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: May 8, 2024

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Weather Conditions and Forecast

On Wednesday and Thursday, an upper-air trough of low pressure should allow subsidence over the SFWMD to further intensify, squelching shower and thunderstorm development, except perhaps for a few late-afternoon showers forming near or inland of the west coast of the SFWMD on Wednesday. The strong subsidence will also result in a warming that will see daytime maximum temperatures rising well into the 90's, to near-record or record levels, while rates of evapotranspiration also soar. On Friday, a cold front will push into south Florida by the afternoon, but ahead of it atmospheric stability, lack of rainfall, and elevated temperatures over the interior and the eastern parts of the SFWMD will continue at record or near-record levels, possibly near all-time May records in some cases. However, large area of rains will erupt ahead of the cold front over north-central Florida, some of which could spill over into the northern Kissimmee Valley late in the afternoon through the evening. Next, another upper-air disturbance will help to push the north Florida cold front into the northern half of the SFWMD either Saturday morning or afternoon, where it will likely stall or make only slow southward progress through Sunday morning. A good moisture supply ahead of it, average instability, and the 'lift' from the frontal zone will help to produce relatively fast-moving showers and thunderstorms across the SFWMD, with a possible focus along and near the east coast of the SFWMD, where the east-coast sea breeze meets westerly steering winds. Finally, the front will move into the Florida Straits by later Sunday, resulting in a marked drying, but return to the SFWMD on Monday, along with a vast amount of moisture and good instability. This could result in a marked increase of rainfall, with a focus of the rains probably over the interior and eastern parts of the SFWMD. However, this part of the forecast is of very low confidence. For the week ending next Tuesday morning, total SFWMD rainfall is most likely to be below normal and near-normal, at best. For the week-2 period (14-20 May), there is a good indication of above or much-above normal rainfall.

Kissimmee

Releases were made from East Lake Toho and Lake Toho to continue spring lake stage recessions to low pool. Weekly average discharge on May 5, 2024, was 630 cfs and 560

cfs at S-65 and S-65A, respectively. Mean weekly water depth on the Kissimmee River floodplain decreased by 0.02 feet to 0.10 feet over the week ending May 5, 2024. The weekly average concentration of dissolved oxygen in the Kissimmee River was unchanged from the previous week and was 7.9 mg/L for the week ending May 5, 2024, which is well above the potentially lethal and stressful levels for largemouth bass and other sensitive species.

Lake Okeechobee

Lake Okeechobee stage was 14.06 feet NGVD29 (12.76 ft NAVD88) on May 05, 2024, which was 0.21 feet lower than the previous week and 1.09 feet lower than a month ago. Average daily inflows (excluding rainfall) were lower than the previous week, at 650 cfs, compared to 820 cfs. Average daily outflows (excluding evapotranspiration) decreased from the previous week, going from 5,080 cfs to 4,290 cfs. The May 6th, 2024, NOAA's Harmful Algal Bloom Monitoring System suggested moderate to high cyanobacteria concentrations within much of the northern region of the Lake.

Estuaries

Total inflow to the St. Lucie Estuary averaged 290 cfs over the past week with all of the flow coming from the Tidal Basin. Mean salinities remained the same at the US1 Bridge site, increased slightly at HR1, and decreased slightly at the A1A Bridge over the past week. Salinity in the middle estuary was in the optimal range (10-25) for adult eastern oysters.

Total inflow to the Caloosahatchee Estuary averaged 2,180 cfs over the past week with 1,040 cfs coming from Lake Okeechobee. Mean surface salinities remained the same at S-79 and increased at the remaining sites within 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 Cape Coral, and in the upper stressed range (>25) at Shell Point and Sanibel.

Stormwater Treatment Areas

For the week ending Sunday, May 5, 2024, 10,200 ac-ft of 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 6,900 ac-feet. The total amount of inflows to the STAs in WY2025 is approximately 7,000 ac-feet. Most STA cells are at or near 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. STA-1W Eastern and Northern Flow-ways and STA-2 Flow-way 1 contain 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 the A-1 FEB, STA-3/4, or STA-5/6.

Everglades

Over the last month, rates of stage change (Sunday to Sunday) were favorable for wading bird foraging and dry season Everglades ecology. Stages increased on average in Taylor Slough and depths remain above historical estimates for this time of year. Average salinity was unchanged in Florida Bay last week, and conditions are at/below historical estimates

and the 25th percentile for this time of year. Florida Bay MFL metrics remain well below thresholds of harm. Wading bird foraging and nesting numbers remain well below average in the WCAs but drier weather has meant a recent increase in foraging (WCA-2A). White Ibis continue to nest in numbers at Alley North and within the Refuge (~15,000). Unfortunately, after abandoning nest post reversal Wood Storks have initiated nesting in WCA-3A. These nests are highly likely to fail as there is not enough time left before wet season rains decrease foraging efficiencies.

Biscayne Bay

Total inflow to Biscayne Bay averaged 200 cfs and the previous 30-day mean inflow averaged 340 cfs. The seven-day mean salinity was 28.3 at BBCW8 and 18.7 at BBCW10, both within the ideal salinity range for estuarine organisms in this region (salinity less than 35). Data provided by Biscayne National Park.

Supporting Information

Kissimmee Basin

Upper Kissimmee

On May 5, 2024, mean daily lake stages were 54.5 feet NAVD (0.6 feet below schedule) in East Lake Toho, 51.5 feet NAVD (0.4 feet below schedule) in Lake Toho, and 48.5 feet NAVD (1.7 feet below the temporary deviation schedule) in Lakes Kissimmee-Cypress-Hatchineha (KCH) (**Table KB-1**, **Figures KB-1-3**).

Lower Kissimmee

For the week ending May 5, 2024, mean weekly discharge was 630 cfs and 560 cfs at S-65 and S-65A, respectively. Mean weekly discharge from the Kissimmee River was 660 cfs at S-65D and 570 cfs at S-65E (**Table KB-2**). Mean weekly headwater stages were 45.1 feet NAVD at S-65A and 24.5 feet NAVD at S-65D on May 5, 2024. Mean weekly river channel stage decreased by 1.2 ft from the previous week's stage to 32.7 feet NAVD over the week ending on May 5, 2024 (**Figure KB-4**). Mean weekly water depth on the Kissimmee River floodplain decreased by 0.02 feet to 0.10 feet over the week ending May 5, 2024 (**Table KB-2**, **Figure KB-5**). The weekly average concentration of dissolved oxygen in the Kissimmee River was 7.9 mg/L for the week ending May 5, 2024 and was unchanged from the previous week (**Table KB-2**, **Figure KB-6**).

Water Management Recommendations

Continue the stage recessions in Lakes East Toho and Toho to reach their low pools on May 31, 2024. Follow the Hybrid A discharge plan for S-65/S-65A (Slide 11) through May 31, 2024 except as otherwise indicated. Maintain at least minimum flow (250-300 cfs) at S-65A. Reduce S-65 flow to provide a slower recession rate (approximately -0.16 ft/week) in KCH while facilitating S-69 repairs. To the extent possible, modify S-65D headwater stage to meet USACE's objectives for S-69 repairs.

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)	
							5/5/24	*4/28/24*
Lakes Hart and Mary Jane	S-62	LKMJ	0	58.7	R	58.9	-0.2	-0.2
Lakes Myrtle, Preston and Joel	S-57	S-57	0	59.2	R	59.3	-0.1	-0.1
Alligator Chain	S-60	ALLI	23	61.6	R	61.7	-0.1	-0.1
Lake Gentry	S-63	LKGT	46	59.1	R	59.1	0.0	0.0
East Lake Toho	S-59	TOHOE	0	54.5	R	55.1	-0.6	-0.8
Lake Toho	S-61	TOHOW S-61	5	51.5	R	51.9	-0.4	-0.5
Lakes Kissimmee, Cypress and Hatchineha	S-65	KUB011 LKIS5B	630	48.5	T	50.2	-1.7	-0.1

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.

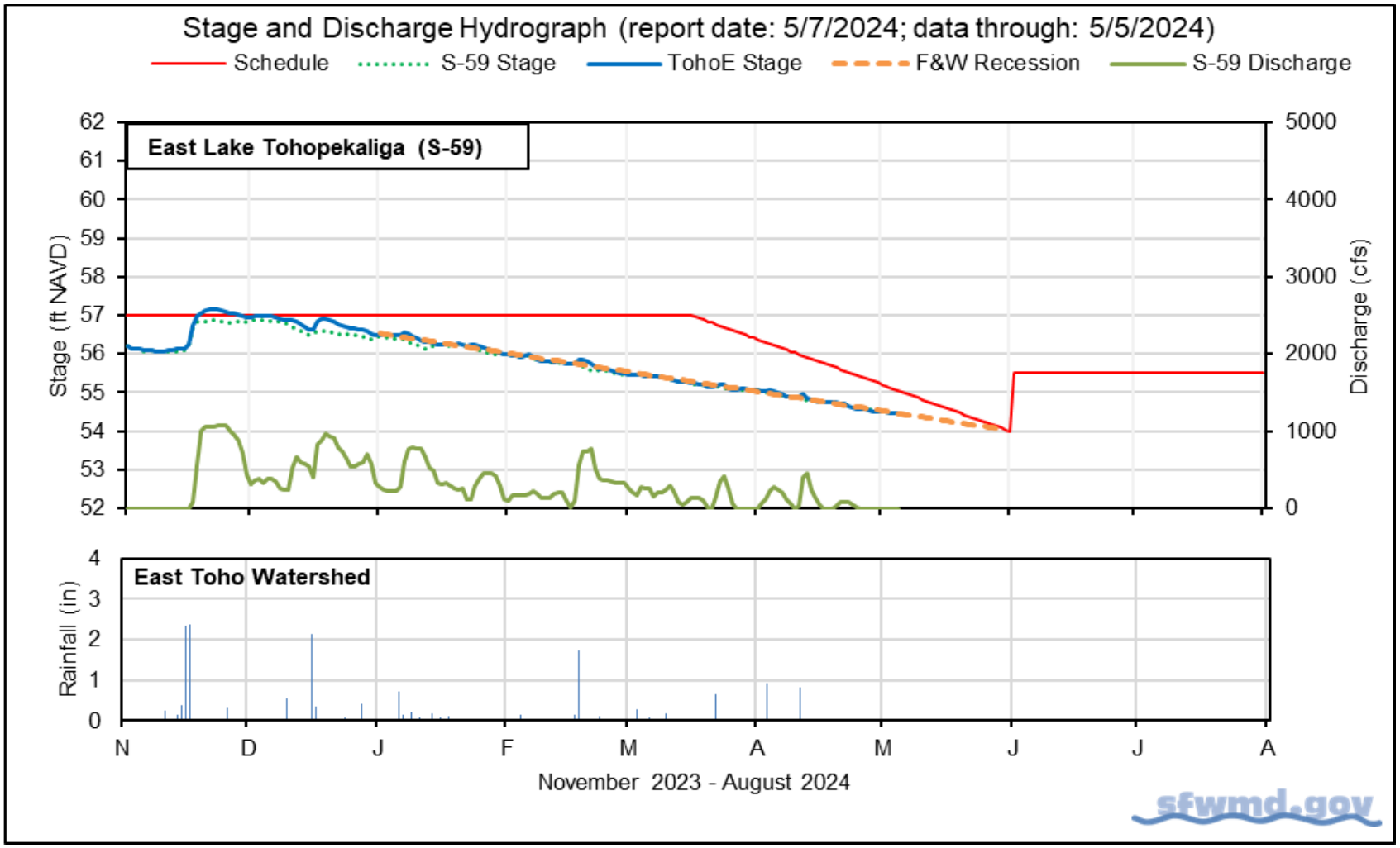


Figure KB-1. East Lake Toho regulation schedule, stage, discharge and rainfall.

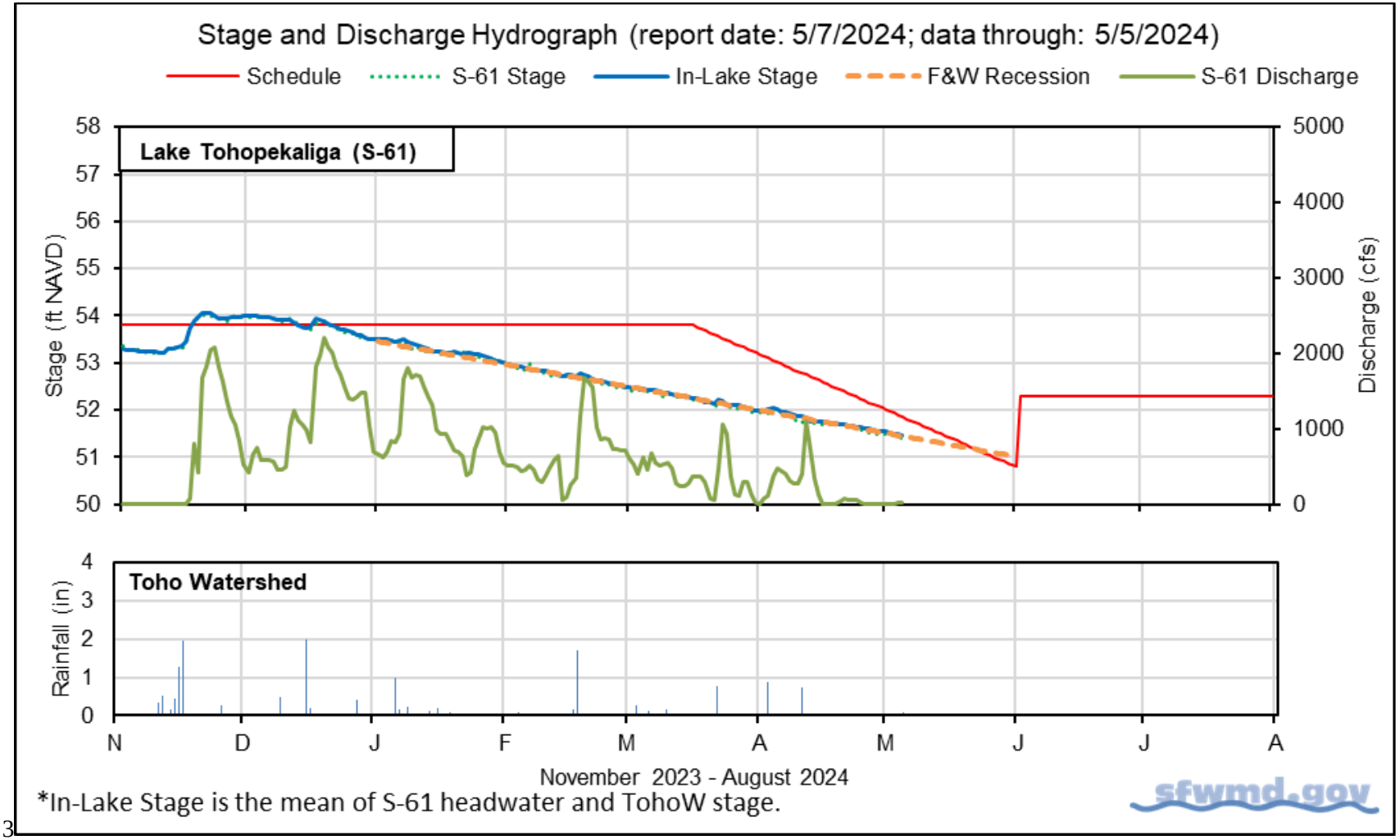


Figure KB-2. Lake Toho regulation schedule, stage, discharge and rainfall.

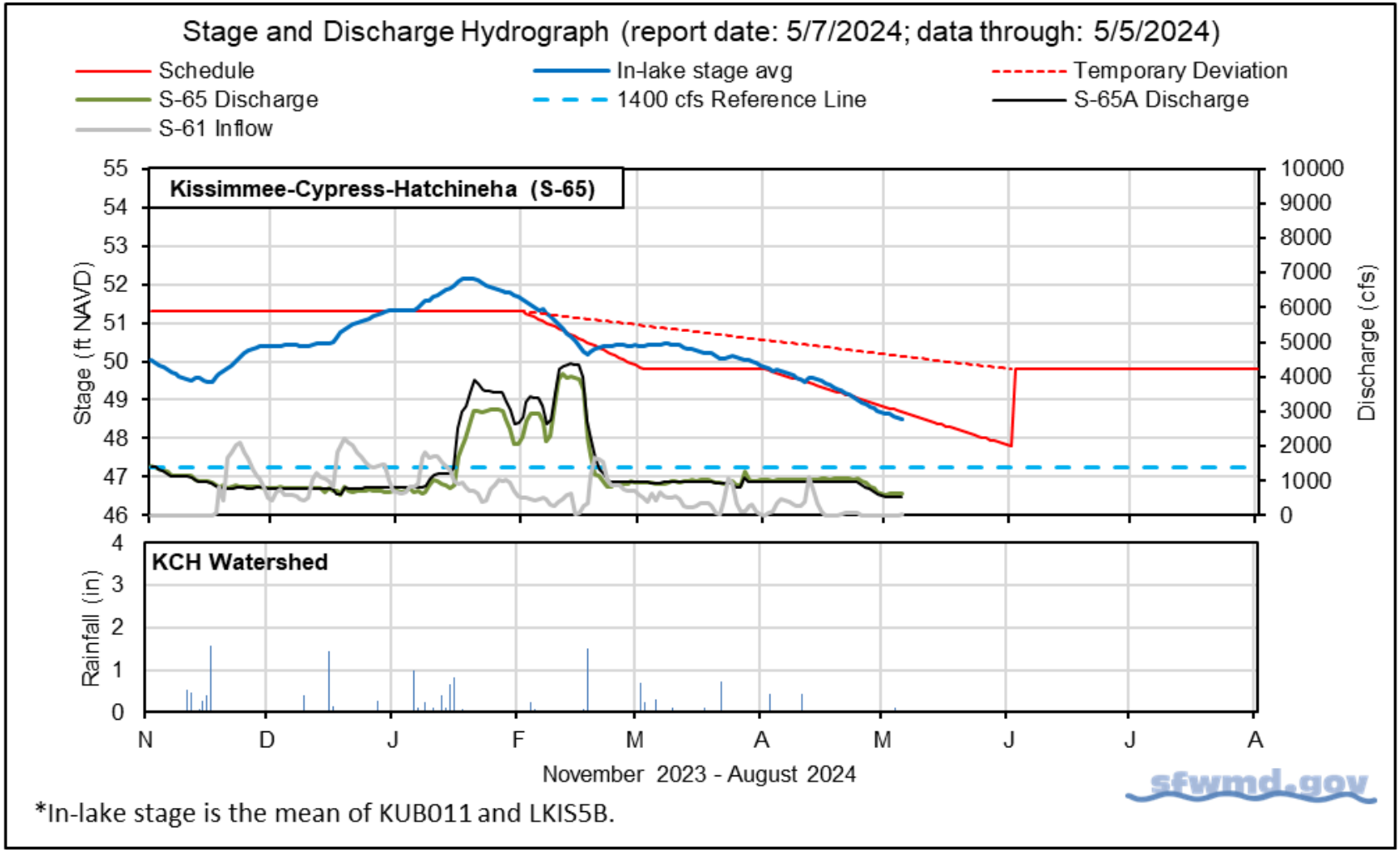


Figure KB-3. Lakes Kissimmee, Cypress and Hatchineha regulation schedule, stage, discharge and rainfall.

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			
		5/5/24	5/5/24	4/28/24	4/21/24	4/14/24
Discharge	S-65	640	630	960	1,100	1,000
Discharge	S-65A[a]	550	560	870	960	960
Headwater Stage (feet NAVD)	S-65A	45.1	45.1	45.2	45.2	45.1
Discharge	S-65D[b]	560	660	940	960	970
Headwater Stage (feet NAVD)	S-65D[c]	24.5	24.5	24.6	24.6	24.7
Discharge (cfs)	S-65E[d]	510	570	830	820	860
Discharge (cfs)	S-67	0	0	0	0	0
Dissolved Oxygen (mg/L) [e]	Phase I, II/III river channel	7.5	7.9	7.9	8.3	8.1
River channel mean stage[f]	Phase I river channel	32.4	32.7	33.9	34.0	34.1
Mean depth (feet) [g]	Phase I floodplain	0.09	0.10	0.12	0.17	0.25

a. Combined discharge from main and auxiliary structures.

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

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

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

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

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

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

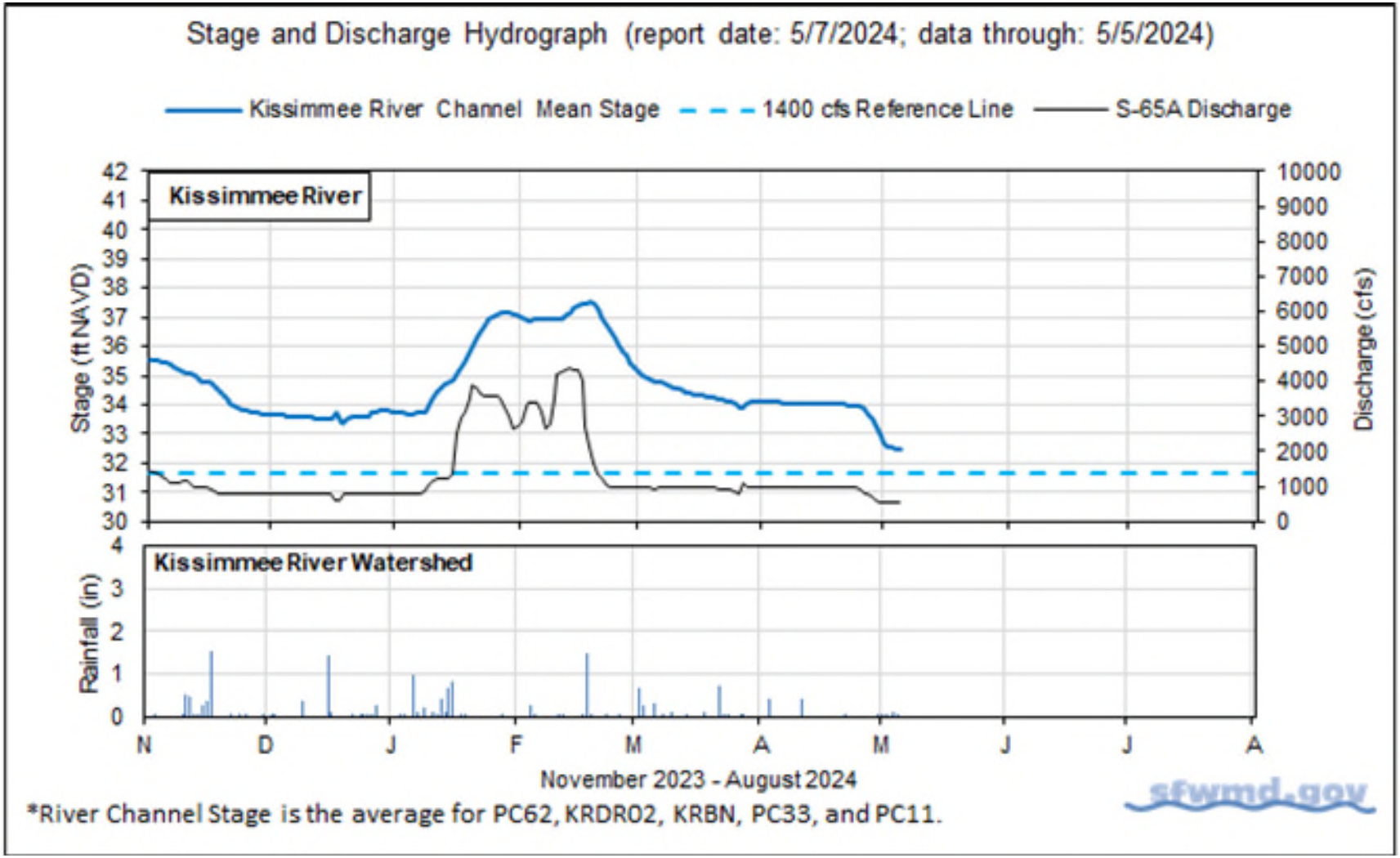


Figure KB-4. Kissimmee River stage, discharge and rainfall.

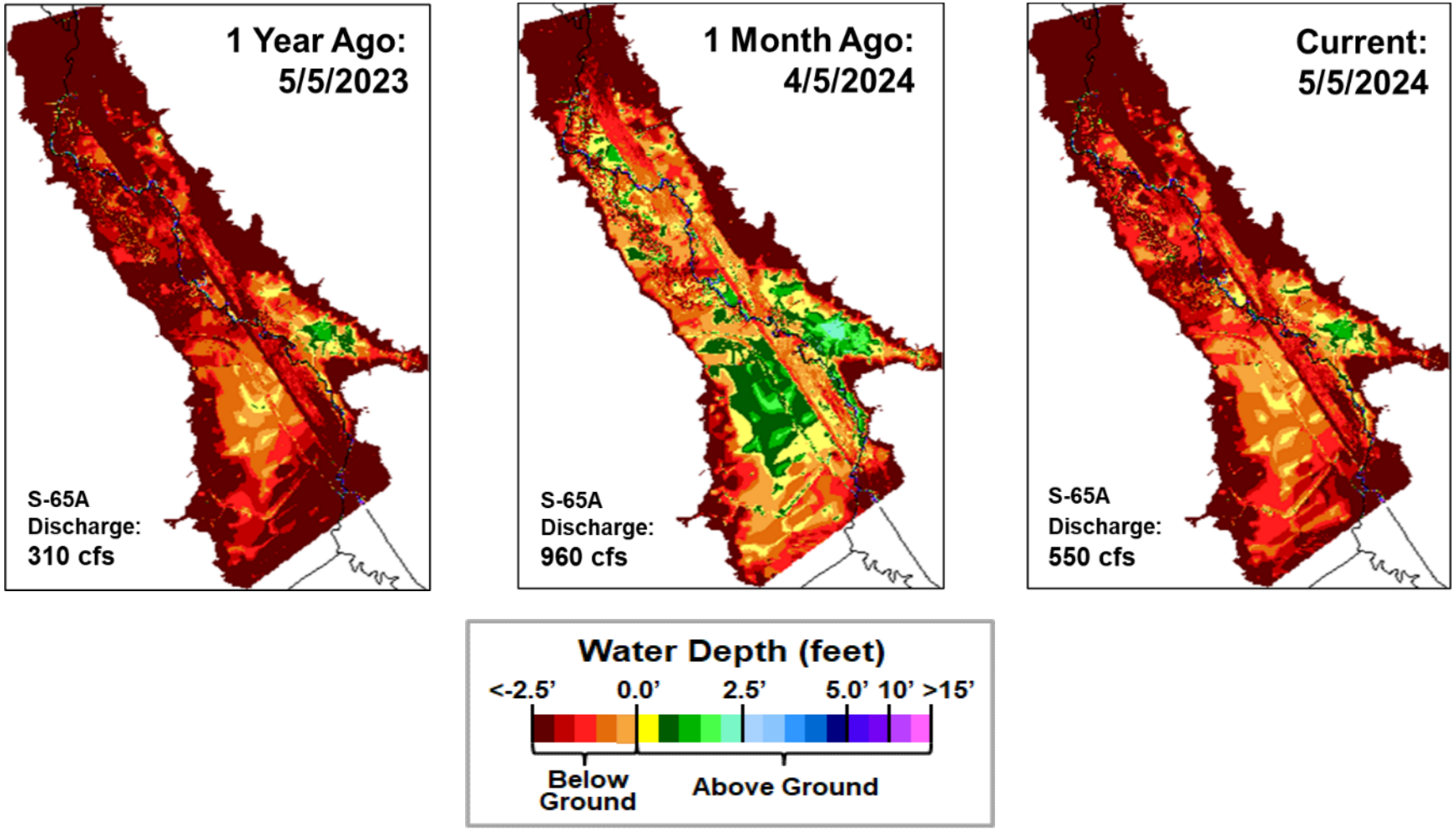


Figure KB-5. Phase I area Kissimmee River floodplain water depths (from left to right) one year ago, one month ago and current.

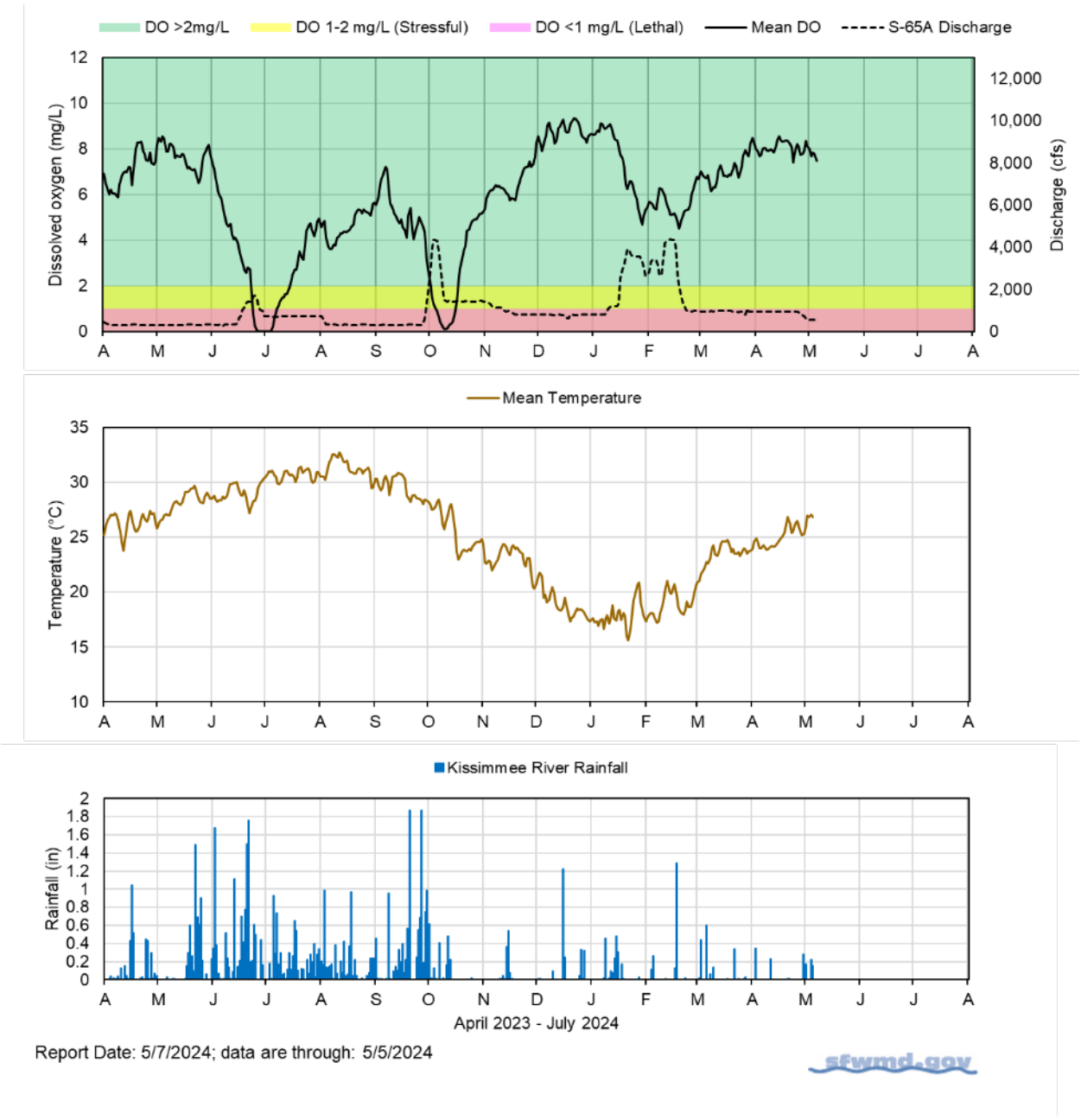


Figure KB-6. Kissimmee River channel mean daily dissolved oxygen concentration (mg/L), S-65A discharge (cfs), temperature (°C) and rainfall (inches). Dissolved oxygen (DO) and temperature are mean daily values averaged for PC62, KRDR02, KRBN, PC33, PC11, PD62R, and PD42R with an average of six stations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

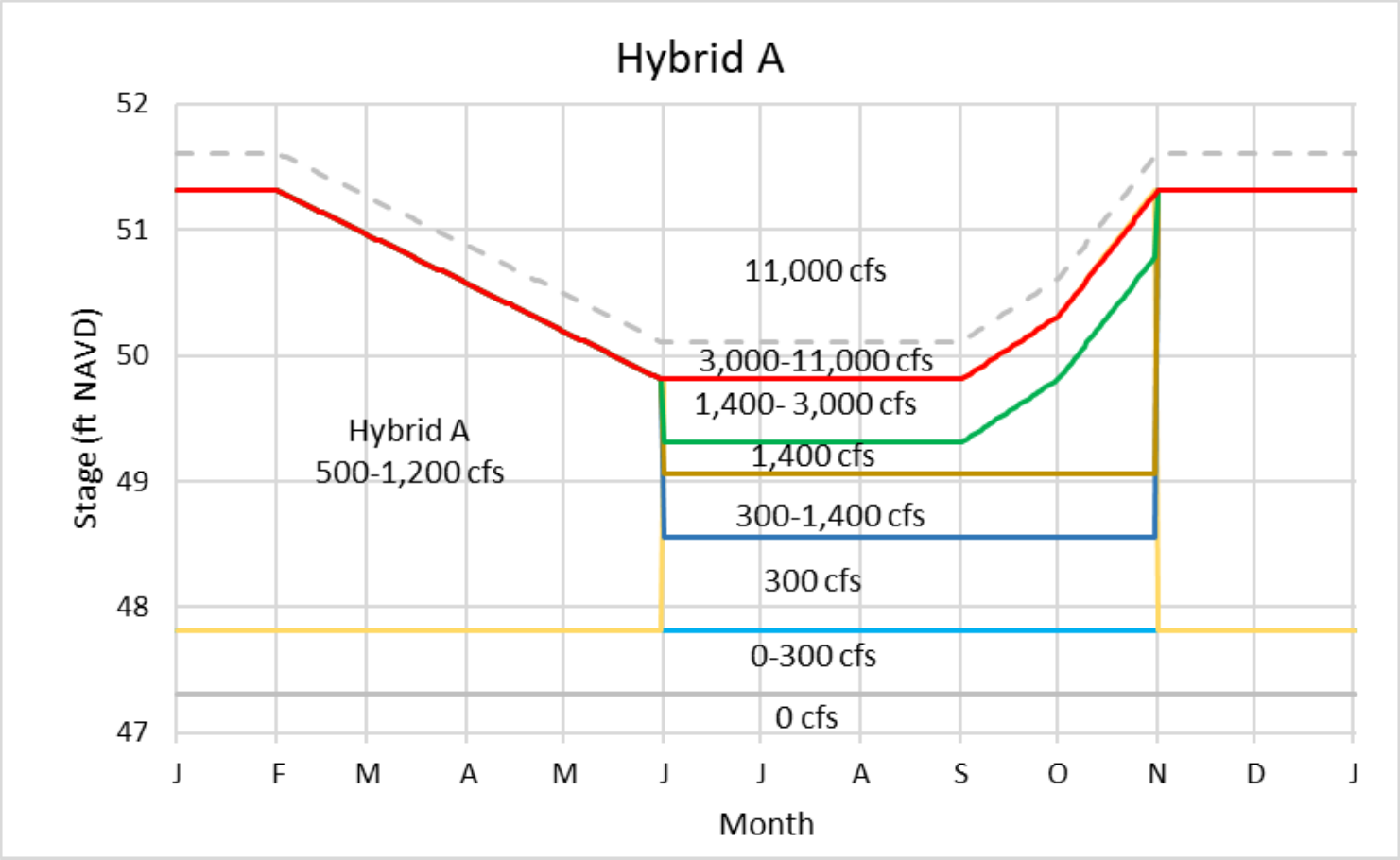


Figure KB-7. Hybrid A Discharge Plan for S-65/S-65A. Use discharge rate of change limits from IS-14-50 (Fig. KB-8).

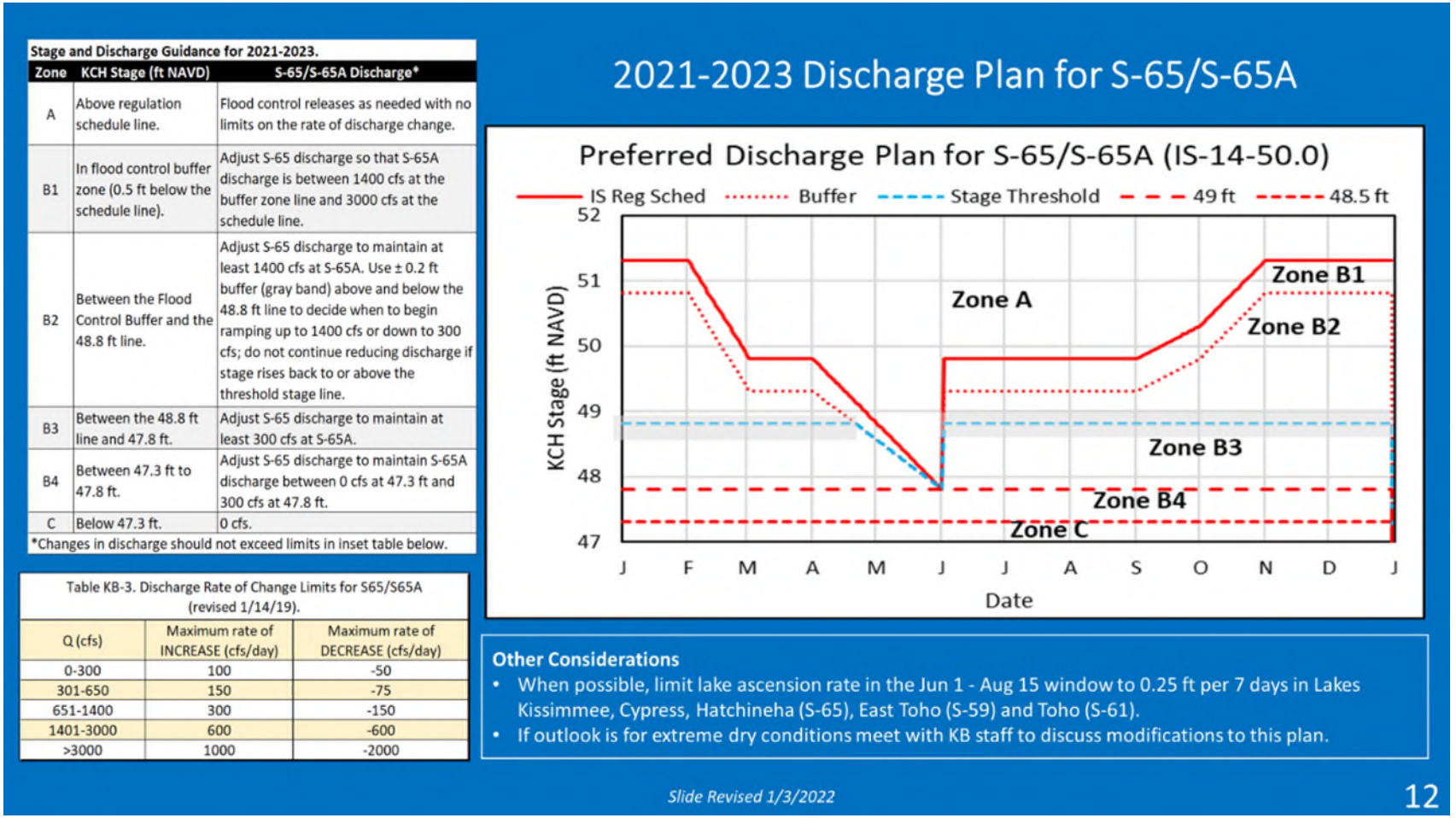


Figure KB-8. IS-14-50 Discharge Plan for S65/S65A with discharge rate of change limits (revised 1/14/19).

Lake Okeechobee

Lake Okeechobee stage was 14.06 feet NGVD29 (12.76 ft NAVD88) on May 05, 2024, which was 0.21 feet lower than the previous week and 1.09 feet lower than a month ago (**Figure LO-1**). Lake stage remained in the Low sub-band (**Figure LO-2**) and was 1.19 feet above the upper limit of the recovery ecological envelope (**Figure LO-3**). According to NEXRAD, 0.31 inches of rain fell directly over the Lake last week.

Average daily inflows (excluding rainfall) were lower than the previous week, at 650 cfs, compared to 820 cfs. The highest structure inflow came from the C-38 Canal via the S-65E/65EX1 structure (570 cfs). Average daily outflows (excluding evapotranspiration) decreased from the previous week, going from 5,080 cfs to 4,290 cfs. The highest average single structure outflow was recorded at the S-77 structure into the C-43 canal (2,020 cfs), while an average of 2,170 cfs was released south through the S-350 structures. No water was released to the east through S-308 into the C-44 canal. **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.

The tenth wading bird foraging survey of the 2024 breeding season (conducted May 2, 2024) reported approximately 800 wading birds actively foraging on the Lake (**Figure LO-6**). This is well below the 5-year average for this time of year (approximately 6,000). Wading bird abundance remained low despite the more favorable foraging conditions, possibly because birds had already relocated to alternate breeding areas.

In the most recent non-obscured satellite image from May 6th, 2024, NOAA's Harmful Algal Bloom Monitoring System suggested high cyanobacteria abundance in the northern nearshore region and moderate abundance along western shorelines and some pelagic regions of the Lake (**Figure LO-7**).

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

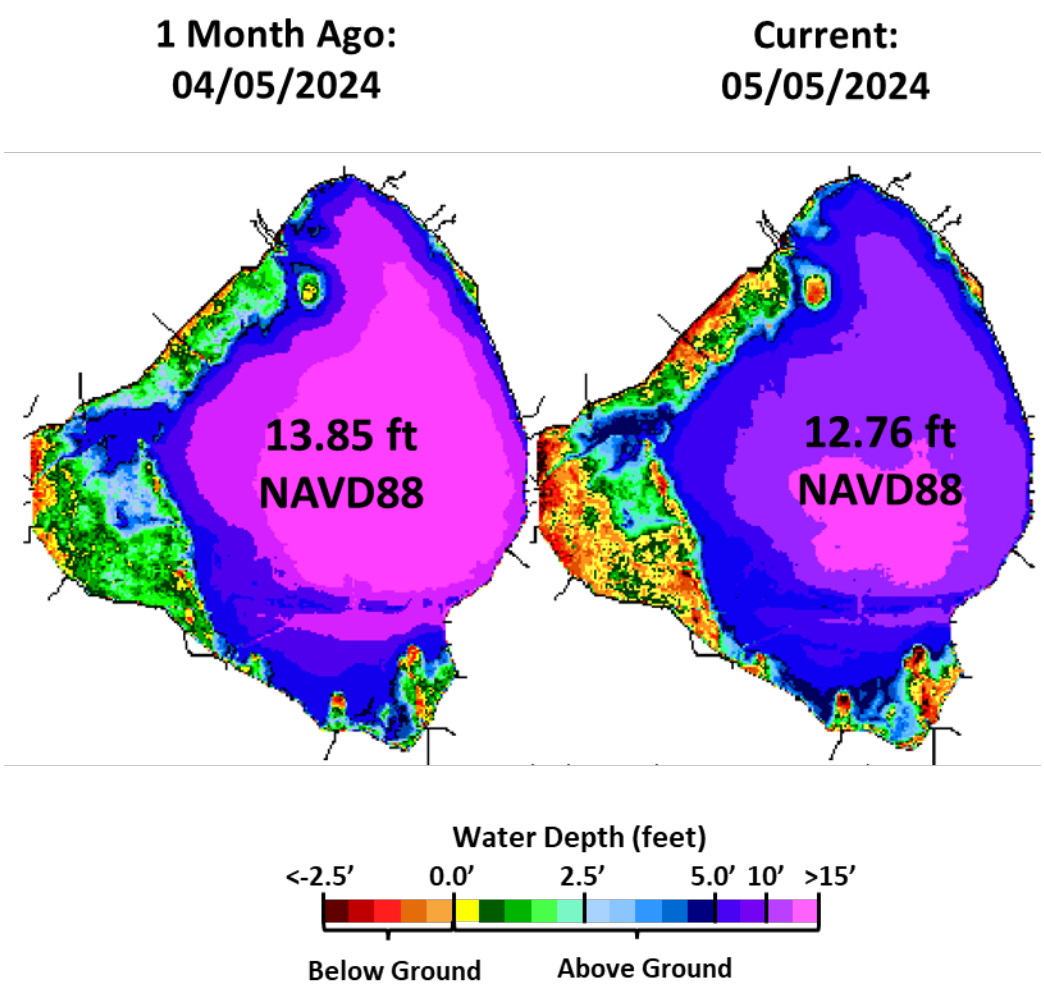


Figure LO-1. Lake Okeechobee water depth estimates based on South Florida Water Depth Assessment Tool (SFWDAT).

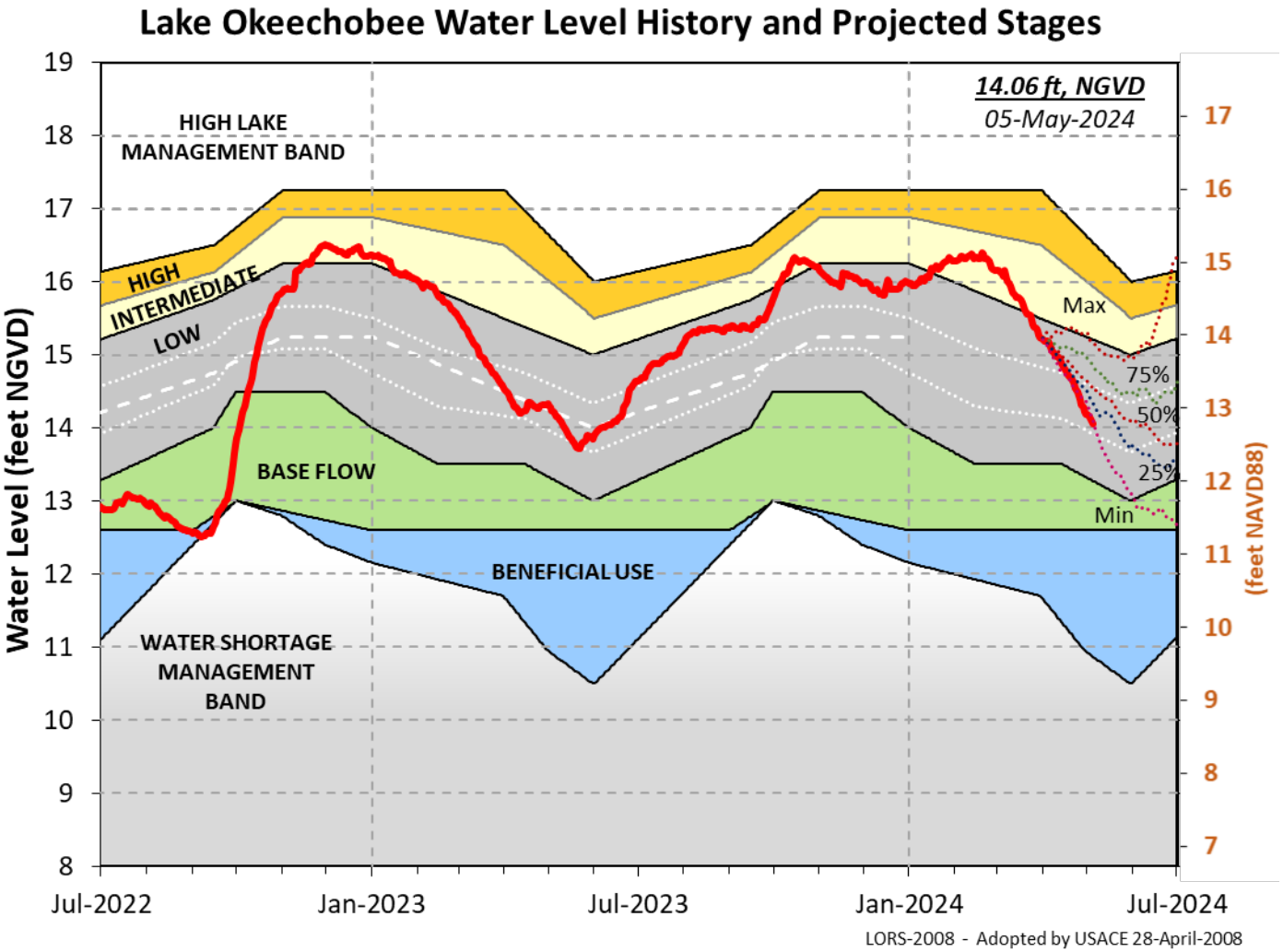


Figure LO-2. Recent Lake Okeechobee stages with projected stages based on a dynamic position analysis. Note: stages are in NGVD29, approximate NAVD88 values are shown for reference.

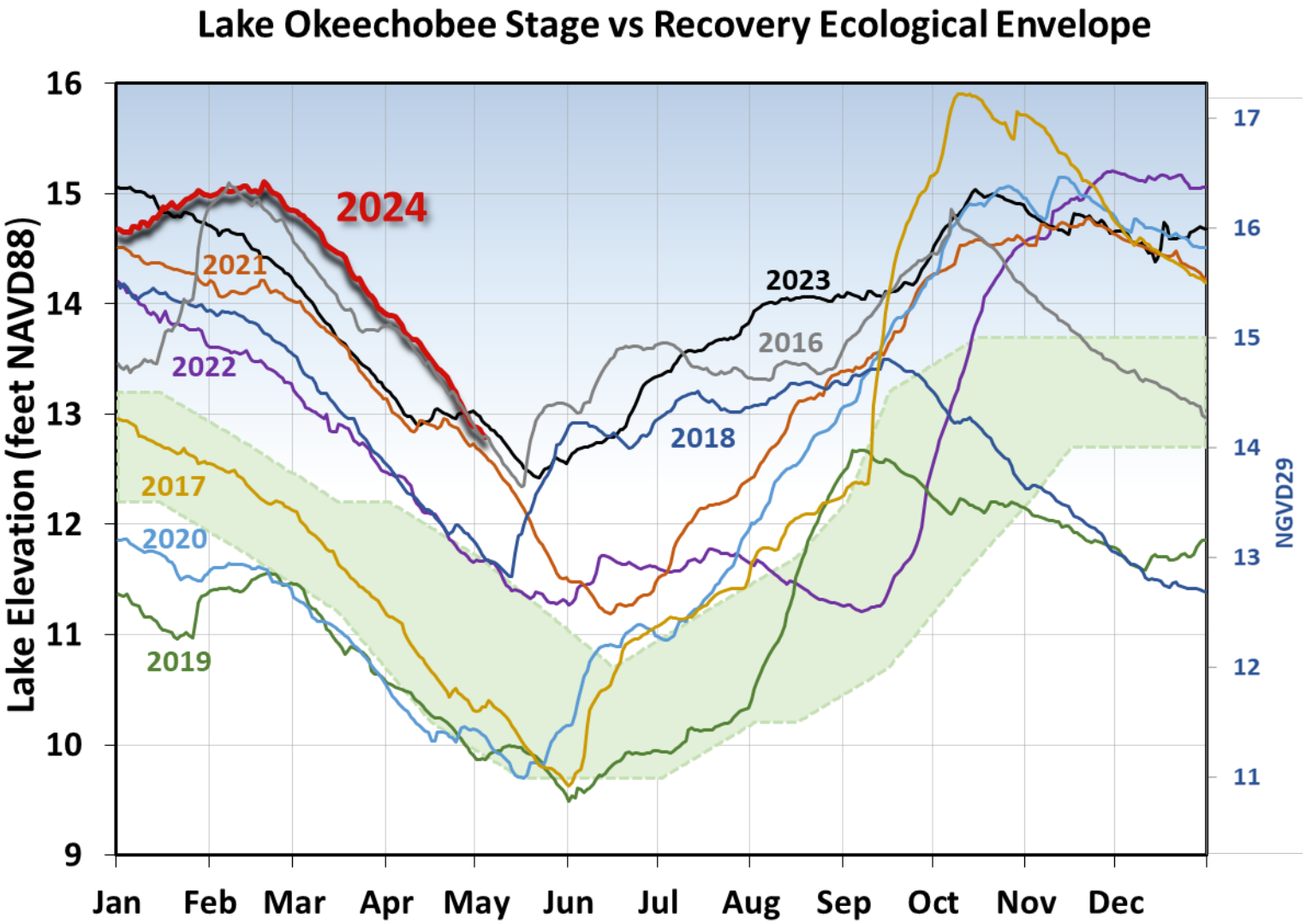


Figure LO-3. The current and eight prior year's annual stage hydrographs for Lake Okeechobee in comparison to the recovery envelope (light green). A shift from the normal ecological envelope to the recovery envelope occurred because the 30-day minimum lake stage (elevations exposed for at least 30 days,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

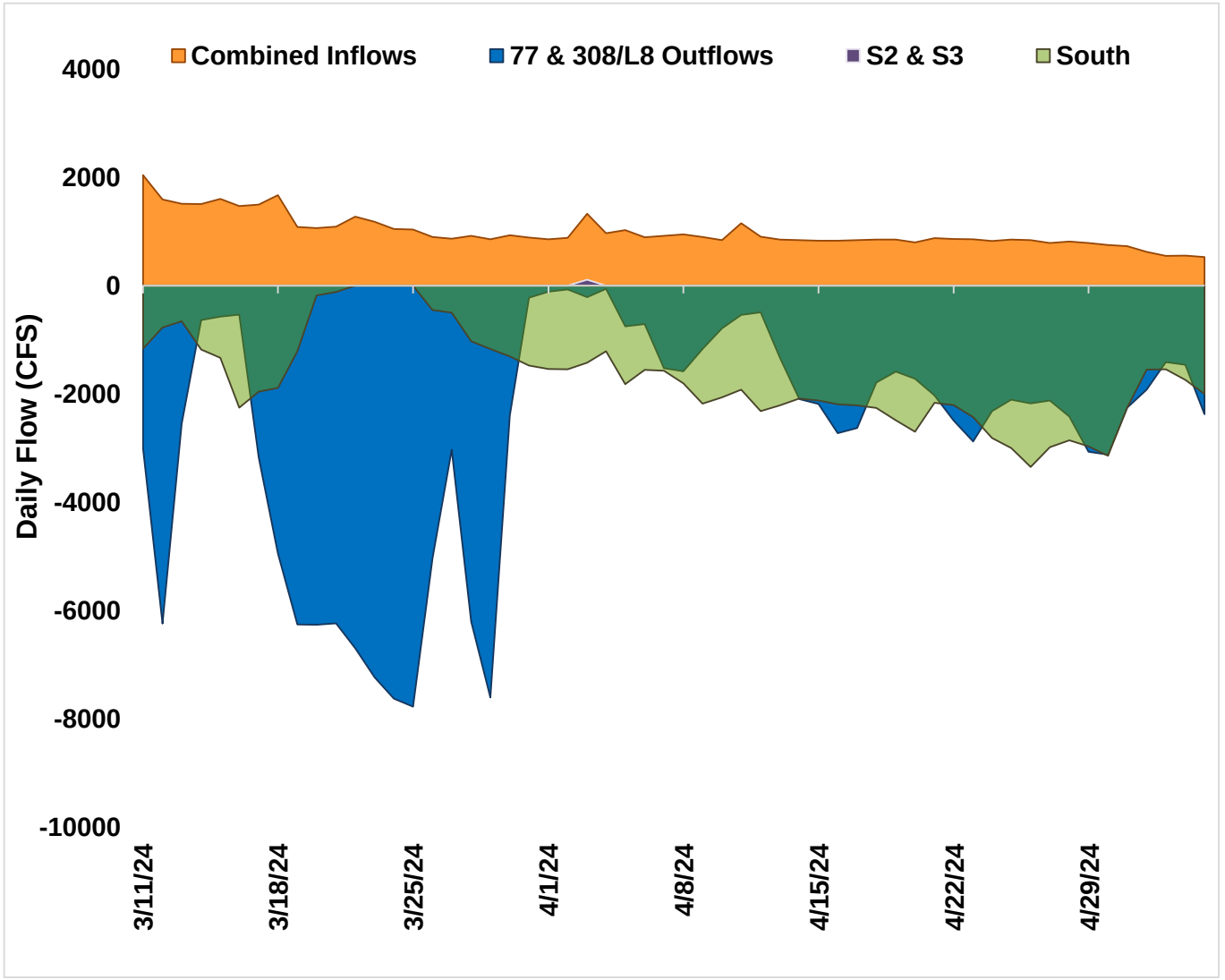


Figure LO-4. Major inflows (orange) to and outflows east and west (blue) from Lake Okeechobee. Outflows south are shown in green. Flows into Lake Okeechobee from the L-8 canal through S-271 (formerly Culvert 10A) or from the C-44 canal through the S-308 are included as inflows. Conversely, flows from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

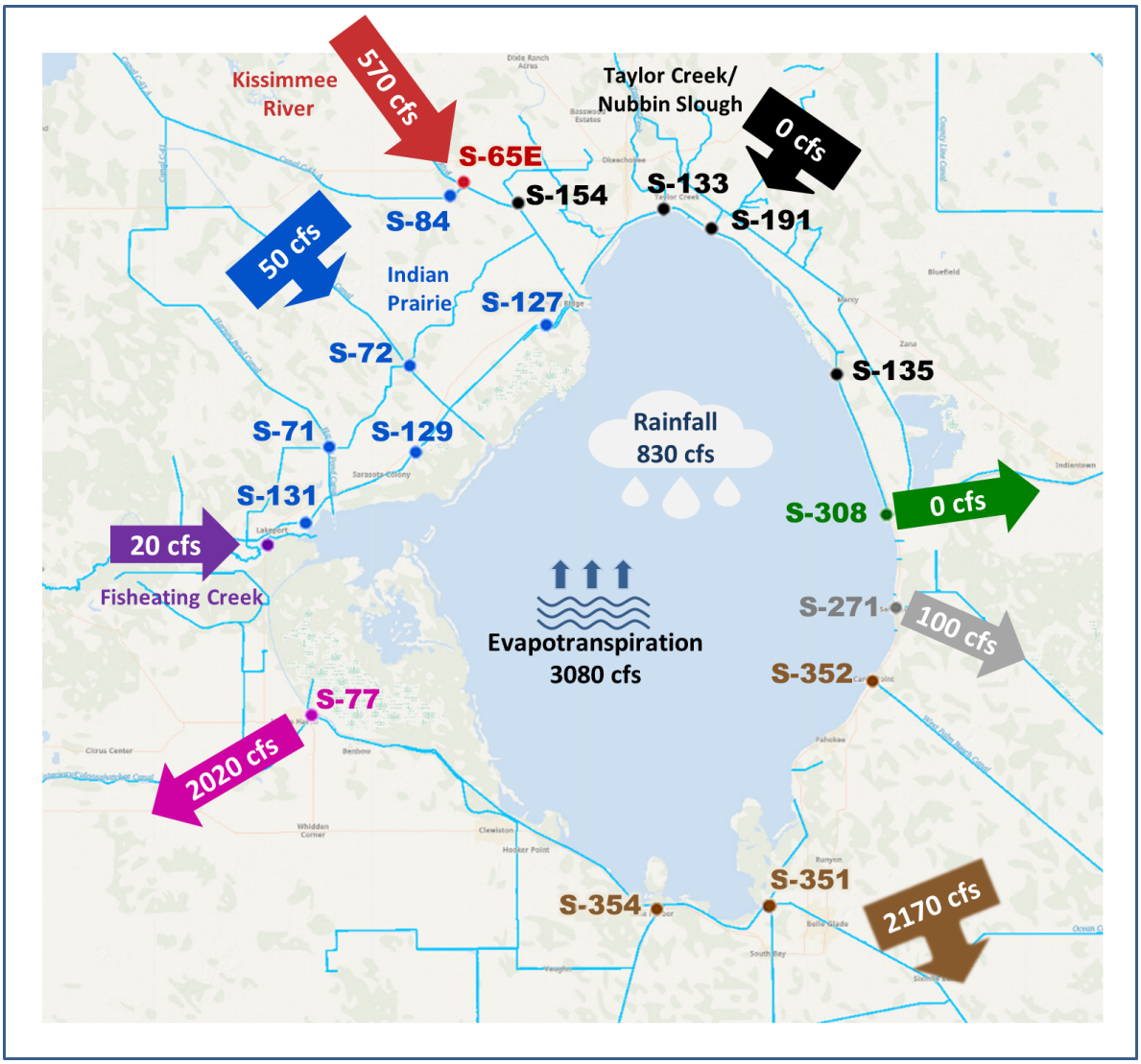


Figure LO-5. Inflows into Lake Okeechobee from Indian Prairie basins, Taylor Creek/Nubbin Slough, Kissimmee River and Fisheating Creek, and outflows to the west via S-77, to the east via S-308, to the south via S-351, S-352, S-354, and to southeast via S-271 (formerly Culvert 10A) for the week of April 29 – May 05, 2024.

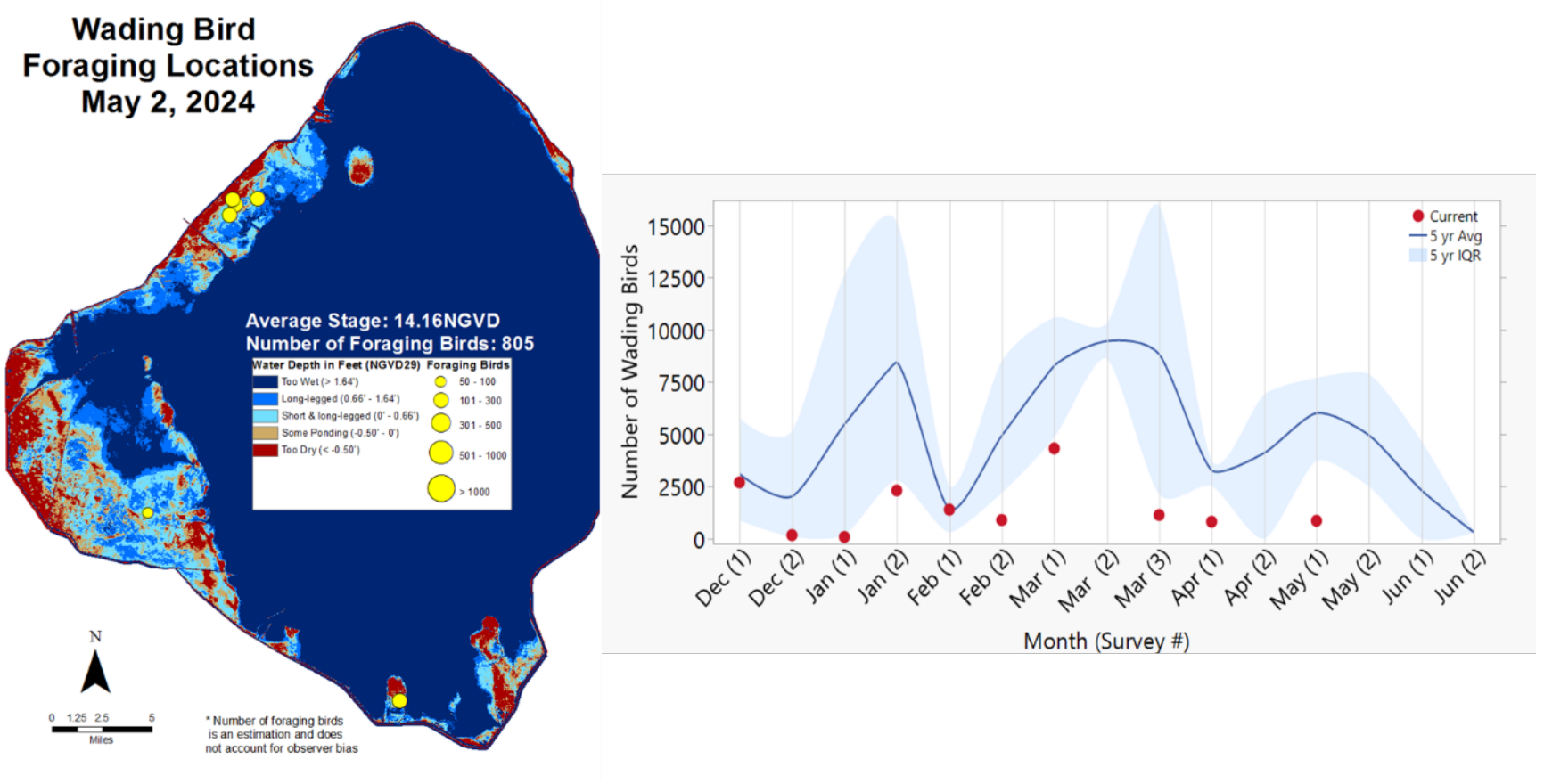


Figure LO-6. Locations of foraging flocks of wading birds observed during a monitoring flight on May 2, 2024, are shown in yellow (circle sizes represents the flock size). The graph shows the number of wading birds counted during the current survey year (red dot), along with the mean (blue line) and interquartile range (blue band) for the preceding 5 years.

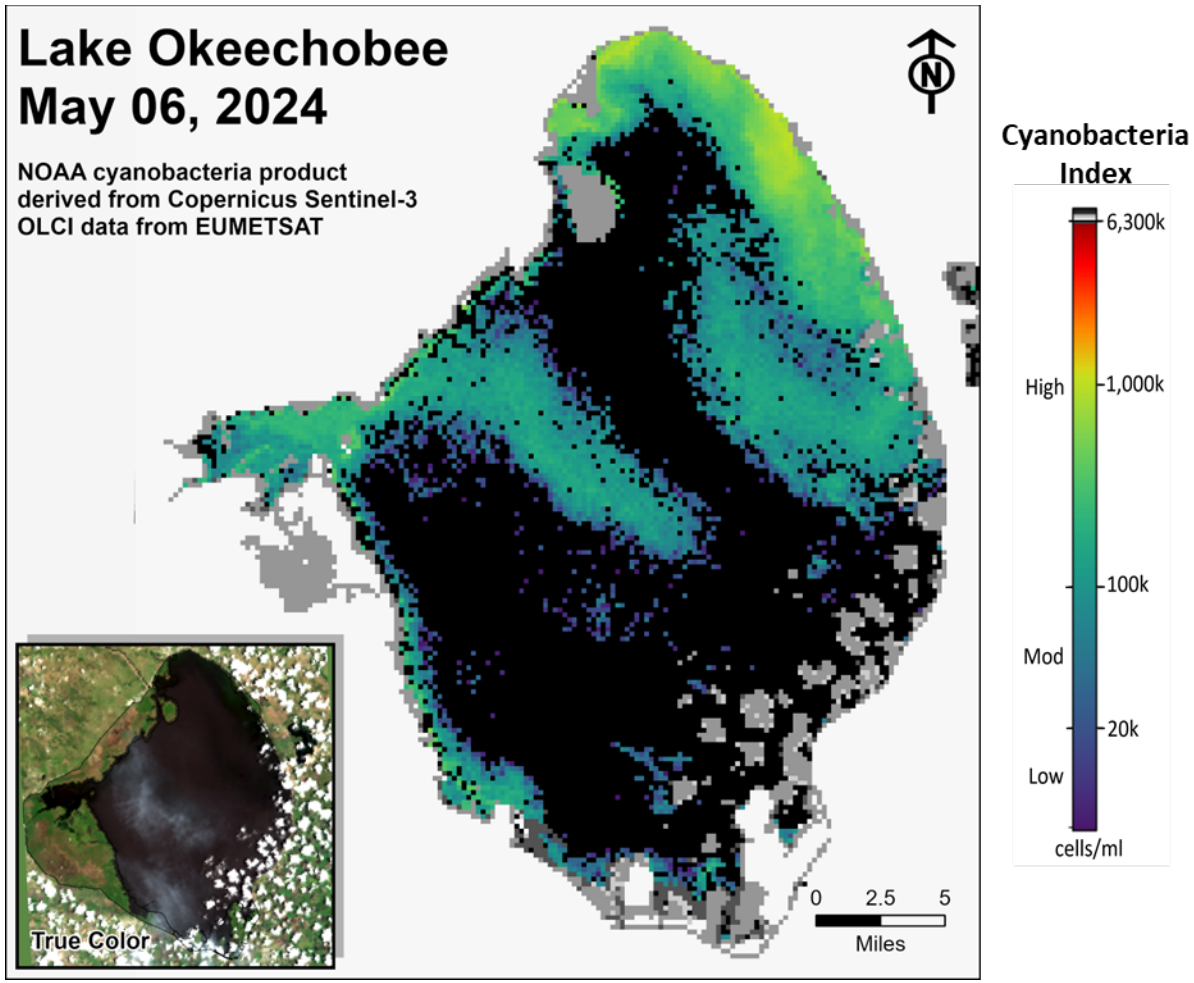


Figure LO-7. Cyanobacteria bloom index level on May 06, 2024, based on NOAA's harmful algal bloom monitoring system. Gray color indicates cloud cover. *Provisional NOAA image, subject to change*

Estuaries

St. Lucie Estuary

Over the past week, mean total inflow to the St. Lucie Estuary was 288 cfs (**Figures ES-1** and **ES-2**), and the previous 30-day mean inflow was 219 cfs. For comparison, the historical provisional mean inflows from the contributing areas are shown in **Figure ES-2**.

Over the past week, surface salinities remained the same at the US1 Bridge site, increased slightly at HR1, and decreased slightly at the A1A Bridge site (**Table ES-1** and **Figure ES-3**). The seven-day moving average of the surface and bottom salinities at the US1 Bridge was 23.3. Salinity conditions in the middle estuary were estimated to be within the optimal range for adult eastern oysters (**Figure ES-4**). The mean larval oyster recruitment rate reported by the Fish and Wildlife Research Institute (FWRI) was 1.3 spat/shell for April, which indicates spring spawning has begun in the SLE (**Figure ES-5**).

Caloosahatchee River Estuary

Over the past week, mean total inflow to the Caloosahatchee River Estuary was 2,180 cfs (**Figures ES-6** and **ES-7**), and the previous 30-day mean inflow was 1,805 cfs. For comparison, the historical provisional mean inflows from the contributing areas are shown in **Figure ES-7**.

Over the past week, salinities remained the same at S-79 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 Cape Coral and in the upper stressed range at Shell Point and Sanibel (**Figure ES-10**). The mean larval oyster recruitment rate reported by the Fish and Wildlife Research Institute was 1.5 spat/shell at Iona Cove and 16.5 spat/shell at Bird Island for April, which indicates spring spawning has begun in the CRE (**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 99 cfs. Model results from all scenarios predict daily salinity to be 0.7 or lower and the 30-day moving average surface salinity to be 0.4 or lower at Val I-75 at the end of the two-week period (**Table ES-3** and **Figure ES-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 May 3, 2024, that *Karenia brevis*, the Florida red tide dinoflagellate, was not observed in any samples collected within the District region. On the east coast, red tide was not observed in samples from Palm Beach or Broward counties.

Water Management Recommendations

Lake stage is in the Low Sub-Band. Tributary conditions are normal. 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.

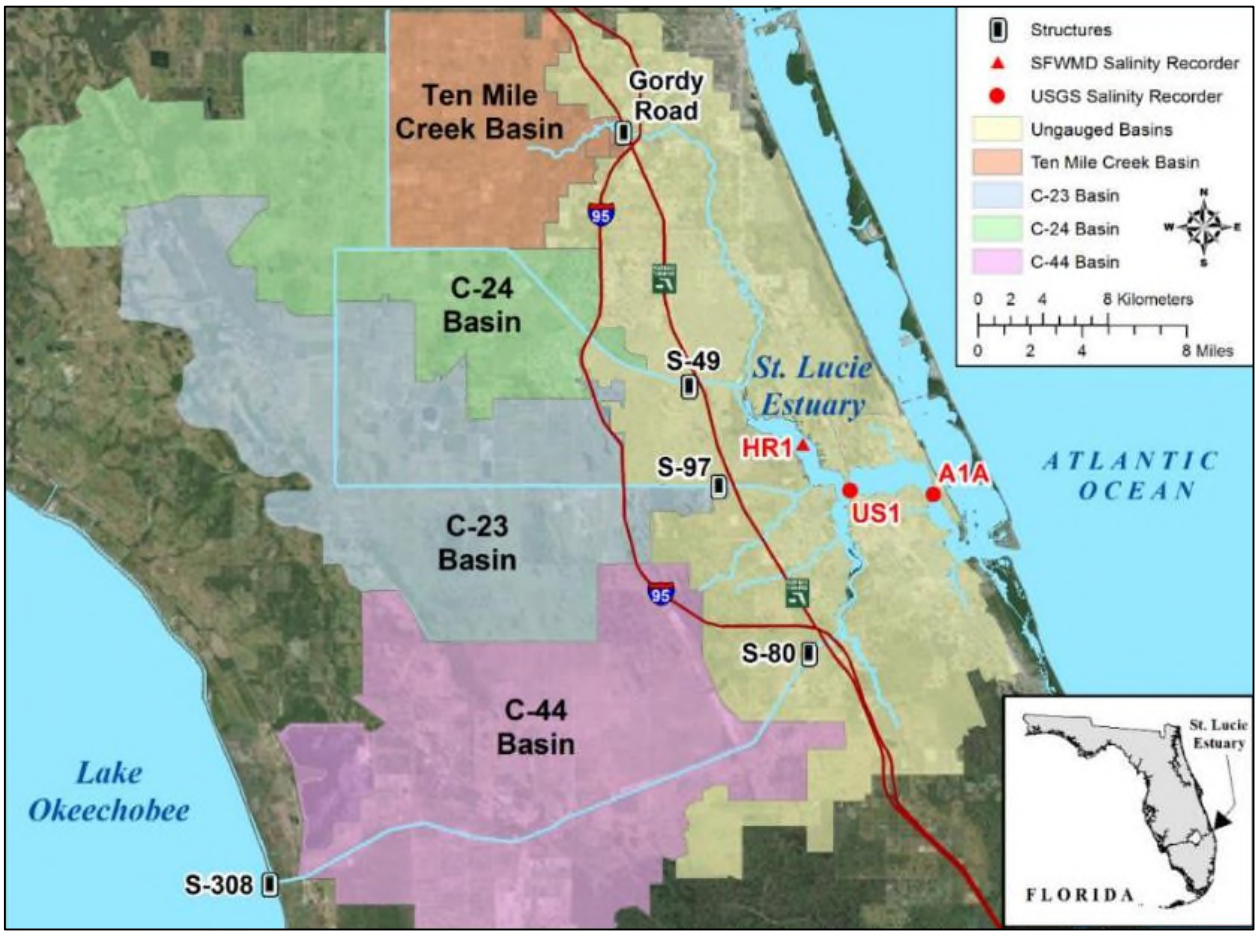


Figure ES-1. Basins, water control structures and salinity monitoring sites in the St. Lucie Estuary.

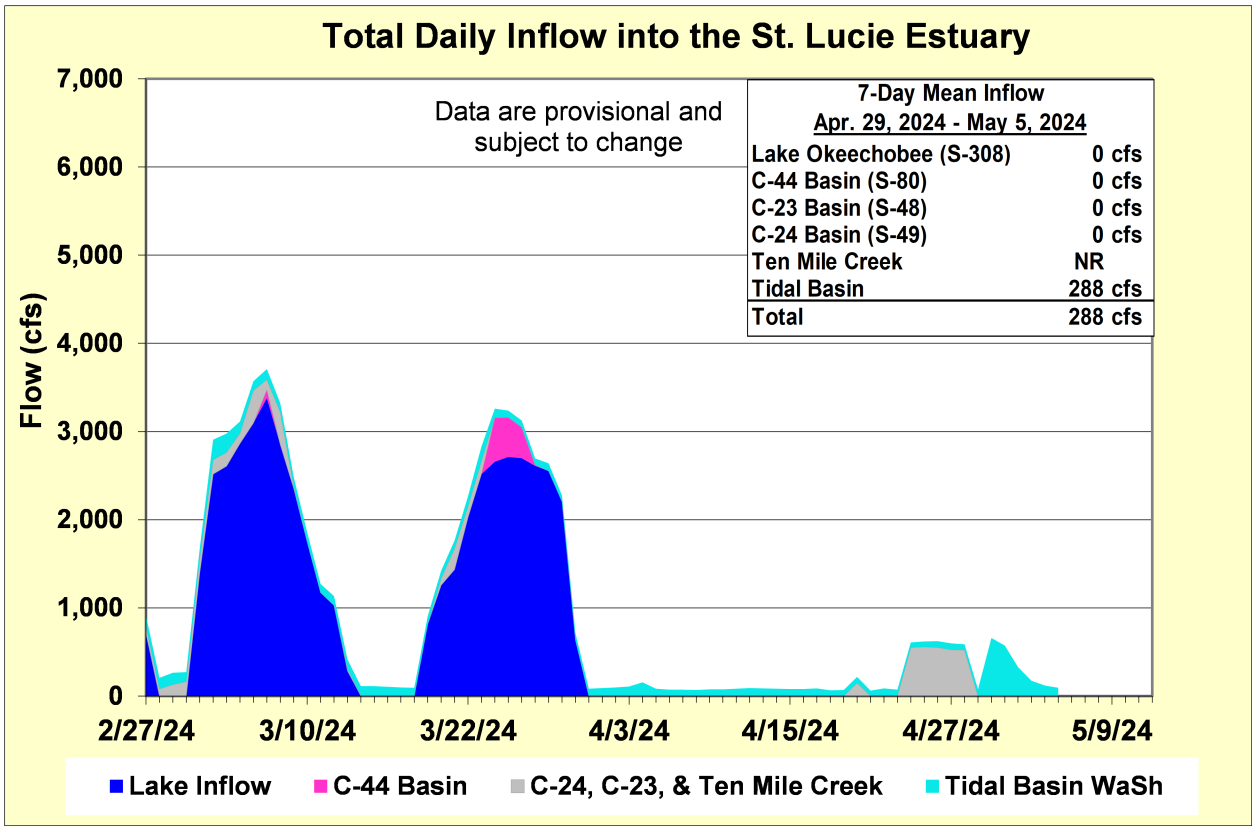


Figure ES-2. Total daily inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and Tidal Basins into the St. Lucie Estuary.

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)	**19.3** (19.1)	**20.7** (21.1)	10.0 – 25.0
US1 Bridge	**23.0** (23.0)	**23.6** (23.0)	10.0 – 25.0
A1A Bridge	**30.1** (30.6)	**31.6** (31.6)	10.0 – 25.0

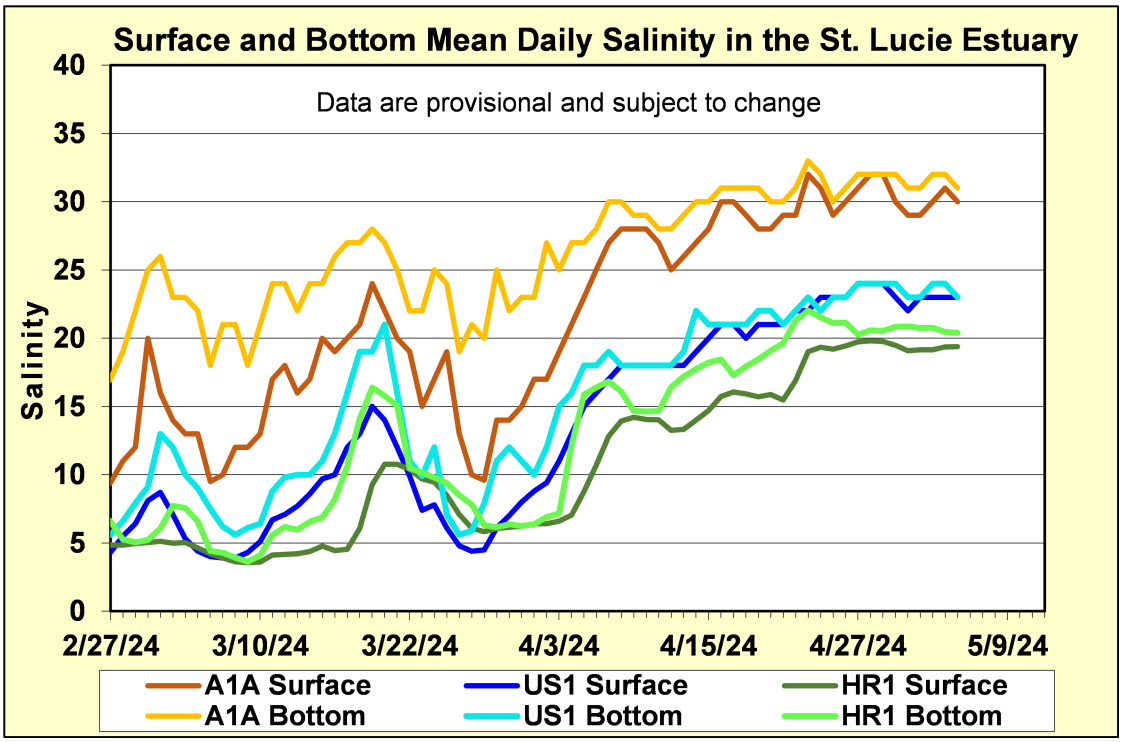


Figure ES-3. Mean daily salinity at the A1A, US1 and HR1 sites in the St. Lucie Estuary.

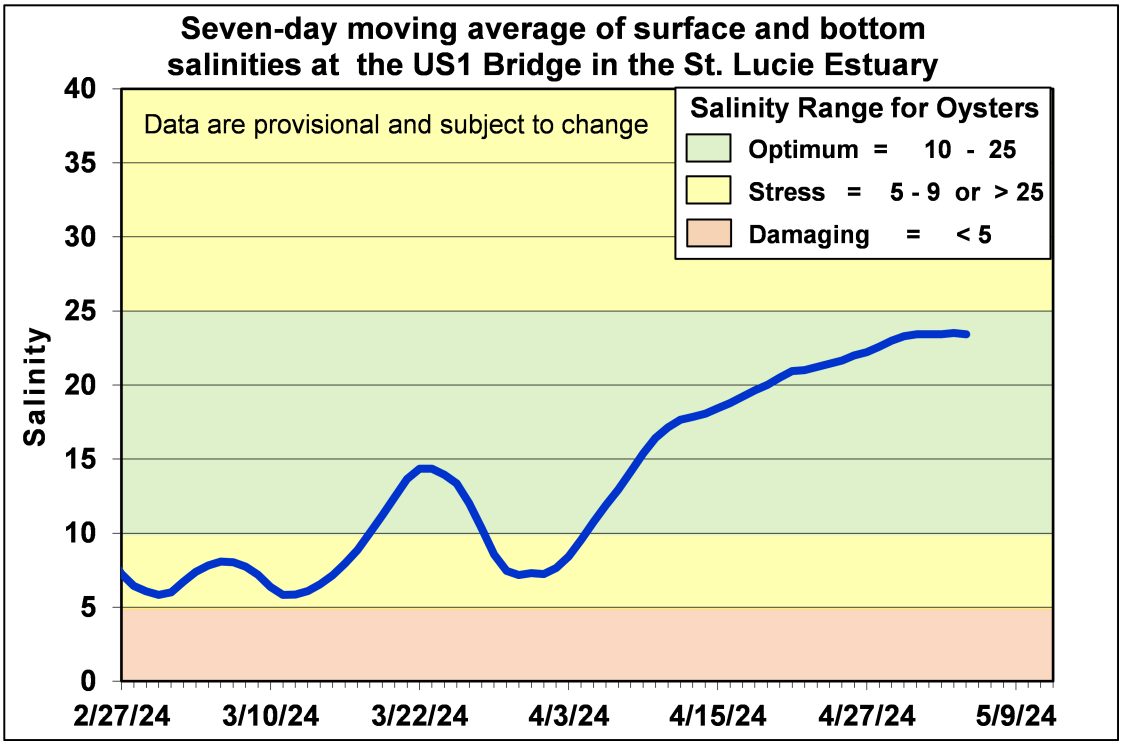


Figure ES-4. Seven-day moving average of the surface and bottom salinities at the US1 Bridge in the St. Lucie Estuary.

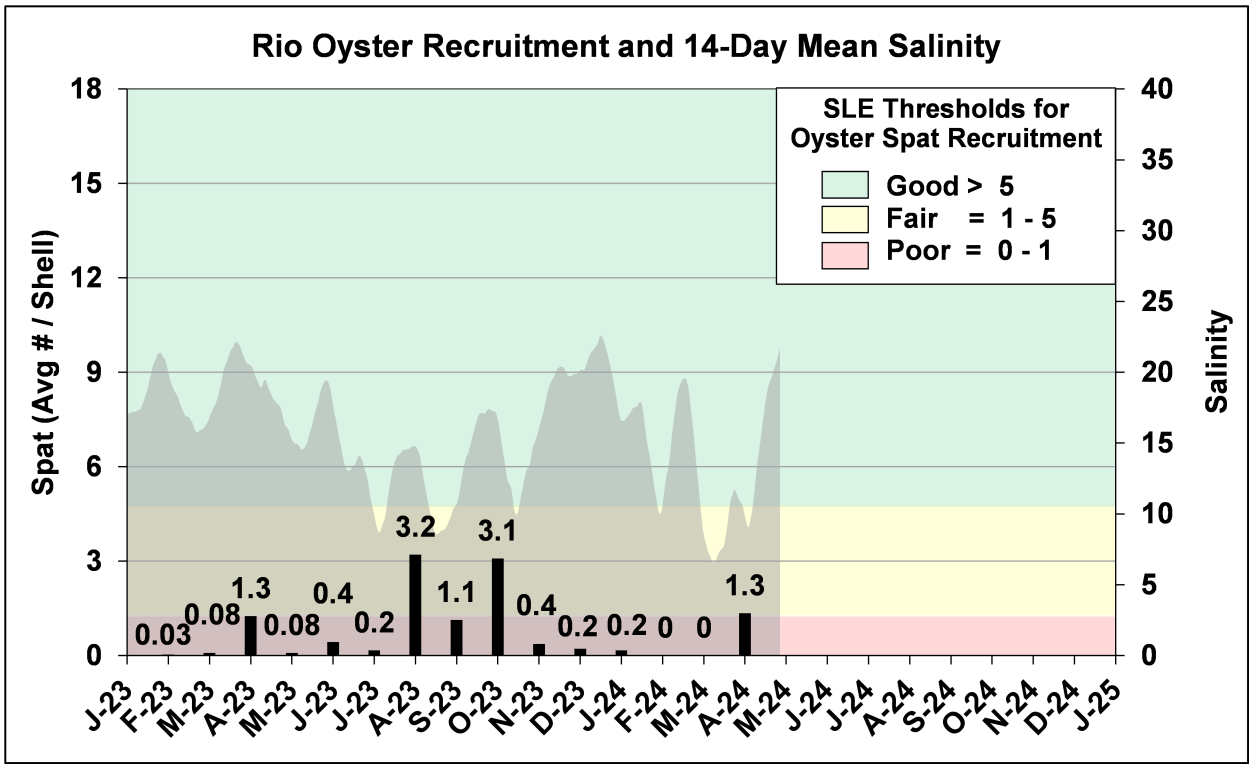


Figure ES-5. Mean oyster recruitment at the Rio oyster monitoring station and 14-day mean salinity at US1 Bridge.

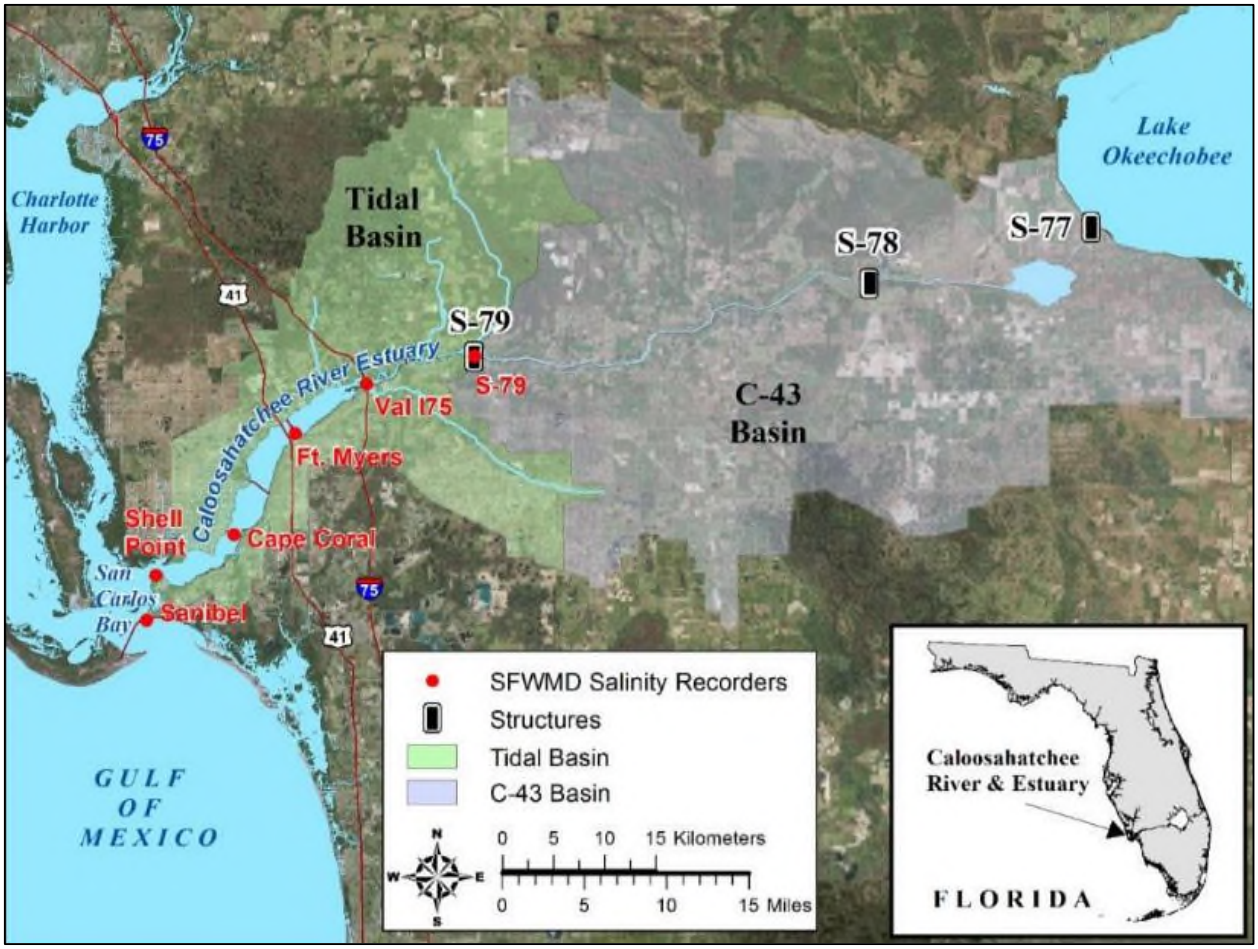


Figure ES-6. Basins, water control structures and salinity monitoring sites in the Caloosahatchee River Estuary.

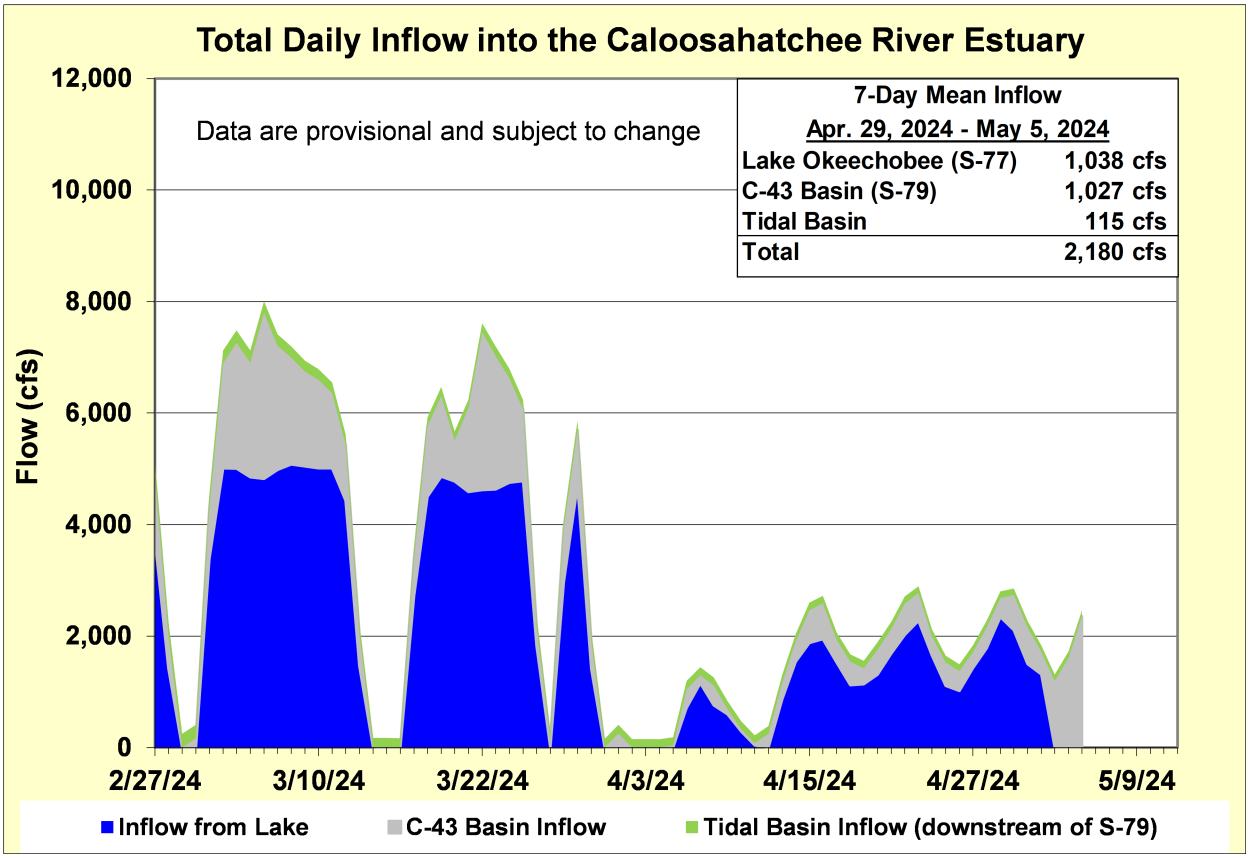


Figure ES-7. Total daily inflows from Lake Okeechobee, and runoff from the C-43 and Tidal basins into the Caloosahatchee River Estuary.

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

Sampling Site	Surface	Bottom	Optimum Envelope
S-79 (Franklin Lock)	**0.2** (0.2)	**0.2** (0.2)	0.0 – 10.0
Val I-75	**0.4** (0.4)	**0.5** (0.4)	0.0 – 10.0
Fort Myers Yacht Basin	**6.6** (4.0)	**9.1** (4.1)	0.0 – 10.0
Cape Coral	**12.8** (12.6)	**17.1** (13.4)	10.0 – 25.0
Shell Point	**26.2** (25.0)	**28.3** (28.0)	10.0 – 25.0
Sanibel	**31.2** (29.7)	**32.1** (30.6)	10.0 – 25.0

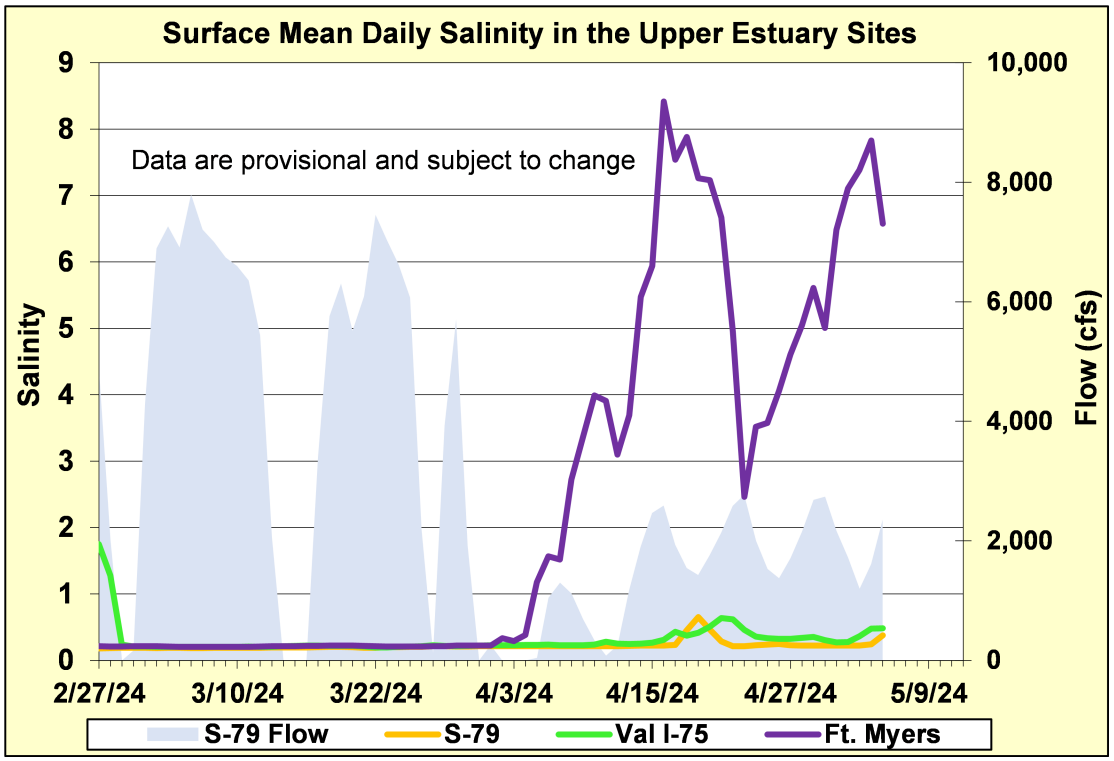


Figure ES-8. Mean daily salinity at upper Caloosahatchee River Estuary monitoring sites and mean daily flow at S-79.

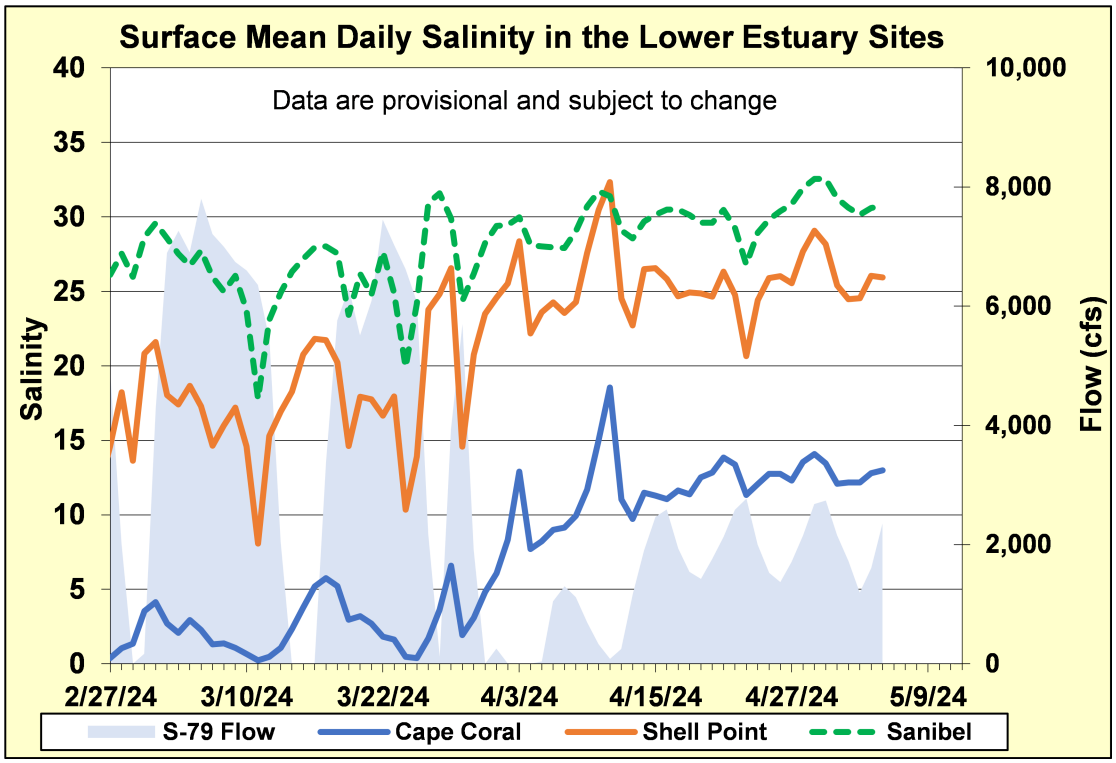


Figure ES-9. Mean daily surface salinity at lower Caloosahatchee River Estuary monitoring sites and mean daily flow at S-79.

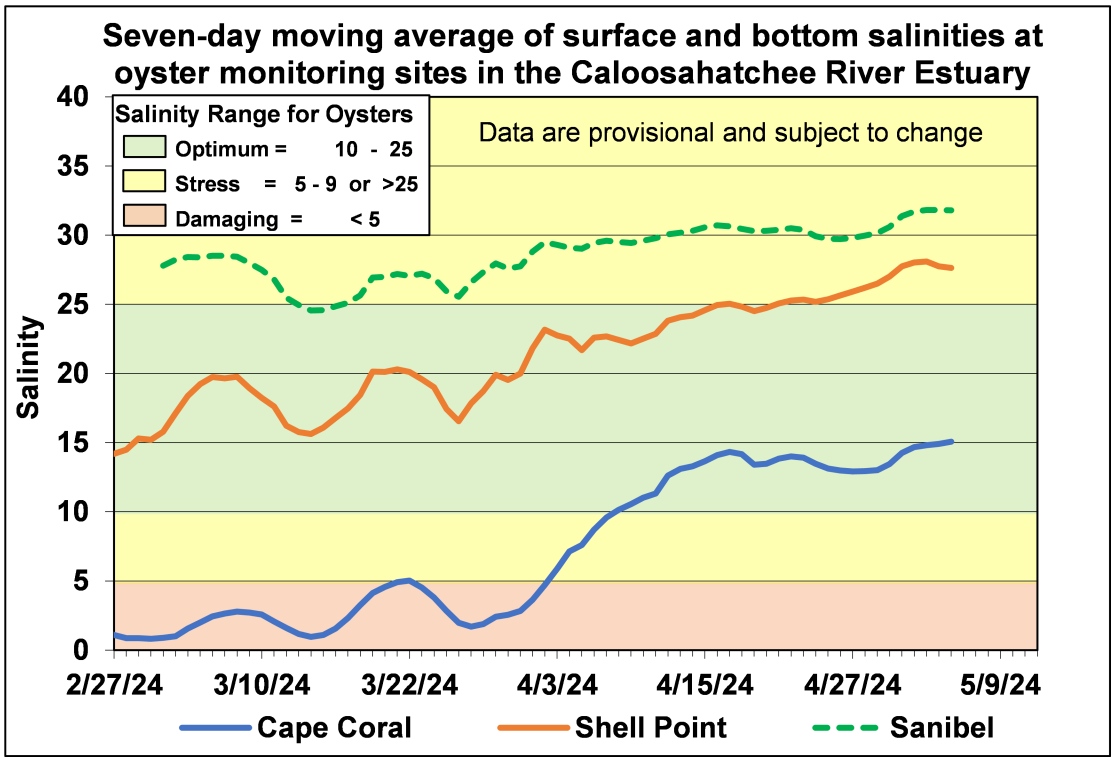


Figure ES-10. Seven-day moving average of surface and bottom salinities at Cape Coral, Shell Point and Sanibel monitoring sites in the Caloosahatchee River Estuary.

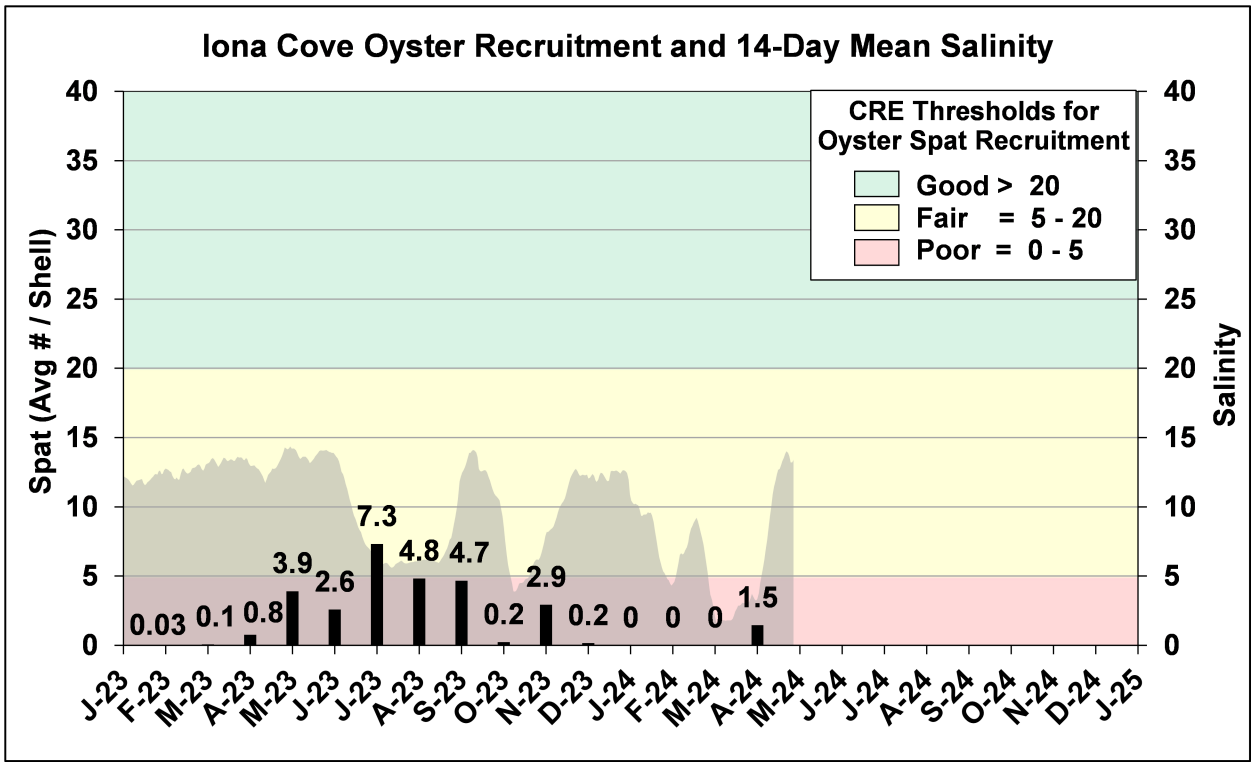


Figure ES-11. Mean oyster recruitment at the Iona Cove oyster monitoring station and 14-day mean salinity at Cape Coral.

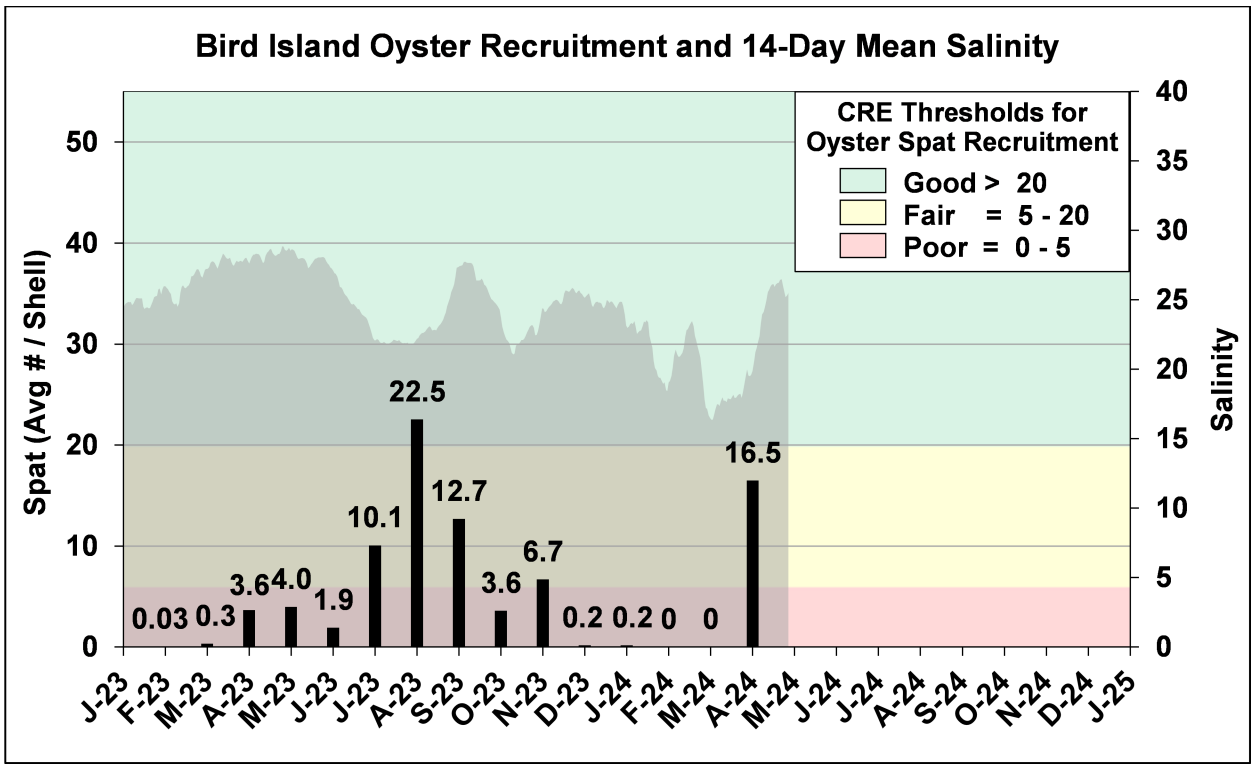


Figure ES-12. Mean oyster recruitment at the Bird Island oyster monitoring station and 14-day mean salinity at Shell Point.

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	99	0.7	0.4
B	750	99	0.4	0.4
C	2000	99	0.3	0.4

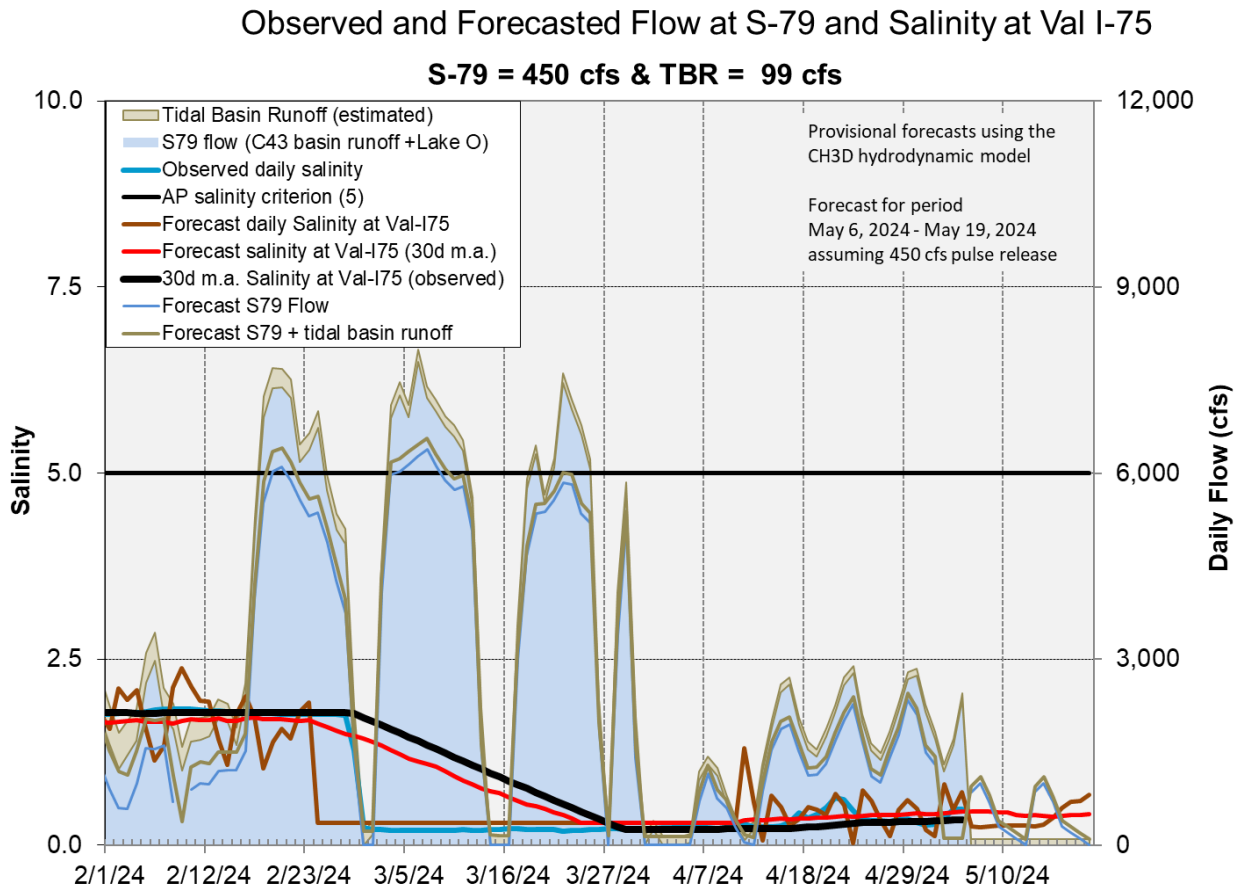


Figure ES-13. Forecasted Val I-75 site surface salinity assuming 450 cfs pulse release at S-79.

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 at or near 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**).

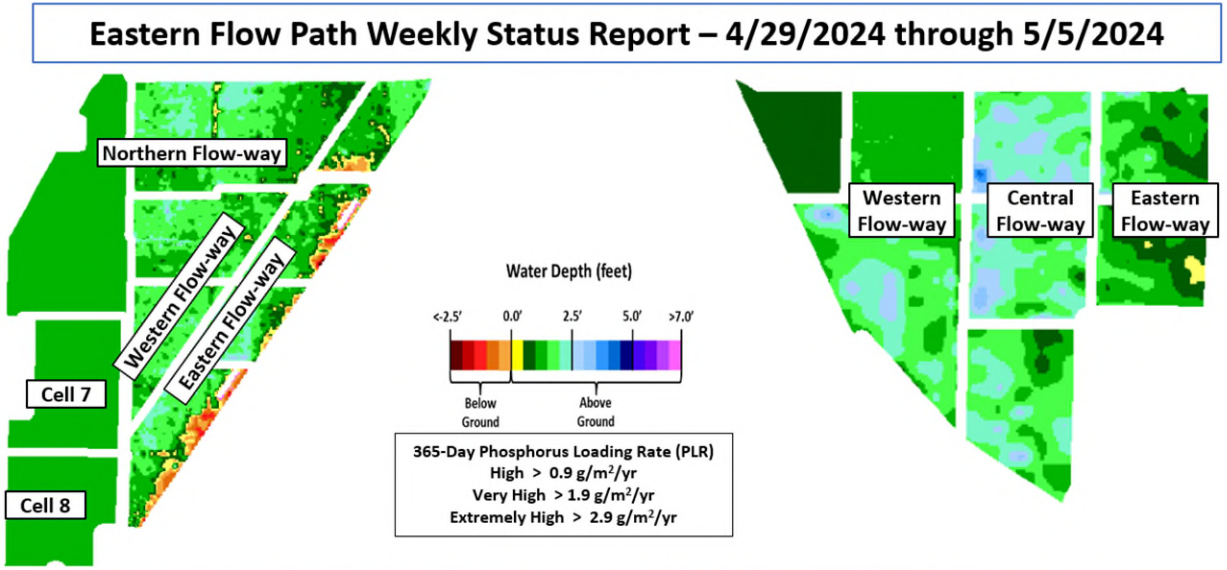
STA-1W: The Northern and Eastern Flow-ways contains nests of Migratory Bird Treaty Act protected species. Treatment cells are at or near target stage. Vegetation in the flow-ways is highly stressed. The 365-day PLR for the Eastern Flow-way is very high, the 365-day PLR for the Western Flow-way is high, 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. Flow-way 1 contains nests of Migratory Bird Treaty Act protected species. Online treatment cells are at or near 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-way 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 at or near 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: An operational restriction is in place in Flow-way 4 for vegetation management (prescribed burn). Treatment cells are at or near 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**).

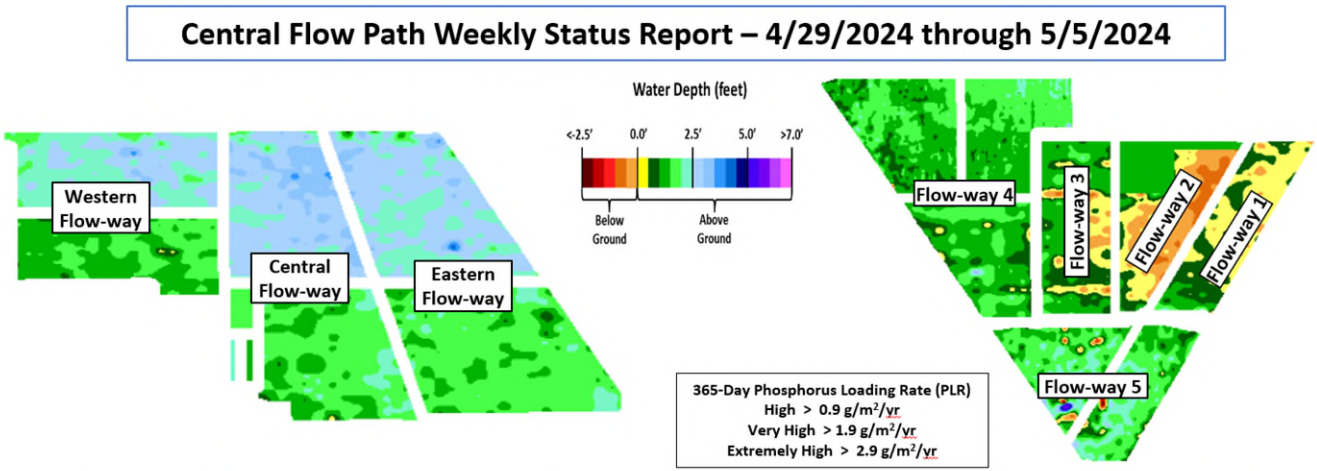
For definitions on STA operational language see glossary following figures.



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

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



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 • Upstream nuisance vegetation control • MBTA nesting
Flow-way 2	• Post-construction vegetation grow-in • Planting emergent vegetation • Stressed vegetation conditions • Upstream nuisance vegetation control
Flow-way 3	• Stressed vegetation conditions • Upstream nuisance vegetation control
Flow-way 4	• Planting emergent vegetation • Stressed vegetation conditions • Upstream nuisance vegetation control
Flow-way 5	• Highly stressed vegetation conditions • Upstream nuisance vegetation control

Figure S-2. Central Flow Path Weekly Status Report

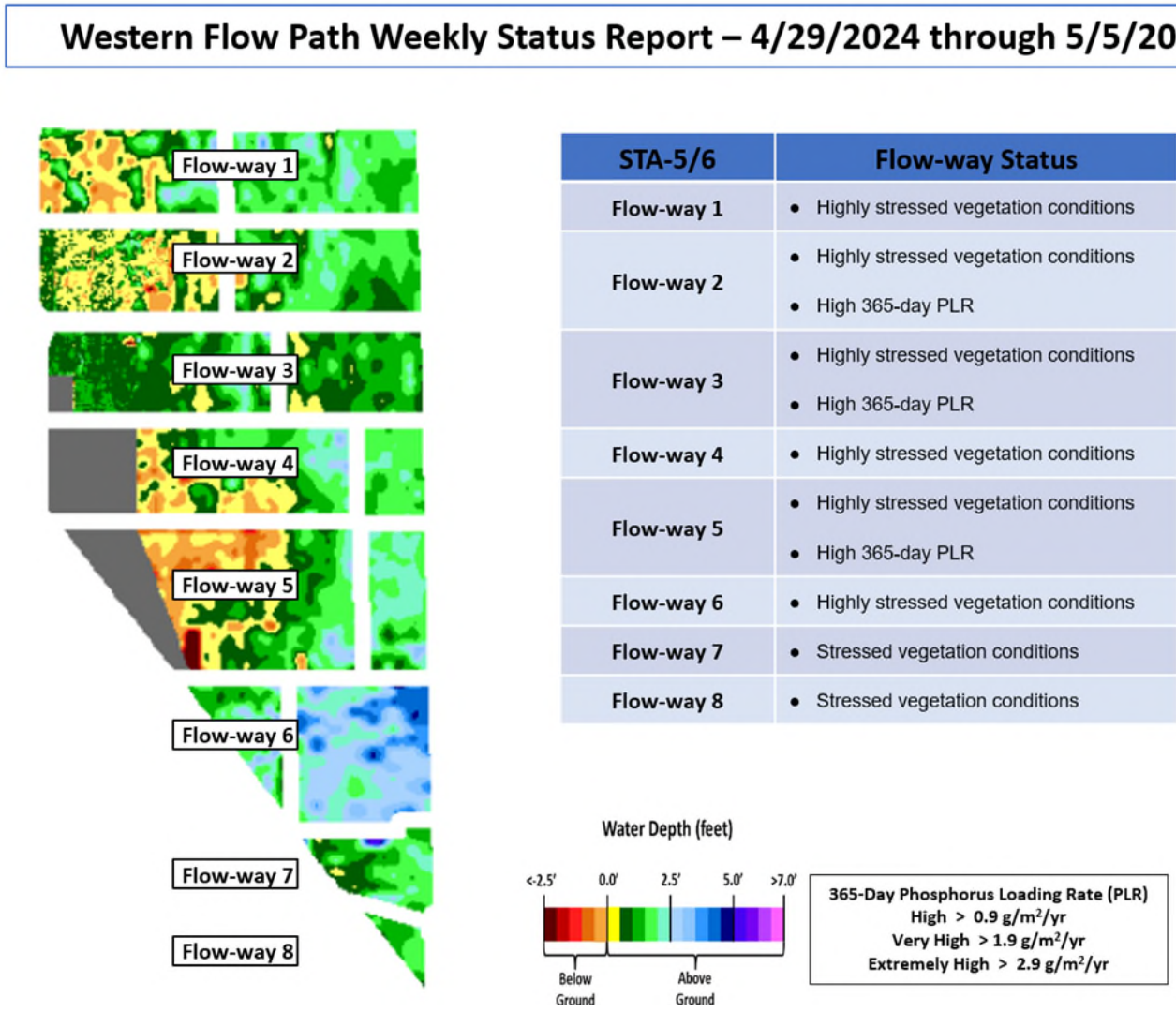


Figure S-3. Western Flow Path Weekly Status Report

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

More rain fell across EPA (especially in ENP) this week than previous weeks, but stages continued to fall. WCA-1: Stage within the Refuge remained below schedule last week, receding faster than the slope of the schedule. On Sunday at the 1-8C gauge was 0.26 feet below the falling Zone A1 regulation line. WCA-2A: Stage at the S-11B_H gauge rose quickly and went above the schedule line last week. The average on Sunday was 0.29 feet above the flat regulation line. WCA-3A: The 3-Gauge average stage remained in Zone B last week, receding faster than the slope of the schedule line. The average stage on Sunday was 0.25 feet below the falling Zone A regulation line. WCA-3A North: Stage at Gauge 62 (NW corner) remained below the Upper schedule last week and recedes quickly. The average on Sunday was around 0.80 feet below that schedule line. See figures **EV-1** through **EV-4**.

Water Depths

This section of the report is unavailable due to data transfer issues.

Taylor Slough and Florida Bay

The northern portion of Taylor Slough showed a decrease in stage while the southern portion showed an increase through 4/30, with an average overall increase of +0.02 feet. Stage changes ranged from –0.06 feet at TSB in the northern slough, to +0.09 feet at EVER6 in the southern C-111 area (**Figure EV-8 and Figure EV-9**). Taylor Slough water levels remain above the recent average for this time of year by 9.4 inches compared to before the Florida Bay initiative (starting in 2017), a decrease of 0.6 inches relative to last week's comparison. The stage at Craighead Pond (CP) remains above estimated historical levels by 0.16 feet and the stage at Taylor Slough Bridge (TSB) has dropped below historical levels by 0.55 feet.

Average Florida Bay salinity on 4/30 was 23.8, no change from two days prior. Salinity increased at most sites, with changes ranging from –2.2 at Buoy Key (BK) in the central offshore region, to +2.5 at Duck Key (DK) in the eastern offshore region (**Figure EV-8**). Salinity remains below the 25th percentile for all three regions, as well as at or below estimated historical levels (**Figure EV-10**). Average Florida Bay salinity remains below its recent average for this time of year by 9.5, a decrease of 0.4 from last week.

Salinity at the TR station in the mangrove zone on 4/30 (tracked for the Florida Bay MFL) was 0.7. The 30-day moving average was 0.5, with no change from last week (**Figure EV-11**). The 365-day moving sum of flow from the five creeks was 453,150 acre-feet, a decrease of 39,145 acre-feet from last week (**Figure EV-11**).

Total weekly rainfall averaged 1.5 inches in Taylor Slough and Florida Bay through 4/30 based on the 18 gauges used for this report (**Figure EV-12**). Rainfall ranged between 0.36 at Terrapin Bay and reached 5.8 inches at Johnson Key (JK). Wind directions and speeds in Florida Bay ranged from 1.5 mph W on 5/1 to 24.7 E on 4/29 (**Figure EV-12**).

Average daily flow from the five major creeks (McCormick, Taylor, Mud, Trout, West Highway) totaled 249 acre-feet last week, with net positive flows for the week. Total daily creek flow ranged from –406 acre-feet on 4/30 to 1,024 acre-feet on 5/2 (**Figure EV-13**). Average daily flow for the week was 2,758 acre-feet below estimated historical levels.

Implications for water management

The ecology of WCA-2A will benefit from stage change in the "good" rate range (up to 0.12 feet per week), this type of recession increases foraging opportunities for wading birds and lessen the flooding stress on tree islands and marsh ecology.

Slowing recession rates to less than 0.12 feet per week in WCA-3A would likely discourage more WOST from falling into the "ecological trap" of late nesting.

Hydrologic connectivity is starting to decrease in ENP, however inputs continue to maintain connectivity and move water southward to prevent salinity swings in the nearshore areas, which is ecologically beneficial.

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	0.17	−0.13
WCA-2A	0.45	−0.08
WCA-2B	0.05	ERROR
WCA-3A	0.67	−0.11
WCA-3B	0.24	ERROR
ENP	1.39	+0.00

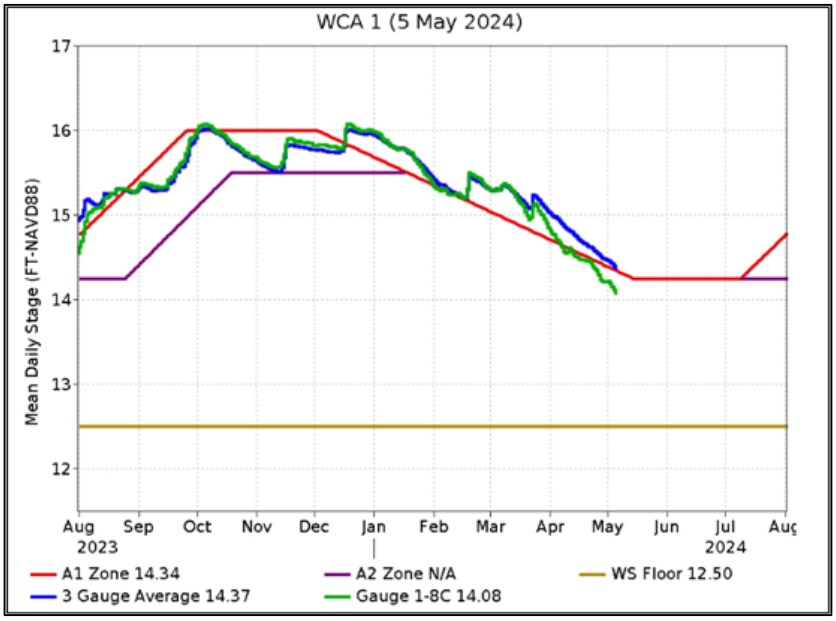


Figure EV-1. WCA-1 stage hydrographs and regulation schedule.

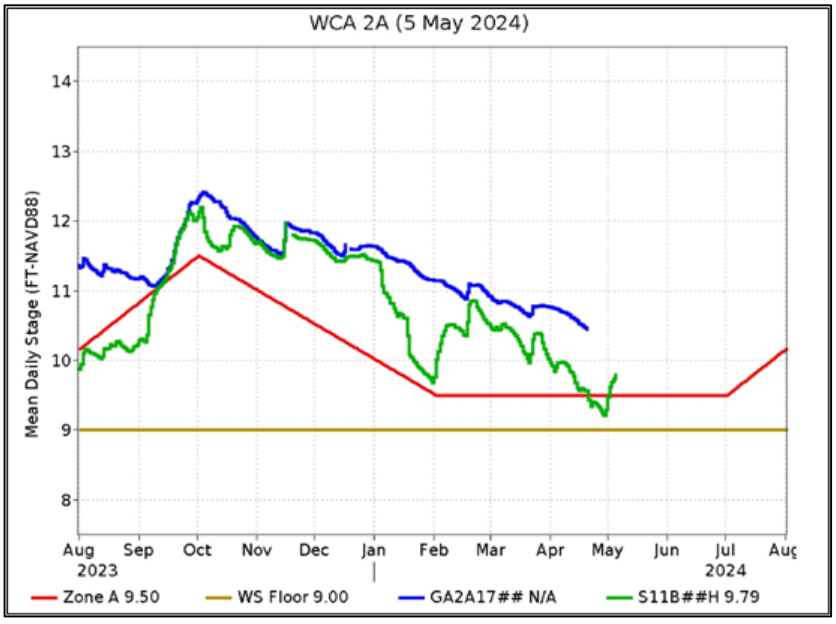


Figure EV-2. WCA-2A stage hydrographs and regulation schedule.

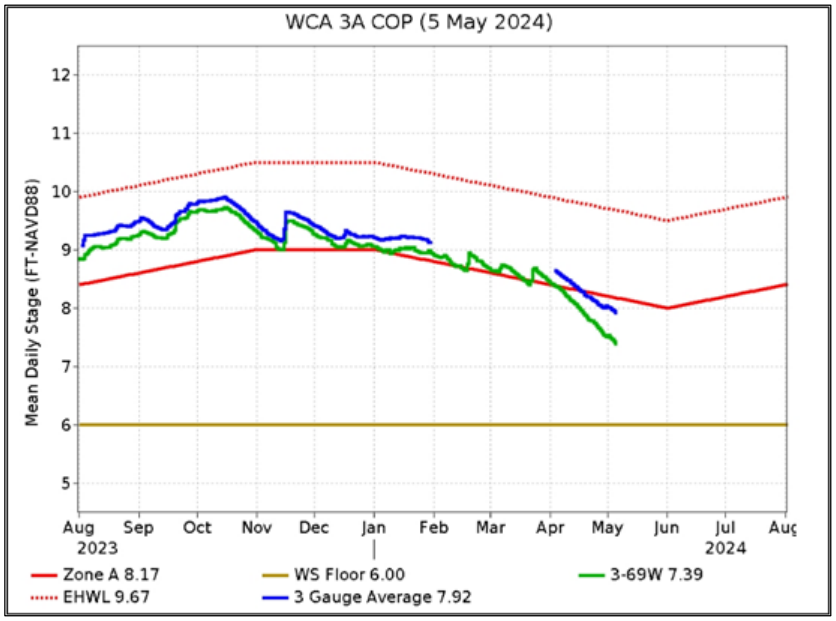


Figure EV-3. WCA-3A stage hydrographs (three-gauge average, 3-69W) and regulation schedule.

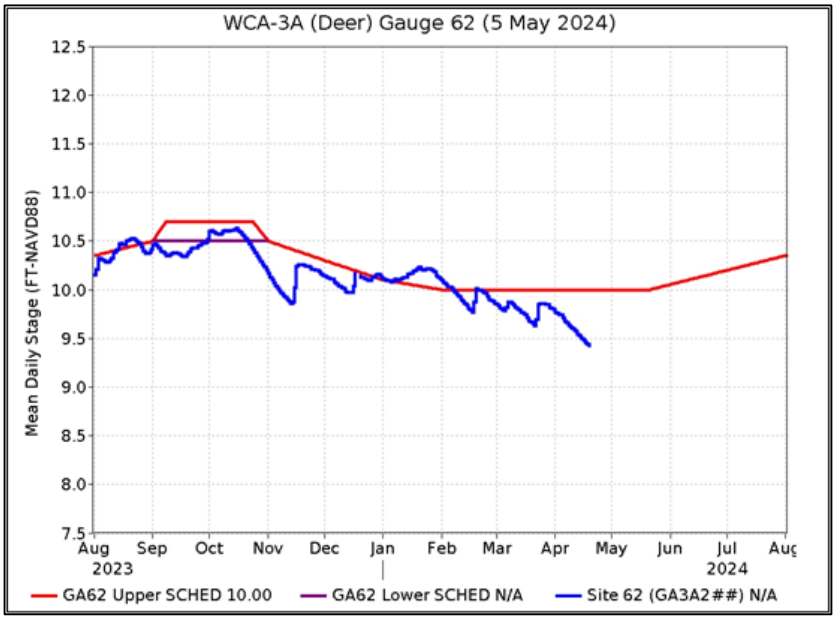


Figure EV-4. WCA-3A stage hydrograph (Deer gauge; Site 62) and GA62 regulation schedule.

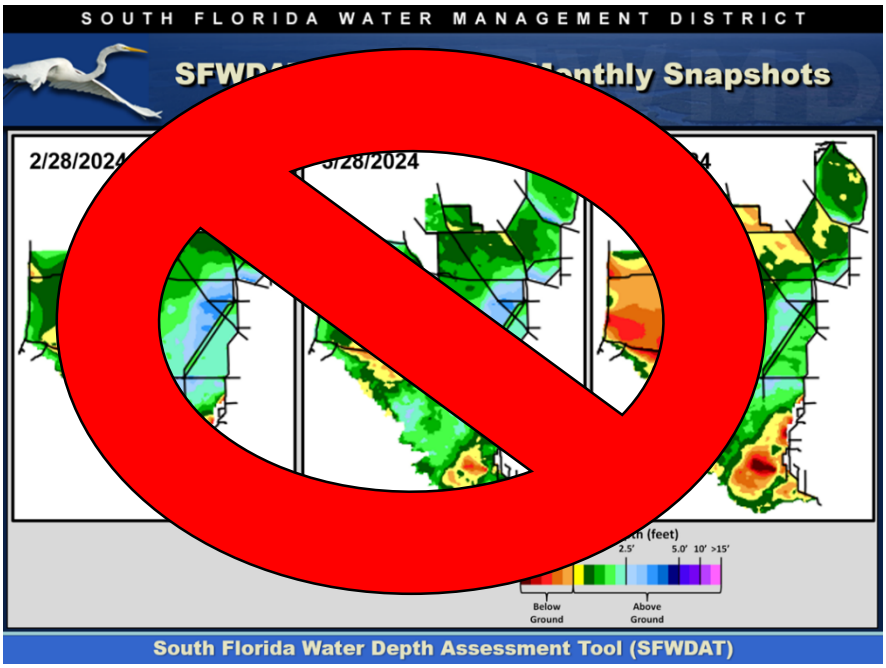


Figure EV-5. Everglades water depths from two months ago (left), one month ago (center) and present (right), based on SFWDAT. This figure was not available this week due to data transfer issues.

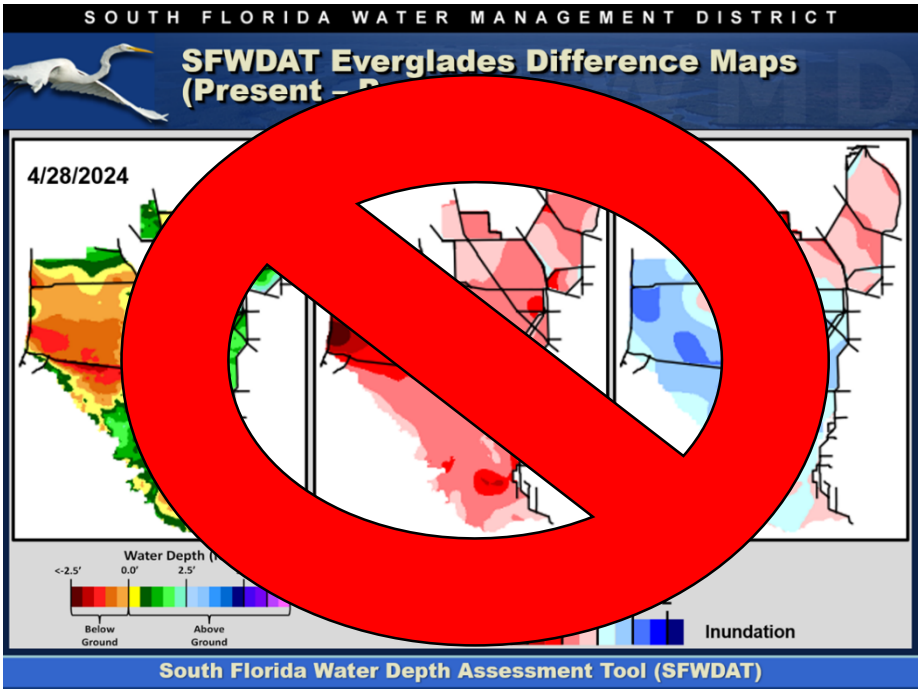


Figure EV-6. Present Everglades water depths (left) and water depth changes from one month (center) and one year (right) ago, based on SFWDAT. This figure was not available this week due to data transfer issues.

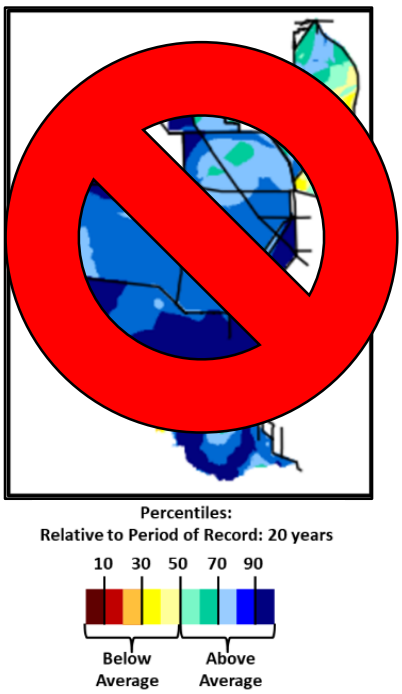


Figure EV-7. Present water depths (X) compared to the day of year average over the previous 20 years. This figure was not available this week due to data transfer issues.

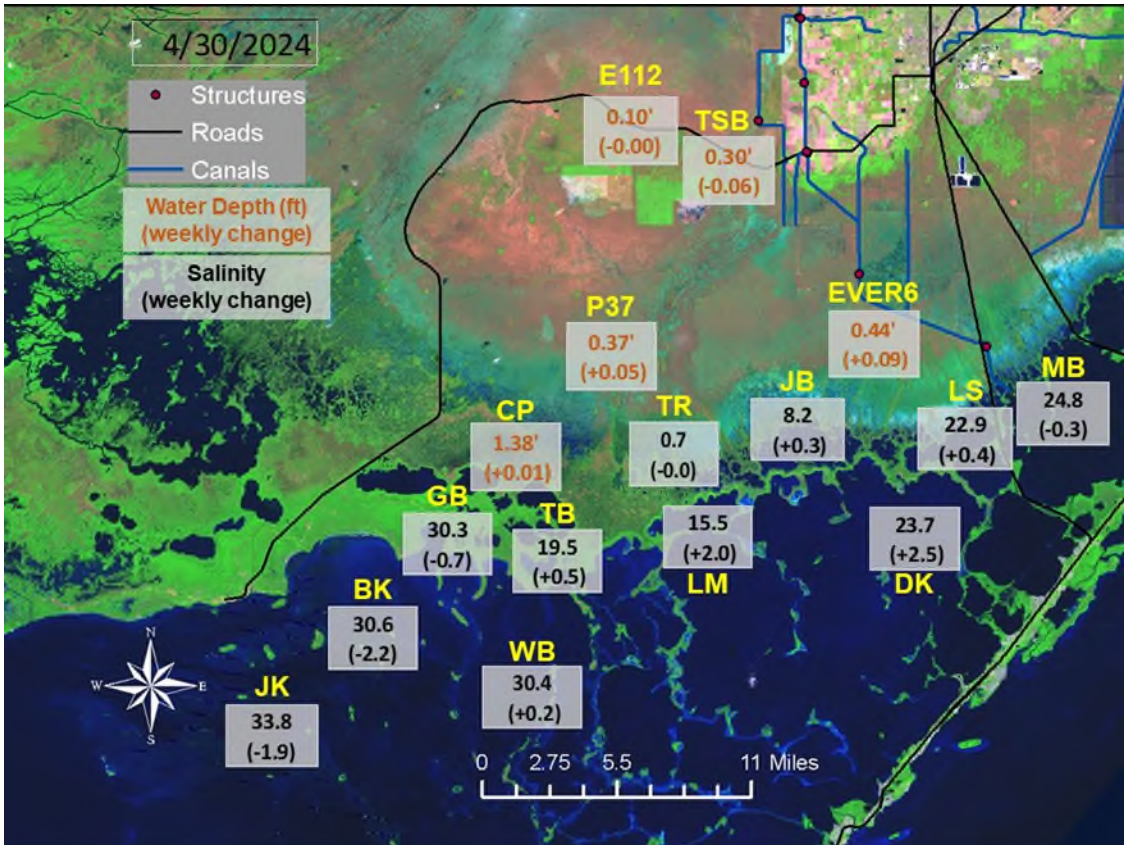


Figure EV-8. Taylor Slough water depths with changes since a week ago and Florida Bay salinities with changes since a week ago.

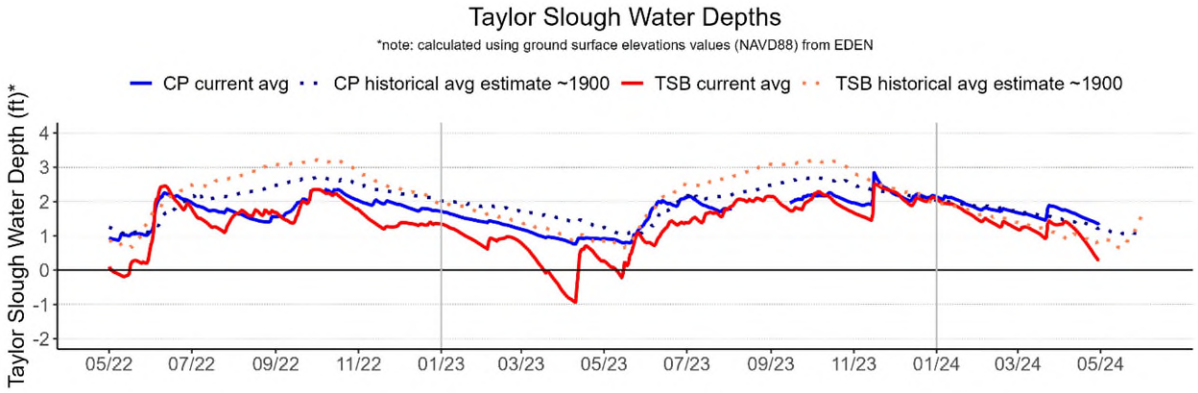


Figure EV-9. Taylor Slough water depth time series for Taylor Slough Bridge (TSB; northern slough) and Craighead Pond (CP; southern slough).

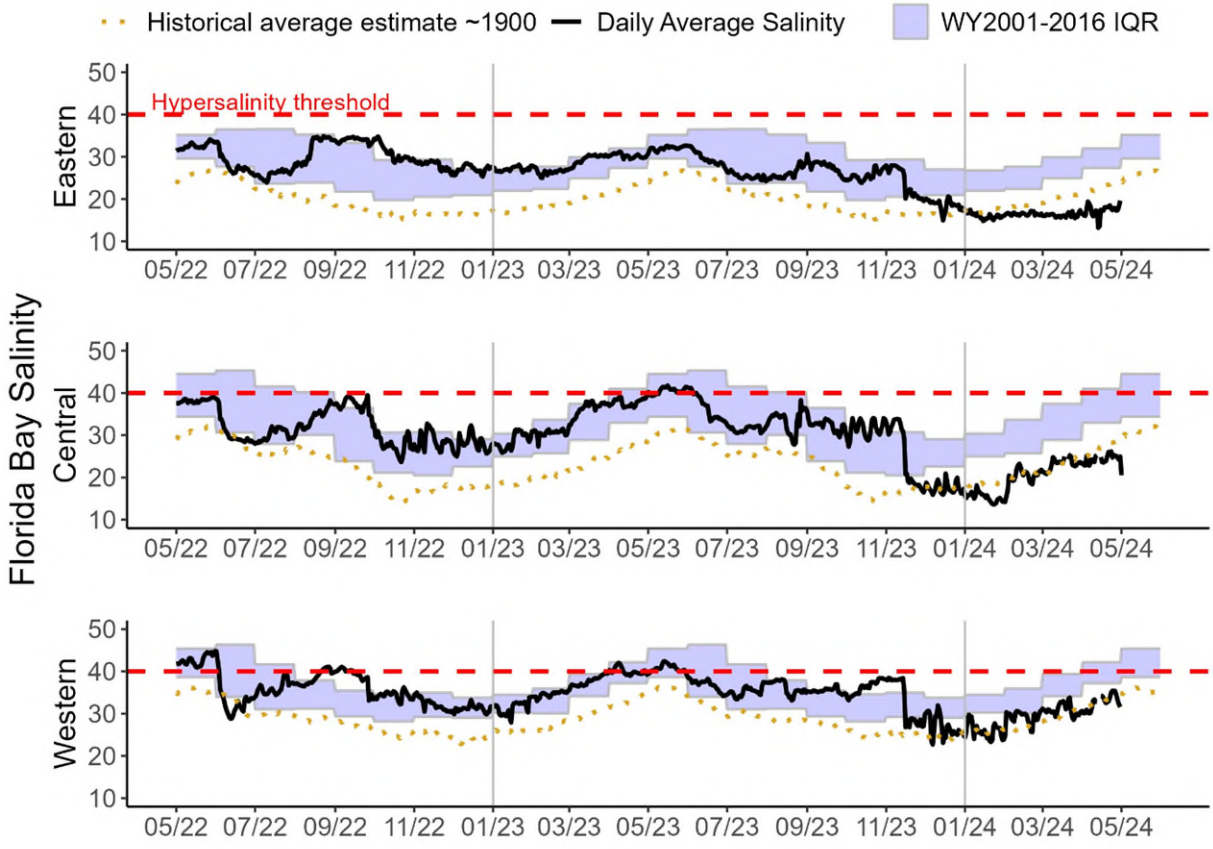


Figure EV-10. Eastern (top panel), Central (middle panel) and Western (bottom panel) Florida Bay daily average salinities with WY2001-2016 interquartile (25-75 percentile) ranges and estimated historical daily average salinities (~1900). The hypersalinity threshold indicates the level at which salinities start to become harmful to seagrass.

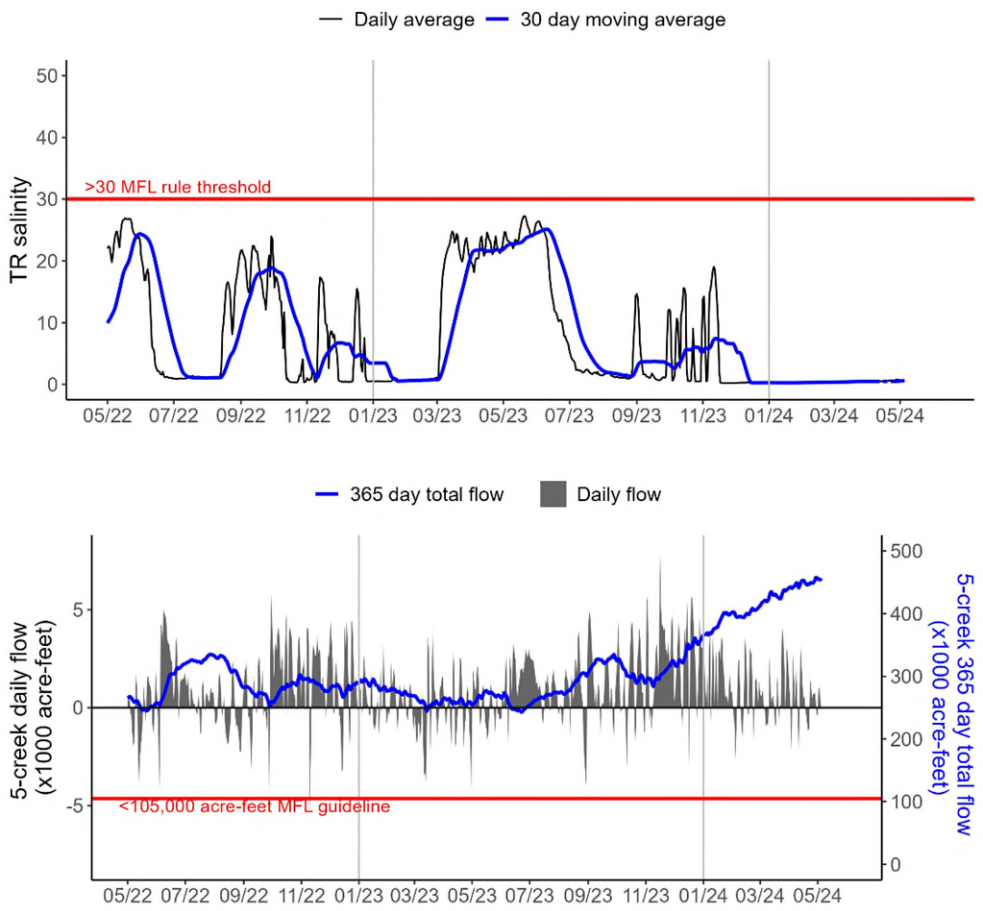


Figure EV-11. Salinity at Taylor River (TR; top) and creek inflow to Florida Bay (bottom) from the five major creeks (McCormick Creek, Taylor River, Mud Creek, Trout Creek, and West Highway Creek). The 30-day moving average salinity and 365-day total creek flow are tracked for the Florida Bay MFL criteria.

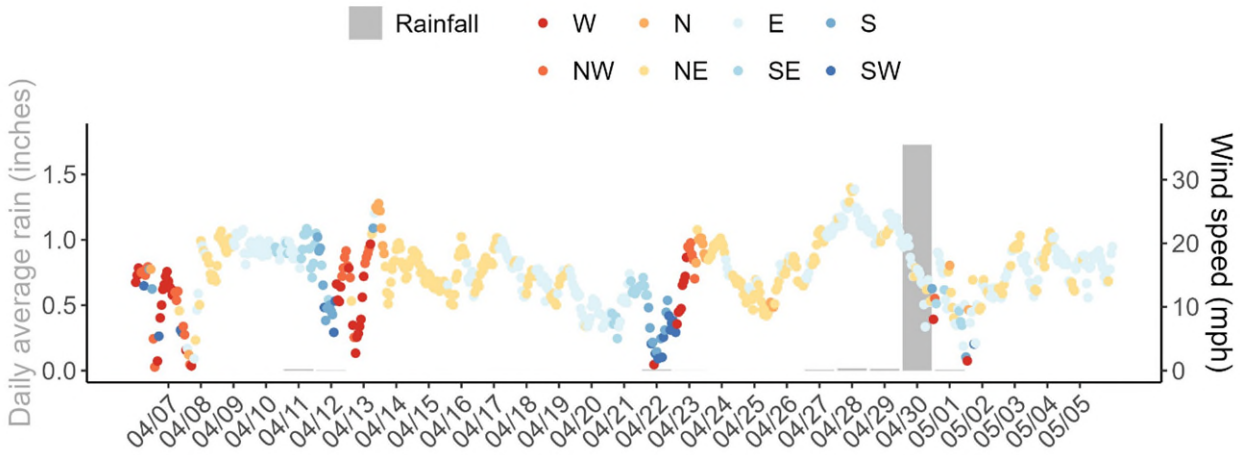


Figure EV-12. Daily average rain across Taylor Slough and Florida Bay, along with hourly average wind speed and direction (measured at Long Key) in Florida Bay over the past four weeks.

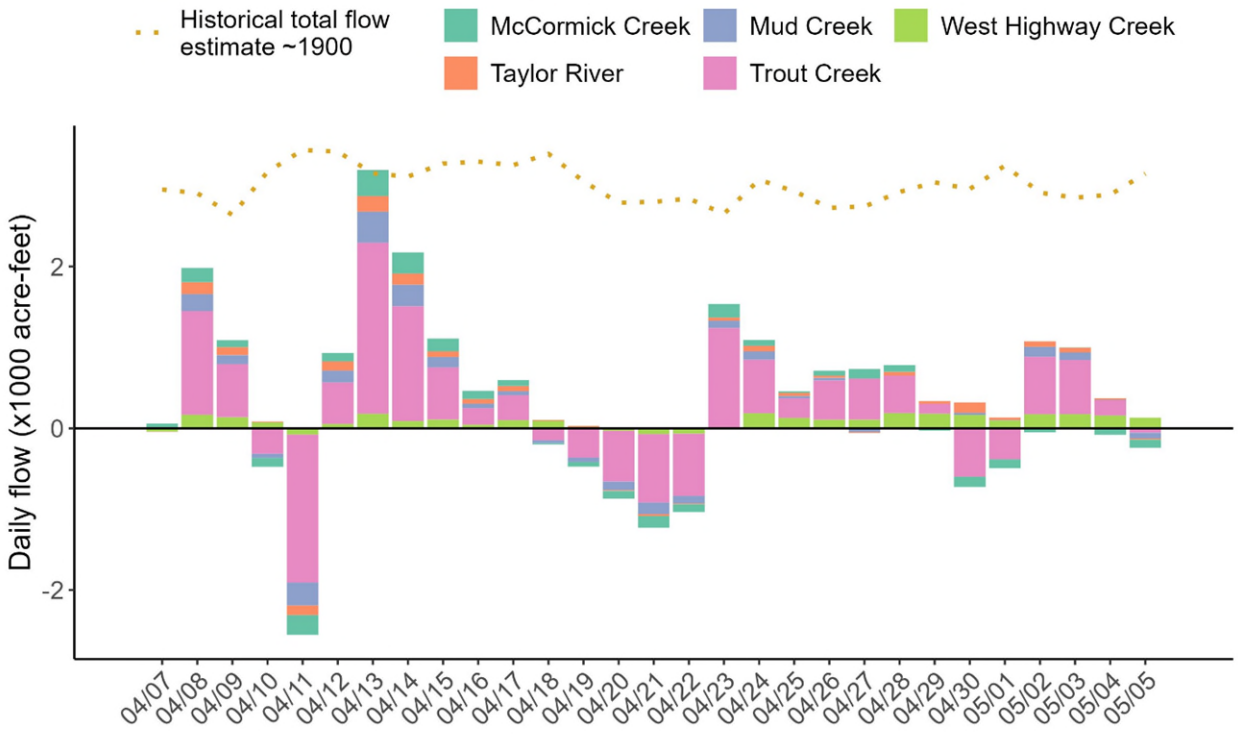


Figure EV-13. Daily average creek flow summed between five creeks with estimated historical daily flow (~1900) over the past four weeks.

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

SFWMD Everglades Ecological Recommendations, May 7, 2024 (red is new)			
	Weekly change	Recommendation	Reasons
WCA-1	Stage decreased by 0.14’	Recession rate of less than 0.12’ per week.	Protect within basin and downstream habitat and wildlife.
WCA-2A	Stage decreased by 0.08’	Recession rate up to 0.12’ per week.	Protect within basin and downstream habitat and wildlife from ongoing above average depths.
WCA-2B	Stage decreased by ?’	Recession rate of less than 0.12’ per week.	Protect within basin and downstream habitat and wildlife.
WCA-3A NE	Stage decreased by 0.04’	Recession rate of less than 0.12’ per week.	Protect within basin and downstream habitat and wildlife (fish/crayfish reproduction, wading bird foraging and nesting).
WCA-3A NW	Stage decreased by 0.12’	Recession rate of less than 0.12’ per week.	
Central WCA-3A S	Stage decreased by 0.14’	Recession rate of less than 0.12’ per week.	Protect within basin wildlife (fish/crayfish reproduction, wading bird foraging). Slowing the recession rate in this region may prevent late/doomed nesting attempts.
Southern WCA-3A S	Stage decreased by 0.14’		
WCA-3B	Stage decreased by ?’	Recession rate of less than 0.12’ per week.	Protect within basin (sensitive tree islands) and downstream habitat and wildlife.
ENP-SRS	Stage remained unchanged	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 (wading bird nesting).
Taylor Slough	Stage changes ranged from −0.06’ to +0.09’	Move water southward as possible.	When available, provide freshwater to promote water movement.
FB- Salinity	Salinity changes ranged from −2.2 to +2.5	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 205 cfs, and the previous 30-day mean inflow was 336 cfs. The seven-day mean salinity was 28.3 at BBCW8 and 18.7 at BBCW10 (as of 5/2/2024), both within the ideal salinity range for estuarine organisms in this region (salinity less than 35). Data were provided by Biscayne National Park.

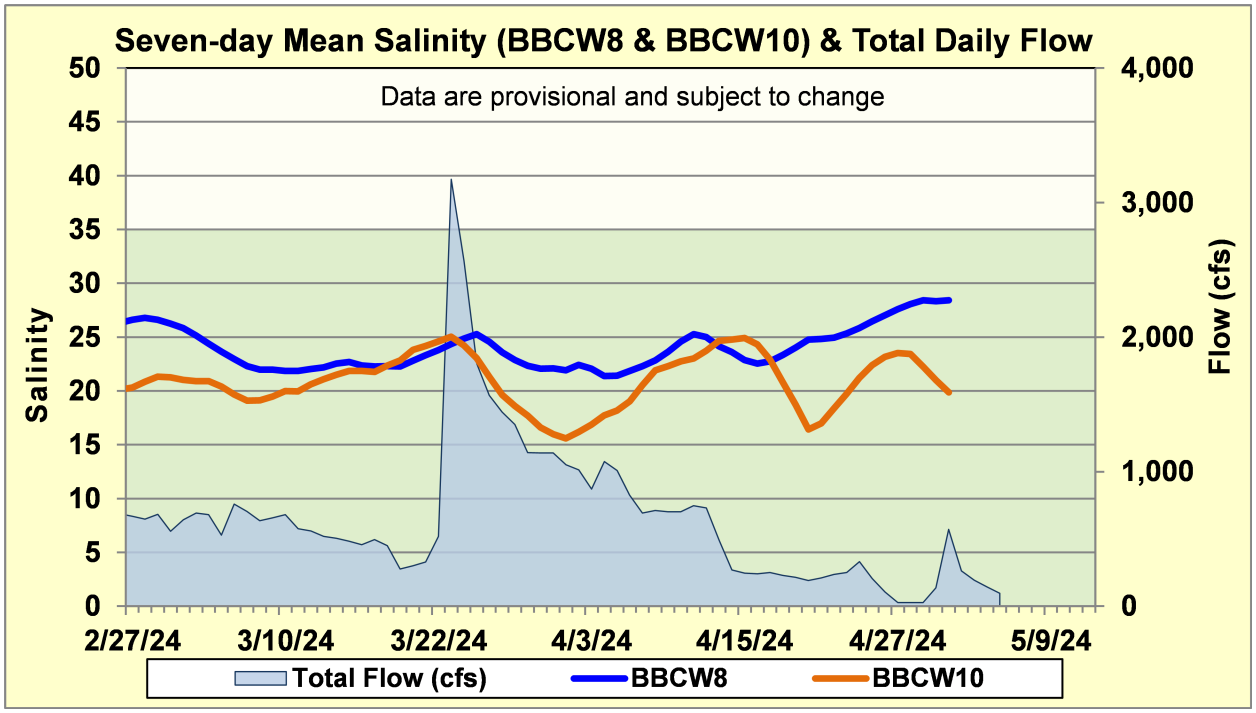


Figure BB-1. Seven-day mean salinity at BBCW8 and BBCW10 and total daily flow in Biscayne Bay. Total daily flow was calculated using flow from structures S20G, S20F, S21, S21A, S123, and S700P.