



South Florida Water Management District

BIG CYPRESS BASIN BOARD MEETING AGENDA

February 23, 2024

11:00 AM

Collier County Government Center

Commission Chambers, 3rd Floor

3299 Tamiami Trail East, Naples, FL 34112

FINAL

1. Call to Order - Charlette Roman, Chair, Big Cypress Basin Board
2. Pledge of Allegiance
3. Agenda Revisions - Lisa Koehler
4. Agenda Item Abstentions by Board Members
5. Consider Approval of the Minutes of the October 27, 2023 Meeting
6. Basin Administrator's Report - Lisa Koehler
 - Corkscrew Watershed Initiative Kickoff
7. General Public Comment
8. Big Cypress Basin Mowing Reduction Pilot Study (Staff contact, Sean Murphy)
9. Capital Improvement Program 5-Year Update (Staff contact, Brad Jackson)
11. Board Comment

Technical Reports

12. Field Station Activity Report - Andrew Wolf

13. Water Conditions Report - Brad Jackson

Staff Reports

14. Monthly Financial Report and Preliminary Budget Discussion - Candida Heater
15. General Public Comment
16. Board Comment
17. Adjourn

Draft Presentations:

Agenda Item Background:

- Item 8 - BCB Mowing Reduction Study
- Item 9 - Big Cypress Basin 5 Year Capital Plan Update
- Item 11 - Field Station Report February 2024
- Item 12 - Water Conditions Report February 2024

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Big Cypress Basin Board Meeting

FEBRUARY 23, 2024



BCB Mowing Reduction Pilot-Study

Sean Murphy, PE
Staff Engineer
Big Cypress Basin Service Center

BCB Mowing Reduction Pilot-Study

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Introduction

- Conclusion of “Canal Bank Study with Naples Botanical Garden”
- Bahia is the “most resilient”
- Board tasked District staff to explore next steps to improve mowing operations within the Basin.

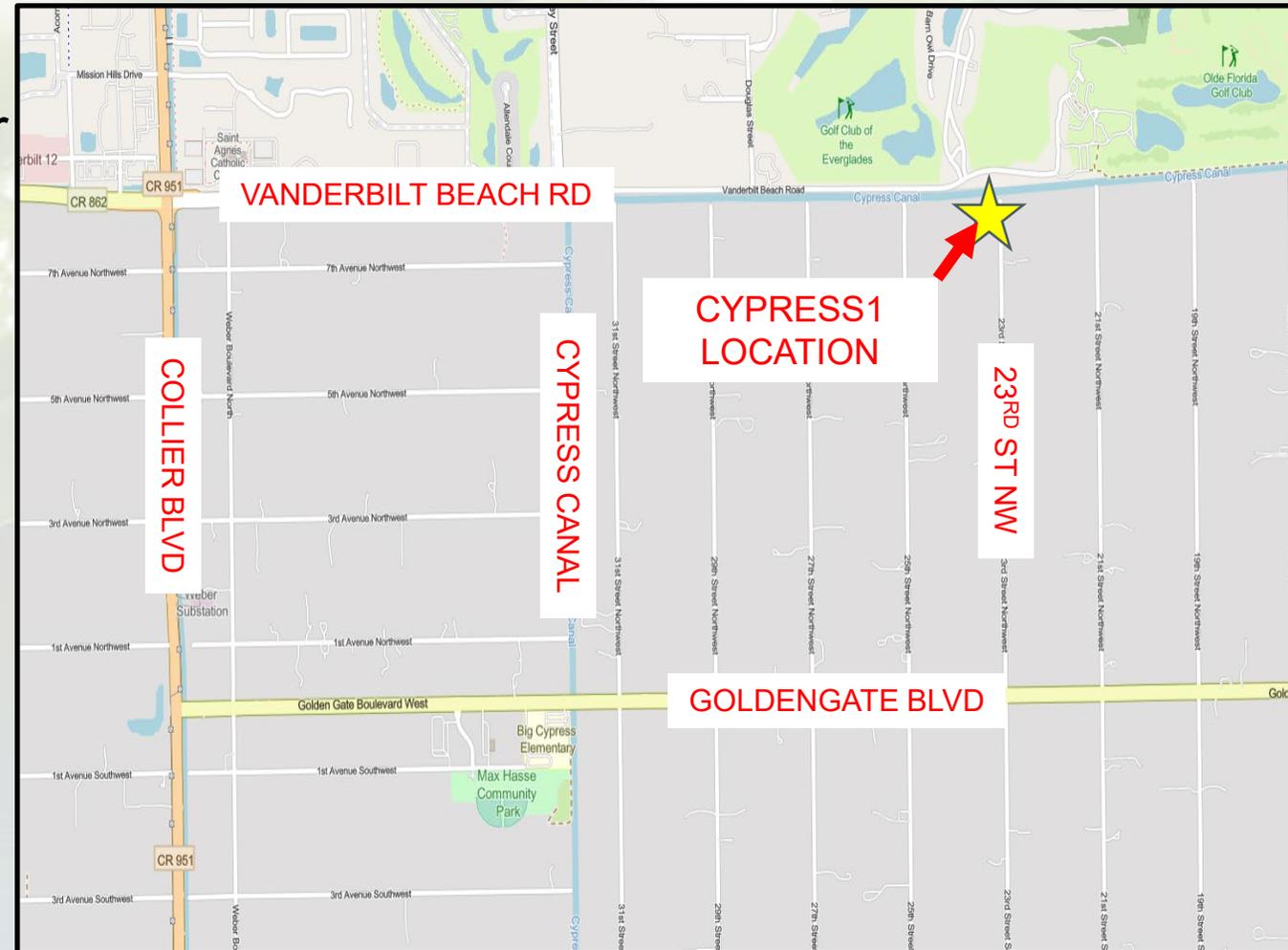


BCB Mowing Reduction Pilot-Study

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Background and Objective

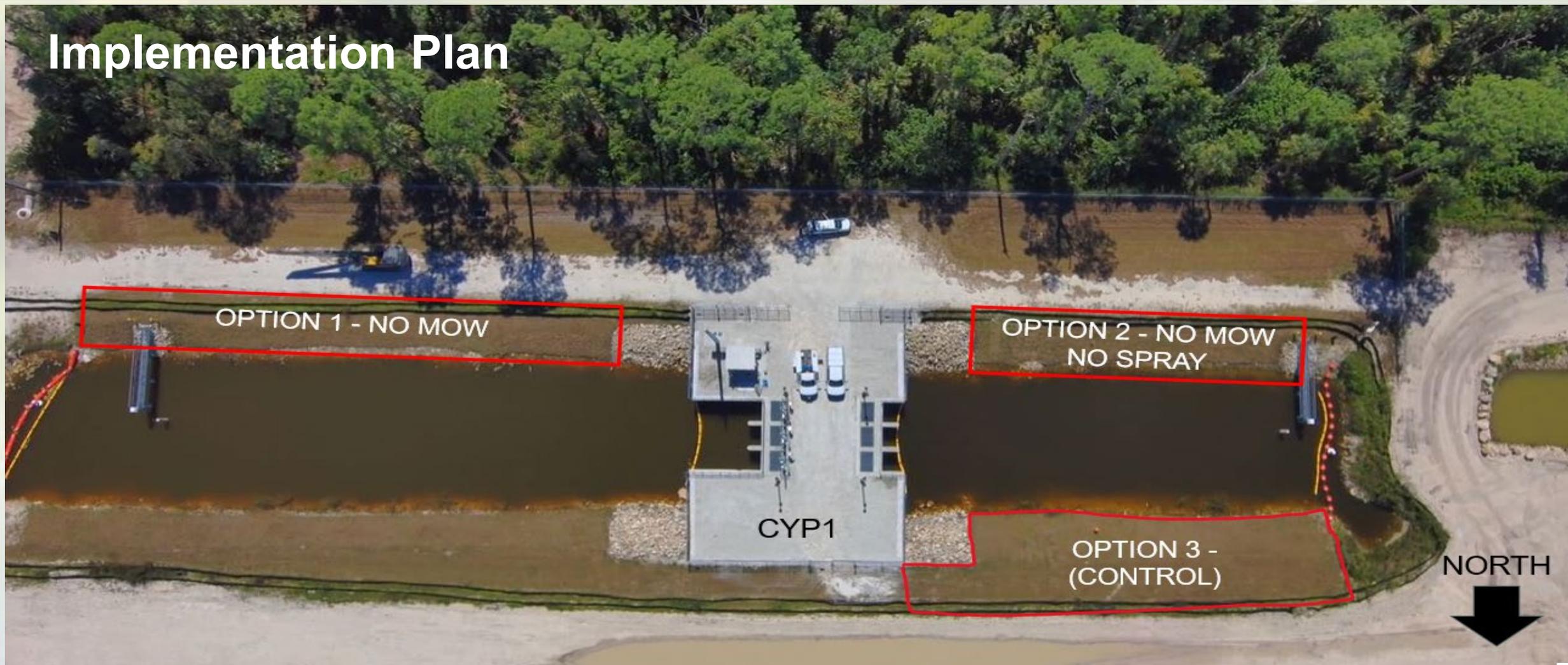
- Assess reduction in mowing frequency for post-tree removal project areas within the Basin
- New CYPRESS1 water control structure
- (3) different plots
- Year-long study starting April 1st 2024
- Evaluate three different maintenance strategies:
 - **Option 1** - No-mowing with spraying
 - **Option 2** - No-mowing with no spraying
 - **Option 3** - Regular mowing with spraying



BCB Mowing Reduction Pilot-Study

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Implementation Plan



BCB Mowing Reduction Pilot-Study

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Monitoring and Data Collection

- Monthly site visits
- Contracted mowing
- Monthly data collection which includes:
 - Mean Plant Height
 - Photo Documentation
 - Percent Coverage
 - Invasive Species Identification
 - Record Keeping of Costs
- Monthly reports
- Final report and presentation at August 2025 Board meeting



BCB Mowing Reduction Pilot-Study

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Summary & Conclusion

- This study will assess various maintenance methods:
 - **Option 1** - No mowing with spraying
 - **Option 2** - No mowing with no spraying
 - **Option 3** - Regular mowing with spraying
- The primary objective is to improve canal mowing operations and maintenance and minimize costs within the Basin.



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QUESTIONS?

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Big Cypress Basin Board Meeting Capital Improvement Program 5-Year Update

February 23, 2024



Brad J Jackson, P.E., CFM
Principal Engineer
Big Cypress Basin

WESTERN URBAN AREA

Description	Site	Flow CFS	Upstream WATER LEVEL (ft NGVD)	Downstream WATER LEVEL (ft NGVD)
 Airport Road South Amil Gate	AR1		7.55	6.17
 CR 951 South Weir	CR951S	0	8.49	6.41
 CR 951 North Weir	CR951N		11.94	8.84
 I-75 Canal Weir #1	I75W1	21**	6.43	6.40
 I-75 Canal Weir #2	I75W2	35**	8.08	6.42
 I-75 Canal Weir #3	I75W3		9.65	

Water Level Real Time Monitoring Upgrades **DRAFT**

- Long term 25-year program
- Structures previously required manual readings
- Added over 80 monitoring stations
- Reduce operational response times
- Real-time reporting public website
- One site remaining for design & construction
 - I-75W3 tailwater (downstream)
 - Design in FY24
 - Construction FY25 - \$400,000



Water level station & rain gauge

Communication System Improvements (Tower)

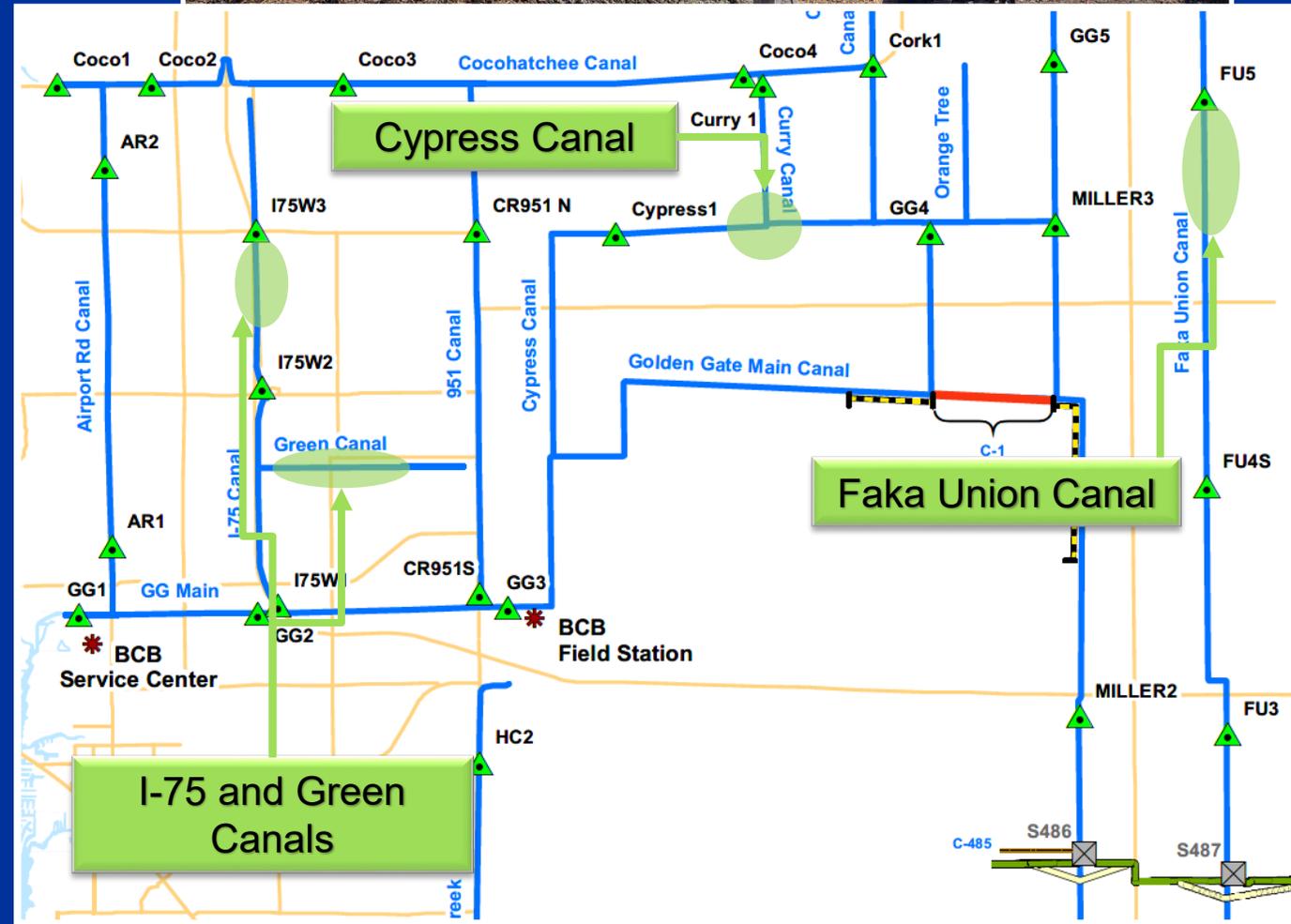
- BCB Flood Control Communication Tower
 - Increases resiliency
 - Eliminate cellular dependance
 - Connects to existing SFWMD microwave network
 - Ensures continuous flood control operations
 - Final design completed winter 2024
 - Remaining milestones
 - Advertise for bids - June 2024
 - Construction fall 2024 - fall 2026
 - Current cost estimate ~\$8.5M
 - Funded over several fiscal years (FY23 - FY27)



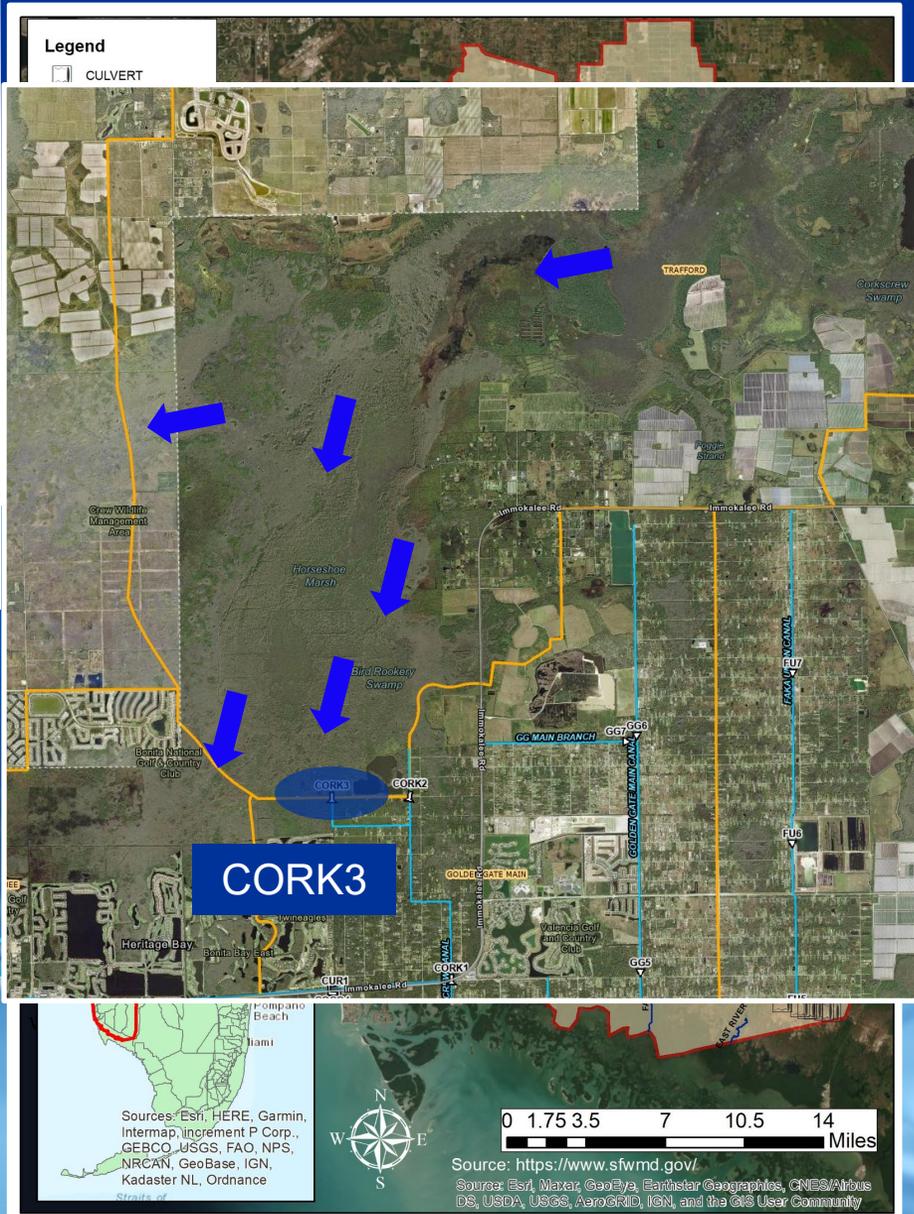
Canal Flood Control Improvements



- Main objective - improve flood control
 - Cypress canal at Curry Canal - **UNDER CONSTRUCTION**
 - I-75 canal & Green Canal - remove shoaling
 - Faka Union Canal - remove 1.5 miles of shoaling
 - Cypress Canal - establish new flow-way cooperation with Collier County
- FY2024 - \$700,000 (Green & I-75)
- FY2025 & 2026 - \$1.0M (Faka Union)
- FY2026 & 2027 - \$3.0M (Cypress)



Corkscrew Canal Headwater Improvements **DRAFT**



- BCB Regional Watershed Model Update
 - Started September 2021 anticipate completion spring 2024
- Corkscrew Watershed Initiative (CWI)
 - Initiate regional comprehensive Corkscrew study (2024 – 2026)
 - Identify and evaluate projects and restoration concepts (2025 – 2027)
 - Early restoration project implementation (2026 – 2028+)
 - Corkscrew Headwater Improvements Construction (2027 - 2029)
- CWI Capital Program Support & Funding
 - FY2025 (\$350,000) & FY2026 (\$500,000) - Initial funding to kickoff early “no regrets” projects
 - FY2027 thru FY2029 – CORK3 replacement & associated facilities \$6.0M total preliminary budget

I-75 Canal Weir #2 Replacement & Weir #1 Removal

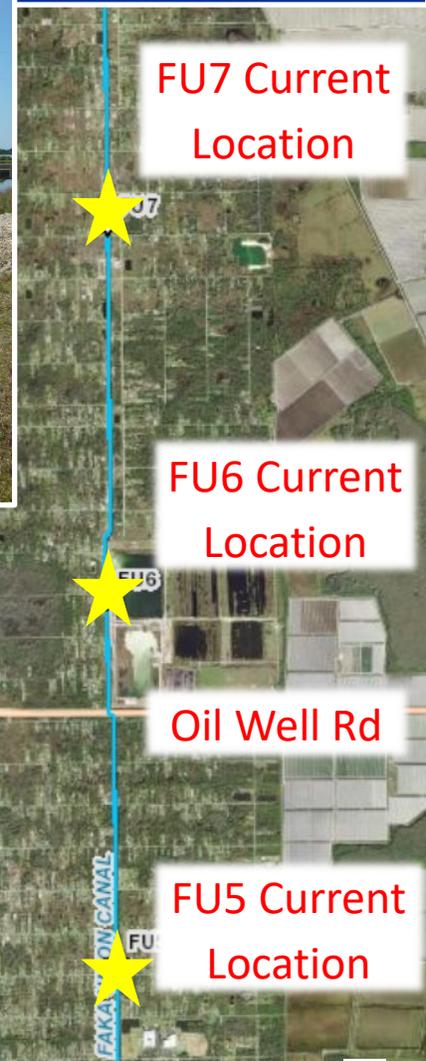
- I-75 canal weir #2 replacement
 - Replace older deficient structure
 - Reduce operation response time
 - Improve dry season groundwater recharge
 - Reduce dry season discharges to Naples Bay
 - Design summer 2023 – winter 2025
 - Construction 2025 – 2026
 - Funded over multiple years (FY2025 \$2.6M & FY2026 \$2.8M)
 - Current cost estimate \$5.4M
- I-75 canal weir #1 removal
 - Current structure is redundant
 - Reduces BCB operation & maintenance
 - Incorporated into I-75 weir #2 replacement
 - Current cost estimate \$2.1M (FY2026 & FY2027)



Upper Faka Union Improvements

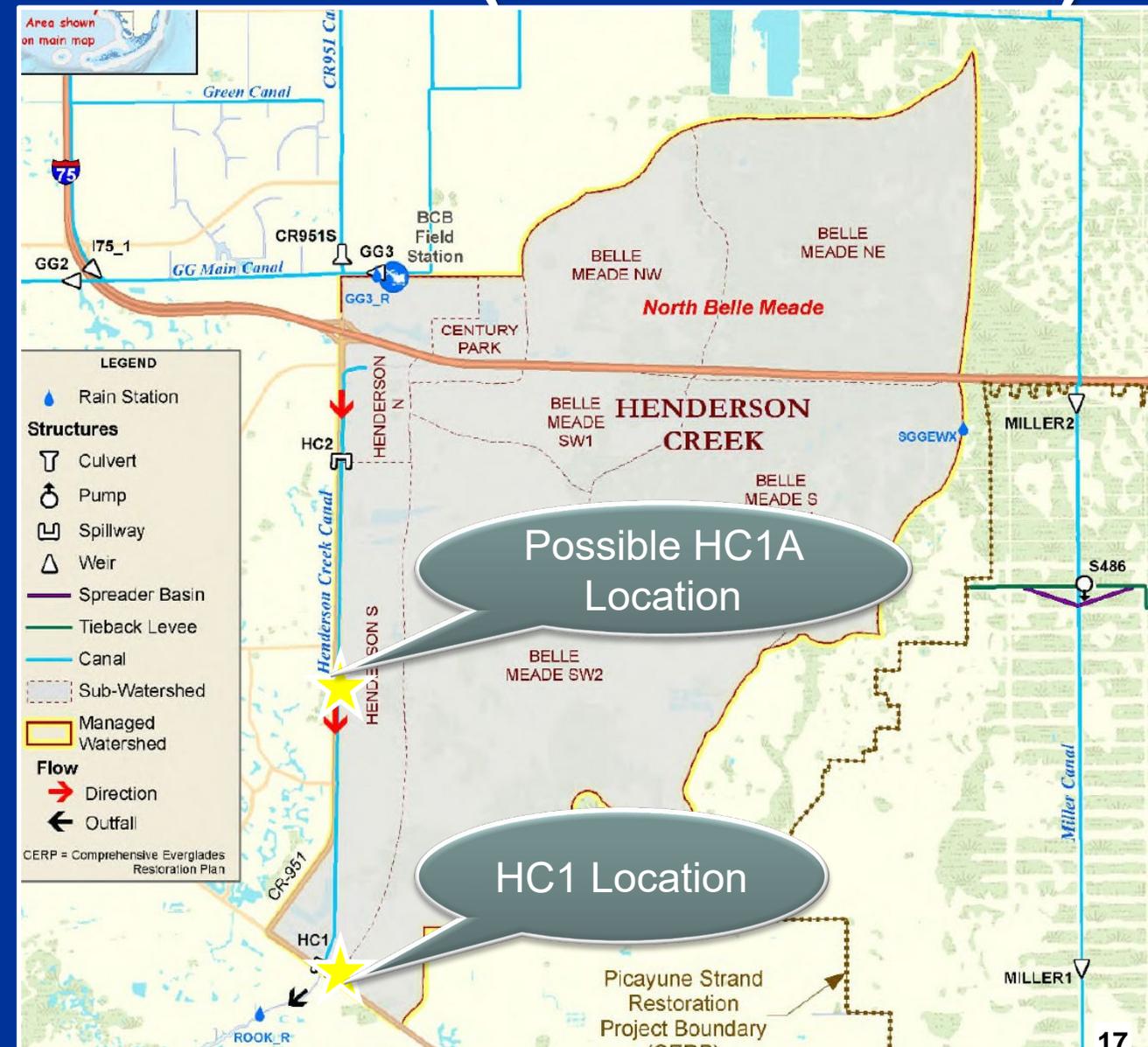
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- Goals
 - Increase flood protection level of service
 - Increase hydroperiod & depth for wetlands
 - Increase aquifer recharge
 - Eliminate obsolete infrastructure
 - Reduce over drainage & protect water supply
- H&H study and design 2024 - 2026
- Construction (tentative) 2026 - 2028 (FU5 & FU6)
- Construction (tentative) 2032 - 2033 (FU7)

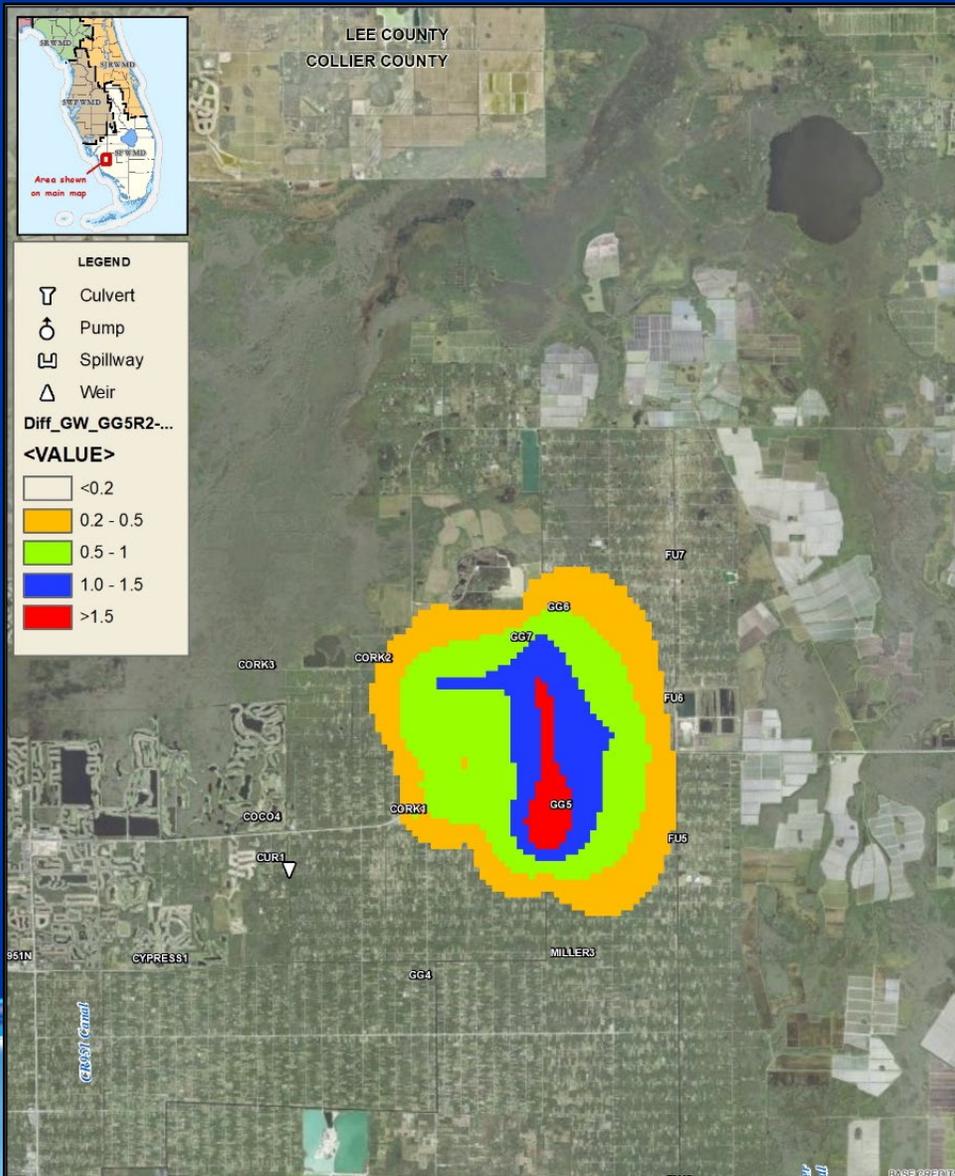


Henderson Creek Improvements (HC1 & HC1A) DRAFT

- HC1 aging structure - Built 1980
 - Undersized gates with manual operation
 - Susceptible to surge events & sea level rise
 - Limited draw-down capability
- Goals
 - Improve flood performance
 - Reduce effects of surge events
 - Protect public water supply for Marco Island
 - Reduce unwanted discharges to downstream Rookery Bay estuary
- New HC1A Structure
 - Reduce undesirable dry season discharges
 - Slow saltwater intrusion
- Long term multi-year large project
 - FY2026 - Begin H&H assessment
 - FY2027 - 2029 Design
 - FY2029 - 2032 Construction



Golden Gate #5 Replacement DRAFT



GG5 Replacement Dry Season
Groundwater Improvement

- GG5 Replacement H&H Study & Siting Analysis
 - Optimized location for replacement structure
 - Rapid growth & development in region
- Existing structure
 - Over drains groundwater
 - Manual operations & limited pre-storm draw-down capability
- H&H Goals & Constraints
 - Improve flood control level of service
 - Increase surface & surficial aquifer water levels when hydrologically appropriate
 - Reduce over-drainage & discharges to Naples Bay
 - Improve canal system response
- FY2025 – Right of Way Acquisition (\$300,000)

Gordon River Structure (GR1) Replacement DRAFT

- Critical coastal water control structure
- SFWMD design & build replacement structure
 - Increase resiliency, remote operation, & monitoring with back-up generator
 - Consider sea-level rise & existing flood protection
 - Will reduce saltwater intrusion from Naples Bay
 - Condition of SFWMD/Collier cooperative agreement
 - Design 2024 - 2026
 - Construction 2026 - 2028



Existing GR1 to be Replaced

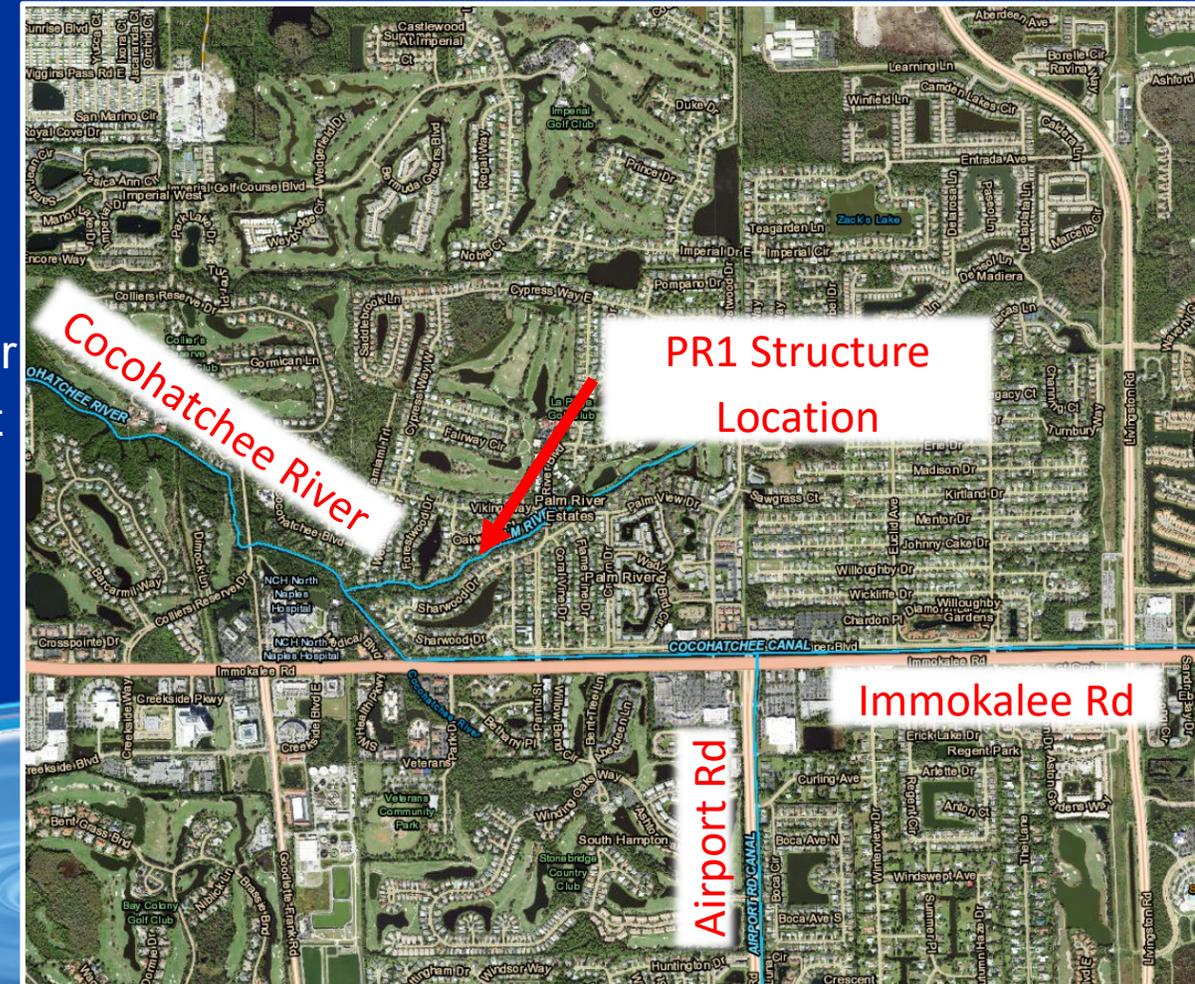
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Palm River Structure (PR1) Replacement

- Critical coastal water control structure
- SFWMD design & build replacement structure
 - Increase resiliency, remote operation, & monitoring with back-up generator
 - Consider sea-level rise & existing flood protection
 - Will reduce saltwater intrusion from Cocohatchee River
 - Condition of SFWMD/Collier County Co-op Agreement
 - Design 2024 - 2026
 - Construction 2026 - 2028



Existing PR1 to be Replaced



BCB 5 Year Capital Improvement Plan

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BCB Capital Projects	Fiscal Year 2024-25 Preliminary	Fiscal Year 2025-26	Fiscal Year 2026-27	Fiscal Year 2027-28	Fiscal Year 2028-29
Structure Inspection Program	\$0	\$0	\$0	\$250,000	\$250,000
SCADA Additions & Replacements	\$400,000	\$0	\$0	\$0	\$0
Communication System Improvements (Tower)	\$3,000,000	\$1,000,000	\$500,000	Complete	
Canal Improvements	\$500,000	\$500,000	\$1,500,000	\$1,500,000	\$0
Corkscrew Canal Headwater Improvements	\$350,000	\$500,000	\$1,500,000	\$2,500,000	\$2,000,000
I-75 Canal Weir #1 (I75W1) Weir Removal	\$0	\$600,000	\$1,500,000	Complete	
I-75 Canal Weir #2 (I75W2) Weir Replacement	\$2,550,000	\$2,800,000	Complete		
Upper Faka Union Replacement (FU5, 6, & 7)	\$500,000	\$300,000	\$1,300,000	\$1,000,000	\$0
Henderson Creek HC1 and HC1A	\$0	\$300,000	\$300,000	\$600,000	\$2,500,000
Golden Gate #5 Replacement	\$300,000	\$0	\$0	\$0	\$350,000
Subtotal (Ad-Valorem)	\$7,600,000	\$6,000,000	\$6,600,000	\$5,850,000	\$5,100,000
Gordon River Structure Replacement (GR1)	\$750,000	\$1,000,000	\$6,000,000	\$2,000,000	\$1,000,000
Palm River Structure Replacement (PR1)	\$750,000	\$1,000,000	\$6,000,000	\$2,000,000	\$1,000,000
Subtotal (Collier/SFWMD Coop Agmt)	\$1,500,000	\$2,000,000	\$12,000,000	\$4,000,000	\$2,000,000

Questions?



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Big Cypress Basin Field Station Activity Report



Andrew Wolf
Superintendent BCB Field Station
February 23, 2024

Overview

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- Field Station Operations
- Maintenance Activities
- Three Month Outlook



Maintenance Activities

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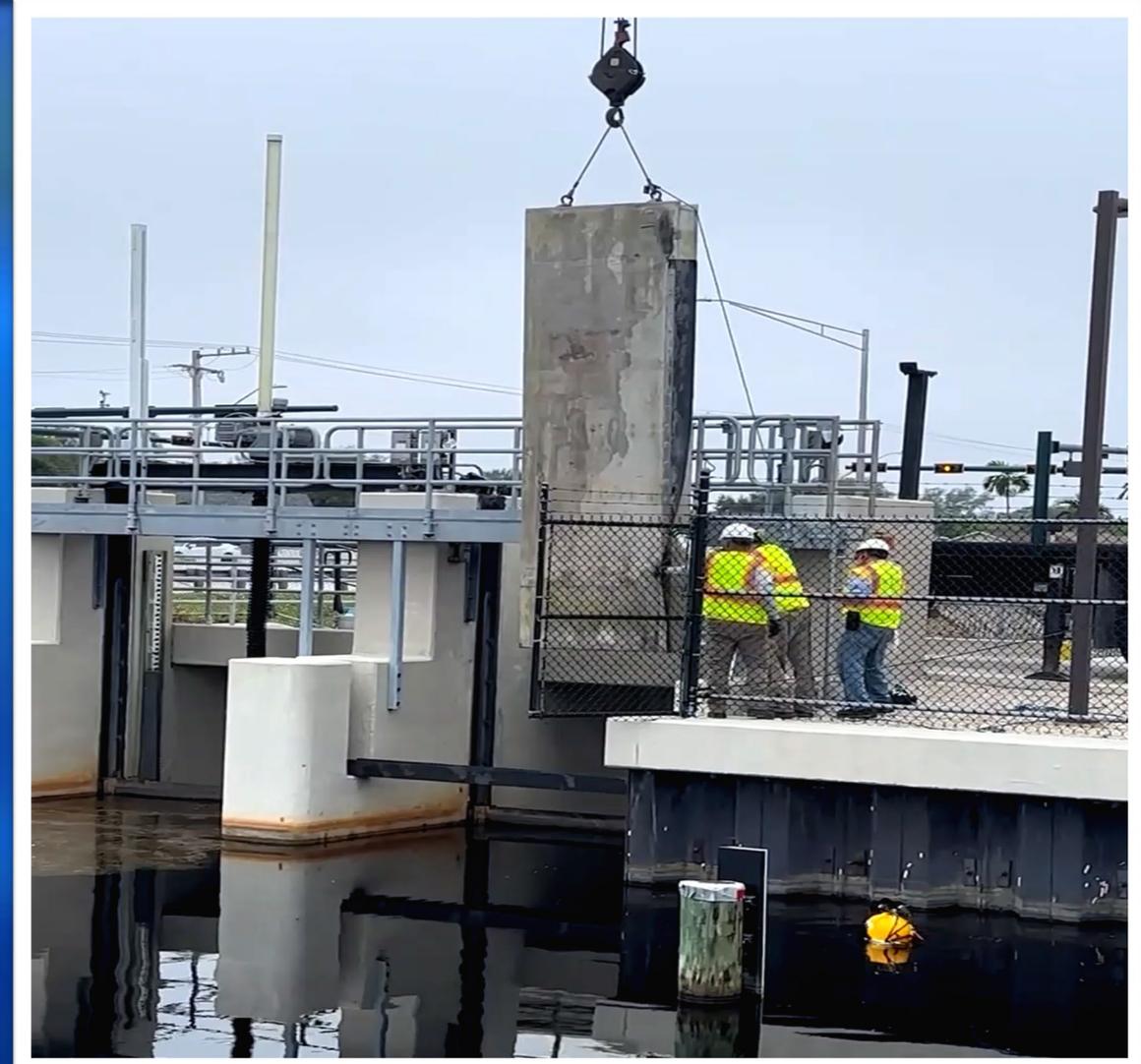
Structure Inspection Program (SIP) Repairs at structures



Overhaul Coco-2 Structure

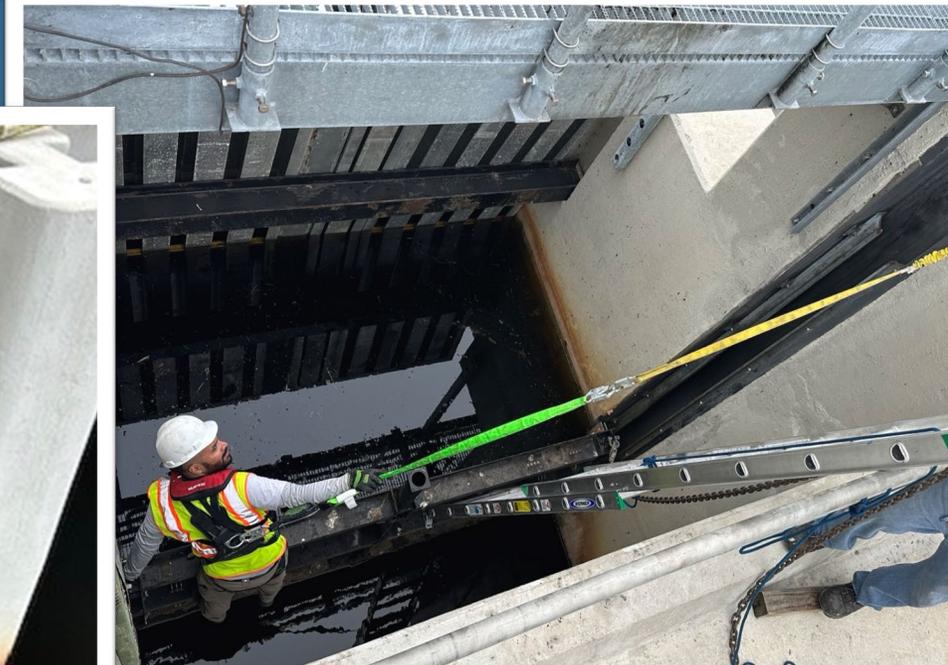
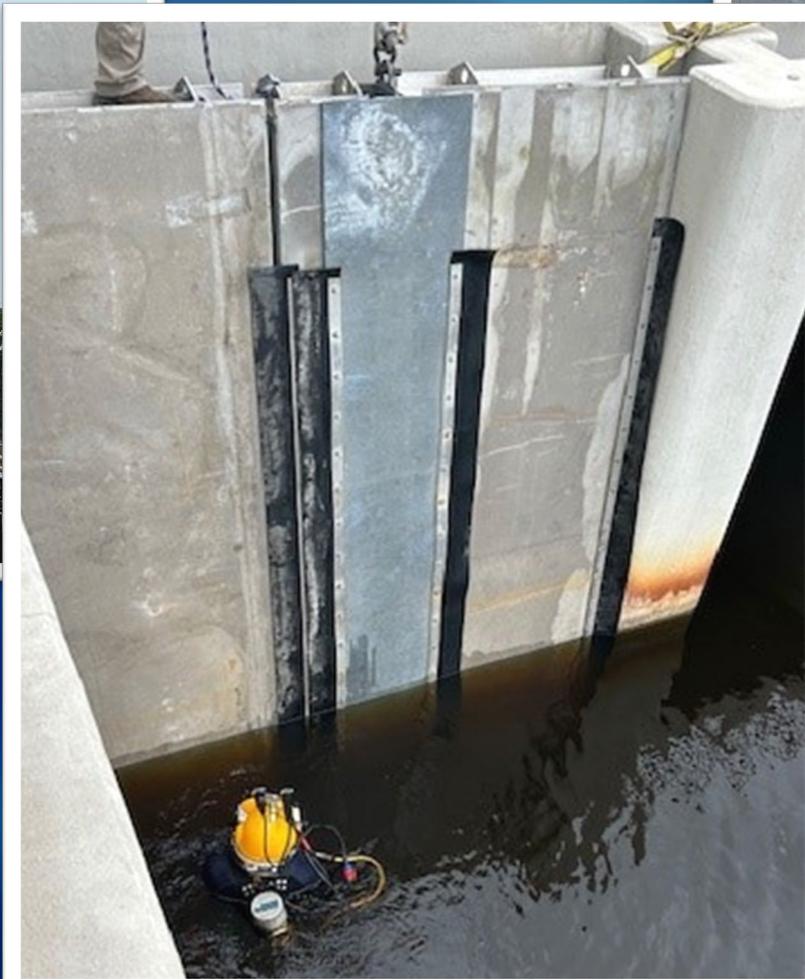
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Installing stop logs up stream and down stream at Coco-2 to remove the gate for major overhaul.



Overhaul Coco-2 Structure

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Overhaul Coco-2 Structure

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Overhaul Coco-2 Structure

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After Gate is removed it is disassembled and all parts pressure cleaned.

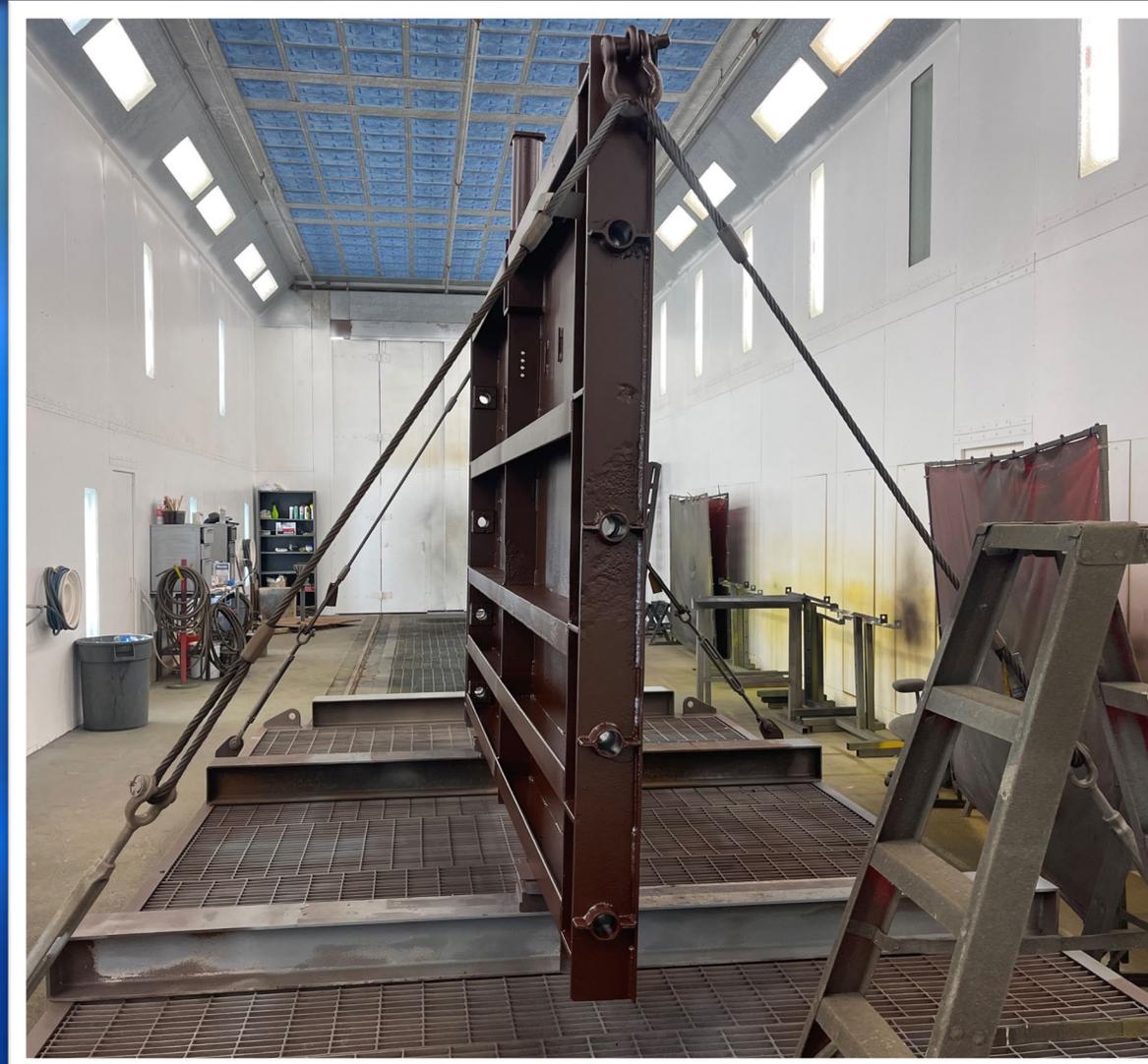
It is loaded and transported to West Palm Beach machine/paint shop.



Overhaul Coco-2 Structure

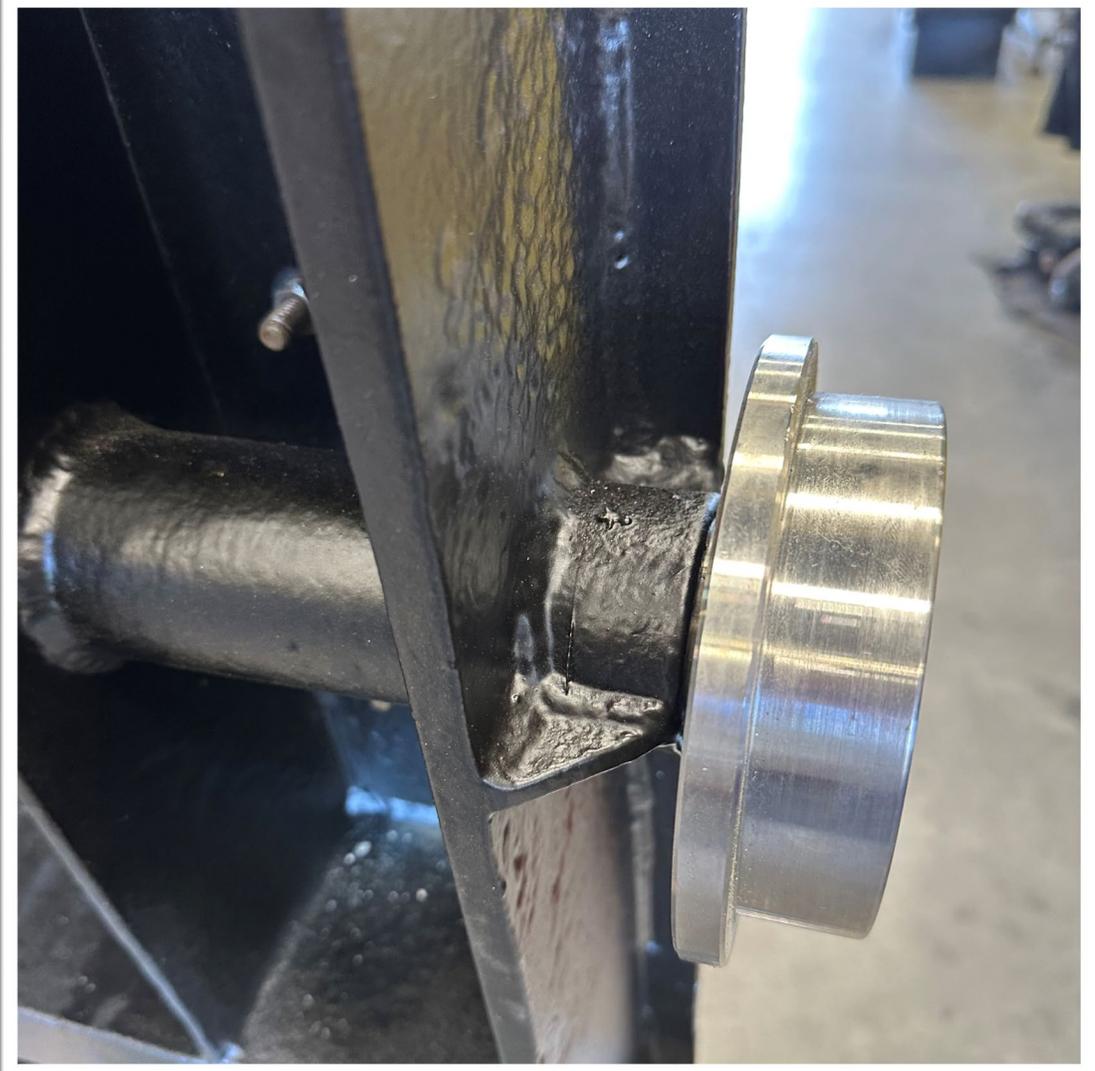
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- West Palm Beach Machine/ Paint shop.
- Gate is sand blasted.
- Repairs are made on any rusted or broken areas.
- Gate is primed and painted.



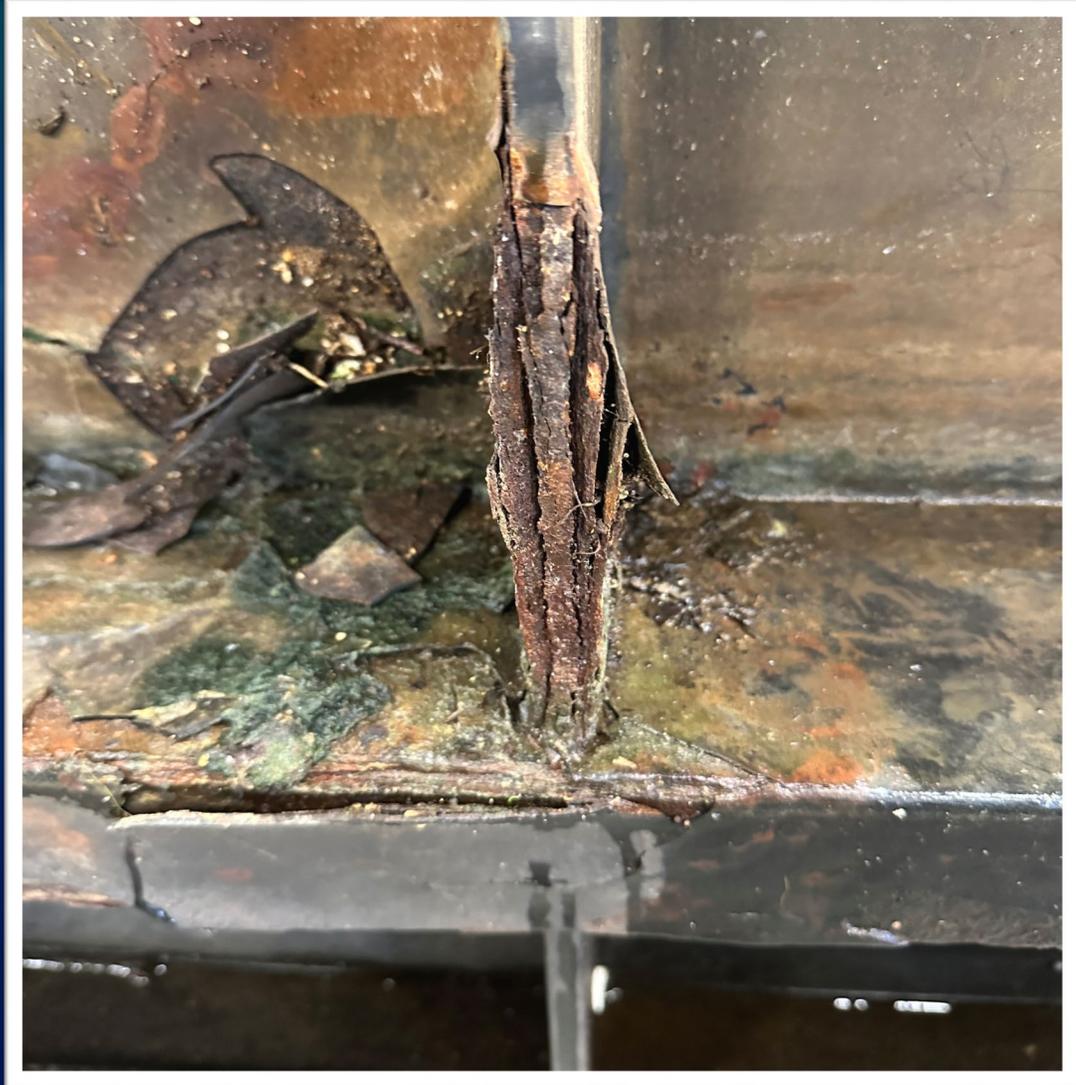
Before and After Repairs

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Before and After Repairs

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Maintenance Activities

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Henderson Creek Vegetation Removal



Maintenance Activities

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- Submerged Aquatic Treatment in Henderson Creek Canal and Airport Road Canal
- On Henderson Creek Canal 12.5 surface acres were treated. From Verona Walk north to Abandon Cracklin Jacks Restaurant, 2.6 Miles



Maintenance Activities

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- One 5-gallon tank treats 1 surface acre.
- One 5-gallon tank has 12.15 fluid ounces of ProcellaCor.
- ProcellaCor is a non-glyphosate chemical used to control aquatic vegetation.



Three Month Outlook

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- Continuing SIP (Structure Inspection Program) repairs.
- Installing gate #1 and removing gate #2 at Coco-2 for overhaul.
- Delivery of new Ford Lightning (electric truck) in early March.





MERRITT Pump Station
PS-488



FAKA Union Pump Station
PS-487



MILLER Pump Station
PS-486

Comprehensive Everglades Restoration Projects (CERP) Activity Report

Pump Station Maintenance

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Dismantling pump #2 at Merritt to replace pump



Manatee Mitigation Area

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Mangrove and Exotic Tree removal around the feature



Manatee Mitigation Area

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Pump Station Maintenance

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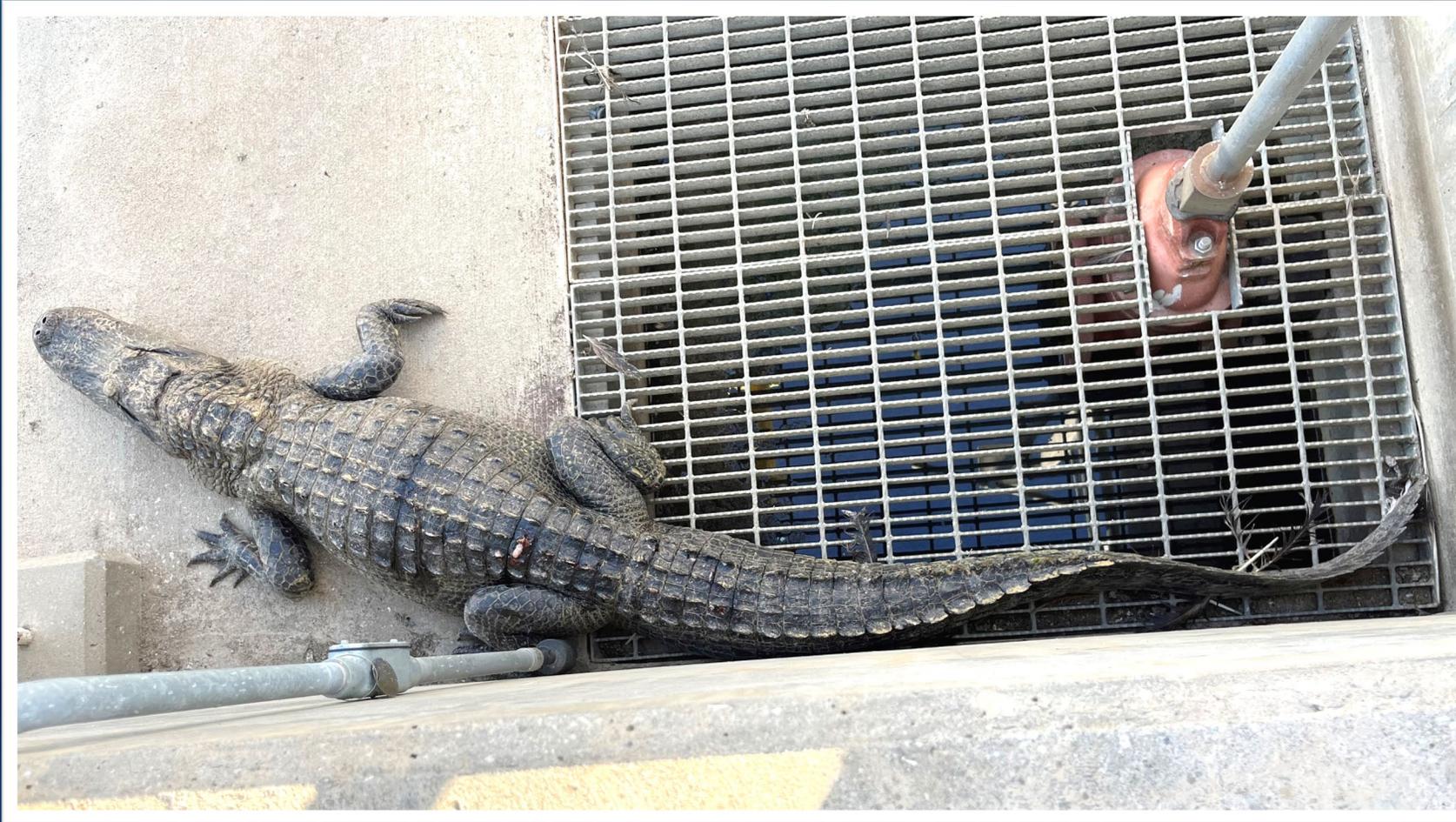
- Completing monthly preventative maintenance
- LED lights installed on the interior, exterior and lower pump bays of Miller Pump Station
- Completed yearly oil and fuel sampling analysis
- Training three new employees on pump operations



Hazards at Pump Station

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Alligator inside Merritt Pump Station fuel farm



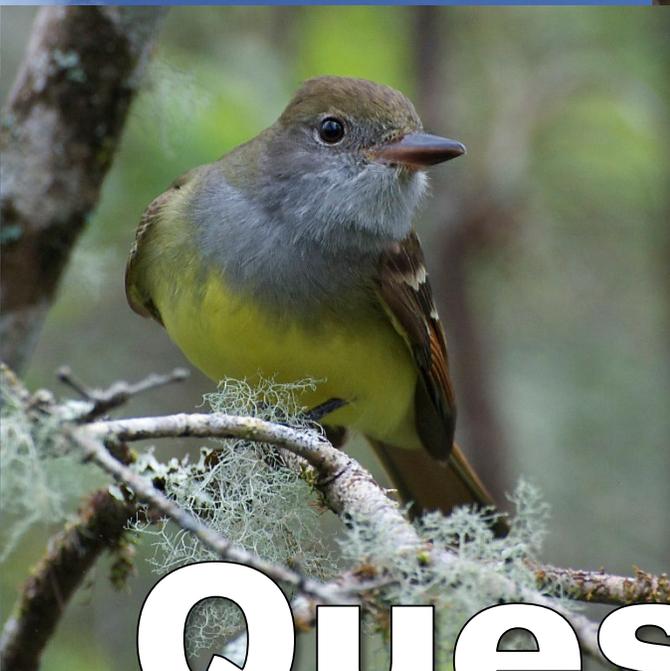
Three Month Outlook

DRAFT

- Respond to dry season pump orders and issues.
- Install new shaft in pump #2 at Merritt P/S
- Post for three open positions for Operators pump station.
- Continue training three new employees on operations.



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Questions



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BIG CYPRESS BASIN BOARD MEETING

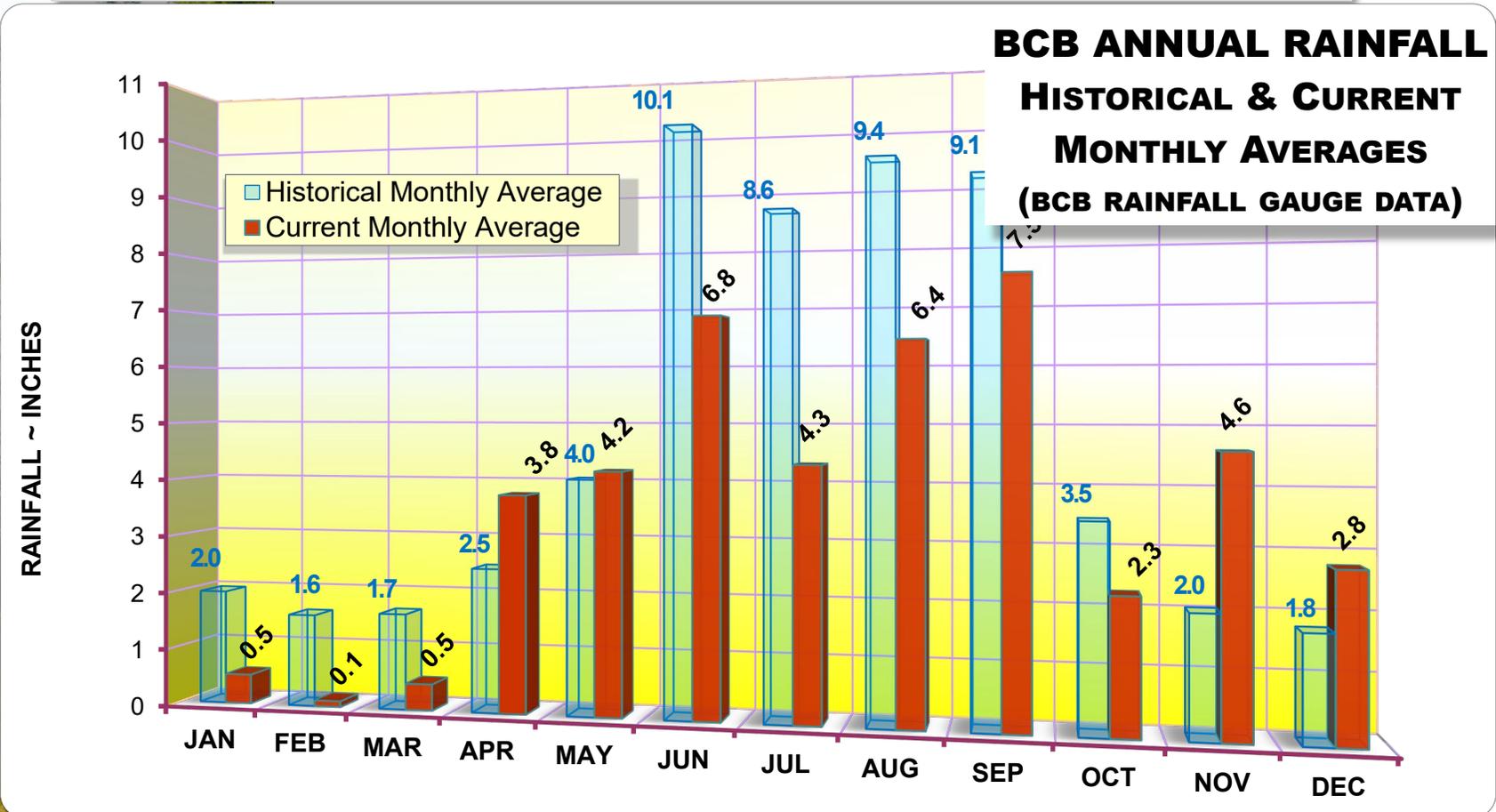
BCB WATER CONDITIONS REPORT
February 23, 2024



Brad J Jackson, P.E., CFM
Principal Engineer
Big Cypress Basin

Hydrologic Conditions ~ BCB Gauge Rainfall DRAFT

2023 MONTHLY SUMMARY

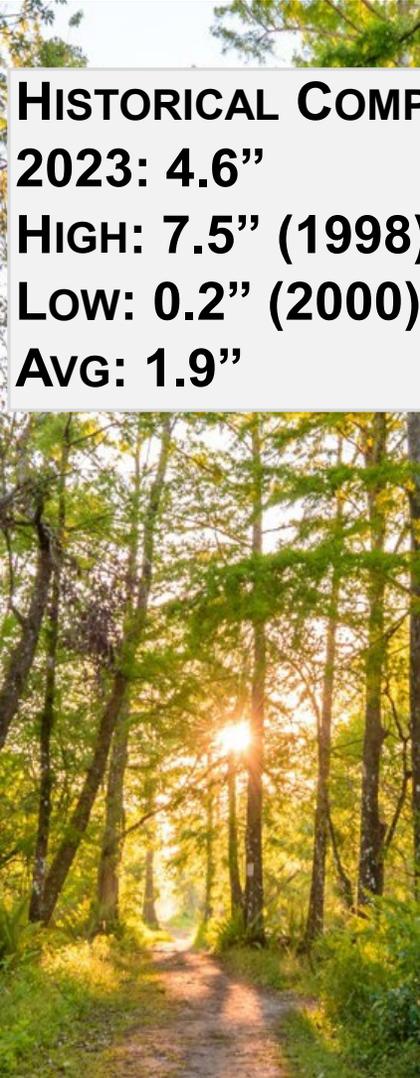


- 2023 TOTAL = 43.1 IN
- BASIN AVG TOTAL = 56.3 IN
- 77% OF NORMAL CY
- 13.0" RAINFALL DEFICIT

NOTE: COVERAGE FOR LOCALITIES WITHIN BCB GAUGE NETWORK ONLY

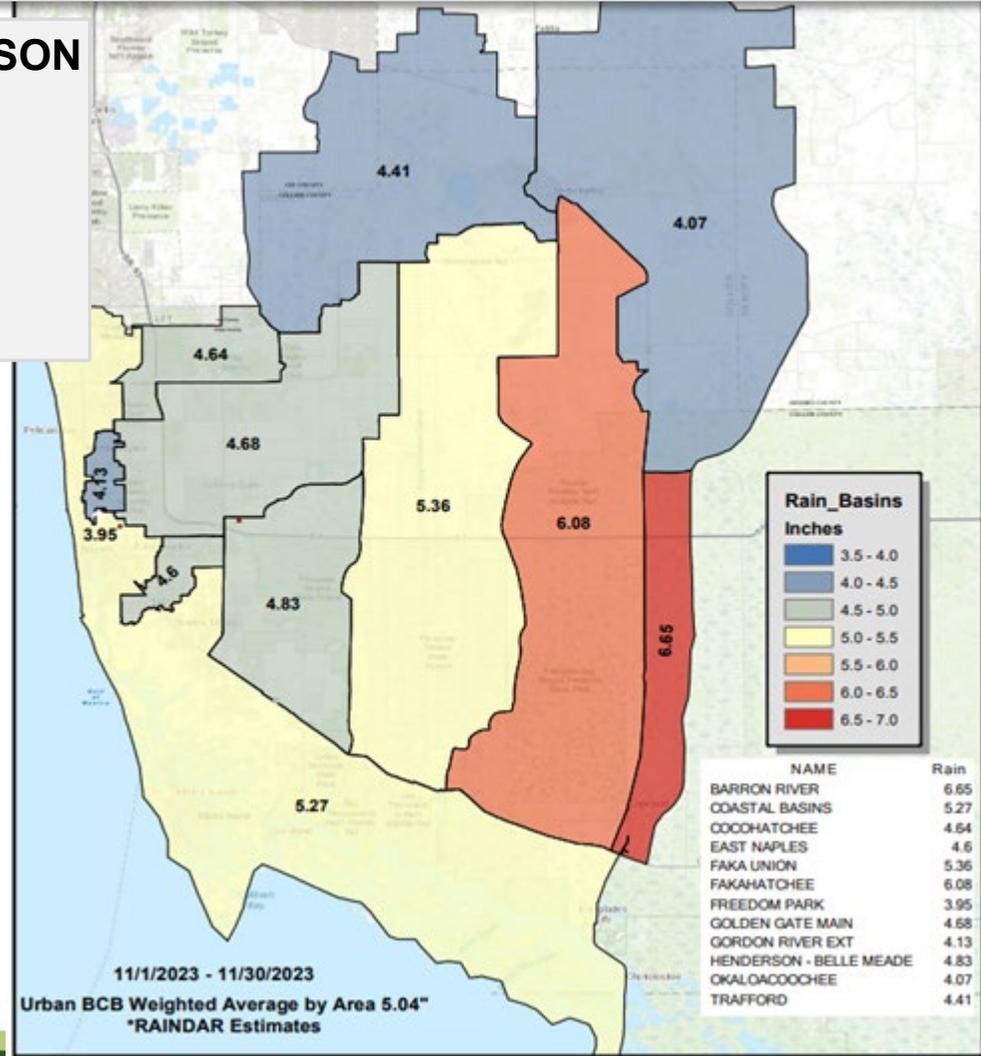
Hydrologic Conditions ~ BCB Rainfall

DRAFT

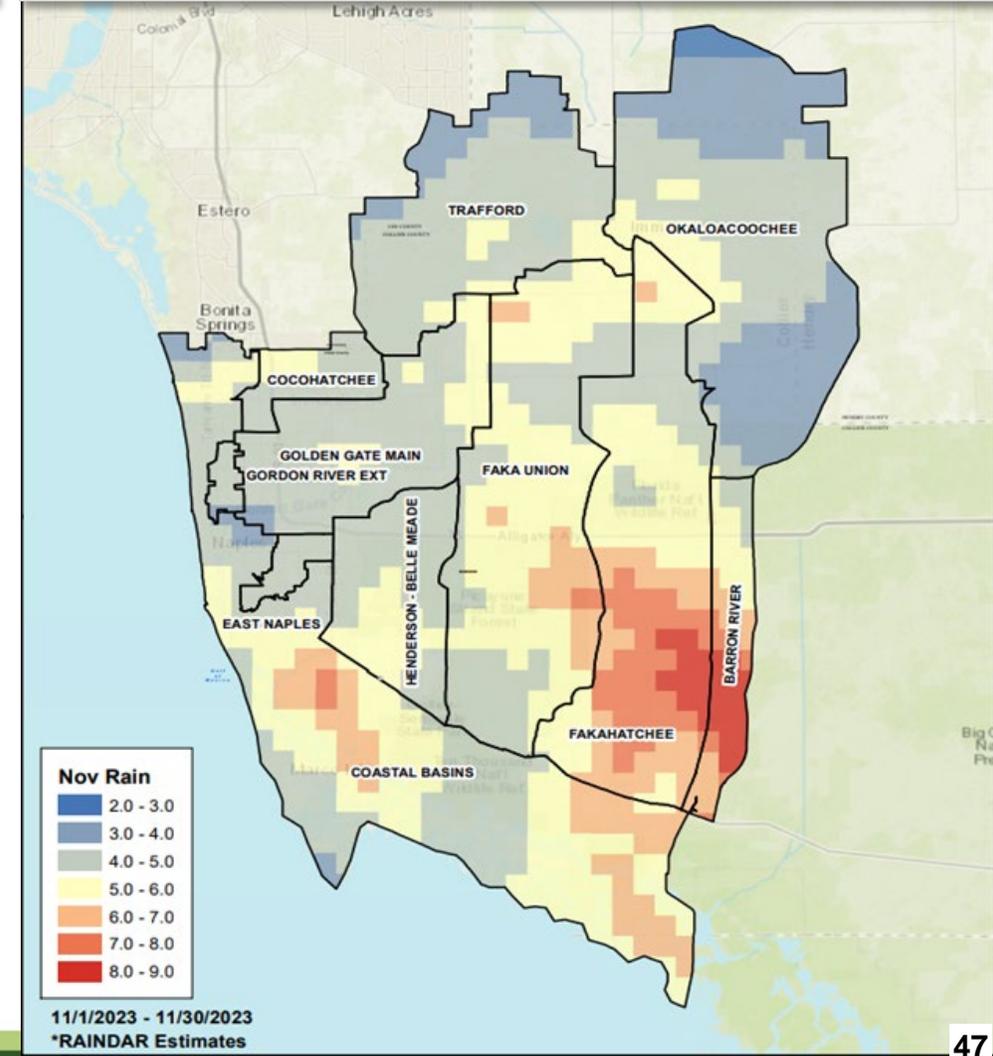


HISTORICAL COMPARISON
2023: 4.6"
HIGH: 7.5" (1998)
LOW: 0.2" (2000)
AVG: 1.9"

NOVEMBER 2023 BY BASIN



NOVEMBER 2023 RAINDAR



Hydrologic Conditions ~ BCB Rainfall

DRAFT

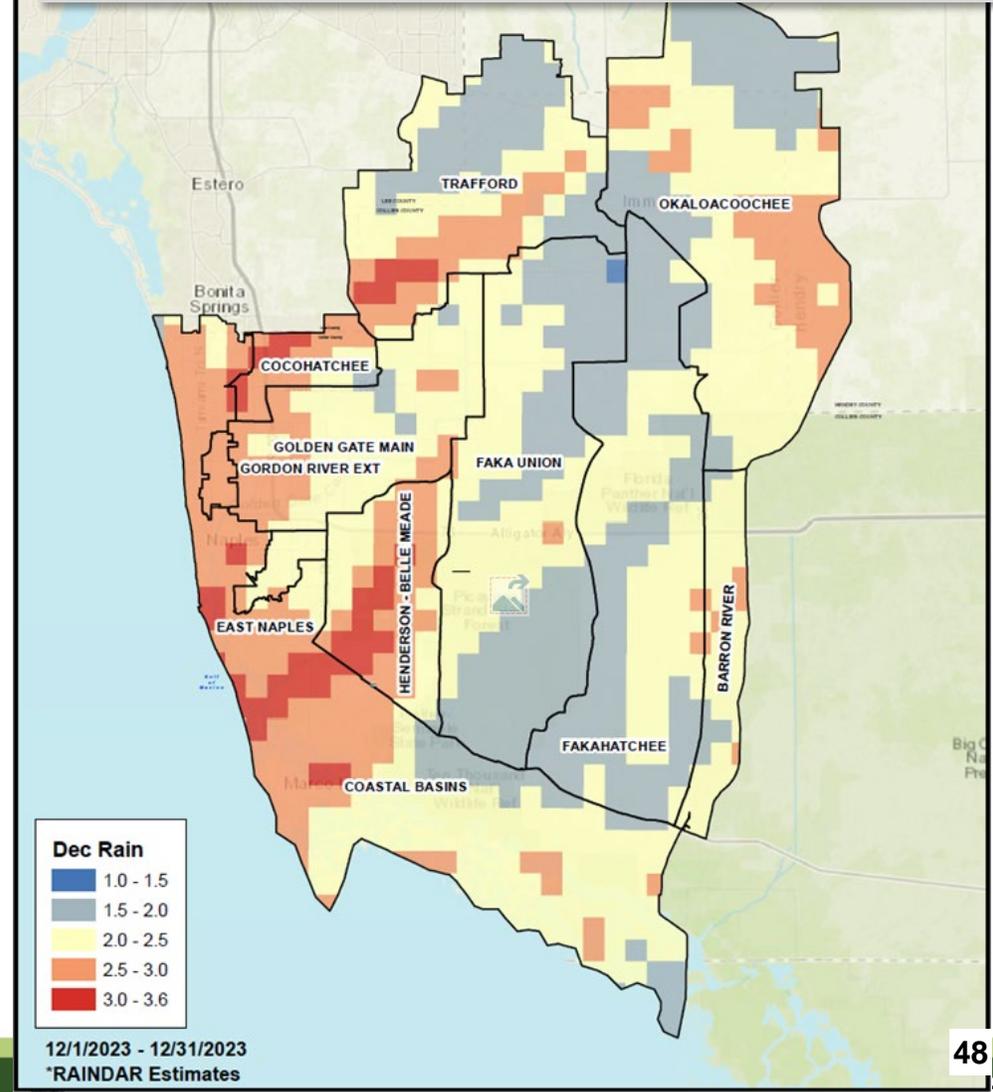
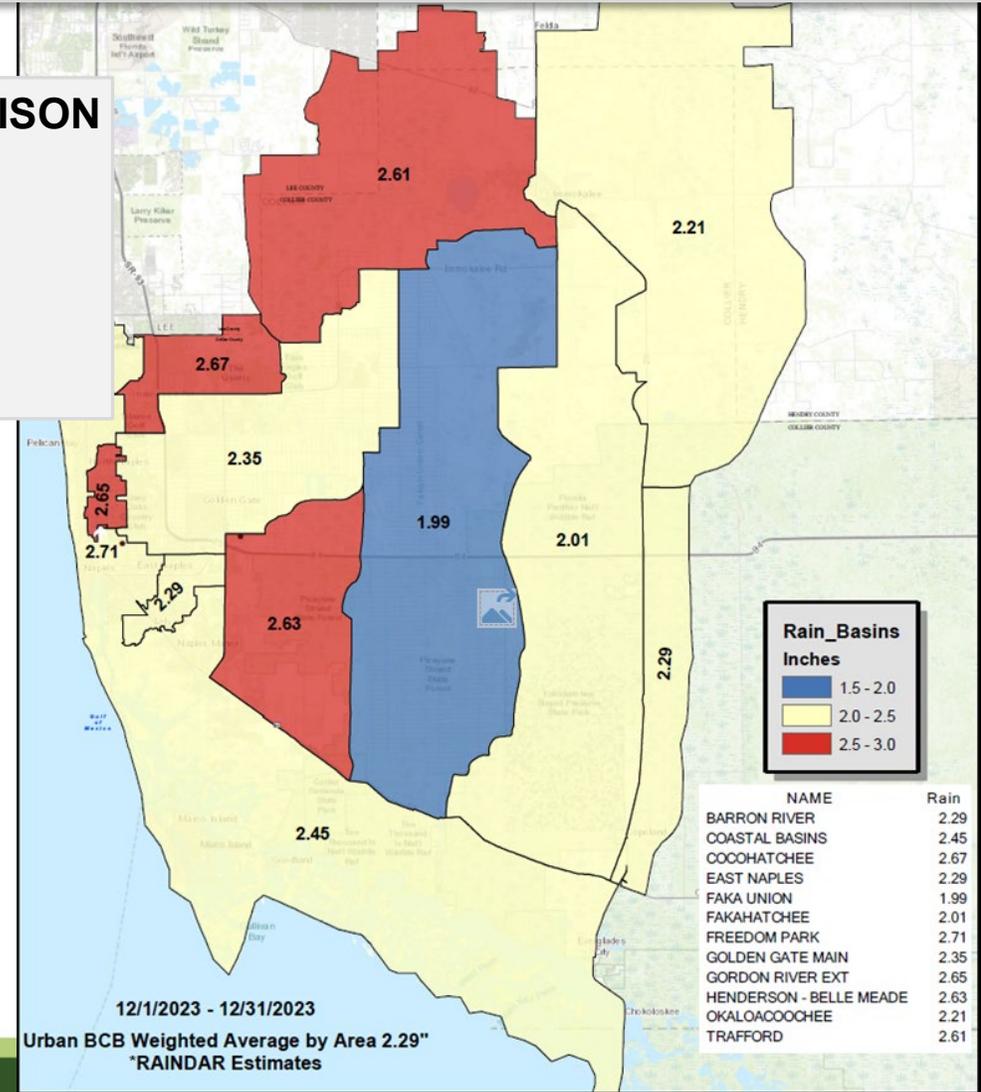
DECEMBER 2023 BY BASIN

DECEMBER 2023 RAINDAR



HISTORICAL COMPARISON

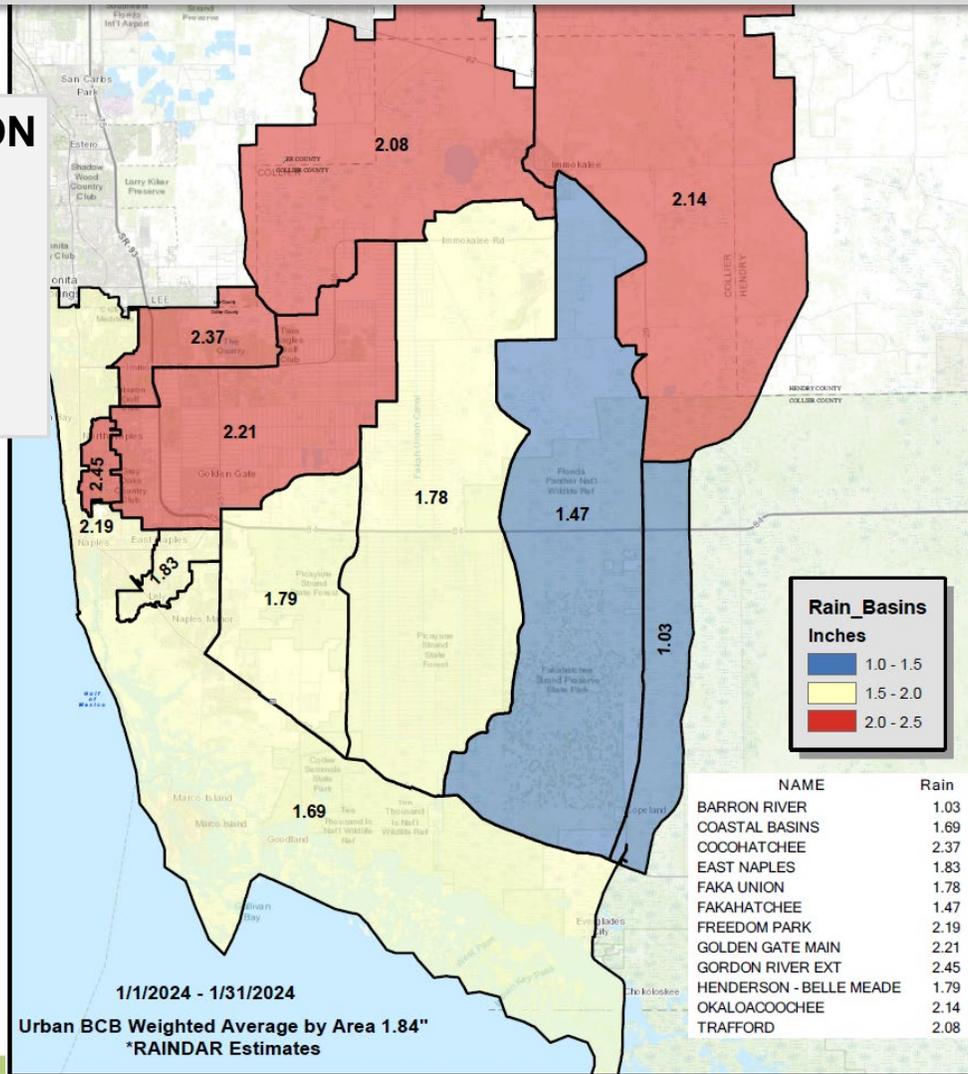
2023: 2.8"
 HIGH: 13.3" (1995)
 LOW: 0.7" (2003)
 AVG: 1.8"



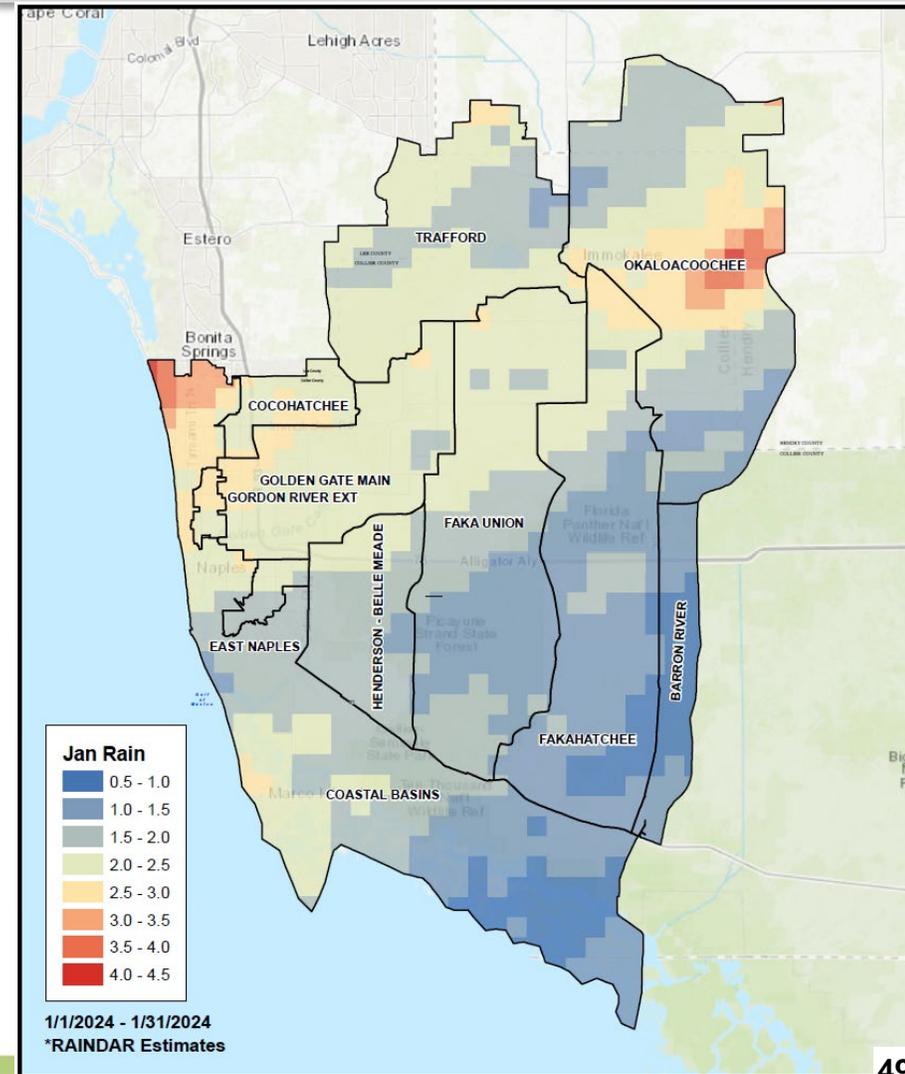
Hydrologic Conditions ~ BCB Rainfall

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JANUARY 2024 BY BASIN



JANUARY 2024 RAINDAR



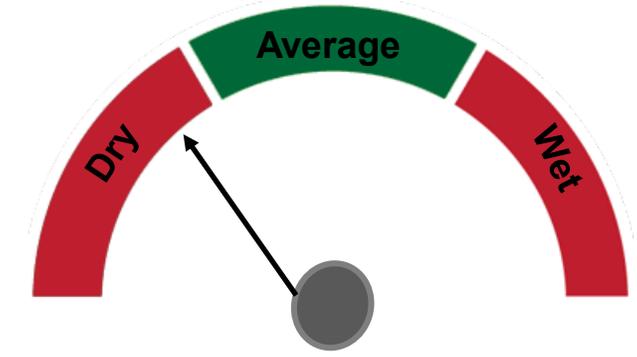
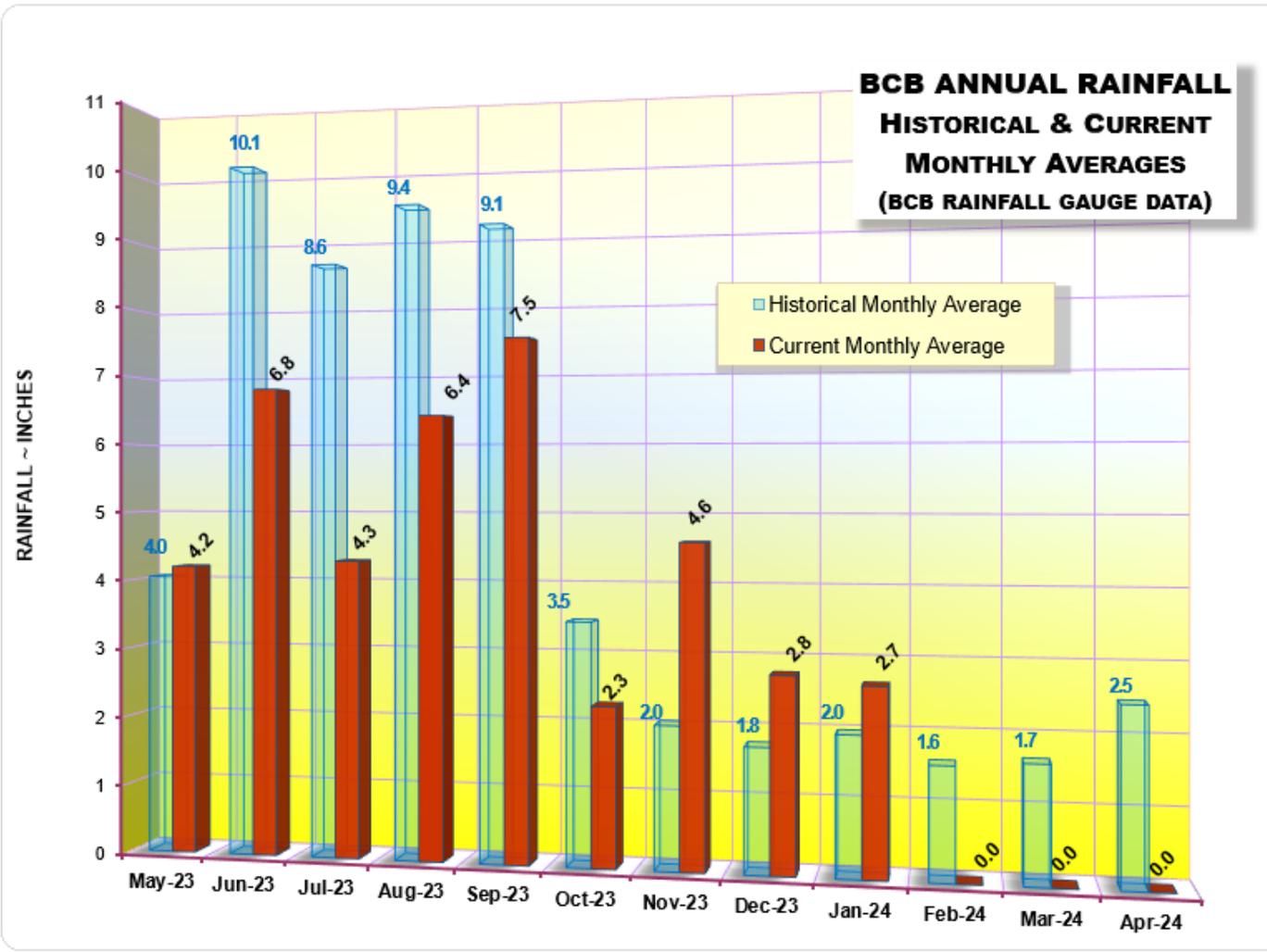
HISTORICAL COMPARISON
 2023: 2.7"
 HIGH: 10.6" (2016)
 LOW: 0.2" (2012)
 AVG: 2.0"



BCB Water Year Summary

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2023-24 WATER YEAR MONTHLY SUMMARY



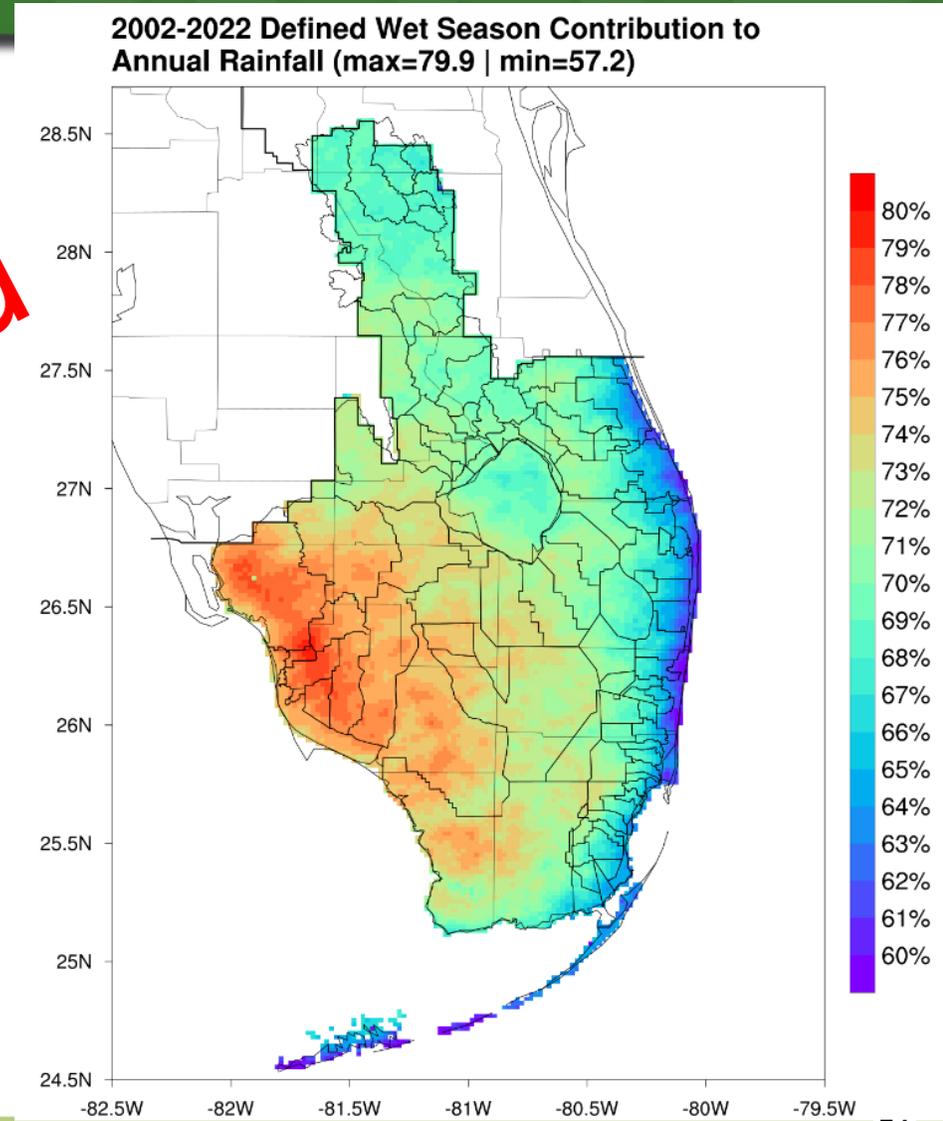
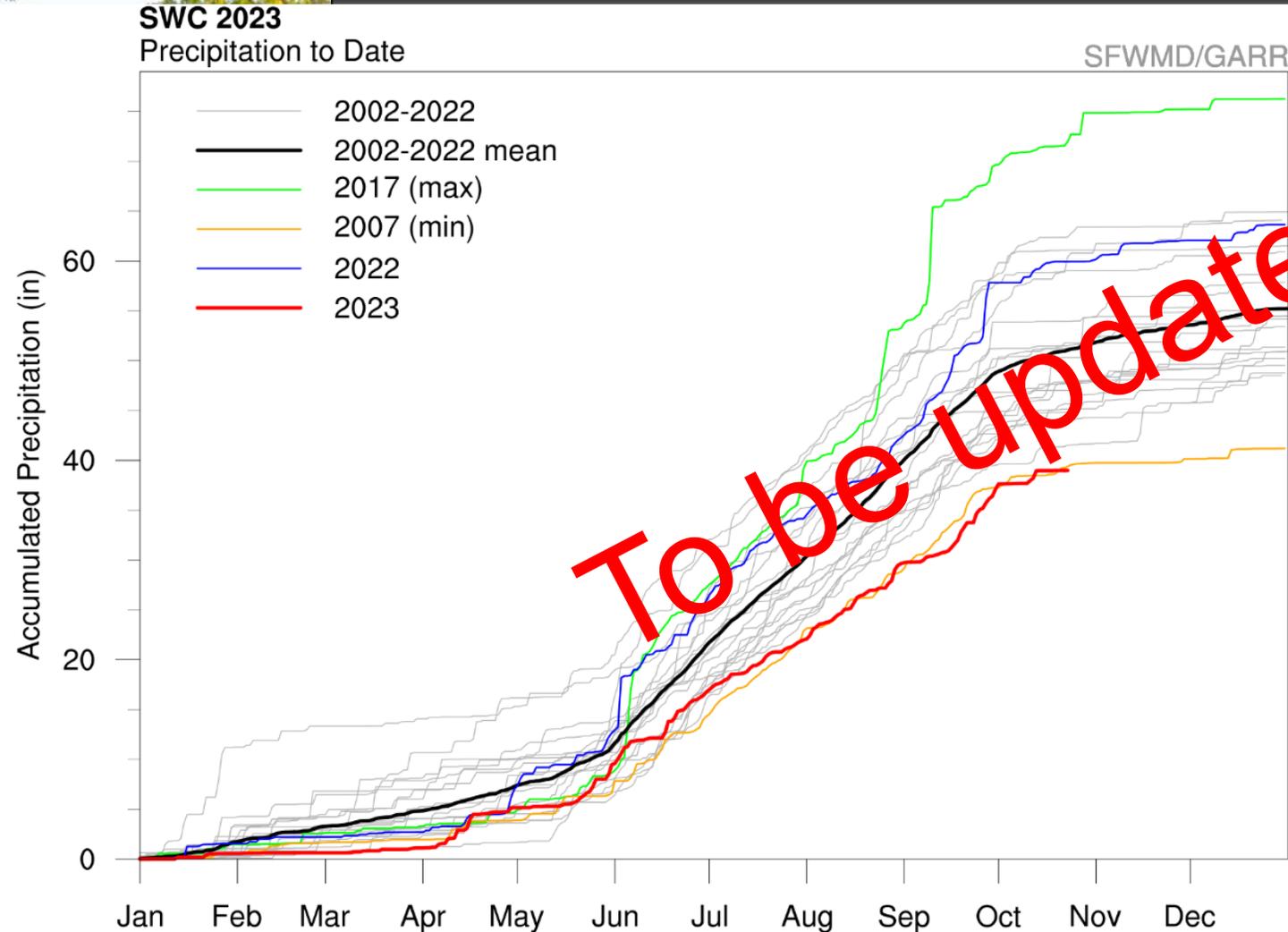
Water Year Rainfall
May 1, 2023 –
January 31, 2024

BCB Total Rainfall: 41.5"
BASIN AVG TOTAL = 50.5 IN

82% of average
 Approx. 9" deficit
 Wet Season Start - May 14, 2023
 Dry Season Start – Oct. 1, 2023

BCB Wet Season Rainfall Contribution

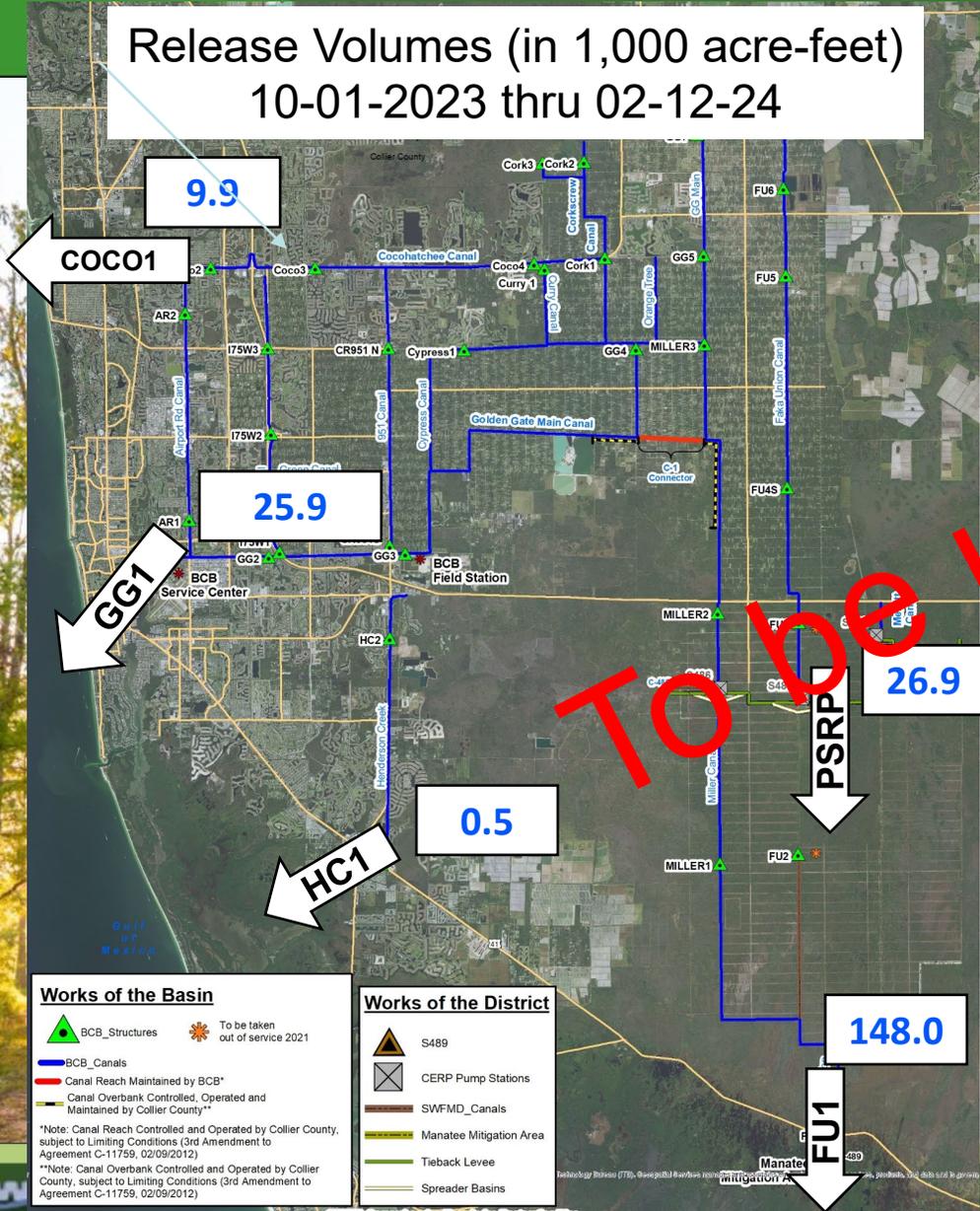
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BCB - Outflow Volumes

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Release Volumes (in 1,000 acre-feet)
10-01-2023 thru 02-12-24



Wet Season Discharge - 05/14/23 – 09/30/23

Coastal discharge volumes – near zero

GG1 volume ~ 2% of average volume (11 million gallons per day)

COCO1 volume ~ 1% of average volume (170 Olympic pools)

Comparison to 2022 (COCO1) ~ 15,413 Olympic pools

Dry Season Discharge 10/01/23 to 02/12/24

To be updated

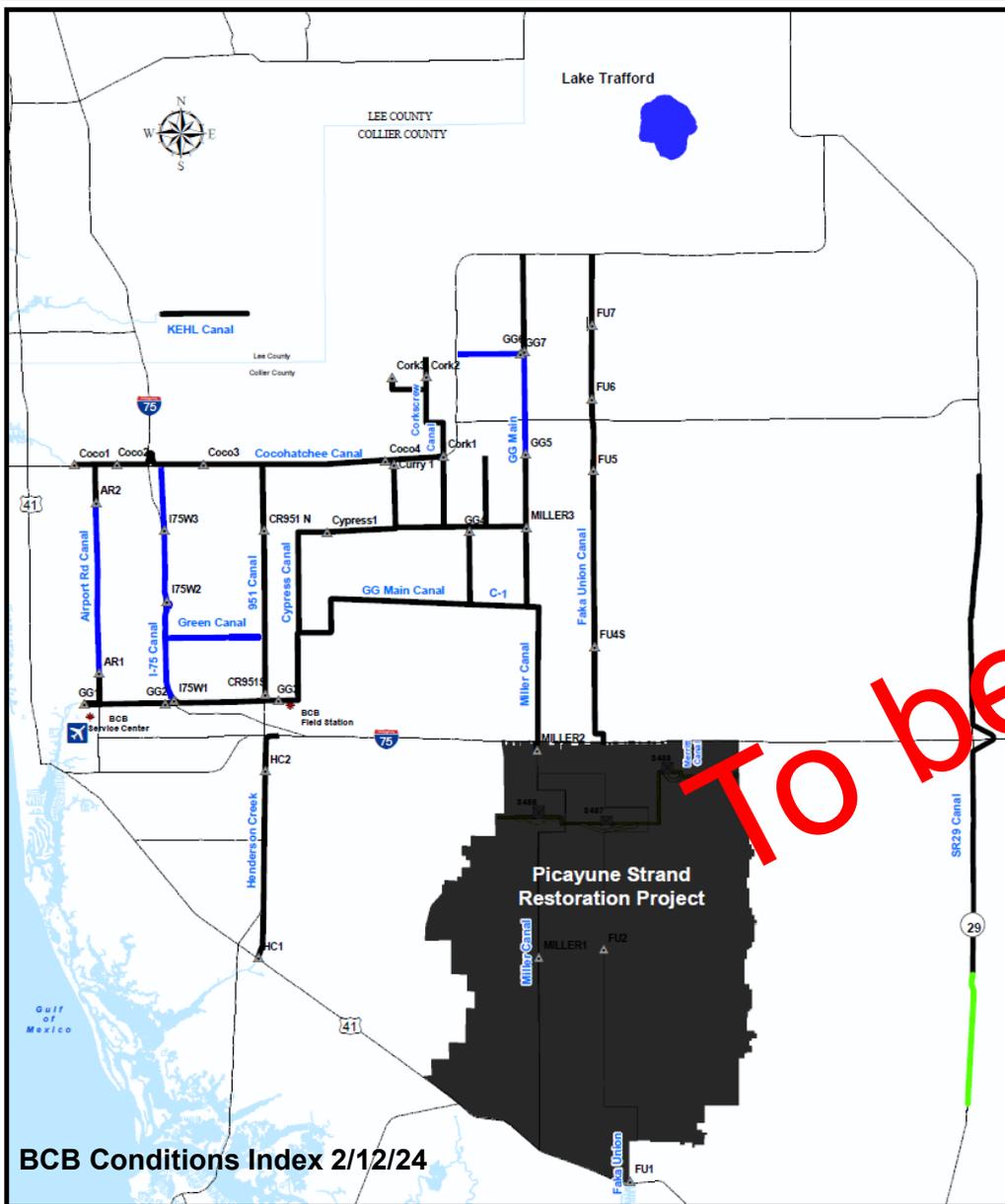


Low Water Airport Canal

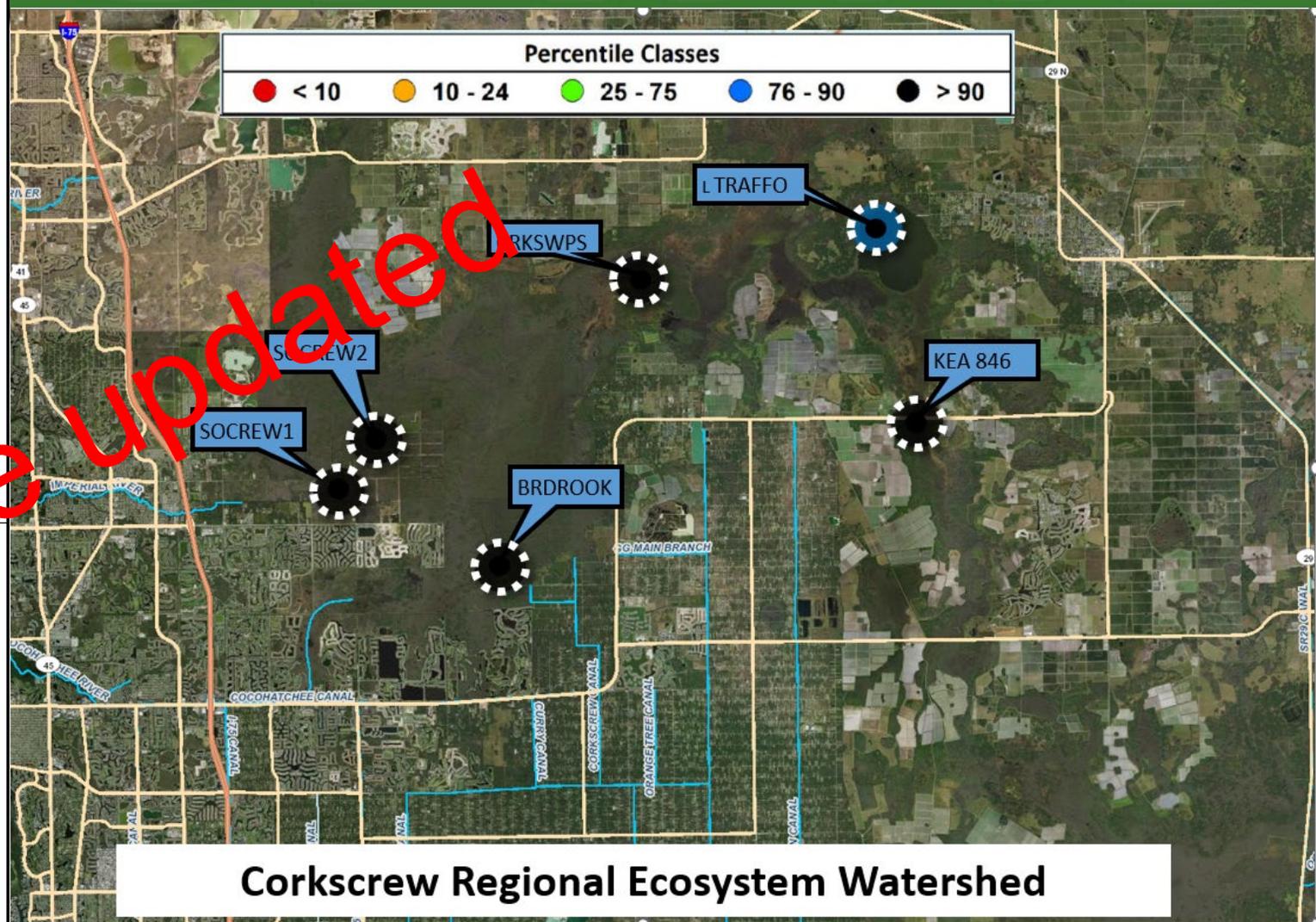


Low Water CORK3

Big Cypress Basin Hydrologic Conditions **DRAFT** as of 01/20/24



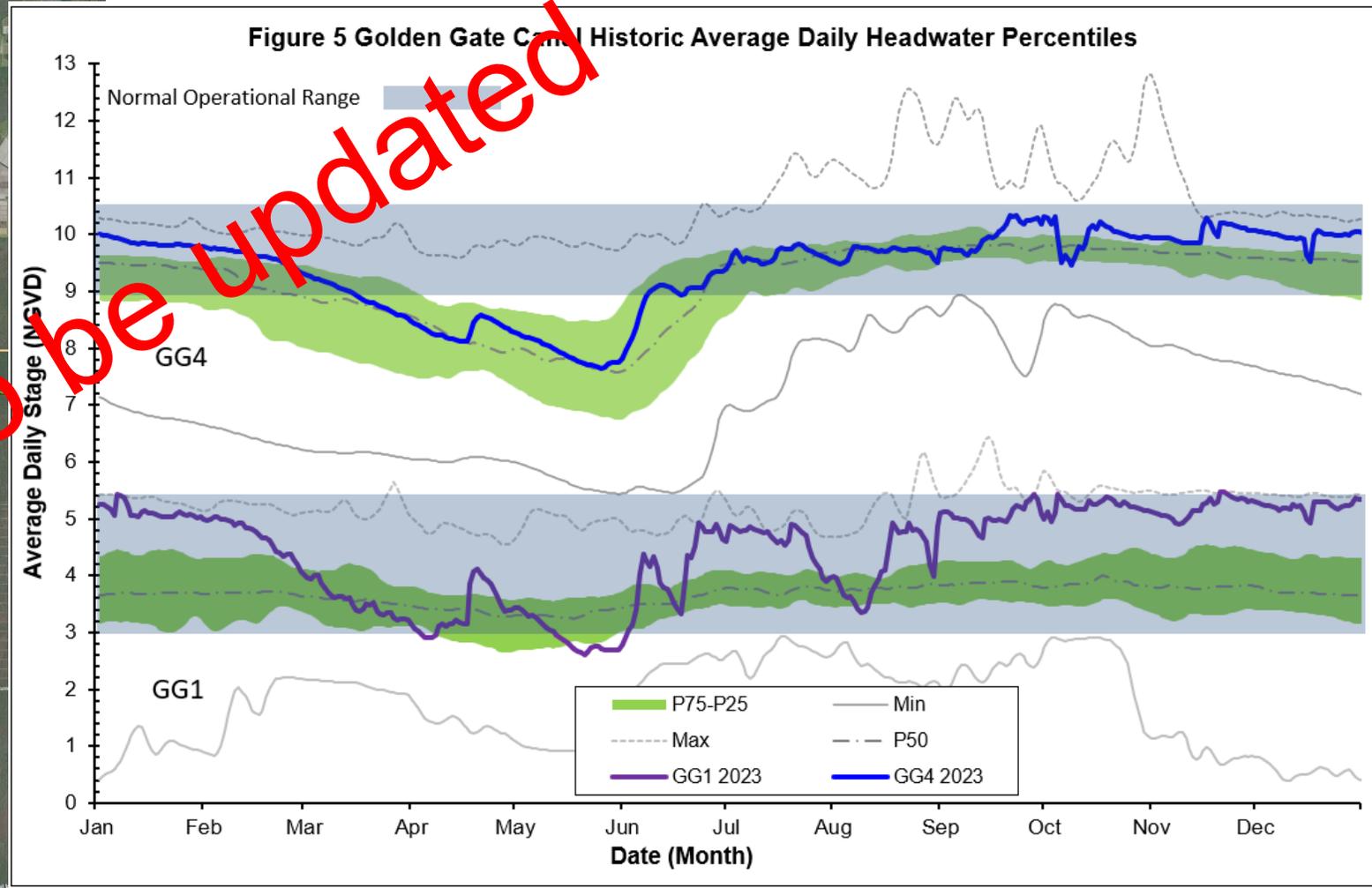
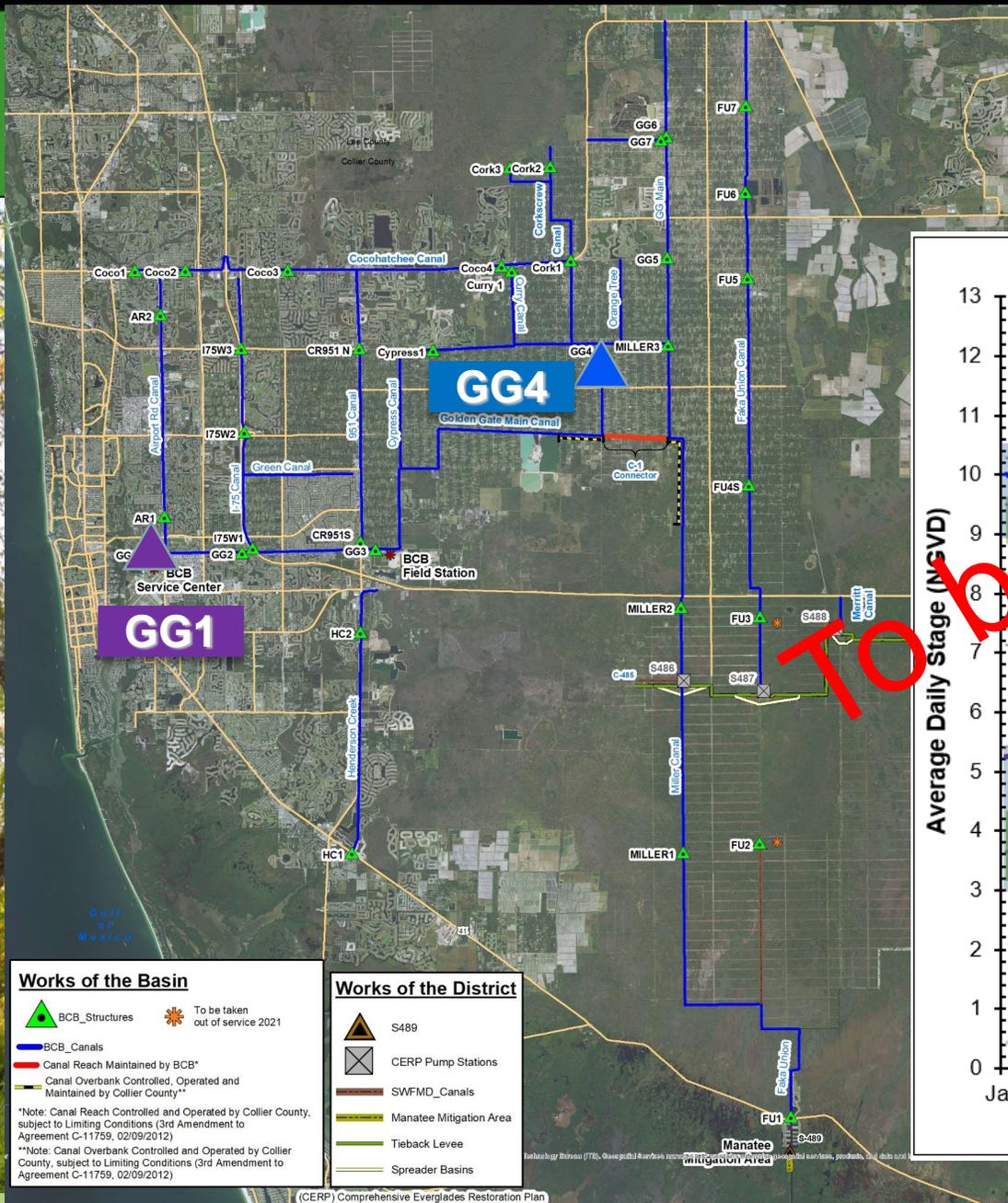
BCB Conditions Index 2/12/24



Corkscrew Regional Ecosystem Watershed

To be updated

BCB Golden Gate Canal DRAFT



Works of the Basin

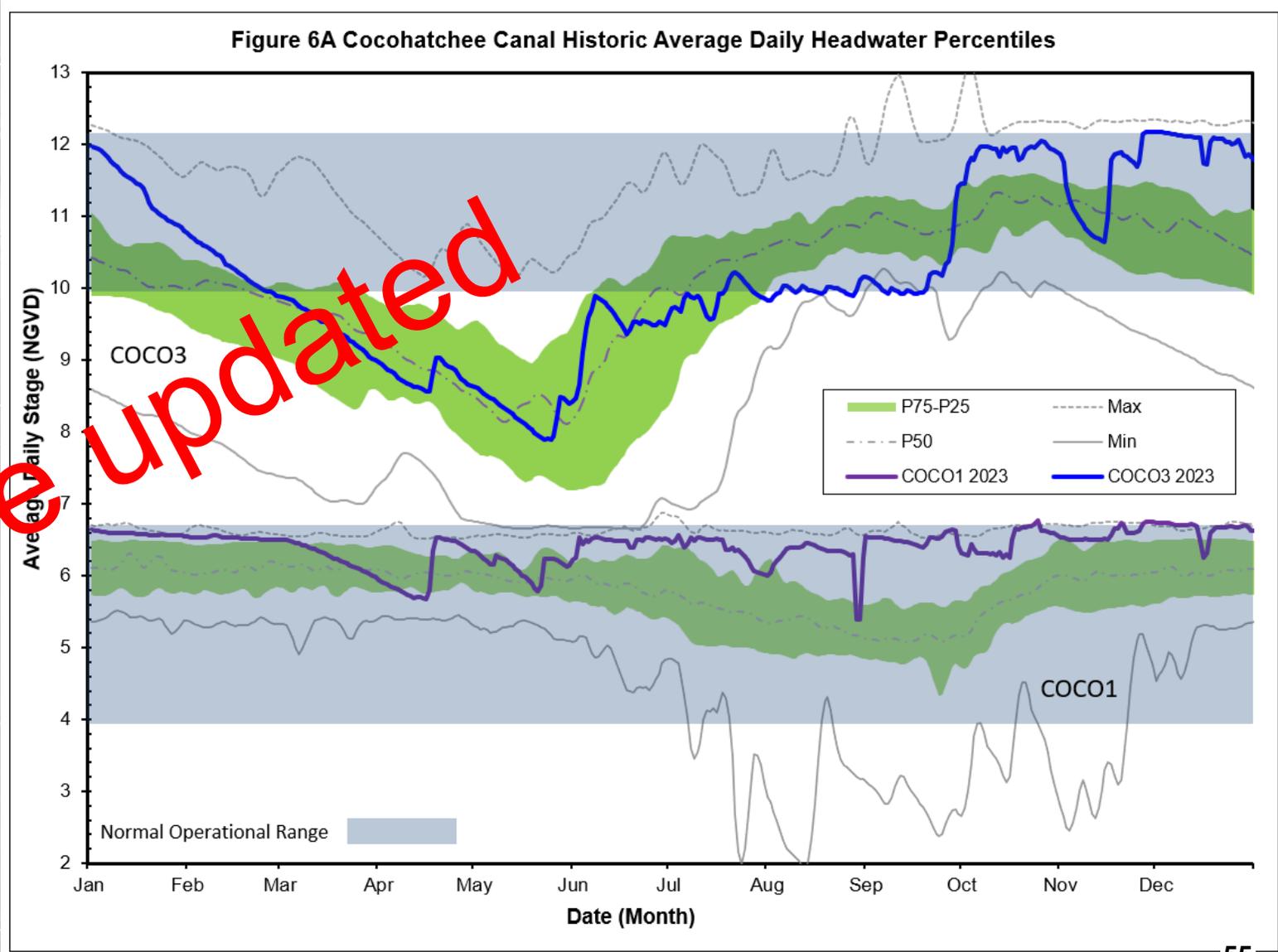
- BCB Structures
- To be taken out of service 2021
- BCB Canals
- Canal Reach Maintained by BCB*
- Canal Overbank Controlled, Operated and Maintained by Collier County**

*Note: Canal Reach Controlled and Operated by Collier County, subject to Limiting Conditions (3rd Amendment to Agreement C-11759, 02/09/2012)
**Note: Canal Overbank Controlled and Operated by Collier County, subject to Limiting Conditions (3rd Amendment to Agreement C-11759, 02/09/2012)

Works of the District

- S489
- CERP Pump Stations
- SWFMD Canals
- Manatee Mitigation Area
- Tieback Levee
- Spreader Basins

BCB Cocohatchee Canal DRAFT



To be updated

Works of the Basin

- BCB Structures
- To be taken out of service 2021
- BCB Canals
- Canal Reach Maintained by BCB*
- Canal Overbank Controlled, Operated and Maintained by Collier County**

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Works of the District

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- Spreader Basins

BCB Faka Union Canal DRAFT

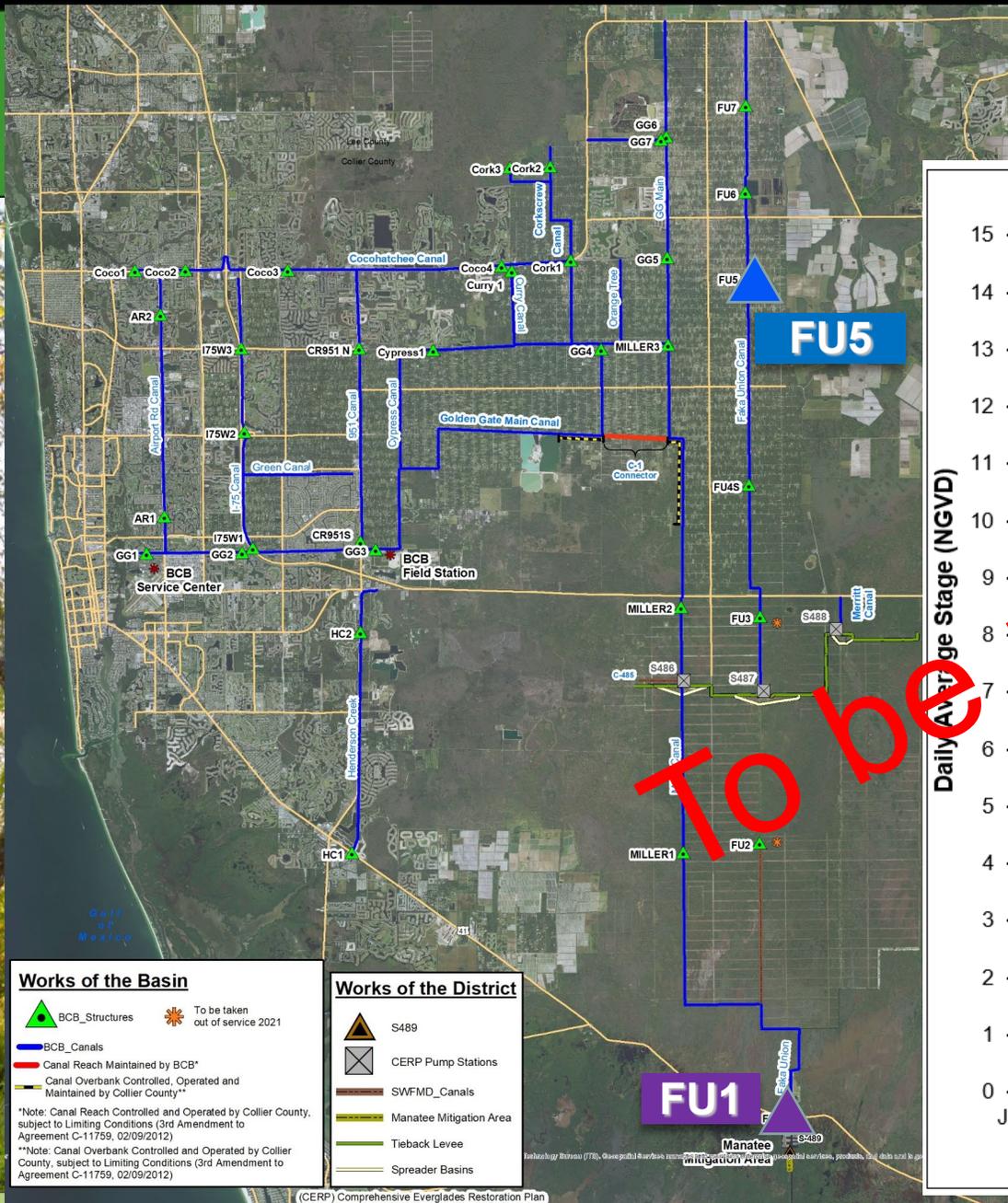
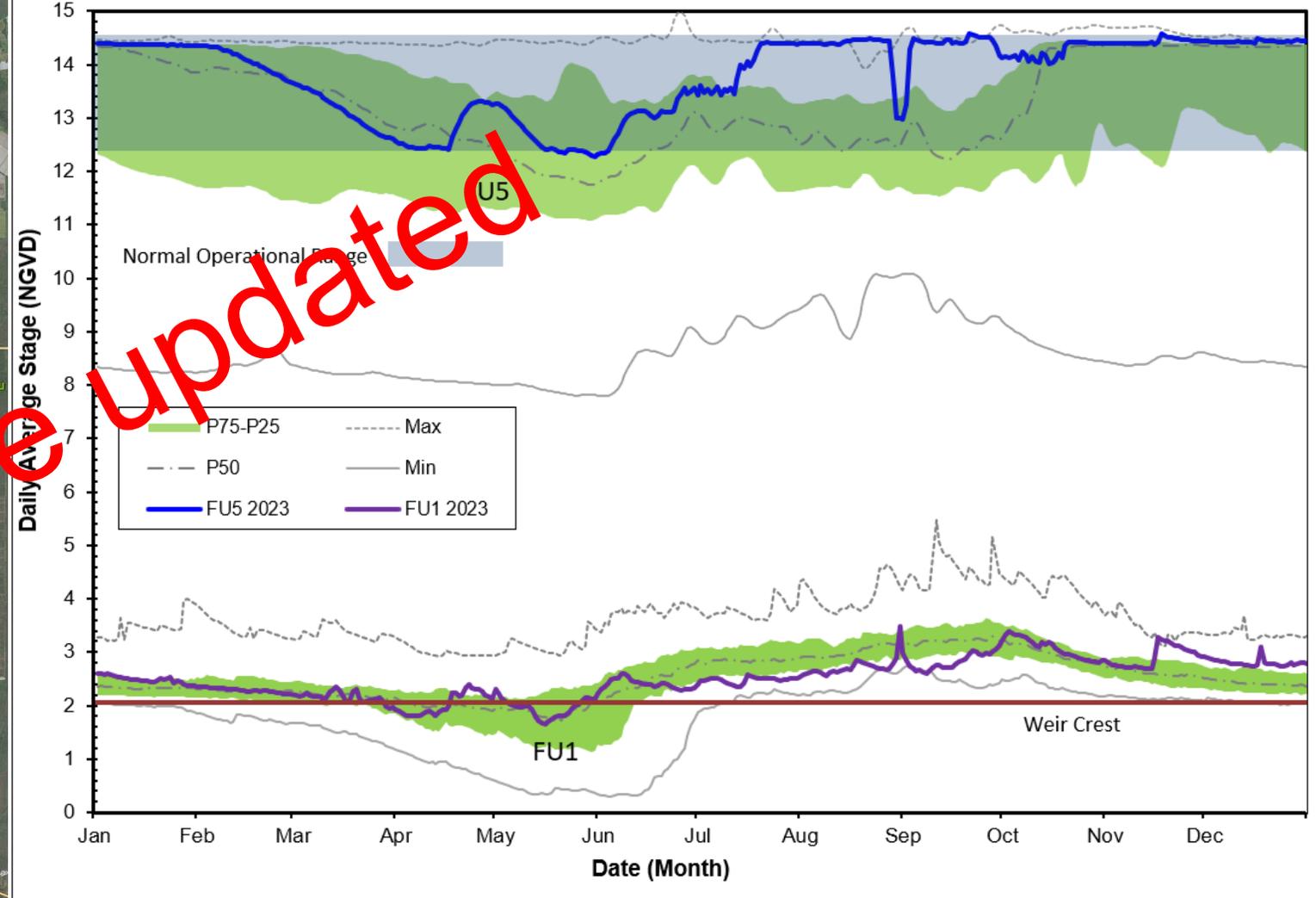


Figure 7A Faka Union Canal Historic Average Daily Headwater Percentiles



Works of the Basin

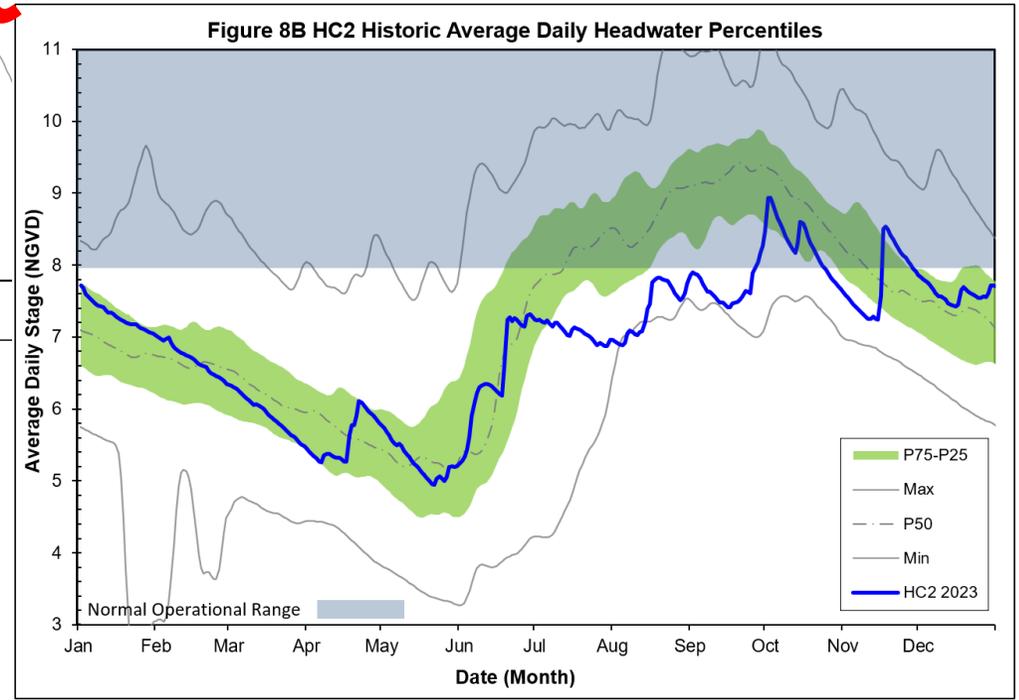
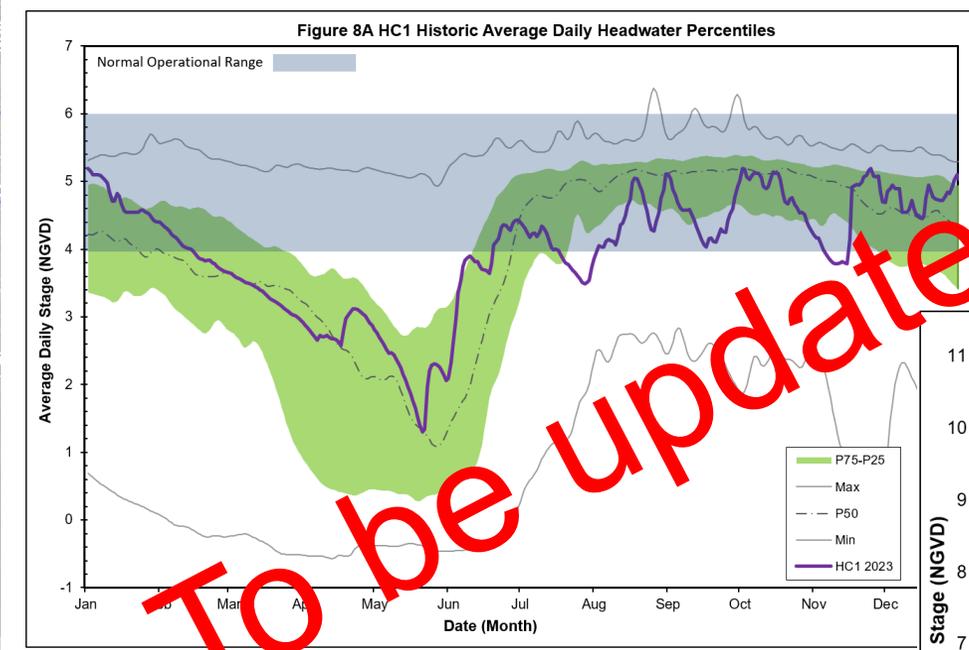
- BCB Structures
- To be taken out of service 2021
- BCB Canals
- Canal Reach Maintained by BCB*
- Canal Overbank Controlled, Operated and Maintained by Collier County**

*Note: Canal Reach Controlled and Operated by Collier County, subject to Limiting Conditions (3rd Amendment to Agreement C-11759, 02/09/2012)
**Note: Canal Overbank Controlled and Operated by Collier County, subject to Limiting Conditions (3rd Amendment to Agreement C-11759, 02/09/2012)

Works of the District

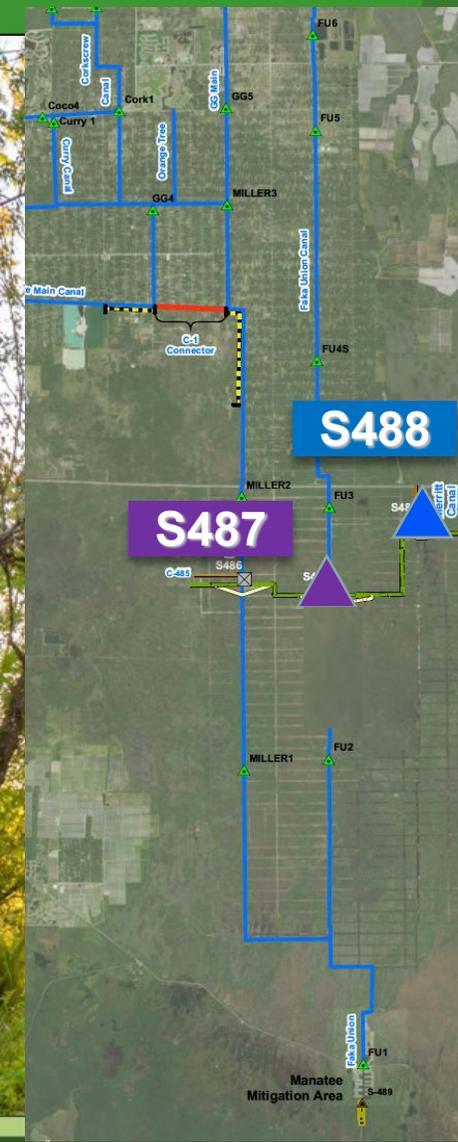
- S489
- CERP Pump Stations
- SWFMD Canals
- Manatee Mitigation Area
- Tieback Levee
- Spreader Basins

BCB Henderson Creek **DRAFT**

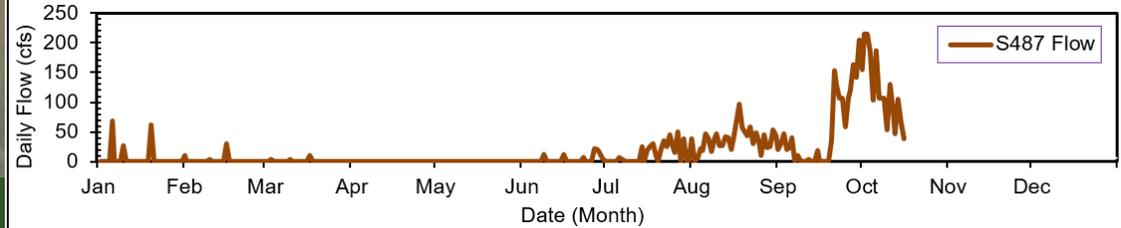
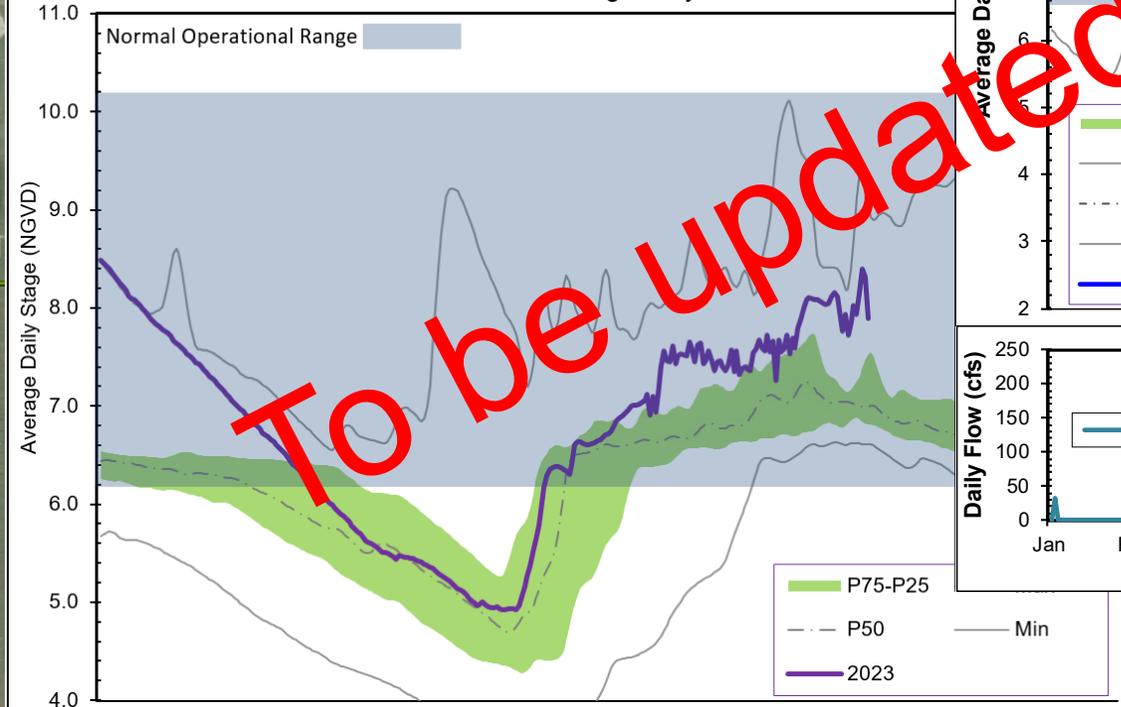


To be updated

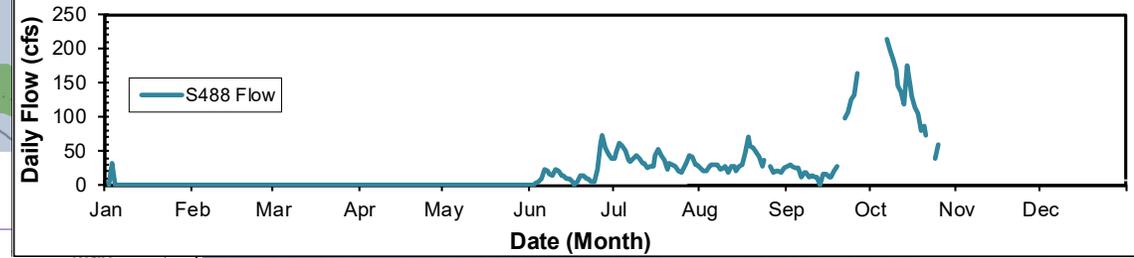
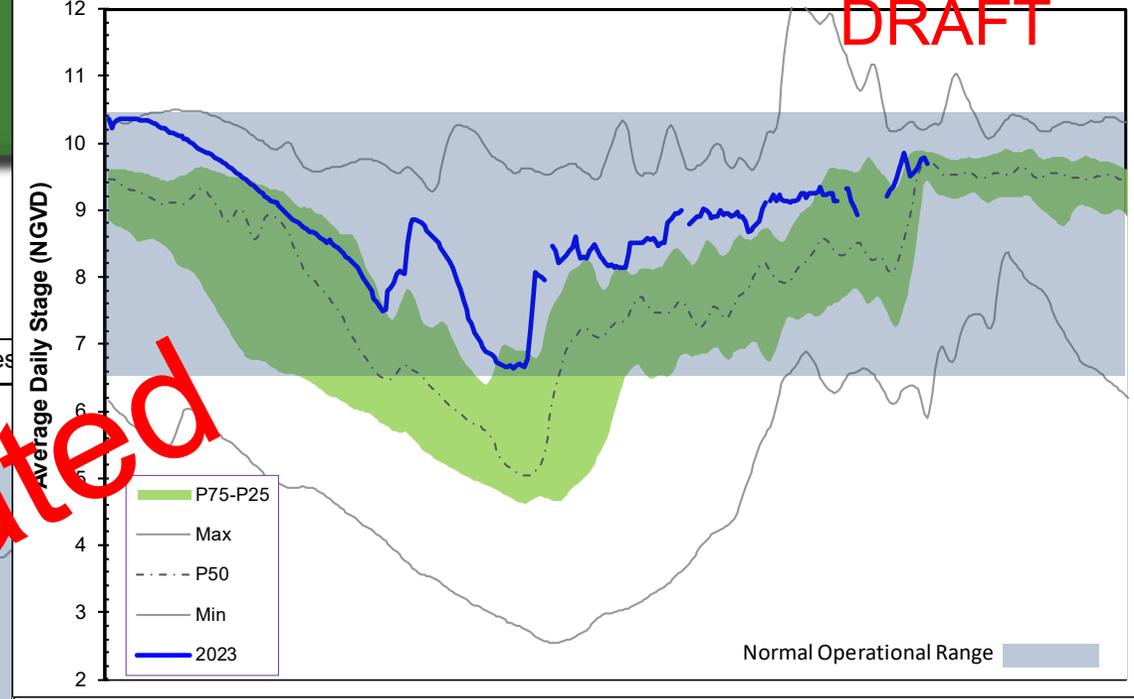
Picayune Strand Restoration Project Operations



Faka Union at S487 Historic Average Daily Headwater Percentiles

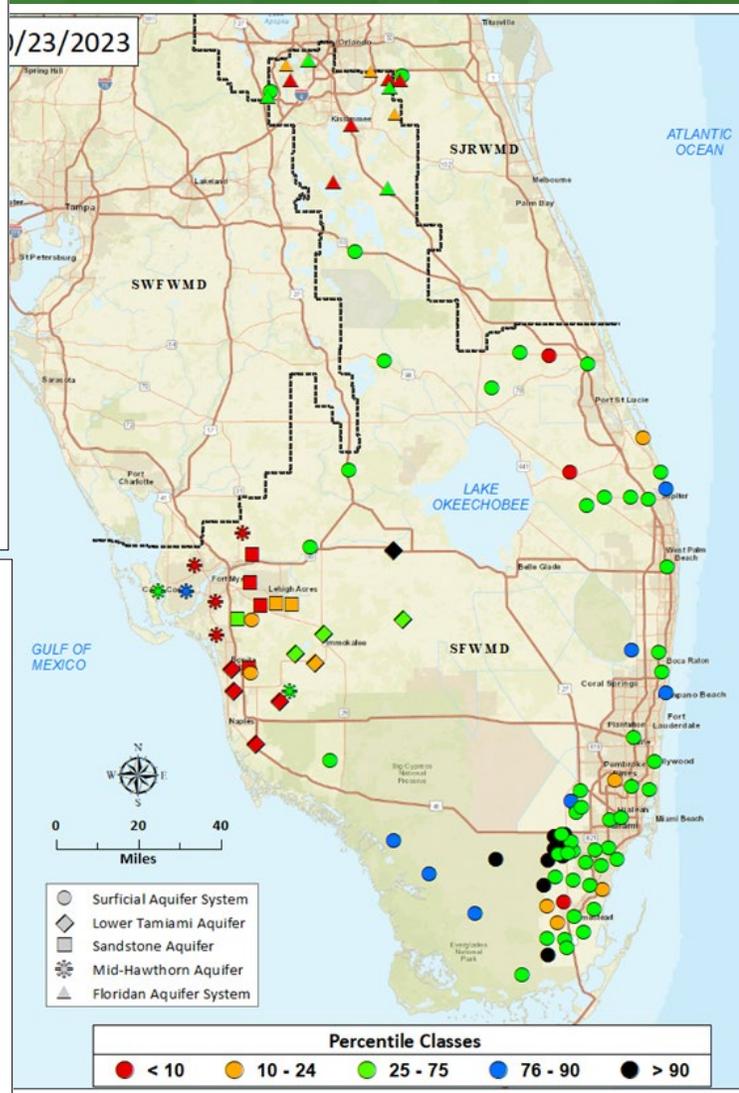
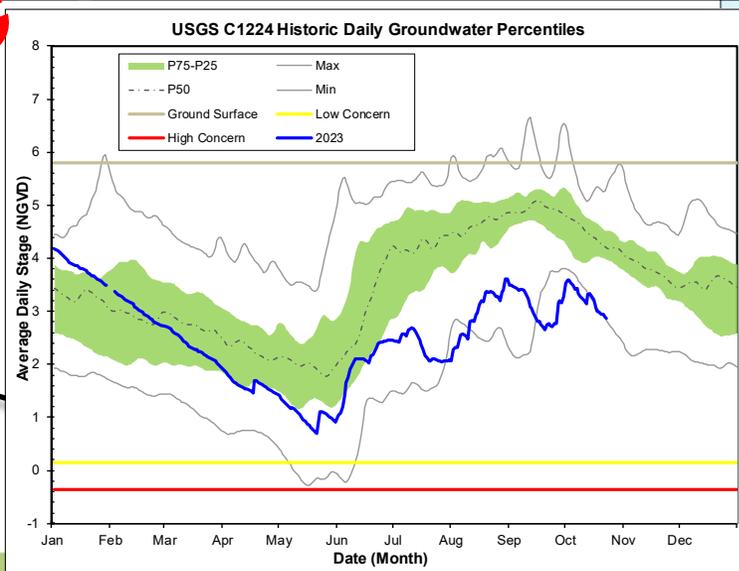
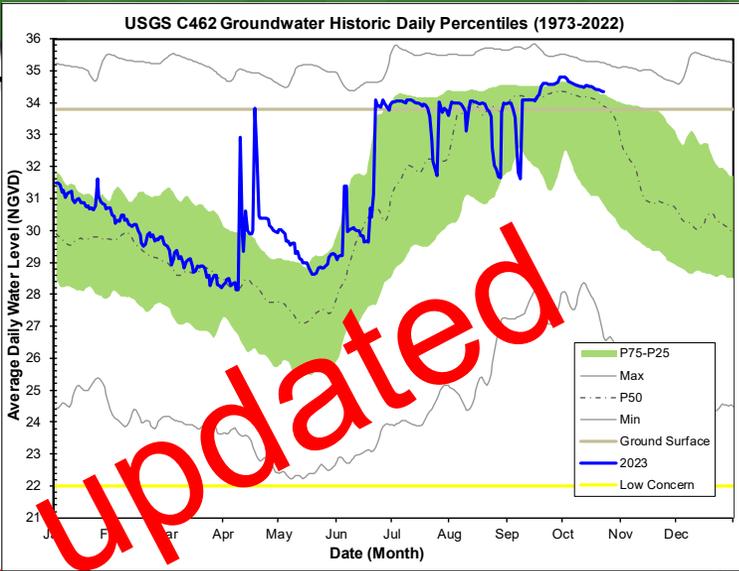
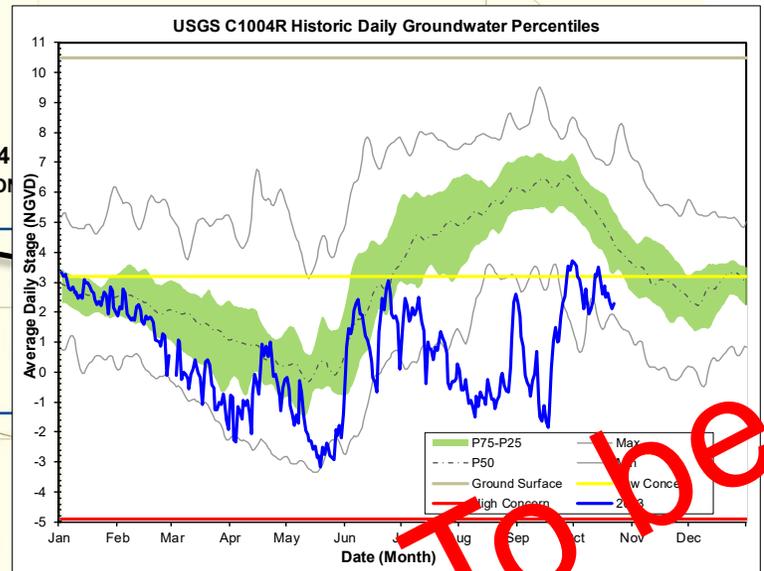
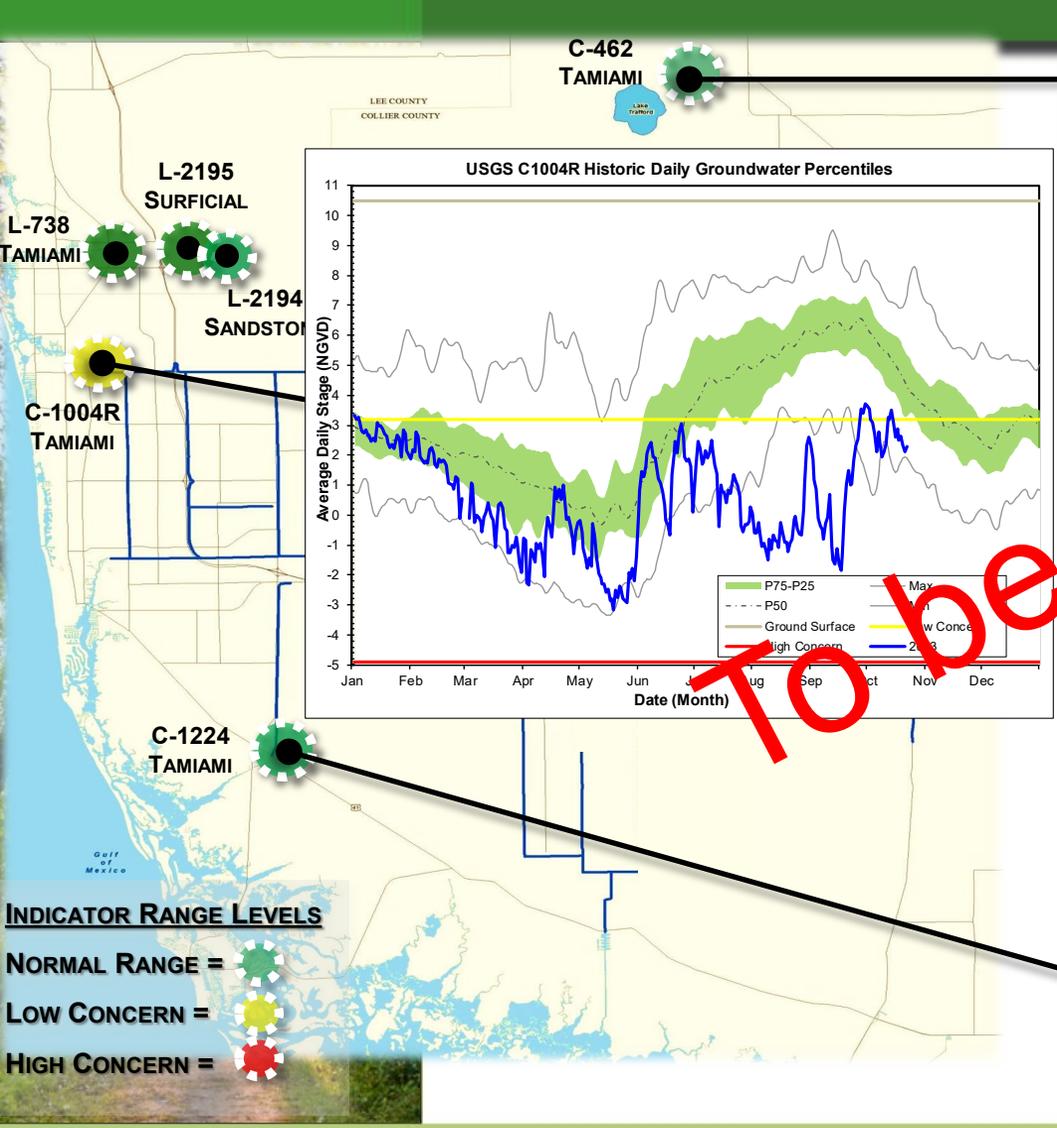


Merritt at S488 Historic Average Daily Headwater Percentiles

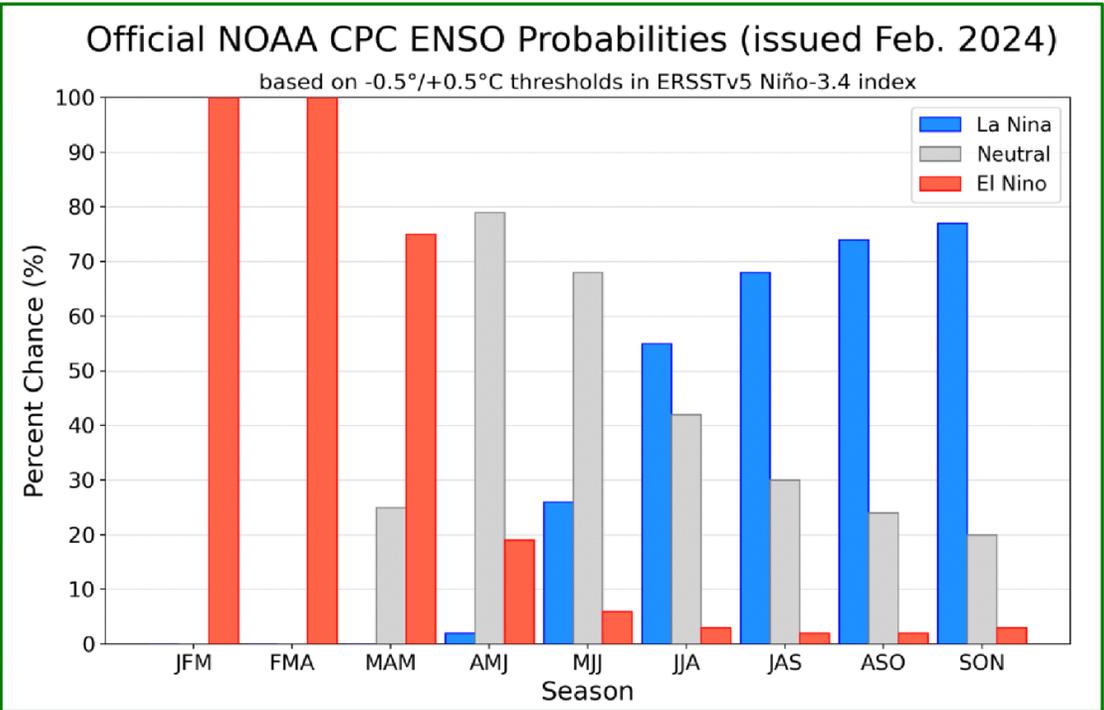


Groundwater Level Trends

DRAFT

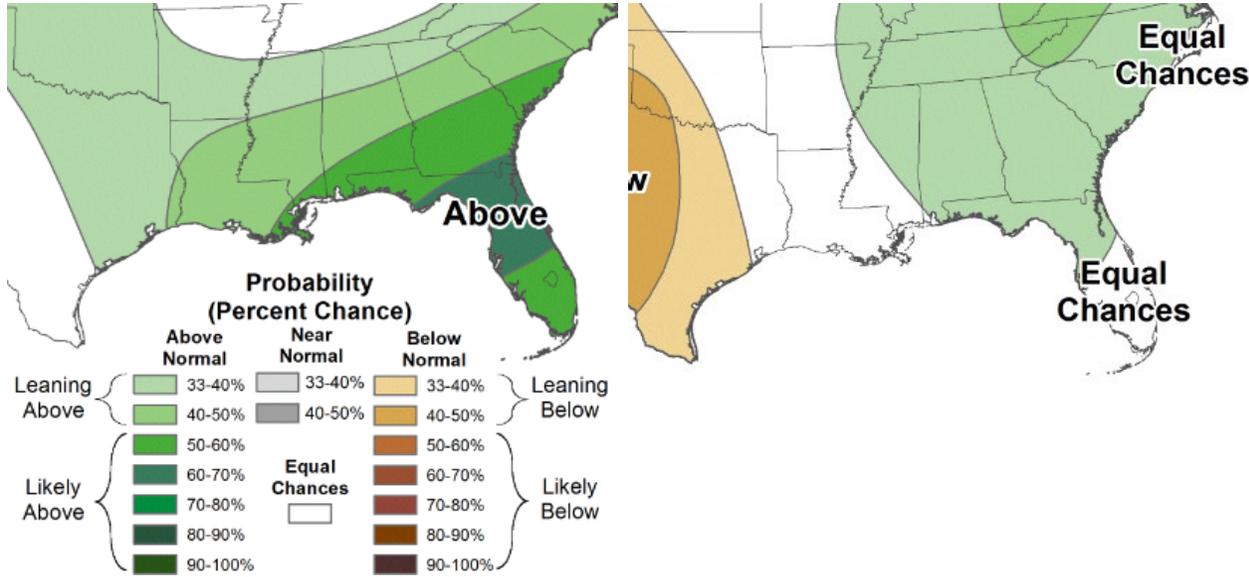


Long-Range **DRAFT** Precipitation Outlook



Feb 2024 – April 2024

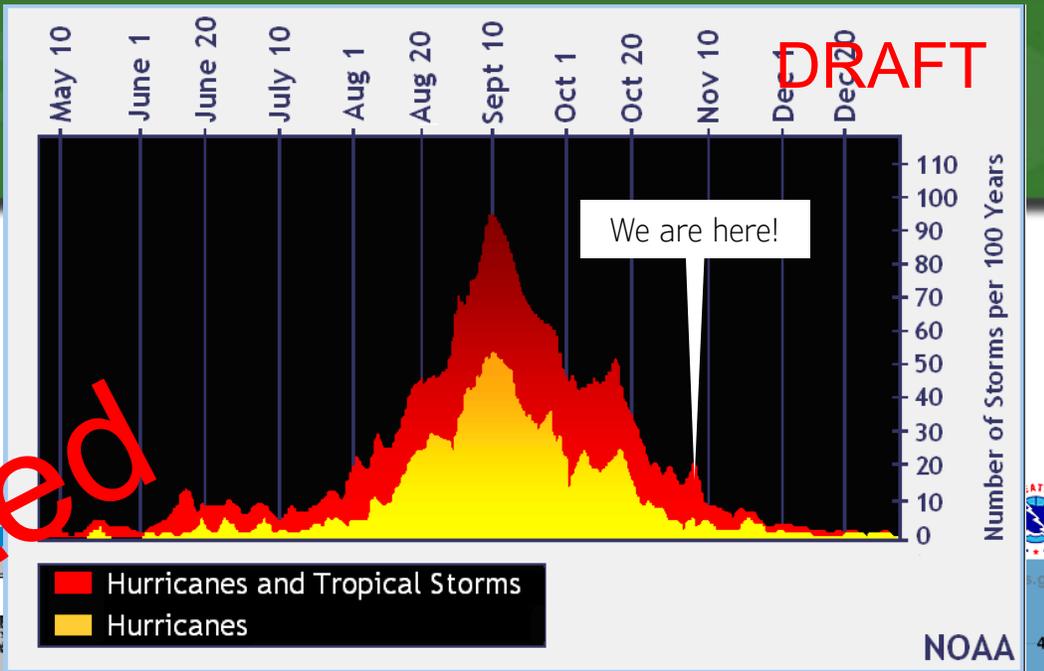
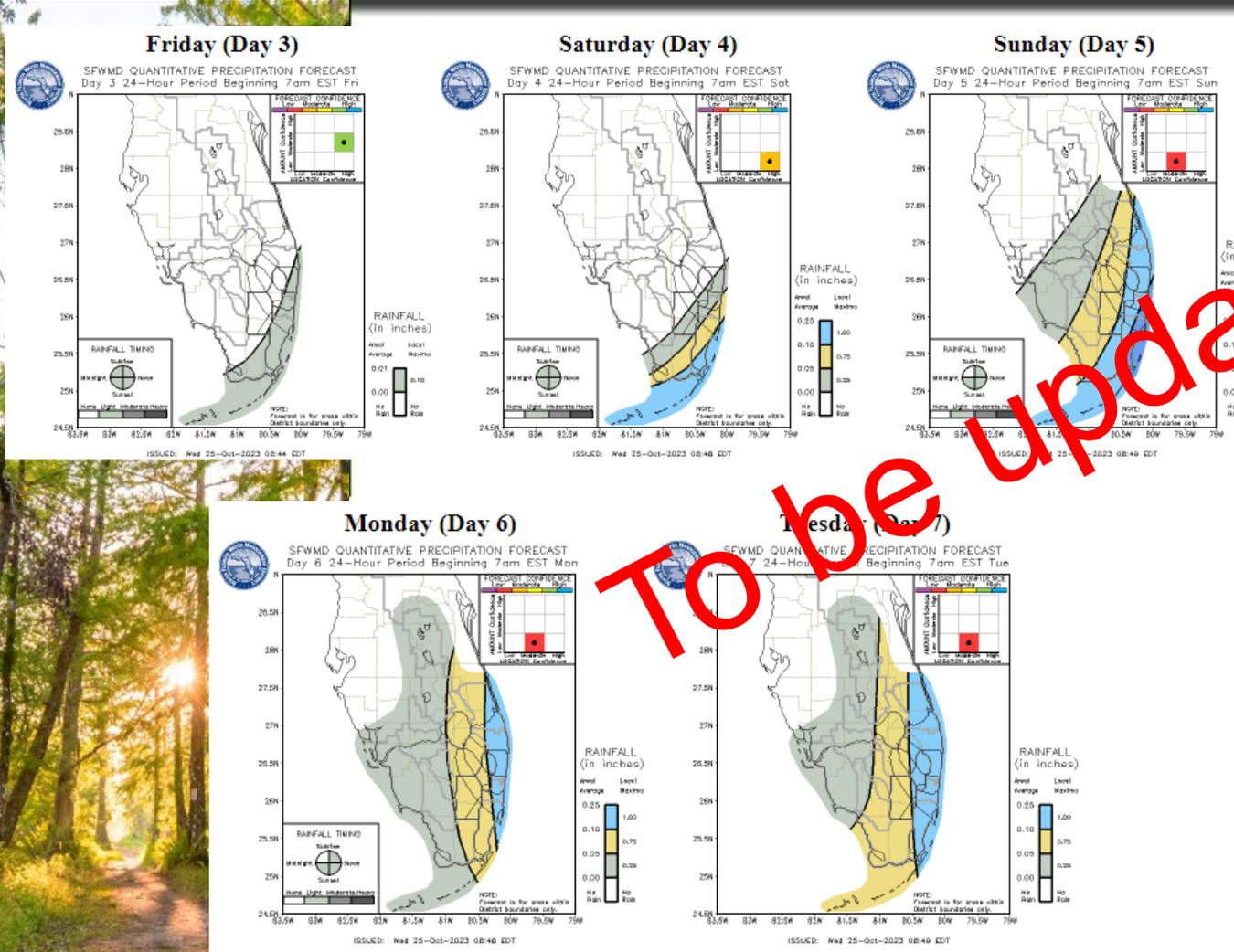
May 2024 – July 2024



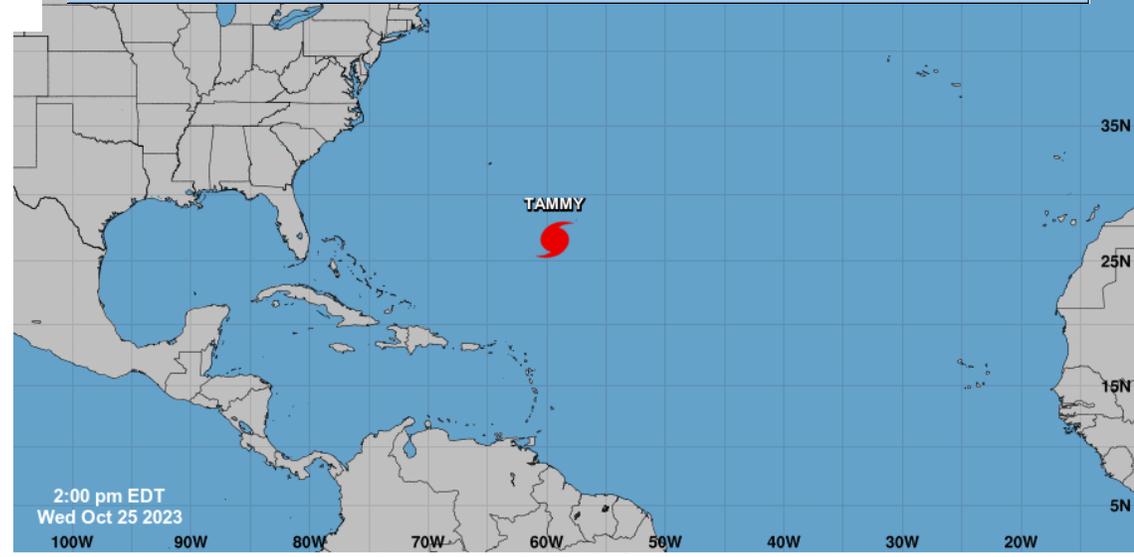
- Transition from El Niño to ENSO-neutral is likely by April-June 2024 (79% chance)
- 55% chance of La Niña developing in June-August 2024

Source

Short Term Forecast



To be updated



Current Disturbances and Seven-Day Cyclone Formation Chance: ✕ < 40% ✕ 40-60% ✕ > 60%

Tropical or Sub-Tropical Cyclone: ○ Depression ◐ Storm ◑ Hurricane

⊙ Post-Tropical Cyclone or Remnants

BCB Water Conditions Report

DRAFT

QUESTIONS ?

