

# **Loxahatchee River Watershed Restoration Project Rule Development Workshop #1**

**January 25, 2022**

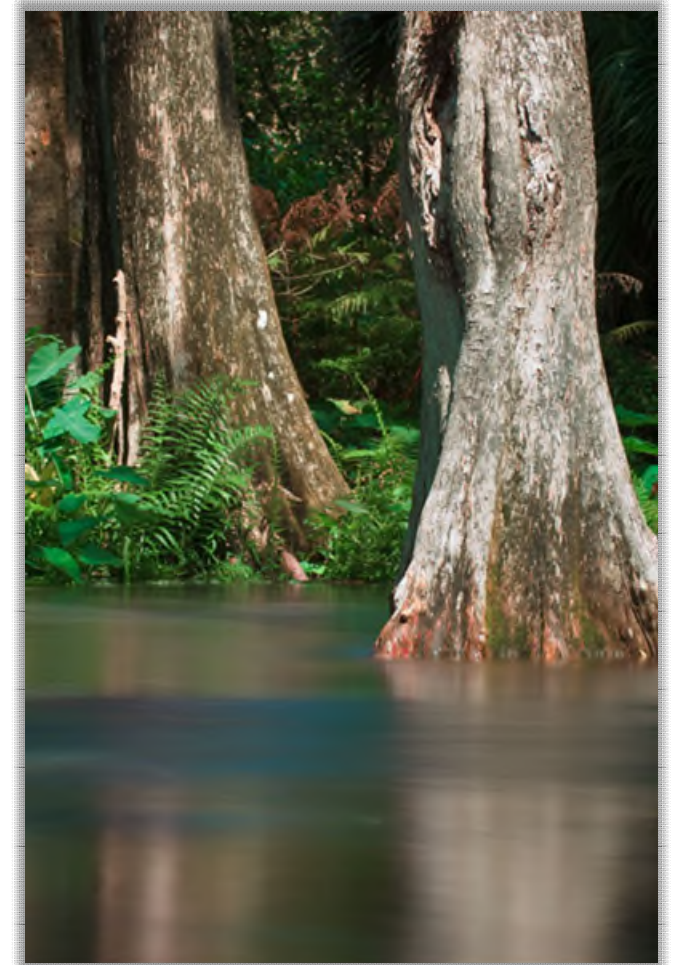


**Lainhart Dam on  
Loxahatchee River**



# Zoom Format for Public Engagement

- Workshop will be recorded
- Workshop participants will be muted during presentations
- Questions will be addressed during the “Public Comment” portion of agenda
- Please use the “Q & A” (Question and Answer) feature on the Zoom toolbar to submit a question regarding the information presented
  - Include your name, affiliation, and relevant agenda item/speaker



# Workshop Agenda

1. Water Protection Overview and Rulemaking Process
2. CERP Loxahatchee River Watershed Restoration Project (LRWRP) Background and Purpose, including a description of project benefits to hydrology and wildlife
3. Aquifer Storage and Recovery (ASR) Component of the LRWRP
4. Draft Rule Language
5. Public Comment
6. Next Steps
7. Adjourn



# Welcome





# **Water Protection Overview & Rulemaking Processes**





# Statutory Authority

- Section 373.044, F.S., authorizes the governing board of a water management district to adopt rules to implement various provisions of Chapter 373, F.S.
- Section 373.216, F.S., requires water management districts to implement a consumptive use permitting program designed to protect water resources of the area from harm. See § 373.219(1), F.S.
- The South Florida Water Management District's consumptive use permitting rules include restricted allocation areas (RAAs) designed to address a specific water resource concern and protect the water resource from harm.

# Statutory Tools

- Overall goal of Chapter 373, F.S., is to ensure sustainability of water resources in Florida
- MFL criteria are one tool
  - Significant harm standard
- Water use permitting is another tool
  - No-harm standard
  - Based on 1-in-10-year drought level of certainty

Conceptual relationship among water resource protection standards at various levels of water resource harm (See Rule 40E-8.421, F.A.C.).

	Water Resource Protection Tools	Water Resource Protection Standards	Observed Impacts
Water Levels/Flow Decreasing	Permittable Water Reservation of Water	NO HARM (1-in-10 Level of Certainty)	Normal Permitted Operations Environmental Restoration
	Phase I Water Shortage Phase II Water Shortage	HARM	Temporary loss of water resource functions taking 1 to 2 years to recover
	<b>MINIMUM FLOWS &amp; LEVELS</b>		
Drought Severity Increasing	Phase III Water Shortage	SIGNIFICANT HARM	Water resource functions require multiple years to recover (> 2 year)
	Phase IV Water Shortage	SERIOUS HARM	Permanent or irreversible loss of water resource functions

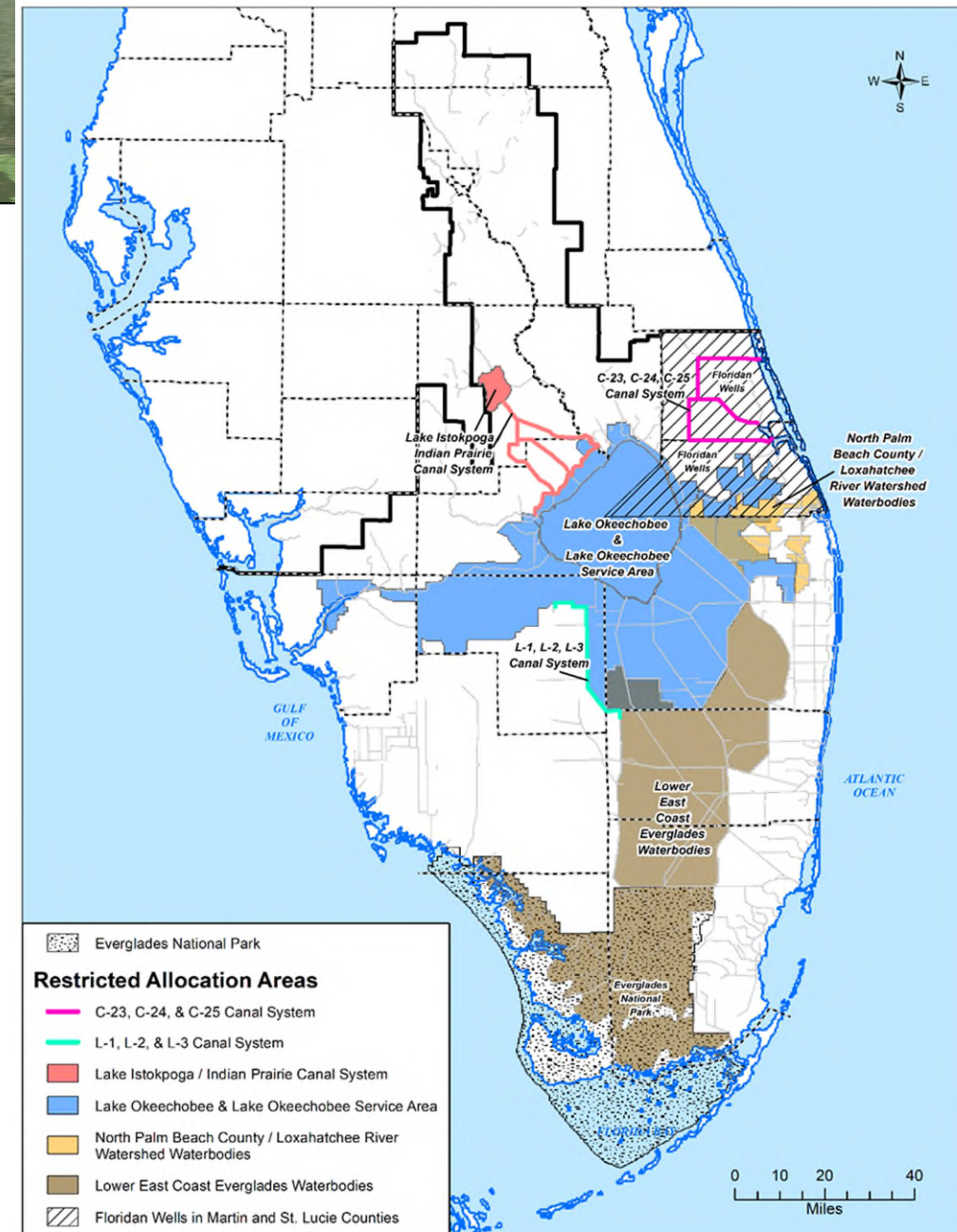
# Restricted Allocation Areas

- RAAs are listed in Section 3.2.1 of the Applicant's Handbook for Water Use Permit Applications within the South Florida Water Management District (Applicant's Handbook)
- RAAs are defined geographic areas where use of specific water supply sources is restricted
- RAAs are adopted for a variety of reasons, including:
  - Where there is insufficient water to meet the projected needs of a region
  - To address regional, resource-specific resource concerns
  - As part of MFL recovery or prevention strategies
- Requests for water allocations in these areas must comply with RAA criteria and all other applicable criteria listed in the Applicant's Handbook



# Restricted Allocation Areas

- C-23, C-24, and C-25 Canal System
- Floridan Aquifer Wells in Martin and St. Lucie Counties
- L-1, L-2, and L-3 Canal System
- Lake Istokpoga/Indian Prairie Canal System
- Lake Okeechobee Service Area
- Lower East Coast Everglades Waterbodies and Northern Palm Beach County/Loxahatchee River Watershed Waterbodies





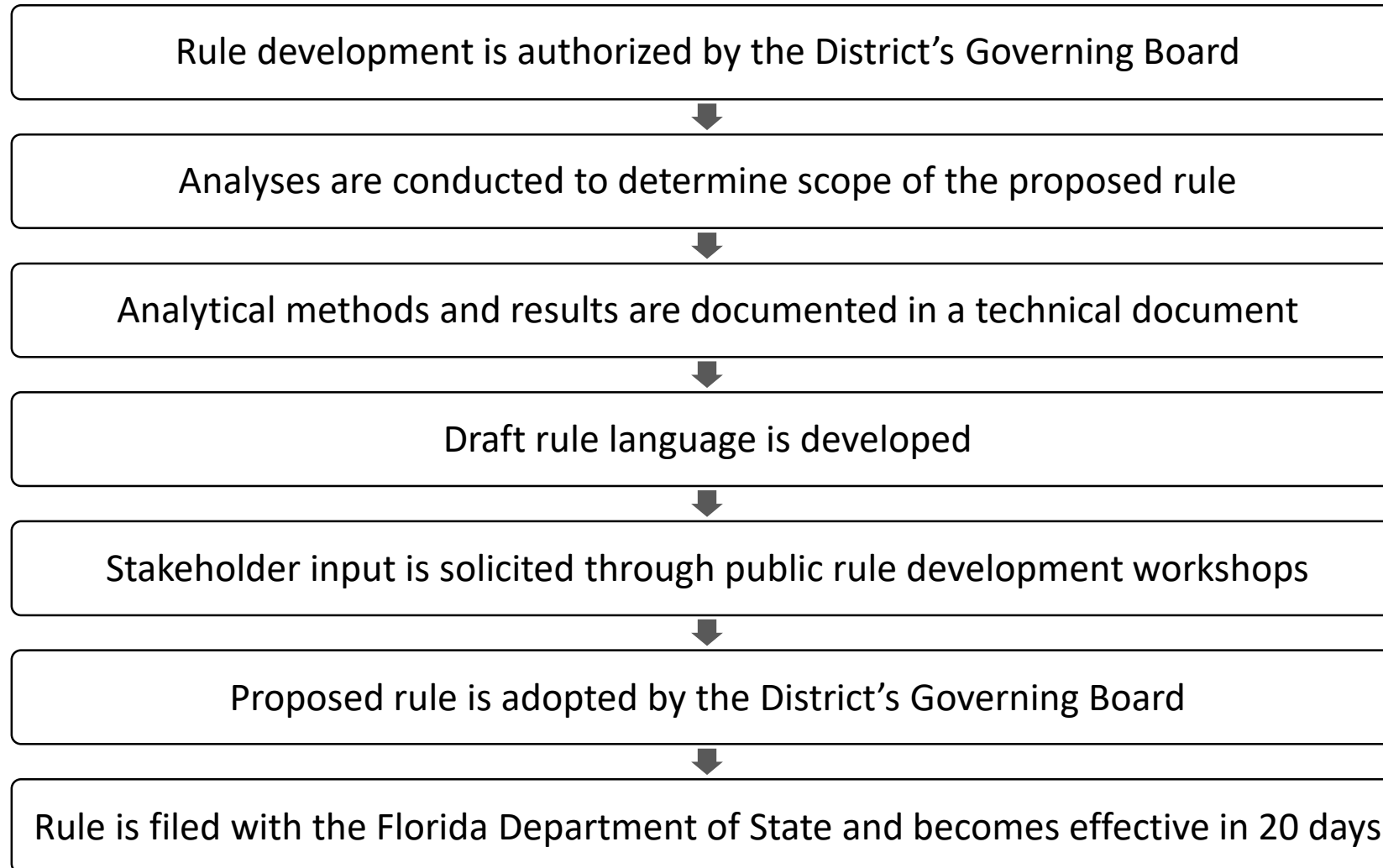
# Additional Rulemaking Requirements

District rules must:

- Be consistent with the Water Resource Implementation Rule (Chapter 62-40, F.A.C.)
- Follow requirements in Chapter 120, F.S., and implementing rules
- Follow the Department of State rules on form
- Follow the Governor Desantis' Executive Order 19-12



# Key Steps in the Rule Development Process





## Federal/State Integration Section 373.470(3)(c), F.S.

“Prior to executing a project cooperation agreement with the Corps for the construction of a project component, the district, in cooperation with the Corps, shall complete a project implementation report to address the project component’s economic and environmental benefits, engineering feasibility, and other factors provided in s. 373.1501 sufficient to allow the district to obtain approval under s. 373.026. Each project implementation report shall also identify the increase in water supplies resulting from the project component. The additional water supply shall be allocated or reserved by the district under this chapter.”

# Federal/State Integration

- Water Resources Development Act (WRDA) 2000
  - Water made available by a CERP project for the natural system is required to be protected
  - Must use its reservation or allocation authority
- Project Implementation Report (PIR) must identify the increase in water supplies resulting from the project component, Section 373.470(3)(c), F.S.
  - Identify water for the natural system
  - Identify water for other water-related needs
- Reservation or allocation must be completed before a Project Partnership Agreement (a cost-share agreement to receive federal funding for project construction and operation) can be executed



# Schedule to Execute Project Partnership Agreement

Rules Effective	Summer 2022
Verification Letter Exchange	TBD
Prepare Package for Project Partnership Agreement	TBD
Approve Project Partnership Agreement	Fall 2022
Preconstruction Engineering and Design	Ongoing 2022

# LRWRP Rule Development Schedule

Milestone	Date
Notice of Rule Development* (Published in FAR)	December 9, 2021 (December 21, 2021)
Rule Development Workshop #1	January 25, 2022
Rule Development Workshop #2	February 22, 2022
Notice of Proposed Rule & Rule Adoption*	April 14, 2022
Effective Date of New Rules	Summer 2022



# **CERP Loxahatchee River Watershed Restoration Project Background & Purpose**





# Comprehensive Everglades Restoration Plan

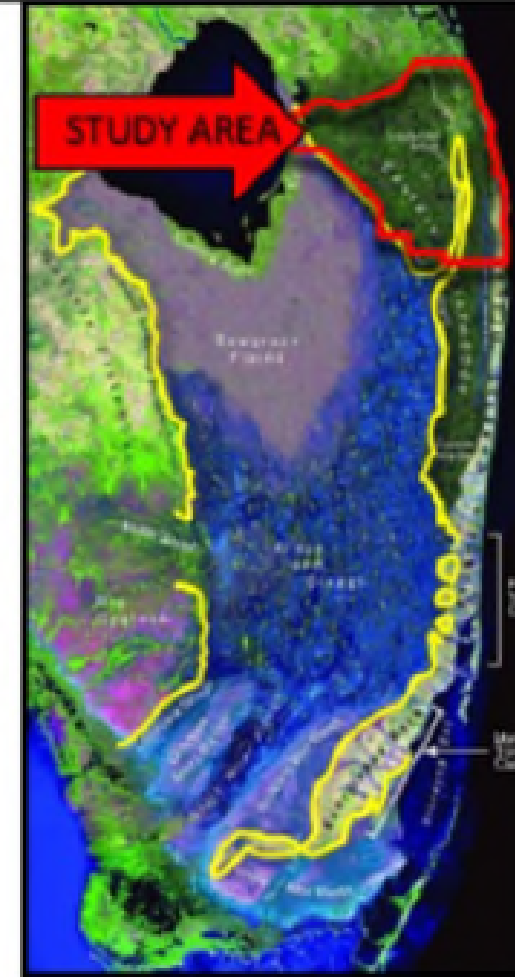
- The LRWRP is part of the Comprehensive Everglades Restoration Plan (CERP) and includes 3 of the 68 CERP components (K, GGG, and OPE)
- CERP was approved by Congress in the Water Resources Development Act (WRDA) of 2000
- Like other CERP projects, the LRWRP is a 50-50 partnership between the State of Florida and the Federal Government





# Project Study Area

- LRWRP study area is ~480,000 acres (~750 mi<sup>2</sup>)
- Current land use
  - Highly urbanized in the east
  - Natural areas/open land and water in the west and north
- Historically dominated by a mosaic of wetlands, uplands, and sloughs



# Project Objectives

- **Objective 1**: Restore wet and dry season flows to the nationally designated Wild and Scenic Northwest Fork of the Loxahatchee River
- **Objective 2**: Restore oysters, seagrass, and other estuarine communities in the Loxahatchee River Estuary
- **Objective 3**: Increase spatial extent and function of wetlands
- **Objective 4**: Restore watershed connections among the Loxahatchee River headwater natural areas to improve hydrology, sheetflow, hydroperiods, natural storage, and vegetative communities
- **Objective 5**: Restore abundance and diversity of native plant and animal species in watershed, natural areas, river, and estuary





# Authorized Plan: Alt 5R

## Flow Way 3

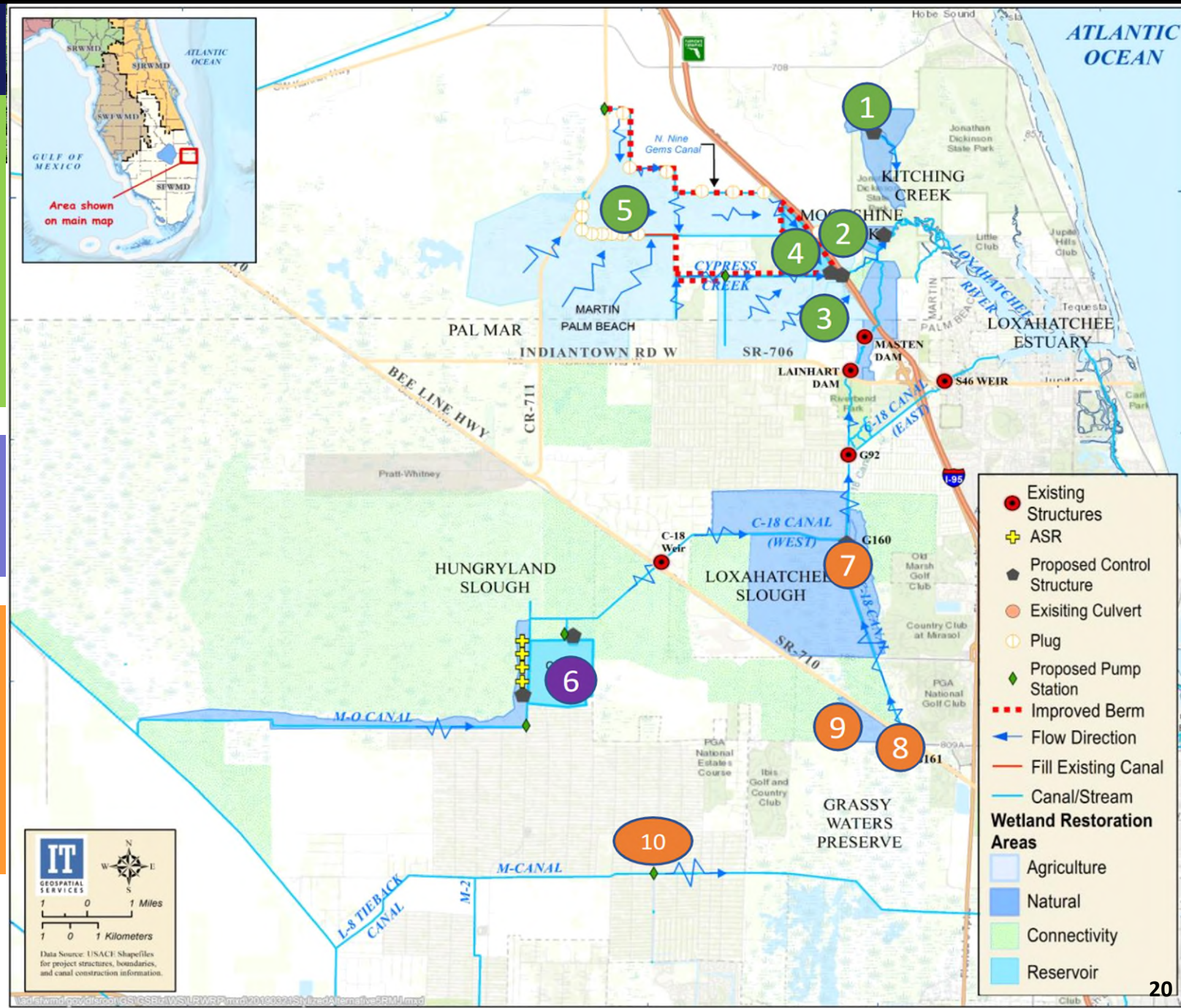
- 1 - Kitching Creek
- 2 - Moonshine Creek/Gulfstream East
- 3 - Cypress Creek Canal
- 4 - Gulfstream West
- 5 - Palmar East

## Flow Way 2

- 6 - C-18W Reservoir (9,500 ac/ft & 4 ASR wells)

## Flow Way 1

- 7 - G-160 Structure
- 8 - G-161 Structure
- 9 - Grassy Waters Triangle
- 10 - M-1 Pump Station





# Project Benefits

- Northwest Fork of Loxahatchee River target flows
  - 91% dry season
  - 98% wet season
- Promotes recovery of riverine freshwater species and estuarine zones for fish, seagrass, oysters, and other protected species
- Improves watershed wetland hydrology
  - 17,000 acres existing or former agricultural lands
  - 10,000 acres existing natural areas
- Improves/maintains ecological connectivity for ~78,000 acres
- Provides additional recreation opportunities





# Project Status

## Tasks Completed

- ✓ Project Implementation Report (PIR) – January 2020
- ✓ Chief's Report signed – April 2020
- ✓ Project authorized by Congress – WRDA 2020



## Tasks Underway

- Execution of agreements with local partners – Ongoing
- SFWMD to initiate preliminary engineering activities in flow-way 3 (e.g., survey, geotech, additional water level/flow monitoring) – 2022
- SFWMD to complete RAA rule development – Summer 2022
- SFWMD to execute Pre-partnership Credit Agreement with USACE – Fall 2022
- Finalize 2021 Integrated Delivery Schedule to reflect LRWRP design/construction schedule – 2022

# Project Schedule

## INTEGRATED DELIVERY SCHEDULE 2021 UPDATE **FINAL DRAFT**

SOUTH FLORIDA ECOSYSTEM RESTORATION | CENTRAL AND SOUTHERN FLORIDA COMPREHENSIVE EVERGLADES RESTORATION PLAN

PROJECT LOCATOR	YELLOW BOOK COMPONENTS	PROJECT	FISCAL YEAR   DESIGN AND CONSTRUCTION COSTS (DOLLARS IN MILLIONS) <sup>2</sup>												
			2020 W	2021	2022 W	2023	2024 W	2025	2026 W	2027	2028 W	2029	2030 W	2031	2032W
		Planning Estimates Federal Construction Cost (SFER)++	\$ 235	\$ 250	\$ 350										
		Planning Estimates Non-Federal Construction Cost (SFER)++	\$ 363	\$ 258	\$ 329	\$ 828	\$ 814	\$ 964	\$ 1,275	\$ 983	\$ 731	\$ 468	\$ 256	\$ 154	\$ 88
		Planning Estimates Total Construction Cost (SFER)++	\$ 598	\$ 508	\$ 679										
		CERP GENERATION 4 (AUTHORIZED IN WRDA 2020; PPA ANTICIPATED IN 2022)													
P16	K, OPE	Loxahatchee River Watershed Restoration Project			●●●●●										
		Flow-way 1 (M-1 Canal, G160/161, Grassy Water Preserve)				●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●				
		Flow-way 2 (C-18 Reservoir, ASR Wells)				●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	
		Flow-way 3 (Gulf Stream West, Nine Gems, Culpepper, Moonshine, Hobe Grove, Kitching Creek)			●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	

■ Non-federal	++ Does not reflect budgetary development dollars or capability	●●●●● Design, PPA Execution, Real Estate Acquisition
■ Federal	W Expected WRDA year	●●●●● Construction (Initiated by award of construction contract)
□□□□● Fiscal Closeout	●●●●● Project Implementation Report	○●●●● Operational Plan
△△△△● Monitoring	●●●●● Project Implementation Report with Exemption	○●●●● Operational Testing and Monitoring Period

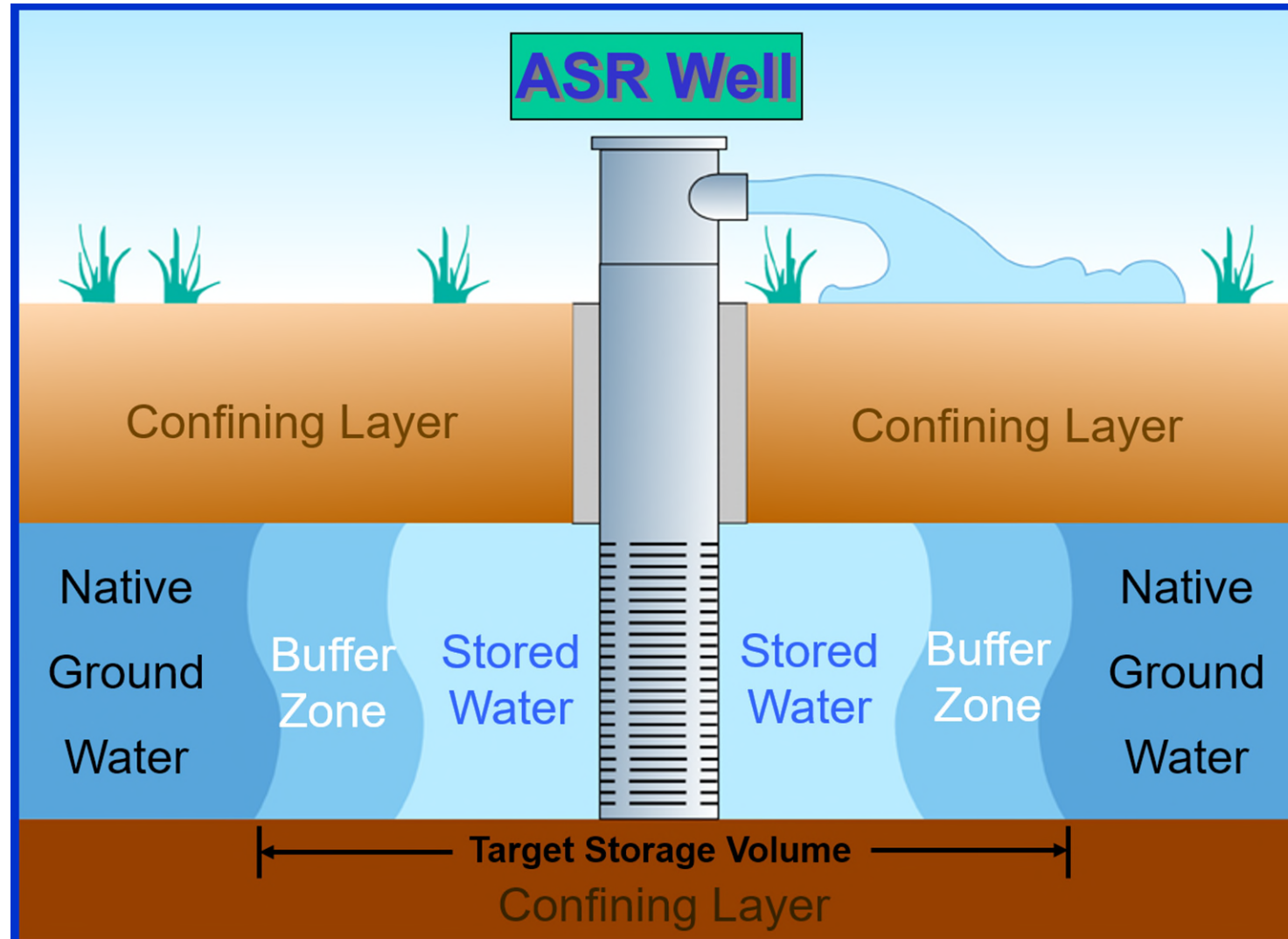


# LRWRP Aquifer Storage and Recovery Component



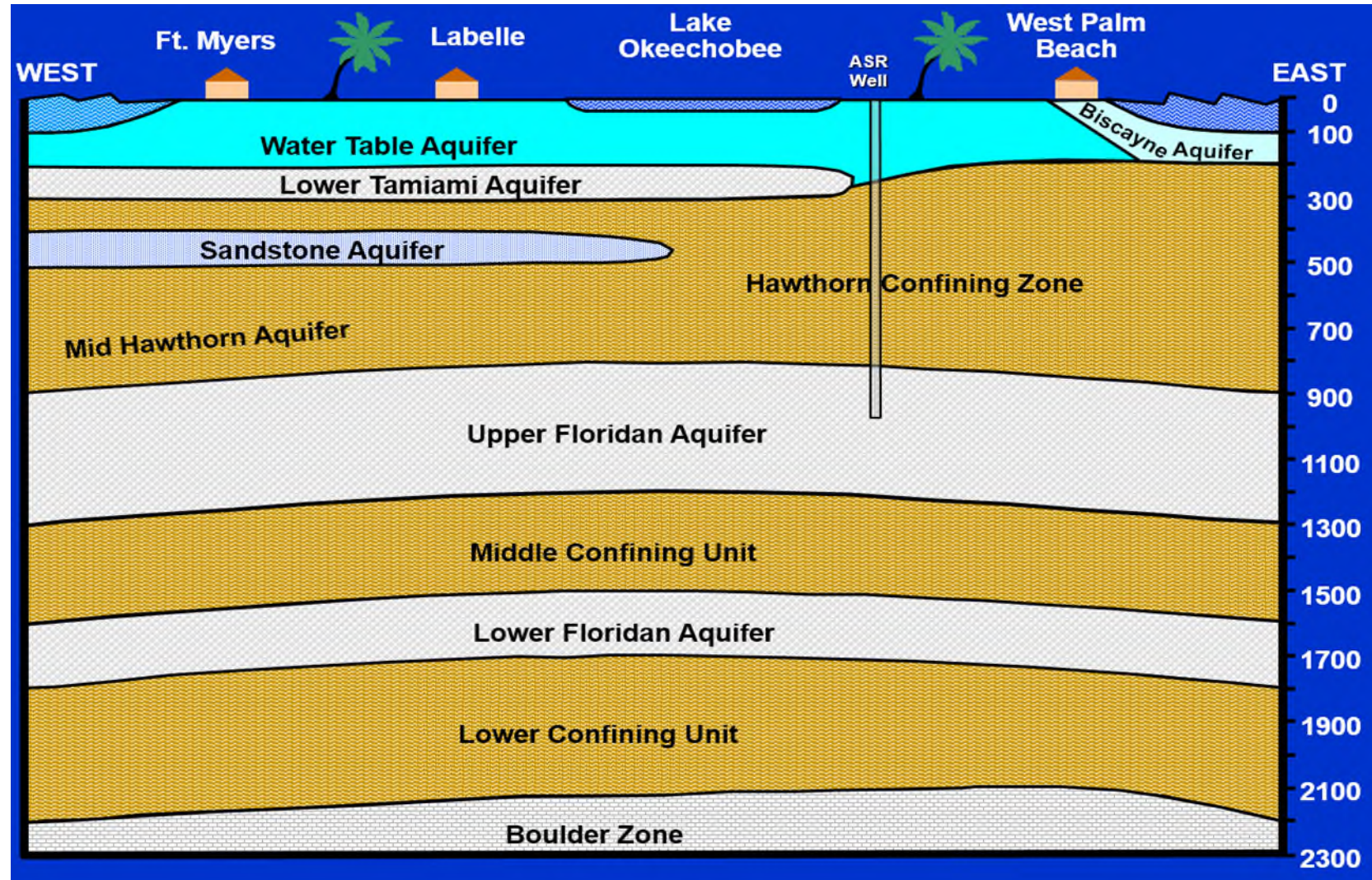


# ASR Concept





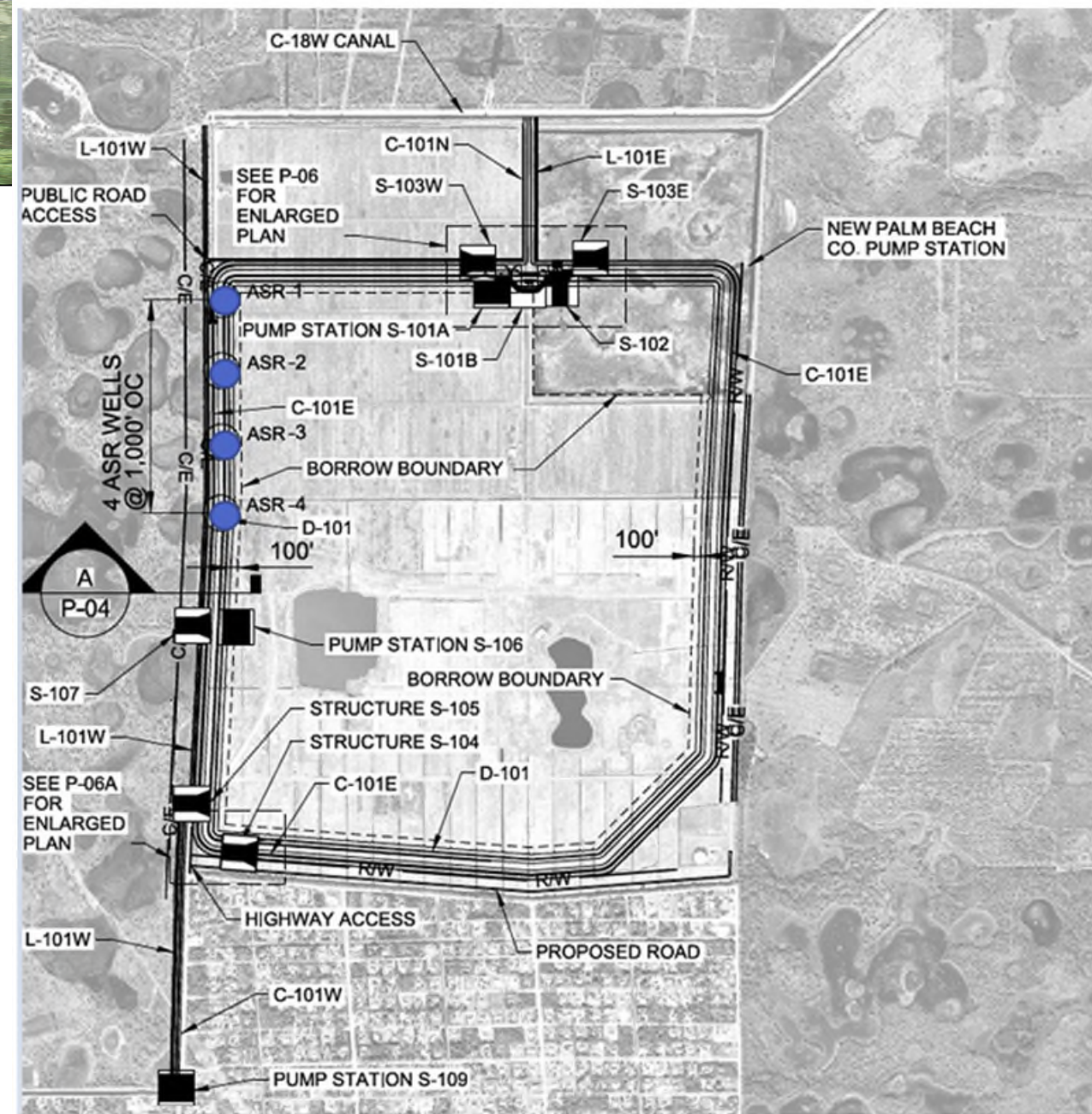
# Hydrogeology Around the C-18W Reservoir





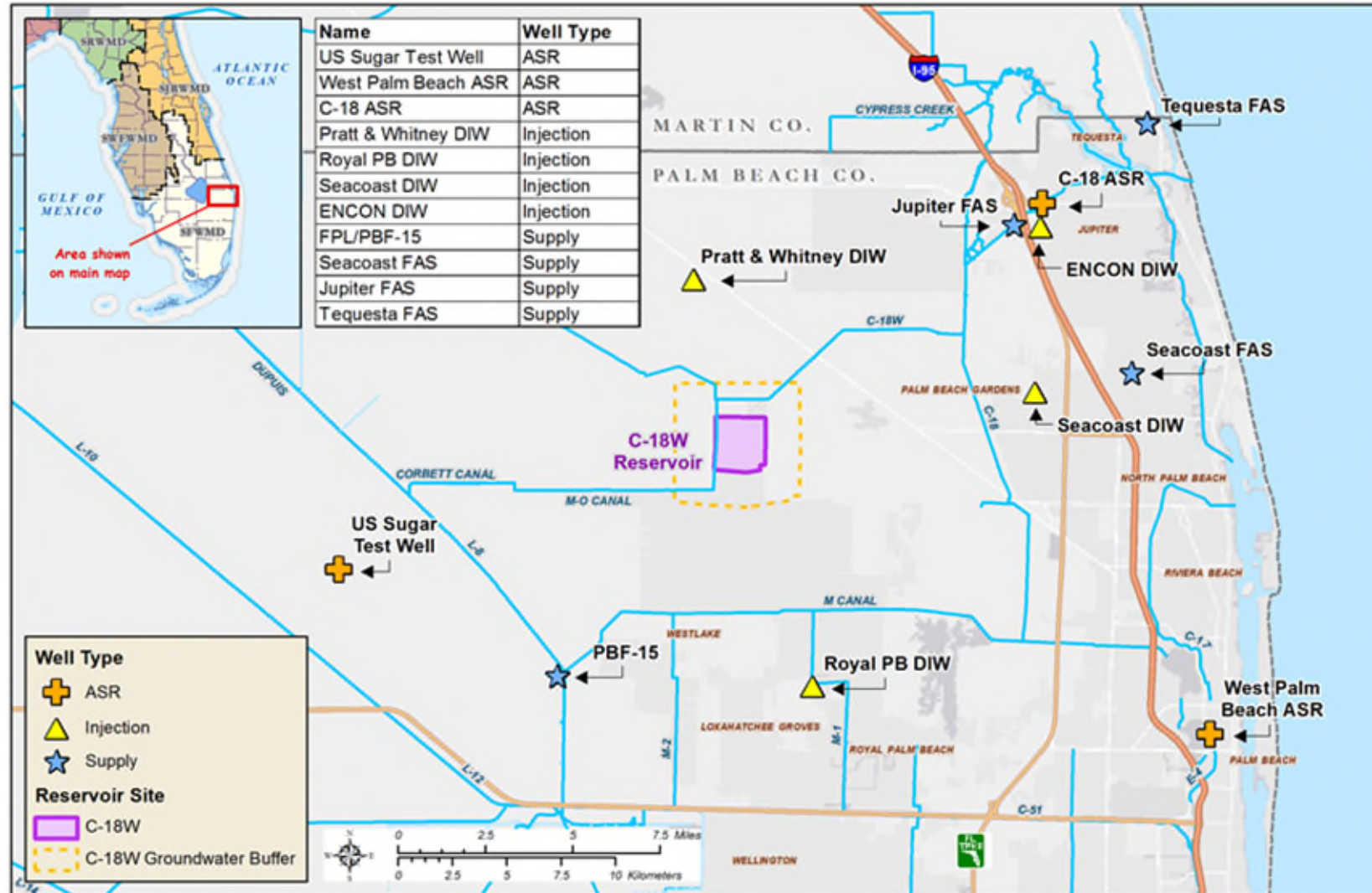
# C-18W Reservoir Design

- Includes four ASR wells, 1,000 ft apart
- Each well at 5 mgd, total capacity 20 mgd (32 cfs)
- Completed in the Upper Floridan aquifer
- Assumes a maximum “bubble” of ~30,000 ac-ft
- Reservoir design is still conceptual, well locations could change
- Exploratory test well has yet to be installed





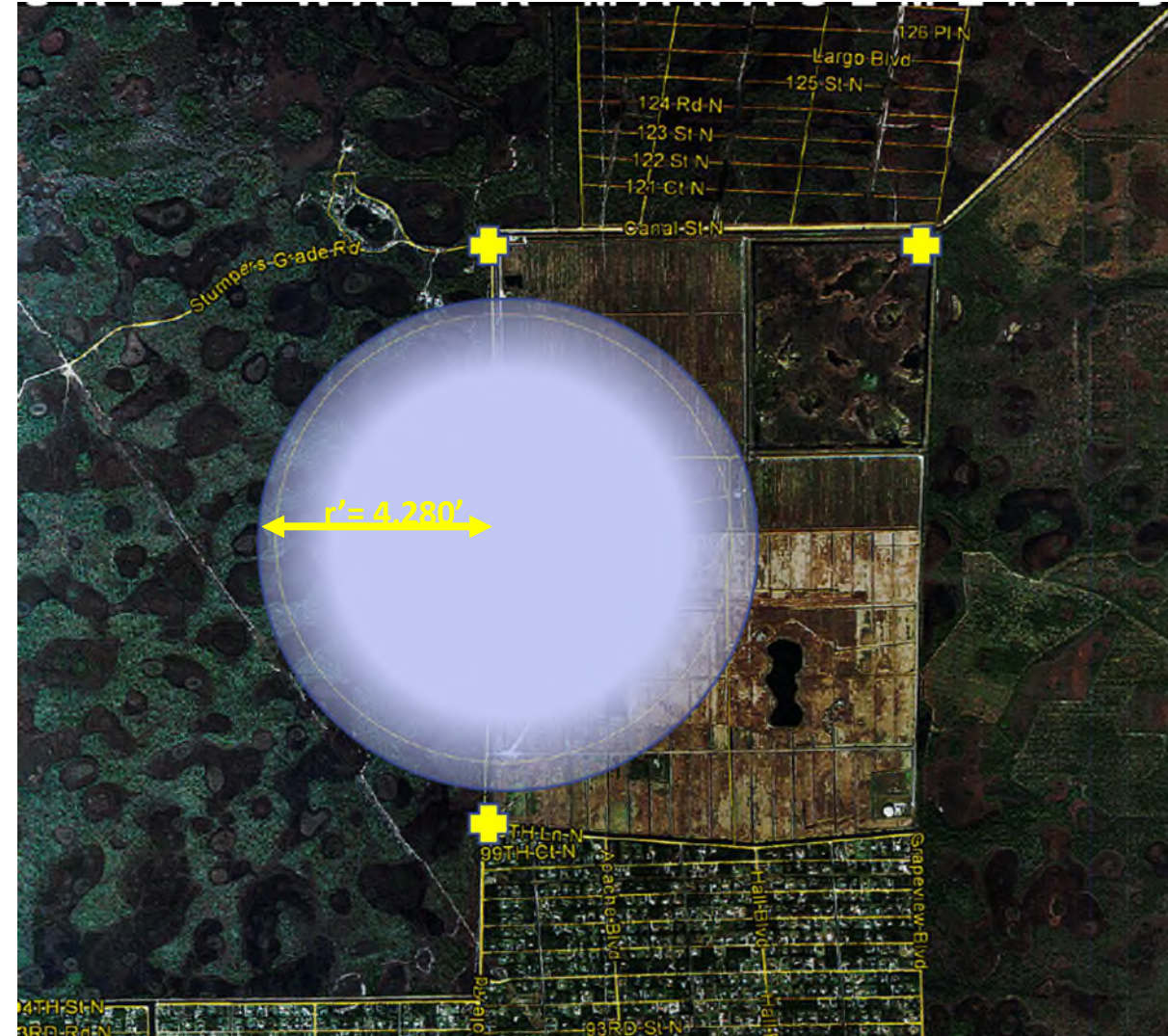
# Nearby Wells of Interest





# Estimated “Bubble” Size

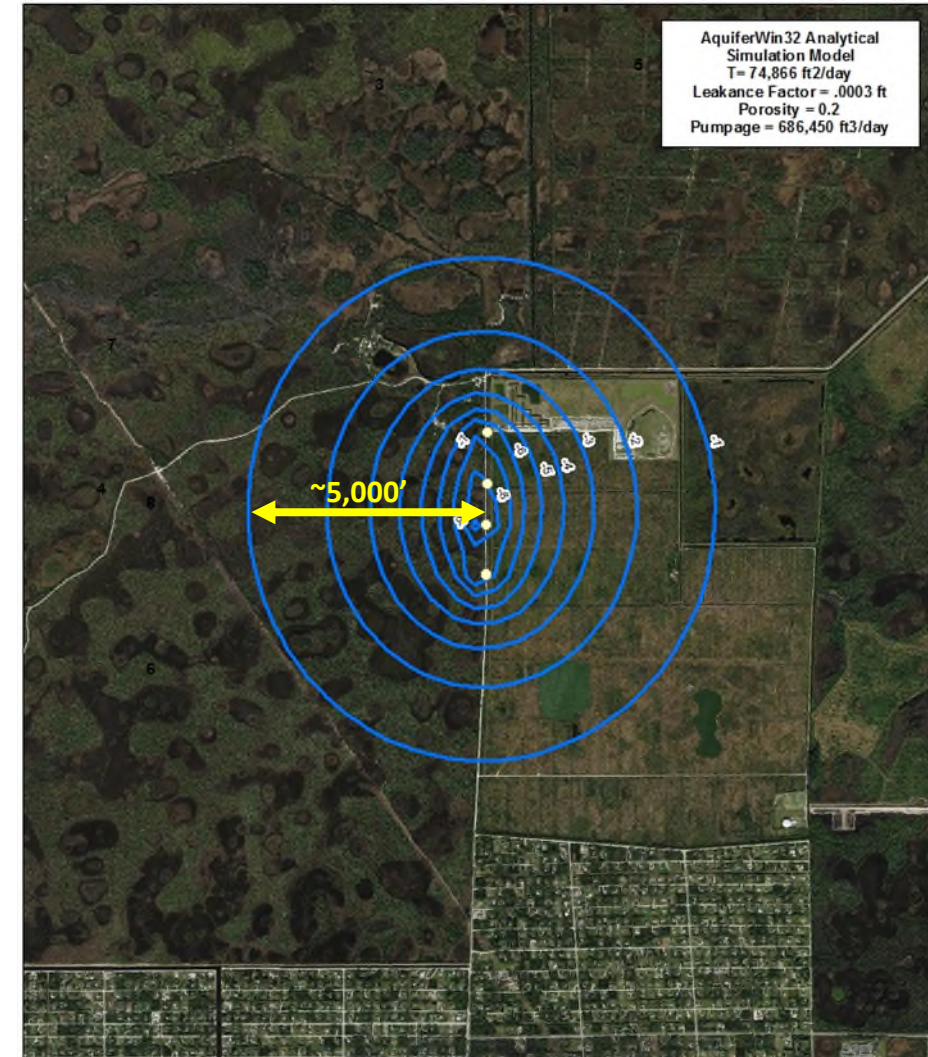
- Assumed maximum bubble size of 30,000 ac-ft
- Using the Warner and Lehr (1981) method
  - Effective porosity = 20%
  - Storage zone thickness = 200 ft
  - Limestone dispersion coefficient = 65
  - Radius ( $r'$ ) = 4,280 ft





# Groundwater Modeling

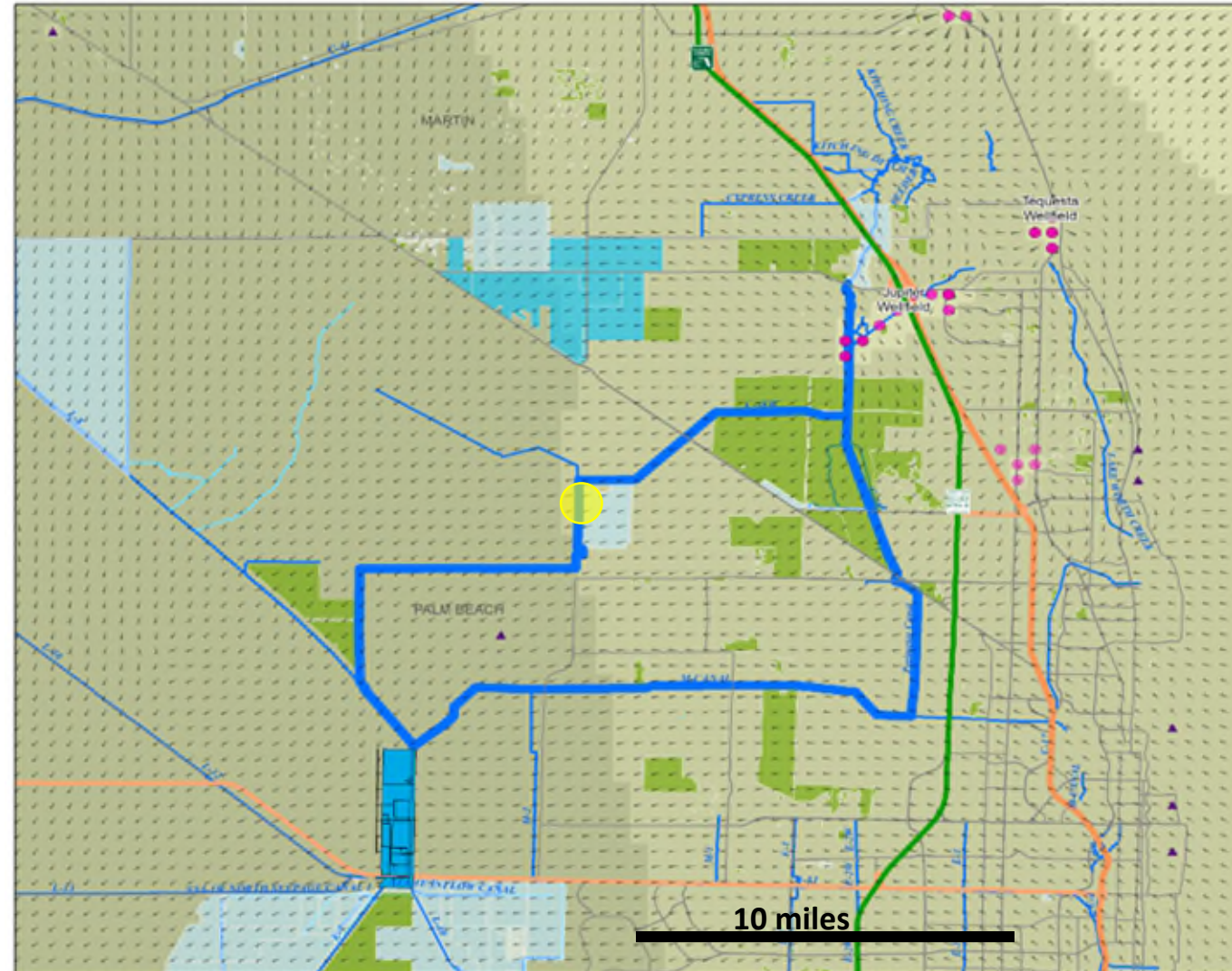
- Winflow analytical “impact” model
- Computed drawdown effects in aquifer
- Typical water use permitting approach
- Hantush-Jacob (1955) transient solution for
  - Low leakance aquifer (0.0003 ft)
  - Low transmissivity aquifer (560,000 ft<sup>2</sup>/day)
  - 90-day, continuous pumpage of 4 wells at 5 mgd/well
  - Porosity – 20%





# Floridan Aquifer Groundwater Flow

- East Coast Floridan Model
  - Three-dimension, density dependent
  - Calibrated & peer reviewed
- 2040 simulation vector analysis
  - Regional gradient to the east
  - Velocity ~10 ft/day





# SR Groundwater Protection

**SR Groundwater Protection**

**Land Surface**

**Surficial Aquifer**

**Intermediate Confining Unit**

**Upper Floridan Aquifer (UFA)**

**Middle Confining Unit 1**

**Avon Park Permeable Zone**

**Middle Confining Unit 2**

**Lower Floridan Aquifer**

**Boulder Zone**

**Groundwater Protection Area**

**C-18W Canal**

**C-18W Reservoir**

**J.W. Corbett Wildlife Management Area**

**Beeline Hwy**

**Hungry Jack Slough**

**Avocado Blvd**

**14th Ave. N**

**Northlake Blvd**

**Canary Grove Blvd**

**89th Place N**

**Seminole Post Highway Rd**

**Key Lime Blvd**

**172nd Ave. N**

**Depth (feet)**

**Hydrogeologic Unit**

**Surficial Aquifer System**

**Intermediate Aquifer System**

**Floridan Aquifer System\***

**\*NOTE: Floridan Aquifer System is Brackish (Chloride concentration > 2,200 mg/L)**

**\*\*Map is not to scale. Vertical axis is greatly exaggerated.**



# Draft Rule Language



# Rule 40E-2.091, F.A.C.

## Publications Incorporated by Reference

(1) The “Applicant’s Handbook for Water Use Permit Applications within the South Florida Water Management District – \_\_\_\_\_ \* ~~March 21, 2021~~” ([web link to be provided at a later date](#)) is incorporated by reference herein.

(2) - (4) No Change.

\* Date when final

### Applicant’s Handbook for Water Use Permit Applications

WITHIN THE SOUTH FLORIDA WATER  
MANAGEMENT DISTRICT

EFFECTIVE ~~MARCH 2021~~



[sfwmd.gov](http://sfwmd.gov)

# Applicant's Handbook

## 1.1 Definitions

**North Palm Beach County /Loxahatchee River Watershed Waterbodies** - as used in Subsection 3.2.1.E, is defined as the surface and groundwater from the City of West Palm Beach ~~Grassy Waters Preserve~~, Water Catchment Area, Pal-Mar and J.W. Corbett Wildlife Management Area, Loxahatchee Slough, Loxahatchee River, Riverbend Park, Dupuis Reserve, Jonathan Dickinson State Park, Kitching Creek, Moonshine Creek, Cypress Creek, ~~and~~ Hobe Grove Ditch, Hungryland Slough, Pine Glades, and the C-18W Reservoir, as depicted in Figure 3-2.



# Applicant's Handbook

## 3.2.1 Restricted Allocation Areas

### E. \* Lower East Coast Regional Water Availability

In addition to all other applicable consumptive use statutory and rule provisions, the following restrictions shall apply when allocating water by permit for water use withdrawals within the Northern Palm Beach County Service Area and Lower East Coast Service Areas 1, 2 or 3.

Subsection 3.2.1.E is a component of recovery strategies for MFLs for the Everglades and the Northwest Fork of the Loxahatchee River, as set forth in Chapter 40E-8, F.A.C., and assists in implementing the objective of the District to ensure that water necessary for Everglades restoration and restoration of the Loxahatchee River Watershed is not allocated for consumptive use upon permit renewal or modification under this rule.

1. - 2. Not Shown

The evaluation of water withdrawn from Waterbodies under this section shall address the impacts of the proposed use on surface water and groundwater from: a) integrated conveyance systems that are hydraulically connected to the subject Waterbodies and are tributary to or receive water from such Waterbodies; and b) the Waterbodies. Integrated conveyance systems that are hydraulically connected to the subject Waterbodies include primary canals used for water supply including, but not limited to, the Central and Southern Florida Project Canals, and secondary and tertiary canals that derive water from primary canals.

3. - 7. Not Shown

# Applicant's Handbook

## 3.2.1 Restricted Allocation Areas

### E. Lower East Coast Regional Water Availability

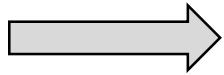
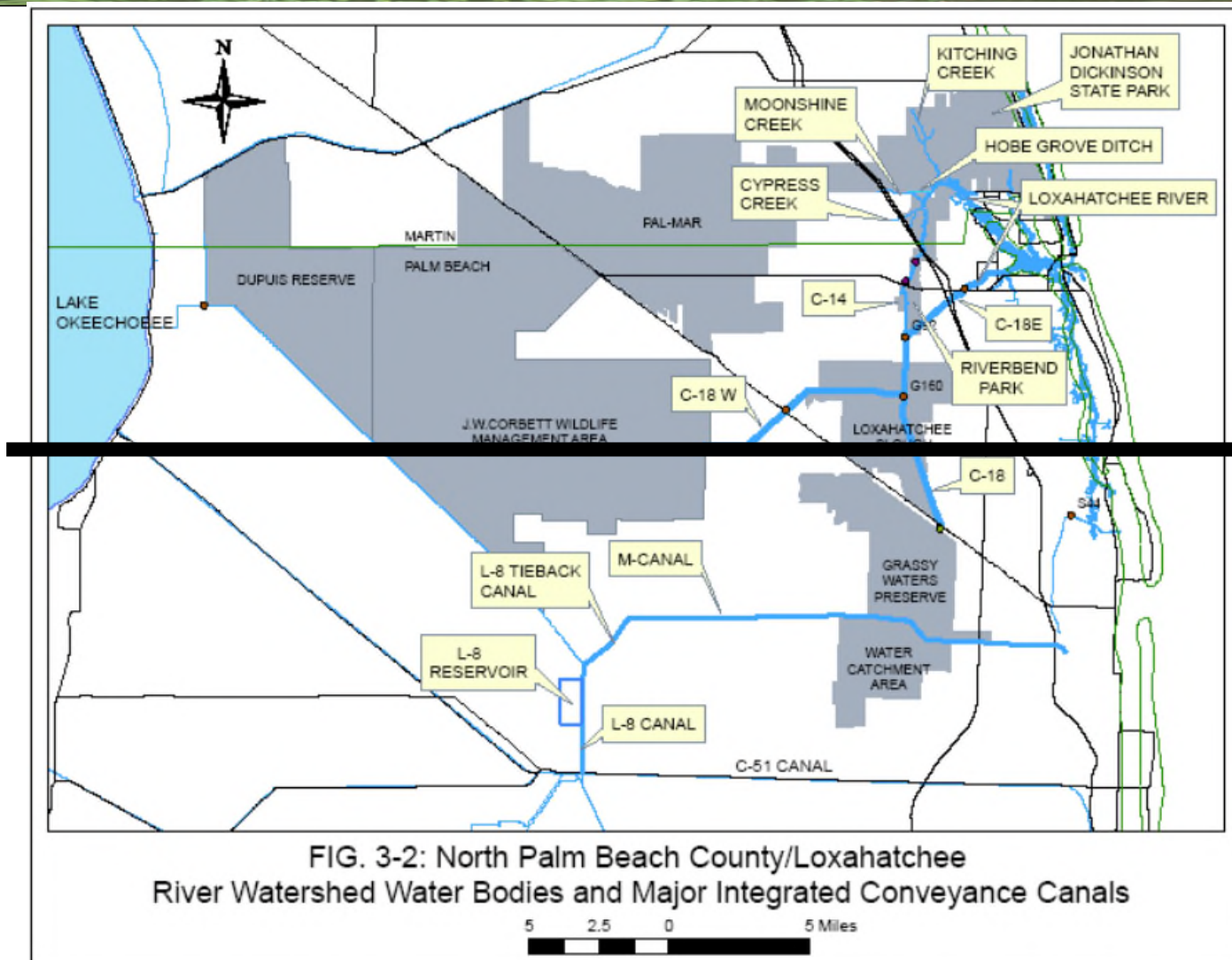


Figure 3-2. North Palm Beach County/Loxahatchee River Watershed Water Bodies and Major Integrated Conveyance Canals.

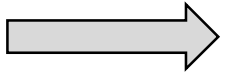
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[sfwmd.gov](http://sfwmd.gov)

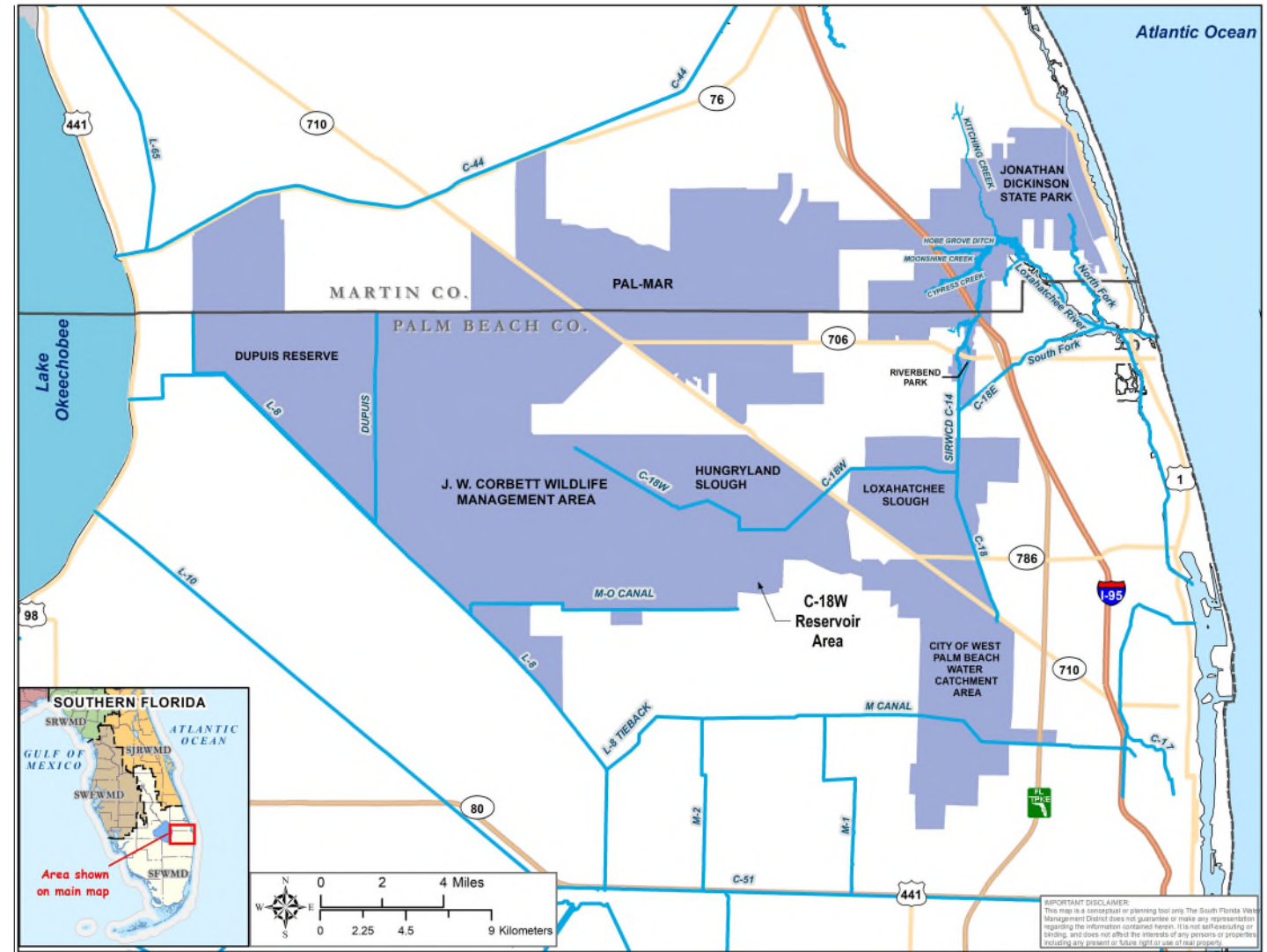




## E. Lower East Coast Regional Water Availability



*Note: Dashed outlines shown for illustration purposes (final will not have dashes)*



# Applicant's Handbook

## **G. Utilization of the Upper Floridan Aquifer System Near the C-18W Reservoir**

The following restrictions shall apply when allocating groundwater stored in the upper Floridan aquifer system (upper FAS) beneath the C-18W Reservoir, as depicted in Figure 3-4. This subsection assists in implementing the District's objective of ensuring that water necessary for the restoration of the Loxahatchee River Watershed is not allocated to consumptive use upon permit issuance, renewal, or modification under these criteria.

The applicant shall provide reasonable assurance that the requested allocation will not withdraw from the portion of the upper FAS underlying the C-18W Reservoir and associated buffer zone delineated in Figure 3-4. This demonstration is provided when the following criteria, pursuant to the impact evaluation provisions in Subsection 3.1.2, are met:

1. The requested allocation will not interfere with the C-18 W Reservoir ASR wells as described in Section 3.7, below; or,
2. The requested allocation will not result in 1-foot or more of drawdown to the portion of the upper FAS that underlies the C-18W Reservoir groundwater buffer zone delineated in Figure 3-4.

For existing legal users of the upper FAS as of [rule effective date] whose cone of depression intersects the zone delineated in Figure 3-4, the use may be renewed. However, no additional allocations that increase the withdrawal's impact beyond that of the previously permitted use as of [rule effective date] will be authorized.



# Applicant's Handbook

## 3.2.1 Restricted Allocation Areas

### G. Utilization of the Upper Floridan Aquifer System Near the C-18W Reservoir

(continued)

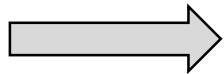
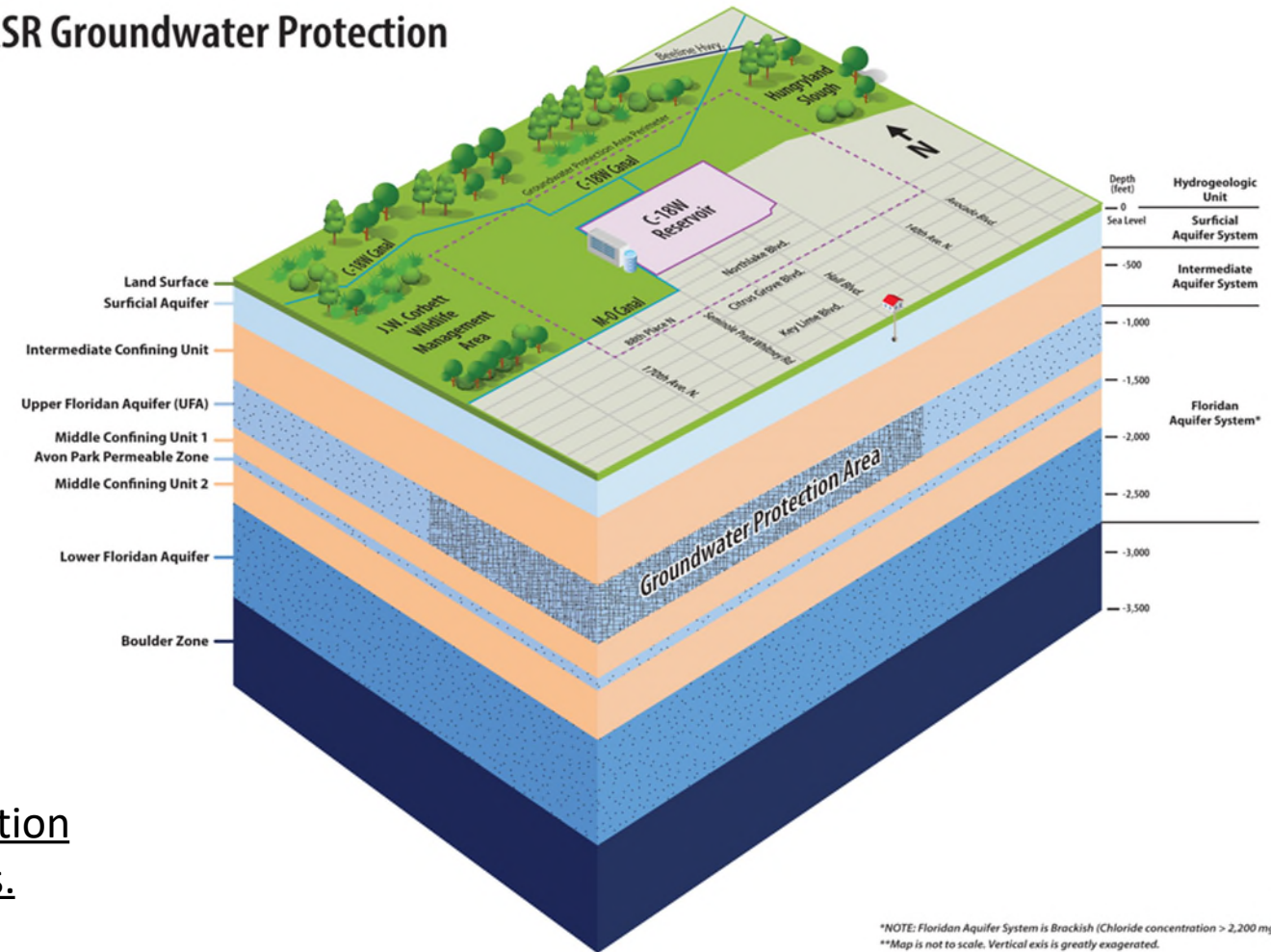


Figure 3-4. Area of upper Floridan aquifer system protection related to the C-18W Reservoir and associated ASR wells.

### ASR Groundwater Protection



# Applicant's Handbook

## 3.7 Interference with Existing Legal Users

To obtain a water use permit the applicant must provide reasonable assurance that it will not interfere with any existing legal use of water, pursuant to Section 373.223(1)(b), F.S. In general, an applicant must provide reasonable assurances that the proposed withdrawal of water, together with other exempt or permitted uses ~~withdrawals~~ within the cone of influence of the proposed withdrawal, will not result in interference with those existing legal uses.

### 3.7.2 Definition of Interference with an Existing Legal Use

A. - D. No Change, except moving “or” and associated punctuation.

E. If the existing legal use is an ASR system, 1) the transmittance of ASR waters away from the delineated project area by changing or accelerating the flow velocity or flow direction; or 2) a change in the concentration of total dissolved solids.



# Applicant's Handbook

## 3.7.3 Mitigation Requirements for Interference with Existing Legal Uses

If the applicant cannot provide reasonable assurance that a proposed withdrawal will not interfere with existing legal uses, the applicant must submit a mitigation plan. The mitigation plan shall identify actions necessary to mitigate for interference once the impact has occurred, or is imminent. Such actions must be sufficient to provide water consistent with the authorized use and will require a permit modification if required by Rule 40E-2.331, F.A.C. As necessary to offset the interference, mitigation will include pumpage reduction, replacement of the impacted individual's equipment, relocation of wells, change in withdrawal source, or other means. If the existing legal use is an ASR system, replacement of the impacted user's equipment shall not be included in the mitigation plan.

Once the permit is issued, the permittee shall mitigate interference with existing legal uses that was caused in whole or in part by the permittee's withdrawals, consistent with the approved mitigation plan. The mitigation plan will require a permittee to mitigate immediately, or upon the actual occurrence of an interference. The determination of when mitigation is required is based upon the likelihood that the interference is projected to occur.

# Public Comment

- Please use the “Q&A” (Question & Answer) feature on the Zoom toolbar to submit a question regarding the information presented
  - Include your name, affiliation, and relevant agenda item/speaker
- If you’re participating via phone:
  - \*9 raises hand
  - \*6 mutes/unmutes
  - When called upon, unmute your device and state your name and affiliation



# Next Steps





# Next Steps

- Agenda, draft technical document, and draft rule language available at [www.sfwmd.gov/rules](http://www.sfwmd.gov/rules)
  - Presentation will be posted following workshop
- Written comments can be submitted to Natalie Kraft at [nkraft@sfwmd.gov](mailto:nkraft@sfwmd.gov)
  - Deadline to submit comments – **February 7, 2022**
  - Comments will be archived on the District's Web Board  
<https://sfwmd.websitetoolbox.com/>



# LRWRP Rule Development Schedule

Milestone	Date	
Notice of Rule Development* (Published in FAR)	December 9, 2021 (December 21, 2021)	✓
Rule Development Workshop #1	January 25, 2022	✓
Rule Development Workshop #2	February 22, 2022	
Notice of Proposed Rule & Rule Adoption*	April 14, 2022	
Effective Date of New Rules	Summer 2022	

## Additional Information

- Links to drafts of rulemaking documents: [www.sfwmd.gov/rules](http://www.sfwmd.gov/rules)
- USACE Loxahatchee River Watershed Restoration Project webpage: <https://www.saj.usace.army.mil/Missions/Environmental/Ecosystem-Restoration/Loxahatchee-River-Watershed-Restoration-Project/>
- SFWMD aquifer storage and recovery (ASR) webpage: [www.sfwmd.gov/asr](http://www.sfwmd.gov/asr)
- Restricted allocation areas webpage: [www.sfwmd.gov/raas](http://www.sfwmd.gov/raas)
- Stakeholder comments received will be posted on the SFWMD Web Board: <https://sfwmd.websitetoolbox.com/>



# **Thank You**

**Loxahatchee River Watershed Restoration Project  
Rule Development Workshop #1**