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M E M O R A N D U M

TO: John Mitnik, Assistant Executive Director, Executive Office Staff

FROM: SFWMD Staff Environmental Advisory Team

DATE: March 2, 2022

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Weather Conditions and Forecast

Cooler and drier weather in store for the District with scattered showers confined to the east coast over the next few days. As high pressure builds back in, residual showers will be confined to the east coast where onshore wind is supplying warmer and more humid conditions. Shower activity along the east coast will gradually taper off throughout the week, and Friday looks to be the driest day with little to no rainfall. Beginning Saturday, persistent easterly wind will resupply the atmosphere with moisture allowing rain chances to increase along the east coast. This dry pattern will lead to much below normal rainfall during the first 7-day period. There are indications that week 2 could be below average as well.

Kissimmee

Flow at S-65/S-65A is being reduced to allow for slow stage recessions on KCH and the Kissimmee River, and water depth on the Kissimmee River floodplain decreased with a mean depth of 0.25 feet as of February 27, 2022. The concentration of dissolved oxygen in the Kissimmee River has remained well above the region of concern, with an average of 7.6 mg/L for the week ending on February 27, 2022.

Lake Okeechobee

Lake Okeechobee stage was 14.59 feet NGVD on February 27, 2022, with water levels 0.49 feet lower than a month ago (**Figure LO-1**). Lake stage fell back to within the ecological envelope on January 1, 2022, after being above the envelope since late September 2021, and having spent a total of 279 days (79%) in 2021 above the envelope (**Figure LO-2**). Average daily inflows (excluding rainfall) decreased from the previous week, going from 1,108 cfs to 915 cfs. Average daily outflows (excluding evapotranspiration) increased from the previous week, going from 2,706 cfs to 4,181 cfs. Recent satellite imagery (February 27, 2022) showed scattered areas of low to moderate bloom potential in the western bay, along the southwestern shoreline and in the south-central pelagic region (**Figure LO-6**).

Estuaries

Total inflow to the St. Lucie Estuary averaged 110 cfs over the past week with no flow coming from Lake Okeechobee. Mean surface salinities increased at HR1 and US1 Bridge sites and decreased slightly at the A1A Bridge site over the past week. Salinity at the US1 Bridge was in the good range (10-26) for adult eastern oysters.

Total inflow to the Caloosahatchee Estuary averaged 2,040 cfs over the past week with 1,450 cfs coming from the Lake. Mean surface salinities remained the same at S-79 and Val I-75, decreased at Cape Coral, and increased at the remaining sites in the estuary over the past week. Salinities were in the good range (0-10) for tape grass at Val I-75 and Ft. Myers. Salinities were in the good range (10-30) for adult eastern oysters at Cape Coral and Shell Point, and in the fair range at Sanibel.

Stormwater Treatment Areas

For the week ending Sunday, February 27, 2022, approximately 3,900 ac-ft of Lake Okeechobee water was delivered to the FEBs/STAs. The total amount of Lake releases sent to the FEBs/STAs in WY2022 (since May 1, 2021) is approximately 85,000 ac-feet. The total amount of inflows to the STAs in WY2022 is approximately 987,000 ac-feet. Most STA cells are at or near target stage, except portions of STA-5/6 cells that are drying out. STA-1E Western Flow-way is offline for the Restoration Strategies project to fill and grade Cells 5 and 7, and STA-1E Eastern Flow-way is offline for rip-rap repairs related to Tropical Storm Eta. Additionally, STA-3/4 Eastern Flow-way is offline for vegetation rehabilitation/drawdown, STA-2 Flow-way 2 is offline for construction activities, and STA-5/6 Flow-way 4 is offline for vegetation management activities. Operational restrictions are in place in STA-1W Western, Eastern, and Northern Flow-ways for construction activities. Operational restrictions are in effect in STA-1E Central Flow-way and STA-2 Flow-ways 1, 3 and 4 for vegetation management activities. This week, if 2008 LORS recommends Lake releases to the WCAs and conditions allow, releases will be sent to STA-2.

Everglades

Stage change within most of the WCAs was elevated above the optimal except where inflows could offset water loss. While depths at the 2-17 gauge remain above schedule, foraging has yet to begin in WCA-2A and continued discharges from there to WCA-3A North are benefitting the ecology of that particularly sensitive region. Wading bird foraging and nesting bounced back from the reversal of a few weeks ago, but expectations remain at best average for wading bird nesting success this year. CSSS subpopulation percent dry conditions improved towards the target over the last week. The rapid decrease typical for this time of year has begun in northern Taylor slough, but the conditions remain fair with Florida Bay with salinities near the 25th percentile and continued flow into the bay.

Biscayne Bay

Over the past week, mean total inflow to Biscayne Bay was 260 cfs (**Figure ES-11**) and the previous 30-day mean inflow was 330 cfs. The seven-day mean salinity was 25.6 at BBCW8 and 15.0 at BBCW10, both below the preferred maximum salinity of 35 for these sites. Salinity data are provided as a courtesy by Biscayne National Park.

Supporting Information

Kissimmee Basin

Upper Kissimmee

On February 27, 2022, lake stages were 57.0 feet NGVD (1.0 feet below schedule) in East Lake Toho, 53.7 feet NGVD (1.3 feet below schedule) in Lake Toho, and 49.3 feet NGVD (1.9 feet below schedule) in Lakes Kissimmee-Cypress-Hatchineha (KCH) (**Table KB-1, Figures KB-1-3**).

Lower Kissimmee

Discharges to the Kissimmee River on February 27, 2022 were 530 cfs at S-65 and 470 cfs at S-65A; discharges from the Kissimmee River were 680 cfs at S-65D and 610 cfs at S-65E (**Table KB-2**). Headwater stages were 46.3 feet NGVD at S-65A and 26.5 feet NGVD at S-65D on February 27, 2022. With lower water temperatures, the concentration of dissolved oxygen is well above the region of concern, with an average of 7.6 mg/L for the week ending on February 27, 2022 (**Table KB-2, Figure KB-4**). Flow at S-65/S-65A is being reduced to allow for slow stage recessions on KCH and the Kissimmee River, and water depth on the Kissimmee River floodplain decreased with a mean depth of 0.25 feet as of February 27, 2022 (**Figure KB-5**).

Water Management Recommendations

Managed stage recessions for snail kite nesting season were started on Lakes Toho and East Toho on January 15, 2022 to gradually reduce lake stages to their low pools by June 1. In Kissimmee-Cypress-Hatchineha, continue to keep stage slowly declining while maintaining at least 300 cfs at S-65A and following the IS-14-50 discharge plan (**Figure KB-6**) for S-65 and S-65A.

Table KB-1. Average discharge for the preceding seven days and Sunday's average daily stage and departures from KCL flood regulation or temporary schedules. All data are provisional.

Water Body	Structure	Stage Monitoring Site	7-Day Average Discharge (cfs)	Lake Stage (feet NGVD) ^a	Schedule Type ^b	Schedule Stage (feet NGVD)	Departure from Regulation (feet)	
							2/27/22	2/20/22
Lakes Hart and Mary Jane	S-62	LKMJ	28	60.8	R	61.0	-0.2	-0.1
Lakes Myrtle, Preston and Joel	S-57	S-57	5	60.8	R	61.0	-0.2	0.0
Alligator Chain	S-60	ALLI	0	64.0	R	64.0	0.0	0.0
Lake Gentry	S-63	LKGT	0	61.5	R	61.5	0.0	0.0
East Lake Toho	S-59	TOHOE	228	57.0	R	58.0	-1.0	-0.8
Lake Toho	S-61	TOHOW S-61	304	53.7	R	55.0	-1.3	-1.2
Lakes Kissimmee, Cypress and Hatchineha	S-65	KUB011 LKIS5B	705	49.3	R	51.2	-1.9	-2.0

a. Names of in-lake monitoring sites and structures used to determine lake stage. If more than one site is listed, an average is reported.

b. A: projected recession line; R: USACE regulation schedule; S: temporary recession target line; T: temporary schedule; NA: not applicable or not available.

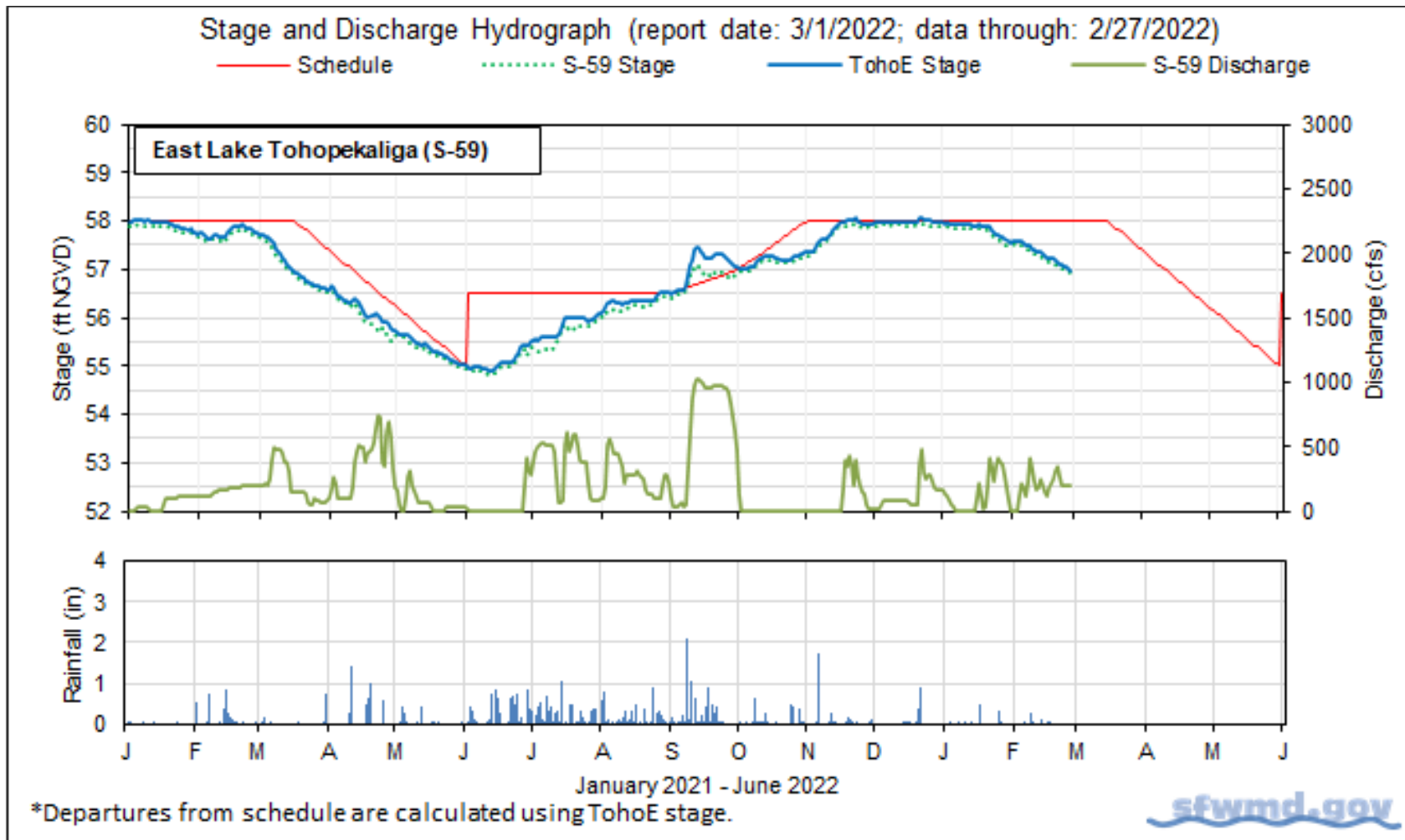


Figure KB-1. East Lake Toho regulation schedule, stage, discharge and rainfall.

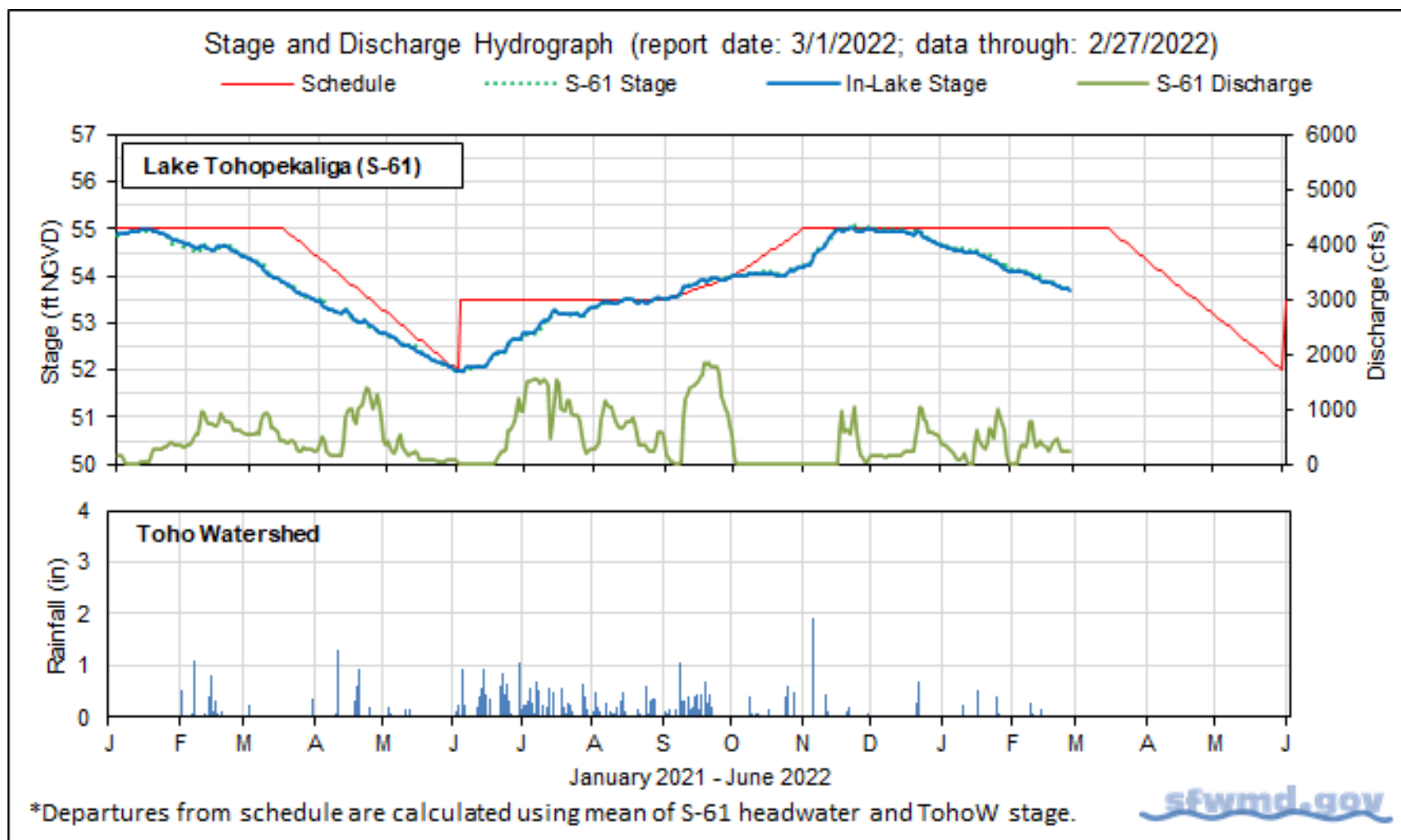


Figure KB-2. Lake Toho regulation schedule, stage, discharge and rainfall.

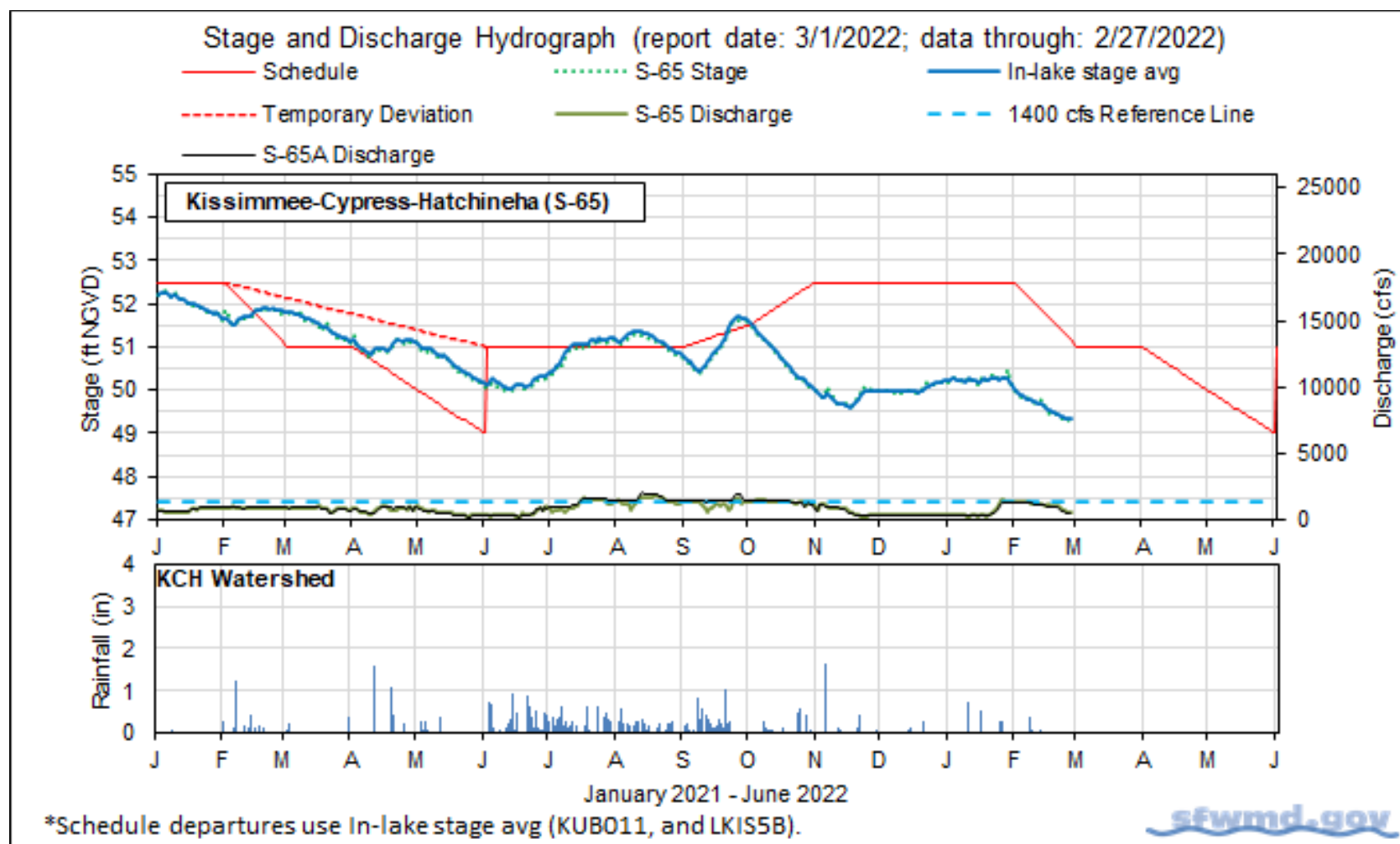


Figure KB-3. Lakes Kissimmee, Cypress and Hatchineha regulation schedule, stage, discharge and rainfall.

Table KB-2. One- and seven-day average discharge and stage at Lower Kissimmee basin structures, river channel dissolved oxygen concentrations and water depths in the Phase I area floodplain. All data are provisional.

Metric	Location	Daily Average	Average for Previous Seven Day Periods			
		2/27/22	2/27/22	2/20/22	2/13/22	2/6/22
Discharge	S-65	530	710	1,100	1,240	1,380
Discharge	S-65A ^a	470	630	1,020	1,180	1,270
Headwater Stage (feet NGVD)	S-65A	46.3	46.3	46.3	46.3	46.3
Discharge	S-65D ^b	680	950	1,170	1,170	1,110
Headwater Stage (feet NGVD)	S-65D ^c	26.5	26.5	26.6	26.7	26.7
Discharge (cfs)	S-65E ^d	610	870	1,070	1,100	1,060
Discharge (cfs)	S-67	0	0	0	0	0
Dissolved Oxygen (mg/L) ^e	Phase I, II/III river channel	7.5	7.6	8.5	8.5	9.6
Mean depth (feet) ^f	Phase I floodplain	0.25	0.30	0.40	0.43	0.34

a. Combined discharge from main and auxiliary structures.

b. Combined discharge from S-65D, S-65DX1 and S-65DX2.

c. Average stage from S-65D and S-65DX1.

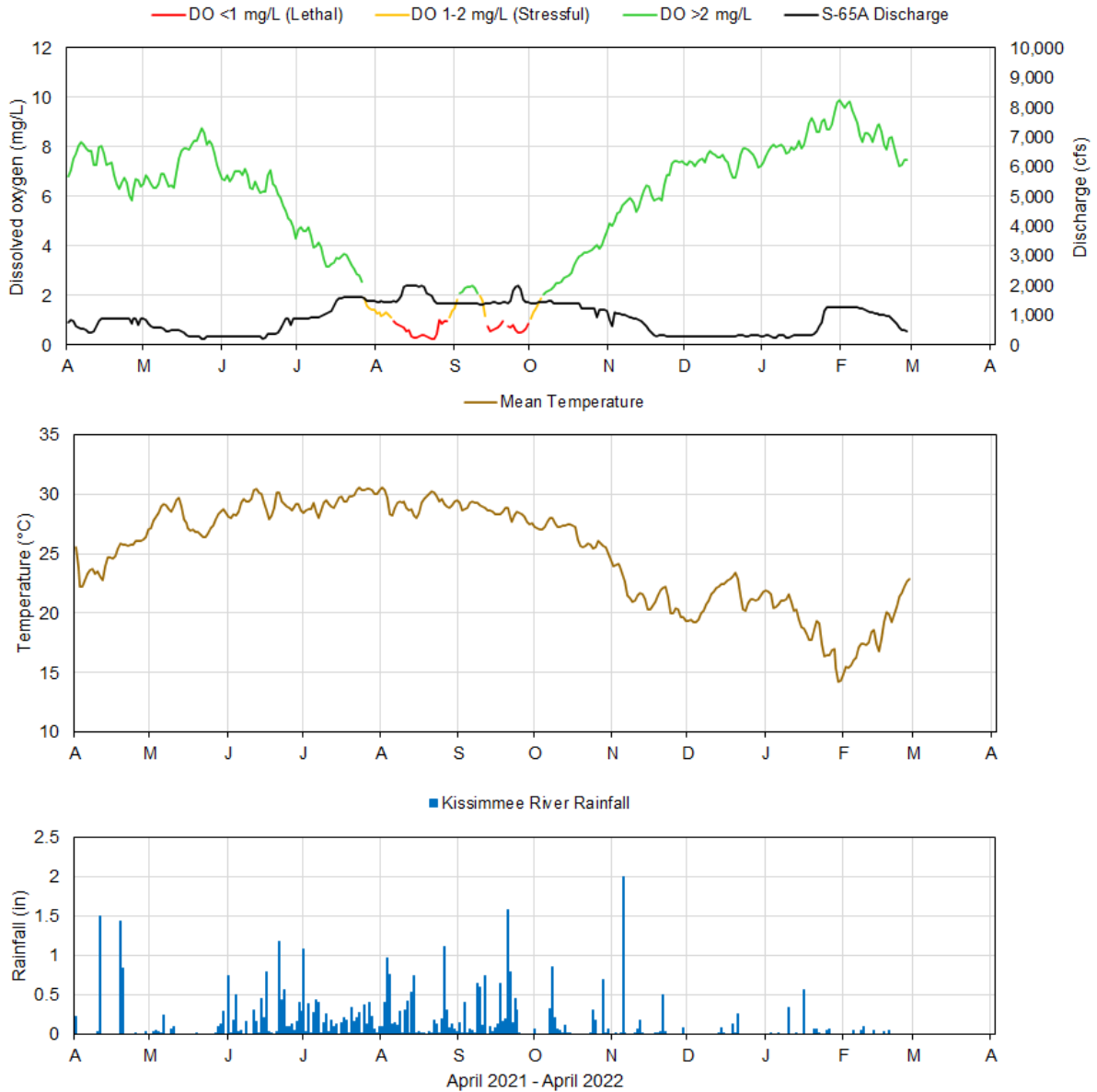
d. Combined discharge from S-65E and S-65EX1.

e. Dissolved oxygen is the average of values from sondes KRBN, PC62, PC33, PD62R and PD42R.

f. One-day spatial average obtained from the South Florida Water Depth Assessment Tool (SFWDAT).

Table KB-3. Discharge rate of change limits for S65/S-65A (revised 1/14/19).

Discharge (cfs)	Maximum Rate of Increase (cfs/day)	Maximum Rate of Decrease (cfs/day)
0-300	100	-50
301-650	150	-75
651-1,400	300	-150
1,401-3,000	600	-600
>3,000	1,000	-2,000



Report Date: 3/1/2022; data are through: 2/27/2022



Figure KB-4. Restored Kissimmee river channel mean daily dissolved oxygen concentration (mg/L), S-65A discharge (cfs), temperature (°C) and rainfall (inches). Dissolved oxygen (DO) and temperature are mean daily values averaged for PC62, KRBN, PC33, PD62R, and PD42R with an average of four stations reporting this week. Rainfall values are daily totals for Kissimmee River (Pool BCD) AHED watershed.

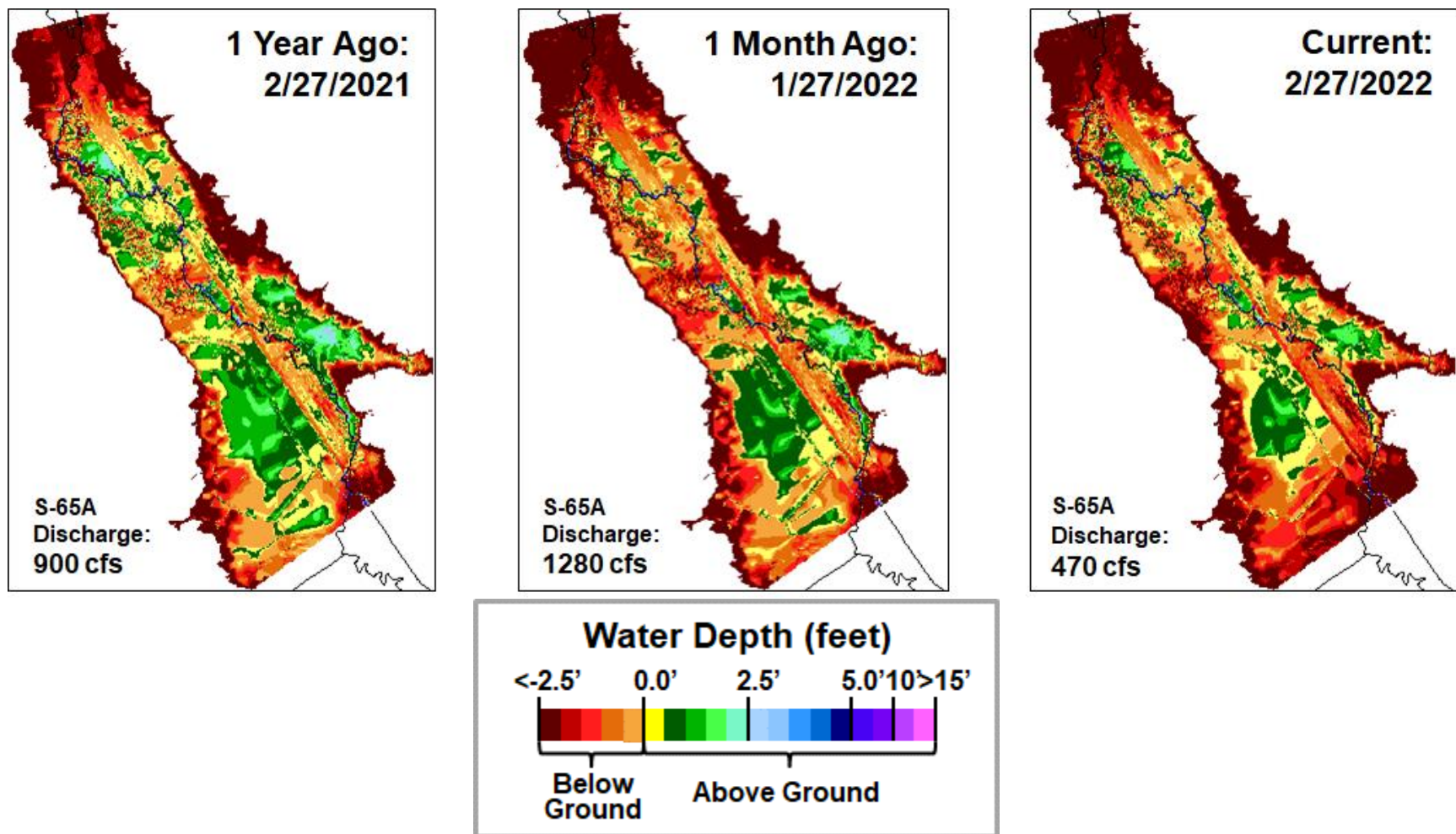


Figure KB-5. Phase I area Kissimmee River floodplain water depths (from left to right) one year ago, one month ago and current.

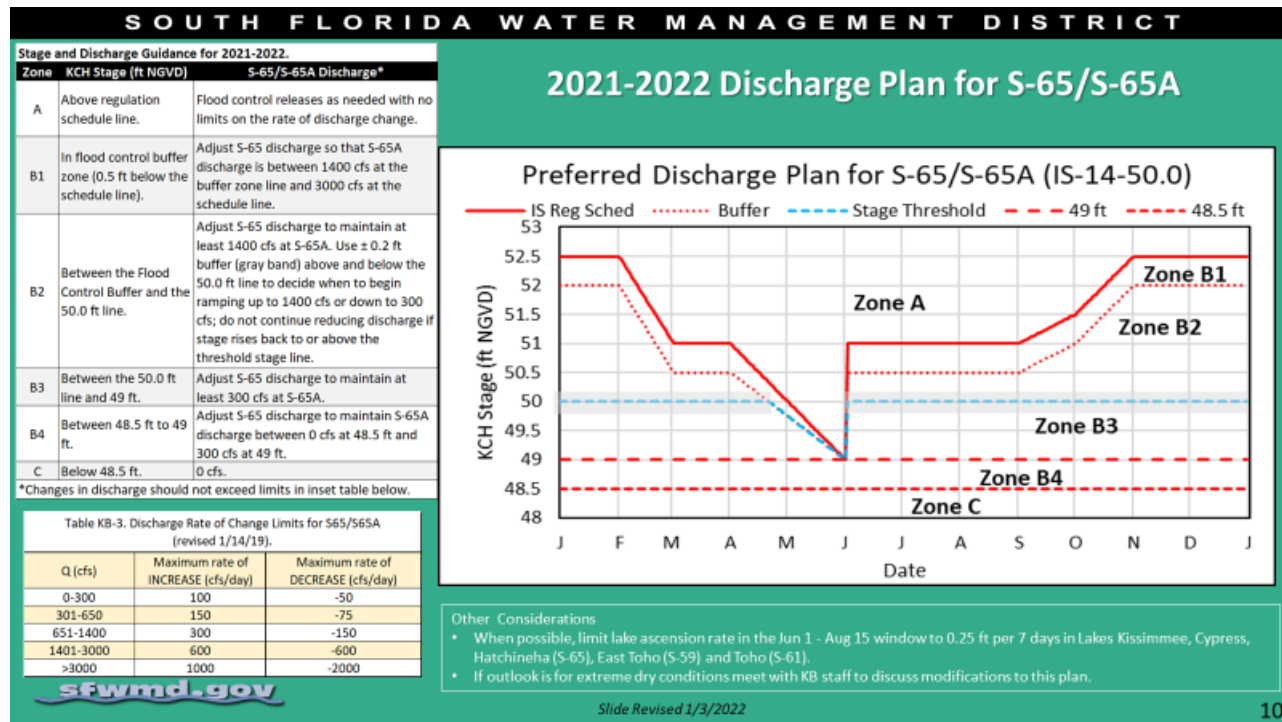


Figure KB-6. IS-14-50 Discharge Plan for S65/S65A with discharge rate of change limits (revised 1/14/19).

Lake Okeechobee

Lake Okeechobee stage was 14.59 feet NGVD on February 27, 2022, with water levels 0.49 feet lower than a month ago (**Figure LO-1**). Lake stage remains in the Low sub-band (**Figure LO-2**) and is still within the ecological envelope, having spent 279 days (79%) of the last year above the envelope (**Figure LO-3**). According to NEXRAD, no rain fell directly on the Lake last week.

Average daily inflows (excluding rainfall) decreased from the previous week, going from 1,108 cfs to 915 cfs. Average daily outflows (excluding evapotranspiration) increased from the previous week, going from 2,706 cfs to 4,181 cfs. Highest inflows came from the Kissimmee River through the S-65E structure (869 cfs). The highest outflow (1,892 cfs) was to the west via the S-77 structure, while 1,236 cfs flowed south via the S-350 structures (S-351, 868 cfs; S-352, 137 cfs; S-354, 231 cfs), 827 cfs flowed east via the S-308 structure and 226 cfs flowed out of the L-8 canal through the S-271 structure (formerly Culvert 10A). **Figures LO-4 and LO-5** show the combined average daily inflows and outflows for the Lake over the past eight weeks, and average inflows and outflows last week, respectively. These data are provisional and are subject to change.

The most recent satellite image (February 27, 2022) from the NOAA cyanobacteria monitoring product derived from EUMETSAT's Sentinel 3 OLCI sensor showed scattered areas of low to moderate bloom potential in the western bay, along the southwestern shoreline and in the south-central pelagic region (**Figure LO-6**).

1 Month Ago:
01/28/2022

Current:
02/27/2022

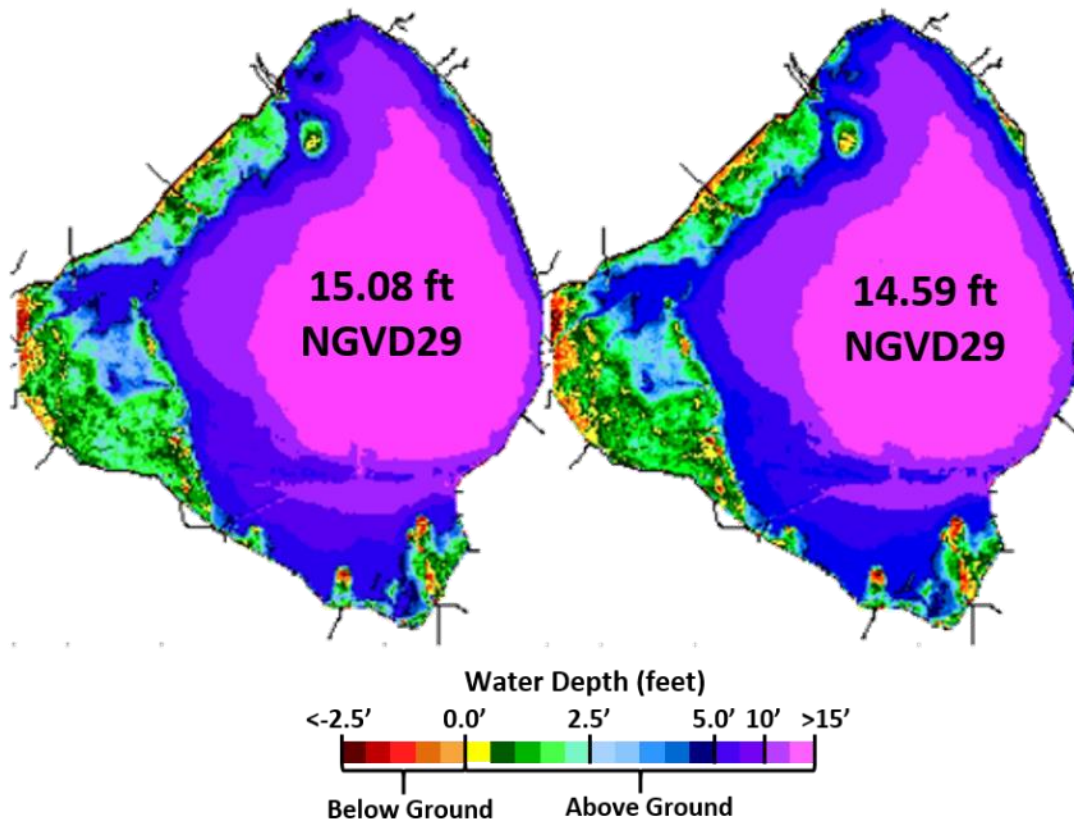
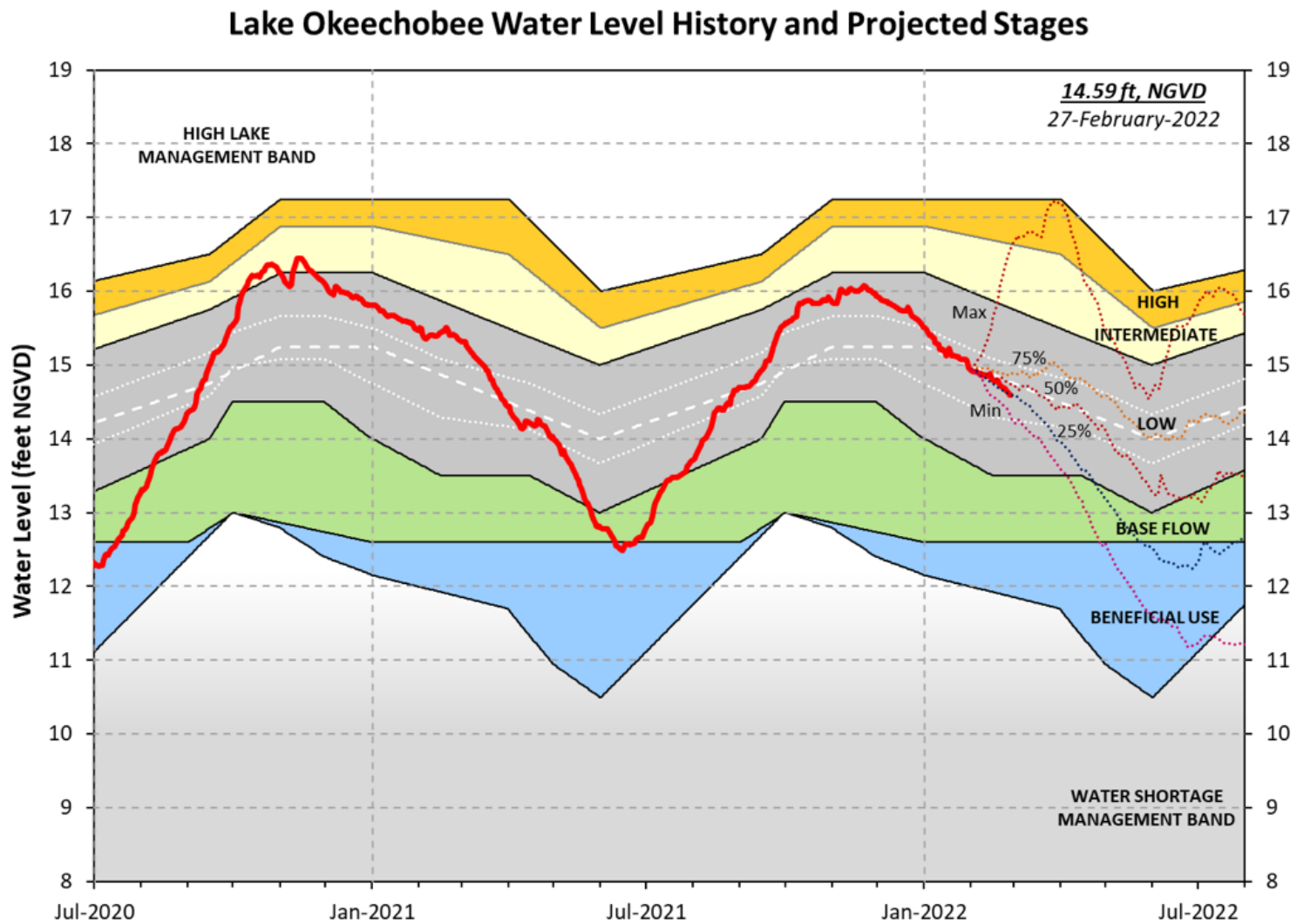


Figure LO-1. Lake Okeechobee water depth estimates based on South Florida Water Depth Assessment Tool (SFWDAT).



LORS-2008 - Adopted by USACE 28-April-2008

Figure LO-2. Recent Lake Okeechobee stages with projected stages based on a dynamic position analysis.

Lake Okeechobee Stage vs Ecological Envelope

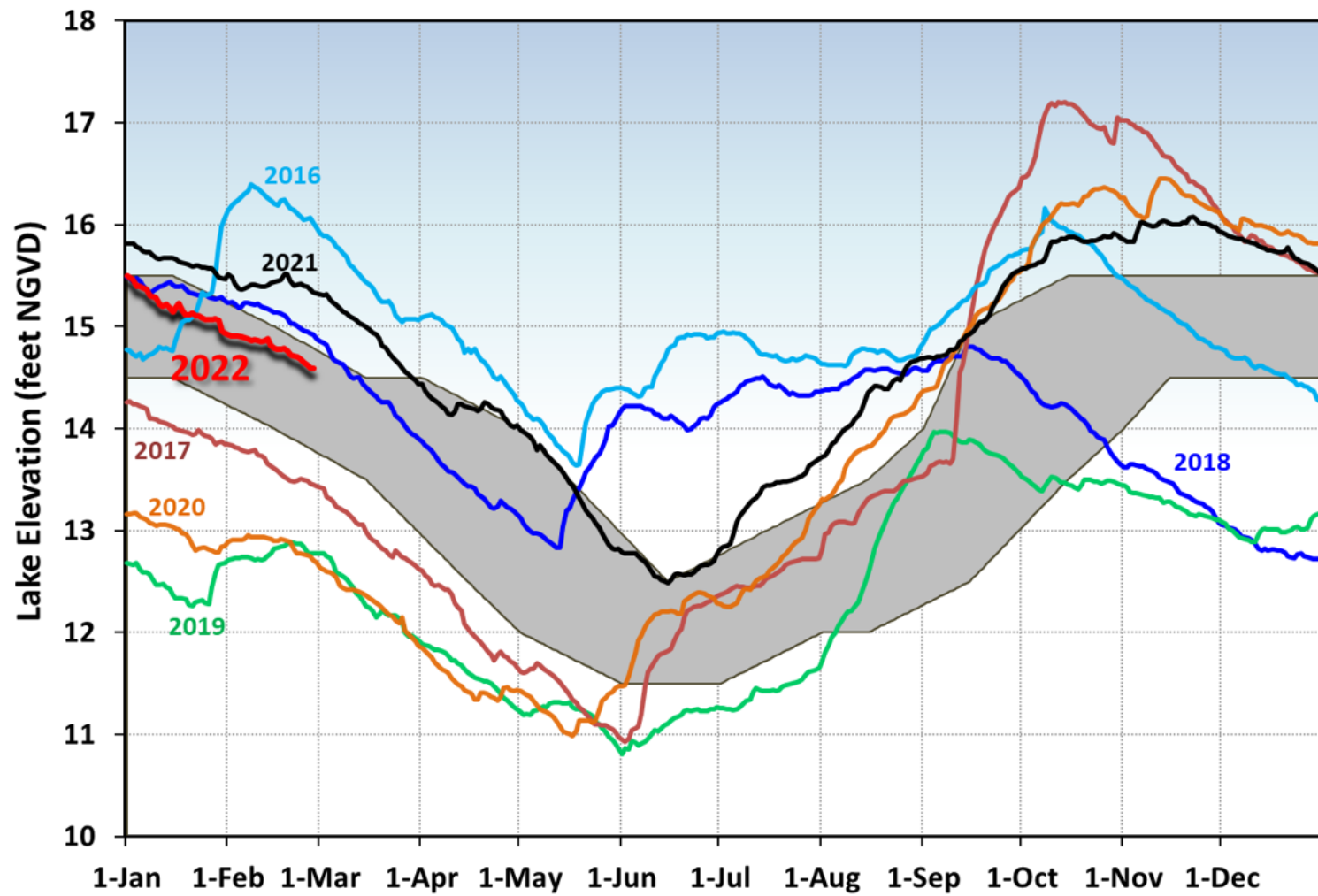


Figure LO-3. The prior six years of annual stage hydrographs for Lake Okeechobee in comparison to the ecological envelope.

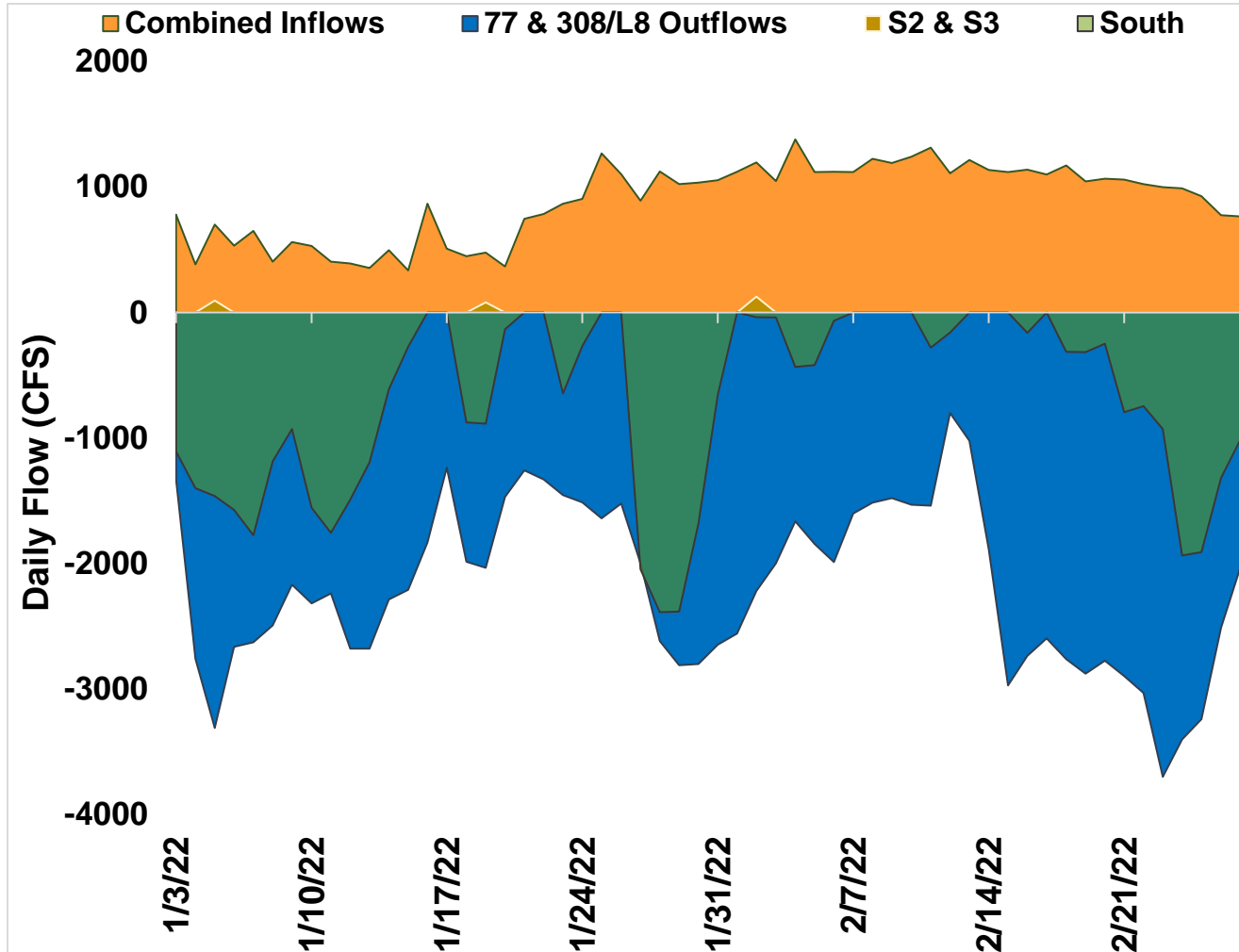


Figure LO-4. Major inflows (orange) to and outflows east and west (blue) from Lake Okeechobee. Outflows south are shown in green. Flows into Lake Okeechobee from the L-8 canal through S-271 (formerly Culvert 10A) or from the C-44 canal through the S-308 are included as inflows. Conversely, flows from Lake Okeechobee into the L-8 or C-44 canals are included with outflows. Inflows are shown as positive values; outflows are negative. Outflows through the S-77 (Caloosahatchee) and S-308 (C-44 Canal) structures are based on downstream gauges to include flows to lock openings for navigation.

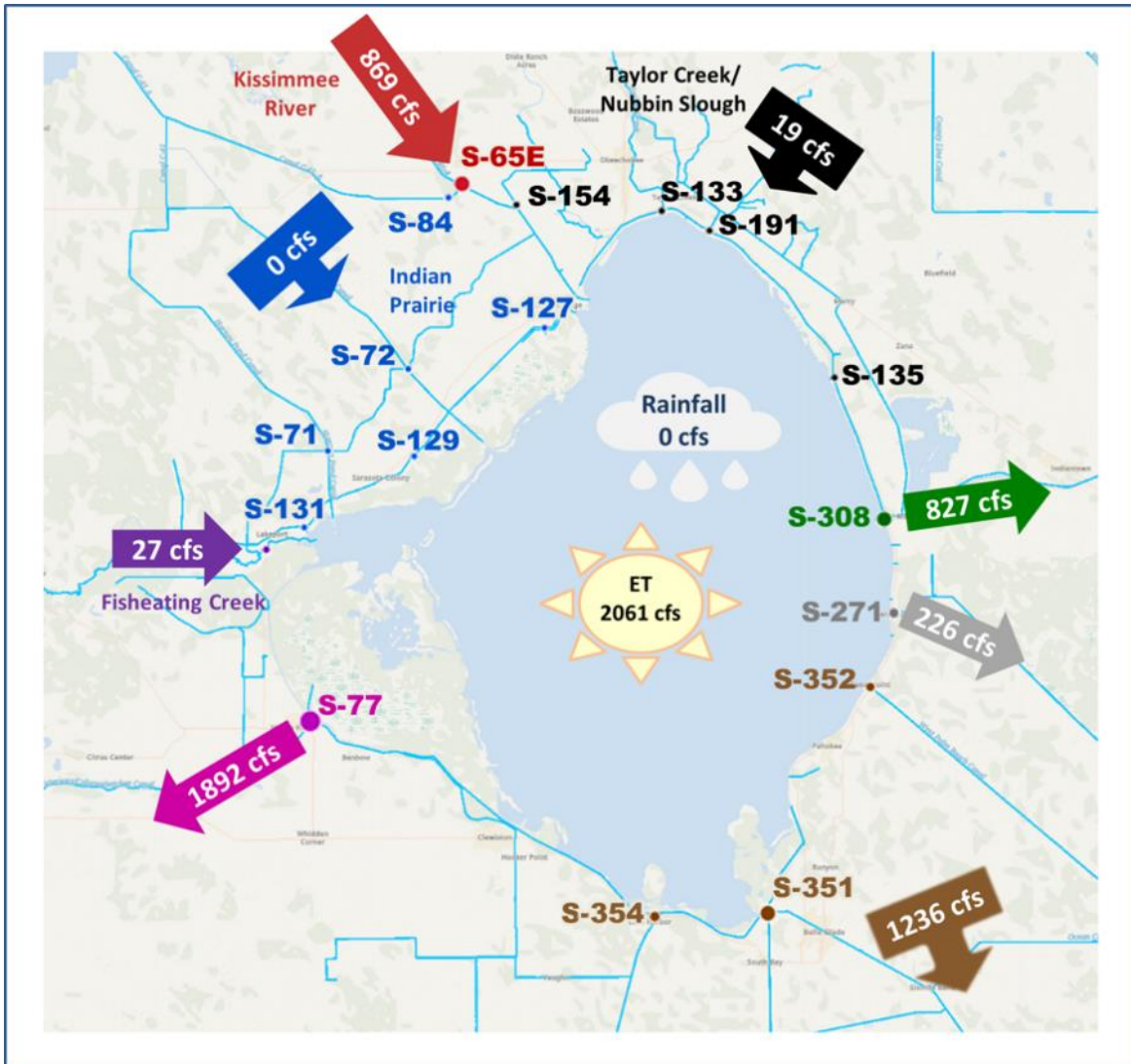


Figure LO-5. Inflows into Lake Okeechobee from Indian Prairie basins, Taylor Creek/Nubbin Slough, Kissimmee River and Fisheating Creek, and outflows to the west via S-77, to the east via S-308, to the south via S-351, S-352, S-354, and to southeast via S-271 (formerly Culvert 10A) for the week of February 21, 2022 – February 27, 2022.

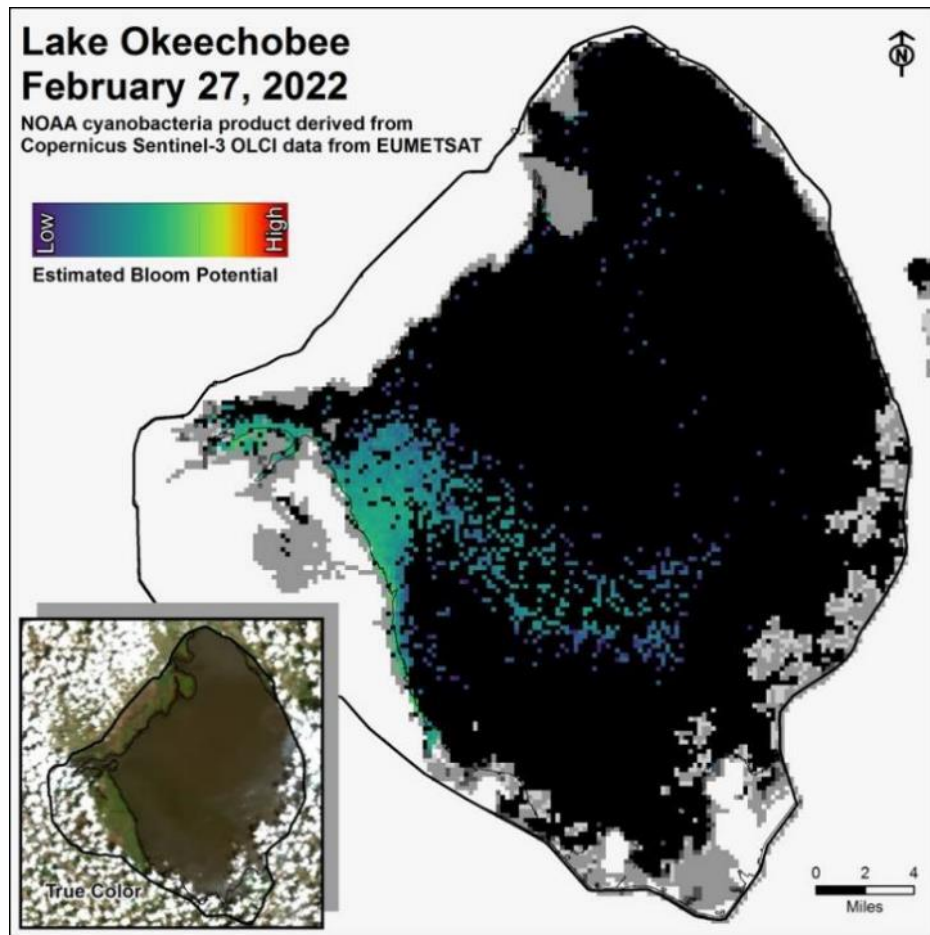


Figure LO-6. Cyanobacteria bloom potential on February 27, 2022 based on NOAA's harmful algal bloom monitoring system. Gray color indicates cloud cover.

Estuaries

St. Lucie Estuary

Over the past week, mean total inflow to the St. Lucie Estuary was 112 cfs (**Figures ES-1 and ES-2**) and the previous 30-day mean inflow was 170 cfs. For comparison, the historical provisional mean inflows from the contributing areas are shown in **Figure ES-2**.

Over the past week, surface salinities remained the same at HR1 and A1A Bridge site and decreased slightly at the US1 Bridge site (**Table ES-1 and Figure ES-3**). The seven-day moving average of the surface and bottom salinities at the US1 Bridge was 23.1. Salinity conditions in the middle estuary were estimated to be within the good range for adult eastern oysters (**Figure ES-4**).

Caloosahatchee River Estuary

Over the past week, mean total inflow to the Caloosahatchee River Estuary was 2,039 cfs (**Figures ES-5 and ES-6**) and the previous 30-day mean inflow was 2,043 cfs. For comparison, the historical provisional mean inflows from the contributing areas are shown in **Figure ES-6**.

Over the past week, surface salinities remained the same at S-79 and Val I-75, decreased at Cape Coral, and increased at the remaining sites in the estuary (**Table ES-2 and Figures ES-7 and ES-8**). The seven-day mean surface salinities (**Table ES-2**) were in the good range (0-10) for tape grass at Val I-75 and at Ft. Myers. The seven-day mean surface salinity values were within the good range for adult eastern oysters at Cape Coral and Shell Point, and in the fair range at Sanibel (**Figure ES-9**).

Surface salinity at Val I-75 was forecasted for the next two weeks, using an autoregression model (Qiu and Wan, 2013¹) coupled with a linear reservoir model for the tidal basin. Model scenarios included pulse releases at S-79 ranging from 0 to 1500 cfs and steady releases at 2,000 cfs with estimated tidal basin inflows of 63 cfs. Model results from all scenarios predict daily salinity to be 1.5 or lower and the 30-day moving average surface salinity to be 0.4 or lower at Val I-75 at the end of the two-week period (**Table ES-3 and Figure ES-10**). This keeps predicted salinities at Val I-75 within the LORS 2008 salinity range (0.0-5.0).

¹ Qiu, C., and Y. Wan. 2013. Time series modeling and prediction of salinity in the Caloosahatchee River Estuary. *Water Resources Research* 49:5804-5816.

Red Tide

The Florida Fish and Wildlife Research Institute reported on February 25, 2022, that *Karenia brevis*, the Florida red tide dinoflagellate, was not observed in any sampled collected statewide. On the east coast, red tide was not observed in samples from St. Lucie, Martin, or Palm Beach counties.

Water Management Recommendations

Lake stage is in the Low Sub-Band. Tributary conditions are dry. The LORS2008 release guidance suggests up to 450 cfs release at S-79 to the Caloosahatchee River Estuary and up to 200 cfs release at S-80 to the St. Lucie Estuary.

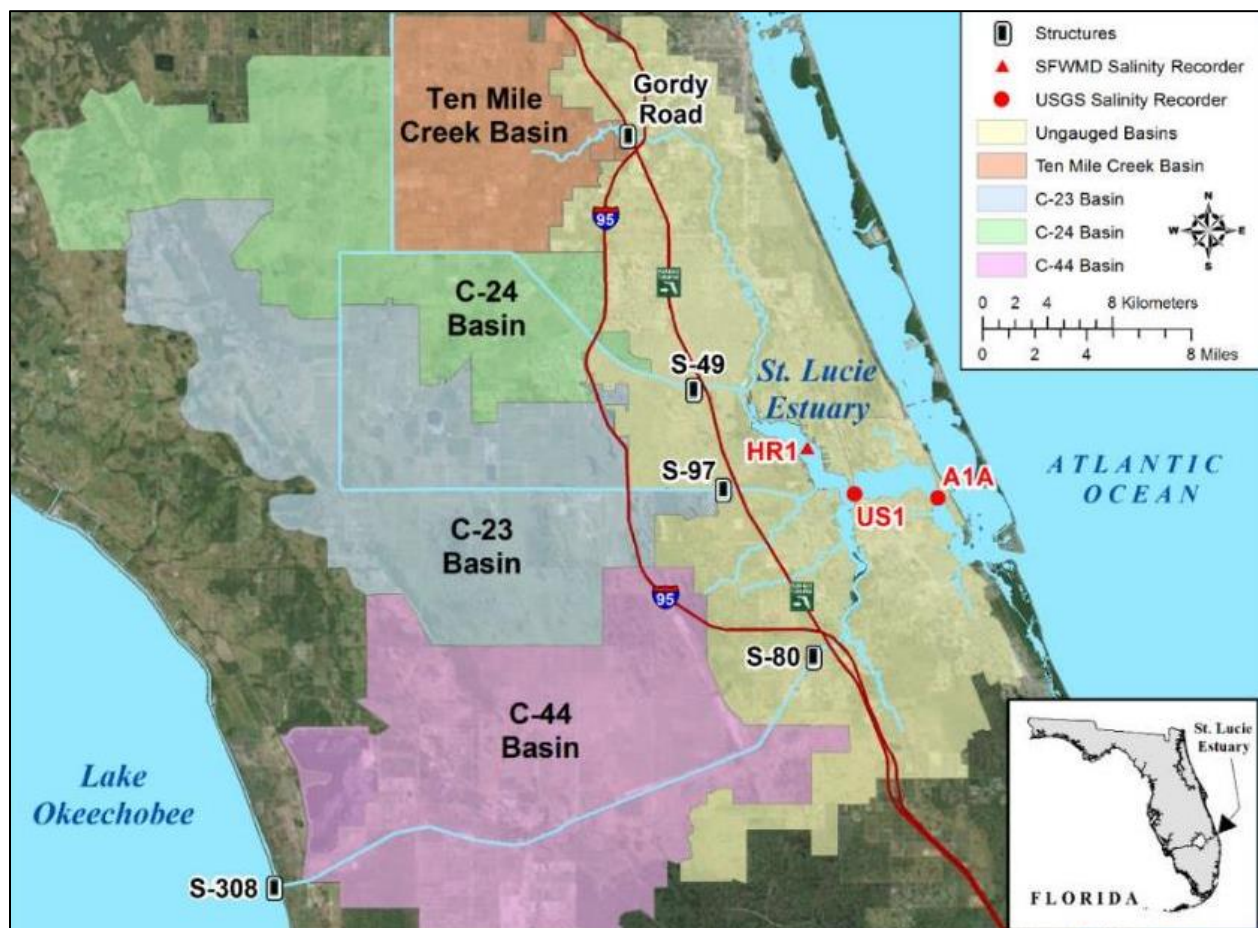


Figure ES-1. Basins, water control structures and salinity monitoring sites in the St. Lucie Estuary.

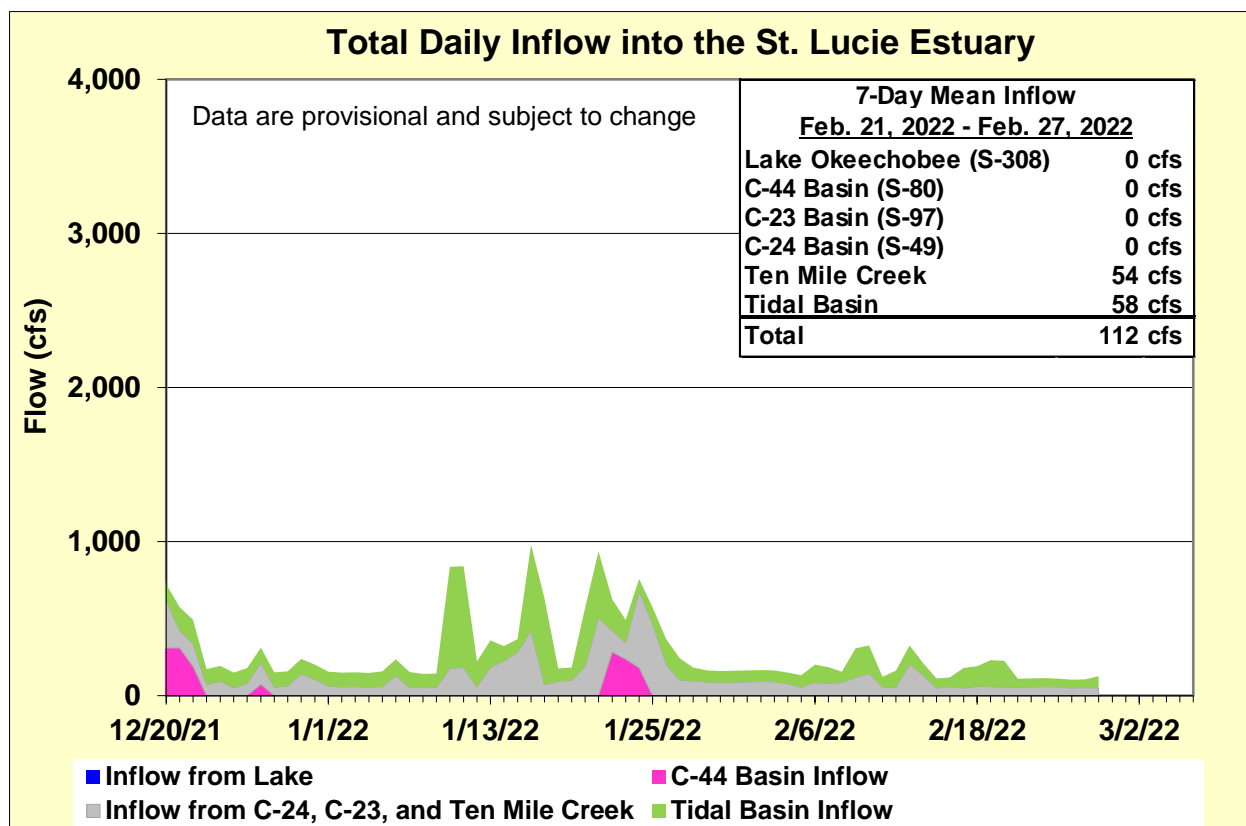


Figure ES-2. Total daily inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and Tidal Basins into the St. Lucie Estuary.

Table ES-1. Seven-day mean salinity at oyster monitoring sites in the St. Lucie Estuary. Current means are in bold font; previous week's means are in parentheses. The envelope reflects the preferred salinity range for adult eastern oysters (*Crassostrea virginica*) in the middle estuary. Data are provisional.

Sampling Site	Surface	Bottom	Envelope
HR1 (North Fork)	19.7 (19.7)	20.4 (21.7)	NA ^a
US1 Bridge	22.9 (23.1)	23.3 (23.6)	10.0 – 26.0
A1A Bridge	29.4 (29.4)	30.4 (30.3)	NA ^a

a. The envelope is not applicable.

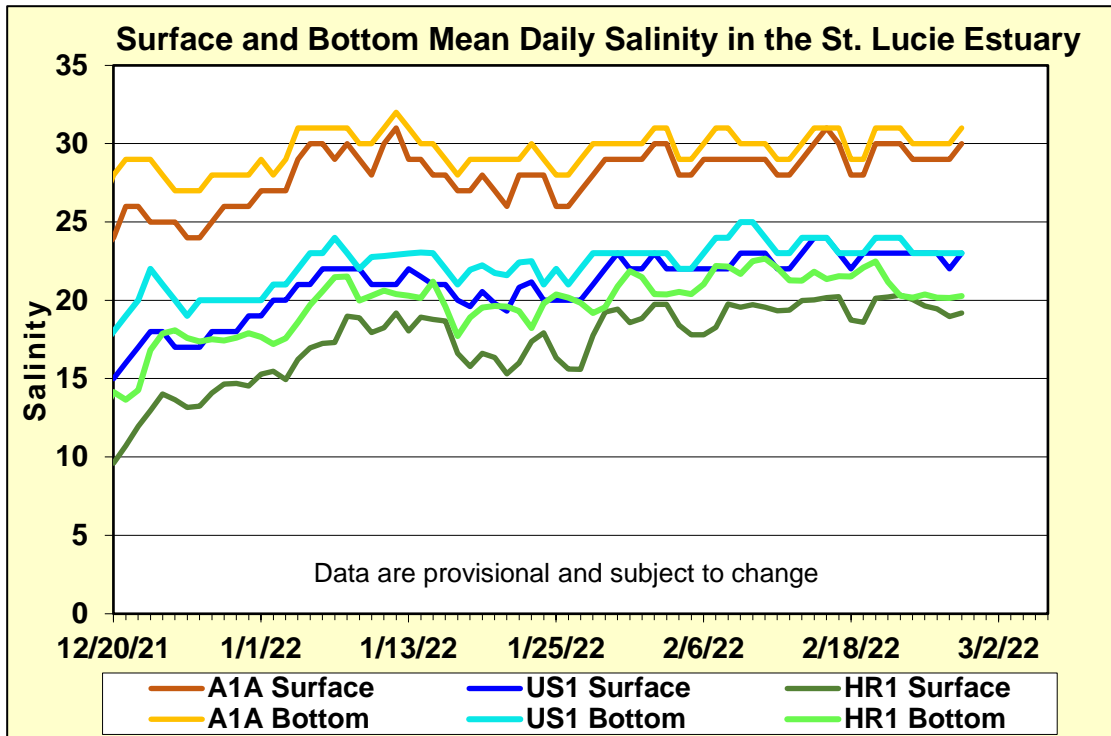


Figure ES-3. Mean daily salinity at the A1A, US1 and HR1 sites in the St. Lucie Estuary.

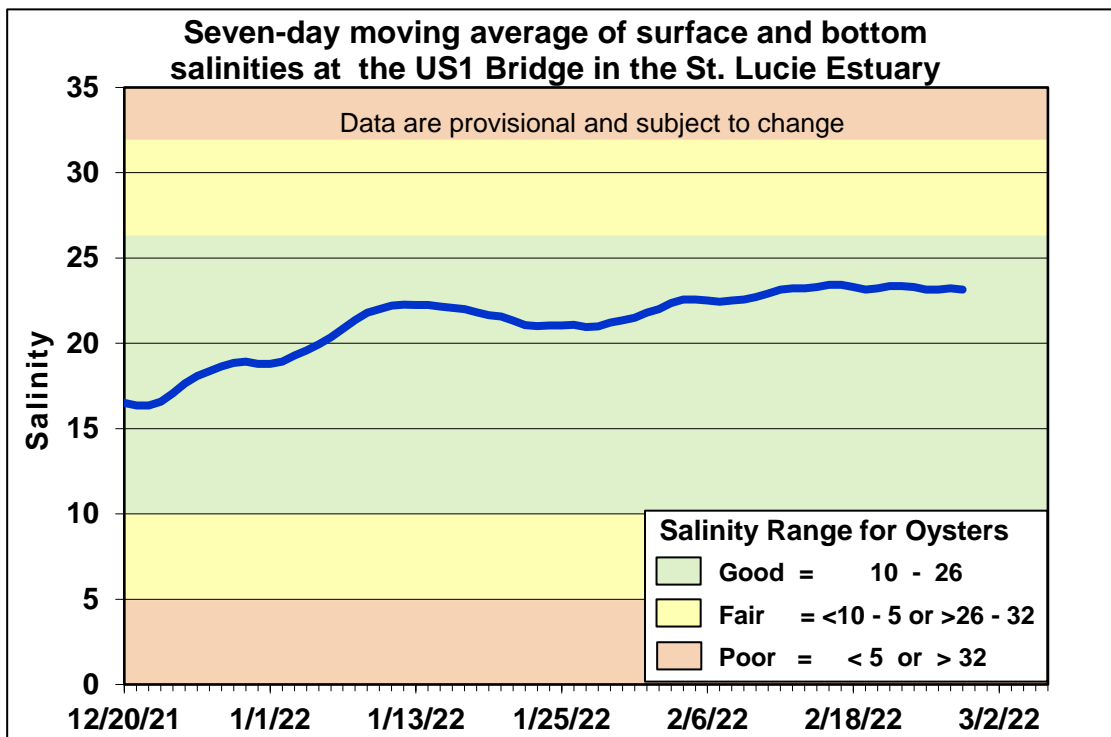


Figure ES-4. Seven-day moving average of the surface and bottom salinities at the US1 Bridge in the St. Lucie Estuary.

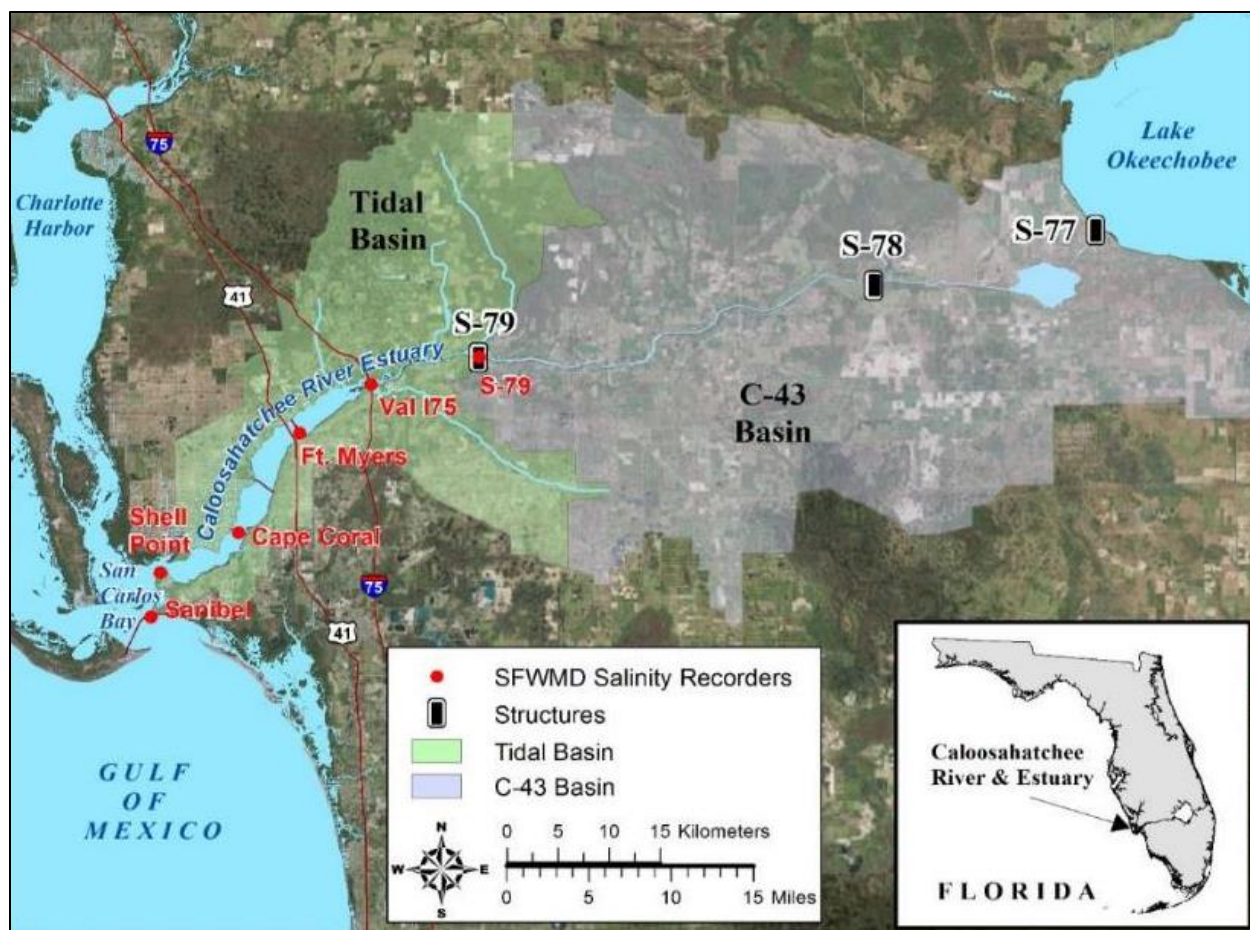


Figure ES-5. Basins, water control structures and salinity monitoring sites in the Caloosahatchee River Estuary.

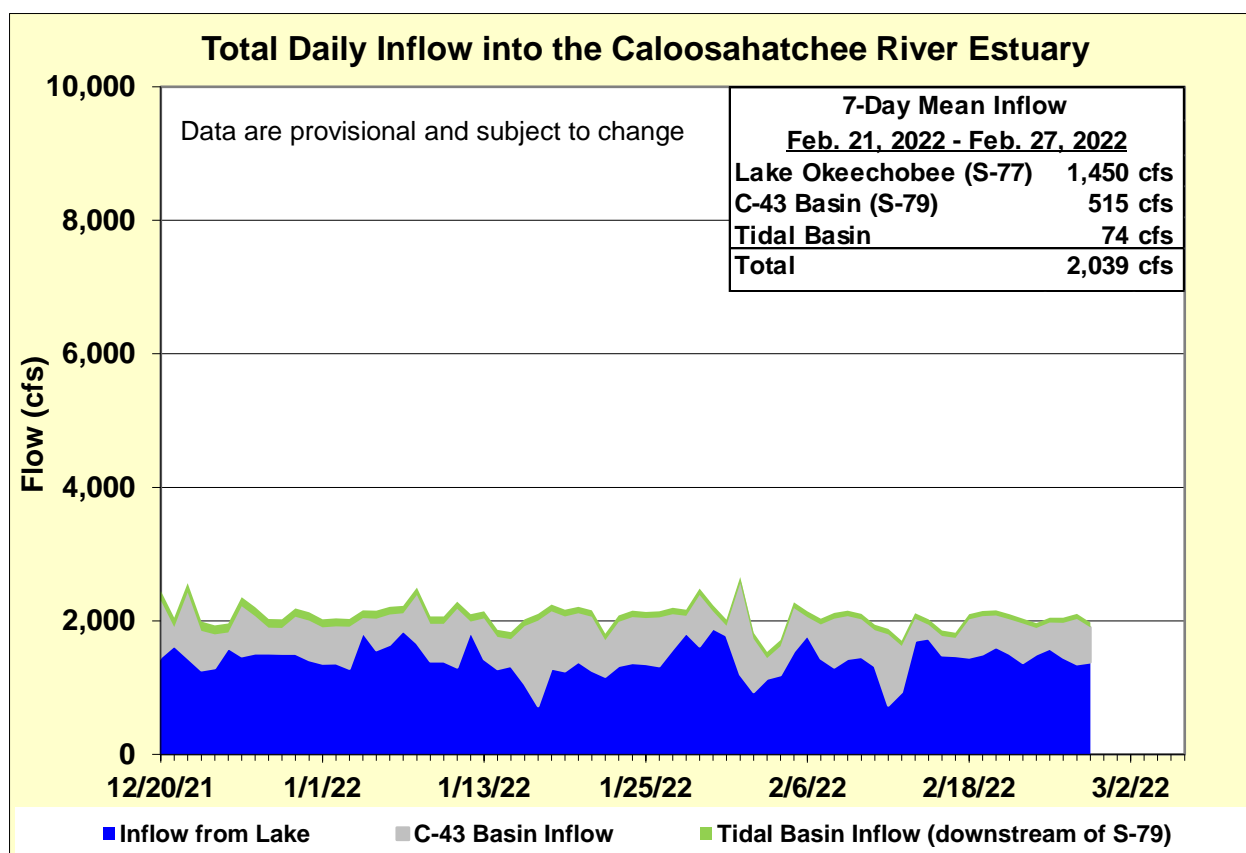


Figure ES-6. Total daily inflows from Lake Okeechobee, and runoff from the C-43 and Tidal basins into the Caloosahatchee River Estuary.

Table ES-2. Seven-day mean salinity at six monitoring sites in the Caloosahatchee River Estuary. Current means are in bold font; previous week's means are in parentheses. The envelope at I-75 is for the protection of tape grass in the upper estuary and the envelope in the lower estuary is the preferred salinity range for adult eastern oysters (*Crassostrea virginica*). Data are provisional.

Sampling Site	Surface	Bottom	Envelope
S-79 (Franklin Lock)	0.2 (0.2)	0.2 (0.2)	NA ^a
Val I-75	0.3 (0.3)	0.6 (0.3)	0.0 – 5.0 ^b
Fort Myers Yacht Basin	3.5 (3.0)	6.8 (4.5)	NA ^a
Cape Coral	10.4 (11.0)	12.8 (12.3)	10.0 – 30.0
Shell Point	24.7 (24.4)	25.2 (24.8)	10.0 – 30.0
Sanibel	30.3 (29.5)	30.8 (29.9)	10.0 – 30.0

a. The envelope is not applicable.

b. The envelope is based on the predicted 30-day mean for the next two weeks.

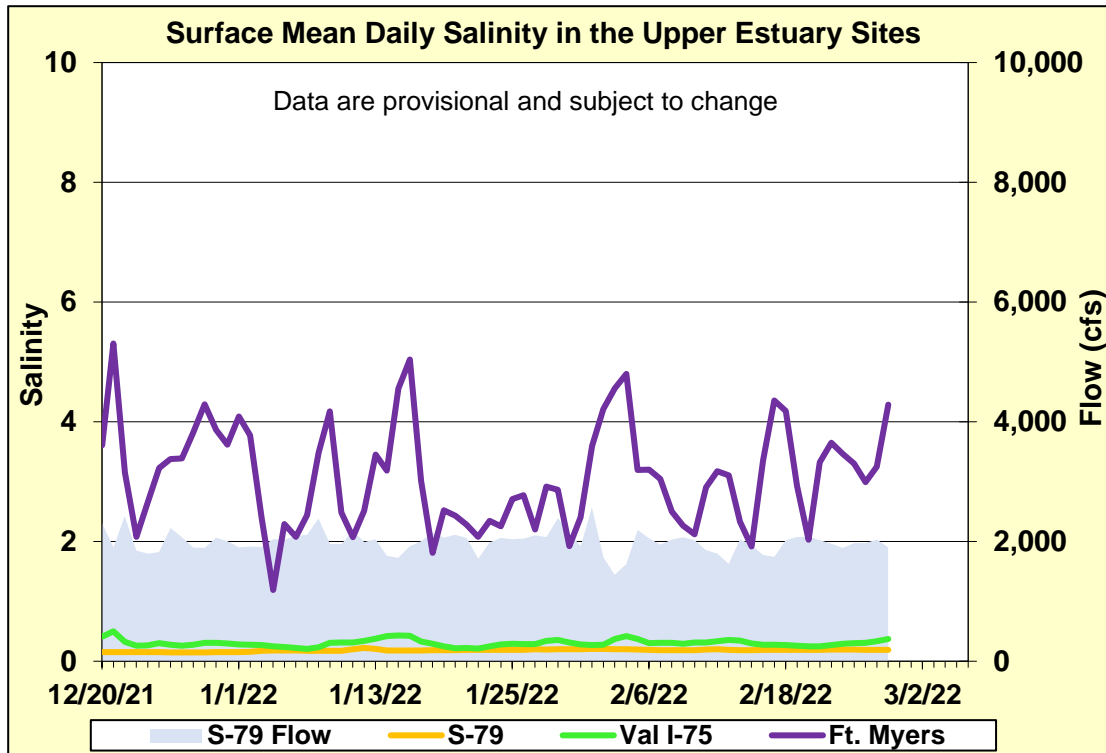


Figure ES-7. Mean daily salinity at upper Caloosahatchee River Estuary monitoring sites and mean daily flow at S-79.

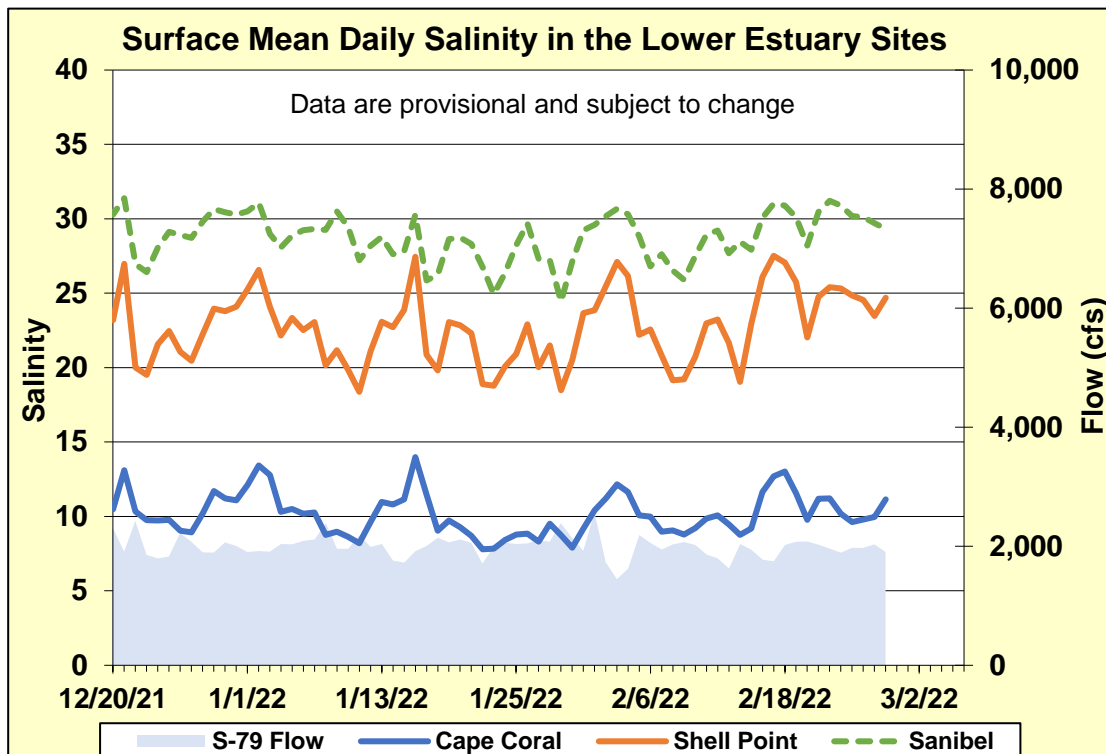


Figure ES-8. Mean daily surface salinity at lower Caloosahatchee River Estuary monitoring sites and mean daily flow at S-79.

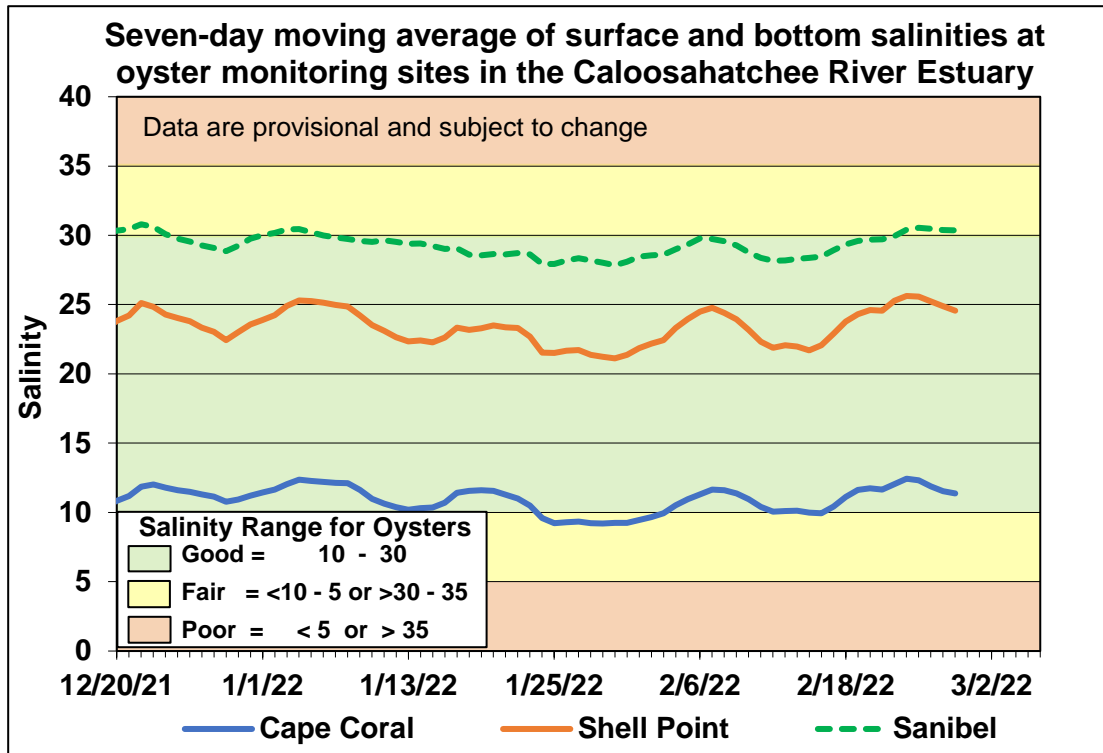


Figure ES-9. Seven-day moving average of surface and bottom salinities at Cape Coral, Shell Point and Sanibel monitoring sites in the Caloosahatchee River Estuary.

Table ES-3. Predicted salinity at Val I-75 in the Caloosahatchee River Estuary at the end of the forecast period for various S-79 flow release scenarios.

Scenario	Simulated S-79 Flow (cfs)	Tidal Basin Runoff (cfs)	Daily Salinity	30-Day Mean Salinity
A	0	63	1.5	0.4
B	450	63	0.7	0.4
C	800	63	0.5	0.3
D	1000	63	0.3	0.3
E	1500	63	0.3	0.3
F	2000	63	0.3	0.3

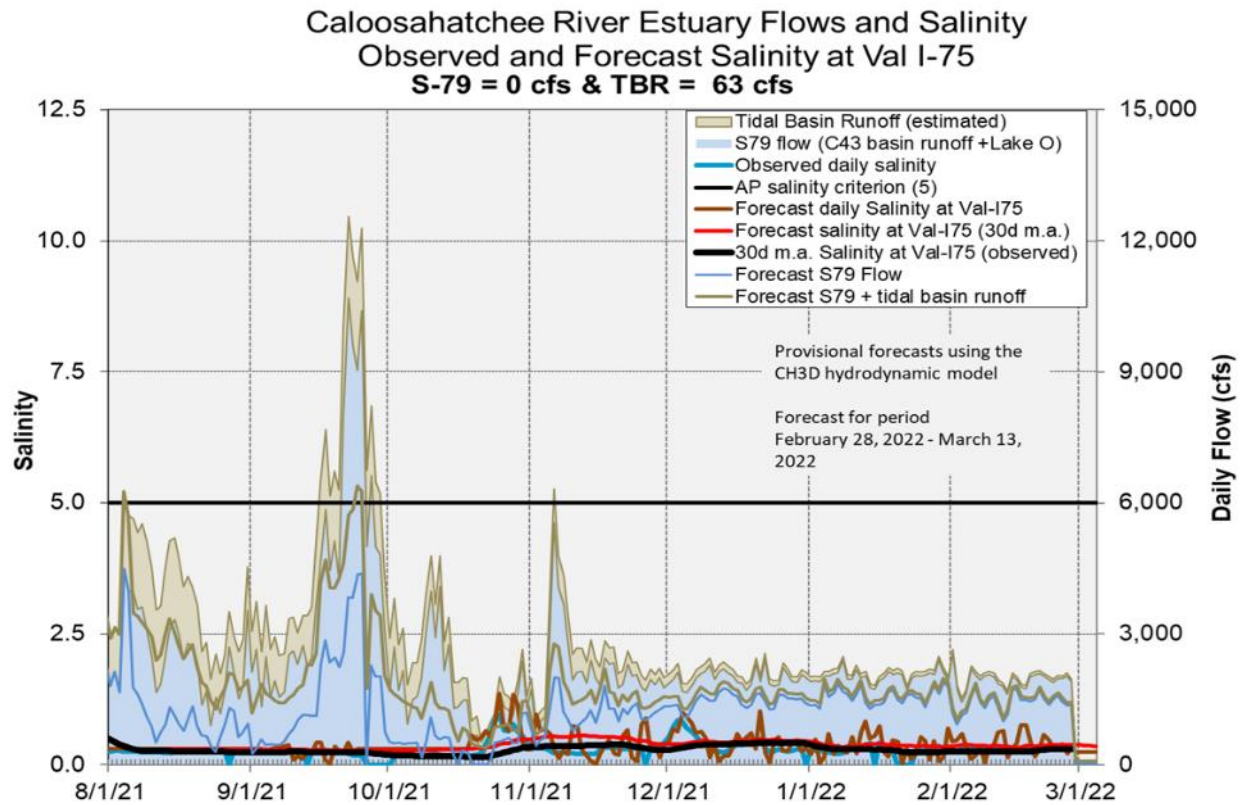


Figure ES-10. Forecasted Val I-75 site surface salinity assuming no pulse release at S-79.

Stormwater Treatment Areas

STA-1E: STA-1E Western Flow-way is offline for the Restoration Strategies project to fill and grade Cells 5 and 7, and the Eastern Flow-way is offline for vegetation management activities including rip-rap repairs related to Tropical Storm Eta. Operational restrictions are in place in STA-1E Central Flow-way for vegetation management activities. Online treatment cells are at or above target stage and vegetation in the flow-ways is stressed and highly stressed. The 365-day phosphorus loading rates (PLRs) is high for the Central Flow-way (**Figure S-1**).

STA-1W: Operational restrictions are in place in STA-1W Western, Eastern, and Northern Flow-ways due to construction activities. Most treatment cells are at or near target stage. Vegetation in the flow-ways is stressed and highly stressed. The 365-day PLRs for the Northern, Western, and Eastern Flow-ways are below 1.0 g/m²/year (**Figure S-2**).

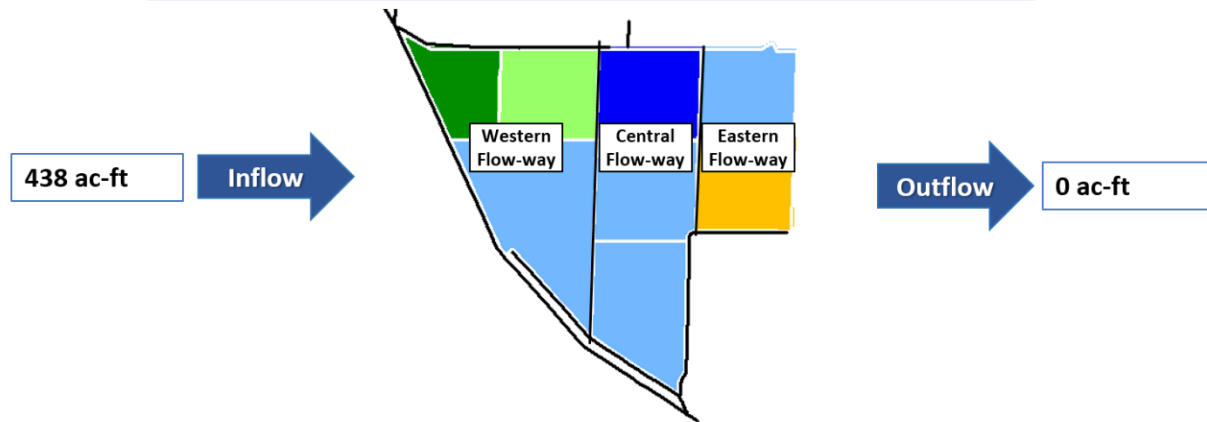
STA-2: STA-2 Flow-way 2 is offline for construction activities. Operational restrictions are in place in STA-2 Flow-ways 1, 3 and 4 for vegetation management activities. Online treatment cells are at or near target stage. Vegetation in Flow-ways 1 and 3 is stressed, and in Flow-ways 2, 4 and 5 is highly stressed. The 365-day PLRs for Flow-ways 1, 4 and 5 are below 1.0 g/m²/year. The 365-day PLR for Flow-way 3 is high (**Figure S-3**).

STA-3/4: STA-3/4 Eastern Flow-way is offline for vegetation rehabilitation/drawdown. Most online treatment cells are at or near target stage. Vegetation in the Eastern and Central Flow-ways is highly stressed and in the Western Flow-way is stressed. The 365-day PLRs for the Central and Western Flow-ways are below 1.0 g/m²/year (**Figure S-4**).

STA-5/6: STA-5/6 Flow-way 4 is offline for vegetation management activities. Most treatment cells are below target stage. All treatment cells have highly stressed vegetation conditions except Flow-ways 7 and 8 which are healthy. The 365-day PLRs for flow-ways 1, 6, 7, and 8 are below 1.0 g/m²/year. The 365-day PLRs for flow-ways 4 and 5 are high. (**Figure S-5 and S-6**).

For definitions on STA operational language see glossary following figures.

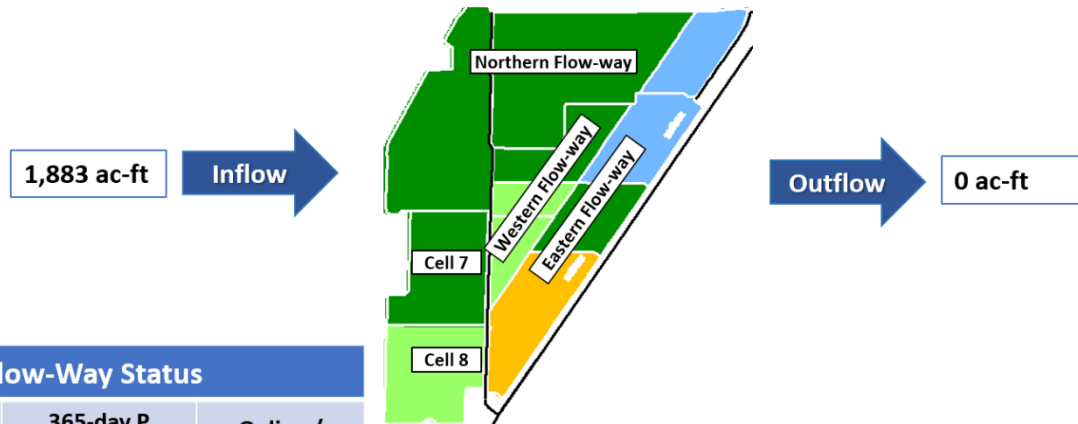
STA-1E Weekly Status Report – 2/21/2022 through 2/27/2022



STA-1E Flow-Way Status				As of 2/27/2022				STA-1E Flow & Phosphorus Concentration			
Flow-Way	Vegetation Status Healthy ----- Stressed ←-----→	365-day P Loading Rate (below 1.0 g P /m ² /yr is optimal)	Online / Offline / Restrictions	Stage Based: Relative to Target Stage (TS)					7-day	28-day	365-day
Eastern	Offline, Tropical Storm Eta repairs starting 01/24/2022			Deep Water Level (> 2.8' above TS)				Total Inflow, ac-ft	438	2,890	180,119
Central	←-----→	1.0	Vegetation Rehab	High Water Level (1.5' – 2.8' above TS)				--Lake Inflow, ac-ft	0	N/A	5,800
Western	Offline, construction activities starting 11/01/2019			0.2' – 1.5' above TS				Total Outflow, ac-ft	0	373	150,618
				Target Stage (TS +/- 0.2')				Inflow Conc., ppb	45	53	122
				Low Water Level (<0.2' below TS)				Outflow Conc., ppb	N/A	23	23
				Depth / Area Based: Percent of Area Dry				Includes Preliminary Data			
				0-25% Dry							
				25-50% Dry							
				50-75% Dry							
				75-100% Dry							

Figure S-1. STA-1E Weekly Status Report

STA-1W Weekly Status Report – 2/21/2022 through 2/27/2022



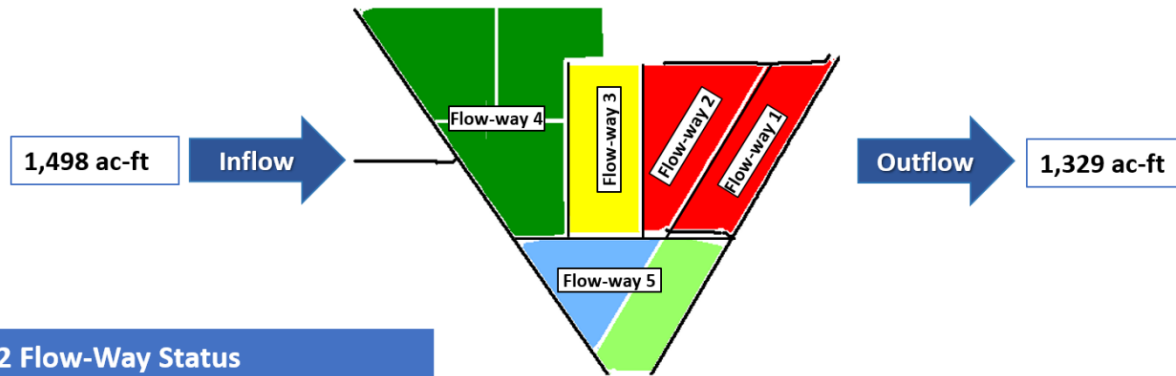
STA-1W Flow-Way Status			
Flow-Way	Vegetation Status Healthy --- Stressed	365-day P Loading Rate (below 1.0 g P /m ² /yr is optimal)	Online / Offline / Restrictions
Northern			Construction
Western			Construction
Eastern			Construction
Cell 7		N/A	Construction
Cell 8		N/A	Construction

As of 2/27/2022	
Stage Based: Relative to Target Stage (TS)	
	Deep Water Level (> 2.8' above TS)
	High Water Level (1.5' – 2.8' above TS)
	0.2' – 1.5' above TS
	Target Stage (TS +/- 0.2')
	Low Water Level (<0.2' below TS)
Depth / Area Based: Percent of Area Dry	
	0-25% Dry
	25-50% Dry
	50-75% Dry
	75-100% Dry

STA-1W Flow & Phosphorus Concentration			
	7-day	28-day	365-day
Total Inflow, ac-ft	1,883	2,594	56,015
--Lake Inflow, ac-ft	700	N/A	5,400
Total Outflow, ac-ft	0	0	52,974
Inflow Conc., ppb	74	79	164
Outflow Conc., ppb	N/A	N/A	24
Includes Preliminary Data			

Figure S-2. STA-1W Weekly Status Report

STA-2 Weekly Status Report – 2/21/2022 through 2/27/2022



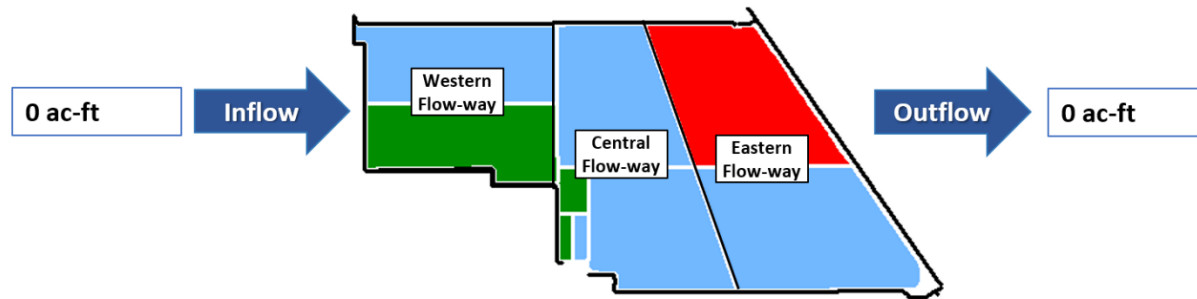
STA-2 Flow-Way Status			
Flow-Way	Vegetation Status Healthy ----- Stressed	365-day P Loading Rate (below 1.0 g P /m ² /yr is optimal)	Online / Offline / Restrictions
1	← →	1.0	Vegetation Management
2	Offline, construction activities as of 9/7/2021		
3	← →	1.0	Vegetation Rehab
4	← →	1.0	Vegetation Rehab
5	← →	1.0	Online

As of 2/27/2022	
Stage Based: Relative to Target Stage (TS)	
Deep Water Level (> 2.8' above TS)	
High Water Level (1.5' – 2.8' above TS)	
0.2' – 1.5' above TS	
Target Stage (TS +/- 0.2')	
Low Water Level (<0.2' below TS)	
Depth / Area Based: Percent of Area Dry	
0-25% Dry	50-75% Dry
25-50% Dry	75-100% Dry

STA-2 Flow & Phosphorus Concentration			
	7-day	28-day	365-day
Total Inflow, ac-ft	1,498	6,465	325,609
--Lake Inflow, ac-ft	1,500	N/A	66,300
Total Outflow, ac-ft	1,329	5,613	338,549
Inflow Conc., ppb	43	45	87
Outflow Conc., ppb	13	12	15
Includes Preliminary Data			

Figure S-3. STA-2 Weekly Status Report

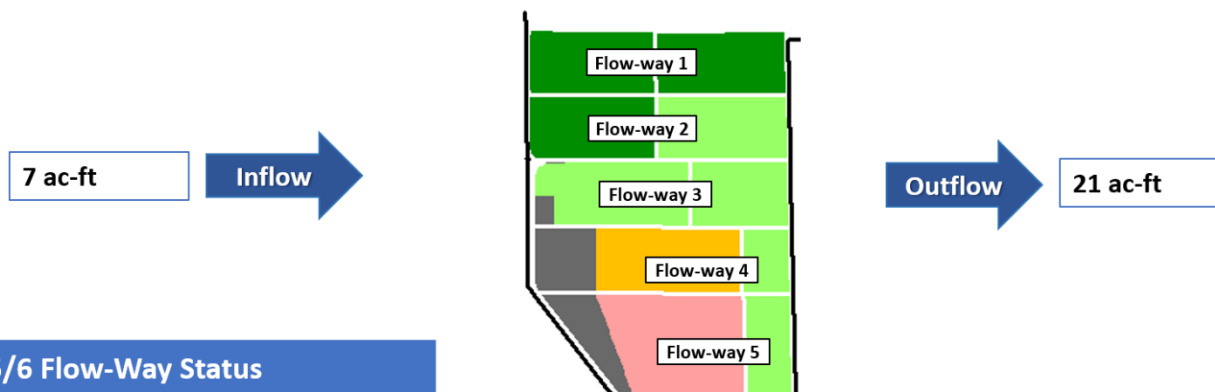
STA-3/4 Weekly Status Report – 2/21/2022 through 2/27/2022



STA-3/4 Flow-Way Status				STA-3/4 Flow & Phosphorus Concentration			
Flow-Way	Vegetation Status <div>Healthy ----- Stressed</div>	365-day P Loading Rate (below 1.0 g P /m²/yr is optimal)	Online / Offline / Restrictions	As of 2/27/2022			
				Stage Based: Relative to Target Stage (TS)			
				Deep Water Level (> 2.8' above TS)			
				High Water Level (1.5' – 2.8' above TS)			
				0.2' – 1.5' above TS			
Eastern	<div>Offline, vegetation management drawdown as of 3/1/2021</div>			Target Stage (TS +/- 0.2')			
				Low Water Level (<0.2' below TS)			
				Depth / Area Based: Percent of Area Dry			
				0-25% Dry 50-75% Dry			
				25-50% Dry 75-100% Dry			
Central	<div></div>	<div></div>	Online	Total Inflow, ac-ft			
Western	<div></div>	<div></div>	Online	--Lake Inflow, ac-ft			
				Total Outflow, ac-ft			
				Inflow Conc., ppb			
				Outflow Conc., ppb			
				Includes Preliminary Data			
				0	0	358,537	
				0	N/A	38,000	
				0	1,482	316,287	
				N/A	N/A	65	
				N/A	20	15	

Figure S-4. STA-3/4 Weekly Status Report

STA-5/6 Weekly Status Report – 2/21/2022 through 2/27/2022



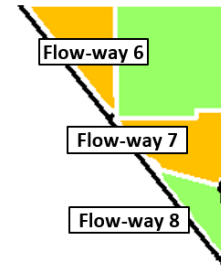
STA-5/6 Flow-Way Status			
Flow-Way	Vegetation Status Healthy ----- Stressed	365-day P Loading Rate (below 1.0 g P /m ² /yr is optimal)	Online / Offline / Restrictions
1			Online
2		N/A	Online
3		N/A	Online
4	Offline, vegetation management starting 01/24/2022		
5			Online

As of 2/27/2022	
Stage Based: Relative to Target Stage (TS)	
	Deep Water Level (> 2.8' above TS)
	High Water Level (1.5' – 2.8' above TS)
	0.2' – 1.5' above TS
	Target Stage (TS +/- 0.2')
	Low Water Level (<0.2' below TS)
Depth / Area Based: Percent of Area Dry	
	0-25% Dry
	25-50% Dry
	50-75% Dry
	75-100% Dry

STA-5/6 Flow & Phosphorus Concentration			
	7-day	28-day	365-day
Total Inflow, ac-ft	7	961	177,768
--Lake Inflow, ac-ft	0	N/A	9,000
Total Outflow, ac-ft	21	328	169,261
Inflow Conc., ppb	107	84	243
Outflow Conc., ppb	15	16	50
Includes Preliminary Data			

Figure S-5. STA-5/6 Weekly Status Report (Flow-ways 1 – 5)

STA-5/6 Weekly Status Report – 2/21/2022 through 2/27/2022



STA-5/6 Flow-Way Status				As of 2/27/2022	
Flow-Way	Vegetation Status Healthy ----- Stressed ←-----→	365-day P Loading Rate (below 1.0 g P /m ² /yr is optimal)	Online / Offline / Restrictions	Stage Based: Relative to Target Stage (TS)	
				Deep Water Level (> 2.8' above TS)	
6	←-----→	1.0	Online	High Water Level (1.5' – 2.8' above TS)	
7	←-----→	1.0	Online	0.2' – 1.5' above TS	
8	←-----→	1.0	Online	Target Stage (TS +/- 0.2')	
				Low Water Level (<0.2' below TS)	
				Depth / Area Based: Percent of Area Dry	
				0-25% Dry	50-75% Dry
				25-50% Dry	75-100% Dry

Figure S-6. STA-5/6 Weekly Status Report (Flow-ways 6 – 8)

Basic Concepts and Definitions for STA Weekly Status Report

- **Inflow:** Sum of flow volume at all inflow structures to an STA.
- **Lake Inflow:** Portion of the STA total inflow volume that originates from Lake Okeechobee.
- **Outflow:** Sum of flow volume at outflow structures from an STA.
- **Total Phosphorus (TP):** Total mass of phosphorus in all its forms; including particulate, dissolved, etc.
- **Inflow Concentration:** TP concentration is the mass of TP in micrograms per liter of water, $\mu\text{g/L}$ or ppb. Inflow concentration refers to the flow-weighted mean TP from all inflow structures over a period of time.
- **Outflow Concentration:** The flow-weighted mean TP from all outflow structures over a period of time. The outflow concentration represents the reduction of inflow TP achieved by STA treatment of the inflow water.
- **WQBEL:** The STA outflow concentration that is required upon completion of the Restoration Strategies projects by December 2025. The outflow concentration shall not exceed 13 ppb as an annual flow weighted mean in more than 3 out of 5 water years on a rolling basis and shall not exceed 19 ppb as an annual flow weighted in any water year.
- **Flow-Way (FW):** One or more treatment cells connected in series. Cells typically have emergent aquatic vegetation (EAV) in the front portion of the flow-way followed by a mix of EAV and submerged aquatic vegetation (SAV)
- **Vegetation Status:** Healthy means the vegetation condition is good and will allow the STA to perform as designed. Stressed means the vegetation is showing signs of poor health, such as browning or areas of vegetation die-off, or the cell contains undesirable vegetation such as floating exotic vegetation requiring treatment. The TP reduction capability of the STA is affected when the vegetation condition is poor.
- **Phosphorus Loading Rate (PLR):** Mass of inflow TP in grams, divided by total treatment area of STA in square meters, per year. In general, a 365-day value of less than 1.0 is needed for an STA to perform optimally. A PLR of 2.0 is considered very high and a PLR of 3.0 is considered extremely high. The TP reduction capability of the STA is affected when the PLR is high, very high and extremely high.
- **Online:** Online status means the FW can receive and treat inflow.
- **Online with Restriction:** The FW can receive and treat inflow, but the amount of flow or water level may be limited temporarily. For example, a vegetation rehabilitation effort may require reduced flows through an area while the new plants are establishing, or nesting by protected species may require a certain water level not to be exceeded.
- **Offline:** The FW is unable to receive and treat inflow due to repairs, construction, or other prohibitive reasons.
- **Depth:** Difference between the average surface water level in a cell and the average ground elevation in that cell. Target depths, or depths between flow events, are between 1.25 ft to 1.5 ft. As depth approaches or drops below zero, an increasing percentage of the cell is considered dry and STA conditions deteriorate. An increase in depth above target depth is expected with increasing flow. However, as depth increases much above the target depth and is sustained over a period of time, it can be detrimental to vegetation health and overall STA treatment performance.
- **Note:** The data provided in this summary report were developed using a combination of provisional and quality-assured flow and water quality data. In some cases, best professional judgment was used to estimate missing data and revise questionable data. Values provided are not considered final but are appropriate for use in STA operational decision-making.

Everglades

Water Conservation Area Regulation Schedules

WCA-1: The 1-8C stage fell faster than the slope of the falling Zone A1 regulation line last week. The average on Sunday was 0.32 feet above that line. WCA-2A: Stage change at S11B headwater was flat last week the average at that gauge on Sunday was 1.10 feet higher than the flat regulation line. WCA-3A: Last week the Three Gauge Average stages fell just faster than the Zone A regulation line; average stage was 0.80 feet below the Zone A regulation on Sunday. WCA-3A: Stage leveled then declined at gauge 62 (Northwest corner) last week, the average on Sunday was 0.71 feet below the flat Upper schedule line. (**Figures EV-1 through EV-4**).

Water Depths

Comparing current WDAT water depths to the depth one month ago, stages are decreasing slowly across most of the EPA with only northeastern WCA-2A and northwestern WCA-3A North unchanged or even gaining in water depth. Looking back one year, most of the EPA south of WCA-2A is lower in depth, most significantly in eastern WCA-3A along the upper reaches of L-67s. (**Figure EV-5**). Comparing current WDAT water depths to the depth one month ago, stages are decreasing slowly in the WCAs with northern WCA-2A and northwestern WCA-3A North unchanged or even gaining in water depth. Looking back one year, most of the EPA south of northern WCA-2A is lower in depth, most significantly in eastern WCA-3A along the L-67s (**Figure EV-6**). Comparing current depths to the past 20 years, the eastern half WCA-3A is below the 20th percentile. WCA-1 and NE SRS remain above the 90th percentile. (**Figure EV-7**).

Taylor Slough and Florida Bay

Next to no rain fell over Taylor Slough and Florida Bay during the week ending Sunday, 2/27. Stages in Taylor Slough decreased an average of 0.11 feet over this past week with the largest weekly change of -0.20 feet in the northern Taylor Slough area (**Figure EV-8**). The Slough, as a whole, is still 9.5 inches higher than average while the northern parts are 17 inches higher than the historical average for this time of year. The rapid decrease in the northern parts of the Slough expected in the late dry season seem to have begun (**Figure EV-9**). Given the expectation of a continued dry dry season, maintaining water deliveries to the area would slow the recession in the slough so water movements south can be expedited once the wet season starts

Salinities in Florida Bay averaged an increase of only 0.1 over the week ending 2/27, with individual station changes ranging from -2.3 to +2.4 (**Figure EV-8**). Weekly flow from the 5 main creeks feeding the Bay was more than 6,000 acre-feet this week when this time of year would typically have no positive flows. The interquartile ranges for each zone of the Bay increases for March since this is the time of year that the rapid increases occur. Current condition across the Bay is 0.6 psu higher than the long term mean and near the 25th percentiles for March in each region (**Figure EV-10**).

Water Management Recommendations

Conserving water in the northern basins, then allowing that water to move downstream as we transition into the dry season maximizes the ecological benefit of freshwater on the landscape. This recommendation is currently being epitomized with WCA-1 and STA2 discharges hydrating northern WCA-2A, being picked up by S7 which then supplies NE and NW WCA-3A North, Holeyland and Rotenberger WMAs. This operation is more ecologically advantageous than outflow from the S-11 structures as long as a recession rate can be returned to WCA-2A.

Stage conditions in northeastern WCA-3AN continue to warrant further consideration as aerial observation confirms WDAT model output indicating very dry, below average levels however recent inflows via the S-150 were anecdotally confirmed once again this week from the air late last week as having a positive result on stages in northeastern WCA-3A. If conditions at all allow operational discharges into both the western and the eastern WCA-3A water control structures, this operation has greater benefit than discharges to the west alone. Continued freshwater to the Taylor Slough area, a discharge amount that maintains stage will help expedite deliveries to the south when the wet season begins. Individual regional recommendations can be found in **Table EV-2**.

Table EV-2. Previous week's rainfall and water depth changes in Everglades regions.

Everglades Region	Rainfall (inches)	Stage change (feet)
WCA-1	0.01	-0.14
WCA-2A	0.02	+0.00
WCA-2B	0.30	-0.11
WCA-3A	0.13	-0.08
WCA-3B	0.18	-0.08
ENP	0.17	-0.09

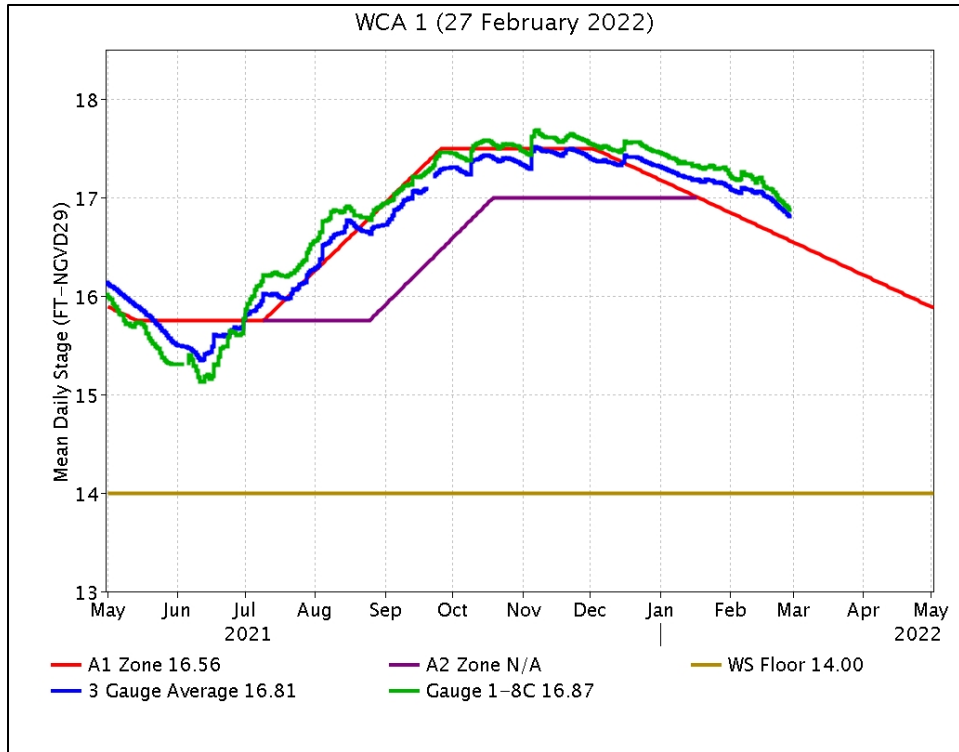


Figure EV-1. WCA-1 stage hydrographs and regulation schedule.

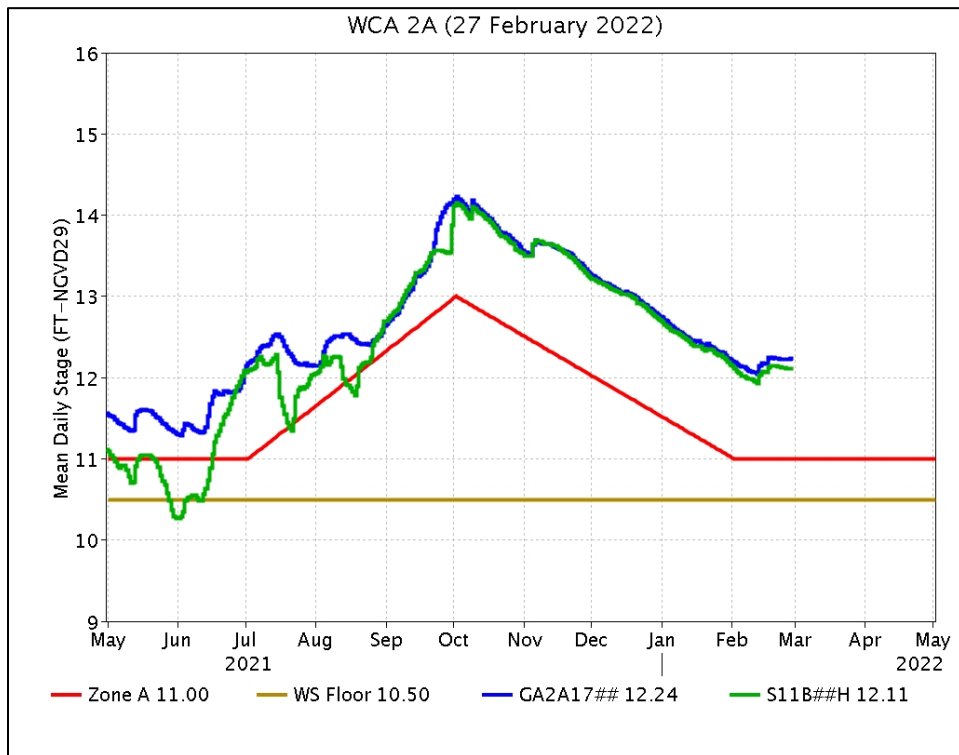


Figure EV-2. WCA-2A stage hydrographs and regulation schedule.

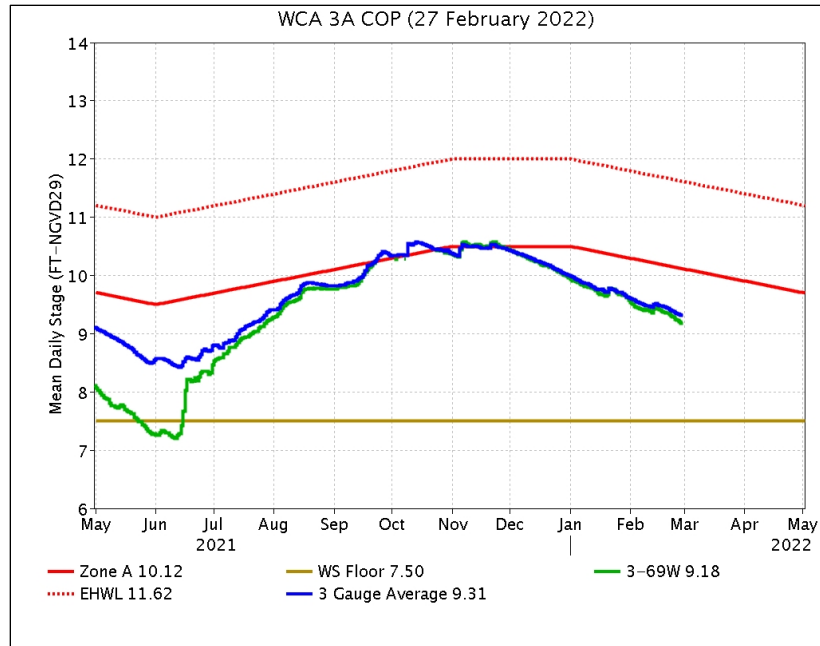


Figure EV-3. WCA-3A stage hydrographs (three-gauge average, S-333 headwater) and regulation schedule.

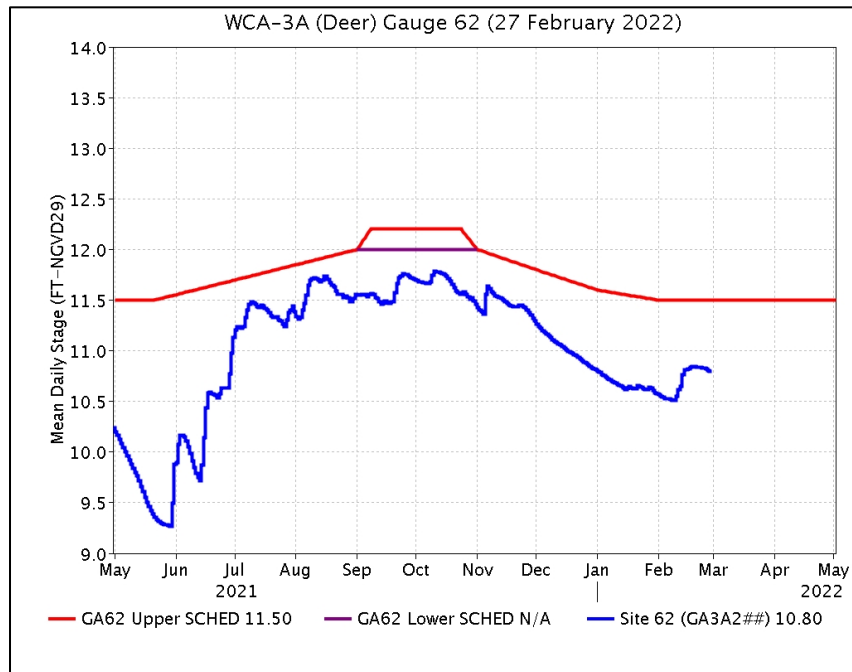


Figure EV-4. WCA-3A stage hydrograph (Deer gauge; Site 62) and CA62 regulation schedule.

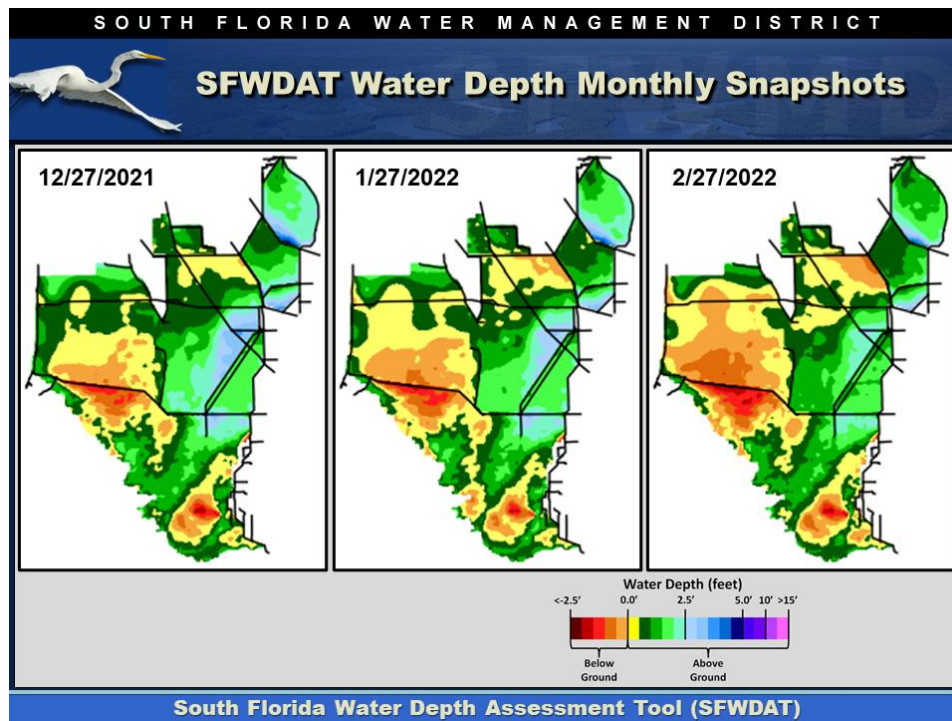


Figure EV-5. Everglades water depths from two months ago (left), one month ago (center) and present (right), based on SFWDAT.

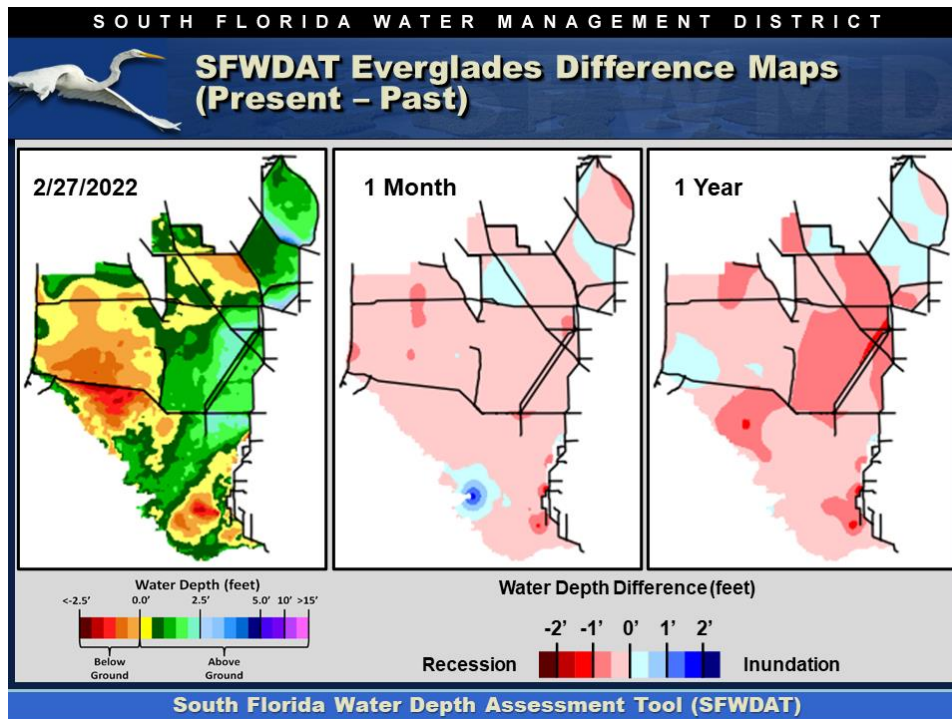


Figure EV-6. Present Everglades water depths (left) and water depth changes from one month (center) and one year (right) ago, based on SFWDAT.

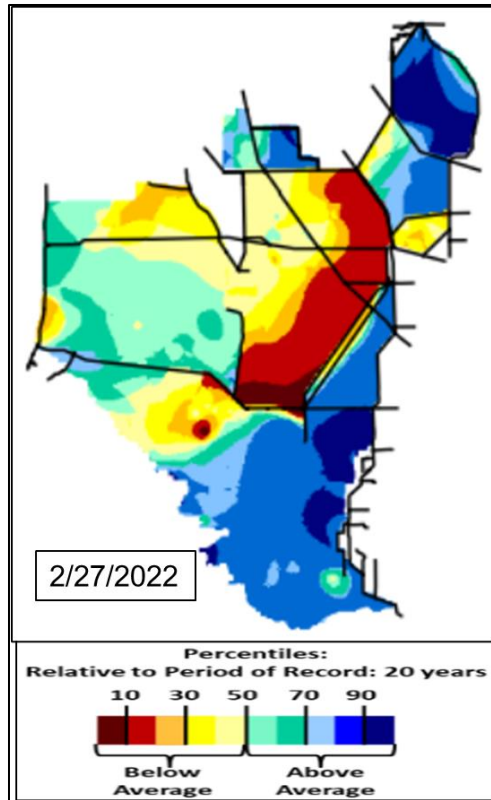


Figure EV-7. Present water depths compared to the day of year median over the previous 20 years.

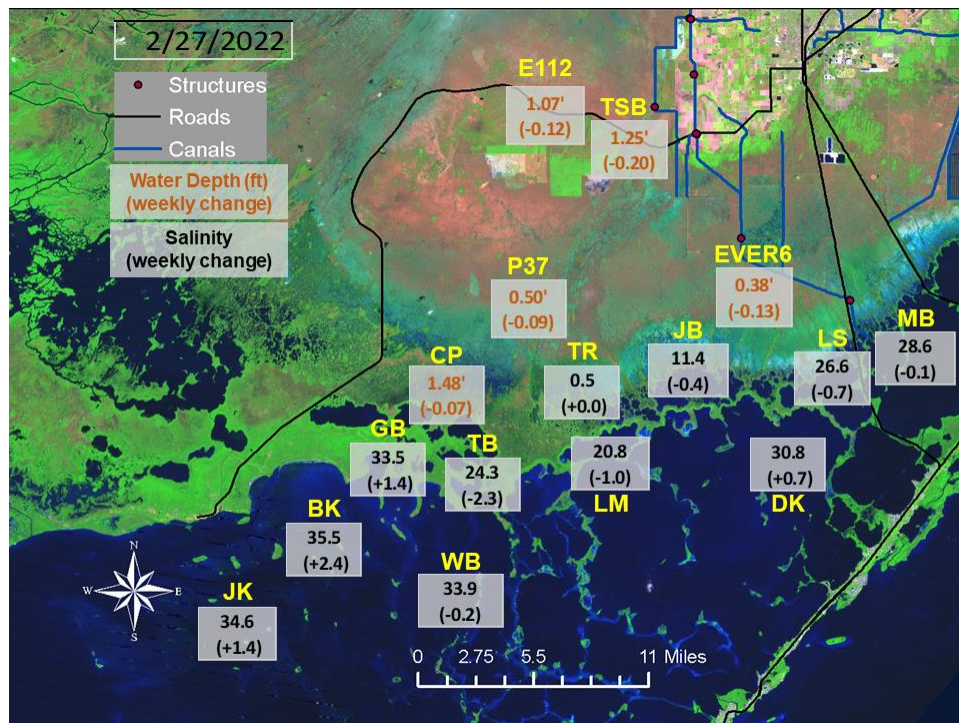


Figure EV-8. Taylor Slough water depths with changes since a week ago and Florida Bay salinities with changes since a week ago.

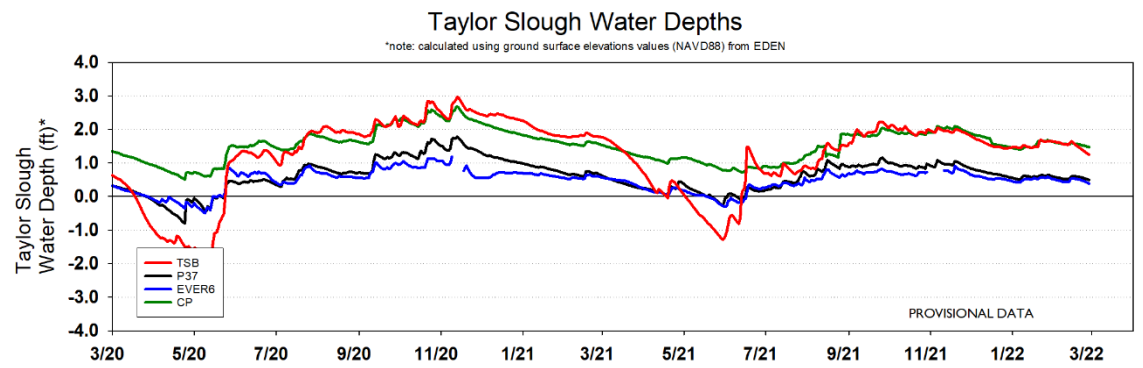


Figure EV-9. Taylor Slough water depth time series.

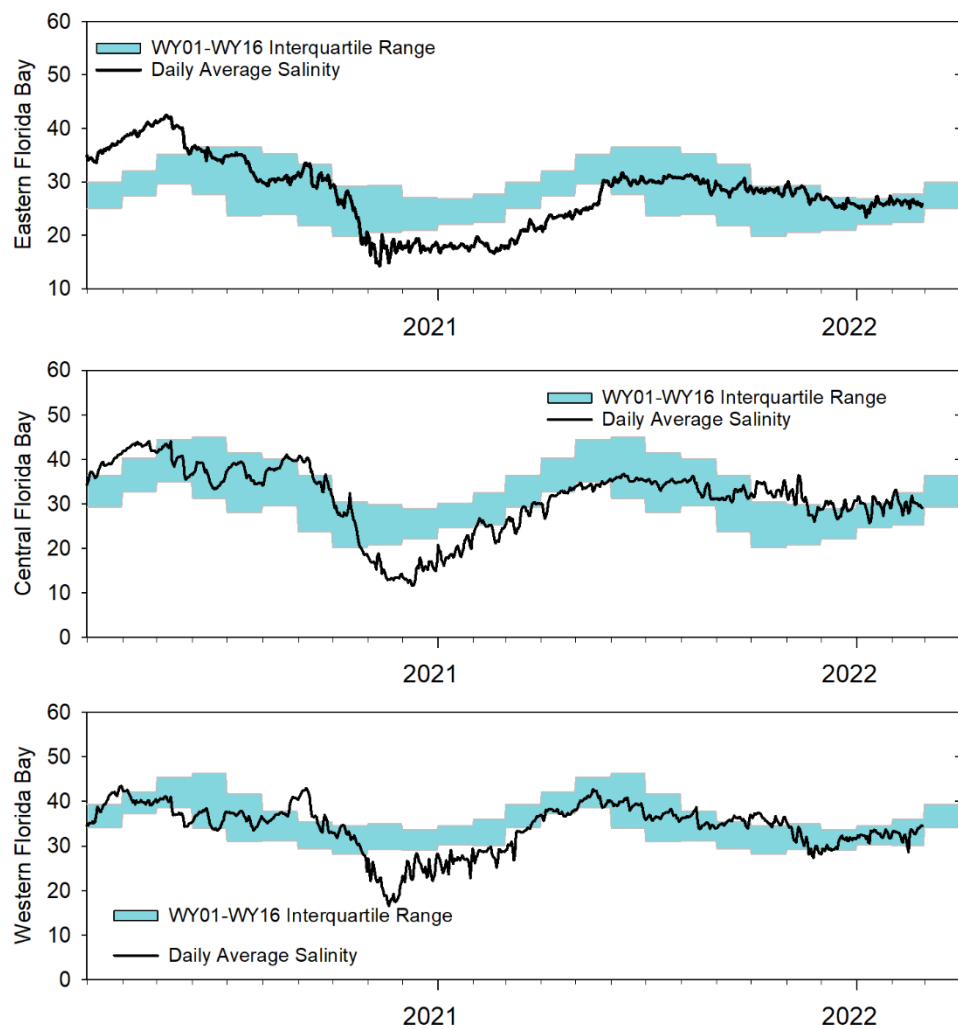


Figure EV-10. Eastern (top panel), Central (middle panel) and Western (bottom panel) Florida Bay daily average salinities with interquartile (25-75 percentile) ranges.

Table EV-2. Weekly water depth changes and water management recommendations

SFWMD Everglades Ecological Recommendations, February 22, 2022 (red is new)			
Area	Weekly change	Recommendation	Reasons
WCA-1	Stage decreased by 0.14'	Allow water to move south from this basin until stages reach the regulation schedule. Return to a recession rate of less than 0.10 feet per week.	Protect within basin and downstream habitat and wildlife. Stages are above the 90 th percentile.
WCA-2A	Stage remains unchanged	Conserve water in this basin letting the water move south when conditions allow, with northern WCA-3A as the priority for receiving discharge. A recession rate less than 0.10 feet per week has an ecological benefit.	Protect within basin and downstream habitat and wildlife. Protect peat soil and future wading bird forage as the dry season progresses.
WCA-2B	Stage decreased by 0.11'	Conserve water in this basin, maintain a minimum input to maintain stage while moving water south when conditions allow.	Protect within basin and downstream habitat and wildlife.
WCA-3A NE	Stage decreased by 0.09'	Conserve water in this basin, while letting the water move south when conditions allow. Keeping a recession rate less than 0.10 feet per week has an ecological benefit.	Protect within basin peat soils, and downstream habitat and wildlife. Inflows via the S-150 are anecdotally observed to be positively impacting stages in NE WCA-3A North.
WCA-3A NW	Stage decreased by 0.04'	Conserve water in this basin letting the water move south when conditions allow.	
Central WCA-3A S	Stage decreased by 0.10'	Return to a recession rate that is less than 0.10 feet per week. Allow flows to move south as conditions allow.	Protect within basin and downstream habitat and wildlife.
Southern WCA-3A S	Stage decreased by 0.11'		
WCA-3B	Stage decreased by 0.08'	Maintain recession rates of less than 0.10 feet per week in this basin, letting the water move south when conditions allow.	Protect within basin and downstream habitat and wildlife.
ENP-SRS	Stage decreased by 0.09'	Make discharges to ENP according to COP and TTFF protocol while adaptively considering upstream and downstream ecological conditions.	Protect within basin and upstream habitat and wildlife.
Taylor Slough	Stage changes ranged from -0.16' to +0.02'	Move water southward as possible.	When available, provide freshwater buffer for downstream conditions.
FB- Salinity	Salinity changes ranged -1.0 to +2.8	Move water southward as possible.	When available, provide freshwater to maintain low salinity buffer and promote water movement.

Biscayne Bay

As shown in **Figure BB-1**, mean total inflow to Biscayne Bay was 262 cfs and the previous 30-day mean inflow was 330 cfs. The seven-day mean salinity was 25.6 at BBCW8 and 15.0 at BBCW10, both below the preferred maximum salinity of 35 for these sites. Data provided by Biscayne National Park.

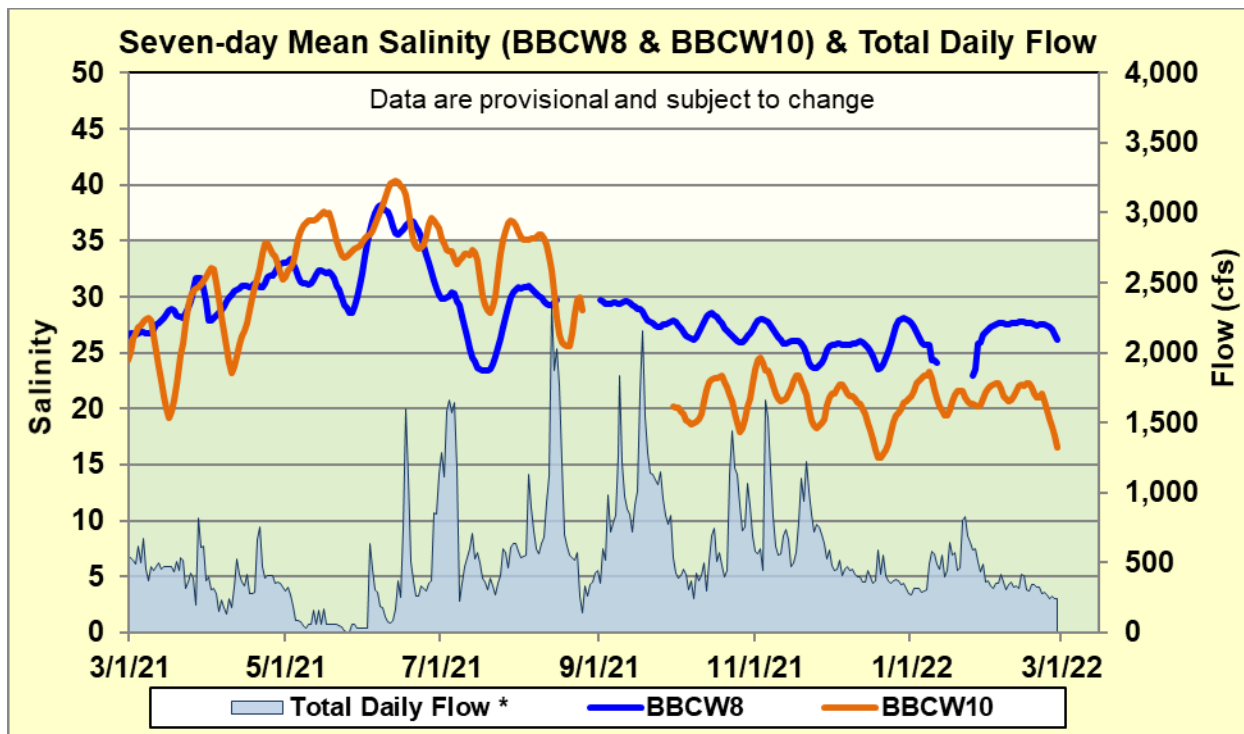


Figure BB-1. Seven-day mean salinity at BBCW8 and BBCW10 and total daily flow in Biscayne Bay. Total daily flow was calculated using flow from structures S20G, S20F, S21, S21A, S123, and S700P.