



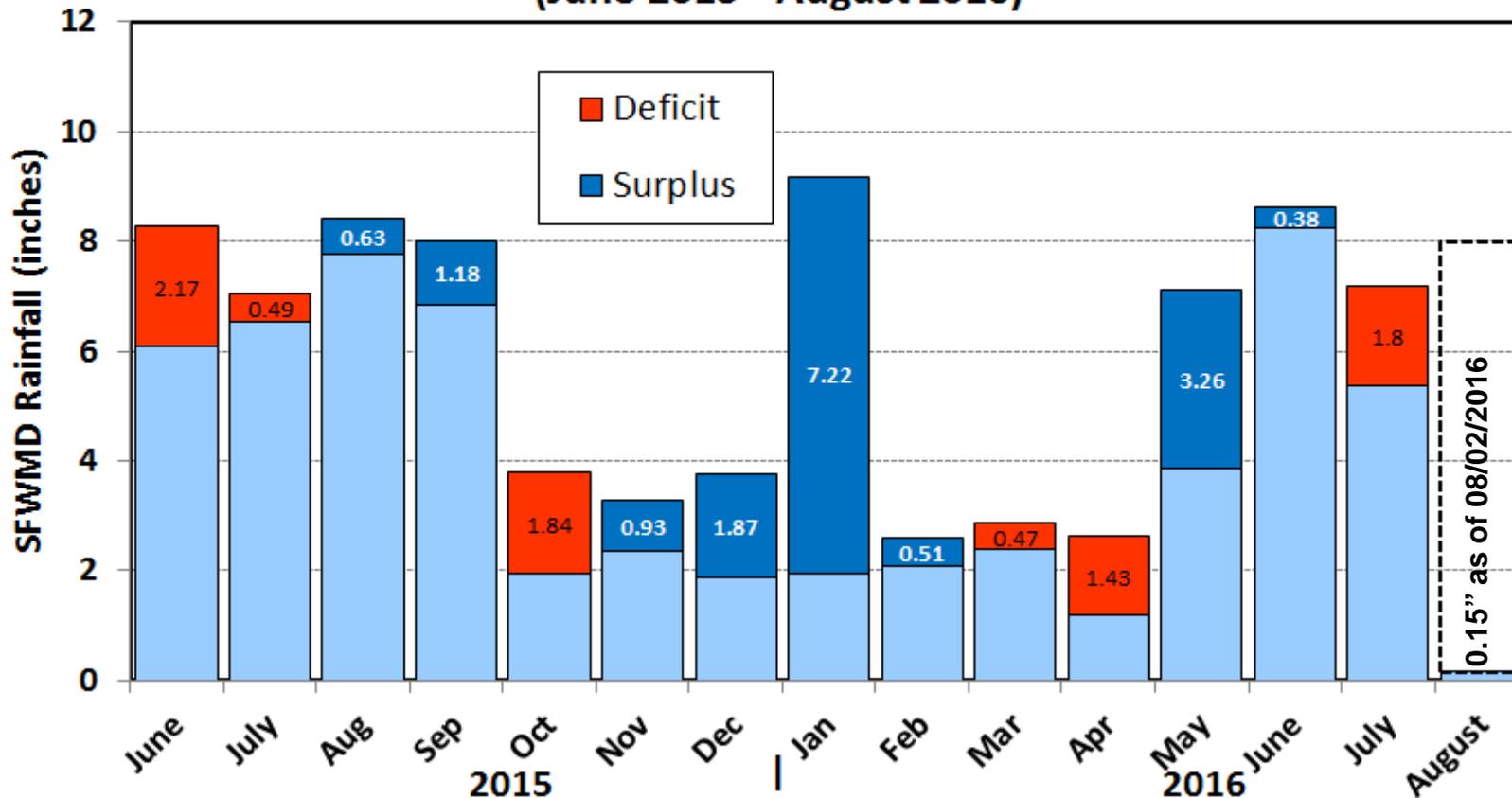
Water Conditions Summary

South Florida Water
Management District
WRAC Meeting
August 4, 2016

John P. Mitnik, P.E.
Division Director, Operations, Engineering and Construction

SFWMD Rainfall Distribution Comparison

(June 2015 - August 2016)



2015 WET SEASON:

- Driest May-July since 2004
- Ended below average

2015-16 DRY AND 2016 EARLY WET SEASON:

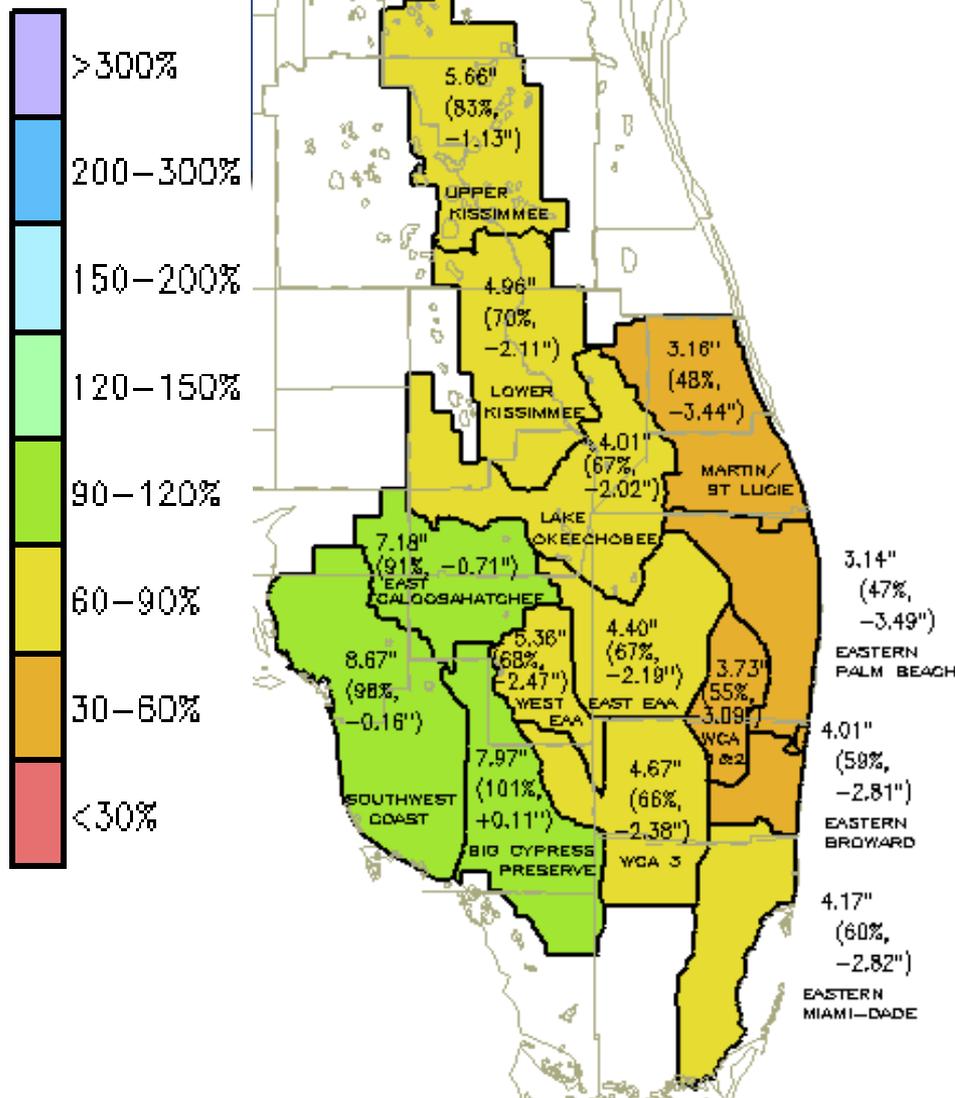
- Nov 2015-Jan 2016 wettest since 1932
- Jan 2016 wettest since 1932
- Second wettest May since 1976
- Dry season 2015-16 168% above average
- June was slightly above average (105%)

SFWMD

July 2016 Rainfall

(02-Jul to 01-Aug-2016)

DISTRICT-WIDE: 5.38"
75% of Avg, or -1.80"



- Only Big Cypress Preserve is slightly above average
- Lower East Coast with the exception of Eastern Miami-Dade, WCA-1 and WCA-2, are less than 60% of average
- District wide driest July since 1999
- Palm Beach County driest July since 1992

Measured
 (% of Avg,
 Diff From Avg)

SFWMD 2016 Wet Season Rainfall

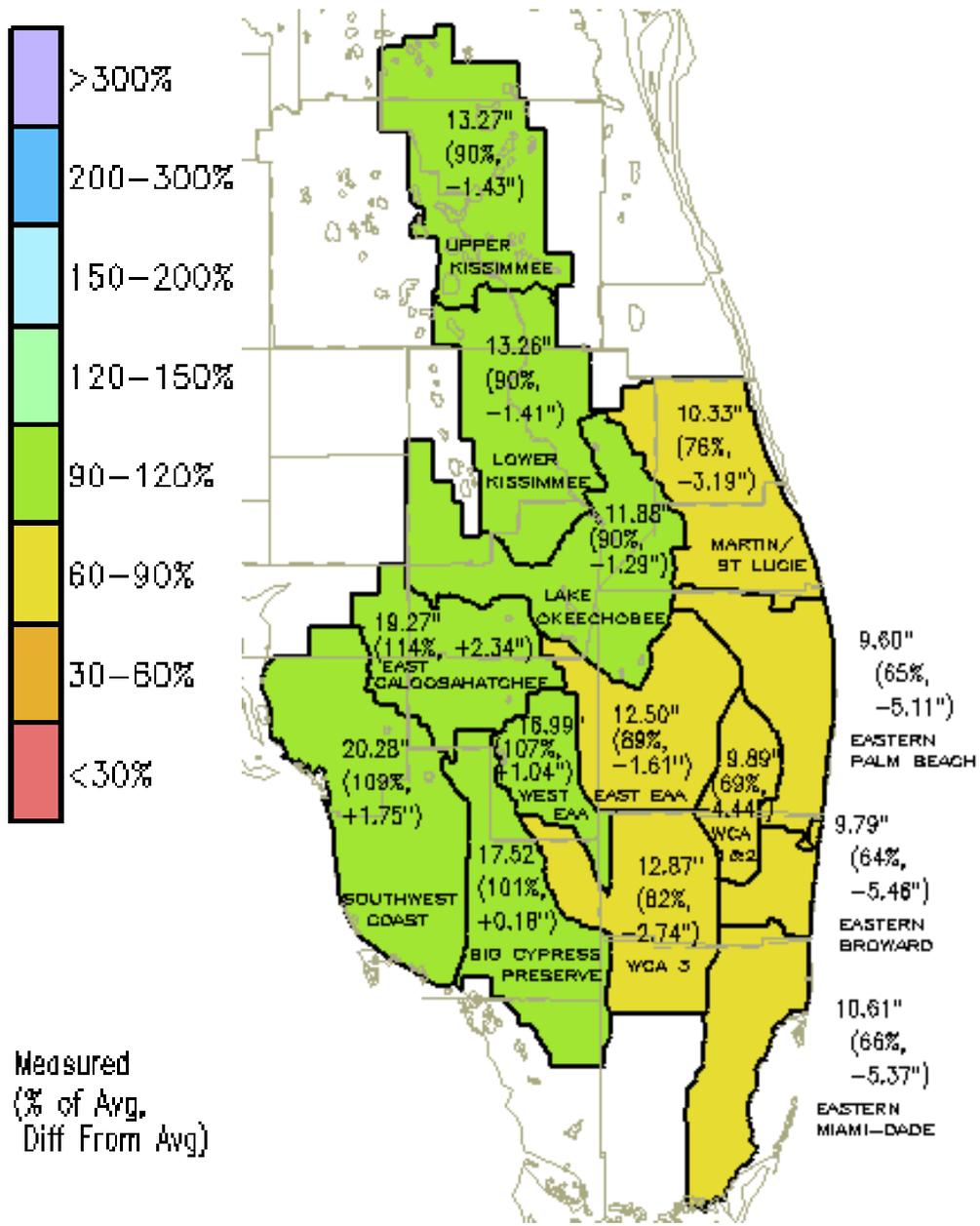
(02-Jun-2016 to 01-Aug-2016
DISTRICT-WIDE: 14.01"
91% of Avg, or -1.42")

District rainfall somewhat below average for the first two months of the 2016 wet season

North-west areas of the District are slightly below average

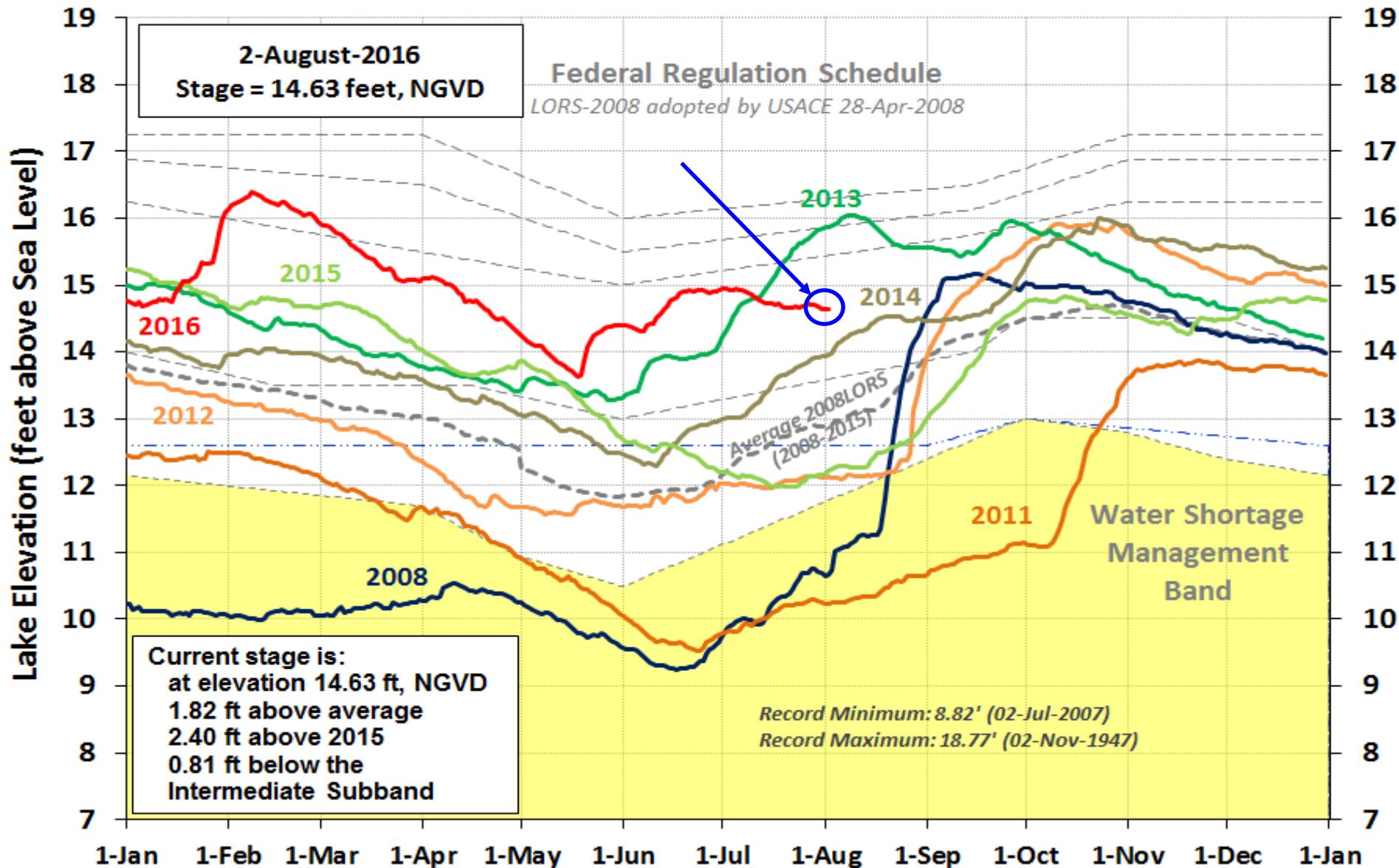
South-west areas are slightly above average

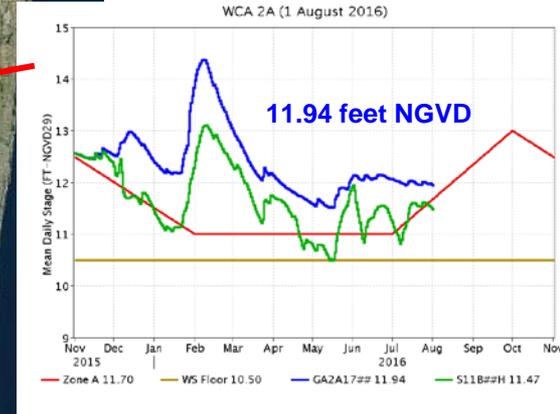
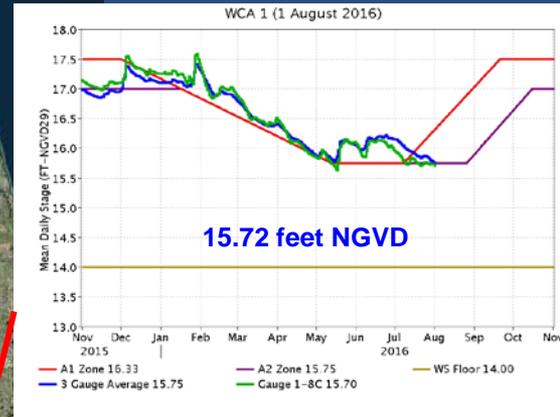
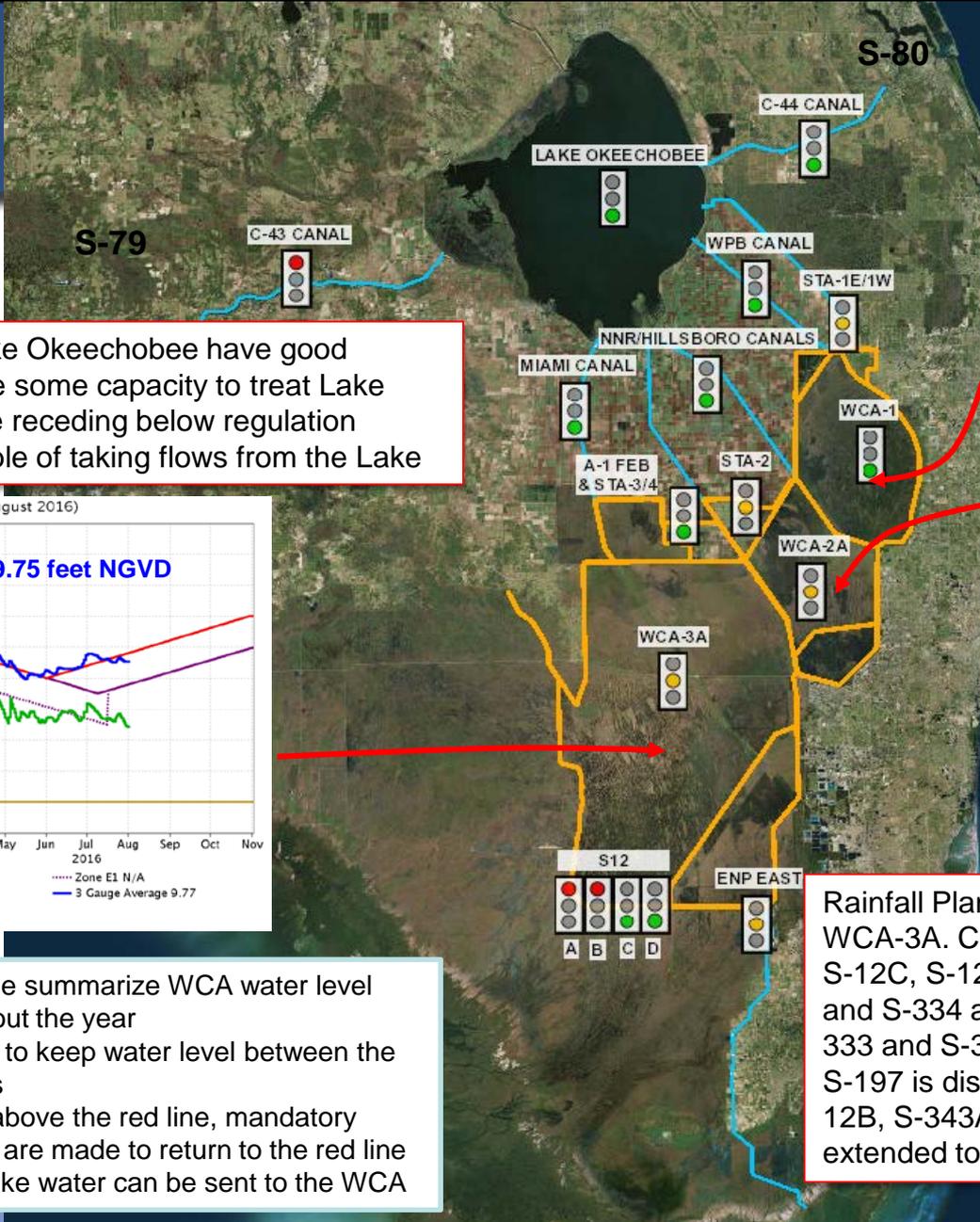
Lower East Coast and Water Conservation Areas are below normal.



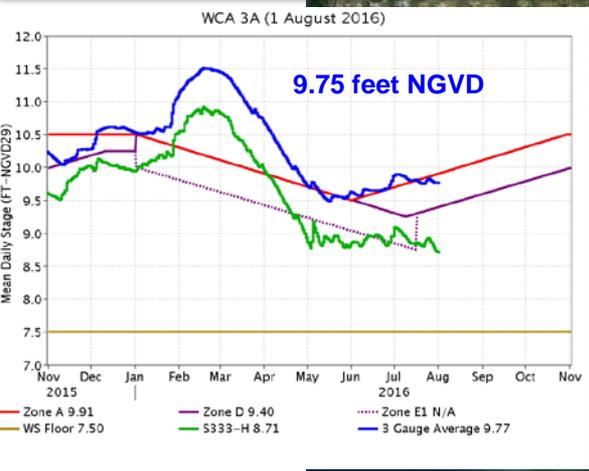
Measured
(% of Avg,
Diff From Avg)

Lake Okeechobee Water Level Comparison





Canals south of Lake Okeechobee have good capacity. STAs have some capacity to treat Lake releases. WCAs are receding below regulation schedule and capable of taking flows from the Lake



Rainfall Plan calls for ~1950 cfs releases from WCA-3A. Currently discharging ~ 500 cfs through S-12C, S-12D, S-333 is discharging ~ 1200 cfs and S-334 around 650 cfs. Difference between S-333 and S-334 is entering the ENP through NERS. S-197 is discharging around 100 cfs. S-12A, S-12B, S-343A&B and S-344 closure period extended to July 15.

- Regulation Schedule summarize WCA water level thresholds throughout the year
- Current objective is to keep water level between the red and purple lines
- If water levels rise above the red line, mandatory regulatory releases are made to return to the red line and no additional lake water can be sent to the WCA



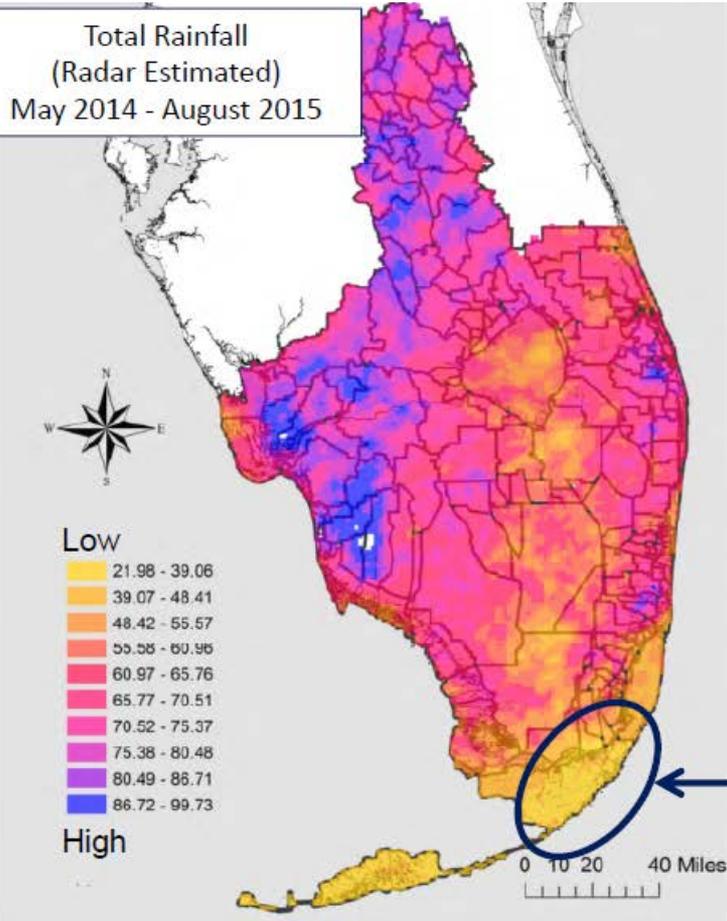
Moving Freshwater South to Florida Bay

South Florida Water Management District
Monroe County Commission Meeting
July 20, 2016

John P. Mitnik, P.E.
Division Director, Operations, Engineering and Construction

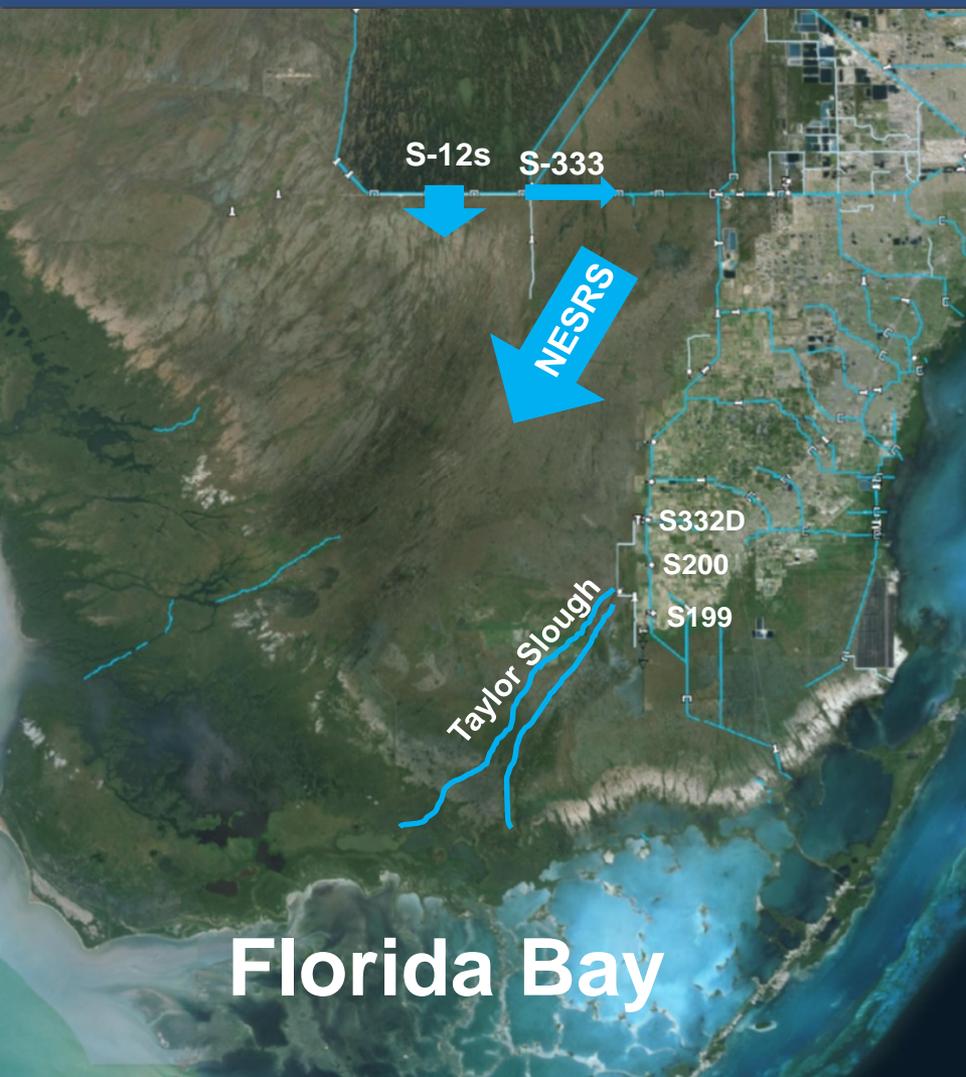
Localized Drought

May 2014-August 2015



- Florida Bay depends on freshwater inputs
 - 45% comes directly from rainfall
 - 55% from run-off
 - Dry conditions District-wide
 - Very dry over Everglades National Park
 - Taylor Slough and Florida Bay 25 to 35 inches of rain
 - About half of the average annual rainfall
- 25-35 inches compared to 50-60 inches (wet year)

Ongoing Projects to Address Flows to Florida Bay



➤ South Dade Study

- Identified opportunities to operate existing infrastructure to benefit both agricultural land uses and natural systems. Identified operations and infrastructure modifications that promote flow towards Taylor Slough, but did not include all required features.

➤ C-111 Spreader Canal Western Project

- Uses S-200 and S-199 pump stations to move water towards and keep water in natural system

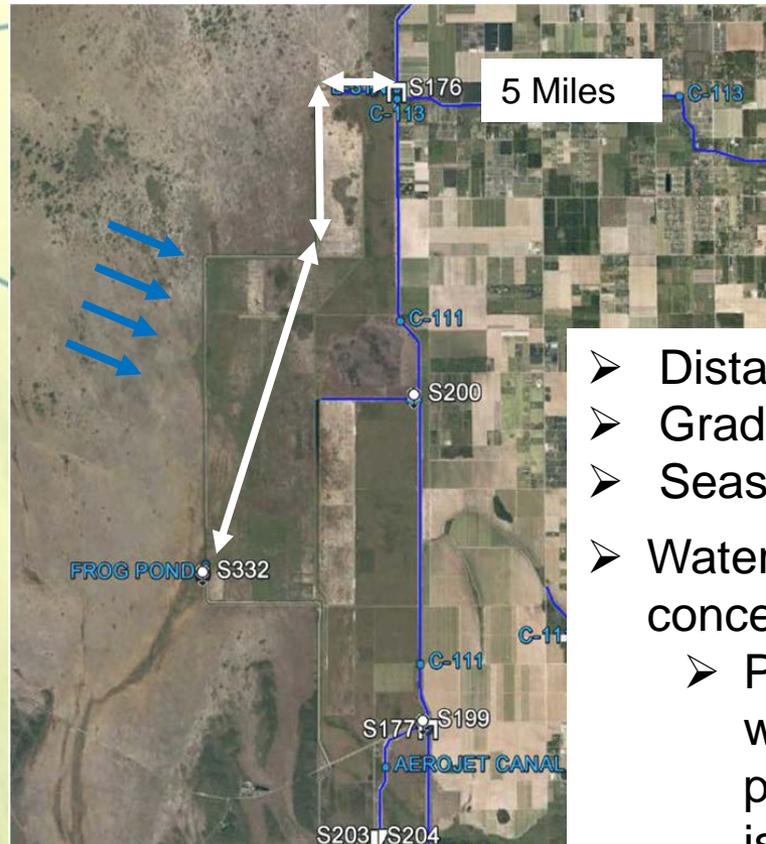
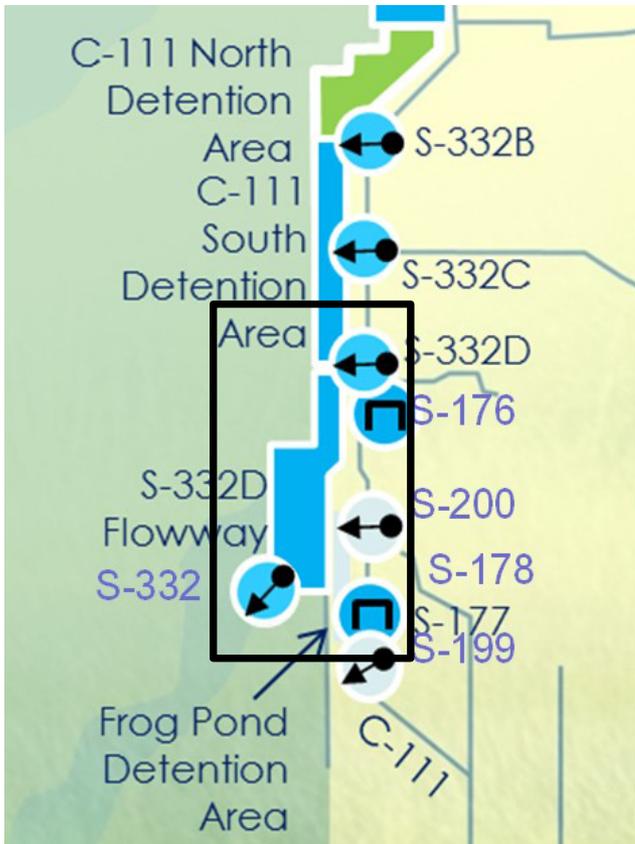
➤ C-111 South Dade Project

- Uses S-332 B, C and D pump stations to move water towards detention areas and keep water in natural system while maintaining flood protection

➤ Modified Water Deliveries to Everglades National Park

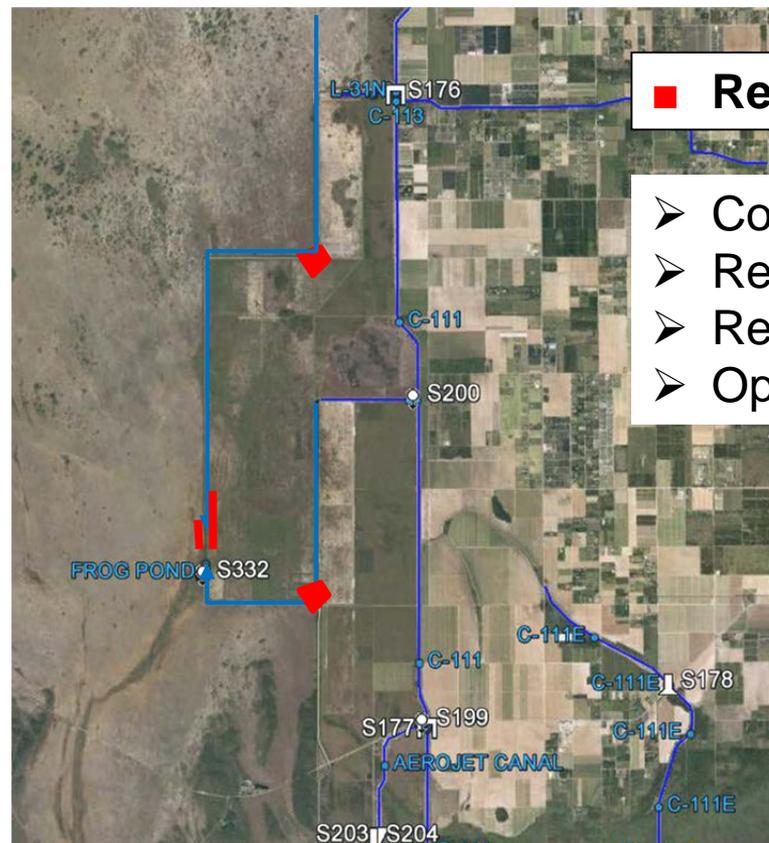
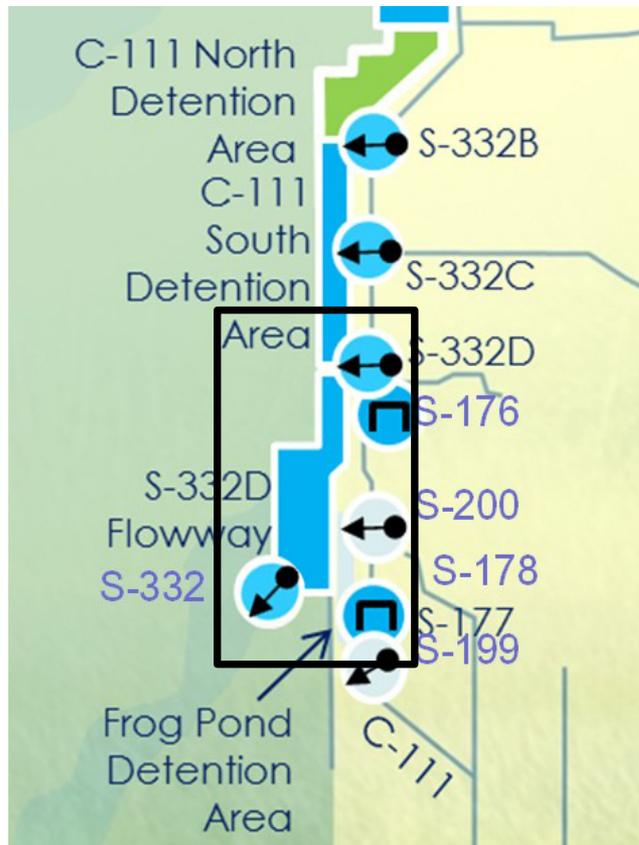
- Brings more water to North East Shark River Slough while mitigating flood impacts to 8.5 Square Mile Area

Challenges to Moving Water to Taylor Slough



- Distance
- Gradient
- Seasonality
- Water quality is not a concern
 - Phosphorus flow-weighted mean is 4-7 parts per billion, which is below 11 parts per billion criteria for S-332D and S-200

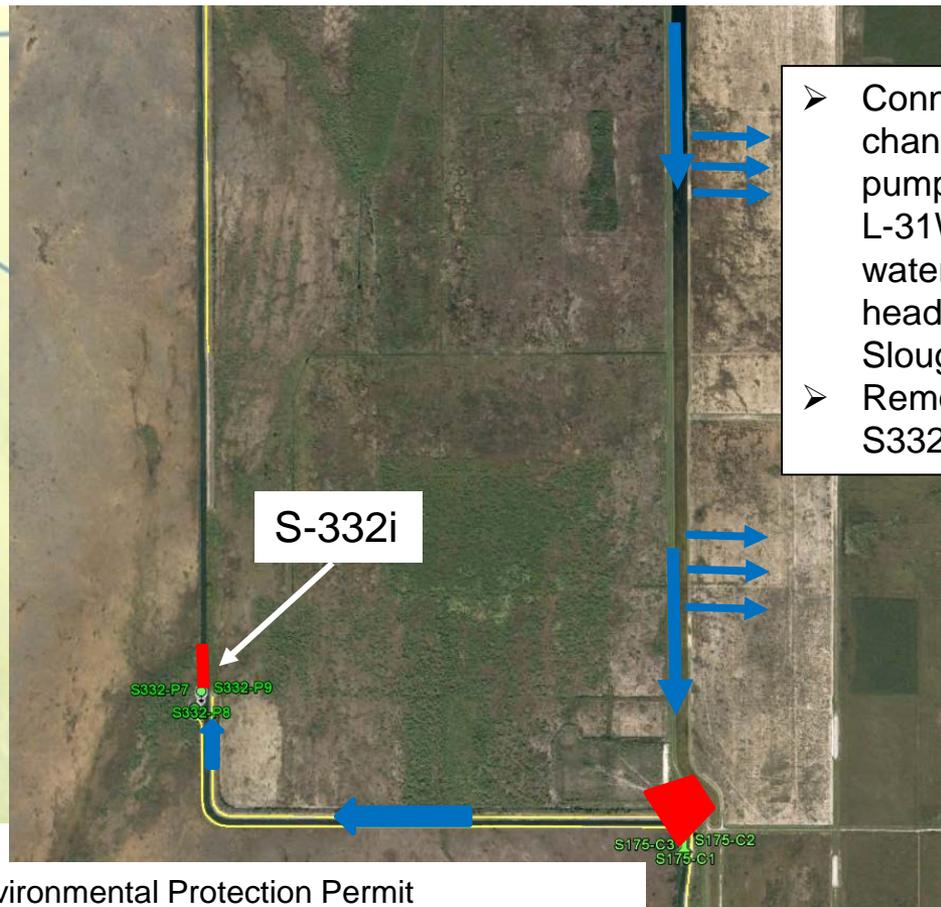
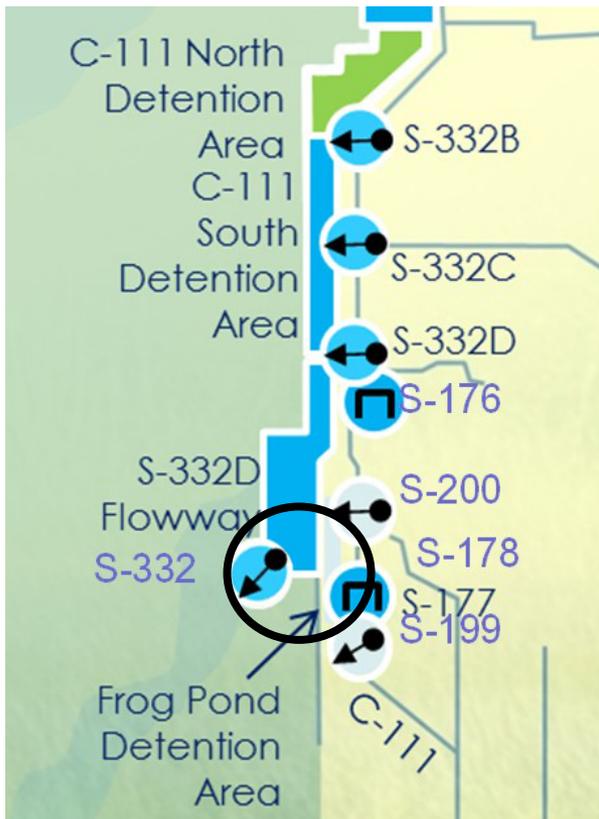
Proposed Features Required to Move Water South to Florida Bay



Required Features

- Connect canals
- Remove Flap Gates
- Rebuild Levee, Weir
- Operate S-328

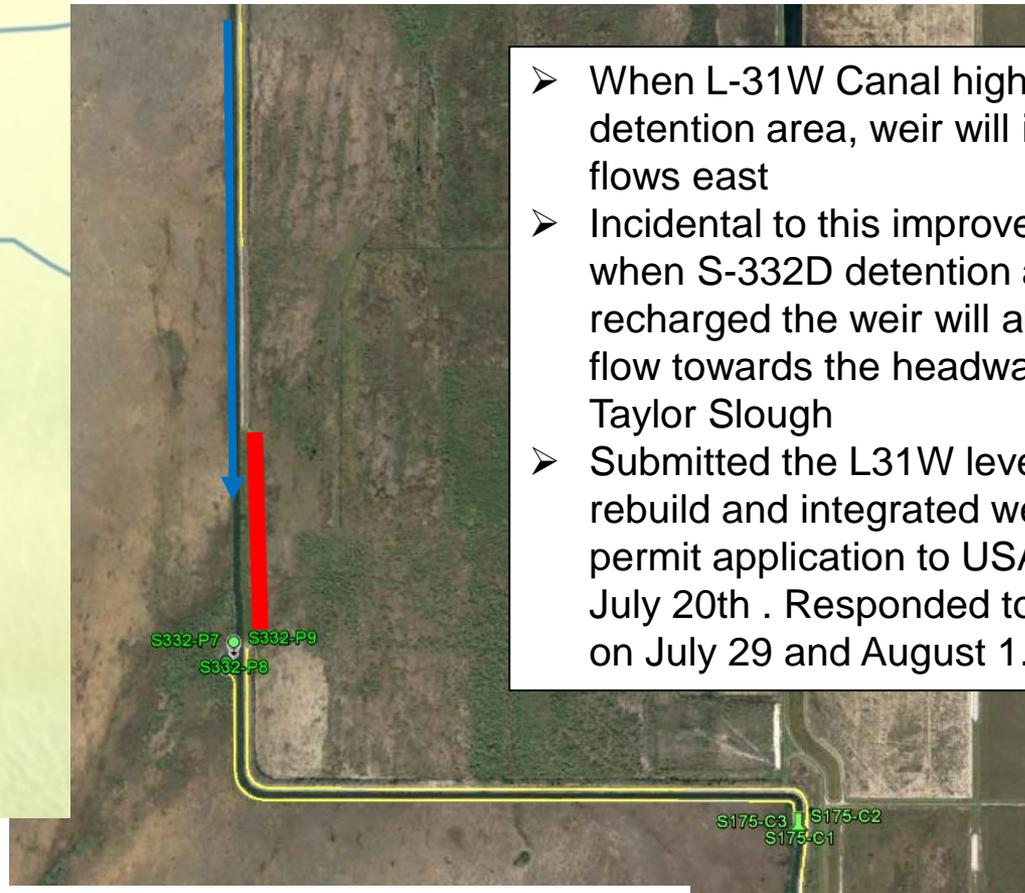
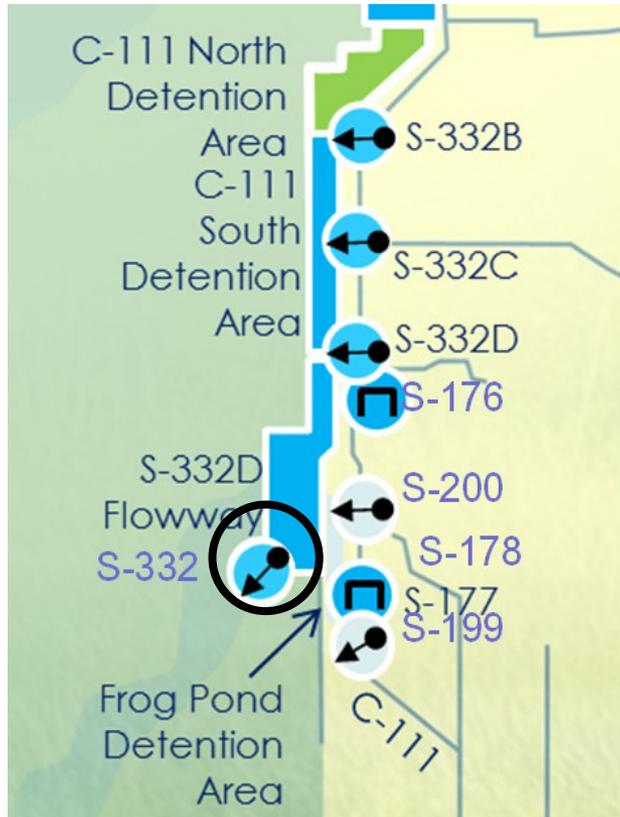
Required Features: Connect Canals and Remove Flap Gates on S-332i



- Connect the high head channel of S-200 pump station to the L-31W canal to push water towards the headwaters of Taylor Slough
- Remove flap gates on S332i culverts

Modify existing Florida Department of Environmental Protection Permit
 Notify U.S. Army Corps of Engineers of revised operations
 No permit required to remove flap gates

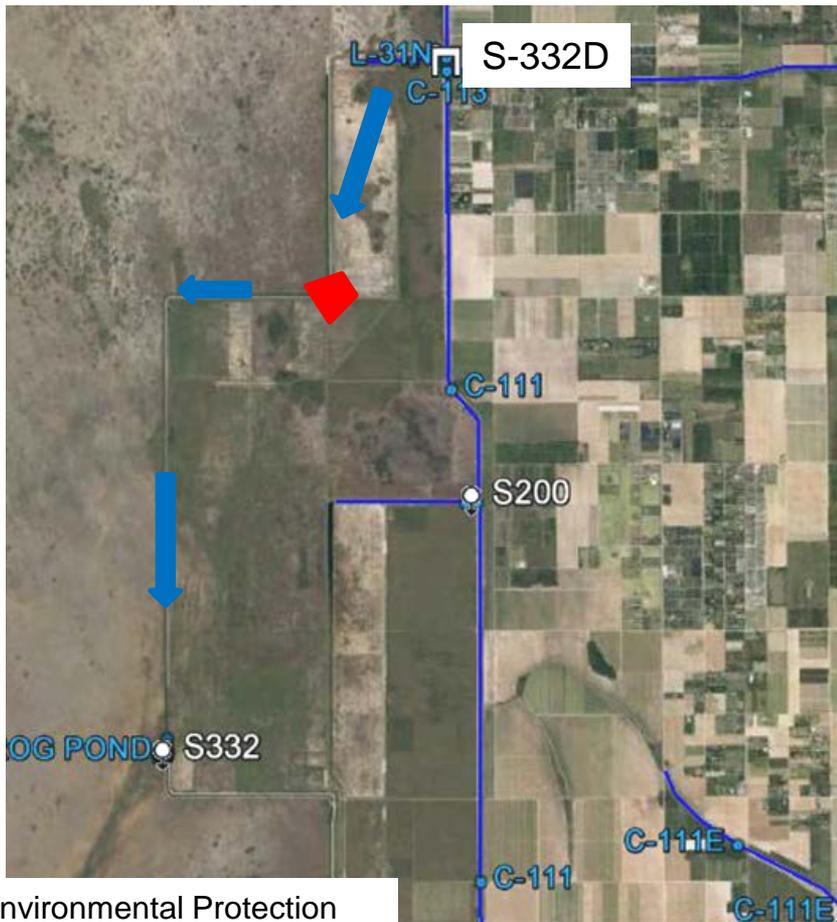
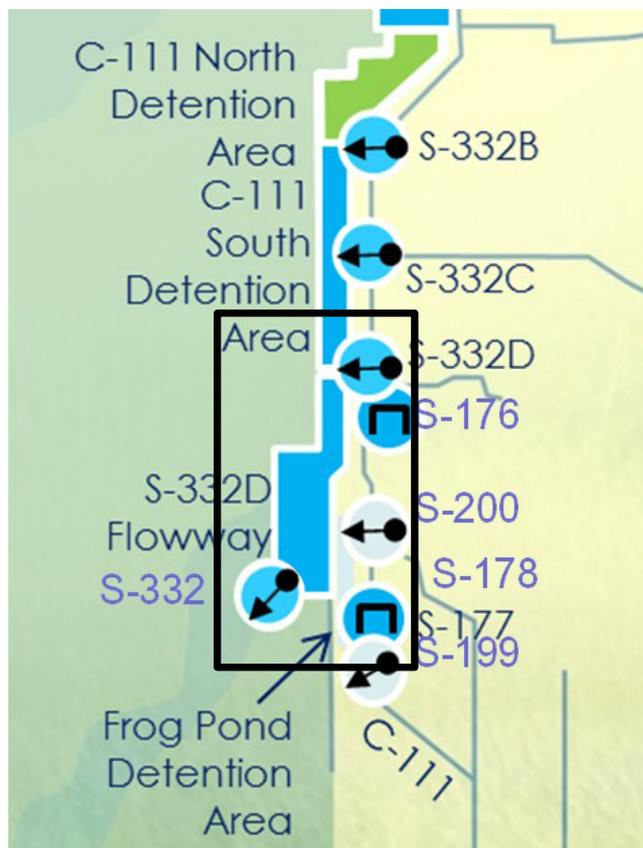
Required Features: Rebuild Levee, Weir and Add Plug to L-31W Canal



- When L-31W Canal higher than detention area, weir will impede flows east
- Incidental to this improvement, when S-332D detention area is recharged the weir will allow flow towards the headwaters of Taylor Slough
- Submitted the L31W levee rebuild and integrated weir permit application to USACE on July 20th . Responded to RAI on July 29 and August 1.

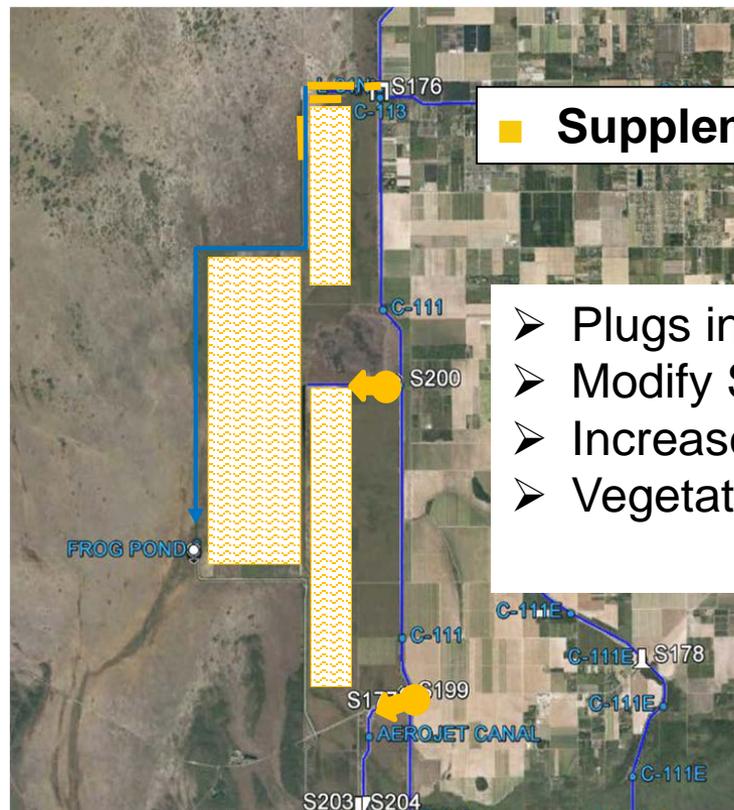
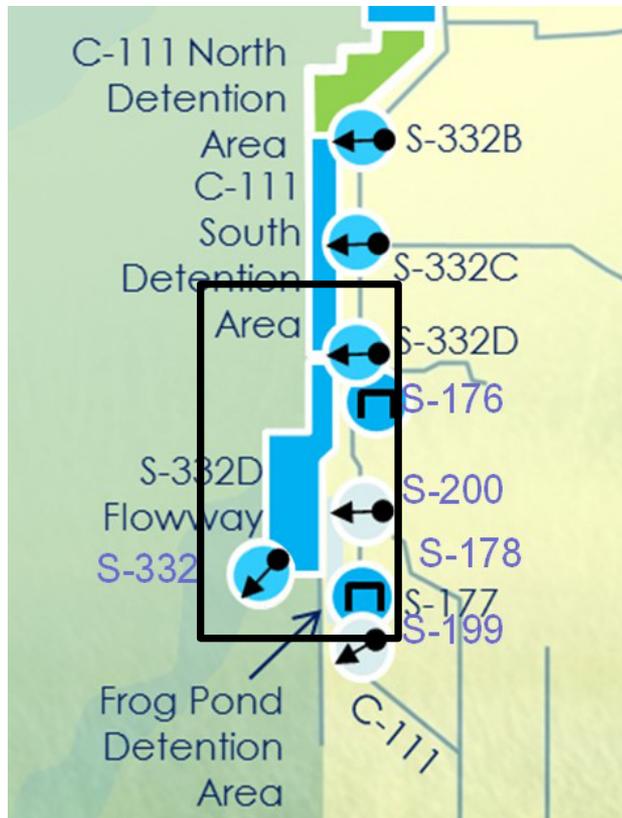
Approval required from Florida Department of Environmental Protection
Permit required from U.S. Army Corps of Engineers

Required Features: Operate S-328 Structure



Approval required from Florida Department of Environmental Protection
 Notify U.S. Army Corps of Engineers of revised operations

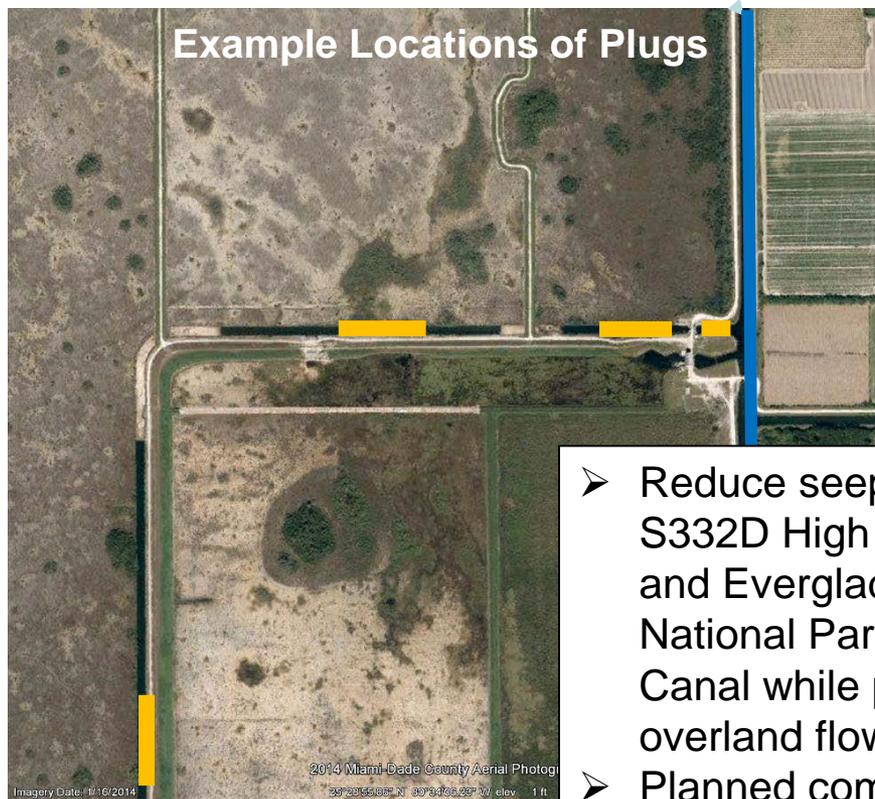
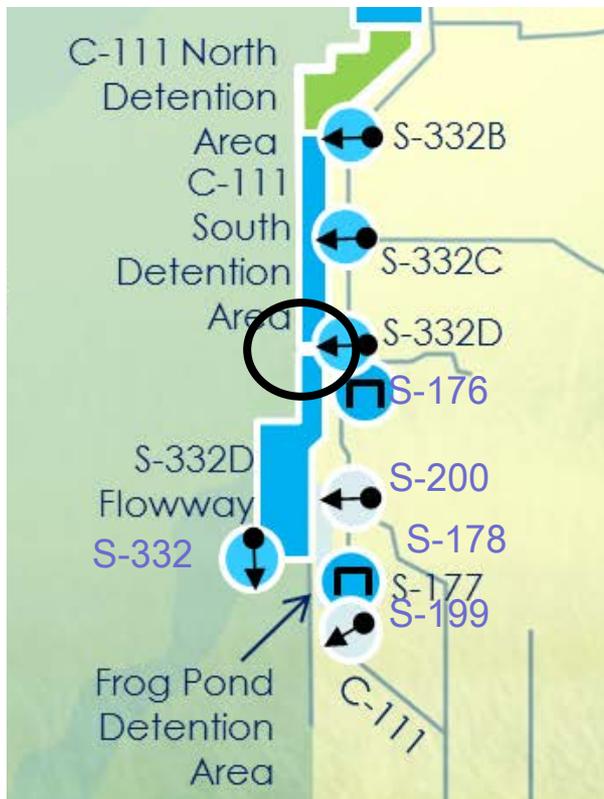
Supplemental Features to Move Water South to Florida Bay



Supplemental Features

- Plugs in L-31W
- Modify S-332D Weir
- Increase pump capacity
- Vegetation management

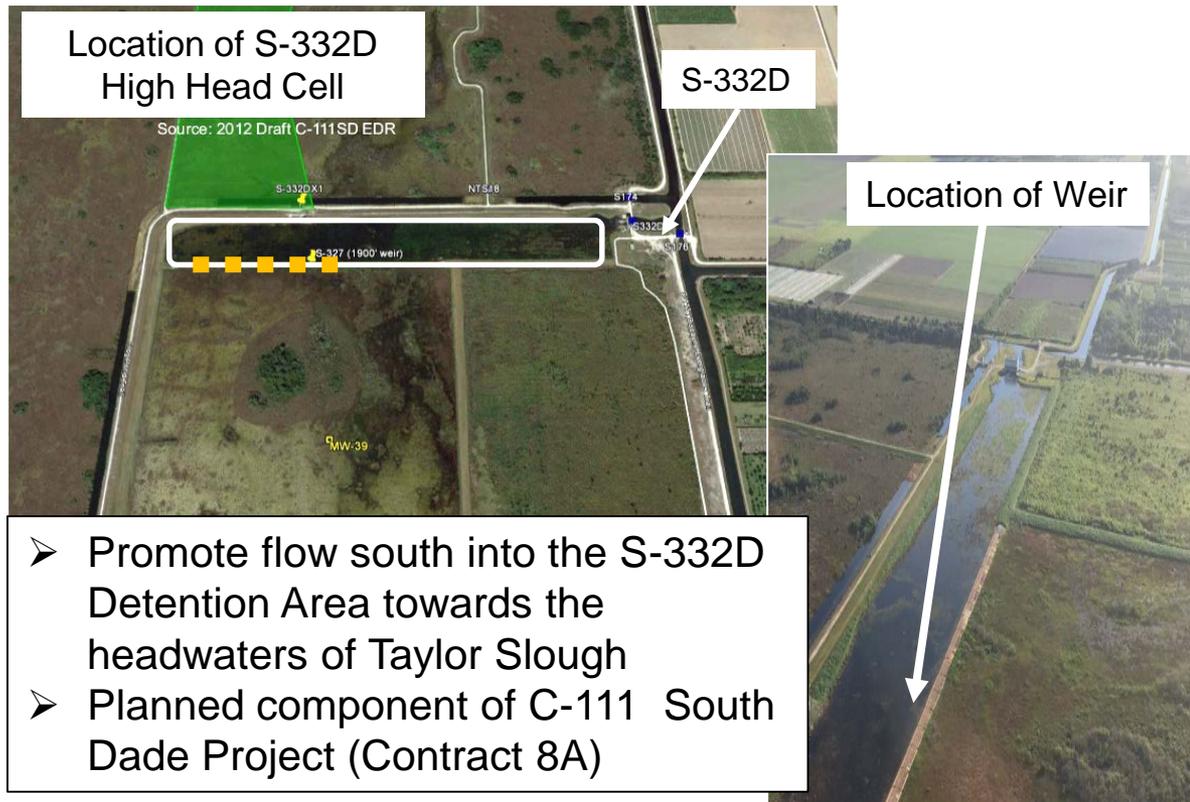
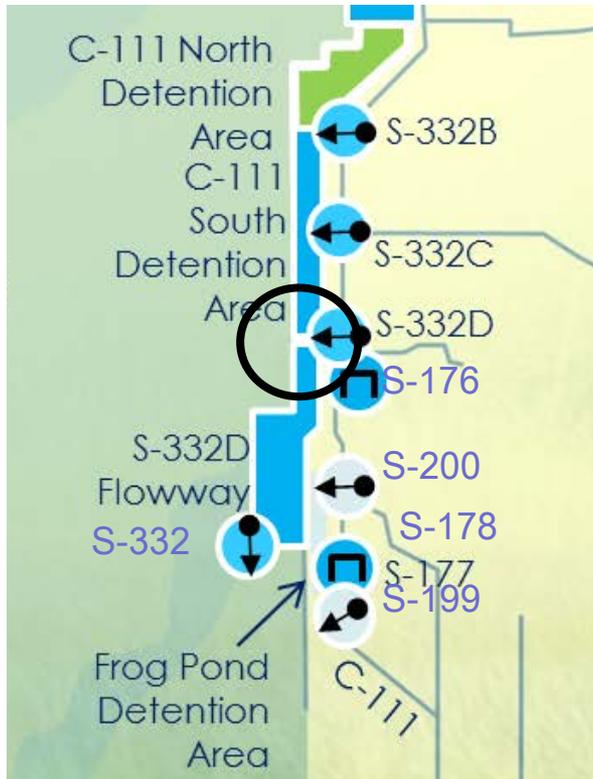
Supplemental Feature: Plugs in L-31W Canal



- Reduce seepage from S332D High Head Cell and Everglades National Park to C-111 Canal while promoting overland flow
- Planned component of C-111 South Dade Project (Contract 9)

Approval required from Florida Department of Environmental Protection
Permit required from U.S. Army Corps of Engineers

Supplemental Feature: Modify S-332D High Head Cell Weir

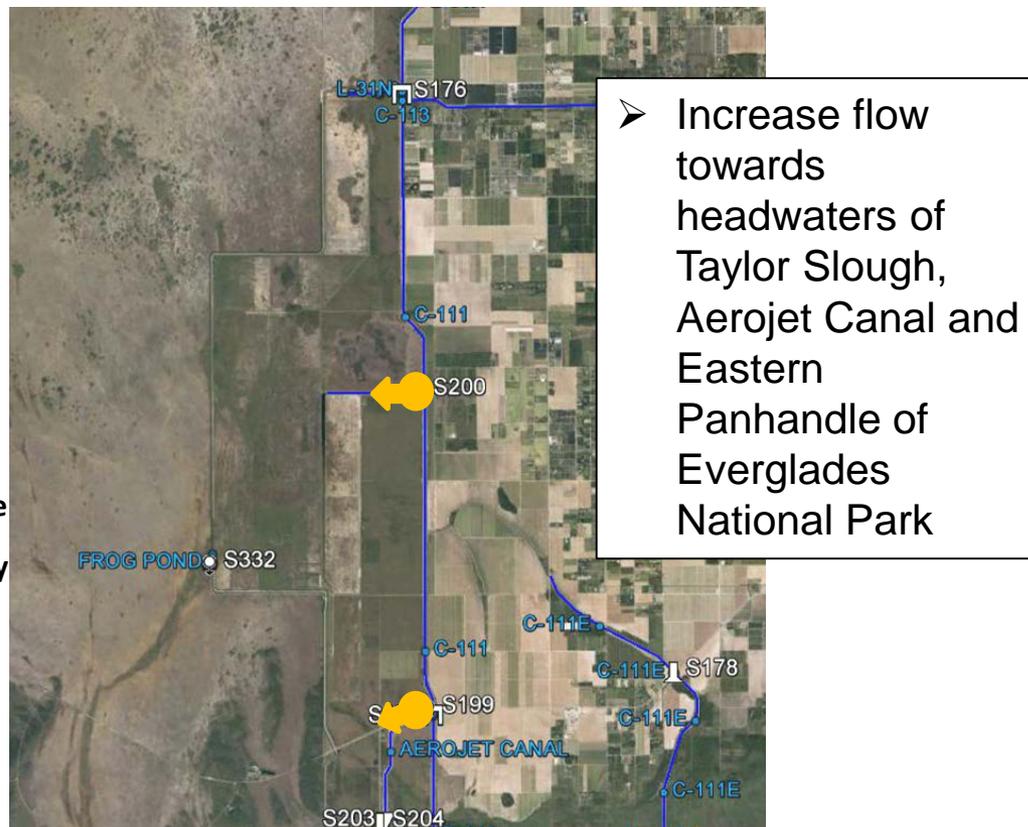
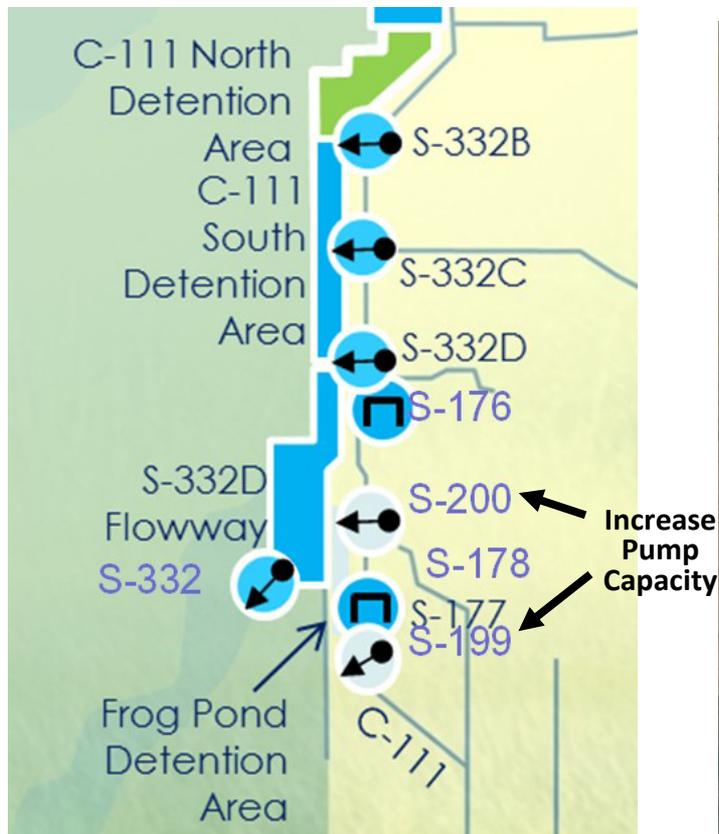


Approved by Florida Department of Environmental Protection
No permit required from U.S. Army Corps of Engineers

Progress

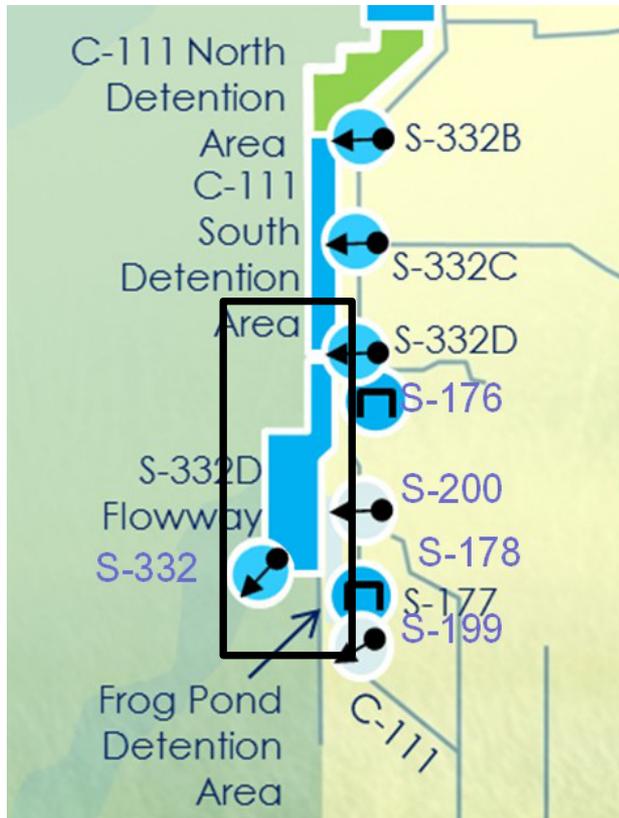


Supplemental Feature: Increase S-199 and S-200 Pump Capacity



Modify existing Florida Department of Environmental Protection permit
Notify U.S. Army Corps of Engineers of revised operations

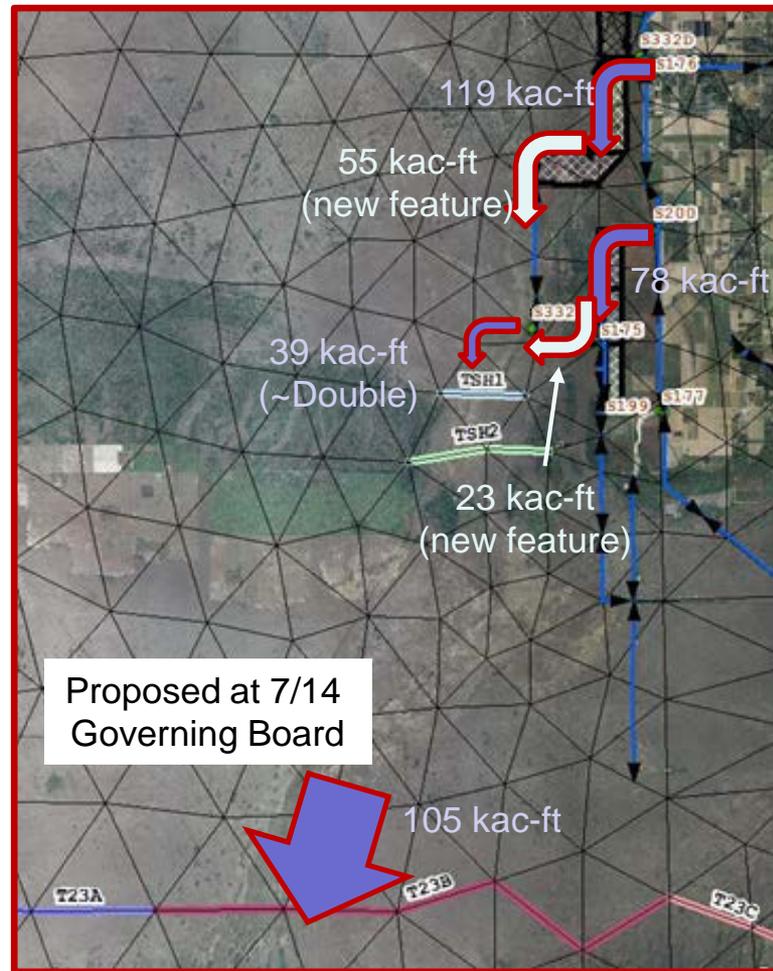
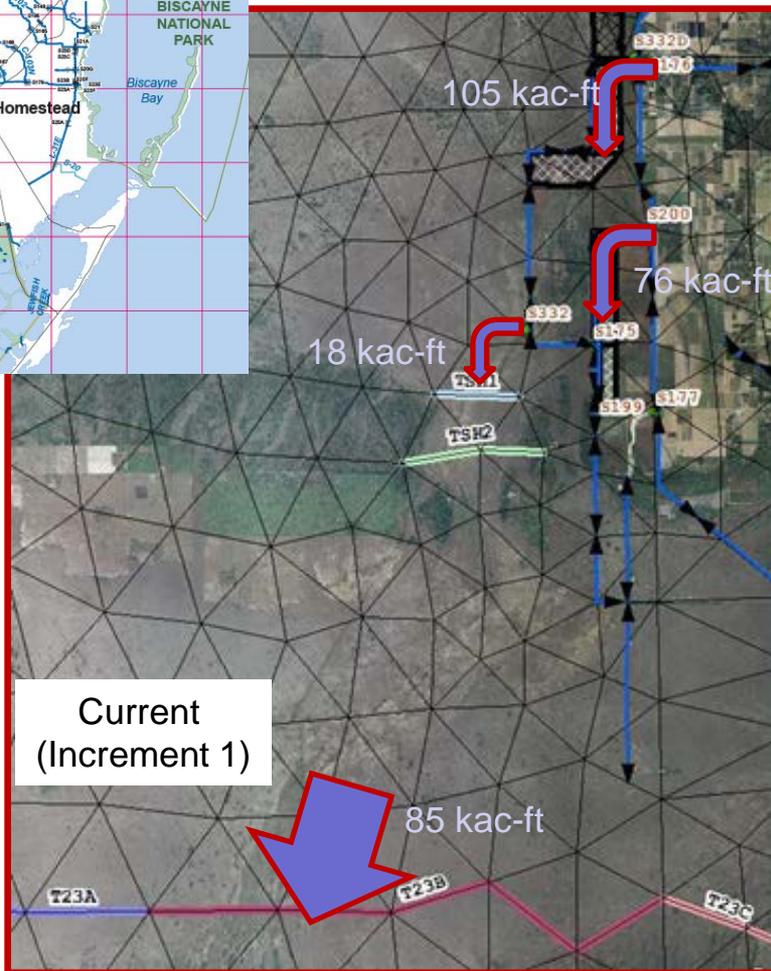
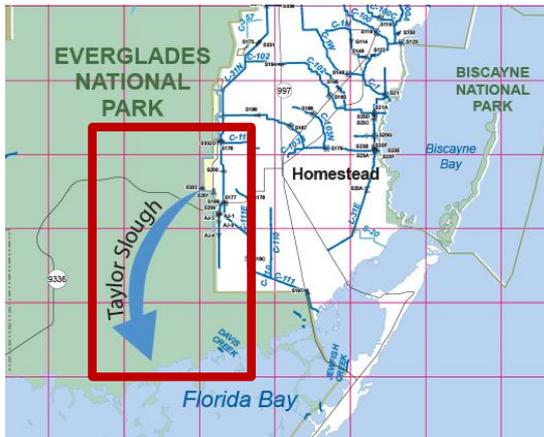
Supplemental Feature: Vegetation Management



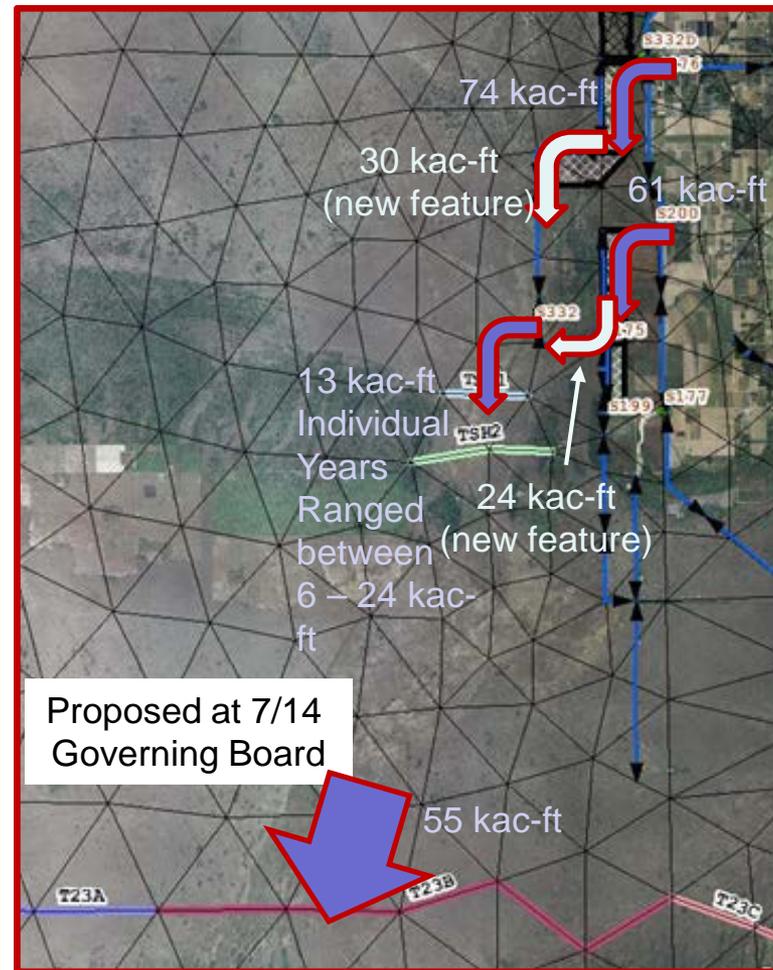
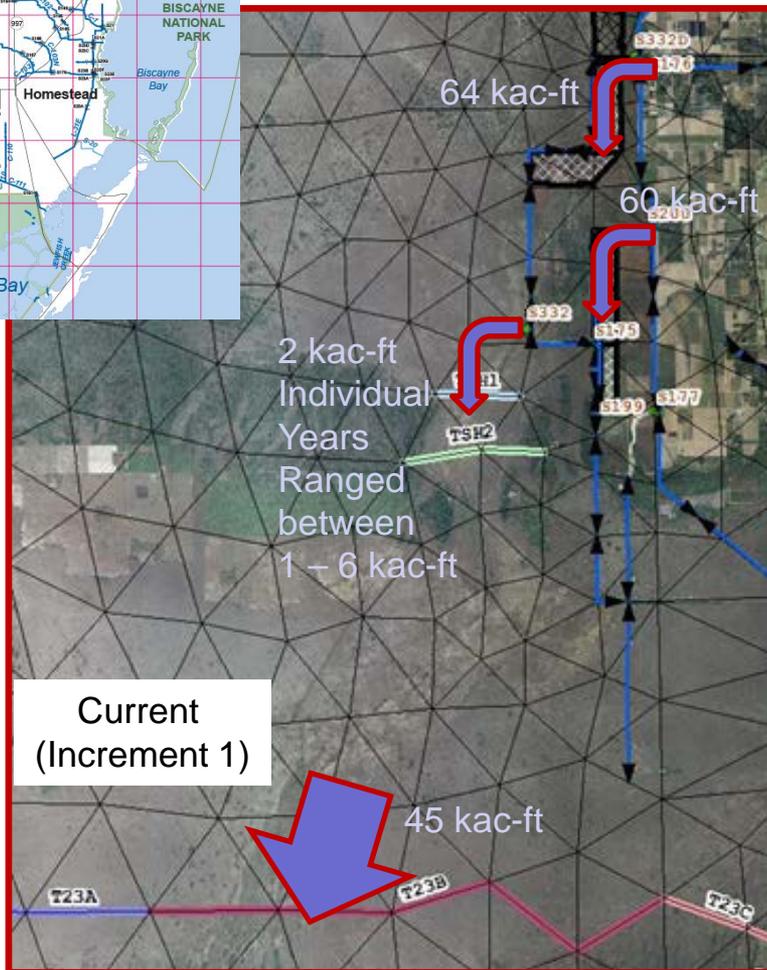
- Improve conveyance from S-332D and S-200 pump stations
- Reduce resistance to overland flow through the detention areas

No permit required
Notification prior to maintenance activity

Average Performance

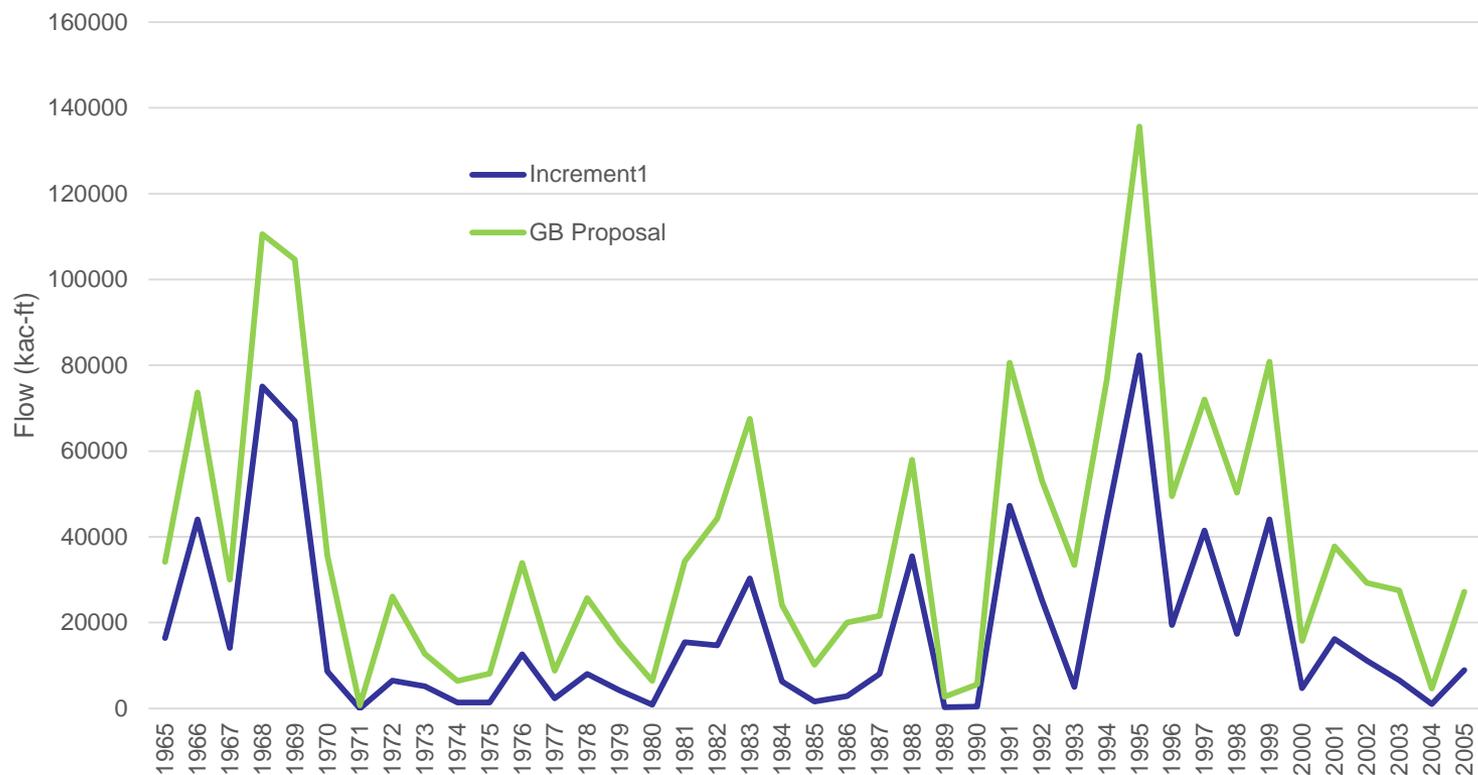


Average Performance During Dry Years (1971, 1975, 1981 & 1985)



Period of Record Model Results

Annual Flow at Taylor Slough Headwater



Proposed Features Estimated Costs and Schedule

Required Features	Estimated Cost	Scheduled Completion
Connect Canals	\$1 million	November
Rebuild Levee along L-31W Canal	\$0.8 million	November
Remove Flap Gates at S-332i	-	August
Operate S-328 Structure	-	November
Total Cost Required Features	\$1.8 million	

Supplemental Features	Estimated Cost	Scheduled Completion
Plugs in L31W at key locations	\$1.4 million	November
Modify S-332D High Head Cell Weir	\$0.1 million	Complete 
Vegetation Management	-	Periodic
Total Cost Supplemental Features	\$1.5 million	