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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: February 8, 2023

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Weather Conditions and Forecast

Mostly clear skies with no rainfall over the interior are expected through Wednesday. On Thursday, widely scattered afternoon showers and possible thunderstorms may occur over the western interior of the District. On Friday, widespread scattered showers will occur over the northwestern interior late at night in advance of a cold front. These frontal showers will push southward across the SFWMD on Saturday, and mostly end by the late afternoon. Much cooler and drier weather will follow, with no rainfall on Sunday and Monday. Much below average SFWMD total rainfall is expected for the 7-day period ending next Tuesday morning.

Kissimmee

Releases were made from East Lake Toho and Lake Toho to continue their recessions to their respective low pools on June 1. Weekly average discharges on February 5, 2023 at S-65 were 1,400 cfs and 1,400 cfs at S-65A. Mean weekly water depth on the Kissimmee River floodplain of 0.44 ft was approximately the same as for the previous week. The weekly average concentration of dissolved oxygen in the Kissimmee River decreased from 6.5 mg/L the previous week to 6.2 mg/L for the week ending February 5, 2023, above both the potentially lethal level and the physiologically stressful range for largemouth bass and other sensitive species.

Lake Okeechobee

Lake Okeechobee stage was 15.96 feet NGVD on February 5, 2023, which is 0.08 feet lower than the previous week and 0.38 feet lower than a month ago (**Figure LO-1**). Lake stage is on the boundary of the Intermediate and the Low sub-band and was 0.80 feet above the upper limit of the ecological envelope. Lake stage was above 16 feet for 3 months and is the highest for this time of year since 2016. According to NEXRAD, 0.43 inches of rain fell directly on the Lake last week. Average daily inflows (excluding rainfall) decreased from the previous week, going from 1,716 cfs to 1,497 cfs. Average daily

outflows (excluding evapotranspiration) increased from the previous week, going from 2,930 cfs to 3,304 cfs. The most recent satellite image (February 6, 2023) from NOAA's Harmful Algal Bloom Monitoring System showed low bloom potential across much of the Lake.

Estuaries

Total inflow to the St. Lucie Estuary averaged 568 cfs over the past week with 314 cfs coming from Lake Okeechobee. Mean salinities decreased at all sites over the past week. Salinity in the middle estuary was in the optimal range (10-25) for adult eastern oysters.

Total inflow to the Caloosahatchee Estuary averaged 2,053 cfs over the past week with 1,378 cfs coming from Lake Okeechobee. Mean surface surface salinities remained the same at S-79, Val I-75, and Sanibel, increased at Ft. Myers and Shell Point, and decreased at Cape Coral. Salinities were in the optimal range (0-10) for tape grass in the upper estuary. Salinities were in the optimal range for adult eastern oysters at Cape Coral and Shell Point (10-25) and in the upper stressed range at Sanibel (>25).

Stormwater Treatment Areas

For the week ending Sunday, February 5, 2023, 4,400 ac-ft of Lake Okeechobee water was delivered to the FEBs/STAs. The total amount of Lake releases sent to the FEBs/STAs in WY2023 (since May 1, 2022) is approximately 24,900 ac-feet. The total amount of inflows to the STAs in WY2023 is approximately 996,000 ac-feet. Most STA cells are at or near target stage, except STA-5/6 where most cells are below target. STA-1E Western Flow-way is offline for post-construction vegetation grow in, STA-3/4 Eastern Flow-way is offline for vegetation rehabilitation/drawdown, and STA-2 Flow-way 2 is offline for post-construction vegetation grow in. Operational restrictions are in effect in STA-1E Central and Eastern Flow-ways, STA-1W Eastern, Western, and Northern Flow-ways, and STA-2 Flow-ways 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

Last week rates of stage change within the EPA moved for the most part into the "good" category, with NESRS an exception. Depths remain above average in WCA-3A northeast (but also remain one of the shallowest regions in the WCAs), maintaining above average conditions could be important for wading bird nesting in that region. 10,000 wading birds are foraging in WCA-3A North both on the west and east side of the Miami canal, large flocks are also feeding along the coastal margins of ENP. 2,000 birds are feeding in the western marl prairies, but none yet in Shark River or Taylor Sloughs. Storks and Egrets have begun nesting in numbers in the western coastal colonies, and Egrets have begun nesting within multiple colonies within the WCAs. FWCC detected endangered Black Rails in WCA-3A South last week. Taylor slough stages increased at all stations last week now well above the pre-Florida Bay initiative average. Average salinity decreased again last week in Florida Bay and all the regions are now within the IQR.

Biscayne Bay

Total inflow to Biscayne Bay averaged 369 cfs and the previous 30-day mean inflow averaged 296 cfs. The seven-day mean salinity was 27.8 at BBCW8 and 23.0 at BBCW10, both within the ideal salinity range for estuarine organisms in this region (salinity less than 35). Data provided by Biscayne National Park.

Supporting Information

Kissimmee Basin

Upper Kissimmee

On February 5, 2023, mean daily lake stages were 57.1 feet NGVD (0.9 feet below schedule) in East Lake Toho, 54.1 feet NGVD (0.9 feet below schedule) in Lake Toho, and 51.7 feet NGVD (0.6 below schedule) in Lakes Kissimmee-Cypress-Hatchineha (KCH) (**Table KB-1, Figures KB-1-3**).

Lower Kissimmee

For the week ending February 5, 2023, mean weekly discharge was 1,400 cfs at S-65 and 1,400 cfs at S-65A. Mean weekly discharge from the Kissimmee River was 1,400 cfs at S-65D and 1,400 cfs at S-65E (**Table KB-2**). Mean weekly headwater stages were 46.3 feet NGVD at S-65A and 28.4 feet NGVD at S-65D on February 5, 2023. Mean weekly river channel stage of 37.5 ft NGVD on February 5, 2023 was unchanged from the previous week's mean (**Figure KB-4**). Mean weekly water depth on the Kissimmee River floodplain of 0.44 ft for the week ending February 5, 2023 was approximately the same as the previous week's mean (**Table KB-2, Figure KB-5**). The weekly average concentration of dissolved oxygen in the Kissimmee River decreased from 6.5 mg/L the previous week to 6.2 mg/L for the week ending February 5, 2023 (**Table KB-2, Figure KB-6**).

Water Management Recommendations

Continue stage recessions in Lake Toho and East Lake Toho to their June 1 low pools. Temporarily for the remainder of this dry season, modify the IS-14-50.0 discharge plan as follows: starting Monday, February 6, reduce discharge at S-65/S-65A at a rate of 25 cfs per week while stage in KCH is at or above 51 ft. Once 51 ft is reached, continue discharge reductions at 50% of the of the maximum rampdown rates given in Table KB-3 (**Figure KB-7**).

Table KB-1. Average discharge for the preceding seven days, Sunday’s average daily stage and Sunday’s average daily departure from KCOL flood regulation lines or temporary schedules. All data are provisional.

Water Body	Structure	Stage Monitoring Site	Weekly (7-Day) Average Discharge (cfs)	Sunday Lake Stage (feet NGVD) ^a	Schedule Type ^b	Sunday Schedule Stage (feet NGVD)	Sunday Departure from Regulation (feet)	
							2/5/23	1/29/23
Lakes Hart and Mary Jane	S-62	LKMJ	0	61.1	R	61.0	0.1	0.0
Lakes Myrtle, Preston and Joel	S-57	S-57	9	61.3	R	61.3	0.0	0.0
Alligator Chain	S-60	ALLI	0	64.0	R	64.0	0.0	0.0
Lake Gentry	S-63	LKGT	6	61.6	R	61.5	0.1	0.1
East Lake Toho	S-59	TOHOE	140	57.1	R	58.0	-0.9	-0.8
Lake Toho	S-61	TOHOW S-61	470	54.1	R	55.0	-0.9	-0.8
Lakes Kissimmee, Cypress and Hatchineha	S-65	KUB011 LKIS5B	1400	51.7	R	52.3	-0.6	-0.6

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.

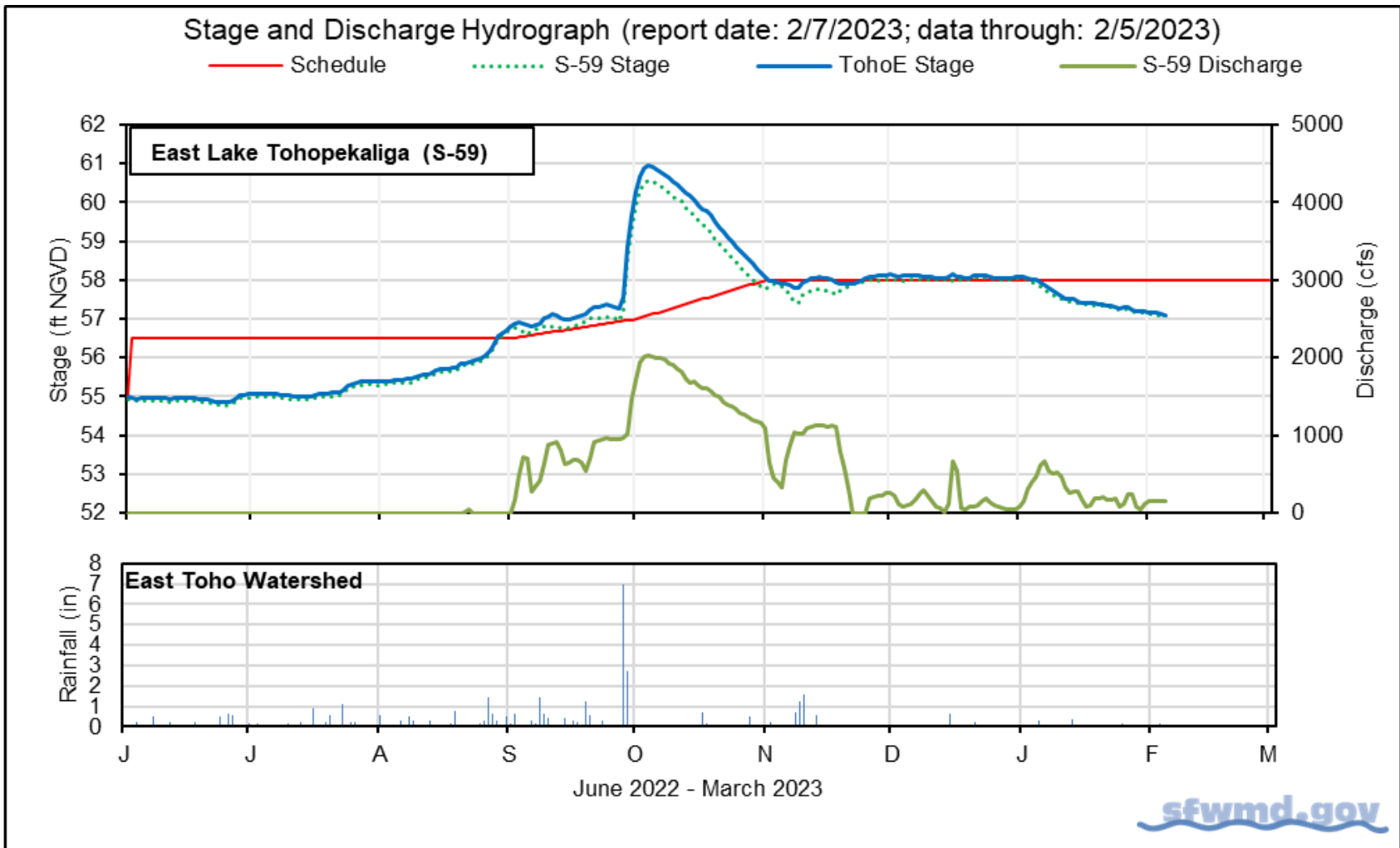


Figure KB-1. East Lake Toho regulation schedule, stage, discharge and rainfall.

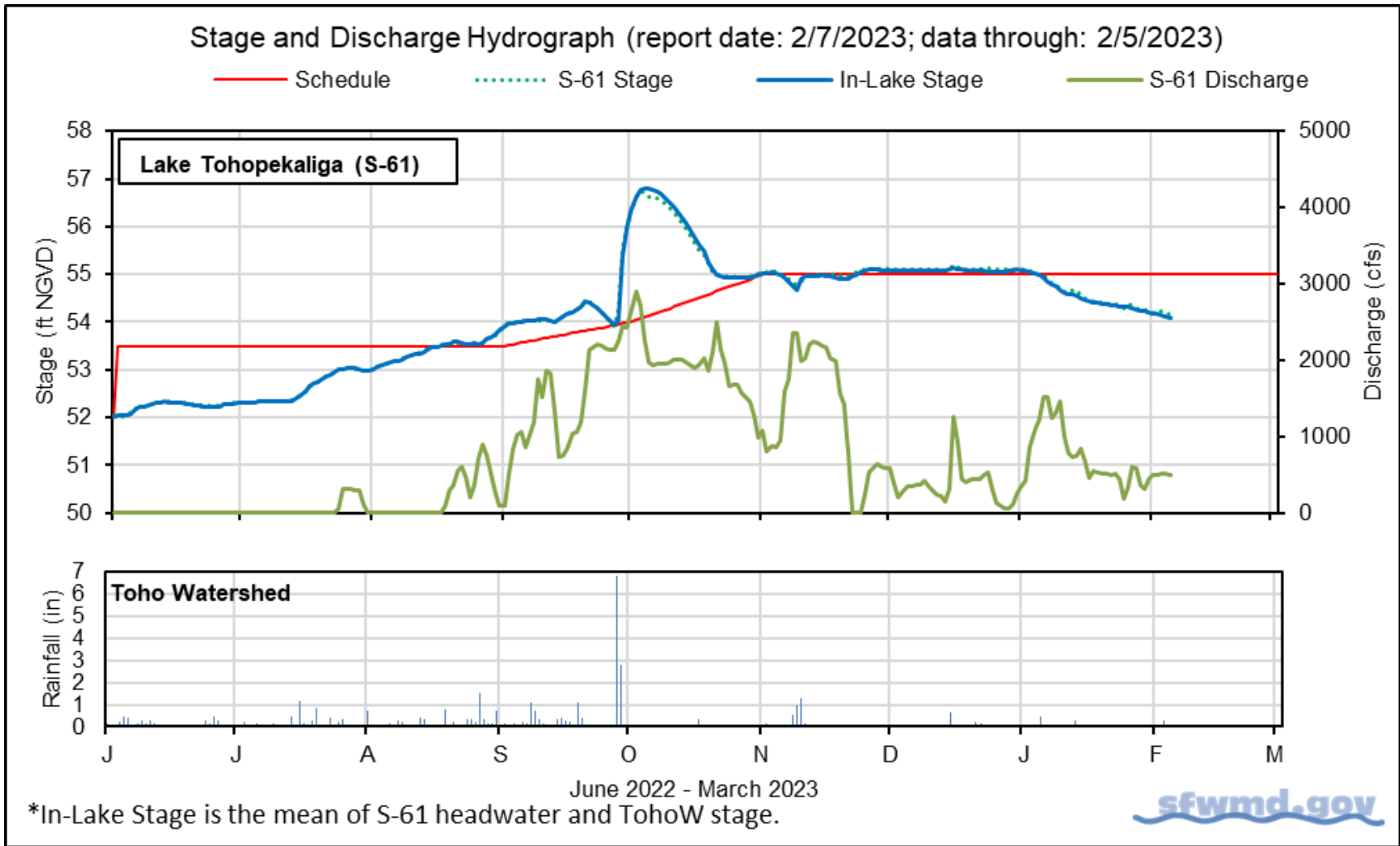


Figure KB-2. Lake Toho regulation schedule, stage, discharge and rainfall.

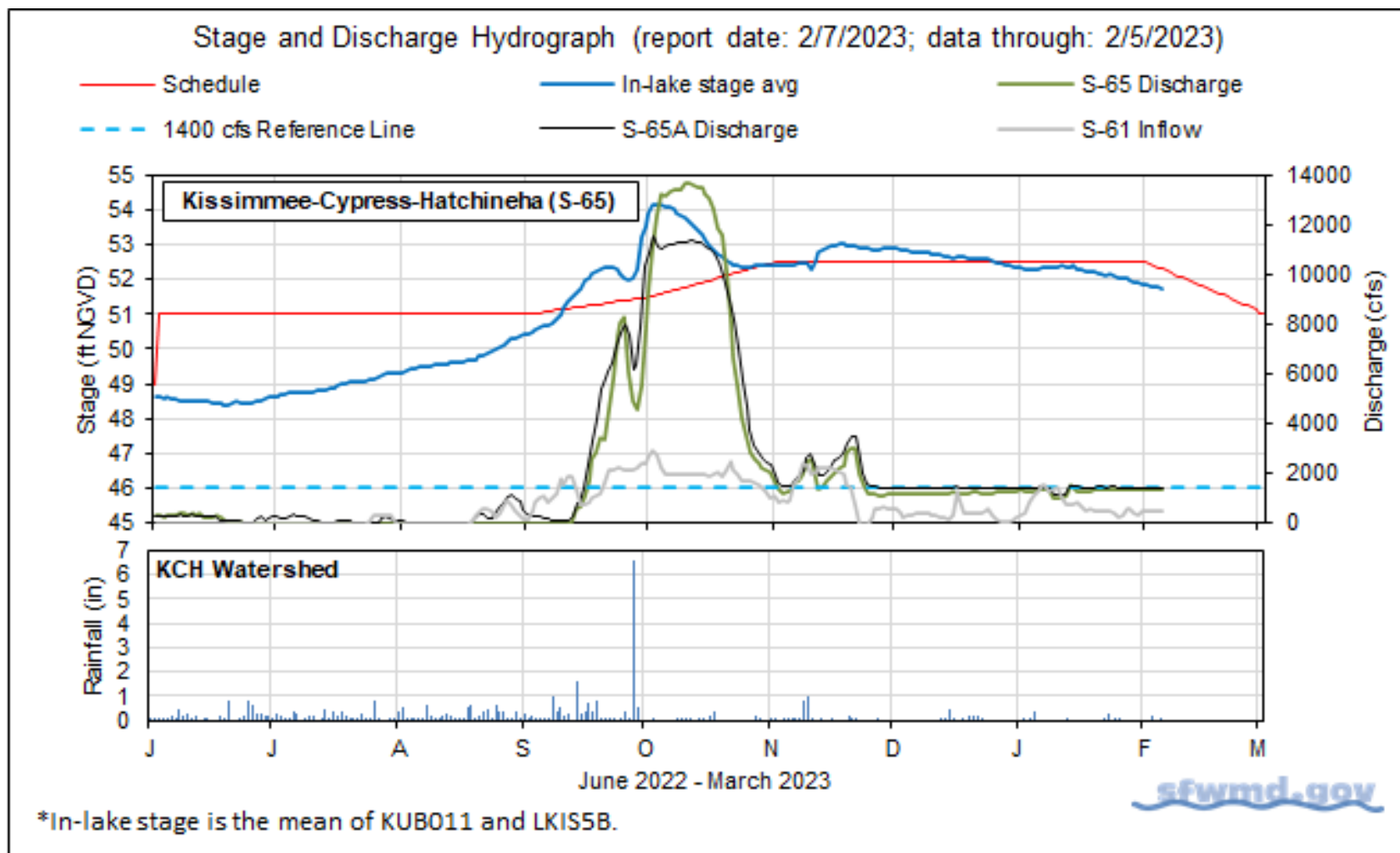


Figure KB-3. Lakes Kissimmee, Cypress and Hatchineha regulation schedule, stage, discharge and rainfall.

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	Sunday Daily Average	Weekly Average for Previous Seven Day Periods			
		2/5/23	2/5/23	1/29/23	1/22/23	1/15/23
Discharge	S-65	1,400	1,400	1,300	1,300	1,200
Discharge	S-65A ^a	1,400	1,400	1,400	1,400	1,300
Headwater Stage (feet NGVD)	S-65A	46.3	46.3	46.3	46.3	46.5
Discharge	S-65D ^b	1,400	1,400	1,400	1,300	1,400
Headwater Stage (feet NGVD)	S-65D ^c	28.4	28.4	28.4	28.4	28.3
Discharge (cfs)	S-65E ^d	1,400	1,400	1,400	1,300	1,500
Discharge (cfs)	S-67	0	0	0	0	0
Dissolved Oxygen (mg/L) ^e	Phase I, II/III river channel	6.4	6.2	6.5	7.3	6.8
River channel mean stage ^f	Phase I river channel	37.5	37.5	37.5	37.5	37.4
Mean depth (feet) ^g	Phase I floodplain	0.43	0.44	0.46	0.44	0.57

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. Mean of five river channel stations (PC62, KRDR02, KRBN, PC33, PC11) in the Phase I area.

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

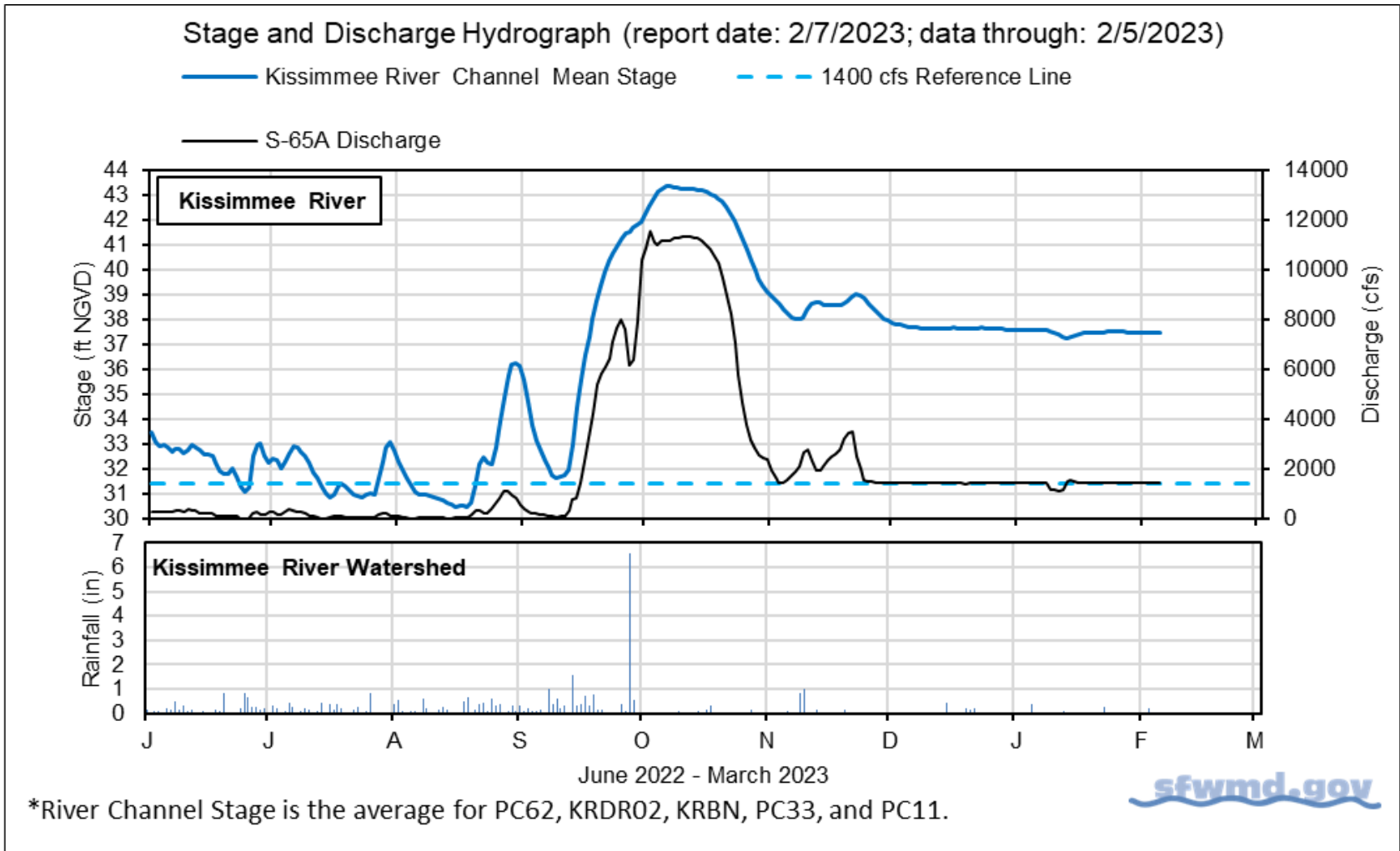


Figure KB-4. Kissimmee River stage, discharge and rainfall.

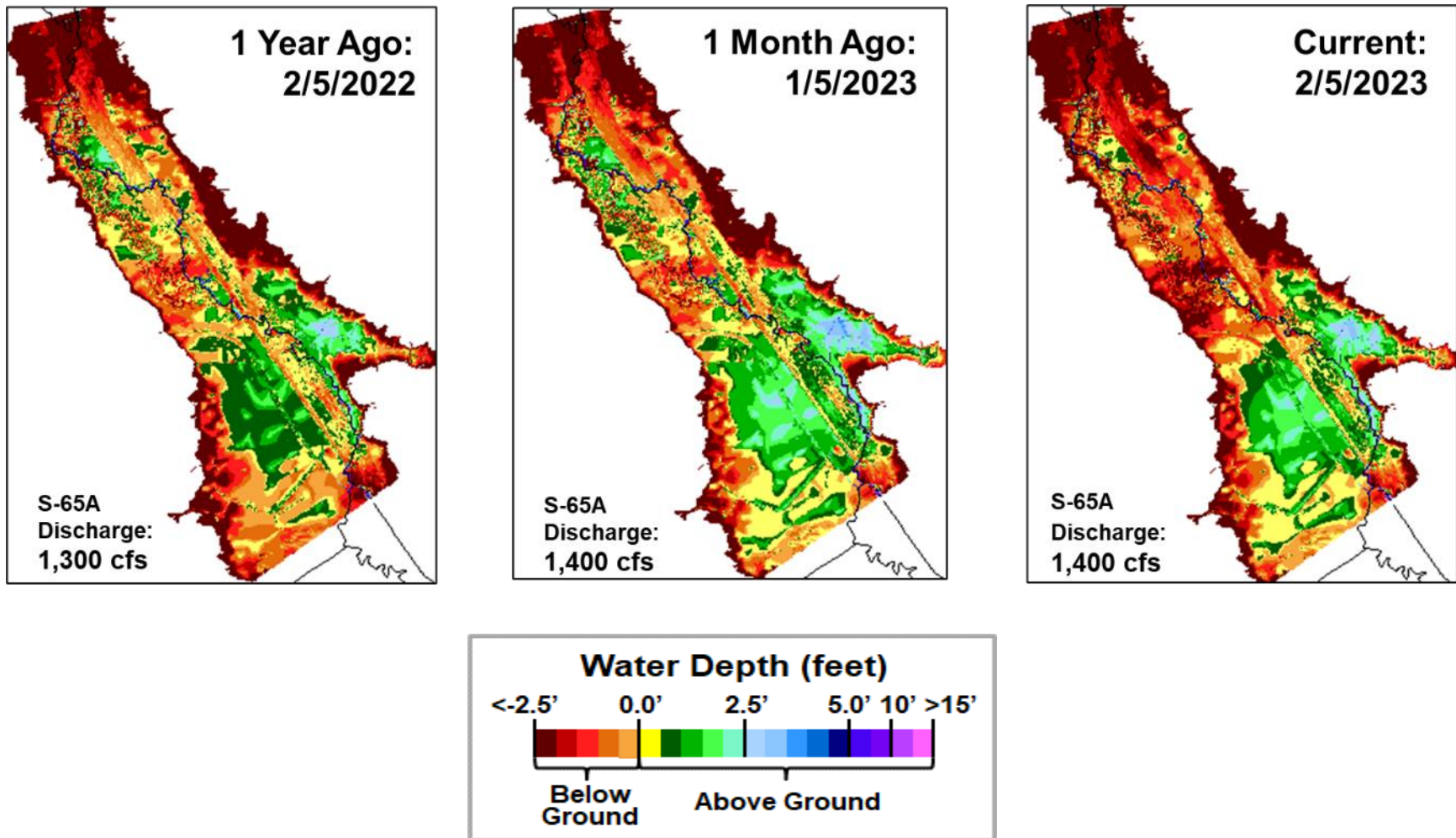
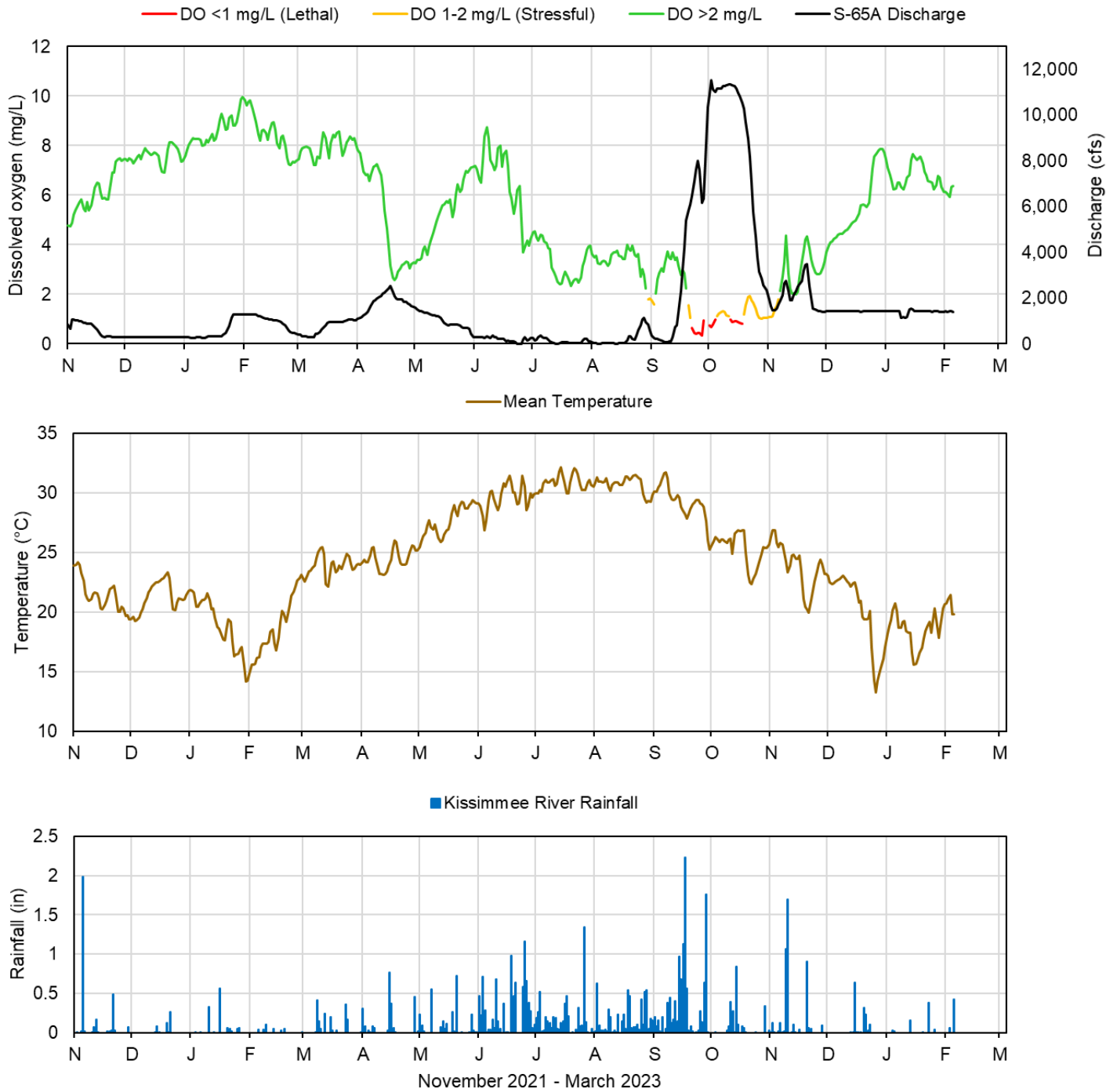


Figure KB-5. Phase I area Kissimmee River floodplain water depths (from left to right) one year ago, one month ago and current.



Report Date: 2/7/2023; data are through: 2/5/2023



Figure KB-6. 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, KRDR02, KRBN, PC33, PC11, PD62R, and PD42R with an average of one stations reporting this week. Rainfall values are daily totals for Kissimmee River (Pool BCD) AHED watershed.

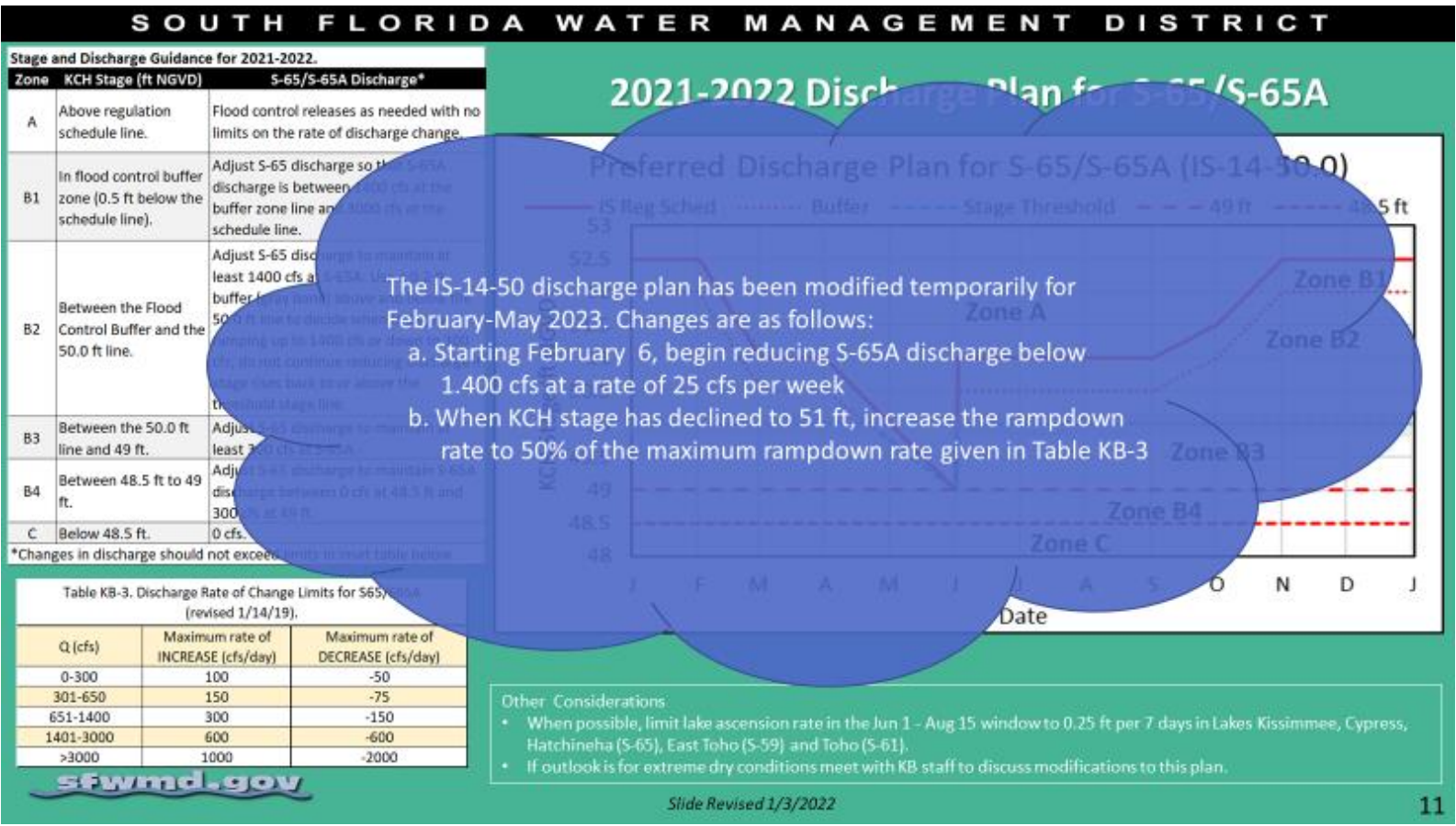


Figure KB-7. IS-14-50 Discharge Plan for S65/S65A with discharge rate of change limits (revised 1/14/19).

Lake Okeechobee

Lake Okeechobee stage was 15.96 feet NGVD on February 5, 2023, which is 0.08 feet lower than the previous week and 0.38 feet lower than a month ago (**Figure LO-1**). Lake stage is on the boundary of the Intermediate and the Low sub-band (**Figure LO-2**) and was 0.80 feet above the upper limit of the ecological envelope (**Figure LO-3**). According to NEXRAD, 0.43 inches of rain fell directly on the Lake last week.

Average daily inflows (excluding rainfall) decreased from the previous week, going from 1,716 cfs to 1,497 cfs. Average daily outflows (excluding evapotranspiration) increased from the previous week, going from 2,930 cfs to 3,304 cfs. The highest inflow came from the Kissimmee River (C-38 Canal; 1,411 cfs). Outflows to the west via the S-77 structure averaged 1,494 cfs for the week. Outflows to the east via the S-308 structure averaged 527 cfs and flows south via the S-350 structures averaged 933 cfs. **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 6, 2023) from NOAA's Harmful Algal Bloom Monitoring System showed low bloom potential across the Lake (**Figure LO-6**).

1 Month Ago:
01/06/2023

Current:
02/05/2023

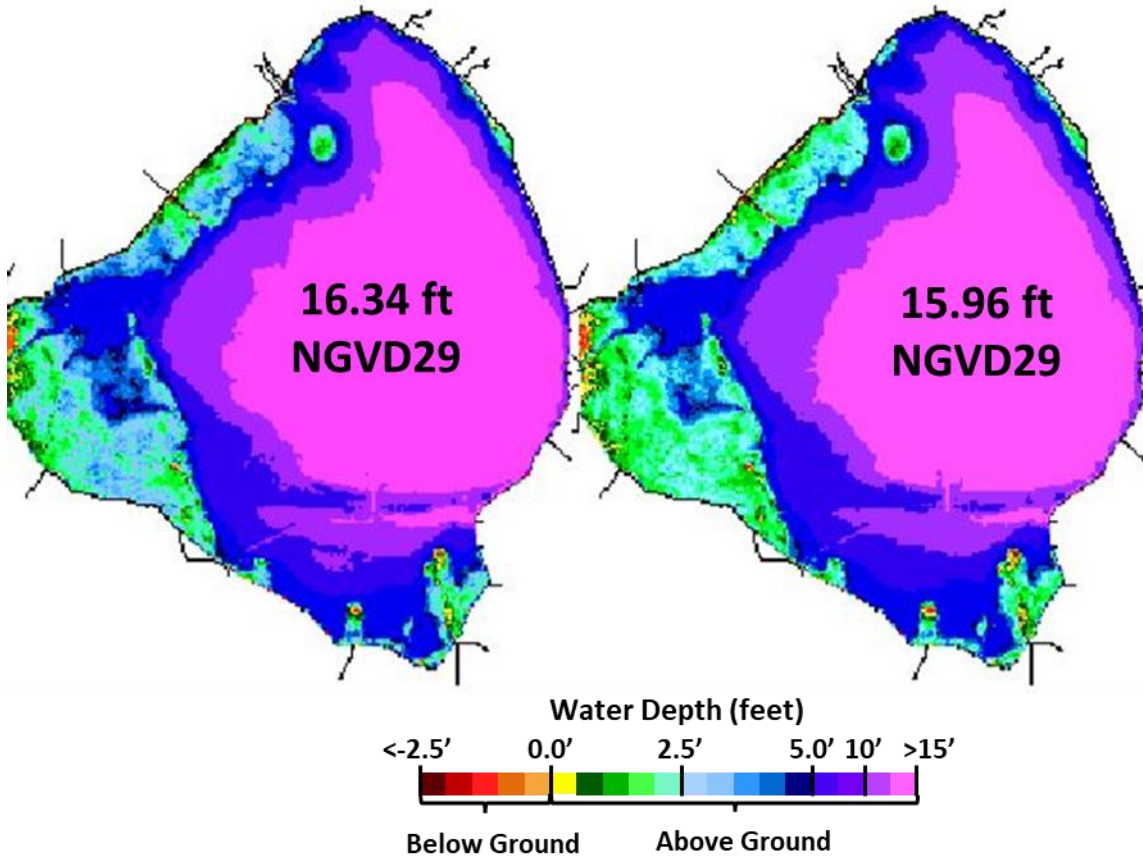


Figure LO-1. Lake Okeechobee water depth estimates based on South Florida Water Depth Assessment Tool (SFWDAT).

Lake Okeechobee Water Level History and Projected Stages

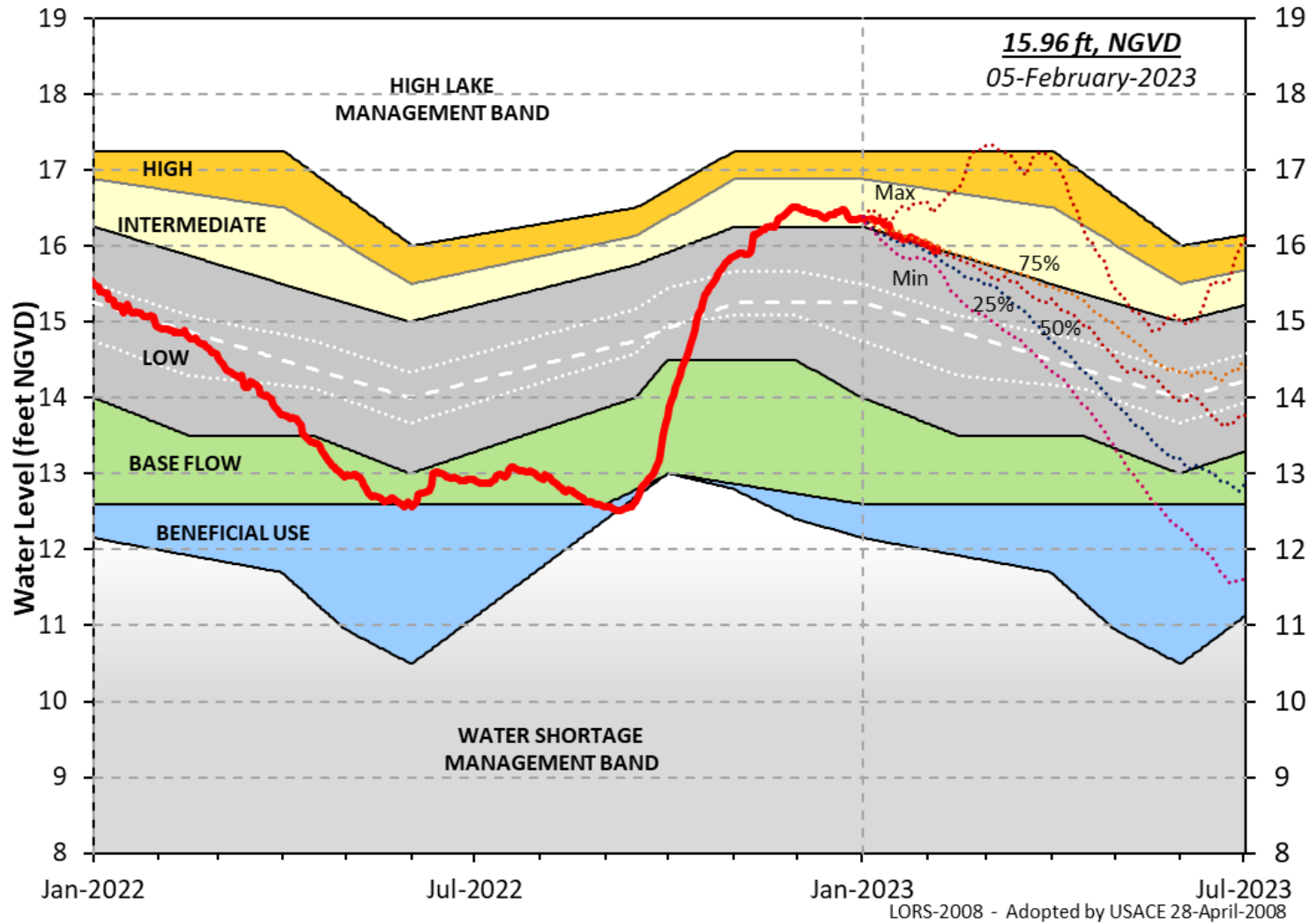


Figure LO-2. Recent Lake Okeechobee stages with projected stages based on a dynamic position analysis.

Lake Okeechobee Stage vs Ecological Envelope

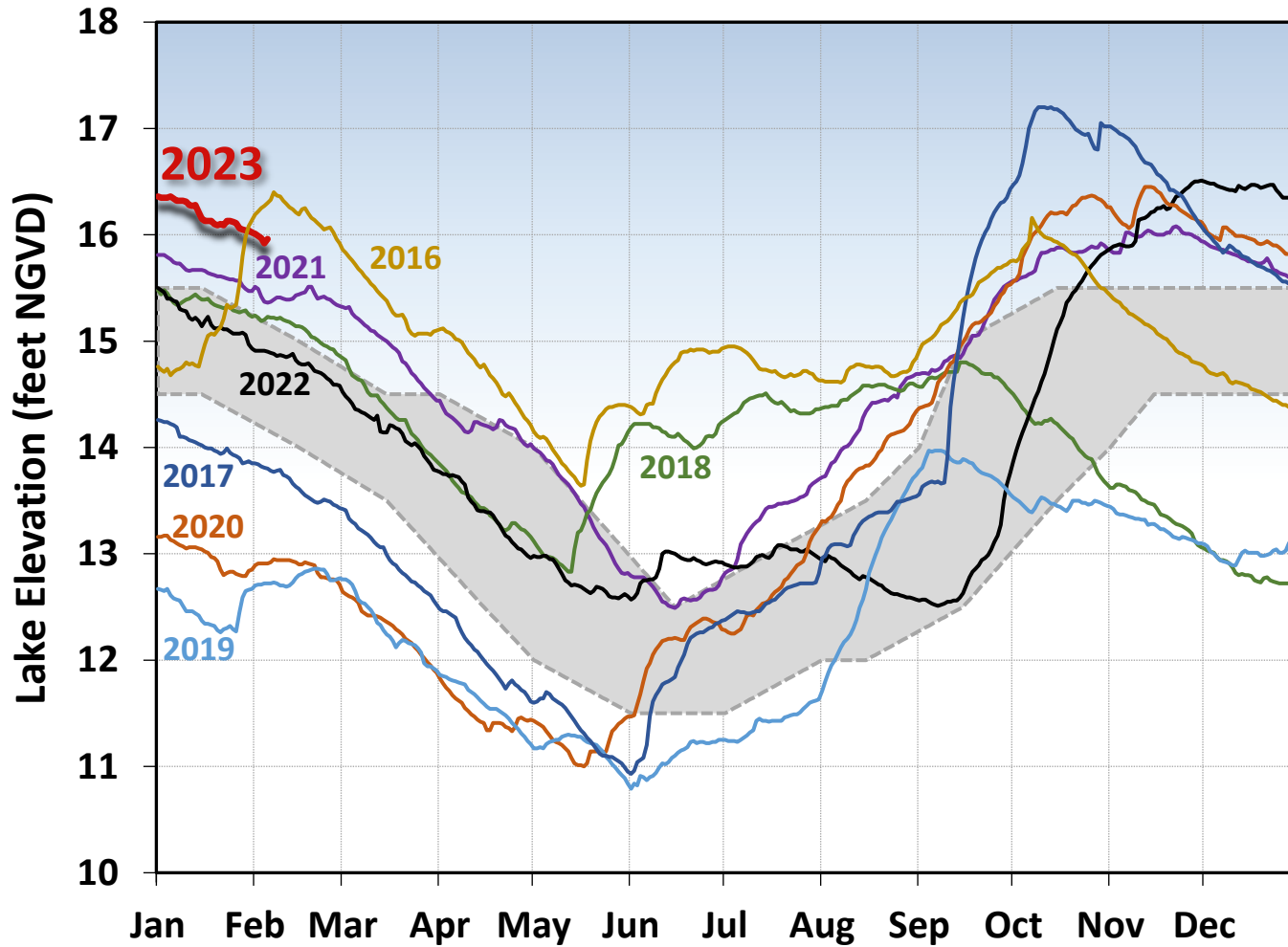


Figure LO-3. The prior seven years of annual stage hydrographs for Lake Okeechobee in comparison to the ecological envelope.

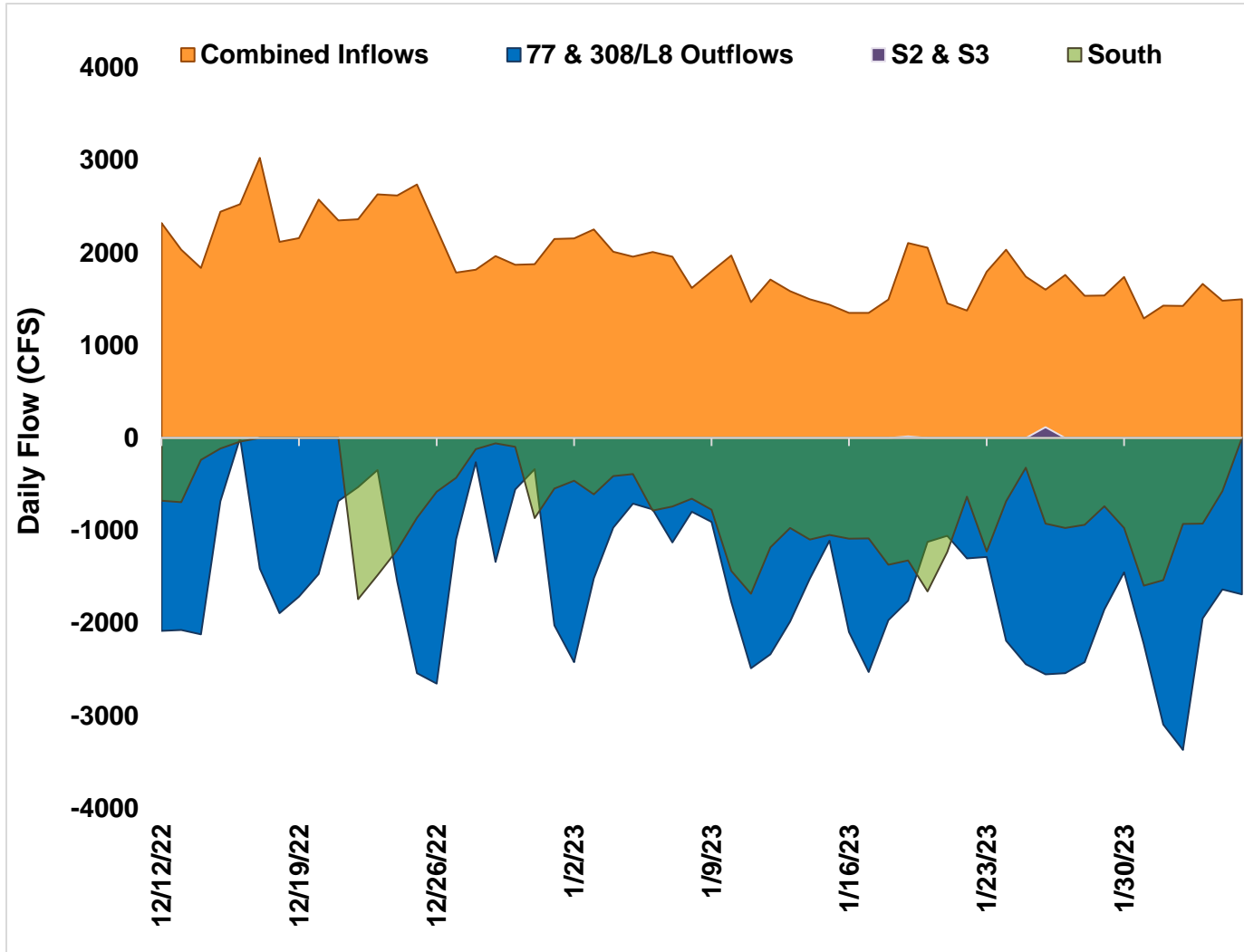


Figure LO-4. Major inflows (orange) to and outflows east and west (blue) from Lake Okeechobee. Outflows south are shown in green. Flows into Lake Okeechobee from the L-8 canal through S-271 (formerly Culvert 10A) or from the C-44 canal through the S-308 are included as inflows. Conversely, flows from 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.

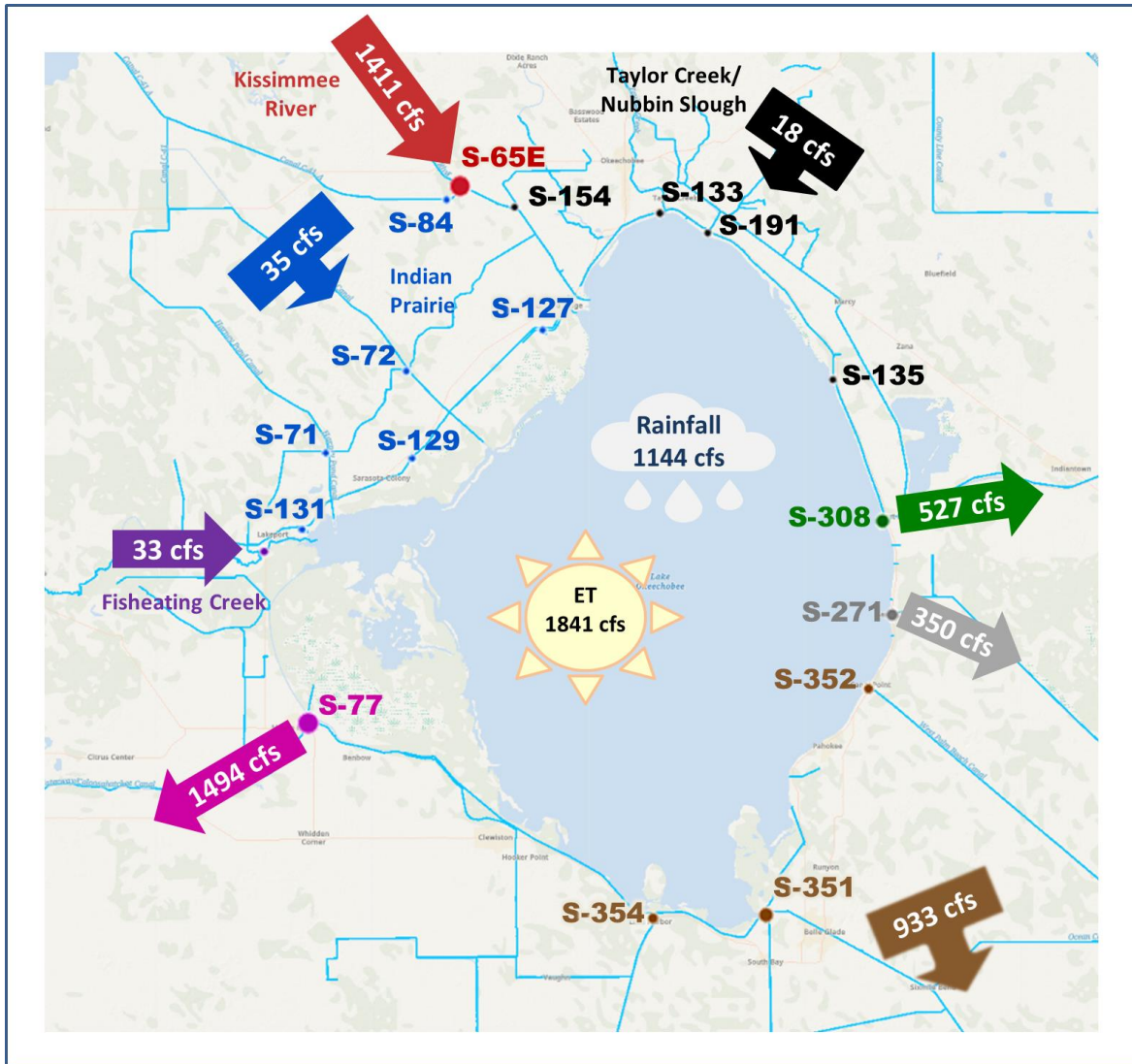


Figure LO-5. Inflows into Lake Okeechobee from Indian Prairie basins, Taylor Creek/Nubbin Slough, Kissimmee River and Fisheating Creek, and outflows to the west via S-77, to the east via S-308, to the south via S-351, S-352, S-354, and to southeast via S-271 (formerly Culvert 10A) for the week of January 30 – February 05, 2023.

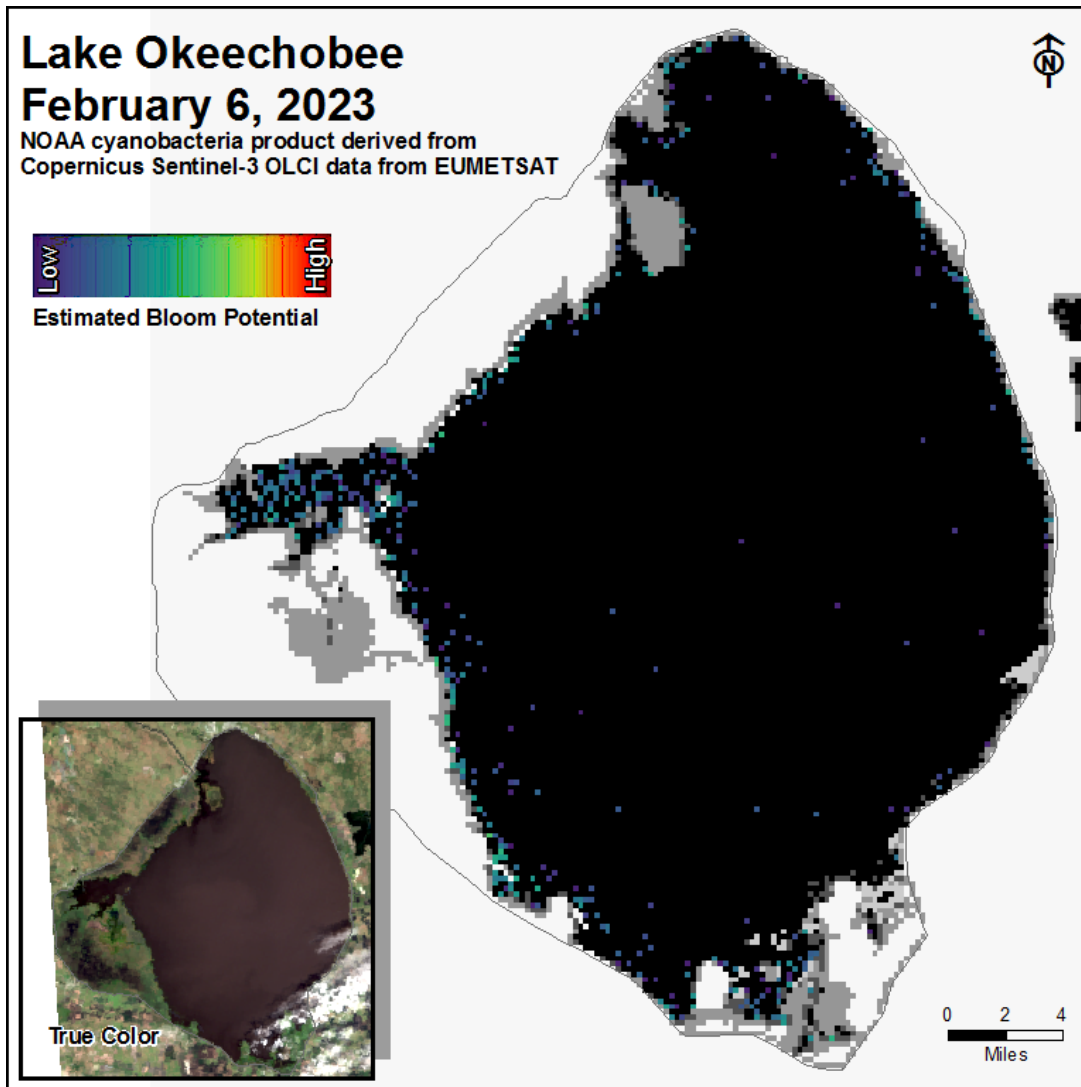


Figure LO-6. Cyanobacteria bloom potential on February 6, 2023, based on NOAA's harmful algal bloom monitoring system. Gray color indicates cloud cover.

Estuaries

St. Lucie Estuary

Over the past week, mean total inflow to the St. Lucie Estuary was 568 cfs (**Figures ES-1 and ES-2**) and the previous 30-day mean inflow was 179 cfs. For comparison, the historical provisional mean inflows from the contributing areas are shown in **Figure ES-2**.

Over the past week, surface salinities decreased at all sites within the estuary (**Table ES-1 and Figure ES-3**). The seven-day moving average of the surface and bottom salinities at the US1 Bridge was 17.9. Salinity conditions in the middle estuary were estimated to be within the optimal range for adult eastern oysters (**Figure ES-4**). The mean larval oyster recruitment rate reported by the Fish and Wildlife Research Institute (FWRI) was 0 spat/shell for January (**Figure ES-5**).

Caloosahatchee River Estuary

Over the past week, mean total inflow to the Caloosahatchee River Estuary was 2,053 cfs (**Figures ES-6 and ES-7**) and the previous 30-day mean inflow was 2,055 cfs. For comparison, the historical provisional mean inflows from the contributing areas are shown in **Figure ES-7**.

Over the past week, surface salinities remained the same at S-79, Val I-75, and Sanibel, increased at Ft. Myers and Shell Point, and decreased at Cape Coral (**Table ES-2 and Figures ES-8 and ES-9**). The seven-day mean salinities (**Table ES-2**) were in the optimal range (0-10) for tape grass in the upper estuary. The seven-day mean salinity values were within the optimal range for adult eastern oysters at Cape Coral and Shell Point, and in the stressed range at Sanibel (**Figure ES-10**). Oyster recruitment data in the CRE are not available at this time; FWRI will redeploy recruitment collectors once water quality conditions improve.

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 a steady release at 2,000 cfs with estimated tidal basin inflows of 79 cfs. Model results from all scenarios predict daily salinity to be 1.2 or lower and the 30-day moving average surface salinity to be 0.5 or lower at Val I-75 at the end of the two-week period (**Table ES-3 and Figure ES-11**). This keeps predicted salinities in the upper estuary within the optimal salinity range (0-10) for tape grass.

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 3, 2023, that *Karenia brevis*, the Florida red tide dinoflagellate, was observed at bloom concentrations in eight samples collected from Lee County and one sample from Collier County over the past week. On the east coast, red tide was not observed in samples from St. Lucie, Martin, and Palm Beach counties.

Water Management Recommendations

Lake stage is in the Intermediate Sub-Band. Tributary conditions are normal. The LORS2008 release guidance suggests up to 4,000 cfs release at S-77 to the Caloosahatchee River Estuary and up to 1,800 cfs release at S-80 to the St. Lucie Estuary.

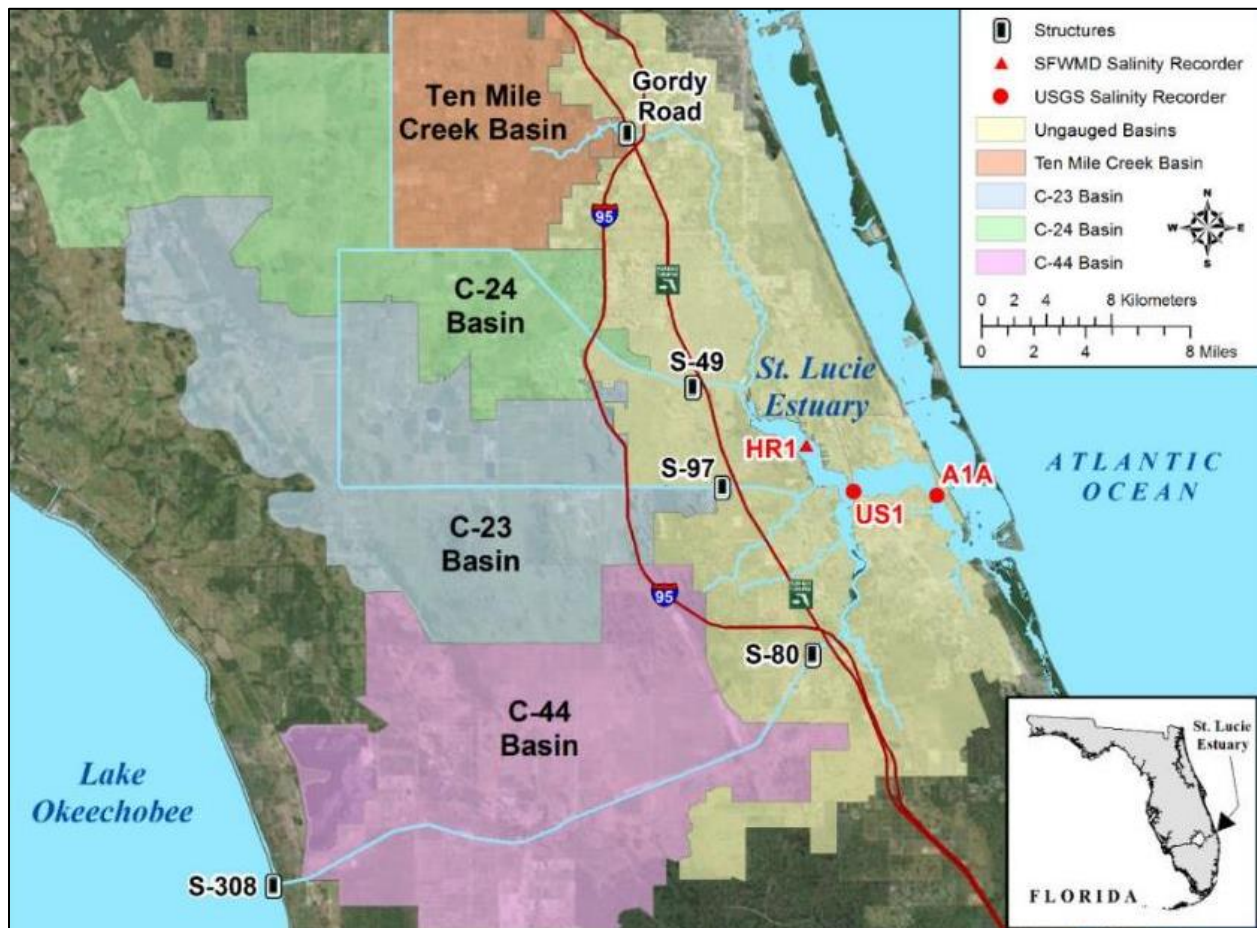


Figure ES-1. Basins, water control structures and salinity monitoring sites in the St. Lucie Estuary.

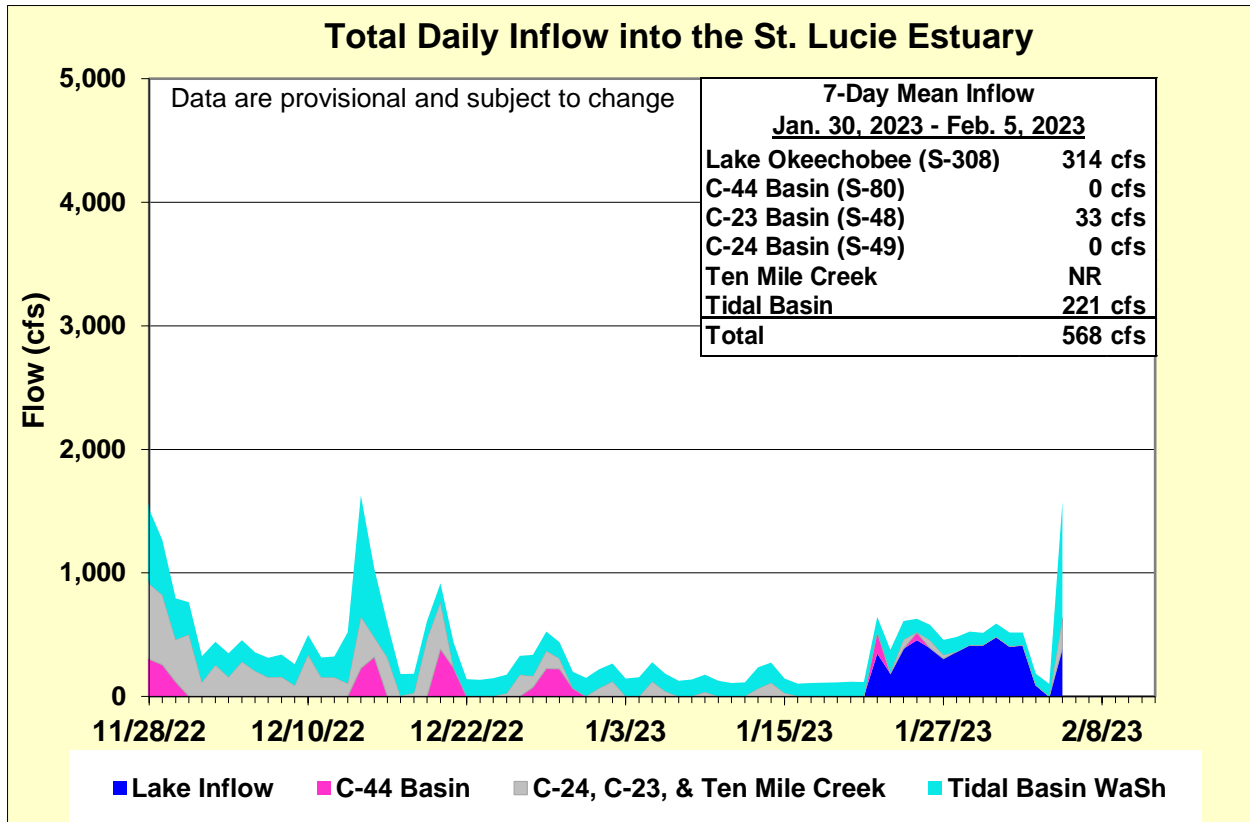


Figure ES-2. Total daily inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and Tidal Basins into the St. Lucie Estuary.

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 optimum salinity range for adult eastern oysters (*Crassostrea virginica*) in the estuary. Data are provisional.

Sampling Site	Surface	Bottom	Optimum Envelope
HR1 (North Fork)	13.2 (14.9)	14.9 (17.5)	10.0 – 25.0
US1 Bridge	17.1 (18.6)	18.7 (19.4)	10.0 – 25.0
A1A Bridge	25.3 (26.4)	28.6 (28.4)	10.0 – 25.0

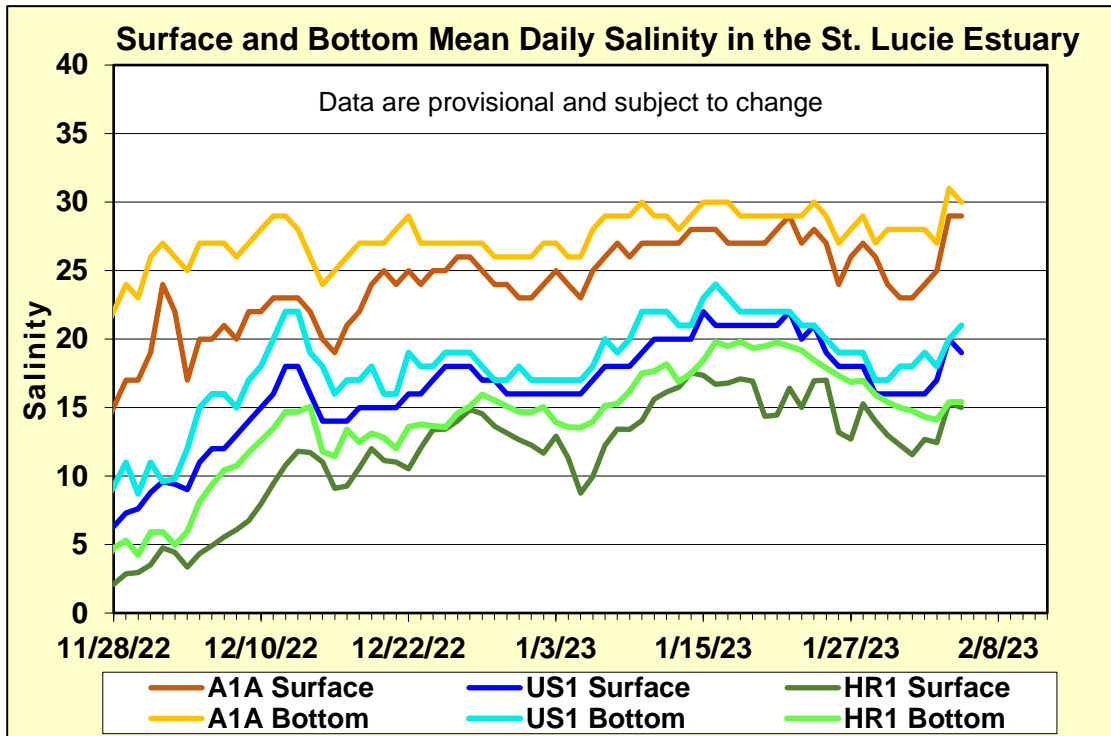


Figure ES-3. Mean daily salinity at the A1A, US1 and HR1 sites in the St. Lucie Estuary.

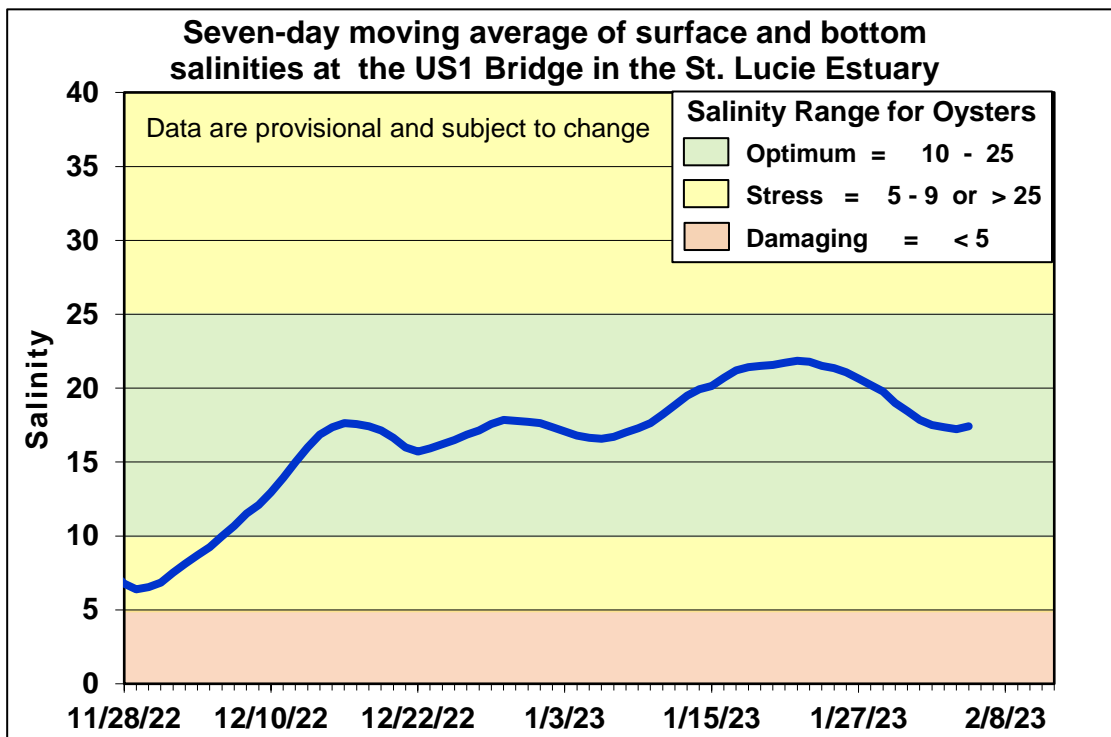


Figure ES-4. Seven-day moving average of the surface and bottom salinities at the US1 Bridge in the St. Lucie Estuary.

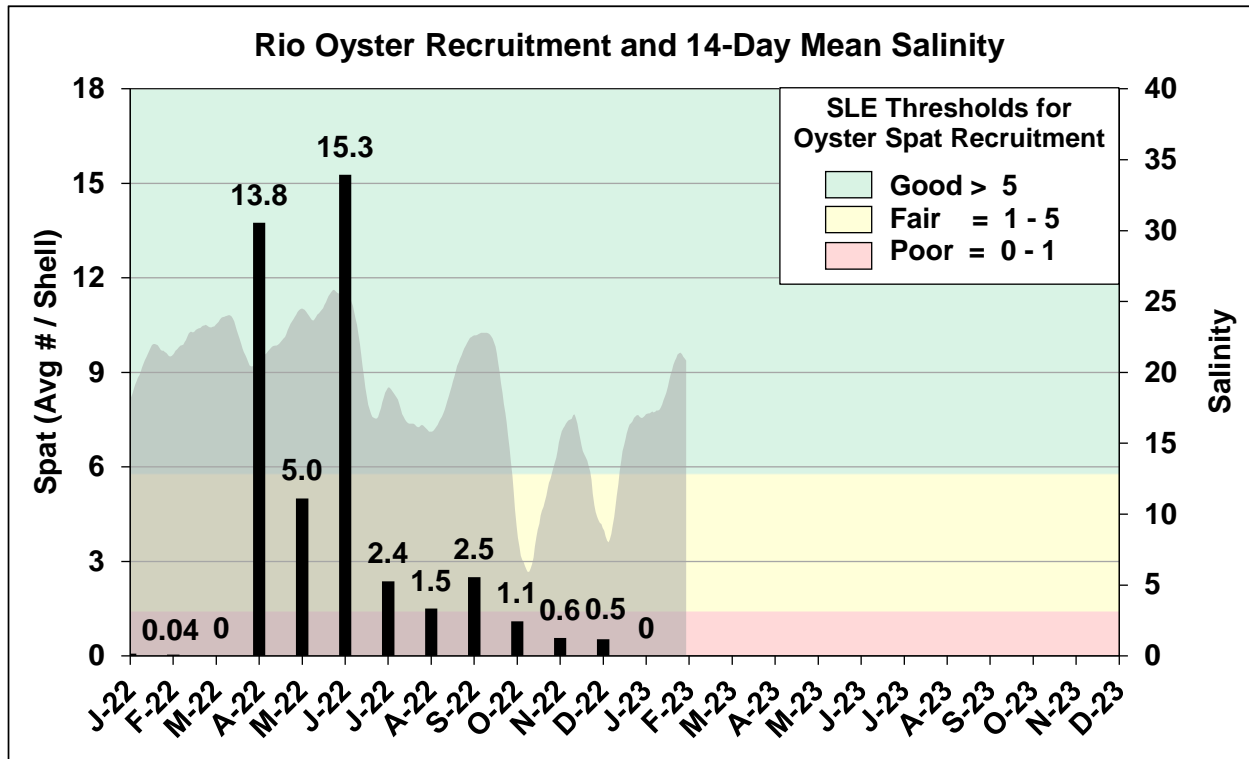


Figure ES-5. Mean oyster recruitment at the Rio oyster monitoring station and 14-day mean salinity at US1 Bridge.

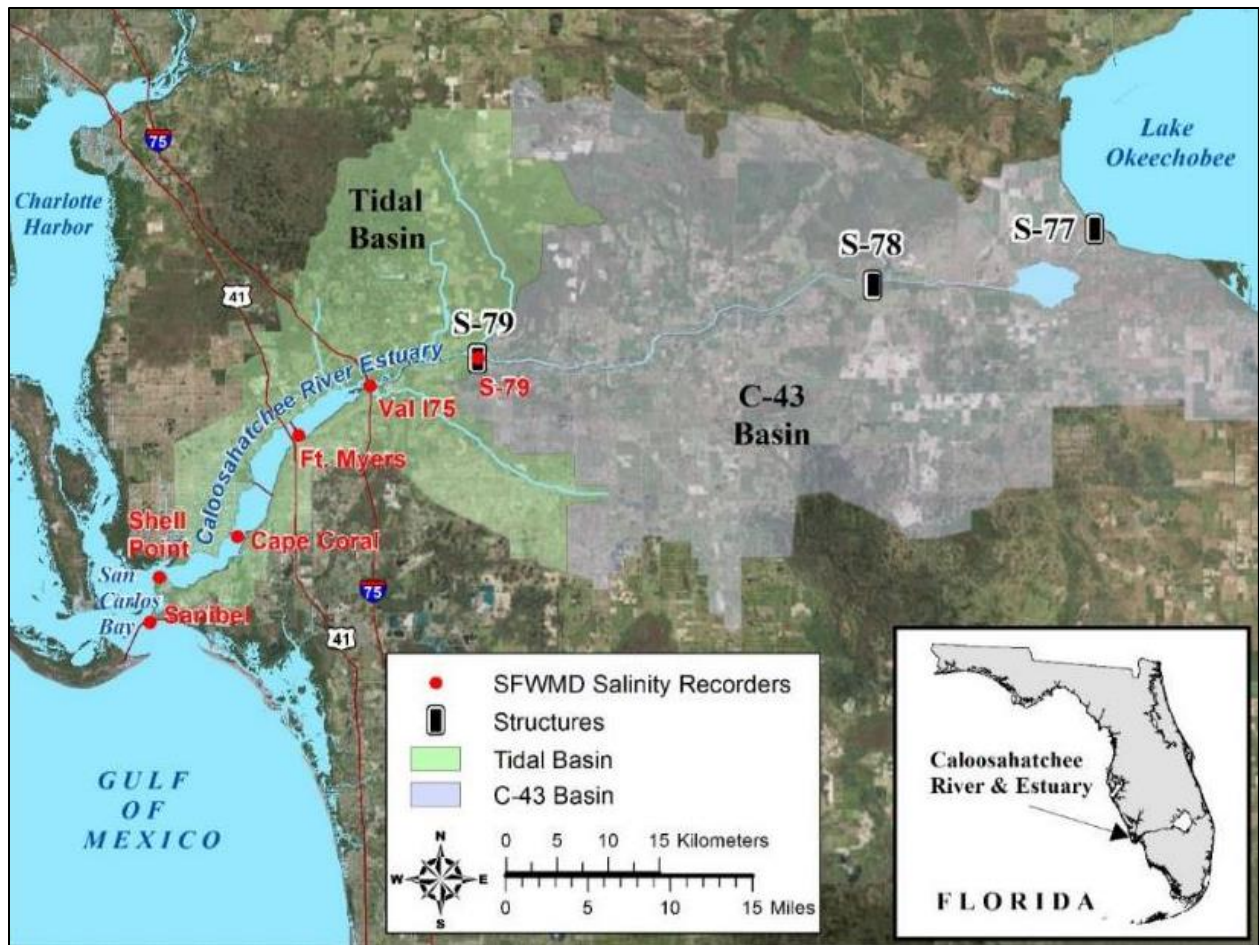


Figure ES-6. Basins, water control structures and salinity monitoring sites in the Caloosahatchee River Estuary.

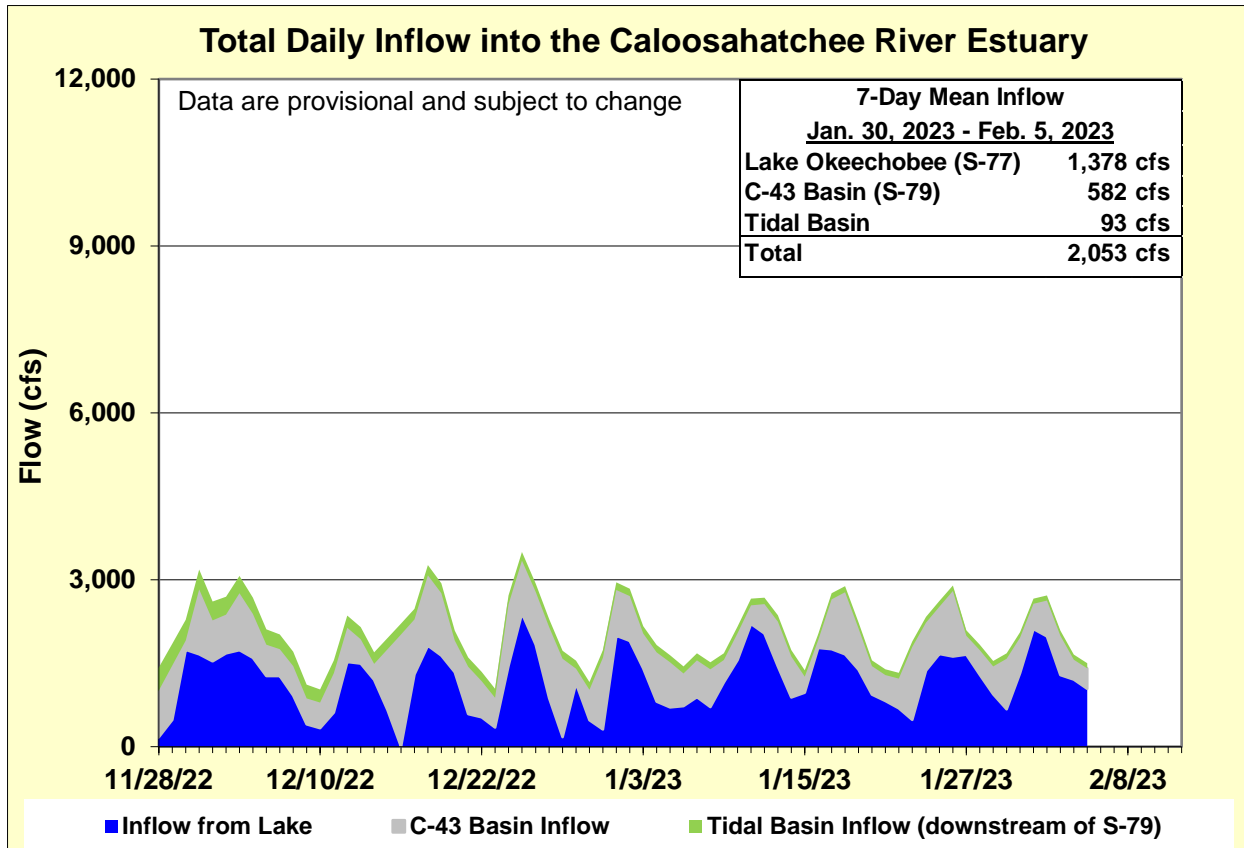


Figure ES-7. Total daily inflows from Lake Okeechobee, and runoff from the C-43 and Tidal basins into the Caloosahatchee River Estuary.

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 in the upper estuary sites is for the protection of tape grass and the envelope in the lower estuary is the optimum salinity range for adult eastern oysters (*Crassostrea virginica*). Data are provisional.

Sampling Site	Surface	Bottom	Optimum Envelope
S-79 (Franklin Lock)	0.2 (0.2)	0.2 (0.2)	0.0 – 10.0
Val I-75	0.2 (0.2)	0.2 (0.2)	0.0 – 10.0
Fort Myers Yacht Basin	4.4 (3.1)	8.7 (4.9)	0.0 – 10.0
Cape Coral	10.4 (10.7)	13.9 (13.1)	10.0 – 25.0
Shell Point	24.5 (24.3)	24.9 (24.7)	10.0 – 25.0
Sanibel	29.7 (29.7)	28.8 (28.9)	10.0 – 25.0

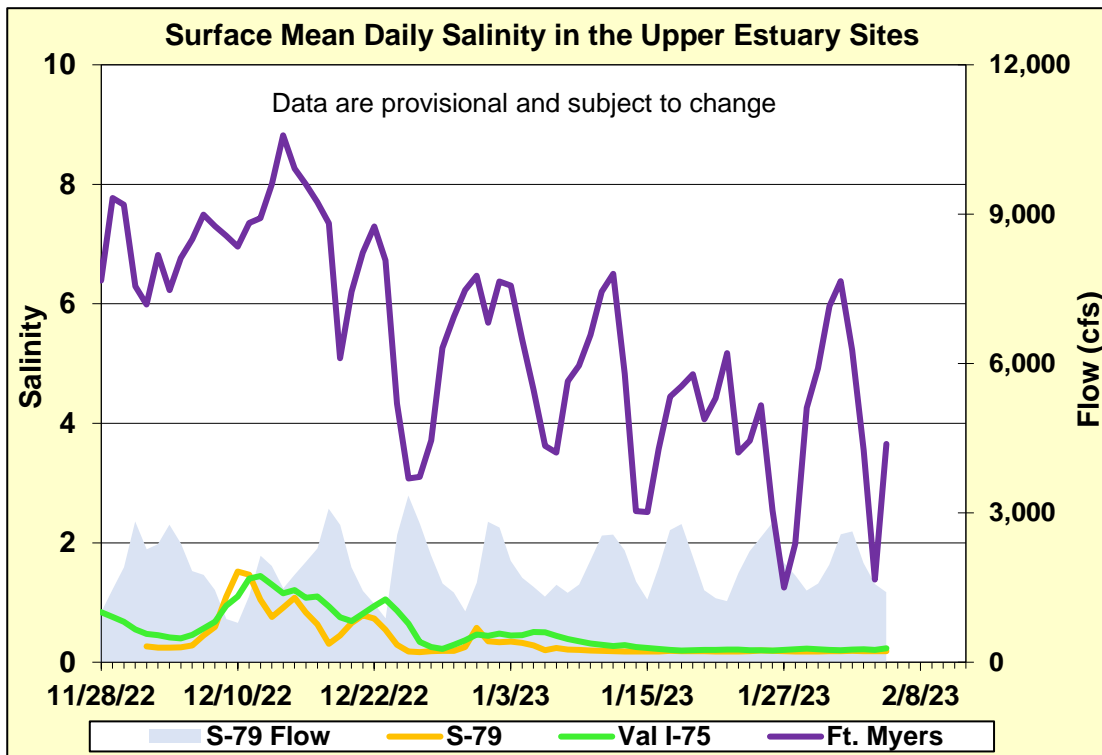


Figure ES-8. Mean daily salinity at upper Caloosahatchee River Estuary monitoring sites and mean daily flow at S-79.

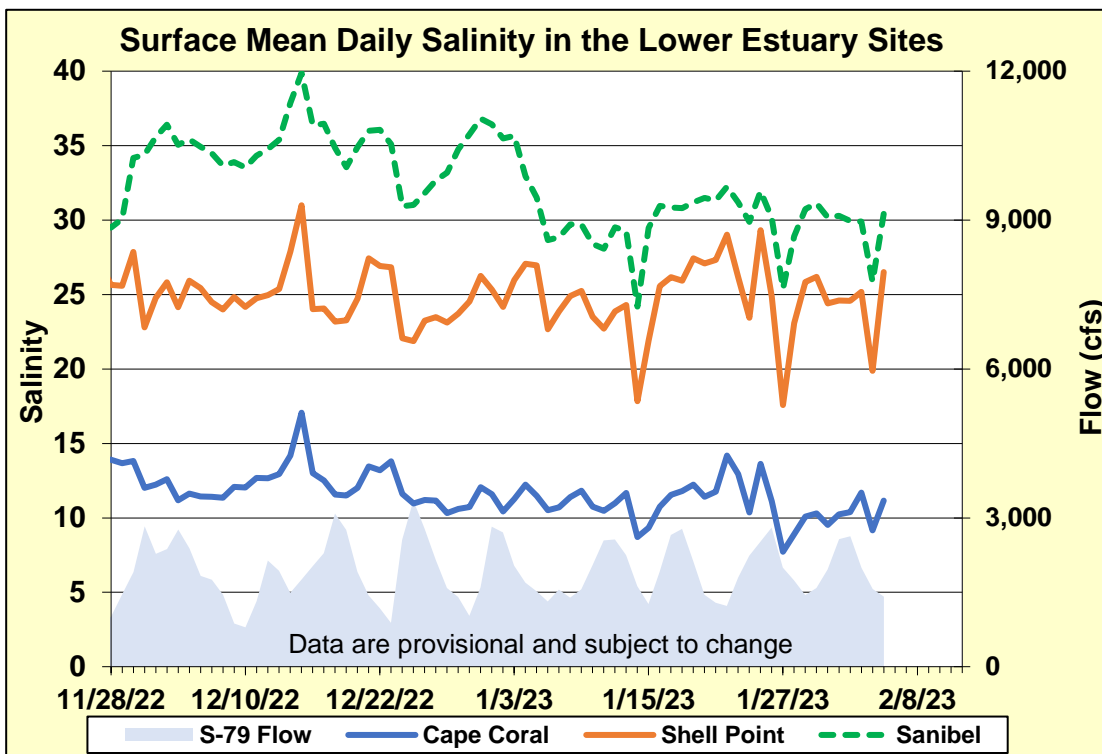


Figure ES-9. Mean daily surface salinity at lower Caloosahatchee River Estuary monitoring sites and mean daily flow at S-79.

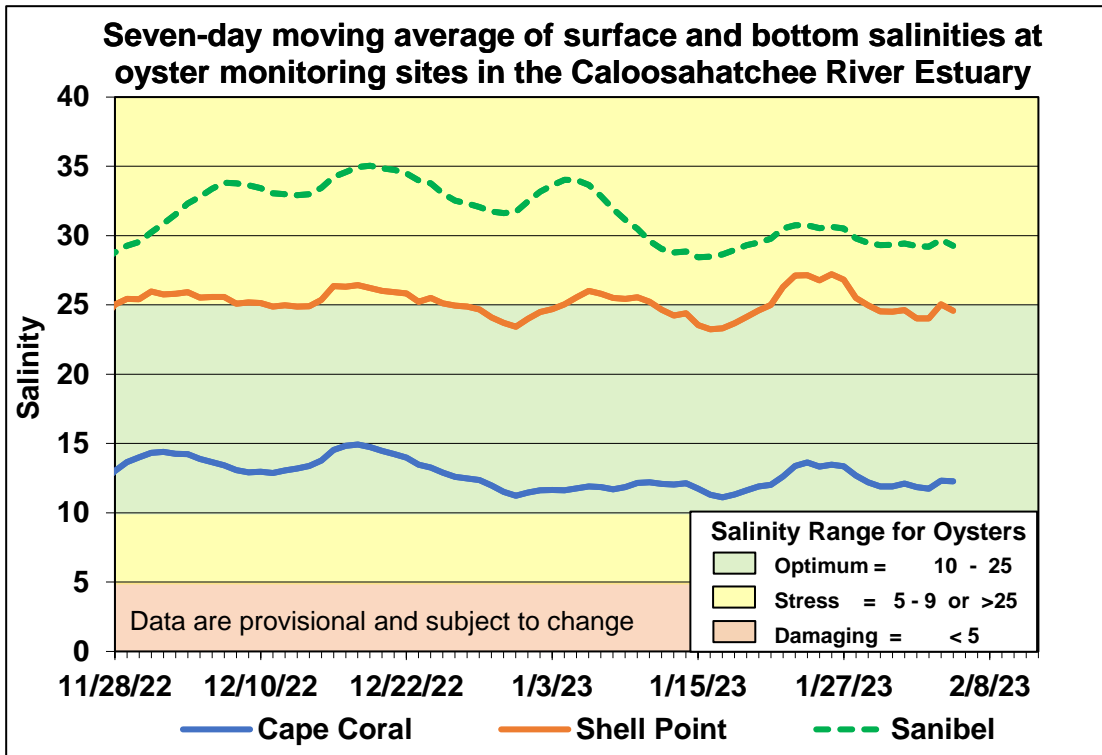


Figure ES-10. Seven-day moving average of surface and bottom salinities at Cape Coral, Shell Point and Sanibel monitoring sites in the Caloosahatchee River Estuary.

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	79	1.2	0.5
B	450	79	0.6	0.4
C	750	79	0.6	0.4
D	1000	79	0.3	0.4
E	1500	79	0.3	0.4
F	2000	79	0.3	0.4

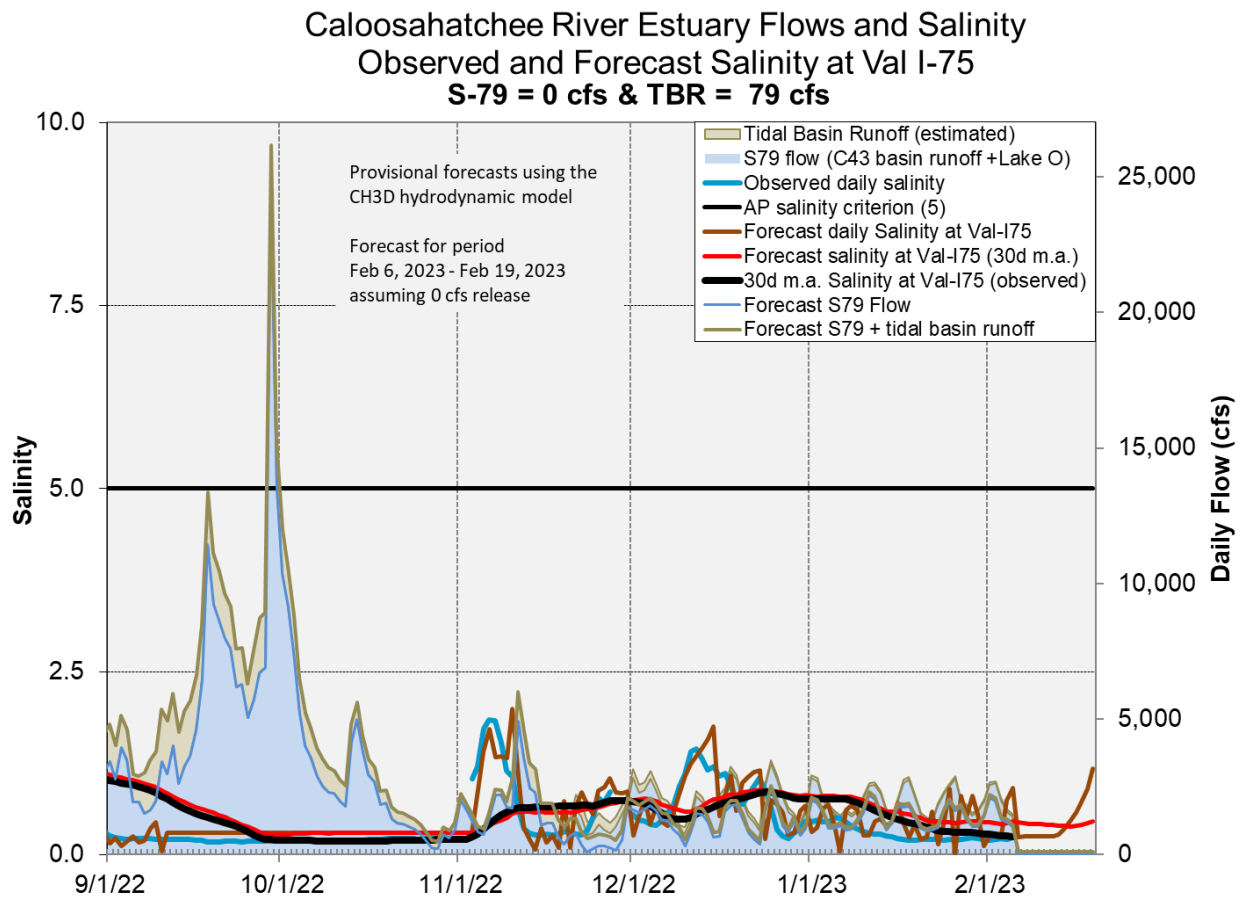


Figure ES-11. Forecasted Val I-75 site surface salinity assuming no pulse release at S-79.

Stormwater Treatment Areas

STA-1E: STA-1E Western Flow-way is offline for post-construction vegetation grow in. Operational restrictions are in place in STA-1E Central and Eastern Flow-ways for vegetation management activities. Online treatment cells are at or near target stage and vegetation in the flow-ways is stressed and highly stressed. The 365-day phosphorus loading rates (PLRs) are high for the Eastern and Central Flow-way (**Figure S-1**).

STA-1W: Operational restrictions are in place in STA-1W Western, Eastern, and Northern Flow-ways for vegetation management activities. Treatment cells are at target stage. Vegetation in the flow-ways is stressed and highly stressed. The 365-day PLR for the Eastern Flow-way is below 1.0 g/m²/year. The 365-day PLRs for the Northern and Western Flow-way are high (**Figure S-2**).

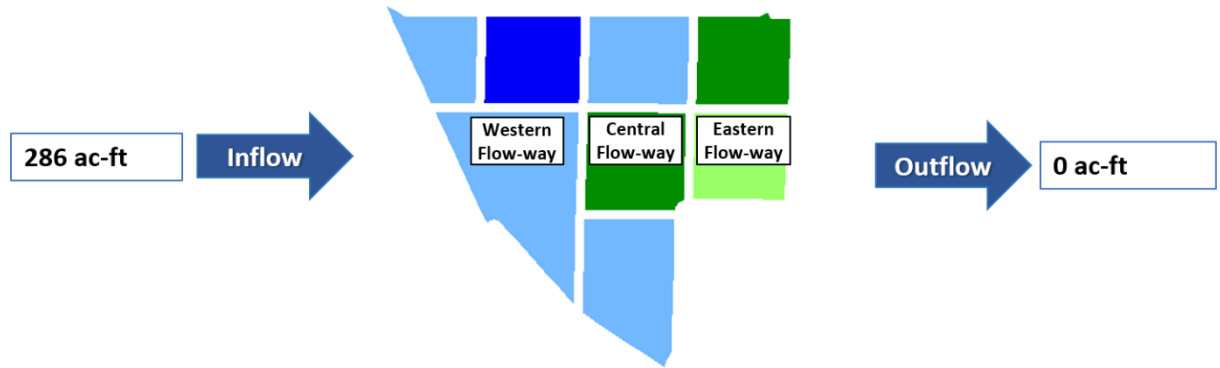
STA-2: STA-2 Flow-way 2 is offline for post-construction vegetation grow in. Operational restrictions are in place in STA-2 Flow-ways 3 and 4 for vegetation management activities. Online treatment cells are at or near target stage. Vegetation in Flow-ways 1 and 3 is stressed, and in Flow-ways 2, 4 and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

STA-3/4: STA-3/4 Eastern Flow-way is offline for vegetation rehabilitation/drawdown. Online treatment cells are at or near above 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: All flow-ways in STA-5/6 are online. 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 most flow-ways are at or below 1.0 g/m²/year, except Flow-ways 3 and 4 which are high (**Figure S-5** and **S-6**).

For definitions on STA operational language see glossary following figures.

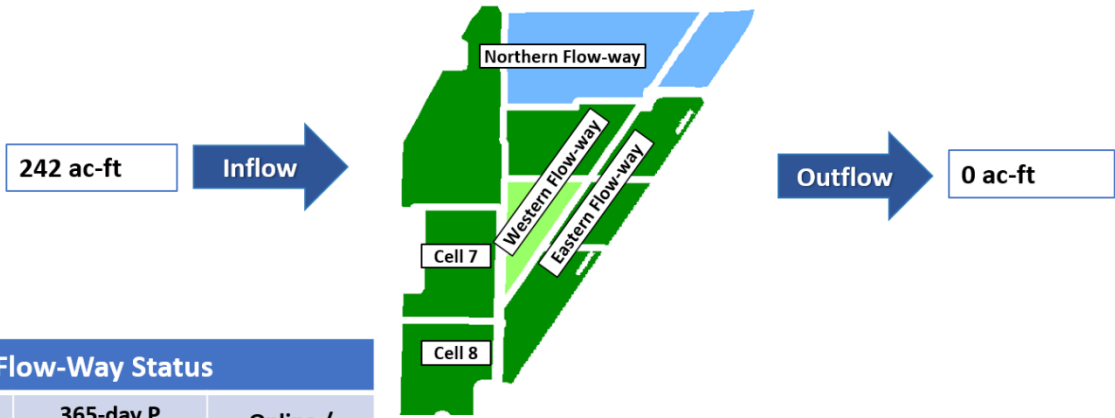
STA-1E Weekly Status Report – 1/30/2023 through 2/5/2023



STA-1E Flow-Way Status				As of 2/5/2023		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	
				<ul style="list-style-type: none"> ■ 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') ■ 0.2' – 0.5' below TS ■ 0.5' – 1.0' below TS ■ Low Water Level (1.0' – 1.2' below TS) ■ Extreme Low Water (> 1.2' below TS) 					
Eastern	← →	1.0	Vegetation management	■		Total Inflow, ac-ft	286	1,895	129,269
Central	← →	1.0	Vegetation rehabilitation	■		--Lake Inflow, ac-ft	300	N/A	3,200
Western	Offline, post-construction grow in starting 3/28/2022			■		Total Outflow, ac-ft	0	367	100,503
				■		Inflow Conc., ppb	56	50	113
				■		Outflow Conc., ppb	N/A	19	25
				■		Includes Preliminary Data			

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

STA-1W Weekly Status Report – 1/30/2023 through 2/5/2023



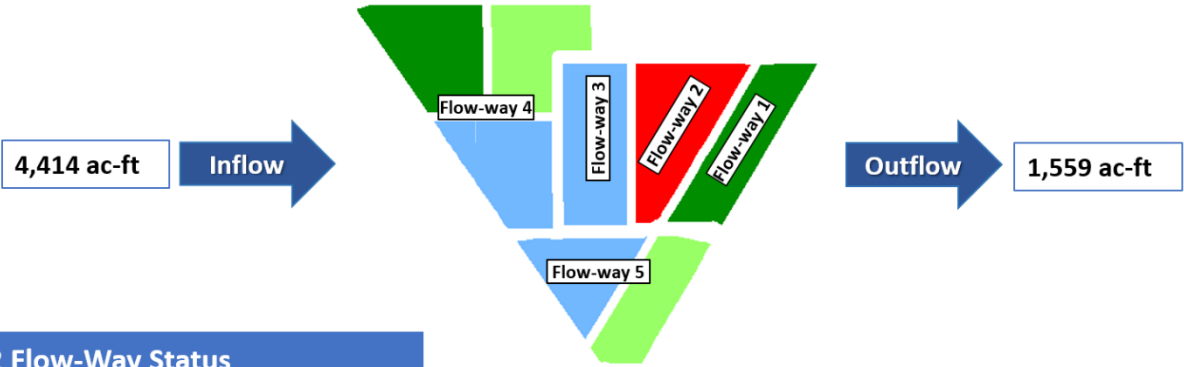
STA-1W Flow-Way Status			
Flow-Way	Vegetation Status Healthy --- Stressed	365-day P Loading Rate (below 1.0 g P /m ² /yr is optimal)	Online / Offline / Restrictions
Northern	← →		Vegetation management
Western	← →		Vegetation management
Eastern	← →		Vegetation management
Cell 7	← →	N/A	Online
Cell 8	←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

As of 2/5/2023	
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')
	0.2' – 0.5' below TS
	0.5' – 1.0' below TS
	Low Water Level (1.0' – 1.2' below TS)
	Extreme Low Water (> 1.2' below TS)

STA-1W Flow & Phosphorus Concentration				
	7-day	28-day	365-day	
Total Inflow, ac-ft	242	2,246	144,455	
--Lake Inflow, ac-ft	200	N/A	3,600	
Total Outflow, ac-ft	0	45	145,991	
Inflow Conc., ppb	159	143	198	
Outflow Conc., ppb	N/A	16	20	
Includes Preliminary Data				

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

STA-2 Weekly Status Report – 1/30/2023 through 2/5/2023



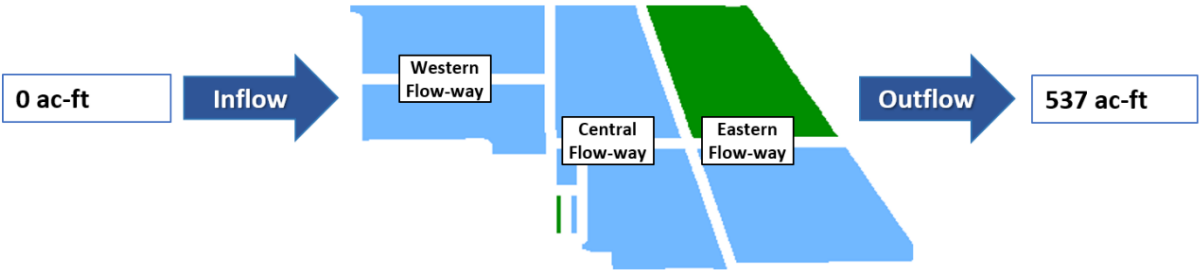
STA-2 Flow-Way Status			
Flow-Way	Vegetation Status Healthy ----- Stressed	365-day P Loading Rate (below 1.0 g P /m ² /yr is optimal)	Online / Offline / Restrictions
1			Online
2	Offline, post-construction grow in starting 1/23/2023		
3			Vegetation Rehab
4			Vegetation Rehab
5			Online

As of 2/5/2023	
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')
	0.2' – 0.5' below TS
	0.5' – 1.0' below TS
	Low Water Level (1.0' – 1.2' below TS)
	Extreme Low Water (> 1.2' below TS)

STA-2 Flow & Phosphorus Concentration			
	7-day	28-day	365-day
Total Inflow, ac-ft	4,414	10,671	316,655
--Lake Inflow, ac-ft	3,900	N/A	31,100
Total Outflow, ac-ft	1,559	4,230	331,273
Inflow Conc., ppb	77	67	114
Outflow Conc., ppb	10	14	30
Includes Preliminary Data			

Figure S-3. STA-2 Weekly Status Report

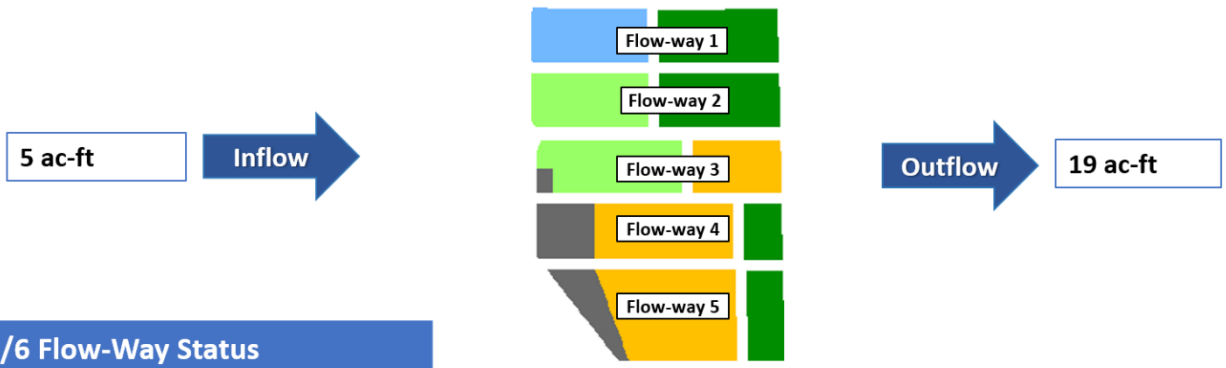
STA-3/4 Weekly Status Report – 1/30/2023 through 2/5/2023



STA-3/4 Flow-Way Status				As of 2/5/2023		STA-3/4 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, vegetation management drawdown as of 3/1/2021					Total Inflow, ac-ft	0	34	299,678
Central			Online			--Lake Inflow, ac-ft	0	N/A	4,200
Western			Online			Total Outflow, ac-ft	537	166	292,540
						Inflow Conc., ppb	N/A	N/A	93
						Outflow Conc., ppb	19	40	16
Includes Preliminary Data									

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

STA-5/6 Weekly Status Report – 1/30/2023 through 2/5/2023



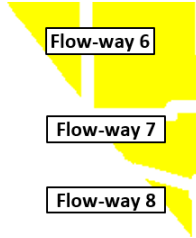
STA-5/6 Flow-Way Status			
Flow-Way	Vegetation Status Healthy ----- Stressed	365-day P Loading Rate (below 1.0 g P /m ² /yr is optimal)	Online / Offline / Restrictions
1	← →		Online
2	← →		Online
3	← →		Online
4	← →		Online
5	← →		Online

As of 2/5/2023
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')
0.2' – 0.5' below TS
0.5' – 1.0' below TS
Low Water Level (1.0' – 1.2' below TS)
Extreme Low Water (> 1.2' below TS)

STA-5/6 Flow & Phosphorus Concentration			
	7-day	28-day	365-day
Total Inflow, ac-ft	5	5	153,167
--Lake Inflow, ac-ft	0	N/A	0
Total Outflow, ac-ft	19	138	148,390
Inflow Conc., ppb	102	130	288
Outflow Conc., ppb	60	19	40
Includes Preliminary Data			

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

STA-5/6 Weekly Status Report – 1/30/2023 through 2/5/2023



STA-5/6 Flow-Way Status				As of 2/5/2023	
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)	High Water Level (1.5' – 2.8' above TS)
6	←-----→	1.0	Online	0.2' – 1.5' above TS	Target Stage (TS +/- 0.2')
7	←-----→	1.0	Online	0.5' – 1.0' below TS	0.5' – 1.0' below TS
8	←-----→	1.0	Online	Low Water Level (1.0' – 1.2' below TS)	Extreme Low Water (> 1.2' below TS)

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: Stage at the 1-8C came up late in the week. The average on Sunday was 0.28 feet above the falling Zone A1 regulation line. WCA-2A: Stage also came up at the 2-17 gauge late last week. The average on Sunday was 1.09 feet above the now flat regulation line. WCA-3A: The Three Gauge Average stage rose slightly late in the week. The average stage was 0.58 feet below the falling regulation line on Sunday. WCA-3A North: At gauge 62 (Northwest corner) stage continued to recede, the average on Sunday was 0.90 feet below the flat Upper schedule line (**Figures EV-1 through EV-4**).

Water Depths

The SFWDAT tool illustrates current stages in the EPA are falling in most of the major basins; with NESRS, southern WCA-1 and the upper reaches of the L-67s retaining stage. WCA-3A continues to dry down from the northwest to the southeast. There is a further expansion in extent for areas with the potential for stages to have moved to ground surface, with now most of that sub basin in the 0.0' to 0.5' category. Connectivity in SRS of ENP remains strong while to the east and west it is diminishing. Comparing current WDAT water depths to one month ago conditions within the EPA are shallower with southern WCA-2A, eastern WCA-3A and western BCNP significantly so. Looking back a year ago, most of eastern WCA-3A and western ENP are slightly deeper (**Figure EV-5 and Figure EV-6**). Comparing current conditions to the 20-year average on February 5: Conditions are above average in northeastern WCA-3A and below in the southeastern WCA-3A; significantly above the 90th percentile in, northeastern SRS and portions of WCA-1 (**Figure EV-7**).

Taylor Slough and Florida Bay

All 18 gauges used in this report in Taylor Slough and Florida Bay recorded rainfall over the past week (Monday-Sunday). Most rain occurred on Sunday 2/5, with high localized rainfall in the south C-111 basin/nearshore Florida Bay area at Highway Creek and Long Sound, reaching a maximum 12.0 inches. Minimum total rainfall was 0.2 inches at Buoy Key (BK) in the western bay and overall, averaged 3.1 inches. Taylor Slough stages increased between +0.01 and +0.25 feet at Craighead Pond (CP) in western Taylor Slough and EVER6 in the southwest C-111 region, respectively (**Figure EV-8 and Figure EV-9**). Taylor Slough water levels remain above the historical average for this time of year by +6.0 inches compared to before the Florida Bay initiative (starting in 2017), an increase of +2.8 inches from last week, driven by recent rain.

Average Florida Bay salinity was 27.5, a decrease of -1.0 from last week. Salinity changes ranged from a decrease of -2.0 in Garfield Bight (GB) in the western nearshore to +2.1 at Joe Bay (JB) in the eastern nearshore (**Figure EV-8**). As of 2/5, salinity is within the IQR in the Eastern, Central, and Western regions (**Figure EV-10**). Florida Bay salinity is +0.8 above its historical average for this time of year, down -1.5 from last week.

Water Management Recommendations

We recommend continuing discussion and to make use of strategies that could prevent further degradation of WCA3A North. Conserving water in this region will most likely prove critical for the upcoming wading bird nesting season. Optimizing the volume of water currently available to be discharged into the northern perimeter of WCA-3A will benefit the ecology of that region as conditions transition to a dry season predicted to be drier than average. Maintaining a moderate rate of stage change within the marshes of WCAs, avoiding abrupt changes in water depth and conserving water north in the system has an ecological benefit. When water is available discharge downstream through Taylor Slough. Individual regional recommendations can be found in **Table EV-2**.

Table EV-2. Previous week’s rainfall and water depth changes in Everglades basins.

Everglades Region	Rainfall (inches)	Stage change (feet)
WCA-1	1.46	+0.08
WCA-2A	2.45	+0.17
WCA-2B	2.86	+0.11
WCA-3A	0.72	-0.02
WCA-3B	1.34	+0.01
ENP	0.48	+0.17

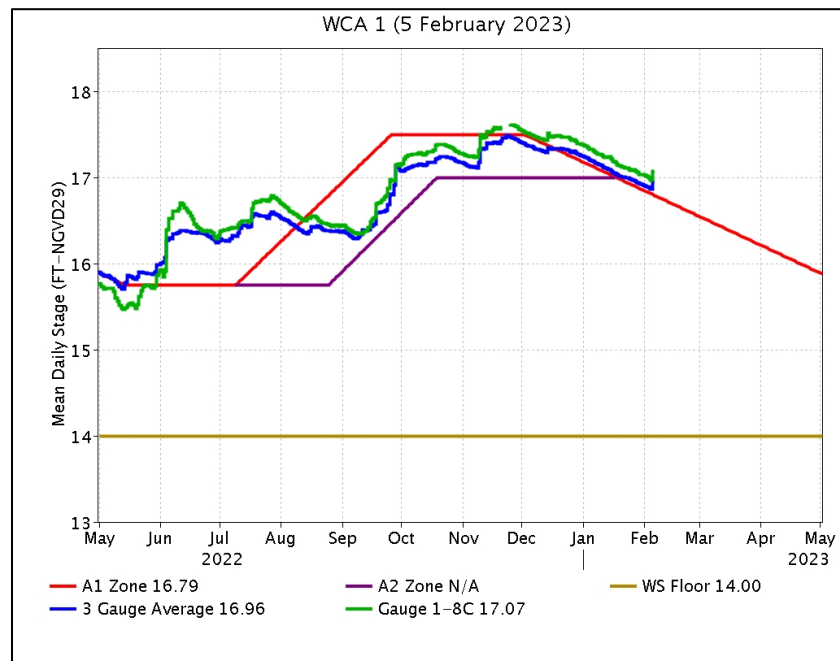


Figure EV-1. WCA-1 stage hydrographs and regulation schedule.

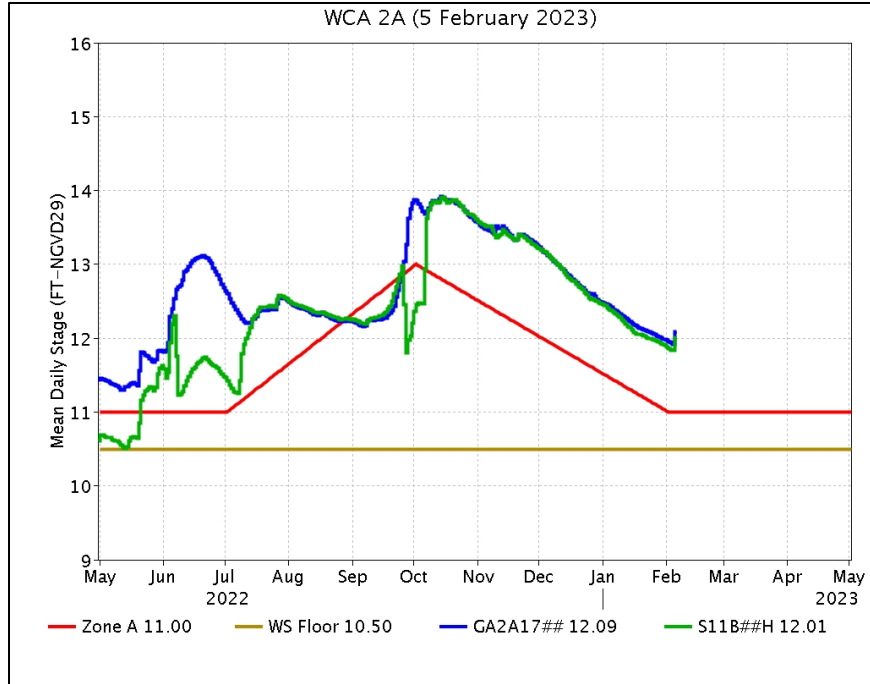


Figure EV-2. WCA-2A stage hydrographs and regulation schedule.

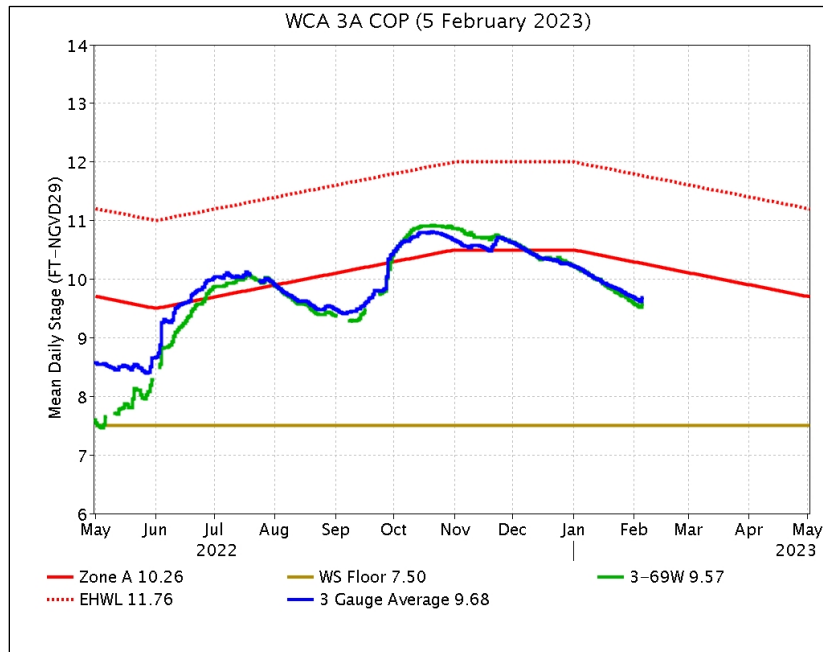


Figure EV-3. WCA-3A stage hydrographs (three-gauge average, S-333 headwater) and regulation schedule.

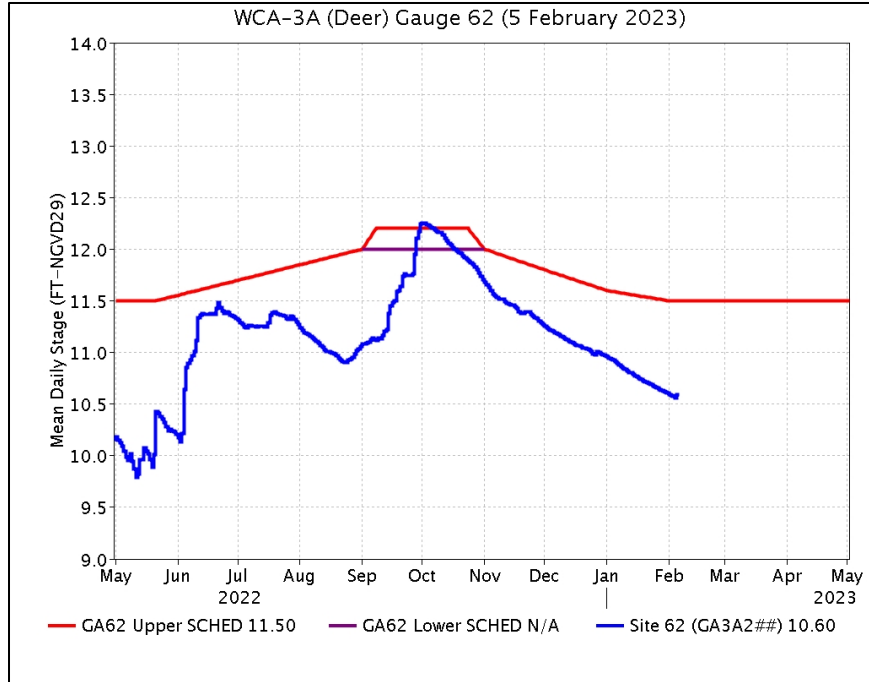


Figure EV-4. WCA-3A stage hydrograph (Deer gauge; Site 62) and CA62 regulation schedule.

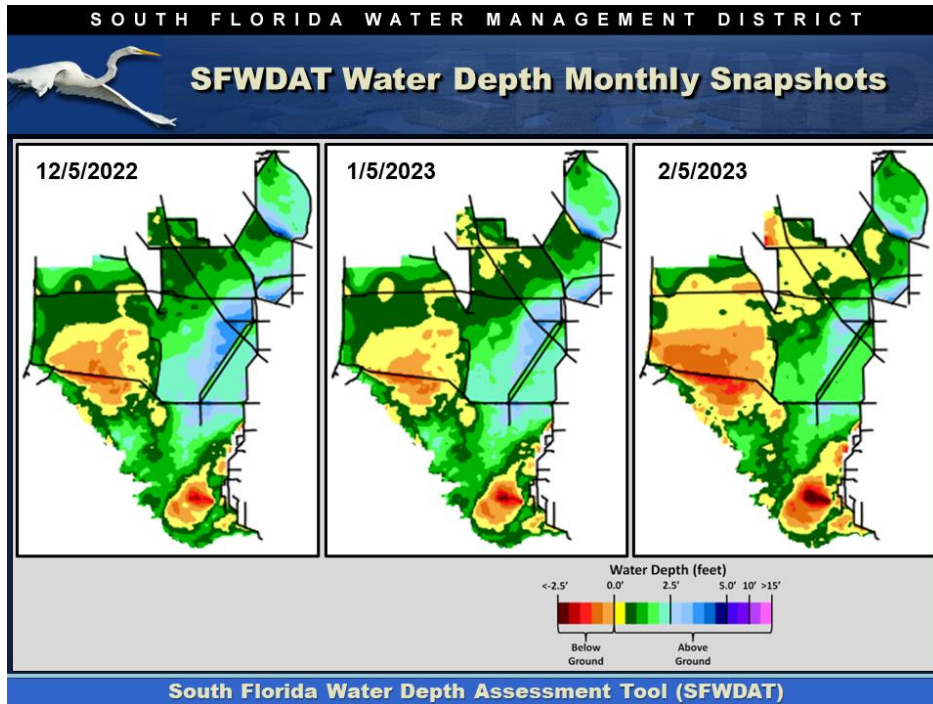


Figure EV-5. Everglades water depths from two months ago (left), one month ago (center) and present (right), based on SFWDAT.

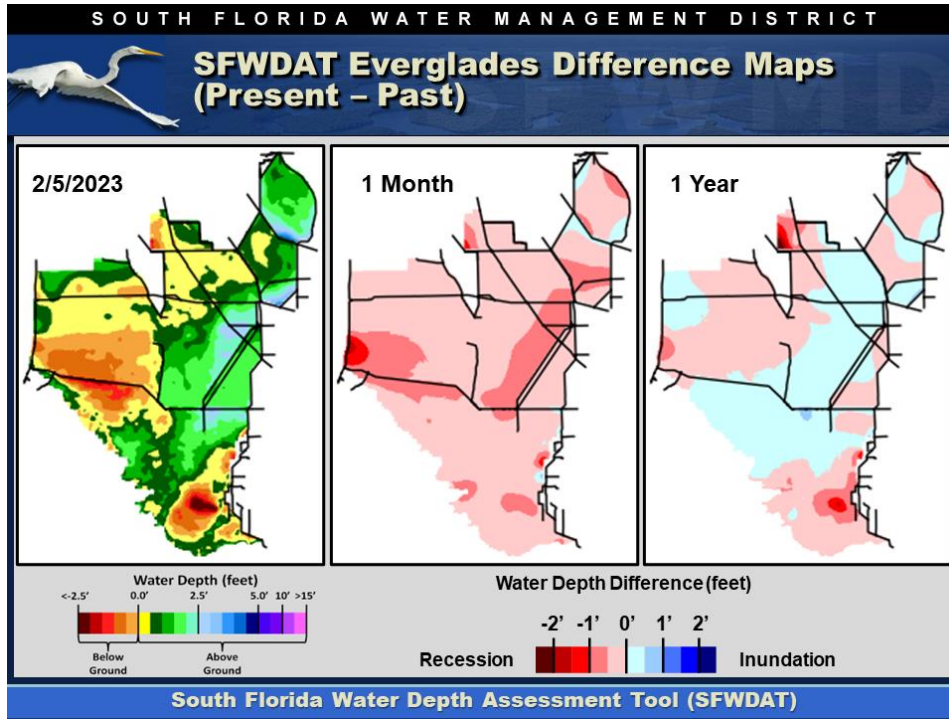


Figure EV-6. Present Everglades water depths (left) and water depth changes from one month (center) and one year (right) ago, based on SFWDAT.

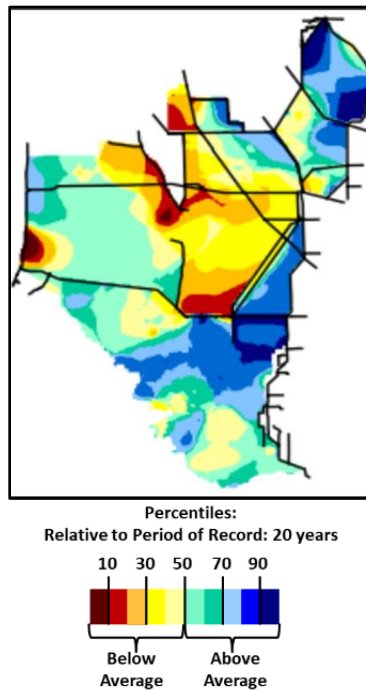


Figure EV-7. Present water depths (2/5/2023) compared to the day of year average over the previous 20 years.

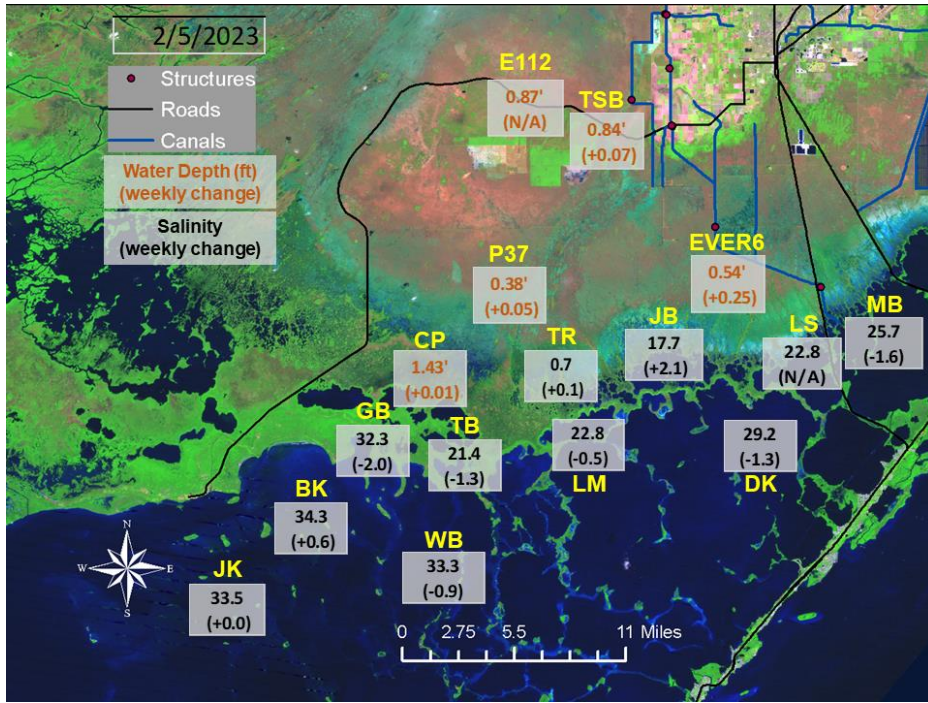


Figure EV-8. Taylor Slough water depths with changes since a week ago and Florida Bay salinities with changes since a week ago.

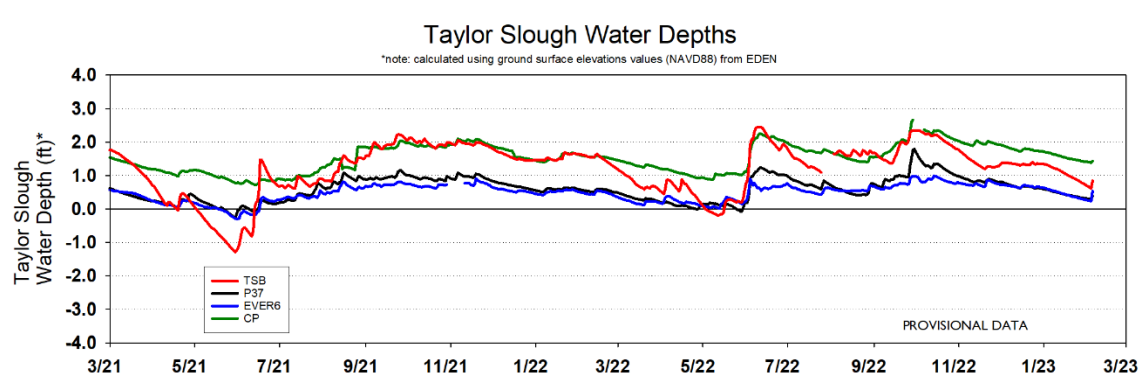


Figure EV-9. Taylor Slough water depth time series.

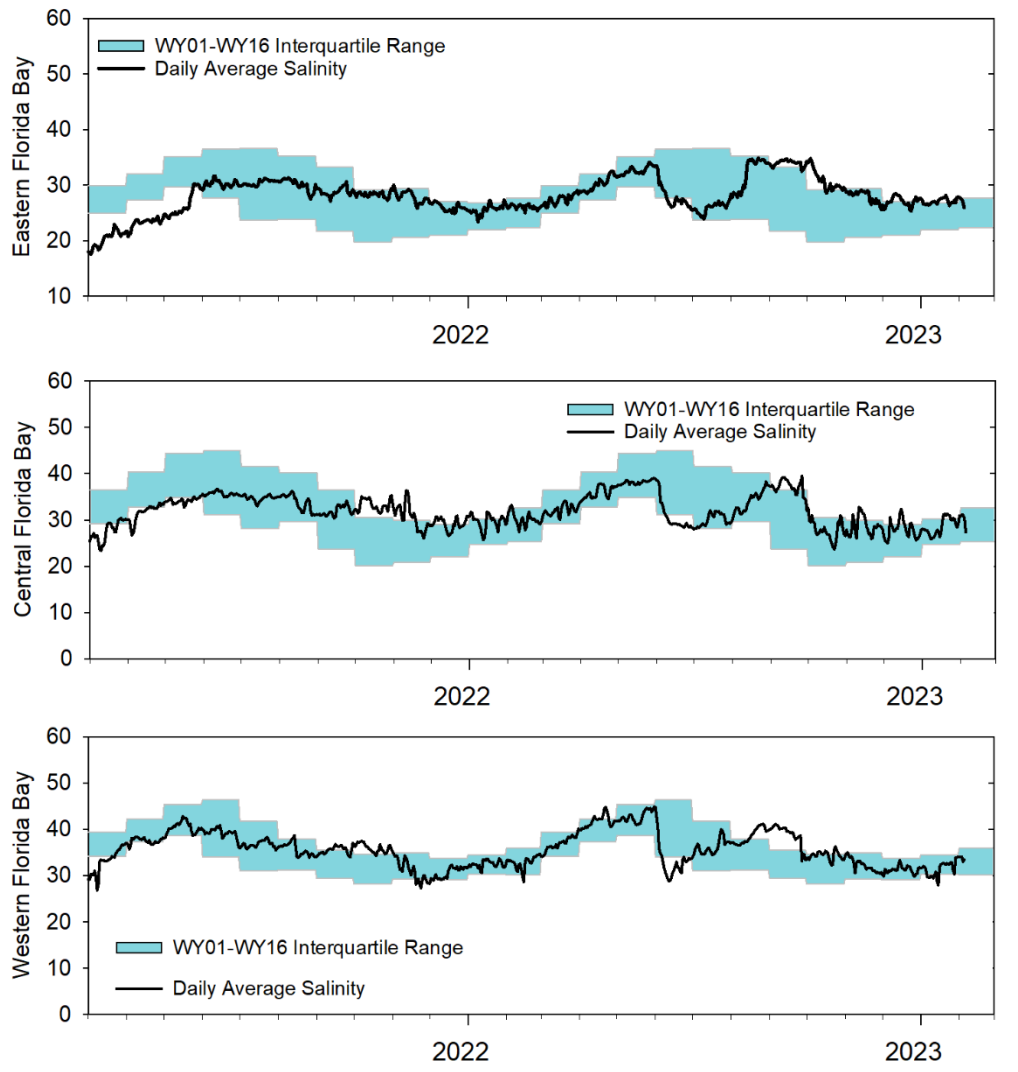


Figure EV-10. Eastern (top panel), Central (middle panel) and Western (bottom panel) Florida Bay daily average salinities with interquartile (25-75 percentile) ranges.

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

SFWMD Everglades Ecological Recommendations, February 7, 2023 (red is new)			
	Weekly change	Recommendation	Reasons
WCA-1	Stage increased by 0.08'	Conserve water in this basin as possible. Recession rate of less than 0.05' per week.	Protect within basin and downstream habitat and wildlife.
WCA-2A	Stage increased by 0.17'	Conserve water in this basin as possible. Recession rate of less than 0.05' per week.	Protect within basin and downstream habitat and wildlife. Protect conditions conducive to wading bird foraging later in the season.
WCA-2B	Stage increased by 0.11'	Conserve water in this basin as possible. Recession rate of less than 0.05' per week.	Protect within basin and downstream habitat and wildlife.
WCA-3A NE	Stage increased by 0.03'	Conserve water in this basin as possible. Recession rate of less than 0.05' per week	Protect within basin and downstream habitat and wildlife. Protect conditions conducive to wading bird foraging later in the season. Lower fire risk and protect peat soils.
WCA-3A NW	Stage remained unchanged	Conserve water in this basin as possible. Recession rate of less than 0.05' per week	
Central WCA-3A S	Stage decreased by 0.08'	Conserve water in this basin as possible. Recession rate of less than 0.10' per week	Protect within basin and downstream habitat and wildlife.
Southern WCA-3A S	Stage decreased by 0.02'		
WCA-3B	Stage increased by 0.01'	Recession rate of less than 0.10' per week.	Protect within basin and downstream habitat and wildlife.
ENP-SRS	Stage increased by 0.17'	Make discharges to ENP according to COP and TTFF protocol while adaptively considering upstream and downstream ecological conditions. Discussions on water management within the system should be continued.	Protect within basin and upstream habitat and wildlife.
Taylor Slough	Stage changes ranged from -0.16' to -0.06'	Move water southward as possible.	When available, provide freshwater buffer for downstream conditions.
FB- Salinity	Salinity changes ranged from -7.9 to +1.4	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 369 cfs and the previous 30-day mean inflow was 296 cfs. The seven-day mean salinity was 27.8 at BBCW8 and 23.0 at BBCW10, both within the ideal salinity range for estuarine organisms in this region (salinity less than 35). Data provided by Biscayne National Park.

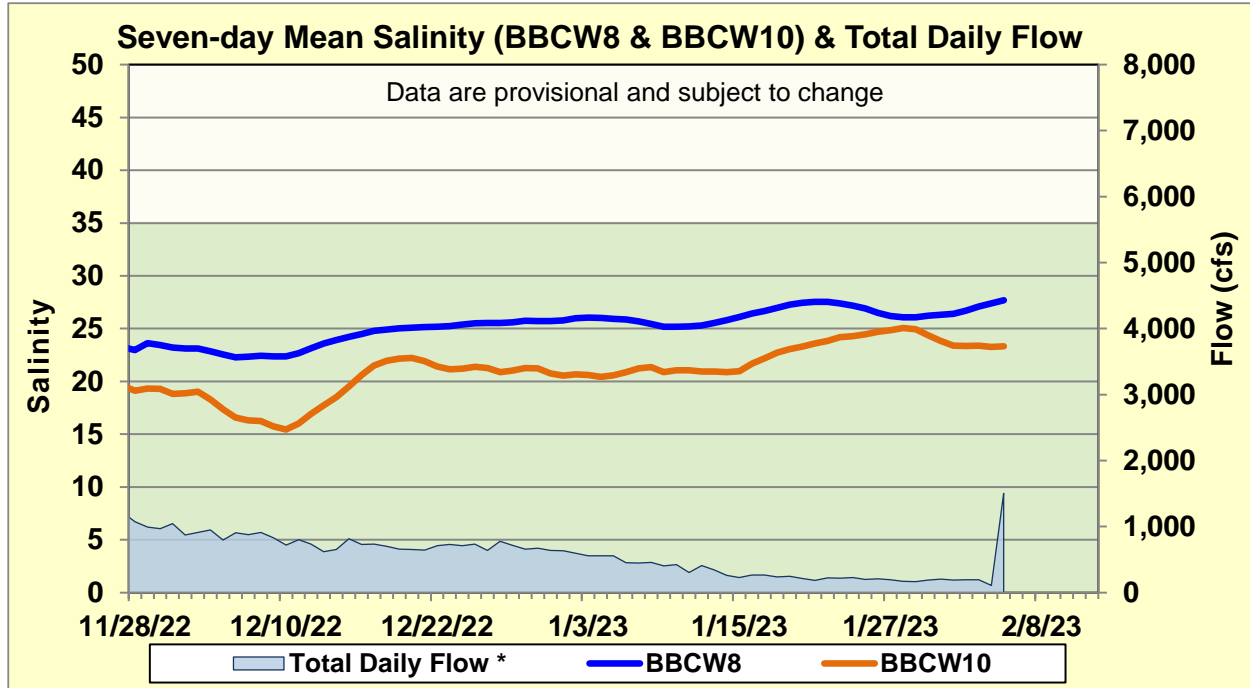


Figure BB-1. Seven-day mean salinity at BBCW8 and BBCW10 and total daily flow in Biscayne Bay. Total daily flow was calculated using flow from structures S20G, S20F, S21, S21A, S123, and S700P.