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: April 15, 2020

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Weather Conditions and Forecast

A cold front located over north Florida is forecast to remain stationary through Wednesday morning while high pressure extending from the central Atlantic to Florida also remains in place. A southerly to southwesterly wind flow to the south of the frontal boundary and extremely dry soil conditions favor a continuation of unseasonably hot temperatures and high evapotranspiration rates throughout the District through Wednesday. While little overall rainfall is expected until Wednesday afternoon, there is a chance to see scattered shower activity and isolated thunderstorms around and east of Lake Okeechobee late today after peak daytime heating. However, confidence in the late-day rains forecast is low due to a lack of model agreement. The front over north Florida should begin to move southeastward on Wednesday as a series of jet stream disturbances cross the central and eastern United States and reach the northern part of the District late Wednesday before pushing as far south as Lake Okeechobee by Thursday morning. Ahead of the front on Wednesday, some rains are predicted to push into the northwestern part of the District but mainly over the far north and near the southwest coast of Florida, where the best large-scale conditions for rain should exist; isolated activity is possible elsewhere across the area through Wednesday evening/night. A good pool of moisture and 'lift' associated with the slow-moving front, as well as a destabilization of the atmosphere and favorable upper air 'forcing,' should contribute to increased rain chances and rain coverage on Thursday. North of the frontal boundary the rains are likely to be uniform and lighter during with a possible maximum over the Kissimmee Valley. To the south of the front greater heating and instability should result in the potential for heavier rains, with the best potential likely during the afternoon to evening over the southeast. The front is forecast to stall over southern Florida by late Thursday and move little through early Saturday before retreating as a warm front by late Saturday. The wetter weather pattern developing Thursday is likely to extend through early this weekend as the front lingers across the area, with some signs of less overall rain by Sunday once the front's influence diminishes. Another jet stream disturbance crossing the Gulf of Mexico on Monday next week could cause a cold front over the southeastern United States to push southward to just north of the District by late Monday. Stronger upper air 'forcing' and favorable moisture/instability ahead of the system could result in a significant increase of rains early next week before the front slowly moves southward through the Florida peninsula. For the week ending next Tuesday morning, the deterministic total District quantitative precipitation forecast (QPF) is nine-tenths of an inch, which is above the long-term mean and a little above the median model forecast. The model probabilistic output is signaling a good chance of at least normal weekly rainfall with some potential that the weekly rains would be above normal and the greatest the District has seen in quite some time.

Kissimmee

Tuesday morning stages were 52.5 feet NGVD (4.4 feet below schedule) in East Lake Toho, 53.1 feet NGVD (0.8 feet below schedule) in Toho, and 50.2 feet NGVD (0.4 feet below schedule) in Kissimmee-Cypress-Hatchineha; headwater stages were 46.4 feet NGVD at S-65A and 25.8 feet NGVD at S-65D.

Tuesday morning discharges were 373 cfs at S-65, 324 cfs at S-65A, 338 cfs at S-65D and 253 cfs at S-65E. Dissolved oxygen concentration in the Kissimmee River averaged 7.6 mg/L for the week through Sunday. Kissimmee River mean floodplain depth on Sunday was 0.07 feet. ***Today's recommendations****:* Continue the recession on Lake Tohopekaliga to reach low-pool (52 feet NGVD) on June 1st. Continue the recession on Lakes Kissimmee-Cypress-Hatchineha to reach low pool (49 feet NGVD) on June 1st.

Lake Okeechobee

Lake Okeechobee stage was 11.44 feet NGVD on April 14, 2020, down 0.26 feet from the previous week, and down 0.94 feet from the previous month. The Lake entered the Beneficial Use sub-band on March 4, 2020 and is now 0.06 feet above the Water Shortage sub-band. Water levels moved below the ecological envelope (which varies seasonally from 12 – 15 feet NGVD +/- 0.5 feet) on October 15, 2019 and are currently 1.09 feet below the bottom of the updated (draft) envelope. Lake stages below the ecological envelope will continue to benefit recovering submerged and emergent marsh vegetation at low elevations but will reduce aquatic habitat for fish and wildlife in the marshes. Wading bird and snail kite nesting efforts are likely to be lower for the second consecutive year on the Lake due to low lake stages during the breeding season.

Estuaries

Total inflow to the St. Lucie Estuary averaged 372 cfs over the past week with no flow coming from Lake Okeechobee. Salinities increased at HR1 and US1 Bridge but remained about the same at A1A over the past week. Salinity at the US1 Bridge is in the good range for adult eastern oysters.

Total inflow to the Caloosahatchee Estuary averaged 494 cfs over the past week with 310 cfs coming from the Lake. Salinity increased throughout the estuary over the past week. Salinities are in the good range for tape grass at Val I-75 and fair range at Ft. Myers. Salinities are in the good range for adult eastern oysters at Cape Coral, in the fair range at Shell Point and in the poor range at Sanibel.

Lake stage is in the Beneficial Use sub-band of 2008 LORS. Tributary hydrological conditions are dry. The SFWMD's Lake Okeechobee Adaptive Protocol's Release Guidance suggests up to 300 cfs at S-79 and S-77 environmental water supply release to supplement as needed to the Caloosahatchee Estuary.

Stormwater Treatment Areas

Over the past week, 2,900 ac-ft of Lake Okeechobee water was delivered to the FEBs/STAs. The total amount of Lake releases sent to the FEBs/STAs in WY2020 (since May 1, 2019) is approximately 142,900 ac-feet. The total amount of inflows to the STAs in WY2020 is approximately 978,000 ac-feet. Most STA cells are near target stage, except STA-5/6 cells that continue to dry out. STA-1E Western Flow-way is offline for the Restoration Strategies project to fill and grade Cells 5 and 7. Operational restrictions are in place in STA-1W Northern Flow-way related to STA-1W Expansion #1 startup activities, in STA-3/4 Western Flow-way for energy dissipator installation, in STA-1E Central Flow-way, STA-2 Flow-way 1, STA-2 Flow-way 2, STA-2 Flow-way 3, STA-2 Flow-way 4, STA-3/4 Eastern Flow-way, and STA-3/4 Central Flow-way for vegetation management activities, and in STA-5/6 Flow-ways 2 and 3 following the Restoration Strategies project to grade non-effective treatment areas. This week, if Lake Okeechobee releases are sent to the WCAs and the conditions allow, the releases will be sent to STA-3/4 Central Flow-way.

Everglades

Current stages in northeastern WCA-3A remain well below average (Site 62 in the northwest is 0.44 feet below and Site 63 in the northeast is 1.02 feet below) for this time of year. Conserving fresh water in the Everglades, distributing it to where depths are low (WCA-3A NE), or maintaining near average depths (WCA-3A NW), then allowing it to flow south has important ecological benefit. Wading bird

nesting and foraging numbers are building in WCA-3A South and WCA-1, ecological benefit is gained by slowing recession rates that exceed -0.09 feet per week when possible. The stage reversal in WCA-3A South probably had little negative impact on wading foraging in that basin, where wading bird nesting is increasing and could allow for the maintenance of optimal rates of recession longer into the nesting effort. Rains over Taylor Slough and Florida Bay mean stage changed little over the week but remain below average. Salinities increased on average in Florida Bay and the 30-day moving average increased significantly at the Taylor River station. Flows from the 5 creeks associated with the Florida Bay MFL were negative last week and the 365 moving sum decreased for the first time in several months.

Supporting Information
KISSIMMEE BASIN
Kissimmee Basin Rainfall

The Upper Kissimmee Basin received 0.43 inches of rainfall in the past week and the Lower Basin received 0.25 inches (SFWMD Daily Rainfall Report 4/12/2020).

Upper Kissimmee Basin

Stages and departures in the Kissimmee Chain of Lakes (KCOL) are shown in **Table 1**. KCOL stage hydrographs with respective regulation schedules and rainfall are shown in Figures 1-3.

Table 1. Average discharge (cfs) for the preceding seven days, one-day stage (feet NGVD), and departures from KCOL flood regulation (R) or temporary schedules (T, A, or S). Provisional, real-time data are from SFWMD.

Report Date: 4/14/2020

Water Body	Structure	7-day Average Discharge (cfs)[1]	Stage Monitoring Site[2]	Lake Stage (feet)	Schedule Type[3]	Schedule Stage (feet)	Daily Departure (feet)						
							4/12/20	4/5/20	3/29/20	3/22/20	3/15/20	3/8/20	3/1/20
Lakes Hart and Mary Jane	S-62	0	LKMJ	60.2	R	60.5	-0.3	-0.4	-0.4	-0.4	-0.4	-0.3	-0.2
Lakes Myrtle, Preston, and Joel	S-57	0	S-57	60.5	R	60.6	-0.1	0.0	0.0	0.0	0.0	0.0	0.0
Alligator Chain	S-60	0	ALLI	62.9	R	63.3	-0.4	-0.5	-0.6	-0.6	-0.7	-0.6	-0.6
Lake Gentry	S-63	19	LKGT	60.9	R	60.8	0.1	0.0	-0.1	-0.1	-0.2	-0.2	-0.1
East Lake Toho	S-59	0	TOHOE	52.5	R	57.0	-4.5	-4.6	-4.8	-5.0	-5.2	-5.1	-58.0
Lake Toho	S-61	144	TOHOW, S-61	53.1	R	54.0	-0.9	-0.9	-1.1	-1.3	-1.3	-1.2	-1.0
Lakes Kissimmee, Cypress, and Hatchineha	S-65	365	KUB011, LKIS5B	50.2	R	50.6	-0.4	-0.5	-0.5	-0.2	0.0	0.2	0.4

[1] Seven-day average of weighted daily means through midnight.
[2] Names of in-lake monitoring sites and structures used to determine lake stage; if more than one site is listed, an average is reported.
[3] A = projected ascension line, R = USACE regulation schedule, S = temporary recession target line, T = temporary schedule, N/A= not applicable or data not available.
DATA ARE PROVISIONAL

Lower Kissimmee Basin

Discharges at Lower Basin structures are shown in Table 2. SFWDAT depth maps for the Phase I restoration area are shown in Figure 4. Figure 5 shows Mean daily dissolved oxygen, discharge, temperature and rainfall in the Phases I/II/III river channel. The 2019-2020 Discharge Plan for S-65/S-65A and interim operations schedule for S-65 are shown in Figures 6 and 7, respectively. Kissimmee River floodplain stages at selected stations are shown in Figure 8.

Table 2. One-day and seven-day averages of discharge at S-65x structures, of dissolved oxygen concentration in the Phase I area river channel, and water depth in the Phase I area floodplain. Data are provisional real-time data from SFWMD.

Report Date: 4/14/2020

Metric	Location	1-Day Average	Average for the Preceeding 7-Days[1]								
		4/12/2020	4/12/20	4/5/20	3/29/20	3/22/20	3/15/20	3/8/20	3/1/20	2/23/20	2/16/20
Discharge (cfs)	S-65	364	365	357	448	690	920	1,013	983	918	922
Discharge (cfs)	S-65A[2]	323	323	311	350	592	837	956	956	930	895
Discharge (cfs)	S-65D[2]	279	308	302	476	699	940	968	985	960	946
Headwater Stage (feet NGVD)	S-65D[2]	25.78	25.75	25.78	25.71	25.75	25.85	25.69	25.80	25.86	25.82
Discharge (cfs)	S-65E[2]	136	283	262	433	653	864	891	905	880	844
Discharge (cfs)	S-67	0	0	0	0	0	0	0	0	0	0
DO (mg/L)[3]	Phases I & II/III river channel	8.1	7.9	7.6	6.9	7.6	8.0	8.3	8.0	7.4	8.2
Mean depth (feet)[4]	Phase I floodplain	0.06	0.07	0.07	0.08	0.11	0.20	0.24	0.26	0.26	0.27

[1] Seven-day average of weighted daily means through Sunday midnight.
[2] S-65A discharge combines S-65A with auxillary strucutures; S-65D discharge combines discharge at S-65D, S-65DX1, and S-65DX2; S-65D stage averages stage at S-65D and S-65DX1; S-65E discharge combines S-65E and S-65EX1.
[3] DO is the average for sondes at KRBN, PC62, PC33, PD62R, and PD42R.
[4] 1-day spatial average from South Florida Water Depth Assessment Tool (SFWDAT).
DATA ARE PROVISIONAL; N/A indicates that data were not available.

KCOL Hydrographs (through Sunday midnight)

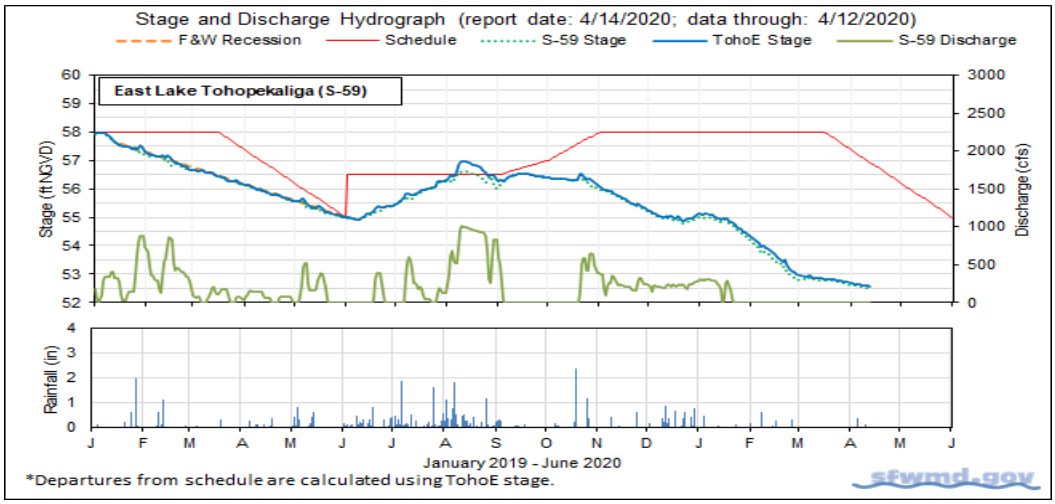


Figure 1.

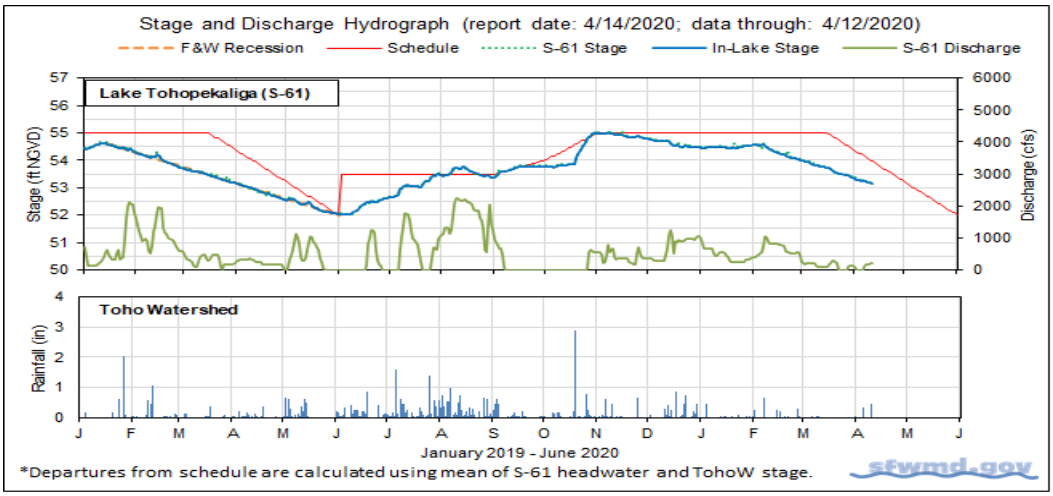


Figure 2.

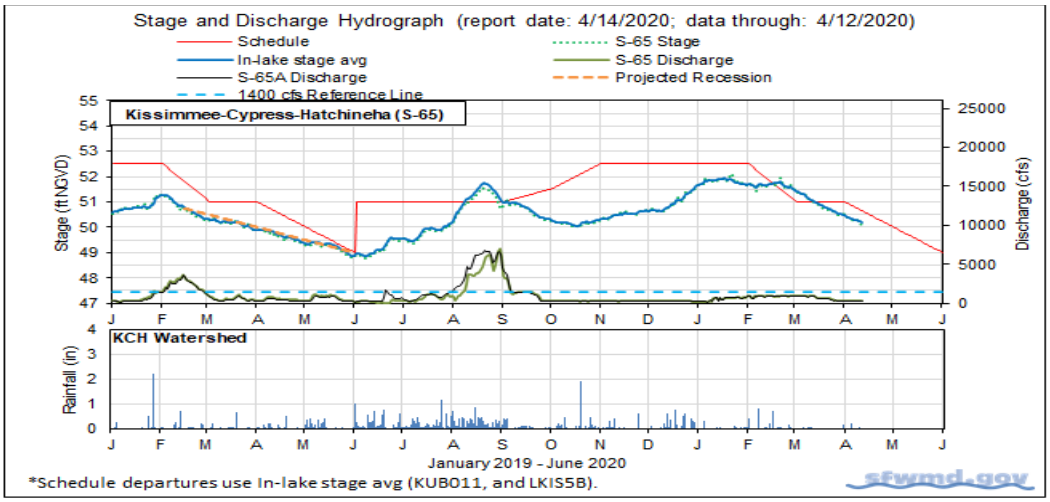


Figure 3.

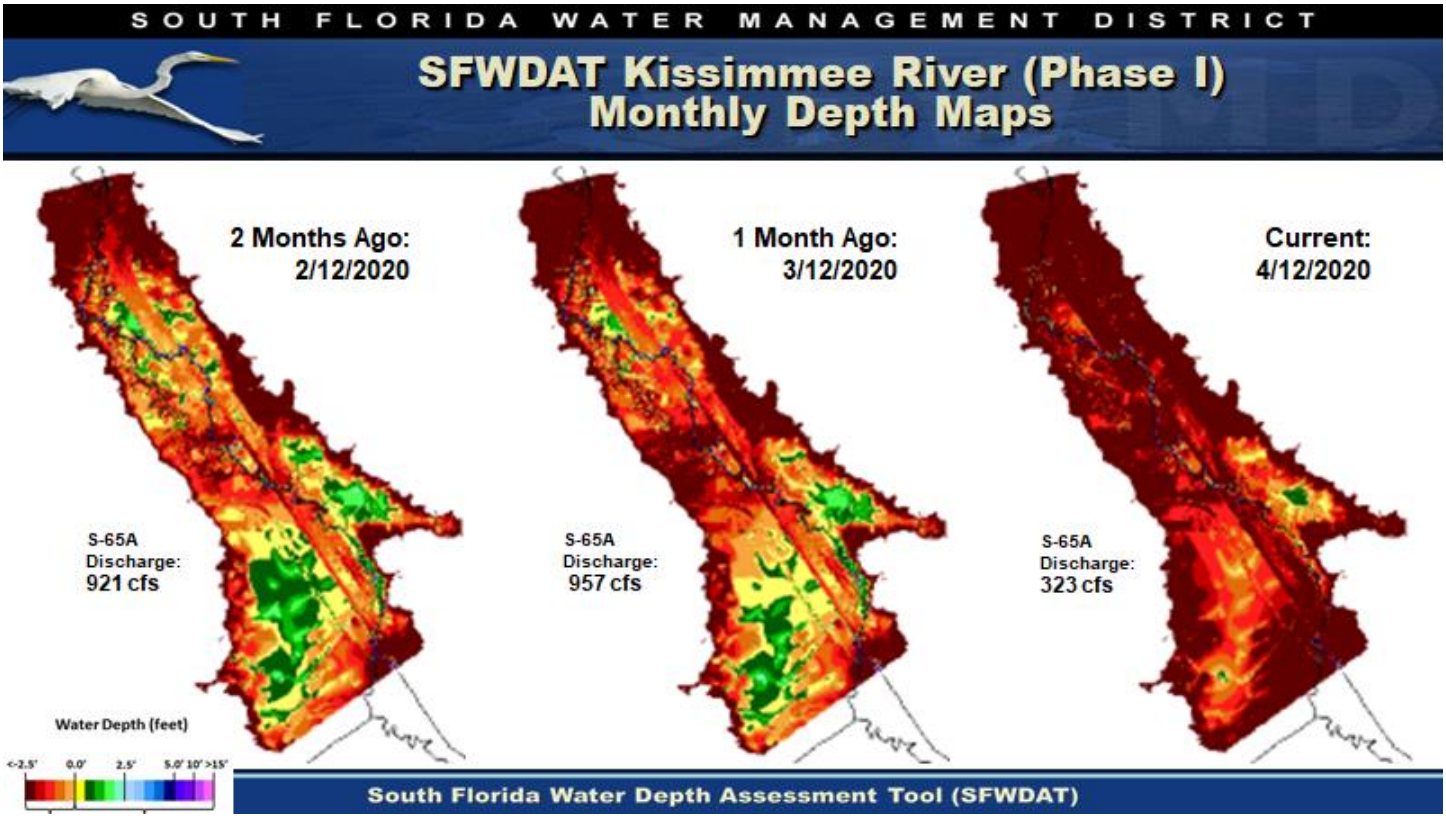


Figure 4. Phase I area floodplain water depths for this week, one month ago, and two months ago. Note that the WDAT color-coding has been modified to accommodate greater water depths; these maps are not directly comparable to Kissimmee Basin WDAT maps published prior to January 16, 2012.

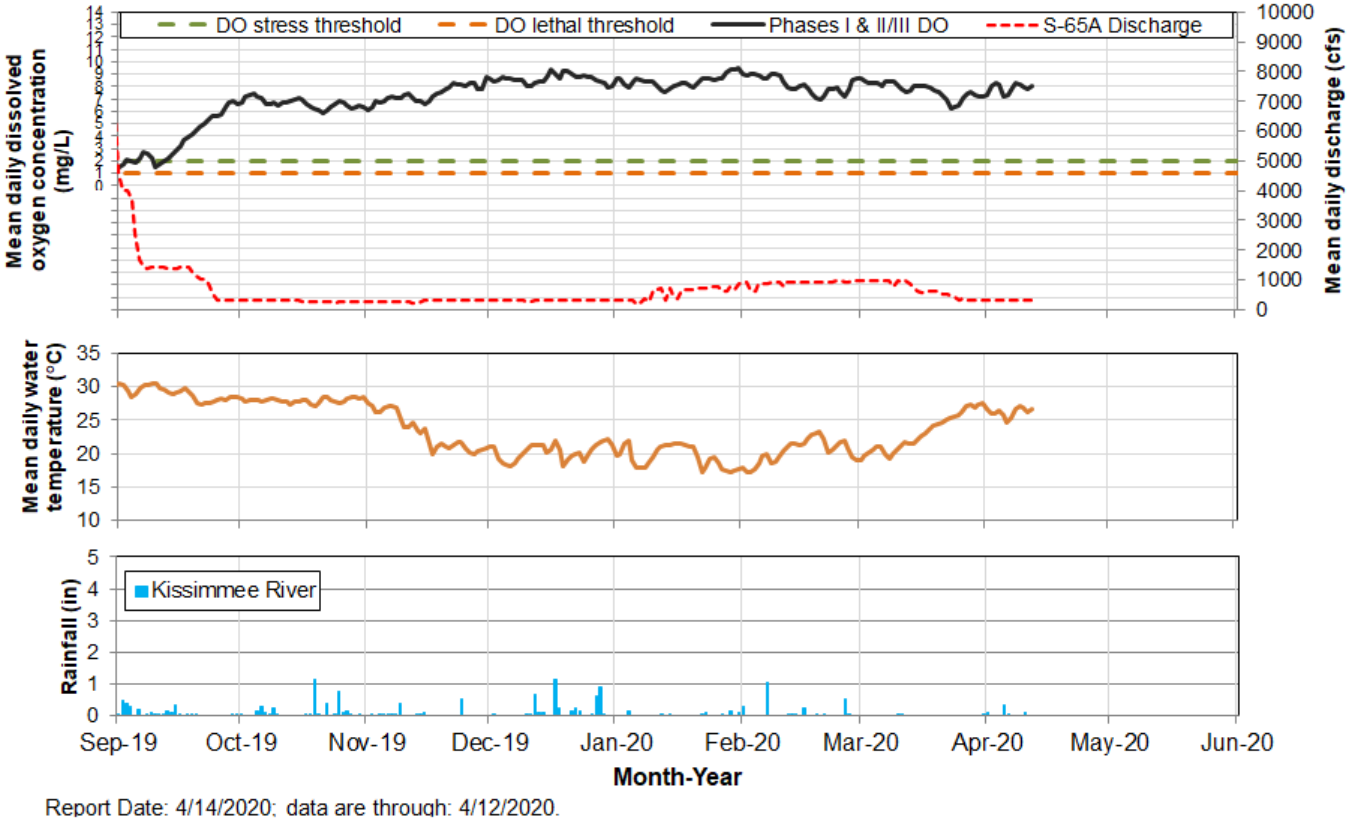


Figure 5. Mean daily dissolved oxygen, discharge, temperature and rainfall in the Phases I/II/III river channel.

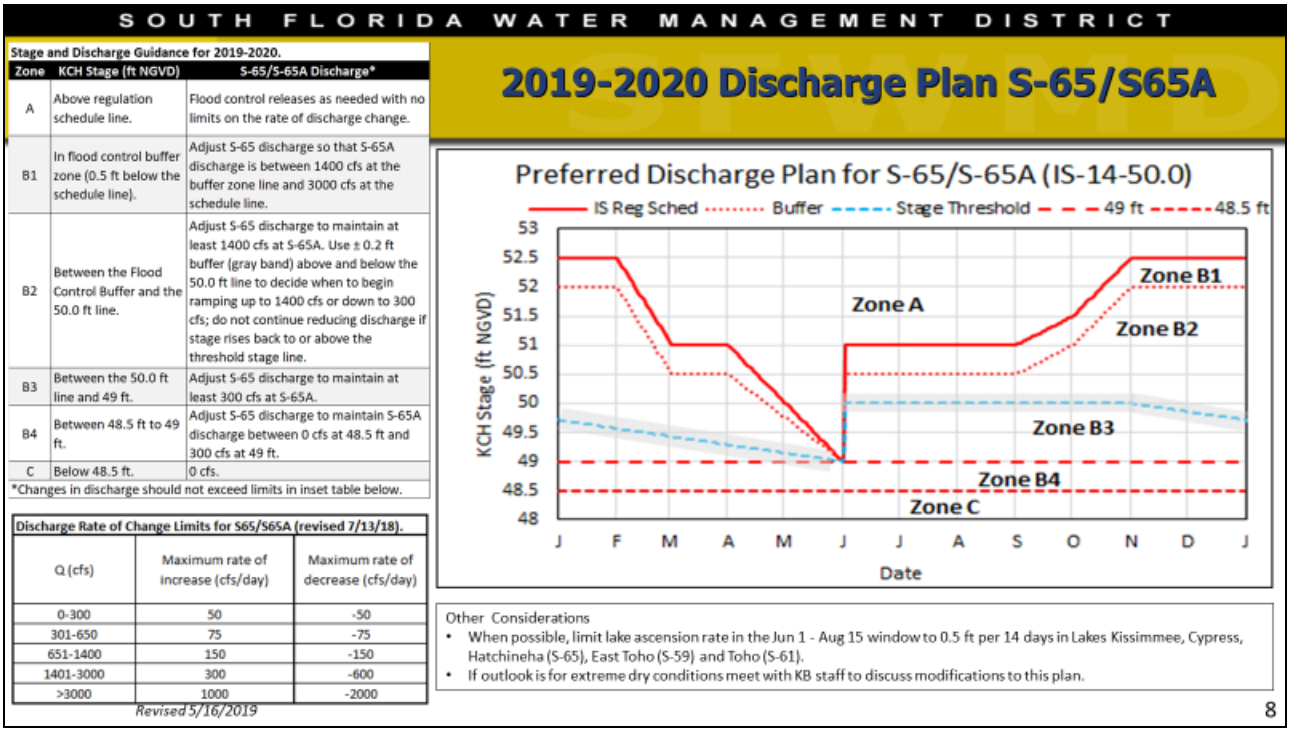


Figure 6. The 2019-2020 Discharge Plan for S-65/S-65A.

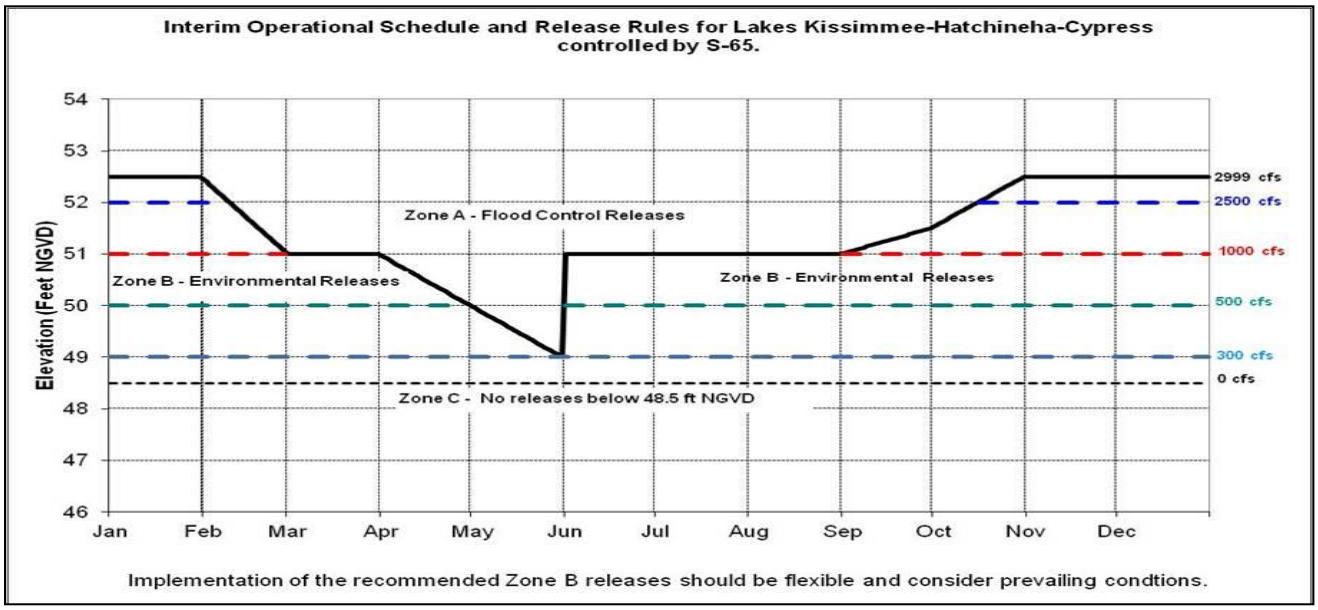


Figure 7. Interim operations schedule for S-65. The discharge schedule shown to the right has not been used in recent years.

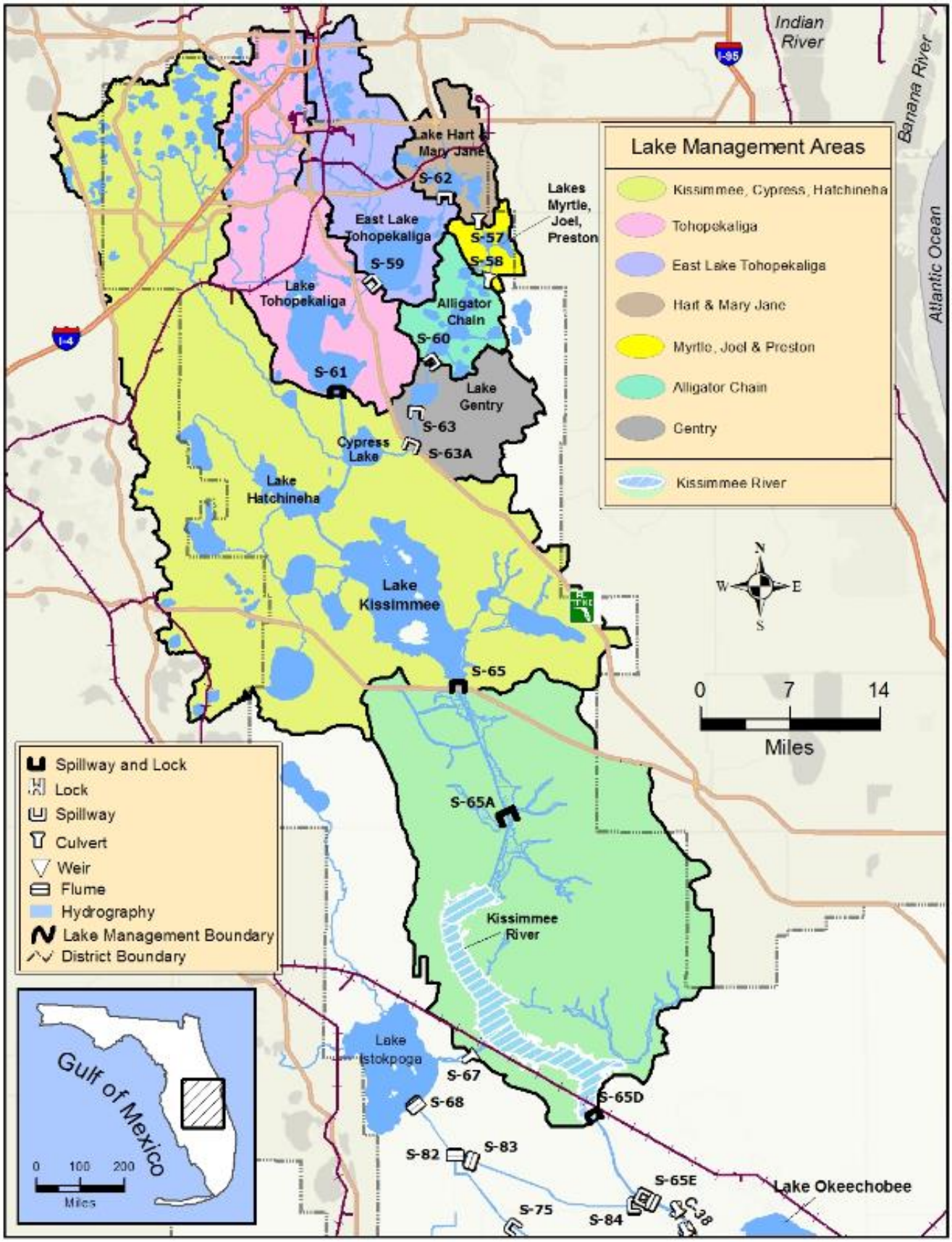


Figure 8. The Kissimmee Basin.

LAKE OKEECHOBEE

Lake Okeechobee stage was 11.44 feet NGVD, 0.94 feet lower than a month ago and 0.21 feet lower than one year ago (Figure 1). The Lake is currently 1.09 feet below the preferred (draft) ecological envelope (Figure 2). Lake stages moved into the Base Flow sub-band on September 11, 2019 and entered the Beneficial Use sub-band on March 4, 2020 (Figure 3). Lake stage had been hovering near 13.0 feet from December 2019 to mid-February 2020, before declining over 1.5 feet during the past two months. According to RAINDAR, 0.06 inches of rain fell directly over the Lake during the past week (Figure 4). Most of the watershed received less than 0.25 inches of rain except the lower east coast which received up to 3.0 inches in spots.

The average daily inflows (minus rainfall) decreased again from 286 cfs to 279 cfs, and average daily outflows (minus evapotranspiration) decreased by approximately 1,150 cfs from the previous week to total 2,721 cfs. Almost all the inflow (272 cfs) came from the Kissimmee River (S-65E & S-65EX1), while most of the outflows were released south through the S-350 structures (1,847 cfs) or west through S-77 (C-43/Caloosahatchee Canal, 761 cfs). An additional 113 cfs were released east through the L-8 Canal and the S-308 structure. Total lake inflows and outflows for the past week are detailed in Table 1, as well as the approximate change in lake stage from each major structure's total flows over the period. Figure 5 shows the combined average daily cfs for inflows and outflows for the Lake over the past eight weeks. These data are provisional and are subject to change.

Current satellite imagery (April 9, 2020) using NOAA's cyanobacteria monitoring product derived from EUMETSAT's Sentinel 3 OLCI sensor data suggested low/moderate potential for cyanobacterial blooms along the northwestern shoreline of the Lake, slightly lower than this time last year (Figure 6). Blooms during this time of year tend to be ephemeral in nature with slight changes occurring in intensity and location along the western and northern sides of the lake from week to week.

Water Management Summary

Lake Okeechobee stage was 11.44 feet NGVD on April 14, 2020, down 0.26 feet from the previous week, and down 0.94 feet from the previous month. The Lake entered the Beneficial Use sub-band on March 4, 2020 and is now 0.06 ft above the Water Shortage sub-band. Water levels moved below the ecological envelope (which varies seasonally from 12 – 15 feet NGVD +/- 0.5 feet) on October 15, 2019 and are currently 1.09 feet below the bottom of the updated (draft) envelope. Lake stages below the ecological envelope will continue to benefit recovering submerged and emergent marsh vegetation at low elevations but will reduce aquatic habitat for fish and wildlife in the marshes. Wading bird and snail kite nesting efforts are likely to be lower for the second consecutive year on the Lake due to low lake stages during the breeding season.

Table 1. Average daily inflows and outflows and the approximate depth equivalents on Lake Okeechobee for various structures.

INFLOWS	Previous week Avg Daily CFS	Avg Daily Flow cfs	Equivalent Depth Week Total (in)
S-65E & S-65EX1	281	272	0.1
S-71 & S-72	0	0	0.0
S-84 & S-84X	0	0	0.0
Fisheating Creek	5	7	0.0
S-154	0	0	0.0
S-191	0	0	0.0
S-133 P	0	0	0.0
S-127 P	0	0	0.0
S-129 P	0	0	0.0
S-131 P	0	0	0.0
S-135 P	0	0	0.0
S-2 P	0	0	0.0
S-3 P	0	0	0.0
S-4 P	0	0	0.0
L-8 Backflow			
Rainfall	358	119	0.1
Total	**644**	**398**	**0.2**

OUTFLOWS	Previous week Avg Daily CFS	Avg Daily Flow cfs	Equivalent Depth Week Total (in)
S-77	869	761	0.4
S-308	-298	32	0.0
S-351	1218	1052	0.5
S-352	342	292	0.1
S-354	600	503	0.2
L-8 Outflow	105	81	0.0
ET	2226	2858	1.4
Total	**5062**	**5579**	**2.7**

Provisional Data

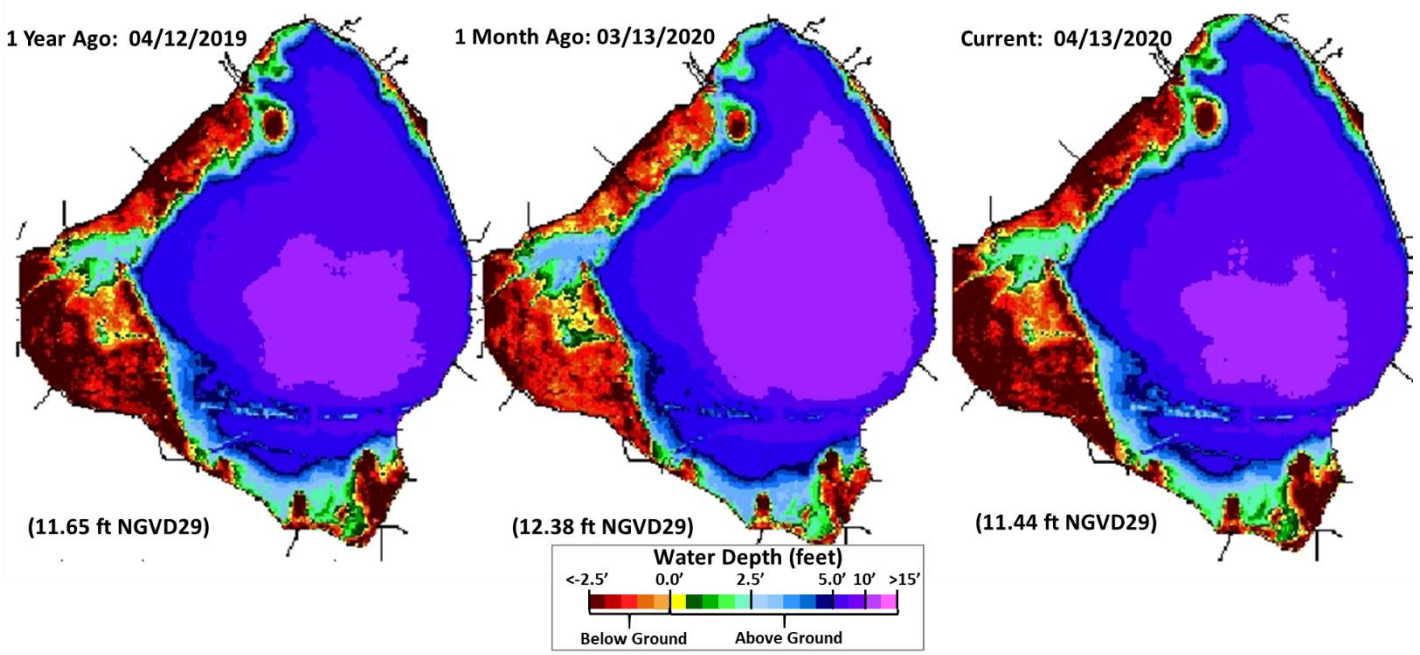


Figure 1. Water depth estimates on Lake Okeechobee based on the South Florida Water Depth Assessment Tool.

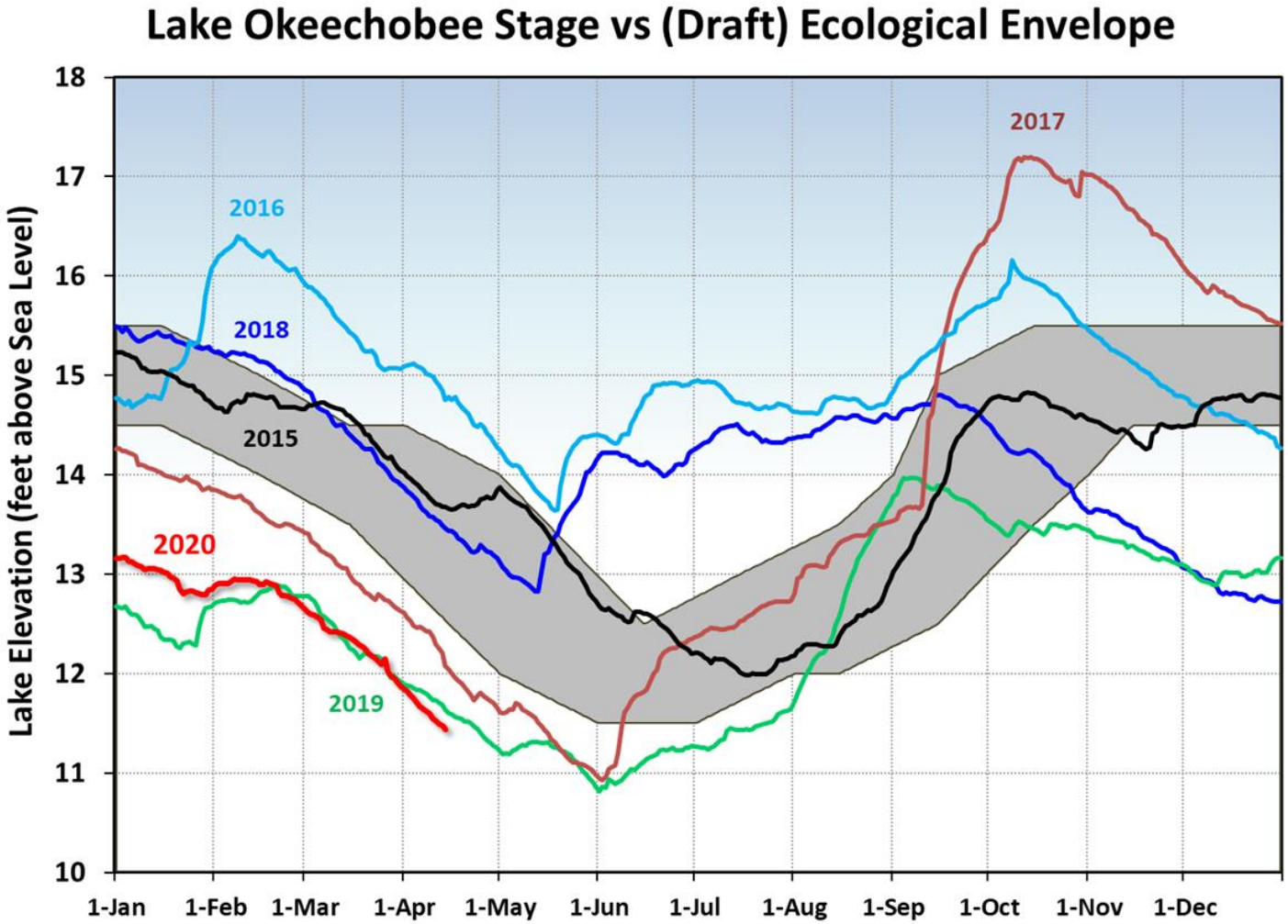


Figure 2. Select annual stage hydrographs for Lake Okeechobee in comparison to the (Draft) updated Ecological Envelope.

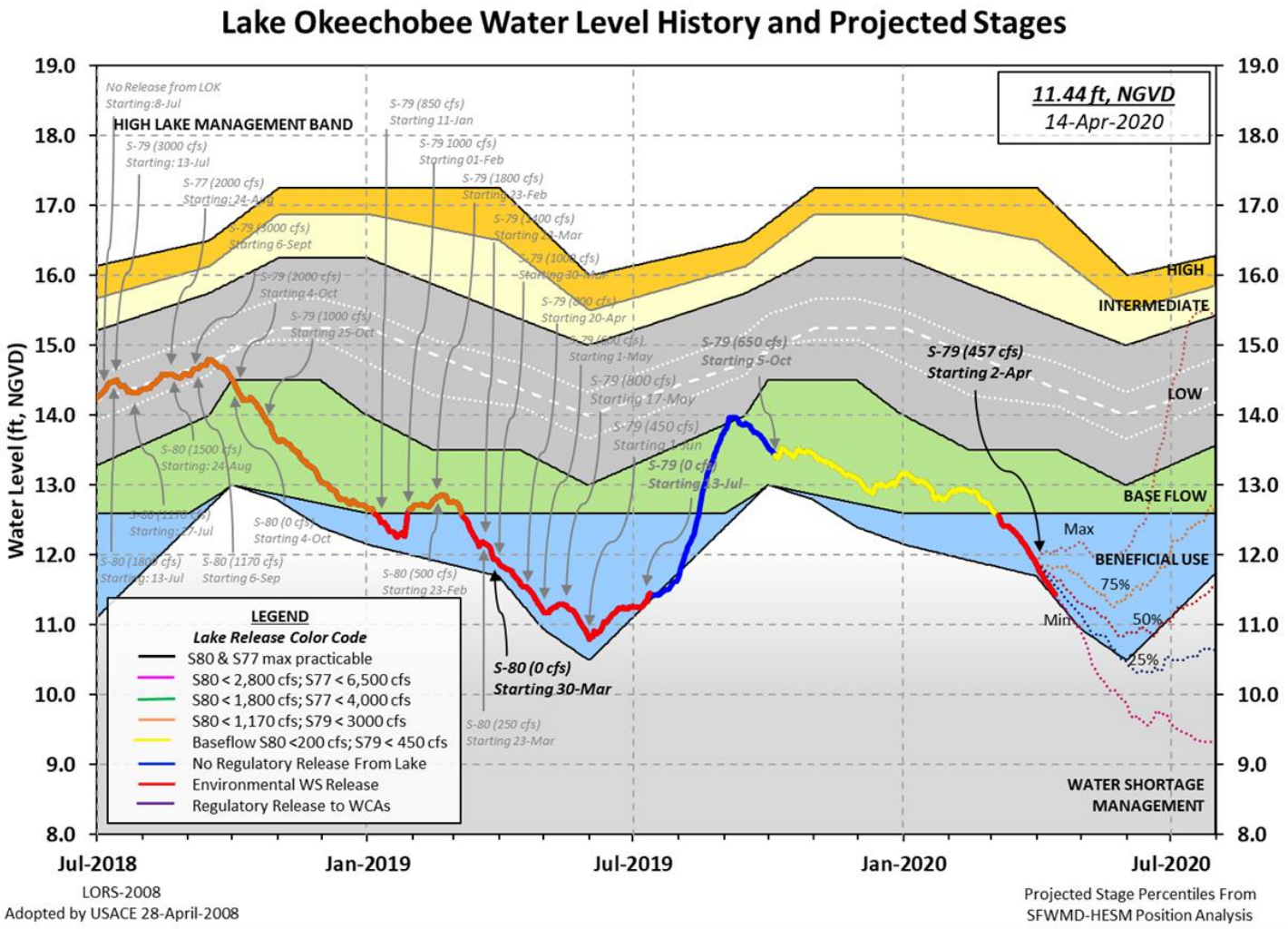


Figure 3. Recent Lake Okeechobee stage and releases, with projected stages based on a dynamic position analysis.

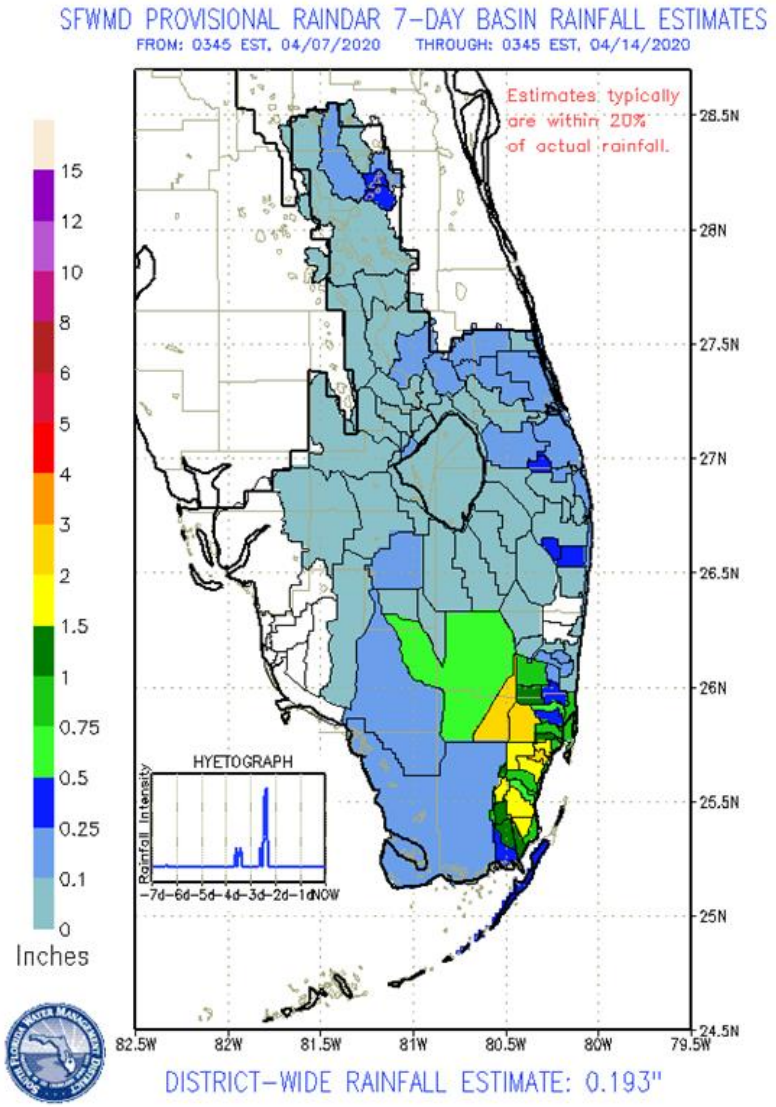


Figure 4. 7-Day rainfall estimates by RAINDAR.

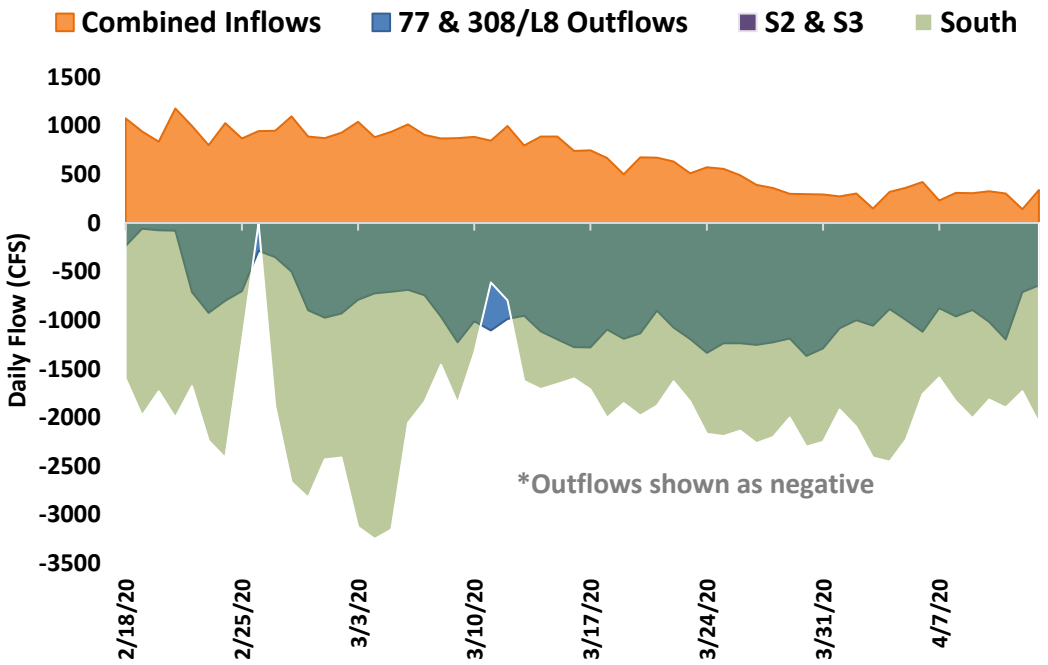


Figure 5. Major inflows (orange) and outflows (blue) of Lake Okeechobee, including the S-350 structures designated as South (green). The L-8 Canal flows through Culvert 10A are included as outflows when positive, and as inflows when backflowing into the Lake. All inflows and outflows are shown as positive and negative, respectively, for visual purposes. Outflows through the S-77 and S-308 structures are shown based on their downstream gauges to account for lock openings for navigation.

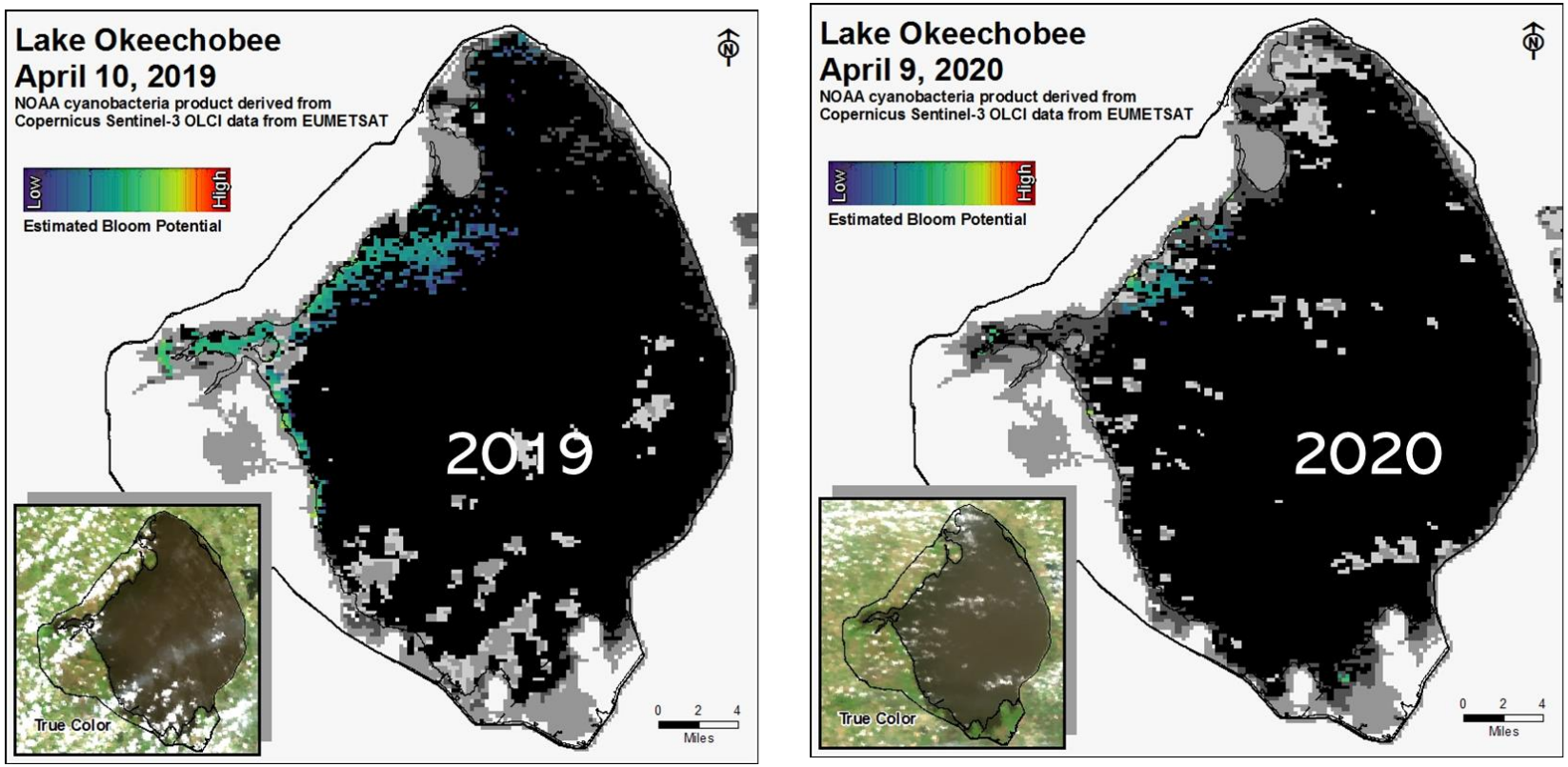


Figure 6. Potential for cyanobacterial blooms on Lake Okeechobee in early April 2019 and 2020, based on NOAA's harmful algal bloom monitoring system. Gray color indicates cloud cover.

ESTUARIES

St. Lucie Estuary:

Last week total inflow to the St. Lucie Estuary averaged approximately 372 cfs (Figures 1 and 2) and last month inflow averaged about 226 cfs. Last week's provisional averaged inflows from the tidal basin and the structures are shown in Table 1.

Table 1. Weekly average inflows (data are provisional).

Location	Flow (cfs)
Tidal Basin Inflow	341
S-80	0
S-308	32
S-49 on C-24	0
S-97 on C-23	0
Gordy Rd. structure on Ten Mile Creek	31

Over the past week in the estuary, salinity increased at HR1 and US1 but remained about the same at A1A (Table 2, Figures 3 and 4). The seven-day moving average of the water column (an average of the surface and bottom salinity) at the US1 Bridge is 26.0. Salinity conditions in the middle estuary are estimated to be within the good range for adult eastern oysters (Figure 3).

Table 2. Seven-day average salinity at three monitoring sites in the St. Lucie Estuary. Current average is in bold face type, previous average in parentheses. The envelope reflects the preferred salinity range for adult eastern oysters (*Crassostrea virginica*) in the middle estuary.

Sampling Site	Surface	Bottom	Envelope
HR1 (North Fork)	**23.3** (21.3)	**24.5** (23.8)	NA[1]
US1 Bridge	**25.9** (25.2)	**26.1** (25.9)	10.0-26.0
A1A Bridge	**31.4** (31.6)	**32.0** (32.6)	NA[1]

[1]Envelope not applicable

Caloosahatchee Estuary:

Last week total inflow to the Caloosahatchee Estuary averaged approximately 494 cfs (Figures 5 and 6) and last month inflow averaged approximately 639 cfs. Last week's provisional averaged inflows from the structures and the tidal basin are shown in Table 3.

Table 3. Weekly average inflows (data is provisional).

Location	Flow (cfs)
S-77	761
S-78	321
S-79	411
Tidal Basin Inflow	83

Over the past week, salinity increased throughout the estuary (Table 4, Figures 7 and 8). The seven-day average salinity values are within the good range for adult eastern oysters at Cape Coral, in the fair range at Shell Point and in the poor range at Sanibel (Figure 9). The seven-day average surface salinities (Table 4) are in the good range for tape grass at Val I-75 and in the fair range at Ft. Myers.

Table 4. Seven-day average salinity at six monitoring stations in the Caloosahatchee Estuary. Current average is in bold, previous average in parentheses. The envelope at Val I-75 is for the protection of tape grass in the upper estuary and the envelope in the lower estuary reflects the preferred salinity range for adult eastern oysters (*Crassostrea virginica*).

Sampling Site	Surface	Bottom	Envelope
S-79 (Franklin Lock)	**3.0** (2.1)	**4.0** (3.0)	NA[1]
Val I75	**5.1** (3.8)	**6.4** (5.1)	0.0-5.0[2]
Ft. Myers Yacht Basin	**13.4** (11.7)	**14.5** (13.7)	NA
Cape Coral	**22.3** (20.6)	**23.9** (22.6)	10.0-30.0
Shell Point	**32.2** (30.2)	**32.7** (30.9)	10.0-30.0
Sanibel	**34.6** (33.6)	**35.7** (34.6)	10.0-30.0

[1]Envelope not applicable and [2]Envelope is based on a 2-week forecast 30-day average.

Forecast of surface salinity (Table 5 and Figure 10) at Val I-75 for the next two weeks using the autoregression model (Qiu and Wan, 2013) coupled with a linear reservoir model for the tidal basin predicts daily salinity ranging from 4.2 to 8.4 at the end of the two week period for pulse release at S-79 ranging from 0 to 1000 cfs and estimated Tidal Basin inflows of 70 cfs. The 30-day moving average surface salinity at Val I-75 is forecast to be between 4.3 and 5.8 (Table 5). The current salinity conditions at Val I-75 are outside of the envelope of salinity 0.0-5.0 for this site (Table 4).

Table 5. Predicted salinity at Val I-75 at the end of forecast period

Scenario	Q79 (cfs)	TB runoff (cfs)	Daily salinity	30 day Mean
A	0	70	8.4	5.8
B	450	70	6.6	5.0
C	650	70	5.1	4.6
D	800	70	4.8	4.5
E	1000	70	4.2	4.3

Red tide

The Florida Fish and Wildlife Research Institute reported on April 10, 2020, that *Karenia brevis,* the Florida red tide dinoflagellate, was not observed in samples collected from or offshore of Lee, St. Lucie, or Palm Beach counties (no samples were analyzed this week from Martin, Broward or Miami-Dade counties).

Water Management Recommendations

Lake stage is in the Beneficial Use Flow sub-band. Tributary conditions are dry. The South Florida Water Management District's Lake Okeechobee Adaptive Protocol's Release Guidance suggests up to 300 cfs at S-79 and S-77 environmental water supply release to supplement as needed to the Caloosahatchee Estuary.

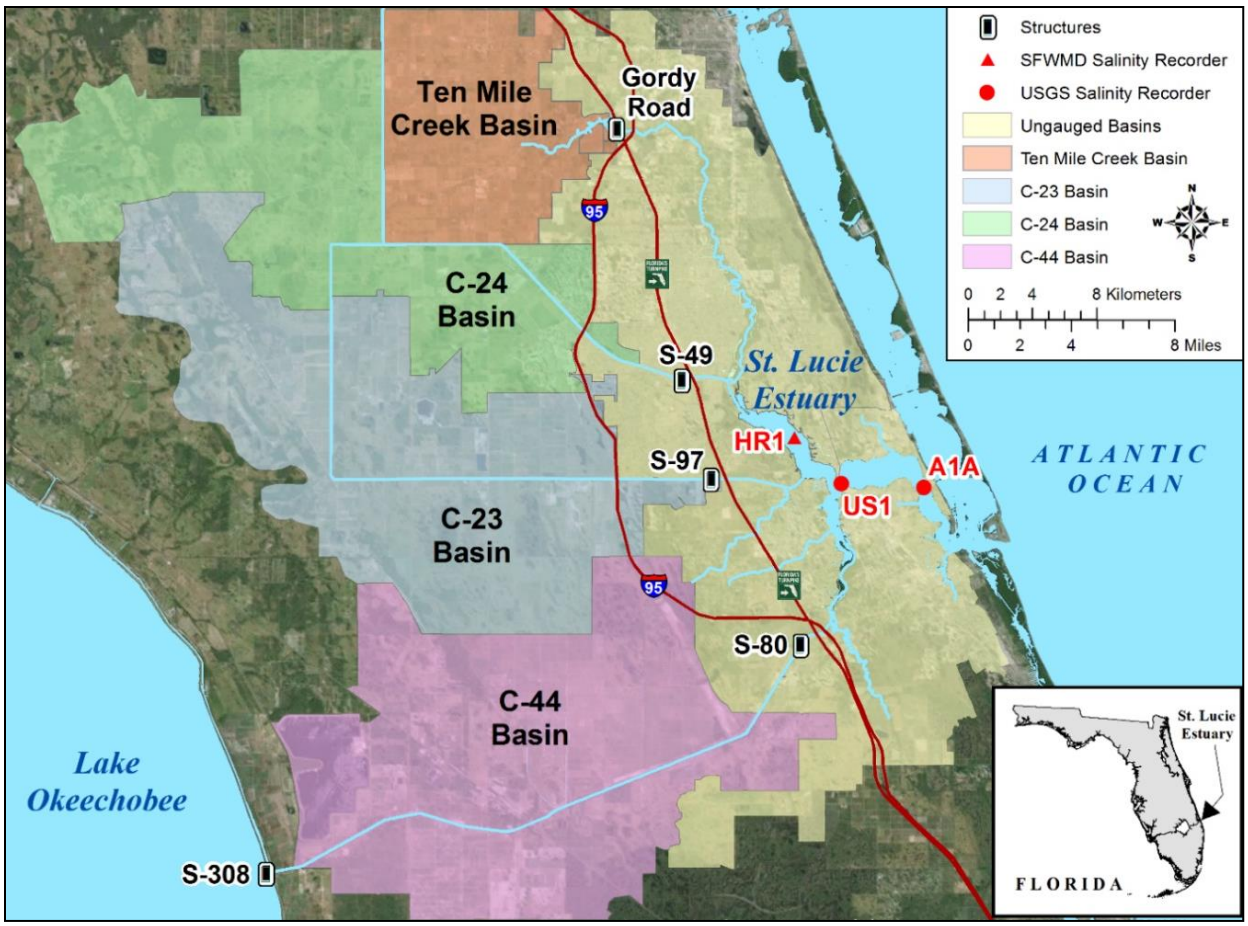


Figure 1. Basins, water control structures, and salinity monitoring for the St. Lucie Estuary.

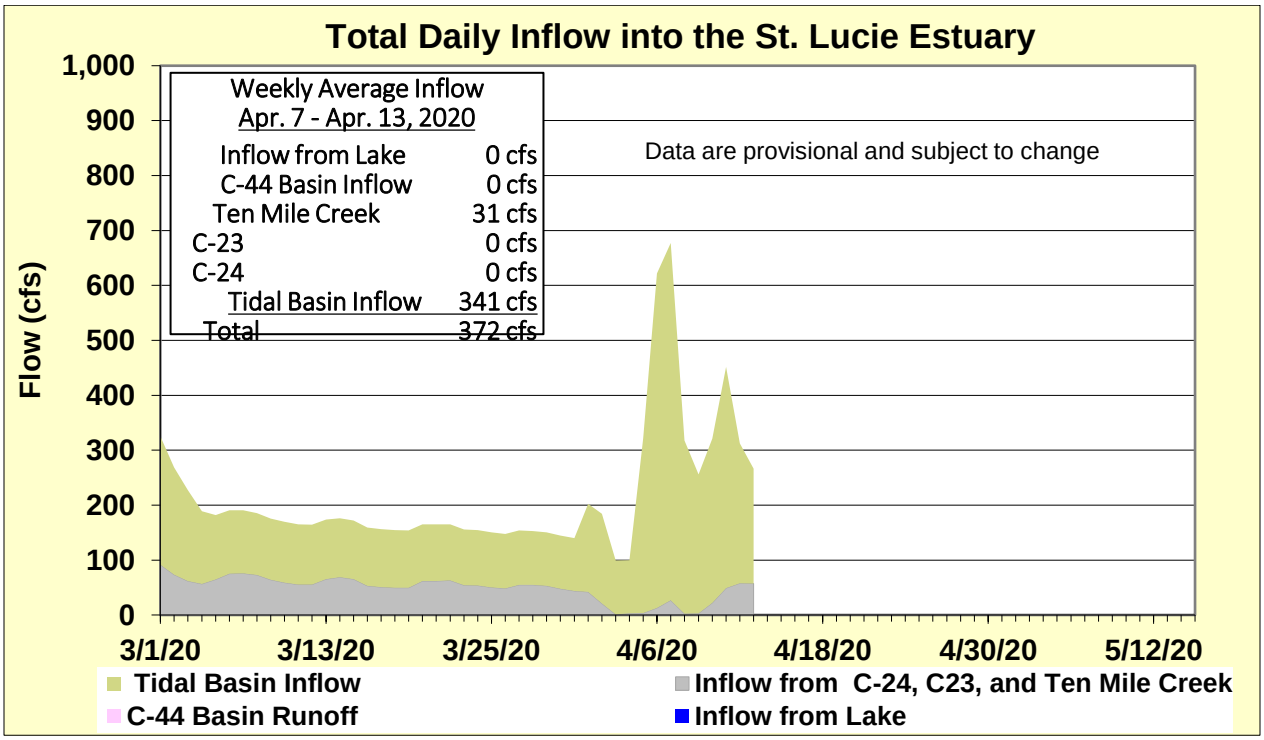


Figure 2. Total daily inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and tidal basin into the St. Lucie Estuary.

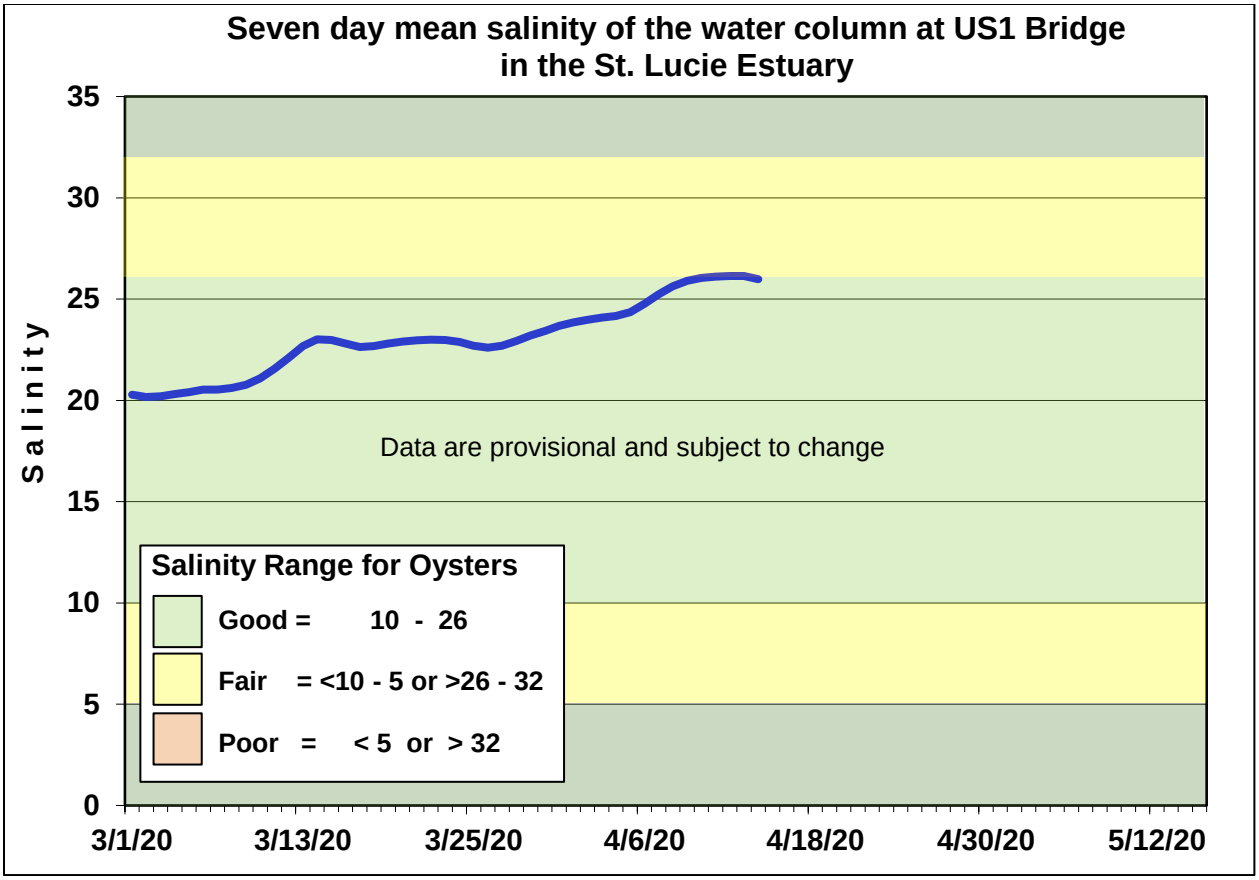


Figure 3. Seven-day mean salinity of the water column at the US1 Bridge.

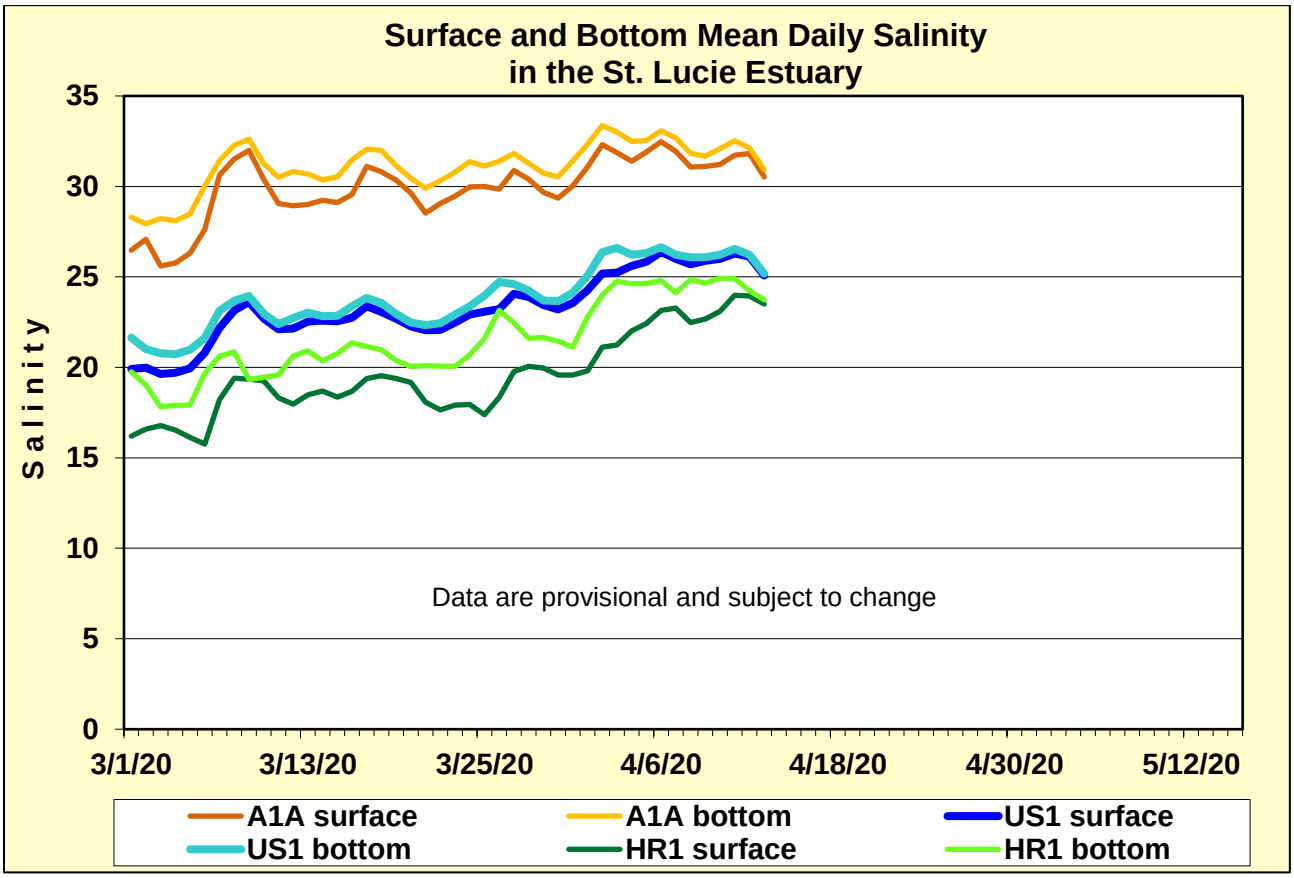


Figure 4. Daily mean salinity at the A1A, US1, and HR1 stations.

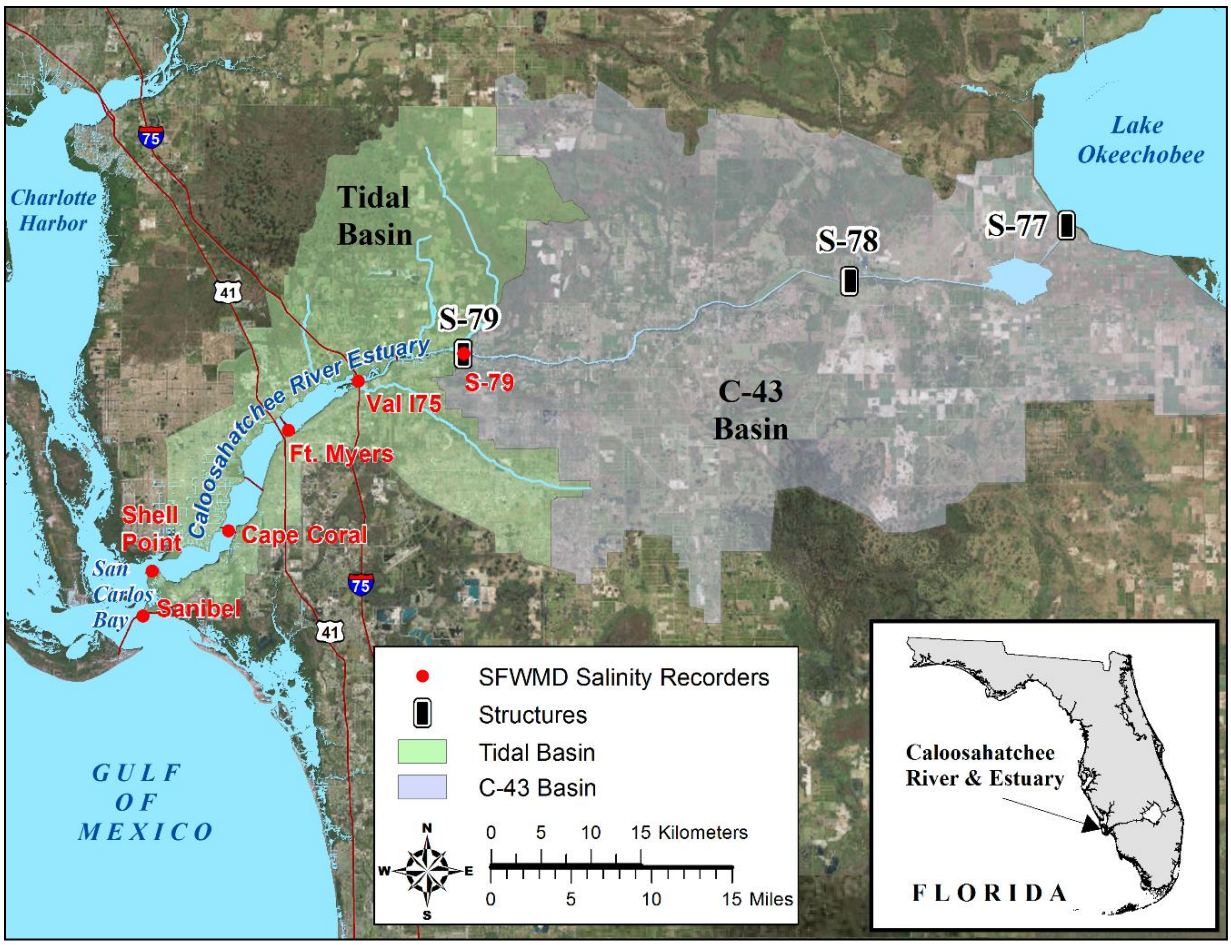


Figure 5. Basins, water control structures, and salinity monitoring for the Caloosahatchee Estuary.

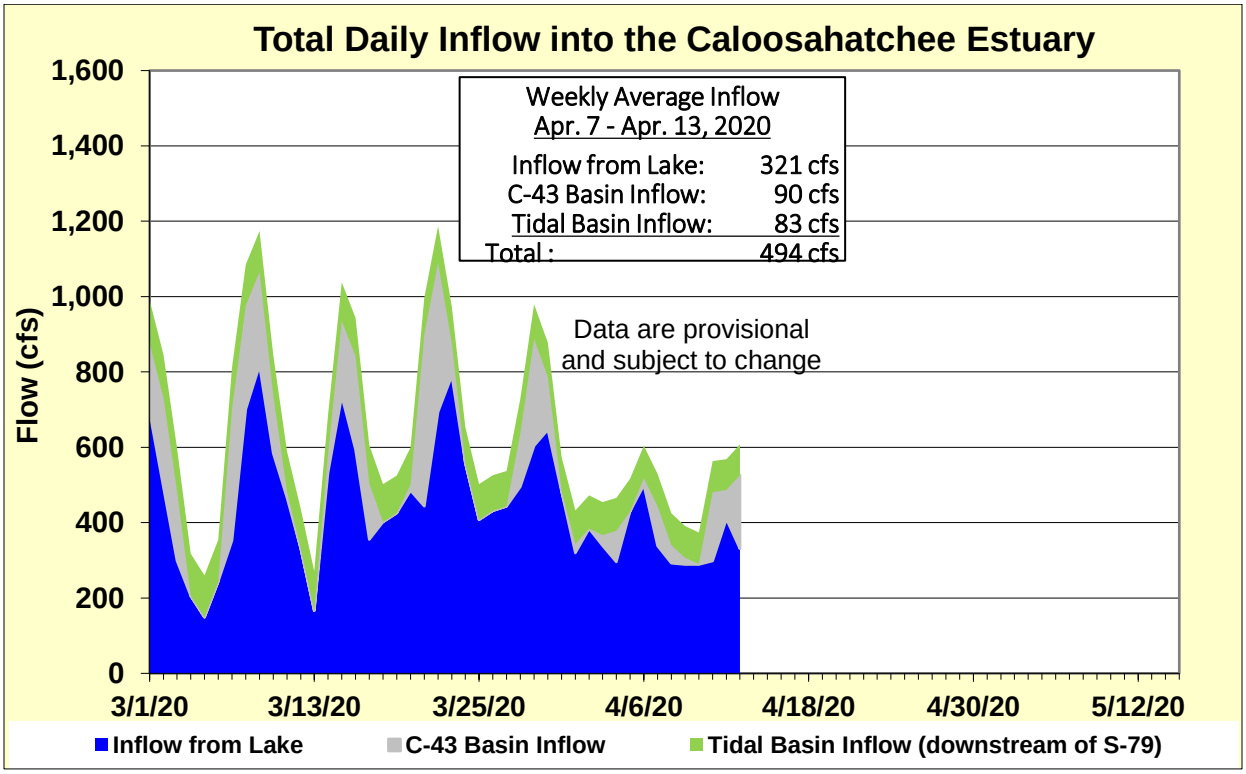


Figure 6. Total daily inflows from Lake Okeechobee, runoff from the C-43 basin.

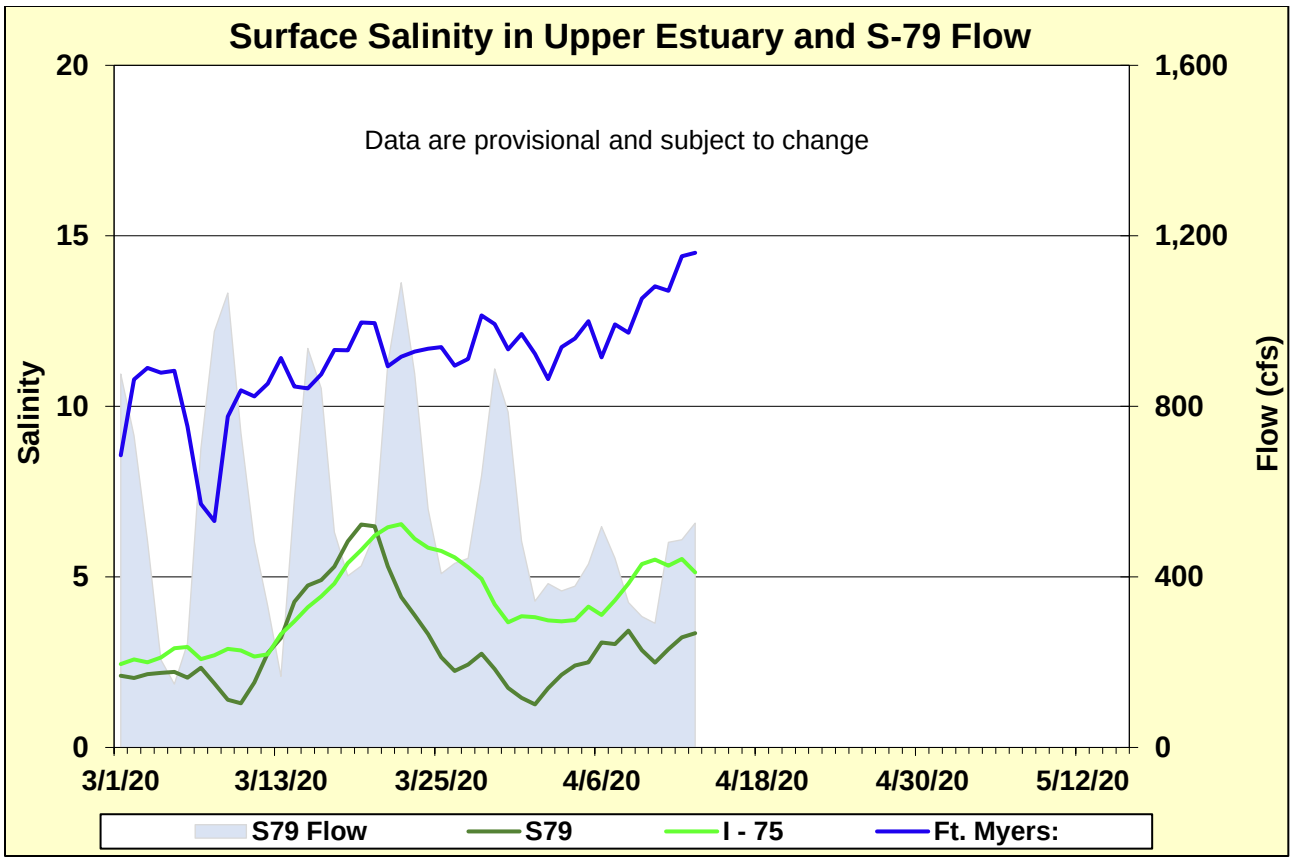


Figure 7. Daily mean flows at S-79 and salinity at upper estuary monitoring stations.

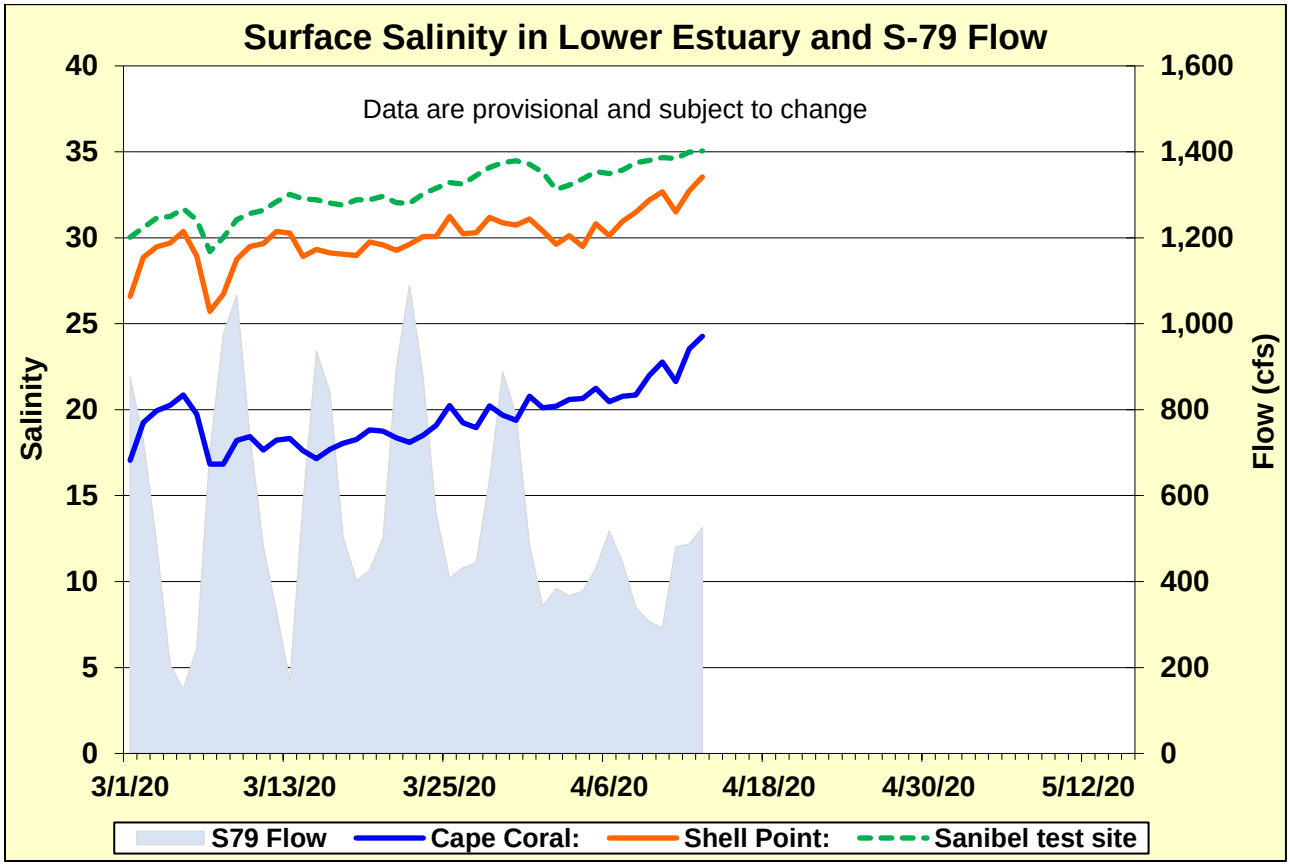


Figure 8. Daily mean flows at S-79 and salinity at lower estuary stations.

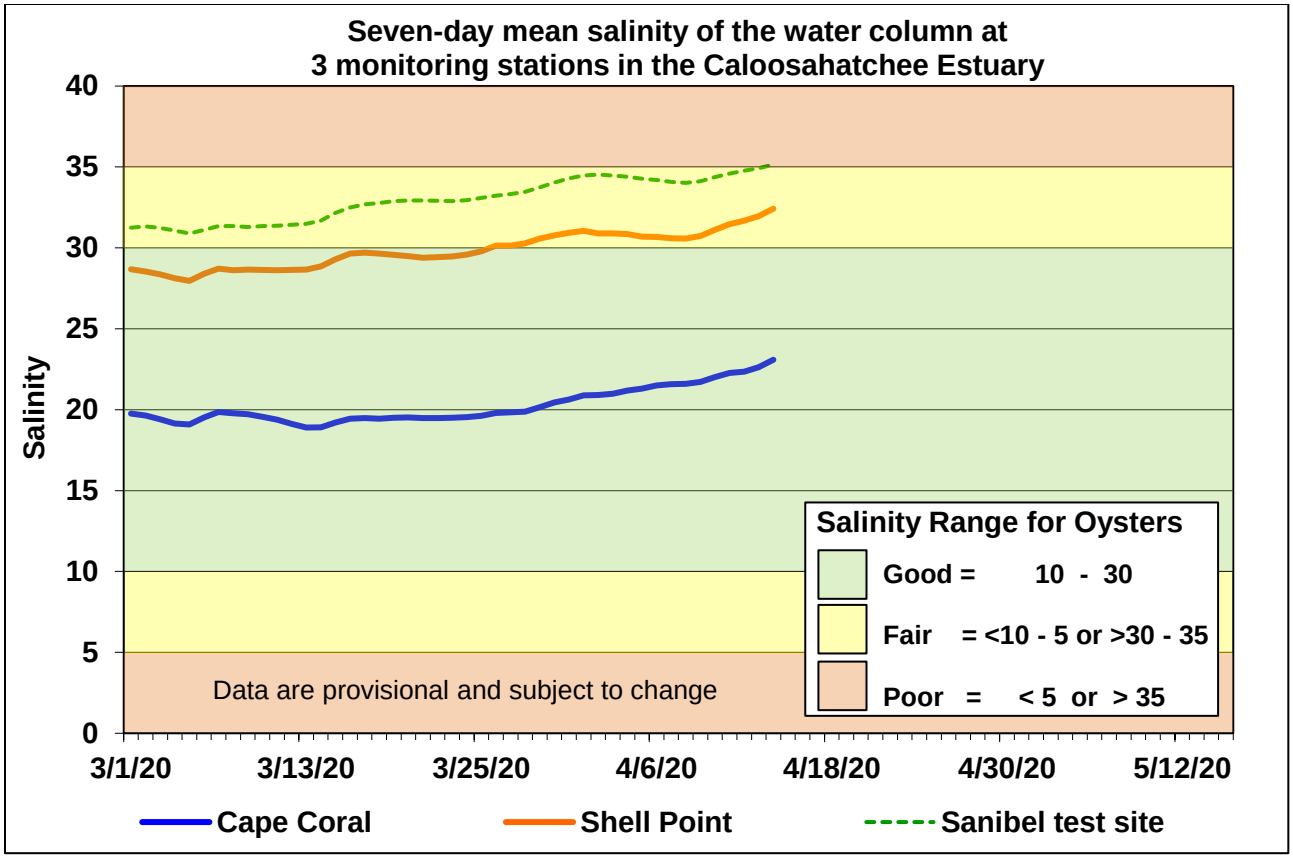


Figure 9. Seven-day mean salinity at Cape Coral, Shell Point, and Sanibel monitoring stations.

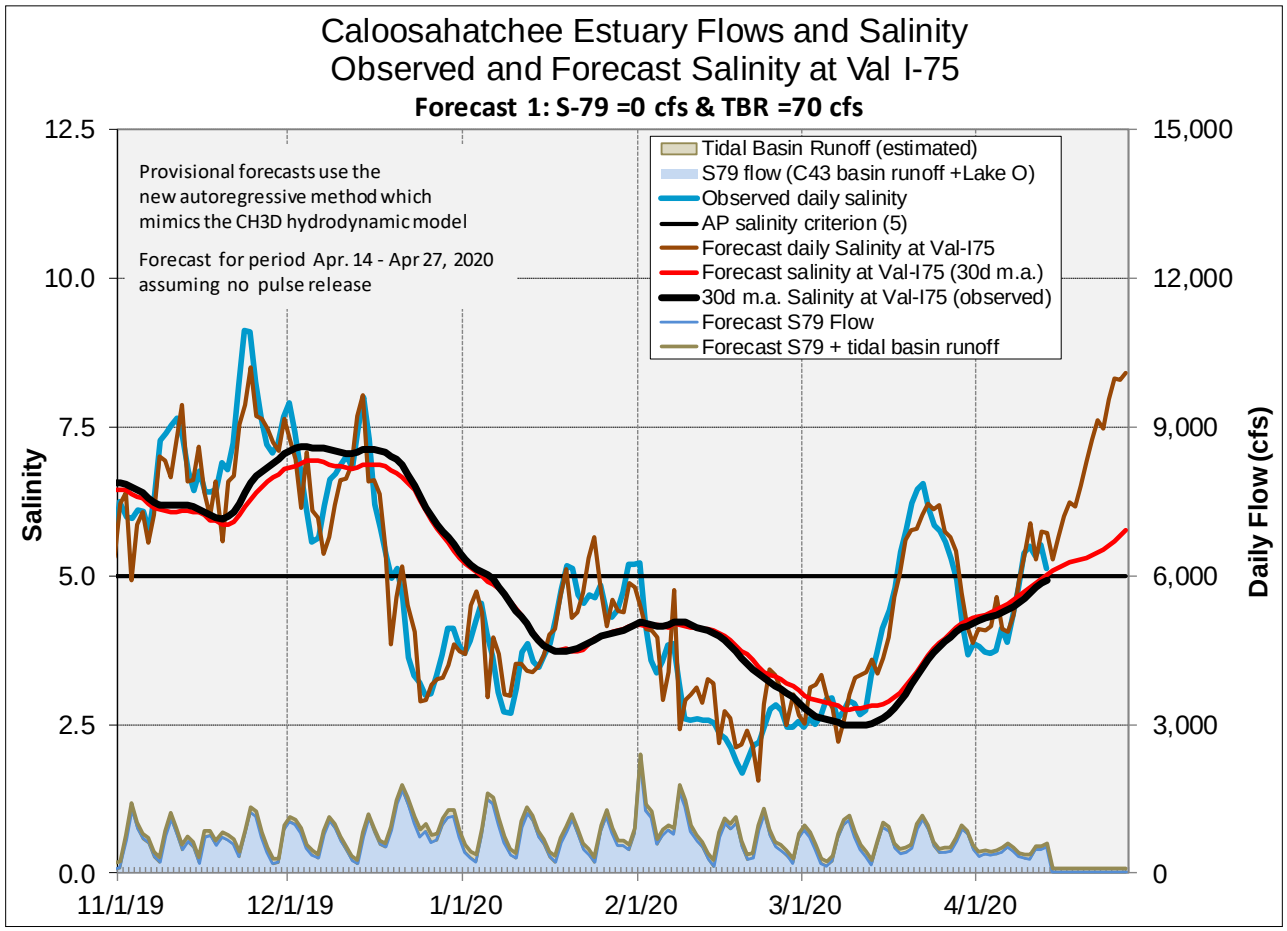


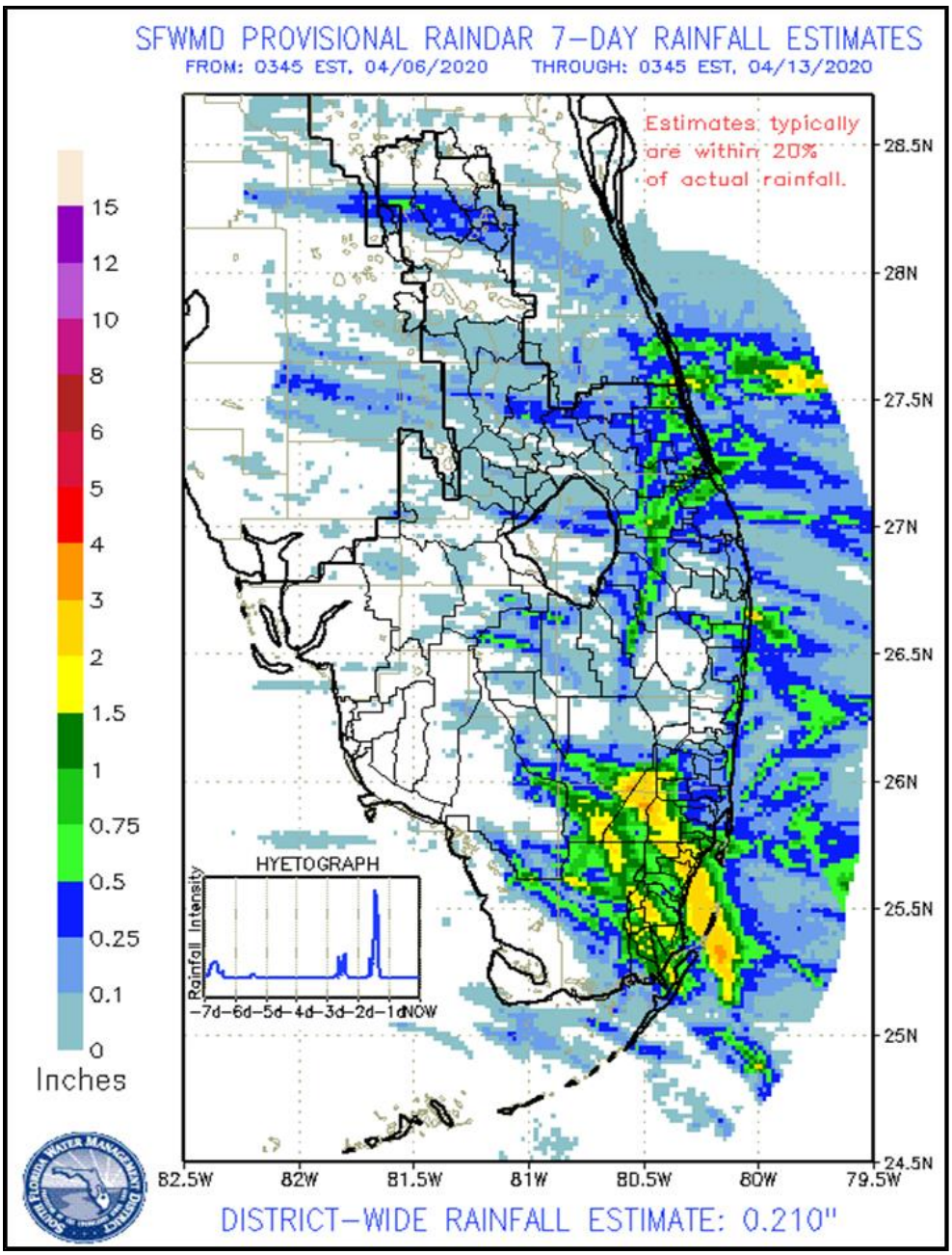
Figure 10. Forecasted Val I-75 surface salinity assuming no pulse release at S-79.

EVERGLADES

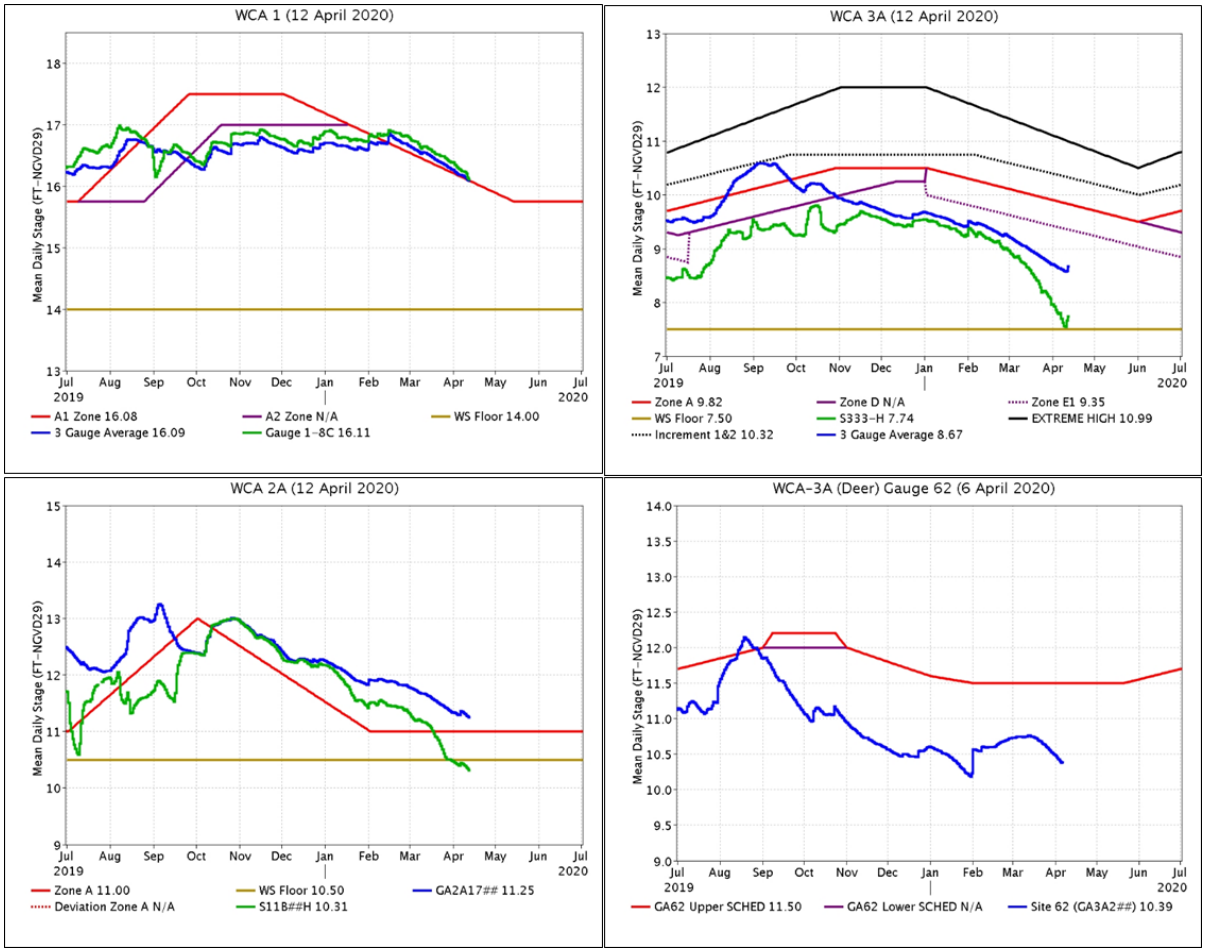
Very little rain fell north of I-75 within the WCA's, while WCA-3A South and WCA-3B recorded significant amounts. Very little rainfall occurred over the ENP. At the gauges monitored for this report, stages fell on average 0.06 feet last week and ranged from -0.23 to +0.14. Evaporation was estimated at 1.74 inches last week.

Everglades Region	Rainfall (Inches)	Stage Change (feet)
WCA-1	0.02	−0.12
WCA-2A	0.02	−0.09
WCA-2B	0.01	−0.15
WCA-3A	0.45	−0.04
WCA-3B	1.68	+0.04
ENP	0.30	+0.01

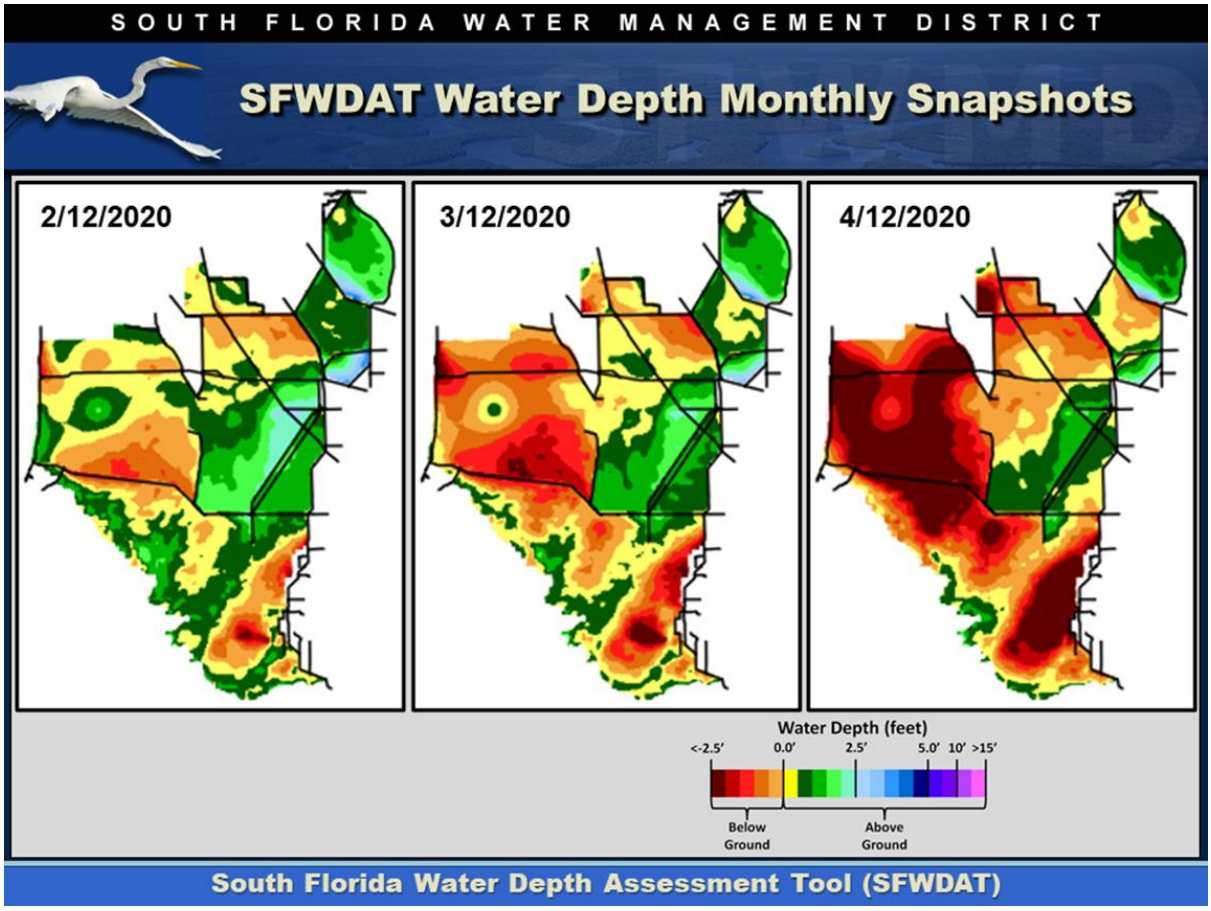
Good
Fair
Poor

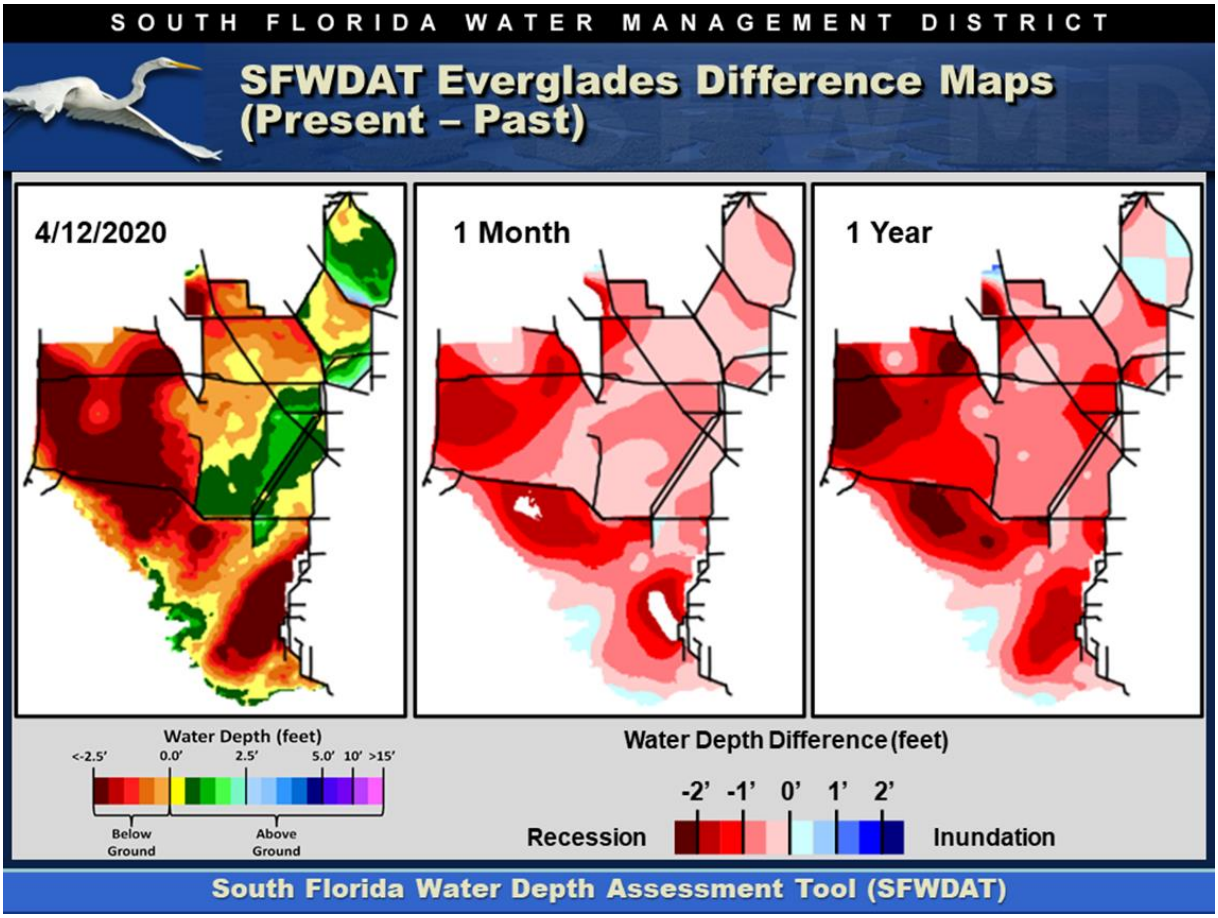


Regulation Schedules: WCA-1: Stage at the 1-8C_Gauge trends near parallel to the falling regulation line last week, currently 0.03 feet above the Zone A1 line. WCA-2A: Stage at Gauge S11-B fell below the water supply floor of the regulation schedule last week, currently 0.19 feet below. WCA-3A: The three-gauge average stage recovered slightly last week but continues to trend down and away from the falling Zone E1 regulation line last week, presently 0.68 feet below that line. WCA-3A at gauge 62 (northwest corner): Stage continues to trend down and away from the stable upper schedule now 1.32 feet below the regulation line.

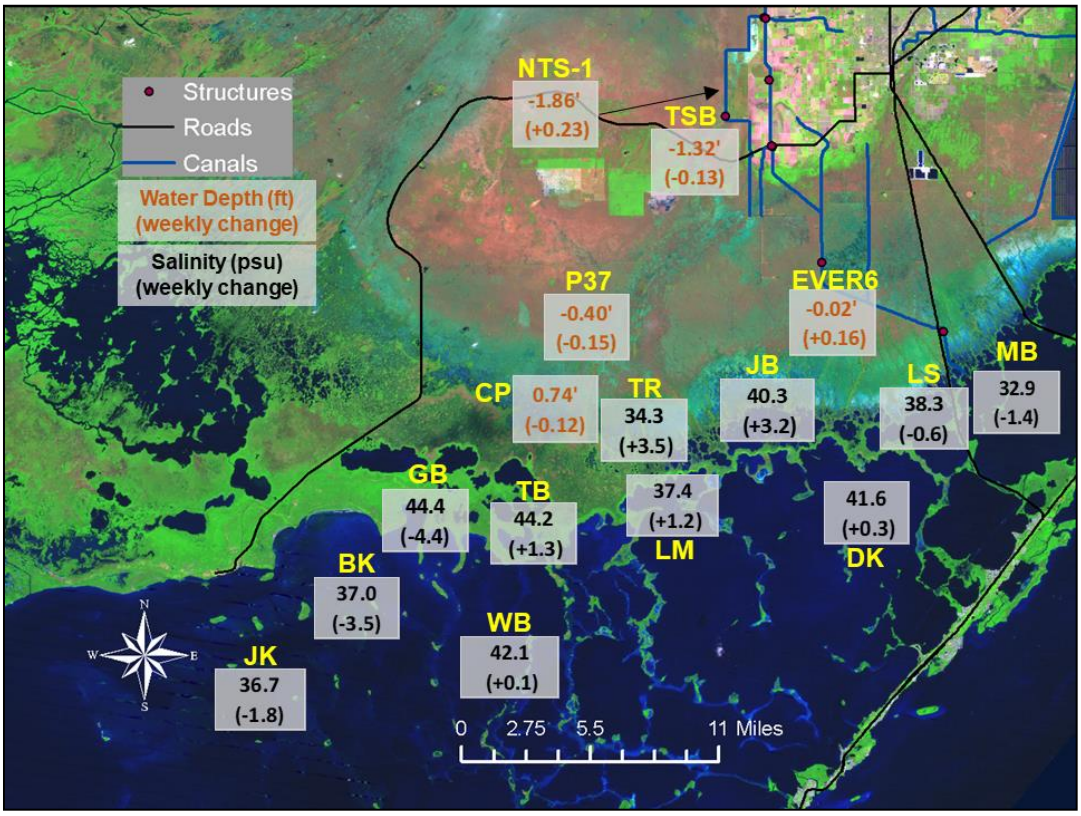


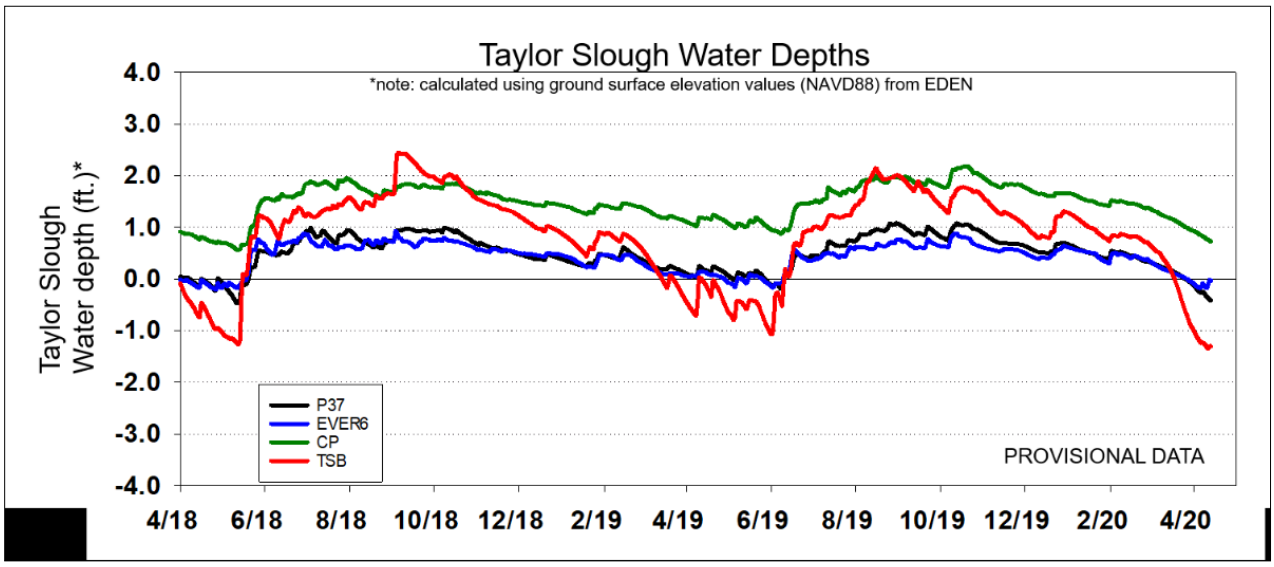
Water Depths: The WDAT tool for spatial interpolation of depth monthly snapshots indicate depths significantly below ground across WCA-3A North and more than a foot below in the extreme northeast and northwest regions. The interior of WCA-2A is drying down to ground surface, with the northern sections along the L-39 now below ground. WCA-1 depths look stable and drawing down from north to south. The sloughs in ENP have all dried down to near- or ground surface. Looking back one year, the stage difference patterns are similar and more dramatic. The entirety of WCA-3A and WCA-2A are significantly lower in stage. WCA-2A is most dramatically lower in stage in the northeastern regions of that basin and WCA-3A in the northwest and in the northern reaches of the L-67 canals. WCA-1 stages are similar to a year ago. The WDAT model indicates a much drier condition in the western basins compared to a month and a year ago.

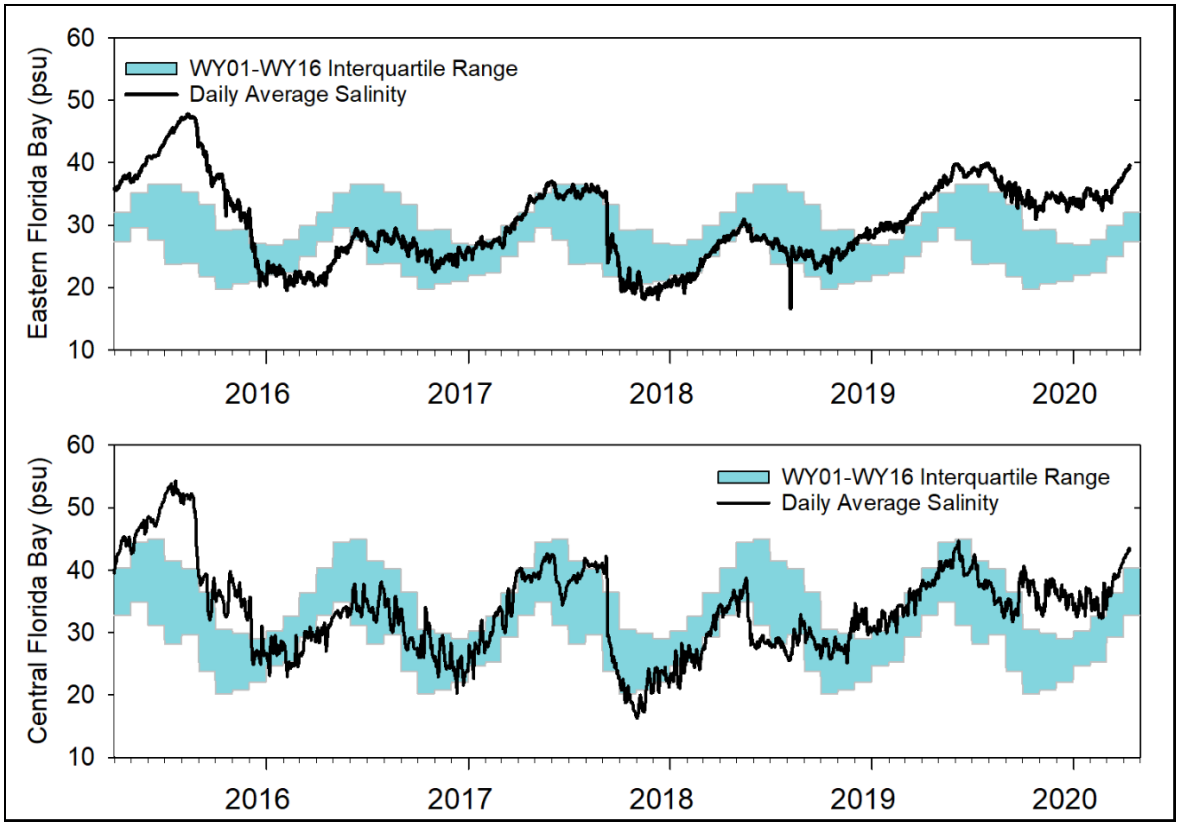

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
SFWDAT Water Depth Monthly Snapshots
2/12/2020
3/12/2020
4/12/2020
Water Depth (feet)
<-2.5'
0.0'
2.5'
5.0'
10'
>15'
Below Ground
Above Ground
South Florida Water Depth Assessment Tool (SFWDAT)

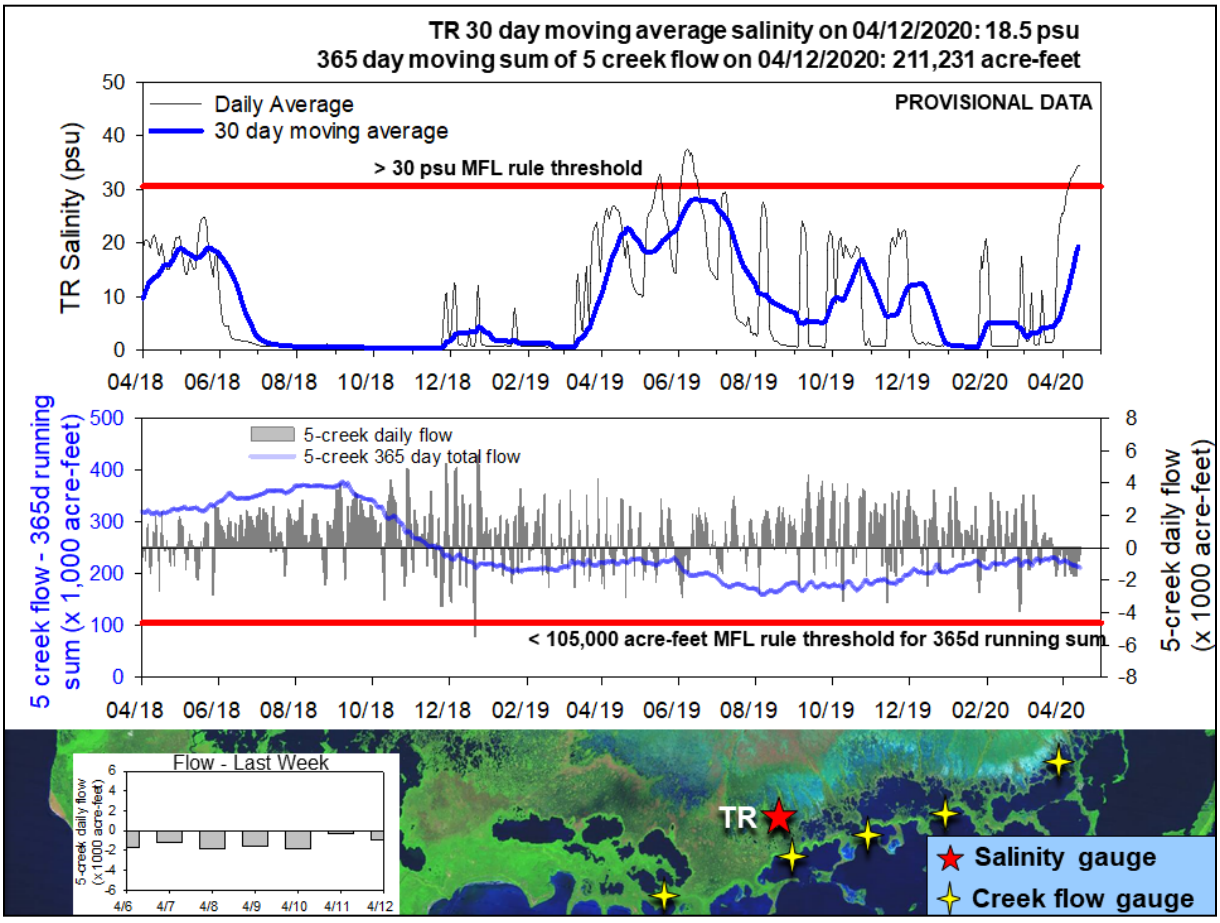

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
SFWDAT Everglades Difference Maps (Present – Past)
4/12/2020
1 Month
1 Year
Water Depth (feet)
<-2.5'
0.0'
2.5'
5.0'
10'
>15'
Below Ground
Above Ground
Water Depth Difference (feet)
-2'
-1'
0'
1'
2'
Recession
Inundation
South Florida Water Depth Assessment Tool (SFWDAT)

Taylor Slough Water Levels: An average of 0.33 inches of rain fell over Taylor Slough and Florida Bay this last week, and stage changes averaged out to nearly no change over the slough since two below ground regions experienced increases due to the rainfall (Upper Taylor Slough and the ENP panhandle). Northern Taylor Slough is averaging 9 inches below the historical average, while the ENP panhandle region is 3 inches above the historical average this week.






Eastern Florida Bay (psu)
WY01-WY16 Interquartile Range
Daily Average Salinity
60
50
40
30
20
10
2016
2017
2018
2019
2020
Central Florida Bay (psu)
WY01-WY16 Interquartile Range
Daily Average Salinity
60
50
40
30
20
10
2016
2017
2018
2019
2020


TR 30 day moving average salinity on 04/12/2020: 18.5 psu
365 day moving sum of 5 creek flow on 04/12/2020: 211,231 acre-feet
TR Salinity (psu)
Daily Average
30 day moving average
PROVISIONAL DATA
> 30 psu MFL rule threshold
50
40
30
20
10
0
04/18
06/18
08/18
10/18
12/18
02/19
04/19
06/19
08/19
10/19
12/19
02/20
04/20
5 creek flow - 365d running sum (x 1,000 acre-feet)
5-creek daily flow
5-creek 365 day total flow
< 105,000 acre-feet MFL rule threshold for 365d running sum
5-creek daily flow (x 1000 acre-feet)
500
400
300
200
100
0
8
6
4
2
0
-2
-4
-6
-8
Flow - Last Week
5-creek daily flow (x1000 acre-feet)
6
4
2
0
-2
-4
-6
4/6
4/7
4/8
4/9
4/10
4/11
4/12
TR
Salinity gauge
Creek flow gauge

Florida Bay Salinities: Average salinity in Florida Bay decreased 0.5 this week. Florida Bay average salinity was 7 higher than the historical average for this time of year with the nearshore area being 9 higher than average. This is the time of year when salinities can increase rapidly.

Florida Bay MFL: Salinity at the TR station in the mangrove zone (tracked for the Florida Bay MFL) continued increasing to 34 over the last week. The 30-day moving average increased 7.2 to end at 18.5. Weekly flow from the 5 creeks identified by yellow stars on the map totaled approximately -9,000 acre-feet last week with negative flows all last week again. The 365-day moving sum of flow from the 5 creeks (tracked as part of the Florida Bay MFL criteria) decreased 7,000 acre-feet this week to end at 211,231 acre-feet, between the 25th percentile (192,885 acre-feet) and the median (249,091 acre-feet). Creek flow are provisional USGS data.

Water Management Recommendations

Discharges into historically over drained northeastern WCA-3A have the potential to maintain saturated soils and protect these over-drained portions of the Everglades. The ecological benefits include conserving peat and lowering the risk of muck fires especially as depths near the 1.0 foot below ground mark, stages at Gauge 63 in northeastern WCA-3A are 0.50 feet below ground. While any moderation of recession rates in WCA-3A North are beneficial, available water sent through the S-150 into Northeastern WCA-3A would have greater ecological value than the same amount of water discharged in Northwestern 3A. Flows towards Taylor Slough and Florida Bay freshen salinity conditions within the nearshore areas of Florida Bay and decrease the currently stressful conditions for seagrasses and fauna as nearshore salinities remain elevated, decreasing the estuarine gradient within the bay. More specific recommendations appear in the summary table below. The red text represents new or modified information or recommendations.

SFWMD Everglades Ecological Recommendations, April 14th, 2020 (red is new)			
Area	Weekly change	Recommendation	Reasons
WCA-1	Stage decreased by 0.12'	Conserving water in this basin has ecological benefit.	Protect downstream habitat and wildlife. Provide wading bird foraging opportunities later in the dry season.
WCA-2A	Stage decreased by 0.09'	Moderating the recession rate and conserving water in this basin has ecological benefit.	Protect upstream/downstream habitat and wildlife. Provide wading bird foraging opportunities as wading bird nesting builds in this basin.
WCA-2B	Stage decreased by 0.15'	Conserving water in this basin has benefit.	Protect upstream/downstream habitat and wildlife.
WCA-3A NE	Stage decreased by 0.04'	Conserving water and slowing the recession in this basin has ecological benefit as current water depths are well below seasonal averages. Inflows to this region have great ecological benefit.	Protect and conserve peat soils.
WCA-3A NW	Stage decreased by 0.23'	Conserving water and slowing the recession in this basin has ecological benefit as current water depths. Inflows to this region have ecological benefit.	
Central WCA-3A S	Stage increased by 0.05'	Conserving water and slowing the recession in this region has ecological benefit as current water depths are below seasonal averages. Inflows to this region have great ecological benefit.	Protect upstream/downstream habitat and wildlife. Protect wading bird foraging as nesting continues to build.
Southern WCA-3A S	Stage increased by 0.06'		
WCA-3B	Stage increased 0.04'	Conserving water in this basin has benefit.	Protect tree islands, upstream/downstream habitat and wildlife.
ENP-SRS	Stage increased 0.01'	Make discharges to the Park according to the 2012 WCP rainfall plan.	Protect upstream/downstream habitat and wildlife.
Taylor Slough	Stage changes ranged from −0.15' to +0.23'	Move water southward as possible	When available, provide freshwater buffer for downstream conditions.
FB- Salinity	Salinity changes ranged −4.4 to +3.2 psu	Move water southward as possible	When available, provide freshwater to maintain low salinity buffer and promote water movement.