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 19, 2024

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Weather Conditions and Forecast

On Wednesday, moisture across the entire SFWMD will increase ahead of a low-level trough moving toward the east coast of Florida. Although this trough is unlikely to become a tropical cyclone, its associated moisture will likely lead to an increase in fast-moving showers and thunderstorms area wide. Areas along and near the east coast are expected to receive the most rain, with a possible secondary maximum along and near the west coast. Overall, a good or widespread rainfall coverage seems likely. The low-level trough will probably move inland late on Thursday or early Friday along the northeast Florida coast, leading to somewhat reduced moisture and decreased rainfall across the SFWMD on Thursday. Next, the northern end of a tropical wave will pass through the SFWMD on Friday and move past the area on Saturday. The deep moisture and instability associated with this weather system are forecast to increase rainfall on both days, with easterly to southeasterly steering winds favoring significant rainfall over the interior and especially the western part of the SFWMD. Localized significant rainfall totals are possible, and broader significant rainfall may occur on Saturday. Early next week, a new tropical disturbance and potential tropical cyclone could be present over the western Gulf of Mexico, with the SFWMD on or just outside its large envelope of moisture. Given the uncertain moisture levels, the forecast for Sunday and Monday remains equally uncertain. However, an easterly steering wind regime will likely continue, favoring early-day and overnight rains over the eastern part of the SFWMD and interior and western rains from the afternoon to early evening. For the week ending next Tuesday morning, total SFWMD rainfall is expected to be below normal and near-normal at best, although rainfall from the southwestern interior to the west coast could be near- to somewhat above normal.

Kissimmee

Lake stage in East Lake Toho and Lake Toho is being allowed to rise with rainfall; no releases were made in the last seven days to slow the rate of lake stage rise. Weekly average discharge on June 16, 2024, was 86 cfs and 430 cfs at S-65 and S-65A, respectively. Mean weekly water depth on the Kissimmee River floodplain for the week ending June 16, 2024, increased from the previous week by 0.01 feet to 0.08 feet. The

weekly average concentration of dissolved oxygen in the Kissimmee River decreased from 7.7 mg/L the previous week to 6.9 mg/L for the week ending June 16, 2024, which is well above the potentially lethal and stressful levels for largemouth bass and other sensitive species.

Lake Okeechobee

Lake Okeechobee stage was 12.11 feet NAVD88 (13.39 ft NGVD29) on June 16, 2024, which was 0.79 feet higher than the previous week and 0.19 feet lower than a month ago. Average daily inflows (excluding rainfall) increased from 220 cfs the previous week to 4,190 cfs. Average daily outflows (excluding evapotranspiration) decreased from 3,700 cfs the previous week to 300 cfs. Provisional taxa and toxin results from the June 3-5 sampling showed *Microcystis aeruginosa* dominated communities at 25 of the 32 sites. Fourteen sites had toxin levels above the 0.25 µg/L method's detection threshold, but only one exceeded the EPA recreational standard of 8 µg/L. Bloom conditions (>40 µg/L chlorophyll *a*) were recorded at 4 sites. Thirteen sites had chlorophyll *a* values >20 µg/L but <40 µg/L.

Estuaries

Total inflow to the St. Lucie Estuary averaged 2,148 cfs over the past week with no flow coming from Lake Okeechobee. Mean salinities decreased at all sites in the estuary 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 8,845 cfs over the past week with 299 cfs coming from Lake Okeechobee. Mean surface salinities decreased at all 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 lower stressed range for adult oysters at Cape Coral, in the optimal range at Shell Point, and in the upper stressed range at Sanibel.

Stormwater Treatment Areas

For the week ending Sunday, June 16, 2024, no Lake Okeechobee water was delivered to the FEBs/STAs. The total amount of Lake releases sent to the FEBs/STAs in WY2025 (since May 1, 2024) is approximately 69,400 ac-feet. The total amount of inflows to the STAs in WY2025 is approximately 154,000 ac-feet. STA cells are above target stage. STA-1E Eastern Flow-way is offline for rehydration and vegetation establishment following erosion repair. Operational restrictions are in effect in STA-1E Western Flow-way, STA-2 Flow-ways 2 and 4, and STA-3/4 Eastern Flow-way for vegetation management activities. An operational restriction is in effect for STA-2 Flow-way 5 for construction activities. STA-1W Cell 7 contains nests of Migratory Bird Treaty Act protected species. This week, if 2008 LORS recommends Lake releases to the WCAs and conditions allow, releases will be sent to STA-2 or STA-3/4.

Everglades

Wading bird nesting is most likely ending soon due to the reversal brought about by last week's rain. This means the ecological focus on rate of stage change shifts to ascension rates and apple snail reproduction. All stages increased on average in Taylor Slough and moved back to above the recent averages for this time of year. Average salinity decreased in Florida Bay last week, conditions improved in every region, and the western region decreased to the lower bound of the Interquartile Range. Flow was well above the Florida

Bay MFL target. The recent rain event began to inundate tree islands after nearly all islands had experienced a dry down. USGS eTree tool uses four classifications of inundation: rarely (near zero days on average), low (1-31 days), medium (32-135 days), and high (136-365). Currently the islands in the high category have been inundated on average for 4 days (0-15), medium category islands for 2 days (0-6), the low category on average for 0.1 days (0-4) and none of the “rare” islands are currently inundated.

Biscayne Bay

Total inflow to Biscayne Bay averaged 3,138 cfs, and the previous 30-day mean inflow averaged 860 cfs. The seven-day mean salinity was 27.3 at BBCW8 and 23.6 at BBCW10, both within the ideal salinity range for estuarine organisms in this region (salinity less than 35). Data were provided by Biscayne National Park.

Supporting Information

Kissimmee Basin

Upper Kissimmee

On June 16, 2024, mean daily lake stages were 53.9 feet NAVD (1.6 feet below schedule) in East Lake Toho, 50.9 feet NAVD (1.4 feet below schedule) in Lake Toho, and 47.9 feet NAVD (1.9 feet below schedule) in Lakes Kissimmee-Cypress-Hatchineha (KCH) (**Table KB-1**, **Figures KB-1-3**).

Lower Kissimmee

For the week ending June 16, 2024, mean weekly discharge was 86 cfs and 430 cfs at S-65 and S-65A, respectively. Mean weekly discharge from the Kissimmee River was 450 cfs at both S-65D and S-65E (**Table KB-2**). Mean weekly headwater stages were 45.5 feet NAVD at S-65A and 24.6 feet NAVD at S-65D on June 16, 2024. Mean weekly river channel stage increased by 0.7 feet from the previous week to 31.7 feet NAVD (**Figure KB-4**). Mean weekly water depth on the Kissimmee River floodplain increased from the previous week by 0.01 feet to 0.08 feet (**Table KB-2**, **Figure KB-5**). The weekly average concentration of dissolved oxygen in the Kissimmee River decreased from 7.7 mg/L the previous week to 6.9 mg/L (**Table KB-2**, **Figure KB-6**).

Water Management Recommendations

Follow the Hybrid A discharge plan for S-65/S-65A (**Figure KB-7**) until further notice. Maintain at least minimum flow (250-300 cfs) at S-65A. Allow stages to rise in Lakes East Toho, Toho and Kissimmee, but keep ascension rates slower than 0.25 ft/week to the extent possible. Avoid sudden increases in KCH stage to help protect recent plantings.

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 NAVD)[a]	Schedule Type[b]	Sunday Schedule Stage (feet NAVD)	Sunday Departure from Regulation (feet)	
							6/16/24	*6/9/24*
Lakes Hart and Mary Jane	S-62	LKMJ	0	58.2	R	58.9	-0.7	-0.7
Lakes Myrtle, Preston and Joel	S-57	S-57	0	58.7	R	60.0	-1.3	-1.3
Alligator Chain	S-60	ALLI	0	60.9	R	62.2	-1.3	-1.2
Lake Gentry	S-63	LKGT	0	58.3	R	59.9	-1.6	-1.5
East Lake Toho	S-59	TOHOE	0	53.9	R	55.5	-1.6	-1.6
Lake Toho	S-61	TOHOW S-61	0	50.9	R	52.3	-1.4	-1.5
Lakes Kissimmee, Cypress and Hatchineha	S-65	KUB011 LKIS5B	86	47.9	R	49.8	-1.9	-2.1

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.

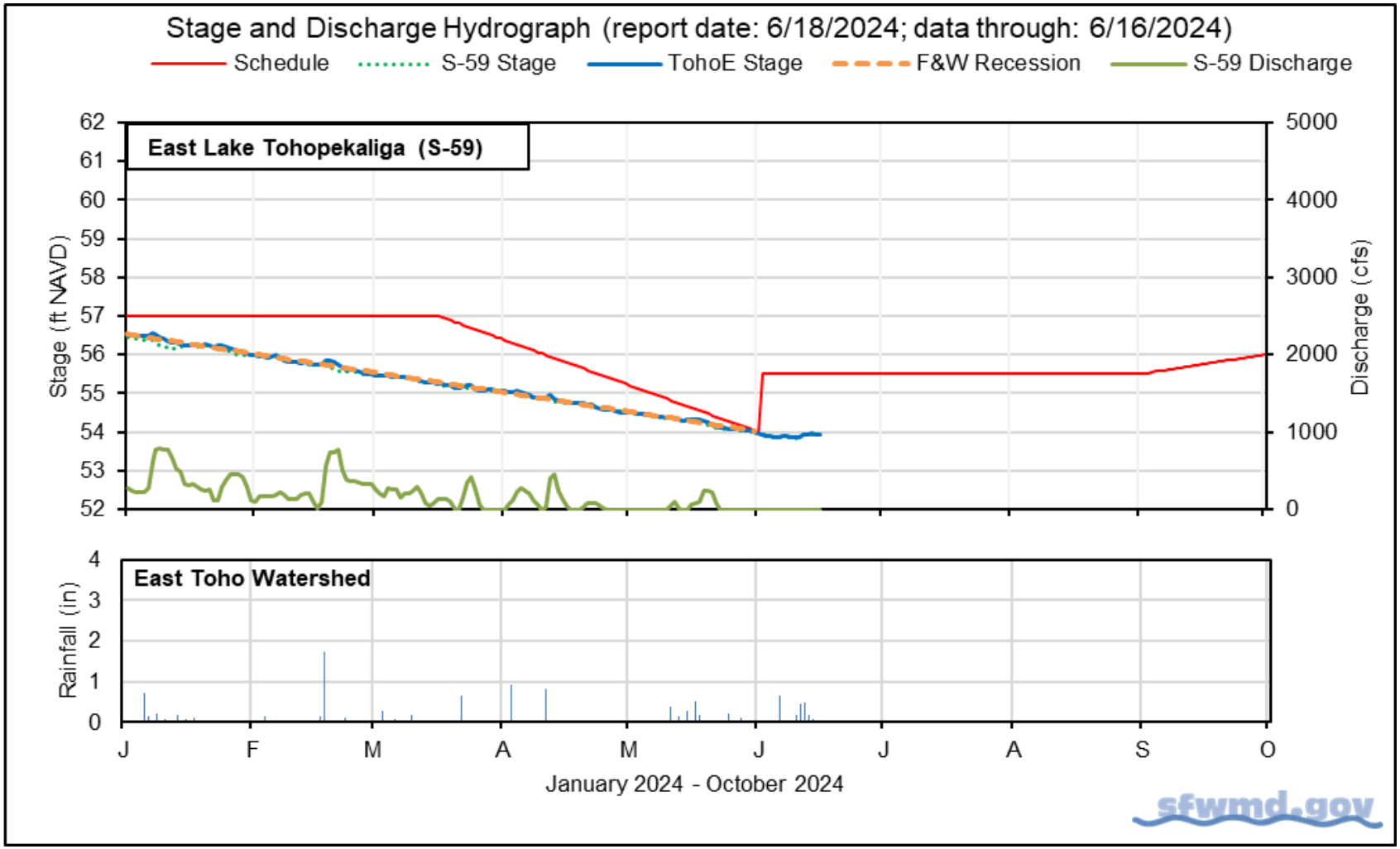


Figure KB-1. East Lake Toho regulation schedule, stage, discharge, and rainfall.

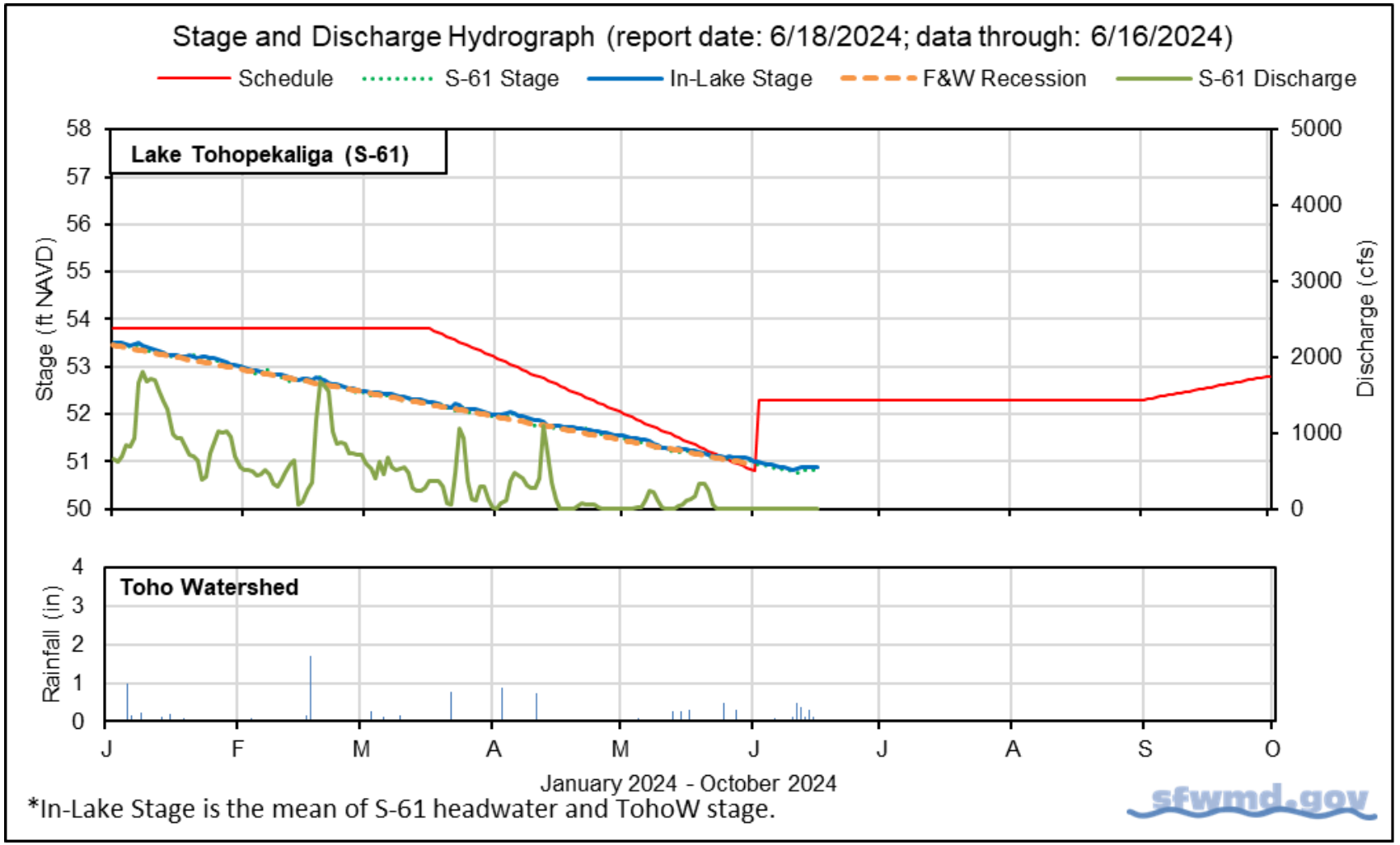


Figure KB-2. Lake Toho regulation schedule, stage, discharge, and rainfall.

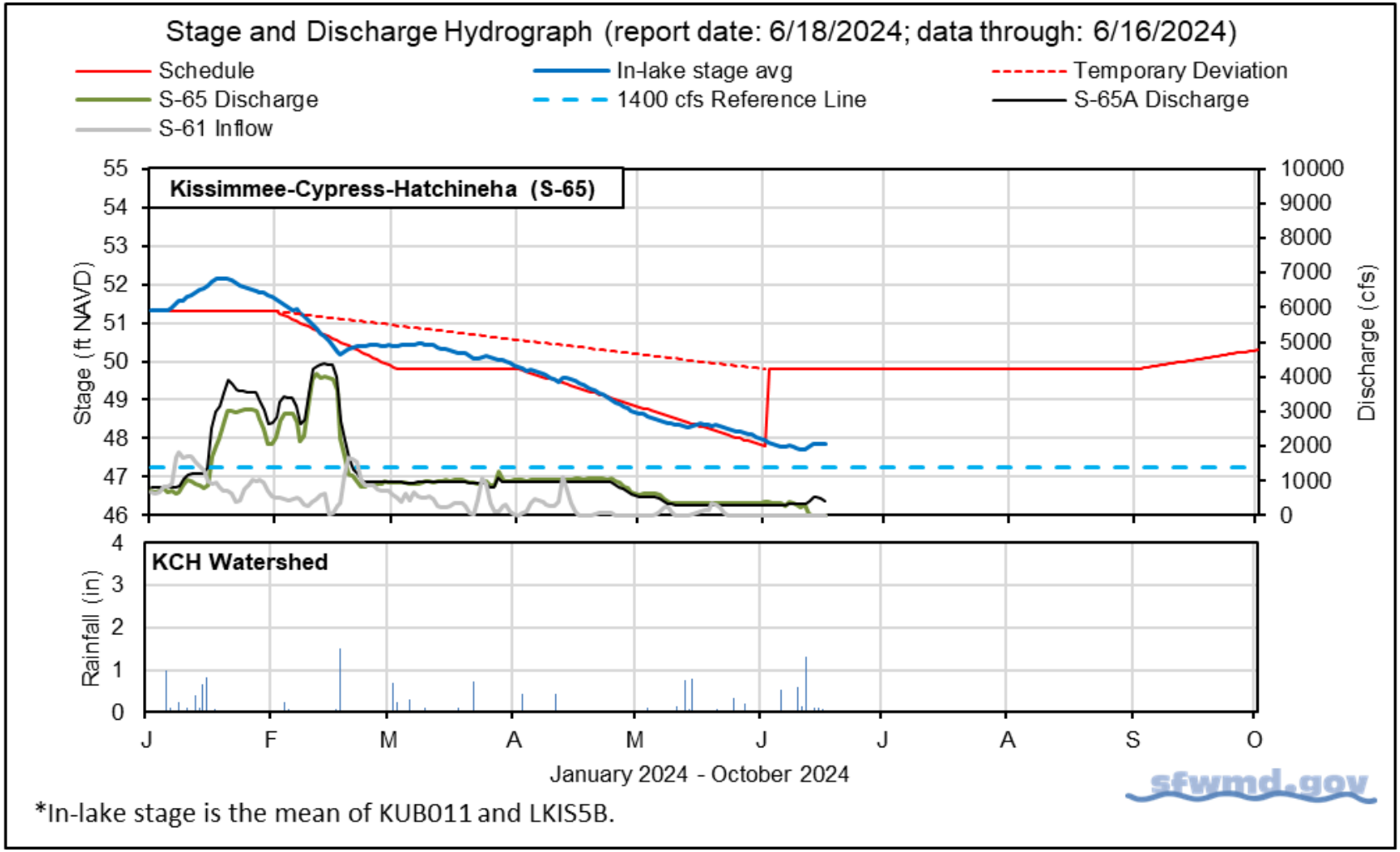


Figure KB-3. Lakes Kissimmee, Cypress and Hatchineha regulation schedule, stage, discharge, and rainfall.

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			
		6/16/24	6/16/24	6/9/24	6/2/24	5/26/24
Discharge	S-65	0	86	340	360	350
Discharge	S-65A[a]	400	430	310	310	310
Headwater Stage (feet NAVD)	S-65A	45.6	45.5	45.1	45.1	45.2
Discharge	S-65D[b]	630	450	260	270	280
Headwater Stage (feet NAVD)	S-65D[c]	24.6	24.6	24.6	24.5	24.4
Discharge (cfs)	S-65E[d]	550	450	220	230	240
Discharge (cfs)	S-67	0	0	0	0	0
Dissolved Oxygen (mg/L) [e]	Phase I, II/III river channel	6.4	6.9	7.7	7.9	8.2
River channel mean stage[f]	Phase I river channel	32.4	31.7	31.0	31.0	31.1
Mean depth (feet) [g]	Phase I floodplain	0.09	0.08	0.07	0.07	0.07

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).

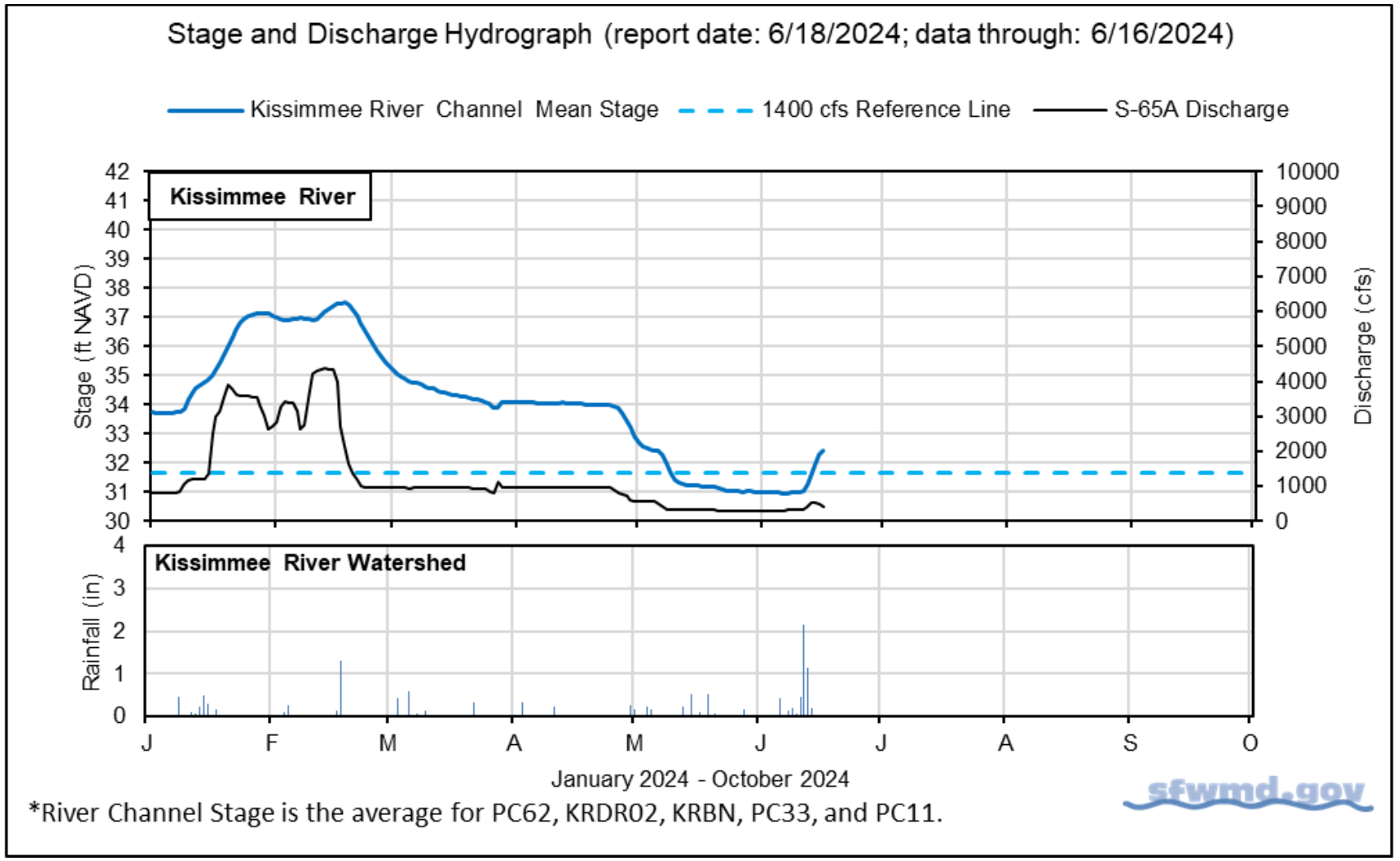


Figure KB-4. Kissimmee River stage, discharge, and rainfall.

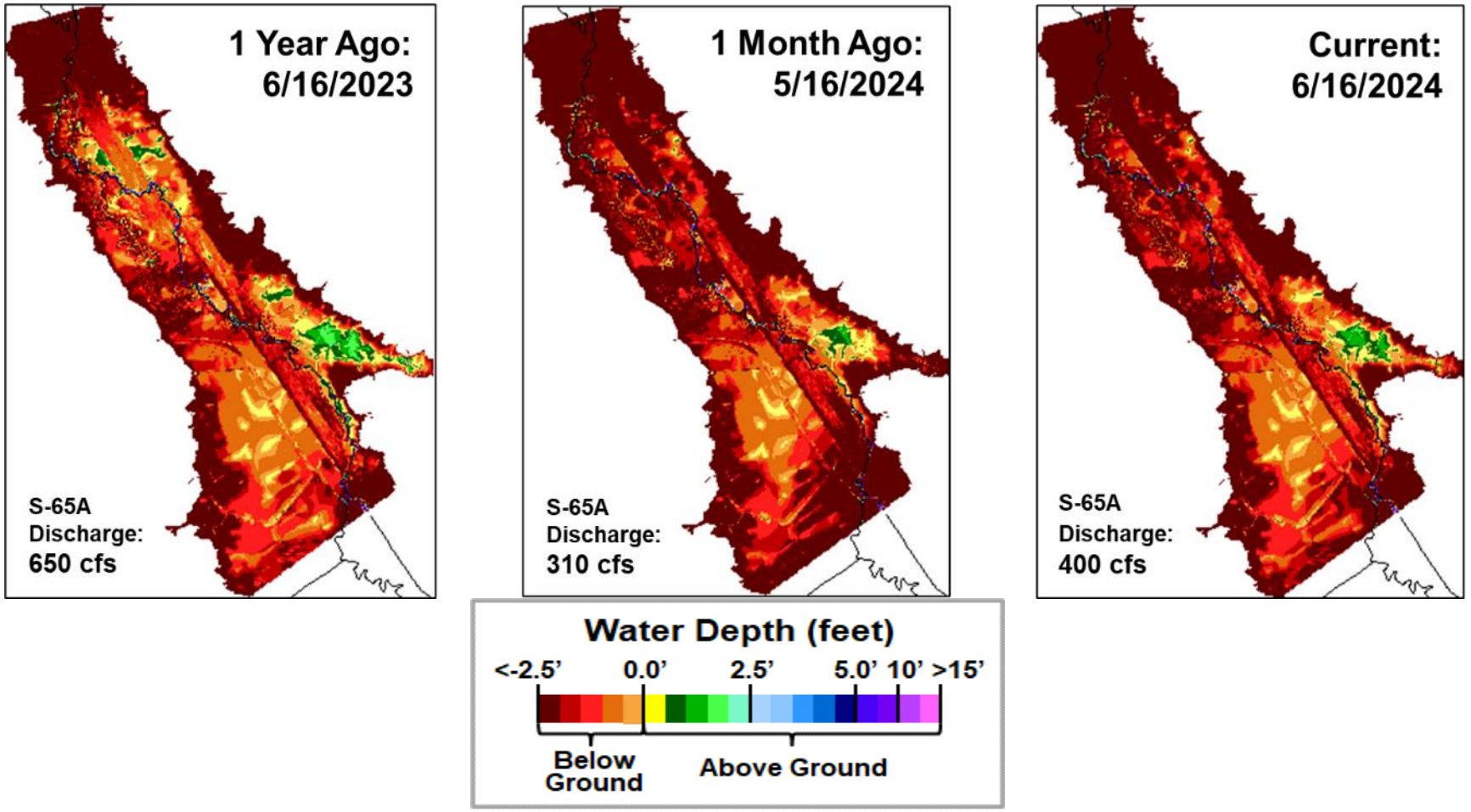


Figure KB-5. Phase I area Kissimmee River floodplain water depths (from left to right) one year ago, one month ago, and currently.

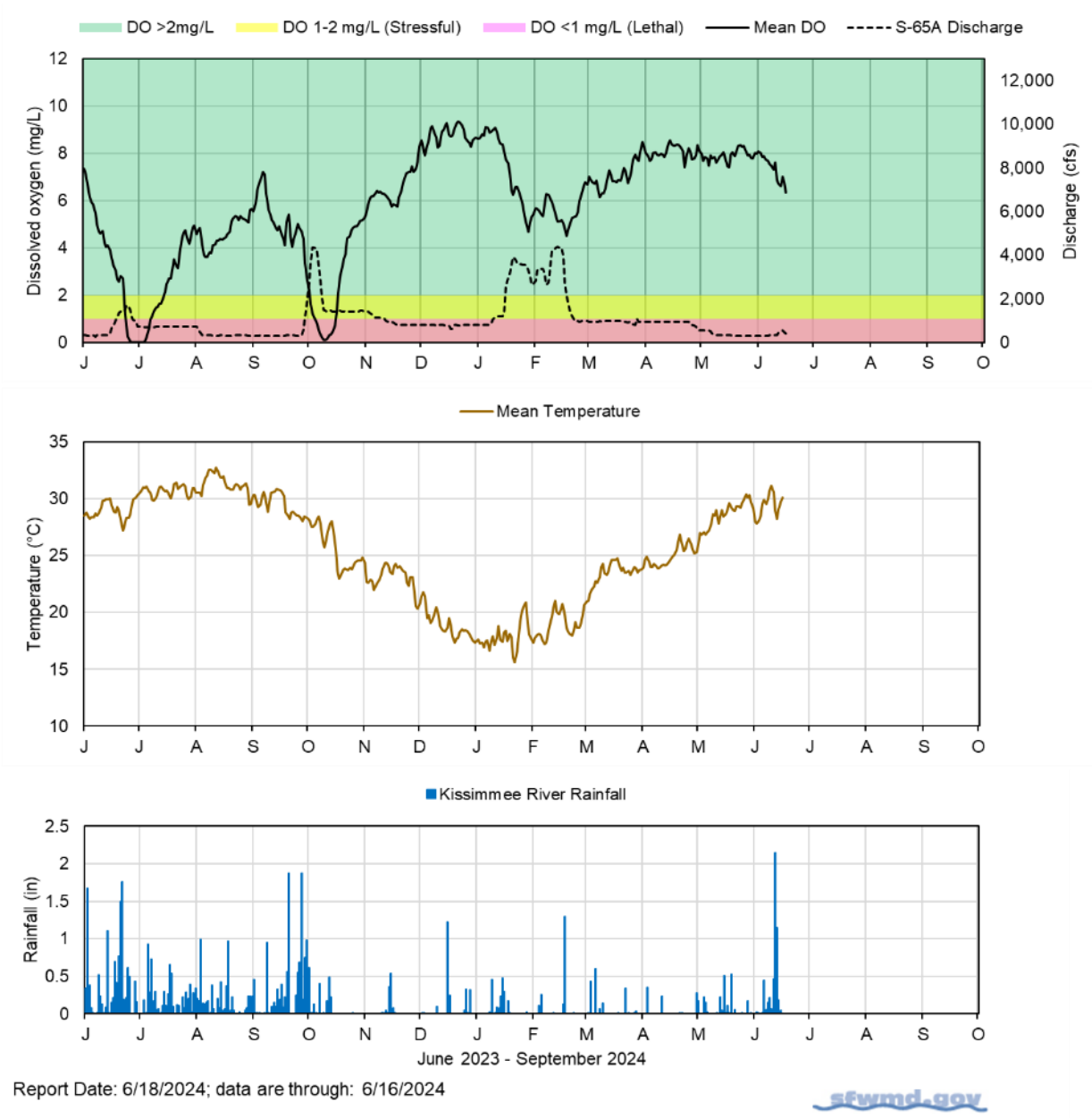


Figure KB-6. Kissimmee River channel mean daily dissolved oxygen concentration (mg/L), S-65A discharge (cfs), temperature (°C), and rainfall (inches). Dissolved oxygen (DO) and temperature are mean daily values averaged for PC62, KRDR02, KRBN, PC33, PC11, PD62R, and PD42R with an average of five stations reporting this week. Rainfall values are daily totals for Kissimmee River (Pool BCD) AHED watershed.

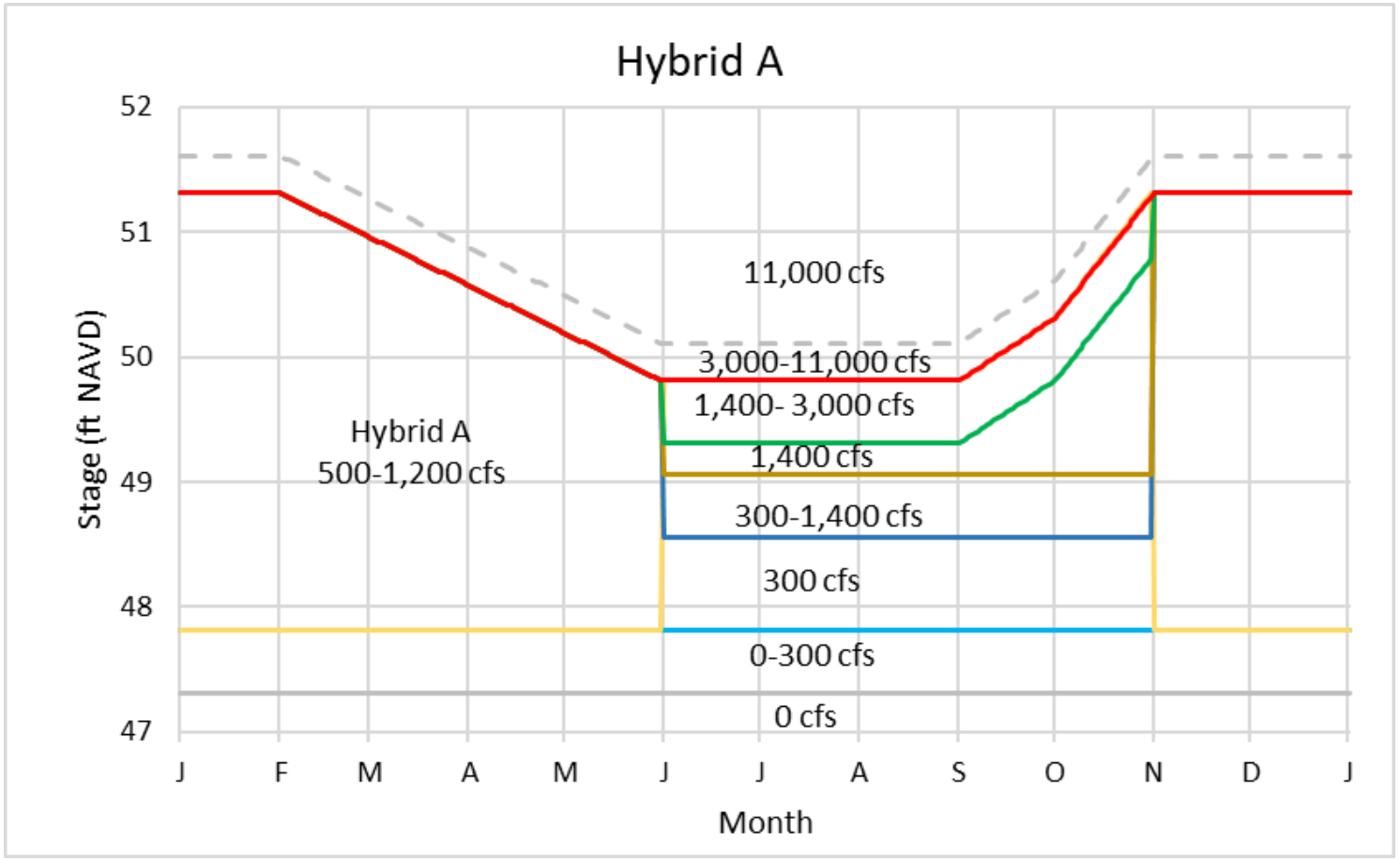


Figure KB-7. Hybrid A Discharge Plan for S-65/S-65A. Use discharge rate of change limits from IS-14-50 (Fig. KB-8).

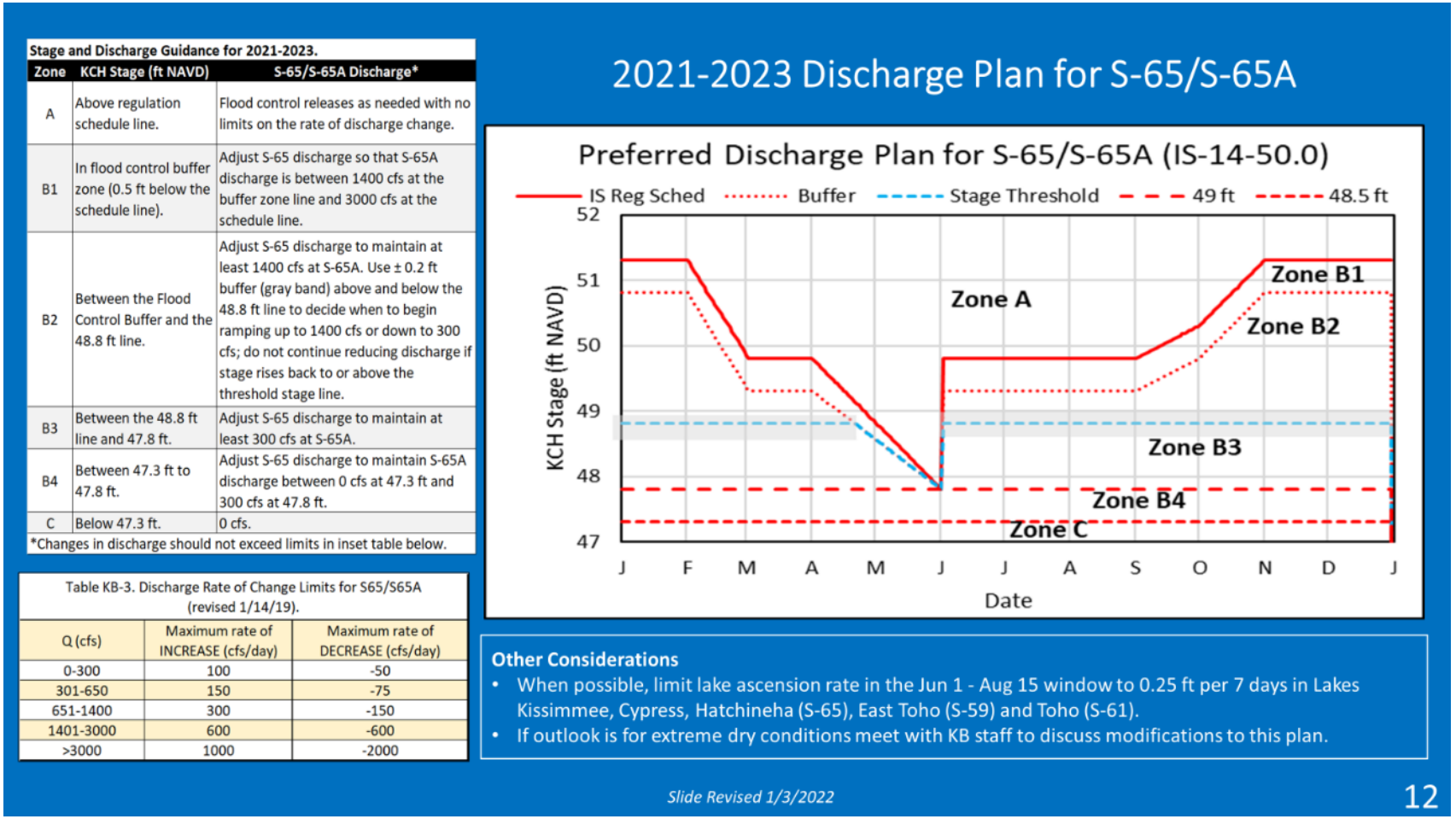


Figure KB-8. IS-14-50 Discharge Plan for S65/S65A with discharge rate of change limits (revised 1/14/19).

Lake Okeechobee

Lake Okeechobee stage was 12.11 feet NAVD88 (13.39 ft NGVD29) on June 16, 2024, which was 0.79 feet higher than the previous week and 0.19 feet lower than a month ago (**Figure LO-1**). Lake stage is in the Low sub-band (**Figure LO-2**) and was 0.87 feet above the upper limit of the recovery ecological envelope (**Figure LO-3**). According to NEXRAD, 6.43 inches of rain fell directly over the Lake last week.

Average daily inflows (excluding rainfall) increased from 220 cfs the previous week to 4,190 cfs. The majority of inflows came from the Indian Prairie watershed (650 cfs), followed by Kissimmee River (450 cfs), Taylor Creek/Nubbin Slough watershed (220 cfs), and Fisheating Creek (40 cfs). Minor backflows were recorded at S-308 (110 cfs) and S271 (390 cfs). Average daily outflows (excluding evapotranspiration) decreased from 3,700 cfs the previous week to 300 cfs. The highest average single structure outflow was recorded at the S-77 into the C-43 canal at 300 cfs. No releases were made to the South. **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.

Routine water quality and phytoplankton monitoring switch to the bloom season schedule in May, with water quality and cyanobacteria taxa/toxins samples collected twice per month at all in-lake sites. Provisional taxa and toxin results from the June 3-5 sampling showed *Microcystis aeruginosa* dominated communities at 25 of the 32 sites, four sites were dominated by *Dolichospermum circinale*, and three were mixed. Fourteen sites had toxin levels above the 0.25 µg/L method's detection threshold, but only one exceeded the EPA recreational standard of 8 µg/L (**Figure LO-6**). Bloom conditions (>40 µg/L chlorophyll *a*) were recorded at four sites. Thirteen sites had chlorophyll *a* values >20 µg/L but <40 µg/L (**Figure LO-6**).

Note: All data presented in this report are provisional and are subject to change.

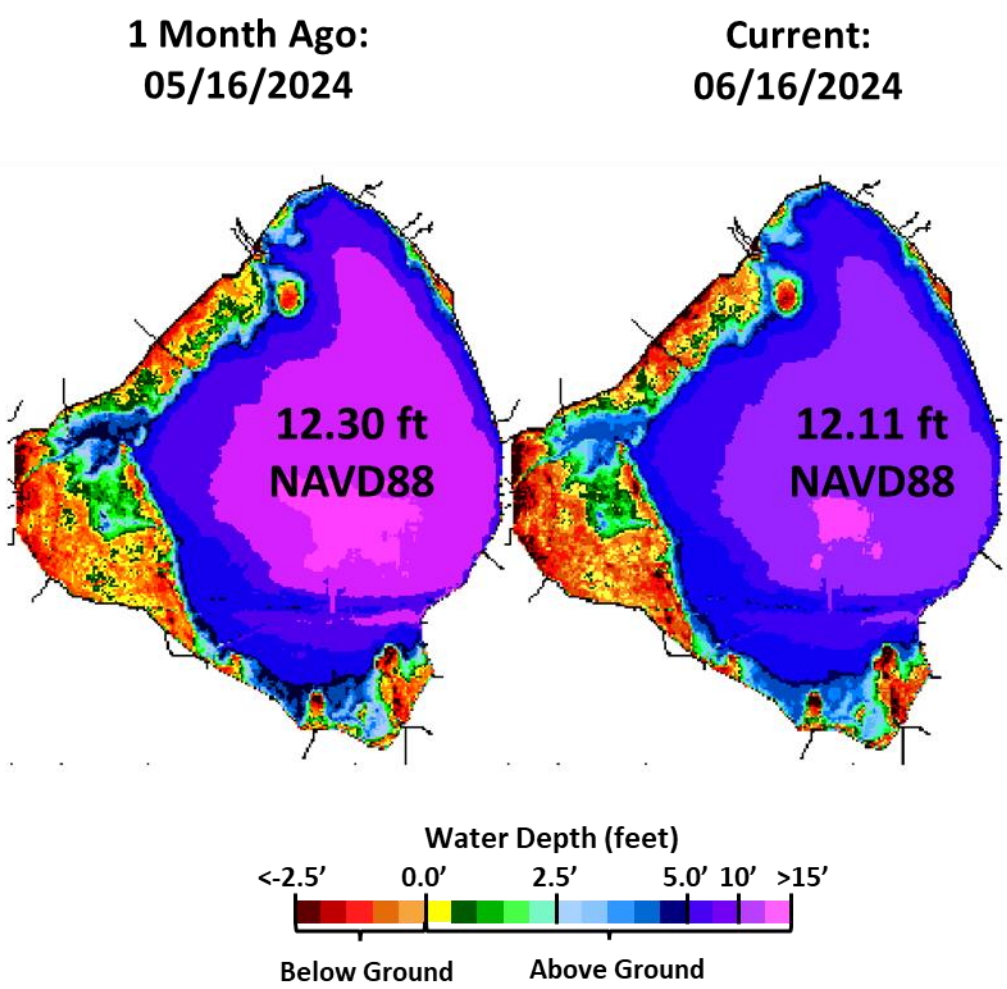


Figure LO-1. Lake Okeechobee water depth estimates based on South Florida Water Depth Assessment Tool (SFWDAT).

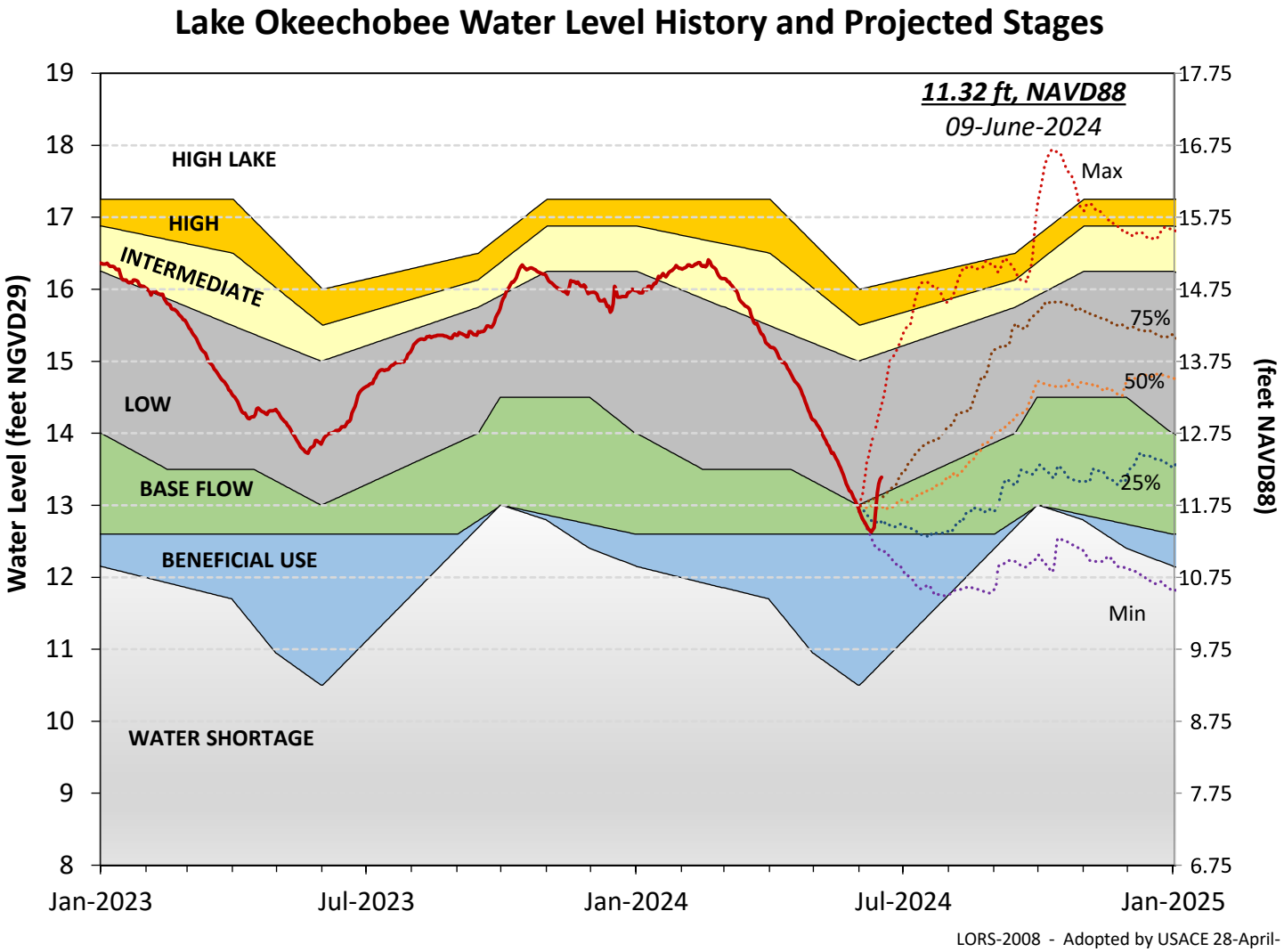


Figure LO-2. Recent Lake Okeechobee stages with projected stages based on a dynamic position analysis. Note: stages are in NGVD29, approximate NAVD88 values are shown for reference.

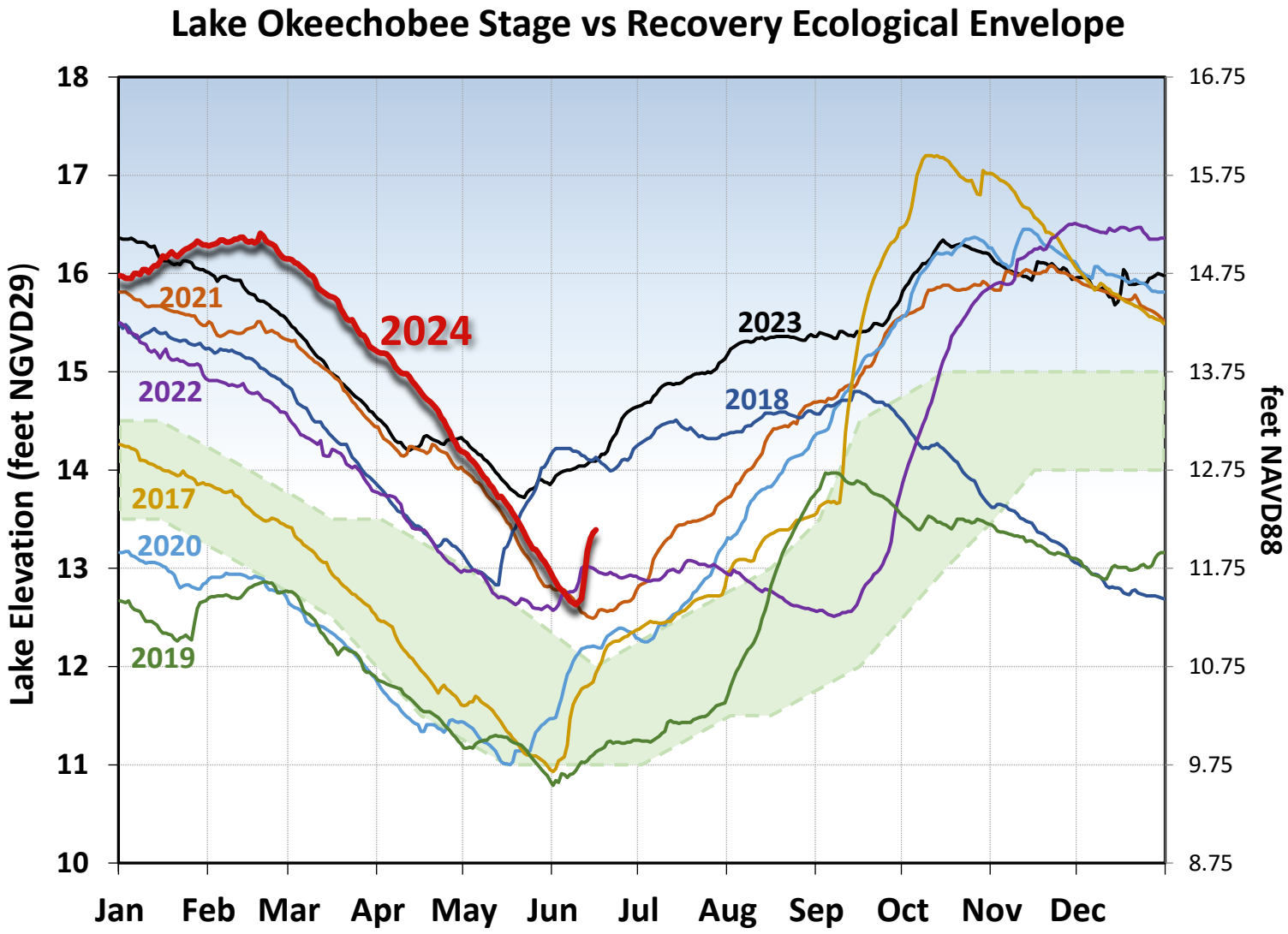


Figure LO-3. The current and seven prior year's annual stage hydrographs for Lake Okeechobee in comparison to the recovery envelope (light green). A shift from the normal ecological envelope to the recovery envelope occurred because the 30-day minimum lake stage (elevations exposed for at least 30 days, nonconsecutively) in the June 1 – July 31, 2023, window was >13 ft NGVD29 (11.75 ft NAVD88).

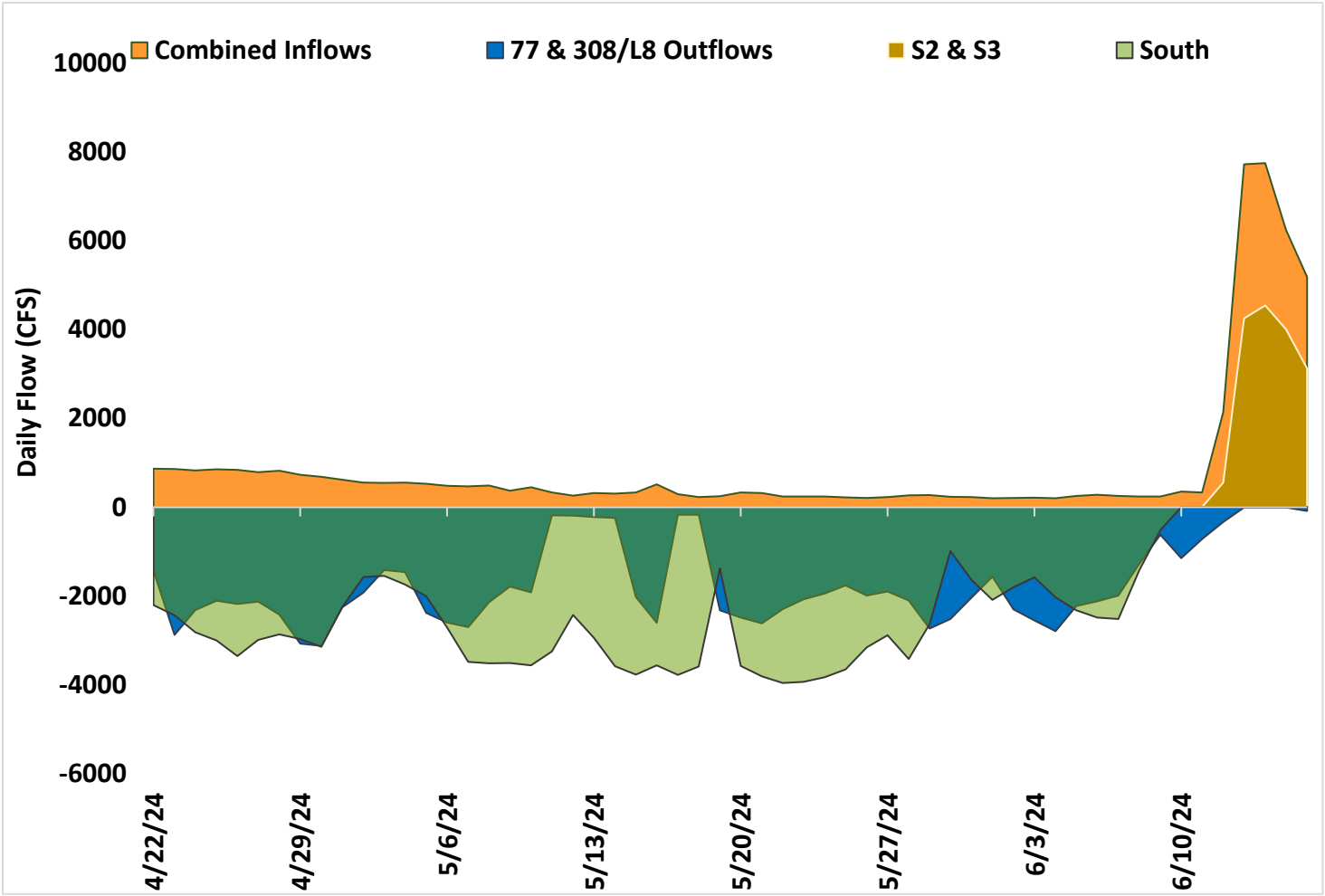


Figure LO-4. Major inflows (orange) to and outflows east and west (blue) from Lake Okeechobee. Outflows south are shown in green. Flows into Lake Okeechobee from the L-8 canal through S-271 (formerly Culvert 10A) or from the C-44 canal through the S-308 are included as inflows. Conversely, flows from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

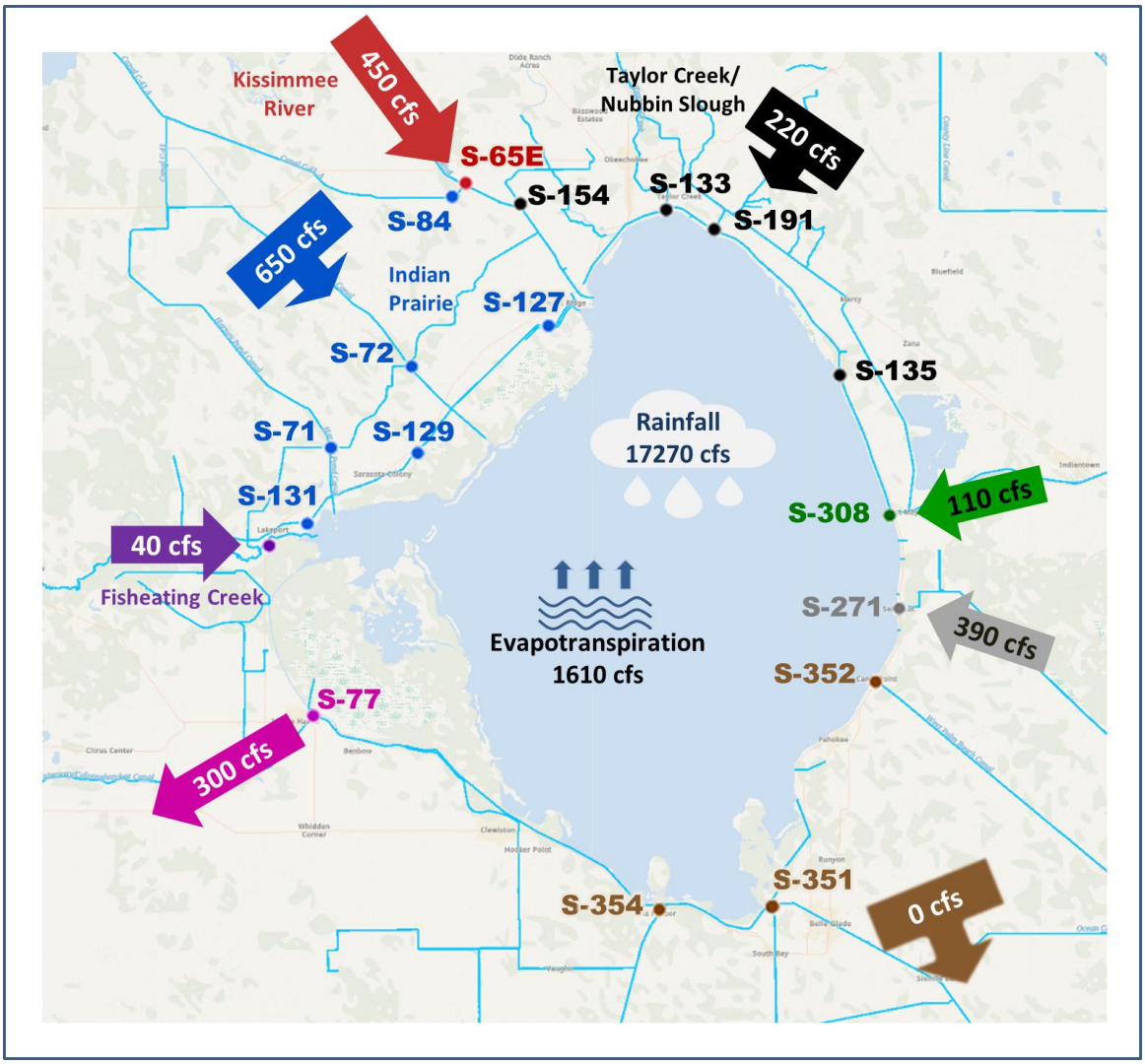


Figure LO-5. Inflows into Lake Okeechobee from Indian Prairie basins, Taylor Creek/Nubbin Slough, Kissimmee River, and Fisheating Creek; and outflows to the west via S-77, to the east via S-308, to the south via S-351, S-352, S-354, and to southeast via S-271 (formerly Culvert 10A) for the week of June 10 – 16, 2024.

Collection Date: June 03-05, 2024

Station	CHL*a* (ug/L)	TOXIN (ug/L)	TAXA
FEBIN	30.6	BDL	*Dolichos*
FEBOUT	22.8	BDL	*Microcys*
KISSR0.0	39.3	BDL	*mixed*
L005	56.8	BDL	*Dolichos*
LZ2	48.8	BDL	*Microcys*
KBARSE	13.7	1.2	*Microcys*
RITTAE2	28.8	BDL	*Microcys*
PELBAY3	24.4	BDL	*Microcys*
POLE3S	30.0	0.68	*Microcys*
LZ25A	14.5	2.1	*Microcys*
PALMOUT	36.4	BDL	*Dolichos*
PALMOUT1	11.2	0.1	*Dolichos*
PALMOUT2	12.0	BDL	*Microcys*
PALMOUT3	11.0	BDL	*Microcys*
POLESOUT	49.8	73.0	*Microcys*
POLESOUT1	25.6	BDL	*Microcys*
POLESOUT2	27.8	5.9	*Microcys*
POLESOUT3	13.2	BDL	*Microcys*
EASTSHORE	31.9	0.3	*Microcys*
NES135	31.8	0.8	*Microcys*
NES191	48.0	BDL	*Microcys*

Station	CHL*a* (ug/L)	TOXIN (ug/L)	TAXA
L001	10.2	BDL	*Microcys*
L004	8.6	BDL	*Microcys*
L006	5.52	0.69	*Microcys*
L007	10.3	0.27	*Microcys*
L008	28.8	2.5	*Microcys*
LZ30	20.6	4.1	*Microcys*
LZ40	6.26	BDL	*mixed*
CLV10A	7.06	BDL	*Microcys*
NCENTER	9.41	0.42	*mixed*

S308C	P	BDL	*Microcys*
S77	P	BDL	*Microcys*

Figure LO-6. Dominant taxa, total microcystin (µg/L) and chlorophyll a (µg/L), data from June 3-5, 2024.

Estuaries

St. Lucie Estuary

Over the past week, mean total inflow to the St. Lucie Estuary was 2,148 cfs (**Figures ES-1** and **ES-2**), and the previous 30-day mean inflow was 663 cfs. For comparison, the historical provisional mean inflows from the contributing areas are shown in **Figure ES-2**.

Over the past week, salinities decreased 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 24.0. Salinity conditions in the middle estuary were estimated to be in 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 3.1 spat/shell for May, which is an increase from the previous month (**Figure ES-5**).

Caloosahatchee River Estuary

Over the past week, mean total inflow to the Caloosahatchee River Estuary was 8,845 cfs (**Figures ES-6** and **ES-7**), and the previous 30-day mean inflow was 3,620 cfs. For comparison, the historical provisional mean inflows from the contributing areas are shown in **Figure ES-7**.

Over the past week, surface salinities decreased at all 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 in the lower stressed range for adult oysters at Cape Coral, in the optimal range at Shell Point, and in the upper stressed range at Sanibel (**Figure ES-10**). The mean larval oyster recruitment rate reported by the FWRI was 17.9 spat/shell at Iona Cove and 40.2 spat/shell at Bird Island for May, which is a substantial increase from the previous month (**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 450 to 2,000 cfs with estimated tidal basin inflows of 1,091 cfs. Model results from all scenarios predict daily salinity to be 0.3 and the 30-day moving average surface salinity to be 0.3 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 FWRI reported on June 14, 2024, that *Karenia brevis*, the red tide dinoflagellate, was not observed in any samples collected within the District region over the past week.

Water Management Recommendations

Lake stage is in the Low Sub-Band. Tributary conditions are very wet. The LORS2008 release guidance suggests up to 3,000 cfs release at S-79 to the Caloosahatchee River Estuary and up to 1,170 cfs release at S-80 to the St. Lucie Estuary.

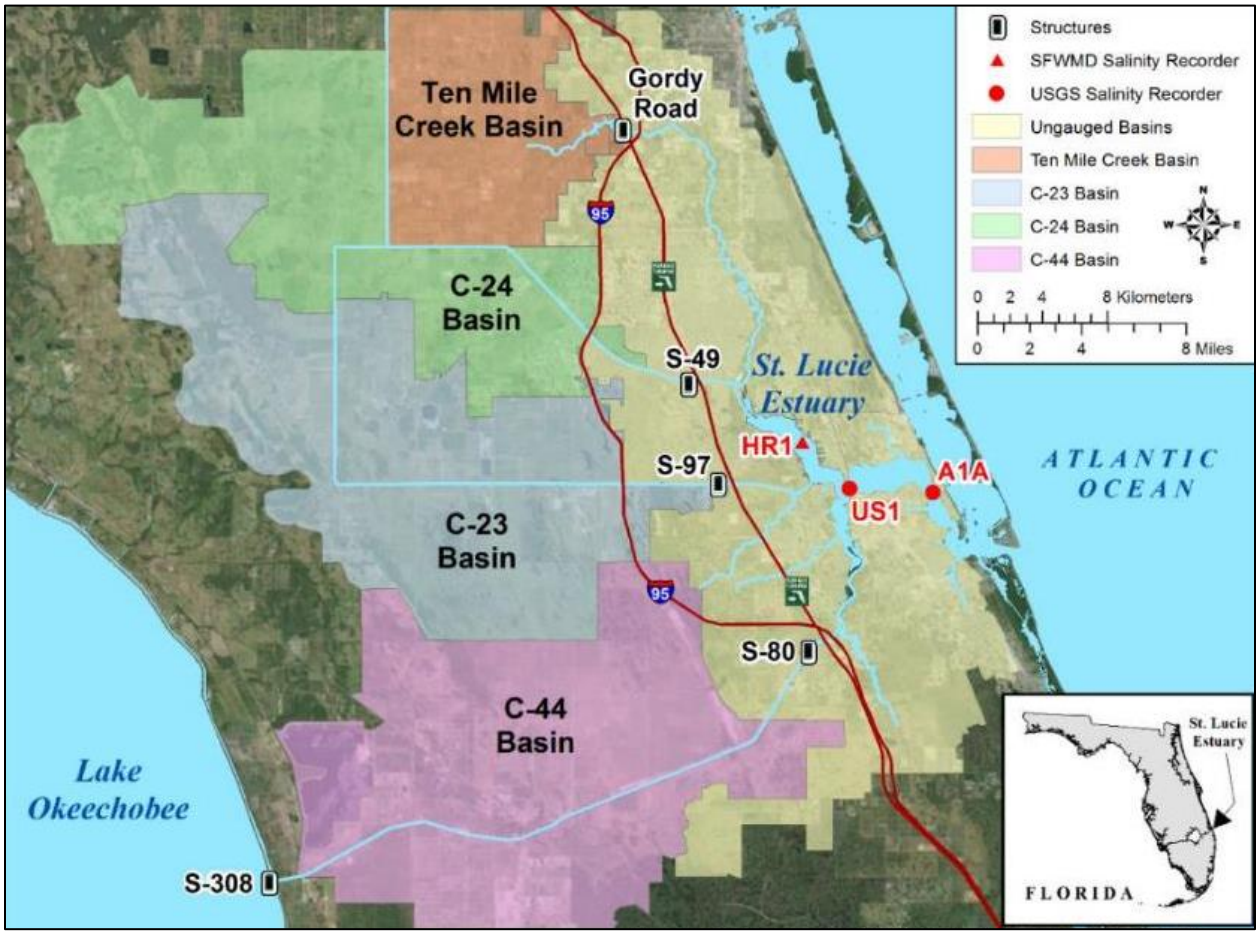


Figure ES-1. Basins, water control structures and salinity monitoring sites in the St. Lucie Estuary.

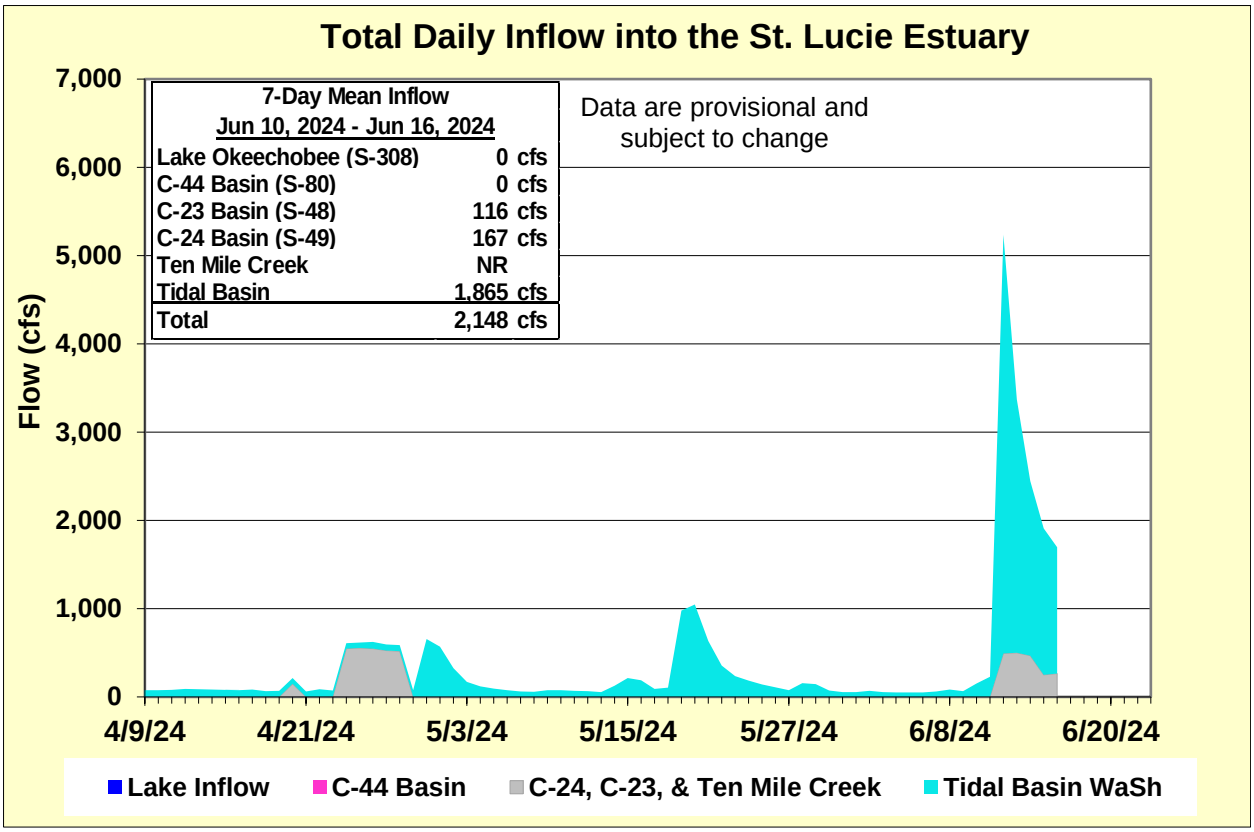


Figure ES-2. Total daily inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and Tidal Basins into the St. Lucie Estuary.

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)	**18.1** (24.4)	**23.9** (25.9)	10.0 – 25.0
US1 Bridge	**23.4** (27.9)	**24.6** (28.0)	10.0 – 25.0
A1A Bridge	**28.4** (32.1)	**30.3** (33.0)	10.0 – 25.0

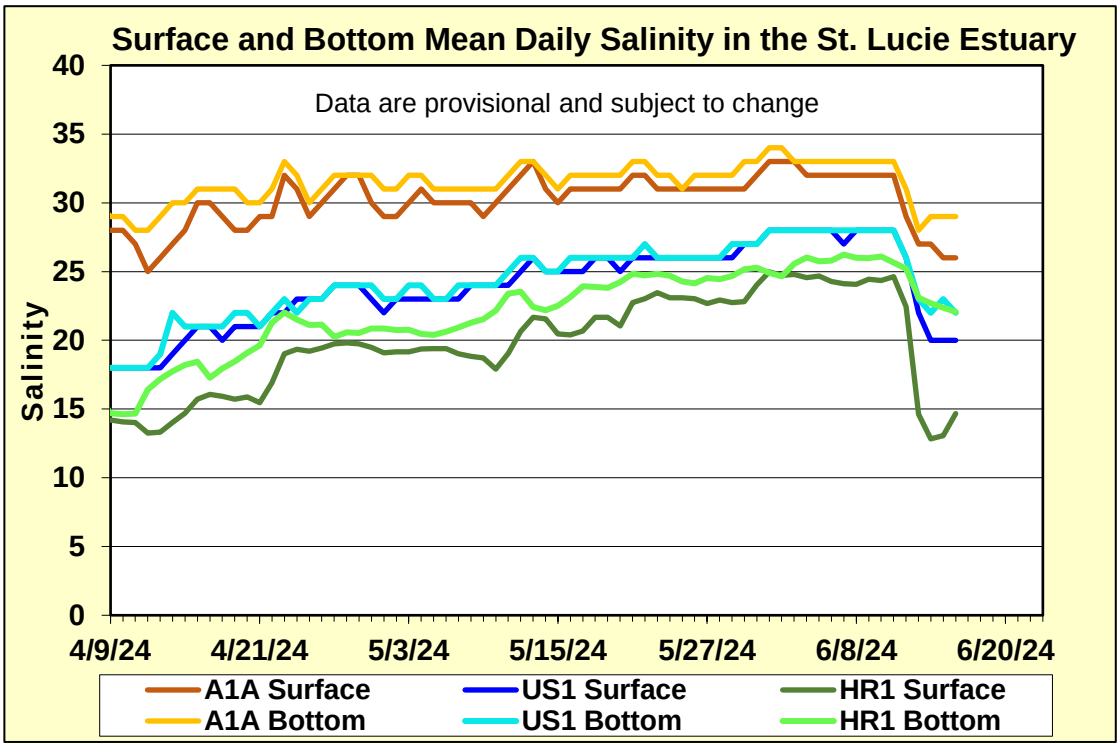


Figure ES-3. Mean daily salinity at the A1A, US1, and HR1 sites in the St. Lucie Estuary.

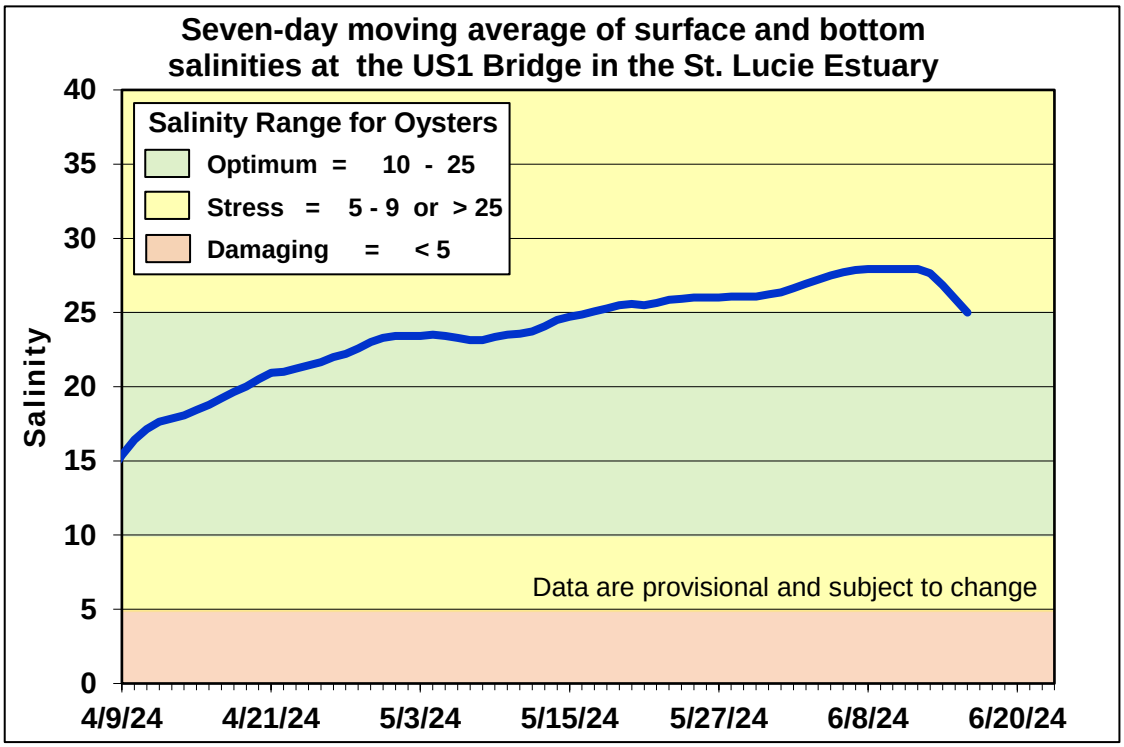


Figure ES-4. Seven-day moving average of the surface and bottom salinities at the US1 Bridge in the St. Lucie Estuary.

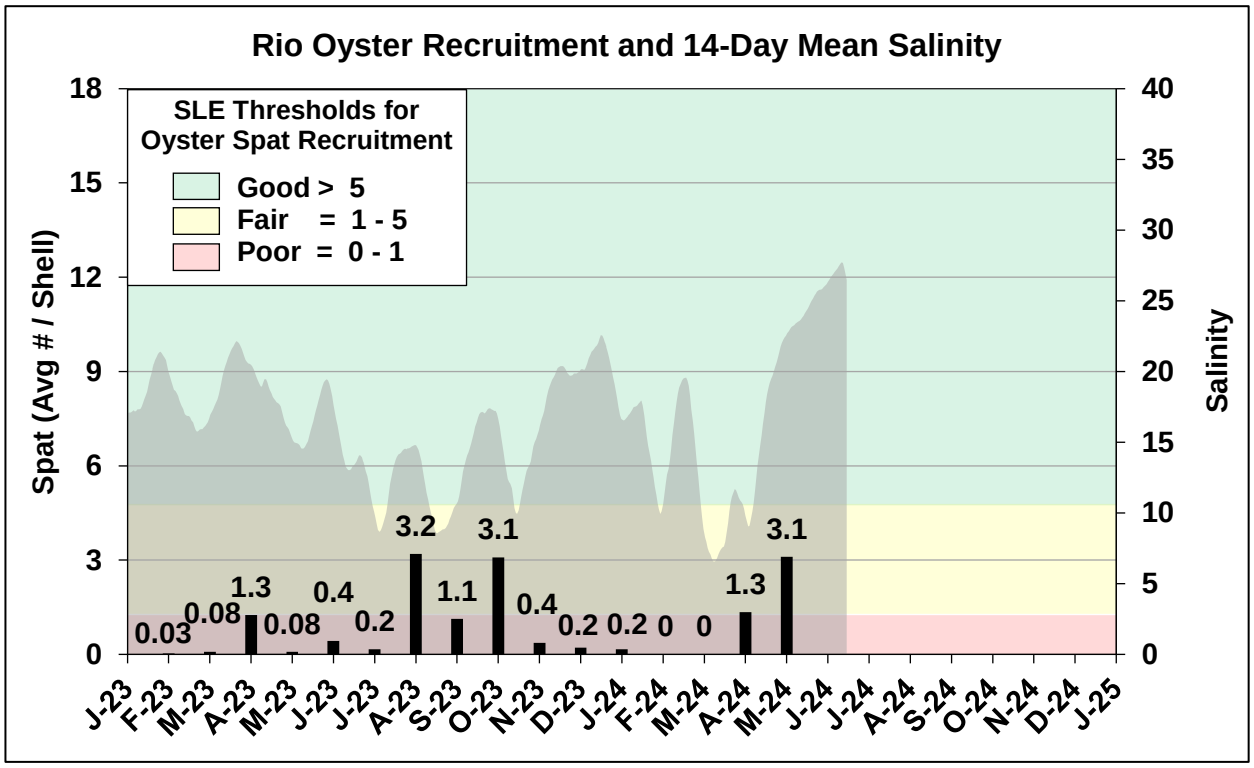


Figure ES-5. Mean oyster recruitment at the Rio oyster monitoring station and 14-day mean salinity at US1 Bridge.

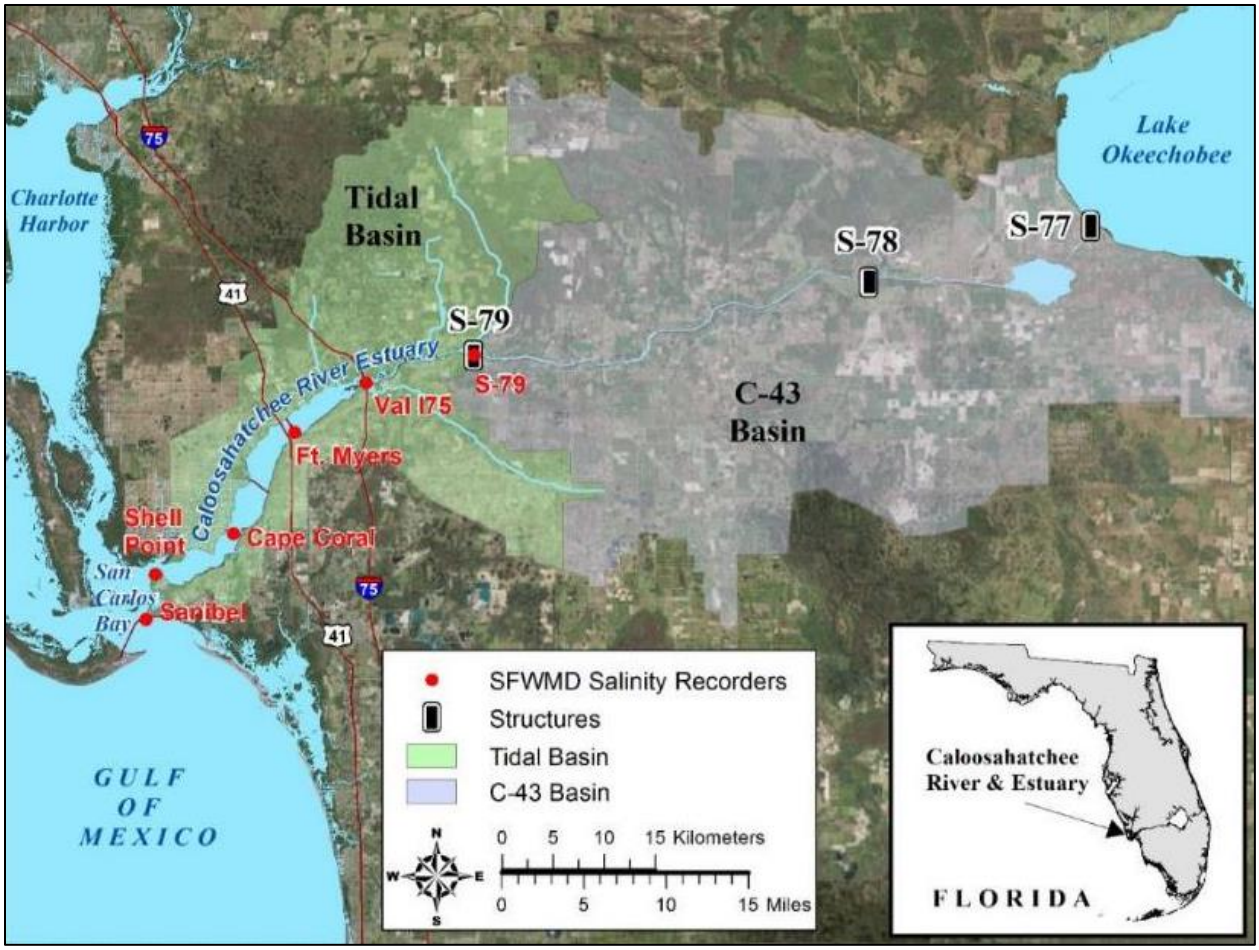


Figure ES-6. Basins, water control structures, and salinity monitoring sites in the Caloosahatchee River Estuary.

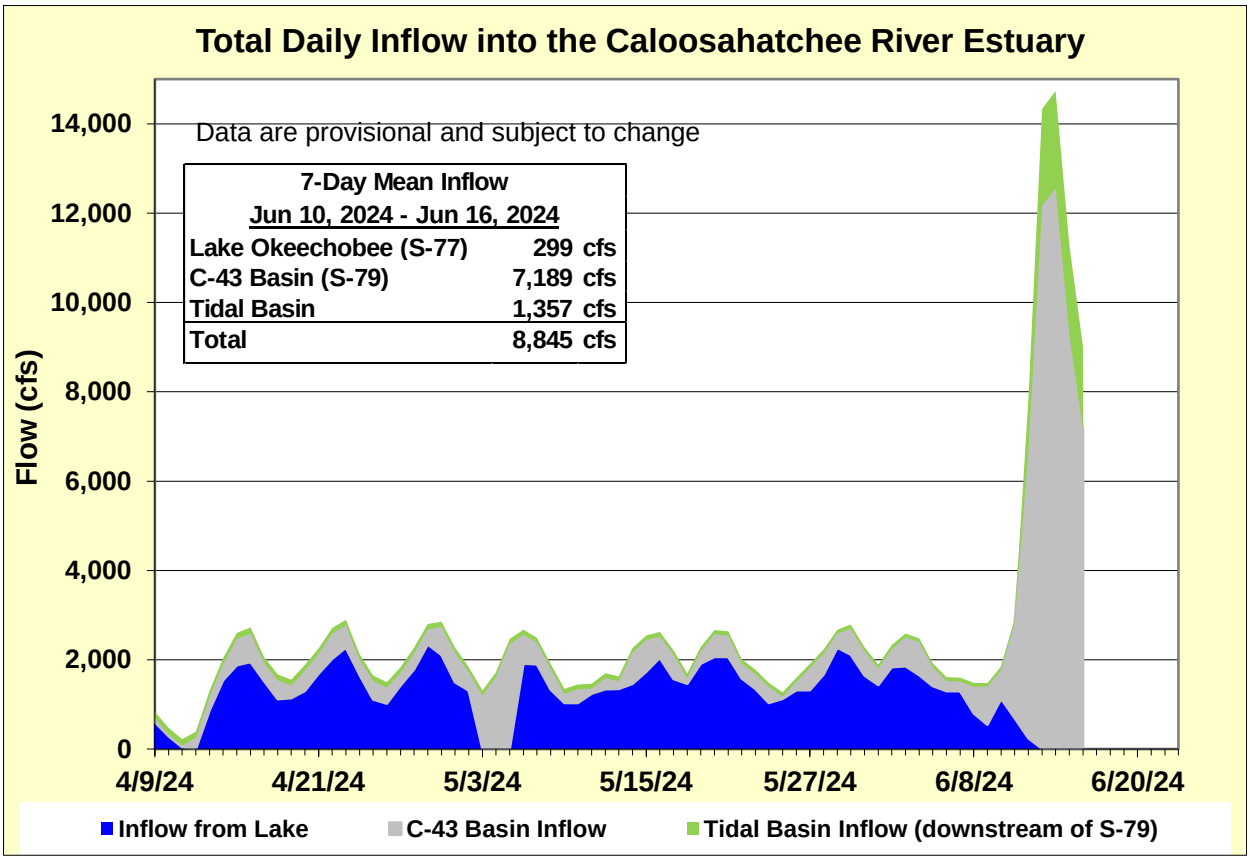


Figure ES-7. Total daily inflows from Lake Okeechobee, and runoff from the C-43 and Tidal basins into the Caloosahatchee River Estuary.

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)	**0.1** (0.2)	**0.2** (0.2)	0.0 – 10.0
Val I-75	**0.2** (0.3)	**0.2** (0.3)	0.0 – 10.0
Fort Myers Yacht Basin	**1.2** (4.5)	**1.3** (5.7)	0.0 – 10.0
Cape Coral	**6.0** (11.0)	**6.8** (14.1)	10.0 – 25.0
Shell Point	**16.8** (27.4)	**19.3** (28.1)	10.0 – 25.0
Sanibel	**25.1** (30.7)	**29.5** (32.2)	10.0 – 25.0

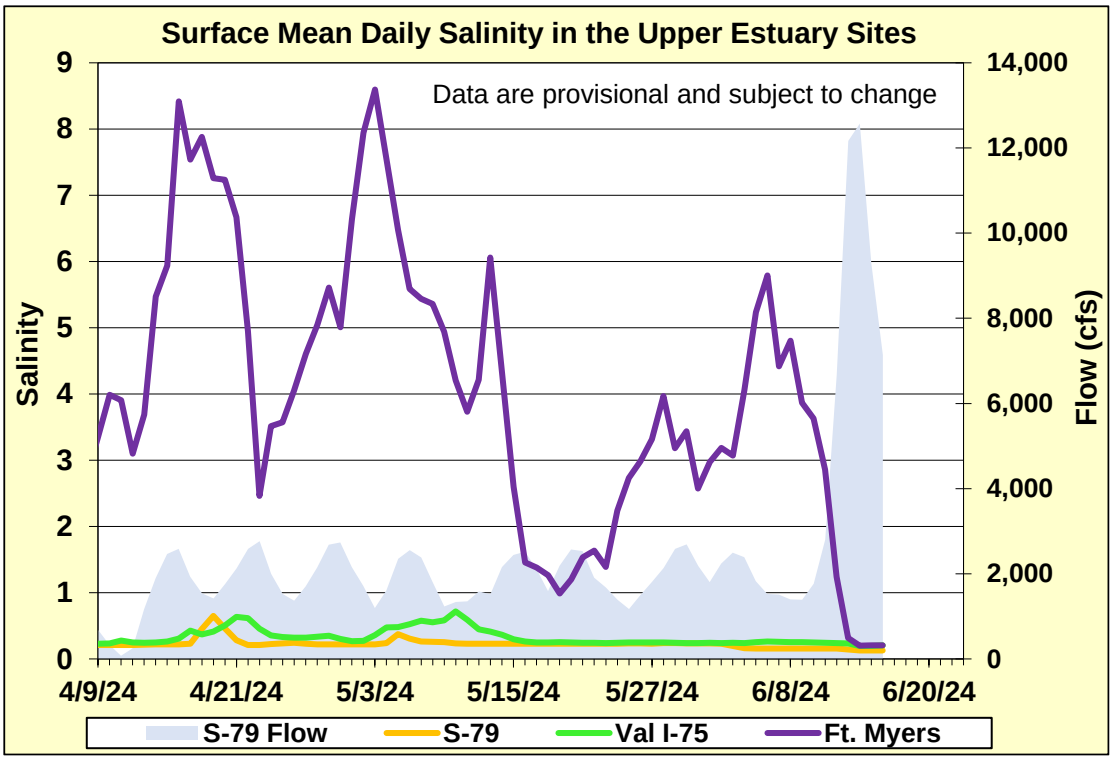


Figure ES-8. Mean daily salinity at upper Caloosahatchee River Estuary monitoring sites and mean daily flow at S-79.

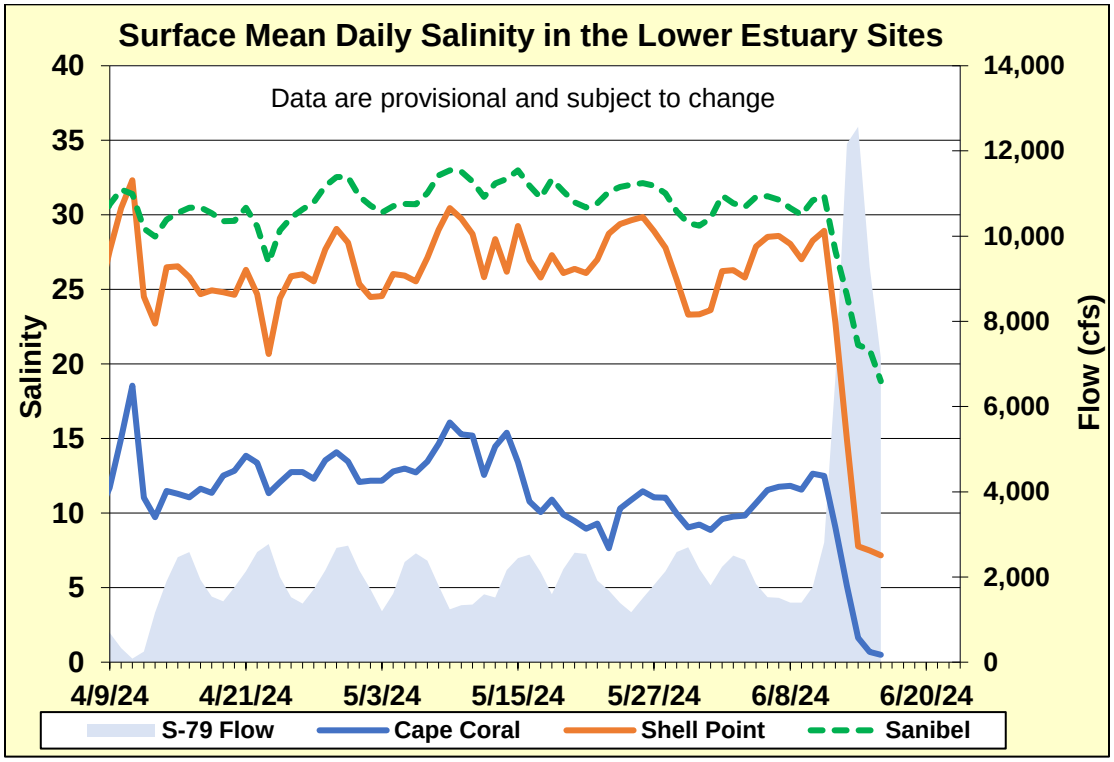


Figure ES-9. Mean daily surface salinity at lower Caloosahatchee River Estuary monitoring sites and mean daily flow at S-79.

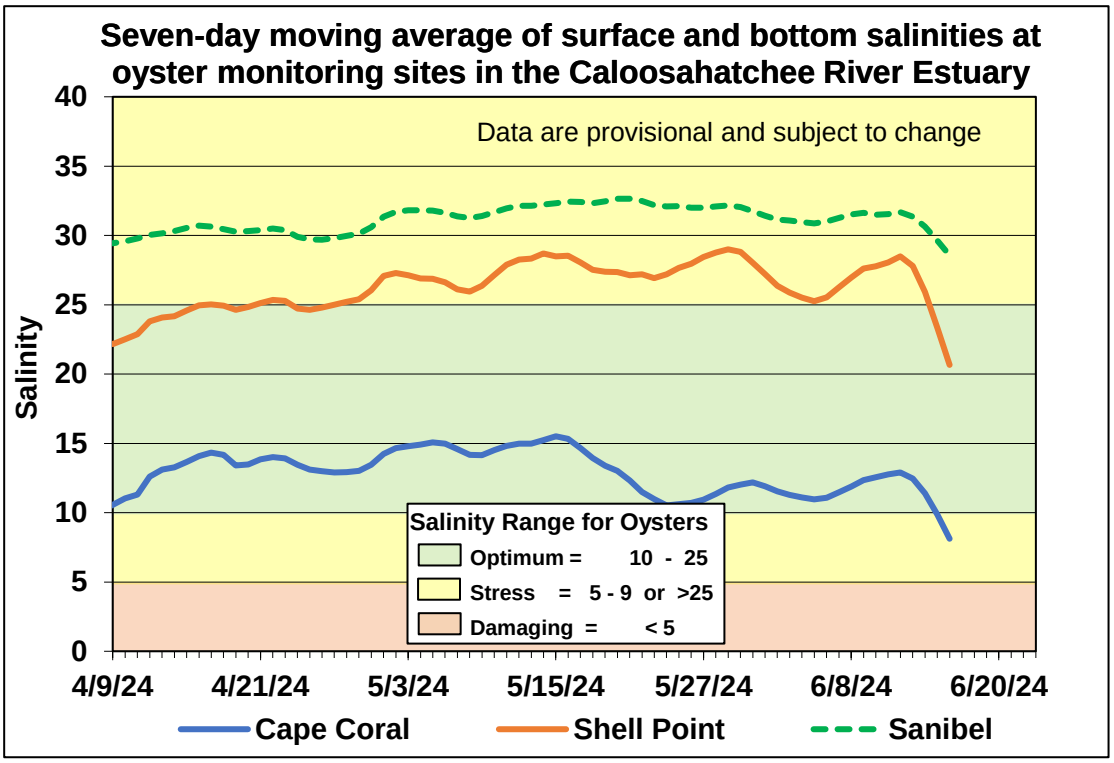


Figure ES-10. Seven-day moving average of surface and bottom salinities at Cape Coral, Shell Point, and Sanibel monitoring sites in the Caloosahatchee River Estuary.

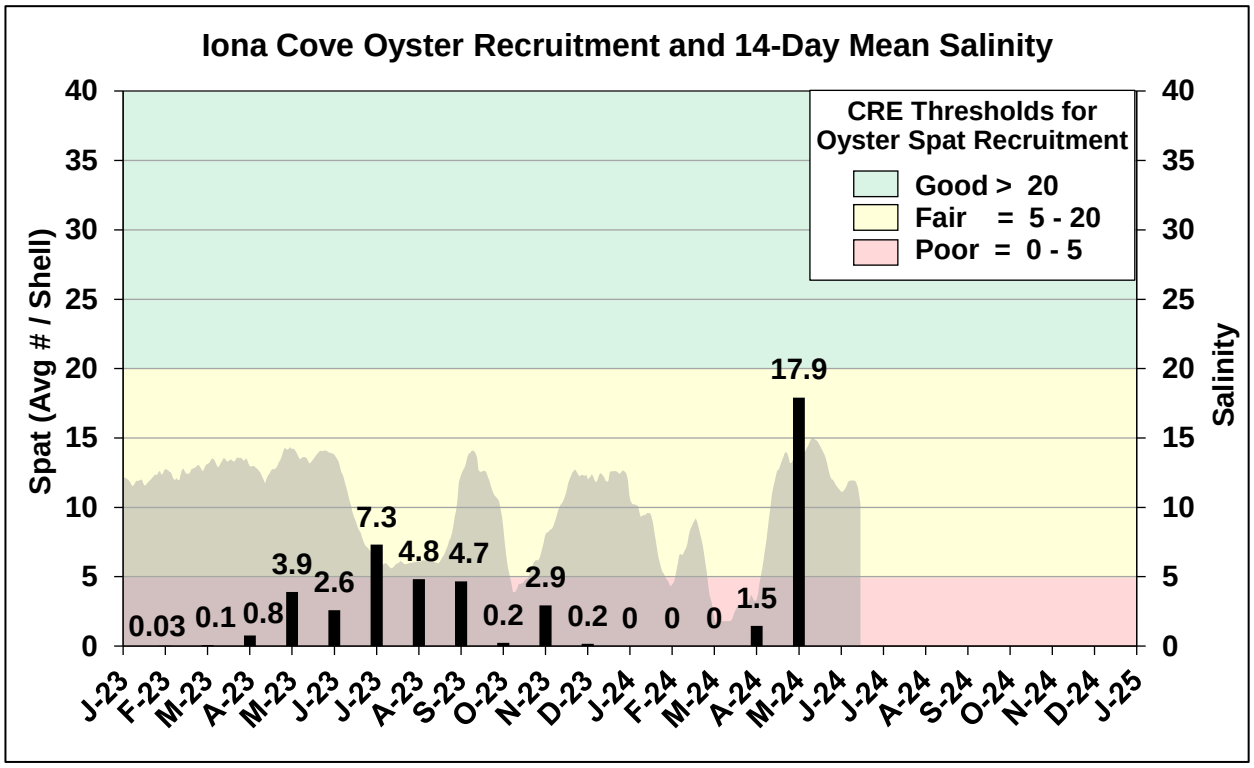


Figure ES-11. Mean oyster recruitment at the Iona Cove oyster monitoring station and 14-day mean salinity at Cape Coral.

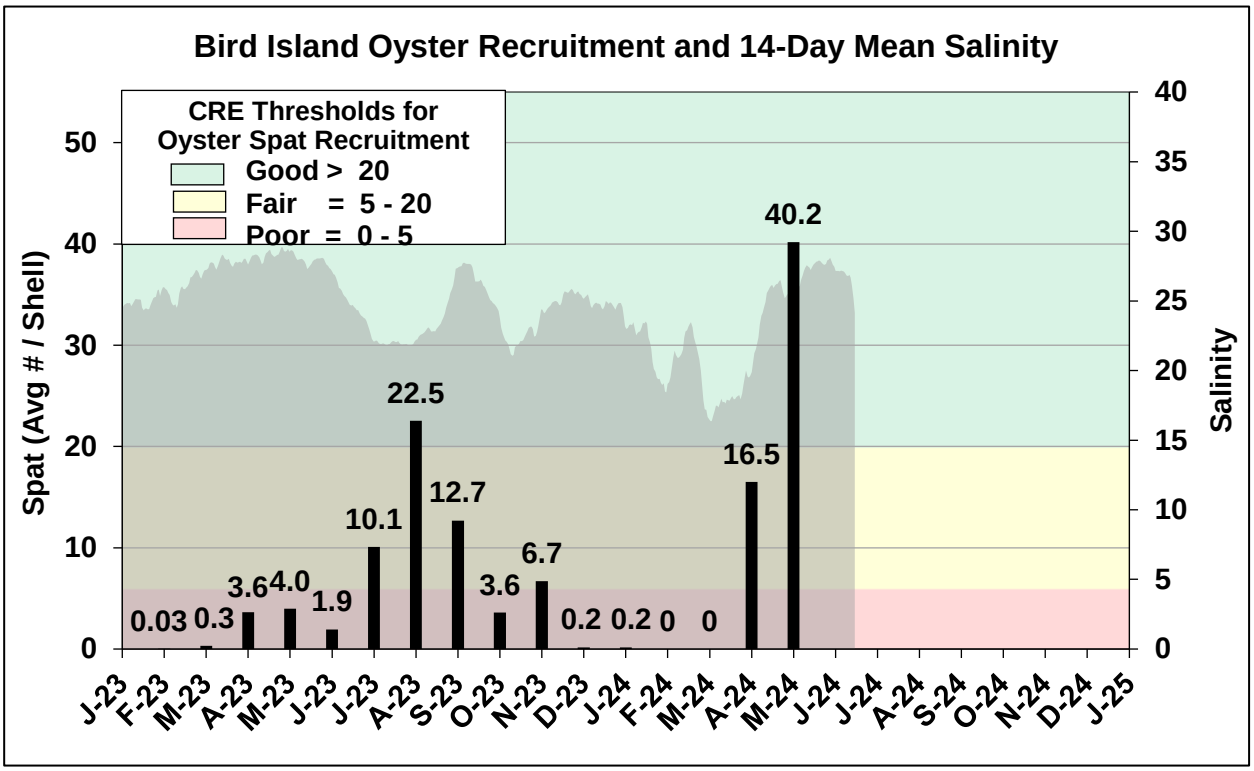


Figure ES-12. Mean oyster recruitment at the Bird Island oyster monitoring station and 14-day mean salinity at Shell Point.

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	450	1,091	0.3	0.3
B	650	1,091	0.3	0.3
C	1,200	1,091	0.3	0.3
D	2,000	1,091	0.3	0.3

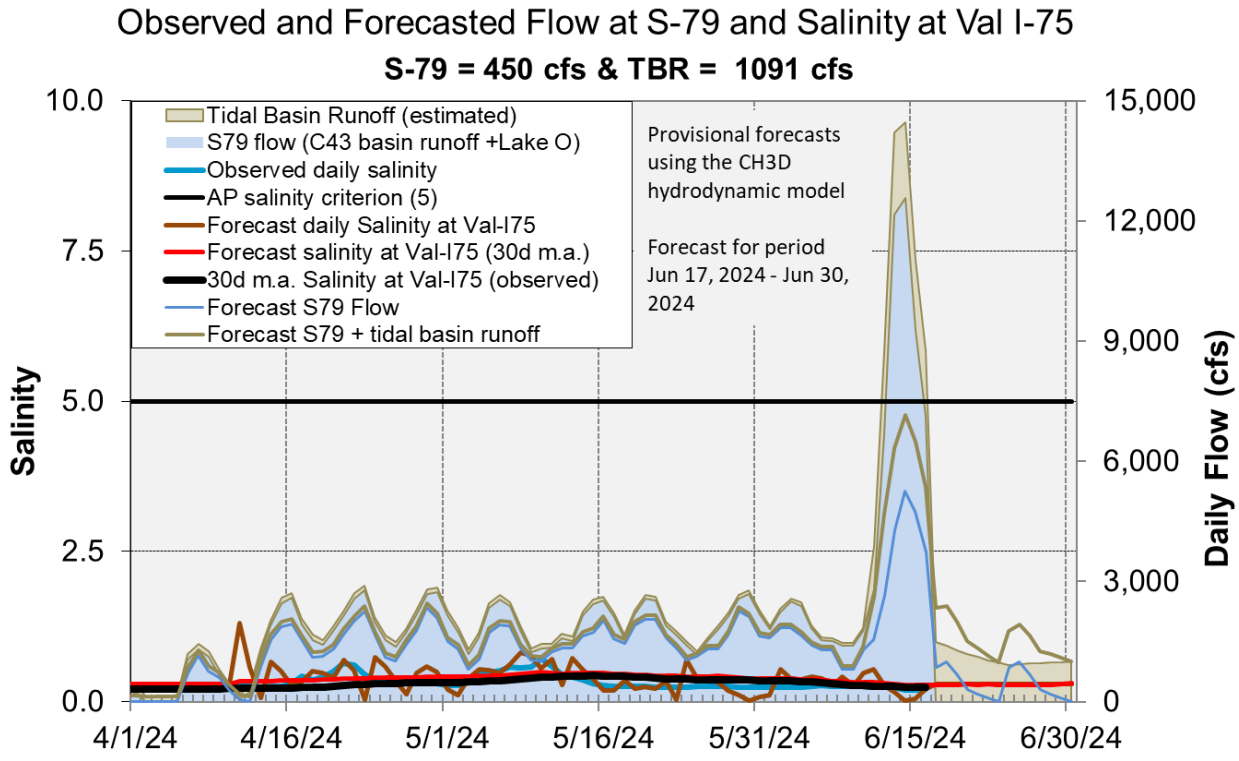


Figure ES-13. Forecasted Val I-75 site surface salinity assuming 450 cfs pulse release at S-79.

Stormwater Treatment Areas

STA-1E: STA-1E Eastern Flow-way is offline for rehydration and vegetation establishment following erosion repair. An operational restriction is in place in STA-1E Western Flow-way for post-construction vegetation grow-in. Online treatment cells are above target stage. Vegetation in the Central flow-way is highly stressed. The 365-day phosphorus loading rate (PLR) for the Central Flow-way is high. (**Figure S-1**).

STA-1W: Cell 7 contains nests of Migratory Bird Treaty Act protected species. Treatment cells are above target stage. Vegetation in the flow-ways is highly stressed. The 365-day PLR for the Eastern Flow-way is very high, the 365-day PLR for the Western Flow-way is high, and the 365-day PLR for the Northern Flow-ways is below 1.0 g/m^2/year (**Figure S-1**).

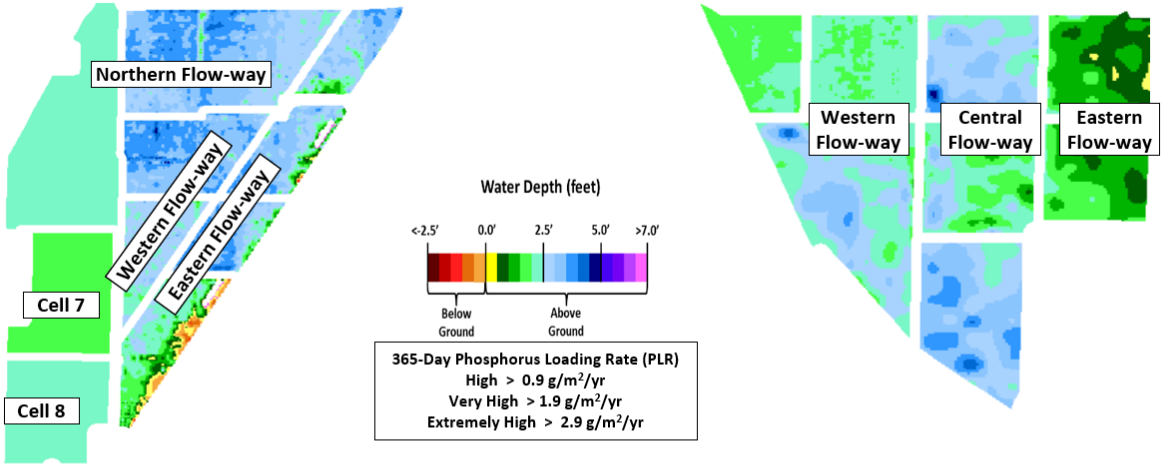
STA-2: Operational restrictions are in place in Flow-ways 2 and 4 for vegetation management activities, and in Flow-way 5 for construction activities. Online treatment cells are above target stage. Vegetation in Flow-ways 2, 3, and 4 is stressed, and in 5 is highly stressed. The 365-day PLRs for Flow-ways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

STA-3/4: An operational restriction is in place in the Eastern Flow-way for post-drawdown vegetation grow-in. Treatment cells are above target stage. Vegetation in the Central Flow-way is highly stressed and in the Eastern 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-2**).

STA-5/6: Treatment cells are above target stage. All treatment cells have highly stressed or stressed vegetation conditions. The 365-day PLRs for Flow-ways 1, 4, 6, 7, and 8 are below 1.0 g/m^2/year, and the 365-day PLRs for Flow-ways 2, 3, and 5 are high. (**Figure S-3**).

For definitions on STA operational language see glossary following figures.

Eastern Flow Path Weekly Status Report – 6/10/2024 through 6/16/2024

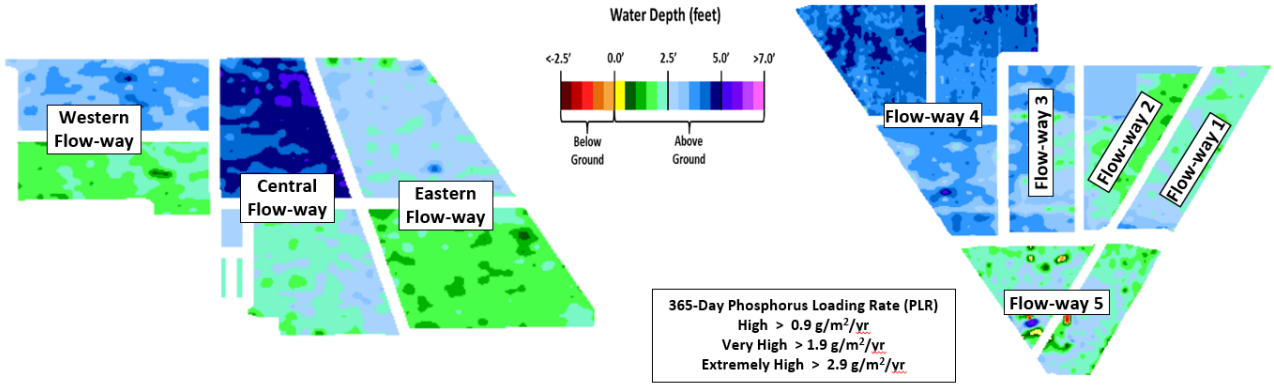


STA-1W	Flow-way Status
Western	• High 365-day PLR • Highly stressed vegetation conditions
Eastern	• Very High 365-day PLR • Highly stressed vegetation conditions
Northern	• Highly stressed vegetation conditions
Cell 6	
Cell 7+8	• MBTA nesting in Cell 7

STA-1E	Flow-way Status
Western	• Post-construction vegetation grow-in
Central	• High 365-day PLR • Highly stressed vegetation conditions
Eastern	• Offline for vegetation grow-in following erosion repair

Figure S-1. Eastern Flow Path Weekly Status Report

Central Flow Path Weekly Status Report – 6/10/2024 through 6/16/2024

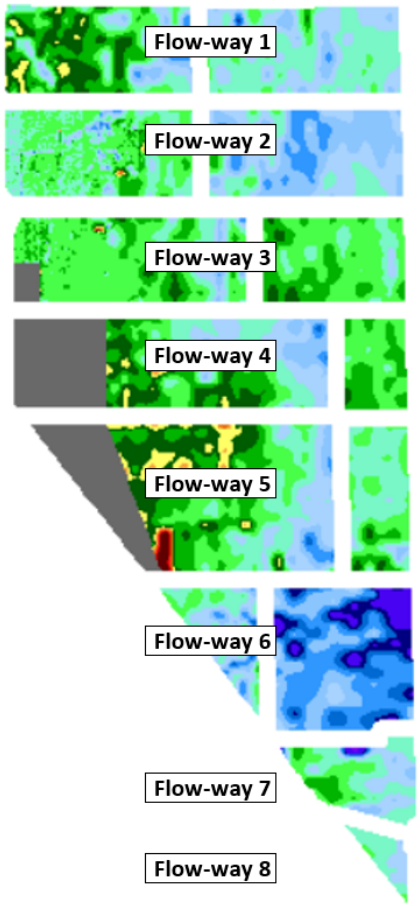


STA-3/4	Flow-way Status
Western	
Central	• Highly stressed vegetation conditions
Eastern	• Post-drawdown vegetation grow-in • Stressed vegetation conditions

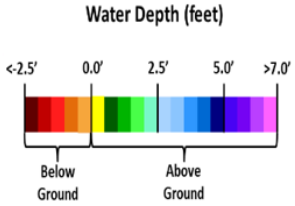
STA-2	Flow-way Status
Flow-way 1	• High 365-day PLR • Rehydration following dryout conditions
Flow-way 2	• High 365-day PLR • Post-construction vegetation grow-in • Stressed vegetation conditions
Flow-way 3	• Stressed vegetation conditions
Flow-way 4	• Planting emergent vegetation • Stressed vegetation conditions
Flow-way 5	• Highly stressed vegetation conditions • Construction activities (FPL pads)

Figure S-2. Central Flow Path Weekly Status Report

Western Flow Path Weekly Status Report – 6/10/2024 through 6/16/2024



STA-5/6	Flow-way Status
Flow-way 1	• Highly stressed vegetation conditions
Flow-way 2	• Highly stressed vegetation conditions • High 365-day PLR
Flow-way 3	• Highly stressed vegetation conditions • High 365-day PLR
Flow-way 4	• Highly stressed vegetation conditions
Flow-way 5	• Highly stressed vegetation conditions • High 365-day PLR
Flow-way 6	• Highly stressed vegetation conditions
Flow-way 7	• Stressed vegetation conditions
Flow-way 8	• Stressed vegetation conditions



365-Day Phosphorus Loading Rate (PLR)
High > 0.9 g/m^2/yr
Very High > 1.9 g/m^2/yr
Extremely High > 2.9 g/m^2/yr

Figure S-3. Western Flow Path Weekly Status Report

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

Record rains fell across Everglades last week especially in WCA-3A. WCA-1: Stage within the Refuge went above schedule last week. On Sunday, stage at the 3-Guage average was 0.37 feet above the flat Zone A1 regulation line. WCA-2A: Stage at the S-11B_H gauge also ascended above schedule last week. The average on Sunday was 0.49 feet above the flat regulation line. WCA-3A: The 3-Gauge average stage rose quickly into Zone A last week then leveled out. The average stage on Sunday was 0.38 feet above the rising Zone A regulation line. WCA-3A North: Stage at Gauge 62 (NW corner) continues a rapid ascent. On Sunday, stage was 0.89 feet above the Upper schedule line. See figures **EV-1** through **EV-4**.

Water Depths

The SFWDAT model output for June 16, 2024, shows a hydro-pattern that is dramatically deeper than one month ago, less so in WCA-1 and WCA-2. Ponded conditions return to the upper reaches of the L-67s and look to be forming in Mullet Slough. Depths in southern WCA-3A return to 2.0 - 2.5 feet. Hydrologic connectivity returns across Everglades National Park (ENP), and Big Cypress National Preserve (BCNP) is now almost completely inundated. Current WDAT water depth estimates are wetter when compared to one month ago across the Everglades Protection Area (EPA), less so in WCA-1 and WCA-2A. The comparison to modeled conditions a year ago illustrates a mix of deeper and drier conditions. WCA-1 and WCA-2A are significantly lower in depth in portions of those basins, with the rest of system deeper particularly to the west. (**Figure EV-5 and Figure EV-6)**.

Comparing current conditions to the 20-year percentiles on June 16, 2024: Depth conditions are now above the 90th percentile for this time of the year for the entirety of WCA-3B, ENP, and BCNP. WCA-1 and WCA-2A are closer the 50th percentile, and the model still predicts the potential for stages to be below ground in those basins (**Figure EV-7**).

Taylor Slough and Florida Bay

Heavy rain caused all stages to increase across Taylor Slough over the past week, with an average increase of 0.90 feet. Changes ranged from +0.22 feet at EPSW in the C-111 area, to +1.76 feet at Taylor Slough Bridge (TSB) in the northern slough (**Figure EV-8 and Figure EV-9**). Taylor Slough water levels are now above the recent average for this time of year by 11.1 inches compared to before the Florida Bay initiative (starting in 2017), an increase of 11.2 inches relative to last week's comparison. The Craighead Pond (CP) stage is now at estimated historical levels, while the TSB stage remains below historical levels by 0.23 feet.

Average Florida Bay salinity was 27.0, a decrease of 3.8 from last week. Salinity decreased at all sites, with changes ranging from –9.4 at Long Sound (LS) in the eastern nearshore region, to –0.3 at Whipray Basin in the central region (**Figure EV-8**). Salinity

remains within the WY2001-2016 Interquartile Range (IQR) and above estimated historical levels in the western region, below both metrics in the eastern region, and is now at the 25th percentile and historical levels in the central region (**Figure EV-10**). Average Florida Bay salinity remains below its recent average for this time of year by 7.0, a decrease of 3.1 from last week's comparison.

Salinity at the TR station in the mangrove zone (tracked for the Florida Bay MFL) was 11.7. The 30-day moving average was 13.9, an increase of 2.3 from last week (**Figure EV-11**). The 365-day moving sum of flow from the five creeks was 398,138 acre-feet, a decrease of 3,923 acre-feet from last week (**Figure EV-11**).

Average rainfall across Taylor Slough and Florida Bay was 5.53 inches over the past week based on the 18 gauges used for this report. Rainfall ranged from 0.31 inches at Trout Creek (TC) in the eastern nearshore region to 9.02 inches at TSB in the northern slough (**Figure EV-12**). Wind directions and speeds in Florida Bay ranged from 0.45 mph SW on June 12th to 23.3 mph NE on June 13th (**Figure EV-12**).

Average daily flow from the five major creeks (McCormick, Taylor, Mud, Trout, West Highway) totaled 1,545 acre-feet last week with net positive flows for the week. Total daily creek flow ranged from –1,280 acre-feet on June 10th to 3,922 acre-feet on June 15th (**Figure EV-13**). Average daily flow for the week was 2,434 acre-feet below estimated historical levels.

Implications for water management

The ecology of the Everglades would benefit from a reduction in ascension rate. Given that in order to successfully fledge wood stork chicks, the wet season would have to start in July; last week's rain event has most likely encouraged abandonment of nesting for this season. Hydrologic connectivity has returned to ENP; inputs continue to move water southward helping to prevent ecologically undesirable salinity swings in Florida Bay nearshore areas. 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	6.89	+0.84
WCA-2A	7.70	+0.98
WCA-2B	8.96	+1.31
WCA-3A	12.52	+1.16
WCA-3B	9.68	+0.69
ENP	8.07	+0.59

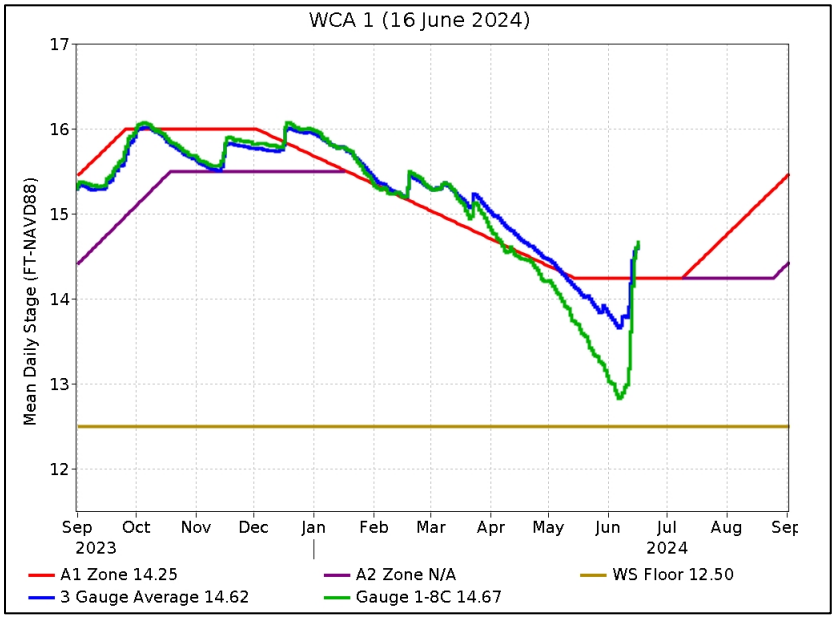


Figure EV-1. WCA-1 stage hydrographs and regulation schedule.

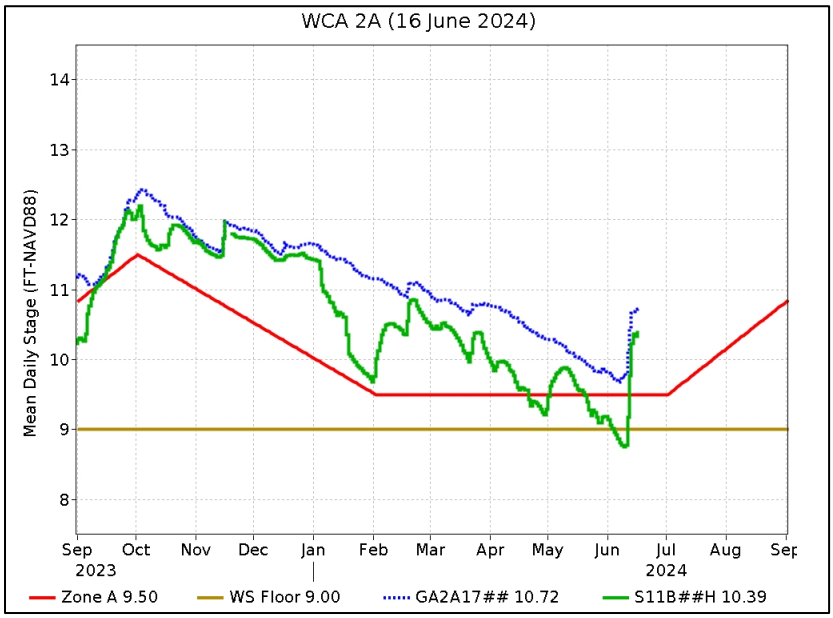


Figure EV-2. WCA-2A stage hydrographs and regulation schedule.

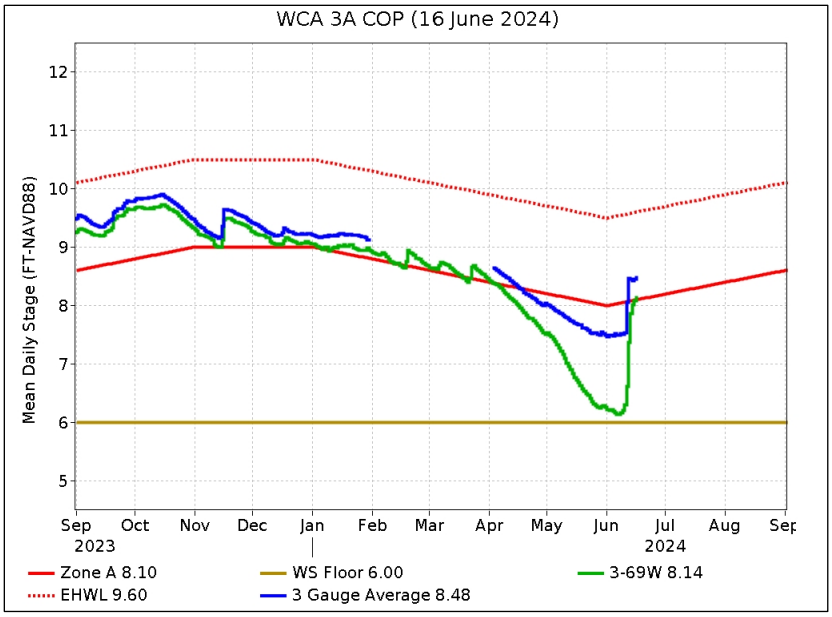


Figure EV-3. WCA-3A stage hydrographs (three-gauge average, 3-69W) and regulation schedule.

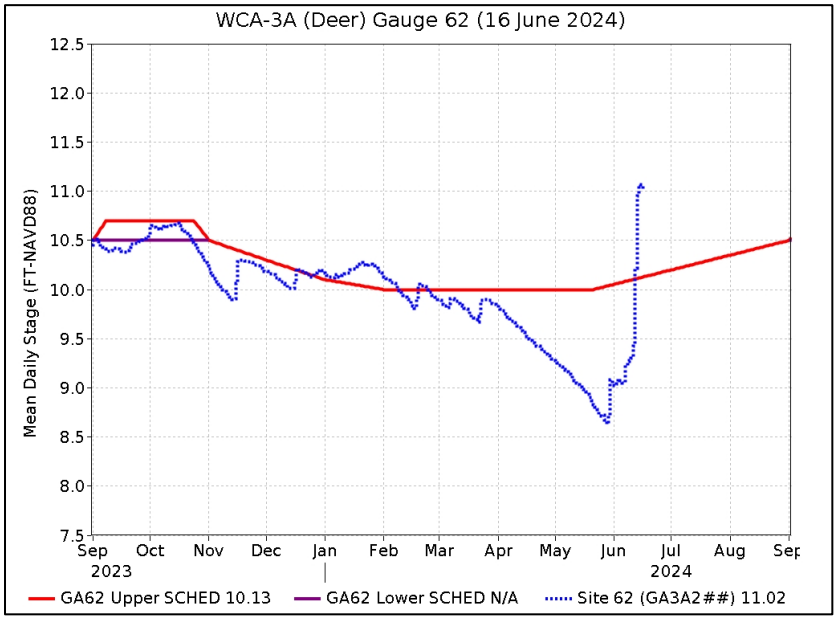


Figure EV-4. WCA-3A stage hydrograph (Deer gauge; Site 62) and GA62 regulation schedule. Figure has not been updating due to data issues. Star represents stage on Sunday.

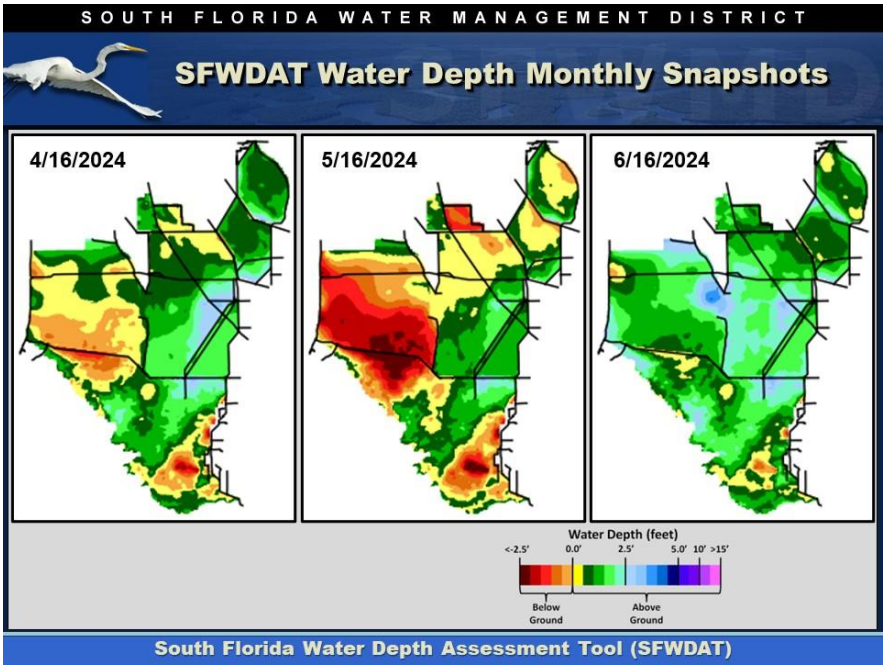


Figure EV-5. Everglades water depths from two months ago (left), one month ago (center), and present (right), based on SFWDAT.

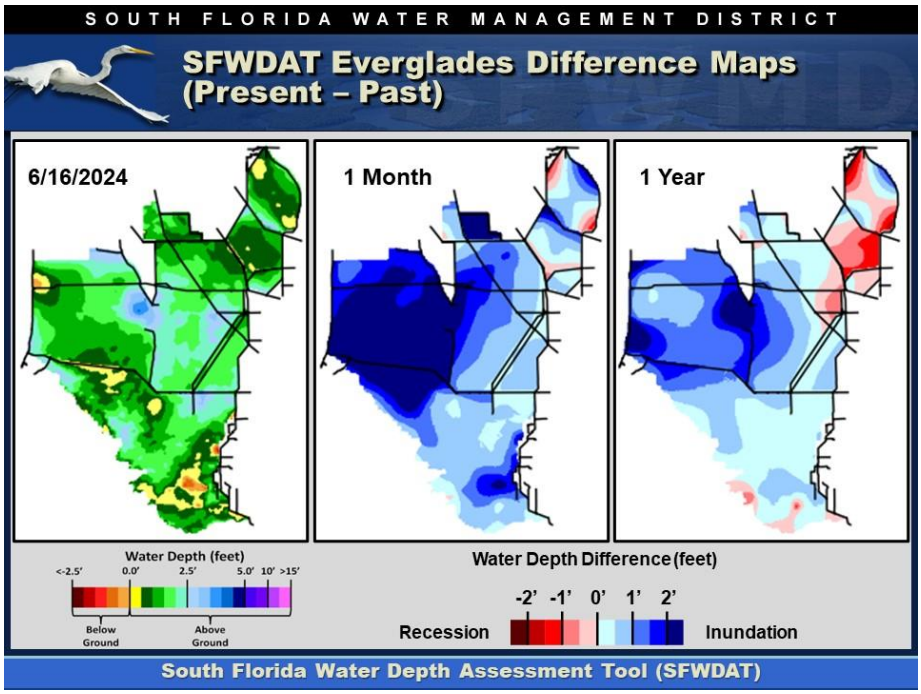


Figure EV-6. Present Everglades water depths (left) and water depth changes from one month (center) and one year (right) ago, based on SFWDAT.

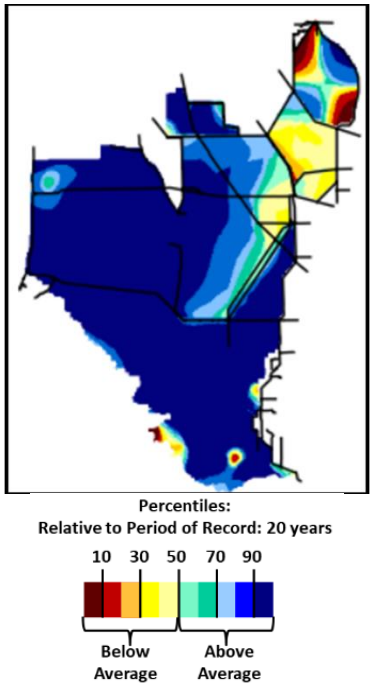


Figure EV-7. Present water depths (6/16/2024) compared to the day of year average over the previous 20 years.

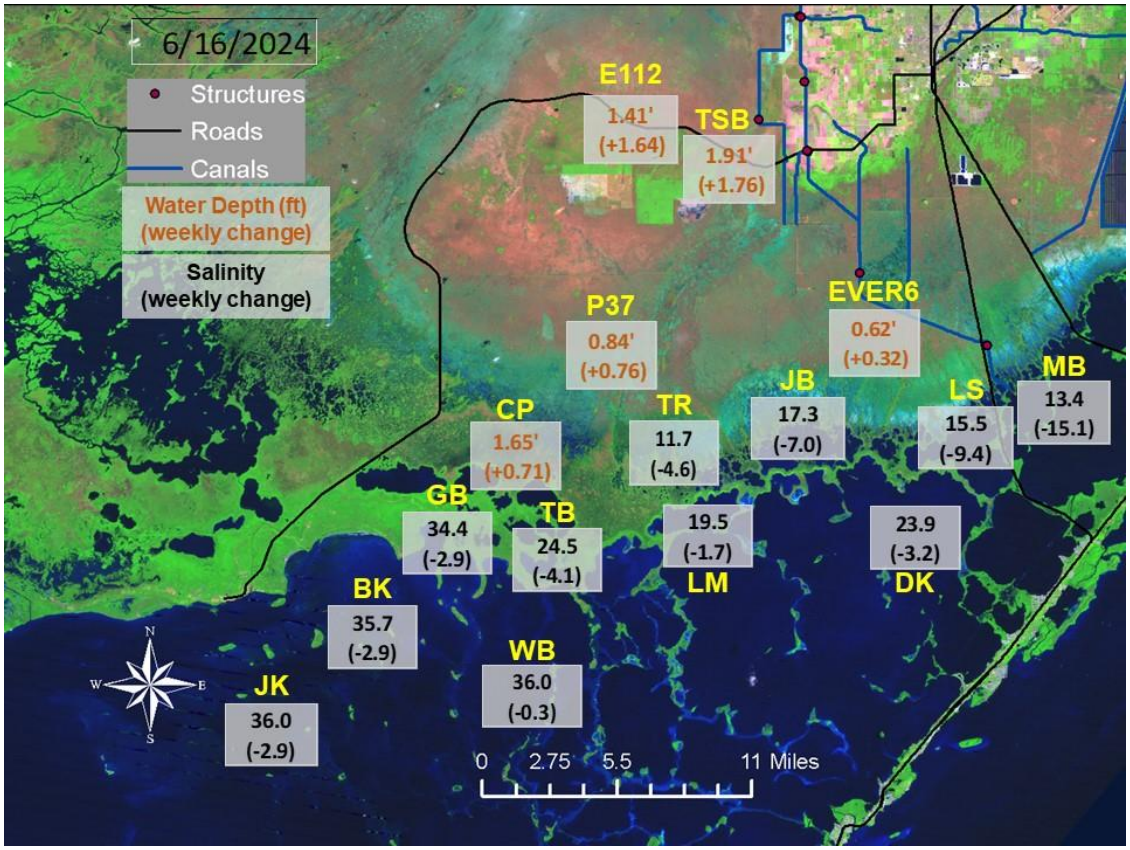


Figure EV-8. Taylor Slough water depths with changes since a week ago and Florida Bay salinities with changes since a week ago.

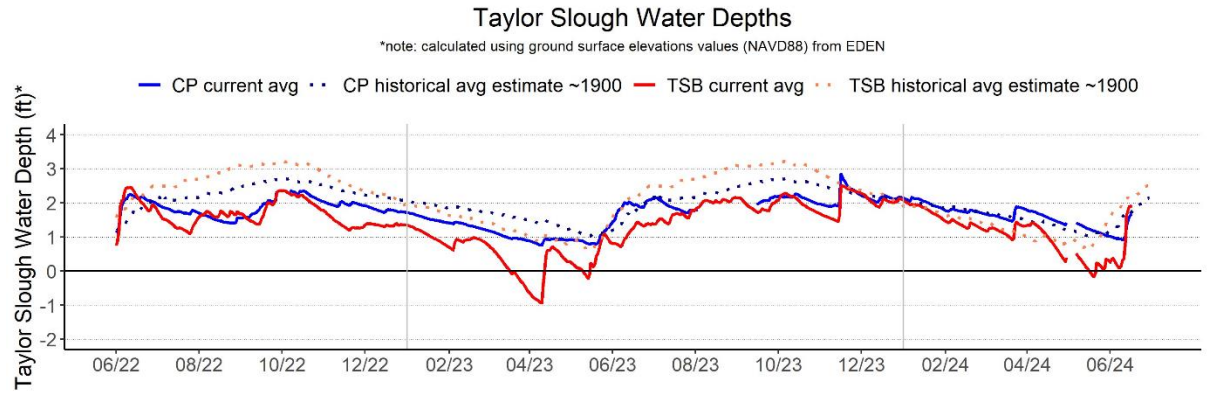


Figure EV-9. Taylor Slough water depth time series for Taylor Slough Bridge (TSB; northern slough) and Craighead Pond (CP; southern slough).

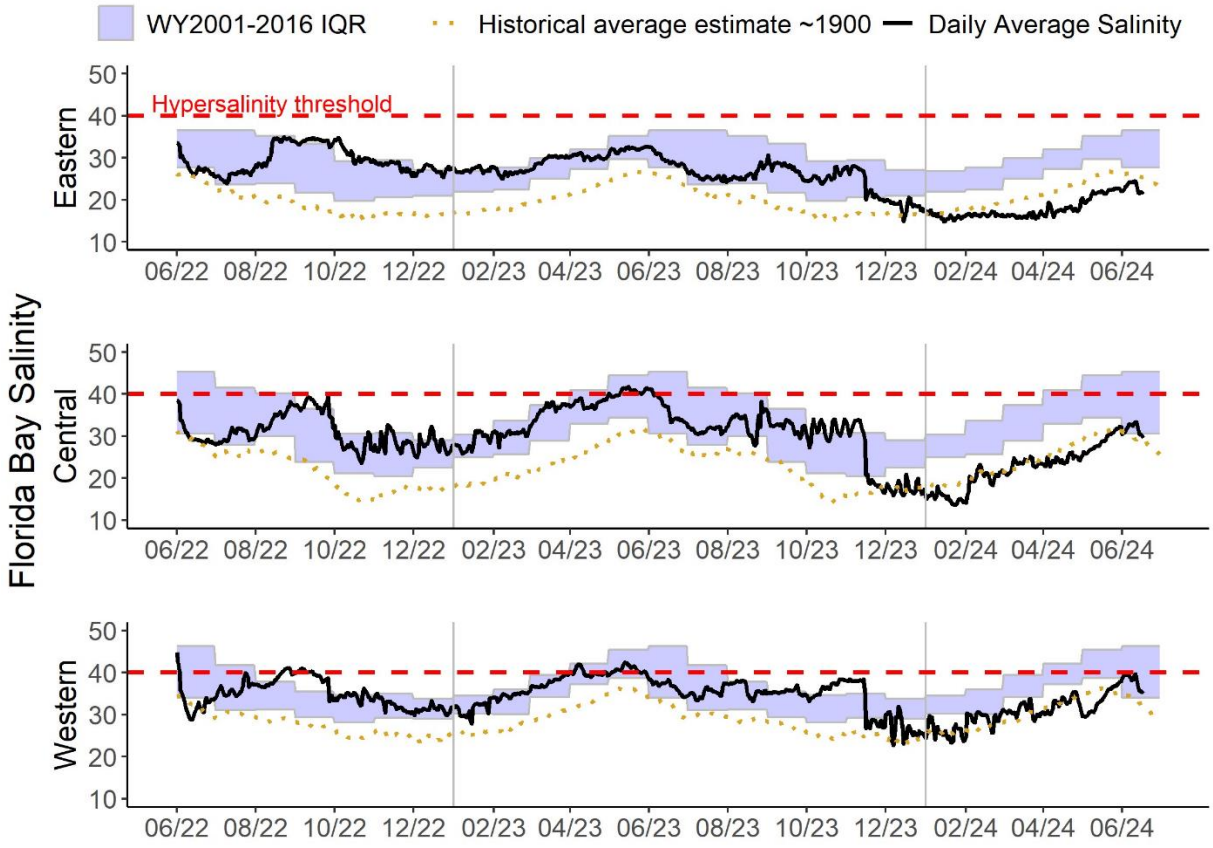


Figure EV-10. Eastern (top panel), Central (middle panel) and Western (bottom panel) Florida Bay daily average salinities with WY2001-2016 interquartile (25-75 percentile) ranges and estimated historical daily average salinities. The hypersalinity threshold indicates the level at which salinities start to become harmful to seagrass.

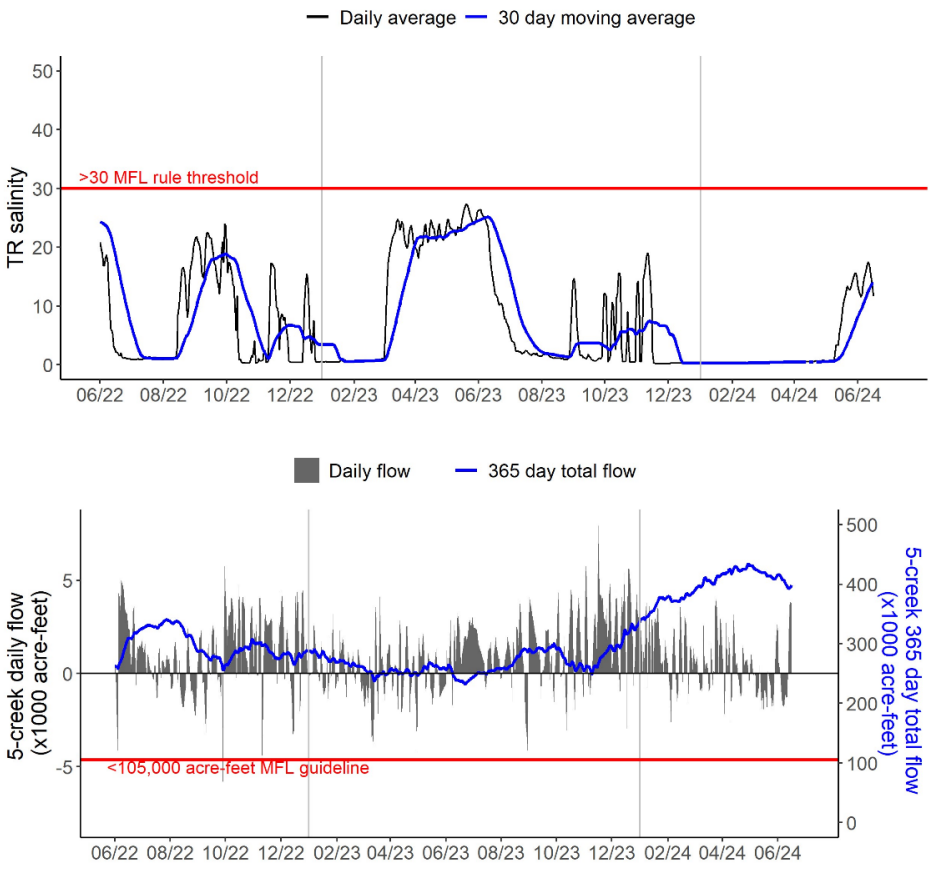


Figure EV-11. Salinity at Taylor River (TR; top) and creek inflow to Florida Bay (bottom) from the five major creeks (McCormick Creek, Taylor River, Mud Creek, Trout Creek, and West Highway Creek). The 30-day moving average salinity and 365-day total creek flow are tracked for the Florida Bay MFL criteria.

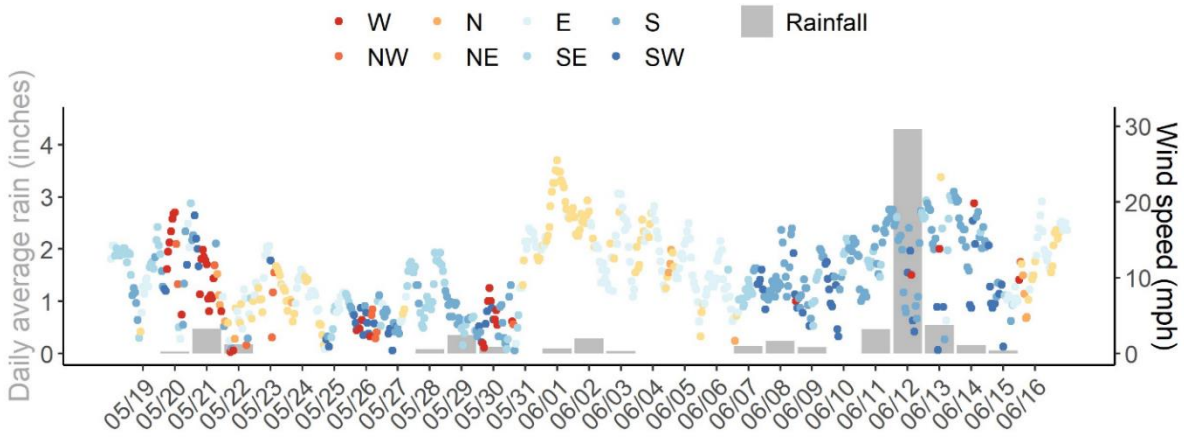


Figure EV-12. Daily average rain across Taylor Slough and Florida Bay, along with hourly average wind speed and direction (measured at Long Key) in Florida Bay over the past four weeks.

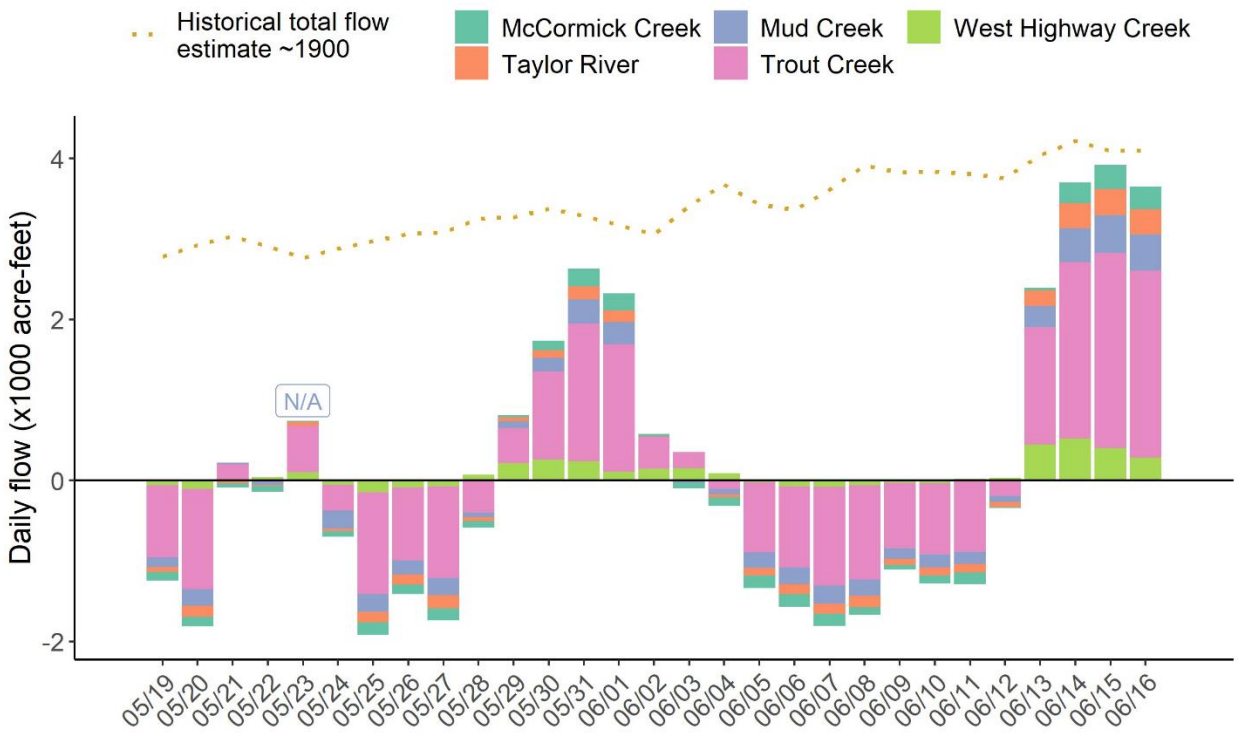


Figure EV-13. Daily average creek flow summed between five creeks with estimated historical daily flow over the past four weeks.

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

SFWMD Everglades Ecological Recommendations, June 18, 2024 (red is new)			
	Weekly change	Recommendation	Reasons
WCA-1	Stage increased by 0.84’	Ascension rate of less than 0.18’ per week.	Protect within basin and downstream habitat and wildlife.
WCA-2A	Stage increased by 0.98’	Ascension rate less than 0.18’ per week.	Protect within basin and downstream habitat and wildlife.
WCA-2B	Stage increased by 1.31’	Ascension rate of less than 0.18’ per week.	Protect within basin and downstream habitat and wildlife.
WCA-3A NE	Stage increased by 1.07’	Ascension rate of less than 0.18’ per week.	Protect within basin and downstream habitat and wildlife.
WCA-3A NW	Stage increased by 1.70’	Ascension rate of less than 0.18’ per week.	
Central WCA-3A S	Stage increased by 0.96’	Maintain the current ascension rate of less than 0.18’ per week.	Protect within basin wildlife.
Southern WCA-3A S	Stage increased by 0.89’		
WCA-3B	Stage increased by 0.69’	Ascension rate of less than 0.18’ per week.	Protect within basin and downstream habitat and wildlife.
ENP-SRS	Stage increased by 0.59’	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 +0.90’ to +1.76’	Move water southward as possible.	When available, provide freshwater to promote water movement.
FB- Salinity	Salinity changes ranged from −9.4 to −0.3	Move water southward as possible.	When available, provide freshwater to promote water movement.

Biscayne Bay

As shown in **Figure BB-1**, mean total inflow to Biscayne Bay was 3,138 cfs, and the previous 30-day mean inflow was 860 cfs. The seven-day mean salinity was 27.3 at BBCW8 and 23.6 at BBCW10, both within the ideal salinity range for estuarine organisms in this region (salinity less than 35). Data were provided by Biscayne National Park.

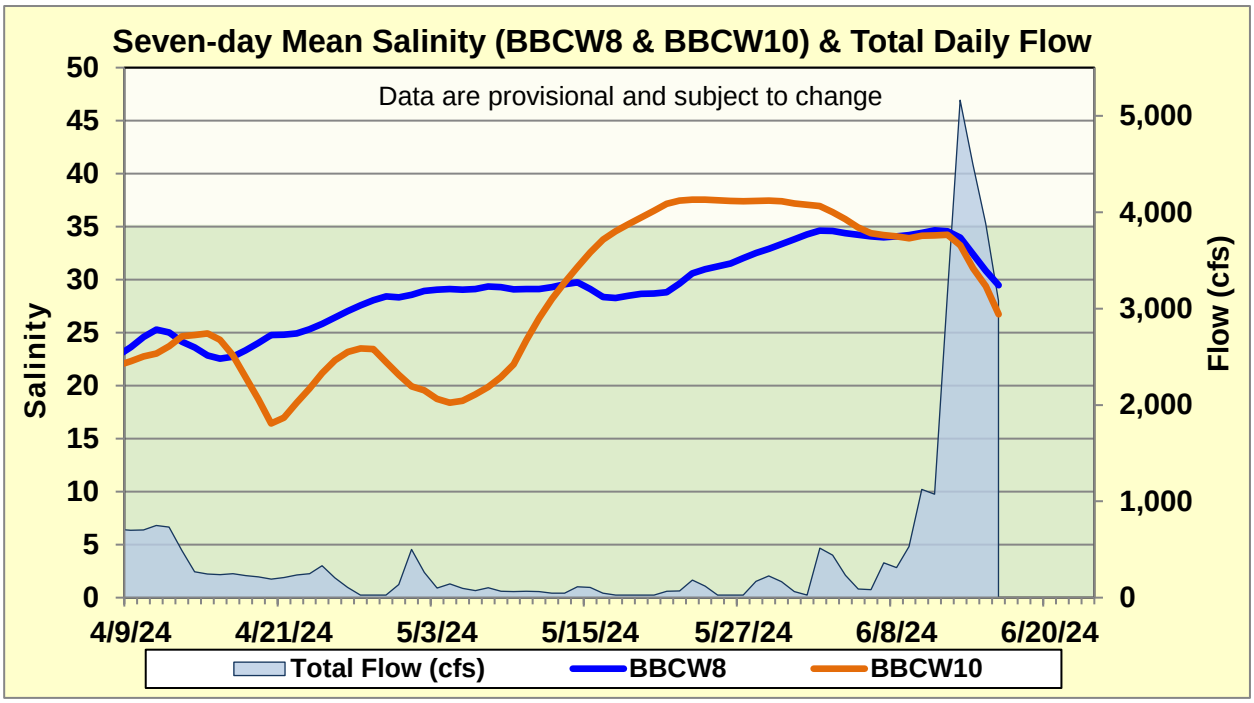


Figure BB-1. Seven-day mean salinity at BBCW8 and BBCW10 and total daily flow in Biscayne Bay. Total daily flow was calculated using flow from structures S20G, S20F, S21, S21A, S123, and S700P.