LOSOM Update

Collier County Board of County Commissioners

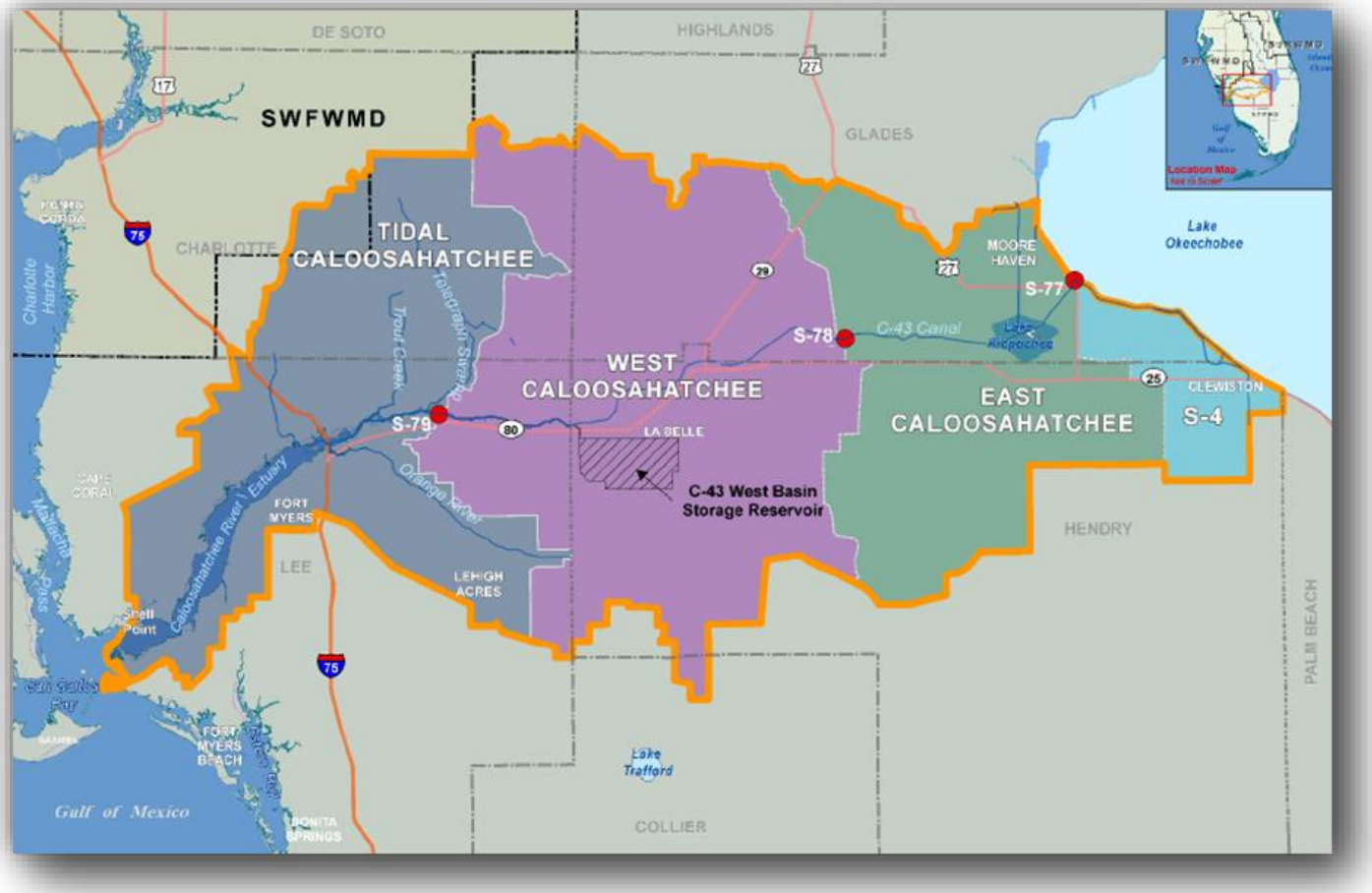
September 14, 2021

Nicole Johnson, Director of Environmental Policy, Conservancy

James Evans, Director of Environmental Policy, SCCF

Dr. Paul Julian, Ph.D., Hydrologic Modeler, Conservancy/SCCF

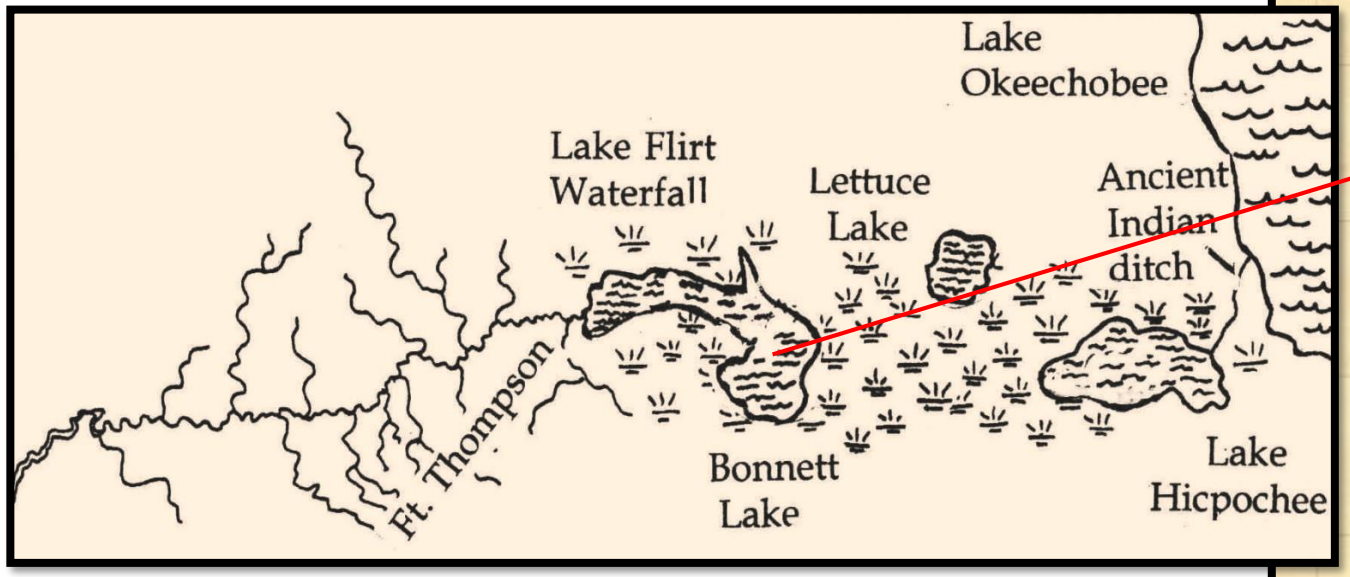
Caloosahatchee & Coastal Water Quality Affected by **both** Caloosahatchee Watershed & Lake Okeechobee Discharges



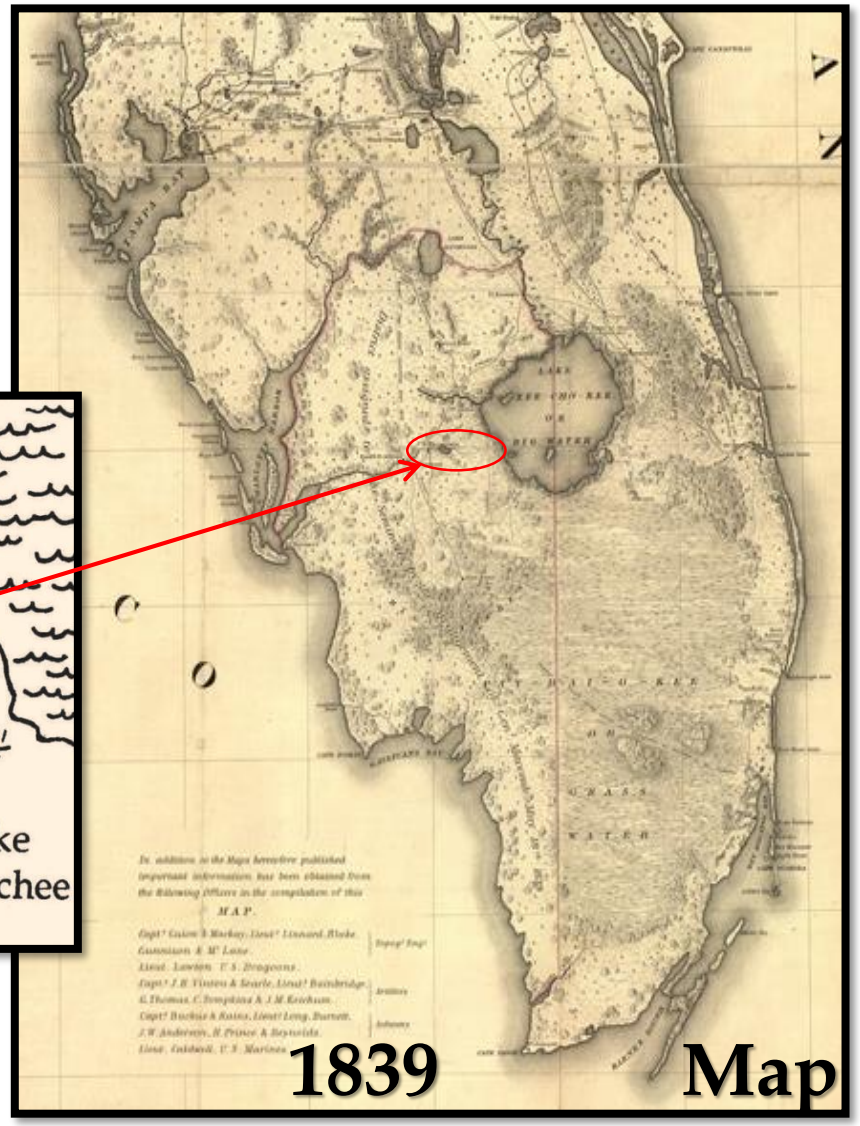
Caloosahatchee Watershed >850k acres

Caloosahatchee - Everglades Connection

Historically Caloosahatchee not Connected to Lake O



Caloosahatchee Valley of Lakes

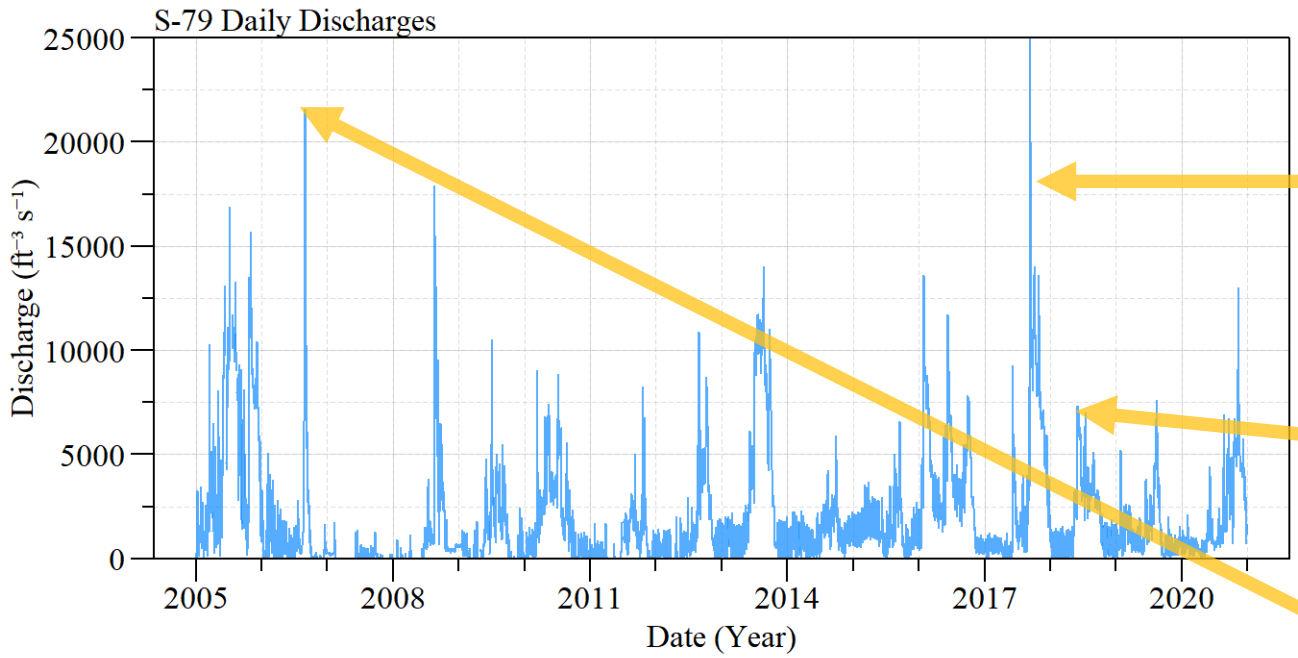


Caloosahatchee Dredged & Straightened

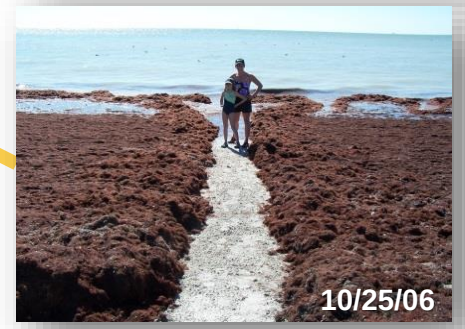
US Army Corps of Engineers®

To Provide Navigation and Flood Control

Caloosahatchee Impacted by Water Quantity & Quality

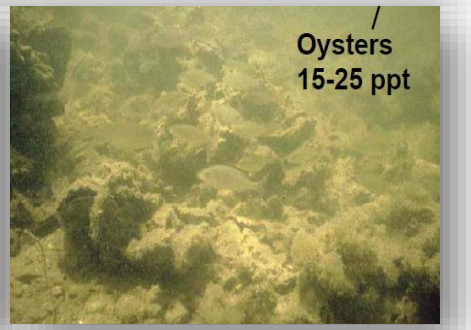


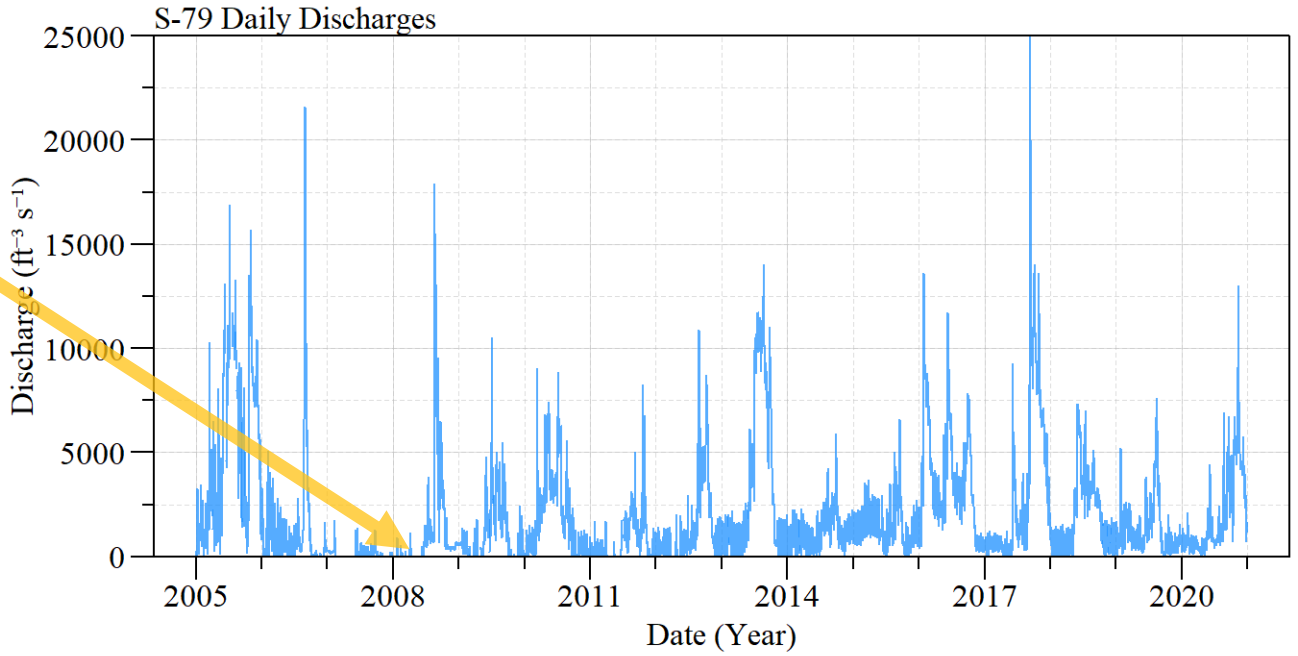
Too Much Flow



Caloosahatchee Impacted by Water Quantity & Quality

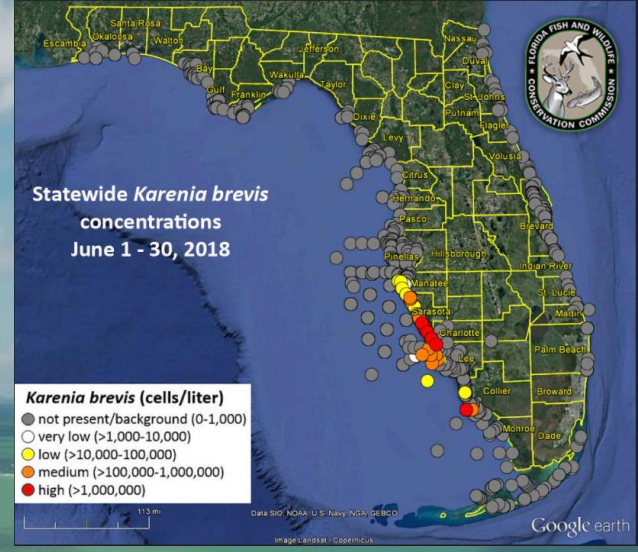
Too Little Flow





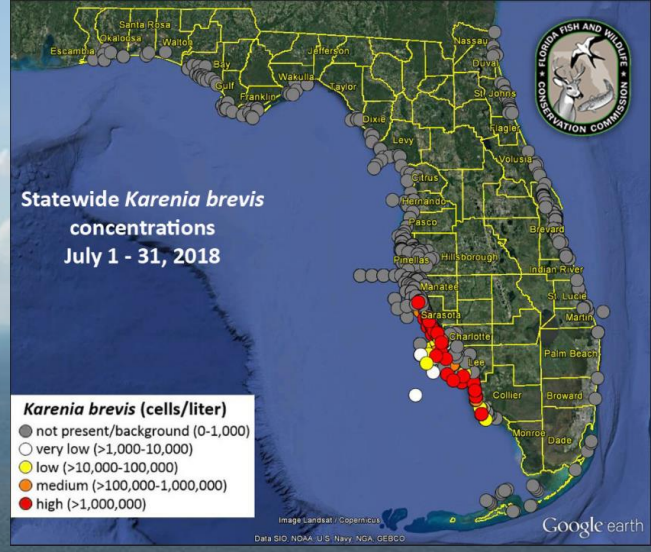
How do Caloosahatchee discharges impact Collier County?

City Of Sanibel, Lighthouse Beach Park, 6-3-18, 1:58 PM, High Tide Is At 2:53 PM



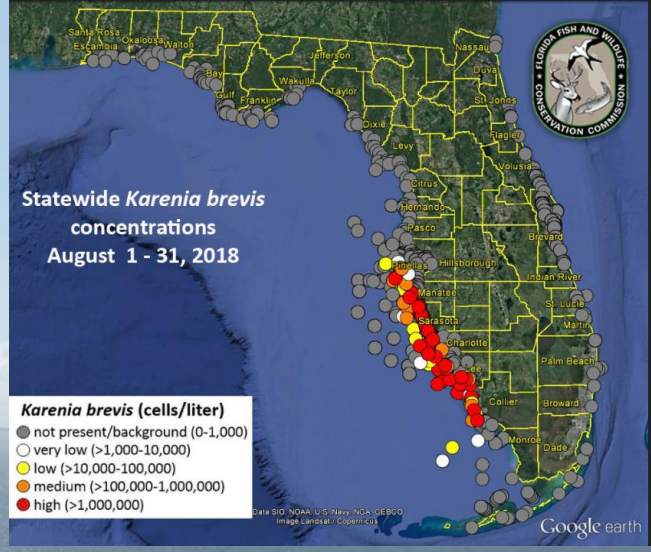
June 3, 2018

City Of Sanibel, Lighthouse Beach Park, 7-17-18, 10:30 AM, High Tide Is At 4:00 PM



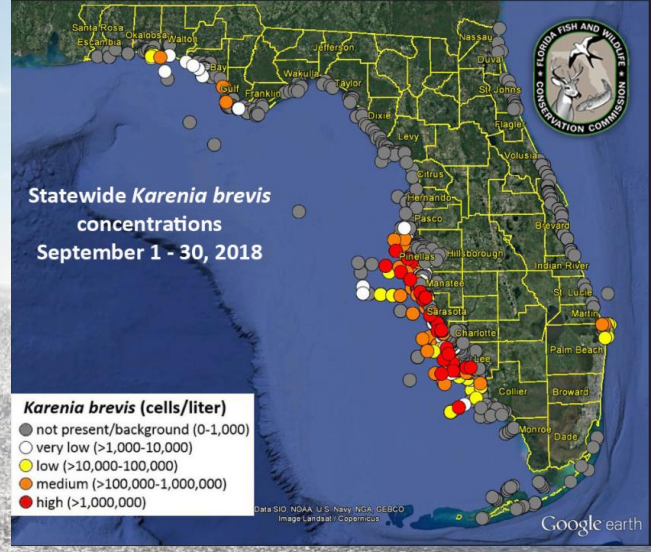
July 17, 2018

City Of Sanibel, Lighthouse Beach Park, 8-15-18, 10:40 AM, High Tide Is 3:59 PM



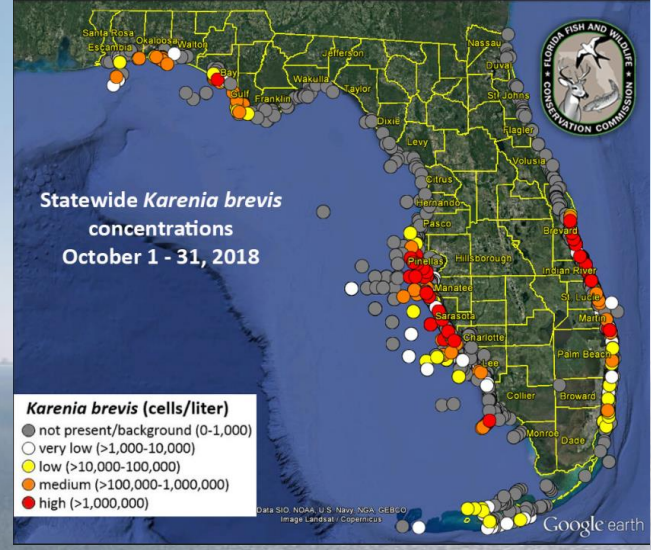
August 15, 2018

City Of Sanibel, Lighthouse Beach Park, 9-27-18, 10:25 AM, High Tide Is 2:27 PM



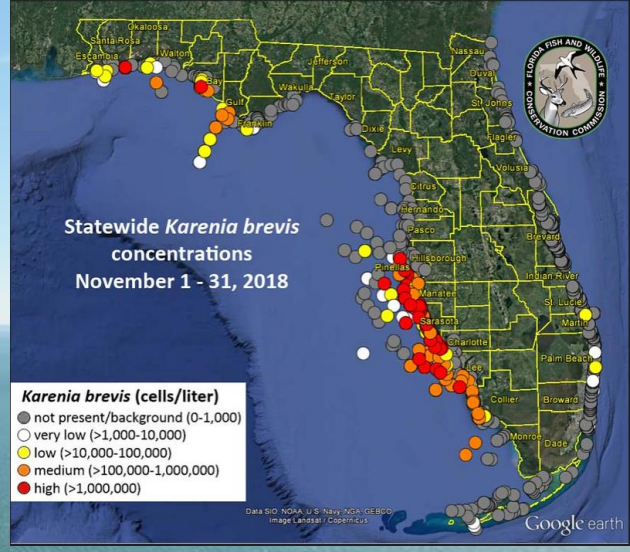
September 27, 2018

City Of Sanibel, Lighthouse Beach Park, 10-31-18, 11:00 AM, High Tide Is 9:27 PM



October 31, 2018

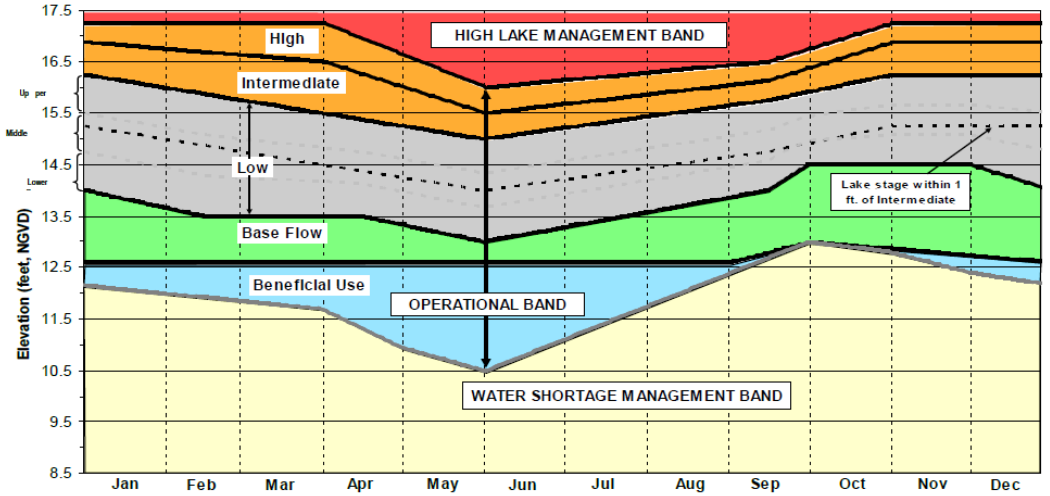
City Of Sanibel, Lighthouse Beach Park, 11-21-18, 11:03 AM, High Tide Is 11:30 AM



November 21, 2018

Lake Okeechobee Regulation Schedule

Features of the 2008 Lake Okeechobee Interim Regulation Schedule (aka LORS-2008)



NOTES:

High Lake Management Band: Outlet canals may be maintained above their optimum water management elevations.
Operational Band: Outlet canals should be maintained within their optimum water management elevations.
Water Shortage Management Band: Outlet canals may be maintained below optimum water management elevations.

CENTRAL AND SOUTHERN FLORIDA PROJECT
2008 LAKE OKEECHOBEE
INTERIM REGULATION SCHEDULE
PART B
DATED: March 2008
DEPARTMENT OF THE ARMY, JACKSONVILLE DISTRICT
CORPS OF ENGINEERS, JACKSONVILLE, FLORIDA

Figure 7-2

2008 LORS

Part D: Establish Allowable Lake Okeechobee Releases to Tide (Estuaries)

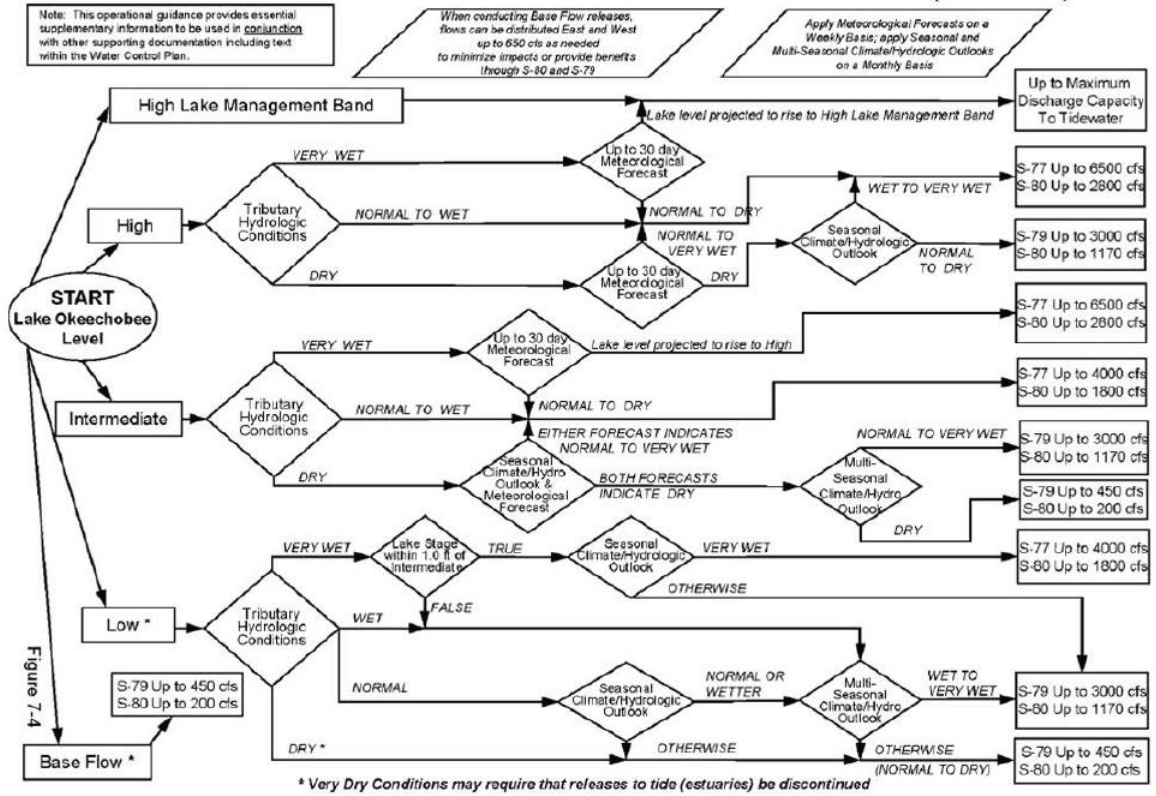


Figure 7-4

LOSOM Process & Timeline

- LOSOM process started with Scoping Meetings - Feb 2019
- LOSOM Public Workshops – Sept 2019

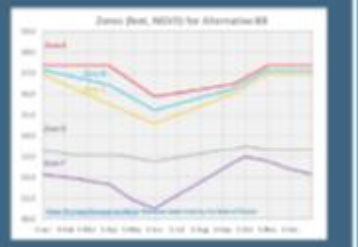
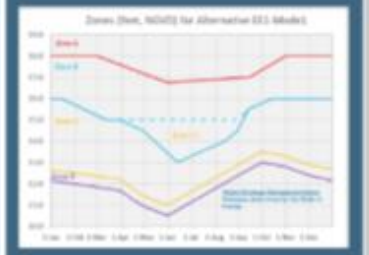
From USACE PDT 09 Aug 2021 meeting presentation

Iteration 2 – Model Alternatives

FINAL ARRAY OF ALTERNATIVES

5

HONOR DIFFERENT PERSPECTIVES ON BALANCING THE CONGRESSIONALLY AUTHORIZED PROJECT PURPOSES AND THE STATED GOAL AND OBJECTIVES OF LOSOM

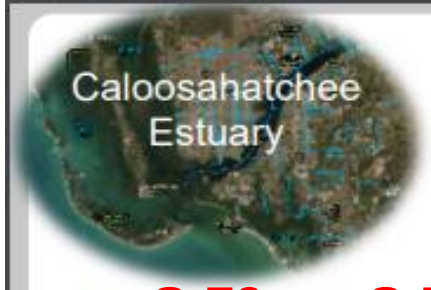
Alternative AA	Alternative BB	Alternative CC	Alternative DD	Alternative EE1/EE2
				
Pros: Best performance for both flows south and reduction of lake releases to SLE Cons: Water supply (2nd worst) and lake ecology performance (3rd worst)	Pros: Significantly best performance for water supply, Navigation, and CRE Algal Bloom Risk performances Cons: Worst SLE and S. Florida ecology performance	Pros: Top 3 performance for 10 out of 11 sub-objectives Cons: Moderate increases in performance when compared to other alts, increases stress flows to CRE	Pros: Best for lake ecology, 2nd best water supply performance Cons: Worst for CRE ecology and CRE algal bloom risk, 2nd worst for SLE performance	Pros: Best overall CRE performance, 2nd best reducing CRE algal bloom risk Cons: Water supply performance (EE2 is worst), most increases in >17 ft lake stages

From USACE PDT 19 July 2021 meeting presentation

Concerns with Alternative CC

- **Water supply & flood control constraints put pressure on the estuaries as the primary outlets for C&SF Project**
- **Alternative CC redistributes harmful regulatory flows from the SLE to CE**
- **Flows to CE are measured at S-77 when conditions are wet** – does not take into account watershed runoff when making release decisions (flows always measured at S-80 in SLE)
- **Does not allow beneficial dry season flows to CE & Everglades in Zone F**
- **Increases total regulatory flows to CE by 9%,** TN & TP loading increases by 10 & 12%, respectively; reduces regulatory flows to SLE by 62% & reduces TN & TP by 62 & 63%, respectively
- Only decreases lake-triggered damaging events to CE by 16% and **increases stressful flows (2,100-2,600 cfs) by 58%**, while St. Lucie gets 88-91% reduction in lake-triggered RECOVER damaging & stressful flow events
- Caloosahatchee & south are the only outlets in **Zone D** – Lake O recovery periods could increase releases to CE in Zone D
- **Allows back flowing of water & nutrients** into the lake from C-44 & EAA (C-44 backflow ~60%).

ALTERNATIVE CC



S-79 vs. S-77

Dry: 2,200 cfs S-79
Wet: 7,200 cfs S-77

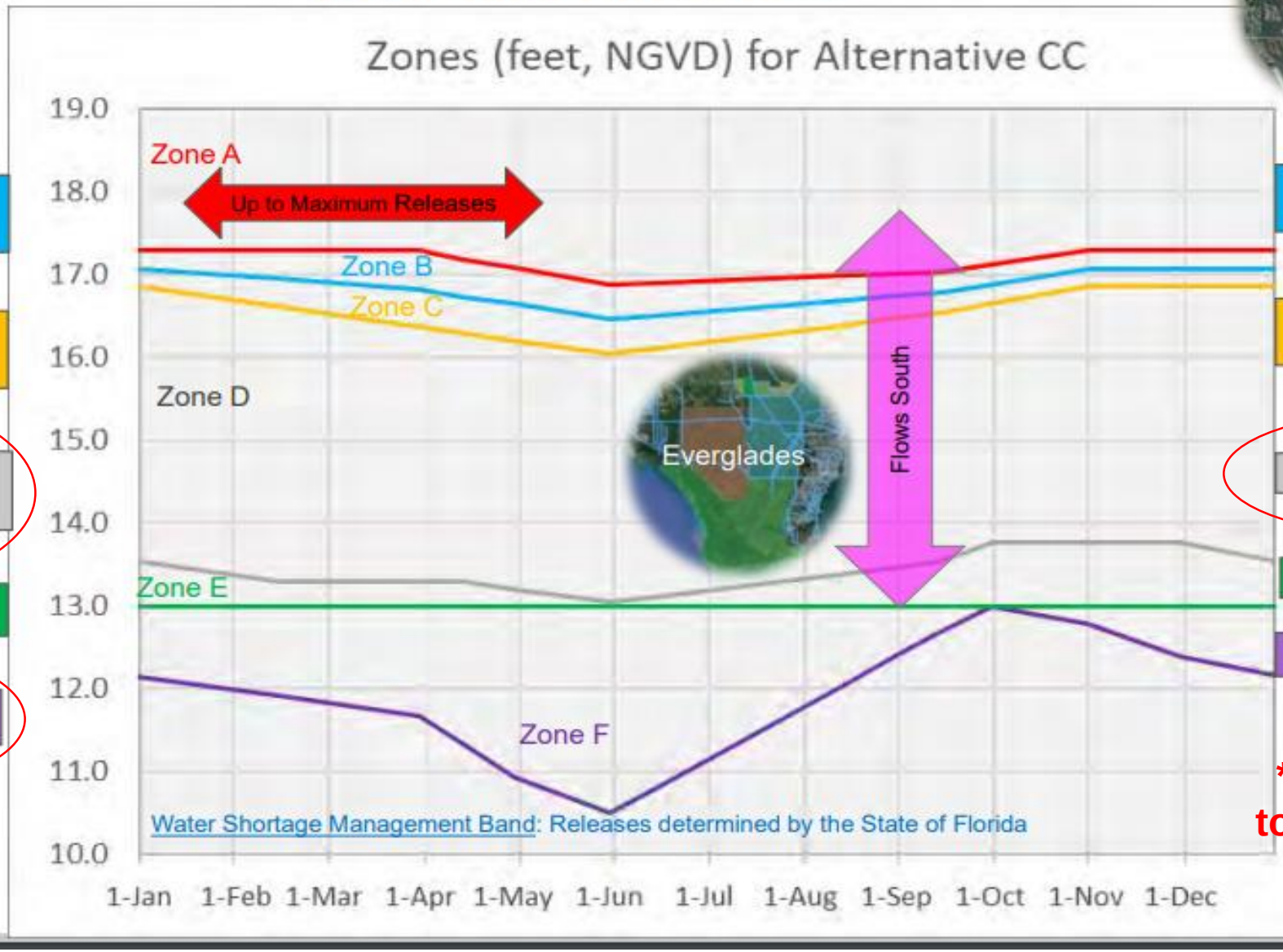
Dry: 750 – 2,200 cfs S-79
Wet: 2,500 - 7,200 cfs S-77

Dry: 750 - 2,200 cfs S-79
Wet: 2,500 cfs S-77

750 cfs S-79

0 cfs at S-79

***Does not allow regulatory flows to the CE in Zone F**



Dry: 0 cfs S-80
Wet: 3,600 cfs S-80

Dry: 0 cfs S-80
Wet: 3,600 cfs S-80

0 cfs S-80

0 cfs S-80

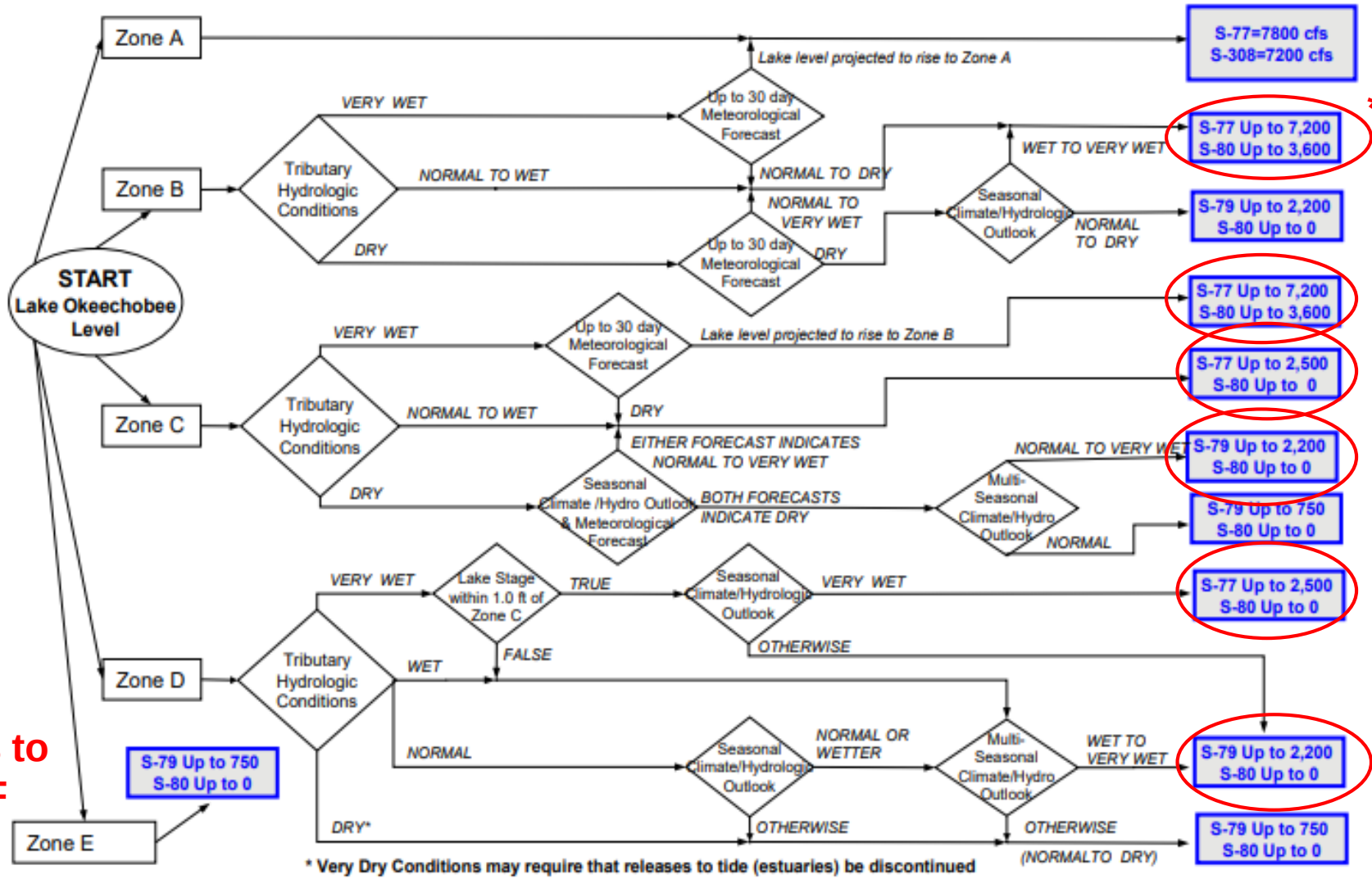
0 cfs S-80

***No water sent to SLE in Zone D**

6/16/2021

"ALTERNATIVE CC"

Part D: Establish Allowable Lake Okeechobee Releases to Tide (Estuaries)



*Still measures at S-77 when conditions are wet

*Does not allow regulatory flows to the CE in Zone F

Average annual regulatory flows (QFC flow tag; CRE: S77; SLE: S308) and stress and damaging events based on RECOVER salinity envelope 14-day event counts for Caloosatchee and St Lucie estuaries.

		Summarized Data					Percent Different from FWO				
Estuary	Alt	Regulatory Flows (kacft/yr)	Stress Events From LOK [3]	Stress Events From Basin [3]	Damaging Events From LOK [4]	Damaging Events From Basin [4]	Regulatory Flows (kacft/yr)	Stress Events From LOK [3]	Stress Events From Basin [3]	Damaging Events From LOK [4]	Damaging Events From Basin [4]
CRE [1]	NA25 [2]	528	183	118	186	173					
	ECBr	515	190	153	205	225	**-2.5**	**3.8**	**29.7**	**10.2**	**30.1**
	CC	578	289	89	156	174	**9.5**	**57.9**	**-24.6**	**-16.1**	**0.6**
SLE [1]	NA25 [2]	187	148	210	142	428					
	ECBr	231	162	186	160	432	**23.0**	**9.5**	**-11.4**	**12.7**	**0.9**
	CC	72	13	308	17	469	**-61.7**	**-91.2**	**46.7**	**-88.0**	**9.6**

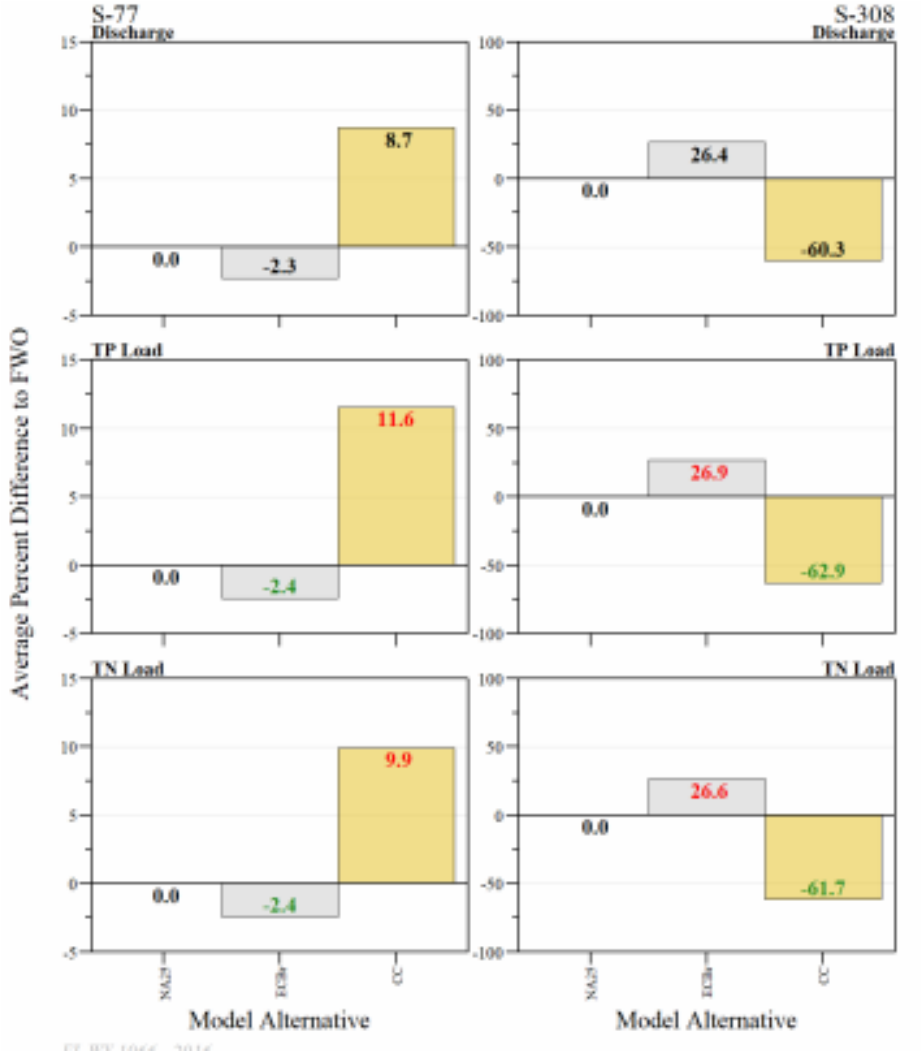
[1] CRE: Caloosahatchee Estuary; SLE: St Lucie Estuary; [2] NA25 = Future without project (FWO)

[3] **Stressful Flows:** CRE: ≥ 2100 cfs & < 2600 cfs; SLE: ≥ 1400 cfs & < 1700 cfs

[4] **Damaging Flows:** CRE: > 2600 cfs; SLE:> 1700 cfs

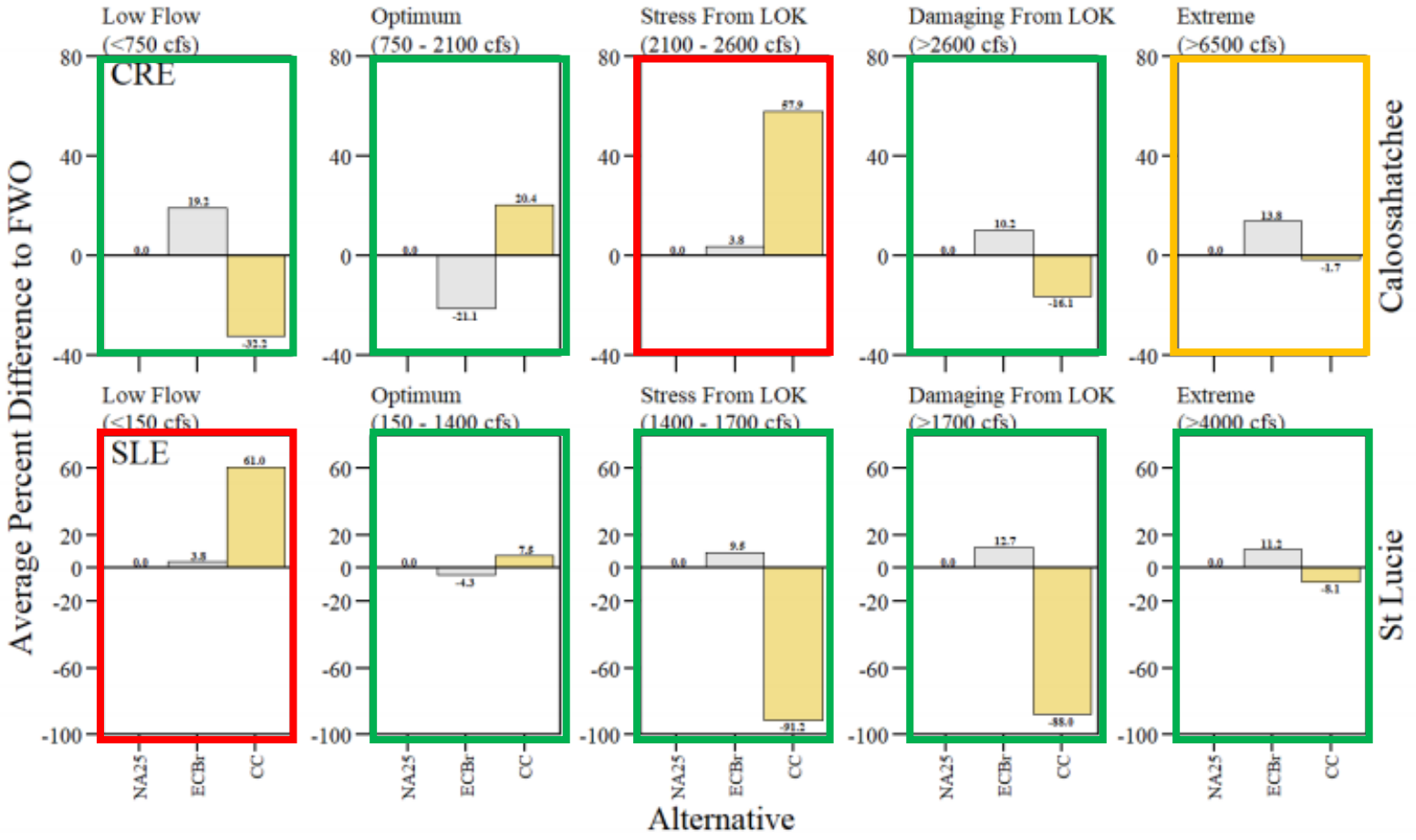
Data Source: USACE and SFWMD Interagency Modeling Center

Regulatory Flows & Nutrient Loading



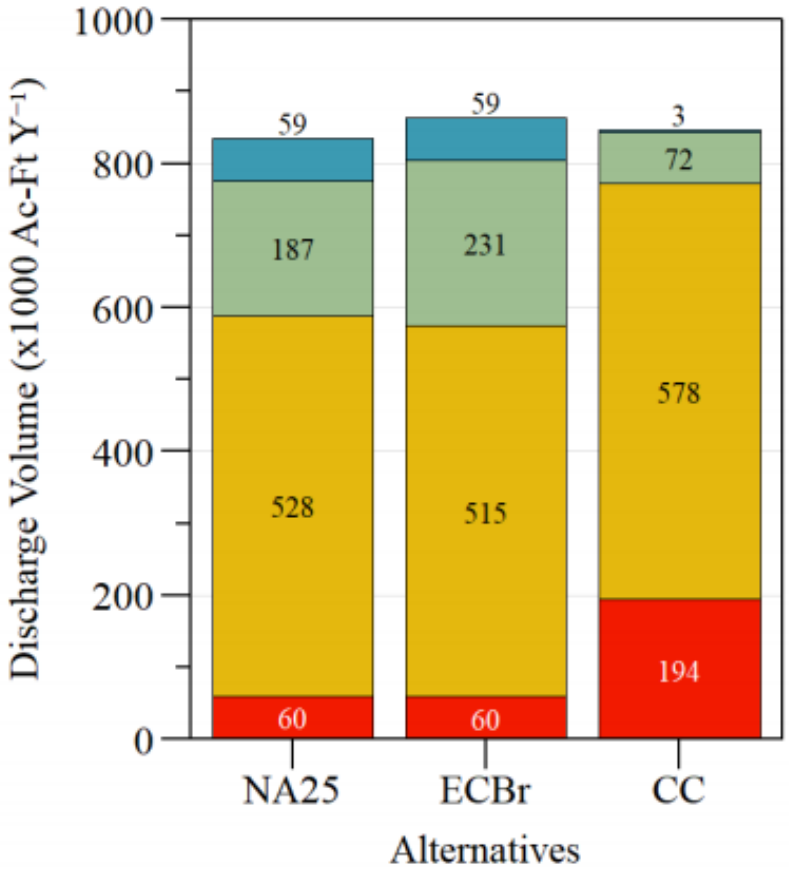
Average percent difference from FWO (NA25) for discharge and estimated nutrient loads over the May 1965 - April 2016 (FL WY 1966 - 2016) period of simulation.

RECOVER Performance Metric



RECOVER salinity envelope evaluation relative to FWO (NA25) during the simulation period of record for Caloosahatchee (top) and St Lucie (bottom) estuaries.

Flood control discharges

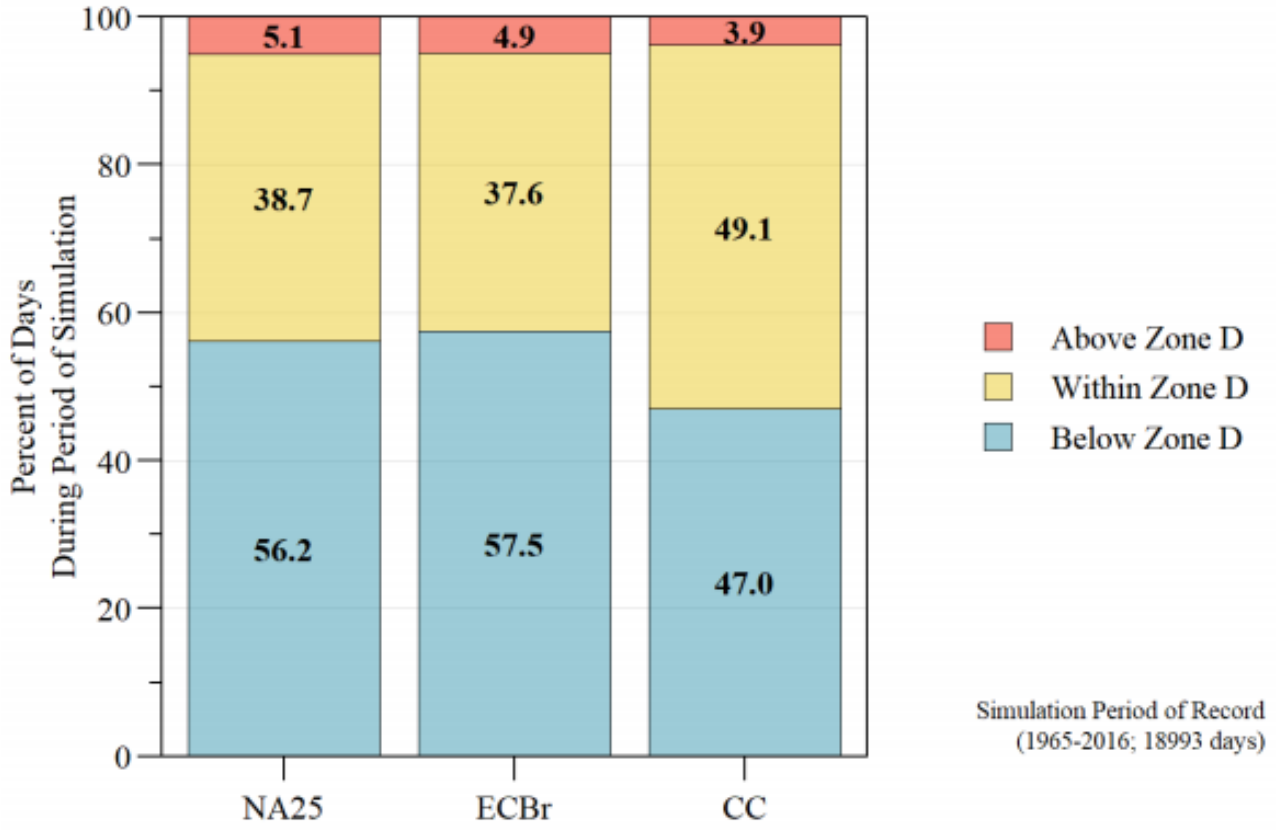


- Water Conservation Areas
- Caloosahatchee River
- St. Lucie River
- Lake Worth Lagoon

Iteration 2 results. Mean annual flood control releases from Lake Okeechobee for the 52 year (1965 - 2016) simulation period of record.

Average annual flood control discharges from Lake Okeechobee to Water Conservation Areas and Northern Estuaries over the simulation period of record.

Lake Okeechobee Regulation Schedule

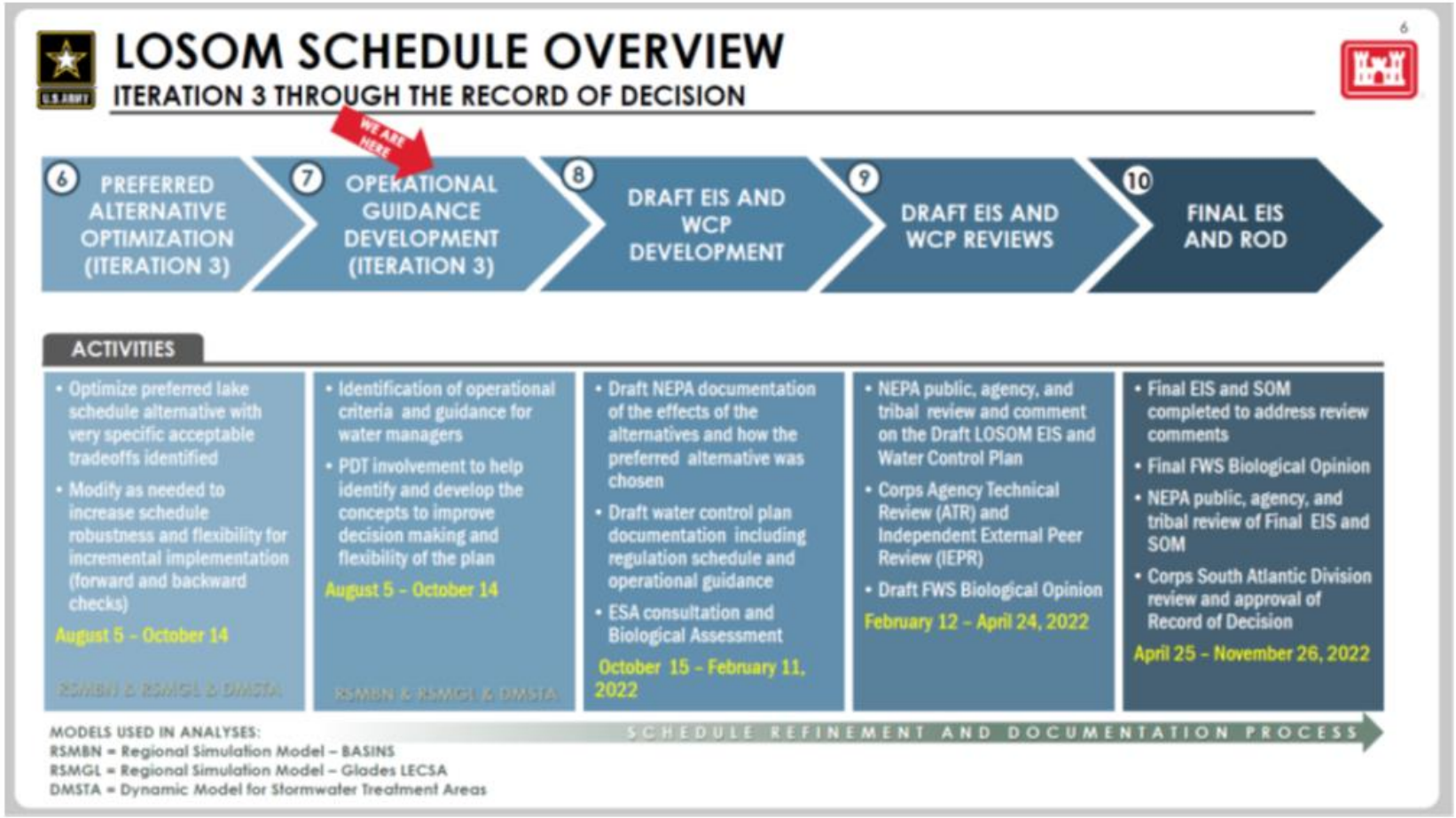


Percent of time above, within, and below Zone D of the regulation schedule.

Modifications Needed to Optimize CC

- Measure all discharges to Caloosahatchee Estuary at the Franklin Lock (S-79)
- Cap regulatory discharges to CE in Zone D to maximum of 2,100 cfs at S-79— consistent with the ecological performance targets for the Caloosahatchee estuary
- If flows are not capped at 2,100 in Zone D, equitably distribute flows across all outlets — south, east, & west—when conditions are wet
- Allow for beneficial dry season releases to the Caloosahatchee & Everglades in all zones
- Reduce total volume of water & nutrient loading to CE below NA25 (targeting stressful & damaging flow ranges)
- Minimize or eliminate back flowing of nutrient-rich water from the Everglades Agricultural Area (EAA) & C-44 basins into the lake

Next Steps in the LOSOM Process



From USACE PDT 25 Aug 2021 meeting presentation

Questions