SOUTH FLORIDA WATER MANAGEMENT DISTRICT

WELCOME

Robert Shuford
Lead Scientist
Everglades and Estuaries Protection Bureau

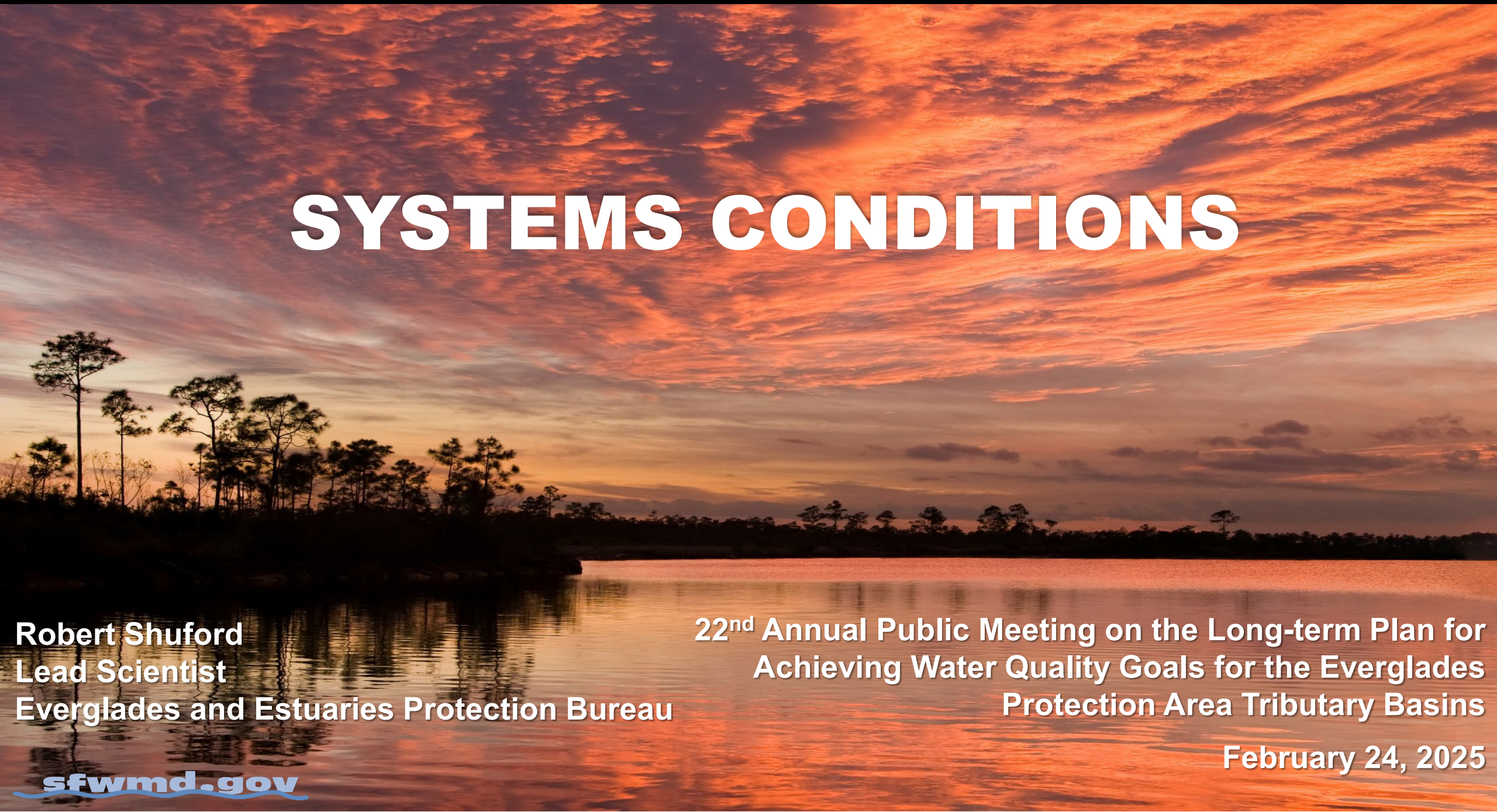
22nd Annual Public Meeting on the Long-term Plan for Achieving Water Quality Goals for the Everglades Protection Area Tributary Basins

February 24, 2025

sfwmd.gov

AGENDA

1. **Welcome and Introduction** *Robert Shuford, Everglades and Estuaries Protection Bureau*	**9:00**
2. **System Conditions** *Robert Shuford, Everglades and Estuaries Protection Bureau*	**9: 05**
3. **Everglades Stormwater Treatment Areas Performance Update** *Jacob Dombrowski, Applied Sciences Bureau*	**9:25**
4. **STA Vegetation Management and Enhancement** *Eric Crawford, Land Resources Bureau*	**9:45**
5. **Restoration Strategies Science Plan Update Results and Management Considerations** *Tom James, Ph.D., and Jill King, Applied Sciences Bureau*	**10:05**
6. **Restoration Strategies: Design and Construction Update** *Alexis San-Miguel, Engineering and Construction Bureau*	**10:50**
7. **SFWMD Southern Everglades Nutrient Source Control Program Update** *Stephanie Nevadunsky, Everglades and Estuaries Protection Bureau*	**11:10**
8. **Public Use on SFWMD Stormwater Treatment Areas** *James Harbaugh, Land Resources Bureau*	**11:30**
9. **Public Comment**	**11:50**



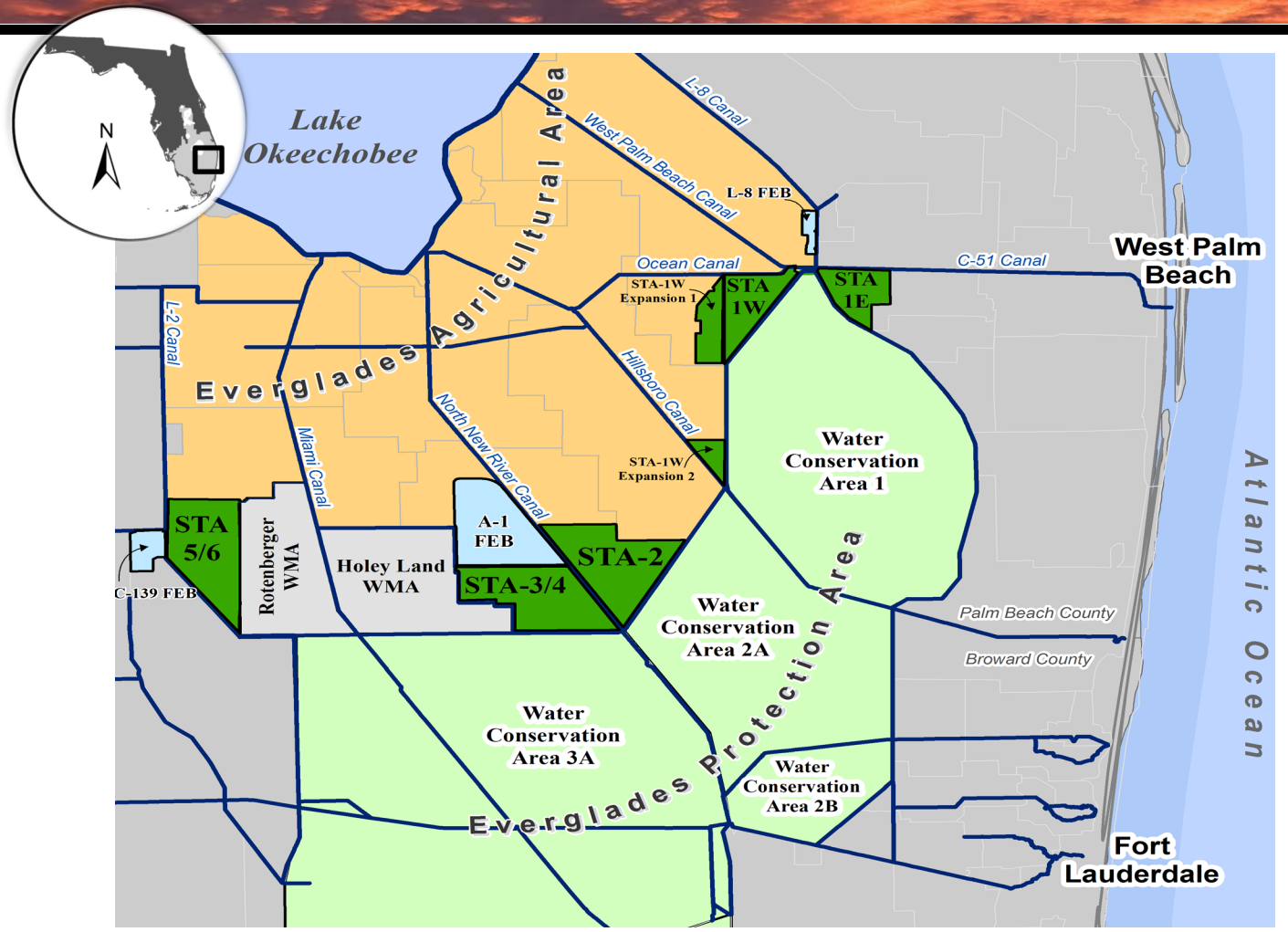
SYSTEMS CONDITIONS

Robert Shuford
Lead Scientist
Everglades and Estuaries Protection Bureau

22nd Annual Public Meeting on the Long-term Plan for Achieving Water Quality Goals for the Everglades Protection Area Tributary Basins

February 24, 2025

RESTORATION STRATEGIES



STAs = 64,000 acres
FEBs = 116,000 ac-ft

Presenter: Robert Shuford

RESTORATION STRATEGIES

EASTERN FLOW PATH

STA-1W Expansion #2 (100864) — COMPLETE

Activity	Deadline	
Complete land acquisition	3/31/2018	✓
Initiate design	10/1/2018	✓
Submit state and federal permit applications	8/1/2019	✓
Complete design	7/31/2020	✓
Initiate construction	11/30/2020	✓
Construction status report	3/1/2021	✓
Construction status report	3/1/2022	✓
Complete construction	12/31/2022	✓
Initial flooding and optimization period complete	12/31/2024	✓

STA-1W Expansion #1 (100818) — COMPLETE

Activity	Deadline	
Complete land acquisition	9/30/2013	✓
Initiate design	9/30/2013	✓
Submit state and federal permit applications	7/30/2014	✓
Complete design	7/30/2015	✓
Initiate construction	1/31/2016	✓
Construction status report	3/1/2017	✓
Construction status report	3/1/2018	✓
Complete construction	12/31/2018	✓
Initial flooding and optimization period complete	12/31/2020	✓

STA-1E Repairs and Modifications — COMPLETE

Activity	Deadline	
PSTA Decommissioning complete	12/31/2022	✓
Culvert repairs complete	12/31/2022	✓
Cell 5 and 7 improvements complete	12/31/2022	✓

L-8 FEB (100813) — COMPLETE

Activity	Deadline	
Submit state and federal permit applications	1/31/2014	✓
Construction status report	3/1/2014	✓
Construction status report	3/1/2015	✓
Complete construction (begin multi-purpose ops)	12/31/2016	✓
Long term operations commence	12/31/2022	✓

G-341 Related Conveyance Improvements (100802) — COMPLETE

Activity	Deadline	
Initiate design	10/1/2020	✓
Submit state and federal permit applications	8/1/2021	✓
Complete land acquisition (if required)	9/30/2021	✓
Complete design	7/31/2022	✓
Initiate construction	11/30/2022	✓
Construction status report	3/1/2023	✓
Construction status report	3/1/2024	✓
Complete construction	12/31/2024	✓

L-8 Divide Structure (100817) — COMPLETE

Activity	Deadline	
Initiate design	10/1/2012	✓
Complete design	9/30/2014	✓
Initiate construction	10/1/2016	✓
Complete construction	9/30/2018	✓

S-5AS Modifications (100822) — COMPLETE

Activity	Deadline	
Initiate design	10/1/2012	✓
Complete design	9/30/2014	✓
Initiate construction	10/1/2014	✓
Complete construction	9/30/2016	✓

S-375 Expansion (100819) — COMPLETE

Activity	Deadline	
Initiate design	9/30/2013	✓
Complete design	7/30/2015	✓
Initiate construction	1/31/2016	✓
Complete construction	12/31/2018	✓

LEGEND

- Flow Equalization Basin
- Stormwater Treatment Area
- Conveyance Improvement
- ✓ Complete

Projects Complete = 12 of 13
Activities Complete = 73 of 74
% Activities Complete = 99 %
% Time Complete = 93 %

CENTRAL FLOW PATH

STA-2 Expansion: Compartment B — COMPLETE

Activity	Deadline	
Initial flooding and optimization period complete	5/31/2014	✓

A-1 FEB (100706) — COMPLETE

Activity	Deadline	
Initiate design	4/1/2012	✓
Submit state and federal permit applications	12/1/2012	✓
Design status report	3/1/2013	✓
Complete design	8/1/2013	✓
Initiate construction	6/30/2014	✓
Construction status report	3/1/2015	✓
Construction status report	3/1/2016	✓
Complete construction	7/30/2016	✓
Operational monitoring and testing period complete	7/29/2018	✓

WESTERN FLOW PATH

STA-5/6 Internal Improvements (100868)

Activity	Deadline	
Initiate design	10/31/2019	✓
Submit state and federal permit applications	8/30/2020	✓
Complete design	10/31/2021	✓
Initiate construction	1/31/2022	✓
Construction status report	3/1/2023	✓
Construction status report	3/1/2024	✓
Complete construction	12/31/2024	✓
Initial flooding and optimization period complete	**12/31/2025**	

STA-5/6 Expansion: Compartment C — COMPLETE

Activity	Deadline	
Initial flooding and optimization period complete	5/31/2014	✓

C-139 FEB (100867) — COMPLETE

Activity	Deadline	
Initiate design	10/31/2018	✓
Submit state and federal permit applications	8/30/2019	✓
Complete design	10/31/2020	✓
Initiate construction	1/31/2021	✓
Construction status report	3/1/2021	✓
Construction status report	3/1/2022	✓
Construction status report	3/1/2023	✓
Complete construction	12/31/2023	✓
Operational monitoring and testing period complete	12/31/2024	✓

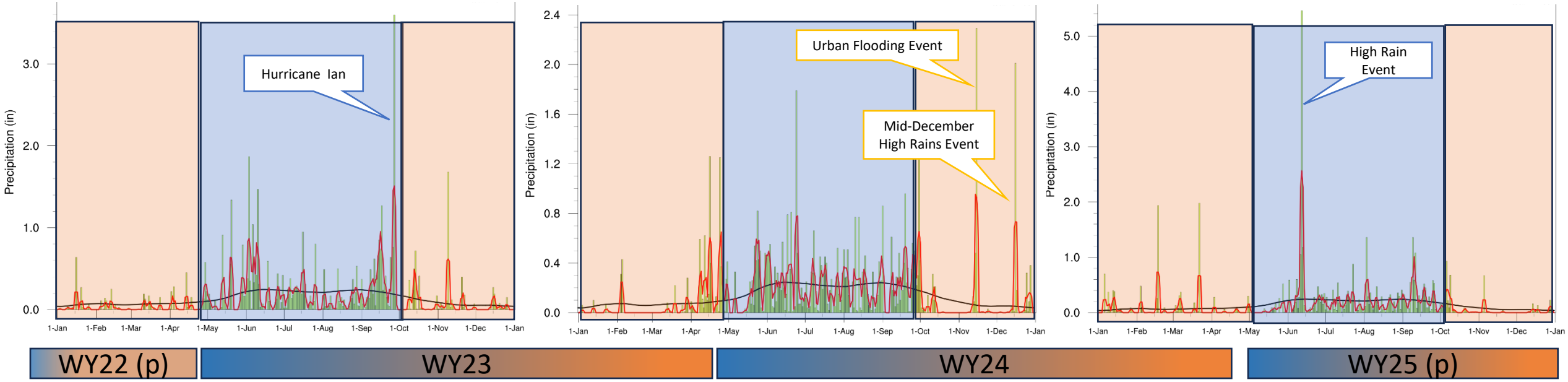
Revised January 6, 2025

WATER YEAR 2025

(May 1, 2024 – April 30, 2025)

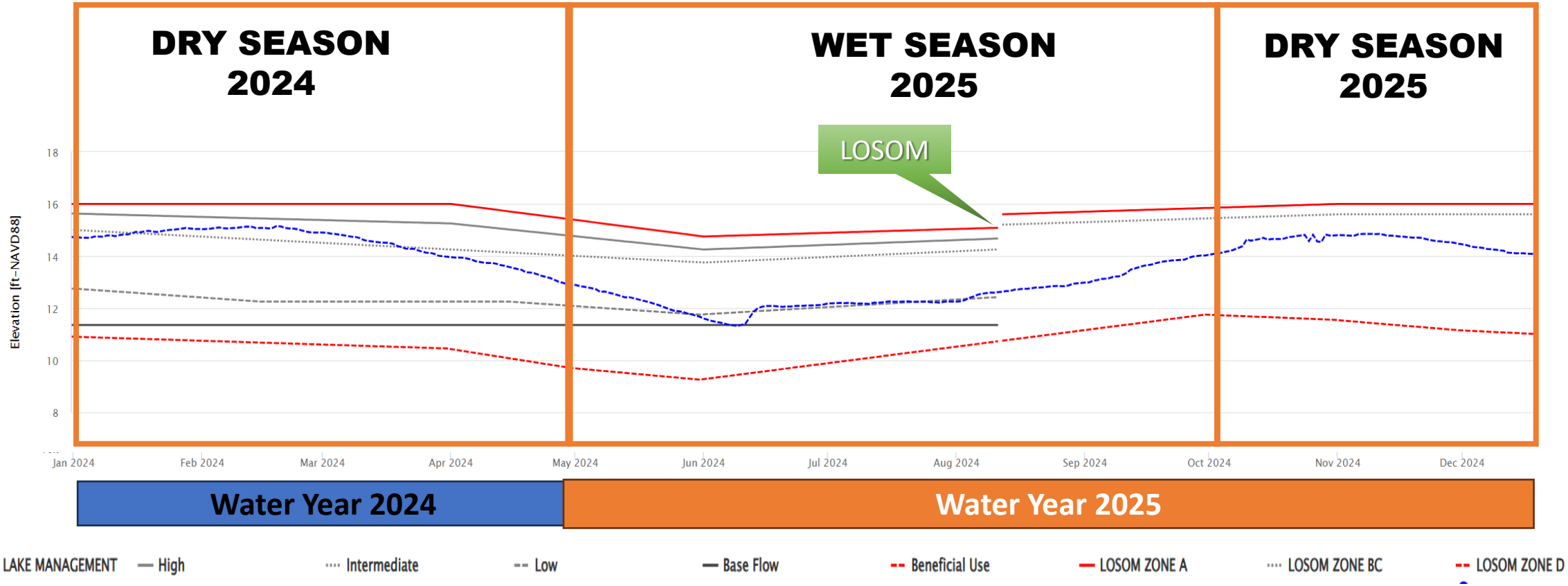
Presenter: Robert Shuford

SEASONAL RAIN PATTERNS



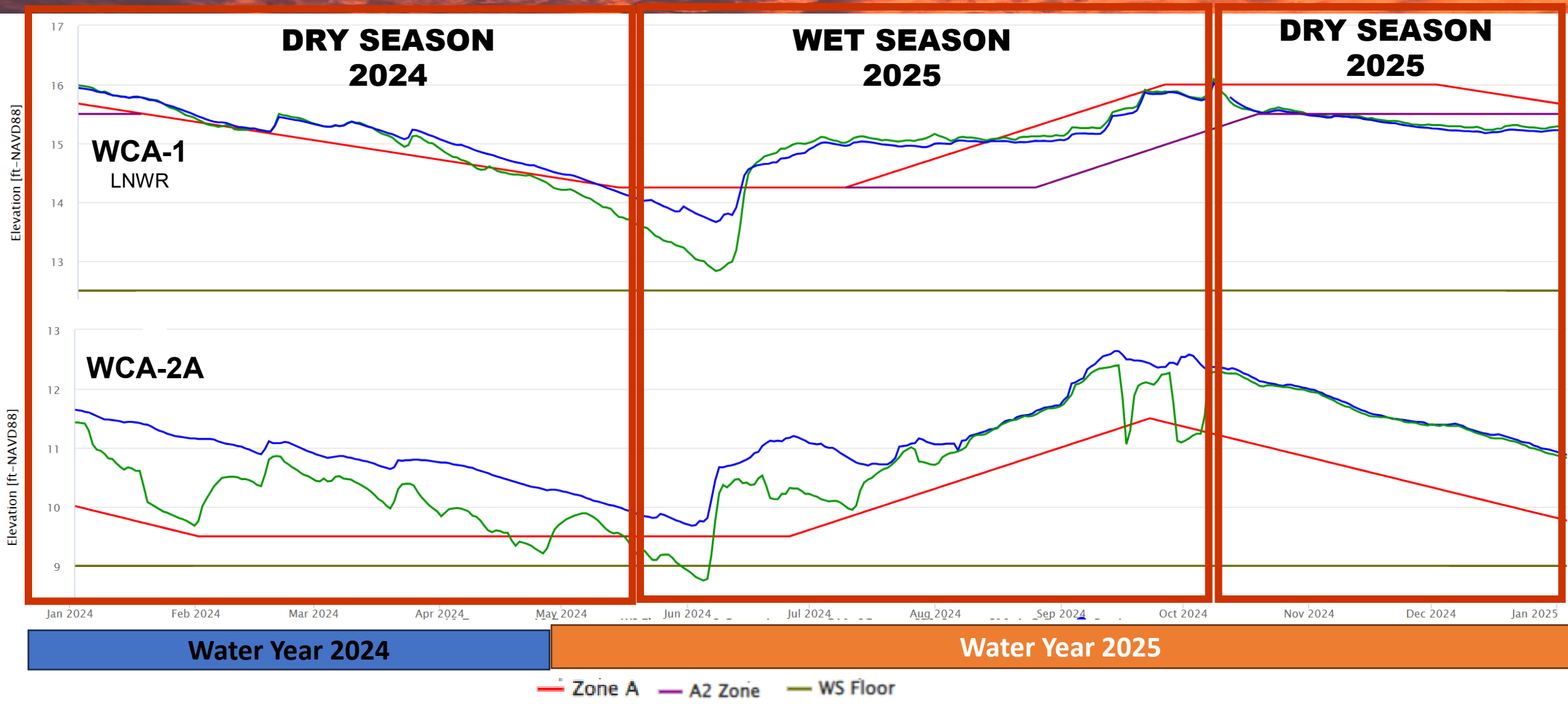
Presenter: Robert Shuford

LAKE OKEECHOBEE



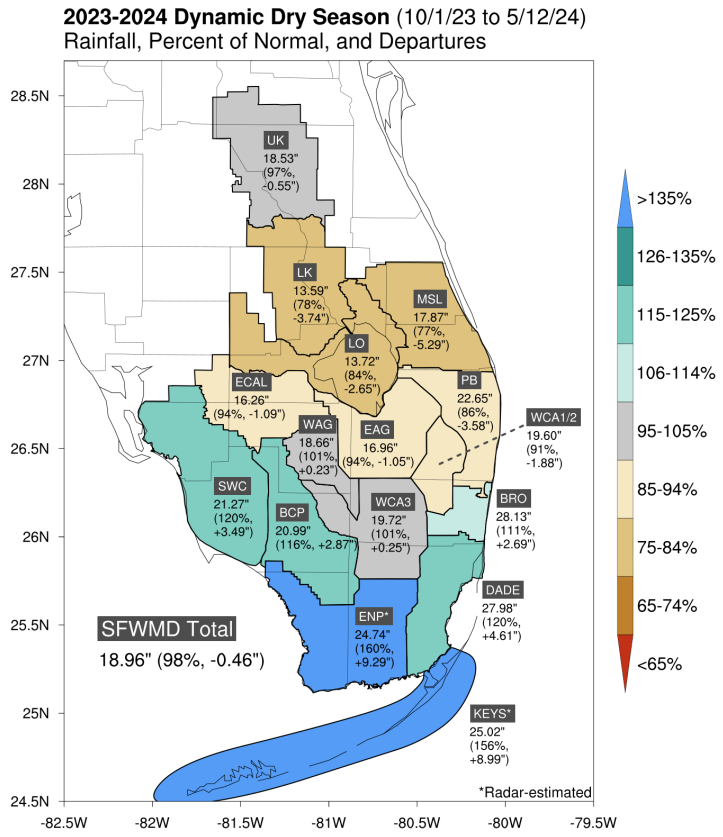
Presenter: Robert Shuford

WCA SCHEDULES



Presenter: Robert Shuford

SEASONAL RAINFALL
Water Year 2024 (Dry Season)



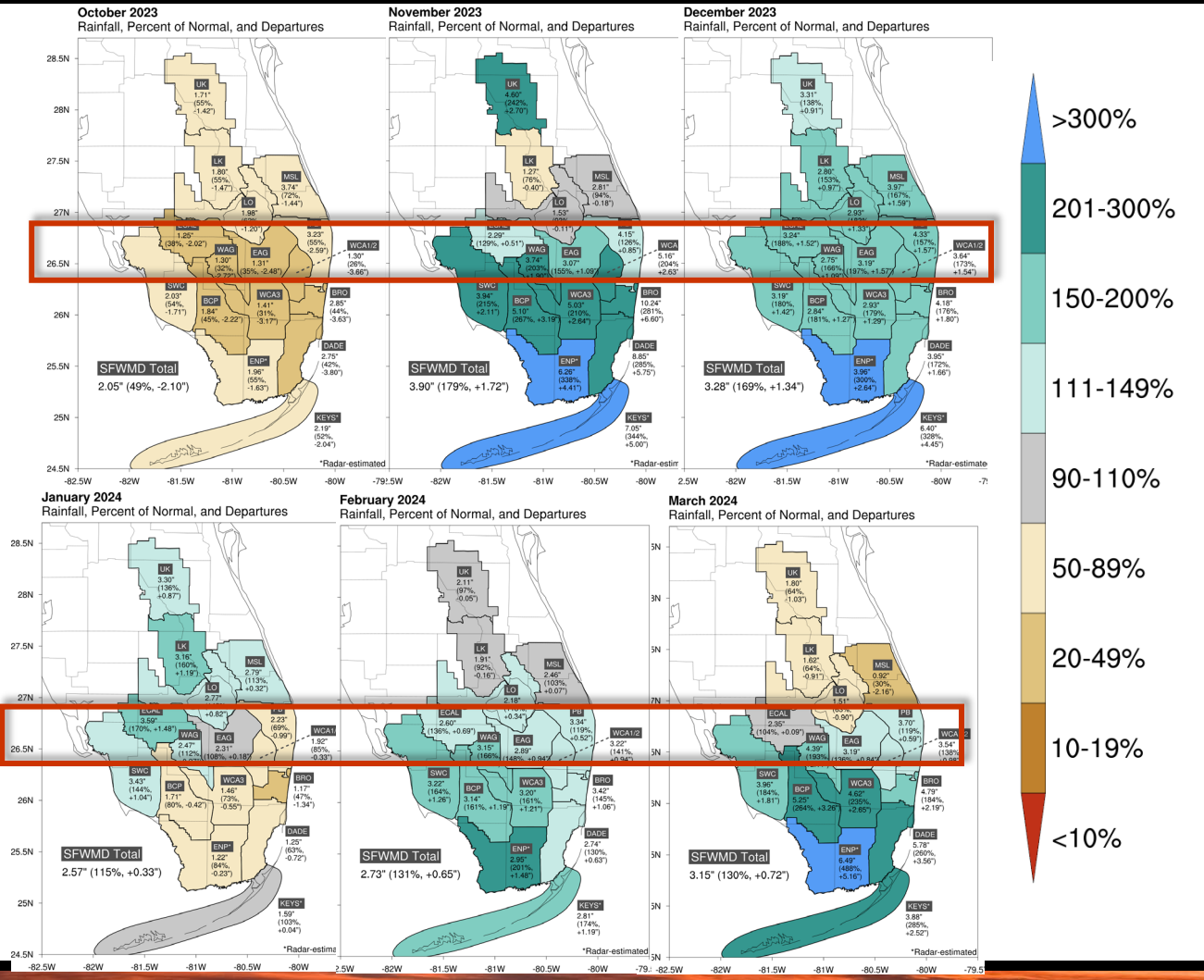
98% of Average

*

Wettest months
Nov 2023 & Dec 2023
(High Rain Events)

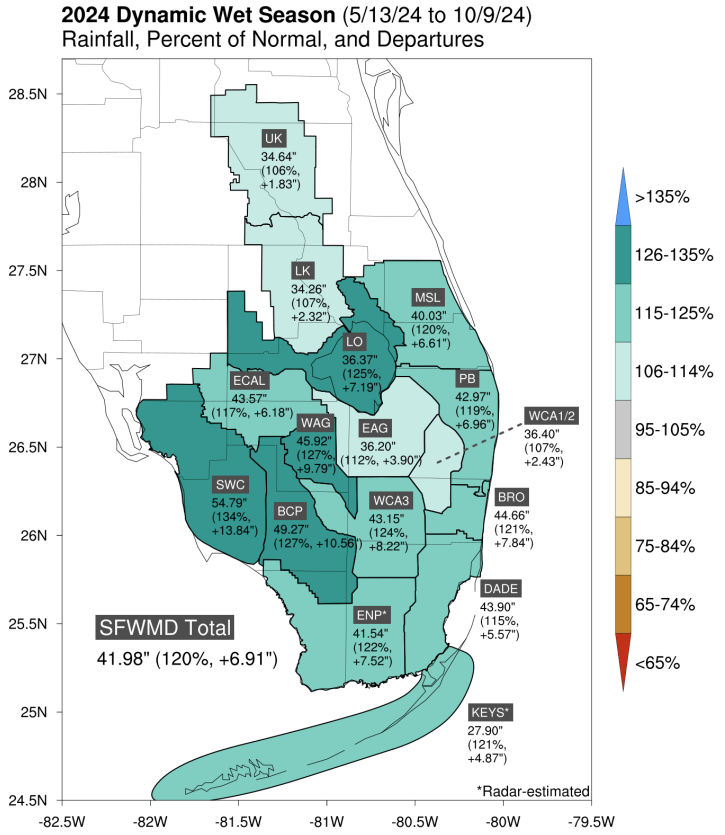
*

Dryest months
Oct. 2023 & Jan 2024



Presenter: Robert Shuford

SEASONAL RAINFALL
Water Year 2025 (Wet Season)



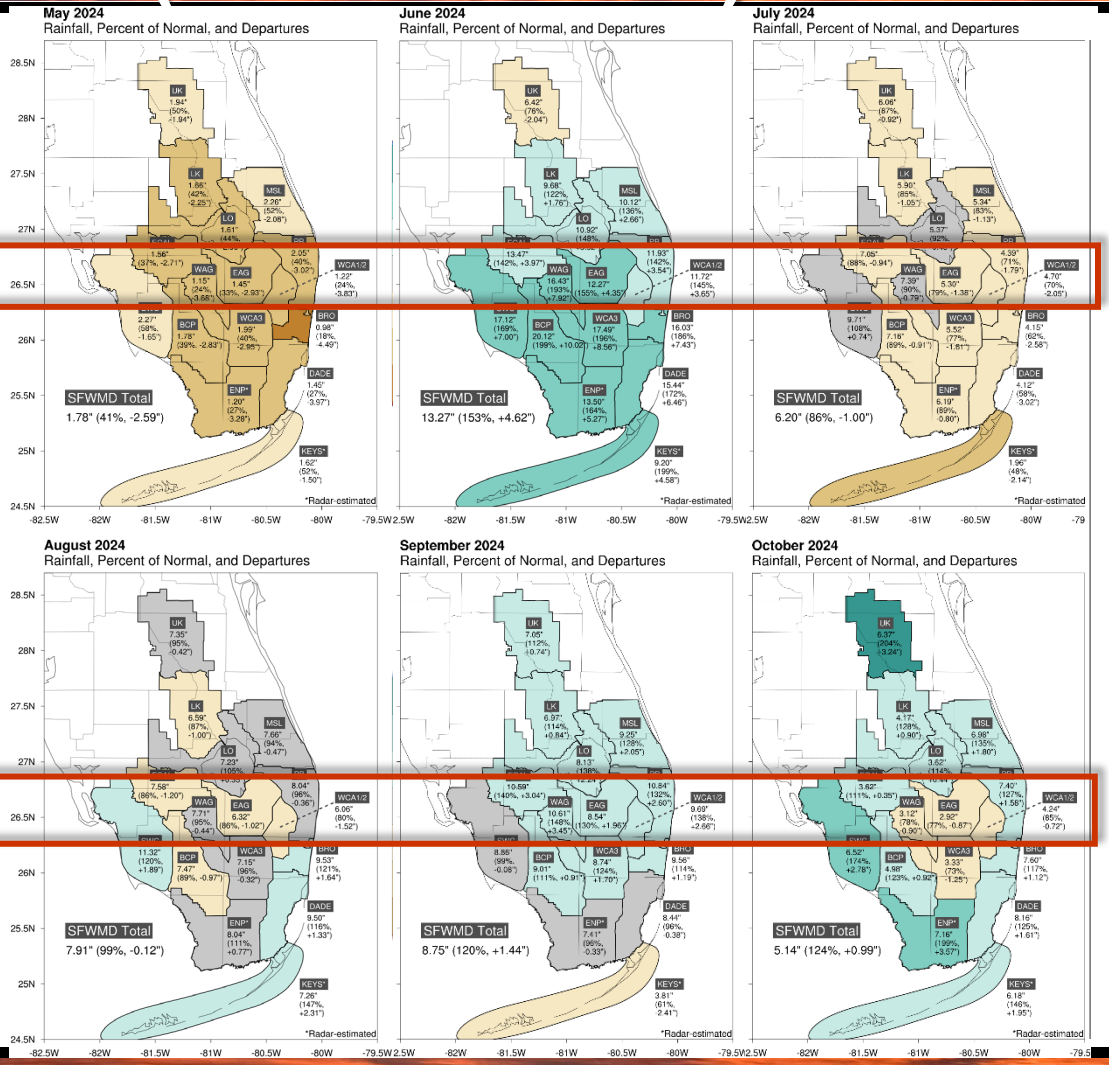
120% of Average

*

June Extreme Event
- 3rd wettest day on record

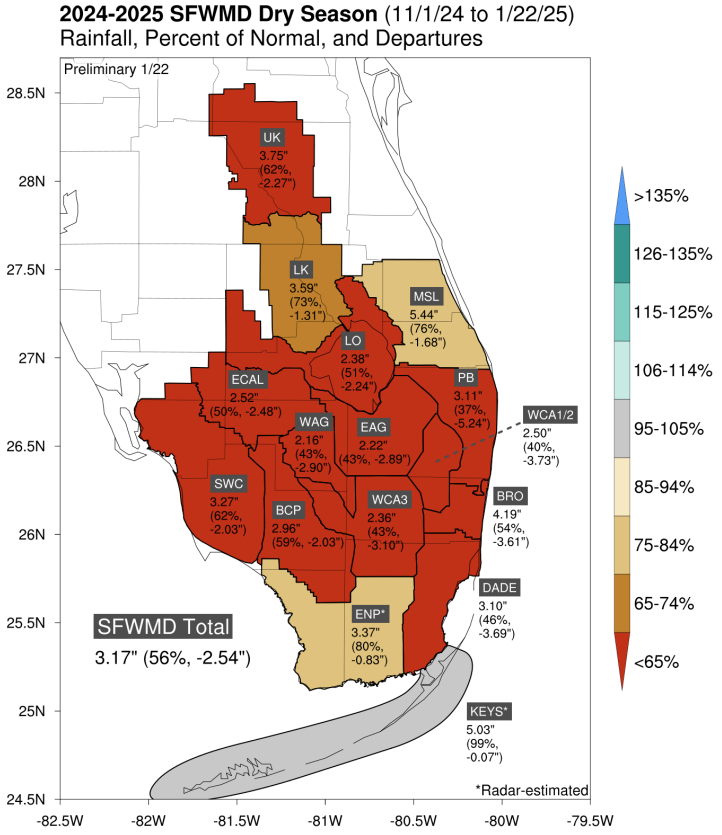
*

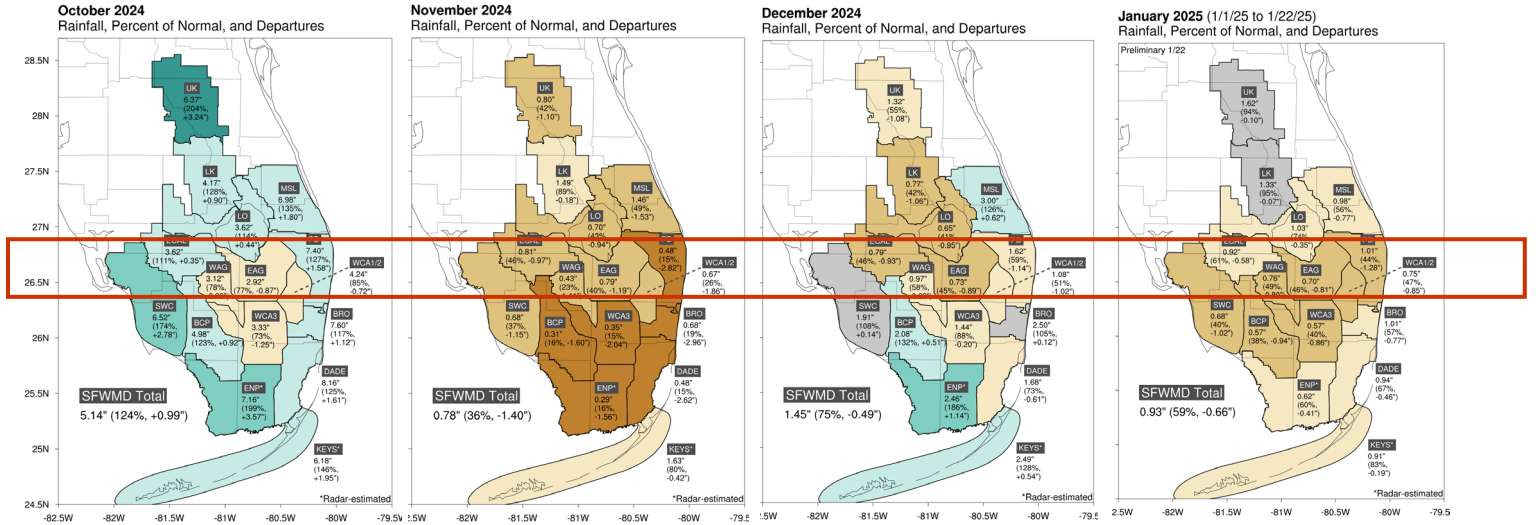
September
-above avg rains

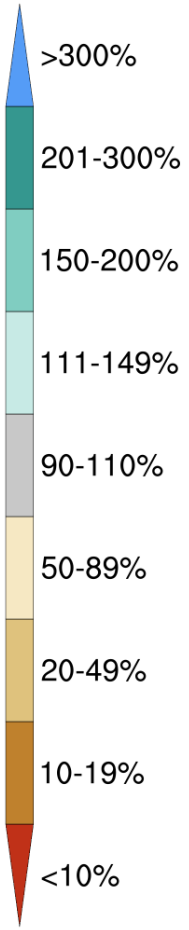


Presenter: Robert Shuford

SEASONAL RAINFALL
Water Year 2025 (Dry Season)







- Dry Season - 56% of normal
- EAA - consistently 43% of normal
- Wettest month – October 2024
- Dryest month – November 2024

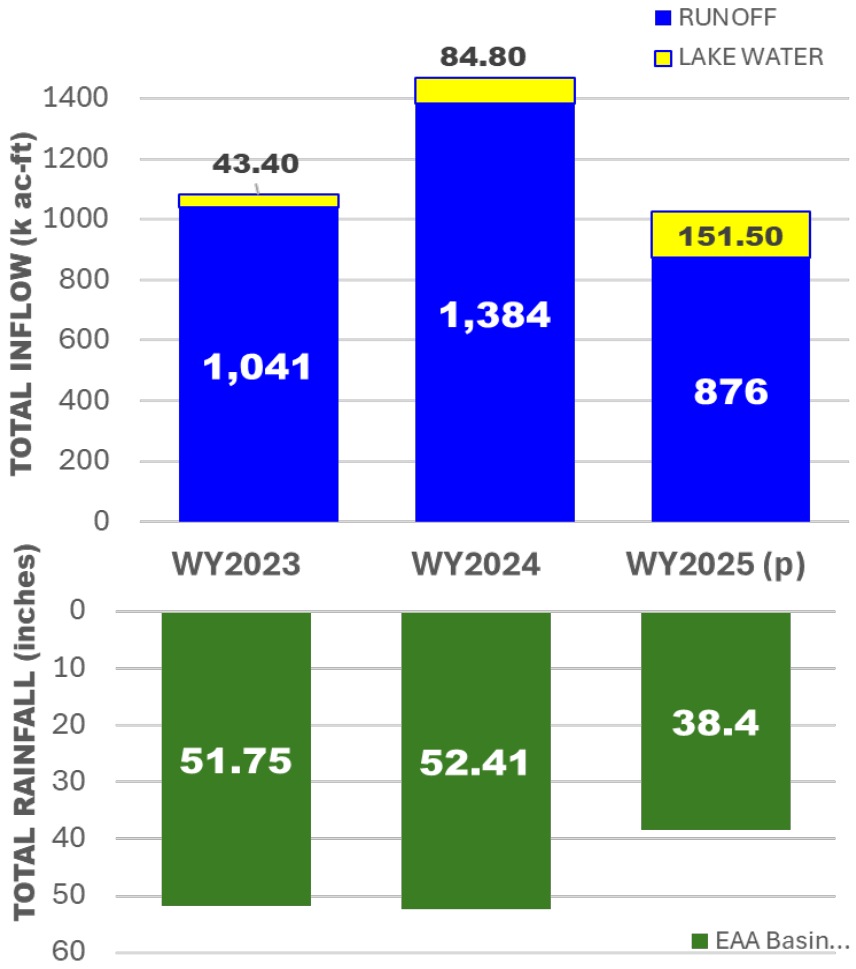
Presenter: Robert Shuford

STA INFLOWS AND RAINFALL

- Inflow volumes
  (exceeds 1M ac-ft)
- *Lake Releases-*

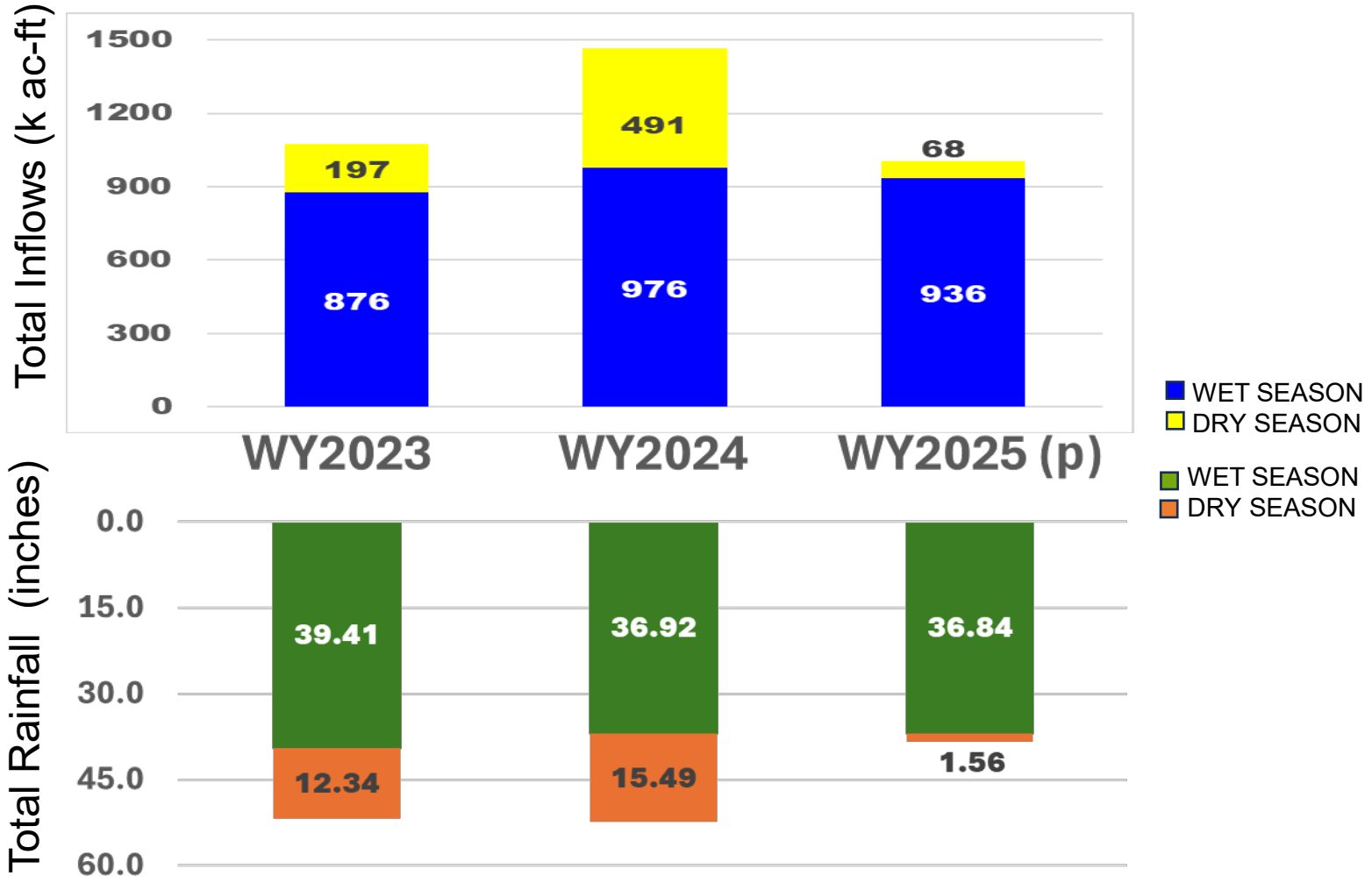
(nearly double each year)

- Normal rainfall



Presenter: Robert Shuford

SEASONAL INFLOWS AND RAINFALL



Presenter: Robert Shuford

CONTACT INFORMATION

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SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Everglades Stormwater Treatment Areas Performance Update

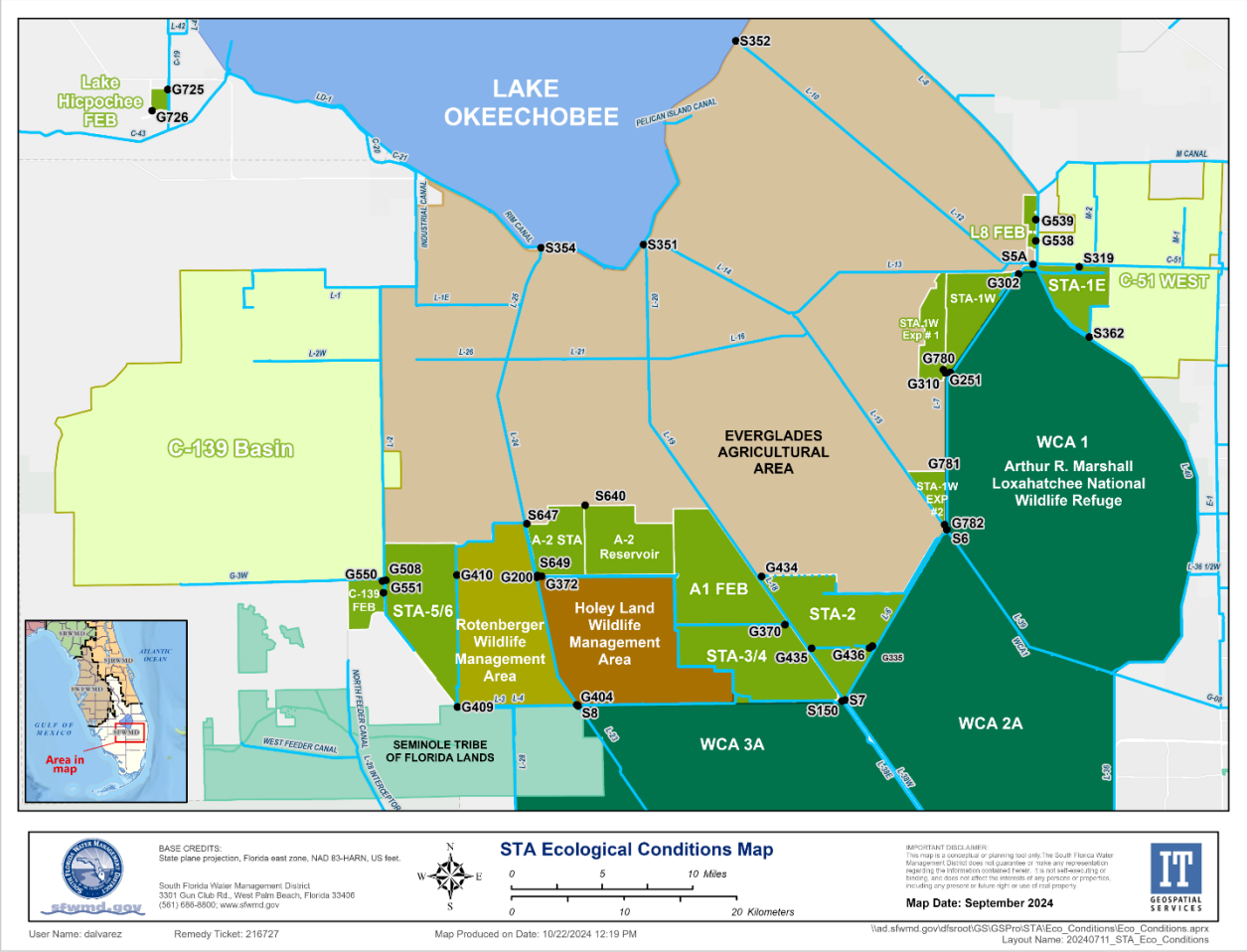
Jake Dombrowski
Senior Scientist
Applied Sciences Bureau

sfwmd.gov

22nd Annual Public Meeting on the Long-Term Plan for Achieving Water Quality Goals for the Everglades Protection Area Tributary Basins

February 24, 2025

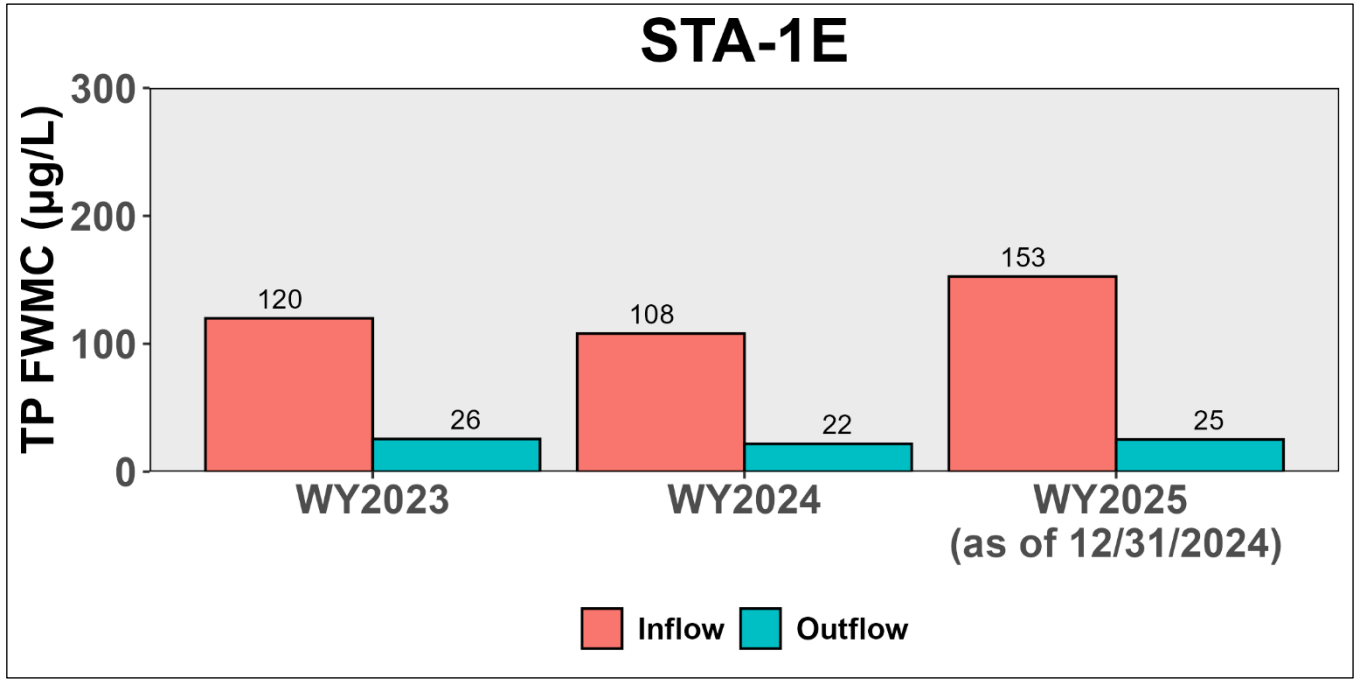
Introduction

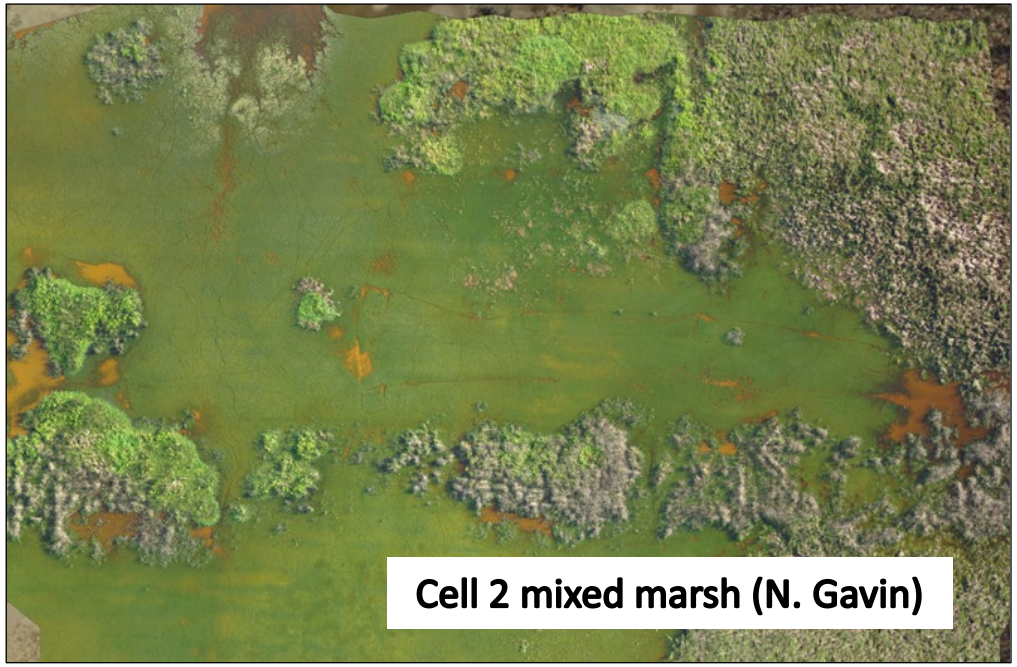


- STA Performance
  - Flow volumes
  - TP loads
  - Flow-Weighted Mean Concentration (FWMC)
- Yearly and monthly variation
  - Water Year
- Construction and operational restrictions

Presenter: Jake Dombrowski

STA-1E Performance Comparison by Water Year



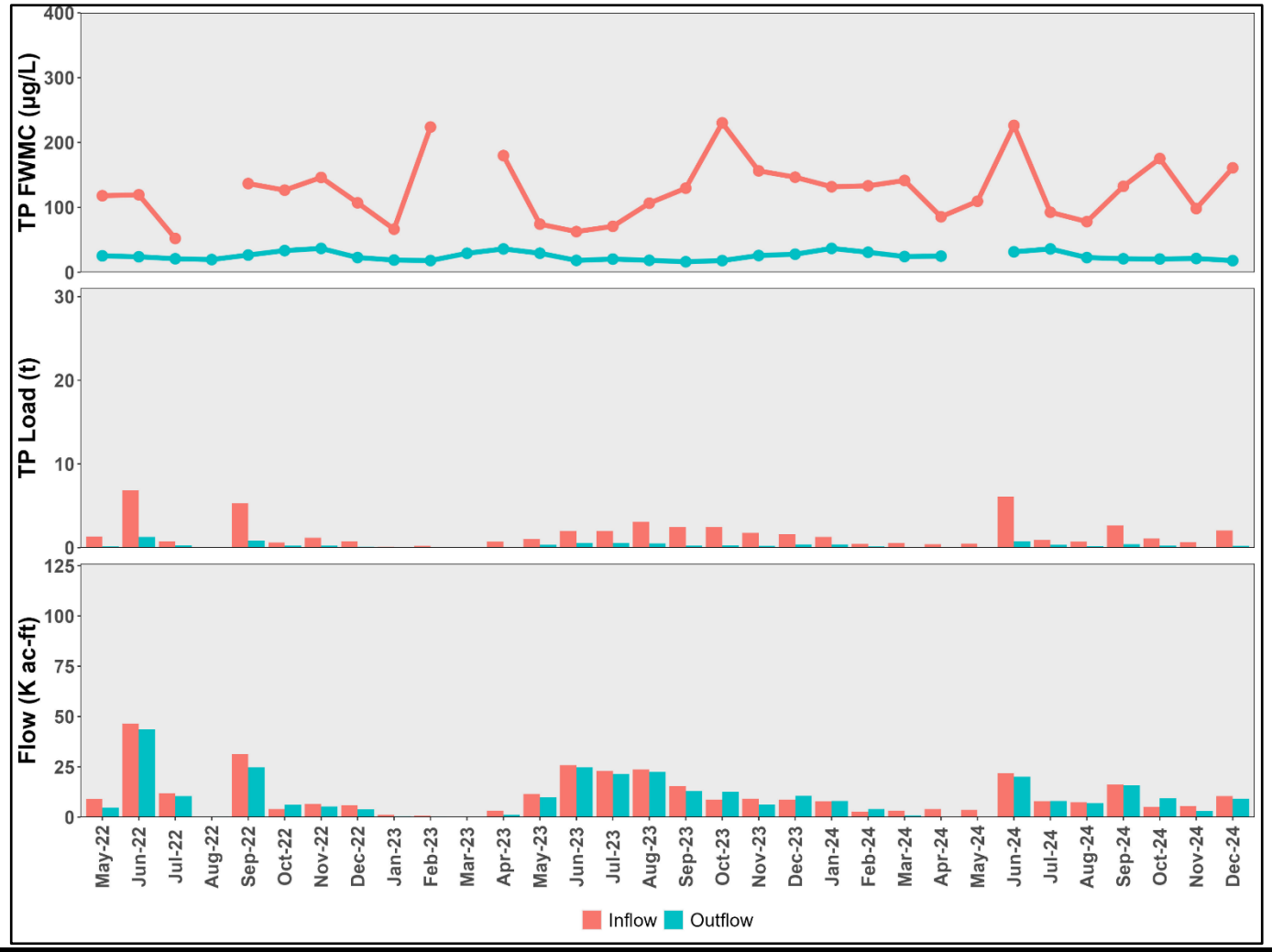

Cell 2 mixed marsh (N. Gavin)

	WY2023	WY2024	Partial WY2025 (05/01/2024 - 12/31/2024)
Total inflow (k acre-feet)	121	144	78
Lake releases (k acre-feet)	2	1	16
TP FWMC inflow / outflow (µg/L)	120 / 26	108 / 22	153 / 25
TP load inflow / outflow (tons)	18 / 3	19 / 4	15 / 2
Reduction in TP FWMC / load	79% / 82%	83% / 85%	83% / 85%

Includes preliminary data

Presenter: Jake Dombrowski

STA-1E Monthly Inflows and Outflows



- Lower inflows in WY2025 relative to previous years
  - Ongoing construction and post-construction vegetation grow-in
  - STA-1W capturing more inflows than previous years
- High inflow TP FWMC in WY2025

Includes preliminary data

Presenter: Jake Dombrowski

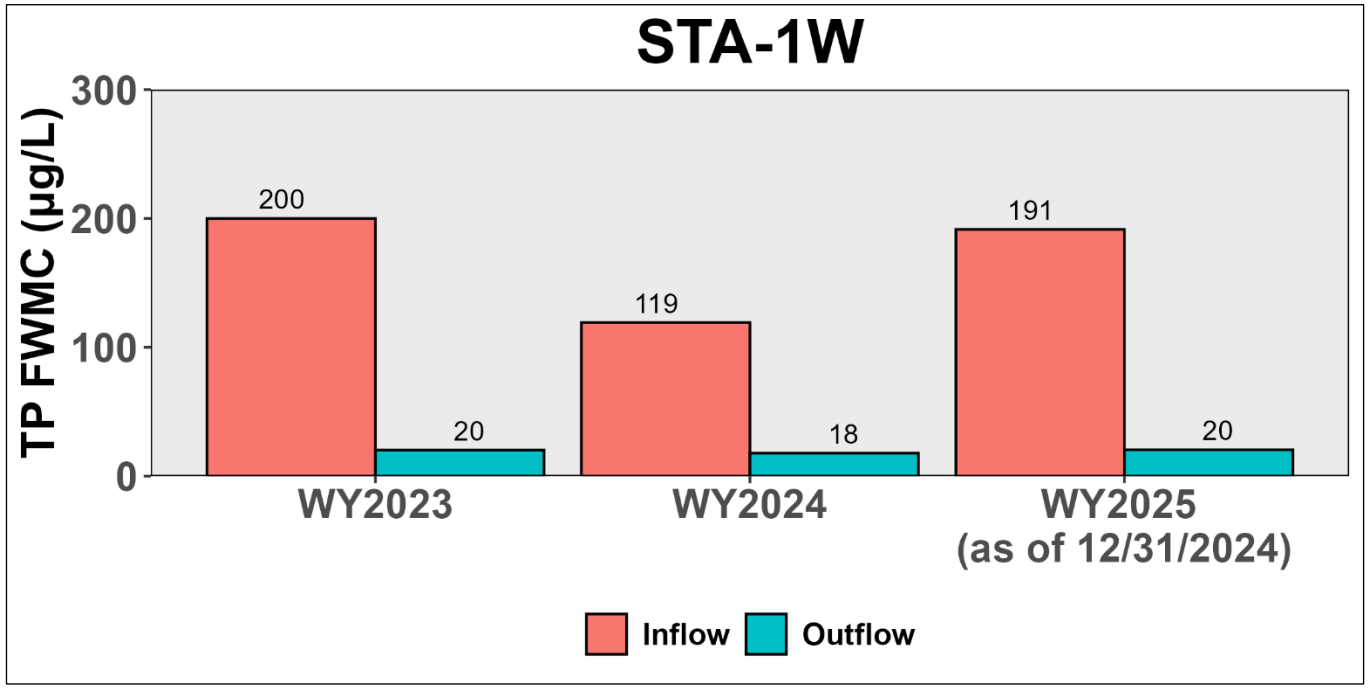
STA-1E Operational Restrictions (Jan. 1, 2024 – Dec. 31, 2024)

- Eastern Flow-way offline for erosion repair related to Hurricane Eta
- Central Flow-way offline for construction activities
- Periodic restrictions in Western and Eastern Flow-ways for post-construction vegetation grow-in

SAV germination post-construction

CFW Construction (T. Adeagbo)

STA-1W Performance Comparison by Water Year



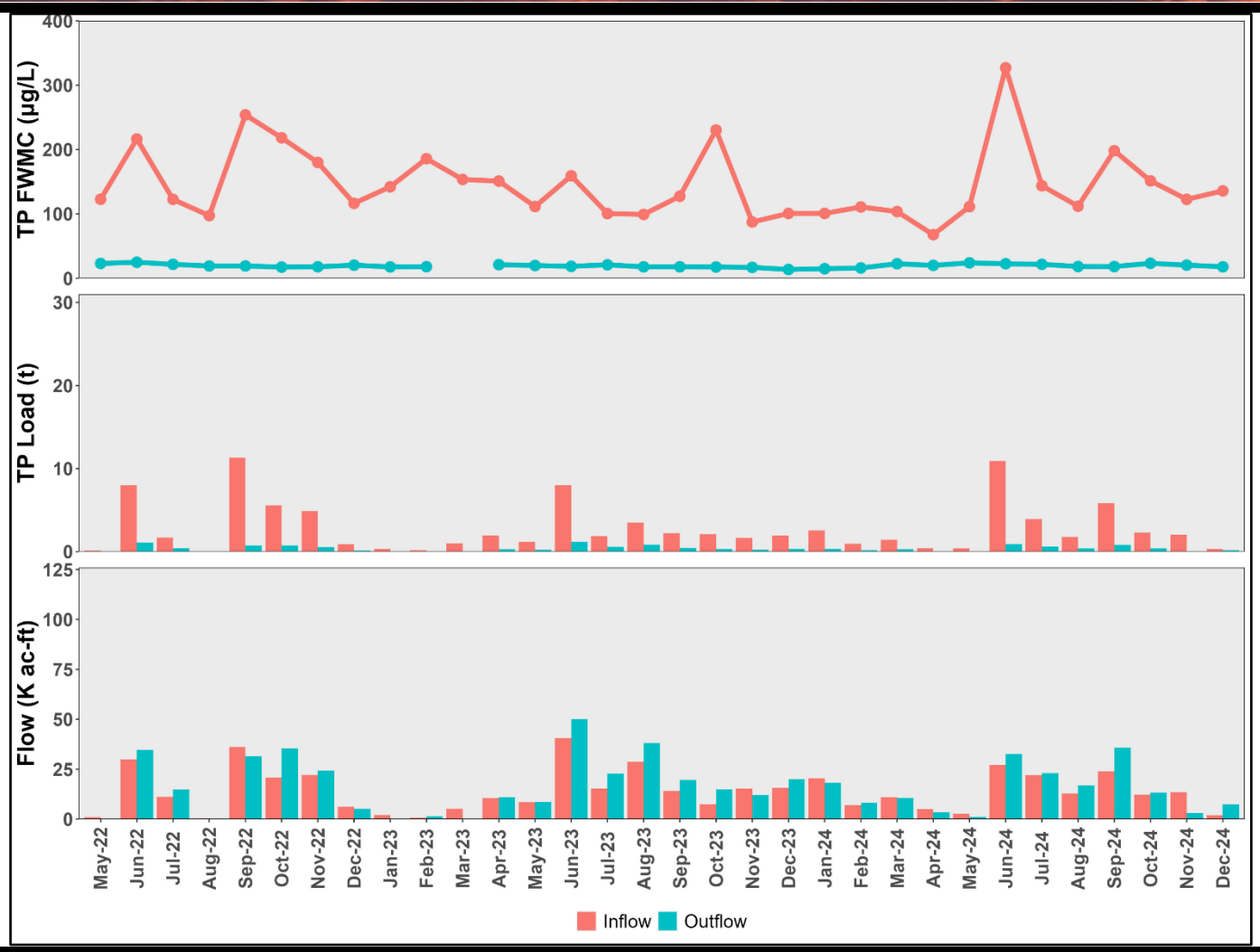

Cell 6 mixed marsh (T. Adeagbo)

	WY2023	WY2024	Partial WY2025 (05/01/2024 - 12/31/2024)
Total inflow (k acre-feet)	146	189	116
Lake releases (k acre-feet)	9	1	10
TP FWMC inflow / outflow (µg/L)	200 / 20	119 / 18	191 / 20
TP load inflow / outflow (tons)	36 / 4	28 / 5	27 / 3
Reduction in TP FWMC / load	90% / 89%	85% / 82%	89% / 88%

Includes preliminary data

Presenter: Jake Dombrowski

STA-1W Monthly Inflows and Outflows



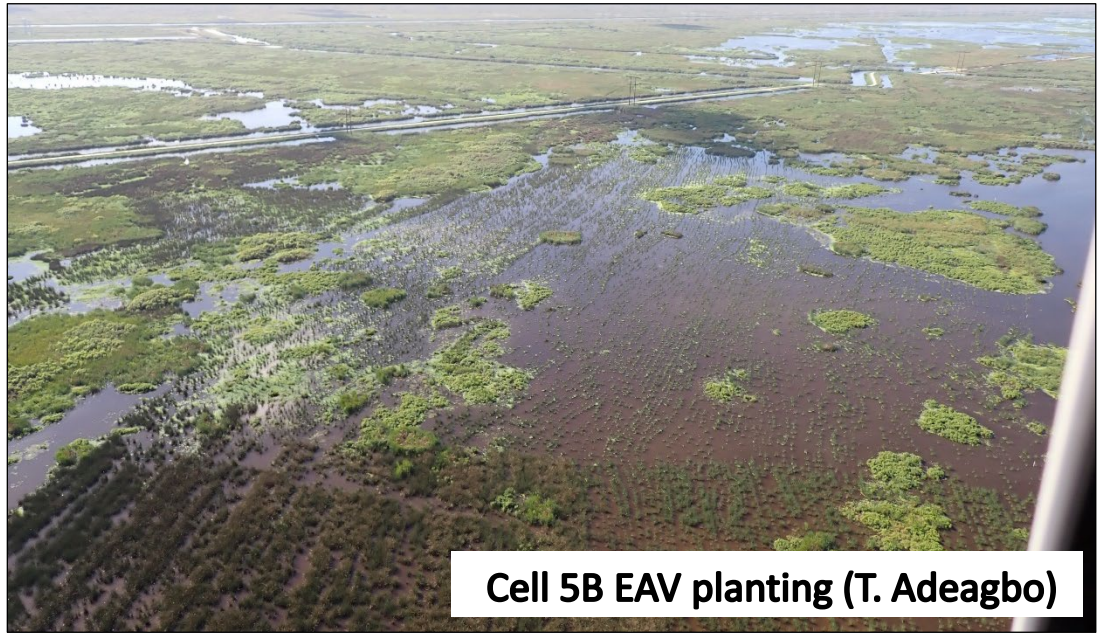
- Higher WY2024 inflow volume relative to recent years
  - Ongoing construction in STA-1E
- High inflow TP FWMC in June 2024
- Outflow TP FWMC low and stable

Includes preliminary data

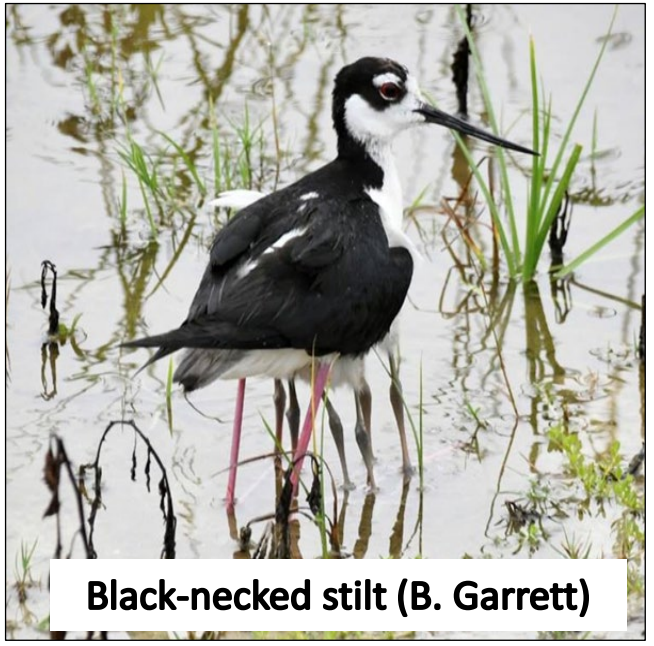
Presenter: Jake Dombrowski

STA-1W Operational Restrictions (Jan. 1, 2024 – Dec. 31, 2024)

- Periodic restrictions in most flow-ways
  - Vegetation management in the Northern Flow-way
  - BNS (Black-necked stilt) nesting in Northern and Eastern Flow-ways, and Cells 6, 7, and 8

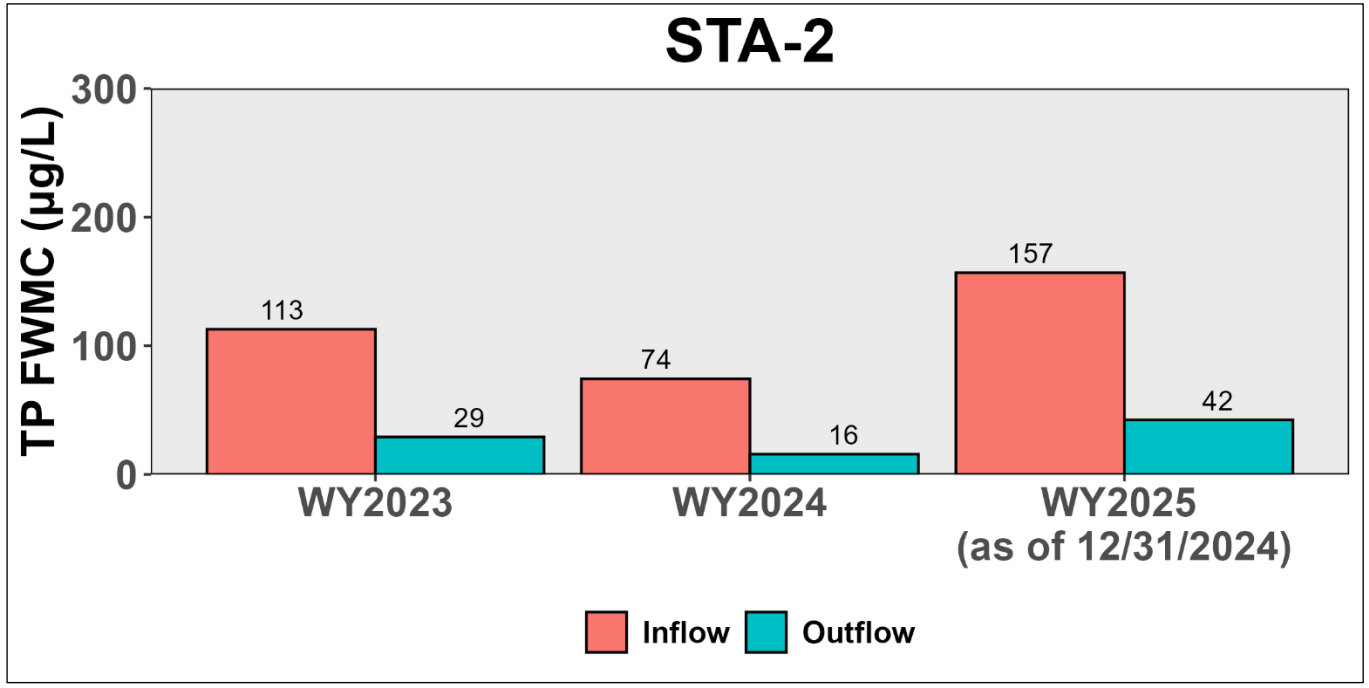


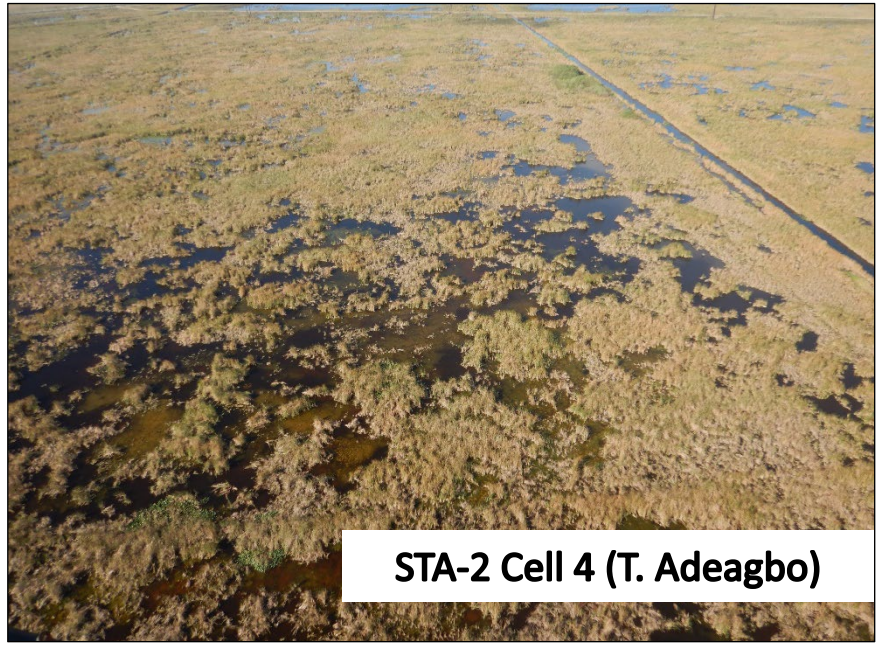
Cell 5B EAV planting (T. Adeagbo)



Black-necked stilt (B. Garrett)

STA-2 Performance Comparison by Water Year



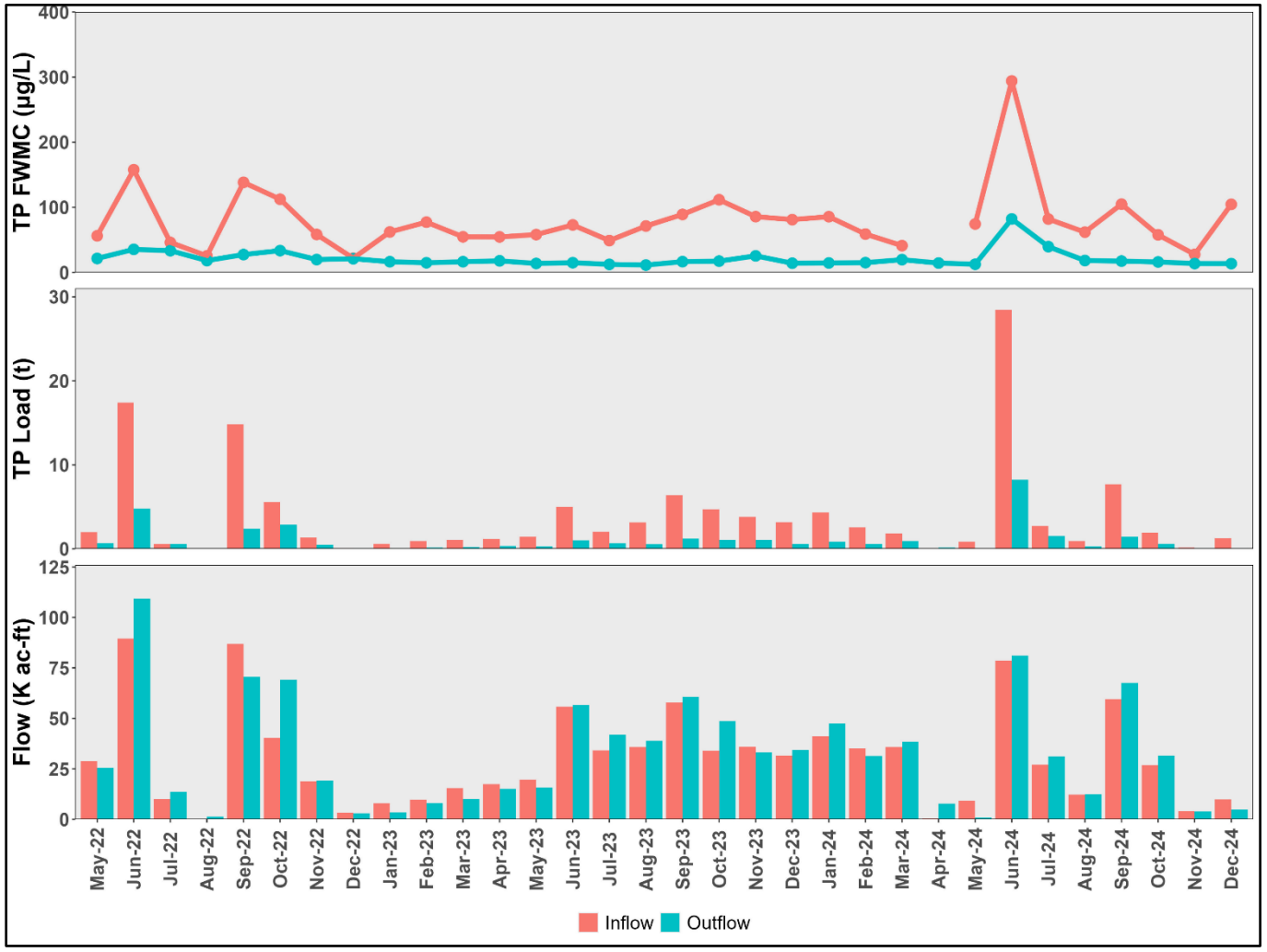

STA-2 Cell 4 (T. Adeagbo)

	WY2023	WY2024	Partial WY2025 (05/01/2024 - 12/31/2024)
Total inflow (k acre-feet)	327	418	227
Lake releases (k acre-feet)	29	7	27
TP FWMC inflow / outflow (µg/L)	113 / 29	74 / 16	157 / 42
TP load inflow / outflow (tons)	45 / 13	38 / 9	44 / 12
Reduction in TP FWMC / load	74% / 72%	79% / 77%	73% / 72%

Includes preliminary data

Presenter: Jake Dombrowski

STA-2 Monthly Inflows and Outflows



- Inflow and outflow TP FWMC spike in June 2024
- Outflow TP FWMC otherwise low

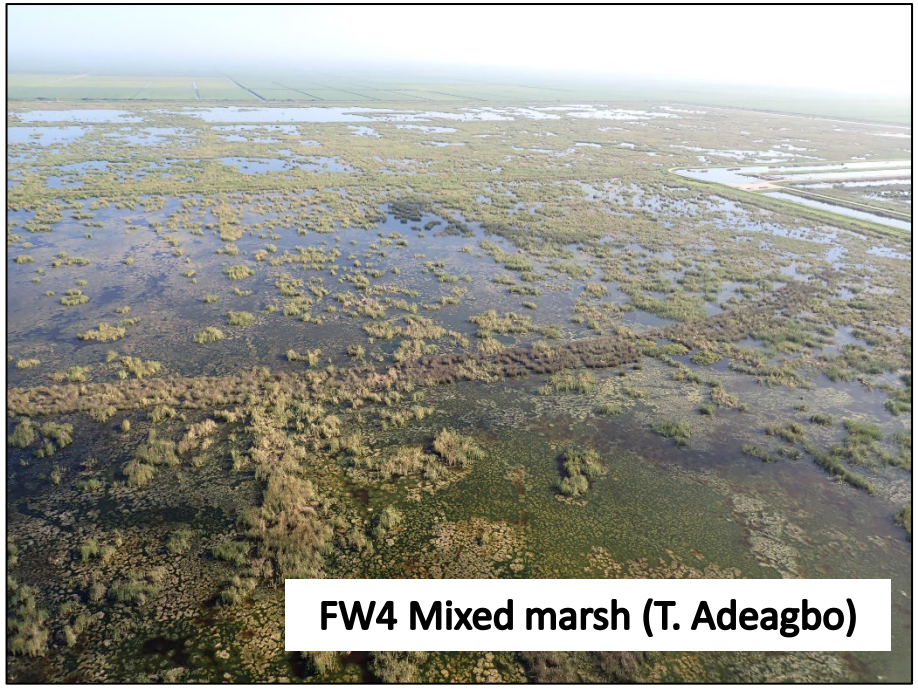
Includes preliminary data

Presenter: Jake Dombrowski

STA-2 Operational Restrictions (Jan. 1, 2024 – Dec. 31, 2024)

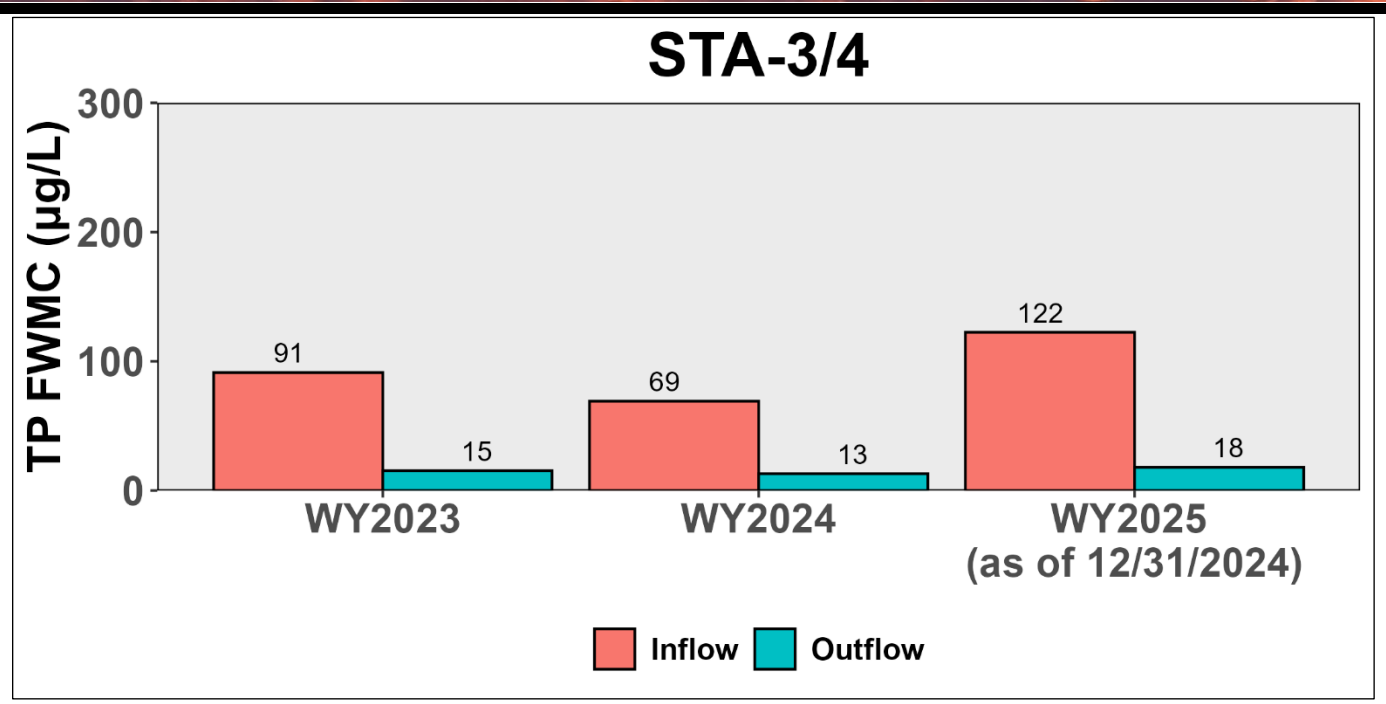
- Periodic restrictions in all flow-ways
  - Topographic survey in Flow-way 1
  - Vegetation management activities in Flow-ways 2 and 4
  - BNS nesting in Flow-ways 1, 2, 3, and 4
  - Construction activities in Flow-way 5

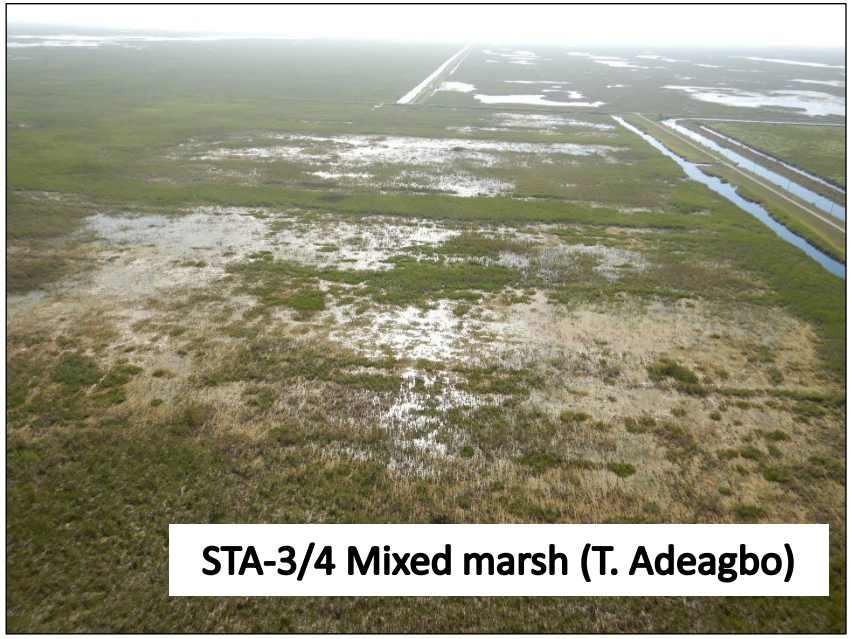
Black-necked Stilt chicks (B. Garrett)



FW4 Mixed marsh (T. Adeagbo)

STA-3/4 Performance Comparison by Water Year



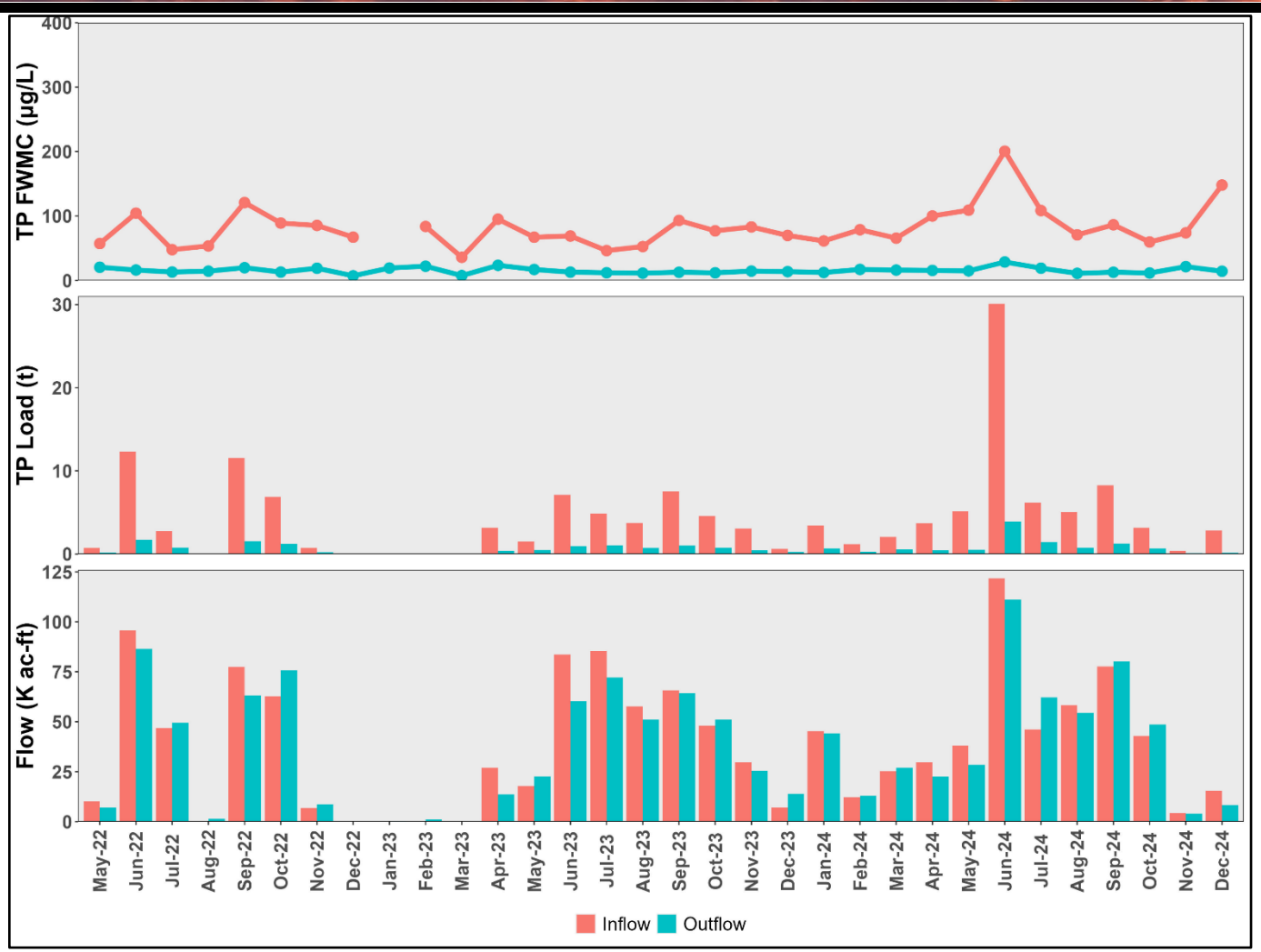

STA-3/4 Mixed marsh (T. Adeagbo)

	WY2023	WY2024	Partial WY2025 (05/01/2024 - 12/31/2024)
Total inflow (k acre-feet)	330	508	405
Lake releases (k acre-feet)	3	64	60
TP FWMC inflow / outflow (µg/L)	91 / 15	69 / 13	122 / 18
TP load inflow / outflow (tons)	37 / 6	43 / 8	61 / 9
Reduction in TP FWMC / load	83% / 84%	81% / 83%	85% / 86%

Includes preliminary data

Presenter: Jake Dombrowski

STA-3/4 Monthly Inflows and Outflows



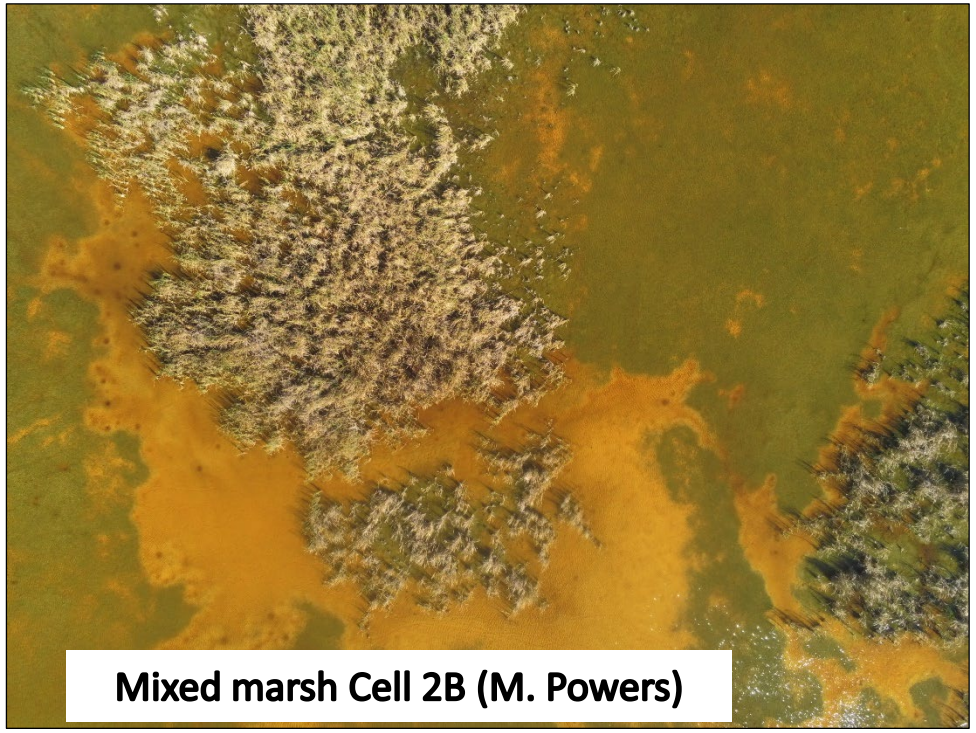
- Compared to other STAs, less variability in inflow TP loads due to A-1 FEB
- High inflow TP FWMC in June 2024
- Outflow TP FWMC remains low and stable

Includes preliminary data

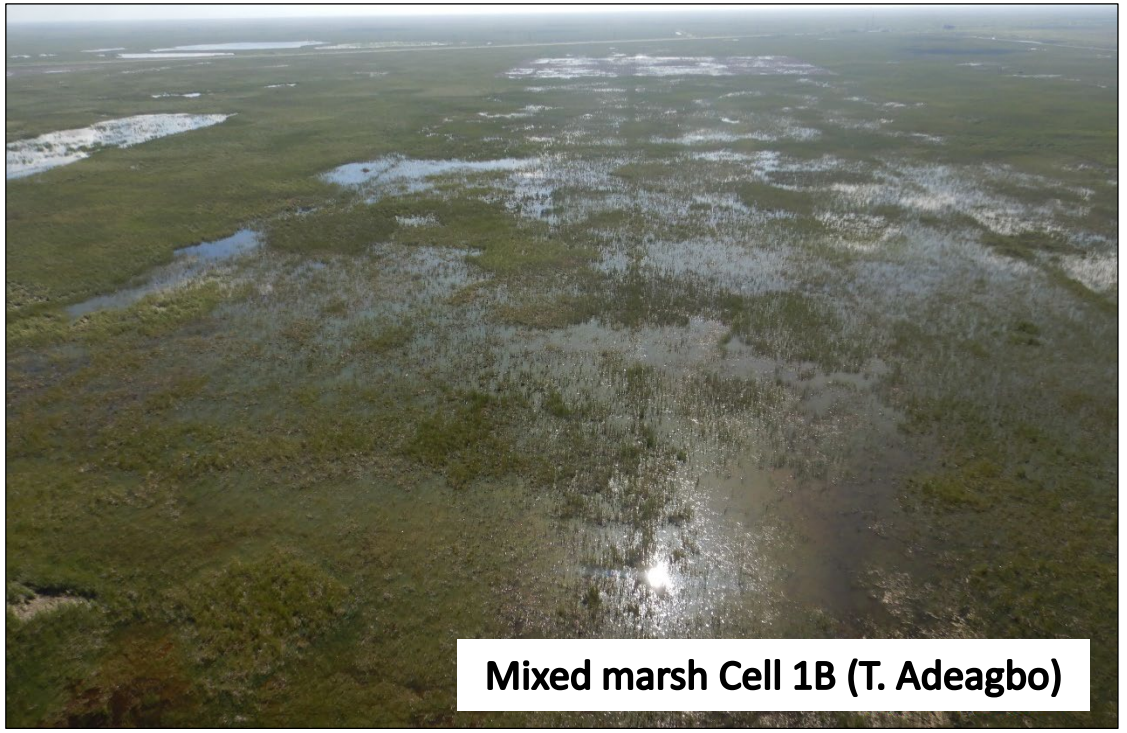
Presenter: Jake Dombrowski

STA-3/4 Operational Restrictions (Jan. 1, 2024 – Dec. 31, 2024)

- Periodic restrictions in all Flow-ways for vegetation management activities
- Eastern Flow-way online with restrictions for vegetation grow-in

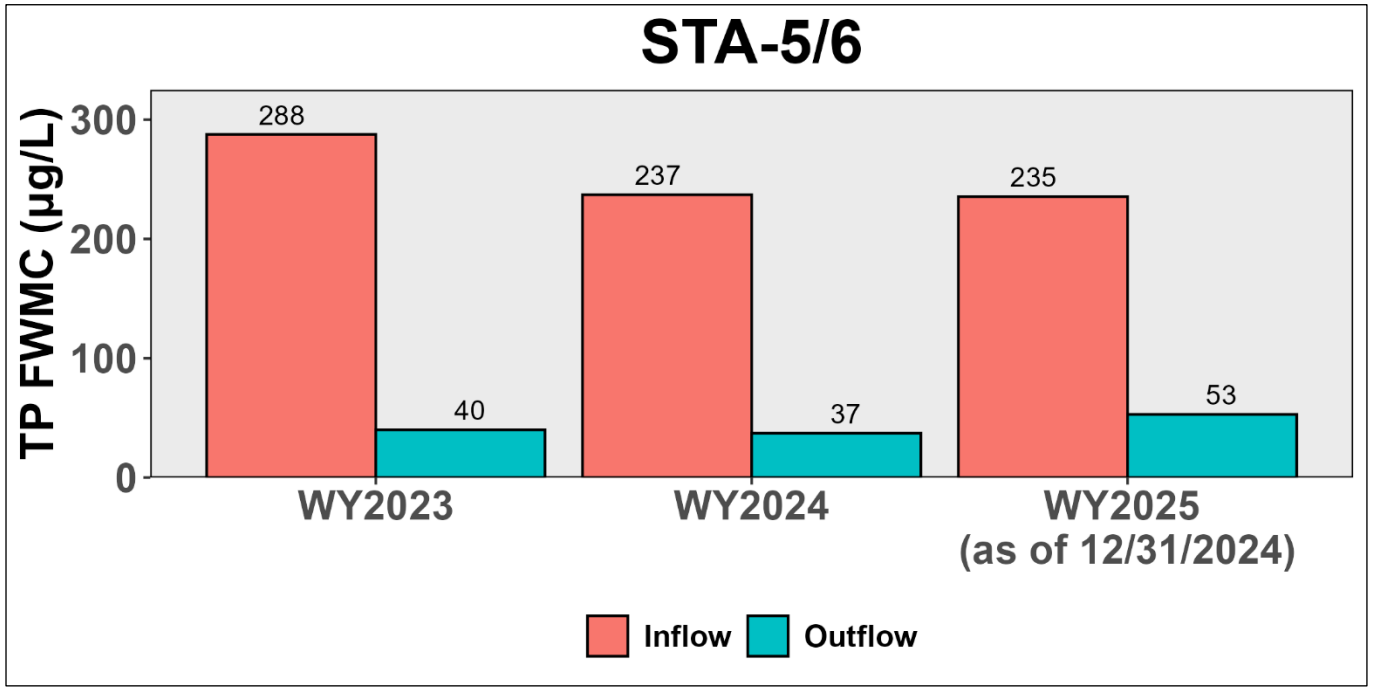


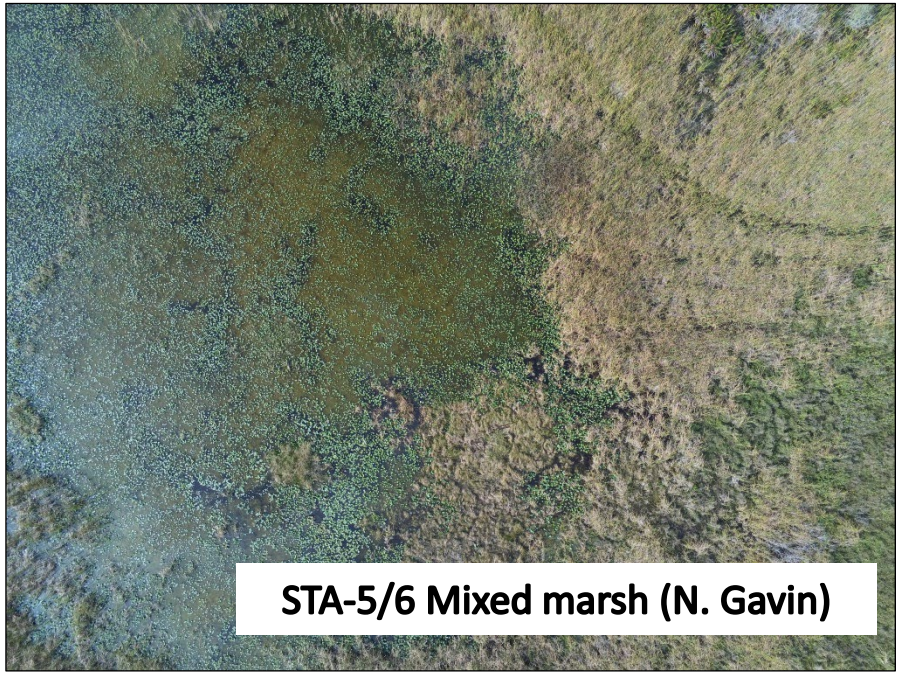
Mixed marsh Cell 2B (M. Powers)



Mixed marsh Cell 1B (T. Adeagbo)

STA-5/6 Performance Comparison by Water Year



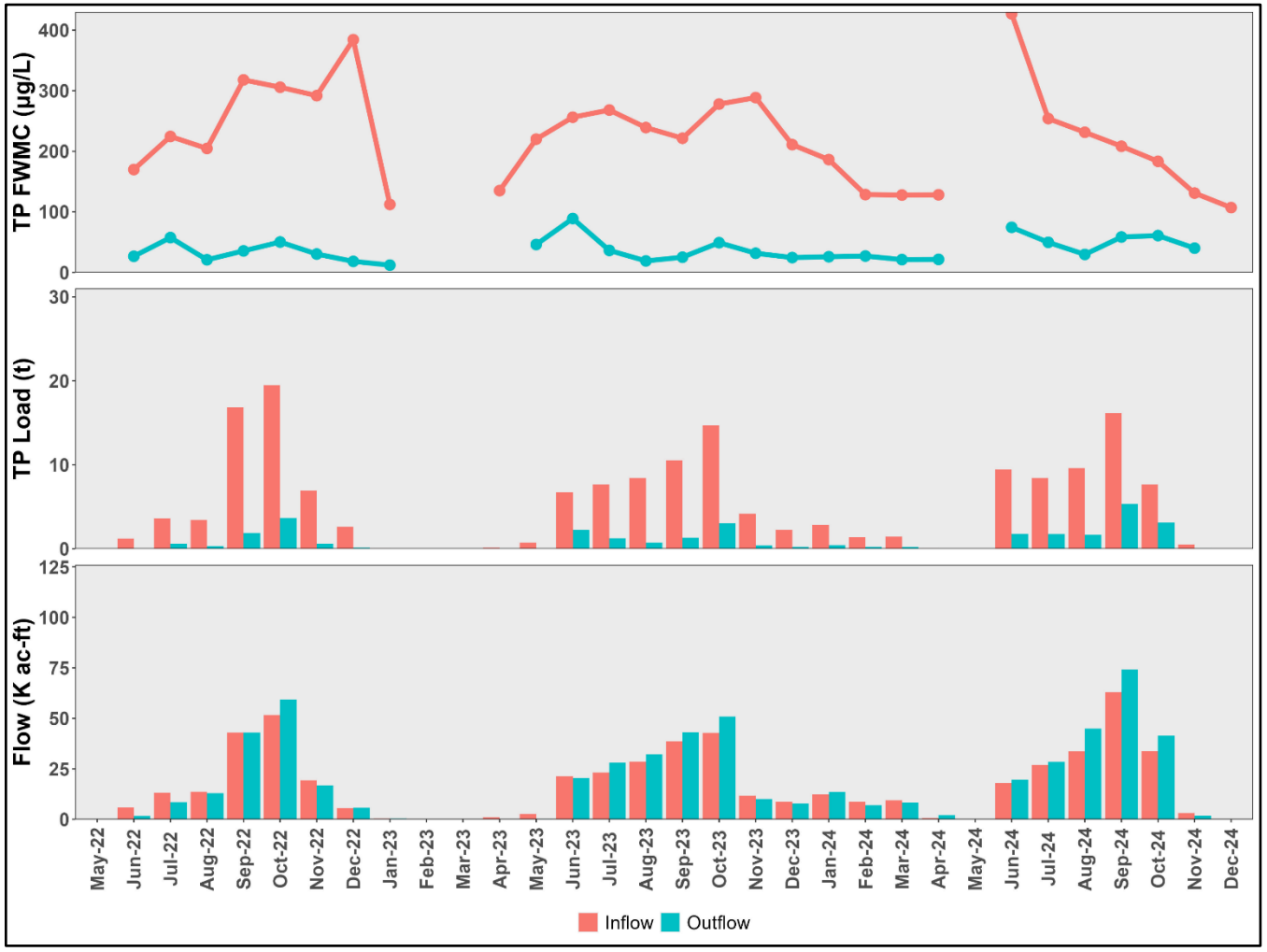


	WY2023	WY2024	Partial WY2025 (05/01/2024 - 12/31/2024)
Total inflow (k acre-feet)	153	209	178
TP FWMC inflow / outflow (µg/L)	288 / 40	237 / 37	235 / 53
TP load inflow / outflow (tons)	54 / 7	61 / 10	52 / 14
Reduction in TP FWMC / load	86% / 87%	84% / 83%	78% / 74%

Includes preliminary data

Presenter: Jake Dombrowski

STA-5/6 Monthly Inflows and Outflows



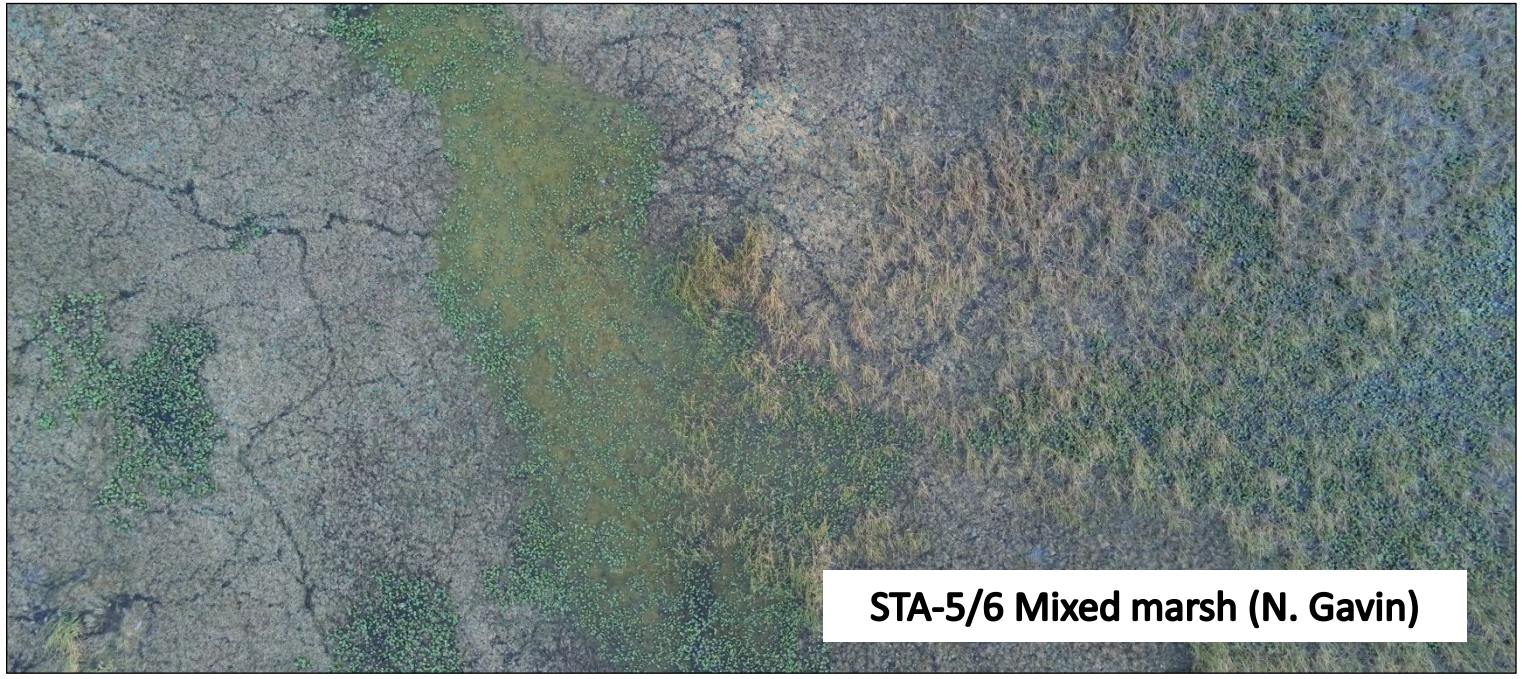
- Frequent dry-out conditions during the dry seasons
- Elevated inflow/outflow TP FWMC following dry-out
  - Reduced impact in recent WYs
- High inflow TP FWMC in June 2024

Includes preliminary data

Presenter: Jake Dombrowski

STA-5/6 Operational Restrictions (Jan. 1, 2024 – Dec. 31, 2024)

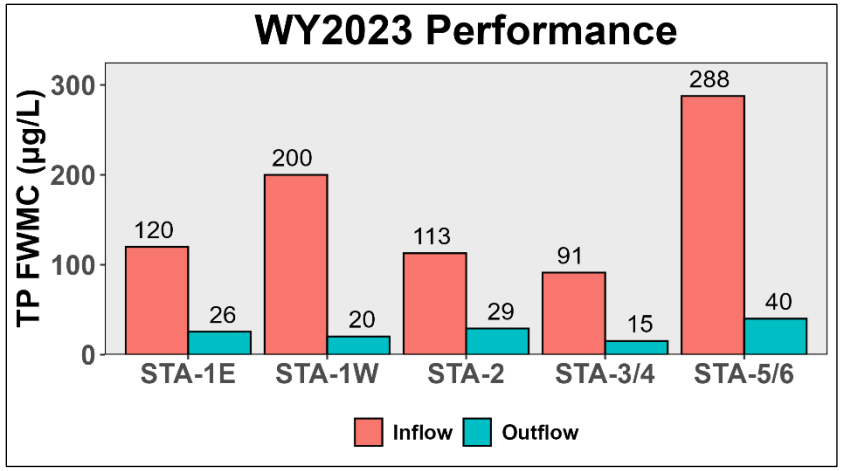
- Flow-way 4 online with restrictions for post-burn vegetation grow-in

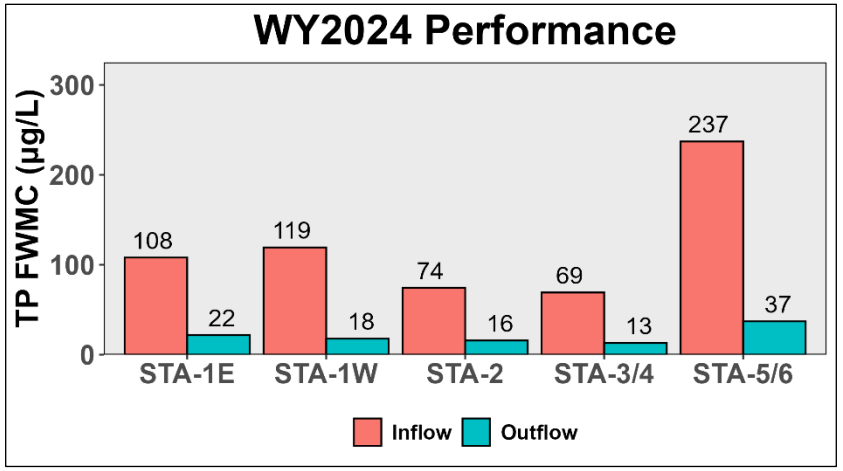


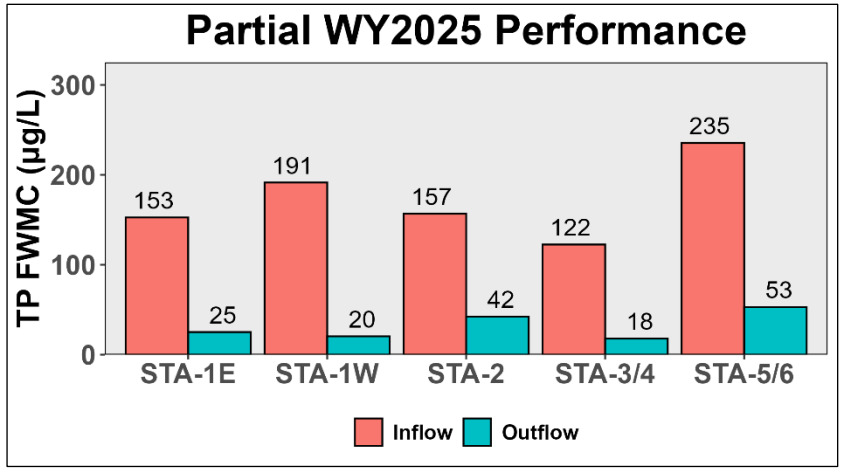
STA-5/6 Mixed marsh (N. Gavin)

Cell 1B SAV coverage (J. Jenison)

All STAs Performance Comparison by WY







	WY2023	WY2024	Partial WY2025 (05/01/2024 - 12/31/2024)
Total inflow (k acre-feet)	1084	1469	1005
Lake releases (k acre-feet)	43	83	134
TP FWMC inflow / outflow (µg/L)	144 / 25	103 / 19	161 / 31
TP load inflow / outflow (tons)	193 / 33	187 / 35	199 / 40
Reduction in TP FWMC / load	83% / 83%	82% / 81%	81% / 80%

Includes preliminary data

Presenter: Jake Dombrowski

Contact info

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STA Vegetation Management

Eric Crawford
Lead Scientist
Land Resources Bureau

22nd Annual Public Meeting on the Long-Term Plan for Achieving Water Quality Goals for the Everglades Protection Area Tributary Basins

February 24, 2025

STA Vegetation Function

Emergent plantings after cattail failure

- **Emergent Aquatic Vegetation (EAV)**
  - Stabilize soils
  - Create beneficial flow patterns
  - Decrease turbidity
  - Create litter
  - Protect SAV
- **Submerged Aquatic Vegetation (SAV)**
  - Water column nutrient uptake
  - Periphyton substrate

Management Objectives

Maintain sustainable vegetation-based nutrient uptake processes

Vegetation Enhancement

- Establish/maintain appropriately diverse vegetation communities
- Improve stability and functional redundancy
- Protect vulnerable communities/ locations

Selective Management

- Increase desirable species
- Control nuisance populations

STA Vegetation Categories

Healthy Marsh

A diverse mix of emergent and immersed vegetation

Unhealthy Marsh

Nuisance vegetation, floating mats and floating delaminated soils

Vegetation Management Process

- Monitor Vegetation and Cell Health
- Observe changes in condition
- Proactively Manage Vegetation
- Increase cover and health of desired species where needed
- Control undesirable species
- Repair Damage and Restore Functionality
- Emergent vegetation enhancements where vegetation is damaged or undesirable and SAV inoculations where appropriate

EAV Management

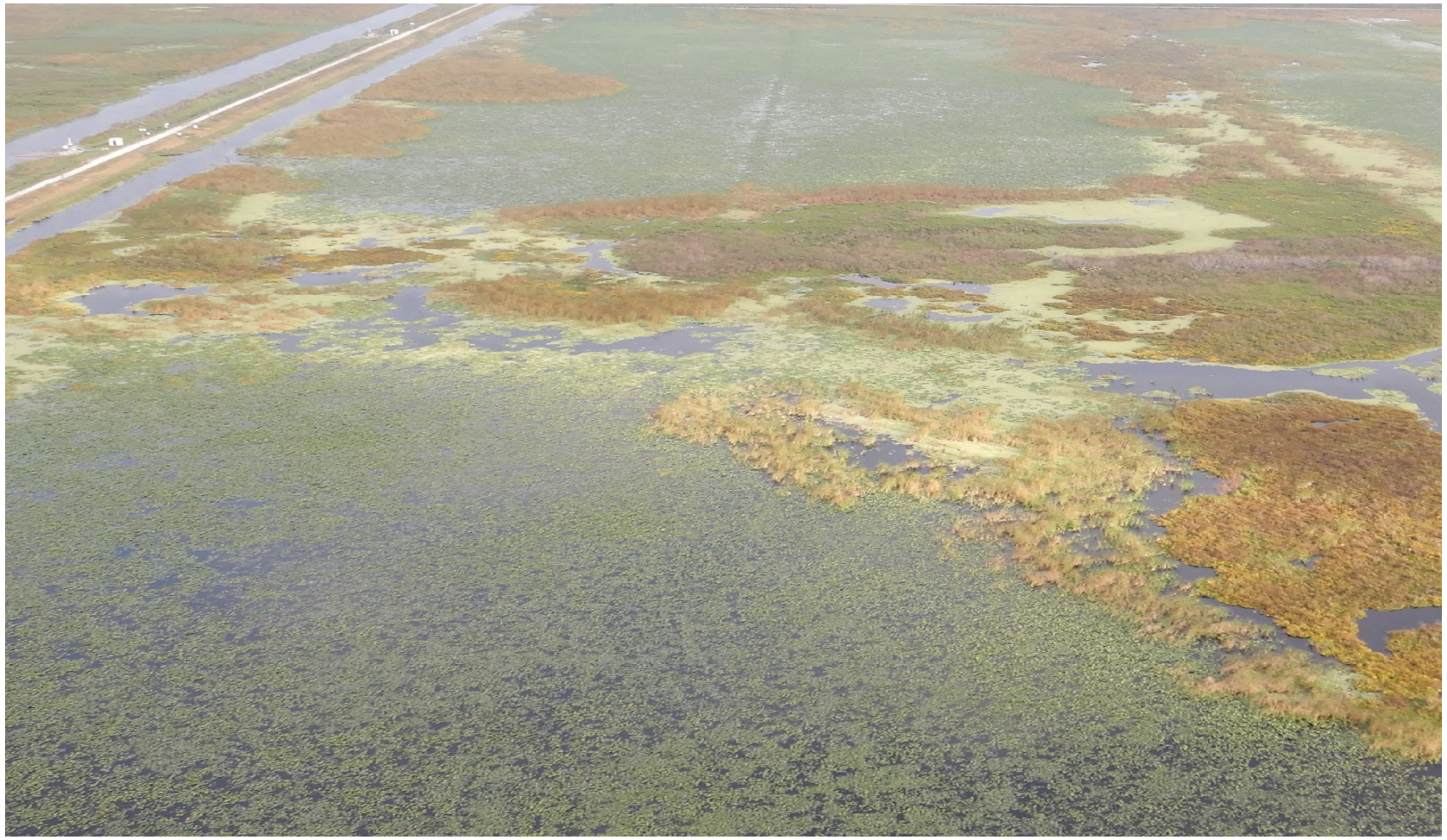
- Healthy native vegetation can interfere with the spread of invasive plants
- Multiple native species used in varying conditions to maximize resiliency and performance
- Redirect flows, repair damage, stabilize sediments, fix short circuits

SAV Management

- Compartmentalize the SAV cells with vegetation strips
- Smaller, more diverse and compartmentalized SAV beds can be more resistant
- EAV provides structure, protection, and litter to assist with nutrient uptake

Floating Aquatic Vegetation Control

- FAV control is needed to protect desirable vegetation
- Dense emergent vegetation helps to reduce FAV penetration into the Cells

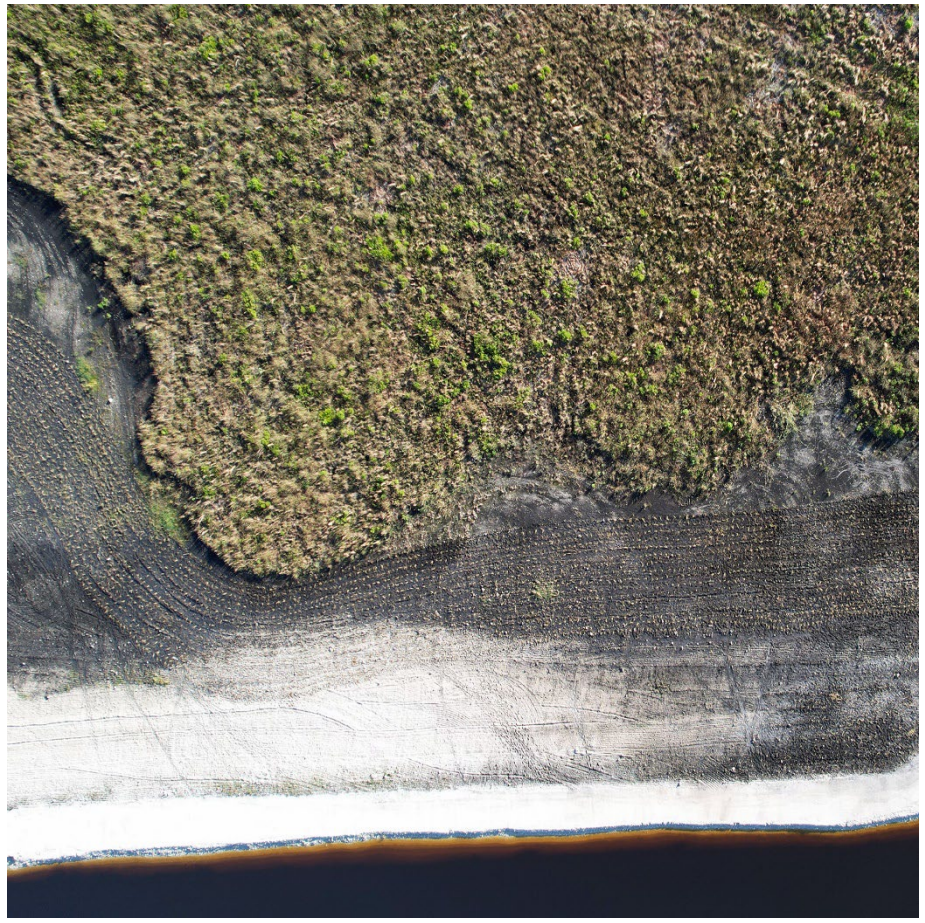


STA 1W Expansion 2

- Inflow region plantings stabilize soils and help create sheet flow
- Giant bulrush roots deeply and can withstand wind and water movement

STA 1W Expansion 2

- Outflow region plantings to protect disturbed soils and provide structure for periphyton



A2 STA Planting

Plantings being made to increase diversity and resilience while filling in areas where cattail recruitment is sparse.

A2 STA Planting

Presenter: Eric Crawford

C-139 Planting

Presenter: Eric Crawford

STA 1E Central Flow-way

Presenter: Eric Crawford

STA 1E Central Flow-way

Presenter: Eric Crawford

CONTACT INFORMATION

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Restoration Strategies Science Plan Studies: Results and Management Considerations

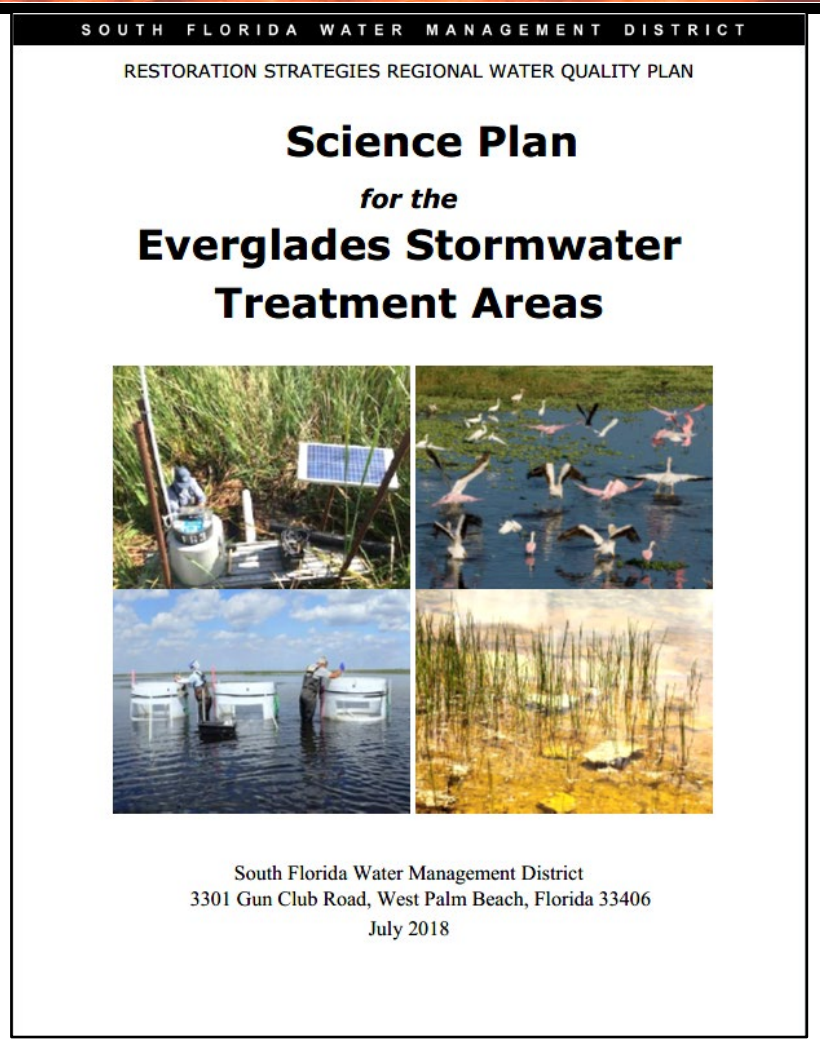
R. Thomas James, Principal Scientist
Jill King, Section Administrator
Applied Sciences Bureau

22nd Annual Public Meeting on the Long-Term Plan for Achieving Water Quality Goals for the Everglades Protection Area Tributary Basins

February 24, 2025

The Science Plan

- Developed in 2013 and updated in 2018
- Specified in Restoration Strategies Regional Water Quality Plan
- Required by Stormwater Treatment Area (STA) permits and consent orders
- Framework for studies
  - Evaluate key factors and processes that affect phosphorus (P) removal in the STAs
  - Support design, operation, & management of STAs to achieve Water Quality-Based Effluent Limit (WQBEL)


SOUTH FLORIDA WATER MANAGEMENT DISTRICT

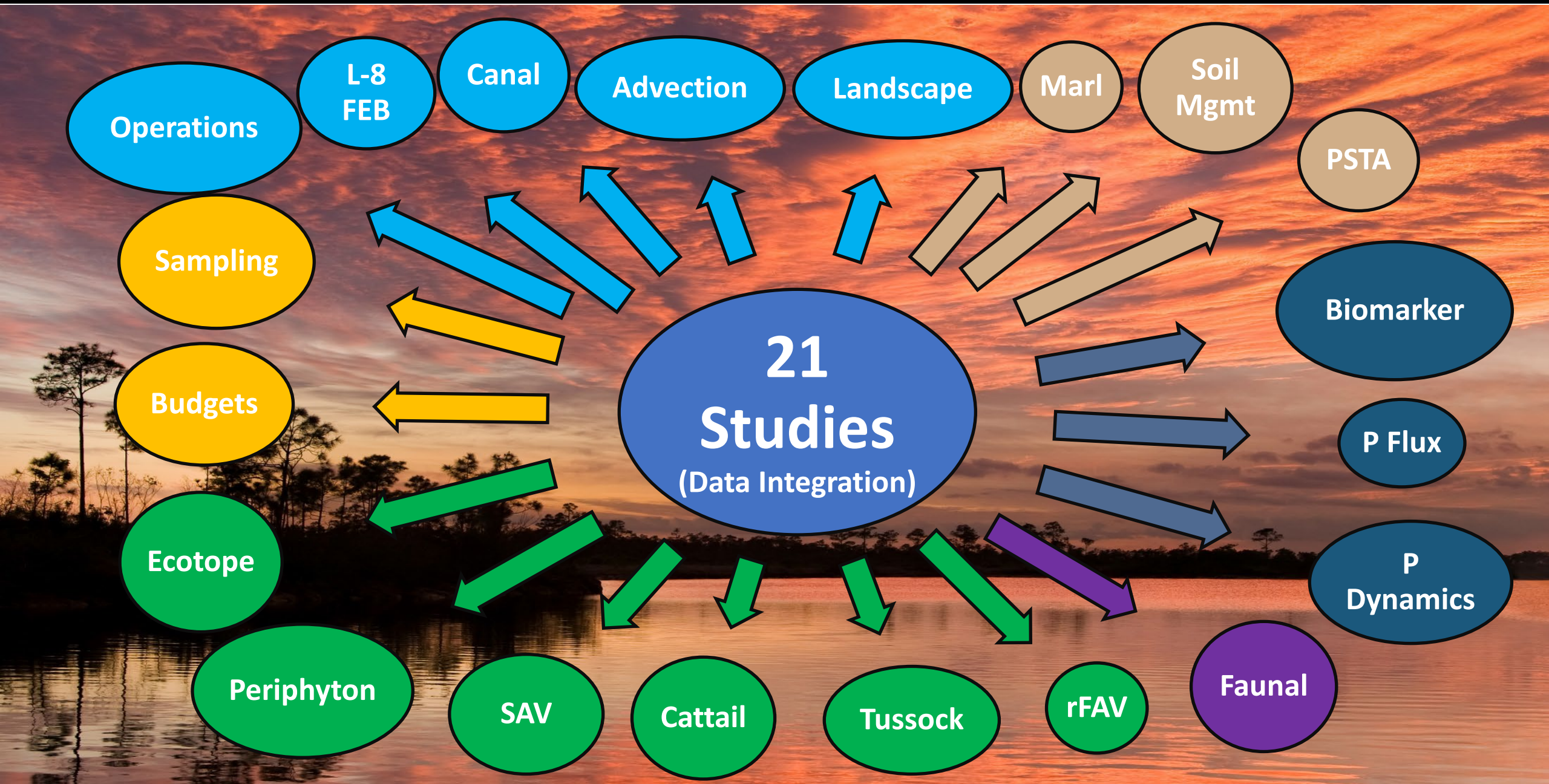
RESTORATION STRATEGIES REGIONAL WATER QUALITY PLAN

Science Plan

for the

Everglades Stormwater Treatment Areas

South Florida Water Management District
3301 Gun Club Road, West Palm Beach, Florida 33406
July 2018



Presenter: R. Thomas James

The Team

UF IFAS UNIVERSITY of FLORIDA
SOIL, WATER, AND ECOSYSTEM SCIENCES

FIU

wsp

ESA

DB Environmental

Coastal Ecosystems, LLC
Wilmington, NC

South Florida Engineering & Consulting

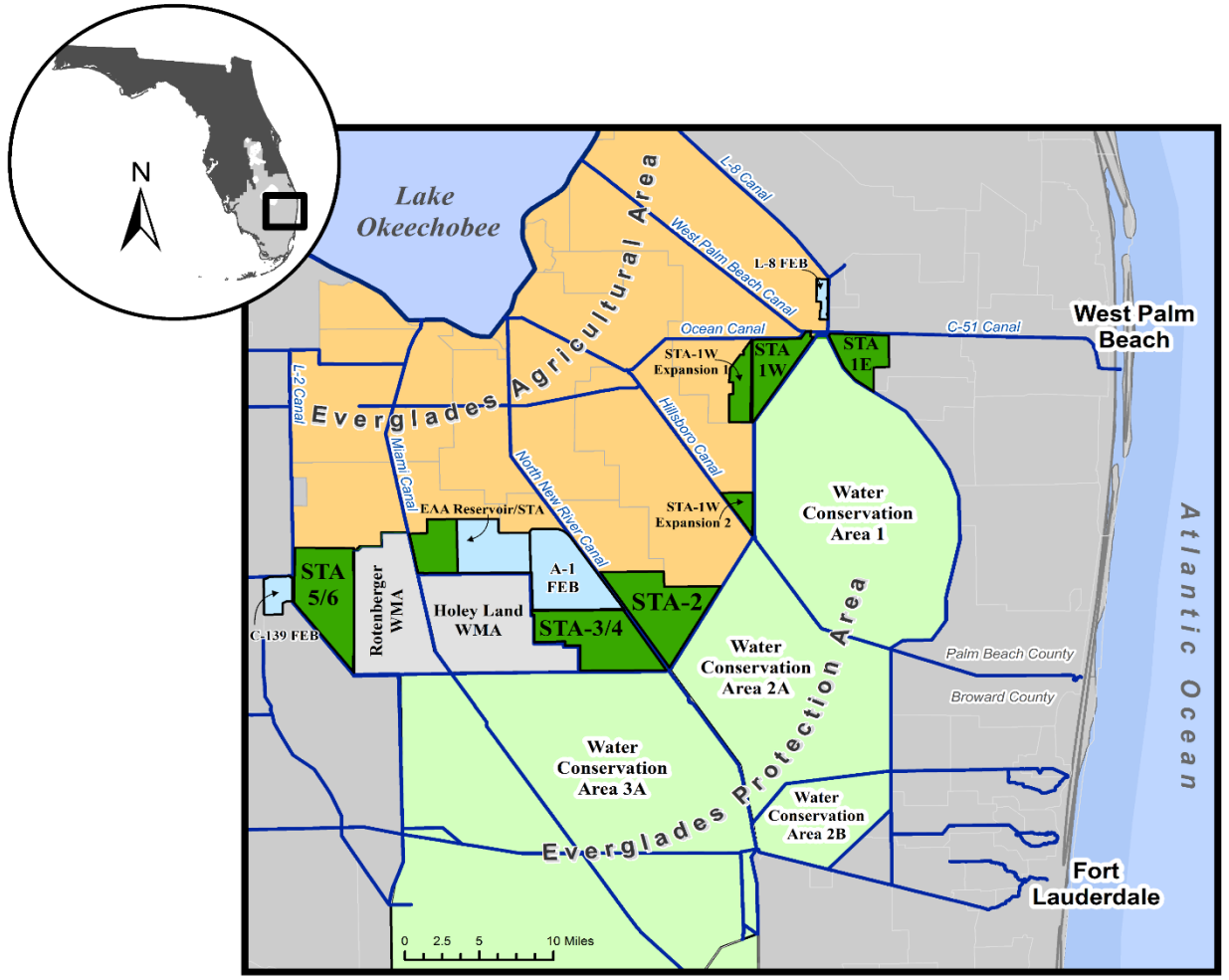
Stantec

Florida Gulf Coast University

Presenter: R. Thomas James

Stormwater Treatment Areas (STAs)

- Five STAs and three Flow Equalization Basins (FEBs)
- Reduce total P (TP) in water outflow to the Everglades Protection Area
  - 62,000 acres
  - Over the past 30 years
    - treated 27.8 million ac-ft of water
    - retained 3,533 metric tons of TP
    - 78% TP load reduction
- WY2024 range of outflow TP concentrations
  - STA-3/4: 13 ppb
  - STA-5/6: 37 ppb



Presenter: R. Thomas James

STAs are different (period of record through WY2024)

Parameter (Unit)	STA-1E	STA-1W	STA-2	STA-3/4	STA-5/6
Treatment Area (ac)	4,994	10,810	15,495	16,327	14,338
Start Date	September-2004	October-1993	June-1999	October-2003	December-1997
Average Annual Inflow Water Volume (ac-ft)	133,775	168,062	291,704	442,779	137,246
Number of Flow-ways	3	3	5	3	8
Average Annual TP Inflow Load (kg)	25,937	37,146	35,879	53,928	34,185
Phosphorus Loading Rate (PLR: $g/m^2/yr.$)	1.53	1.48	0.89	0.86	0.99
Hydraulic Loading Rate (HLR: cm/d)	2.67	2.26	2.43	2.39	1.34
Flow weighted mean (FWM) Inflow TP (ppb)	157	179	100	99	202
Average Annual Outflow Water Volume (ac-ft)	123,155	174,037	312,391	449,160	128,886
Average Annual TP Outflow Load (kg)	15	25	23	23	27
FWM Outflow TP Concentration (ppb)	36	43	21	15	61
Average Annual TP Retained (kg)	25,922	37,121	35,856	53,905	34,159
% TP Retained	79%	75%	77%	85%	72%

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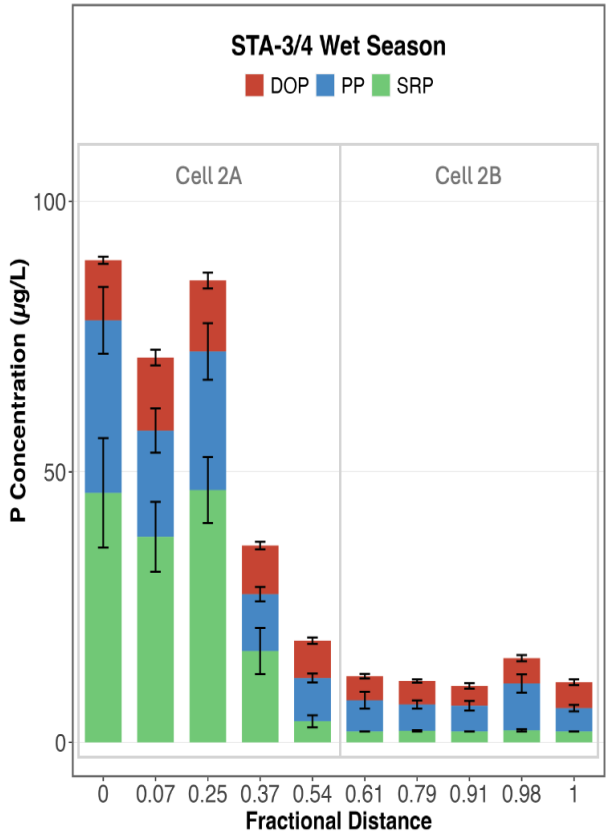
Presenter: R. Thomas James

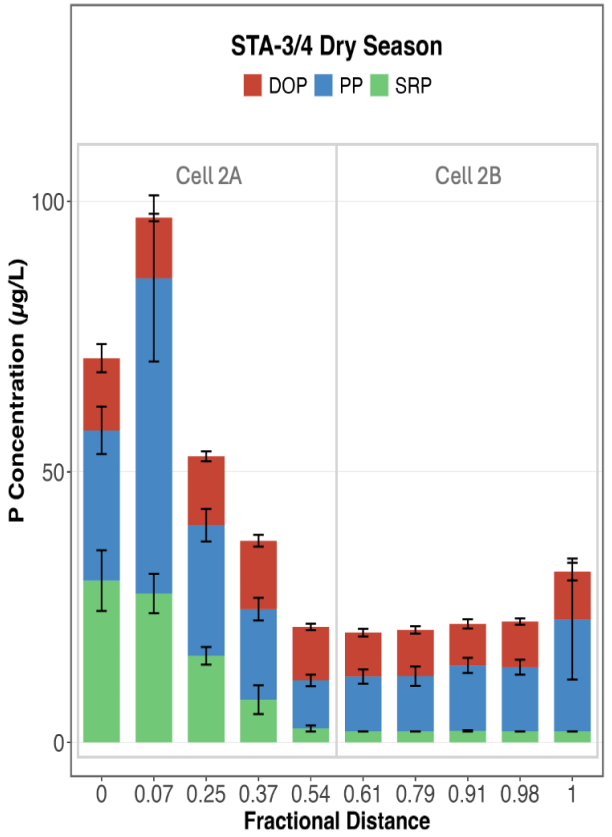
Results

Water Column Phosphorus

G-250 inflow pump station

G-251 outflow pump station





Jerauld et al. (2024)

Inflow

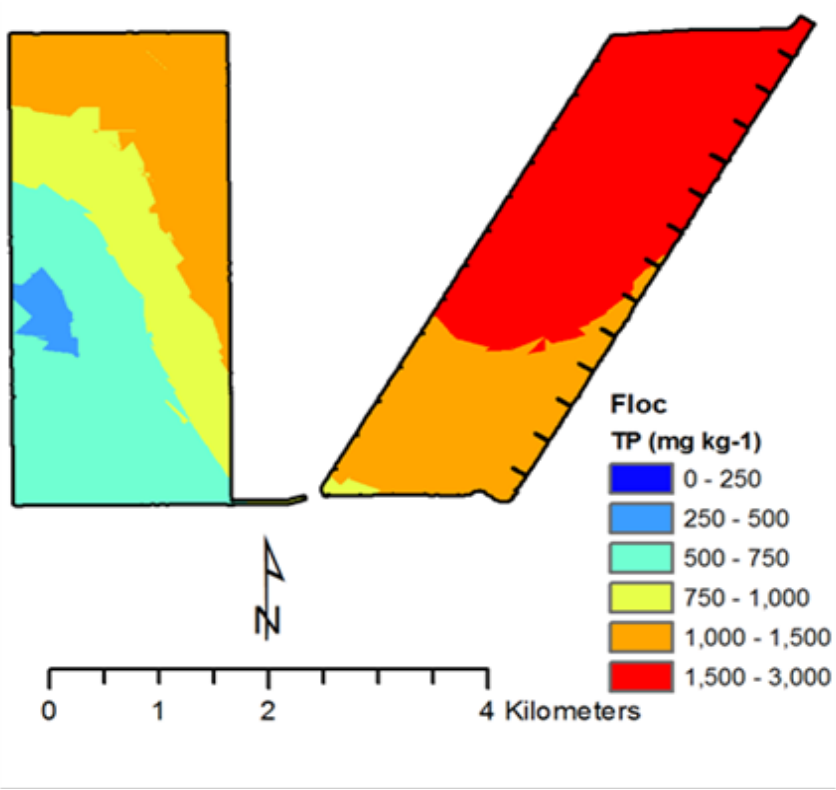
- High in soluble reactive P (SRP)
- Organic P sourced from terrestrial plants

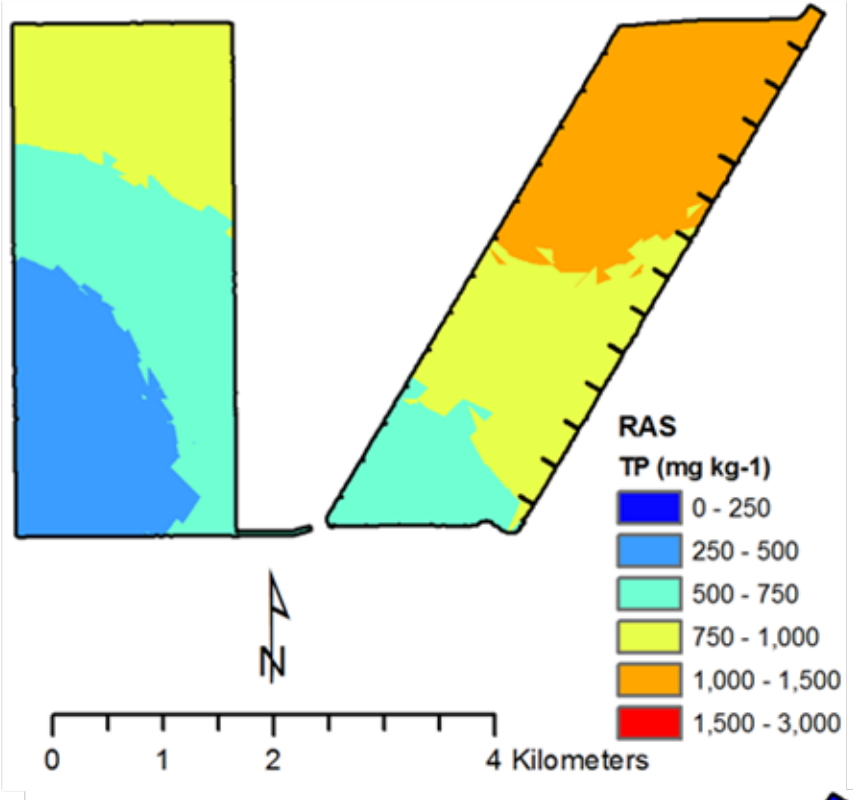
Pathway

- SRP disappears
- At outflow Mostly dissolved organic P (DOP) and Particulate P (PP)
- PP higher in no-flow (dry season) conditions
- PP and TP are lower with flow (wet season) conditions)

Phosphorus Trends

- TP declines in floc (detritus), recently accreted soils (RAS)

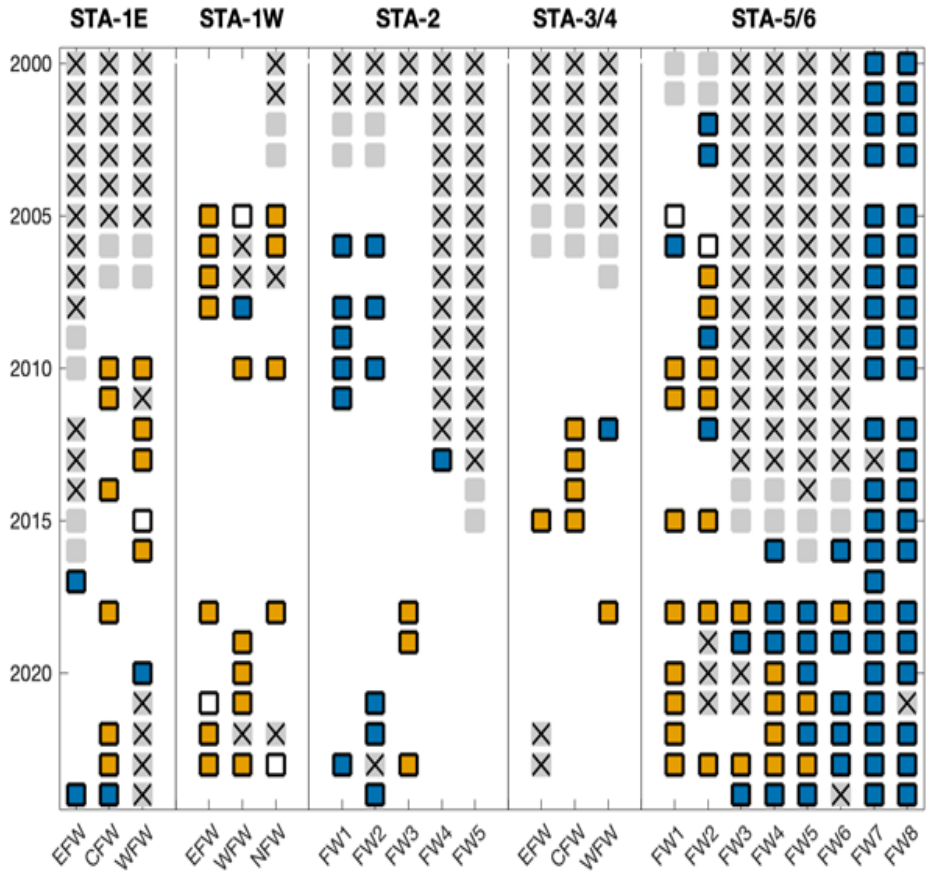




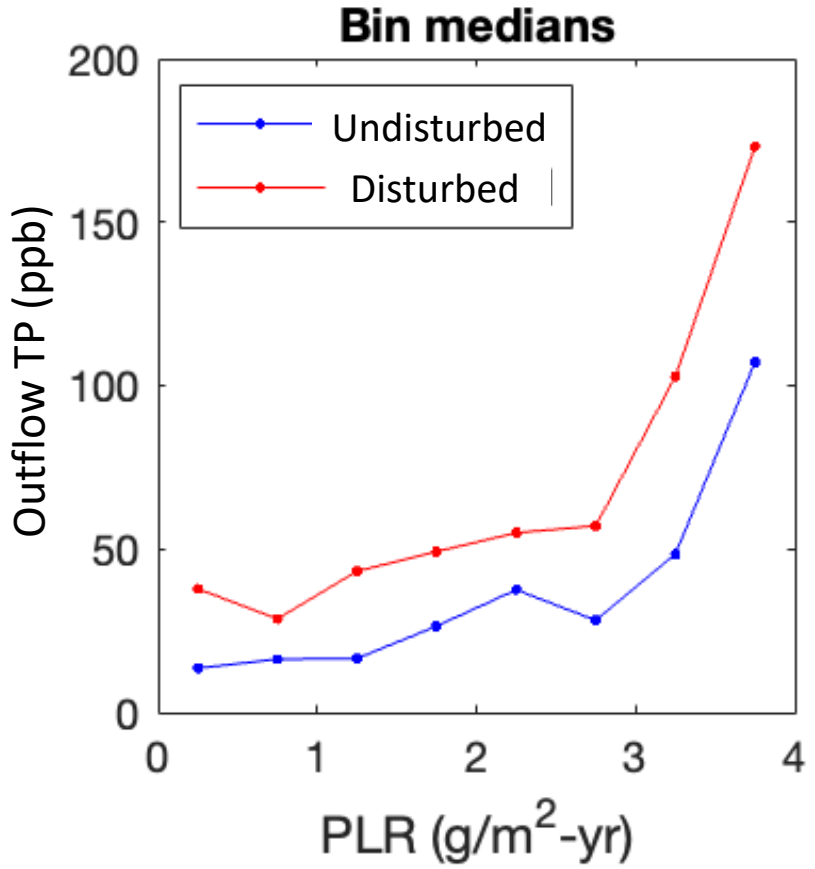
Osborne, et al. (2019)

Disturbance and Phosphorus Loads

Disturbance years in STAs

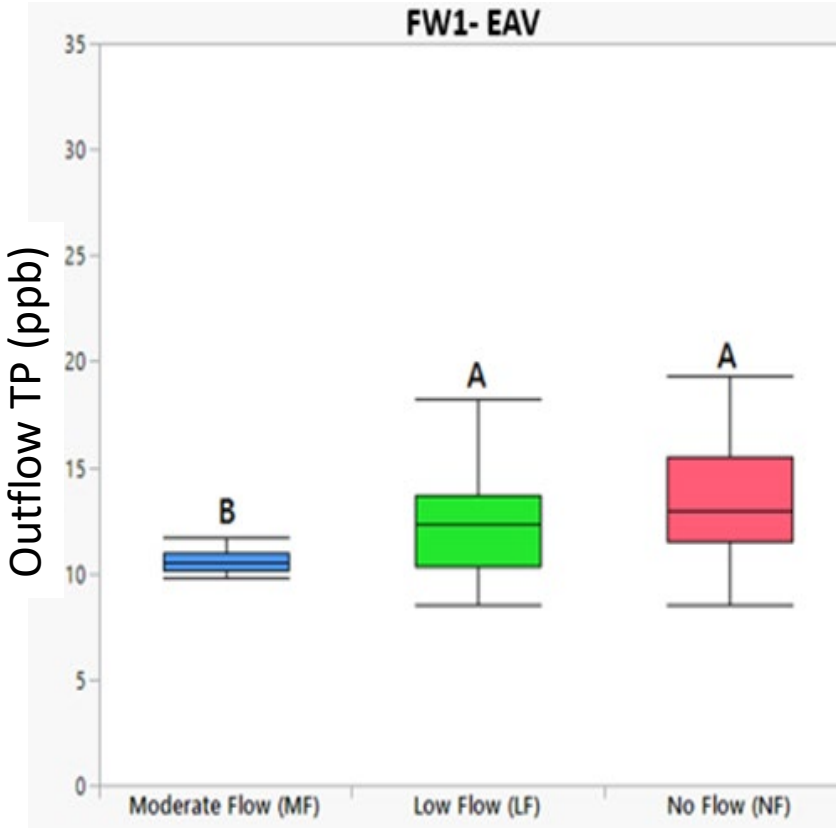


- Disturbed
  - Vegetation loss, drydown or construction
  - Outflow is above 20 ppb
- Undisturbed
  - P loads below 1.3 g/m2/yr
  - Outflow is below 20 ppb



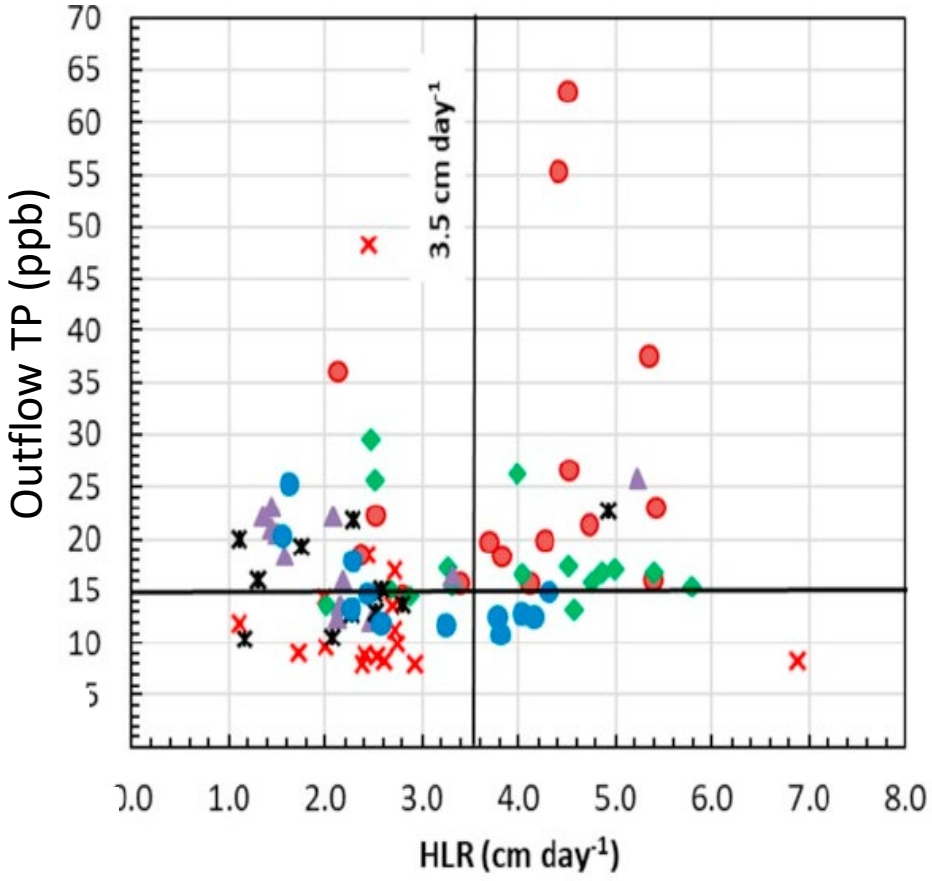
DB environmental. (2024)

Hydrology Loads



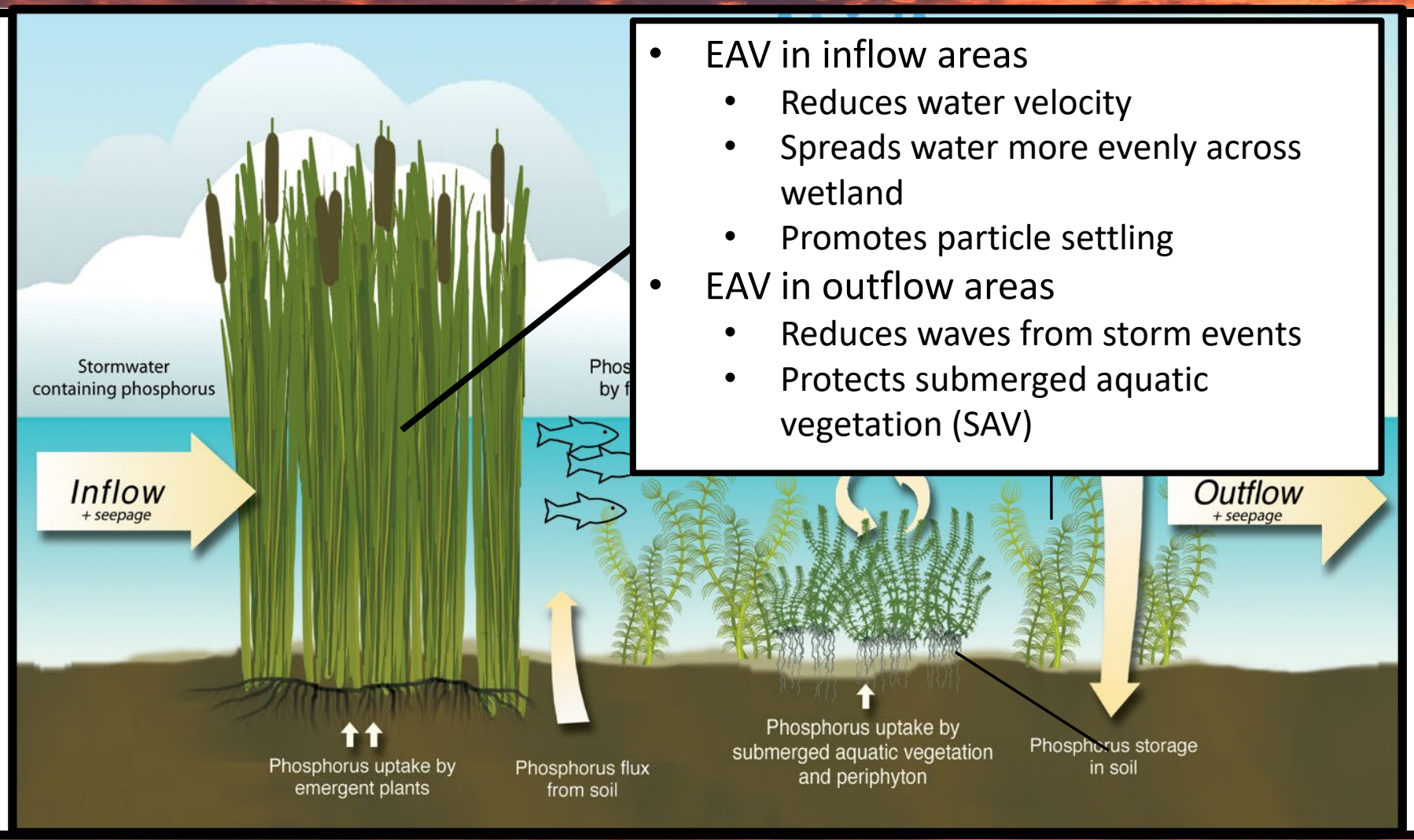
Villapando et al. (2024)

- Lowest daily outflow TP concentrations
  - Moderate flow- daily HLR between 5 and 15 cm/d
- Annual HLR <=3.5 cm/d
  - 54% of years FWM <= 15
- Annual HLR > 3.5 cm/d
  - 29% of years FWM <= 15



Zhao, H., and T. Piccone. (2020)

Vegetation (emergent aquatic vegetation: EAV)

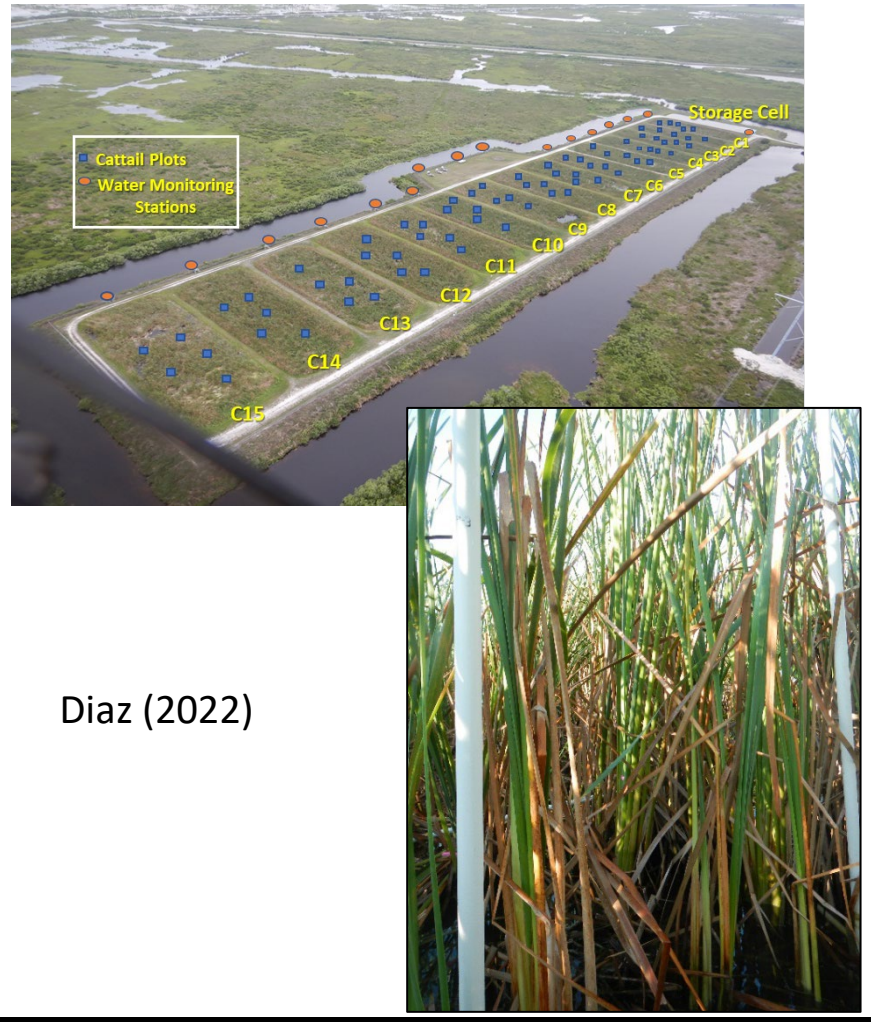


- EAV in inflow areas
  - Reduces water velocity
  - Spreads water more evenly across wetland
  - Promotes particle settling
- EAV in outflow areas
  - Reduces waves from storm events
  - Protects submerged aquatic vegetation (SAV)

Cattail in STA-1W October 2005

Presenter: R. Thomas James

Vegetation (EAV)



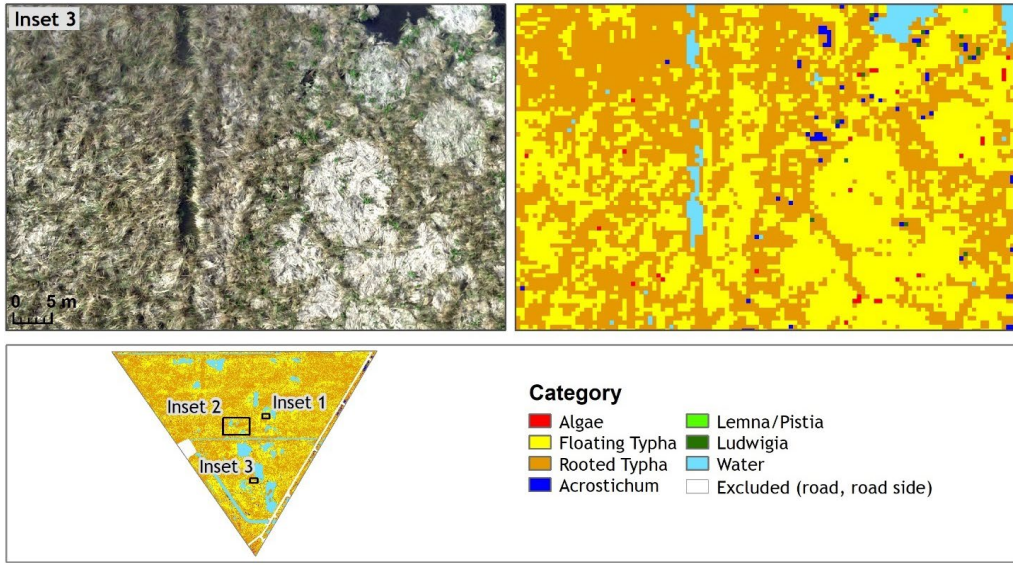
Diaz (2022)

- Water depth at 85 cm (2.8 feet) or more
  - increased cattail stress, mortality and tussock formation
- Sudden drop in water depth
  - plants fall over (lodge)

Diaz, et al. (2023)

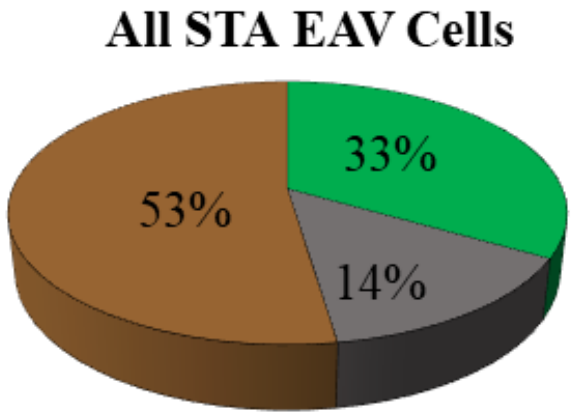
Vegetation (Tussock)

- Unmanned areal vehicles can be used to find Tussocks
- Tussocks more likely to form
  - Areas recently converted to STA from farm land
  - In soils with low TP concentrations
  - Water levels are deep (2 ft or above)



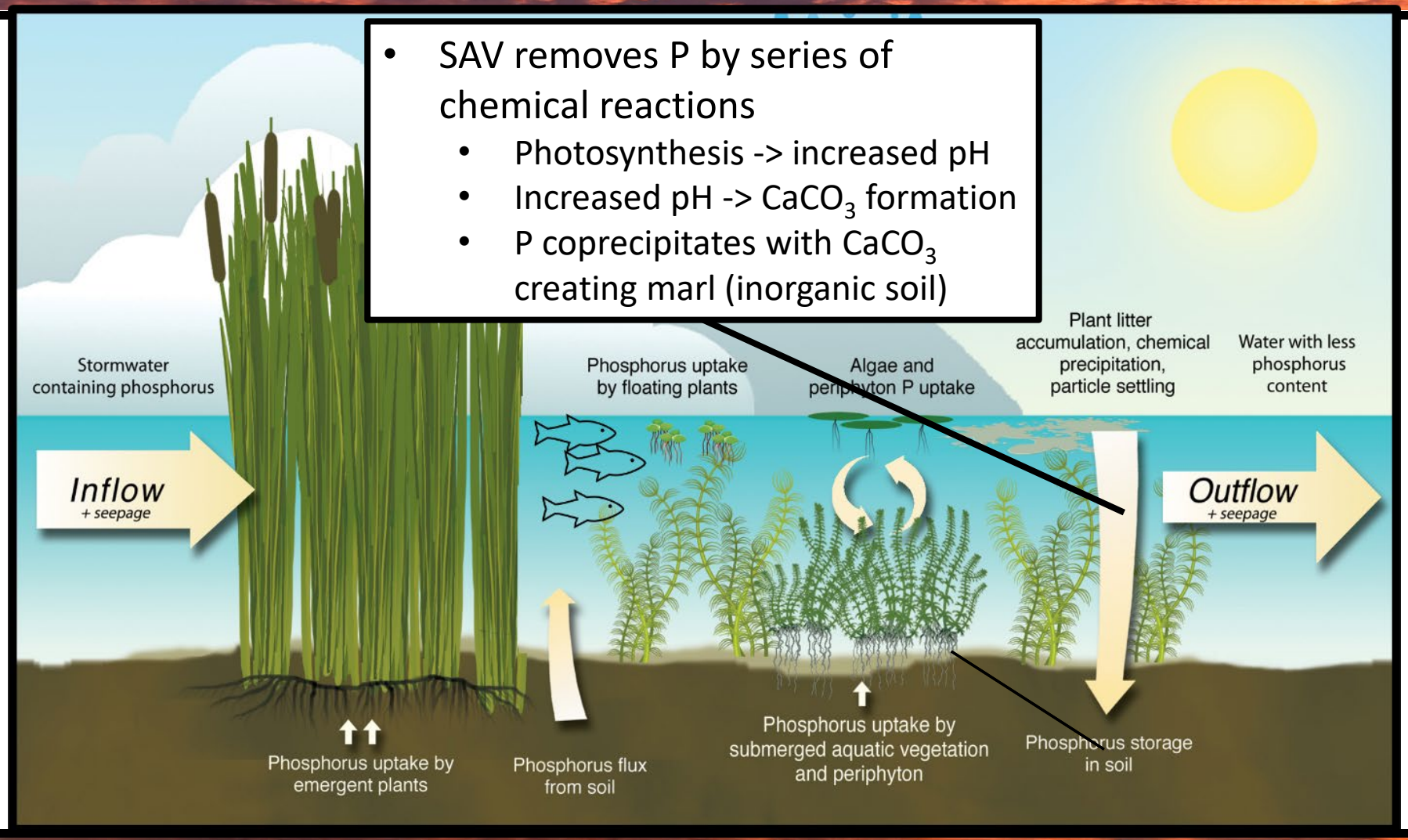
Clark et al (2024)


Drone used in the floating tussock mapping efforts.



Vegetation (submerged aquatic vegetation: SAV)

- SAV removes P by series of chemical reactions
  - Photosynthesis -> increased pH
  - Increased pH -> $CaCO_3$ formation
  - P coprecipitates with $CaCO_3$ creating marl (inorganic soil)

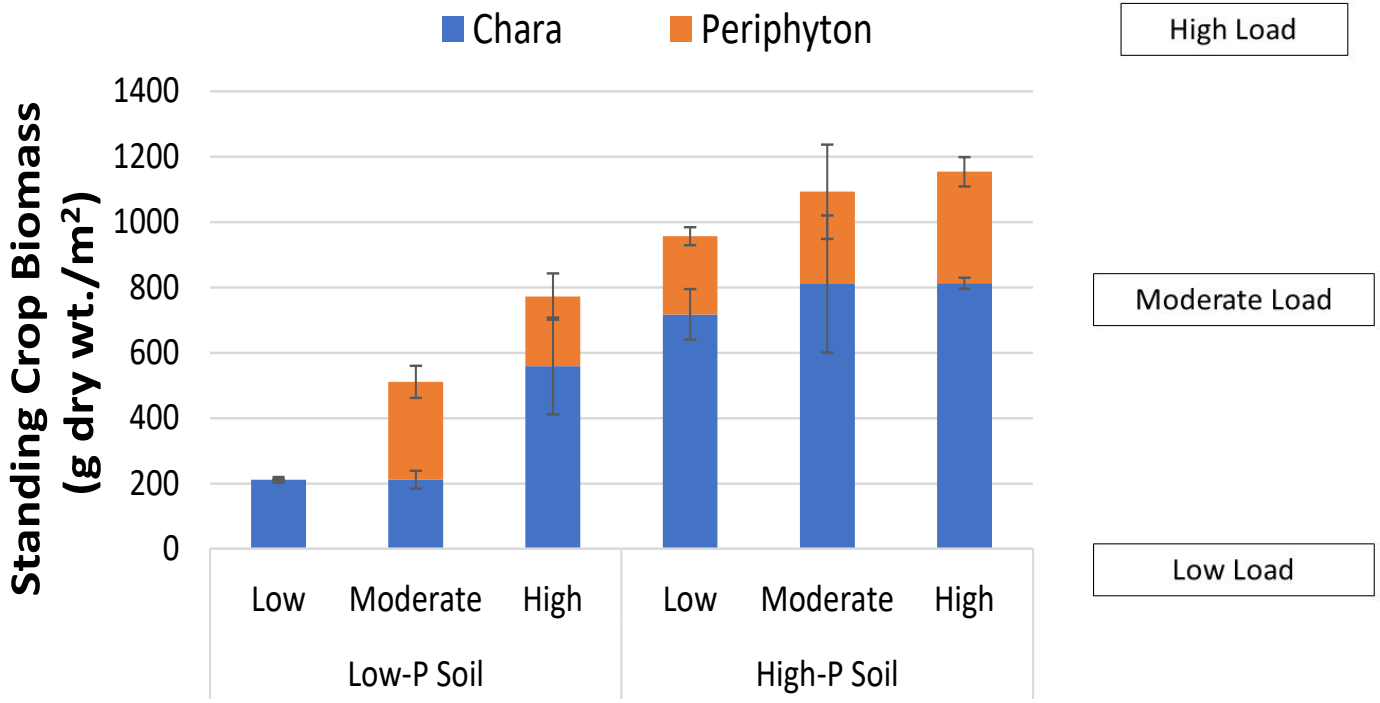


DB environmental (2023).

Presenter: R. Thomas James

Vegetation (SAV)

- SAV was sustained in mesocosms of different loads, flow, water depth
- High loads
  - Lower DO and redox
  - Light limiting
  - Increased potential for sulfide production
  - Could lead to collapse

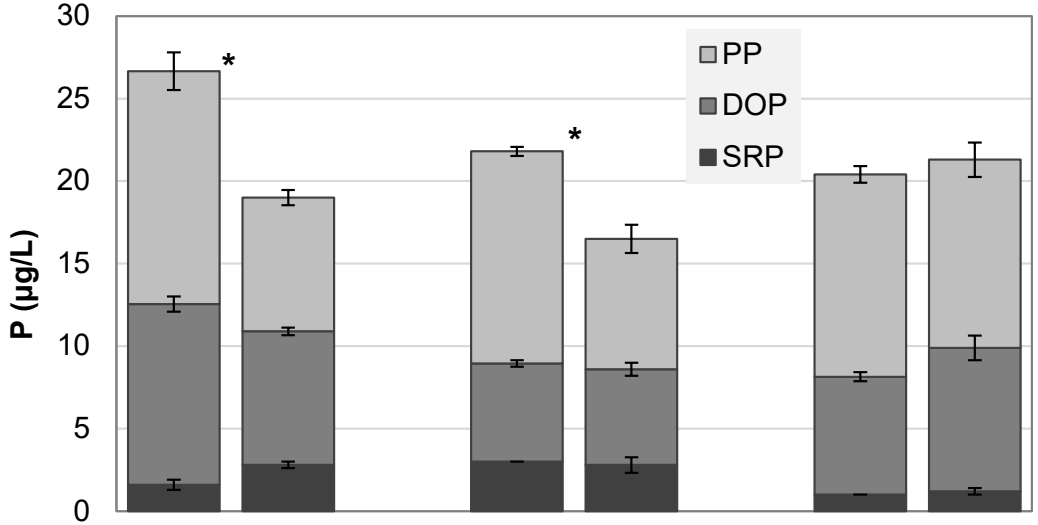


DB environmental (2023a)

Vegetation (SAV vs rooted floating aquatic vegetation:rFAV)

[lotus]
DB Environmental. (2018).

- P concentration in SAV area
  - Less than lily or lotus area
  - Equal to nuphar area



DB Environmental. (2018)

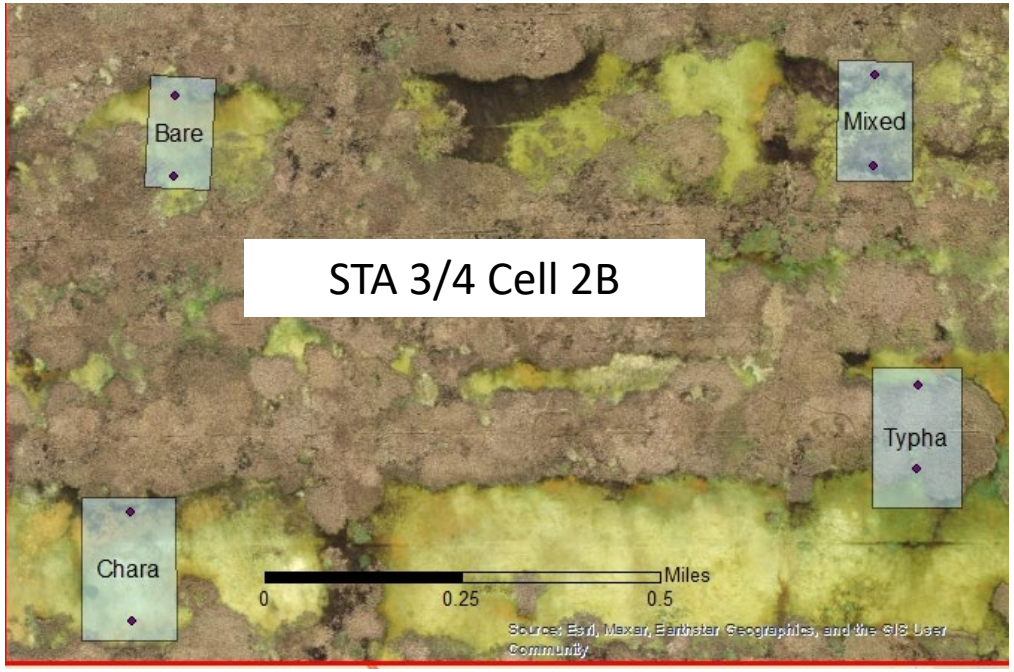
DB environmental. (2023).

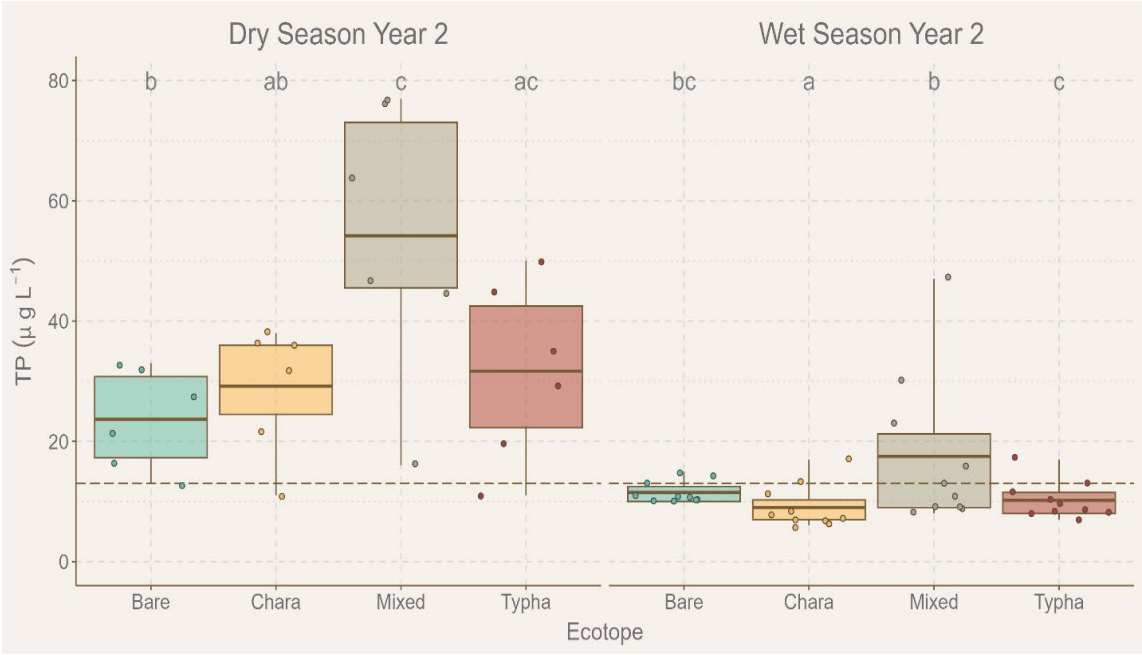
Presenter: R. Thomas James

Ecotopes (Plant communities and associated environment)

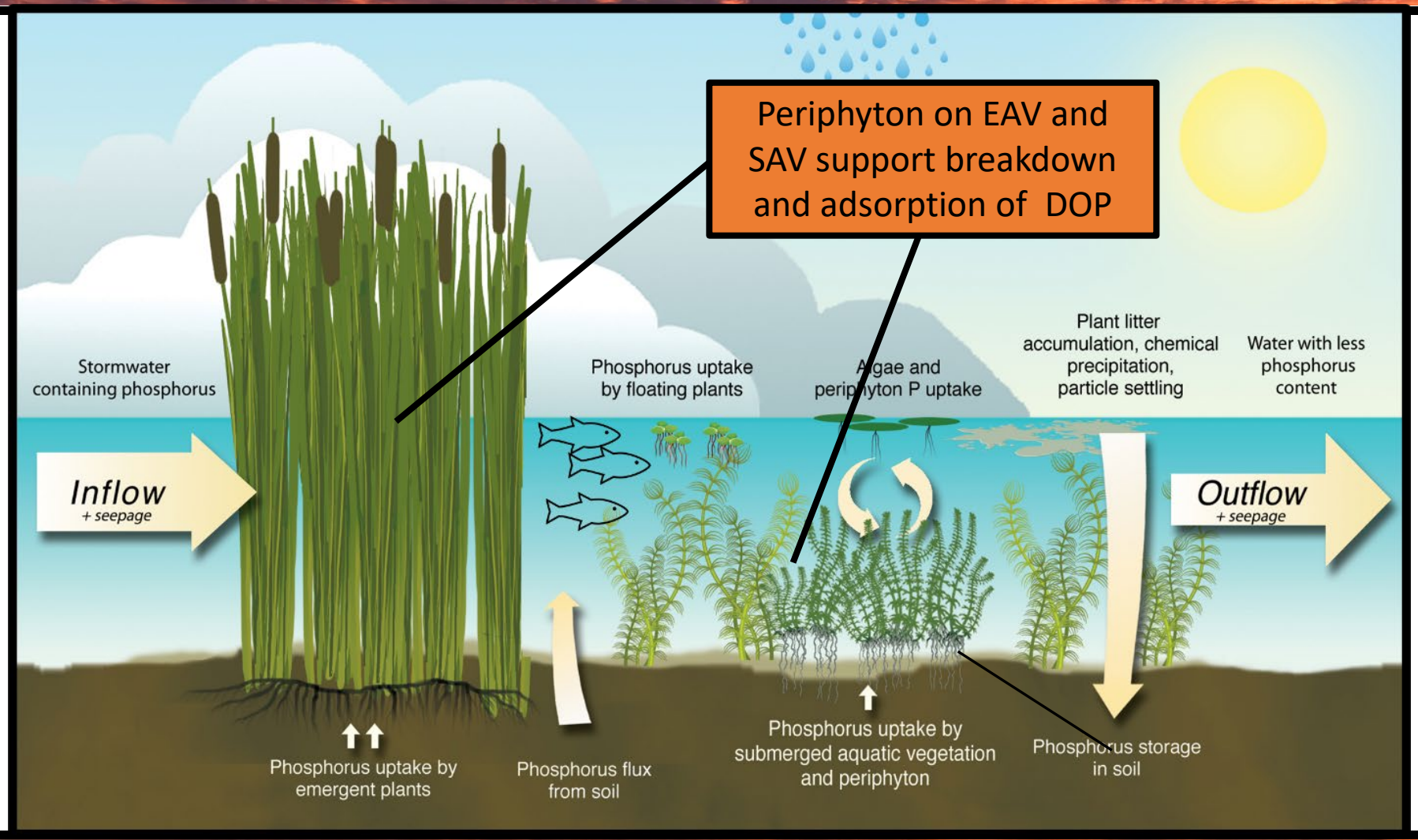
- Wet season
  - The lowest TP in the Chara Ecotope
  - Highest TP in mixed SAV and bare soil
  - Intermediate TP in Typha

Powers (2025)





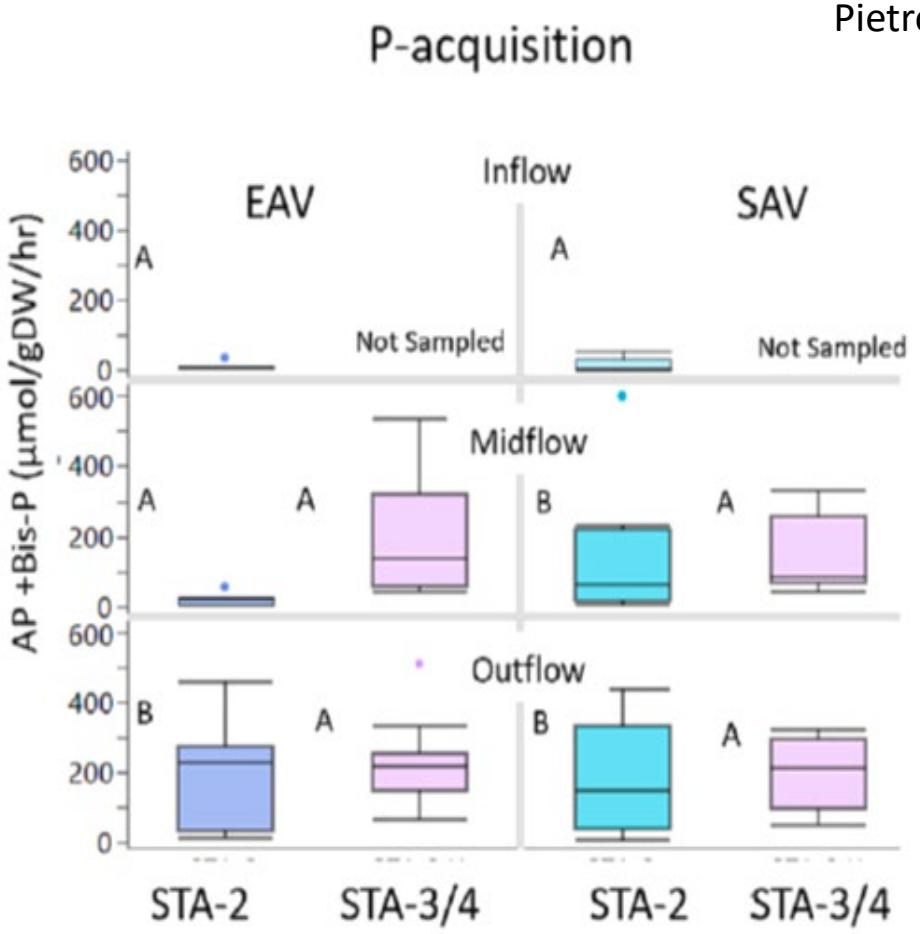
Periphyton



Presenter: R. Thomas James

Periphyton

Pietro et al. (2023)

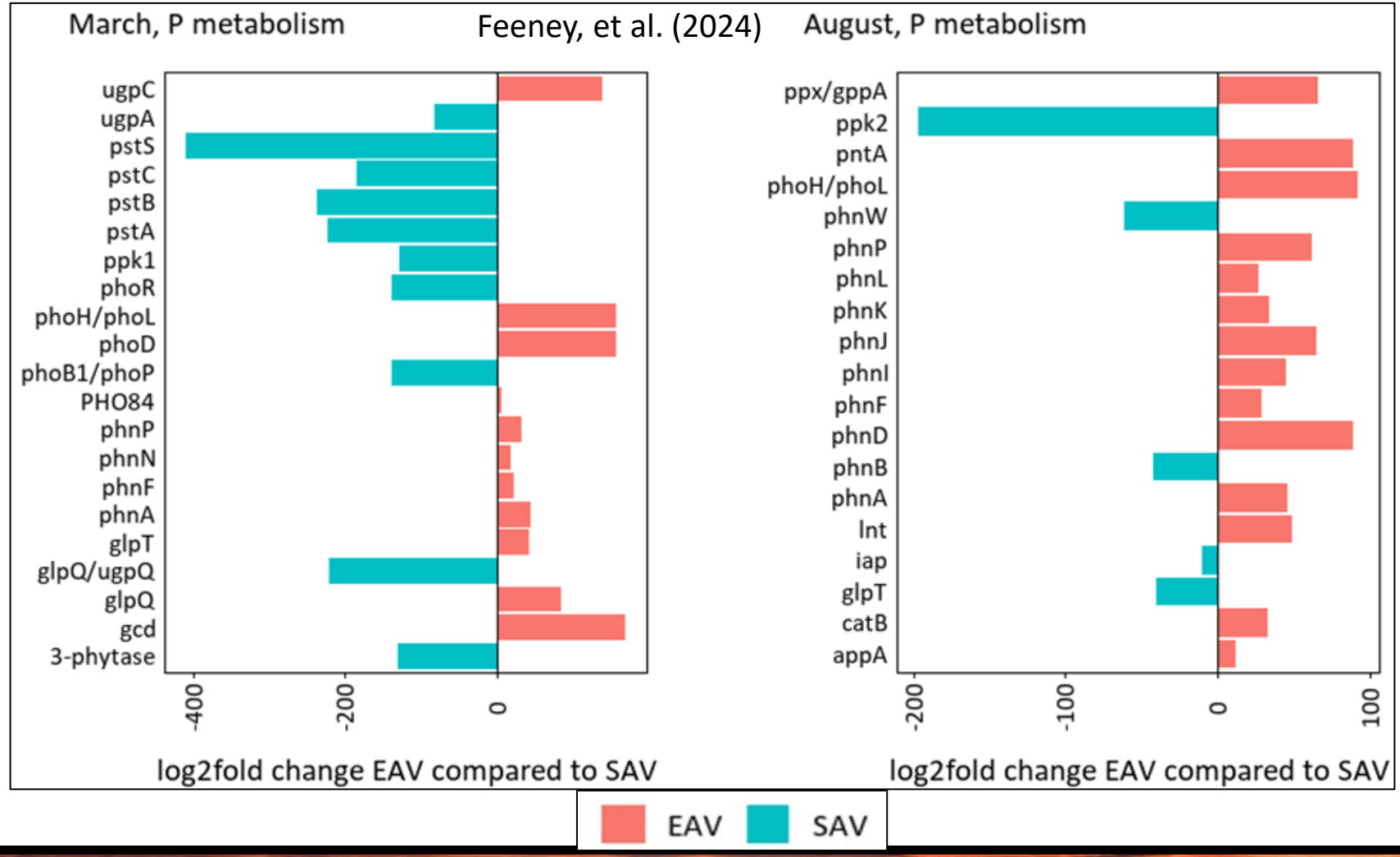


- Periphyton on EAV and SAV support breakdown of DOP
- Enzyme activity increased at the outflow region
  - Low amounts of available phosphorus
  - Use enzymes to degrade organic P

Periphyton (gene expression –RNA analyses)

- SAV periphyton are more adapted to use inorganic P
- EAV periphyton are more adapted to use less abundant organic P

- Differences in P gene expression between SAV and EAV



Presenter: R. Thomas James

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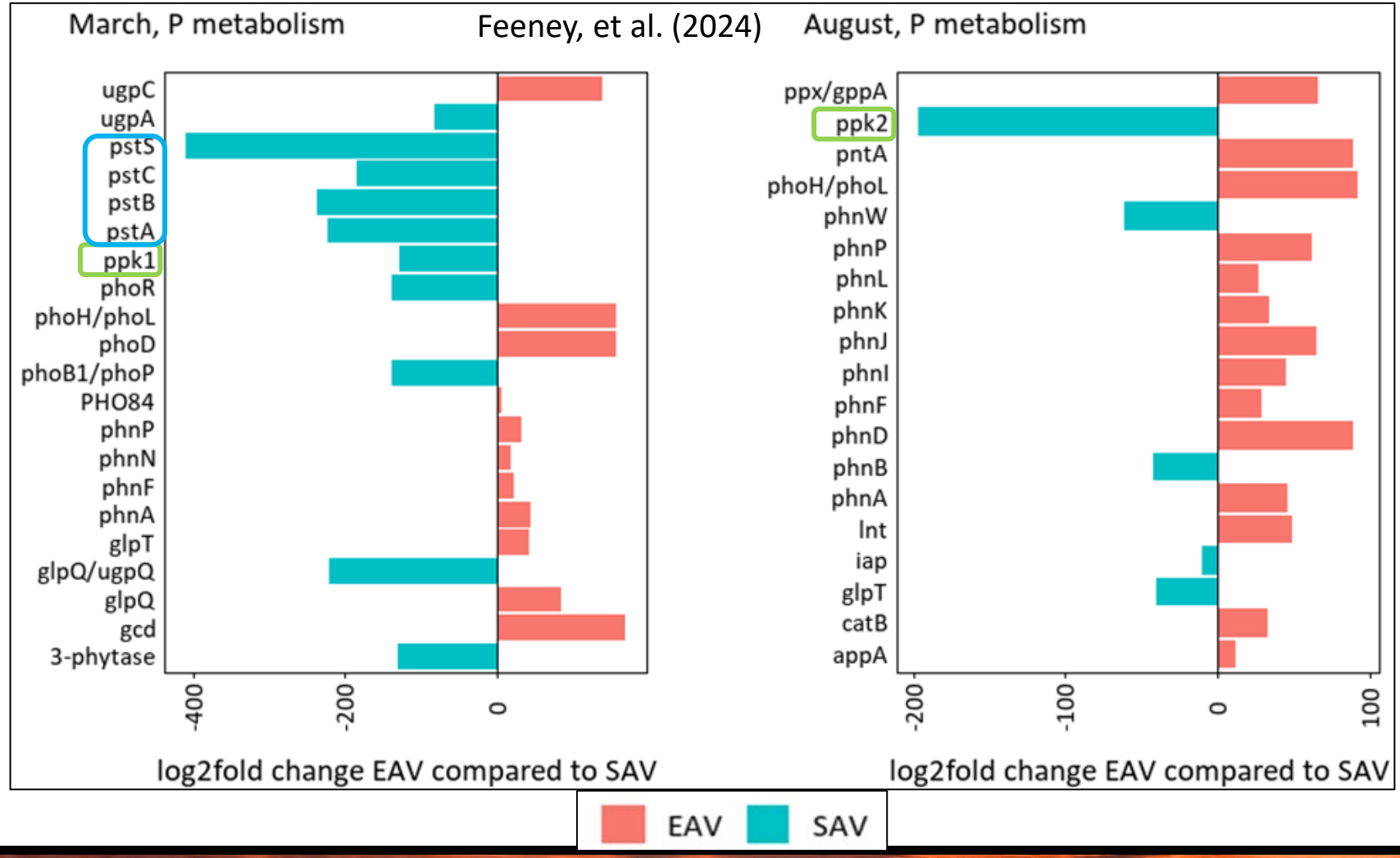
- EAV periphyton are more adapted to use less abundant organic P

- Differences in P gene expression between SAV and EAV
  - SAV = P storage (green), inorganic P transport (blue)



Presenter: R. Thomas James

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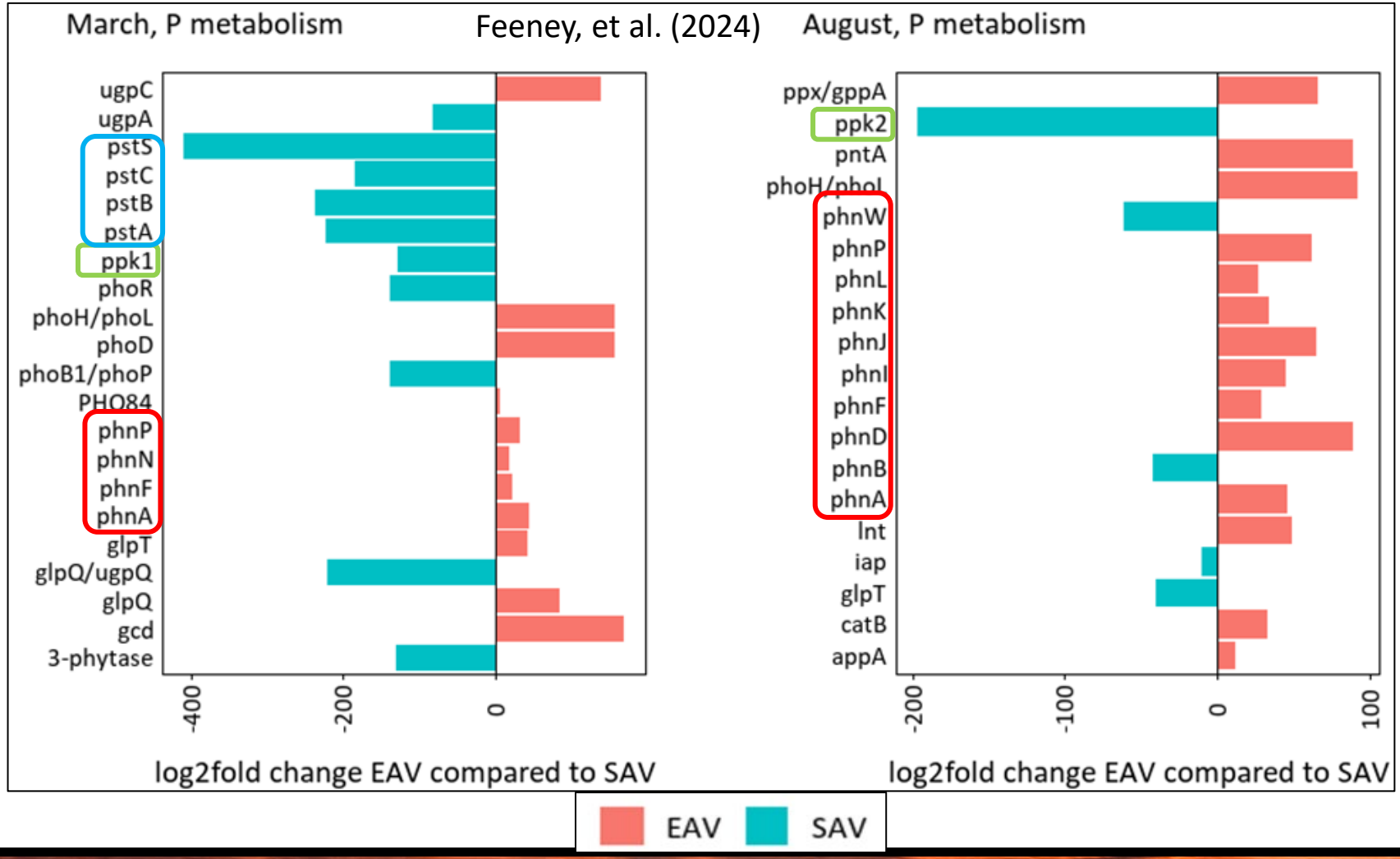
- Differences in P gene expression between SAV and EAV
  - SAV = P storage (green), inorganic P transport (blue)
  - EAV = phosphonate metabolism (red)



Presenter: R. Thomas James

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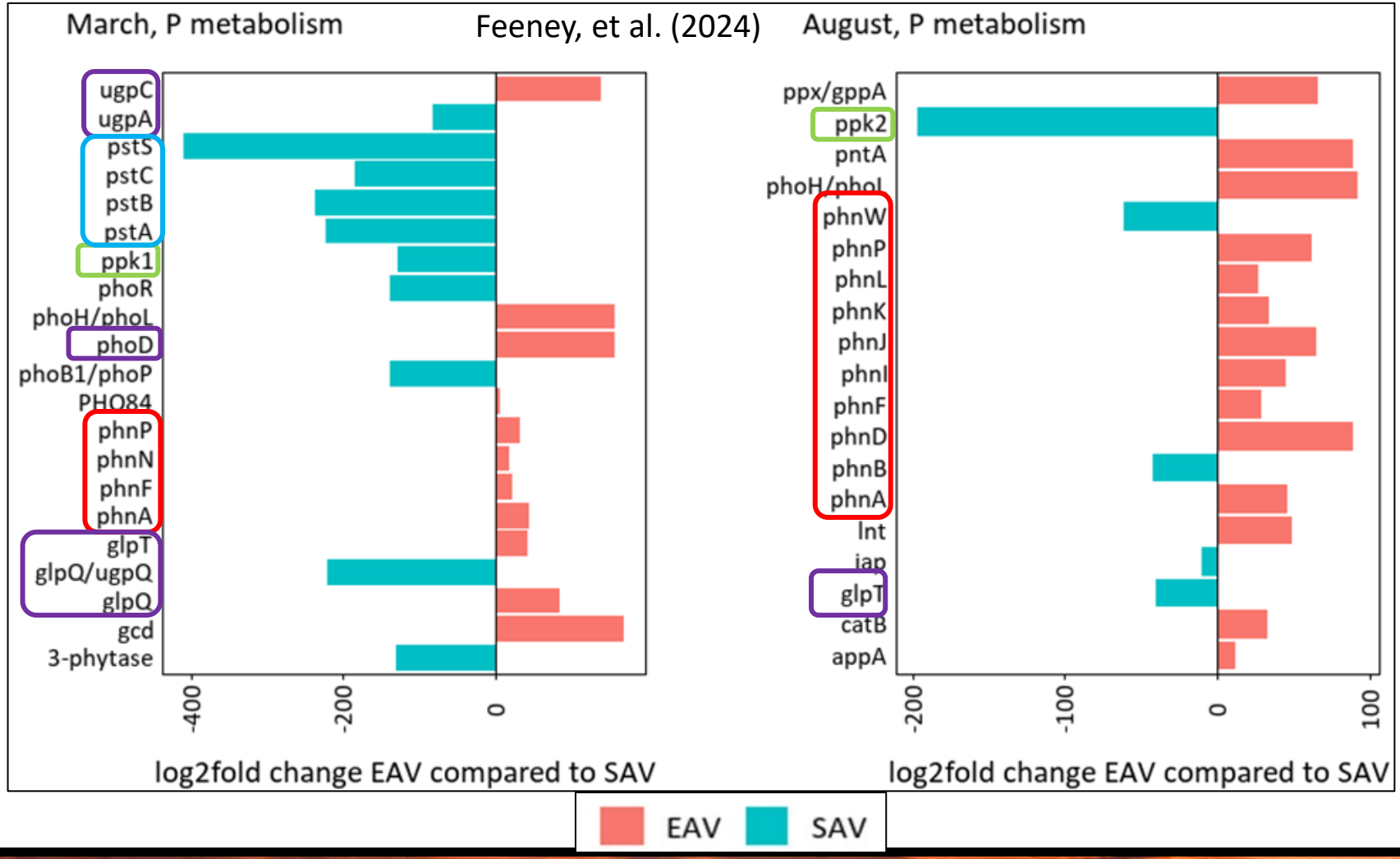
  - SAV = P storage (green), inorganic P transport (blue)
  - EAV = phosphonate metabolism (red)
  - Genes related to diesterP use (purple)



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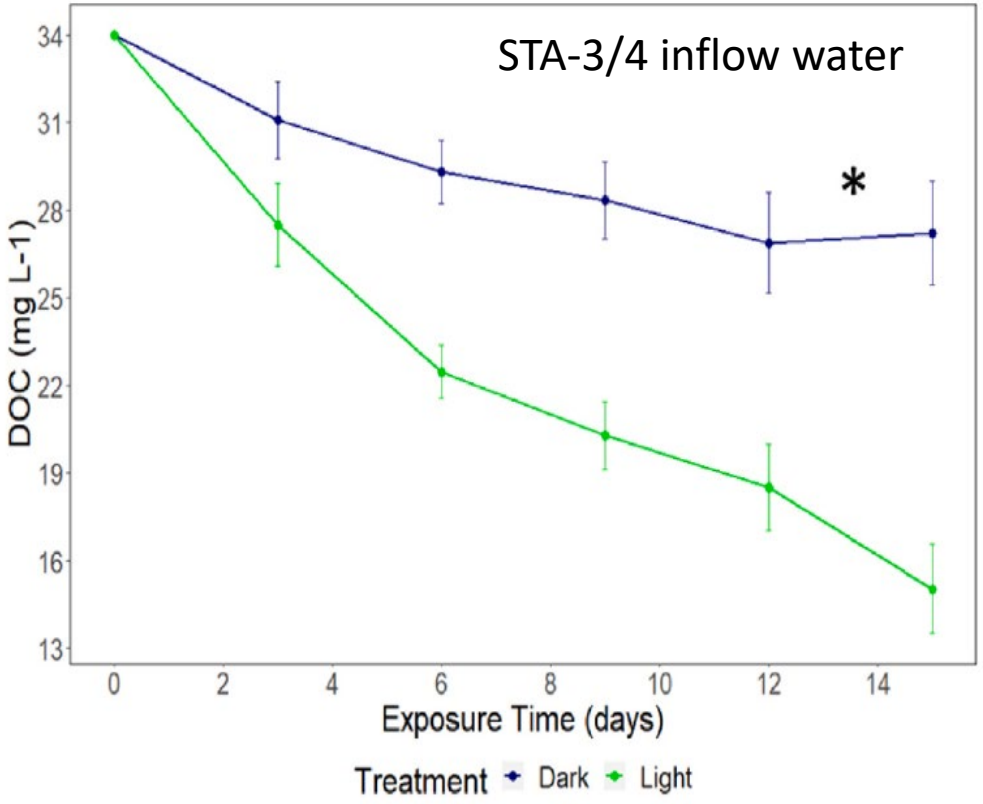
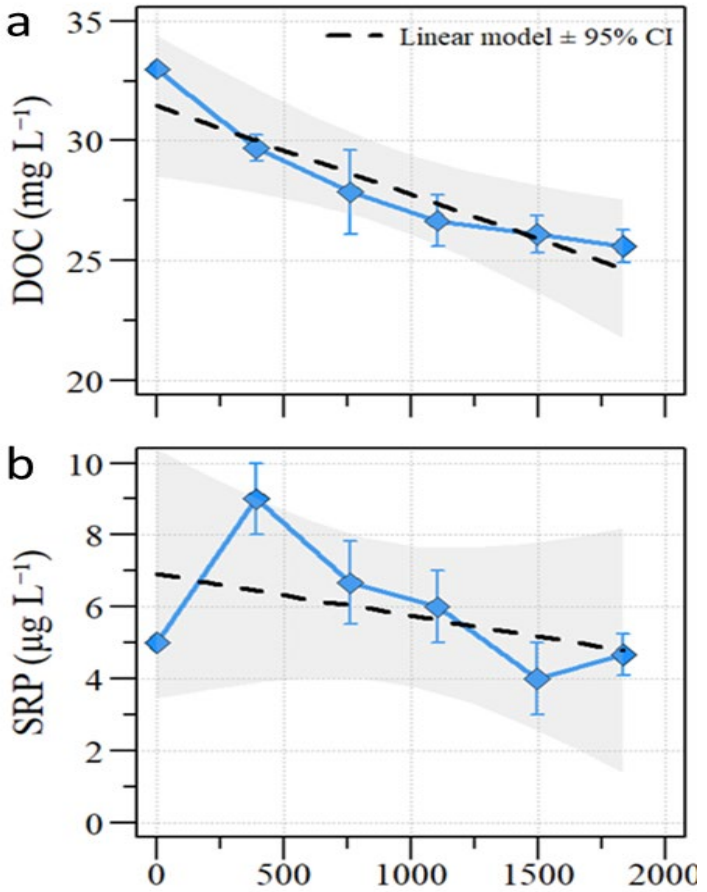
Photolysis



- Photolysis results in breakdown of DOC
- SRP increase related to breakdown of DOC
- Subsequent reduction of SRP attributed to biological transformation

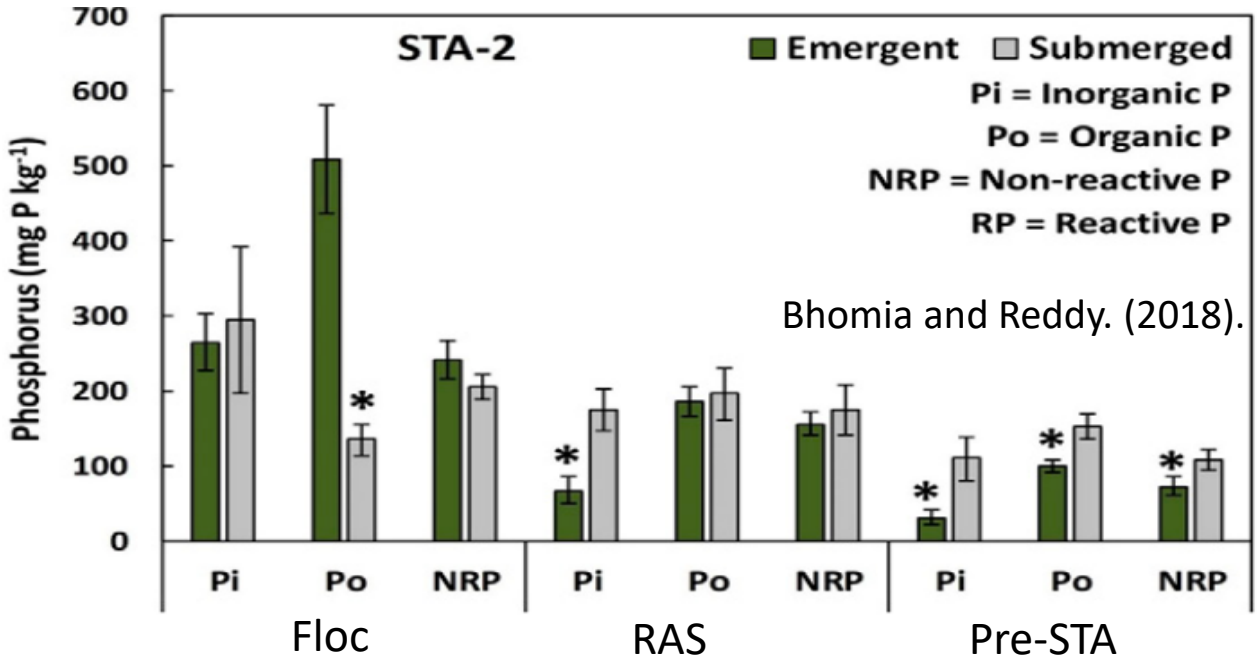
STA-3/4 inflow water



Schafer et al. (2023).

Soils

SAV marl core
DB Environmental (2023)

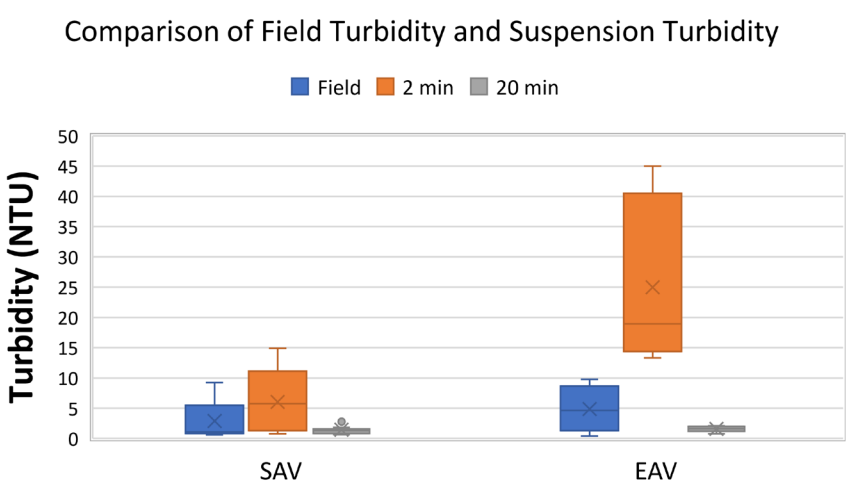


Bhomia and Reddy. (2018).

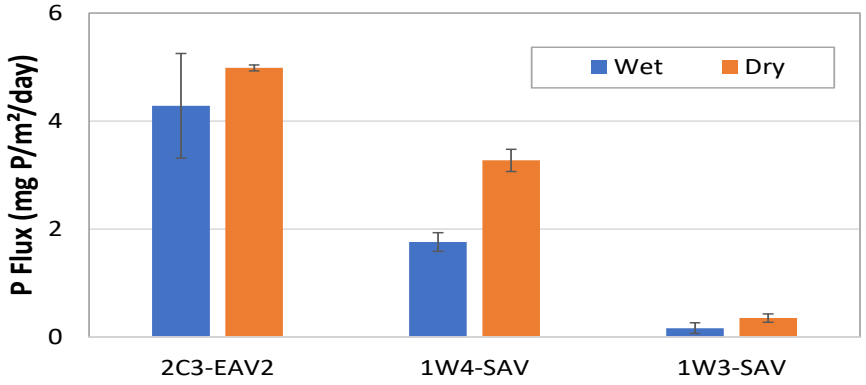
- Soil accumulation of P is not limiting
- SAV marl (inorganic) soils
- EAV organic soils

EAV Soil core STA-2 FW1 collected October 2015.
(photo courtesy of Odi Villapando)

Soils: marl consolidation



From DB Environmental. (2023b)



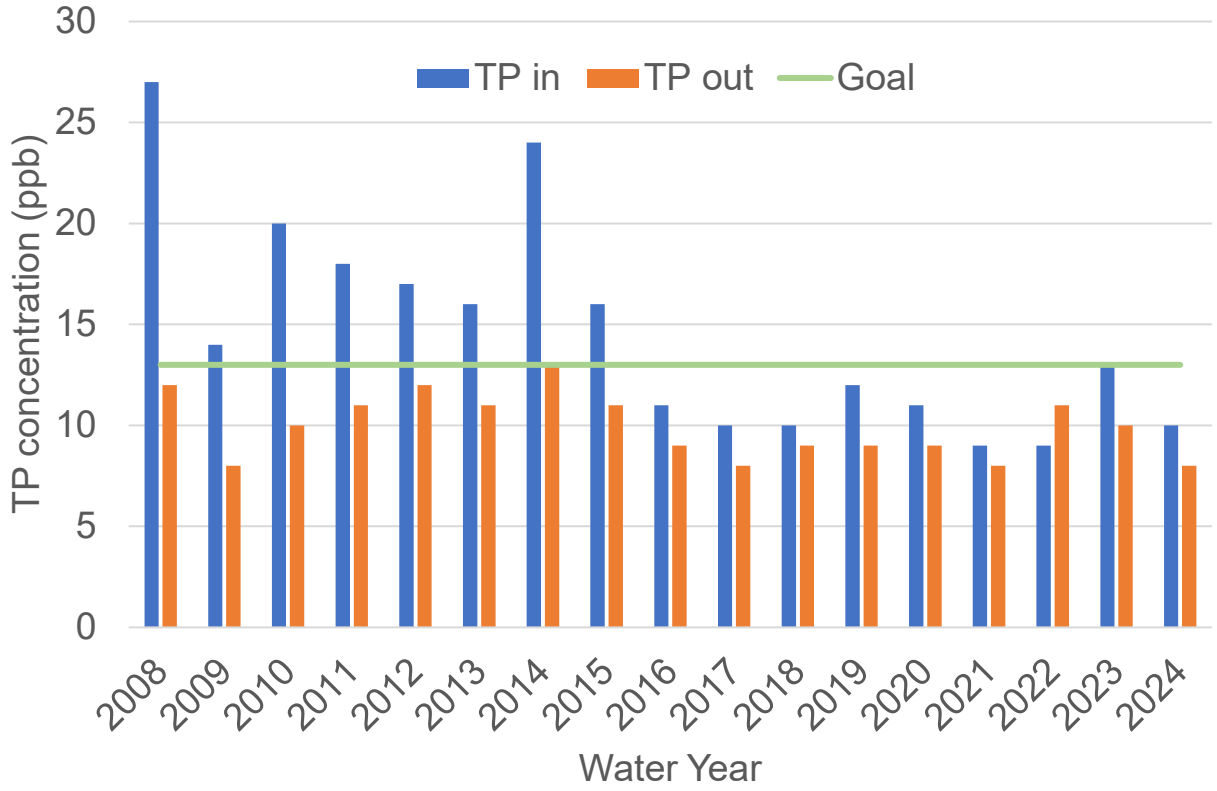
- Organic soils more easily resuspended than inorganic marl soils
- P flux from Hydrated marl soils is lower than dried and rehydrated marl soils
- Drying and consolidating marl soil increases SAV germination

DB Environmental. (2023a).

Soils (Periphyton-assisted STA: PSTA)

- Muck soils scraped to bedrock (limestone)
- Located at outflow of STA-3/4
- Annual TP outflow <= 13 ppb
- Feasible in a few flow-ways

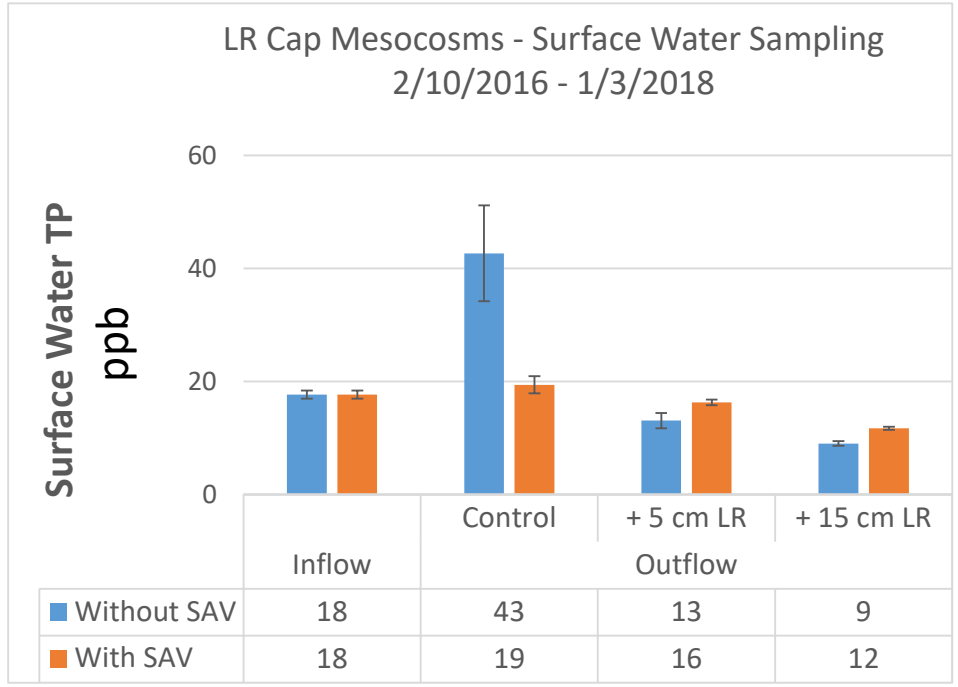
Piccone and Zamorano (2020)



Zamorano et al. (2023)
Dombrowski and Piccone (2025)

Soils (Limerock Capping)

- Muck soils
  - Increase water column TP concentration
  - SAV on muck reduces TP concentration
- Limerock caps
  - Reduce TP concentrations
  - SAV (rooted and unrooted) influence capping

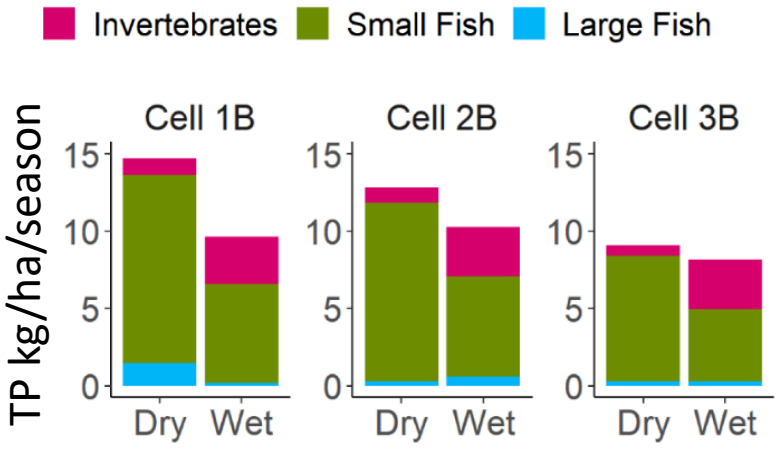


DB environmental (2018)

Fish Effects

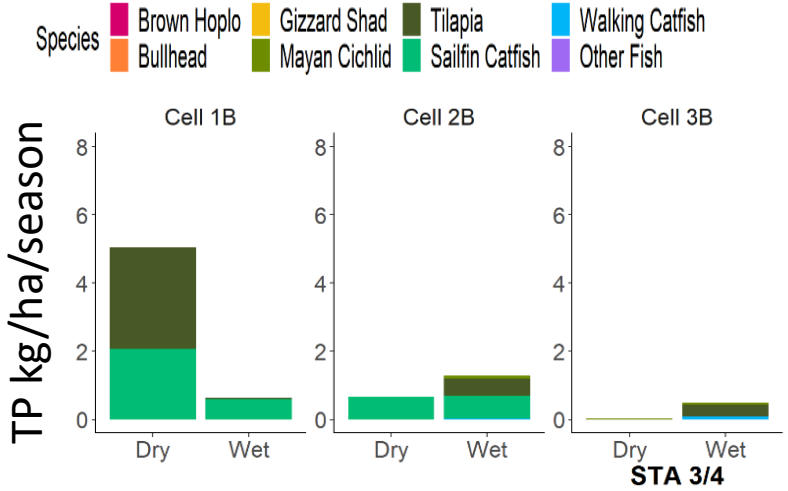



- Small fish excrete as much P as external loads
- Bioturbation by large fish can be a concern in specific circumstances



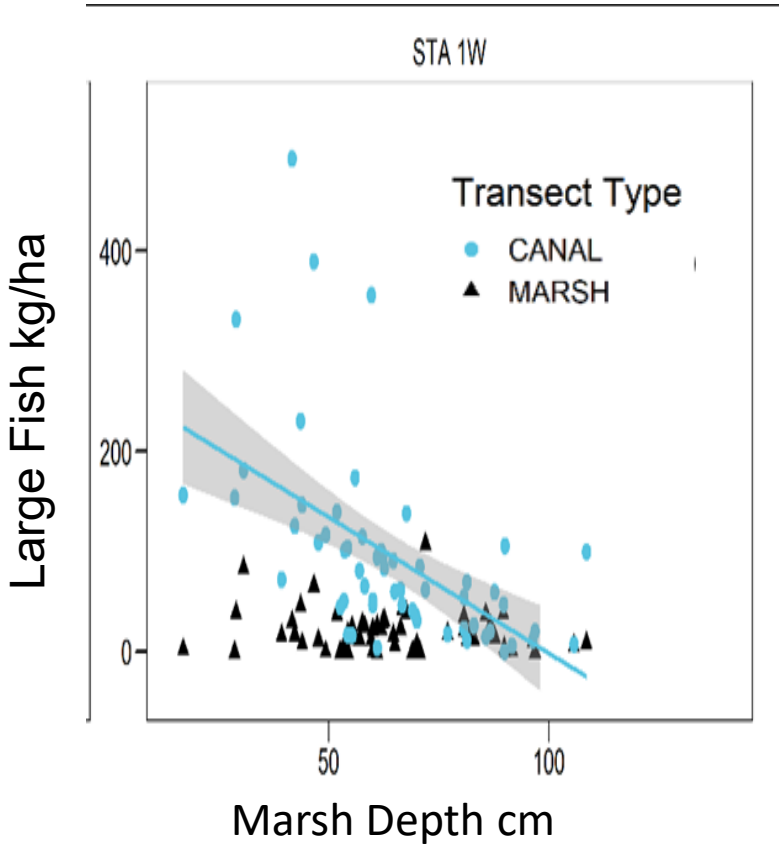
STA-3/4 Excretion rates

Goeke and Dorn. (2024a)



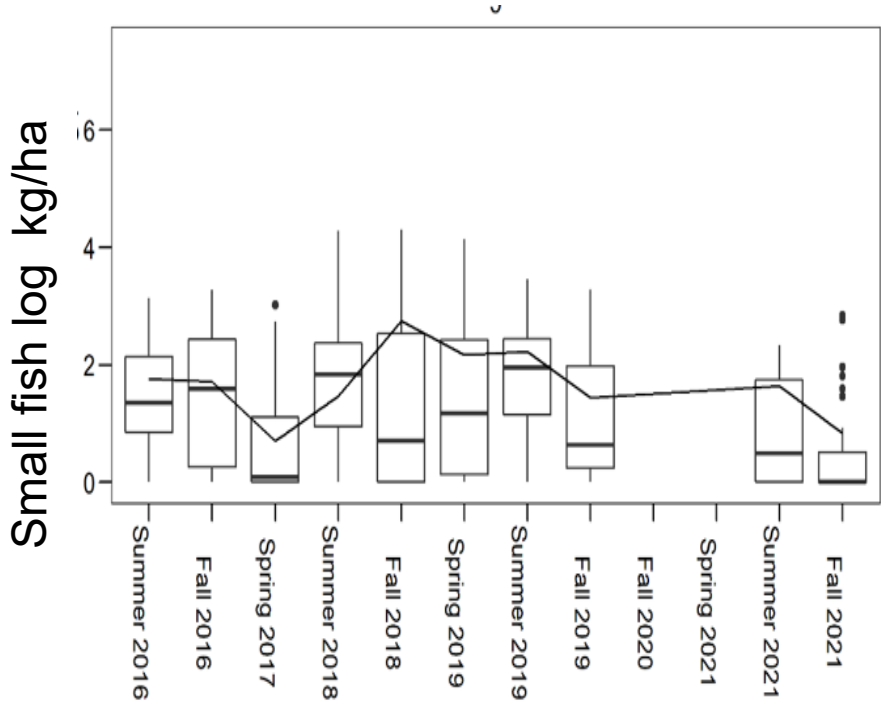
STA-3/4 Bioturbation rates

Fish Biomass

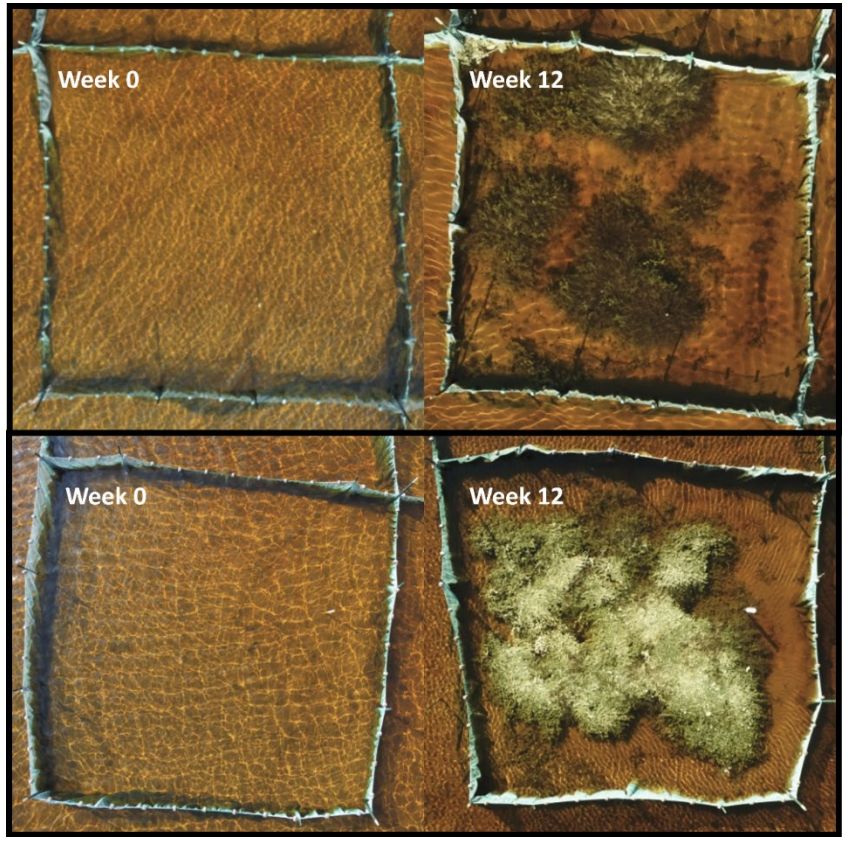


- Large fish disperse from STAs to canals under low water levels
- Small fish congregate around SAV

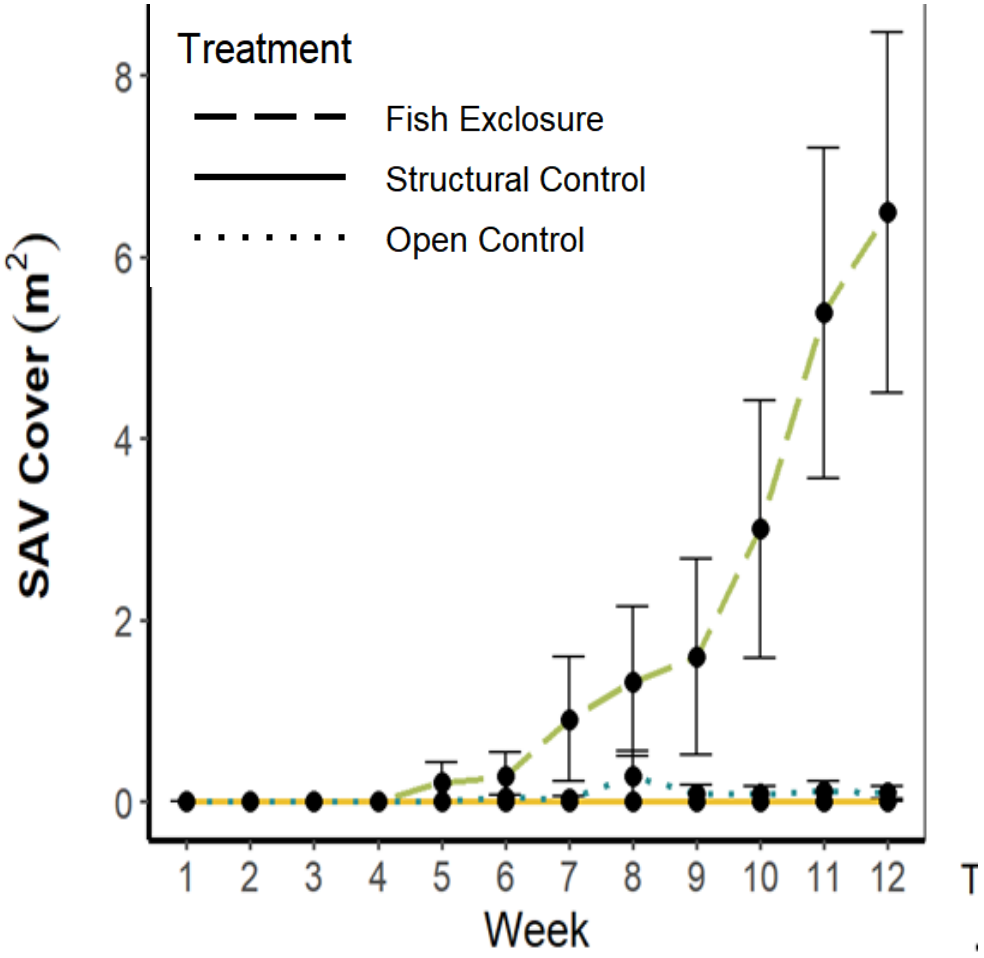
Goeke and Dorn.(2024b).



Fish Herbivory



- Herbivory by large fish reduces SAV regrowth in baren areas
- Excluding fish for 10 to 12 weeks allows SAV regrowth



Goeke and Dorn. (2024c).

Takeaways

- P Retention occurs through accumulation of soil, which is not limited
- STAs (and flow-ways) are different
- A substantial amount of P (72 to 85% or more) is retained in STAs
- Proper loading and flow and low disturbance are important to achieve low P discharge
- Vegetation, fauna, biogeochemistry, and internal loads affect retention

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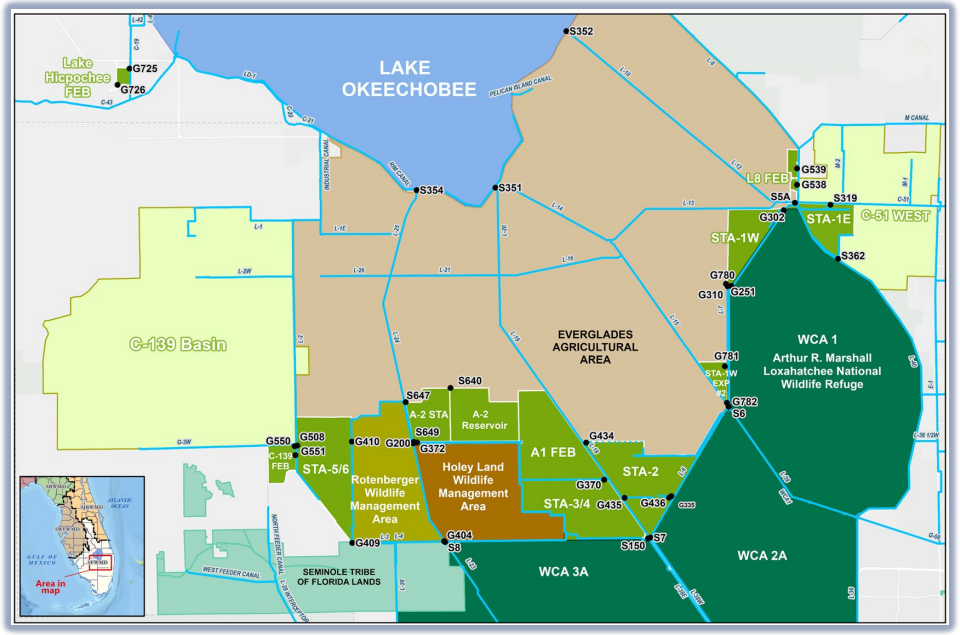
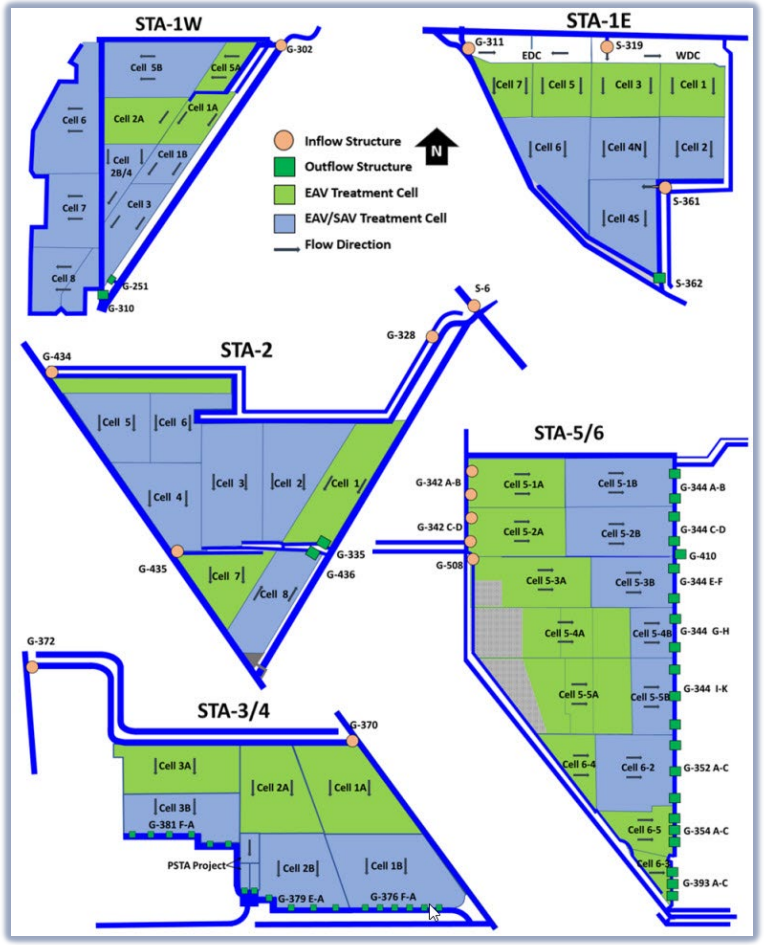
Management Considerations

Overall Management Considerations

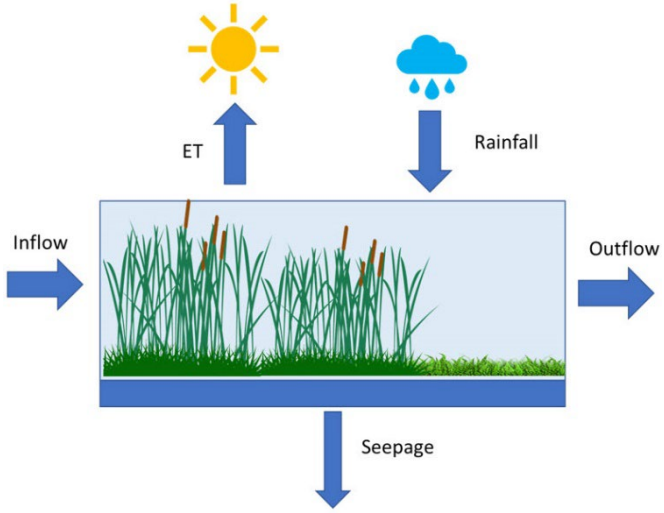
- Each FW is different
  - Land uses
  - Soil types
  - Soil TP content
  - Inflow waters
  - Topography
  - Plants
  - Hydrology
  - Type, location, and number of control structures





Mgmt Considerations: Flows and Loads

- Maintain annual FW PLR below 1.3 g/P/m^2/yr
- During periods of flow, maintain HLR between 5 and 15 cm/day
- On an annual basis, maintain HLR < 3.5 cm/d
- High flows should be avoided after periods of no-flow conditions to the extent practicable
- After substantial periods of no-flow (weeks to months) introduce low flows gradually to reduce effect of high TP and high flows



Mgmt Considerations: EAV

- To support healthy cattail areas and minimize tussock formation, avoid water levels > 2.75 feet (>84 cm) for > 8 weeks

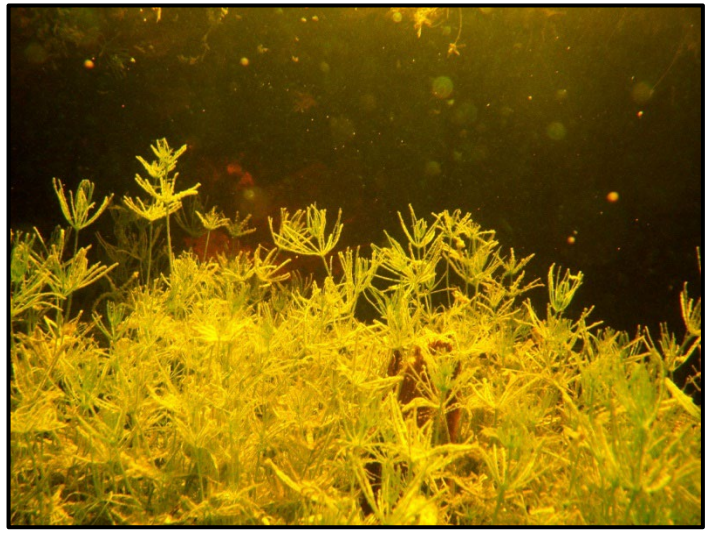
- If water levels above 3 feet for > 4-6 weeks, avoid rapid water level declines of to minimize cattail lodging

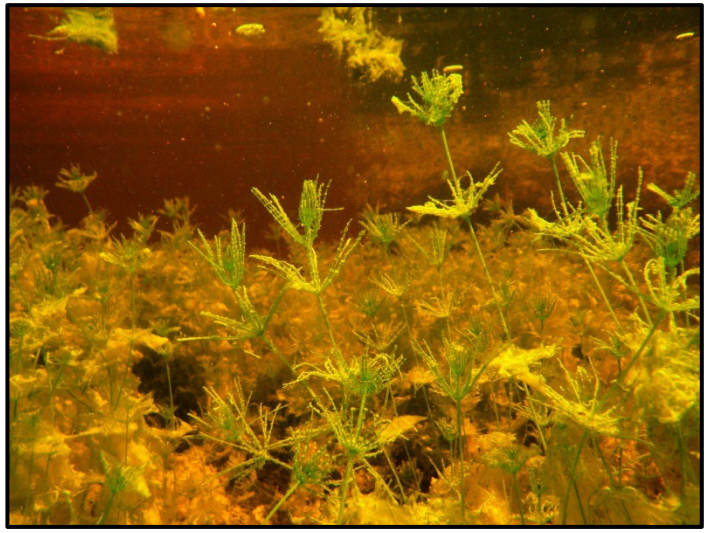
Mgmt Considerations: Avoid tussock formation

- Fallow ag land preferred over active farmland for new STAs
- Survey tussock prone areas with UAVs as means of early detection
- Reduce tussock formation by planting deeply rooted species
- Where tussocks formation observed, lower water levels below 1.0 feet

Mgmt Considerations-SAV

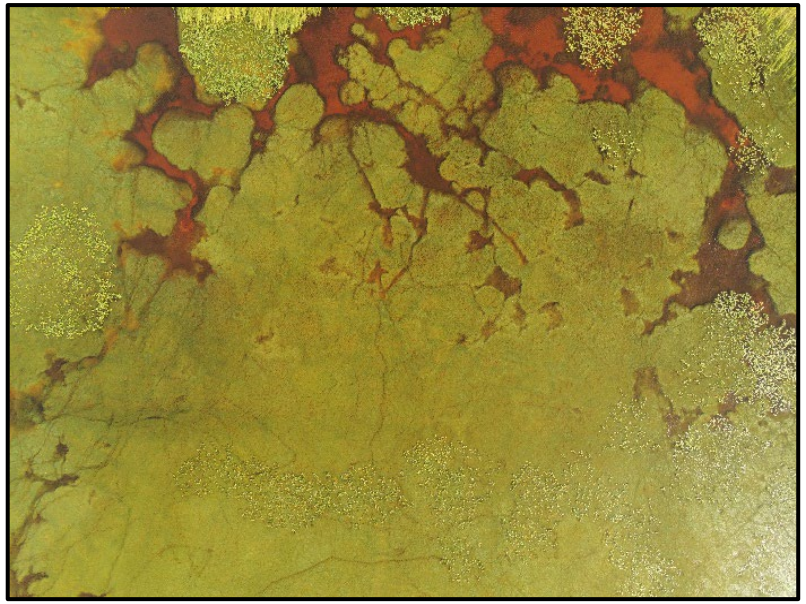
- Avoid high P loading to SAV communities
- Maintain healthy SAV at outflow regions
- Maintain SAV regions that support sunlight penetration
- Support SAV ecotopes of Chara and Naiad at outflow regions
- In areas of SAV collapse, reduce water levels to support germination





Mgmt Considerations-Vegetation

- *Typha* and bare soil should be discouraged near outflow structures
- Minimize rFAV at outflow regions

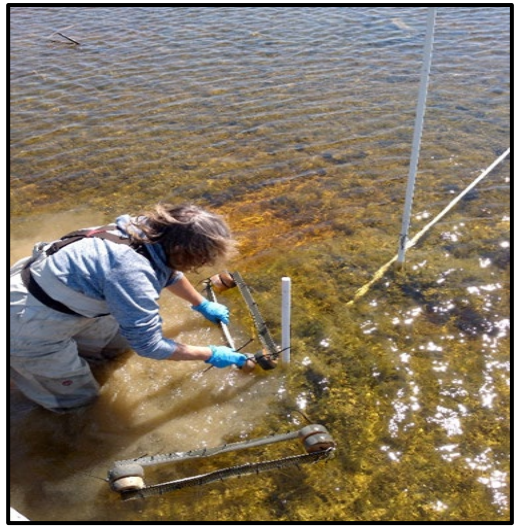


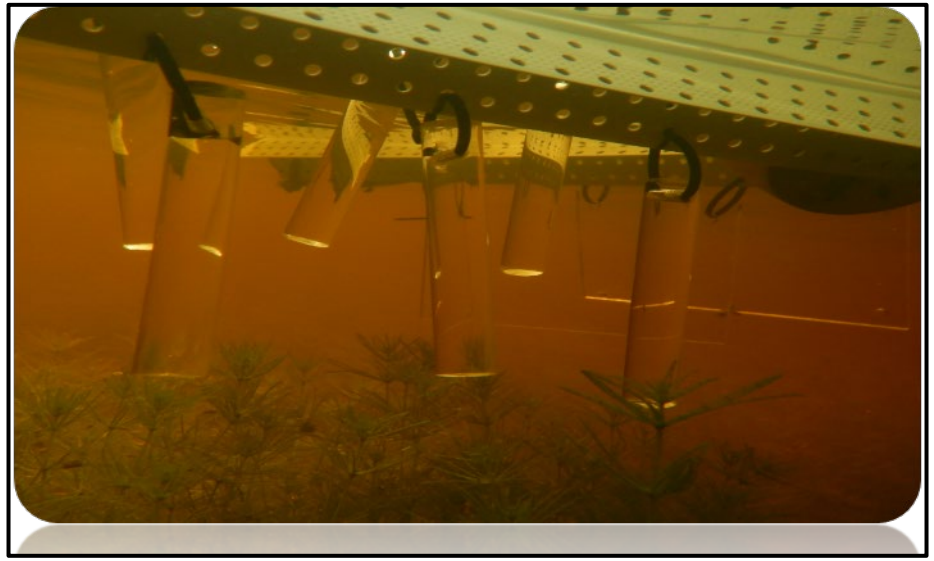
Mgmt Considerations: Fauna

- Limit fish density and nesting in STA outflow regions
- Selective EAV planting in these areas
- Manage fish populations in dry season to concentrate fish in deeper areas to enhance predation

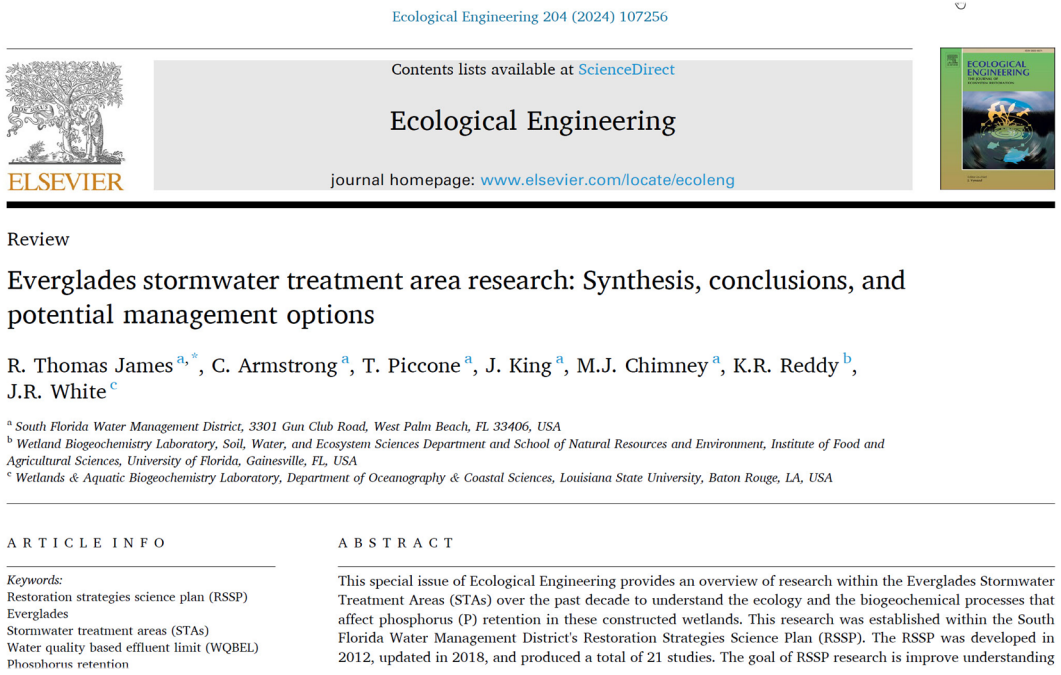
Mgmt Considerations: Periphyton/PSTA

- For FWs requiring further water quality improvements, consideration to PSTA implementation
- Where soil removal not feasible, consider limerock capping of soil
- Mixed marsh (EAV interspersed with SAV) increases the diversity of the microbial community to breakdown more DOP





Final Takeaways



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Review

Everglades stormwater treatment area research: Synthesis, conclusions, and potential management options

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Phosphorus retention

ABSTRACT

This special issue of Ecological Engineering provides an overview of research within the Everglades Stormwater Treatment Areas (STAs) over the past decade to understand the ecology and the biogeochemical processes that affect phosphorus (P) retention in these constructed wetlands. This research was established within the South Florida Water Management District's Restoration Strategies Science Plan (RSSP). The RSSP was developed in 2012, updated in 2018, and produced a total of 21 studies. The goal of RSSP research is improve understanding

Ecological Engineering Special Issue

- RSSP completed in 2024
- 21 studies conducted over 12 years

- P retention varies among the STAs due to their different land use histories, soil types, soil TP content, inflow waters, topographies, vegetation, hydrology, and the type, location, and number of control structures.
- 20 proposed management strategies to help optimize P retention in the STAs to achieve the WQBEL
- Not all considerations are appropriate for each STA

Thank you!
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Links:

South Florida Environmental Report (SFER):
South Florida Environmental Report and Other Publications | South Florida Water Management District (sfwmd.gov)

Ecological Engineering Special Issue:
https://www.sciencedirect.com/special-issue/10B60WZB3QL

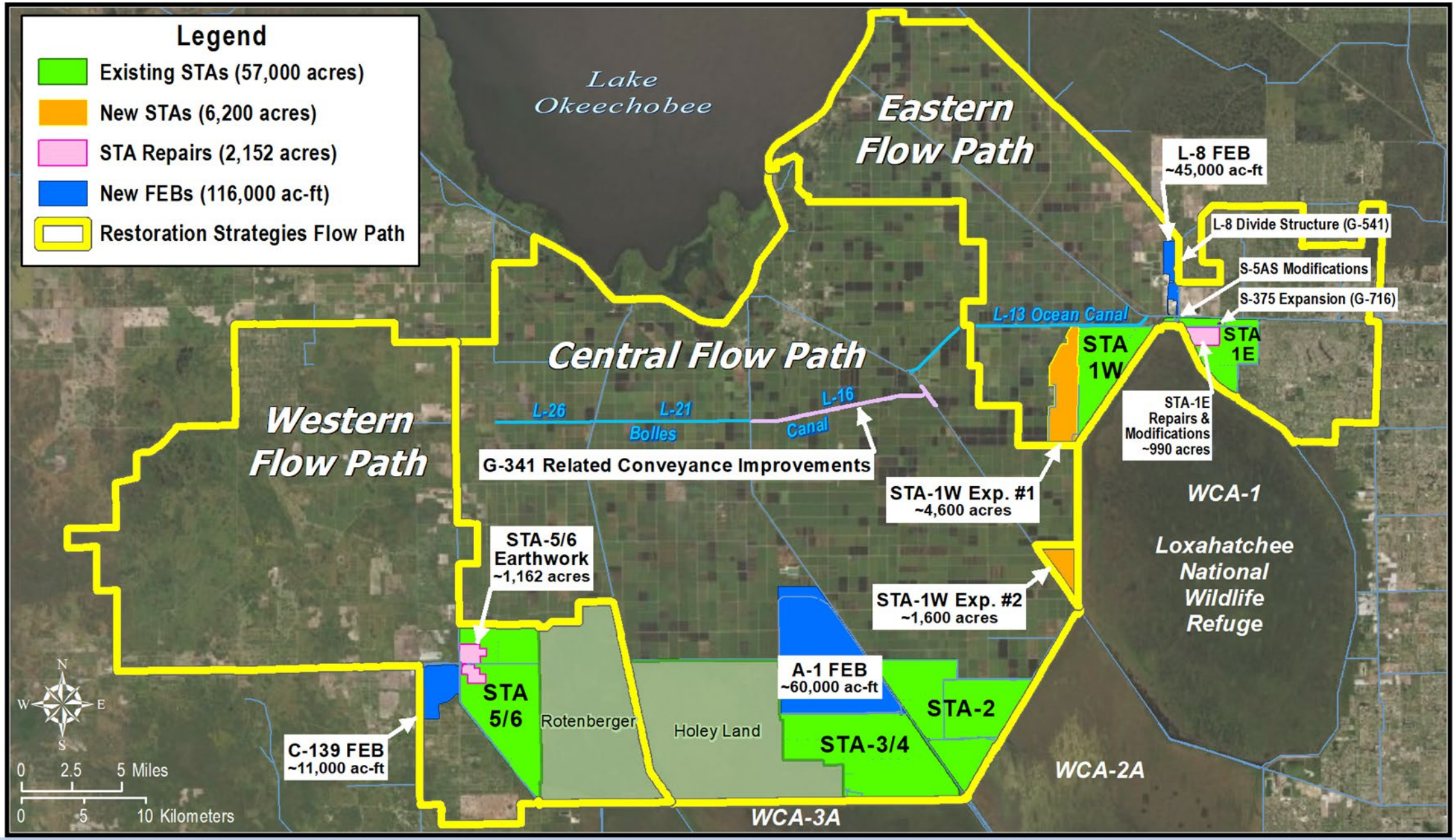
Restoration Strategies

Engineering & Construction Update

Alexis San-Miguel, P.E.
Project Management Section Administrator
Engineering & Construction Bureau

22nd Annual Public Meeting on the Long-term Plan for Achieving Water Quality Goals for the Everglades Protection Area Tributary Basins

February 24, 2025


Legend
Existing STAs (57,000 acres)
New STAs (6,200 acres)
STA Repairs (2,152 acres)
New FEBs (116,000 ac-ft)
Restoration Strategies Flow Path
Lake Okeechobee
Eastern Flow Path
Central Flow Path
Western Flow Path
L-8 FEB ~45,000 ac-ft
L-8 Divide Structure (G-541)
S-5AS Modifications
S-375 Expansion (G-716)
L-13 Ocean Canal
STA 1W
STA 1E
STA-1E Repairs & Modifications ~990 acres
L-26
L-21
Bolles
Canal
L-16
G-341 Related Conveyance Improvements
STA-1W Exp. #1 ~4,600 acres
STA-1W Exp. #2 ~1,600 acres
WCA-1
Loxahatchee National Wildlife Refuge
STA-5/6 Earthwork ~1,162 acres
A-1 FEB ~60,000 ac-ft
STA 5/6
Rotenberger
Holey Land
STA-2
STA-3/4
C-139 FEB ~11,000 ac-ft
WCA-2A
WCA-3A
N
W
E
S
0 2.5 5 Miles
0 5 10 Kilometers

Restoration Strategies Project Status

- **Completed Construction:**
  - STA2 Expansion Compartment B
  - STA 5/6 Expansion Compartment C
  - S-5AS Modifications
  - L-8 FEB *Multi-Use Operation*
  - A-1 FEB
  - L-8 Divide Structure (G-541)
  - S-375 Expansion (G-716)
  - STA 5/6 Earthwork *Optimization*
  - STA-1W Expansion #1
  - G-341 Segments 1 – 5
  - STA-1E Repair
  - STA-1W Expansion #2 *Optimization*
  - C-139 FEB *Optimization*

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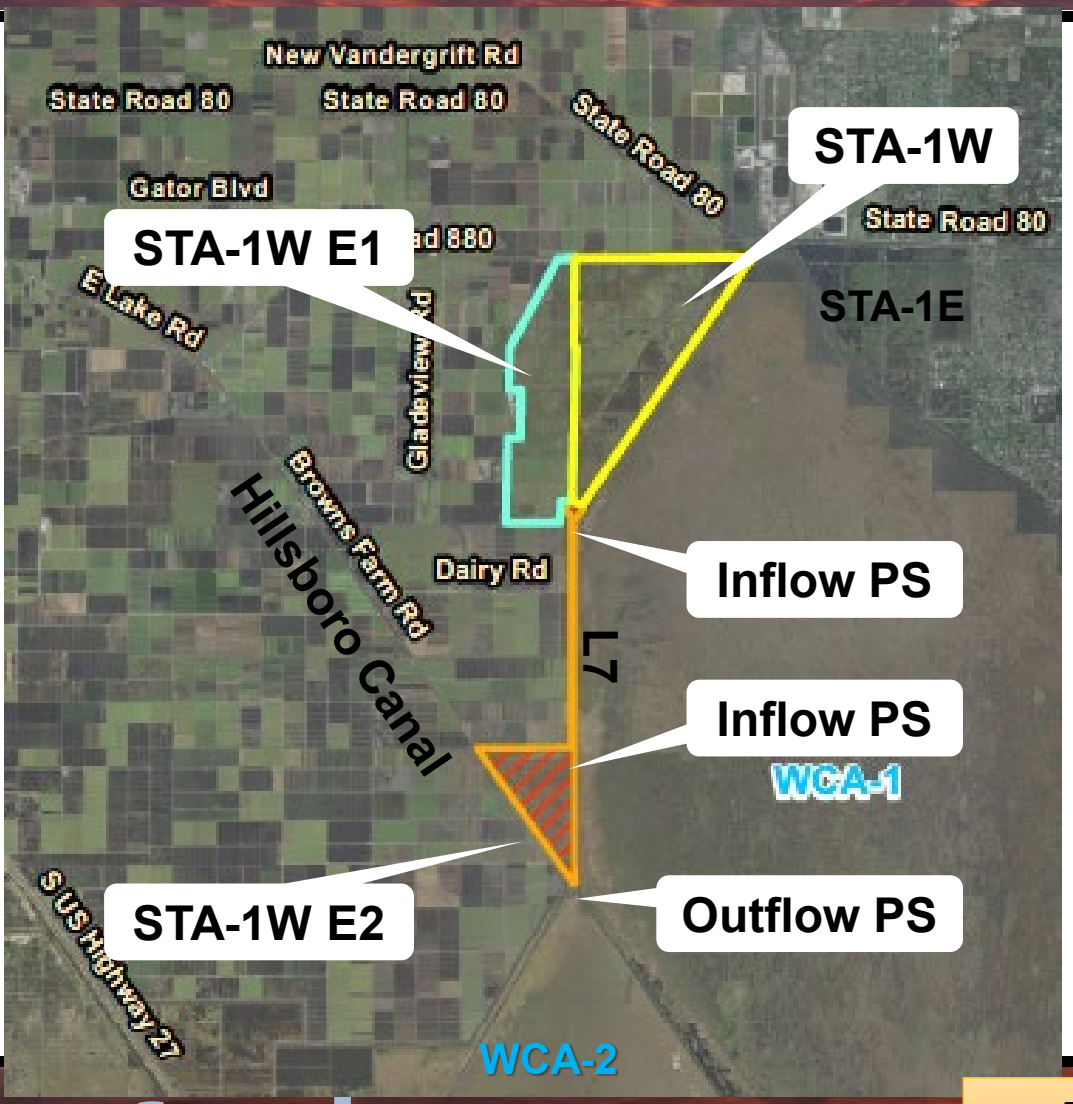
STA-1W Expansion No. 2



- Purpose is to extend treatment flow-ways for STA-1W
- Overall Construction Cost $214M
- Features 1,600 acres of additional treatment area
- Inflows from S-5A and C-51 West Basins via STA-1W
- Outflow to Water Conservation Area 1

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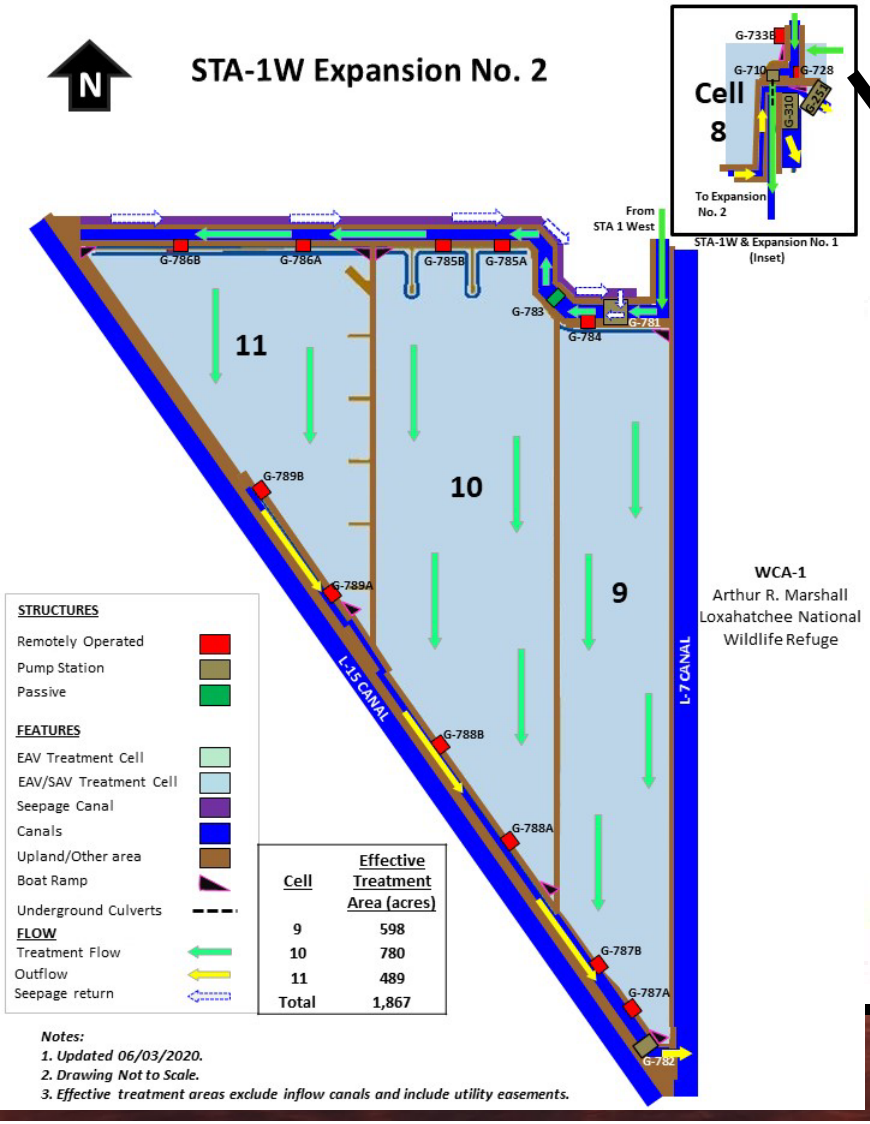
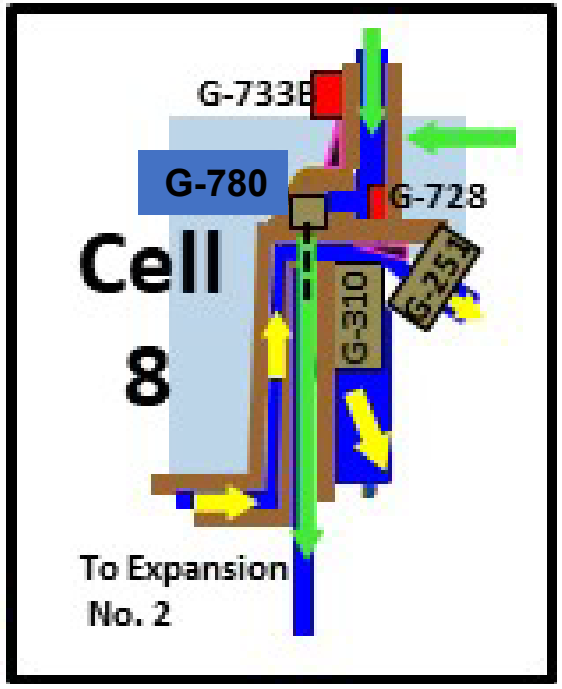
STA-1W Expansion No. 2

Schedule of Construction





- Underground Piping Complete
  - Construction Complete - December 2020
- STA and Connector Canal
  - Start Construction - September 2020
  - 100% Complete
- Inflow Pump Stations (G780 & G781)
- Start Construction – December 2020
  - 100% Complete
- Outflow Pump Station (G782)
  - Start Construction – December 2020
  - 100% Complete

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STA-1W Expansion No. 2

STA Civil Works

Concrete Conveyance Canal and G-781

North Inflow Canal and STA Cells

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STA-1W Expansion No. 2

Inflow Pump Stations

G-780 & Intake Channel

G-781, Lined Channel & STA Intake Channel

STA-1W Expansion No. 2

Outflow Pump Station

G-782 Electrical Bldg Wall Construction

G-782 & Discharge to WCA-1

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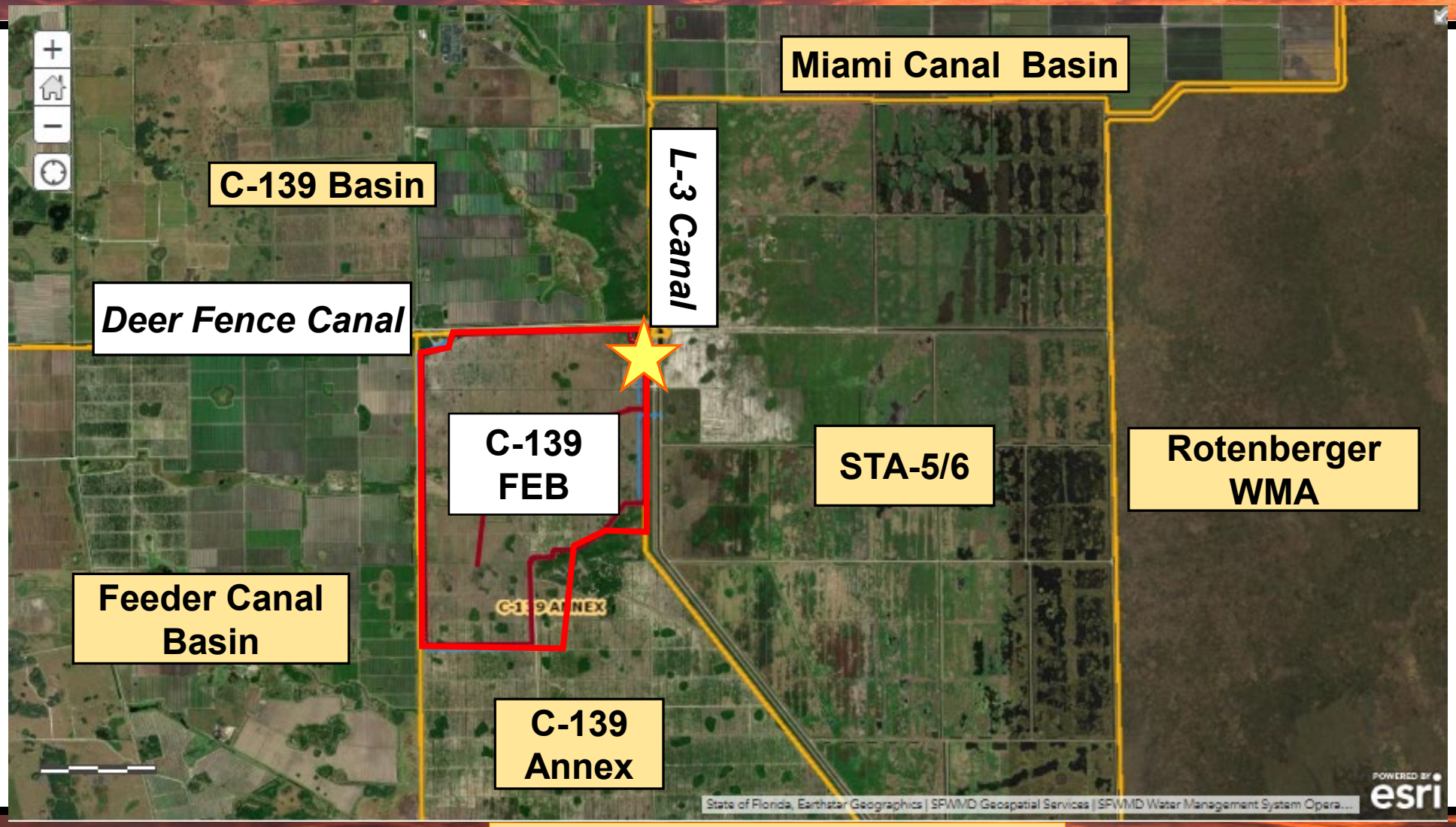
C-139 Flow Equalization Basin



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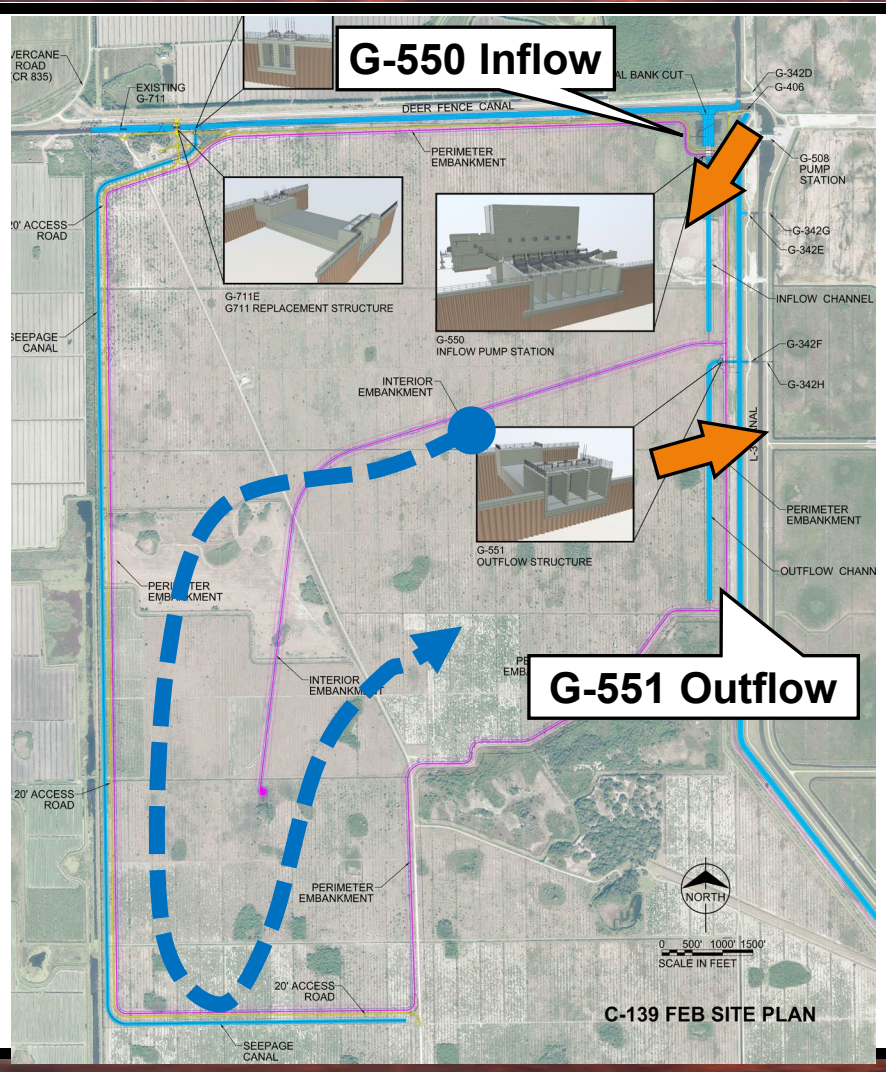
C-139 Flow Equalization Basin



- Overall Project - 100% Complete
- G550 Pump Station - 100% Complete
- G551 Outflow Structure – 100% Complete
- G552 Seepage Structure-100%
- G711E Control Structure-100%
- Flow Equalization Basin-Complete

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C-139 Flow Equalization Basin

G-550 Pump Station

G-551 Outflow Structure

Presenter: Alexis San-Miguel

C-139 Flow Equalization Basin

G-552 Seepage Control Structure

G-711E Control Structure

EASTERN FLOW PATH

STA-1W Expansion #2 (100864)

COMPLETE

Activity	Deadline	
Complete land acquisition	3/31/2018	✓
Initiate design	10/1/2018	✓
Submit state and federal permit applications	8/1/2019	✓
Complete design	7/31/2020	✓
Initiate construction	11/30/2020	✓
Construction status report	3/1/2021	✓
Construction status report	3/1/2022	✓
Complete construction	12/31/2022	✓
Initial flooding and optimization period complete	12/31/2024	✓

STA-1W Expansion #1 (100818)

COMPLETE

Activity	Deadline	
Complete land acquisition	9/30/2013	✓
Initiate design	9/30/2013	✓
Submit state and federal permit applications	7/30/2014	✓
Complete design	7/30/2015	✓
Initiate construction	1/31/2016	✓
Construction status report	3/1/2017	✓
Construction status report	3/1/2018	✓
Complete construction	12/31/2018	✓
Initial flooding and optimization period complete	12/31/2020	✓

STA-1E Repairs and Modifications

COMPLETE

Activity	Deadline	
PSTA Decommissioning complete	12/31/2022	✓
Culvert repairs complete	12/31/2022	✓
Cell 5 and 7 improvements complete	12/31/2022	✓

L-8 FEB (100813)

COMPLETE

Activity	Deadline	
Submit state and federal permit applications	1/31/2014	✓
Construction status report	3/1/2014	✓
Construction status report	3/1/2015	✓
Complete construction (begin multi-purpose ops)	12/31/2016	✓
Long term operations commence	12/31/2022	✓

G-341 Related Conveyance Improvements (100802)

COMPLETE

Activity	Deadline	
Initiate design	10/1/2020	✓
Submit state and federal permit applications	8/1/2021	✓
Complete land acquisition (if required)	9/30/2021	✓
Complete design	7/31/2022	✓
Initiate construction	11/30/2022	✓
Construction status report	3/1/2023	✓
Construction status report	3/1/2024	✓
Complete construction	12/31/2024	✓

L-8 Divide Structure (100817)

COMPLETE

Activity	Deadline	
Initiate design	10/1/2012	✓
Complete design	9/30/2014	✓
Initiate construction	10/1/2016	✓
Complete construction	9/30/2018	✓

S-5AS Modifications (100822)

COMPLETE

Activity	Deadline	
Initiate design	10/1/2012	✓
Complete design	9/30/2014	✓
Initiate construction	10/1/2014	✓
Complete construction	9/30/2016	✓

S-375 Expansion (100819)

COMPLETE

Activity	Deadline	
Initiate design	9/30/2013	✓
Complete design	7/30/2015	✓
Initiate construction	1/31/2016	✓
Complete construction	12/31/2018	✓

LEGEND

- Flow Equalization Basin
- Stormwater Treatment Area
- Conveyance Improvement
- ✓ Complete

Projects Complete = 12 of 13
Activities Complete = 73 of 74
% Activities Complete = 99 %
% Time Complete = 93 %

CENTRAL FLOW PATH

STA-2 Expansion: Compartment B

COMPLETE

Activity	Deadline	
Initial flooding and optimization period complete	5/31/2014	✓

A-1 FEB (100706)

COMPLETE

Activity	Deadline	
Initiate design	4/1/2012	✓
Submit state and federal permit applications	12/1/2012	✓
Design status report	3/1/2013	✓
Complete design	8/1/2013	✓
Initiate construction	6/30/2014	✓
Construction status report	3/1/2015	✓
Construction status report	3/1/2016	✓
Complete construction	7/30/2016	✓
Operational monitoring and testing period complete	7/29/2018	✓

WESTERN FLOW PATH

STA-5/6 Internal Improvements (100868)

Activity	Deadline	
Initiate design	10/31/2019	✓
Submit state and federal permit applications	8/30/2020	✓
Complete design	10/31/2021	✓
Initiate construction	1/31/2022	✓
Construction status report	3/1/2023	✓
Construction status report	3/1/2024	✓
Complete construction	12/31/2024	✓
Initial flooding and optimization period complete	**12/31/2025**	

STA-5/6 Expansion: Compartment C

COMPLETE

Activity	Deadline	
Initial flooding and optimization period complete	5/31/2014	✓

C-139 FEB (100867)

COMPLETE

Activity	Deadline	
Initiate design	10/31/2018	✓
Submit state and federal permit applications	8/30/2019	✓
Complete design	10/31/2020	✓
Initiate construction	1/31/2021	✓
Construction status report	3/1/2021	✓
Construction status report	3/1/2022	✓
Construction status report	3/1/2023	✓
Complete construction	12/31/2023	✓
Operational monitoring and testing period complete	12/31/2024	✓

Revised January 6, 2025

Presenter: Alexis San-Miguel

CONTACT INFORMATION

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SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Southern Everglades Nutrient Source Control Program Update

Stephanie Nevadunsky, P.E.
Senior Engineer
Everglades and Estuaries Protection Bureau

22nd Annual Public Meeting on the Long-Term Plan for Achieving Water Quality Goals for the Everglades Protection Area Tributary Basins

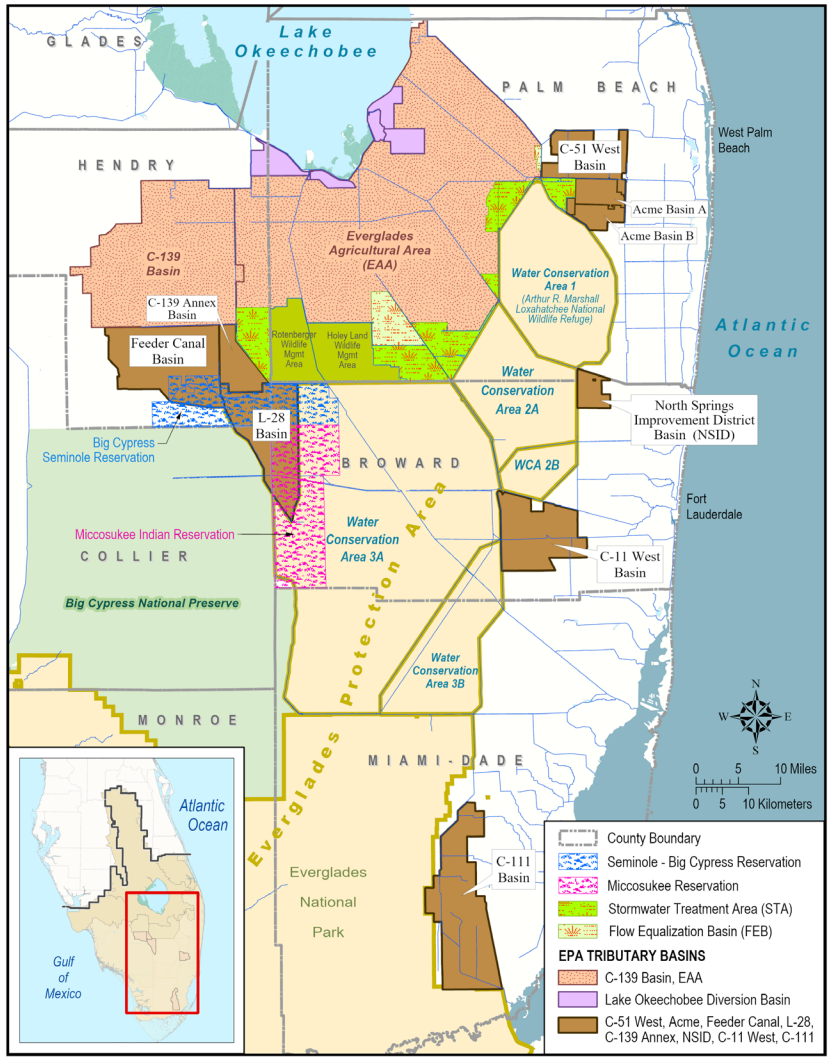
February 24, 2025

sfwmd.gov

Source Control Programs

Presenter: Stephanie Nevadunsky

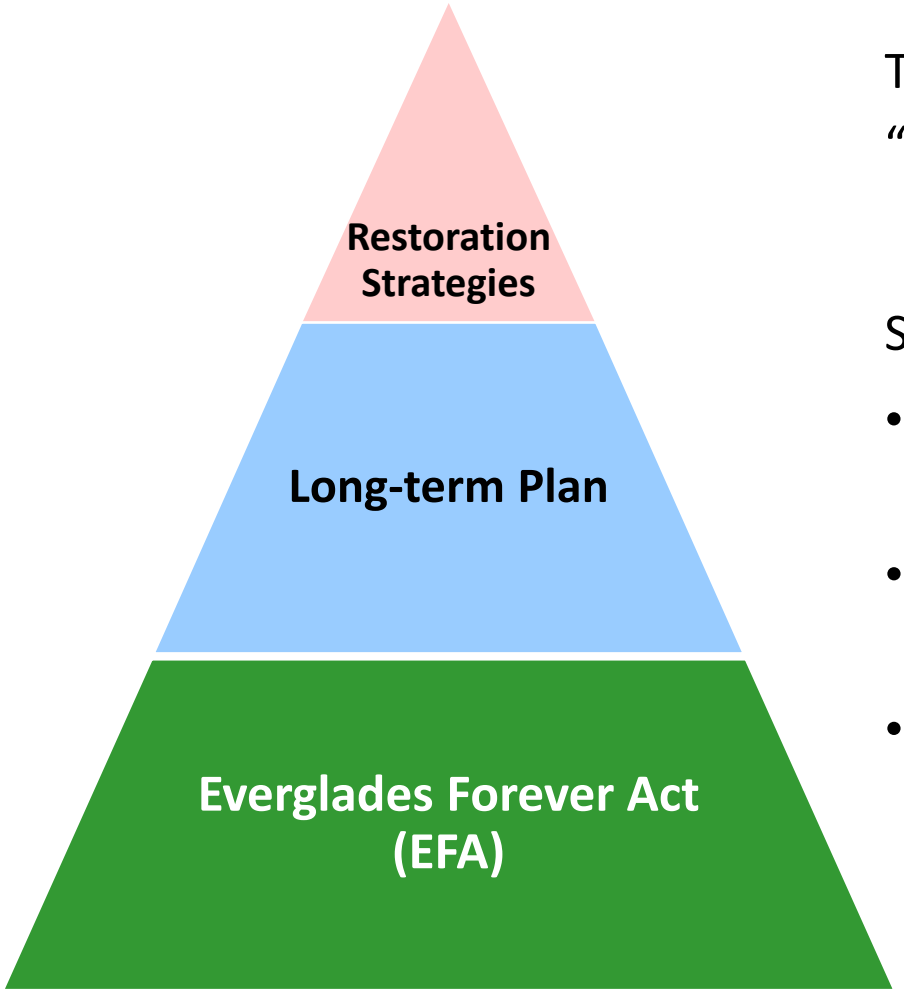
Basins Tributary to the Everglades



- **Everglades Construction Project (ECP) Basins**
  - Everglades Agricultural Area (EAA)
  - C-139
  - C-51 West /ACME
- **Non-ECP Basins**
  - Feeder Canal
  - L-28
  - North Springs Improvement District (NSID)
  - C-11 West
  - C-111

Presenter: Stephanie Nevadunsky

Long-Term Plan Project Objectives



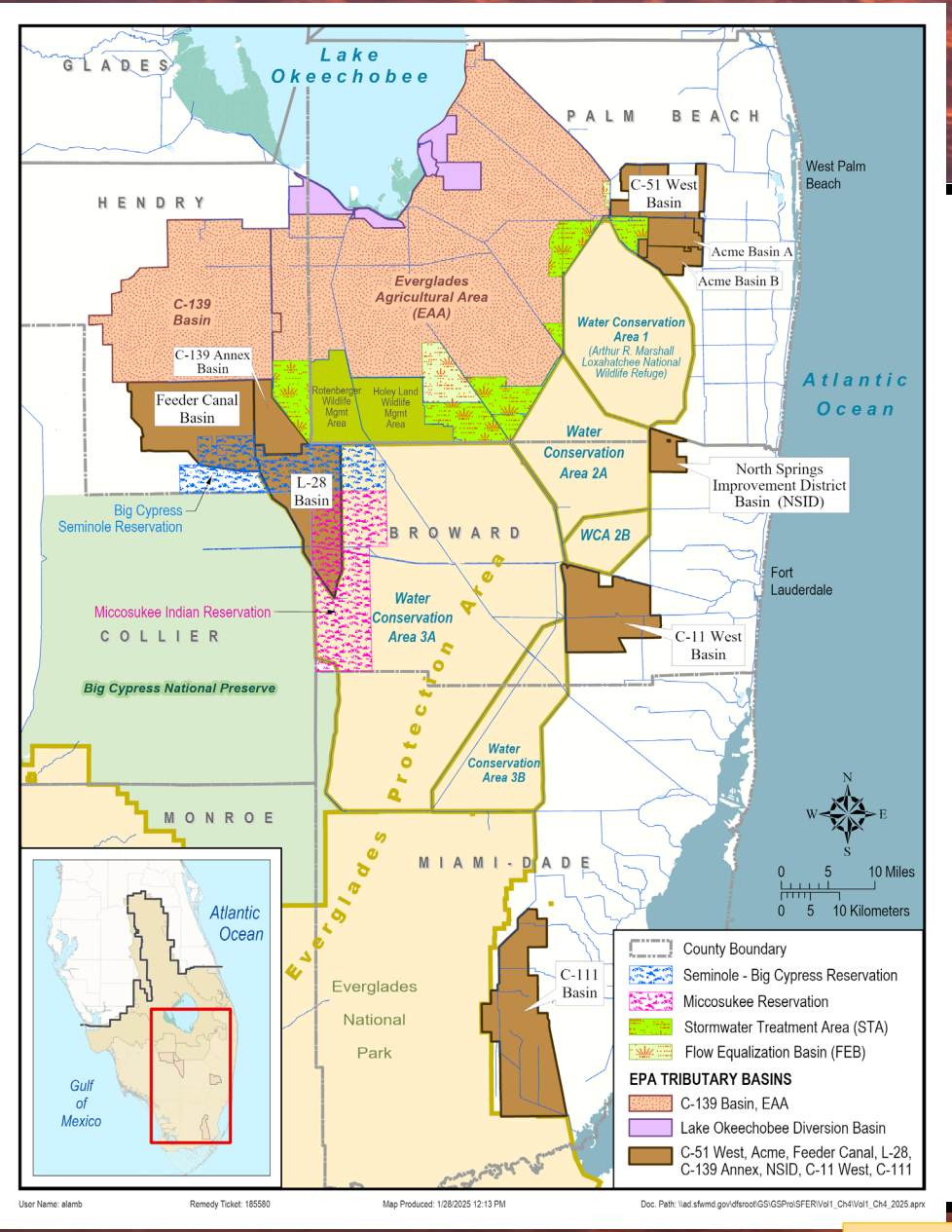
The Long-Term Plan recommends activities designed to:

"***Maintain and improve*** *upon the contribution of source controls to overall water quality improvement goals."*

Specifically:

- **Identify** discharges that are candidates for implementation of **cost-effective** source controls
- Characterize management practices on lands or processes tributary to those discharges
- Implement these source controls **in concert with** landowners or municipalities

Contents



- **EAA and C-139 Basins**
  - Regulatory compliance and activities
  - Research and demonstration projects
  - Sub-regional source control projects
- **Other Tributary Basins**
  - Regulatory and cooperative activities
  - Environmental Resource Permit (ERP) integration

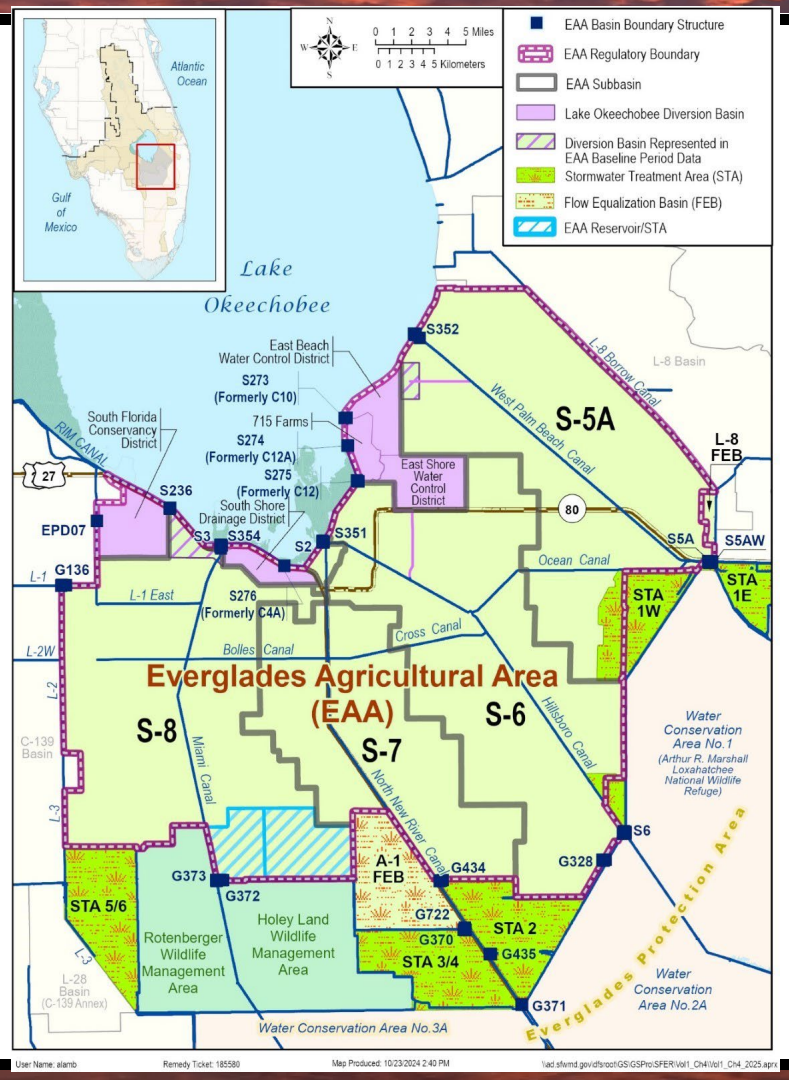
Presenter: Stephanie Nevadunsky

Total Phosphorus (TP) Runoff Data By Basin

Basin	Receiving Water Body	WY2024 TP Load (t)	WY2024 TP FWMC (µg/L)
Everglades Agricultural Area (EAA)	STAs and Lake Okeechobee	110	90
C-139	STA 5/6 and EAA	63	222
C-51 West (incl. Acme Improvement District)	STA-1E, C-51 East Basin, and WCA-1	15	98
Feeder Canal	WCA-3A	14	111
L-28	WCA-3A	13	79
C-11 West	WCA-3A	5	15
C-111	ENP	4	9
North Springs Improvement Distict (NSID)	WCA-2A	0	-

Presenter: Stephanie Nevadunsky

EAA Basin Source Control Programs



- EAA Basin level water quality compliance
- Permit level compliance
- Research and demonstration projects
  - EAA Environmental Protection District (EAAEPD) Research Master Permit
- Sub-regional source control projects (S-5A Sub-basin)

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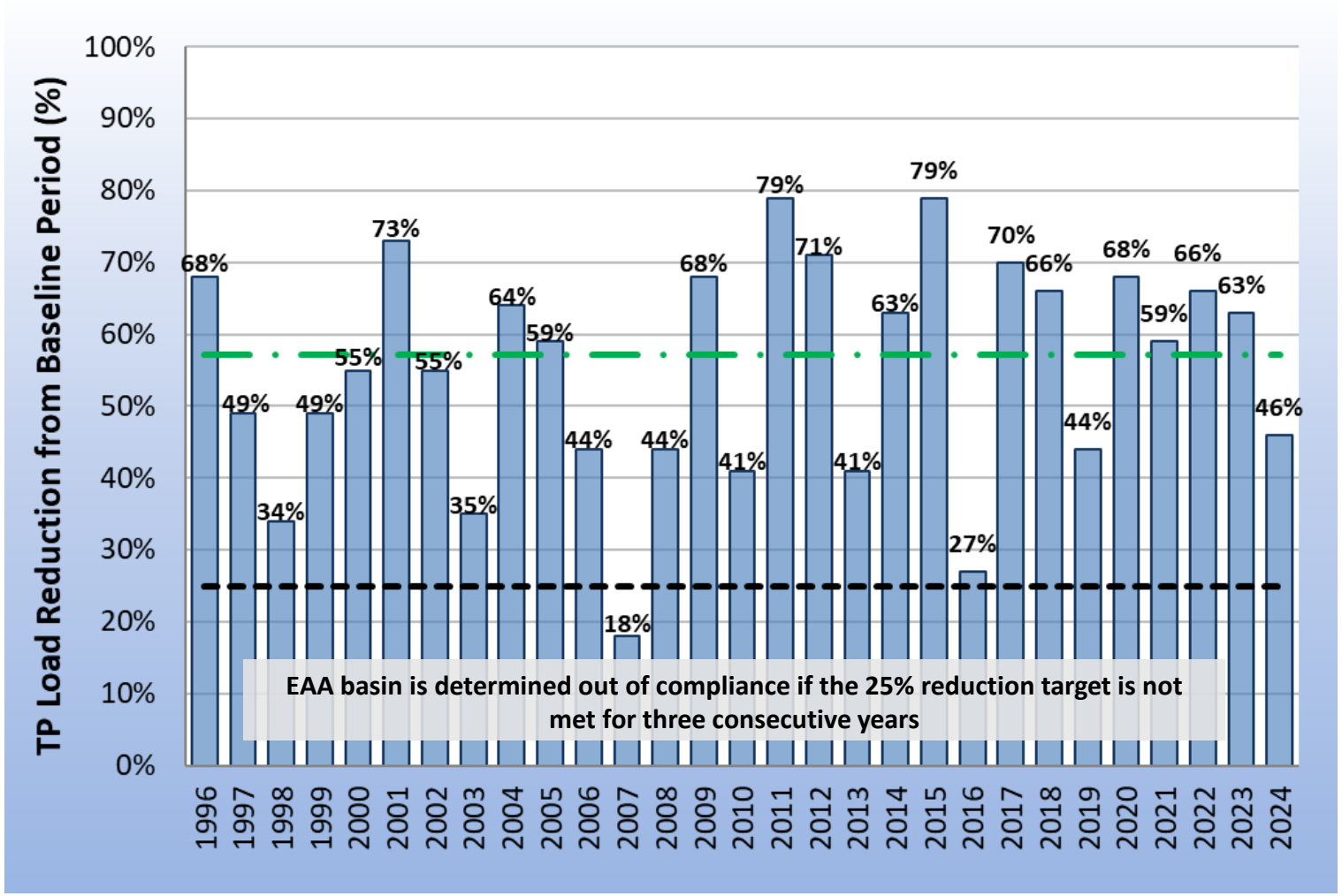
EAA Basin Level Compliance



WY2024 TP Load Reduction = 46%

- Annual phosphorus reduction
- Required reduction target 25%
- Long-term average reduction 57%

EAA Permit Level Compliance

- Comprehensive best management practices (BMP) plan
- Permittee water quality monitoring plan
- Post-permit compliance activities

Nutrient Management

Controlled application

Water Management

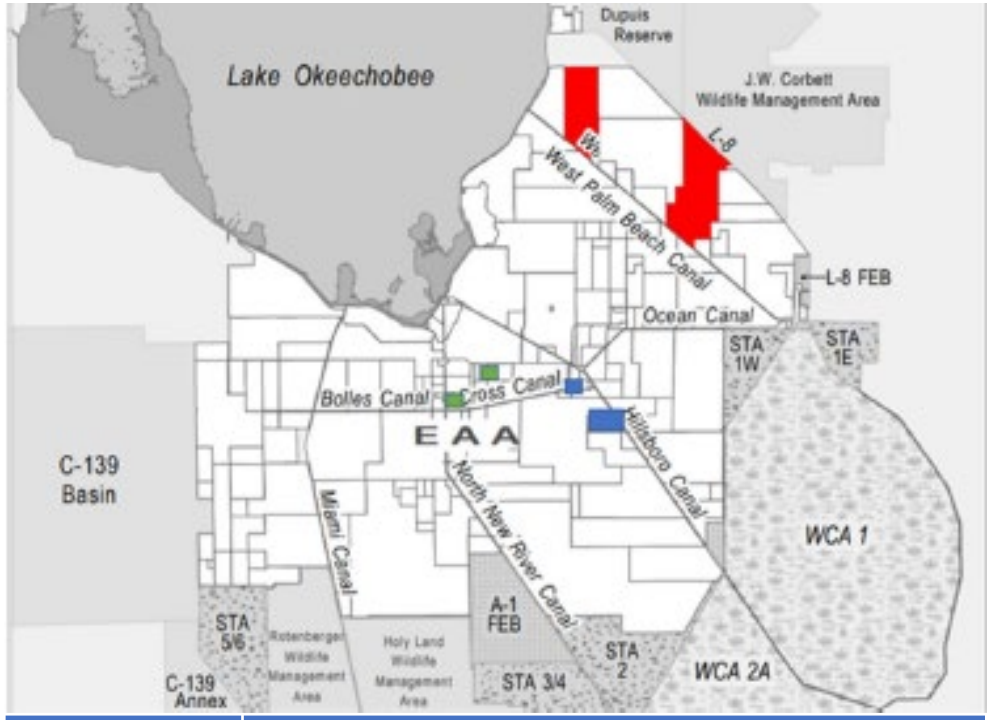
Water control structure

Particulate Matter and Sediment Controls

Canal cleaning, sumps and vegetated banks

EAA BMP Master Research Permit

- The Everglades Forever Act (EFA) requires a comprehensive program of research, field testing and implementation of BMPs.
- A 5-year EAA-EPD Master Research Permit was issued in September 2020.
  - ➢ This research evaluates performance differences between EAA farm basins with similar BMPs.
  - ➢ Six farms were selected for this research project that started in October 2020.
- Fourth interim annual report completed in July 2024.



Legend	Farm Basin ID
	50-018-01 and 50-018-03
	50-028-01 and 50-048-01
	50-061-07 and 50-061-12

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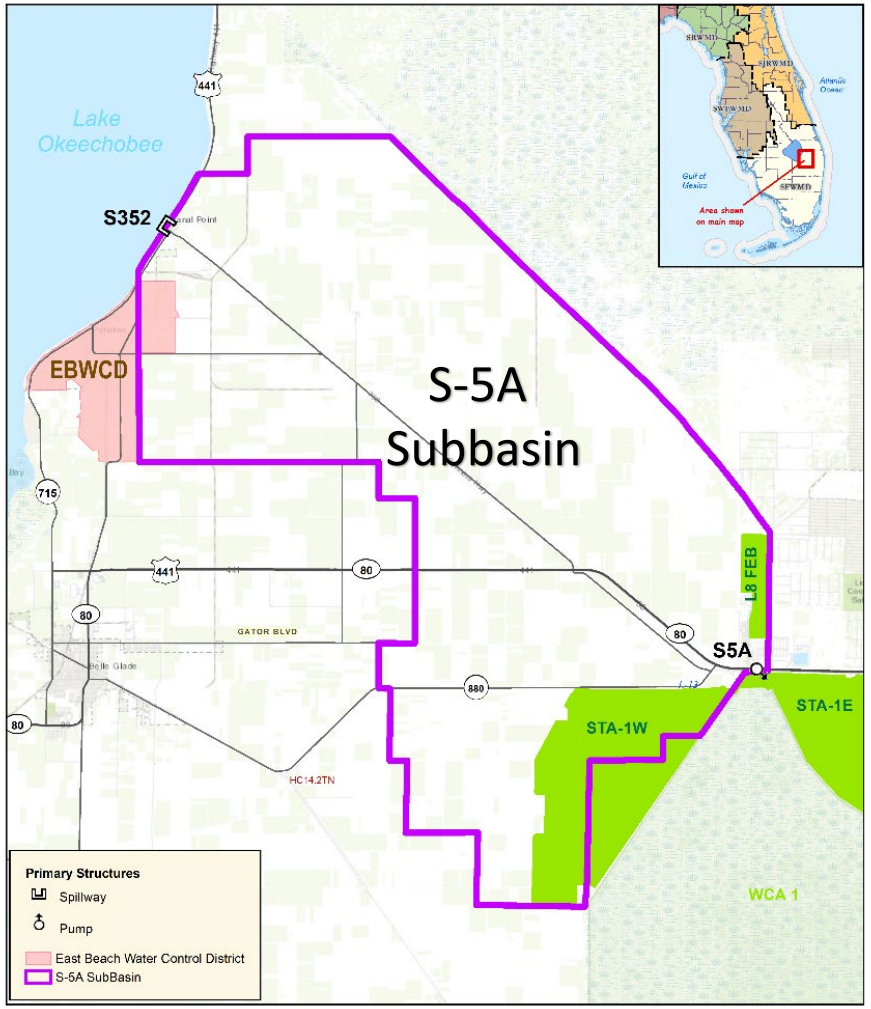
Sub-Regional Source Control Projects

- Build upon the success of the EAA Regulatory Program
- It's one of the "safety factors" for Restoration Strategies
- To reduce total phosphorus (TP) from the S-5A source basin into STA-1E and STA-1W (Eastern Flow Path)
- Two sub-regional source control projects are under consideration to further reduce TP into the STAs
  1. Dredge portions of the West Palm Beach Canal near S-5A
  2. Test an innovative technology in the C-4 canal of the East Beach Water Control District



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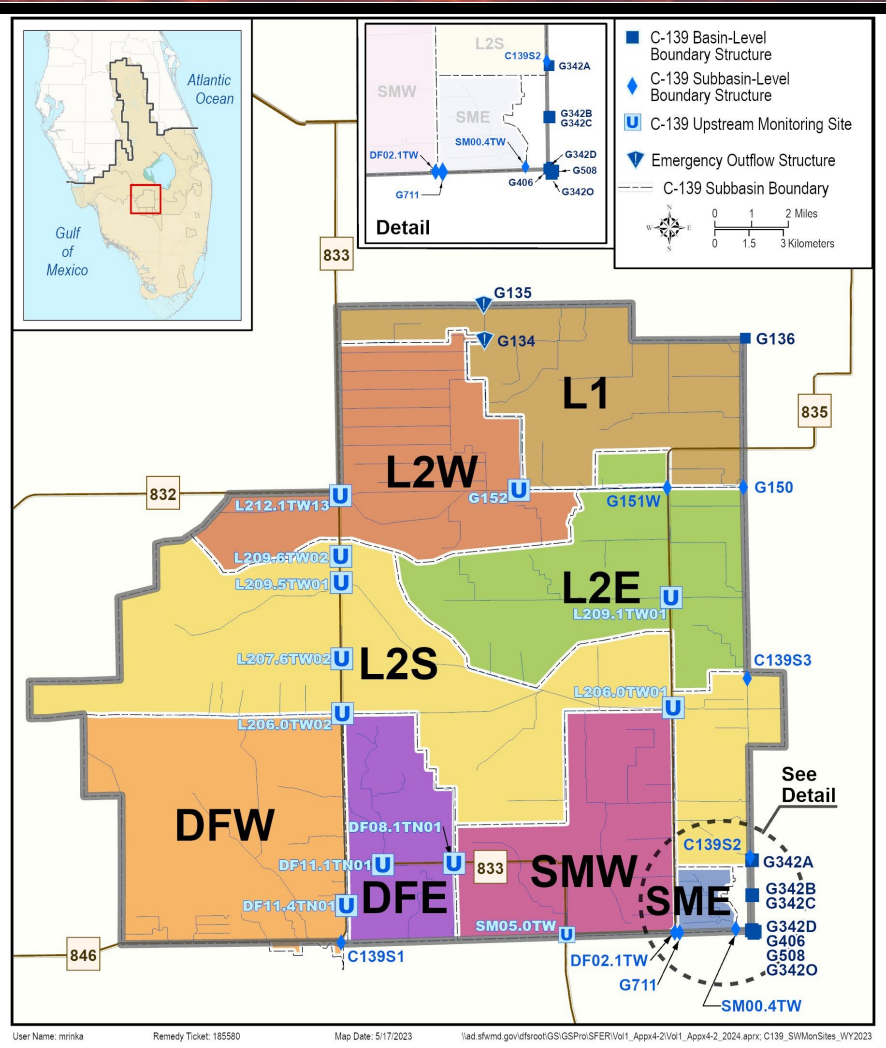
C-139 Basin Source Control Programs



- Basin-level water quality compliance
- Sub-basin water quality monitoring
  - Upstream water quality monitoring
  - Post-permit compliance activities

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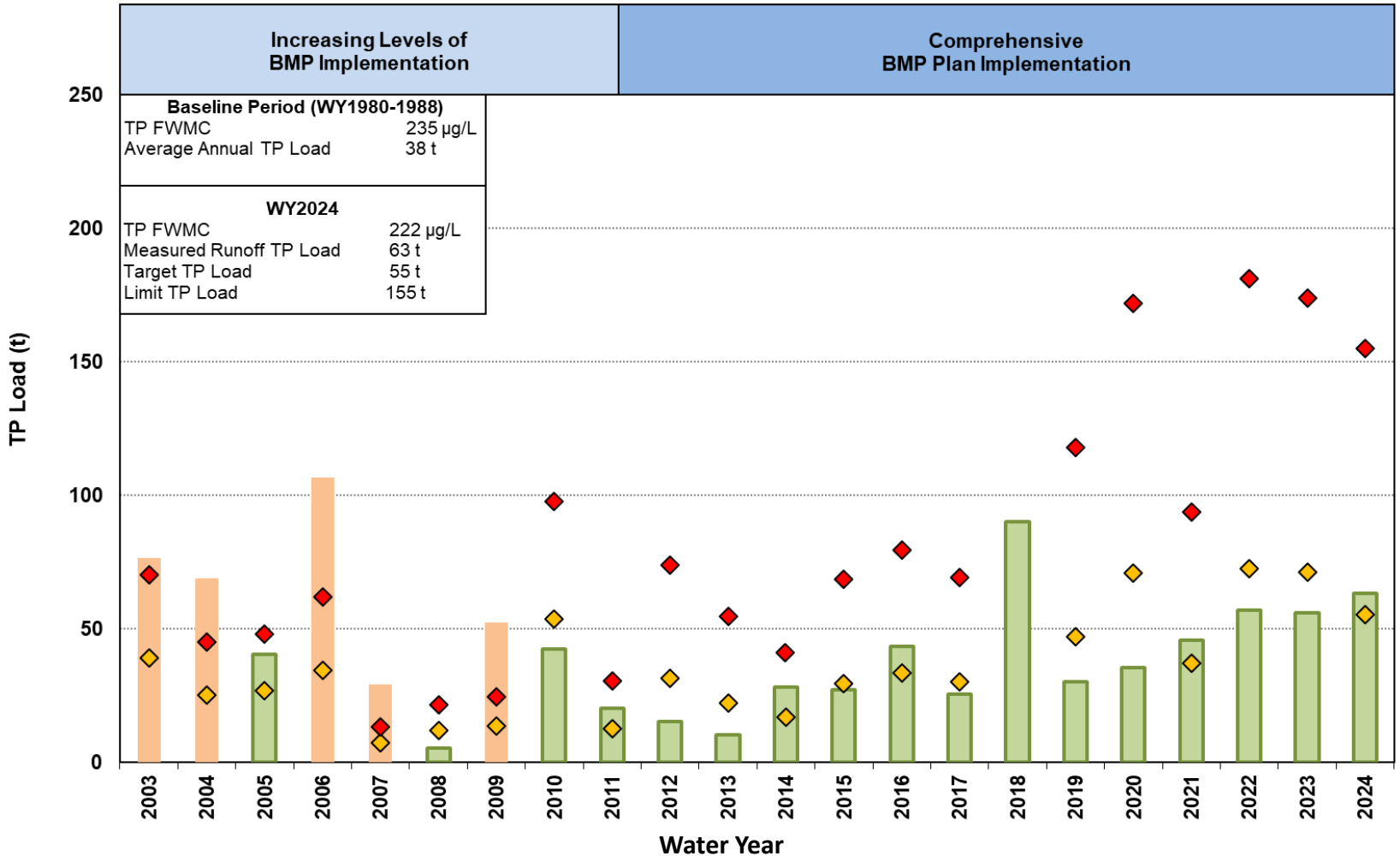
C-139 Basin Level Compliance



WY2024 Measured TP Load = 63 t

- Performance Not Met
- Performance Met
- Target TP Load
- Limit TP Load

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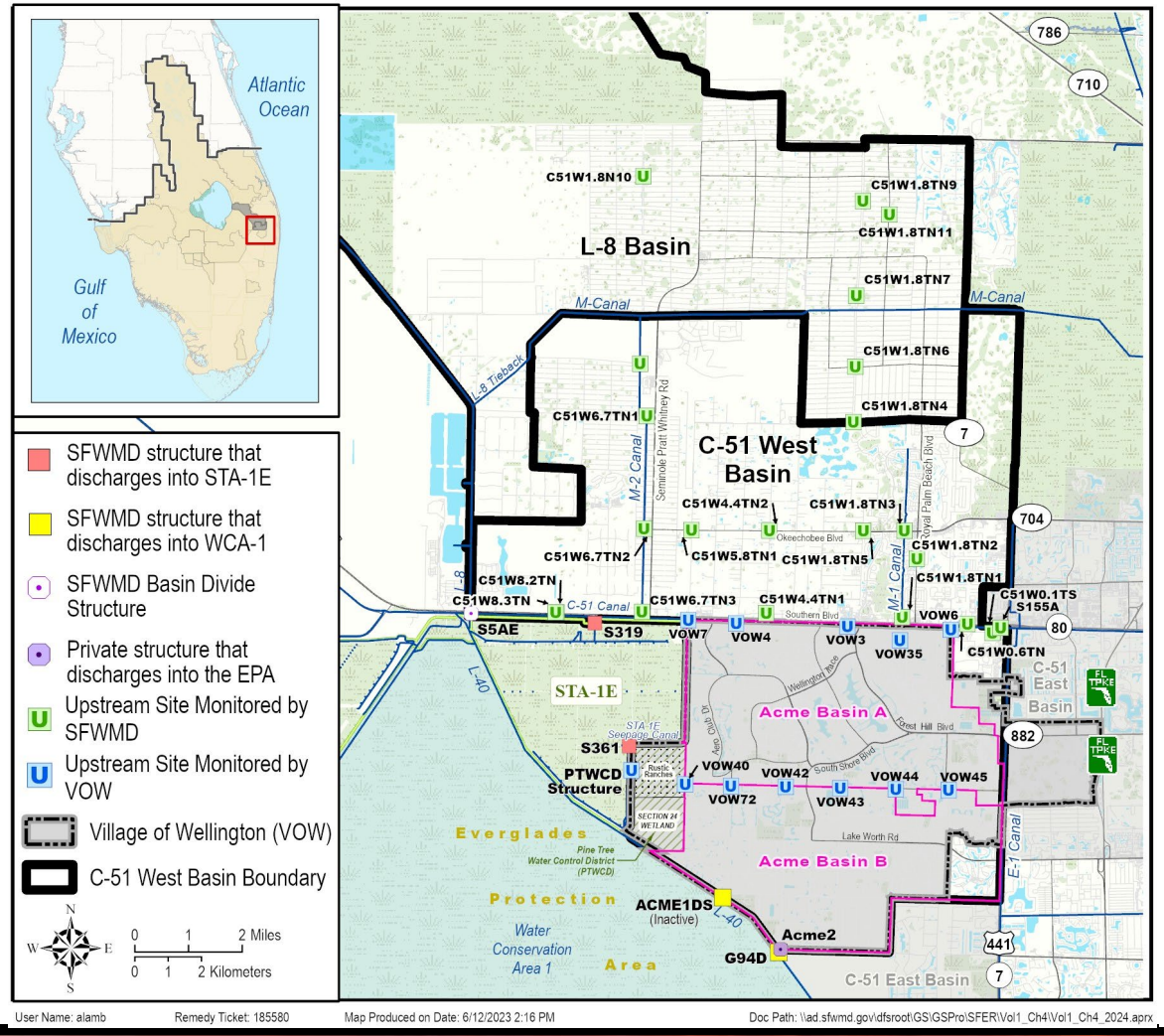
C-51 West and Acme Basin



- ERPs and ordinances in Village of Wellington include conditions that require
  - BMPs and livestock waste storage and disposal requirements in coordination with FDACS
  - Water quality monitoring program throughout the Acme basin (U markers)
- Additional sampling has been implemented by SFWMD in areas north of the C-51 West Canal (U markers)

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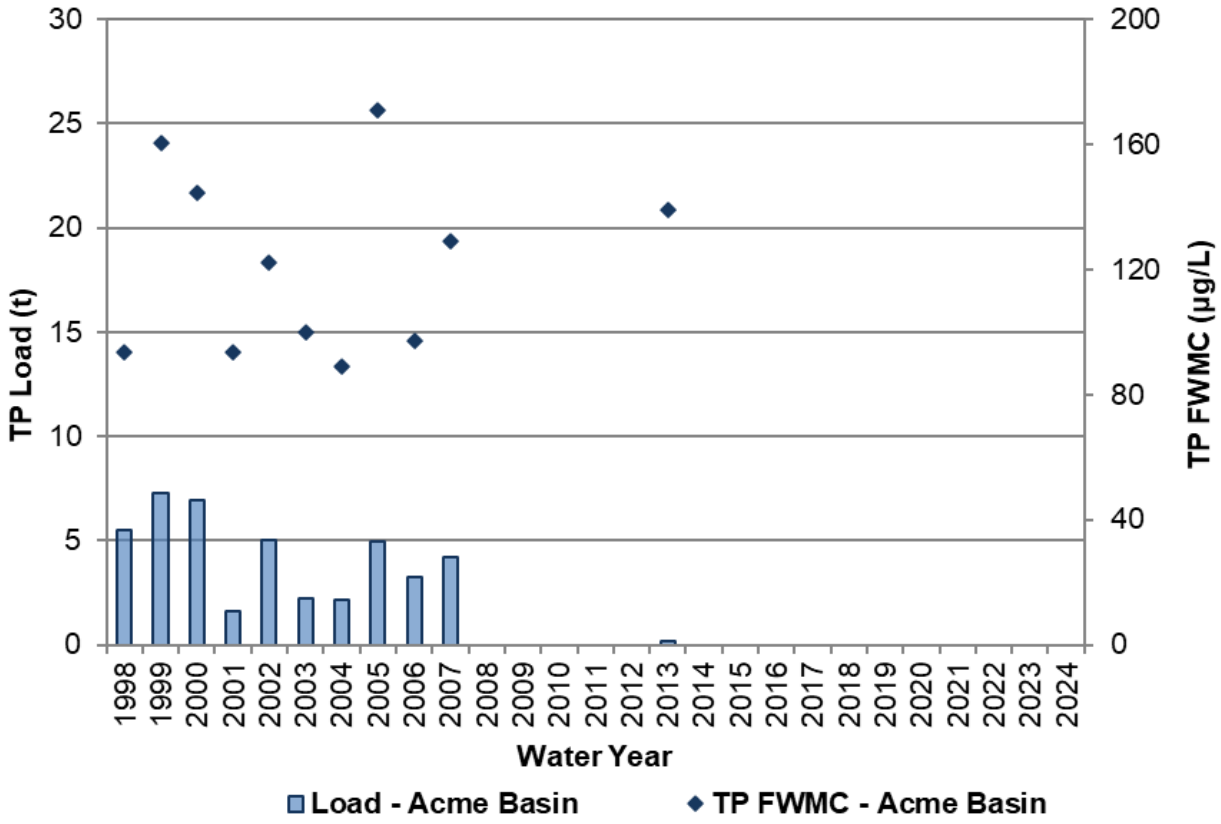
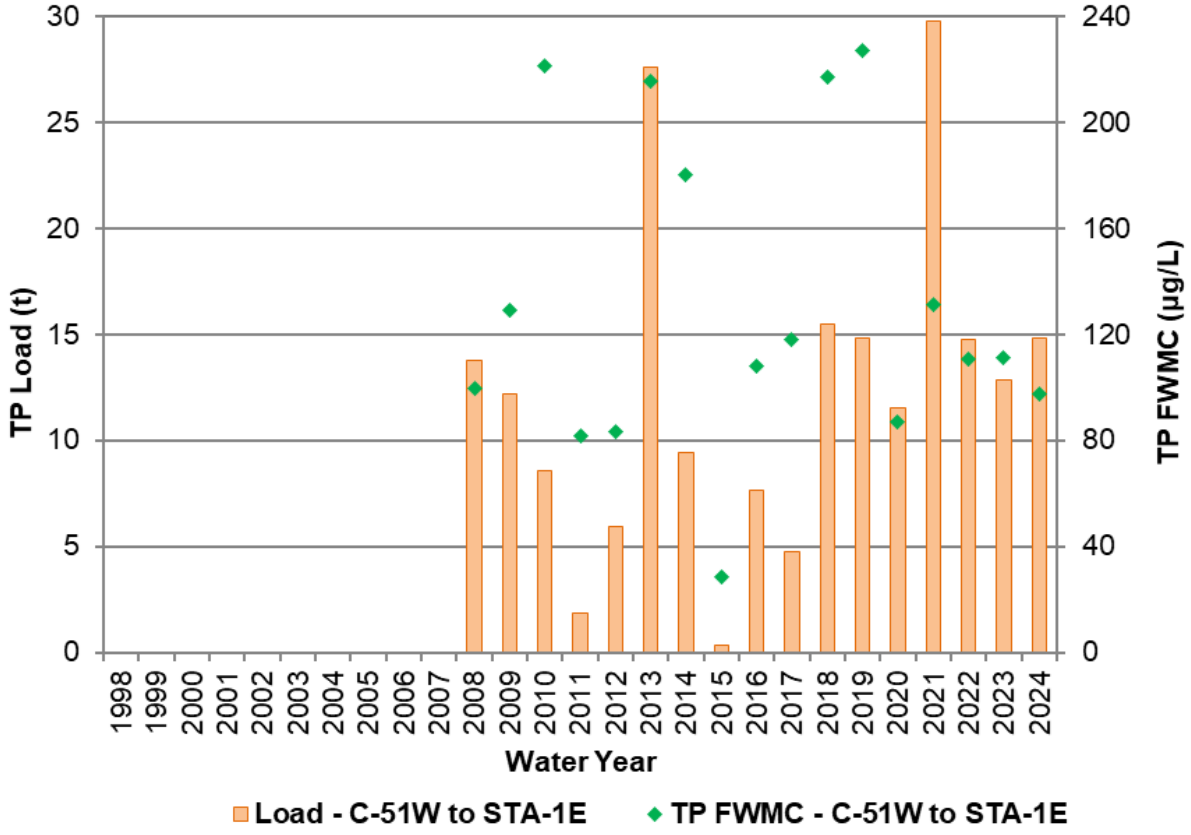
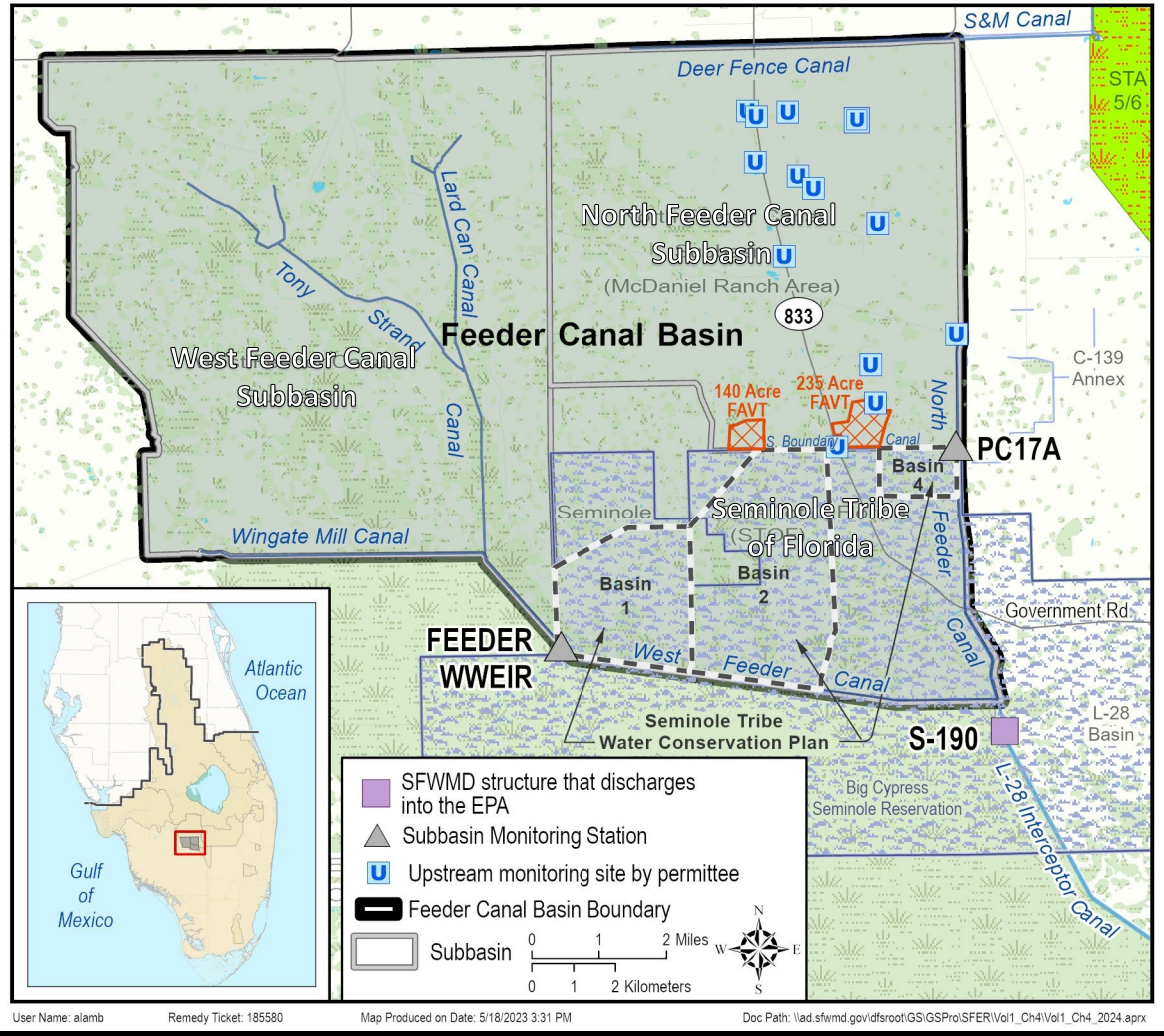
Acme Basin and C-51 West





WY2024 Measured TP Load = 15 t

Feeder Canal Basin



- North Feeder Subbasin:
  - Landowner ERPs require BMPs and water quality monitoring
  - Voluntary FAV tilling projects
- West Feeder Subbasin:
  - Landowners can enroll in the FDACS BMP program.
- CERP Big Cypress/L-28 Interceptor Modification (Western Everglades Restoration Project or WERP)

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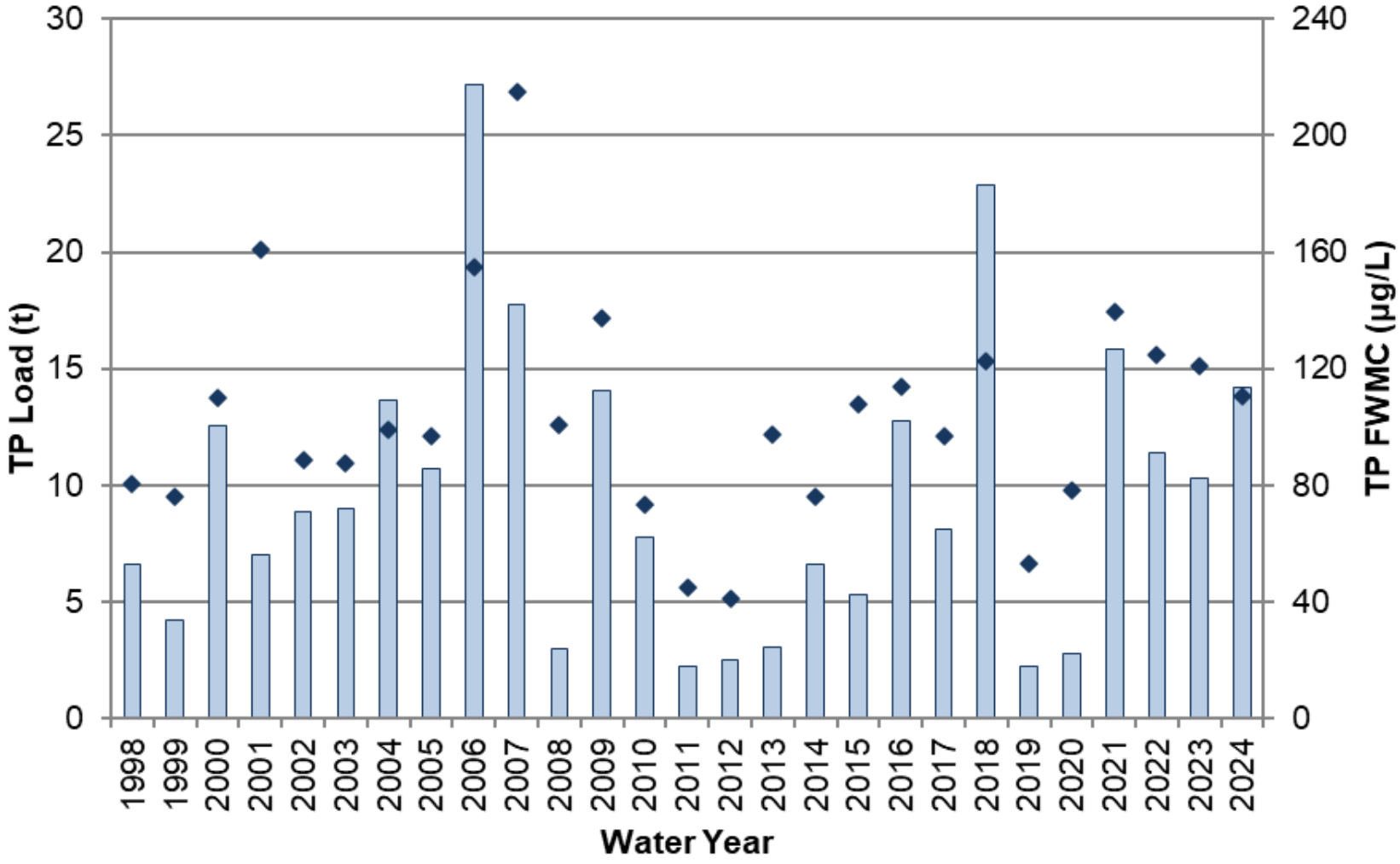
Feeder Canal Basin



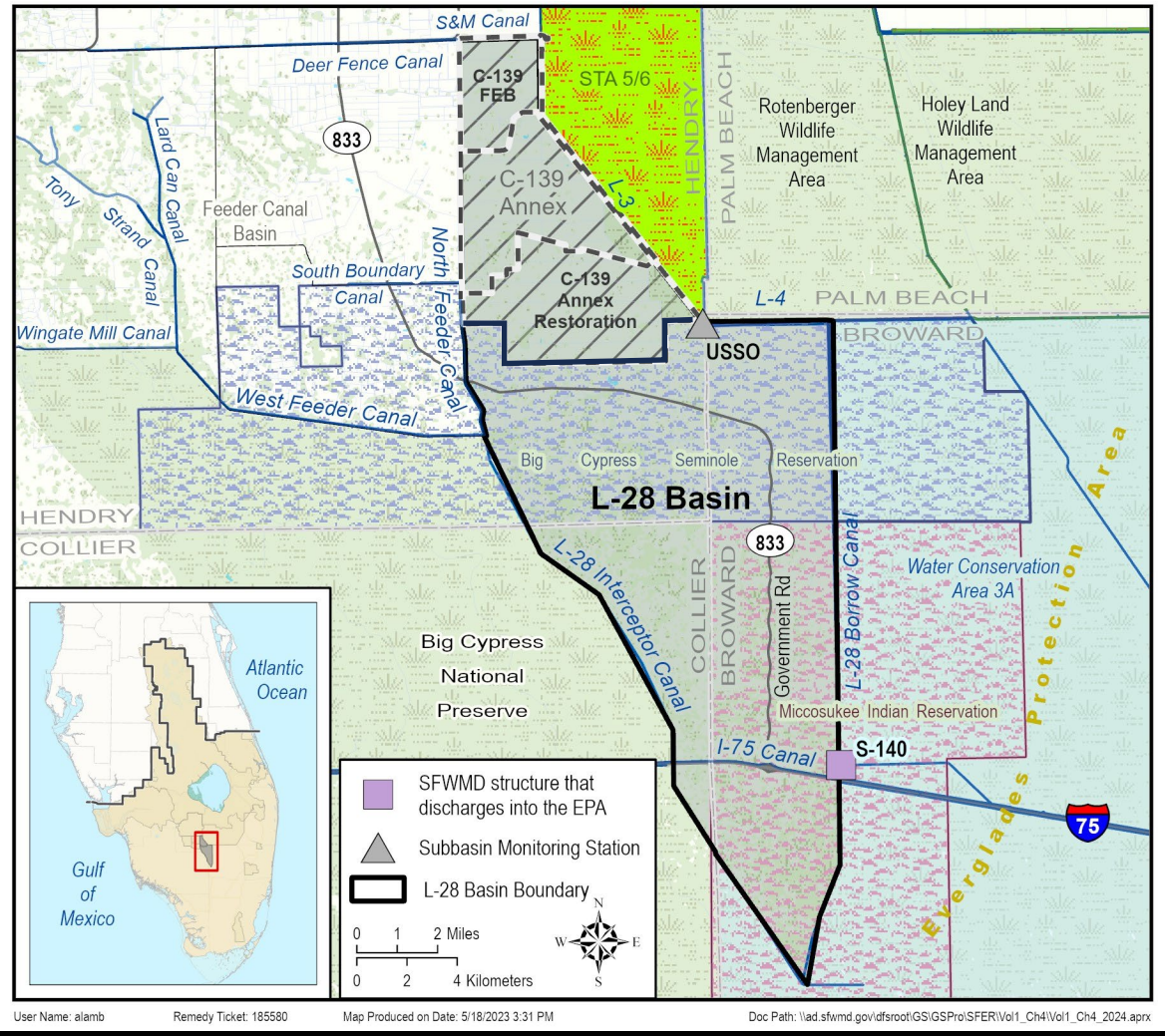
Discharge through Structure S-190

WY2024 Measured TP Load = 14 t

Annual Load

TP FWMC

L-28 Basin



- CERP projects:
  - CERP Big Cypress/L-28 Interceptor Modification (WERP)

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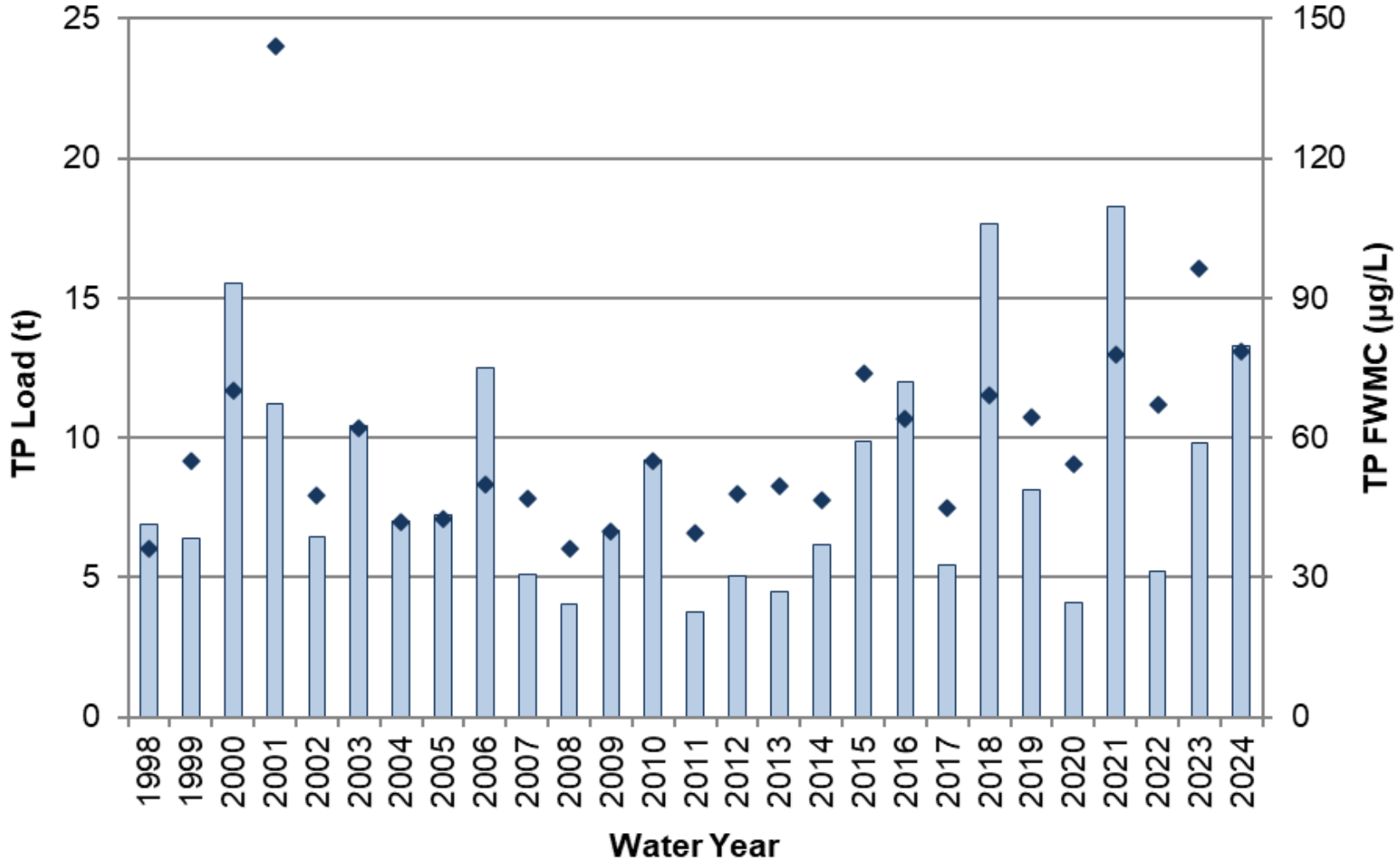
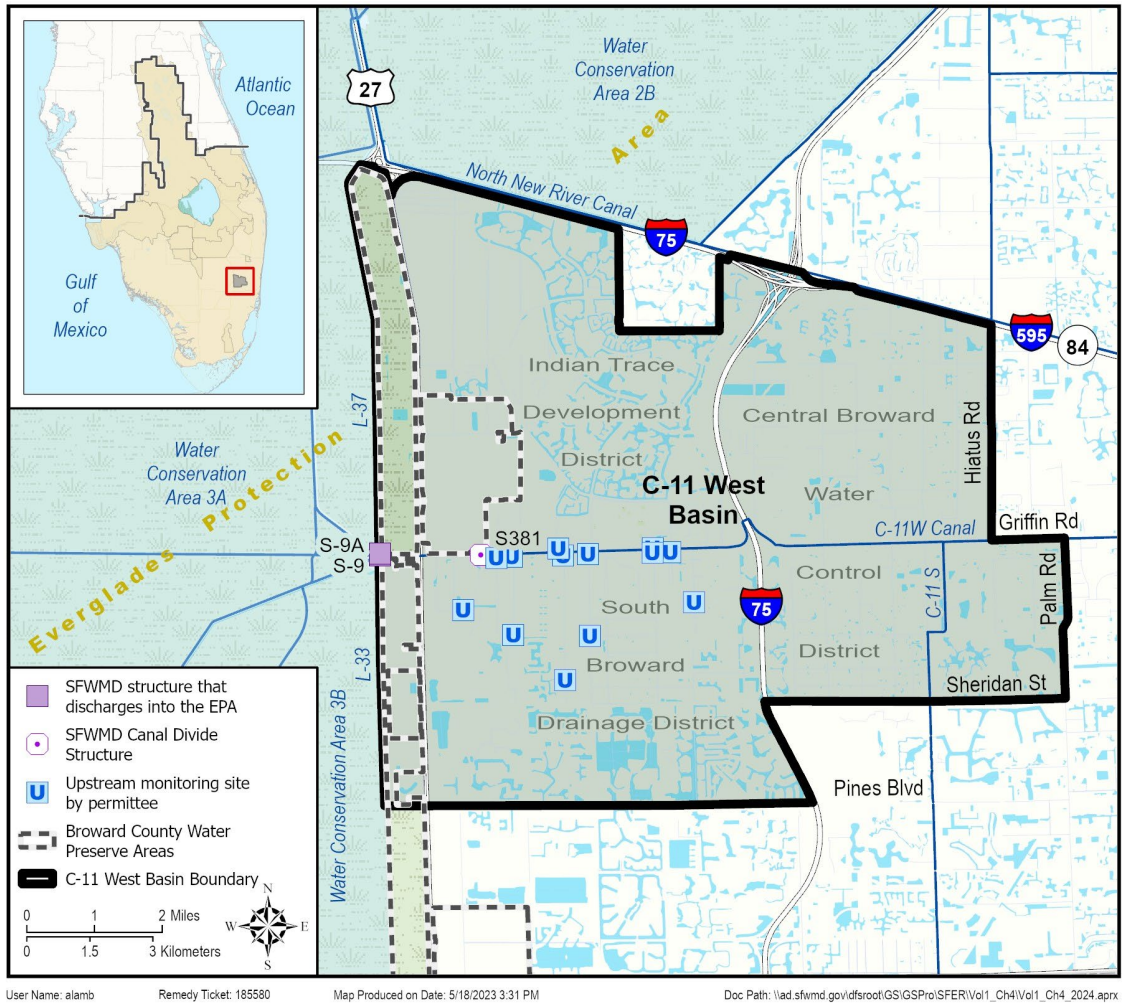
L-28 Basin



Discharge through Structure S-140

WY2024 Measured TP Load = 13 t

C-11W Basin



- ERPs issued to water control districts include conditions for BMPs including optimized detention of runoff and water quality monitoring
- CERP project:
  - CERP Broward County Water Preserve Area Project.

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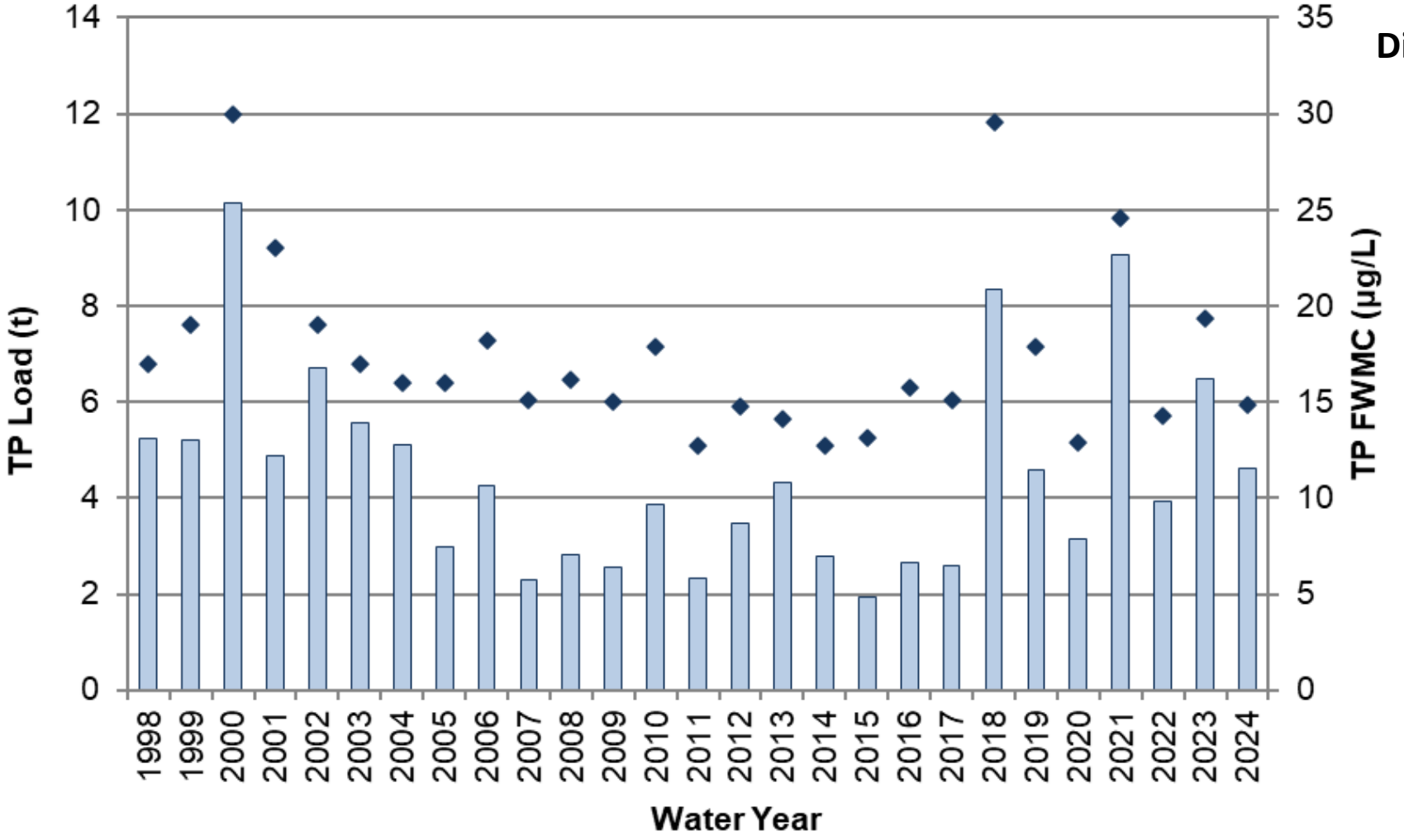
C-11W Basin



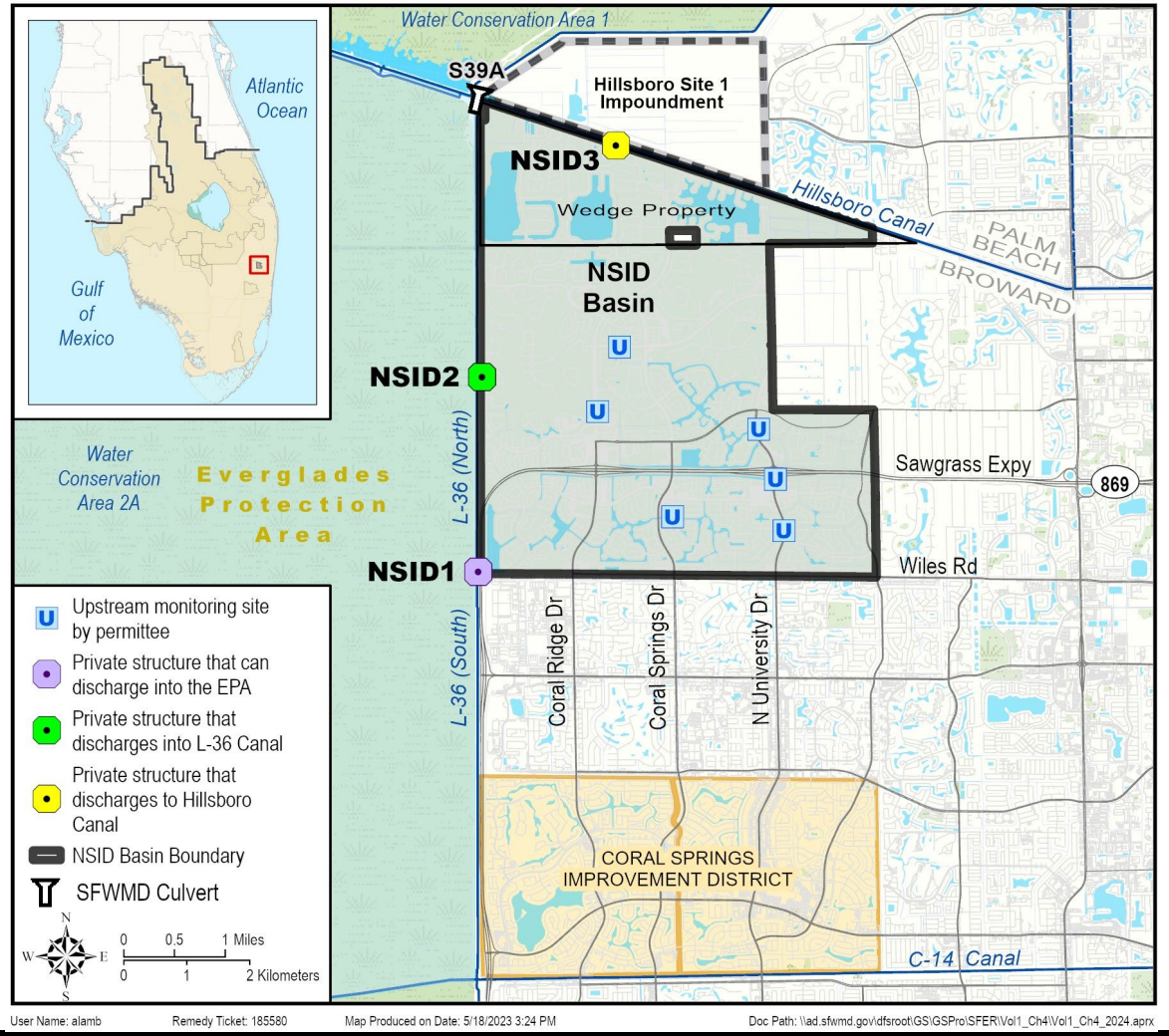
Discharge through Structures S-9 & S-9A

WY2024 Measured TP Load = 5 t

Annual Load

TP FWMC

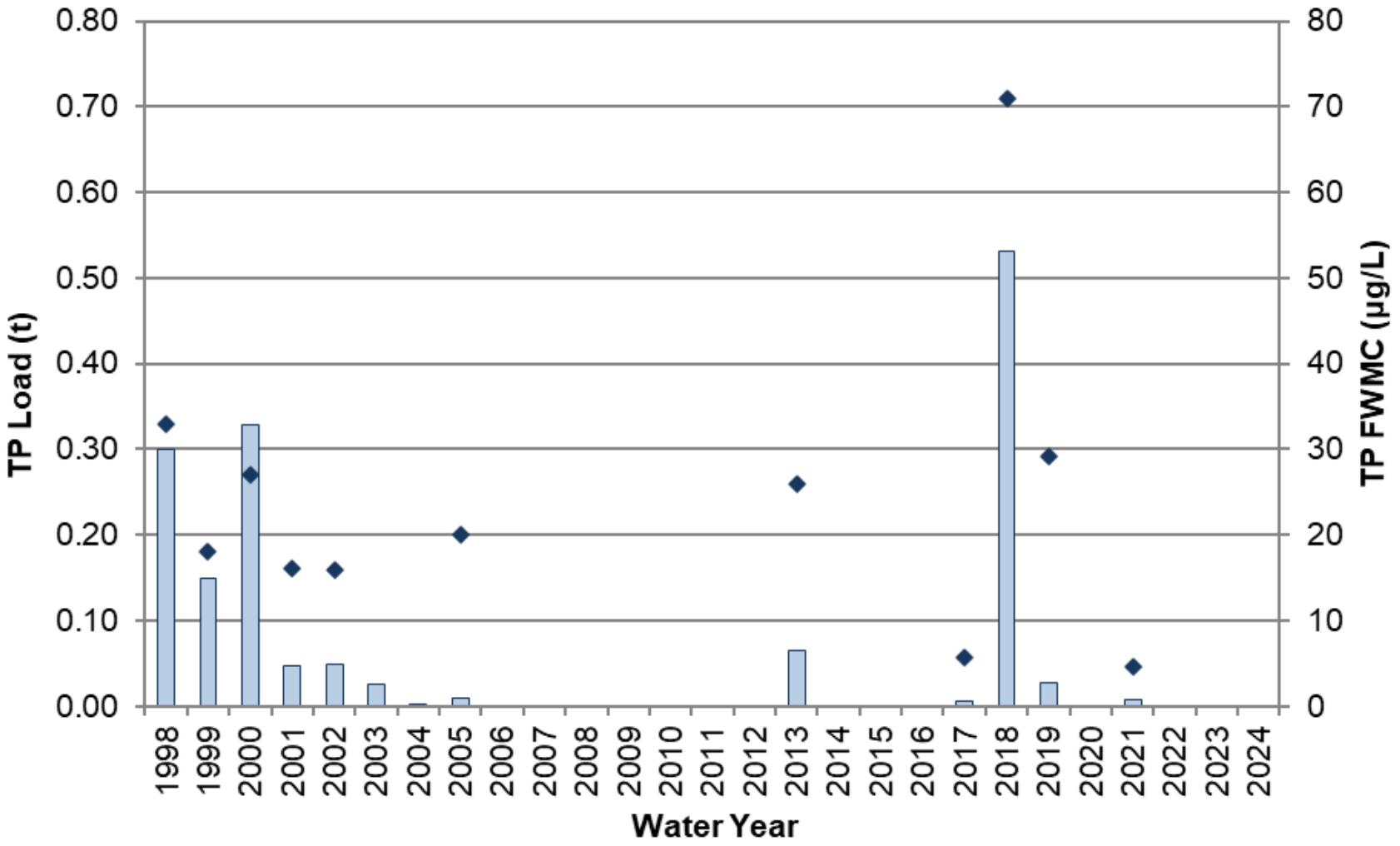
NSID Basin



- ERPs issued to NSID include conditions requiring BMPs implementation, water quality reporting, and phosphorus load limits for discharges to WCA-2A.
- CERP project:
  - CERP Hillsboro Site 1 Impoundment Phase 2 needs congressional authorization before moving forward

Presenter: Stephanie Nevadunsky

NSID Basin



Discharge through Structure NSID1

WY2024 Measured TP Load = 0 t

Annual Load

TP FWMC

Summary

- For the EAA basin, WY2024 TP load reduction is 46%. With the WY2024 results, the 29-year average annual TP load reduction for the program is 57%.
- For the C-139 basin, although the measured TP load in runoff was above the target load in WY2024, it was below the limit load; therefore, the basin met the performance measure TP levels for WY2024.
- For the other tributary basins during WY2024, voluntary BMP implementation and progress toward the completion of CERP projects continued.
- The continued success of and ongoing improvements to the Southern Everglades source control program rely on verifying BMP implementation, continuing meaningful research and tracking program performance based on WQ data and basin-specific metrics.

Additional Information

CHAPTER 4:
NUTRIENT SOURCE CONTROL PROGRAMS
IN THE SOUTHERN EVERGLADES

www.sfwmd.gov/sfer

Contact Information

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SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Public Use on SFWMD Stormwater Treatment Areas

James Harbaugh
Recreation Project Manager
Land Stewardship

22nd Annual Public Meeting on the Long-Term Plan for Achieving Water Quality Goals for the Everglades Protection Area Tributary Basins

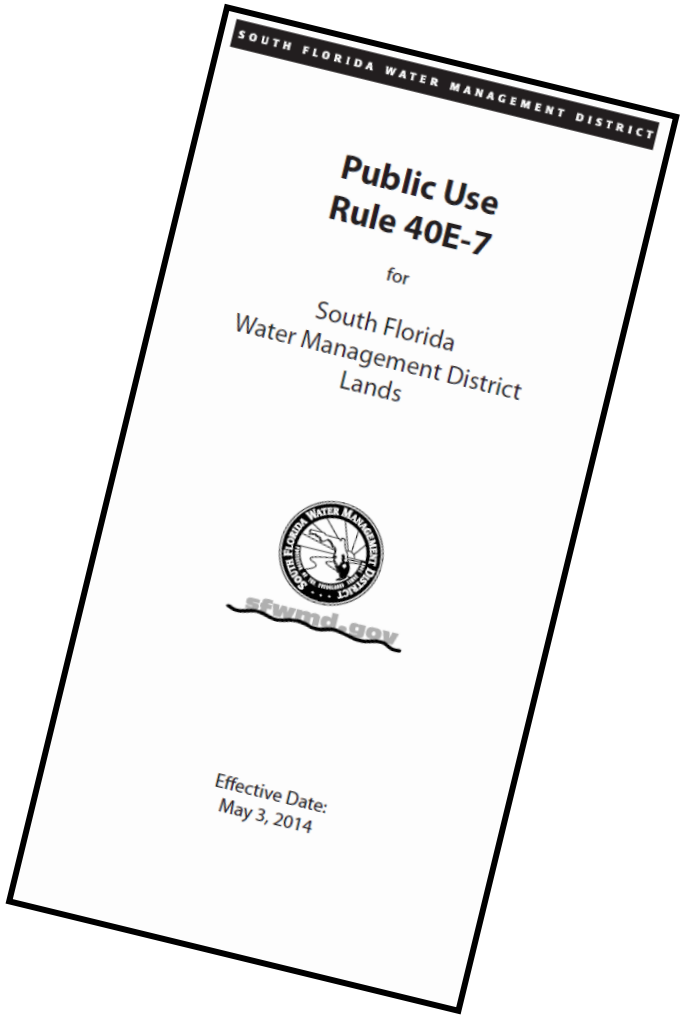
February 24, 2025

sfwmd.gov

Mission

- **Why have Public Use?**
- **Florida Statutes 373.4592 - Everglades improvement and management …** These lands shall be made available for recreational use unless … such uses are incompatible with the restoration goals of the Everglades Construction Project or the water quality and hydrological purposes of the STAs or would otherwise adversely impact the implementation of the project.

- **Florida Administrative Code: 40E - 7**



Nature Based Recreation Types

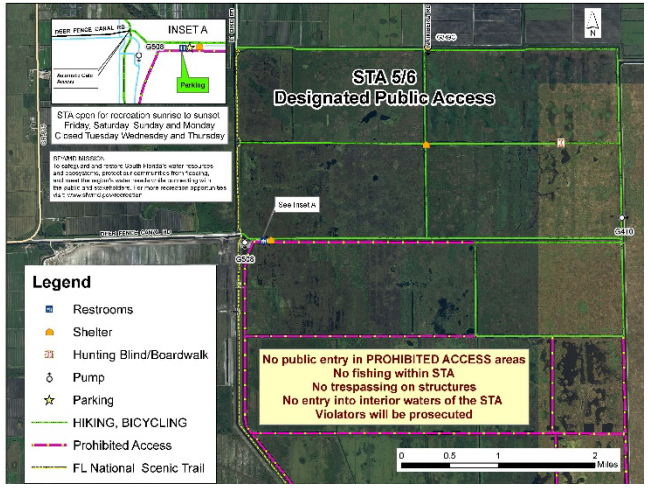
- **Nature based recreation from levees**
  - Hiking
  - Wildlife Viewing
  - Biking
  - Day use picnic
  - Fishing
- **Recreation within cells**
  - Hunting

Partnerships

- **SFWMD**
  - Responsibility to provide recreation opportunities
- **Stakeholders/Partners**
  - Florida Fish and Wildlife Conservation Commission - FWC
  - Florida National Scenic Trail - FNST
  - Audubon Society
  - Conservation/Recreation Clubs
    - i.e. - United Waterfowlers of Florida
    - S. Florida Amateur Astronomer Assoc
    - Many others

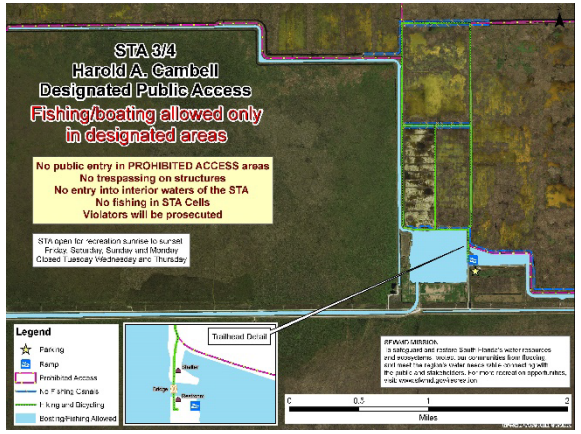
Nature Based Recreation

- **Guided Wildlife Viewing**
  - STA - 5/6
    - Hendry Glades Audubon
  - STA - 1E
    - Everglades Audubon
- **Hiking/Biking**
  - All STA's
    - Fri - Mon

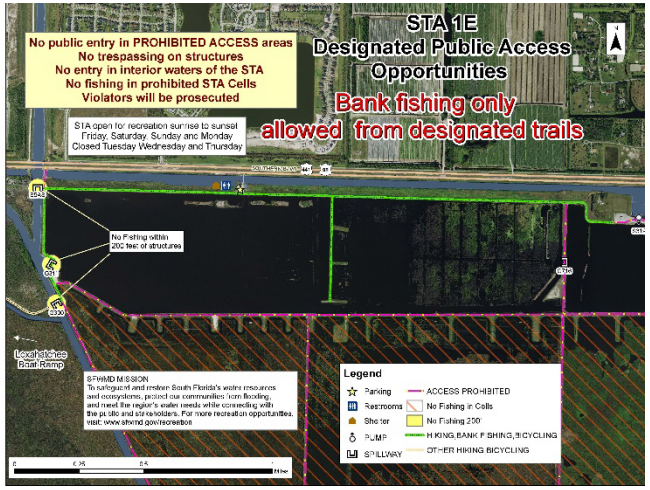


Nature Based Recreation

- **FWC quota hunt**
  - Waterfowl & Alligator
    - Access into cells limited
      - Designated access points
- **FWC Youth Hunt Program**
- **Other specialty hunts**
  - Wounded Warrior Hunts

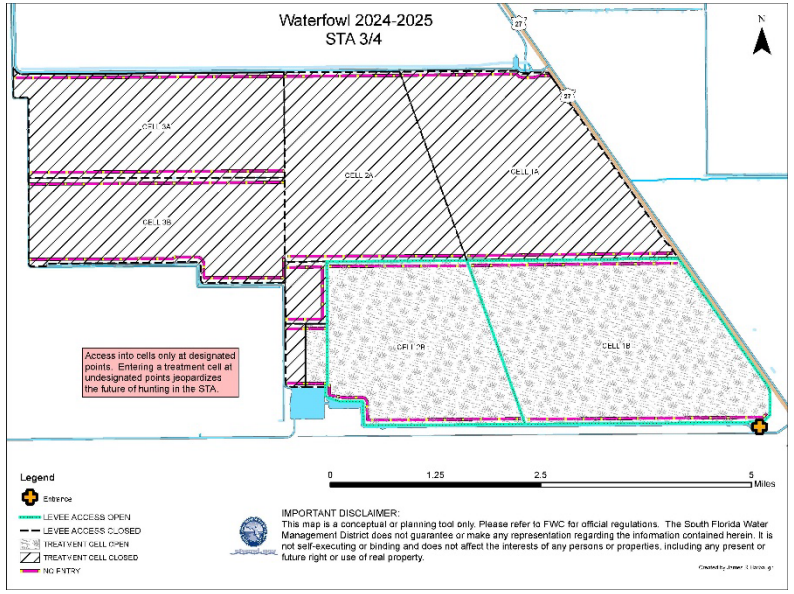


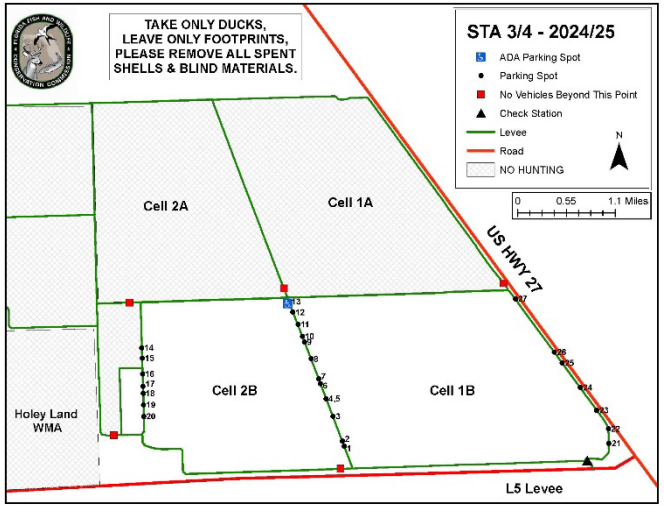
- **Fishing outside project area**
  - i.e. Discharge canals
  - STA - 1E & 1W
    - Bank fishing
  - STA - 3/4, Harold Campbell
    - Motorboat access
    - Non impacting



STA Function vs Public Use

- **A working property**
  - Constructed wetland to improve water quality
  - **Access coordination**
    - Field Operations
      - Public access hours
      - Fri - Mon
    - Land Stewardship
      - T/E Wildlife
    - Veg Management Team
    - Construction - Project Manager



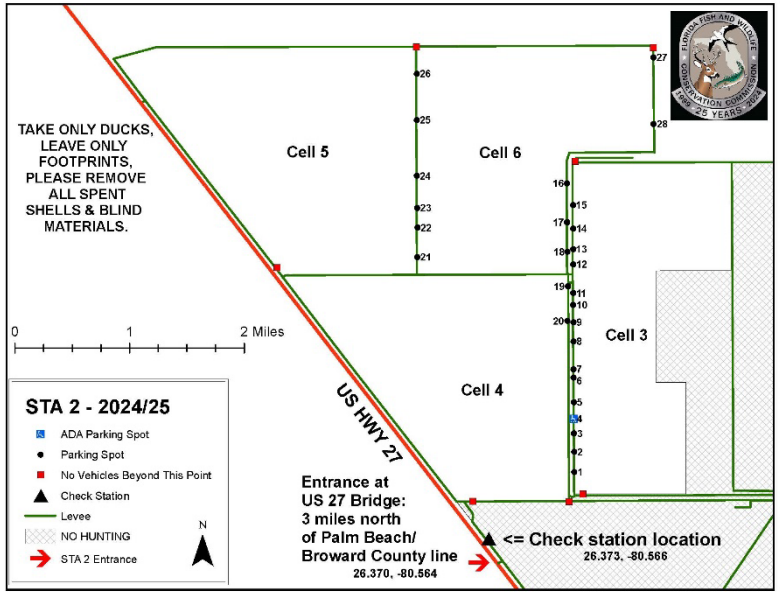


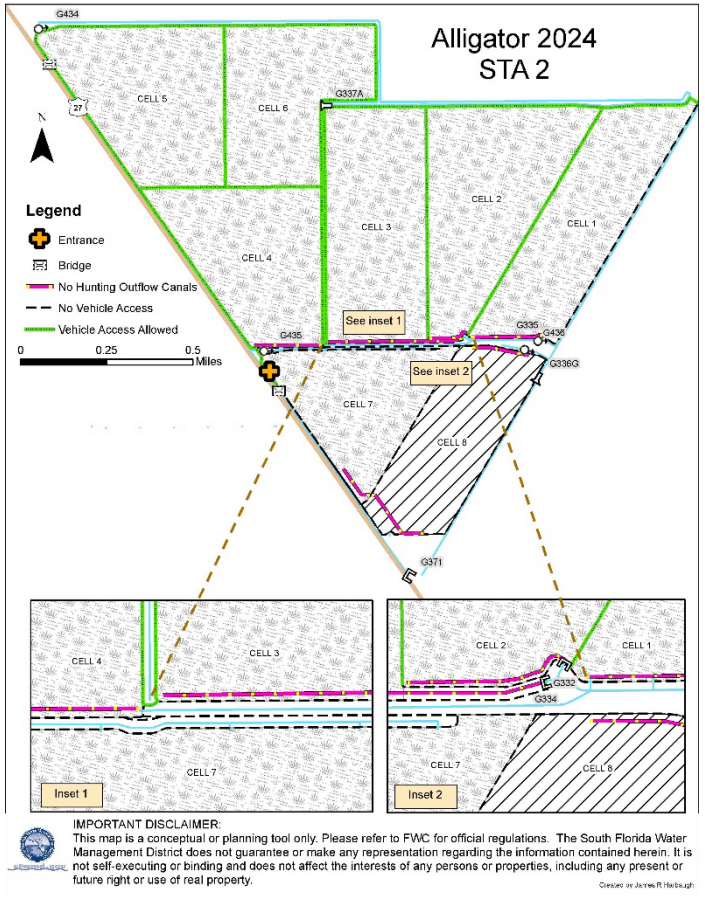
STA Function vs Public Use

- **Preserve function**
  - Additional signage
    - Restrict alligator hunting
    - Collection canals
    - Levee access
    - Assist with enforcement
  - Education
    - Website STA information linked on FWC Waterfowl Hunting webpage to SFWMD Recreation webpage
    - Questions & Answers – What You Need to Know about Visiting Stormwater Treatment Areas (STAs) [PDF]

Construction & Maintenance

- **Necessary Closures**
  - Construction zone
    - Safety/Deadlines





Maintenance

Parking areas

- Surfaces resealed and striped
- Border fence
  - Replaced with low maintenance design

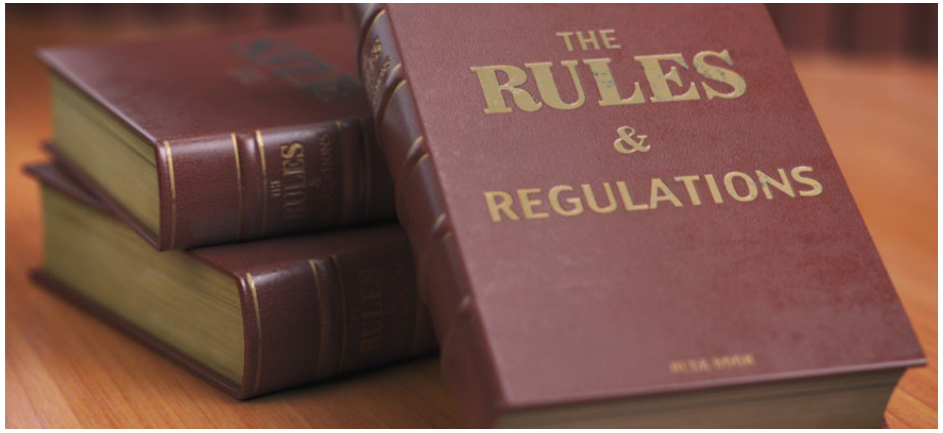
- **New Restrooms**
  - Composters
    - Past life expectancy
    - High maintenance
  - New concrete vault toilet

Moving forward – phase involvement

- Rec Infrastructure Standards incorporated in design phase
- Implement construction
- Construction completion
- Testing phase/finalizing rec infrastructure
  - ADA considerations, facilities, access points, barriers, etc.
- Consulting with internal staff
- Public Input
  - Recreation considerations
    - Hunting
    - Birding tours
    - Etc.
- Testing completion
- Governing Board approval

Public Participation

- Public Meetings - SFWMD
  - Public Meetings and Forums | South Florida Water Management District (sfwmd.gov)
  - Rec Forum – 3 meetings annually
    - 3rd Monday of March, June & September
- Proposed Rule Changes - FWC
  - Proposed Rule Changes | FWC (myfwc.com)



Contact Information

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Everglades
National Park

PUBLIC COMMENT

If you're participating in person – please fill out a comment card and give to a meeting attendant

If you're participating via Zoom – use the Raise Hand feature

If you're participating via Phone –
*9 Raises Hand
*6 Mutes/Unmutes

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PUBLIC COMMENT

sfwmd.gov

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THANK-YOU

FOR MORE INFORMATION,

PLEASE CONTACT

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