Disclaimer: Information contained in the report addresses environmental conditions only and is not the official South Florida Water Management District operations recommendation or decision.

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: June 29, 2022

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Weather Conditions and Forecast

On Wednesday, dry air north of Lake Okeechobee will restrict most of the afternoon thunderstorms to areas south of the Lake. A more widespread coverage of moderate-to-heavy afternoon rainfall will occur on Thursday and Friday as moisture levels increase across the SFWMD. By Friday, a cold upper-low will begin to weaken and lift out, which will decrease its influence on SFWMD weather. Meanwhile, an expansive region of surface high pressure, dubbed the “Bermuda High,” will establish itself over the western Atlantic. The result will be stiff easterly flow over south Florida, which will confine most of the rainfall at the end of this week towards the west. In addition, drier, more stable air associated with the high-pressure region will keep total daily SFWMD rainfall lower than average. The total average District rainfall ending next Tuesday morning will likely be much below average for this time of the year.

Kissimmee

Flow at S-59 and S-61 remained at 0 cfs to allow stages to rise in East Toho and Toho, respectively. Flows will be adjusted to keep stage from rising too quickly if substantial rainfall occurs in the region. Flow at S-65/S-65A was reduced to 0 cfs to slow earlier stage decline in KCH, although some releases were made from S-65A to control the rainfall-driven stage rise in Pool A. Water depth on the Kissimmee River floodplain declined over the week, but later increased due to rainfall, with a mean depth of 0.48 feet as of June 26, 2022. The concentration of dissolved oxygen in the Kissimmee River declined following the increase in flow at S-65A, with an average of 5.5 mg/L for the week ending on June 26, 2022.

Lake Okeechobee

Lake Okeechobee stage was 12.91 feet NGVD on June 26, 2022, with water levels 0.29 feet higher than a month ago (**Figure LO-1**). Lake stage on June 26, 2022 was in the Base Flow sub-band (**Figure LO-2**) and 0.23 feet above the ecological envelope (**Figure**

LO-3). This was the third week stage has been above the ecological envelope, after 22 weeks within it. Average daily inflows (excluding rainfall) increased from the previous week, going from 661 cfs to 701 cfs. Average daily outflows (excluding evapotranspiration) also increased, going from 46 cfs to 278 cfs. The most recent satellite image (June 25, 2022) from NOAA's Harmful Algal Bloom Monitoring System showed that bloom potential is high in Fisheating Bay (western part of the Lake) and along the northwestern and southwestern shoreline of the Lake.

Estuaries

Total inflow to the St. Lucie Estuary averaged 327 cfs over the past week with no flow coming from Lake Okeechobee. Mean salinities increased at all sites within the estuary over the past week. Salinity in the middle estuary was within the optimal range (10-25) for adult eastern oysters.

Total inflow to the Caloosahatchee Estuary averaged 2,267 cfs over the past week with 165 cfs coming from the Lake. Mean surface salinities remained the same at Val I-75 and Sanibel and increased at the remaining sites in the estuary over the past week. Salinities were in the optimal range (0-10) for tape grass in the upper estuary. Salinities were in the optimal range (10-25) for adult eastern oysters at Shell Point and in the stressed range at Cape Coral and Sanibel.

Stormwater Treatment Areas

For the week ending Sunday, June 26th, 2022, approximately 0 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 12,400 ac-feet. The total amount of inflows to the STAs in WY2023 so far is approximately 303,000 ac-feet. Most STA cells are above target stage, except STA-5/6 cells that are near or below target. STA-1E Western Flow-way is offline for post-construction vegetation grow in. 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 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, there is no capacity for Lake releases in the STAs.

Everglades

Ascension rates increased in the south (WCA3 and ENP) this week, with most of the EPA having rates within the good or fair range. Descension rates mainly increased or held steady in the north end of the EPA this week, which could help reduce above average water levels that can affect plant health and reduce competition. Stages fell in Taylor slough last week but remain well above average. Salinities on average increased slightly last week in Florida Bay but remain below the 25th percentile for this time of year. Conditions remain ideal to move water south as rains continue.

Biscayne Bay

Total inflow to Biscayne Bay averaged 742 cfs and the previous 30-day mean inflow averaged 2,372 cfs. The seven-day mean salinity was 20.2 at BBCW8 and 19.3 at BBCW10, both below the preferred maximum salinity of 35 for these sites. Salinity data provided as a courtesy by Biscayne National Park.

Supporting Information

Kissimmee Basin

Upper Kissimmee

On June 26, 2022, lake stages were 54.9 feet NGVD (1.6 feet below schedule) in East Lake Toho, 52.2 feet NGVD (1.3 feet below schedule) in Lake Toho, and 48.5 feet NGVD (2.5 feet below schedule) in Lakes Kissimmee-Cypress-Hatchineha (KCH) (**Table KB-1**, **Figures KB-1-3**). All remain near or below minimum levels (low-pool) due to lack of rainfall.

Lower Kissimmee

Discharges to the Kissimmee River were reduced to 0 cfs at S-65 and 65A on Wednesday June 22, 2022 to slow the rate of stage decline in KCH; discharges on June 26, 2022 were 0 cfs at S-65 and 190 cfs at S-65A; the increase in S-65A discharge was to control rising S-65A headwater stage due to nearly 3 inches of rain that fell between Friday and Sunday over the S-65A basin; discharges from the Kissimmee River were 450 cfs at S-65D and 380 cfs at S-65E (**Table KB-2**). Headwater stages were 46.8 feet NGVD at S-65A and 26.3 feet NGVD at S-65D on June 26, 2022. The concentration of dissolved oxygen in the Kissimmee River declined in the last week, with an average of 5.5 mg/L for the week ending on June 26, 2022; much of the decline occurred on Sunday when S-65A discharge was increased, which caused an increase in water depth in the river channel (**Table KB-2**, **Figure KB-5**). Over the week ending June 26, 2022, the mean river channel stage declined through the end of the week, then rose when flow was resumed (**Figure KB-5).** Water depth on the Kissimmee River floodplain also declined over the week followed by a late rise, with a mean depth of 0.48 feet on June 26, 2022 due primarily to local rainfall (**Figure KB-6**).

Water Management Recommendations

When possible, limit stage ascension rates in Lakes East Toho, Toho and KCH to a preferred maximum of 0.5 ft/14 days. With stage in KCH below or close to 48.5 ft, encourage stage to rise by continuing 0 cfs discharge at S-65 and S-65A except when S-65A flow can be increased to manage stage in Pool A.

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)	
							6/26/22	*6/19/22*
Lakes Hart and Mary Jane	S-62	LKMJ	0	59.3	R	60.0	-0.7	-0.7
Lakes Myrtle, Preston and Joel	S-57	S-57	0	60.0	R	61.0	-1.0	-1.1
Alligator Chain	S-60	ALLI	0	62.1	R	63.2	-1.1	-1.1
Lake Gentry	S-63	LKGT	0	59.4	R	61.0	-1.6	-1.5
East Lake Toho	S-59	TOHOE	0	54.9	R	56.5	-1.6	-1.6
Lake Toho	S-61	TOHOW S-61	0	52.2	R	53.5	-1.3	-1.2
Lakes Kissimmee, Cypress and Hatchineha	S-65	KUB011 LKIS5B	26	48.5	R	51.0	-2.5	-2.6

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.

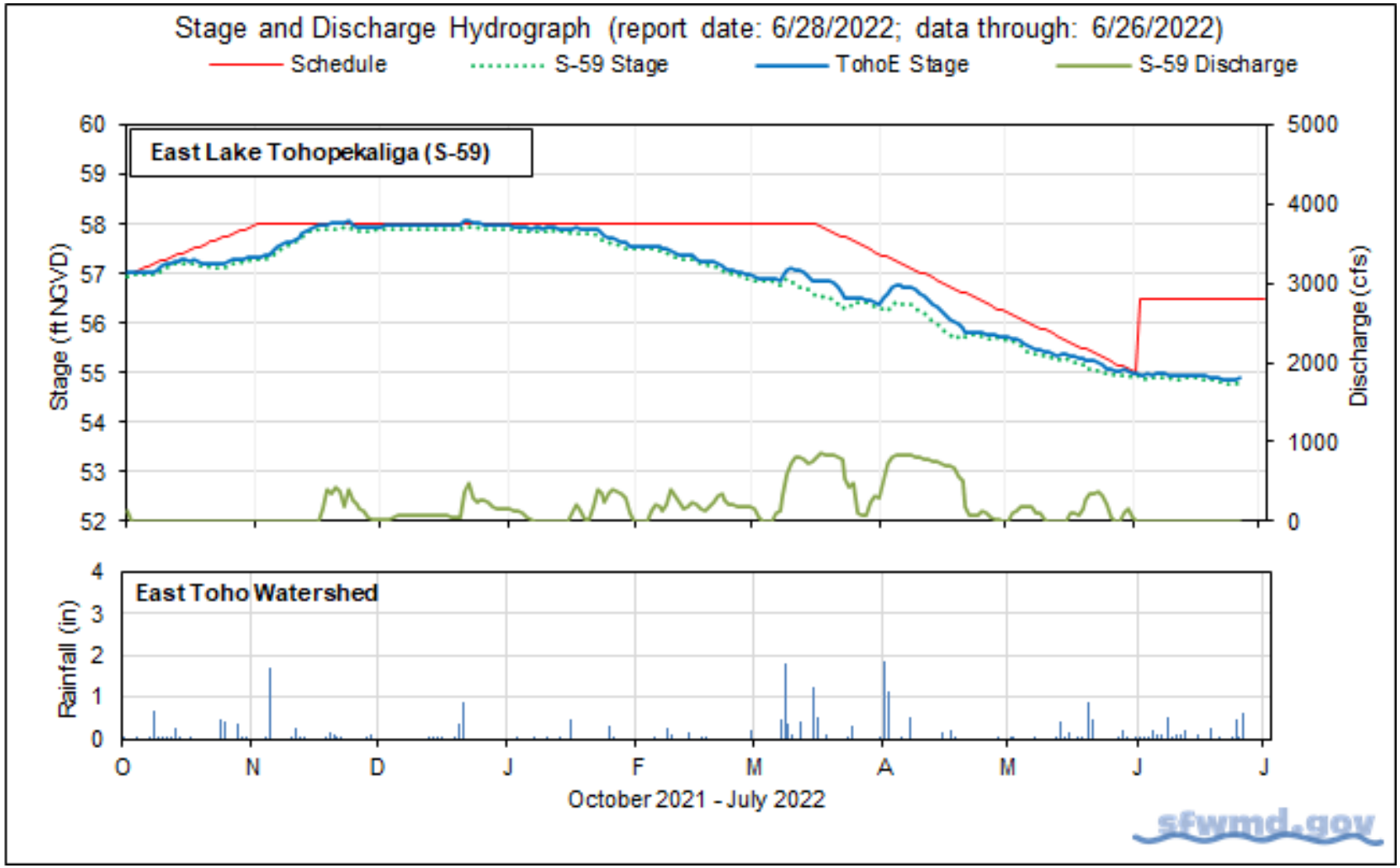


Figure KB-1. East Lake Toho regulation schedule, stage, discharge and rainfall.

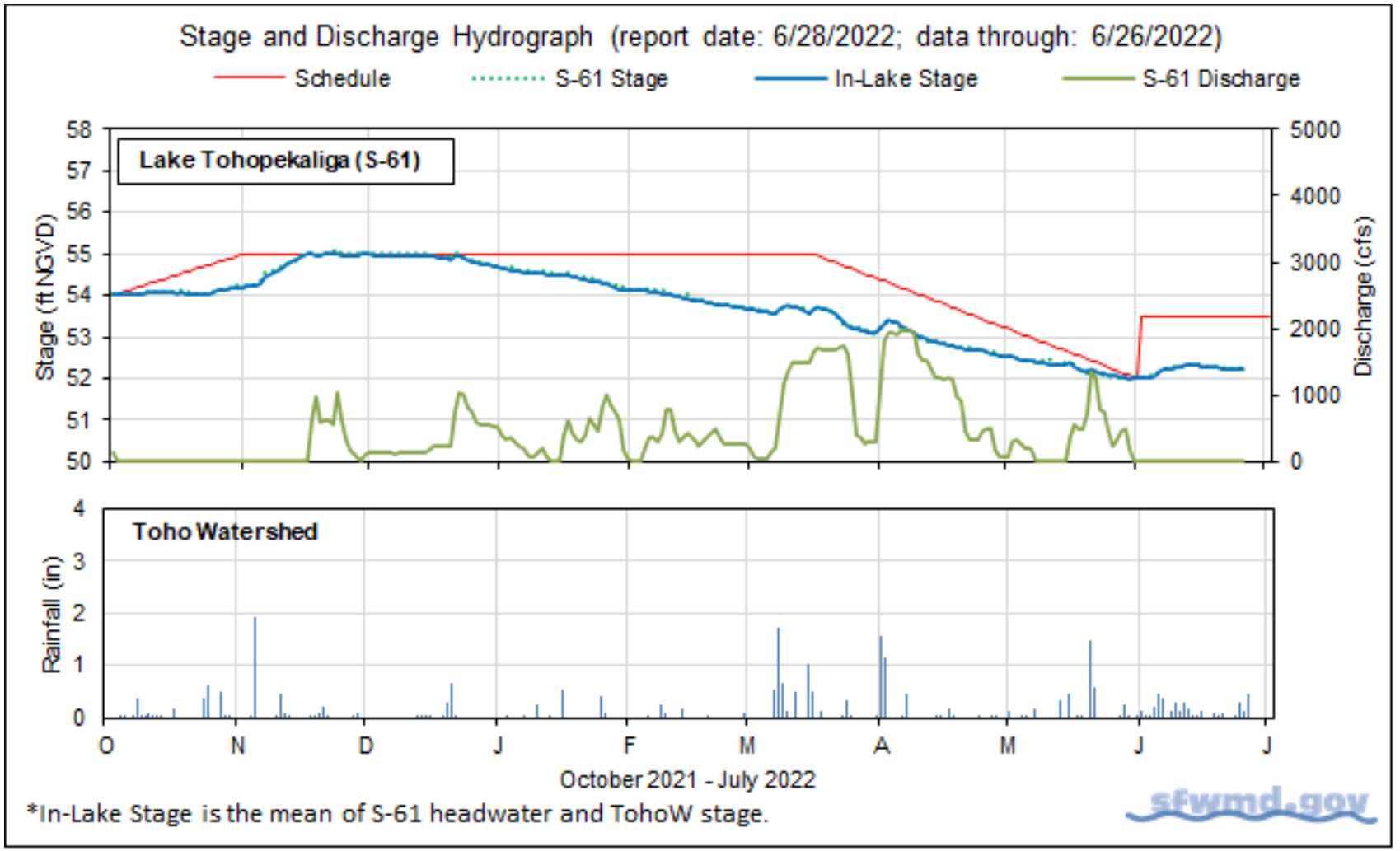


Figure KB-2. Lake Toho regulation schedule, stage, discharge and rainfall.

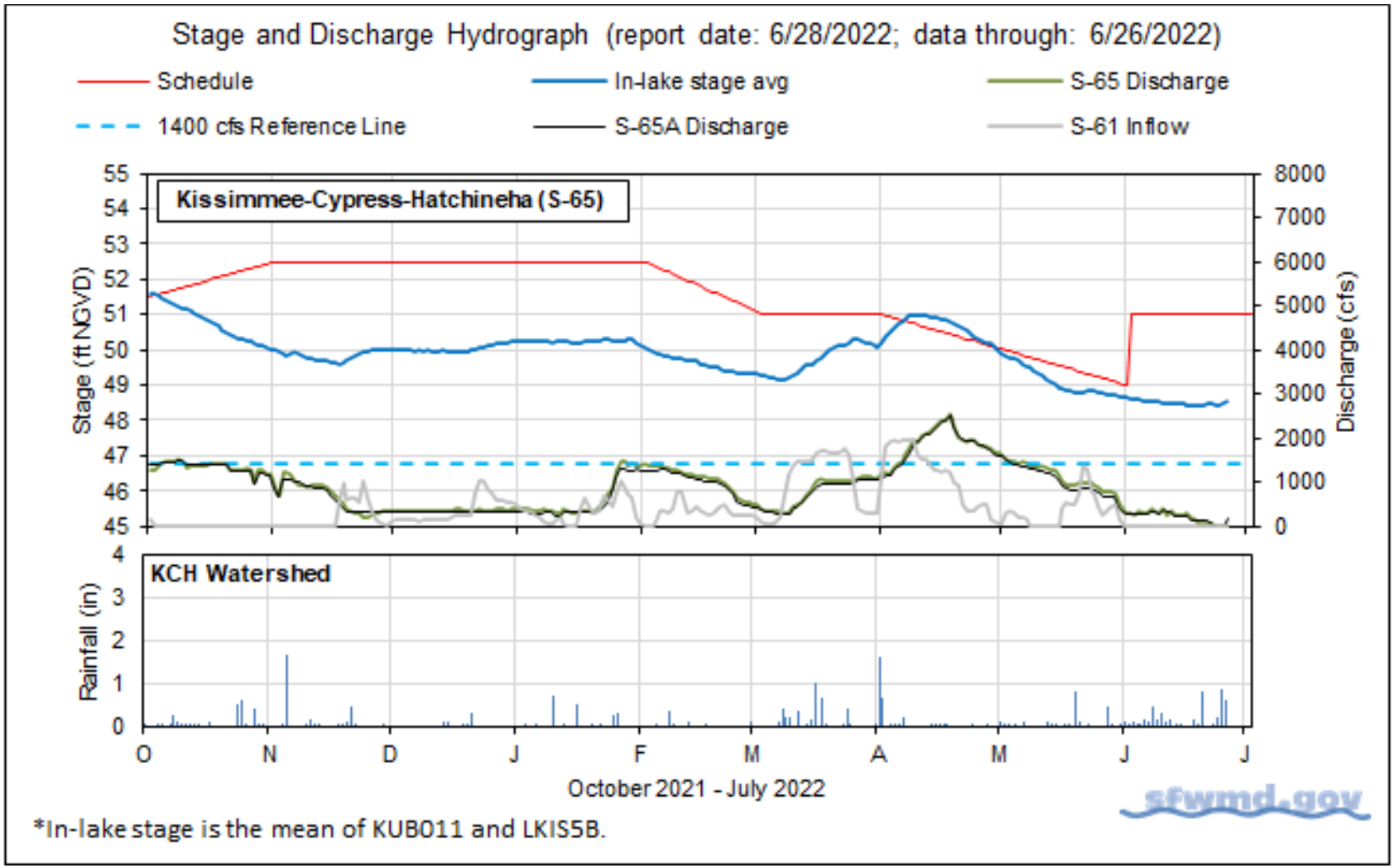


Figure KB-3. Lakes Kissimmee, Cypress and Hatchineha regulation schedule, stage, discharge and rainfall.

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	Daily Average	Average for Previous Seven Day Periods			
		6/26/22	6/26/22	6/19/22	6/12/22	6/5/22
Discharge	S-65	0	30	210	340	340
Discharge	S-65A[a]	190	70	190	300	310
Headwater Stage (feet NGVD)	S-65A	46.8	46.5	46.4	46.3	46.3
Discharge	S-65D[b]	450	310	310	330	480
Headwater Stage (feet NGVD)	S-65D[c]	26.3	26.2	26.6	26.8	26.8
Discharge (cfs)	S-65E[d]	380	260	300	330	420
Discharge (cfs)	S-67	0	0	0	0	0
Dissolved Oxygen (mg/L) [e]	Phase I, II/III river channel	3.8	5.5	7.4	7.9	7.1
Mean depth (feet) [f]	Phase I floodplain	0.48	0.41	0.28	0.27	0.26

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).

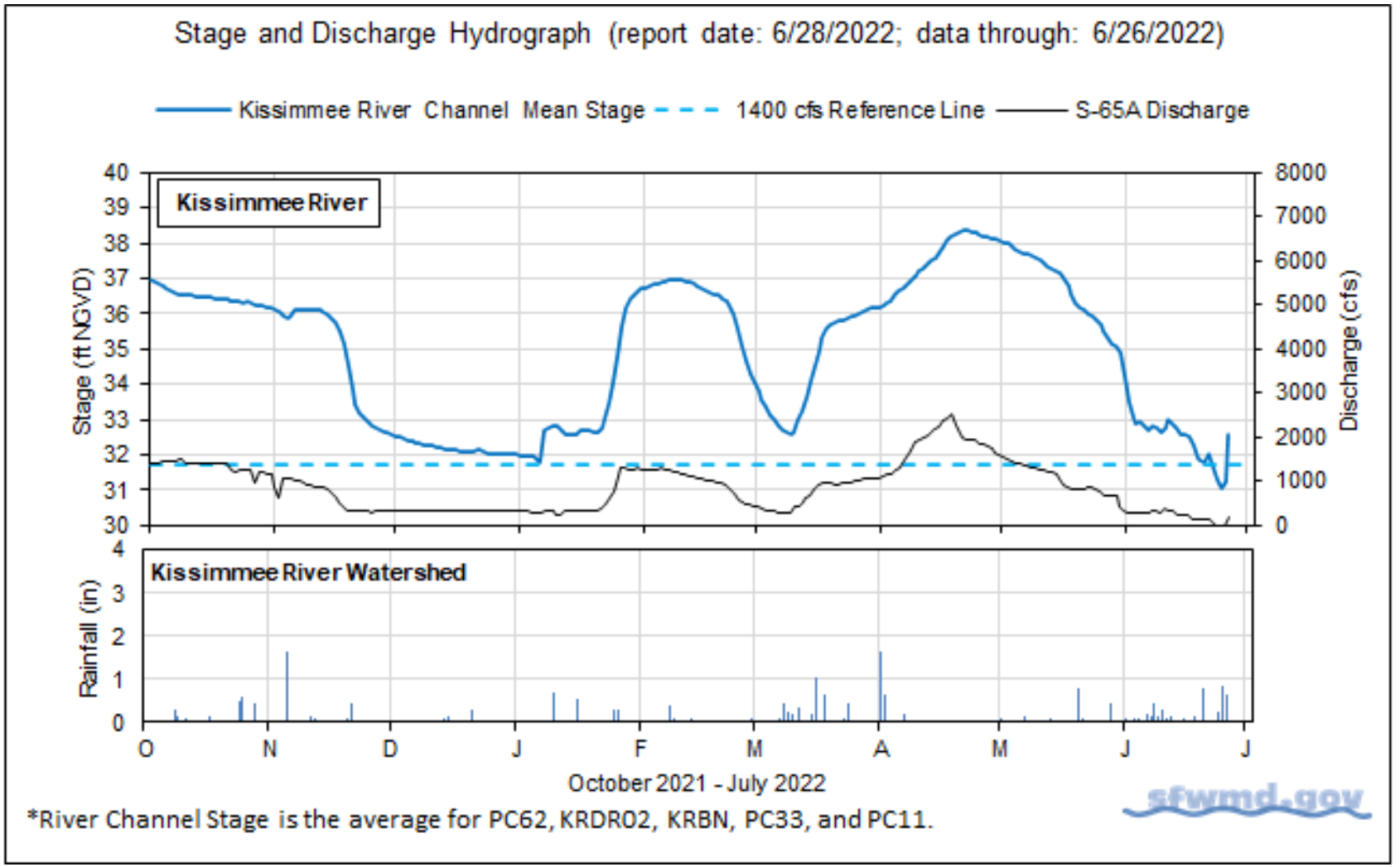


Figure KB-4. Kissimmee River stage, discharge and rainfall.

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

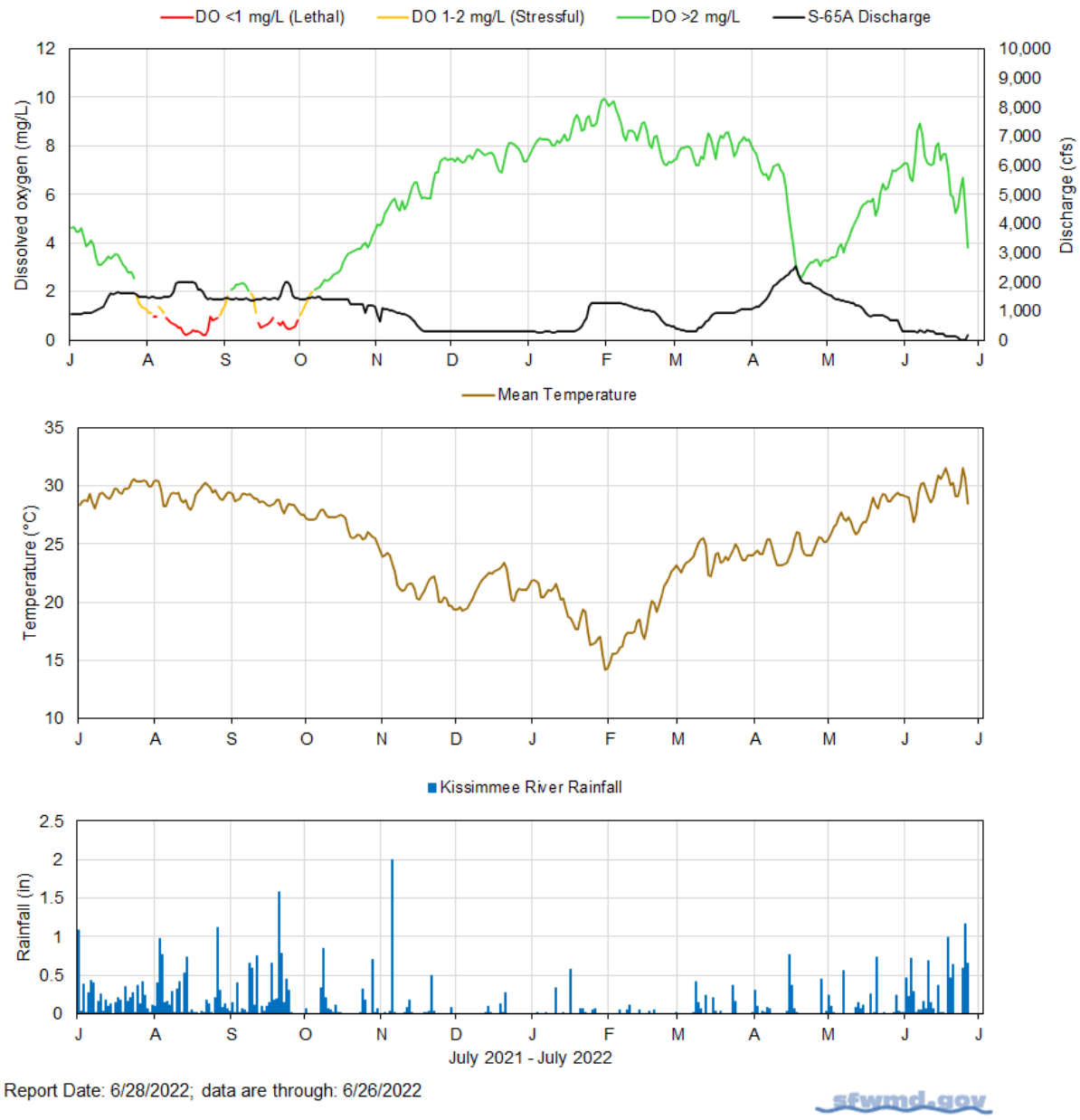


Figure KB-5. Restored Kissimmee river channel mean daily dissolved oxygen concentration (mg/L), S-65A discharge (cfs), temperature (°C) and rainfall (inches). Dissolved oxygen (DO) and temperature are mean daily values averaged for PC62, KRDR02, KRBN, PC33, PC11, PD62R, and PD42R with an average of three stations reporting this week. Rainfall values are daily totals for Kissimmee River (Pool BCD) AHED watershed.

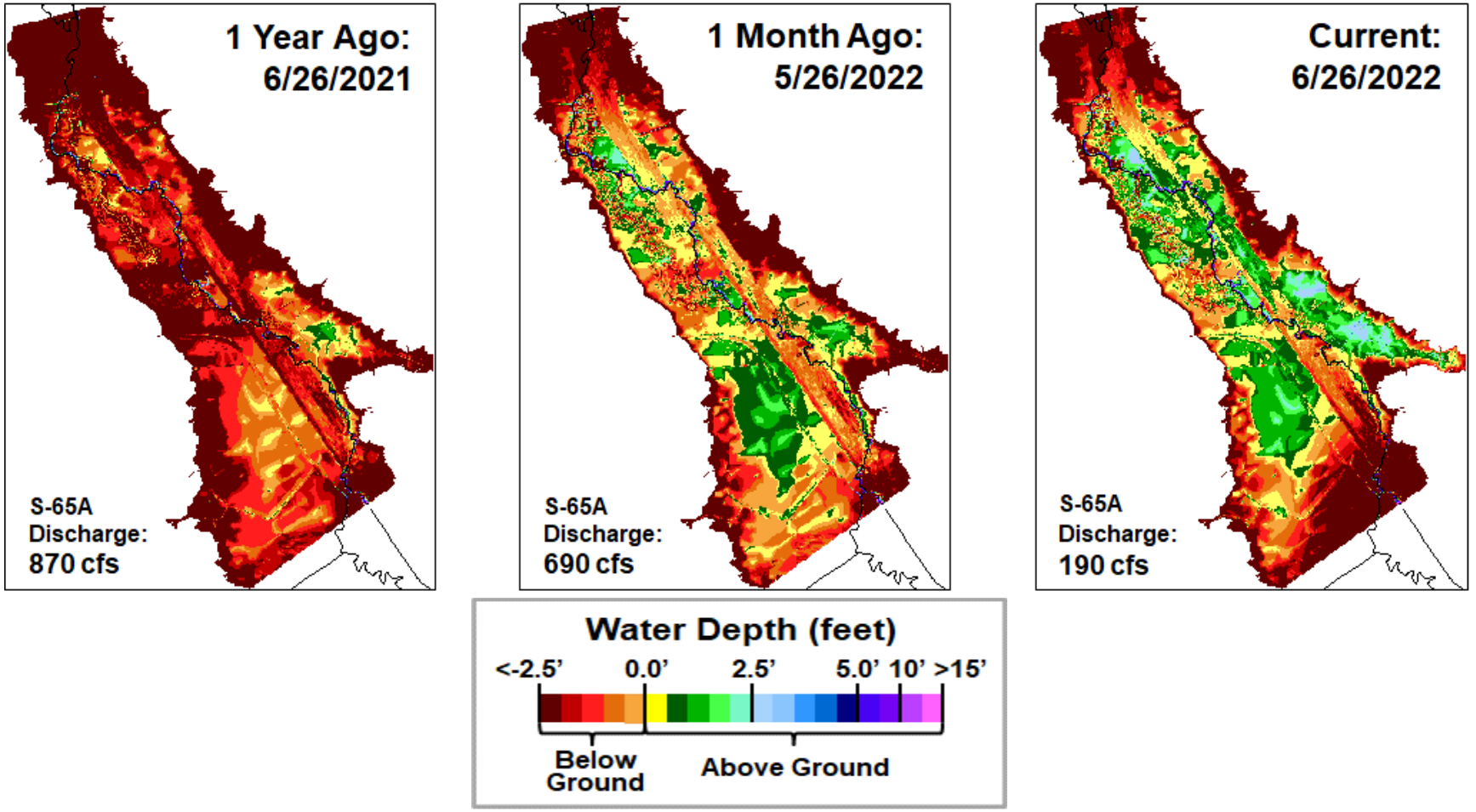


Figure KB-6. Phase I area Kissimmee River floodplain water depths (from left to right) one year ago, one month ago and current.

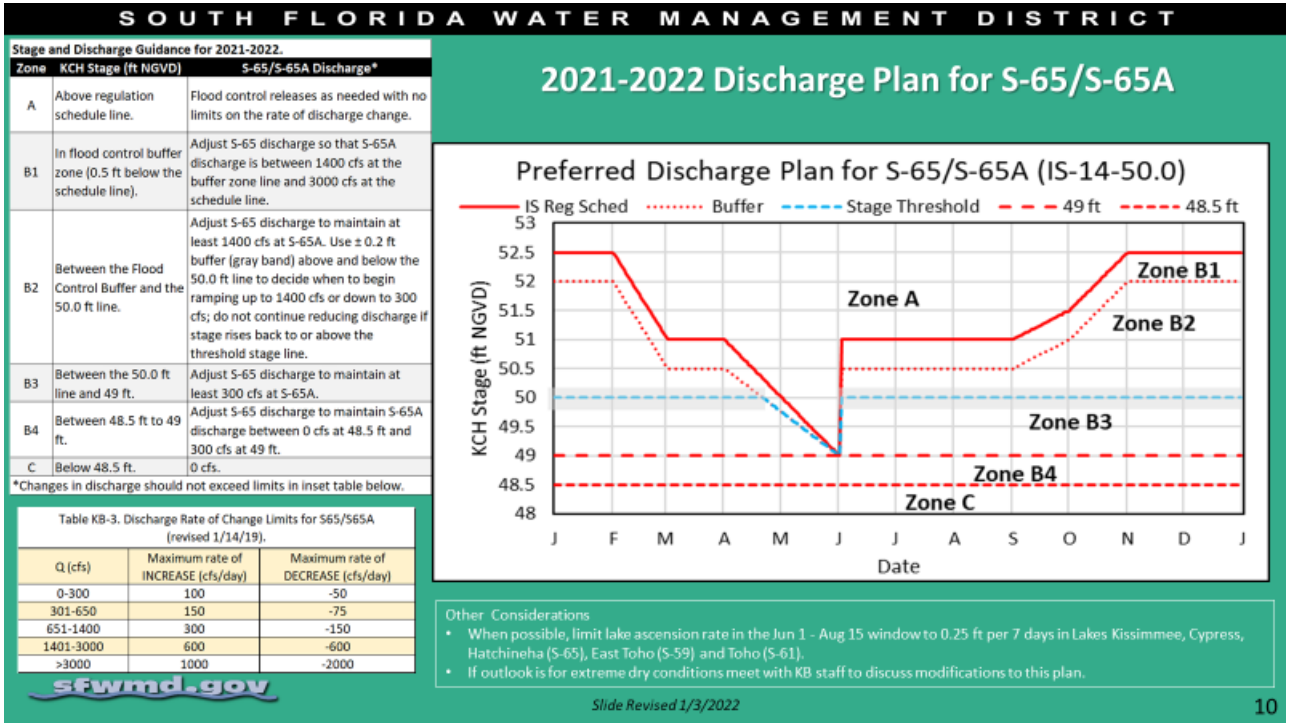


Figure KB-7. IS-14-50 Discharge Plan for S65/S65A with discharge rate of change limits (revised 1/14/19).

Lake Okeechobee

Lake Okeechobee stage was 12.91 feet NGVD on June 26, 2022, with water levels 0.32 feet higher than a month ago (**Figure LO-1**). Lake stage was in the Base Flow sub-band (**Figure LO-2**) and 0.23 feet above the ecological envelope last week (**Figure LO-3**). Lake stage rose above the ecological envelope on June 8, 2022, after spending 22 weeks within it. According to NEXRAD, 1.24 inches of rain fell directly on the Lake last week.

Average daily inflows (excluding rainfall) increased from the previous week, going from 661 cfs to 701 cfs. Average daily outflows (excluding evapotranspiration) also increased, going from 46 cfs to 278 cfs. Highest inflow came from the Kissimmee River/C-38 Canal through the S-65E structure (260 cfs). There was 278 cfs of outflow to the west via S-77 and no outflow south through the S-350 structures. There was a total of 254 cfs of backflow from the east via S-308 (253 cfs) and S-271 (1 cfs) last week. **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 (June 25, 2022) from NOAA's Harmful Algal Bloom Monitoring System showed that bloom potential is high in Fisheating Bay (western part of the Lake), and the northwestern and southwestern shorelines of the Lake. The bloom potential remains as a moderate risk in the northern region of the Lake (**Figure LO-6**).

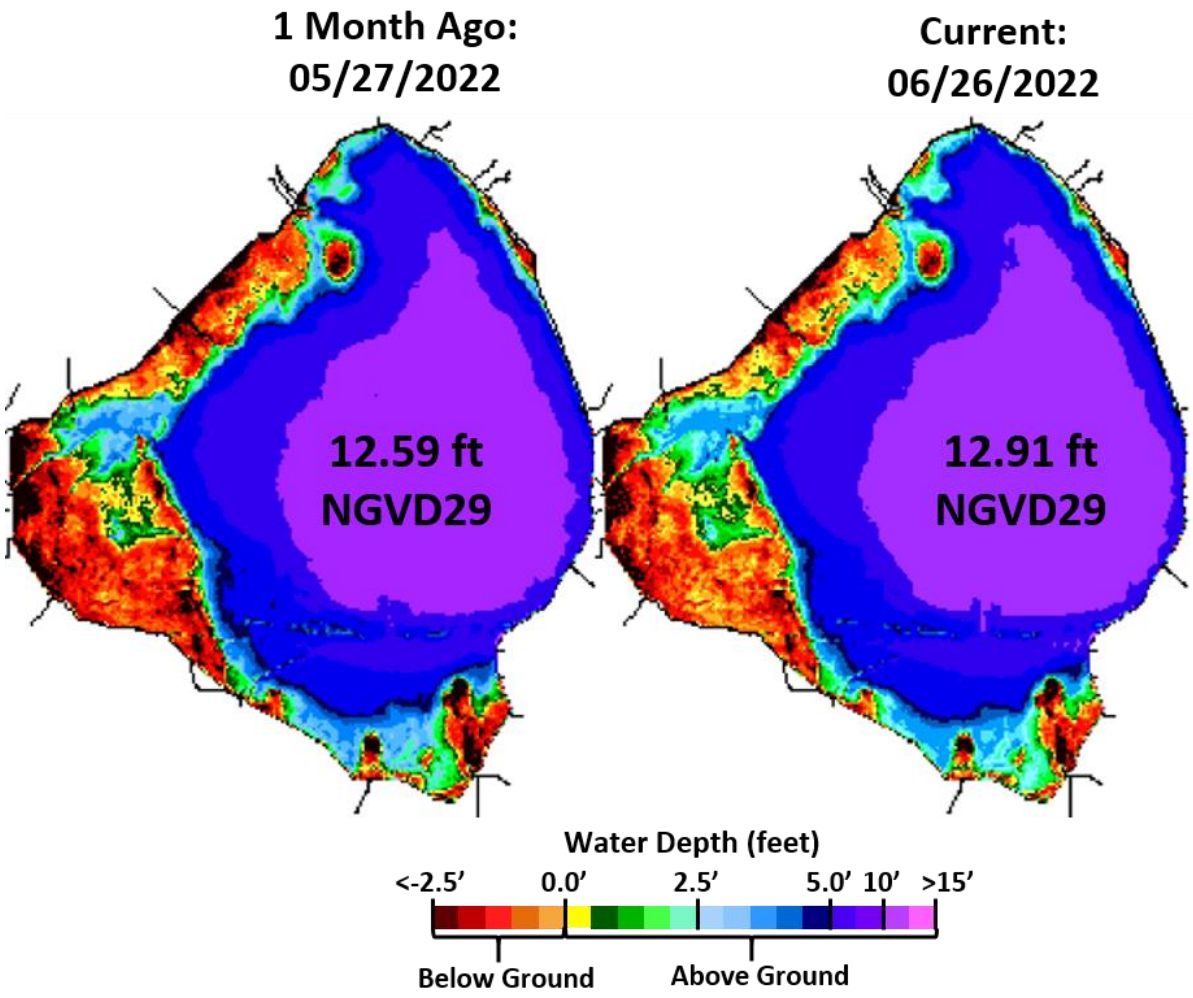


Figure LO-1. Lake Okeechobee water depth estimates based on South Florida Water Depth Assessment Tool (SFWDAT).

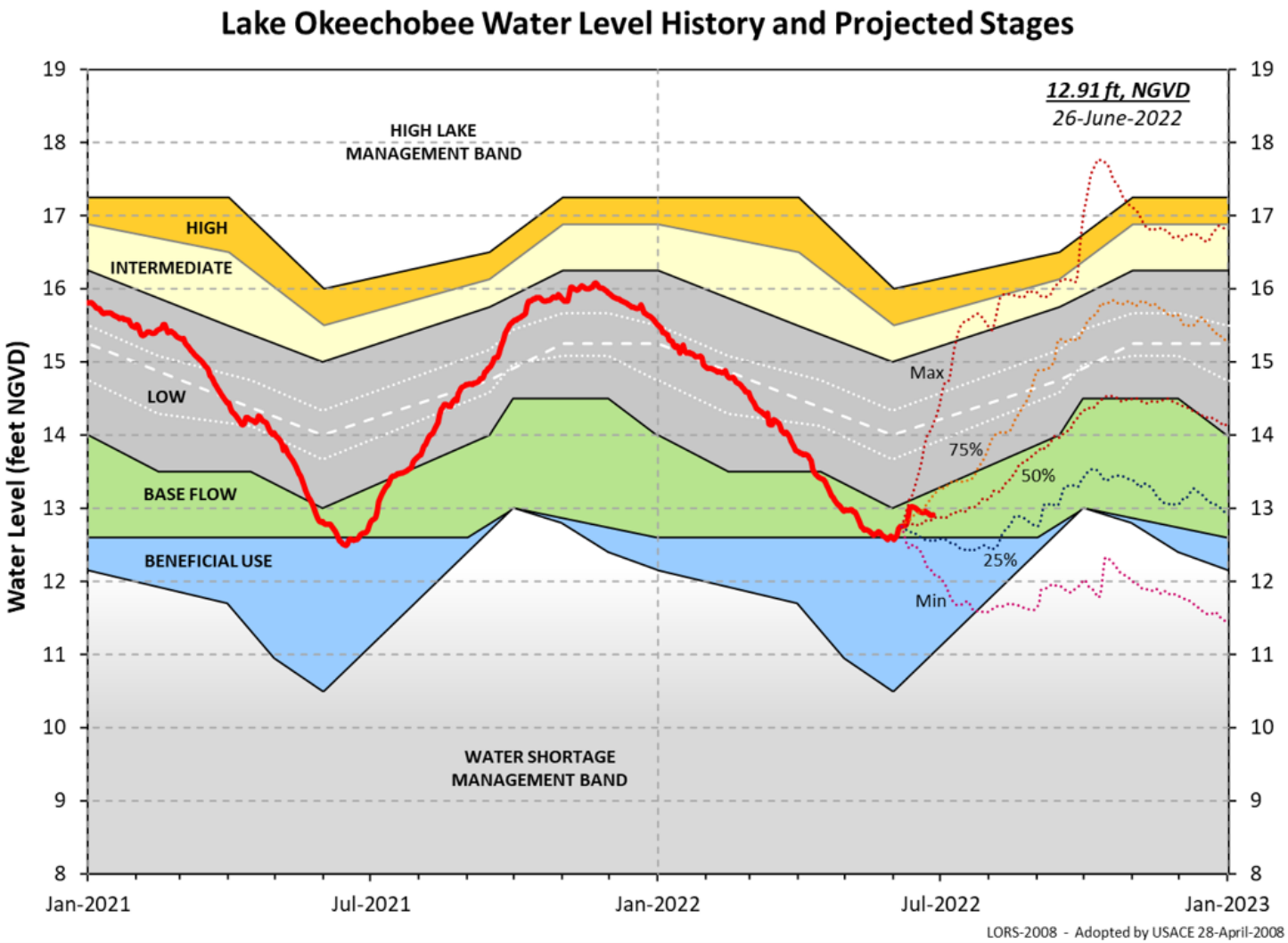


Figure LO-2. Recent Lake Okeechobee stages with projected stages based on a dynamic position analysis.

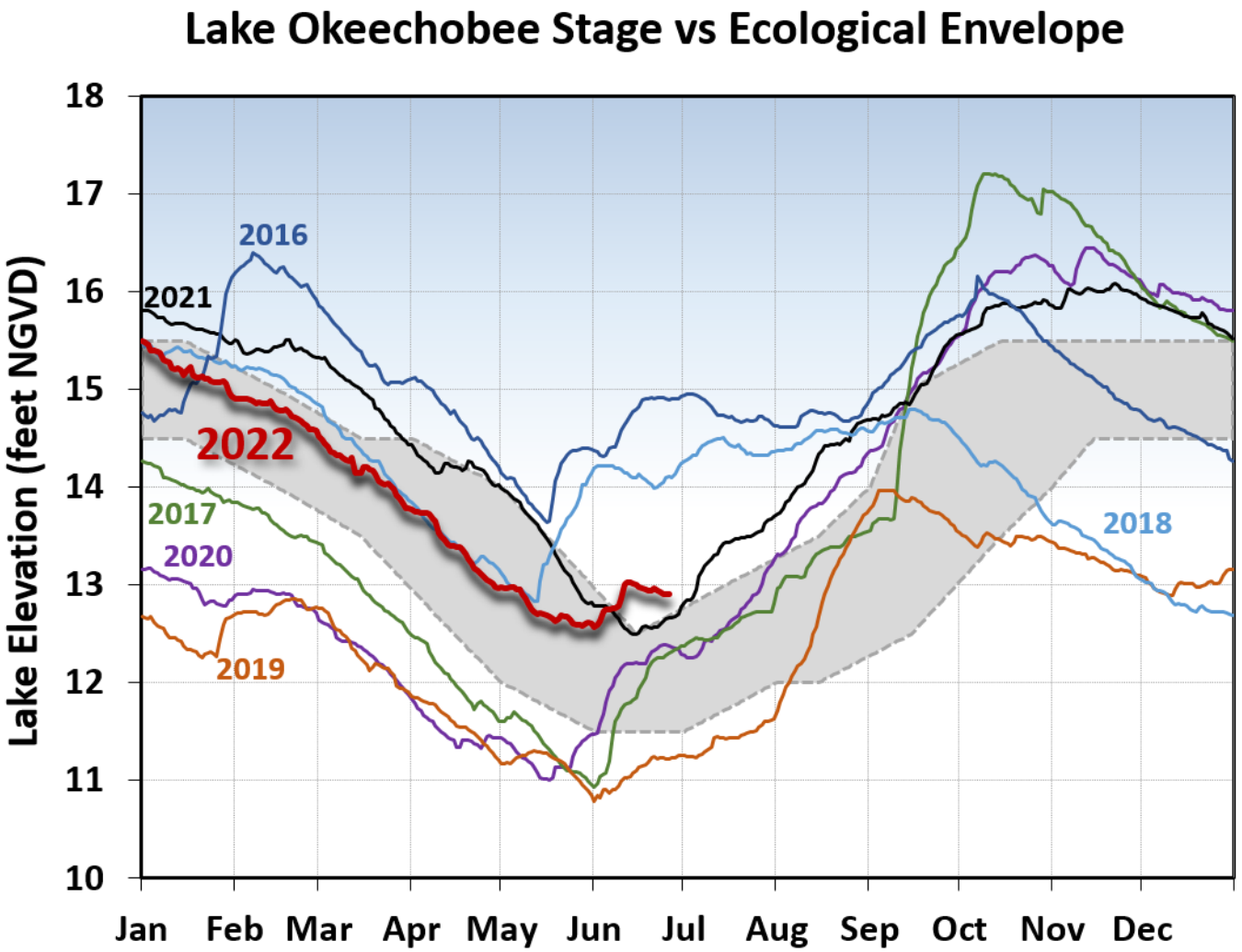


Figure LO-3. The prior six years of annual stage hydrographs for Lake Okeechobee in comparison to the ecological envelope.

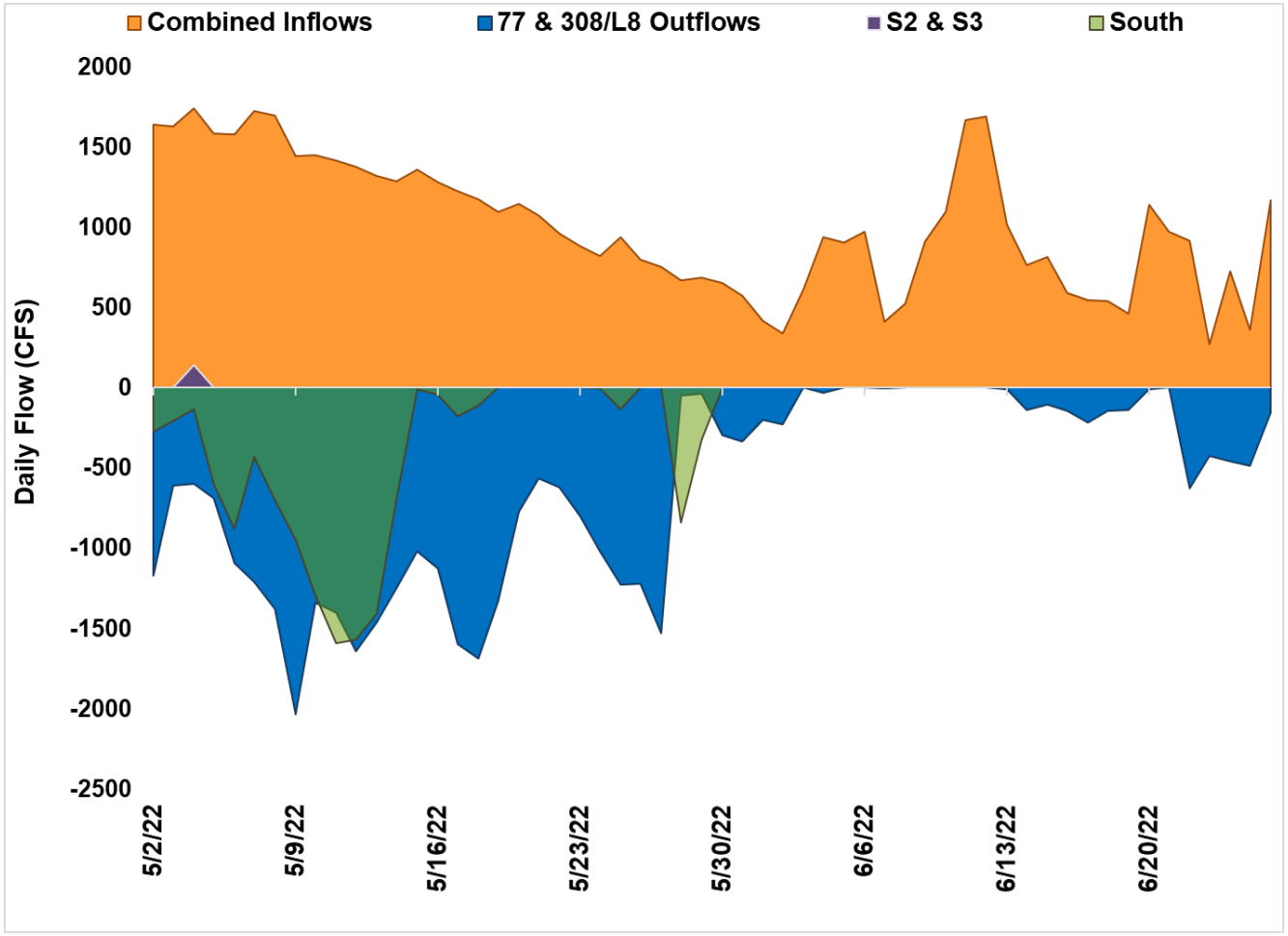


Figure LO-4. Major inflows (orange) to and outflows east and west (blue) from Lake Okeechobee. Outflows south are shown in green. Flows into Lake Okeechobee from the L-8 canal through S-271 (formerly Culvert 10A) or from the C-44 canal through the S-308 are included as inflows. Conversely, flows from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

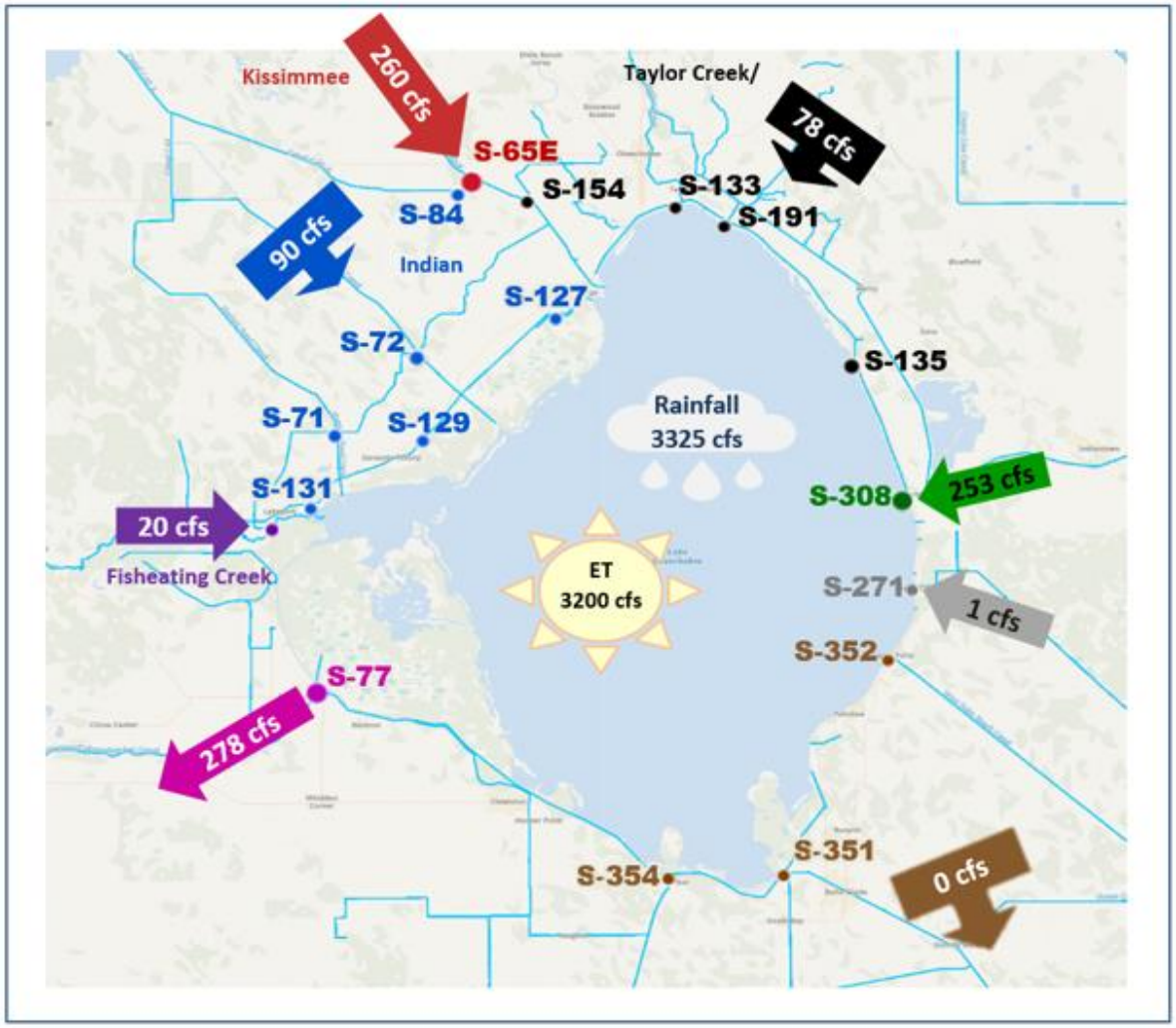


Figure LO-5. Inflows into Lake Okeechobee from Indian Prairie basins, Taylor Creek/Nubbin Slough, Kissimmee River and Fisheating Creek, and outflows to the west via S-77, to the east via S-308, to the south via S-351, S-352, S-354, and to southeast via S-271 (formerly Culvert 10A) for the week of June 20 - 26, 2022.

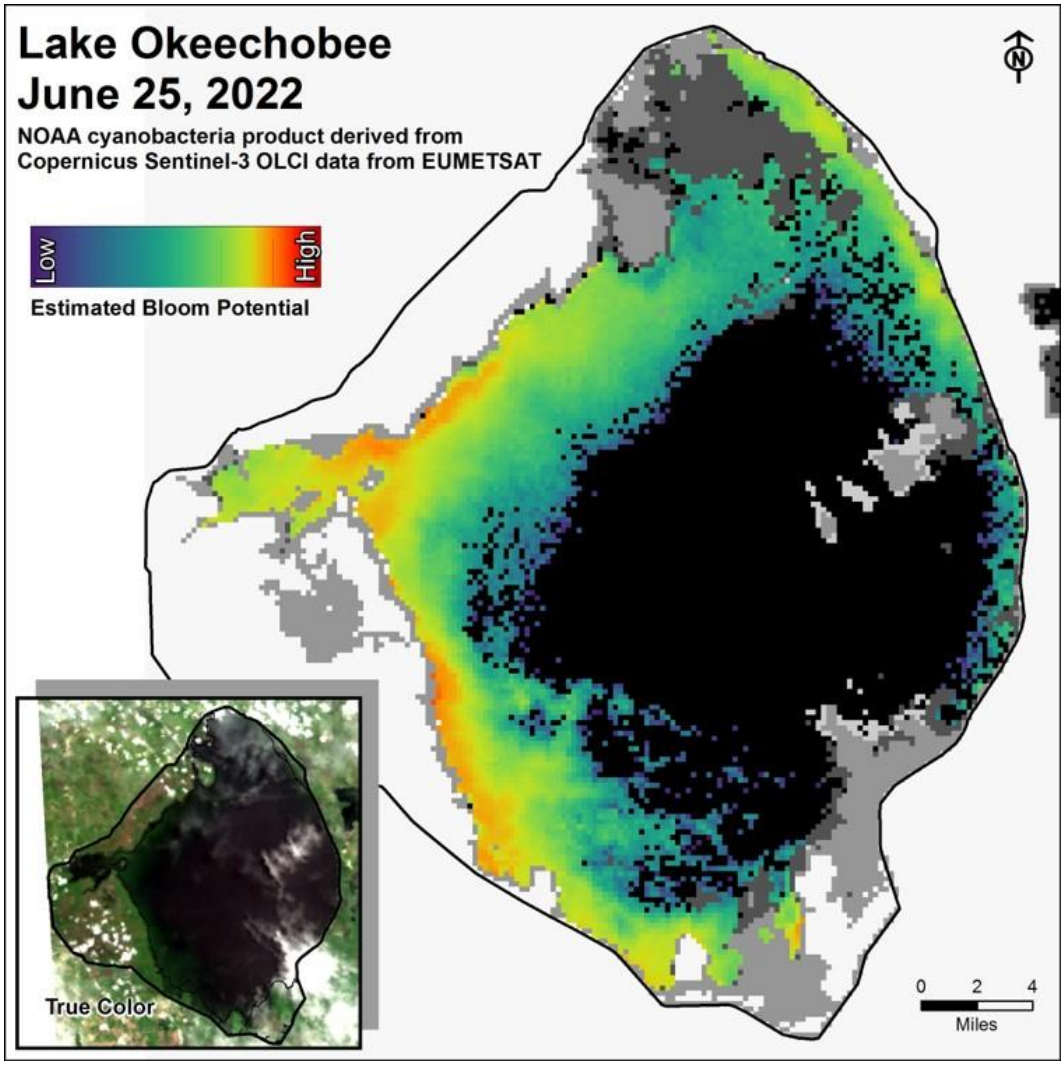


Figure LO-6. Cyanobacteria bloom potential on June 25, 2022 based on NOAA's harmful algal bloom monitoring system. Gray color indicates cloud cover.

Estuaries

St. Lucie Estuary

Over the past week, mean total inflow to the St. Lucie Estuary was 327 cfs (**Figures ES-1** and **ES-2**) and the previous 30-day mean inflow was 838 cfs. For comparison, the historical provisional mean inflows from the contributing areas are shown in **Figure ES-2**.

Over the past week, salinities increased at all sites in 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 19.0. 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 was 5.0 spat/shell for May (**Figure ES-5**).

Caloosahatchee River Estuary

Over the past week, mean total inflow to the Caloosahatchee River Estuary was 2,267 cfs (**Figures ES-6** and **ES-7**) and the previous 30-day mean inflow was 3,589 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 Val I-75 and Sanibel and increased at the remaining sites in the estuary (**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 Shell Point, and in the stressed range at Cape Coral and Sanibel (**Figure ES-10**). Mean larval oyster recruitment rates reported by the Fish and Wildlife Research Institute were 13.7 spat/shell at Iona Cove and 3.9 spat/shell at Bird Island in May (**Figures ES-11 and ES-12**).

Surface salinity at Val I-75 was forecasted for the next two weeks, using an autoregression model (Qiu and Wan, 2013[1]) coupled with a linear reservoir model for the tidal basin. Model scenarios included pulse releases at S-79 ranging from 0 to 1,500 cfs, and a steady release at 2,000 cfs with estimated tidal basin inflows of 919 cfs. Model results from all scenarios predict daily salinity to be 1.0 or lower and the 30-day moving average surface salinity to be 0.3 or lower at Val I-75 at the end of the two-week period (**Table ES-3** and **Figure ES-13**). This keeps predicted salinities in the upper estuary within the optimal salinity range (0-10) for tape grass.

[1] Qui, 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 June 24, 2022, that *Karenia brevis*, the Florida red tide dinoflagellate, was observed at background concentrations in three samples from Lee and Collier counties last week. On the east coast, red tide was not observed in samples from Broward County.

Water Management Recommendations

Lake stage is in the Base Flow 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.

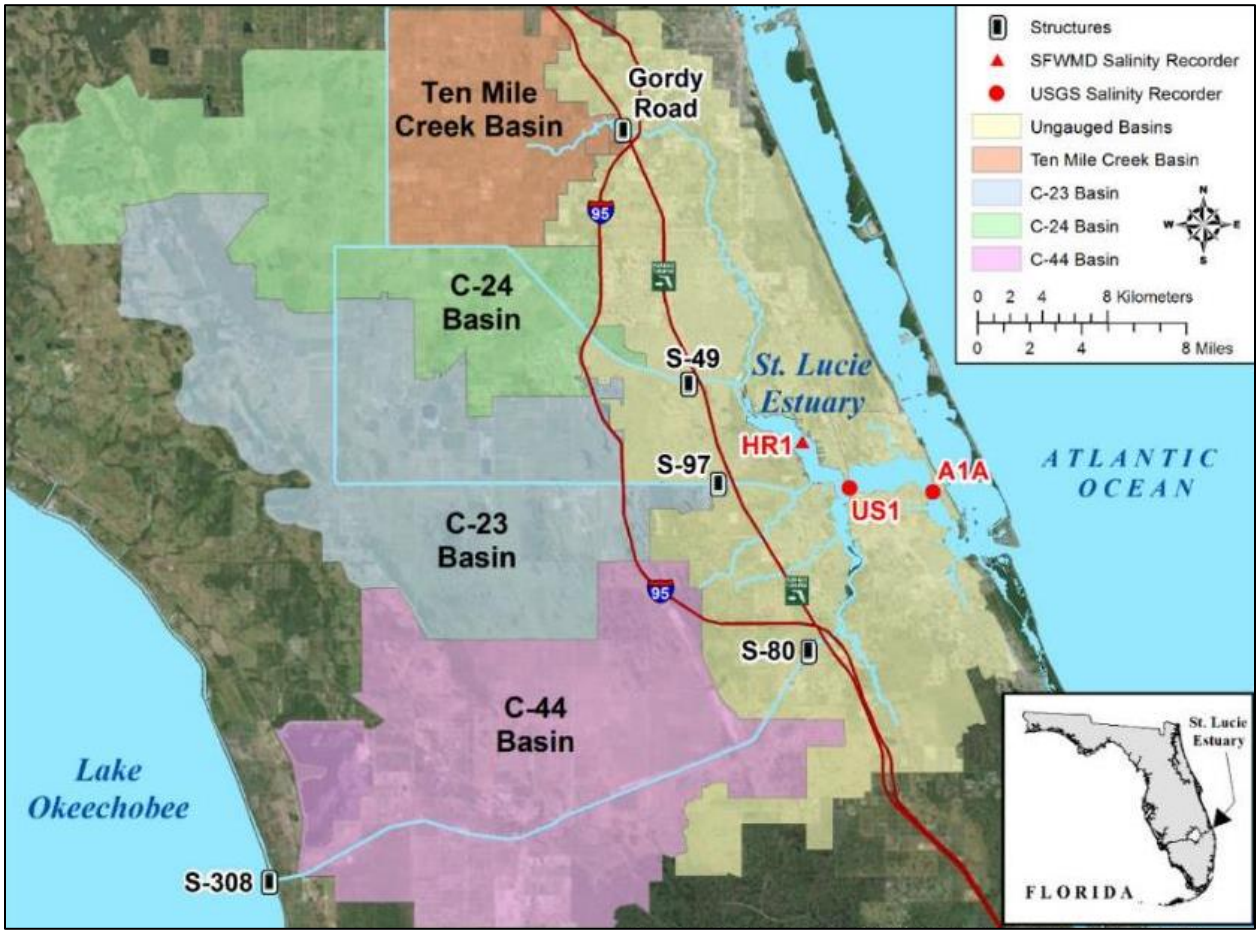


Figure ES-1. Basins, water control structures and salinity monitoring sites in the St. Lucie Estuary.

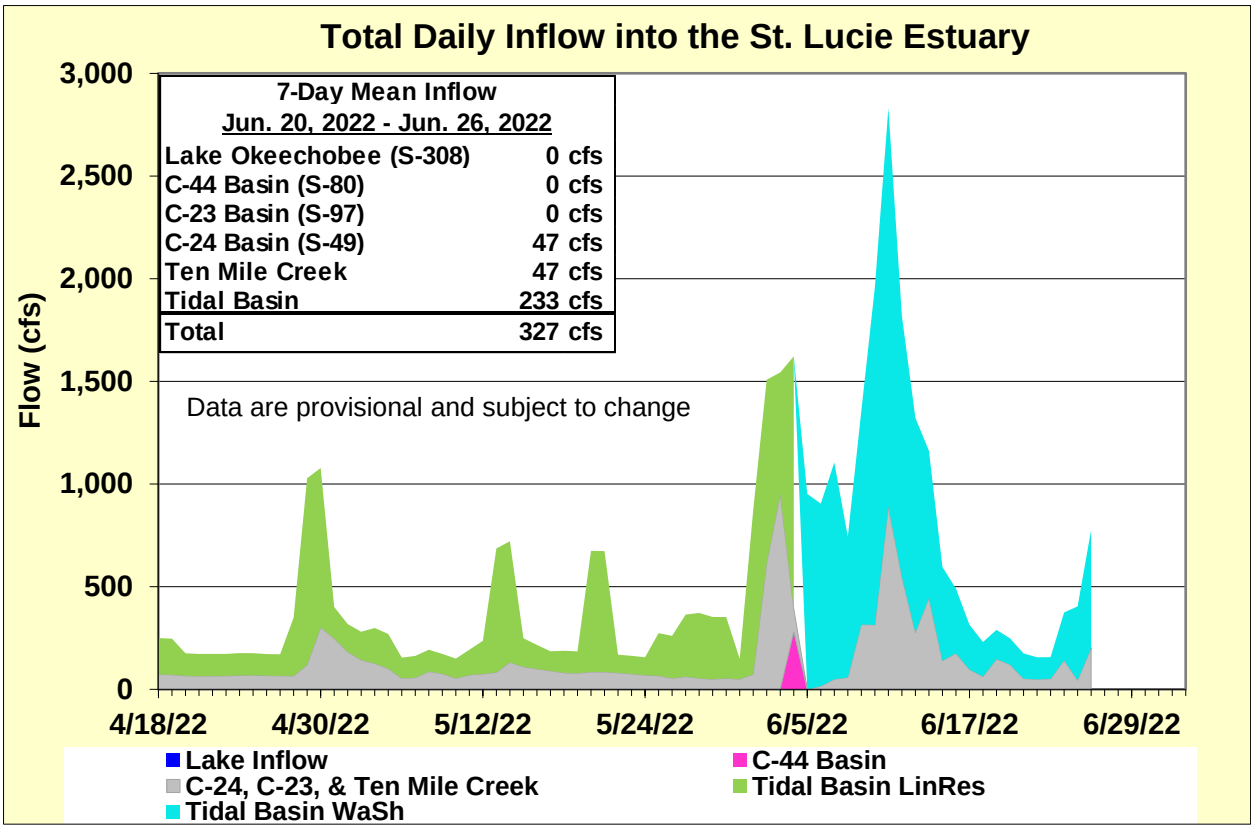


Figure ES-2. Total daily inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and Tidal Basins into the St. Lucie Estuary.

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

Sampling Site	Surface	Bottom	Optimum Envelope
HR1 (North Fork)	**12.1** (8.3)	**16.0** (13.6)	10.0 – 25.0
US1 Bridge	**18.1** (15.1)	**19.9** (16.9)	10.0 – 25.0
A1A Bridge	**26.6** (24.0)	**29.3** (27.3)	10.0 – 25.0

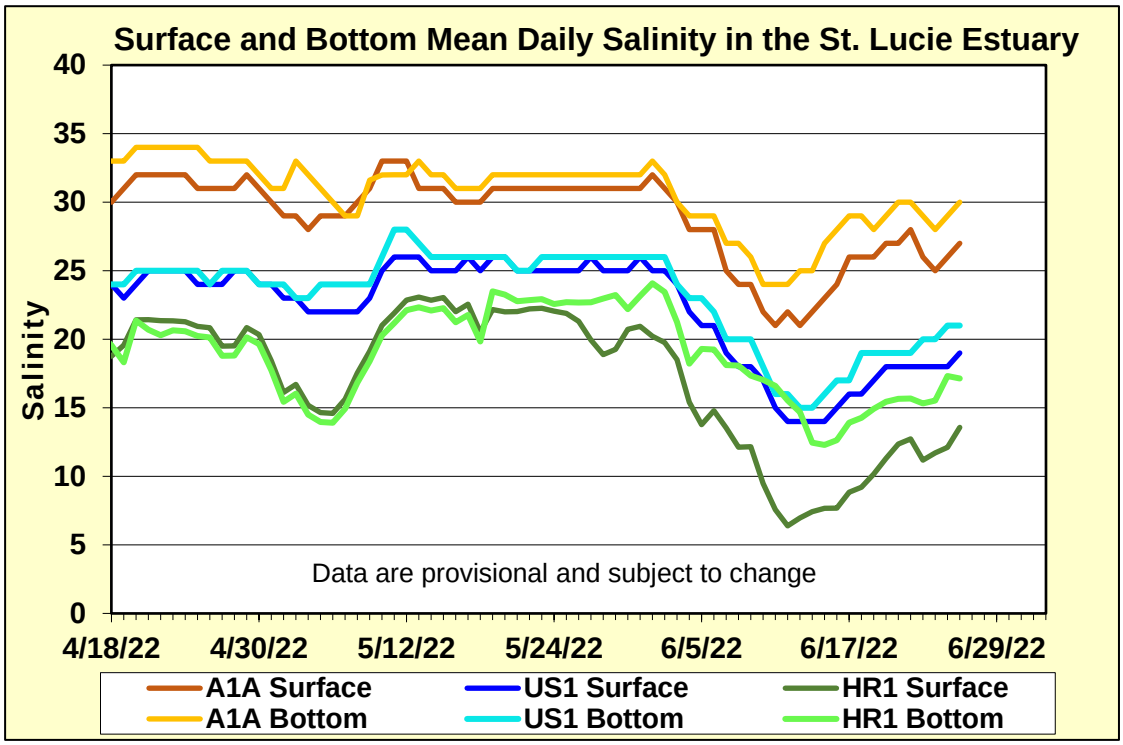


Figure ES-3. Mean daily salinity at the A1A, US1 and HR1 sites in the St. Lucie Estuary.

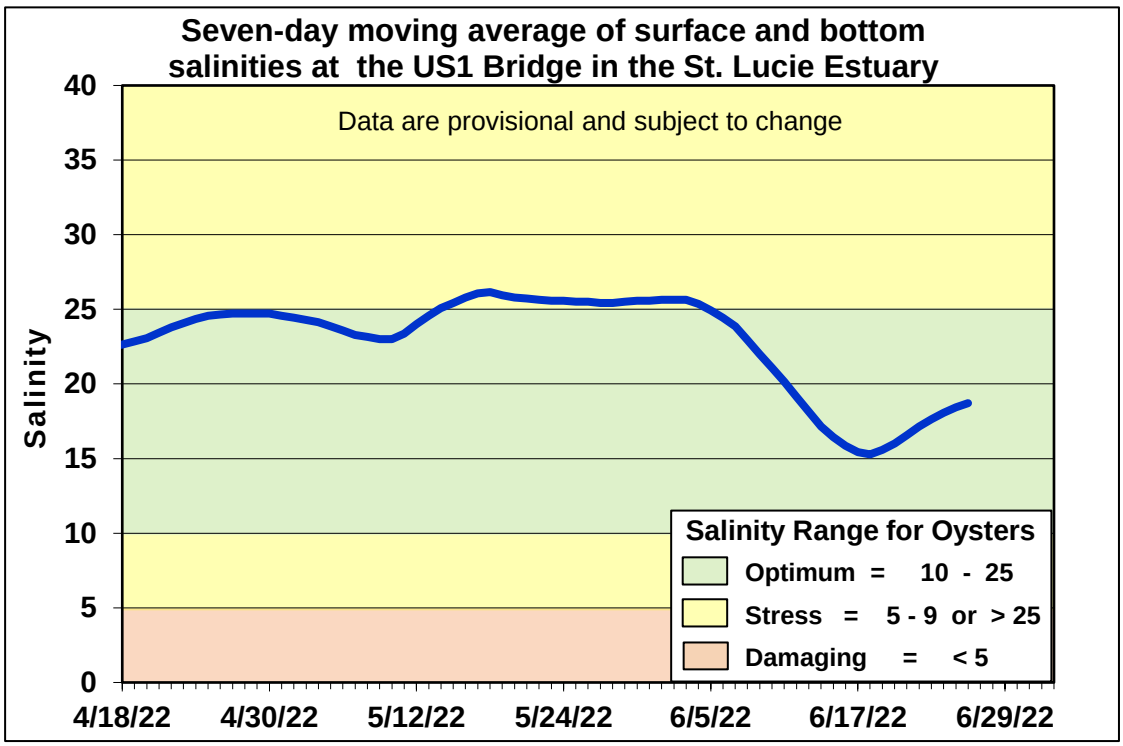


Figure ES-4. Seven-day moving average of the surface and bottom salinities at the US1 Bridge in the St. Lucie Estuary.

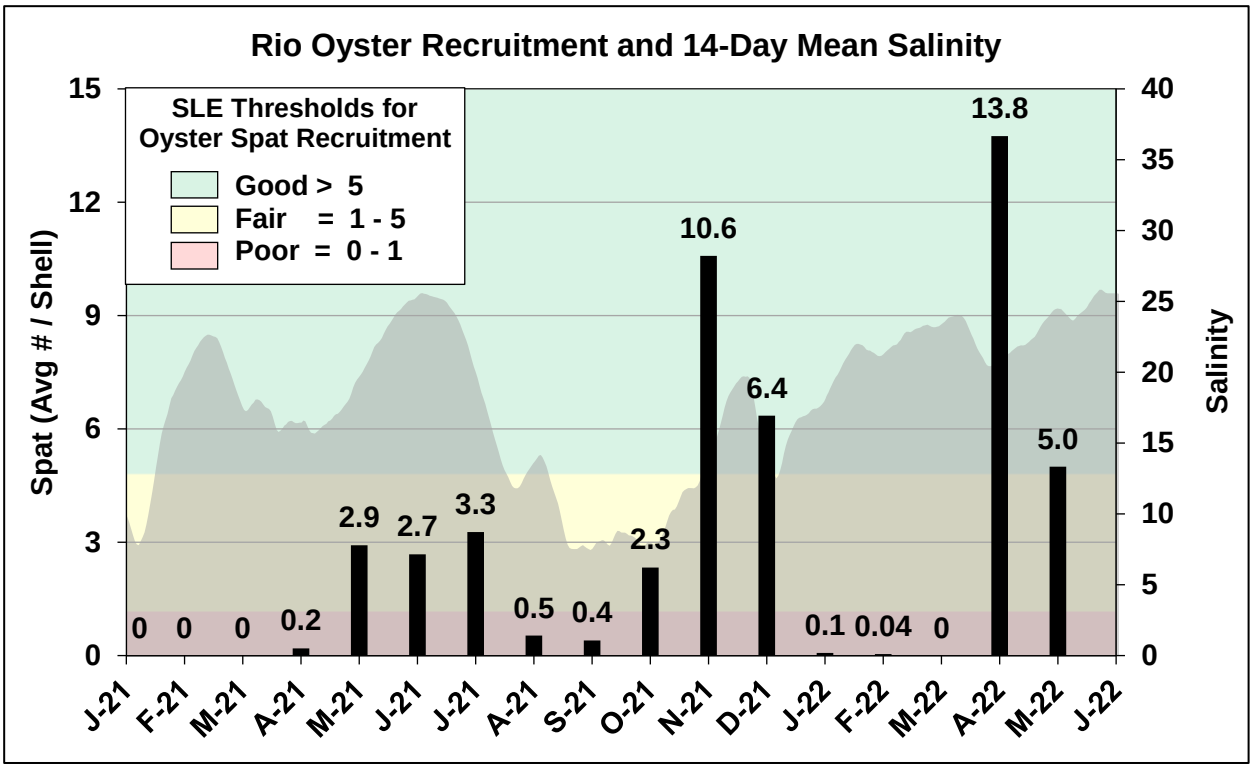


Figure ES-5. Mean oyster recruitment at the Rio oyster monitoring station and 14-day mean salinity at US1 Bridge.

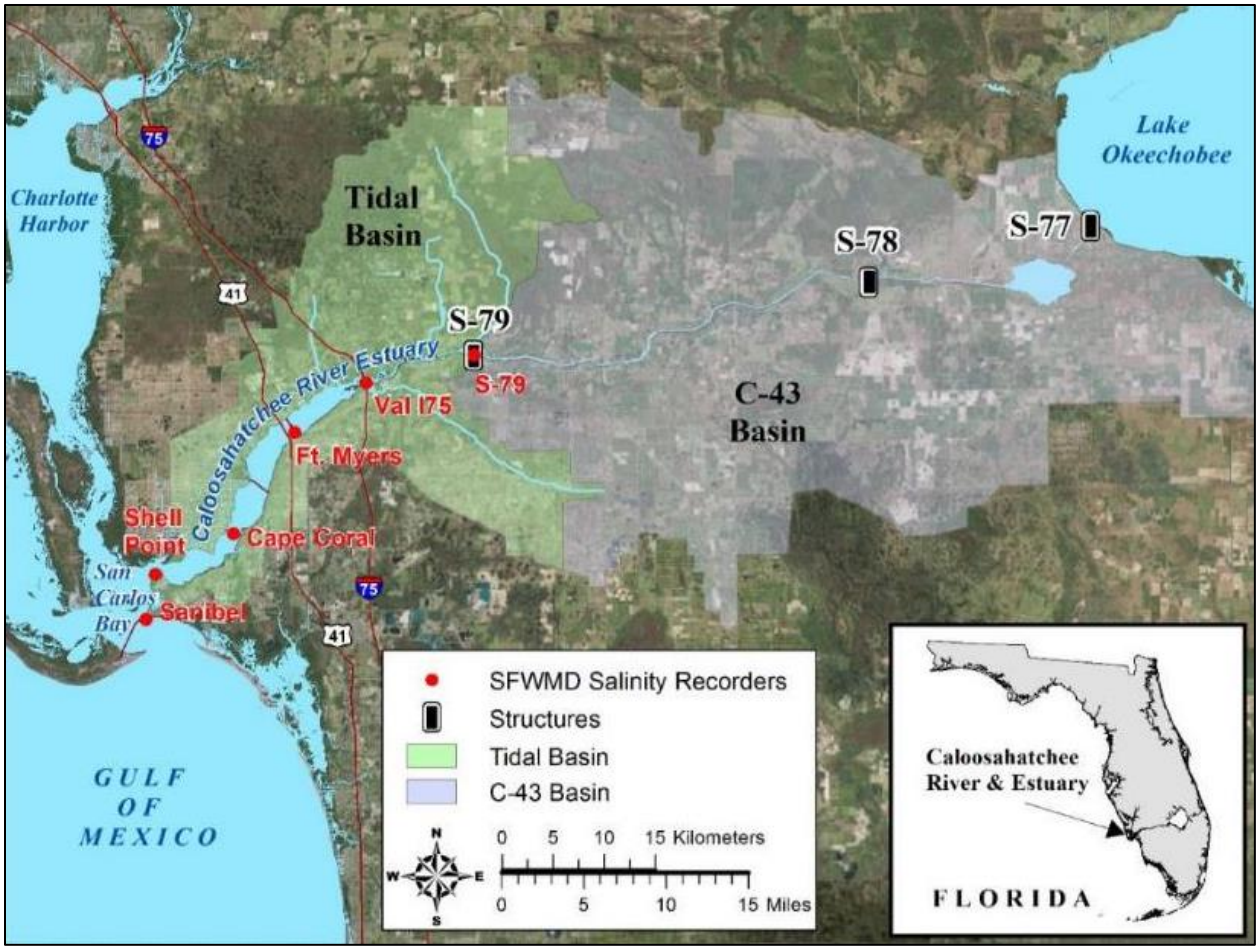


Figure ES-6. Basins, water control structures and salinity monitoring sites in the Caloosahatchee River Estuary.

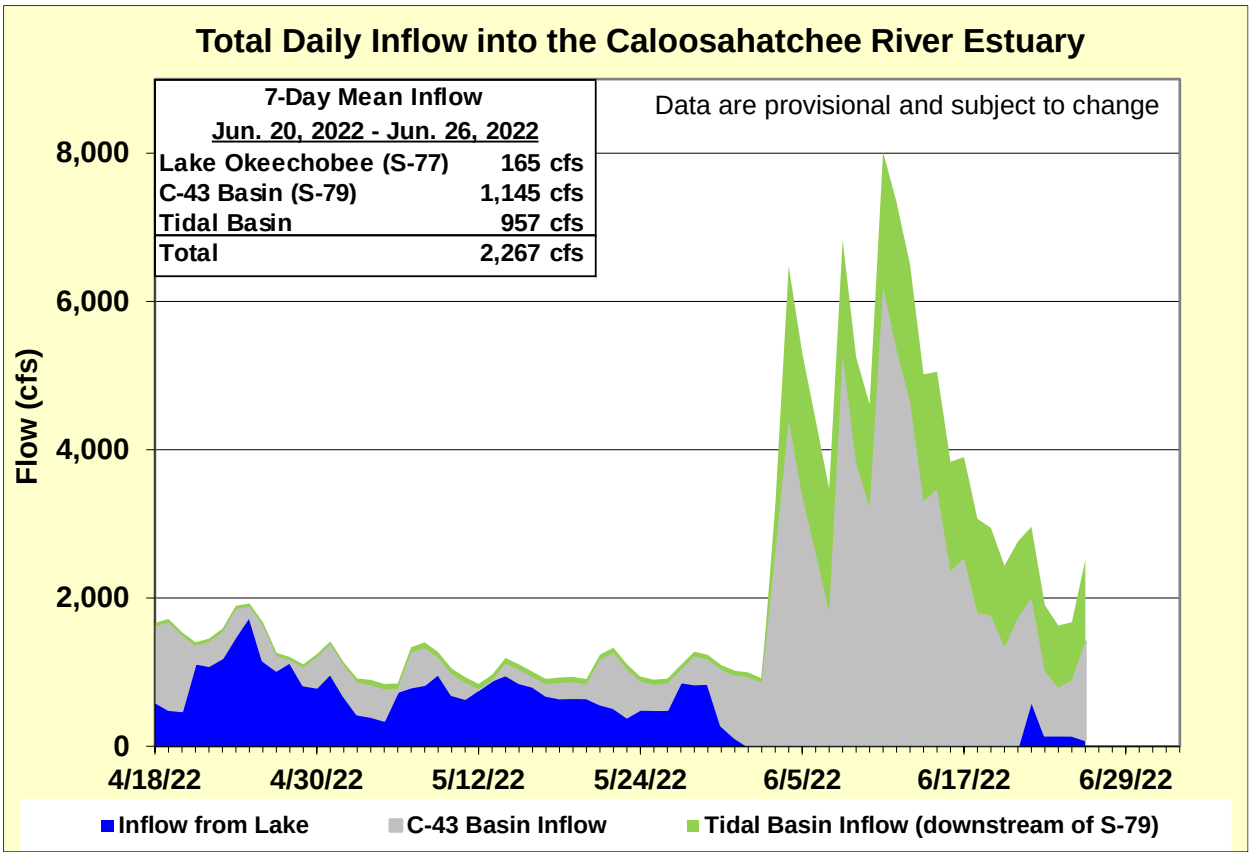


Figure ES-7. Total daily inflows from Lake Okeechobee, and runoff from the C-43 and Tidal basins into the Caloosahatchee River Estuary.

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)	**0.3** (0.2)	**0.3** (0.2)	0.0 – 10.0
Val I-75	**0.3** (0.3)	**0.3** (0.3)	0.0 – 10.0
Fort Myers Yacht Basin	**0.5** (0.3)	**0.5** (0.3)	0.0 – 10.0
Cape Coral	**4.9** (2.9)	**6.3** (4.0)	10.0 – 25.0
Shell Point	**18.5** (17.4)	**20.3** (19.8)	10.0 – 25.0
Sanibel	**26.0** (26.0)	**28.0** (27.5)	10.0 – 25.0

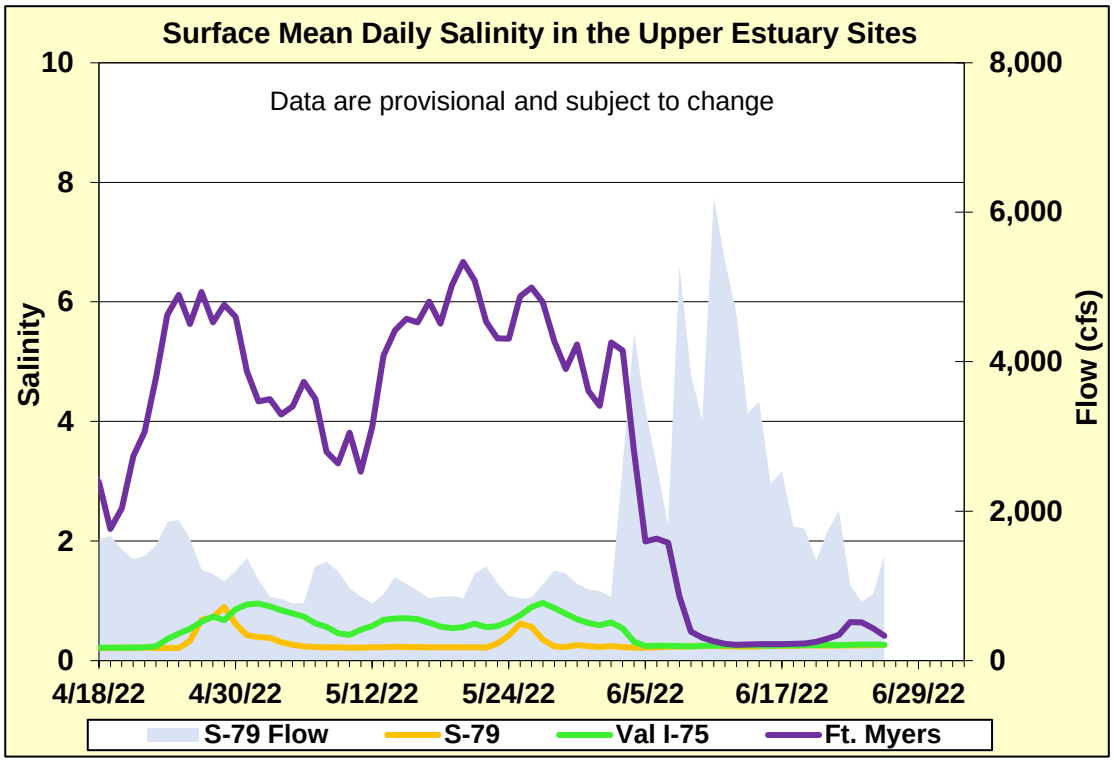


Figure ES-8. Mean daily salinity at upper Caloosahatchee River Estuary monitoring sites and mean daily flow at S-79.

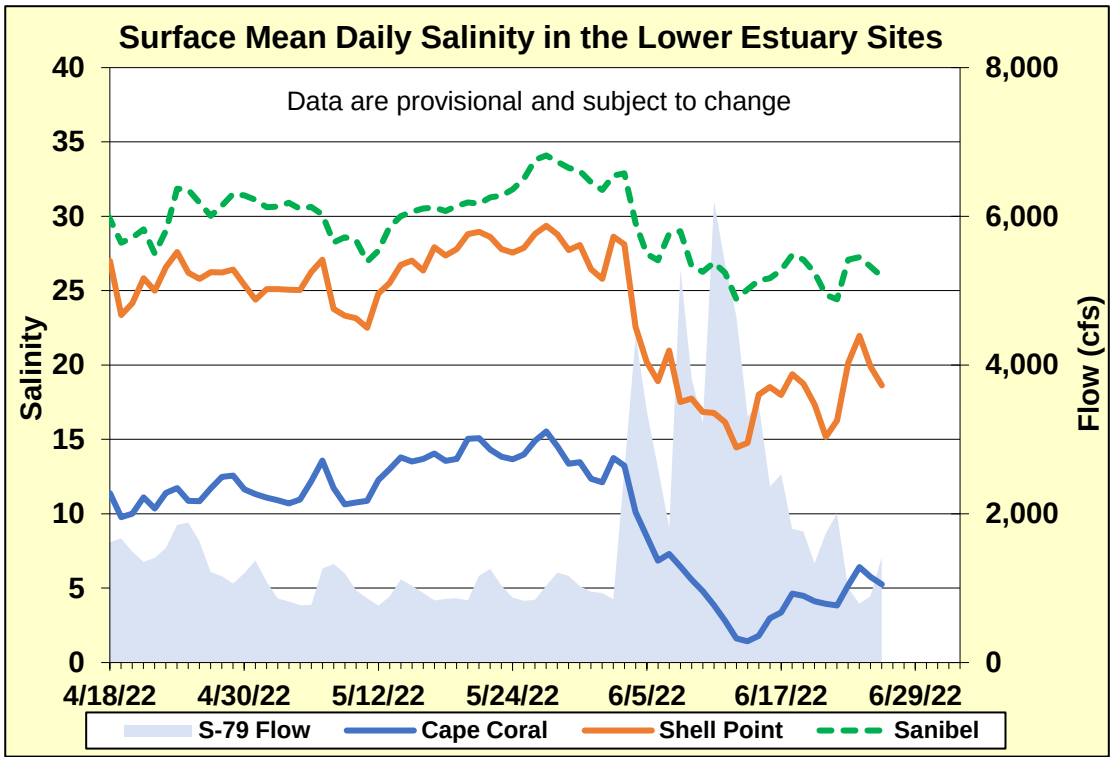


Figure ES-9. Mean daily surface salinity at lower Caloosahatchee River Estuary monitoring sites and mean daily flow at S-79.

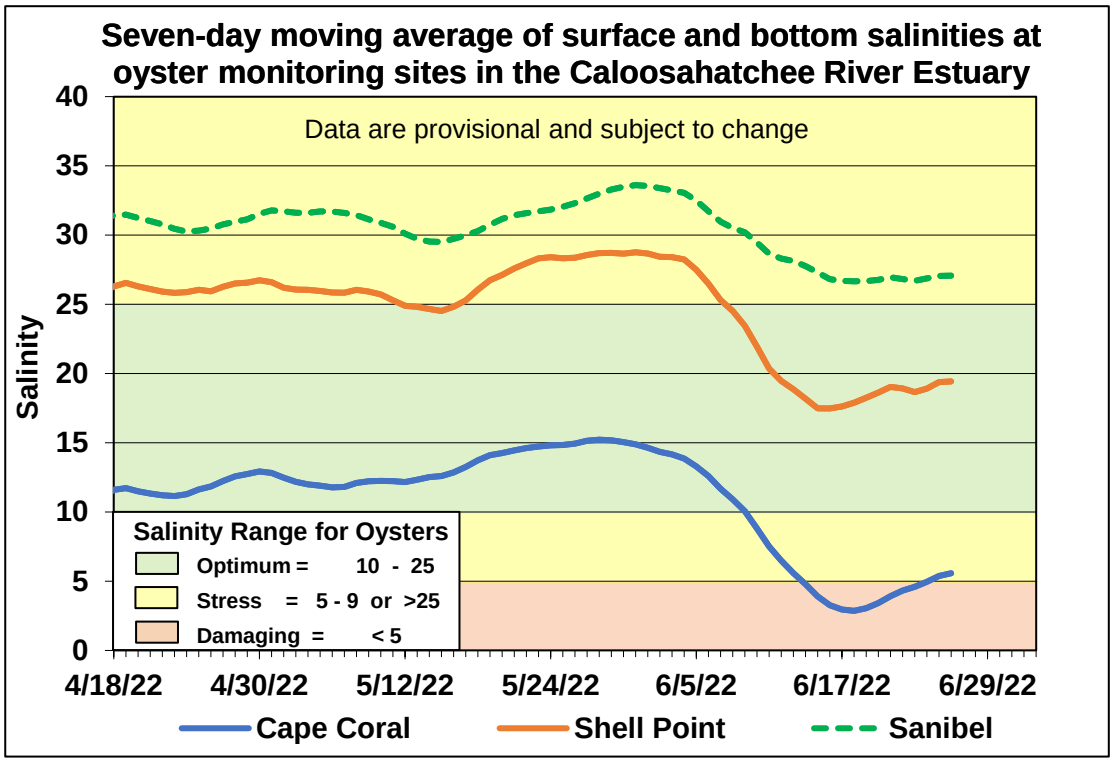


Figure ES-10. Seven-day moving average of surface and bottom salinities at Cape Coral, Shell Point and Sanibel monitoring sites in the Caloosahatchee River Estuary.

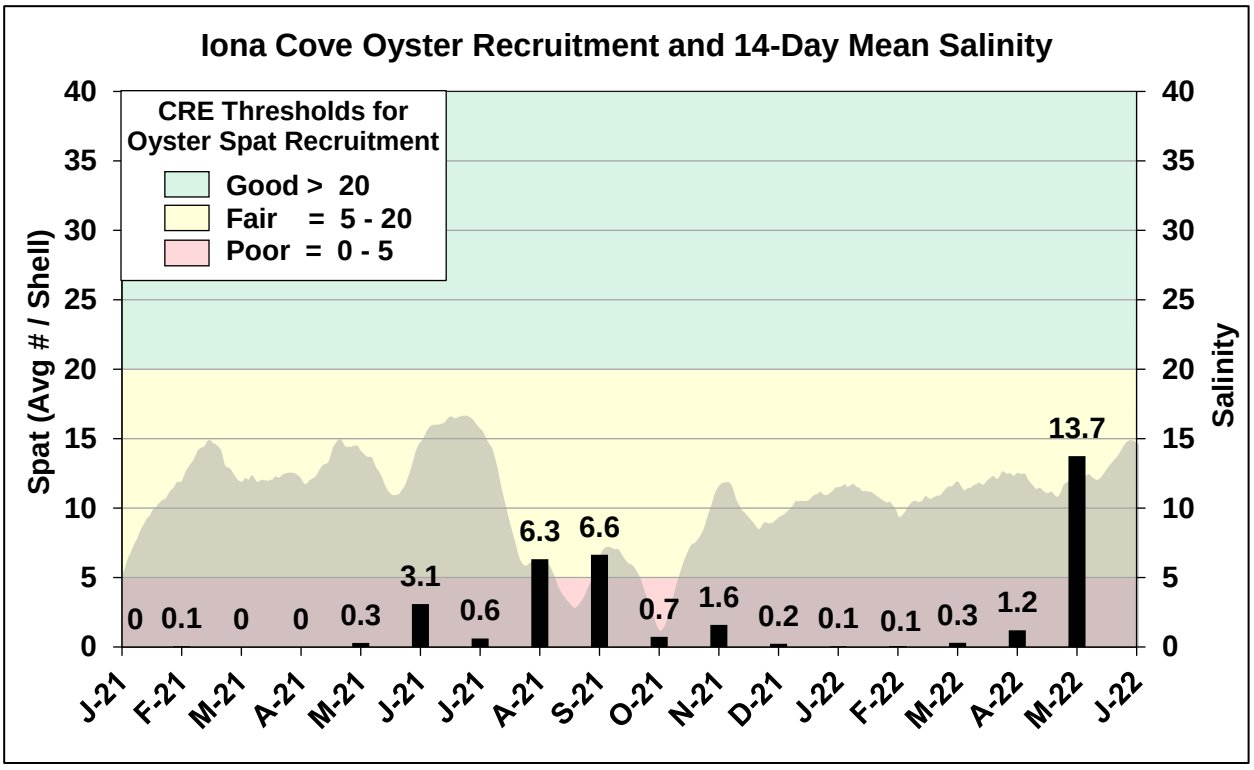


Figure ES-11. Mean oyster recruitment at the Iona Cove oyster monitoring station and 14-day mean salinity at Cape Coral.

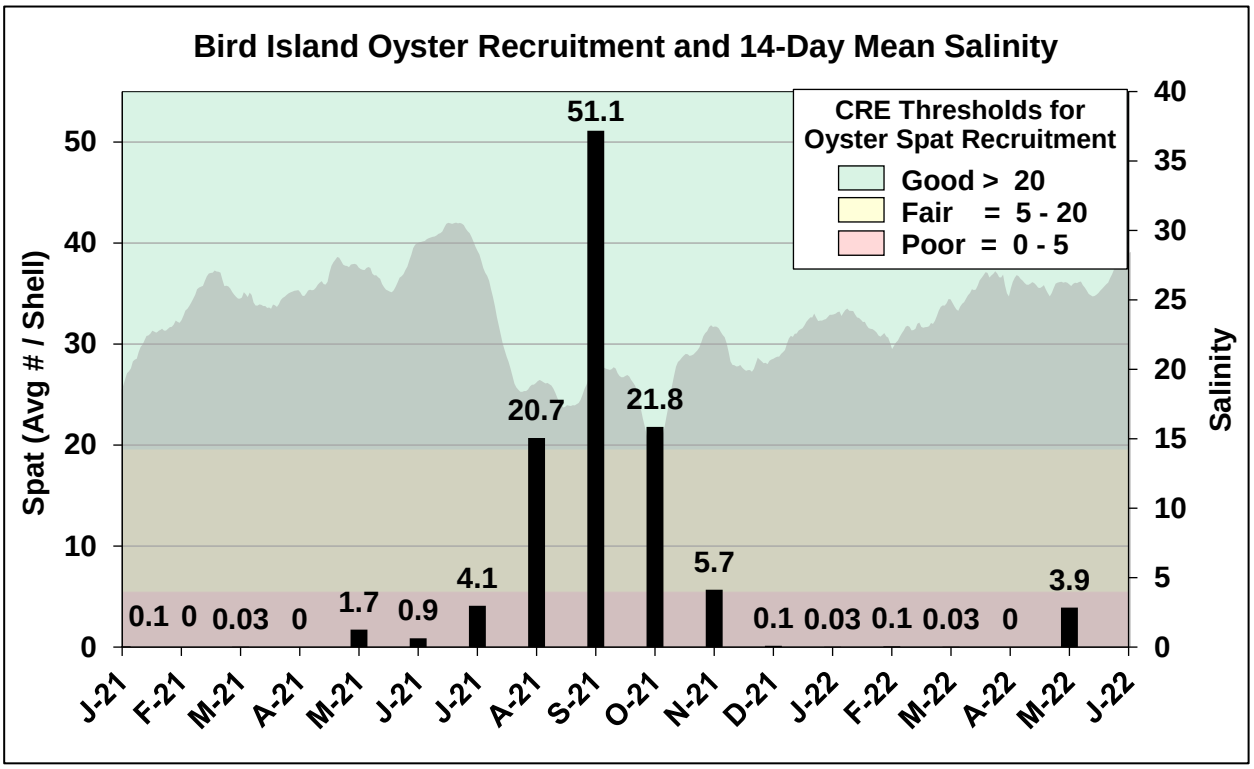


Figure ES-12. Mean oyster recruitment at the Bird Island oyster monitoring station and 14-day mean salinity at Shell Point.

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	919	1.0	0.3
B	450	919	0.5	0.3
C	800	919	0.3	0.3
D	1000	919	0.3	0.3
E	1500	919	0.3	0.3
F	2000	919	0.3	0.3

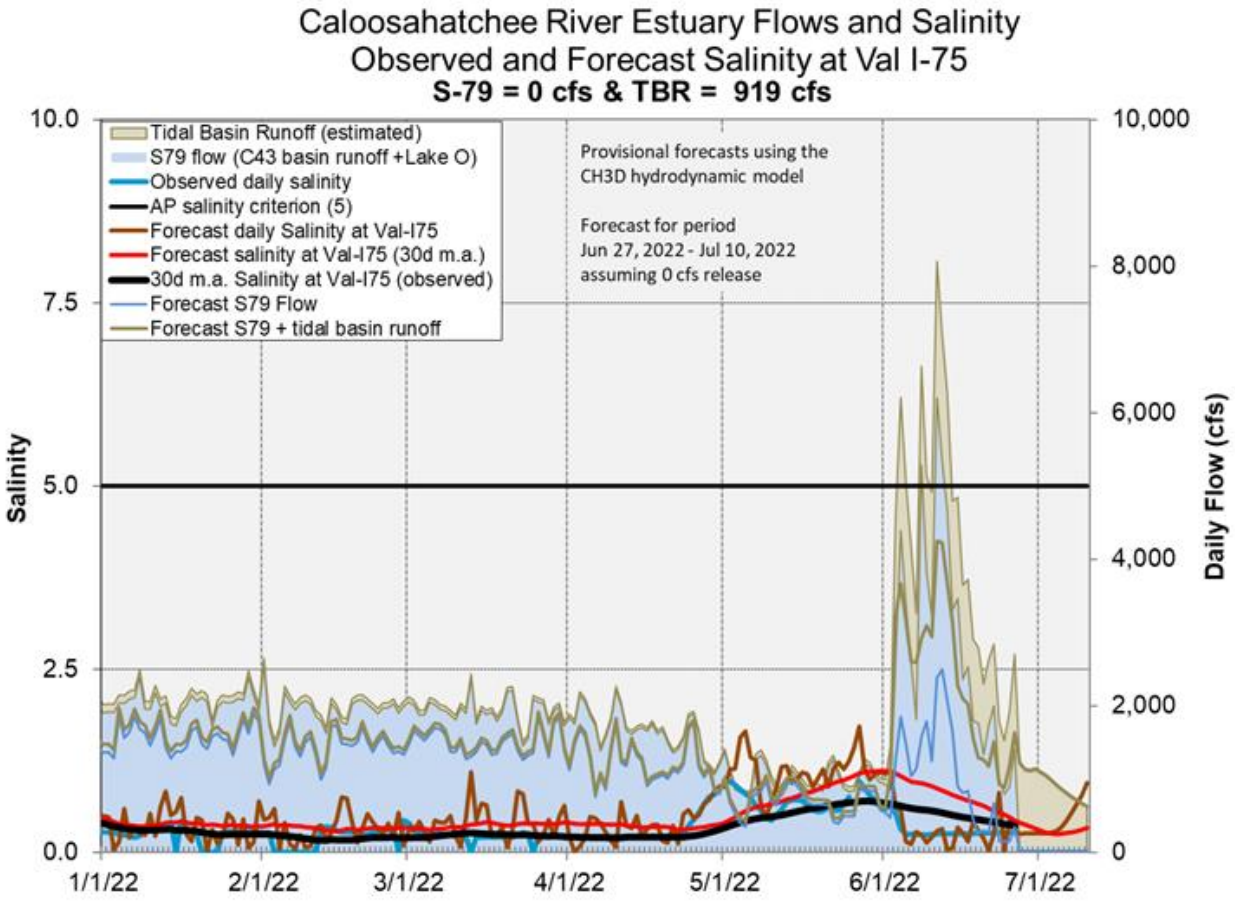


Figure ES-13. Forecasted Val I-75 site surface salinity assuming no pulse release at S-79.

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 near or above 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 Flow-way and very high for the Central Flow-way (**Figure S-1**).

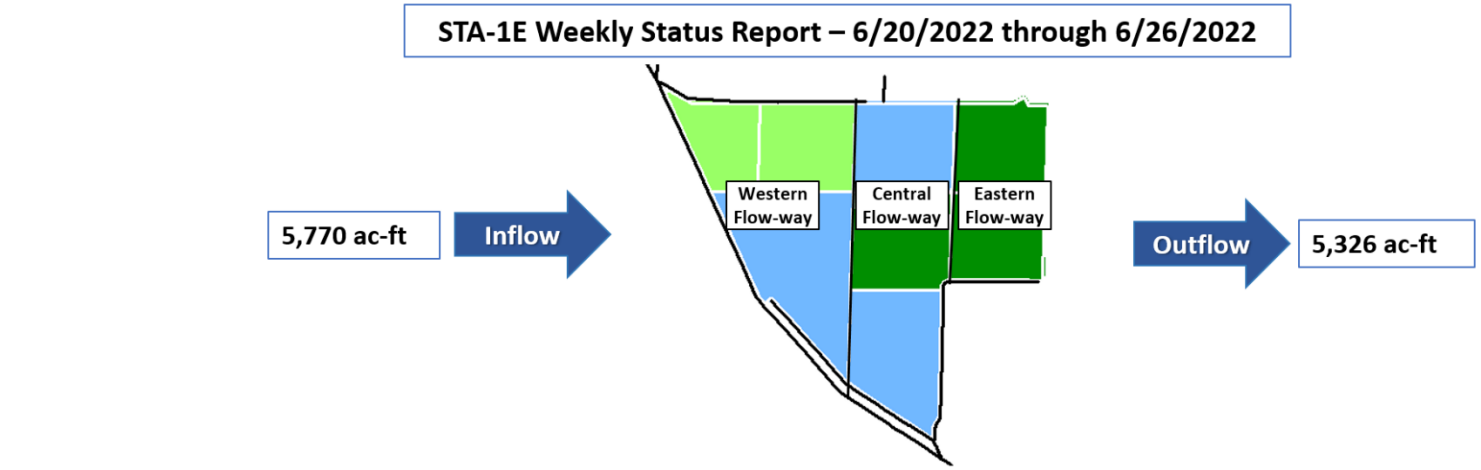
STA-1W: Operational restrictions are in place in STA-1W Western, Eastern, and Northern Flow-ways for vegetation management activities. Most treatment cells are above target stage. Vegetation in the flow-ways is stressed and highly stressed. The 365-day PLRs for the Northern and Western, and Eastern Flow-ways are at or below 1.0 g/m^2/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 3 and 4 for vegetation management activities. Online treatment cells are above 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/m^2/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. Online treatment cells are 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/m^2/year (**Figure S-4**).

STA-5/6: STA-5/6 Flow-way 4 is offline for vegetation management activities. Treatment cells are near or 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 below 1.0 g/m^2/year, except Flow-way 5 which is high. (**Figure S-5** and **S-6**).

For definitions on STA operational language see glossary following figures.



STA-1E Flow-Way Status			
Flow-Way	Vegetation Status Healthy ----- Stressed	365-day P Loading Rate (below 1.0 g P /m²/yr is optimal)	Online / Offline / Restrictions
Eastern	← 🍂 →	1.0	Vegetation management
Central	← 🍂 →	1.0	Vegetation rehabilitation
Western	Offline, post-construction grow in starting 3/28/2022		

As of 6/26/2022	
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-1E Flow & Phosphorus Concentration			
	7-day	28-day	365-day
Total Inflow, ac-ft	5,770	48,029	214,362
--Lake Inflow, ac-ft	0	N/A	2,600
Total Outflow, ac-ft	5,326	43,277	181,088
Inflow Conc., ppb	50	54	103
Outflow Conc., ppb	19	19	21
Includes Preliminary Data			

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

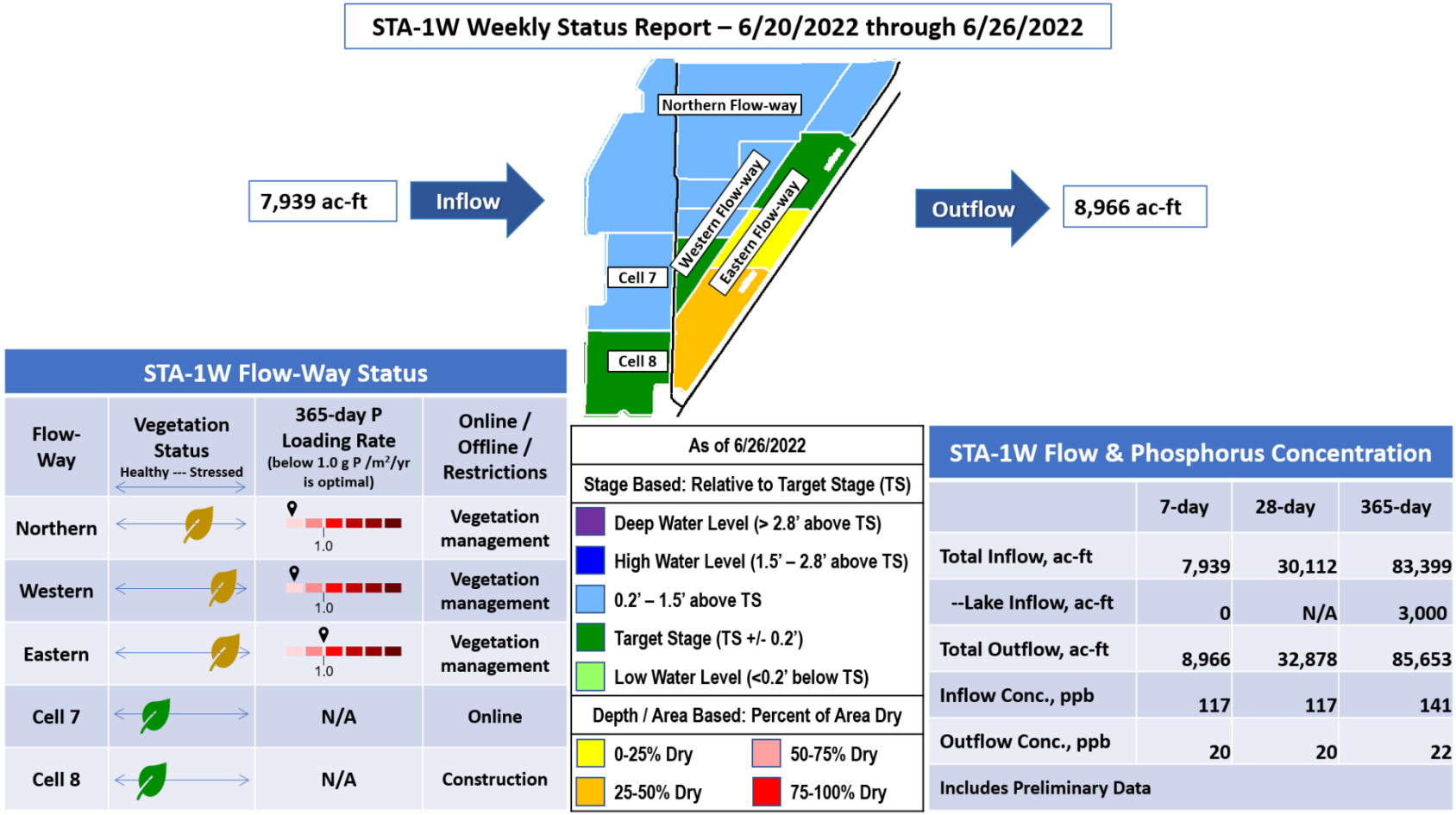
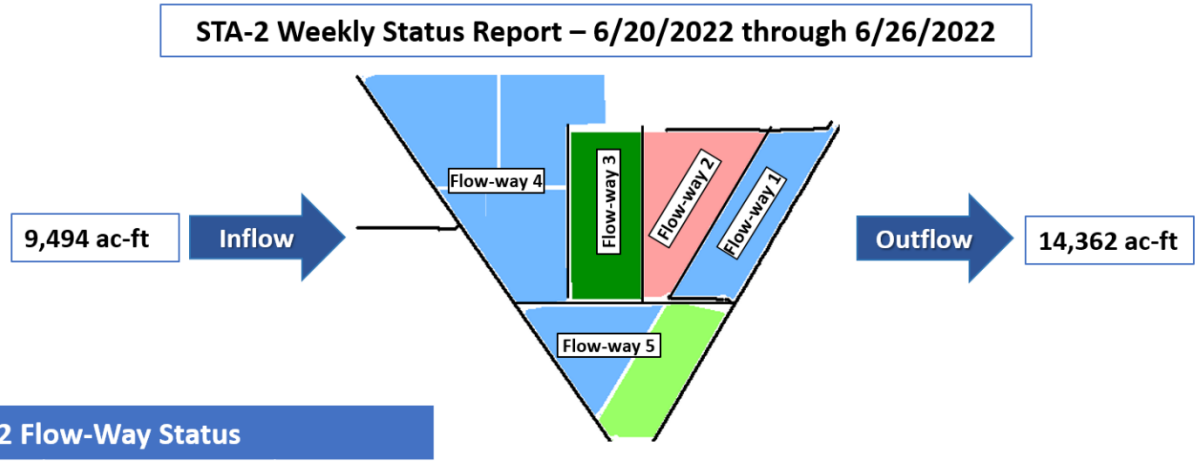


Figure S-2. STA-1W Weekly Status Report



STA-2 Flow-Way Status

Flow-Way	Vegetation Status (Healthy ------ Stressed)	365-day P Loading Rate (below 1.0 g P /m²/yr is optimal)	Online / Offline / Restrictions
1		1.0	Online
2	Offline, construction activities as of 9/7/2021		
3		1.0	Vegetation Rehab
4		1.0	Vegetation Rehab
5		1.0	Online

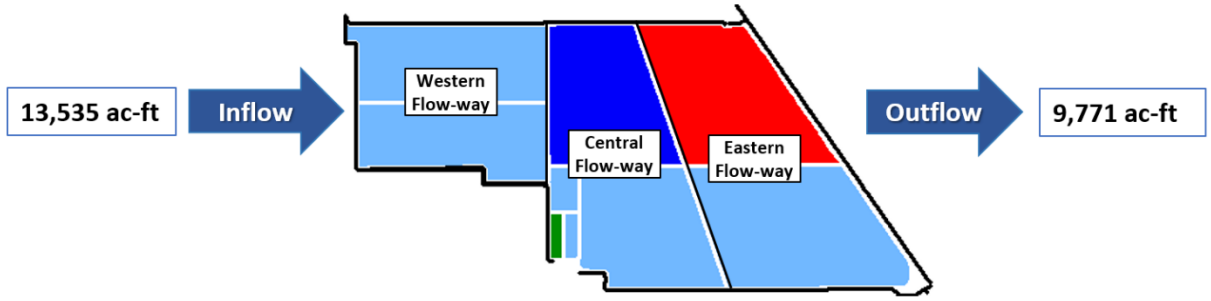
As of 6/26/2022	
Stage Based: Relative to Target Stage (TS)	
Deep Water Level (> 2.8' above TS)	
High Water Level (1.5' – 2.8' above TS)	
0.2' – 1.5' above TS	
Target Stage (TS +/- 0.2')	
Low Water Level (<0.2' below TS)	
Depth / Area Based: Percent of Area Dry	
0-25% Dry	50-75% Dry
25-50% Dry	75-100% Dry

STA-2 Flow & Phosphorus Concentration

	7-day	28-day	365-day
Total Inflow, ac-ft	9,494	90,124	356,929
--Lake Inflow, ac-ft	0	N/A	28,100
Total Outflow, ac-ft	14,362	104,798	386,749
Inflow Conc., ppb	206	162	106
Outflow Conc., ppb	21	23	18
Includes Preliminary Data			

Figure S-3. STA-2 Weekly Status Report

STA-3/4 Weekly Status Report – 6/20/2022 through 6/26/2022



STA-3/4 Flow-Way Status

Flow-Way	Vegetation Status (Healthy ------ Stressed)	365-day P Loading Rate (below 1.0 g P /m²/yr is optimal)	Online / Offline / Restrictions
Eastern	Offline, vegetation management drawdown as of 3/1/2021		
Central		1.0	Online
Western		1.0	Online

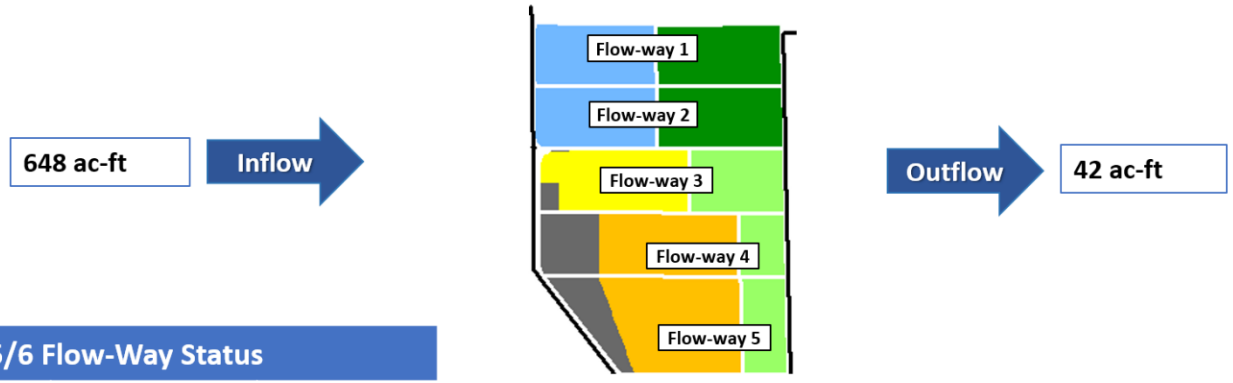
As of 6/26/2022	
Stage Based: Relative to Target Stage (TS)	
Deep Water Level (> 2.8' above TS)	
High Water Level (1.5' – 2.8' above TS)	
0.2' – 1.5' above TS	
Target Stage (TS +/- 0.2')	
Low Water Level (<0.2' below TS)	
Depth / Area Based: Percent of Area Dry	
0-25% Dry	50-75% Dry
25-50% Dry	75-100% Dry

STA-3/4 Flow & Phosphorus Concentration

	7-day	28-day	365-day
Total Inflow, ac-ft	13,535	87,510	377,121
--Lake Inflow, ac-ft	0	N/A	5,400
Total Outflow, ac-ft	9,771	71,310	341,249
Inflow Conc., ppb	117	83	86
Outflow Conc., ppb	15	15	15
Includes Preliminary Data			

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

STA-5/6 Weekly Status Report – 6/20/2022 through 6/26/2022



STA-5/6 Flow-Way Status

Flow-Way	Vegetation Status (Healthy ------ Stressed)	365-day P Loading Rate (below 1.0 g P /m²/yr is optimal)	Online / Offline / Restrictions
1		1.0	Online
2		1.0	Online
3		1.0	Online
4	Offline, vegetation management starting 01/24/2022		
5		1.0	Online

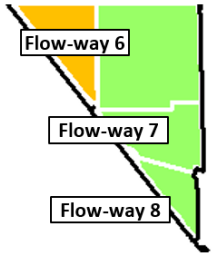
As of 6/26/2022	
Stage Based: Relative to Target Stage (TS)	
Deep Water Level (> 2.8' above TS)	
High Water Level (1.5' – 2.8' above TS)	
0.2' – 1.5' above TS	
Target Stage (TS +/- 0.2')	
Low Water Level (<0.2' below TS)	
Depth / Area Based: Percent of Area Dry	
0-25% Dry	50-75% Dry
25-50% Dry	75-100% Dry

STA-5/6 Flow & Phosphorus Concentration

	7-day	28-day	365-day
Total Inflow, ac-ft	648	5,379	183,056
--Lake Inflow, ac-ft	0	N/A	0
Total Outflow, ac-ft	42	1,461	170,610
Inflow Conc., ppb	122	130	240
Outflow Conc., ppb	16	16	49
Includes Preliminary Data			

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

STA-5/6 Weekly Status Report – 6/20/2022 through 6/26/2022



STA-5/6 Flow-Way Status

Flow-Way	Vegetation Status Healthy ------ Stressed	365-day P Loading Rate (below 1.0 g P /m²/yr is optimal)	Online / Offline / Restrictions
6		1.0	Online
7		1.0	Online
8		1.0	Online

As of 6/26/2022	
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

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, µg/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 gauge fell 0.05 ft over the previous week. The average on Sunday was 0.62 feet above the flat Zone A1 regulation line. WCA-2A: Stage decreased throughout the week at the S11B headwater gauge last week. The average on Sunday was 0.62 feet above the flat regulation line. WCA-3A: Last week the Three Gauge Average stages continued to ascend but faster than the Zone A regulation line. The average stage was 0.34 feet above the rising regulation line on Friday. At gauge 62 (Northwest corner of WCA-3A) the stage change was holding steady last week, the average on Sunday was 0.30 feet below the rising Upper schedule line (**Figures EV-1** through **EV-4**).

Water Depths

Comparing current WDAT water depths to the depth one month ago, stages are significantly deeper across the EPA (**Figure EV-5**). Looking back one year, the EPA is deeper (including southeast of SRS); eastern WCA-3A and BCNP are significantly deeper. (**Figure EV-6)**. Comparing current depths to the past 20 years, Eastern WCA-3A North is now above the 50th percentile. The typically flooded area in eastern WCA-3A South along the L-67s is now above the 50th percentile. Eastern ENP is above the 90th percentile. (**Figure EV-7**)

Taylor Slough and Florida Bay

Taylor Slough and Florida Bay received a total of 10.24 inches of rain in the past week. Stages in Taylor Slough have remained stable with an average change of −0.08 feet (**Figure EV-8** and **Figure EV-9**). Individual stage gauge changes ranged from −0.252 at Taylor Slough Bridge in the northern slough area to +0.042 feet at EVER6. The Slough is now 9.76 inches higher than its historical average for this time of year (pre-Florida Bay initiative which started in 2017). Conditions are highly favorable for moving water downstream through the Slough this year as the rains continue.

Florida Bay salinity average increased only +0.2 over the week ending in 6/26. However, salinities remain low for the early wet season bay-wide. Individual station changes throughout the bay ranged from −2.40 to +2.80 (**Figure EV-8**). Salinities in Joe Bay continue to decrease, reaching 6.9. Salinities in Eastern, Central and Western Florida Bay regions continue to remain below the 25th percentile (**Figure EV-10**). The Bay is 5.02 lower than its historical average for this time of year.

Water Management Recommendations

Balancing inflows with outflows in WCA-2A to slow descension rates below last week's rate in that basin would have ecological benefit. If conditions allow, distributing flows both into the northern perimeter of WCA-3A and making use of the S-150 is ecologically better than using the northwestern structures alone. Flows into northern WCA-3A continue to have an ecological benefit as dry conditions are still present in the east of that sub-basin. Continued rain and freshwater flows to the Taylor Slough area have prolonged the

hydroperiod there, if stage can be maintained it 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 basins.

Everglades Region	Rainfall (inches)	Stage change (feet)
WCA-1	0.32	−0.09
WCA-2A	0.34	-0.24
WCA-2B	0.37	−0.15
WCA-3A	1.59	+0.17
WCA-3B	1.30	+0.09
ENP	1.14	+0.20

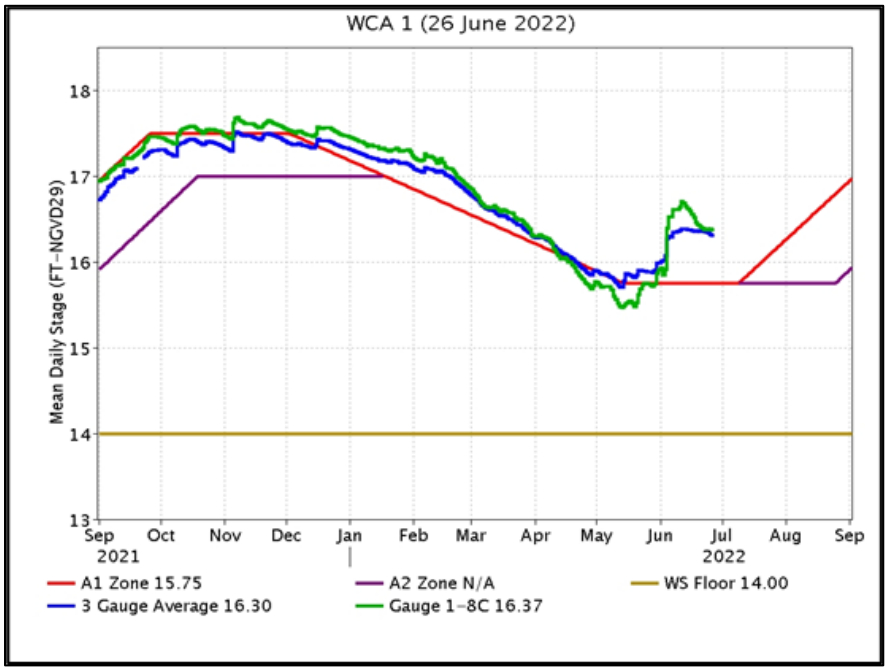


Figure EV-1. WCA-1 stage hydrographs and regulation schedule.

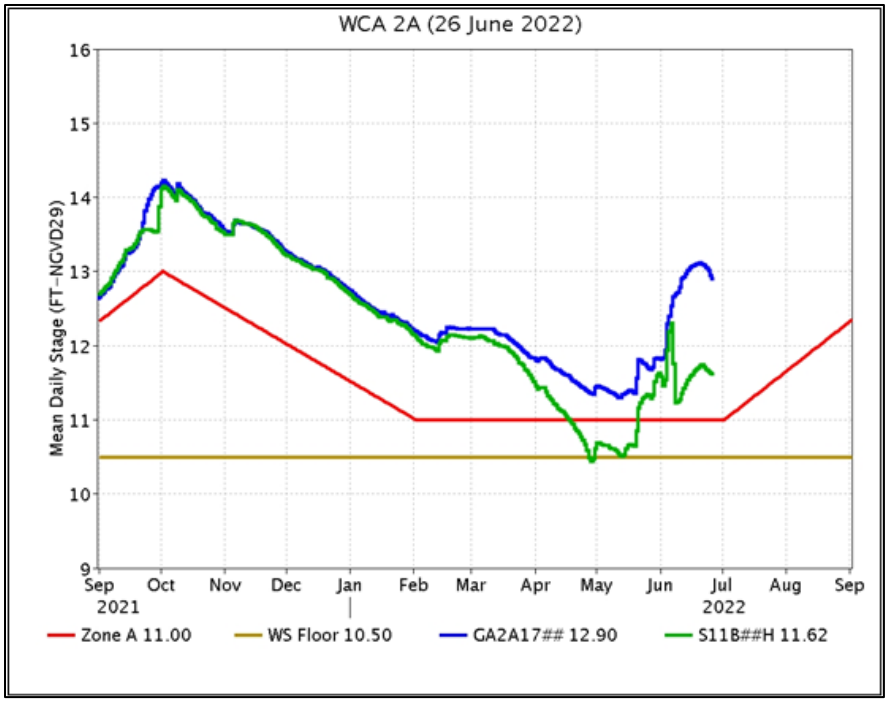


Figure EV-2. WCA-2A stage hydrographs and regulation schedule.

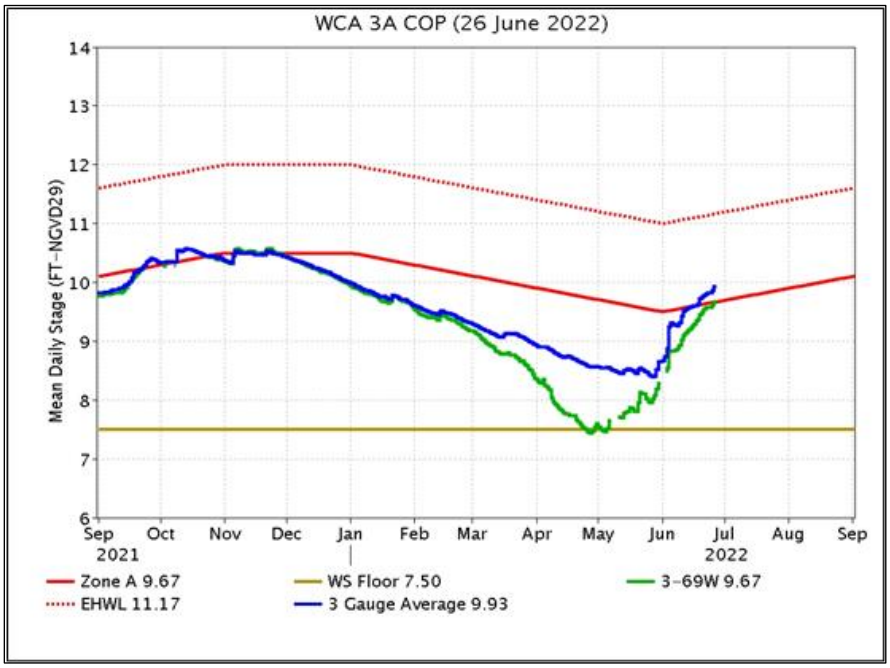


Figure EV-3. WCA-3A stage hydrographs (three-gauge average, S-333 headwater) and regulation schedule.

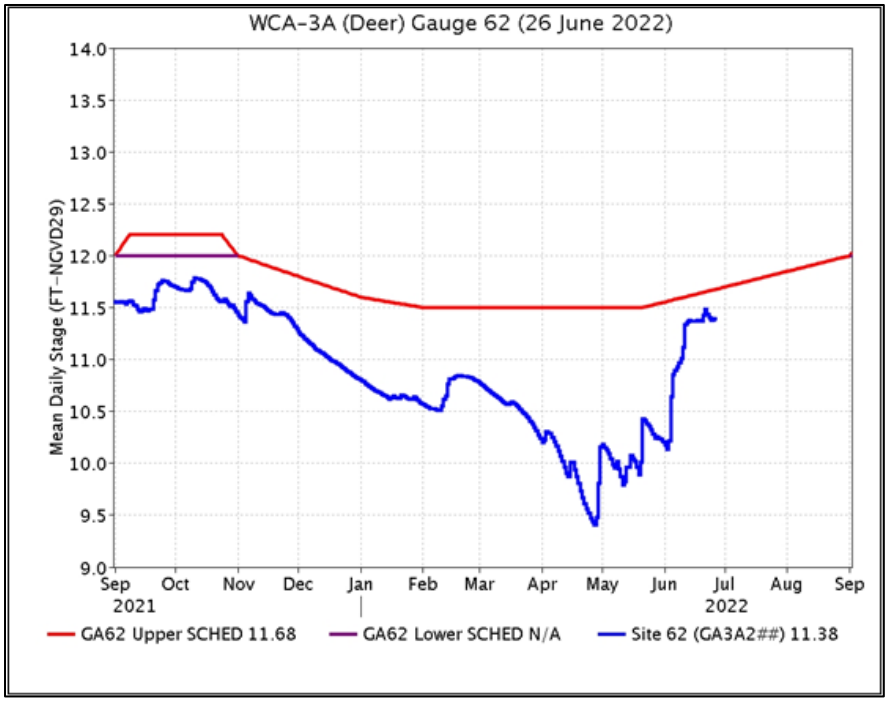


Figure EV-4. WCA-3A stage hydrograph (Deer gauge; Site 62) and CA62 regulation schedule.

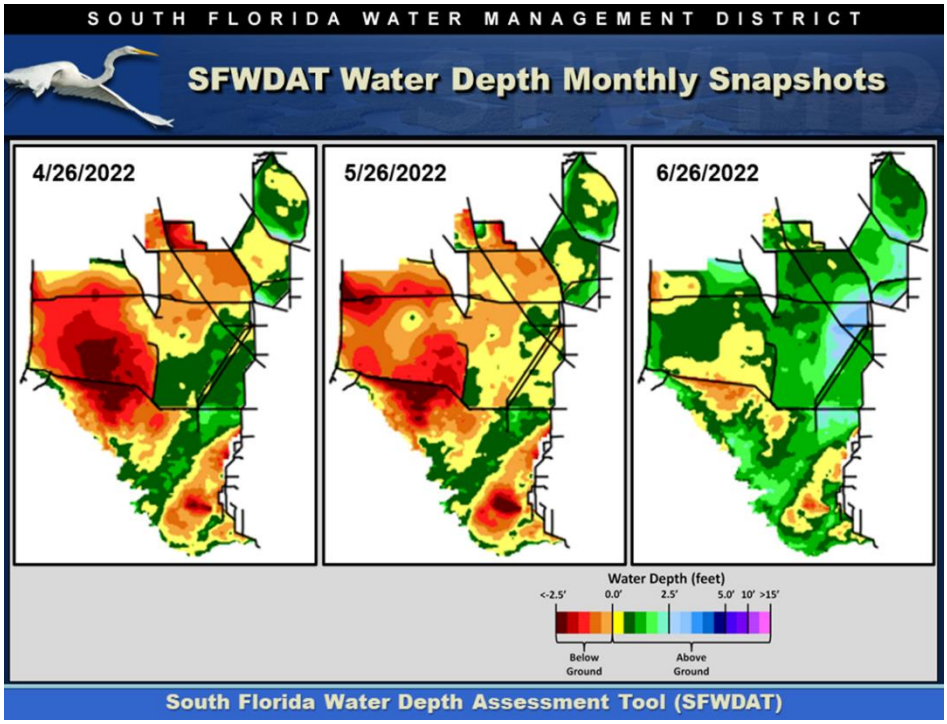


Figure EV-5. Everglades water depths from two months ago (left), one month ago (center) and present (right), based on SFWDAT.

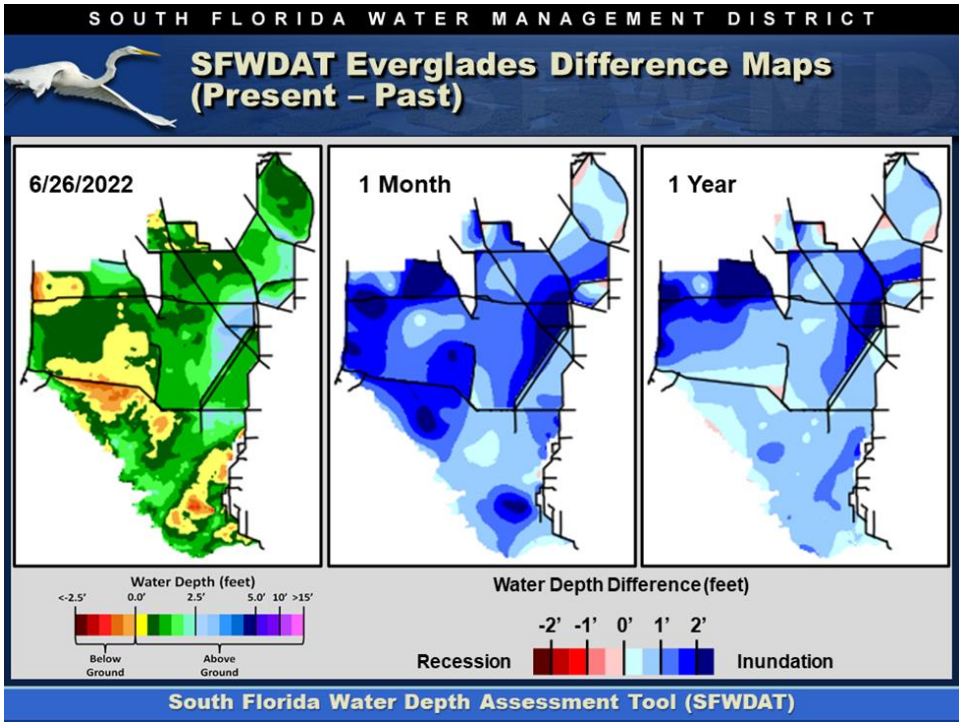


Figure EV-6. Present Everglades water depths (left) and water depth changes from one month (center) and one year (right) ago, based on SFWDAT.

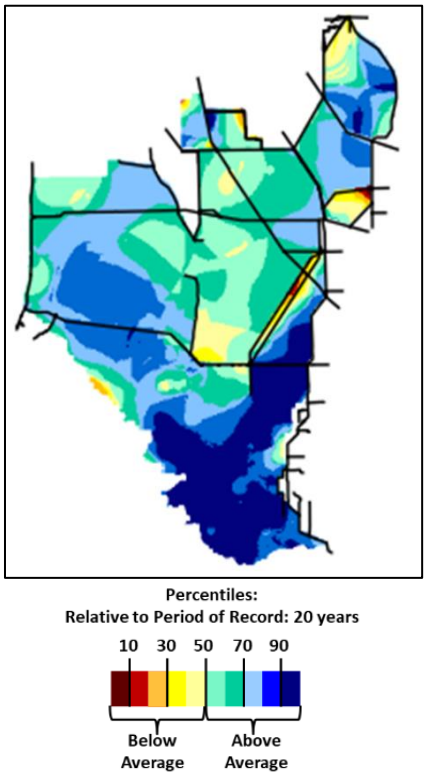


Figure EV-7. Present water depths (6/26/2022) compared to the day of year median over the previous 20 years.

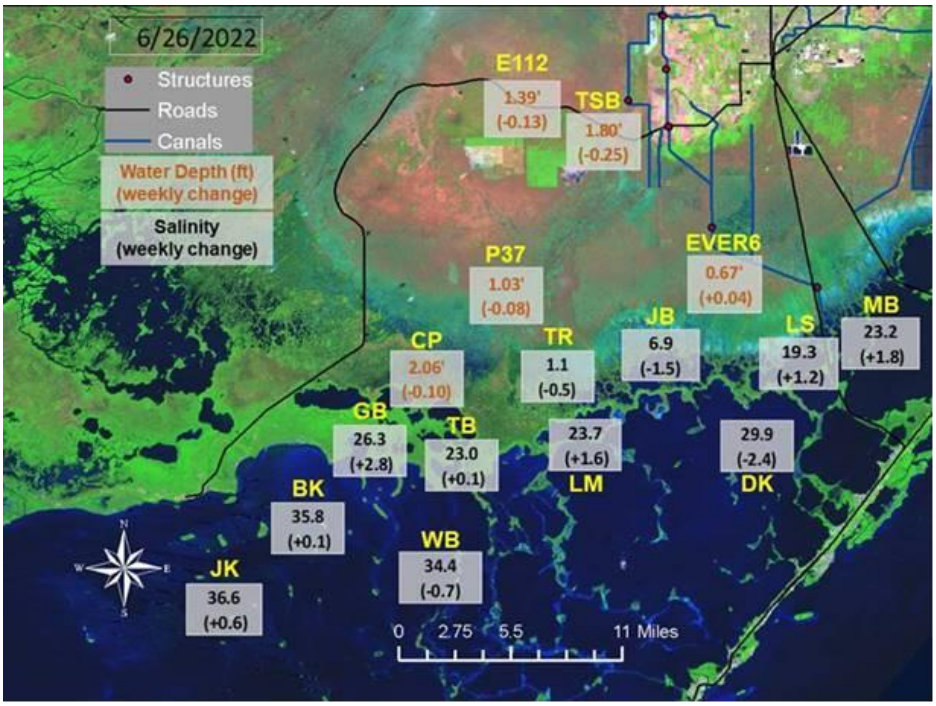


Figure EV-8. Taylor Slough water depths with changes since a week ago and Florida Bay salinities with changes since a week ago.

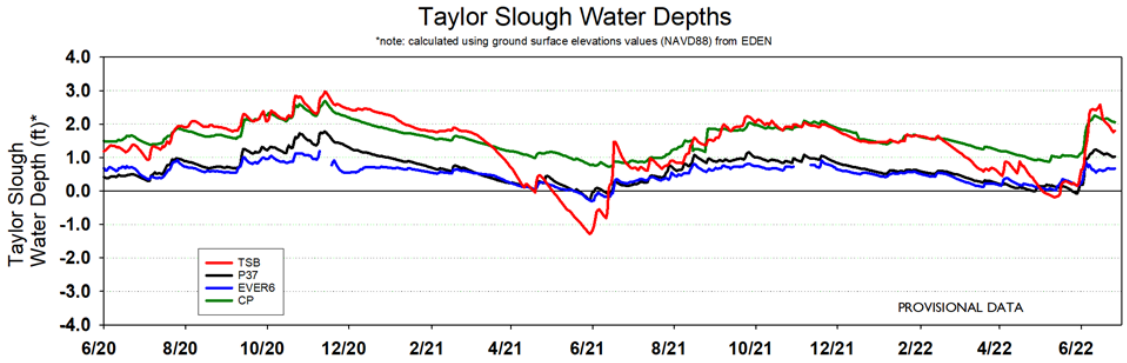


Figure EV-9. Taylor Slough water depth time series.

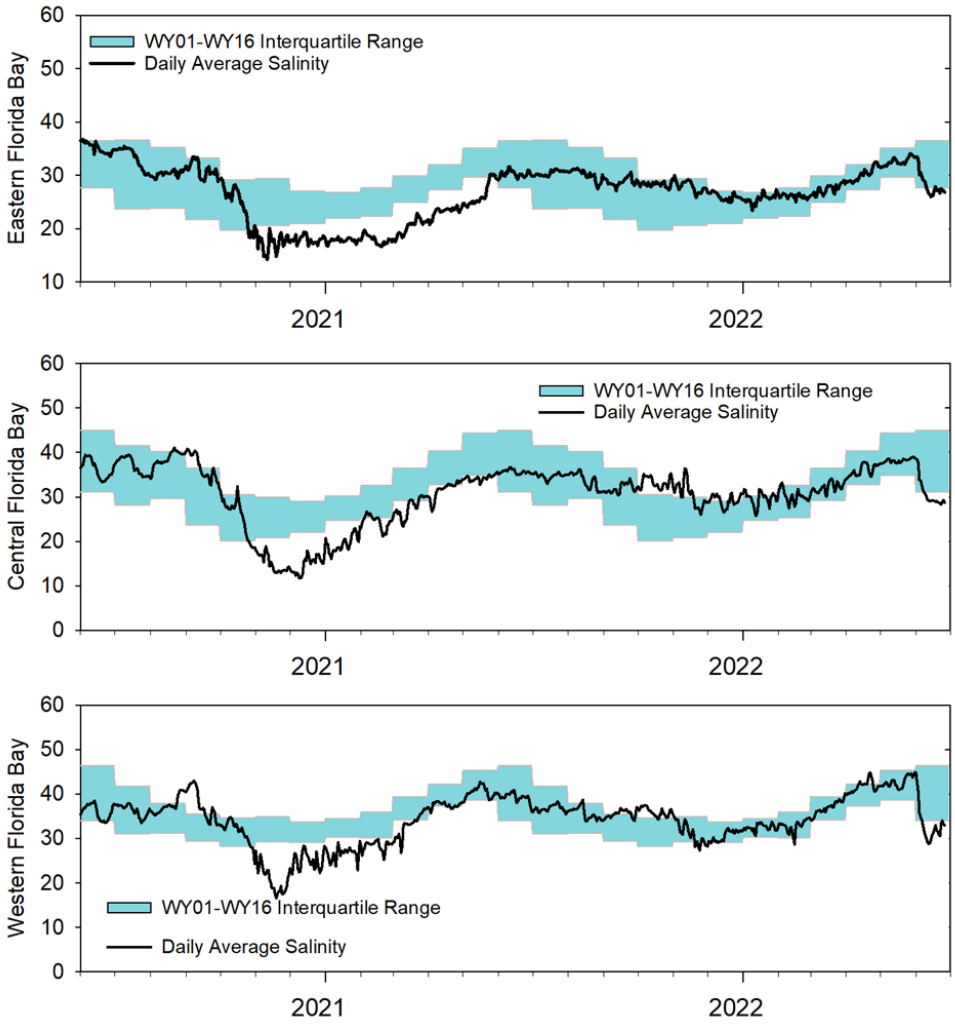


Figure EV-10. Eastern (top panel), Central (middle panel) and Western (bottom panel) Florida Bay daily average salinities with interquartile (25-75 percentile) ranges.

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

SFWMD Everglades Ecological Recommendations, June 26, 2022 (red is new)			
Area	Weekly change	Recommendation	Reasons
WCA-1	Stage decreased by 0.09'	Moderate ascension to less than 0.5 feet per two weeks. Conserve water in this basin, while letting the water move south when conditions allow.	Protect within basin and downstream habitat and wildlife.
WCA-2A	Stage decreased by 0.24'	Reduce descension rate to about .20 per week.	Protect within basin and downstream habitat and wildlife.
WCA-2B	Stage decreased by 0.15'	Maintain an ascension of less than 0.5 feet per two weeks.	Protect within basin and downstream habitat and wildlife.
WCA-3A NE	Stage increased by 0.20'	Moderate ascension to less than 0.5 feet per two weeks.	Protect within basin peat soils, and downstream habitat and wildlife.
WCA-3A NW	Stage decreased by 0.02'	Maintain an ascension of less than 0.5 feet per two weeks.	
Central WCA-3A S	Stage increased by 0.27'	Maintain an ascension of less than 0.5 feet per two weeks, letting the water move south when conditions allow.	Protect within basin and downstream habitat, Tree islands and wildlife.
Southern WCA-3A S	Stage increased by 0.24'		
WCA-3B	Stage increased by 0.09'	Maintain an ascension of less than 0.5 feet per two weeks in this basin, letting the water move south when conditions allow.	Protect within basin and downstream habitat and wildlife. Lower fire risk.
ENP-SRS	Stage increased by 0.20'	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 −0.252' to +0.042'	Move water southward as possible.	When available, provide freshwater buffer for downstream conditions.
FB- Salinity	Salinity changes ranged −2.4 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 742 cfs and the previous 30-day mean inflow was 2,372 cfs. The seven-day mean salinity was 20.2 at BBCW8 and 19.3 at BBCW10, both below the preferred maximum salinity of 35 for these sites. Data provided by Biscayne National Park.

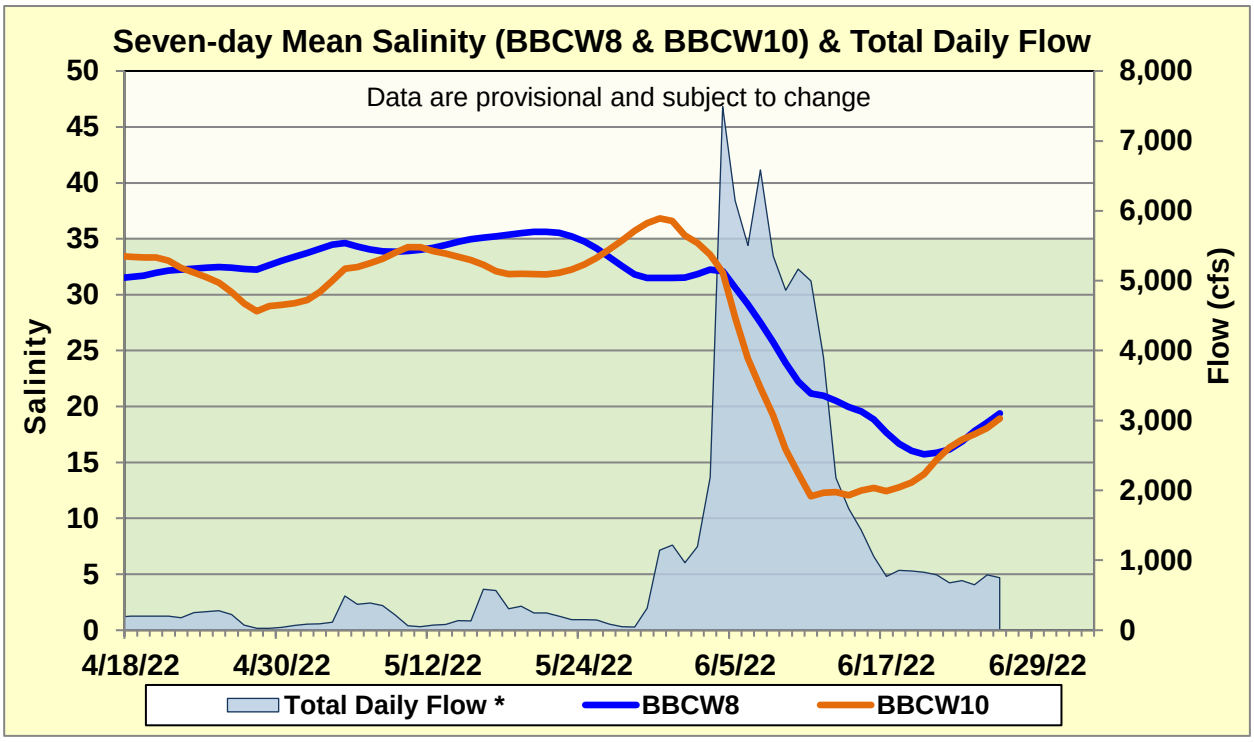


Figure BB-1. Seven-day mean salinity at BBCW8 and BBCW10 and total daily flow in Biscayne Bay. Total daily flow was calculated using flow from structures S20G, S20F, S21, S21A, S123, and S700P.