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: November 1, 2023

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Weather Conditions and Forecast

An upper-air disturbance will move into the eastern U.S. Wednesday, bringing a cold front to the northern half of the SFWMD by daybreak and the southern half of the area by the afternoon. Very breezy north-northeasterly winds will carry shallow moisture to the east coast. While little rain will most likely move onshore, there is a lower chance that a spot or two along the immediate east coastal could experience a burst of relatively heavier rain. The last of any shower activity will affect the lower to middle east coast Thursday morning, followed by a drying that will last through Friday. Meanwhile, very breezy northeasterly winds with wind gusts to gale force are likely along and near the east coast. The frontal boundary will retreat to the far southern part of the SFWMD by early Sunday. As a result, some increase of shower and isolated thunderstorm activity is possible from Saturday through early Sunday, with more probably in the eastern half of the SFWMD than in the west. However, model confidence is low, and the weekend forecast uncertain. Finally, on Sunday, rains should end as a frontal boundary push to the south. The front will then return as a warm front on Monday and lift north of the area. Little shower activity is expected in the wake of the warm frontal passage. For the week ending next Tuesday morning, total SFWMD rainfall is likely to be much below normal. The October 2023 total will finish a little above 20th percentile in the last roughly 90 years of historical records.

Kissimmee

No releases were made from East Lake Toho and Lake Toho last week as stages were below the regulation schedule. Weekly average discharge on October 29, 2023, was 1,400 cfs at S-65 and 1,400 at S-65A. Mean weekly water depth on the Kissimmee River floodplain decreased by 0.16 feet to 0.43 feet over the week ending October 29, 2023. The weekly average concentration of dissolved oxygen in the Kissimmee River increased from 3.0 mg/L last week to 4.9 mg/L for the week ending October 29, 2023, which is well above the potentially lethal and stressful levels for largemouth bass and other sensitive species.

Lake Okeechobee

Lake Okeechobee stage was 16.21 feet NGVD on October 29, 2023, which was 0.08 feet lower than the previous week and 0.53 feet higher than a month ago. Average daily inflows (excluding rainfall) decreased from the previous week, going from 4,740 cfs to 3,020 cfs. Average daily outflows (excluding evapotranspiration) increased from the previous week, going from 910 cfs to 2,150 cfs. The cyanobacteria index level was low to high in the southwestern and western regions of the Lake according to the October 28, 2023 satellite image from NOAA's Harmful Algal Bloom Monitoring System. Routine phytoplankton monitoring on October 16 - 17 did not detect microcystins toxins at any of the sampled stations. Bloom conditions (>40 µg/L chlorophyll a) were recorded at the L005 and KBARSE stations in the western and northwestern regions of the lake. Phytoplankton communities were dominated by *Cylindrospermopsis raciborskii* at 3 stations and had mixed communities at 14 stations.

Estuaries

Total inflow to the St. Lucie Estuary averaged 274 cfs over the past week with no flow coming from Lake Okeechobee. Mean salinities increased at all sites in the estuary over the past week. Salinity in the middle estuary was within the optimal range (10-25) for adult eastern oysters.

Total inflow to the Caloosahatchee Estuary averaged 2,425 cfs over the past week with 1,185 cfs coming from Lake Okeechobee. Mean salinities increased 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 optimal range for adult eastern oysters at Shell Point (10-25), in the lower stressed range at Cape Coral (5-10), and in the upper stressed range at Sanibel (>25).

Stormwater Treatment Areas

For the week ending Sunday, October 29, 2023, 3,400 ac-ft of Lake Okeechobee water was delivered to the FEBs/STAs. The total amount of Lake releases sent to the FEBs/STAs in WY2024 (since May 1, 2023) is approximately 6,000 ac-feet. The total amount of inflows to the STAs in WY2024 is approximately 981,000 ac-feet. Most STA cells are near target stage. STA-1E Western Flow-way is offline for post-construction vegetation grow in. Operational restrictions are in effect in STA-1W Northern Flow-way, STA-2 Flow-ways 2 and 4, STA-3/4 Eastern Flow-way, and STA-5/6 Flow-way 4 for vegetation management activities. This week, if 2008 LORS recommends Lake releases to the WCAs and conditions allow, releases will be sent to STA-2.

Everglades

Rates of stage change remain high, classified as in the poor or fair range across the EPA, with highest rates of recession in WCA-3A North and WCA-2A. Rapid recessions in WCA-3A North create some uncertainty about whether wading bird foraging and nesting can be sustained through the dry season in that region. Stages decreased across Taylor Slough last week but remain above the historical average. Salinity increased again on average across Florida Bay last week and the western and central regions remain at or above the 75th percentile. FWC lifted public access restrictions on WCAs (except Rotenberger).

Biscayne Bay

Total inflow to Biscayne Bay averaged 595 cfs and the previous 30-day mean inflow averaged 900 cfs. The seven-day mean salinity was 25.2 at BBCW8, within the ideal salinity range for estuarine organisms in this region (salinity less than 35). No salinity data were available at BBCW10 for the past week. Data provided by Biscayne National Park.

Supporting Information

Kissimmee Basin

Upper Kissimmee

On October 29, 2023, mean daily lake stages were 57.2 feet NGVD (0.7 feet below schedule) in East Lake Toho, 54.3 feet NGVD (0.6 feet below schedule) in Lake Toho, and 51.4 feet NGVD (1.0 feet below schedule) in Lakes Kissimmee-Cypress-Hatchineha (KCH) (**Table KB-1**, **Figures KB-1-3**).

Lower Kissimmee

For the week ending October 29, 2023, mean weekly discharge was 1,400 cfs and 1,400 cfs at S-65 and S-65A, respectively. Mean weekly discharge from the Kissimmee River was 1,900 cfs at S-65D and 2,000 cfs at S-65E (**Table KB-2**). Mean weekly headwater stages were 46.3 feet NGVD at S-65A and 27.9 feet NGVD at S-65D on October 29, 2023. Mean weekly river channel stage decreased by 0.5 feet to 37.7 feet NGVD over the week ending on October 29, 2023 (**Figure KB-4**). Mean weekly water depth on the Kissimmee River floodplain decreased by 0.16 ft to 0.43 feet over the week ending October 29, 2023 (**Table KB-2**, **Figure KB-5**). The weekly average concentration of dissolved oxygen in the Kissimmee River increased from 3.0 mg/L the previous week to 4.9 mg/L for the week ending October 29, 2023 (**Table KB-2**, **Figure KB-6**).

Water Management Recommendations

Follow the IS-14-50 discharge plan for S-65/S-65A or transition to Hybrid A (approximately 500-1,200 cfs until June 2024) on November 1. Maintain at least minimum flow (250-300 cfs) at S-65A. Begin a stage recession at S-65D headwater to reach 25.8 ft NGVD in early January 2024 at a recession rate of approximately 0.2 ft/week.

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

Water Body	Structure	Stage Monitoring Site	Weekly (7-Day) Average Discharge (cfs)	Sunday Lake Stage (feet NGVD)[a]	Schedule Type[b]	Sunday Schedule Stage (feet NGVD)	Sunday Departure from Regulation (feet)	
							10/29/23	*10/22/23*
Lakes Hart and Mary Jane	S-62	LKMJ	0	60.5	R	60.9	-0.4	-0.2
Lakes Myrtle, Preston and Joel	S-57	S-57	0	61.7	R	61.9	-0.2	0.0
Alligator Chain	S-60	ALLI	0	63.6	R	63.9	-0.3	-0.2
Lake Gentry	S-63	LKGT	0	61.2	R	61.5	-0.3	-0.1
East Lake Toho	S-59	TOHOE	0	57.2	R	57.9	-0.7	-0.5
Lake Toho	S-61	TOHOW S-61	0	54.3	R	54.9	-0.6	-0.4
Lakes Kissimmee, Cypress and Hatchineha	S-65	KUB011 LKIS5B	1400	51.4	R	52.4	-1.0	-0.5

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.

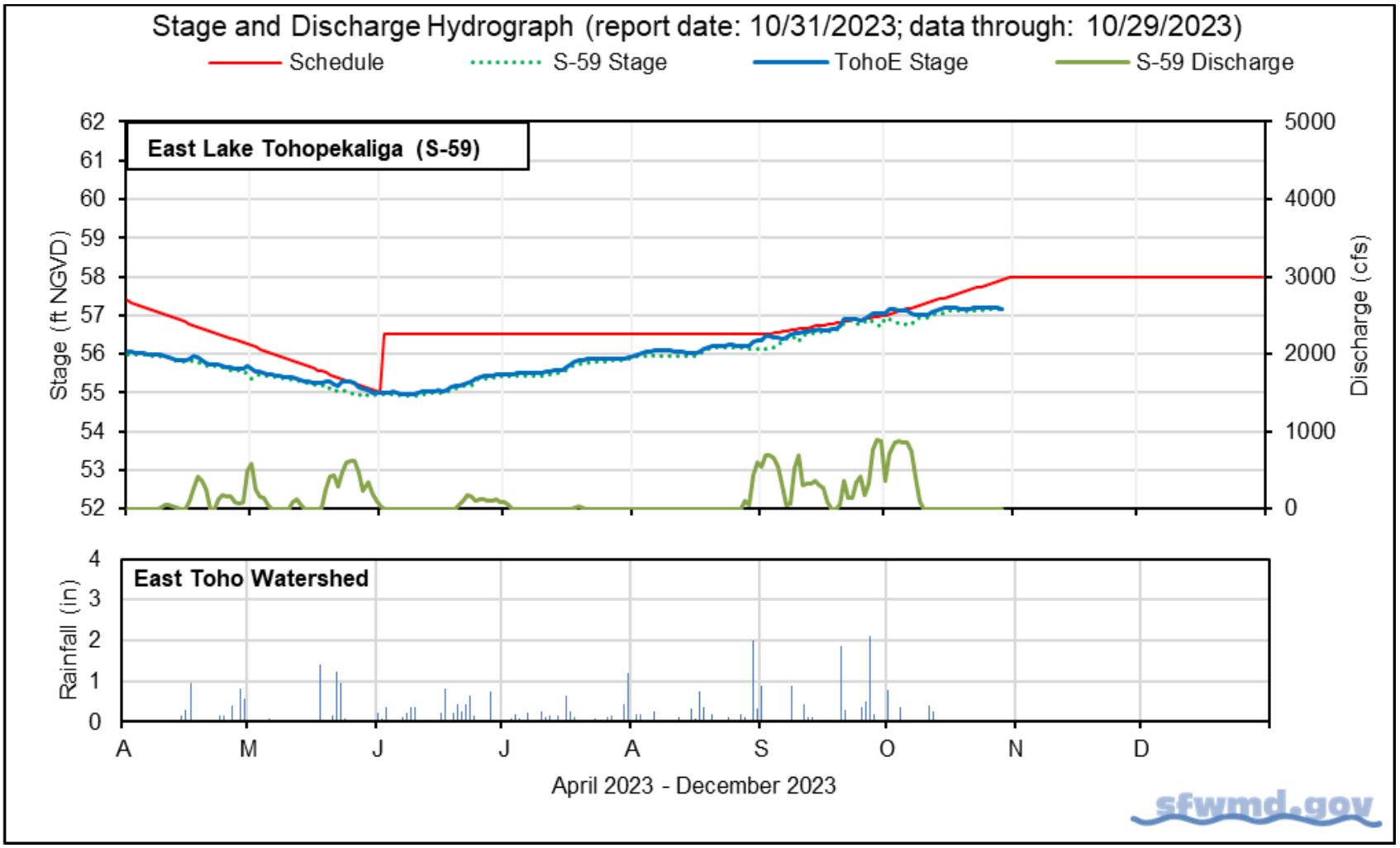


Figure KB-1. East Lake Toho regulation schedule, stage, discharge and rainfall.

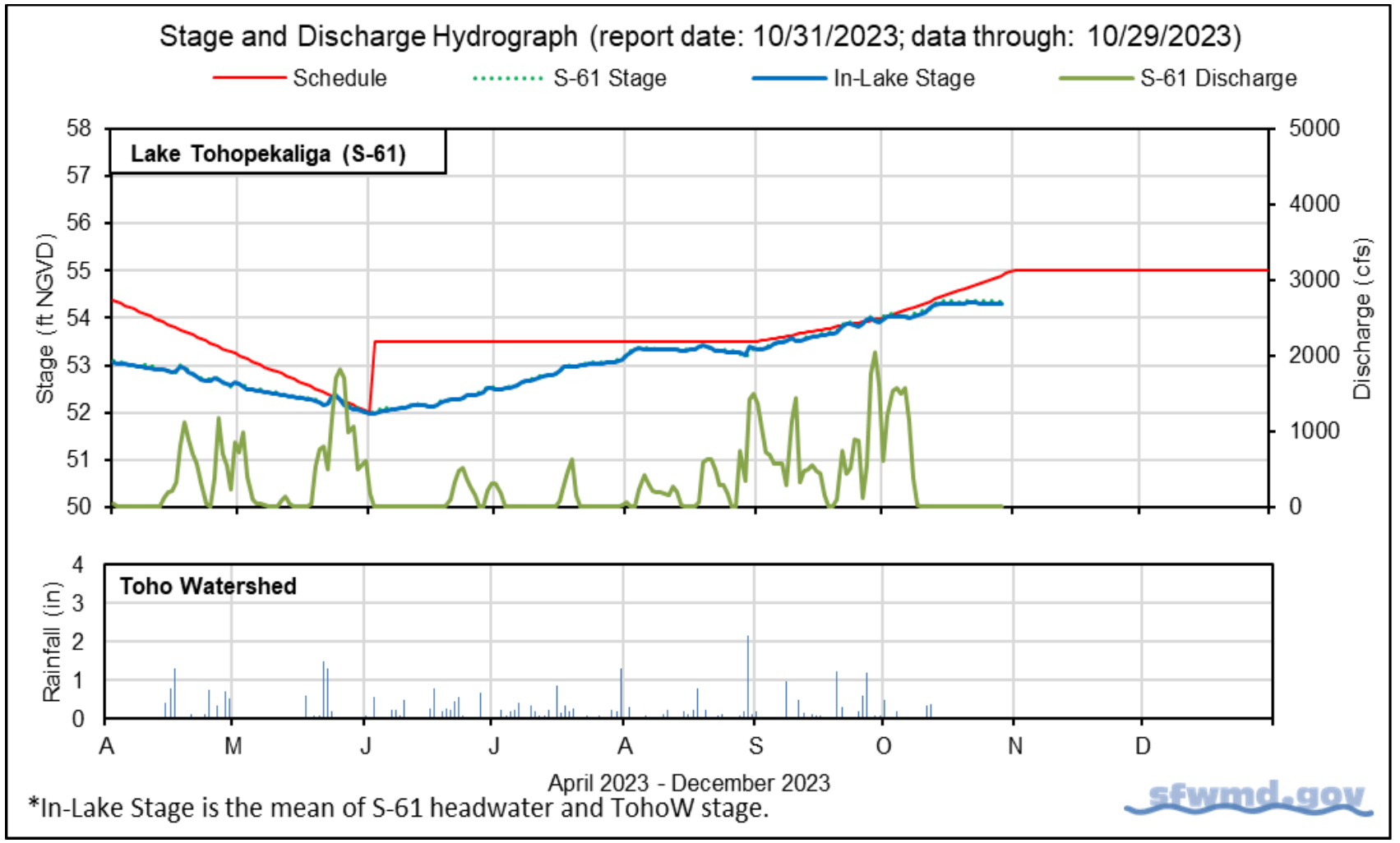


Figure KB-2. Lake Toho regulation schedule, stage, discharge and rainfall.

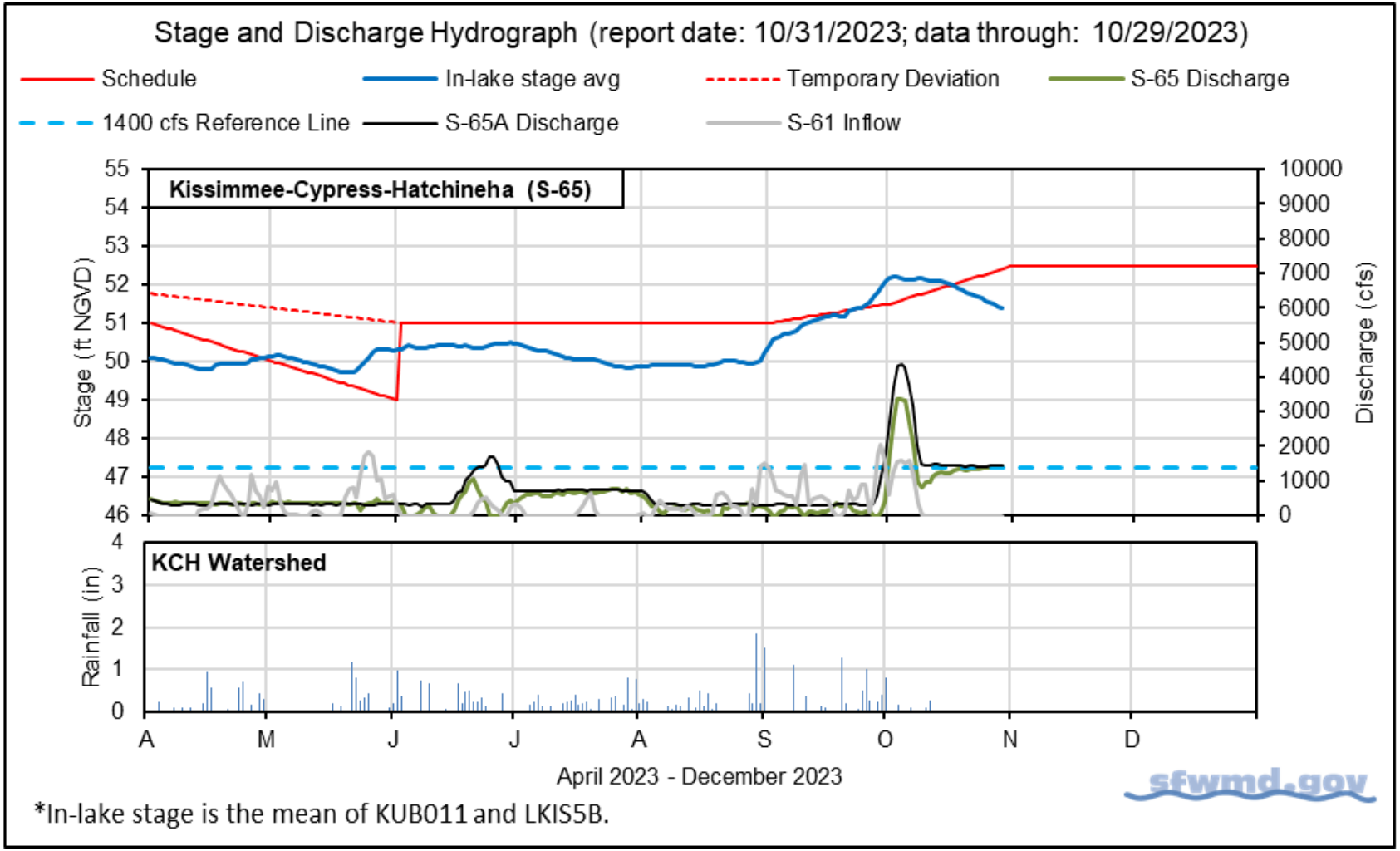


Figure KB-3. Lakes Kissimmee, Cypress and Hatchineha regulation schedule, stage, discharge and rainfall.

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			
		10/29/23	10/29/23	10/22/23	10/15/23	10/8/23
Discharge	S-65	1,400	1,400	1,300	1,100	2,600
Discharge	S-65A[a]	1,400	1,400	1,400	1,400	3,700
Headwater Stage (feet NGVD)	S-65A	46.3	46.3	46.3	46.1	47.7
Discharge	S-65D[b]	1,700	1,900	3,000	4,500	3,300
Headwater Stage (feet NGVD)	S-65D[c]	27.7	27.9	27.9	28.0	28.0
Discharge (cfs)	S-65E[d]	1,800	2,000	3,100	4,600	3,400
Discharge (cfs)	S-67	0	0	0	0	0
Dissolved Oxygen (mg/L) [e]	Phase I, II/III river channel	5.1	4.9	3.0	0.3	0.9
River channel mean stage[f]	Phase I river channel	37.6	37.7	38.2	39.3	39.6
Mean depth (feet) [g]	Phase I floodplain	0.40	0.43	0.59	1.23	1.80

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).

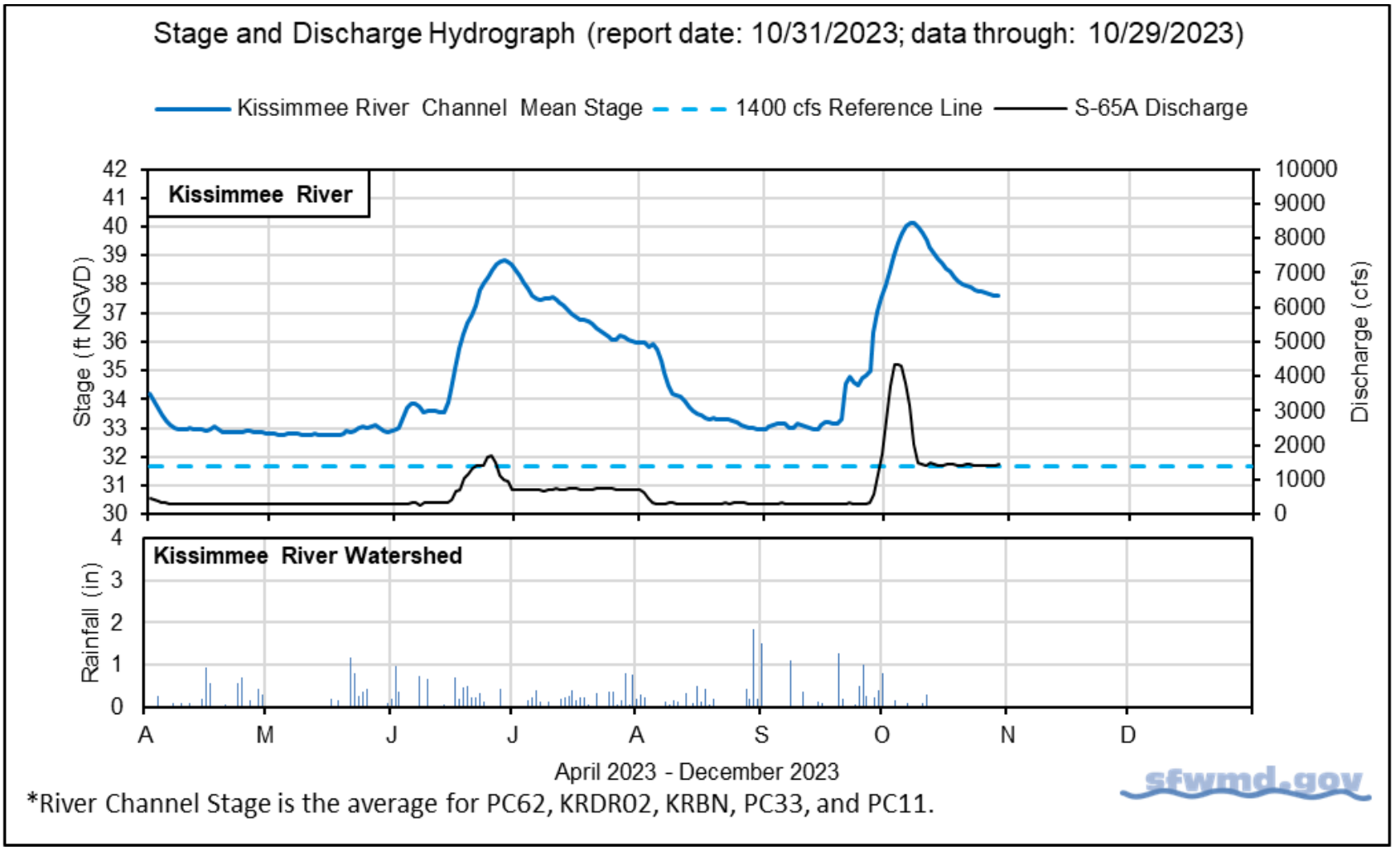


Figure KB-4. Kissimmee River stage, discharge and rainfall.

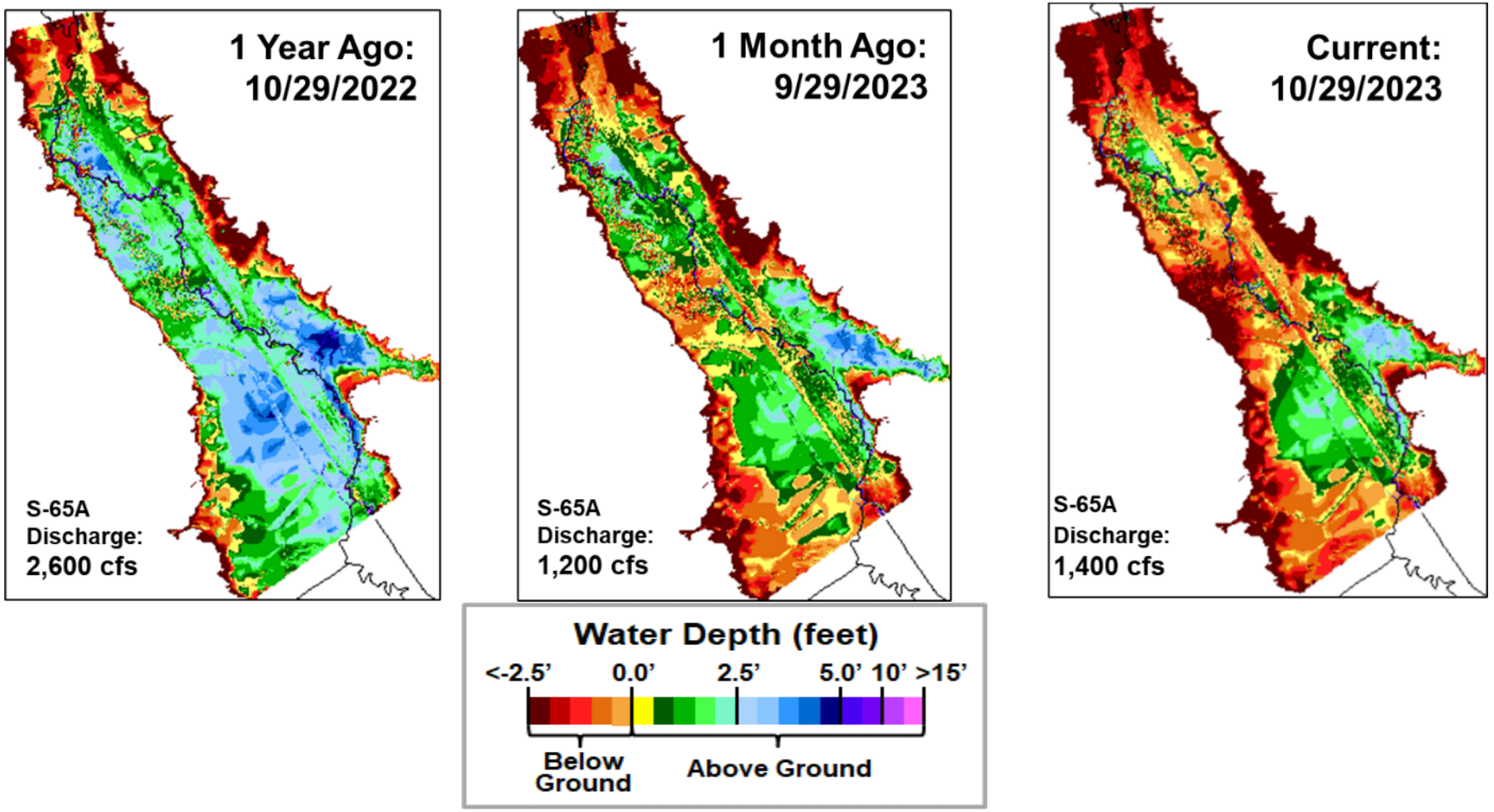


Figure KB-5. Phase I area Kissimmee River floodplain water depths (from left to right) one year ago, one month ago and current.

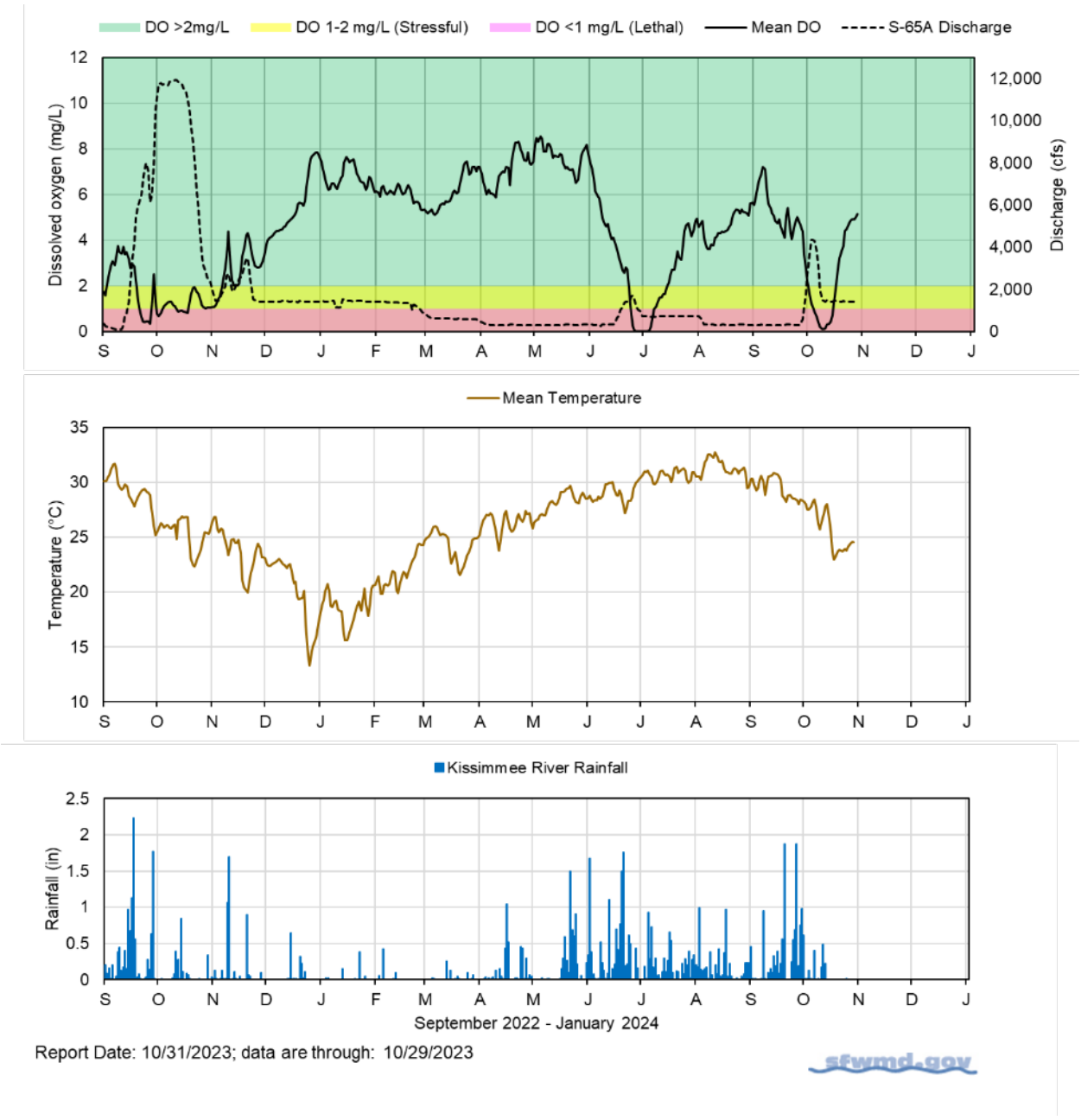


Figure KB-6. Restored Kissimmee River channel mean daily dissolved oxygen concentration (mg/L), S-65A discharge (cfs), temperature (°C) and rainfall (inches). Dissolved oxygen (DO) and temperature are mean daily values averaged for PC62, KRDR02, KRBN, PC33, PC11, PD62R, and PD42R with an average of six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

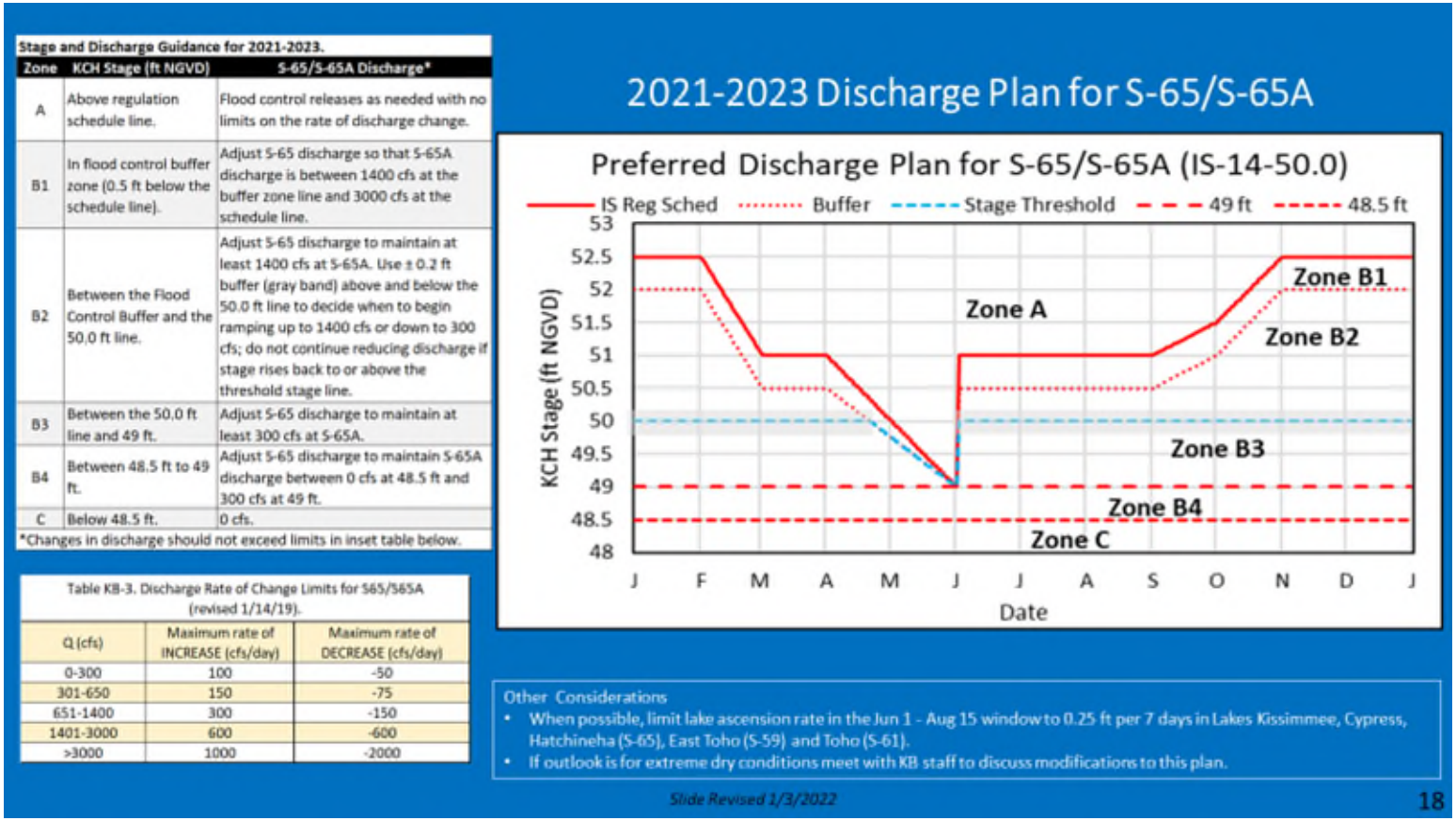


Figure KB-7. IS-14-50 Discharge Plan for S65/S65A with discharge rate of change limits (revised 1/14/19).

Lake Okeechobee

Lake Okeechobee stage was 16.21 feet NGVD on October 29, 2023, which was 0.08 feet lower than the previous week and 0.53 feet higher than a month ago (**Figure LO-1**). Lake stage was in the low sub-band on October 29th (**Figure LO-2**) and was 0.71 feet above the upper limit of the ecological envelope (**Figure LO-3**). According to NEXRAD, no rainfall was recorded over the Lake last week.

Average daily inflows (excluding rainfall) decreased from the previous week, going from 4,740 cfs to 3,020 cfs. The highest structure inflow came from the C-38 Canal via the S-65E/65EX1 structure (1,960 cfs). Average daily outflows (excluding evapotranspiration) increased from the previous week, going from 910 cfs to 2,150 cfs. The highest average single structure outflow was recorded at the S-77 structure into the C-43 Canal (1,410 cfs). **Figures LO-4 and LO-5** show the combined average daily inflows and outflows for the Lake over the past eight weeks, and average inflows and outflows last week, respectively. These data are provisional and are subject to change.

The cyanobacteria index level was low to high in the southwestern and western regions of the Lake according to the October 28, 2023 satellite image from NOAA's Harmful Algal Bloom Monitoring System (**Figure LO-6**). Routine phytoplankton monitoring on October 16 - 17 did not detect microcystins toxins at any of the sampled stations. Bloom conditions (>40 µg/L chlorophyll *a*) were recorded at the L005 and KBARSE stations in the western and northwestern regions of the lake (**Figure LO-7**). Phytoplankton communities were mixed at 14 stations while *Cylindrospermopsis raciborskii* was the most abundant at 3 stations. Sampling was not conducted in the southern region of the lake due to mechanical issues. All data presented in this report are provisional and are subject to change.

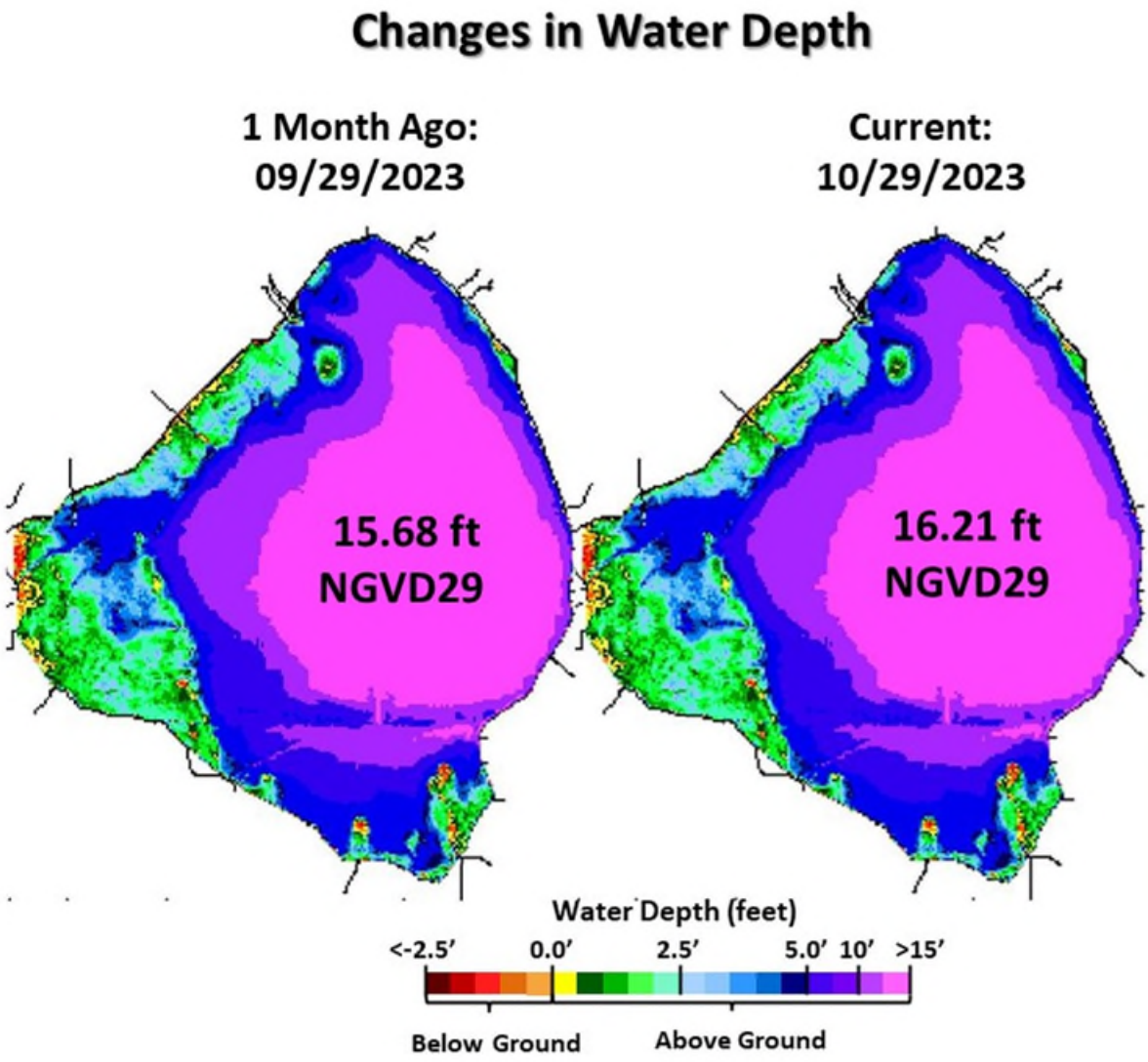


Figure LO-1. Lake Okeechobee water depth estimates based on South Florida Water Depth Assessment Tool (SFWDAT).

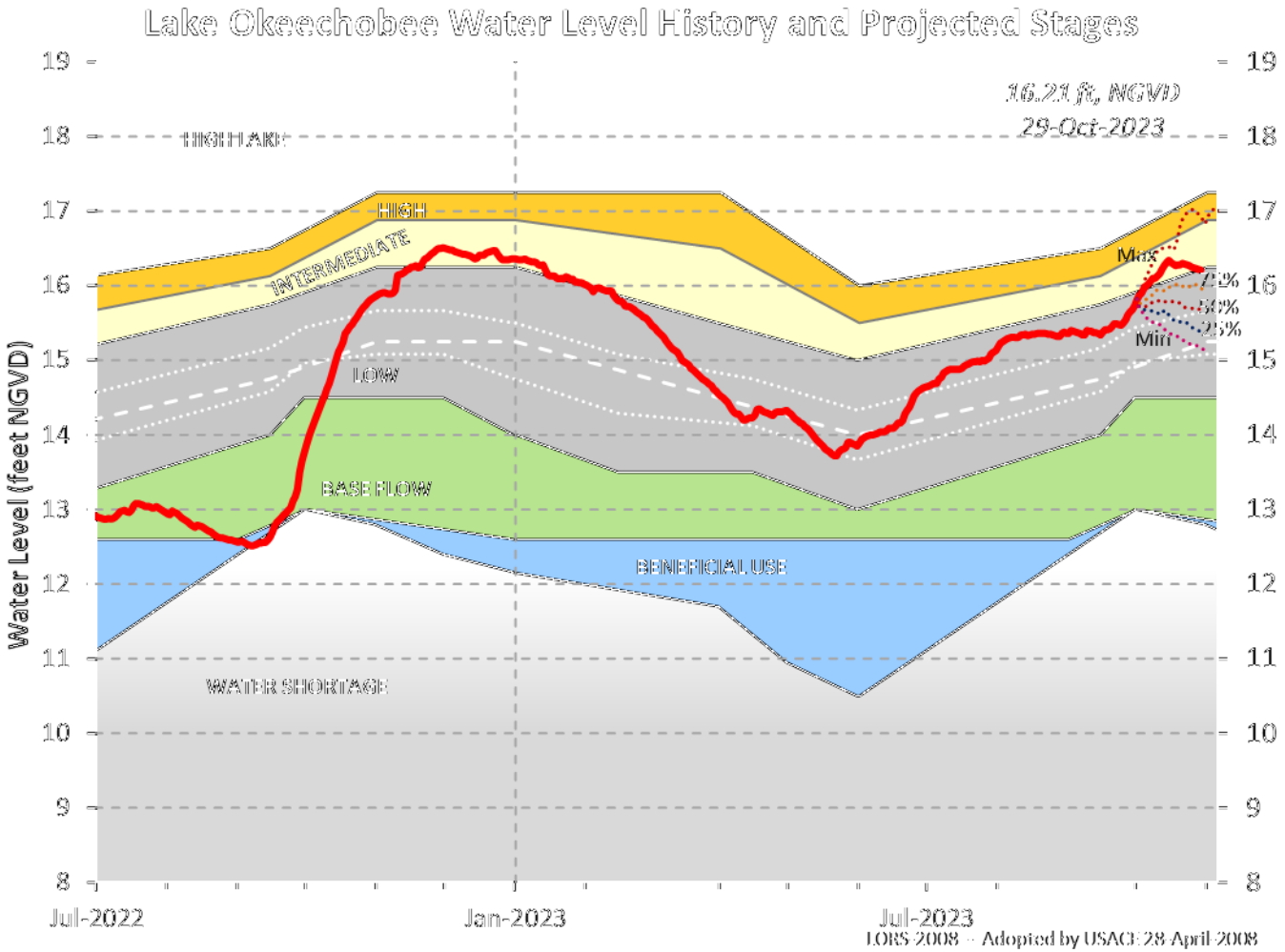


Figure LO-2. Recent Lake Okeechobee stages with projected stages based on a dynamic position analysis.

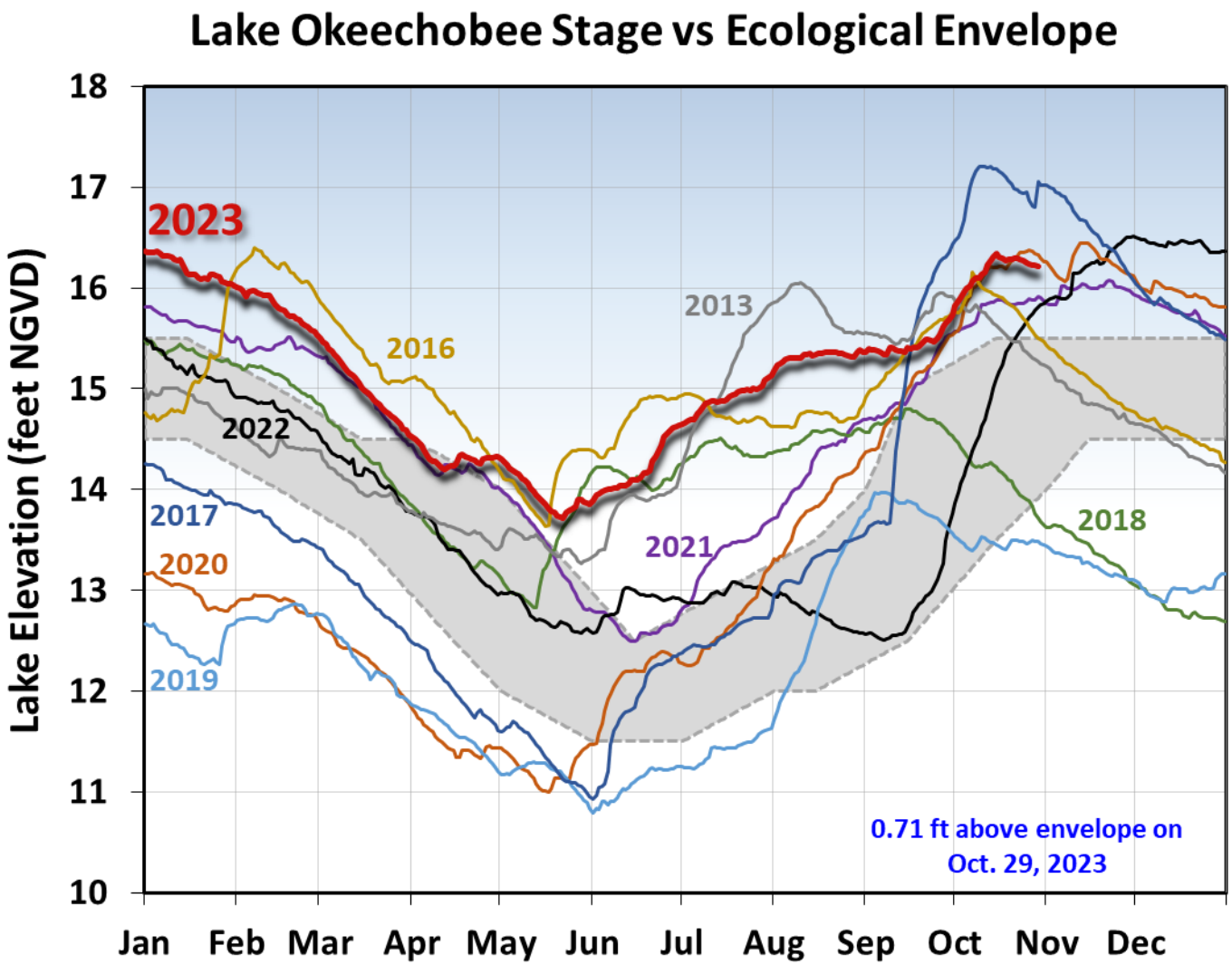


Figure LO-3. The selected prior years within the ten-year period of annual stage hydrographs for Lake Okeechobee in comparison to the ecological envelope.

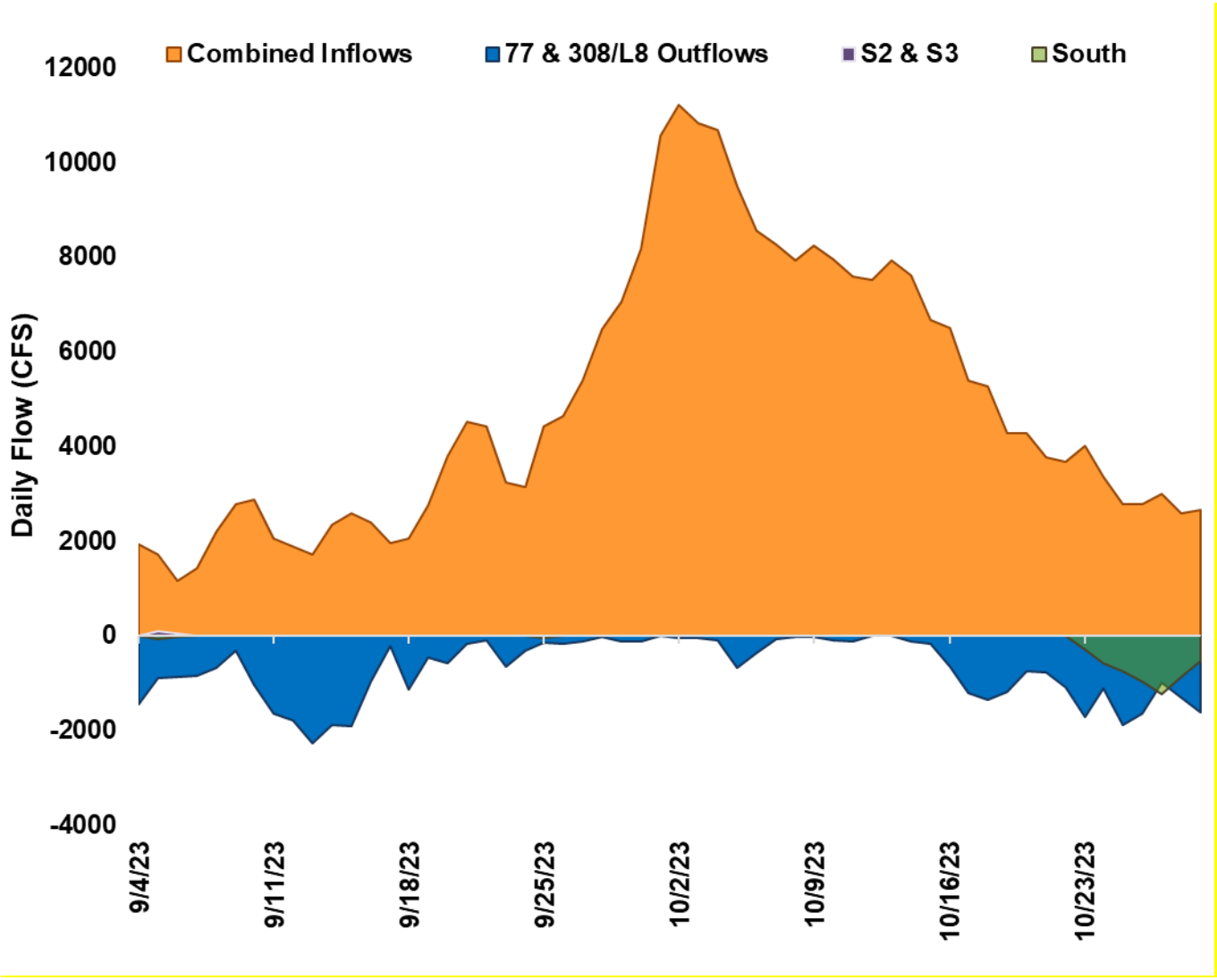


Figure LO-4. Major inflows (orange) to and outflows east and west (blue) from Lake Okeechobee. Outflows south are shown in green. Flows into Lake Okeechobee from the L-8 canal through S-271 (formerly Culvert 10A) or from the C-44 canal through the S-308 are included as inflows. Conversely, flows from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

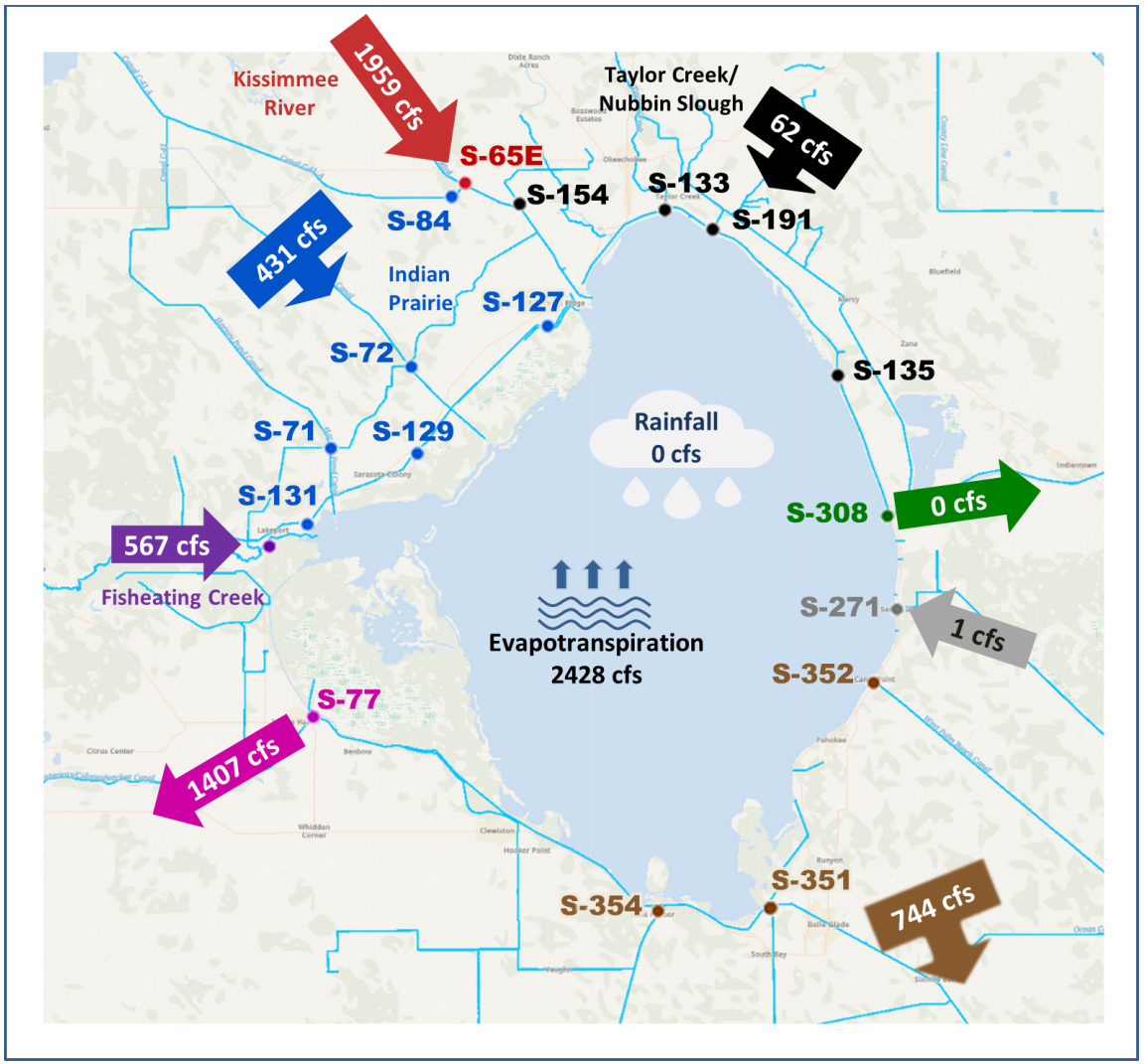


Figure LO-5. Inflows into Lake Okeechobee from Indian Prairie basins, Taylor Creek/Nubbin Slough, Kissimmee River and Fisheating Creek, and outflows to the west via S-77, to the east via S-308, to the south via S-351, S-352, S-354, and to southeast via S-271 (formerly Culvert 10A) for the week of October 23 - 29, 2023.

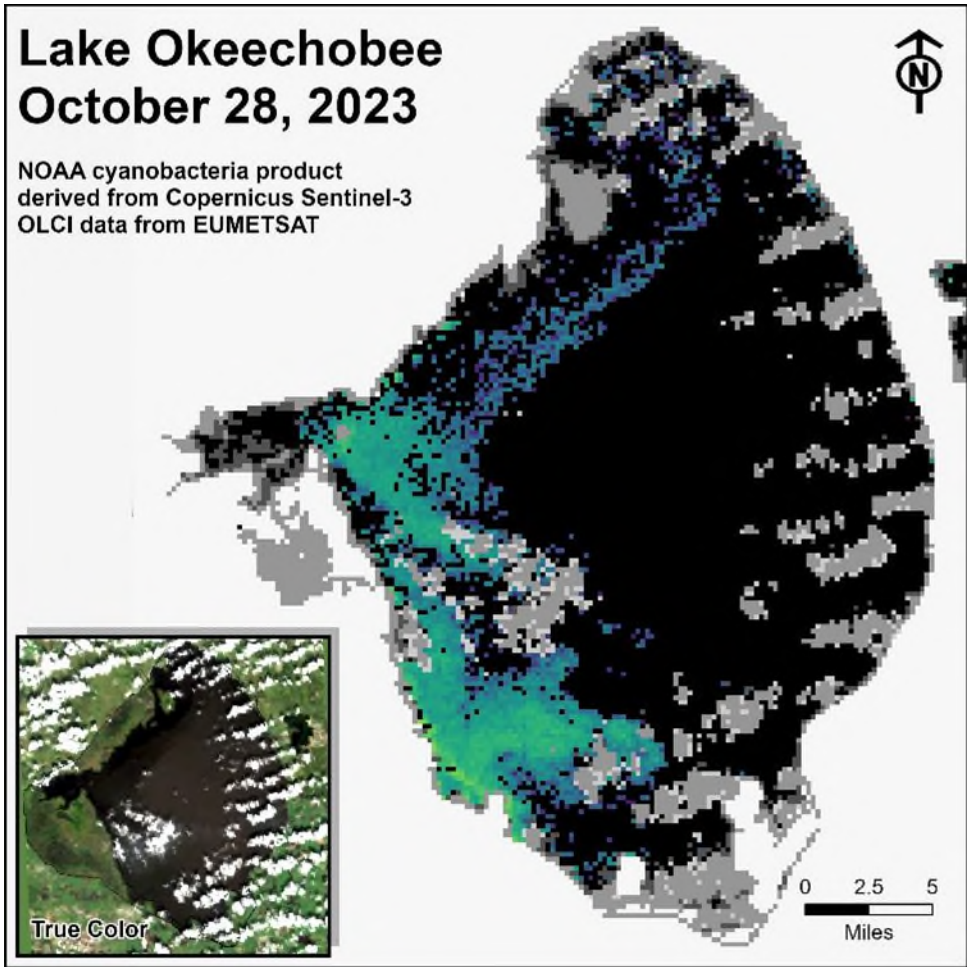


Figure LO-6. Cyanobacteria bloom index level on October 28, 2023, based on NOAA's harmful algal bloom monitoring system. Gray color indicates cloud cover.

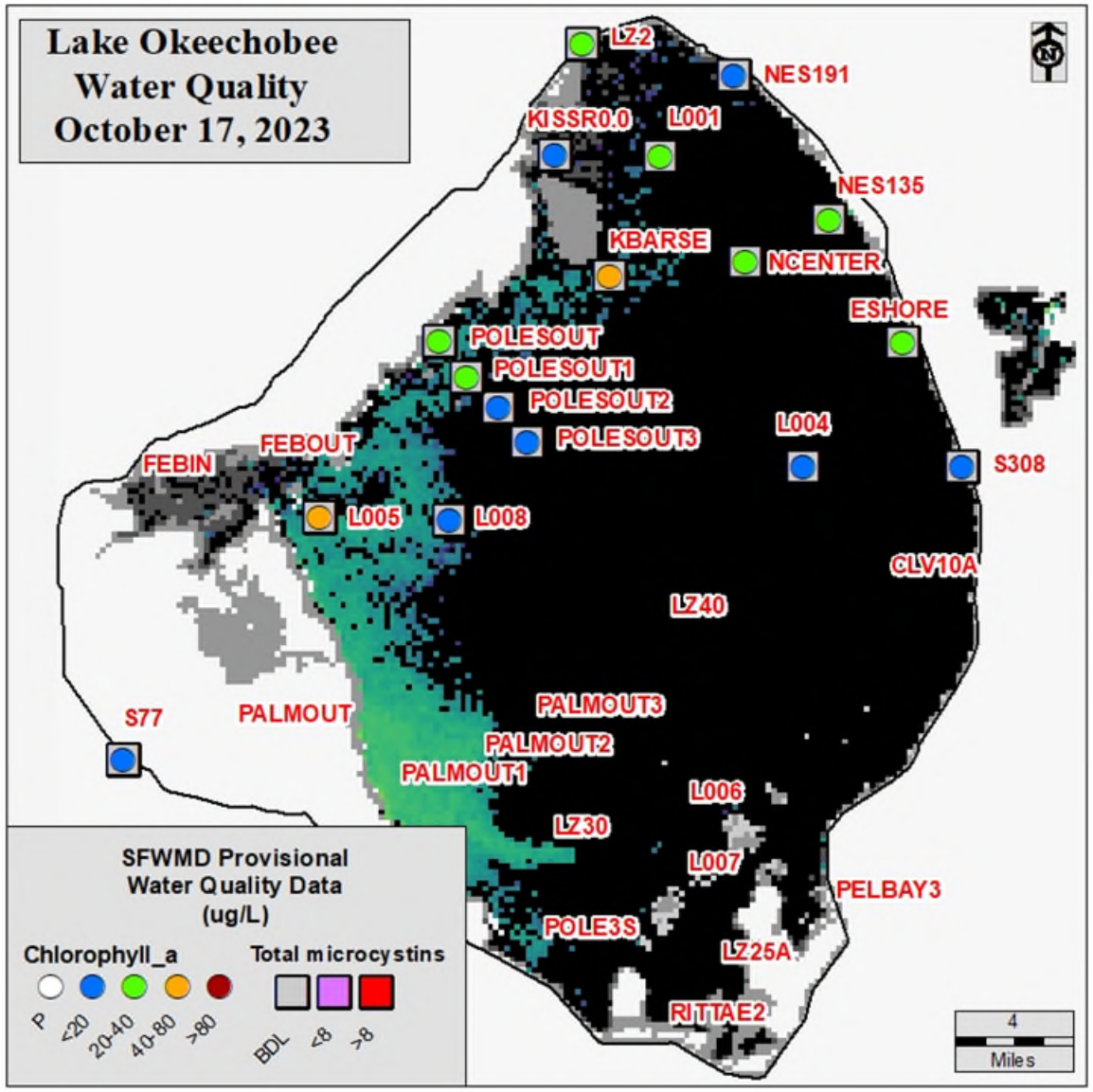


Figure LO-7. Total microcystins (µg/L) and chlorophyll *a* (µg/L) data from October 16 - 17, 2023 survey. Sampling locations are overlaid on the October 17, 2023 image from NOAA's harmful algal bloom monitoring system. Gray color indicates cloud cover.

Estuaries

St. Lucie Estuary

Over the past week, mean total inflow to the St. Lucie Estuary was 270 cfs (**Figures ES-1** and **ES-2**), and the previous 30-day mean inflow was 1,700 cfs. For comparison, the historical provisional mean inflows from the contributing areas are shown in **Figure ES-2**.

Over the past week, salinities increased at all sites within the estuary (**Table ES-1** and **Figure ES-3**). The seven-day moving average of the surface and bottom salinities at the US1 Bridge was 16.1. 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 1.1 spat/shell for September, which was a decrease from the settlement rate reported in August (**Figure ES-5**).

Caloosahatchee River Estuary

Over the past week, mean total inflow to the Caloosahatchee River Estuary was 2,425 cfs (**Figures ES-6** and **ES-7**), and the previous 30-day mean inflow was 4,150 cfs. For comparison, the historical provisional mean inflows from the contributing areas are shown in **Figure ES-7**.

Over the past week, salinities increased at all sites within the estuary (**Table ES-2** and **Figures ES-8** and **ES-9**). The seven-day mean salinities (**Table ES-2**) were in the optimal range (0-10) for tape grass in the upper estuary. The seven-day mean salinity values were within the optimal range for adult eastern oysters at Shell Point, in the lower stressed range at Cape Coral, and in the upper stressed range at Sanibel (**Figure ES-10**). The mean larval oyster recruitment rate reported by the Fish and Wildlife Research Institute was 4.7 spat/shell at Iona Cove in September, which was similar to the settlement rate reported the previous month. At Bird Island, the reported rate was 12.7 spat/shell for September, which was a decrease from the settlement rate reported in August (**Figures ES-11 and ES-12**).

Surface salinity at Val I-75 was forecast for the next two weeks using an autoregression model (Qiu and Wan, 2013[1]) coupled with a linear reservoir model for the tidal basin. Model scenarios included pulse releases at S-79 ranging from 0 to 1,500 cfs, and a steady release at 2,000 cfs with estimated tidal basin inflows of 222 cfs. Model results from all scenarios predict daily salinity to be 1.5 or lower and the 30-day moving average surface salinity to be 0.4 or lower at Val I-75 at the end of the two-week period (**Table ES-3** and **Figure ES-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 October 27, 2023, that *Karenia brevis*, the Florida red tide dinoflagellate, was not observed at bloom concentrations in any samples collected within the District region. On the east coast, red tide was not observed in samples from St. Lucie, Martin, Palm Beach or Broward counties.

Water Management Recommendations

Lake stage is in the Low Sub-Band. Tributary conditions are dry. The LORS2008 release guidance suggests up to 450 cfs release at S-77 to the Caloosahatchee River Estuary and up to 200 cfs release at S-80 to the St. Lucie Estuary.

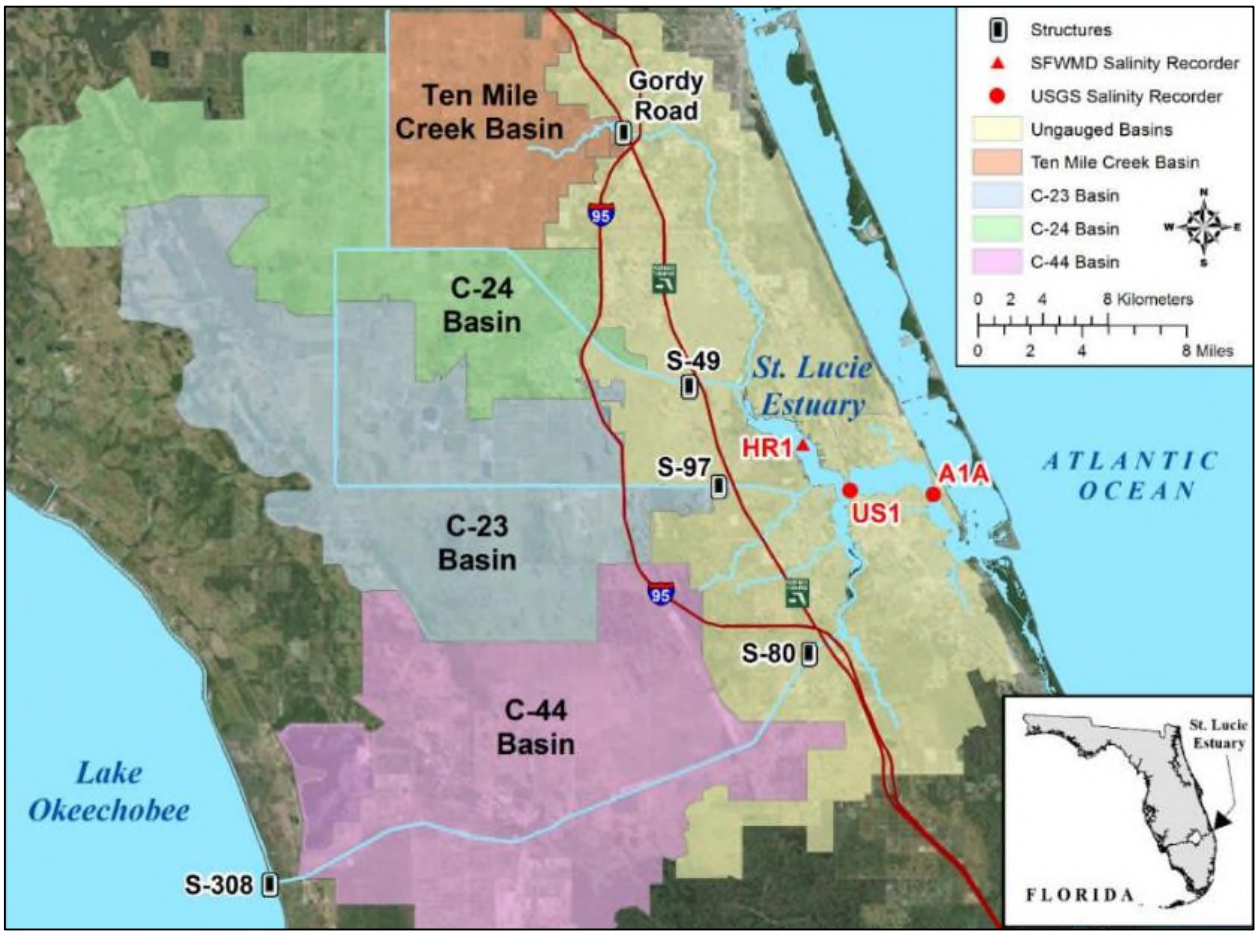


Figure ES-1. Basins, water control structures and salinity monitoring sites in the St. Lucie Estuary.

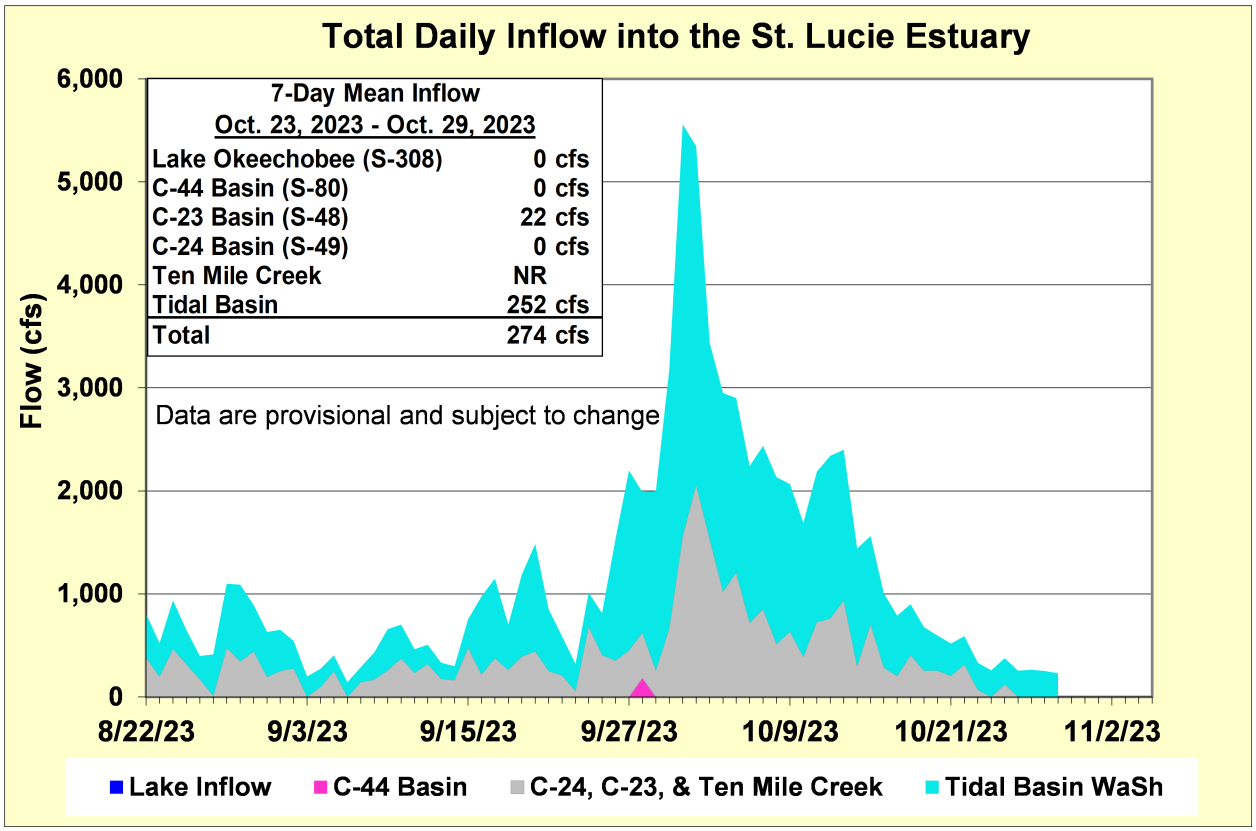


Figure ES-2. Total daily inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and Tidal Basins into the St. Lucie Estuary.

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

Sampling Site	Surface	Bottom	Optimum Envelope
HR1 (North Fork)	**11.6** (8.4)	**13.7** (13.0)	10.0 – 25.0
US1 Bridge	**15.6** (12.6)	**16.6** (16.3)	10.0 – 25.0
A1A Bridge	**26.3** (19.7)	**29.0** (25.0)	10.0 – 25.0

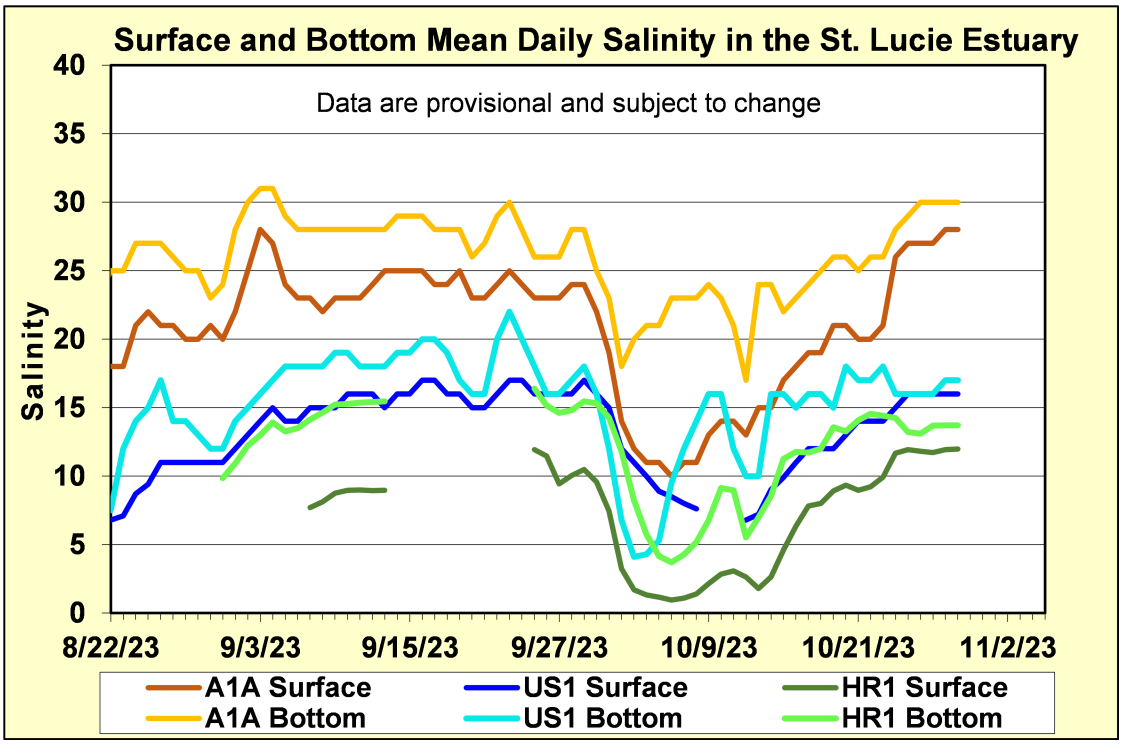


Figure ES-3. Mean daily salinity at the A1A, US1 and HR1 sites in the St. Lucie Estuary.

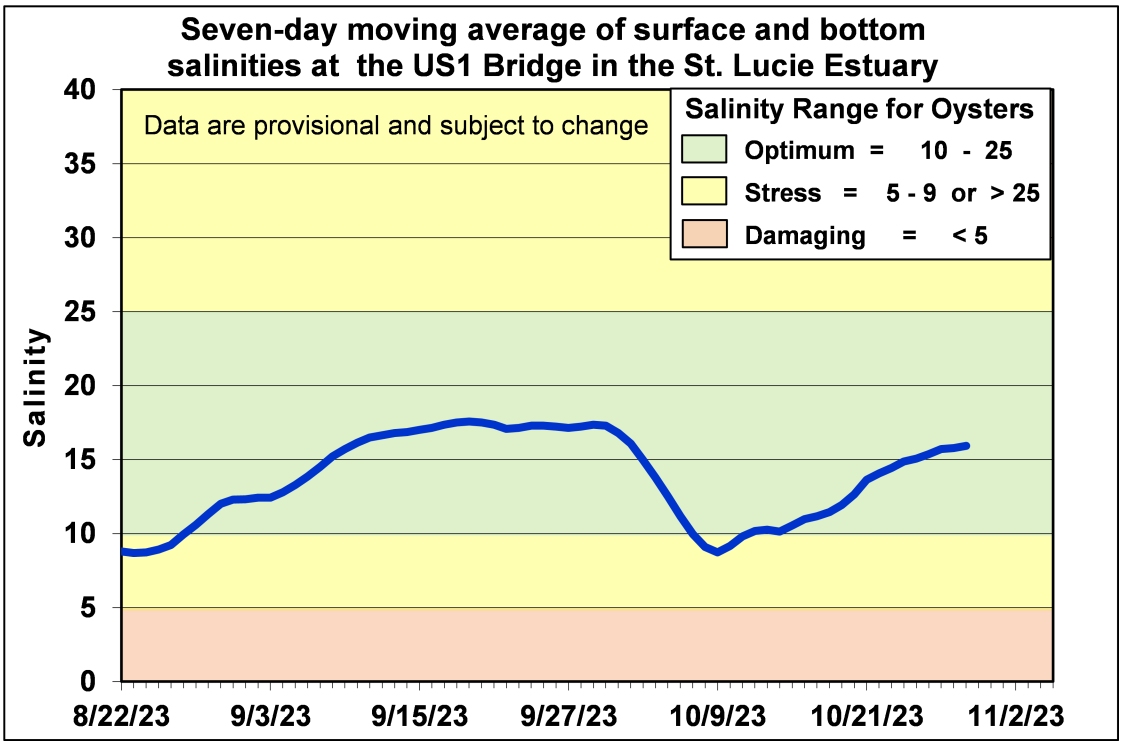


Figure ES-4. Seven-day moving average of the surface and bottom salinities at the US1 Bridge in the St. Lucie Estuary.

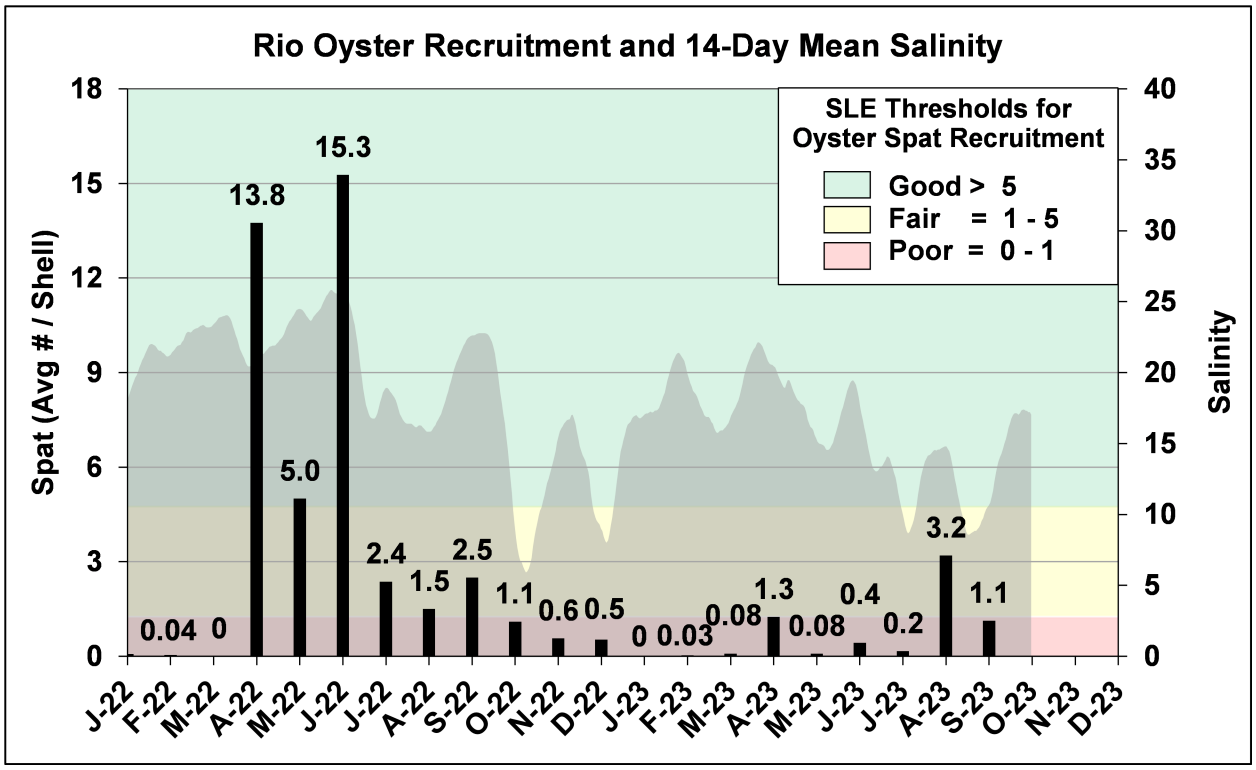


Figure ES-5. Mean oyster recruitment at the Rio oyster monitoring station and 14-day mean salinity at US1 Bridge.

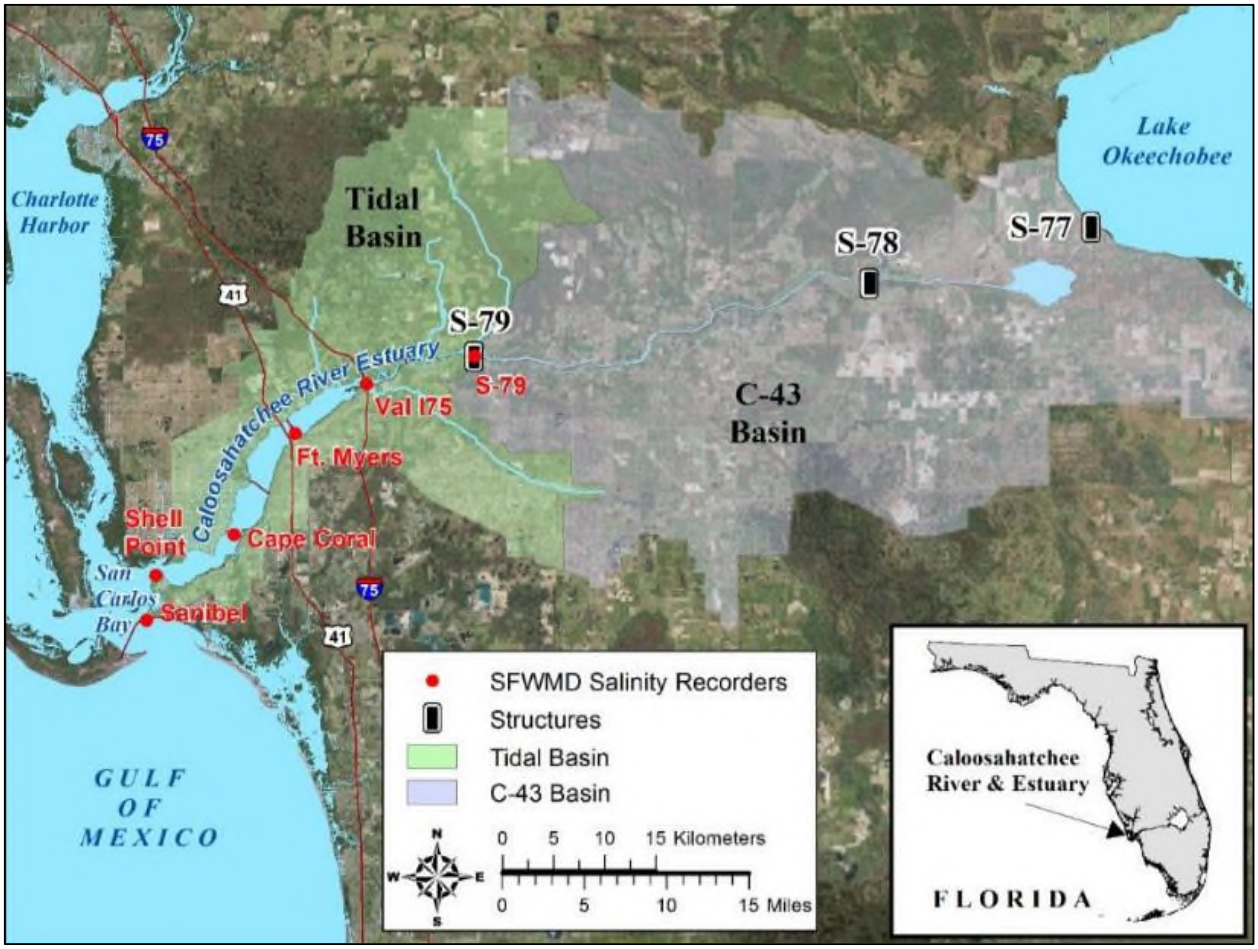


Figure ES-6. Basins, water control structures and salinity monitoring sites in the Caloosahatchee River Estuary.

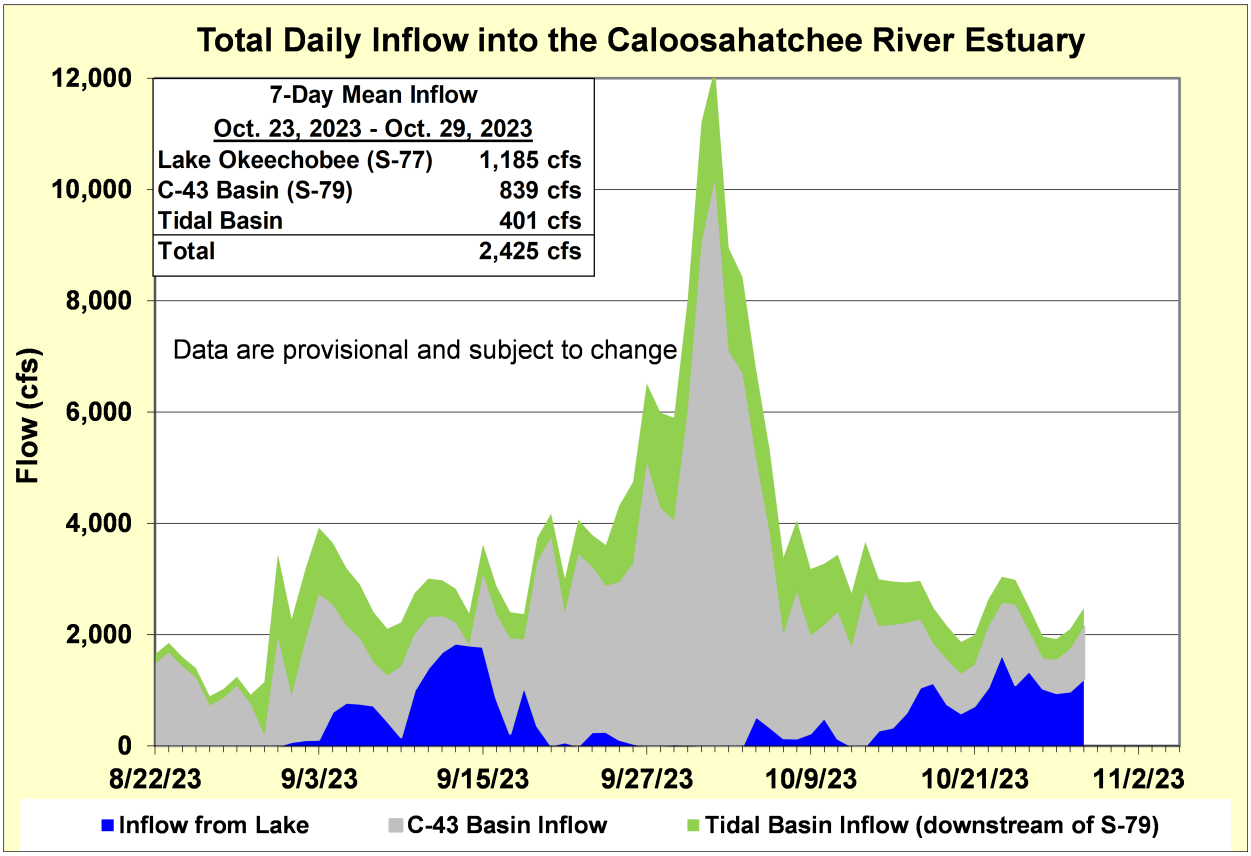


Figure ES-7. Total daily inflows from Lake Okeechobee, and runoff from the C-43 and Tidal basins into the Caloosahatchee River Estuary.

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)	**0.3** (0.2)	**0.3** (0.2)	0.0 – 10.0
Val I-75	**2.0** (1.8)	**2.2** (1.8)	0.0 – 10.0
Fort Myers Yacht Basin	**4.7** (1.6)	**5.8** (3.2)	0.0 – 10.0
Cape Coral	**8.9** (6.0)	**7.3** (5.6)	10.0 – 25.0
Shell Point	**23.7** (20.9)	**25.3** (22.8)	10.0 – 25.0
Sanibel	**29.3** (27.1)	**31.1** (29.7)	10.0 – 25.0

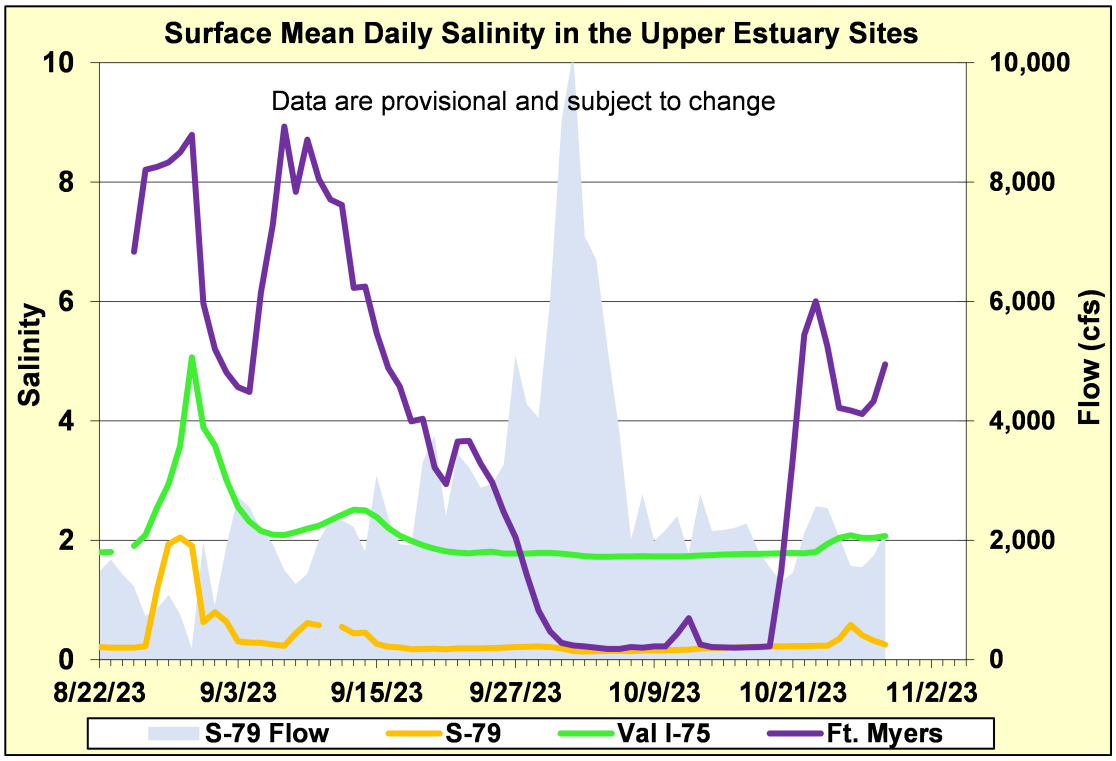


Figure ES-8. Mean daily salinity at upper Caloosahatchee River Estuary monitoring sites and mean daily flow at S-79.

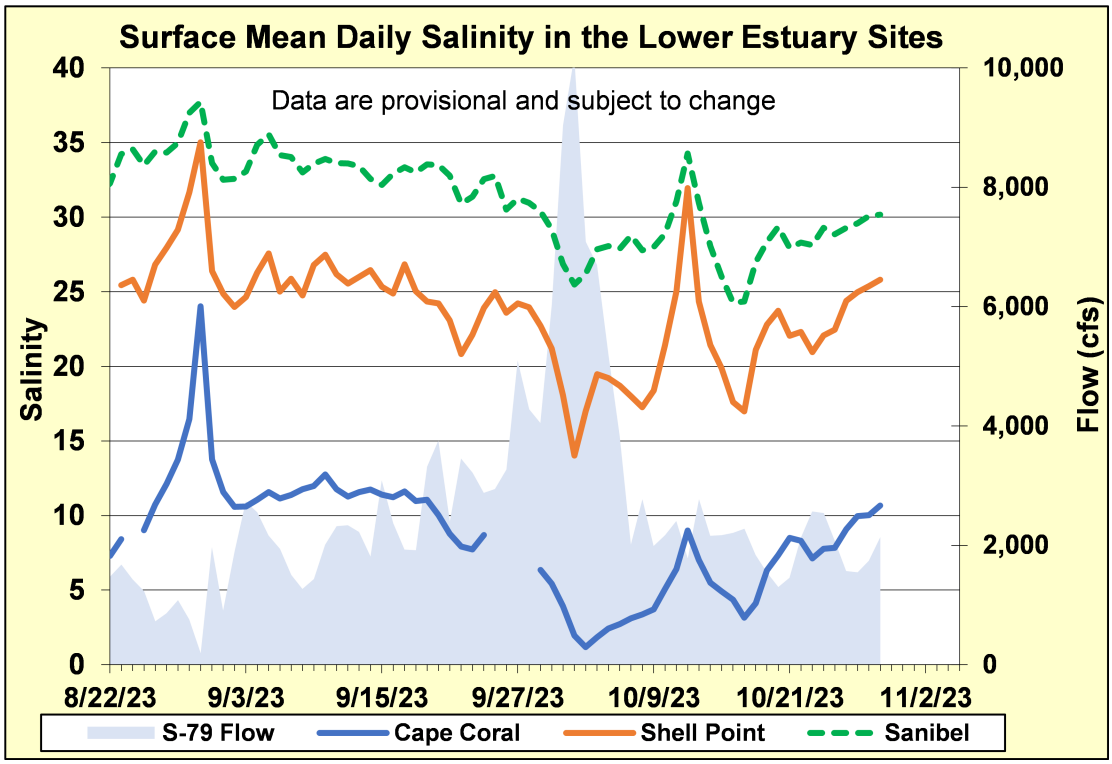


Figure ES-9. Mean daily surface salinity at lower Caloosahatchee River Estuary monitoring sites and mean daily flow at S-79.

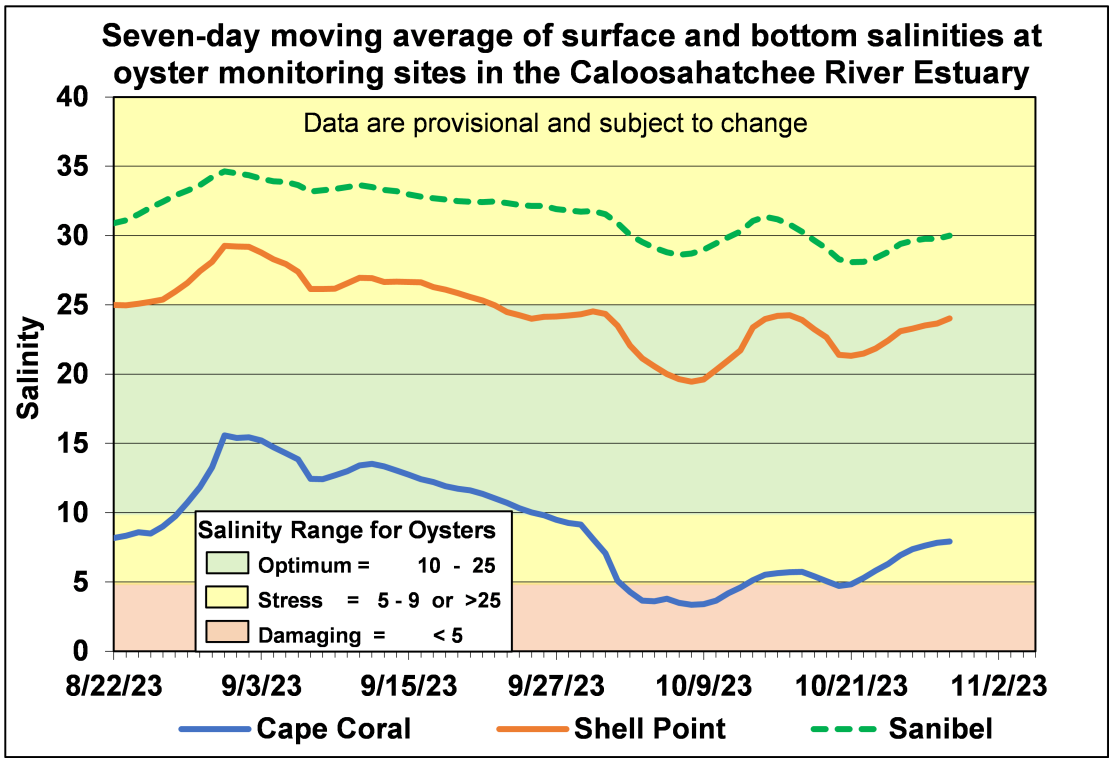


Figure ES-10. Seven-day moving average of surface and bottom salinities at Cape Coral, Shell Point and Sanibel monitoring sites in the Caloosahatchee River Estuary.

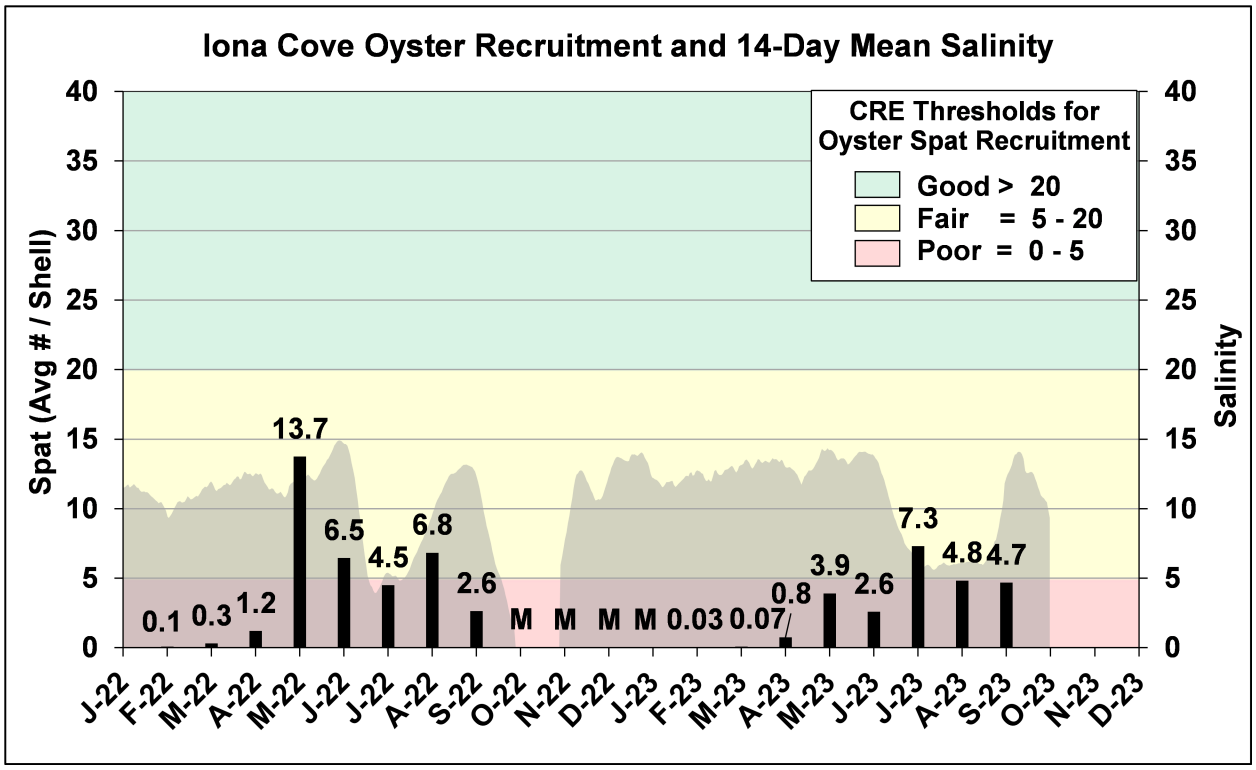


Figure ES-11. Mean oyster recruitment at the Iona Cove oyster monitoring station and 14-day mean salinity at Cape Coral.

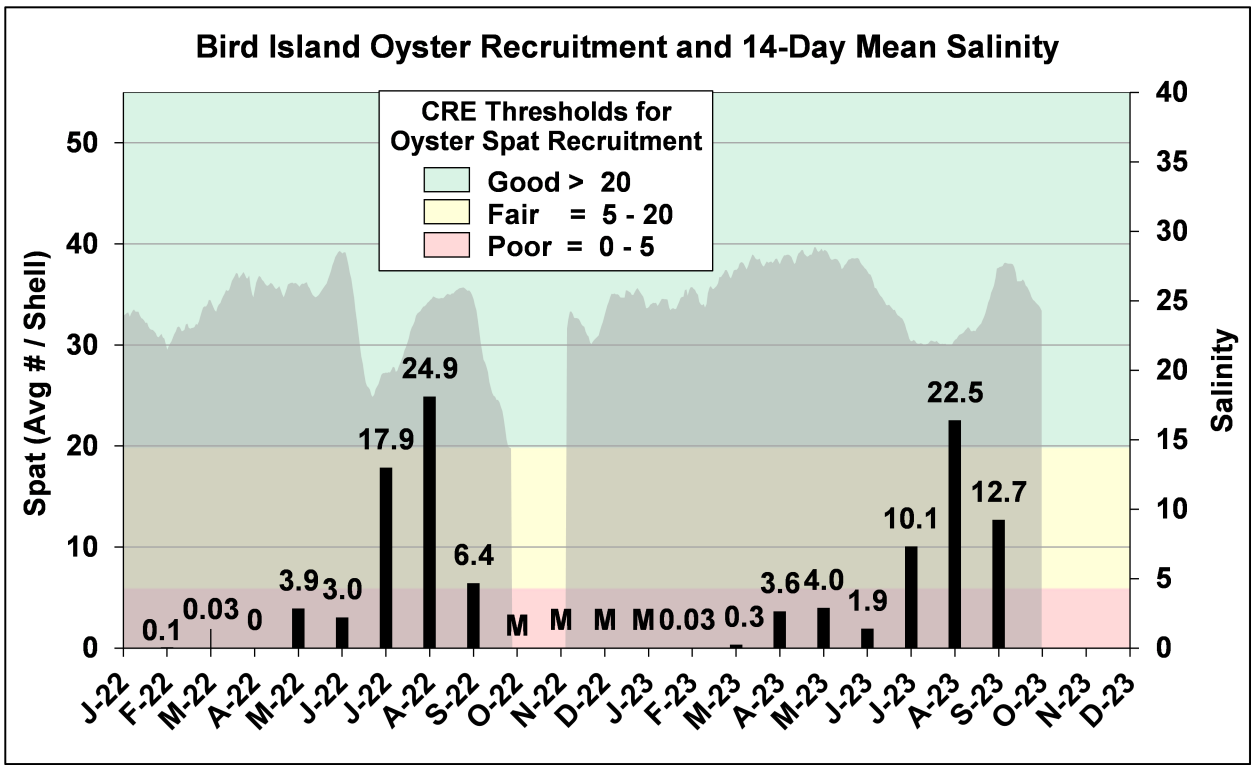


Figure ES-12. Mean oyster recruitment at the Bird Island oyster monitoring station and 14-day mean salinity at Shell Point.

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

Scenario	Simulated S-79 Flow (cfs)	Tidal Basin Runoff (cfs)	Daily Salinity	30-Day Mean Salinity
A	0	222	1.5	0.4
B	450	222	0.7	0.4
C	750	222	0.4	0.3
D	1,000	222	0.3	0.3
E	1,500	222	0.3	0.3
F	2,000	222	0.3	0.3

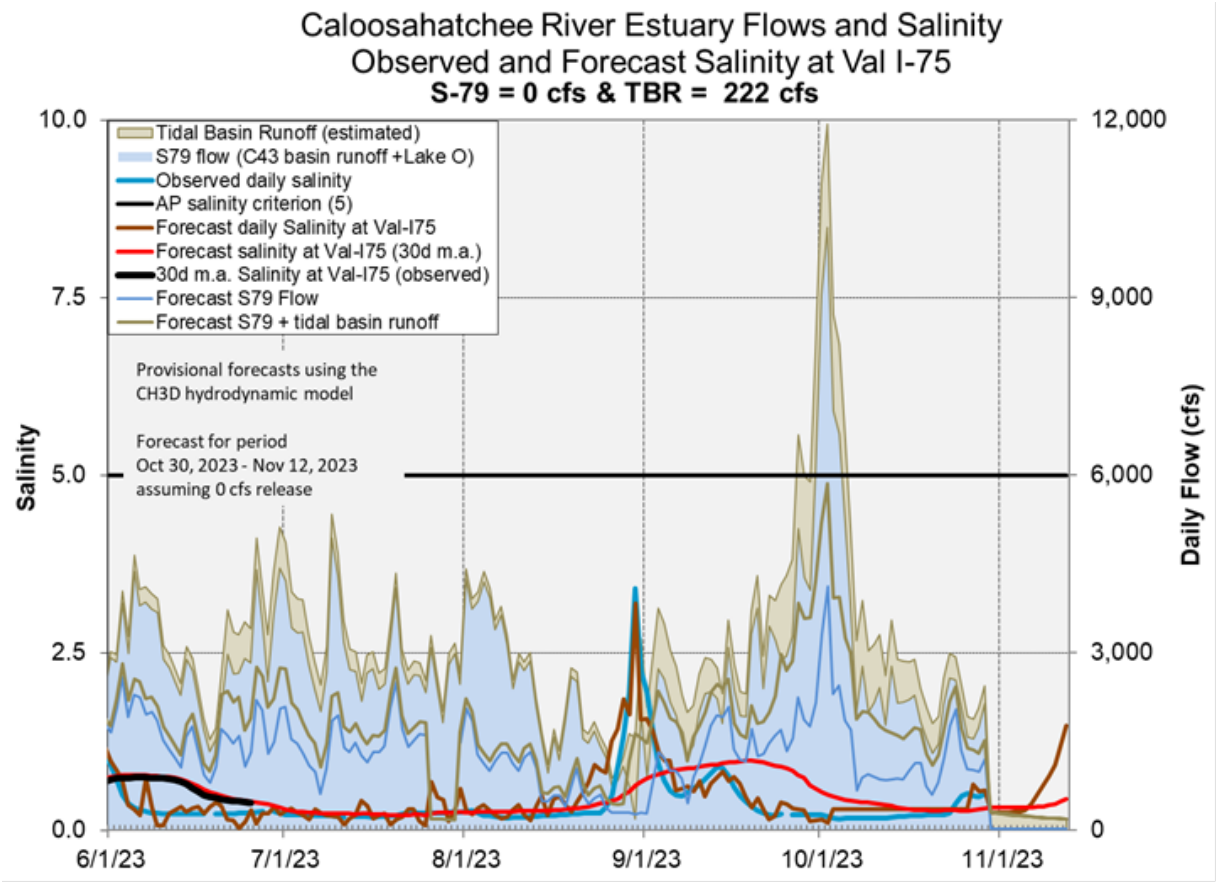


Figure ES-13. Forecasted Val I-75 site surface salinity assuming no pulse release at S-79.

Stormwater Treatment Areas

STA-1E: STA-1E Western Flow-way is offline for post-construction vegetation grow in. Online treatment cells are near target stage. Vegetation in the flow-ways is stressed and highly stressed. The 365-day phosphorus loading rate (PLR) for the Central Flow-way is high and the 365-day PLR for the Eastern Flow-way is below 1.0 g/m^2/year. (**Figure S- 1**).

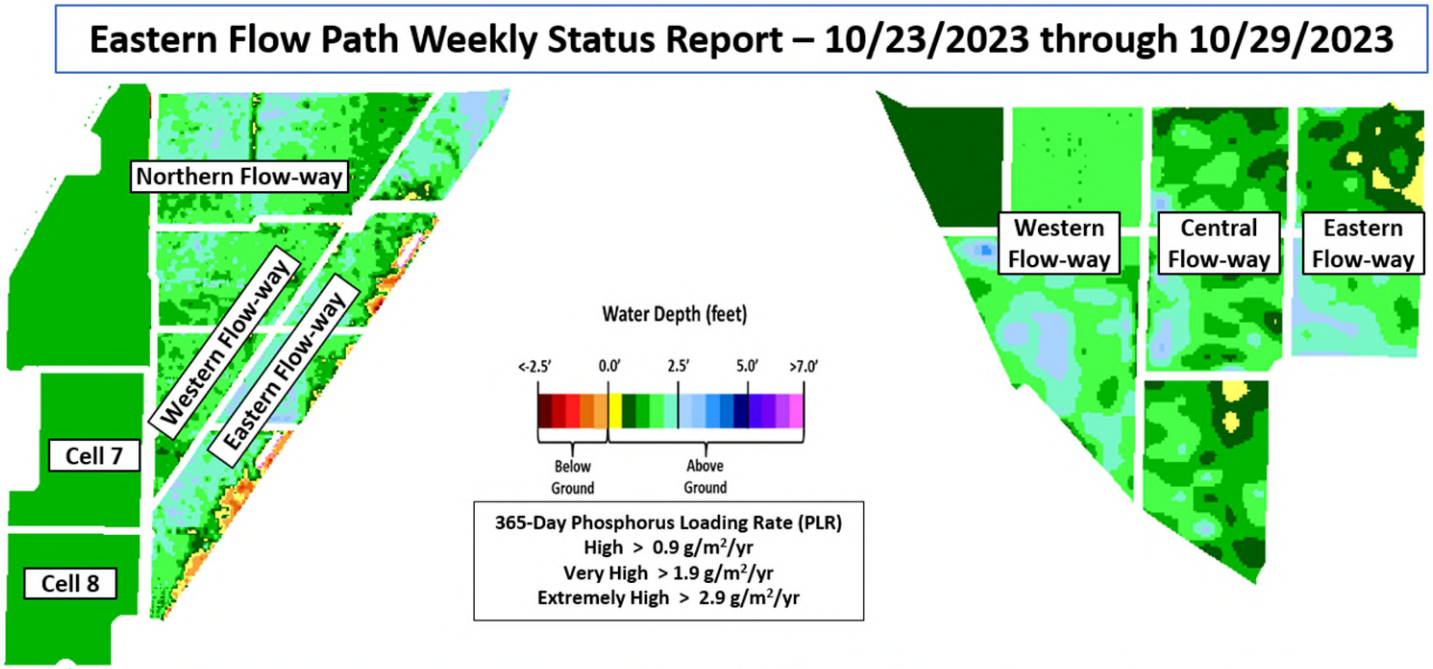
STA-1W: An operational restriction is in place in STA-1W Northern Flow-way for vegetation management activities. Treatment cells are near target stage. Vegetation in the flow-ways is stressed and highly stressed. The 365-day PLRs for the Eastern and Western Flow-ways are high, and the 365-day PLR for 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. Most online treatment cells are near target stage. Vegetation in Flow-ways 1 and 3 is stressed, and in Flow-ways 4 and 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 PLR for Flow-way 1 is high (**Figure S-2).**

STA-3/4: An operational restriction is in place in the Eastern Flow-way for post-drawdown vegetation grow-in. Online treatment cells are at or above target stage. Vegetation in the Central Flow-way is highly stressed and in the Western Flow-way is stressed. The 365-day PLRs for the Central and Western Flow-ways are below 1.0 g/m^2/year (**Figure S-2**).

STA-5/6: An operational restriction is in place in Flow-way 4 for vegetation management (prescribed burn). Most treatment cells are near target stage. All treatment cells have highly stressed or stressed vegetation conditions except Flow-ways 7 which is healthy. 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**).

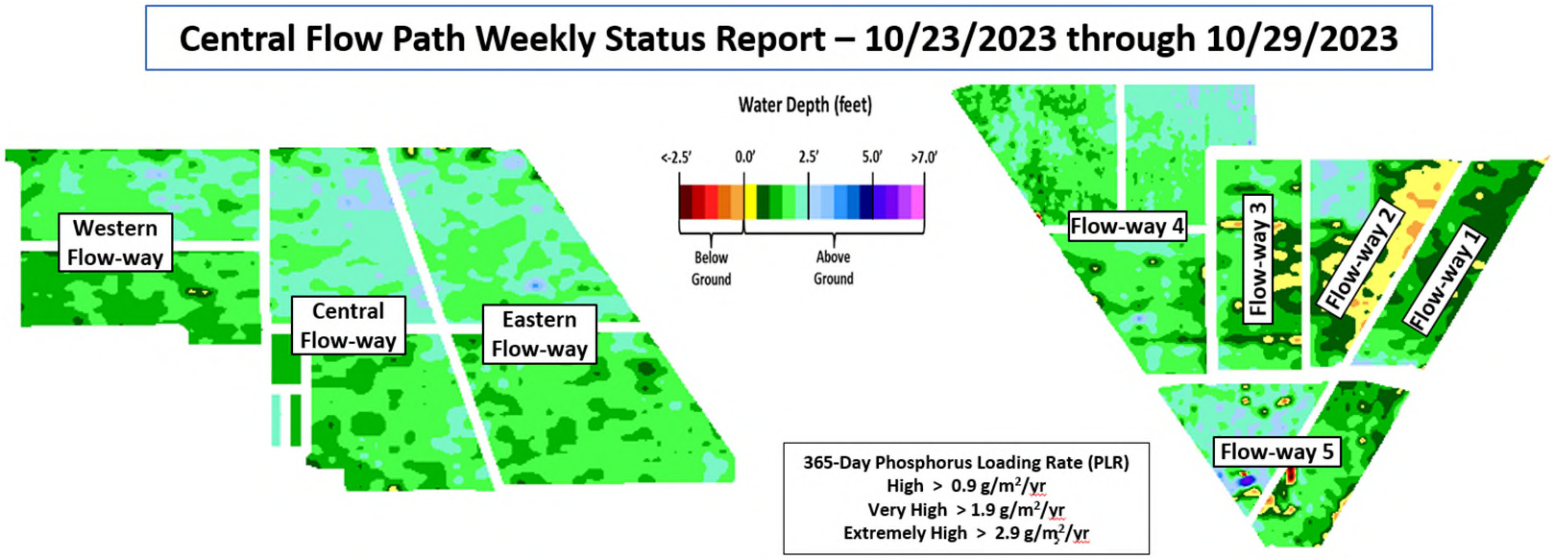
For definitions on STA operational language see glossary following figures.



STA-1W	Flow-way Status
Western	• High 365-day PLR • Highly stressed vegetation conditions
Eastern	• High 365-day PLR • Highly stressed vegetation conditions
Northern	• Highly stressed vegetation conditions • Planting emergent vegetation
Cell 7	• Stressed vegetation conditions
Cell 8	• Construction activities

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

Figure S-1. Eastern Flow Path Weekly Status Report

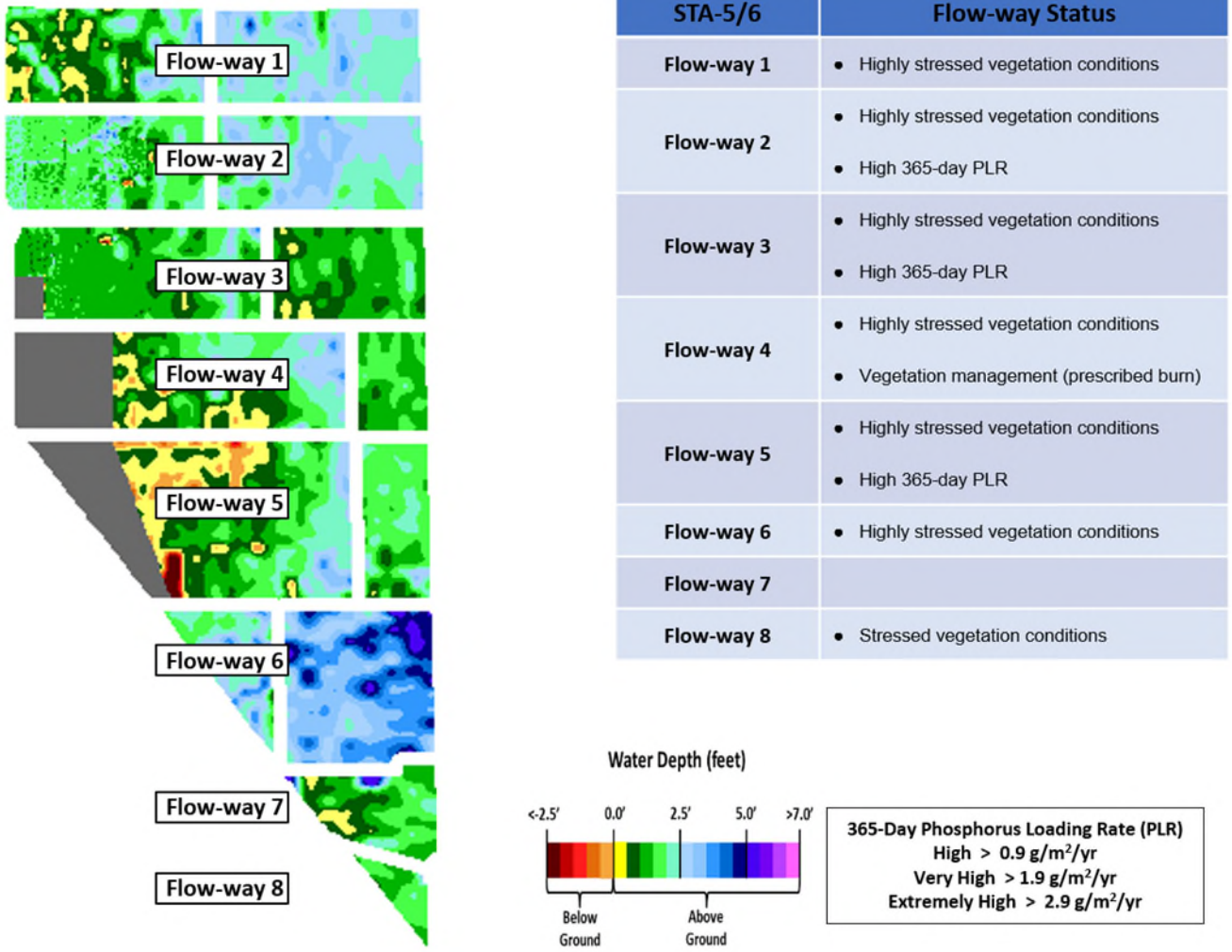


STA-3/4	Flow-way Status
Western	• Stressed vegetation conditions • Nuisance vegetation control within inflow canal
Central	• Highly stressed vegetation conditions • Removal of floating tussocks • Nuisance vegetation control within inflow canal
Eastern	• Post-drawdown vegetation grow-in • Nuisance vegetation control within inflow canal

STA-2	Flow-way Status
Flow-way 1	• High 365-day PLR • Stressed vegetation conditions
Flow-way 2	• Post-construction vegetation grow-in • Planting emergent vegetation
Flow-way 3	• Stressed vegetation conditions
Flow-way 4	• Planting emergent vegetation • Nuisance vegetation control • Highly stressed vegetation conditions
Flow-way 5	• Highly stressed vegetation conditions

Figure S-2. Central Flow Path Weekly Status Report

Western Flow Path Weekly Status Report – 10/23/2023 through 10/29/2023



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 • Vegetation management (prescribed burn)
Flow-way 5	• Highly stressed vegetation conditions • High 365-day PLR
Flow-way 6	• Highly stressed vegetation conditions
Flow-way 7	
Flow-way 8	• Stressed vegetation conditions

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

Another week of near zero rainfall resulted in stages falling across the WCAs. WCA-1: Last week stage dropped steeply within the Refuge. The 1-8C gauge average on Sunday was 0.21 feet below the flat Zone A1 regulation line. WCA-2A: Stage at the 2-17 receded towards the falling regulation line again last week. The average on Sunday was 0.79 feet above the regulation line. WCA-3A: The 3-Gauge average receded quickly over the last week. The average stage on Sunday was 0.53 feet above the regulation line and 0.97 feet below the EHWL. WCA-3A North: Gauge 62 (NW corner) fell steeply last week trending faster than the slope of the Upper Schedule line. See figures **EV-1** through **EV- 4**.

Water Depths

The SFWDAT illustrates water depths have receded slightly along the upper reaches of the L-67s and southern WCA-3A. However, conditions remain ponded in the southern portions of WCA-3A. Hydrologic connectivity is strong within all the major sloughs of ENP. The area with the potential for significantly below ground stages in southern BCNP has expanded. Comparing current WDAT water depths to one month ago conditions across the Everglades are drier. Looking back a year ago, conditions are wetter in WCA-3A and downstream of the S-12s in western ENP; drier in WCA-2A and to the west. (**Figure EV-5 and Figure EV-6)**.

Comparing current conditions to the 20-year average on October 29th: Well above average depths conditions continue in WCA-3B and northeastern ENP, but to the north conditions are trending towards average in historically overdried regions like northern WCA-2A and -3A. (**Figure EV-7**).

Taylor Slough and Florida Bay

Total weekly rainfall averaged 0.20 inches in Taylor Slough and Florida Bay over the past week (Monday-Sunday) based on the 18 gauges used for this report. Total weekly rainfall ranged from 0.04 inches at Highway Creek in the southern slough to 0.60 inches at Buoy Key (BK) in the western region. All stages decreased across Taylor Slough, with an average decrease of −0.10 feet. Stage changes ranged from −0.16 feet at Taylor Slough Bridge (TSB) in the northern slough to −0.04 feet at EPSW in the southeastern slough (**Figure EV-8 and Figure EV-9**). Taylor Slough water levels remain above the historical average for this time of year by +3.3 inches compared to before the Florida Bay initiative (starting in 2017), with no change from last week.

Average Florida Bay salinity was 29.9, an increase of +0.4 from last week. Salinity increased at most sites and changes ranged from a decrease of −5.3 at Joe Bay (JB) to an increase of +3.8 at Little Madeira Bay (LM), both in the eastern nearshore region (**Figure EV-8**). Eastern salinities remain within the IQR, while Central and Western salinities are at and above the 75th percentile, respectively (**Figure EV-10**). Average Florida Bay salinity remains above its historical average for this time of year by +7.0, an increase of +1.3 from the previous week.

Water Management Recommendations

Conserving water in the north during the early dry season has ecological benefits like slowing recession rates, especially important in historically over drained regions. Stable depths and minimal stage changes in WCA-2A and WCA-3A North remain ecologically beneficial as those two regions have experienced dramatic changes in stage over the last few weeks. The ecology of Northern WCA-3A would continue to benefit from a balanced distribution of flows into the northern perimeter, protecting depths in that region has been shown to increase the likelihood of successful wading bird nesting (perhaps more important this year after two successive years of below average nesting). As conditions remain above the 90th percentile in NESRS, continuing strong positive TS creek flows to avoid salinity swings in the nearshore areas is showing to be 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	<0.01	−0.11
WCA-2A	<0.01	−0.20
WCA-2B	0.00	−0.15
WCA-3A	0.00	−0.21
WCA-3B	<0.01	−0.09
ENP	0.03	−0.10

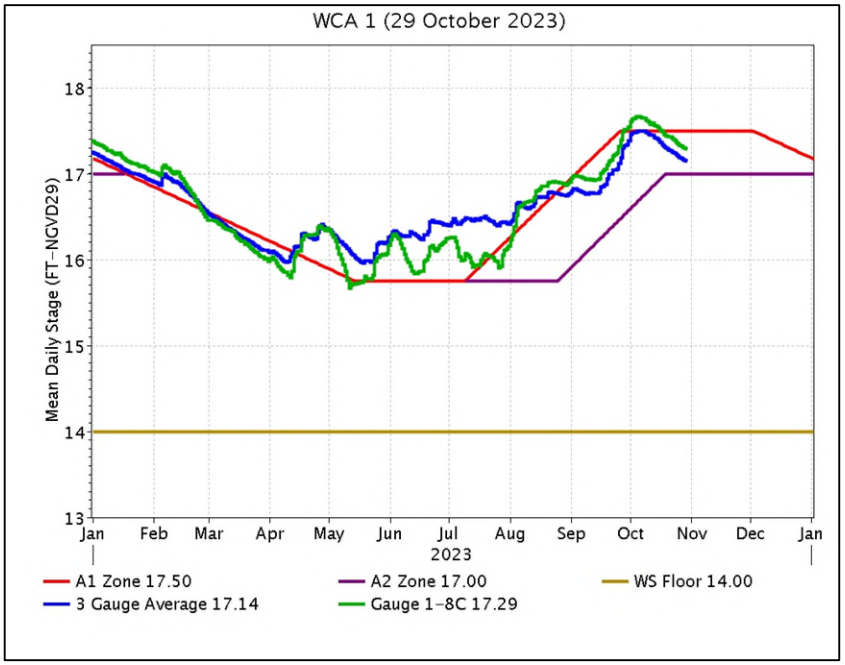


Figure EV-1. WCA-1 stage hydrographs and regulation schedule.

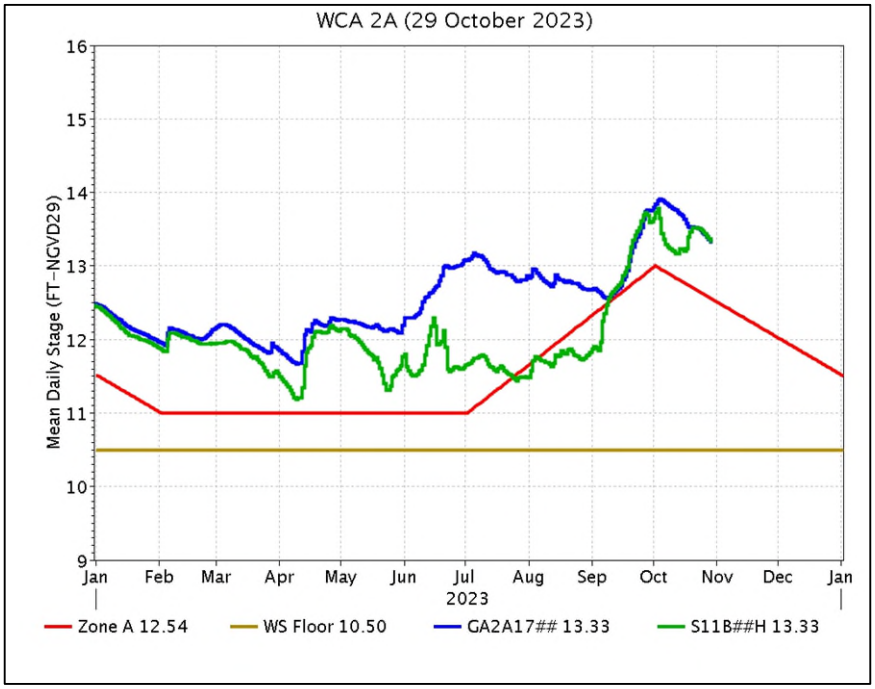


Figure EV-2. WCA-2A stage hydrographs and regulation schedule.

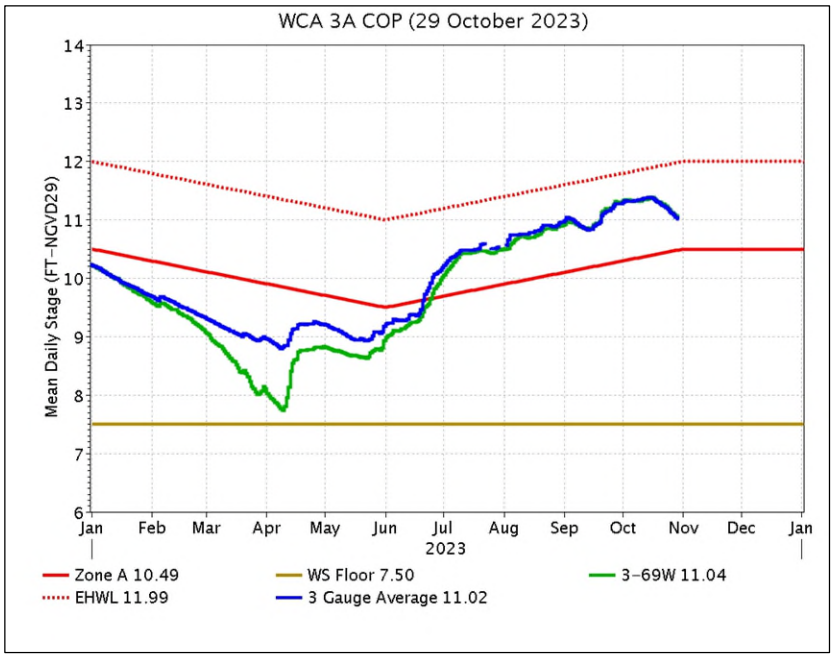


Figure EV-3. WCA-3A stage hydrographs (three-gauge average, 3-69W) and regulation schedule.

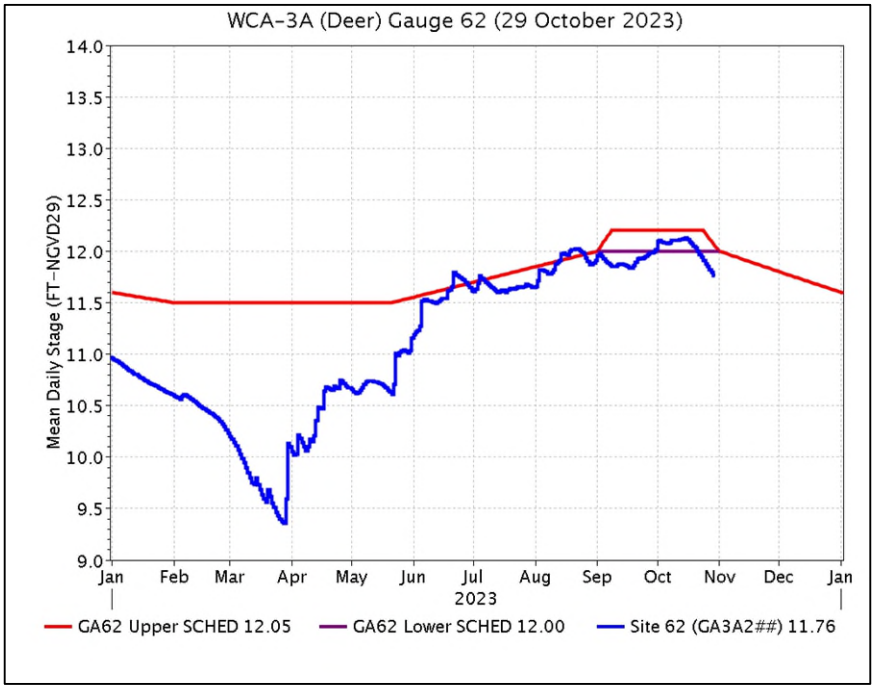


Figure EV-4. WCA-3A stage hydrograph (Deer gauge; Site 62) and GA62 regulation schedule.

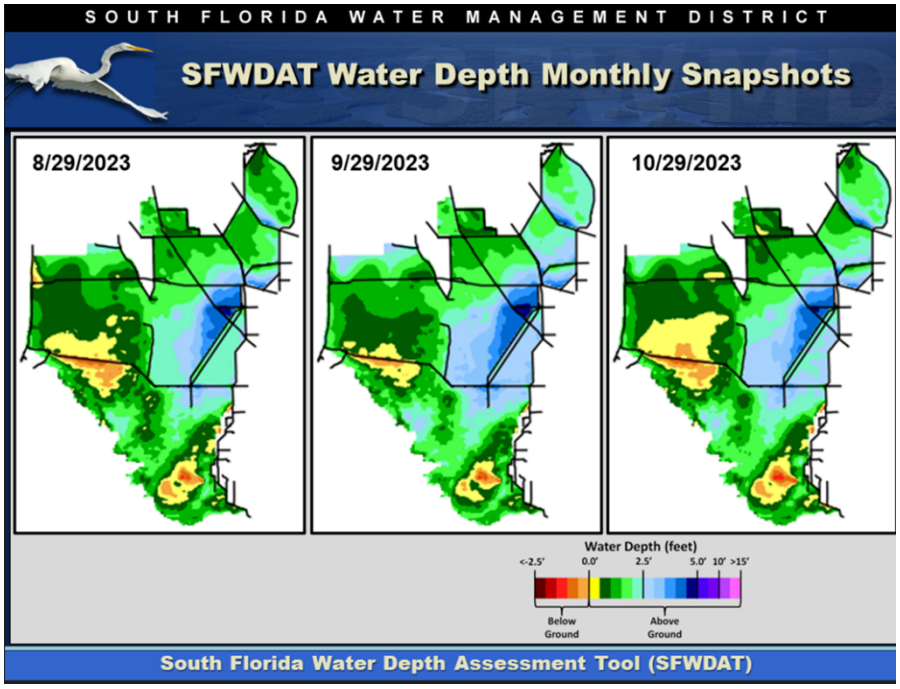


Figure EV-5. Everglades water depths from two months ago (left), one month ago (center) and present (right), based on SFWDAT.

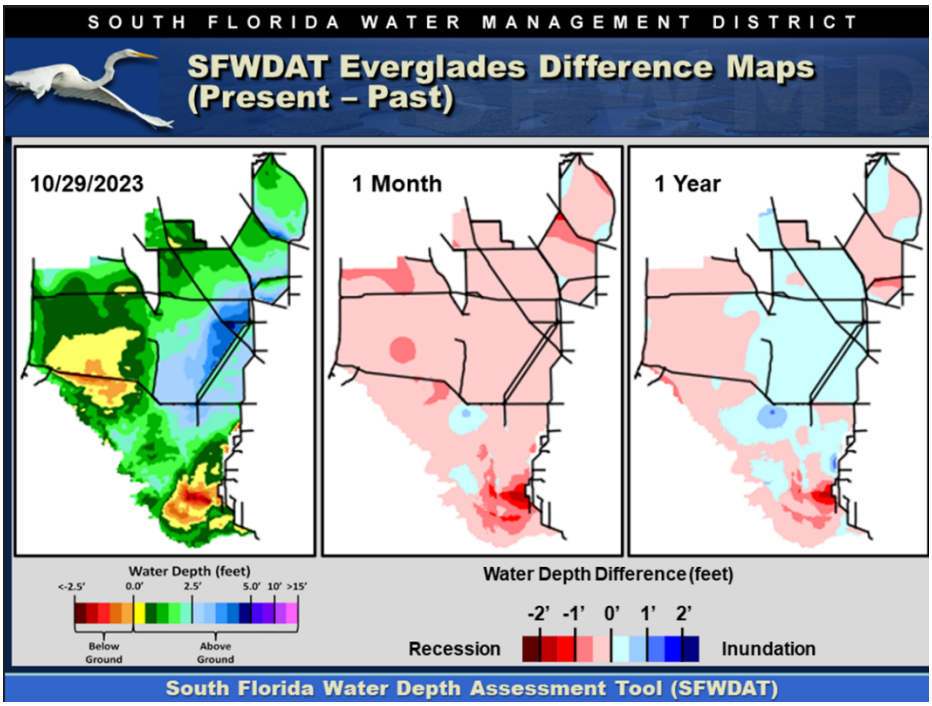


Figure EV-6. Present Everglades water depths (left) and water depth changes from one month (center) and one year (right) ago, based on SFWDAT.

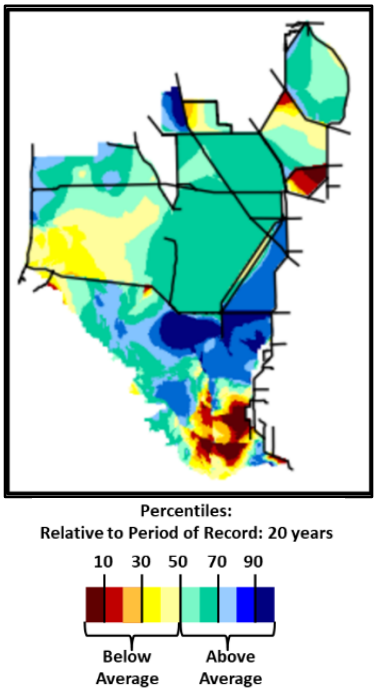


Figure EV-7. Present water depths (10/29/2023) compared to the day of year average over the previous 20 years.

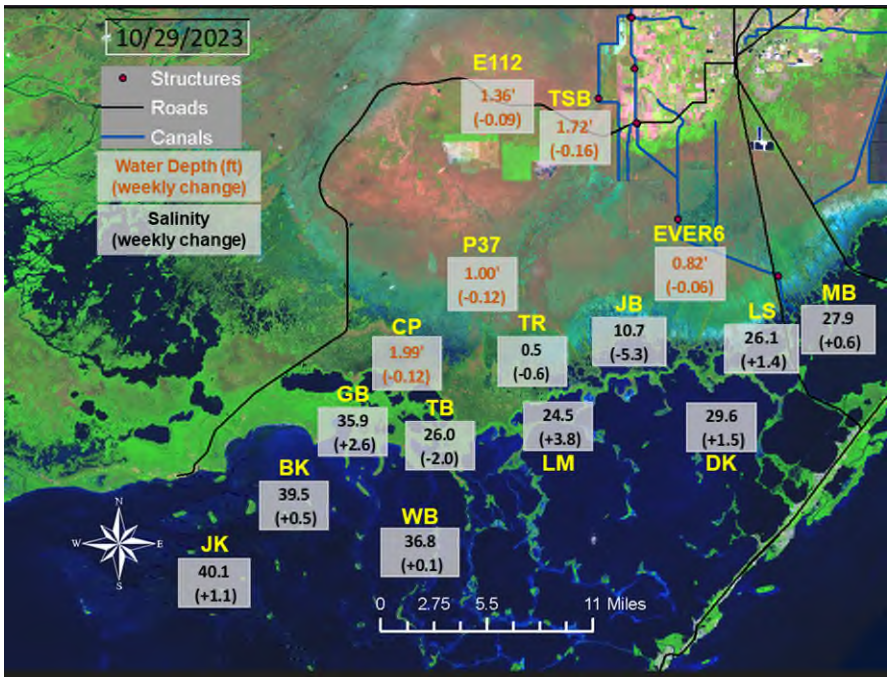


Figure EV-8. Taylor Slough water depths with changes since a week ago and Florida Bay salinities with changes since a week ago.

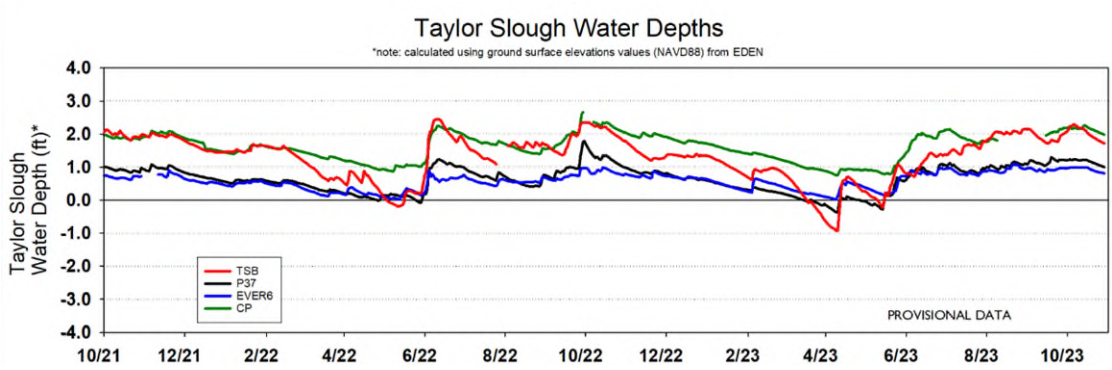


Figure EV-9. Taylor Slough water depth time series.

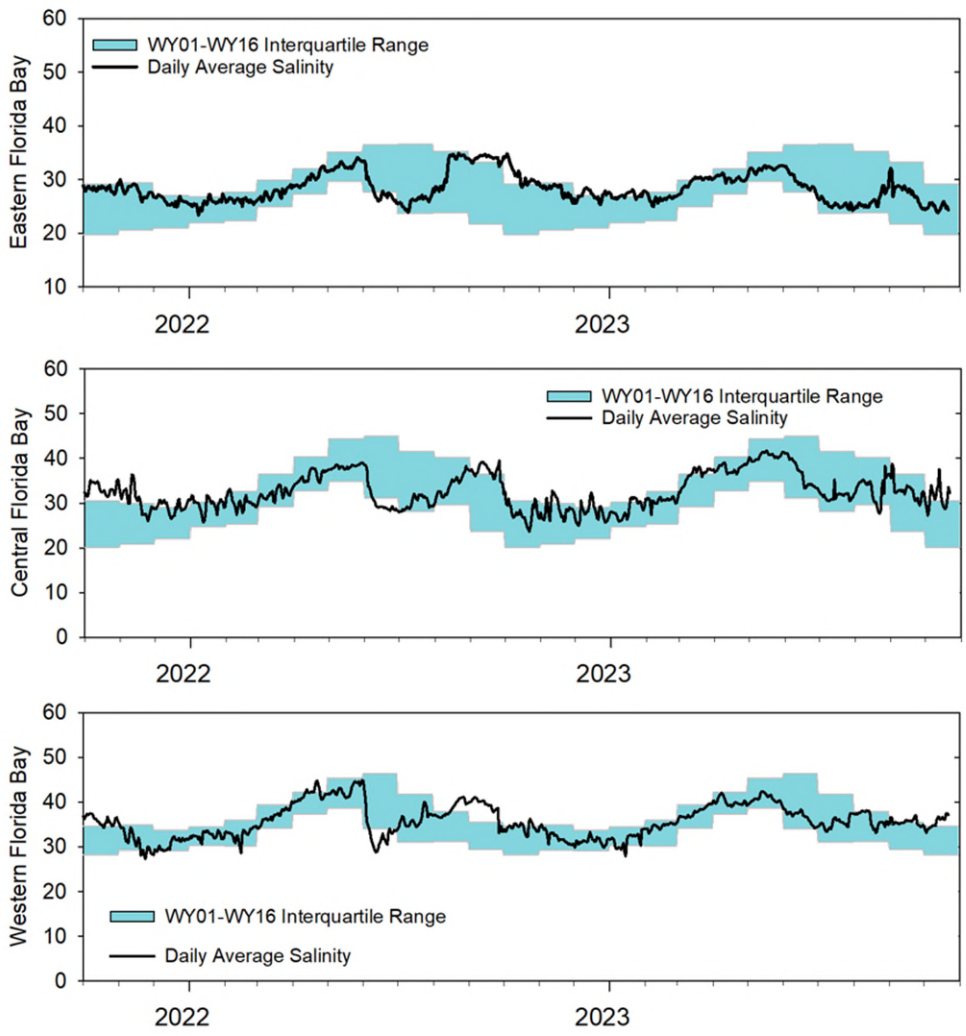


Figure EV-10. Eastern (top panel), Central (middle panel) and Western (bottom panel) Florida Bay daily average salinities with interquartile (25-75 percentile) ranges.

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

SFWMD Everglades Ecological Recommendations, October 31, 2023 (red is new)			
	Weekly change	Recommendation	Reasons
WCA-1	Stage decreased by 0.11'	Recession rate of less than 0.05' per week.	Protect within basin and downstream habitat and wildlife (apple snail reproduction).
WCA-2A	Stage decreased by 0.20'	Recession rate of less than 0.05' per week.	Protect within basin and downstream habitat and wildlife (apple snail reproduction). Recent rapid decrease.
WCA-2B	Stage decreased by 0.16'	Recession rate of less than 0.05' per week.	Protect within basin and downstream habitat and wildlife (apple snail reproduction).
WCA-3A NE	Stage decreased by 0.29'	Recession rate of less than 0.05' per week.	Protect within basin and downstream habitat (peat soils) and wildlife (fish/crayfish reproduction).
WCA-3A NW	Stage decreased by 0.20'	Recession rate of less than 0.05' per week.	
Central WCA-3A S	Stage decreased by 0.20'	Recession rate of less than 0.12' per week.	Protect within basin and downstream habitat and wildlife (apple snail reproduction).
Southern WCA-3A S	Stage decreased by 0.16'		
WCA-3B	Stage decreased by 0.13'	Recession rate of less than 0.12' per week.	Protect within basin (sensitive tree islands) and downstream habitat and wildlife (apple snail reproduction). Allow for flow through.
ENP-SRS	Stage decreased by 0.10'	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 −0.16' to −0.04'	Move water southward as possible.	When available, provide freshwater to promote water movement.
FB- Salinity	Salinity changes ranged from −5.3 to +3.8	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 595 cfs, and the previous 30-day mean inflow was 900 cfs. The seven-day mean salinity was 25.2 at BBCW8, within the ideal salinity range for estuarine organisms in this region (salinity less than 35). No salinity data were available at BBCW10 for the past week. Data were provided by Biscayne National Park.

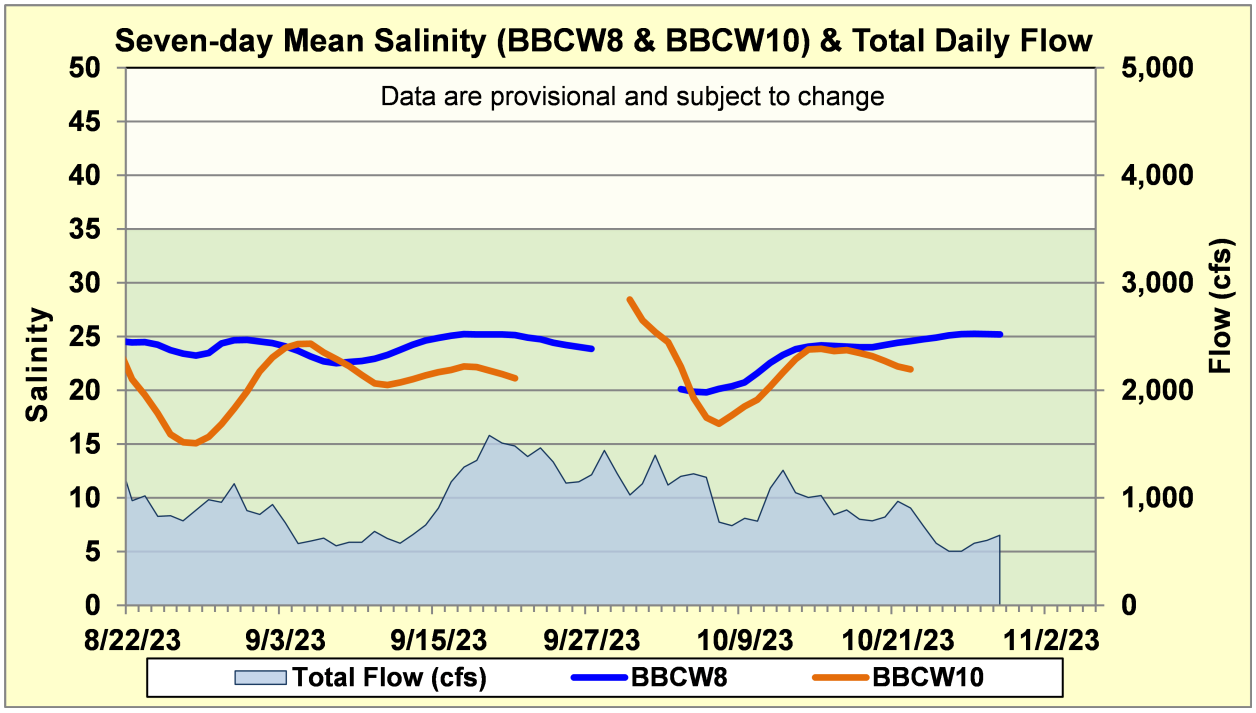


Figure BB-1. Seven-day mean salinity at BBCW8 and BBCW10 and total daily flow in Biscayne Bay. Total daily flow was calculated using flow from structures S20G, S20F, S21, S21A, S123, and S700P.