Central Florida Water Initiative

Water for Tomorrow

Steering Committee and Public Meeting
November 19, 2024

www.cfwiwater.com

Steering Committee Members

Florida Department of Environmental Protection	
Deputy Secretary for Ecosystems Restoration	**Adam Blalock,** Chair
Utility Representative	
Public Water Supply, Toho Water Authority	**Todd Swingle**
Water Management Districts	
South Florida Water Management District	**Benjamin Butler**
Southwest Florida Water Management District	**Ashley Bell Barnett**
St. Johns River Water Management District	**J. Chris Peterson**
Florida Department of Agriculture and Consumer Services	
Director, Office of Agriculture Water Policy	**West Gregory**

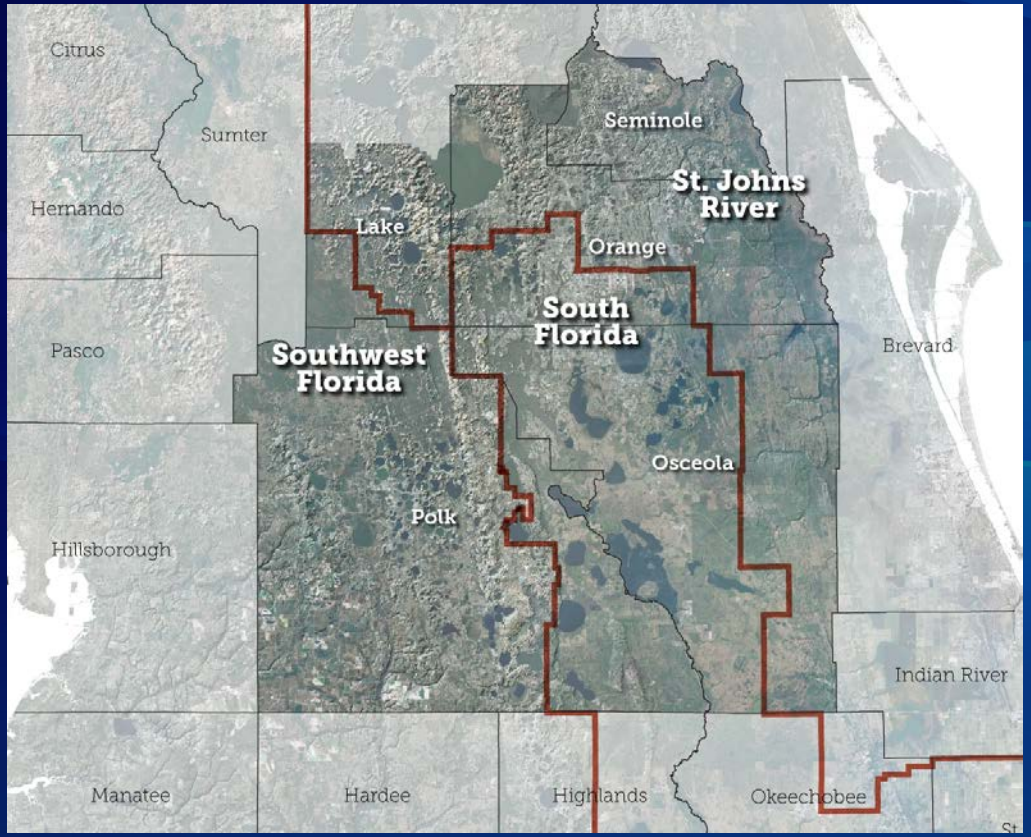
Agenda

- Steering Committee Introduction – Pamela Flores, FDEP
- 2025 CFWI Regional Water Supply Plan (RWSP) Recap and Draft Results
  - Overview of RWSP – Callie Register, SJRWMD
  - Hydrologic Analysis – Peter Kwiatkowski, SFWMD
  - Minimum Flows and Minimum Water Levels – Andrew Sutherland, SJRWMD
  - Environmental Measures - Kym Holzwart, SWFWMD
- Data, Monitoring, and Investigations Team Update – Keith Pari, SJRWMD
- Public Comment
- Steering Committee Comment
- 2025 Steering Committee Schedule

Overview of 2025 CFWI Regional Water Supply Plan

Callie Register, P.E.
St. Johns River Water Management District
Regional Water Supply Planning Coordinator

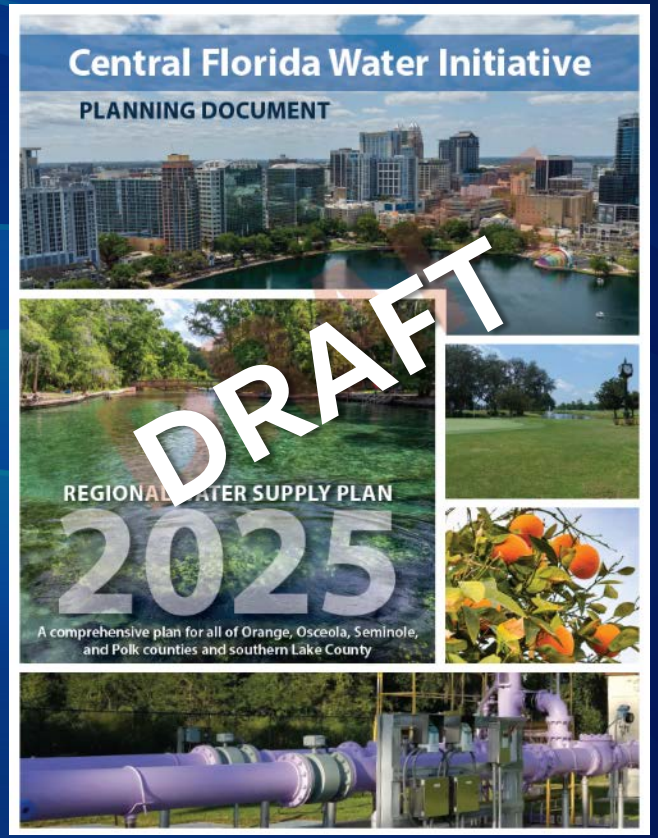
Central Florida Water Initiative Planning Area



- A collaborative water supply planning effort to protect, manage, conserve, and restore Central Florida's water resources
- A comprehensive plan for Orange, Osceola, Polk, Seminole, and southern Lake counties

2025 CFWI Regional Water Supply Plan

- 20-year planning period
- Updated every 5 years
- RWSP Chapters include
  - Progress since 2020 CFWI RWSP
  - Population and Water Demands
  - Water Resource Assessment
  - Water Conservation
  - Water Source Options
  - Water Supply & Water Resource Development
  - Funding Options
  - Conclusions and Recommendations



2025 Process and Objectives

- Updated the:
  - Population and water demand projections
  - Groundwater modeling with the most recent water demand projections
  - Project options and strategies to meet water demands
- Finalize the 2025 CFWI RWSP

CFWI Planning Area Projections

Planning Horizon 2020 – 2045

- Population:
  - 2020 3,383,425
  - 2045 4,741,314

  40% increase

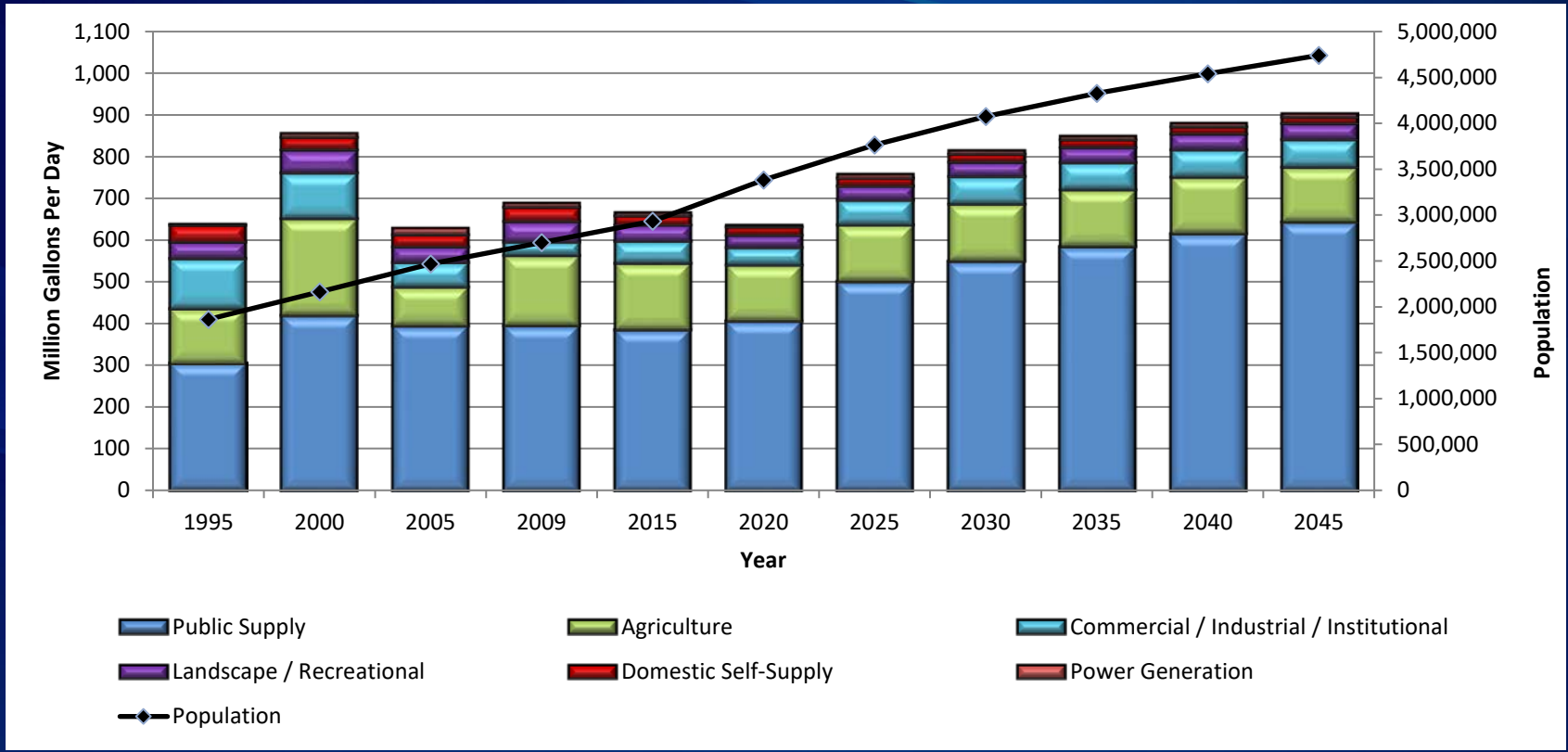
- Irrigated agricultural acreage:
  - 2020 121,686 acres
  - 2045 115,183 acres

  5% decrease

- Total water demands:
  - 2020 639 mgd
  - 2045 903 mgd

  41% increase

Historic Water Use and Projected Water Demand versus Historic Population and Projected Population



1995-2020 is historic data / 2025-2045 is projected data.

Schedule

Public Outreach Meeting	*October 2023*
Technical Methods Public Workshop	*April 2024*
Steering Committee/Public Meeting (with results)	November 2024
Governing Board overview of Draft 2025 CFWI RWSP	February/March 2025
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Public Comment Ends	May 2025
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Final 2025 CFWI RWSP posted to cfwiwater.com	December 2025

Hydrologic Assessment

Peter J. Kwiatkowski, P.G.
South Florida Water Management District
CFWI Hydrologic Assessment Lead

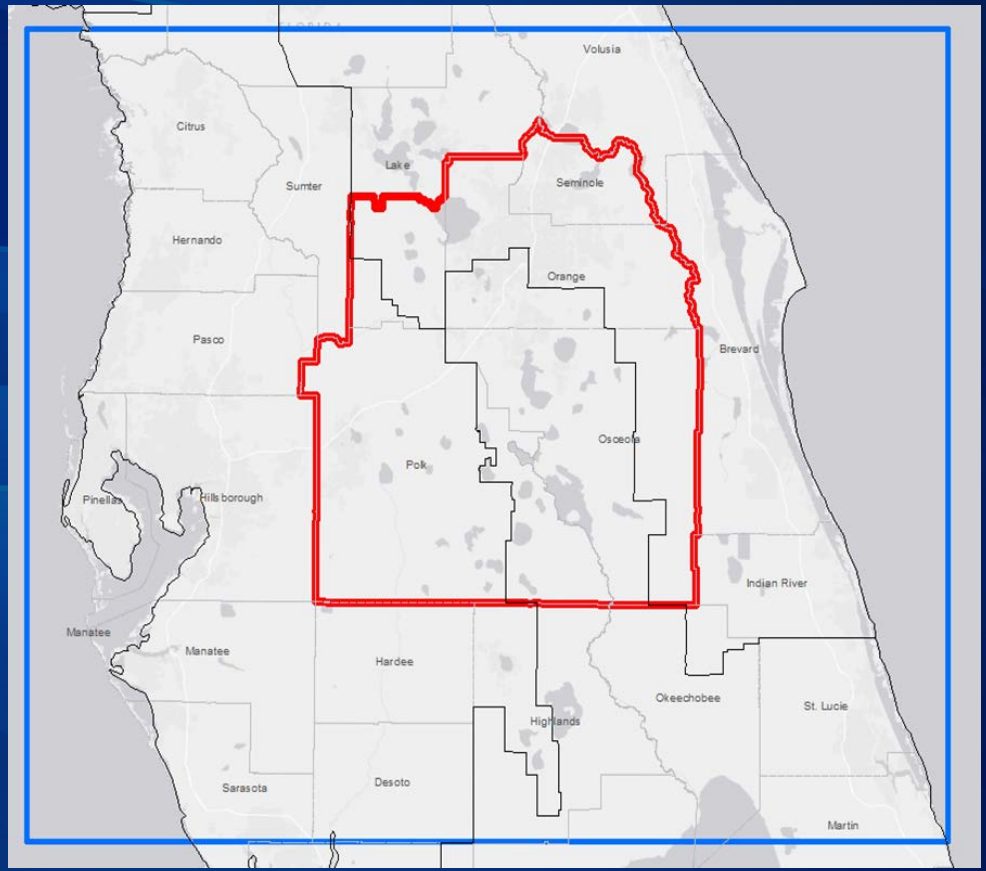
Topics

- East Central Florida Transient Expanded (ECFTX v2.0) Groundwater Flow Model
- Modeling Scenarios
- Model Results

East Central Florida Transient Model Expanded

Purpose: Use a calibrated, peer-reviewed groundwater flow model to:

- Simulate effects of groundwater withdrawals on natural systems, including springs, lakes, wetlands, and aquifers
- Assist in evaluating whether projected water supply demands can be met over the 20-year planning horizon while meeting resource protection criteria



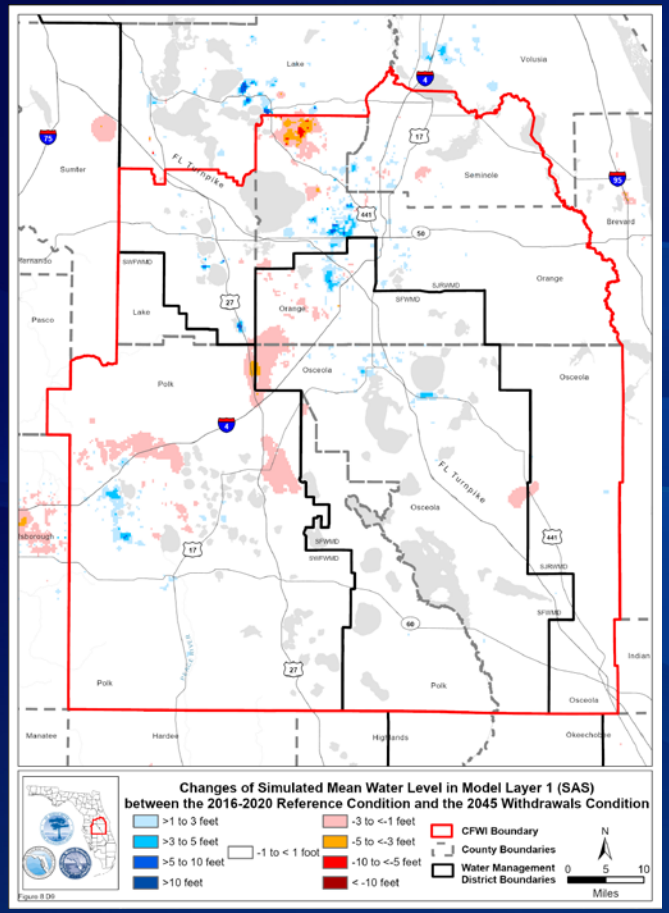
Red line = CFWI Planning Area boundary

Blue line = ECFTX model boundary

Modeling Scenarios

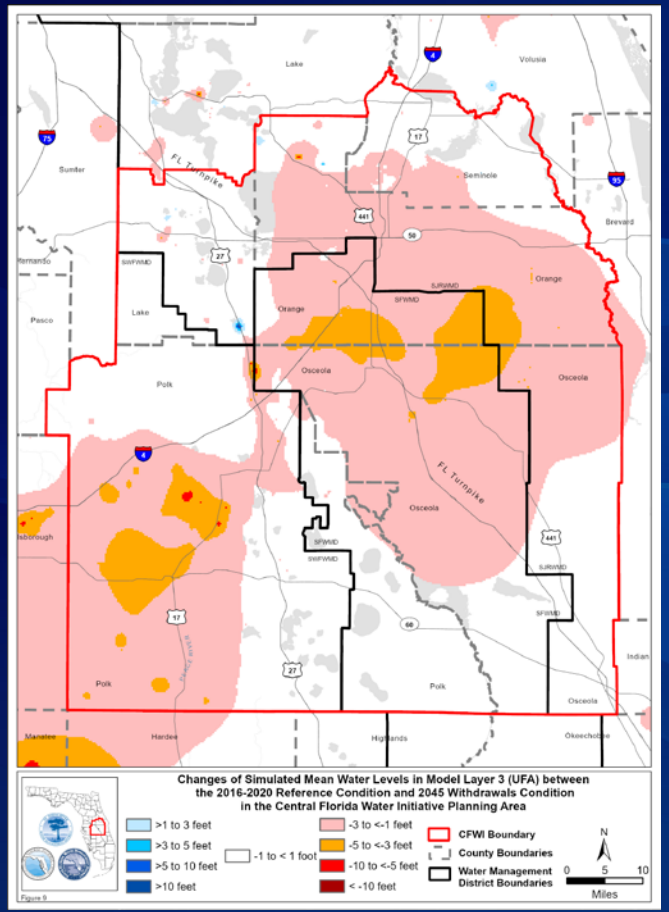
- Calibration and verification from 2003 to 2014
- Scenarios include rainfall from 2003 to 2014 (wet and dry years)
  - Reference Condition (RC)
    - 2016 -2020 average Withdrawals Condition
  - Future Conditions
    - 2025 Withdrawals Condition
    - 2030 Withdrawals Condition
    - 2035 Withdrawals Condition
    - 2040 Withdrawals Condition
    - 2045 Withdrawals Condition
- Compare simulated water levels and flows between reference condition and future condition
- Evaluate effects of groundwater withdrawals on aquifers and natural systems

Surficial Aquifer System (SAS)
2045 Withdrawals Condition Minus 2016-2020 RC



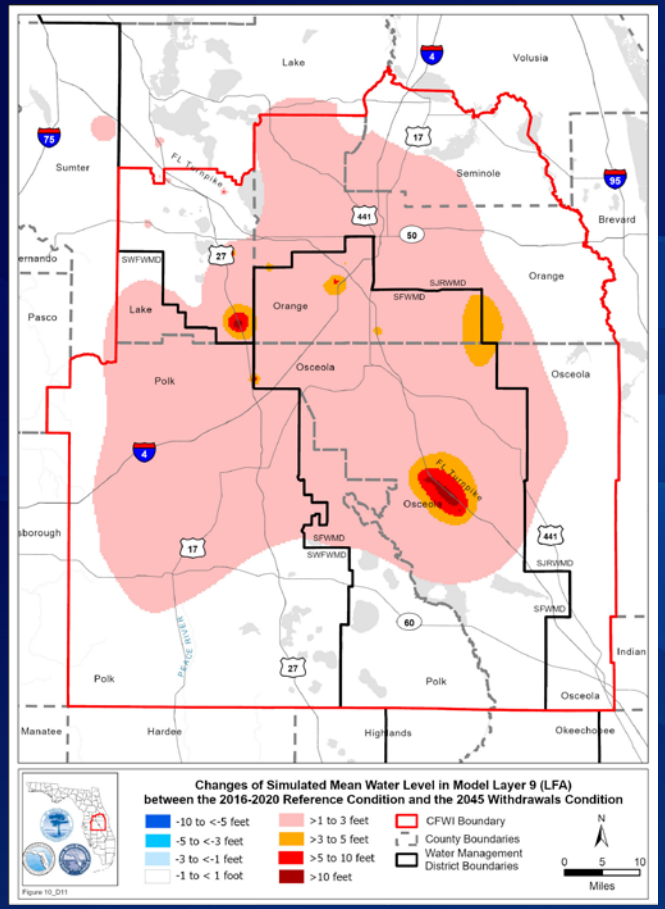
- Most differences in water levels +/- 1 foot
- Differences most pronounced (orange/red) in ridge areas north and south of Lake Apopka
- Increases in water levels (blue) due to return flow to SAS from UFA, LFA, and surface water withdrawals

Upper Floridan Aquifer (UFA)
2045 Withdrawals Condition Minus 2016-2020 RC



- Water level differences most pronounced (-5 to -3 feet) over large areas in north-central Osceola County, south Orange County and southwest Polk County

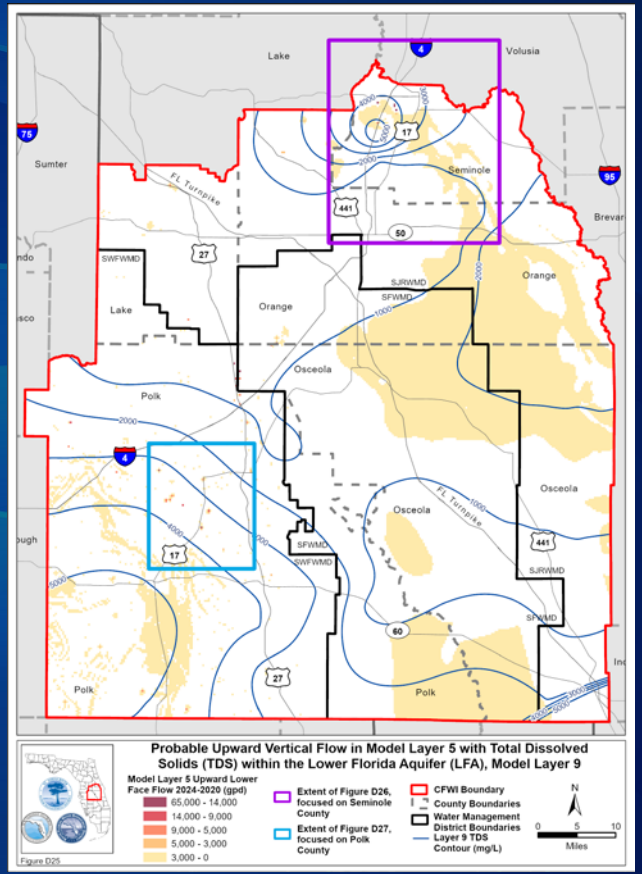
Lower Floridan Aquifer (LFA)
2045 Withdrawals Condition Minus 2016-2020 RC



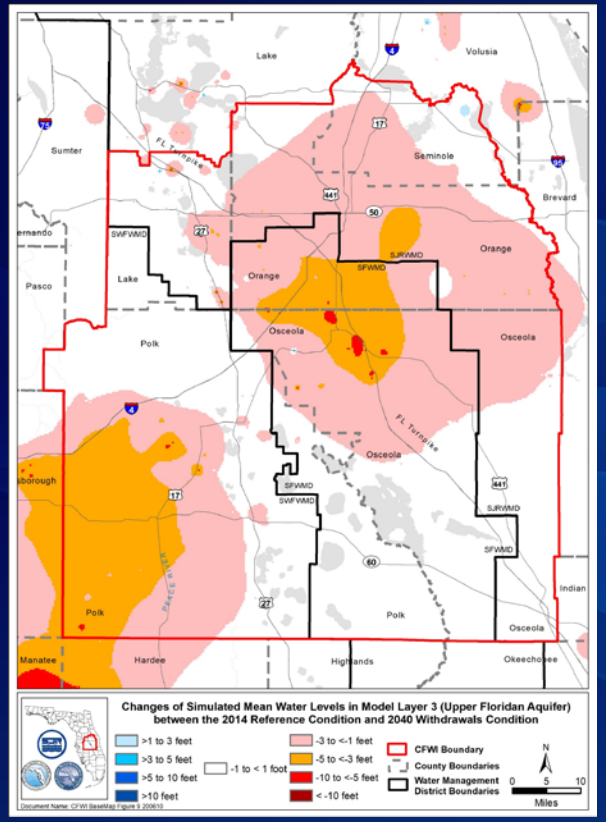
- Differences in LFA water levels of 1 to 3 feet are widely dispersed
- South-central Orange and north-central Osceola counties have water level differences of 3 to 5 feet
- The largest differences (greater than 10 feet) are in southeast Lake County and in Osceola County at Toho Water Authority's Cypress Lake LFA wellfield

Upconing Evaluation
2045 Withdrawals Condition Minus 2016-2020 RC

- Purpose: Evaluate if brackish groundwater from the underlying LFA can move upward into the overlying UFA due to pumping stress of 2045 Withdrawals Condition
- Approach: Identify areas with upward flow gradients and elevated total dissolved solids (TDS) concentrations in LFA groundwater
- Results: Some areas in northern Seminole and northern Polk Counties meet this condition

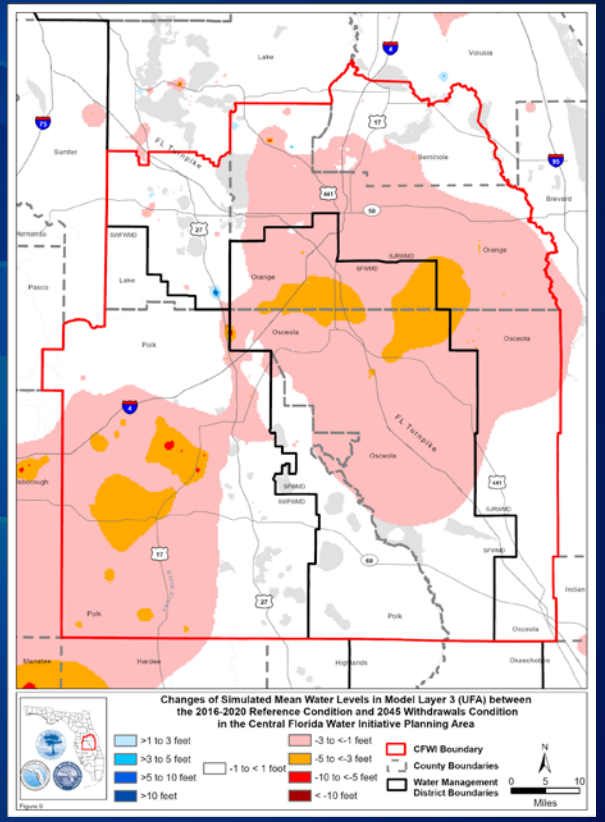


How Do the Model Results Between the 2020 and 2025 CFWI RWSP Compare?



2040 Withdrawals Condition Minus 2014 RC in UFA

Comparing results of the modeling that supported the 2020 vs 2025 CFWI RWSPs, we see similar magnitudes and locations of drawdowns.



2045 Withdrawals Condition Minus 2016-2020 RC in UFA

Minimum Flows and Minimum Water Levels

Andrew Sutherland, PhD
St. Johns River Water Management District
Minimum Flows and Levels and Reservations Lead

Minimum Flows and Minimum Water Levels (MFLs)

Water management districts or the Florida Department of Environmental Protection must establish minimum flows and levels (MFLs) that set the limit or level…

"…at which further withdrawals would be significantly harmful to the water resources or ecology of the area."

from Subsection 373.042(1), Florida Statutes

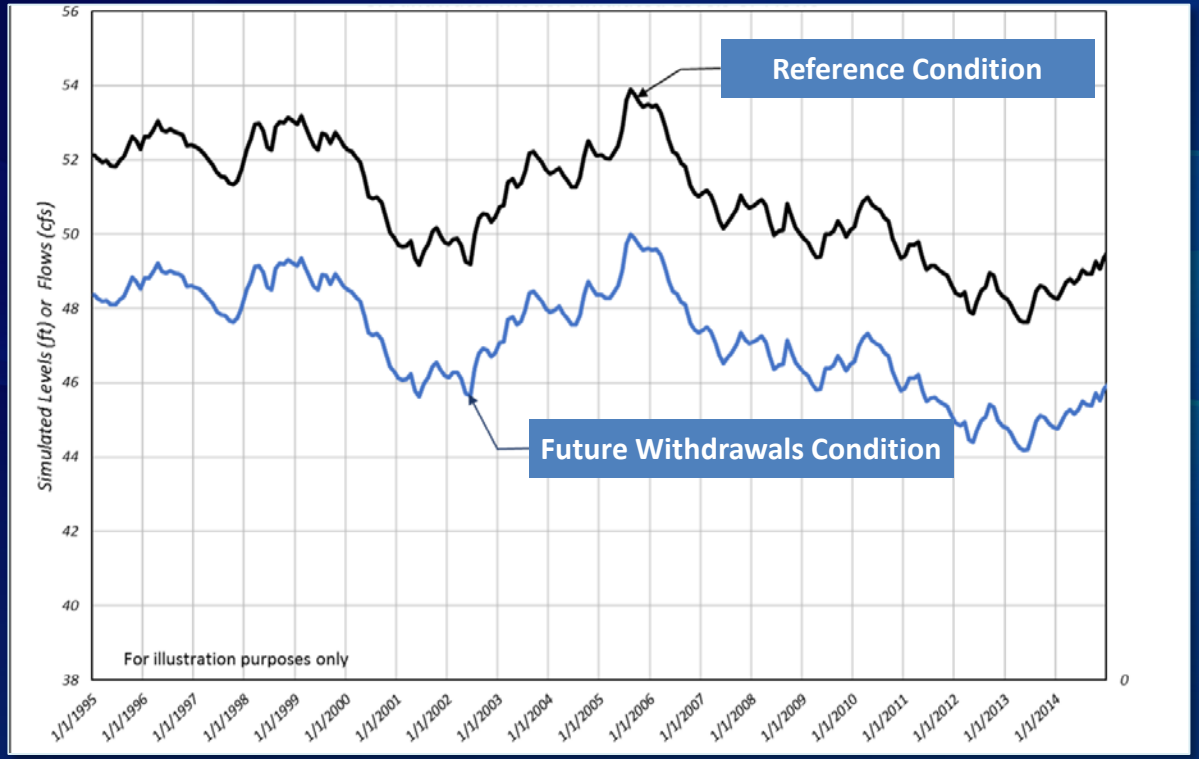
MFLs are tools for…

- Water use permitting
- Water supply planning

MFLs Environmental Criteria Data/Tools/Methods

- Data
  - MFLs environmental criteria
    - Adopted MFLs for lakes, springs, and rivers
    - As available, additional new or revised MFLs
    - Regulatory well target water levels for lake and river MFLs
  - Surface water levels/flows, well water levels, rainfall, evapotranspiration, and other hydrologic data
  - ECFTX model output (UFA levels and flows)
- Tools/Methods
  - ECFTX model output and water budget models used to determine effects of groundwater level changes on MFLs environmental criteria

Site-specific Predicted Changes in Upper Floridan Aquifer Water Levels

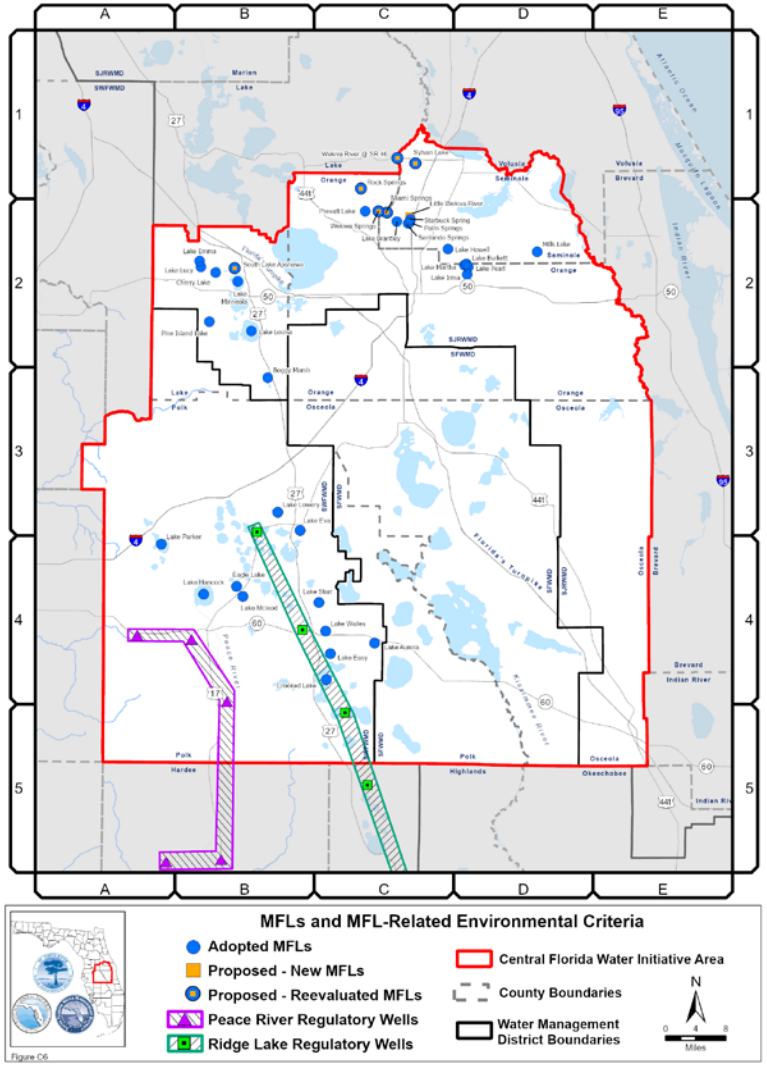


Example: Predicted UFA water levels in a well near a lake

- Water level differences represent UFA change
- UFA change linked to surface water change with water budget models

Freeboard/Deficit Expression for MFLs Environmental Criteria

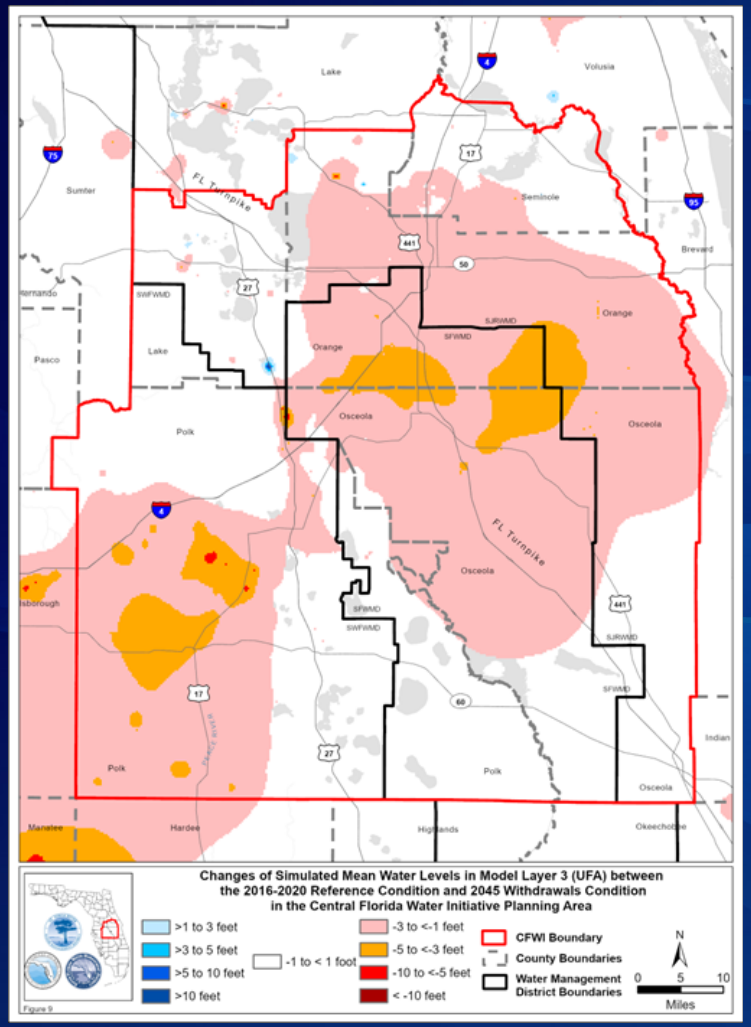
- Freeboard/deficits expressed in cubic feet per second for river and spring MFLs
- Freeboard/deficit expressed in feet for lake and groundwater MFLs, as well as regulatory wells associated with an MFLs recovery strategy



MFLs and MFL-Related Environmental Criteria

38 criteria were considered most appropriate for assessing potential impacts due to groundwater withdrawals:

- Adopted MFLs in the CFWI Planning Area: 26 lakes and wetlands
- 1 target regulatory water level based on Upper Peace River Regulatory Wells for SWUCA recovery
- 1 target regulatory water level based on Ridge Lakes Regulatory Wells for SWUCA recovery
- Peer reviewed but not yet adopted MFLs for 10 water bodies: 1 new river segment and reevaluated MFLs for 1 river segment, 6 springs, and 2 lakes



Change in UFA Water Levels based on the ECFTX v2.0

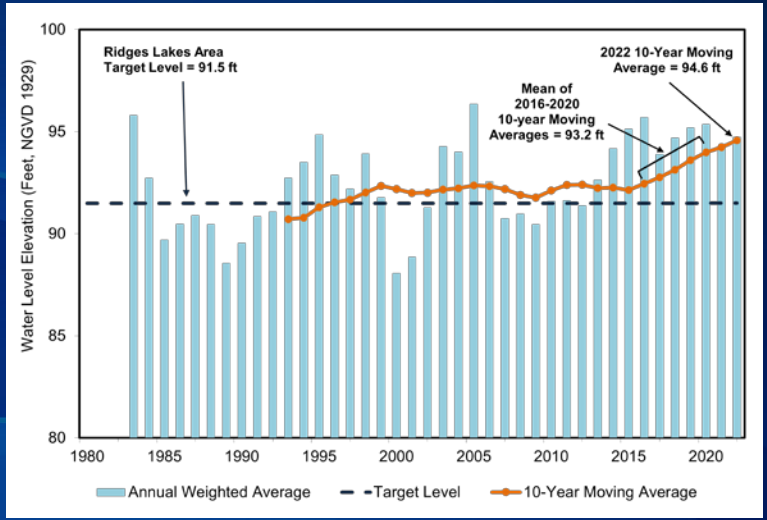
Predicted change from the 2016–2020 RC to 2045 Withdrawals Condition

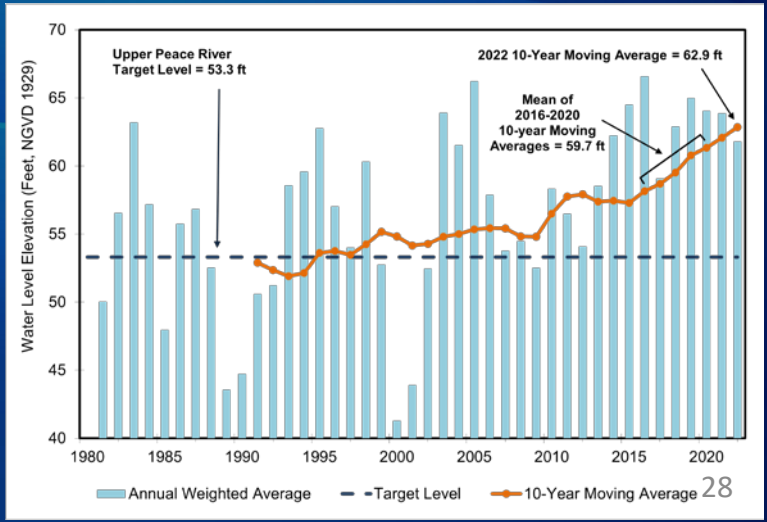
Ridge Lakes & Upper Peace River Regulatory Wells

- Ridge Lakes (upper plot) and Upper Peace River (lower plot) regulatory well target levels are also assessed using 10-year moving average UFA levels for respective sets of five wells.

- Used the average of 2016-2020 10-year moving average values to characterize UFA water level → both targets met

- Decreases in simulated UFA water levels between 2016-2020 RC and 2045 Withdrawals Condition (& other withdrawals conditions) then subtracted from the respective target value and status characterized → both targets met for future withdrawals conditions





Status Results for 38 MFLs/MFL-Related Environmental Criteria

2016-2020 RC not met

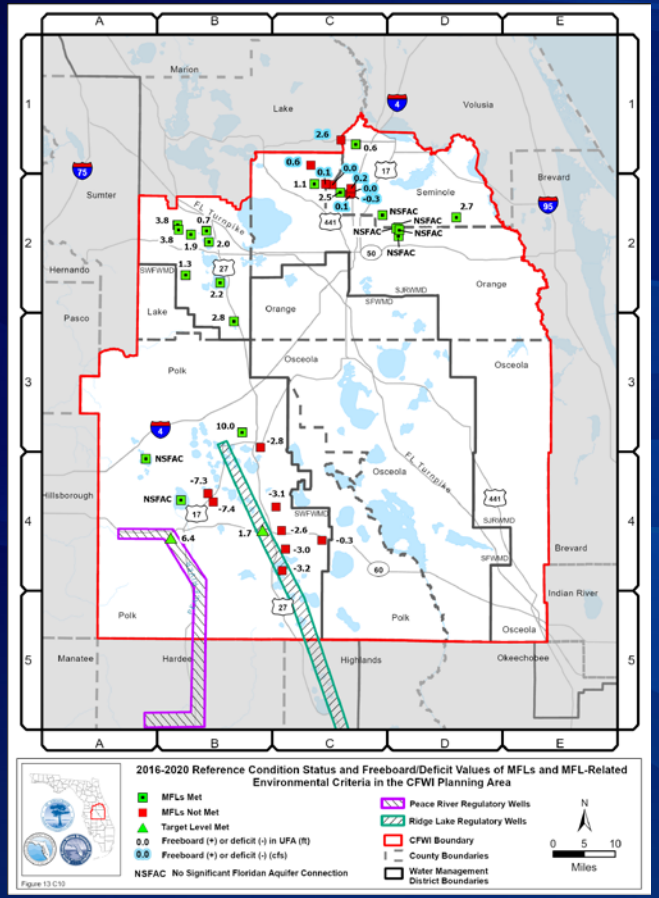
- Lakes Aurora, Crooked, Eagle, Easy, Eva, McLeod, Starr, and Wailes
- Little Wekiva River and Wekiva River at SR46
- Miami, Palm, Rock, Sanlando, Starbuck, and Wekiwa Springs

2045 Withdrawals Condition not met

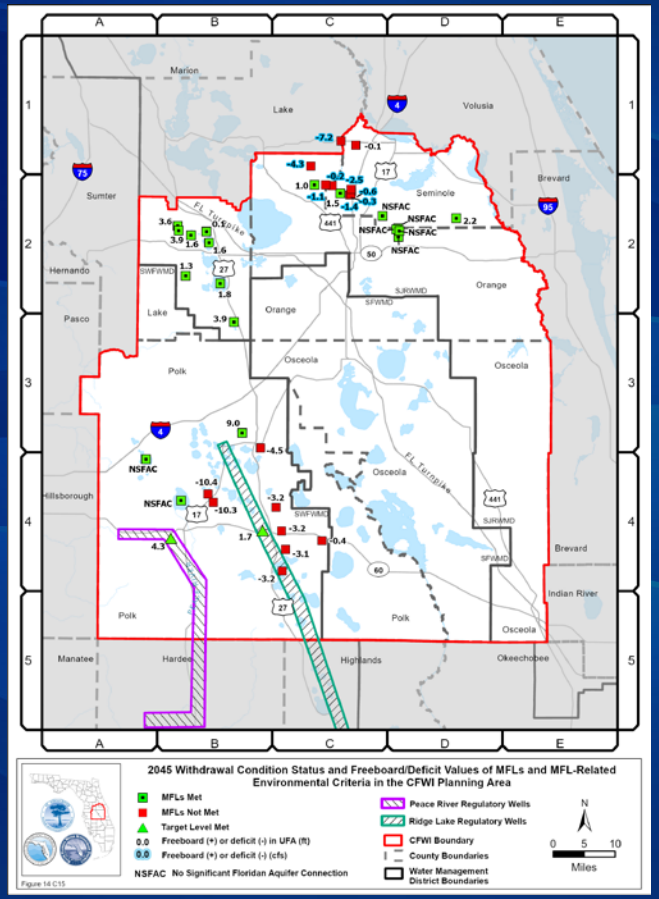
- Same as 2016-2020 RC + Sylvan Lake

MFLs and MFL-Related Environmental Criteria	ECFTXv2.0 Modeled Withdrawals Conditions					
	2016-2020 Reference Condition	2025 Withdrawals Condition	2030 Withdrawals Condition	2035 Withdrawals Condition	2040 Withdrawals Condition	2045 Withdrawals Condition
Number Met	22	22	22	22	22	21
Number Not Met	16	16	16	16	16	17

MFL Status: 2016-2020 RC to 2045 Withdrawals Condition



2016-2020 Reference Condition



2045 Withdrawals Condition

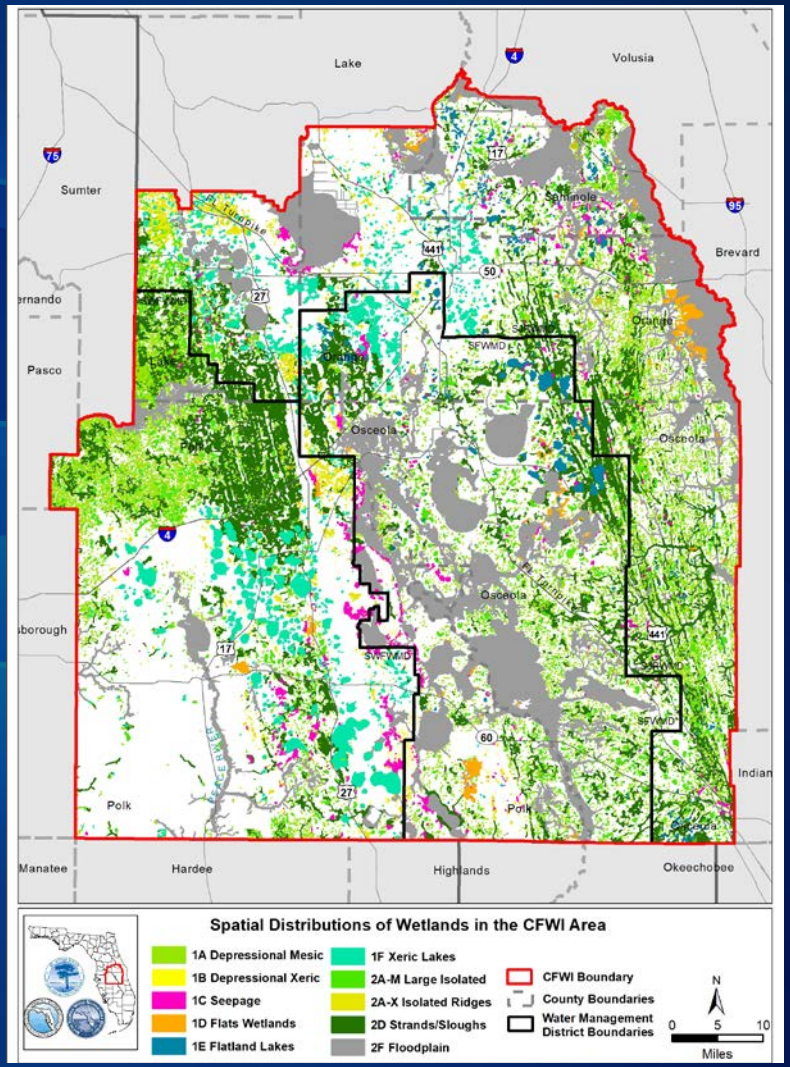
- Green symbols indicate criteria met
- Red symbols indicate criteria not met
- 1 system changed status: Sylvan Lake

Environmental Measures

Kym Rouse Holzwart
Southwest Florida Water Management District
Environmental Measures Lead

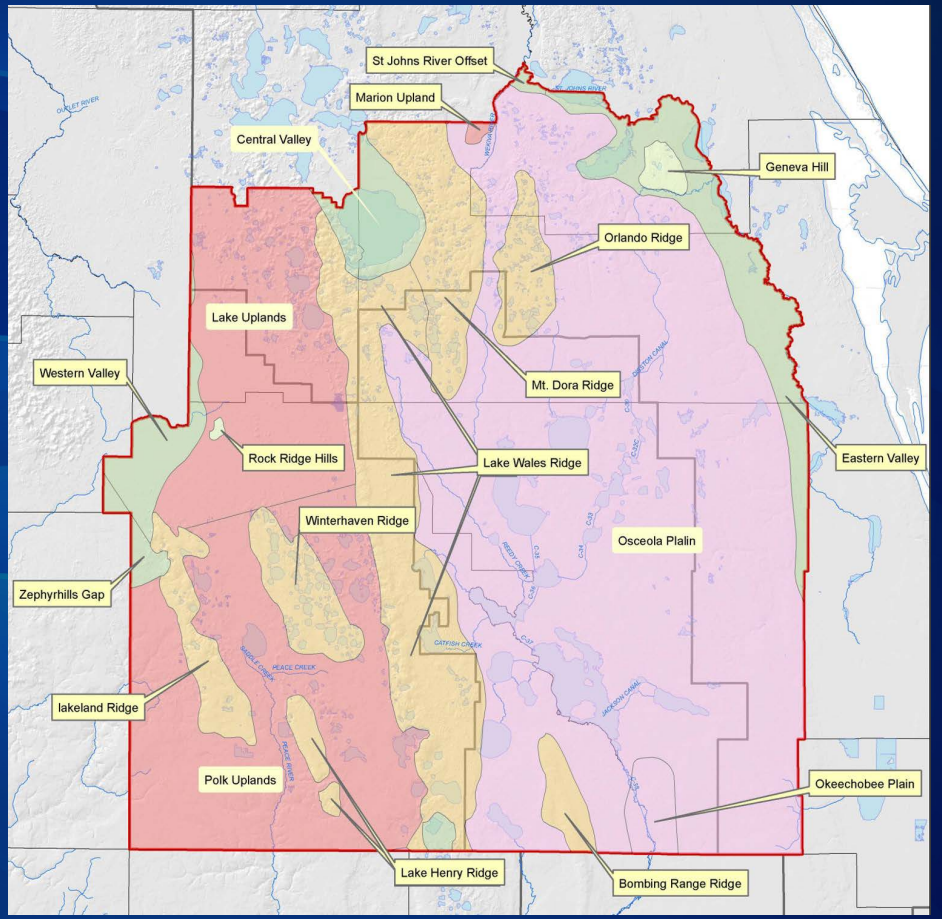
Wetlands in CFWI Planning Area

- >1 million acres
- Focus on groundwater-dominated wetlands
- Sensitive to groundwater withdrawals



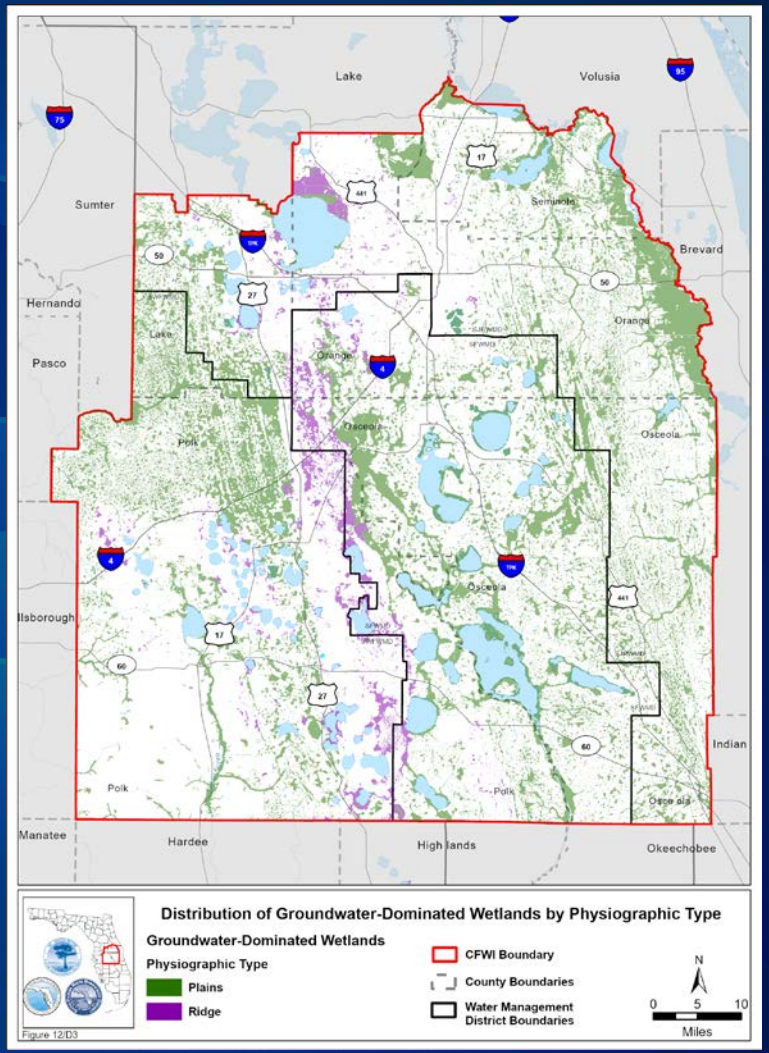
Groundwater-Dominated Wetlands

- Plains settings
  - Typically confined
  - Little exchange between SAS and UFA
- Ridge settings
  - Less confined, leaky
  - Conditions vary considerably



Wetlands in CFWI Planning Area

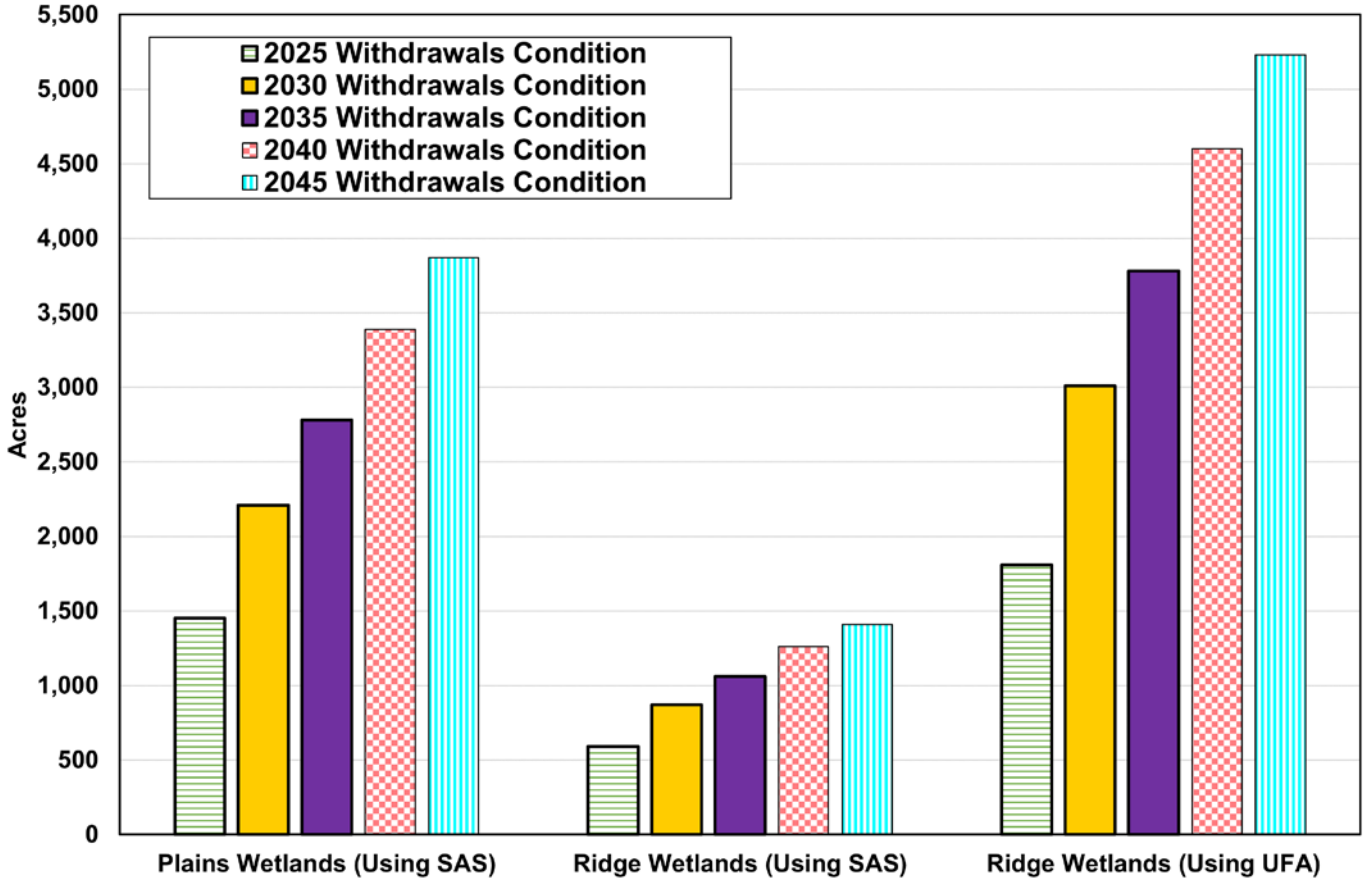
- About 442,300 acres included in analysis
- 382,850 acres of Plains wetlands
- 59,440 acres of Ridge wetlands



Wetlands Risk Assessment Results

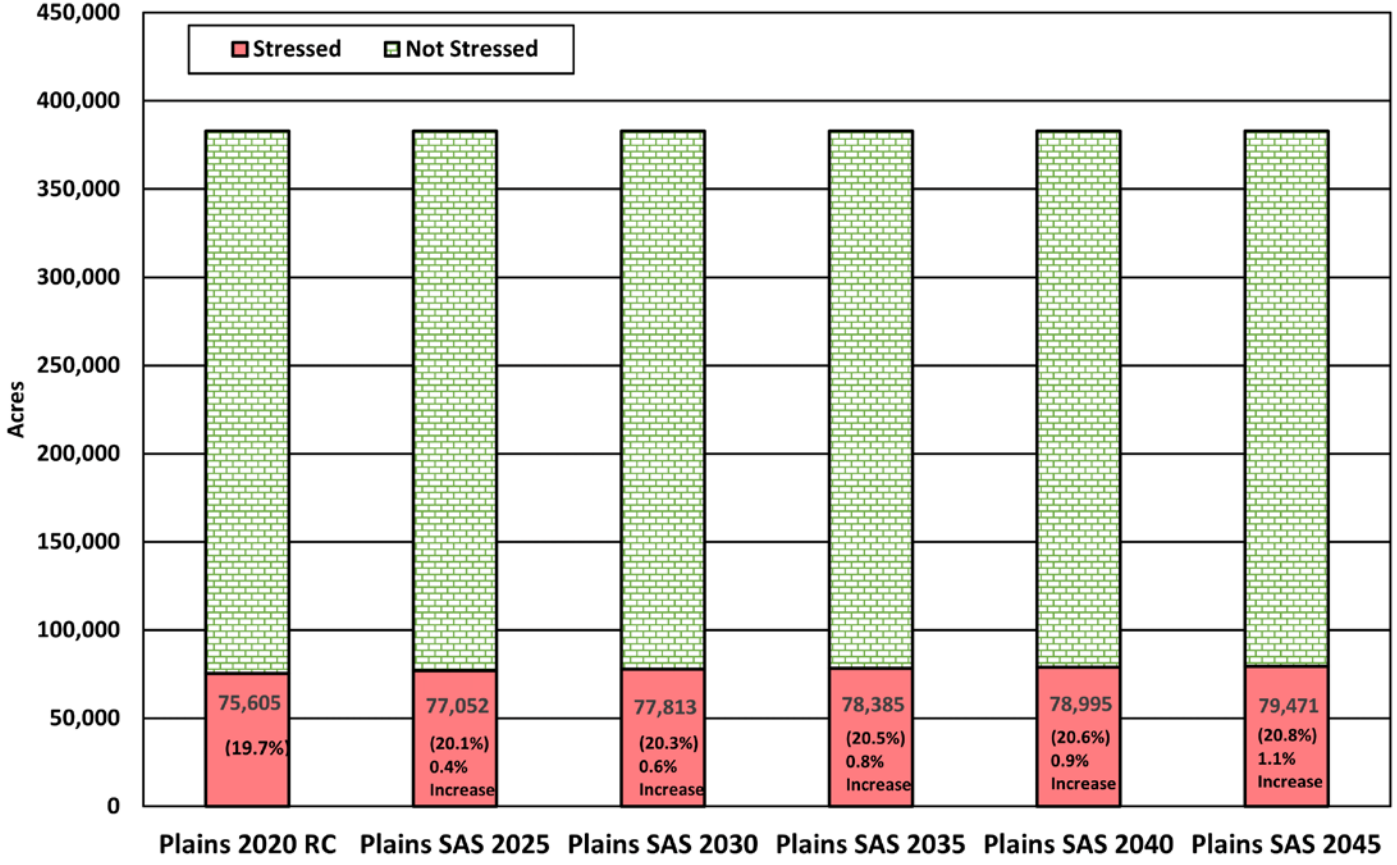
Wetlands Class	Total Acres	Acres of Stressed Wetlands for the 2016-2020 RC	Probable Increase in Acres of Stressed Wetlands				
			From RC to 2025 Withdrawals Condition	From RC to 2030 Withdrawals Condition	From RC to 2035 Withdrawals Condition	From RC to 2040 Withdrawals Condition	From RC to 2045 Withdrawals Condition
Surficial aquifer system (Model Layer 1)							
Plains	382,850	75,600	1,450	2,210	2,780	3,390	3,870
Ridge	59,440	14,940	590	870	1,060	1,260	1,410
Upper Floridan aquifer (Model Layer 3)							
Ridge	59,440	14,940	1,810	3,010	3,780	4,600	5,230

Probable Net Increase in Stressed Wetland Acres



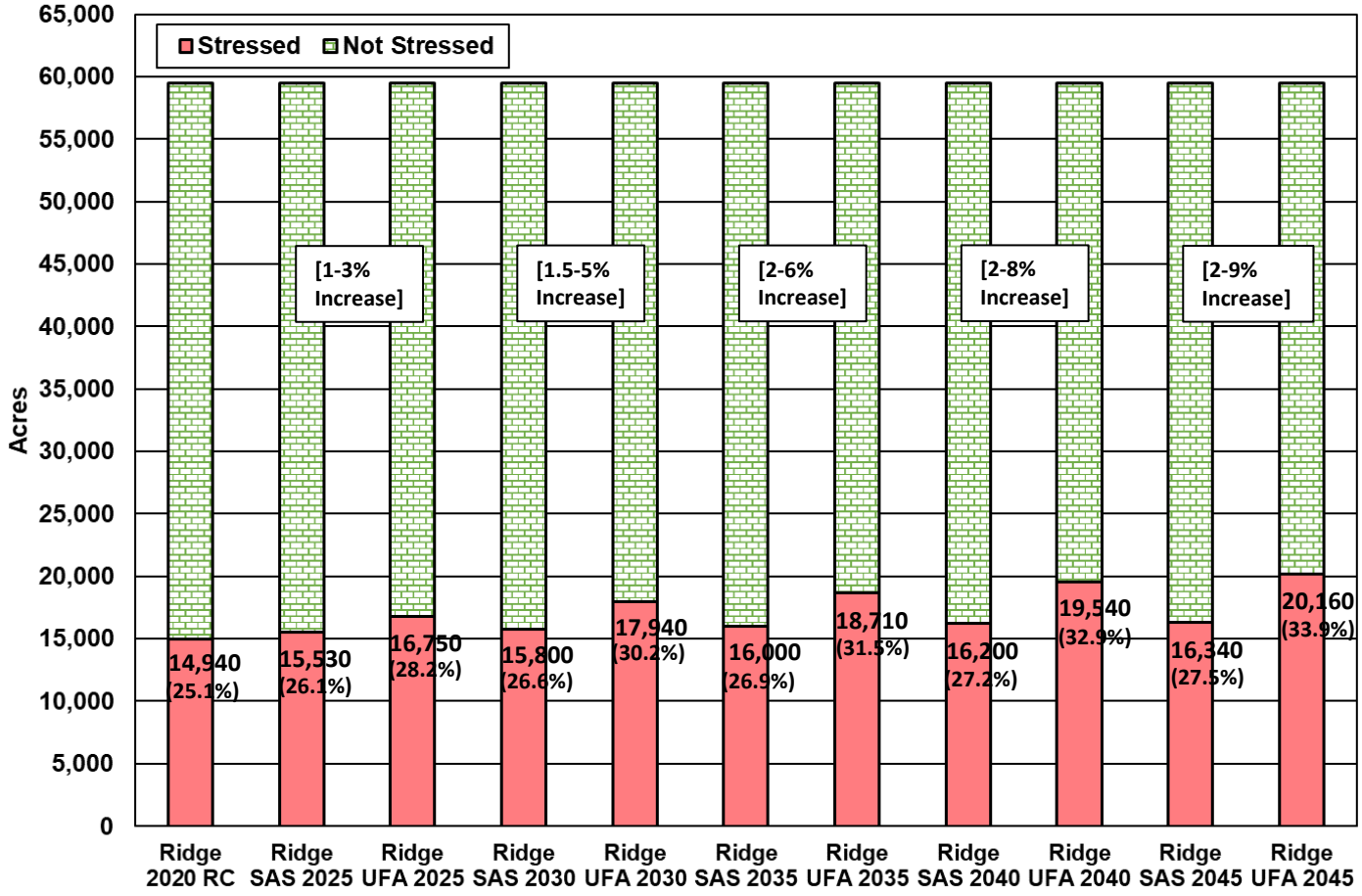
SAS = Surficial Aquifer System, UFA = Upper Floridan Aquifer

Probable Stressed and Not Stressed Plains Wetland Acres for the 2016-2020 RC and 2025, 2030, 2035, 2040, and 2045 Withdrawals Conditions

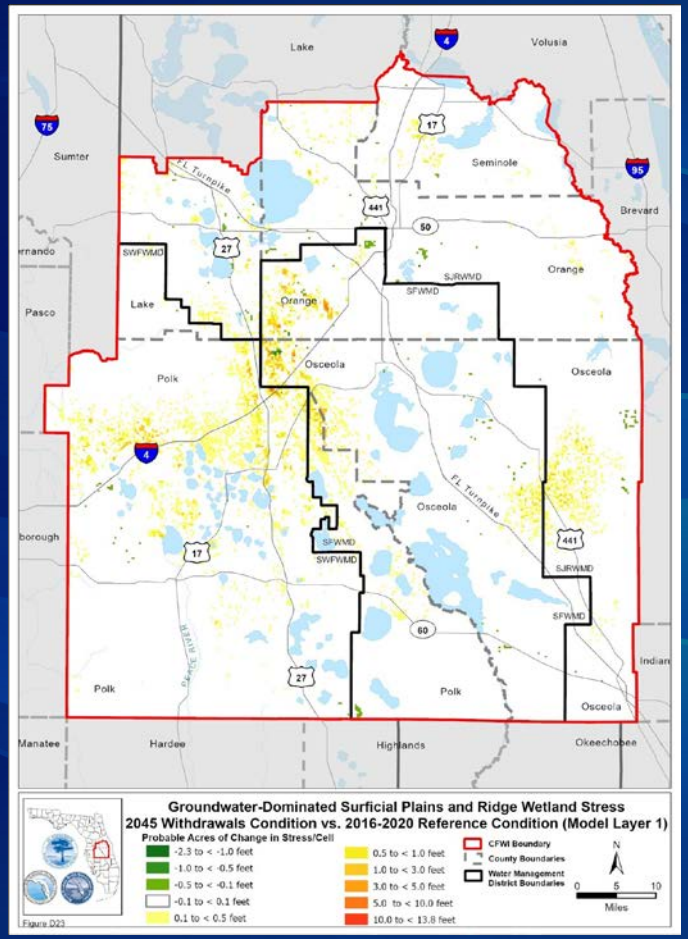


RC = Reference Condition, SAS = Surficial Aquifer System

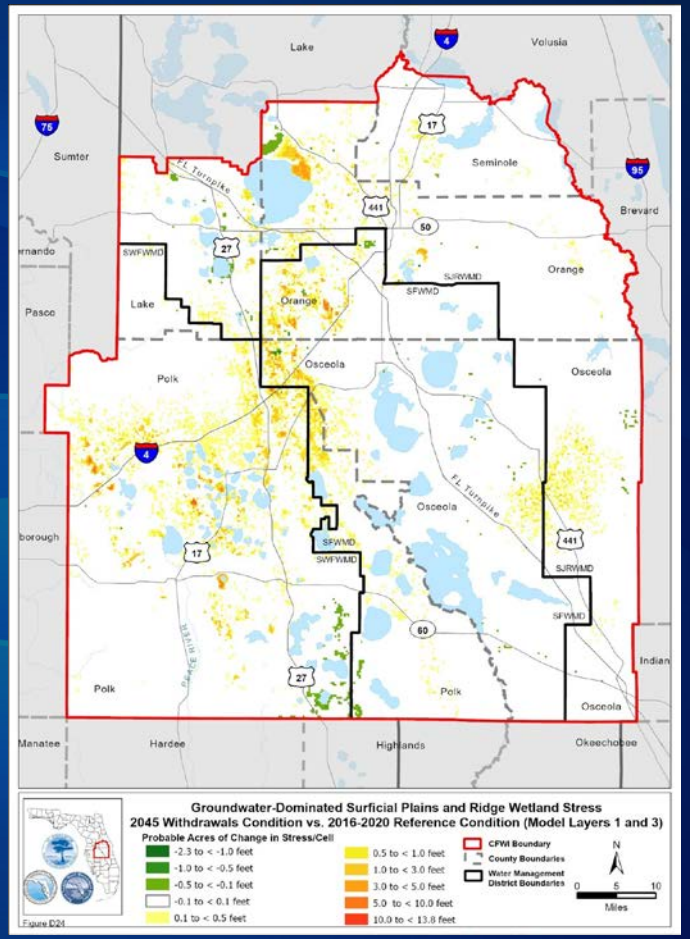
Probable Stressed and Not Stressed Ridge Wetland Acres for the 2020 RC and the 2025, 2030, 2035, 2040, and 2045 Withdrawals Conditions



Comparison of Probable Stressed Wetland Acres, 2016-2020 RC and 2045 Withdrawals Conditions



Model Layer 1 (SAS), Plains and Ridge



Model Layer 1 (SAS), Plains and Model Layer 3 (UFA), Ridge

CFWI Steering Committee and Public Meeting

November 19, 2024

Meeting Will Resume Shortly

Data, Monitoring, and Investigations Team (DMIT) Update

Keith Pari
St. Johns River Water Management District
Hydrologist IV

Goal of DMIT

"Ensure that available hydrologic, environmental, and other pertinent data collected throughout the region are identified, inventoried, and accessible to support the CFWI technical initiatives and CFWI regulatory activities."

DMIT History

- CFWI Regional Monitoring Program: Summary Report (June 2014) was accepted
- Steering Committee provided additional guidance
- Initial Workplan began in 2015 (DMIT Hydrogeologic work plan for FY2015-FY2020)
- The work plan was updated annually
- DMIT Hydrogeologic Annual Work Plan (FY2020-FY2025) with FY2021 as the final update
- DMIT Staff updates Site Status Tables annually
- Site Status Maps also maintained and updated

Monitoring Sites

- Wetland and associated Surficial Aquifer System (SAS) Wells
- Surficial and Intermediate Aquifer Wells
- Upper Floridan aquifer (UFA) Wells
- Lower Floridan aquifer (LFA) Wells
- Water Quality Sites
- Atmospheric Monitor Sites

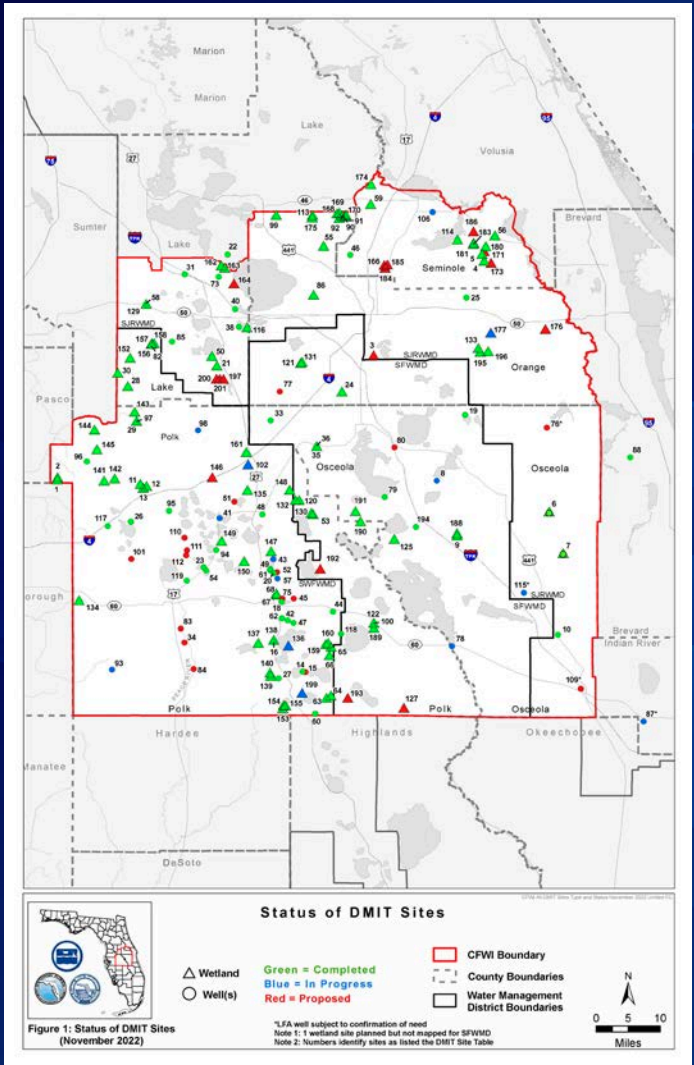
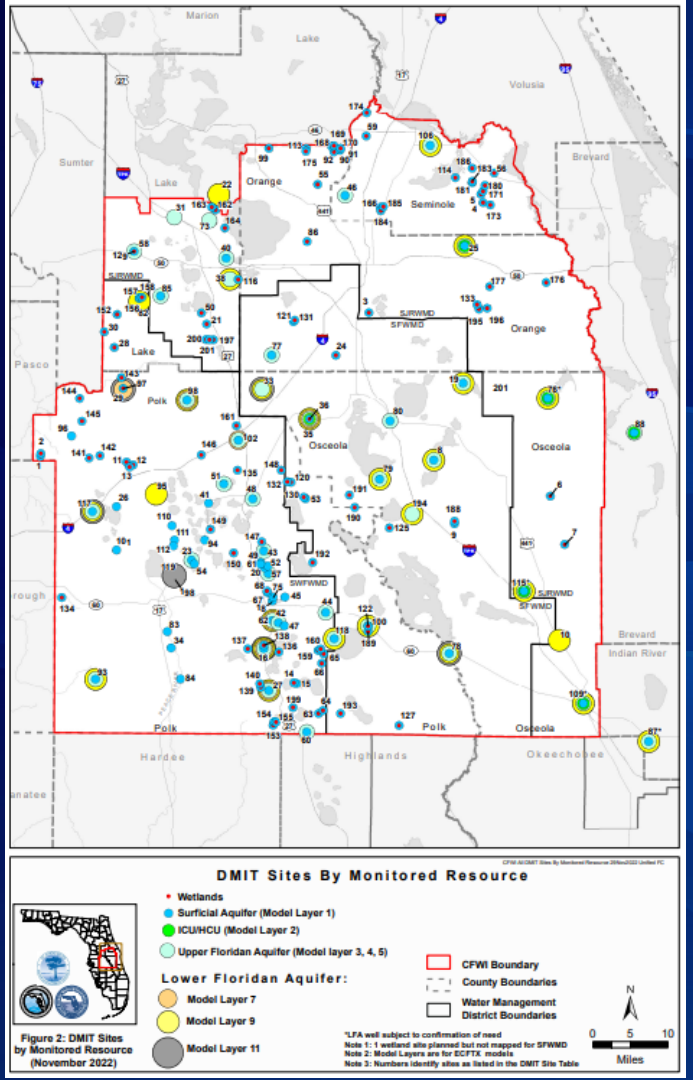


Figure 1: Status of DMIT Sites (November 2022)

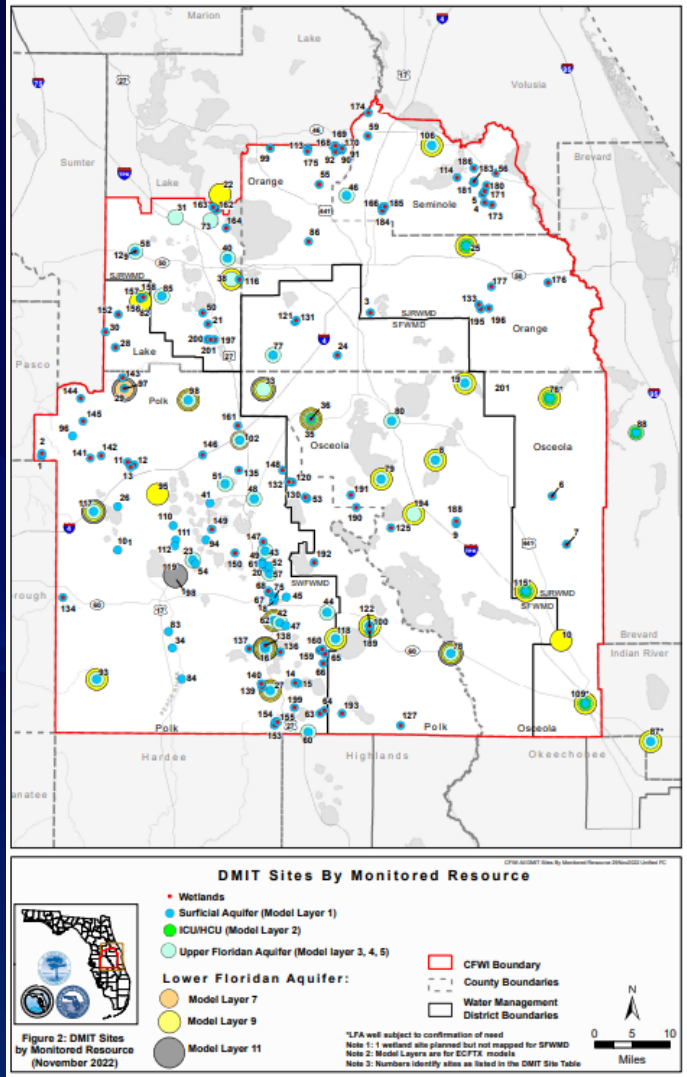
Monitor Site Status

- Green symbols indicate completed
- Blue symbols indicate in progress
- Red symbols indicate proposed



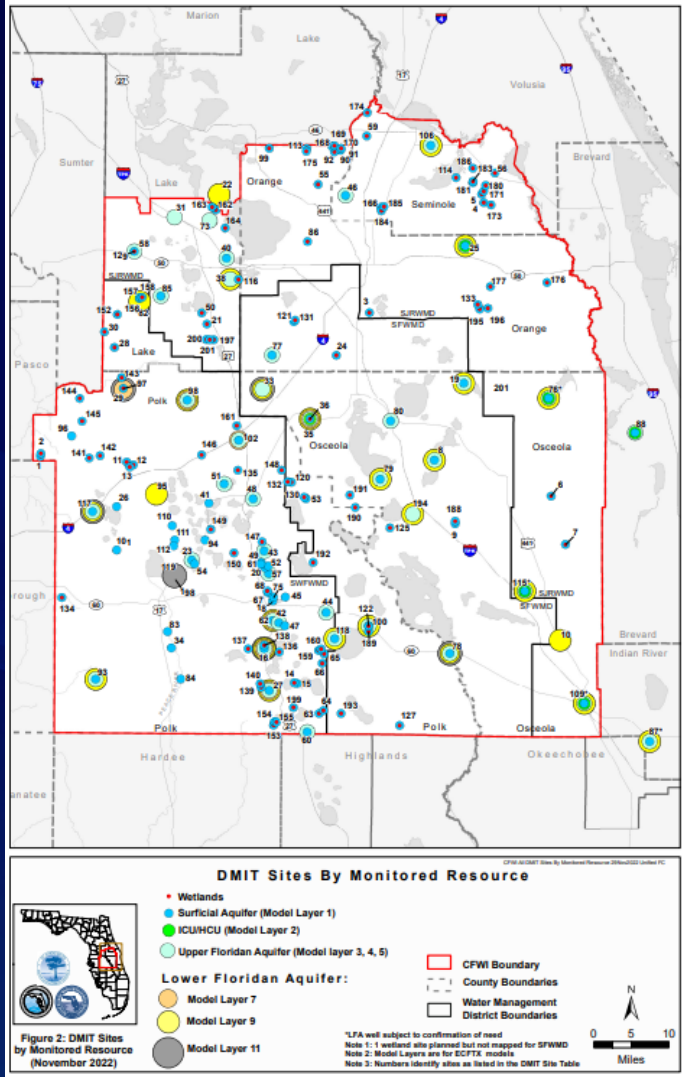
Wetland and Associated Surficial Aquifer Wells

- Project Target is 104 Wetland Sites with 85 completed.
- Project Target is 84 for the associated SAS Wells with 66 completed.



Surficial and Intermediate Aquifer Wells

- Project Target is 53 SAS/IA Wells with 38 completed.
- Additional locations potentially to be constructed in FY2024-FY2025 and beyond upon evaluation.

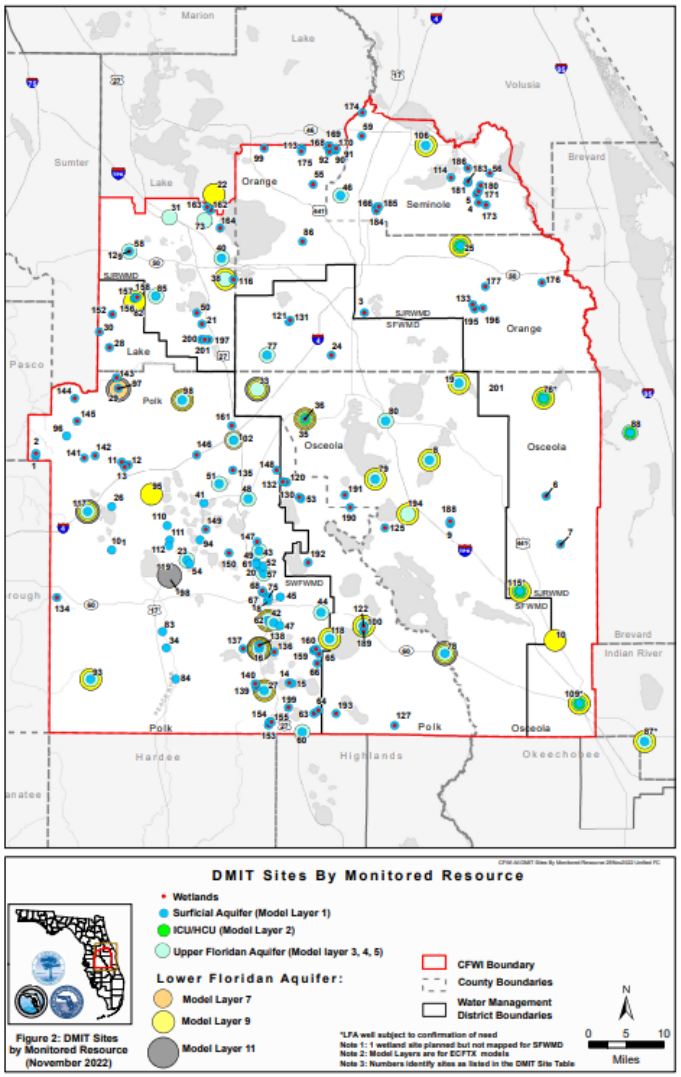


Upper Floridan Aquifer Wells

- Project Target is 47 UFA Wells with 38 completed.
- Additional locations to be constructed in FY2024-FY2025 and beyond upon evaluation.

Lower Floridan Aquifer Wells

- Project target is 36 LFA wells with 29 completed.
- Additional locations to be constructed in FY2024-FY2025 and beyond upon evaluation.



Future DMIT Actions

- Conduct a focused re-evaluation of existing and proposed wells.
- Develop an amended DMIT proposed sites based on the re-evaluation.
- Extend the DMIT construction phase for an additional five years (FY2025-FY2030).

Re-evaluation

- Original DMIT work plan was developed after an extensive evaluation to identify data gaps to be filled with new wells.
- Original gap analysis was completed 10+ years ago.
- Since then, many of the wells proposed in that workplan have been constructed. In addition, many other wells have been completed by outside entities (e.g. utilities).
- A newly focused re-evaluation would:
  - Use all available data to update the CFWI hydrostratigraphy to support updated model layering in a future version of the ECFTX model
  - Produce an amended DMIT proposed sites list to fill remaining data gaps, pending funding approval

Amend DMIT Proposed Sites

- Amend the proposed sites based on the re-evaluation findings.
- Floridan wells (higher cost) will be a top focus in the amendment, although surficial wells/wetlands will be included as well.

Extended Construction Phase

- Current DMIT construction phase ends in FY2025.
- Extend DMIT construction phase for an additional 5 years (FY2025-FY2030).
- Wells identified in the amended DMIT proposed sites will be installed during this period, pending funding approval.
- At the end of the construction phase, DMIT will continue long term monitoring and evaluation of the related data.

Public Comments

- If you are participating via Zoom, use the Raise Hand feature under Reactions
- If you are participating via phone:
  - *9 Raises Hand
  - *6 Mutes/Unmutes

Steering Committee Comment

Steering Committee Schedule

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End

Additional information can be found at:

cfwiwater.com