife
- Constructed by the U.S. Army Corps of Engineers between 1949 and 1970

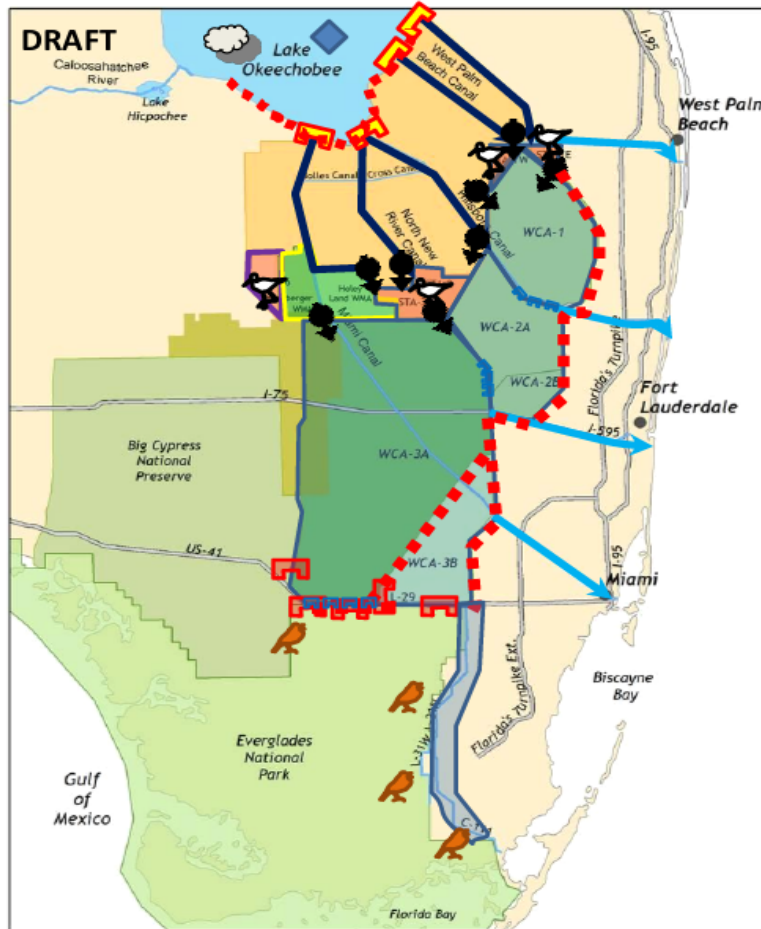


Water Management System

- 2,100 miles of canals
- 2,000 miles of levees
- 1,225 water control structures/culverts
- 71 stormwater pumping stations
- Regional telemetry system
- 57,000 acres of regional wetland Stormwater Treatment Areas
- Lake Okeechobee
 - 450,000 acre water storage
- Water Conservation Areas
 - 959,000 acre water storage



Challenges to Moving Water South



Symbol	Constraint
	Weather Patterns
	Herbert Hoover Dike
	2008 LORS
	Structure Capacity
	Canal Conveyance
	Species protection
	STA Treatment Capability
	Pump Capacity
	STA 5 / 6 Connectivity
	Wildlife Management Area
	Water Level Limitation (Tree Islands & Wildlife)
	LEC Canal Conveyance
	Levee Safety
	Flow Limitation
	Flood Risk (G3273, SDCS)

Comprehensive Everglades Restoration Plan

- 50/50 state-federal partnership
- Restore and improve quality, quantity, timing and flow of water
- Provide sustainable water supply to meet environmental, agricultural and urban needs



Maximizing Storage: Utilizing Public and Private Lands



Moving Forward – Build Project and Provide Benefits

- Complete ongoing projects and start seeing benefits
- Send more clean water south
- Look for additional storage opportunities

Restoration Projects

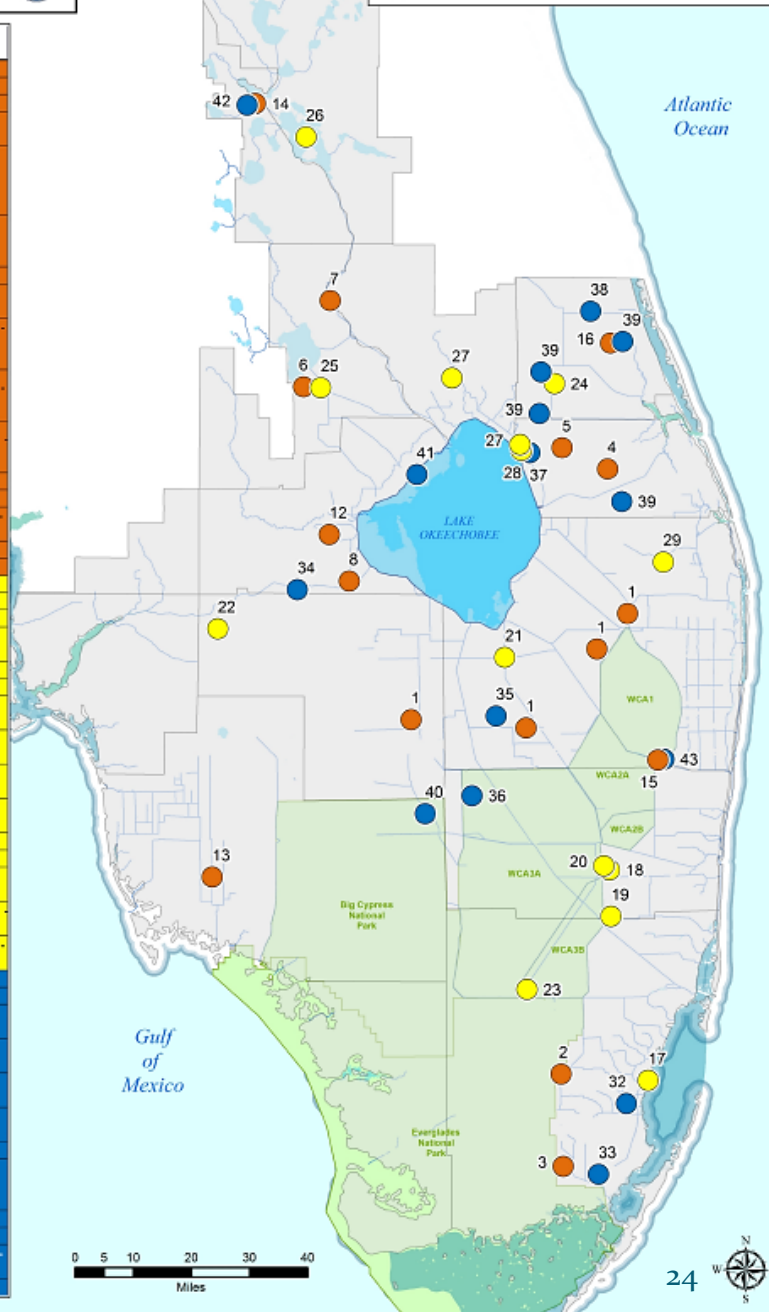
September 03, 2014



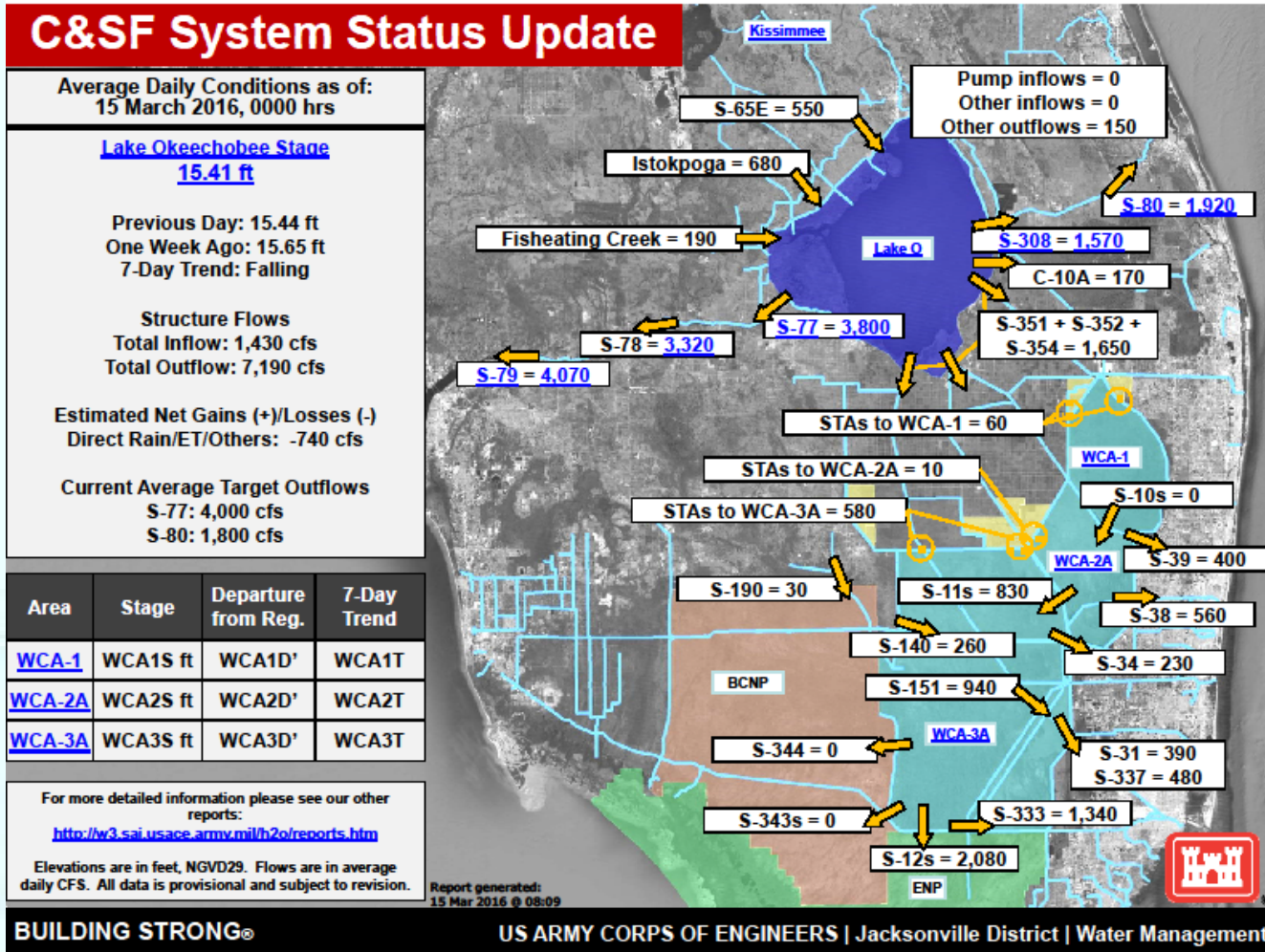
Restoration Project Map ID	Name
1	Restoration Strategies
2	C-111 South Dade
3	C-111 West Spreader Canal
4	IRLS Phase 1 - C-44 Reservoir and STAs
5	IRLS Phase 2 - Natural Storage and Treatment Areas (A - land acquisition completed and WRP improvements underway)
6	Istokpoga Marsh Improvement District Water Quality Project - Phase 1
7	Kissimmee River Restoration
8	Lake Hippochee North Hydrologic Enhancement Project
9	NEEPP - Dispersed Water Management - Existing Private w/ contract (see DWM map)
10	NEEPP - Dispersed Water Management - Existing Public (see DWM map)
11	NEEPP - Dispersed Water Management - Future Public (see DWM map)
12	Nicodemus Slough
13	Picayune Strand Restoration
14	Rolling Meadows Wetland Restoration - Phase I
15	Site 1 Impoundment - Phase 1
16	Ten Mile Creek
17	BBCW Phase 1
18	BCWPA - C-11 Impoundment
19	BCWPA - C-9 Impoundment
20	BCWPA - WCA-3A/3B Seepage Management Area
21	Bolles Canal Improvement
22	C-43 West Basin Reservoir
23	Central Everglades Planning Project - South
24	IRLS Phase 1 - C-23/C-24 Reservoir and STAs
25	Istokpoga Marsh Improvement District Water Quality Project - Future Phases
26	Kissimmee Headwaters Revitalization Project
27	Lake Okeechobee Watershed Project
28	Lakeside Ranch STA Phase II
29	Loxahatchee River Watershed Restoration
30	NEEPP - Dispersed Water Management - Future NE-PES (not shown)
31	NEEPP - Dispersed Water Management - Future Water Farming (not shown)
32	BBCW - Phase 2
33	C-111 Eastern Canal - Phase 2
34	C-43 Water Quality Treatment and Testing (Boma)
35	Central Everglades Planning Project - New Water
36	Central Everglades Planning Project - North
37	Grassy Island and Brady Ranch Properties
38	IRLS Phase 1 - C-25 Reservoir and STAs
39	IRLS Phase 2 - Natural Storage and Treatment Areas (B - some or no land acquired, no WRP)
40	L-28 Interceptor: Western Basins
41	Lake Okeechobee Regional Scale ASR
42	Rolling Meadows Wetland Restoration - Phase II
43	Site 1 Impoundment - Phase 2

Key

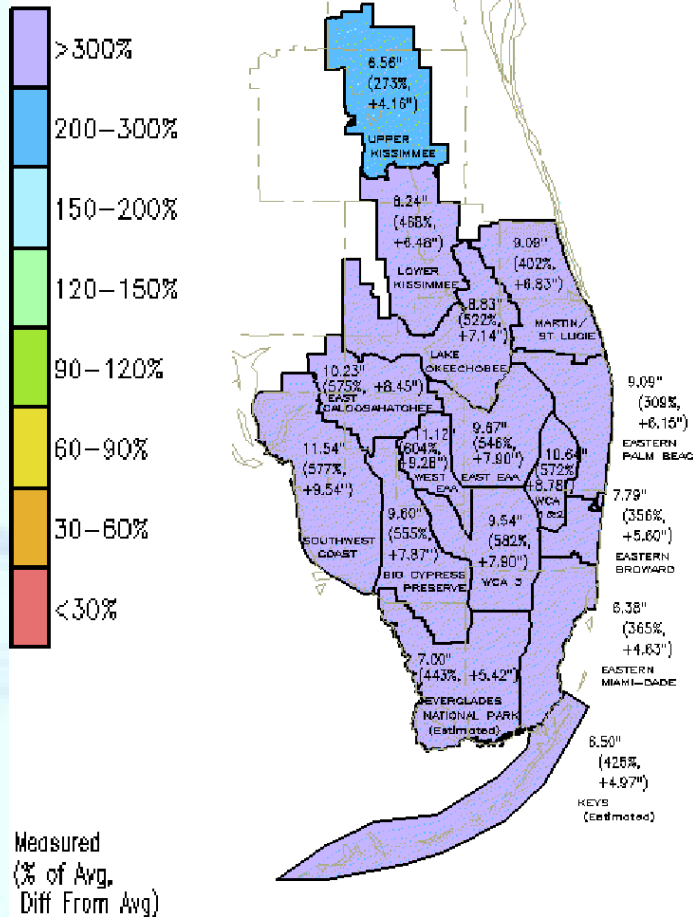
- A - Under Construction & Mandated or Authorized
- B - Land Acquisition & Planning Underway or Complete
- C - Land Acquisition & Planning Not Initiated or in Initial Phases



Current Conditions



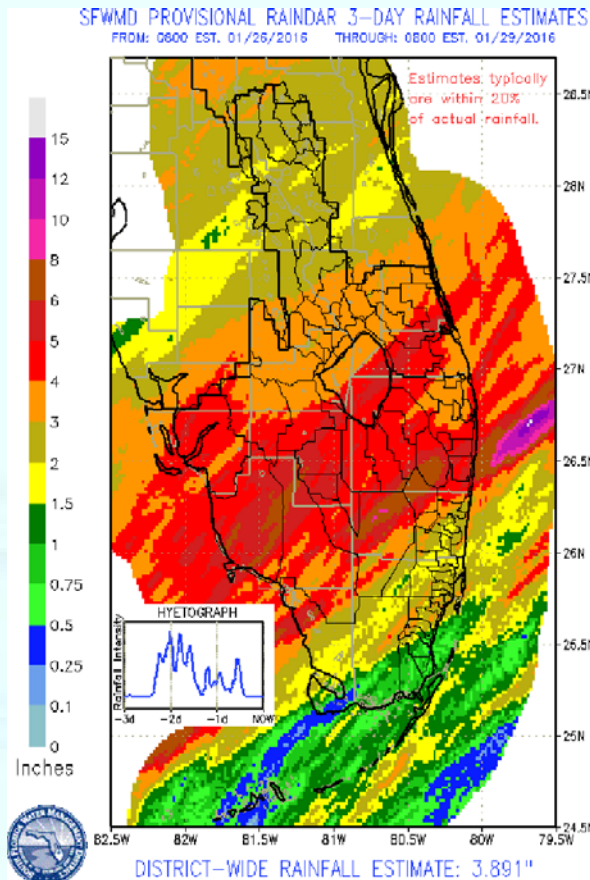
January Rainfall



DISTRICT-WIDE: 9.18"
476% of Avg. or +7.25"

- **Wettest January since record keeping began in 1932**
- **Nearly all basins received more than 300 percent of average**
- **SW Coast received 11.54"**
- **Lee County – 11.2" ave**

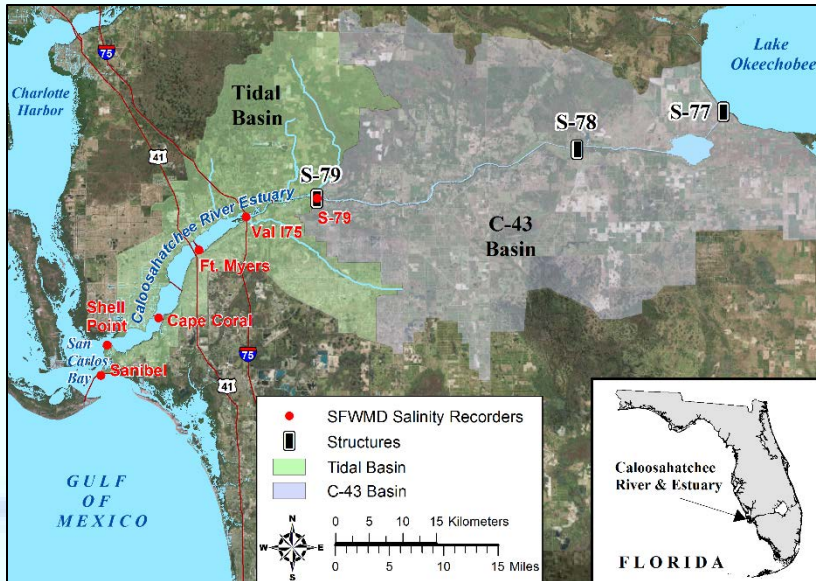
January 26-29, 2016 Rainfall



Most of the recent event was concentrated on the 3 calendar days Jan-26 to Jan-29 with a total of ~ 3.9" in 3 days

- Lake Okeechobee vicinity received 3-6"

Caloosahatchee Estuary



Data are provisional and subject to change

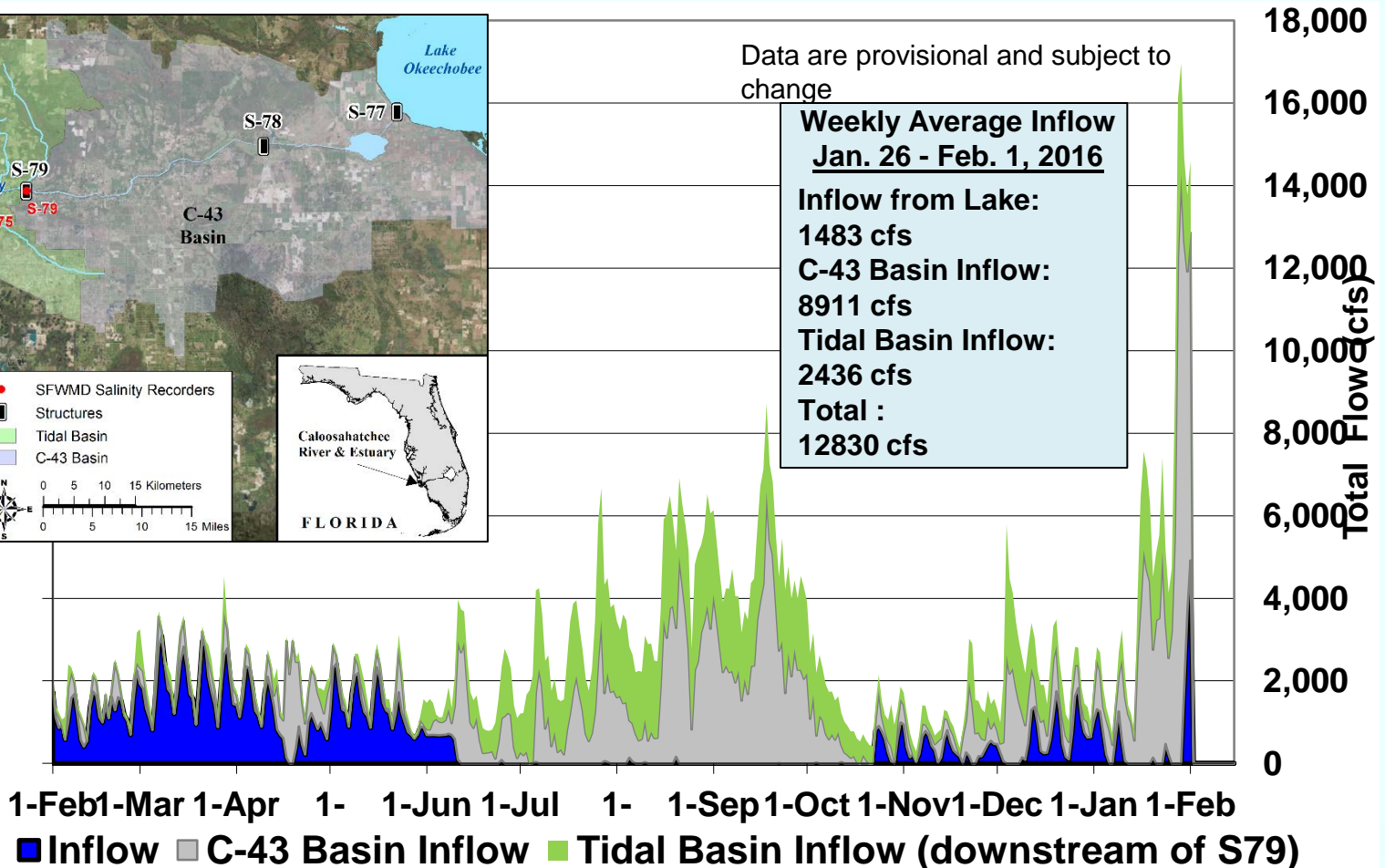
Weekly Average Inflow Jan. 26 - Feb. 1, 2016

Inflow from Lake:
1483 cfs

C-43 Basin Inflow:
8911 cfs

Tidal Basin Inflow:
2436 cfs

Total :
12830 cfs



1-Feb 1-Mar 1-Apr 1-May 1-Jun 1-Jul 1-Aug 1-Sep 1-Oct 1-Nov 1-Dec 1-Jan 1-Feb
 ■ Inflow ■ C-43 Basin Inflow ■ Tidal Basin Inflow (downstream of S79)

Caloosahatchee Estuary Inflows Jan. 1, 2016 – Mar. 8, 2016

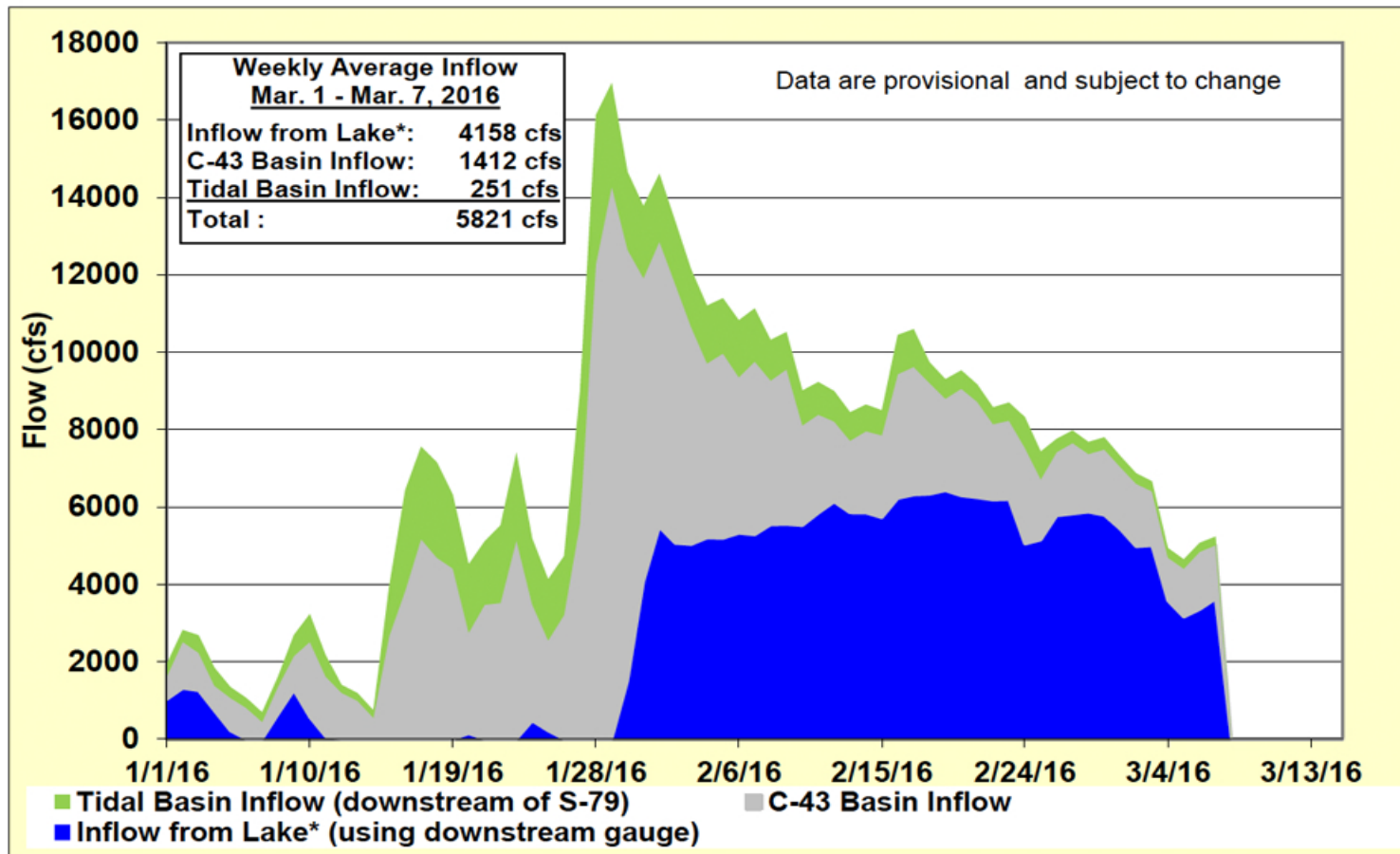


Figure 6. Freshwater inflows from Lake Okeechobee, runoff from the C-43 basin, and tributaries in the tidal basin into the Caloosahatchee River Estuary.

Current Conditions



Lee County – Water Action Plan

Operations / Lake Okeechobee Management

- Pursue Lake O Regulation Schedule modifications post Dam Risk Assessment Study
- Advocate shared adversity

State Funding / Cost Share

- Continue support Legacy Florida for Everglades funding
- Continue support for C-43 Reservoir
- Continue support for Boma Water Quality Project
- Continue pursuit of local water quality project funding

Federal

- Advocate completion of Herbert Hoover Dike Repairs
- Support authorization of Central Everglades Planning Project (CEPP) – WRDA 2016
- Support completion of Comprehensive Everglades Restoration Plan (CERP)

Local

- **Utilize water storage capabilities of C2020 and other public lands where practicable**
- **Continue water quality projects and programs in fulfillment of TMDL obligations**

Lee County Investments in Water Quality/ Storage

How long?

Since the late 80's Lee County has taken pro-active measures to address impairments to our waterways and preserve our natural systems.

How much?

- 25,000 acres purchased (\$316m) from C2020 land acquisition program
- \$25m spent on projects in last 5-10 years
- \$12.2m planned future projects
- \$ 60m estimated project expenditures over next 15 years for balance of TMDL compliance
- **\$96m spent over the last 5 years in capital and operations towards stormwater management activities (per NPDES reporting data)**

Milestones:

- Six Mile Cypress Slough Land Purchases (1980)
- CREW Land Purchases (1989)
- Weir structures added to Six Mile Cypress, Kehl Canal, Whiskey Creek to retain water (late 80's , early 90's)
- C2020 (1996)
- NPDES MS4 permit holder (1997)
- Ten Mile Canal –first filter marsh (2005)
- Northern Everglades Estuary Protection Act (NEEPA)- Boma purchase (2007)
- TMDL/ BMAP stakeholder (2008-9/2012)

Questions?

