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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: March 4, 2020

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Weather Conditions and Forecast

A surface high pressure extending from the central Atlantic to Florida this morning will shift eastward as a storm system forming over the Rio Grande Valley pushes into southeast Texas by Wednesday. Southerly low-level winds around the high-pressure area will transport an increasing supply of moisture over the District and provide for much warmer temperatures over the next couple of days. In fact, near-record high temperatures are possible over the interior of the District on Wednesday and record highs are likely over the interior and east on Thursday. Despite the enhanced moisture, strong atmospheric stability should inhibit any organized areas of rain through mid-afternoon on Thursday, except for some light shower activity along or near the southeast coast of Florida and the Florida Keys today. The storm system over southeast Texas will race east-northeastward along the northern Gulf coast later Wednesday and Thursday and be well offshore of the southeast coast of the United States by daybreak on Friday, with a trailing cold front pushing through all but the southeast part of the District by that time. Scattered showers, and perhaps the most meaningful rain of the week, are expected to push into the northwestern part of the District by Thursday evening and then spread rapidly southeastward overnight. The rains are not forecast to be that heavy, and it would be surprising to see more than a tenth of an inch of total District rainfall. The last of the rains should exit the southeast coast of Florida by Friday morning, probably before sunrise, with a cooler and much drier air mass associated with high pressure building southeastward into Florida from the Midwest by later in the day. Dry and cool conditions are expected to persist throughout the weekend, but moderating temperatures and a marginal return of low-level moisture forecast by Sunday as the high-pressure area begins to move into the western Atlantic and the low-level winds veer to the east. The easterly winds should transport somewhat greater moisture over the District by Monday, which could result in a nominal but noticeable increase of shower activity over the eastern part of the District by that time. But overall, little significant rainfall is expected. For the week ending next Tuesday morning, the deterministic total District quantitative precipitation forecast (QPF) is less than a tenth of an inch or about 10-15% of normal. The model probabilistic output is in strong agreement with the deterministic forecast of much below normal rainfall, indicating an upper quartile of around 30-35% of normal.

Kissimmee

Tuesday morning stages were 52.9 feet NGVD (5.1 feet below schedule) in East Lake Tohopekaliga, 54.0 feet NGVD (1.0 feet below schedule) in Tohopekaliga, and 51.4 feet NGVD (0.4 feet above schedule) in Kissimmee-Cypress-Hatchineha. Headwater stages were 46.2 feet NGVD at S-65A and 25.7 feet NGVD at S-65D. Tuesday morning discharges were 995 cfs at S-65, 955 cfs at S-65A, 971 cfs at S-65D, and 863 cfs at S-65E. Dissolved oxygen concentration in the Kissimmee River averaged 8.4 mg/L for the week through Sunday. Kissimmee River mean floodplain depth on Sunday was 0.25 feet. ***Today's recommendations:*** Maintain S-65A discharge at 950 cfs or less to protect construction

work on the Kissimmee River floodplain (as recommended by USACE) and continue the snail kite recession on Lake Tohopekaliga to reach low pool (52.0 feet NGVD) on June 1, 2020.

Lake Okeechobee

Lake Okeechobee stage was 12.62 feet NGVD on March 2, 2020, down 0.15 feet from the previous week, and down 0.27 feet from the previous month. The Lake remains in the Base Flow sub-band and is 0.02 feet above the Beneficial Use sub-band. Water levels moved below the ecological envelope (which varies seasonally from 12.5 – 15.5 feet NGVD +/- 0.5 feet) on October 15, 2019 and are currently 1.11 feet below the bottom of the 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. Wading bird and snail kite nesting efforts are likely to be lower for the second consecutive year on the Lake if stages continue below the ecological envelope throughout the breeding season.

Estuaries

Total inflow to the St. Lucie Estuary averaged 436 cfs over the past week with no flow coming from Lake Okeechobee. Salinities increased slightly at HR1 but decreased 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 552 cfs over the past week with 359 cfs coming from the Lake. Salinity increased slightly in the estuary over the past week. Salinities are in the good range for tape grass at Val I-75 and Ft. Myers. Salinities are in the good range for adult eastern oysters at Cape Coral and Shell Point and in the fair range at Sanibel. Lake stage is in the Base Flow sub-band of 2008 LORS. Tributary hydrological conditions are dry. The 2008 LORS release guidance suggests releases of up to 450 cfs at S-79 and up to 200 cfs at S-80.

Stormwater Treatment Areas

Over the past week, 11,500 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 125,300 ac-feet. The total amount of inflows to the STAs in WY2020 is approximately 928,200 ac-feet. Most STA cells are above target, 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 Central Flow-way for energy dissipator installation, in STA-1E Eastern and Central Flow-way for East Distribution Cell levee repairs, in STA-1E Central Flow-way, STA-2 Flow-way 3, and STA-2 Flow-way 4 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 2008 LORS recommends Lake releases to the WCAs and the conditions allow, releases will be sent to STA-2 or A-1 FEB/STA-3/4.

Everglades

Current stages in northeastern WCA-3A remain below average (Site 62 in the northwest is 0.08 feet below and Site 63 in the northeast is 0.78 feet below) for this time of year and salinities are above average in Florida Bay. Conserving fresh water in the Everglades, distributing it to where depths are low (WCA-3A North) and allowing it to flow south has important ecological benefit. As wading bird nesting begins in the Everglades, ecological recommendations move towards moderating recession rates where and when possible. However, given the below average stages in key foraging areas it currently remains ecologically desirable to conserve as much water as possible. This recommendation is expected to change as wading bird nesting increases in the Everglades. Near average precipitation fell over Taylor Slough and Florida Bay this last week and stages fell slightly but remain above average, especially in Upper Taylor Slough. Salinities in both the nearshore and the bay proper remain above average as we move into the time of year where salinities will begin to increase rapidly with higher temperatures and dry conditions.

Supporting Information

KISSIMMEE BASIN

Kissimmee Basin Rainfall

The Upper Kissimmee Basin received 0.26 inches of rainfall in the past week and the Lower Basin received 0.40 inches (SFWMD Daily Rainfall Report 3/1/2020).

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: 3/3/2020

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)						
							3/1/20	2/23/20	2/16/20	2/9/20	2/2/20	1/26/20	1/19/20
Lakes Hart and Mary Jane	S-62	20	LKMJ	60.8	R	61.0	-0.2	-0.1	-0.2	0.0	0.0	0.0	-0.1
Lakes Myrtle, Preston, and Joel	S-57	4	S-57	61.0	R	61.0	0.0	0.0	-0.1	0.0	0.1	0.0	0.0
Alligator Chain	S-60	0	ALLI	63.4	R	64.0	-0.6	-0.5	-0.5	-0.5	-0.5	-0.6	-0.5
Lake Gentry	S-63	0	LKGT	61.4	R	61.5	-0.1	-0.1	0.1	0.0	0.0	-0.1	-0.1
East Lake Toho	S-59	0	TOHOE	0.0	R	58.0	-58.0	-4.8	-4.4	-4.1	-3.7	-3.4	-3.2
Lake Toho	S-61	475	TOHOW, S-61	54.0	R	55.0	-1.0	-0.9	-0.7	-0.5	-0.4	-0.5	-0.5
Lakes Kissimmee, Cypress, and Hatchineha	S-65	983	KUB011, LKIS5B	51.5	R	51.1	0.4	0.3	-0.1	-0.4	-0.8	-0.7	-0.6

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. Mean daily dissolved oxygen concentrations, discharge, temperature, and rainfall are shown in Figure 5. Kissimmee River floodplain stages at selected stations are shown in Figures 6-8.

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: 3/3/2020

Metric	Location	1-Day Average		Average for the Preceding 7-Days ¹							
		3/1/2020	3/1/20	2/23/20	2/16/20	2/9/20	2/2/20	1/26/20	1/19/20	1/12/20	1/5/20
Discharge (cfs)	S-65	997	983	918	922	853	808	719	606	408	211
Discharge (cfs)	S-65A ²	959	956	930	895	823	766	736	557	445	314
Discharge (cfs)	S-65D ²	985	985	960	946	881	785	777	632	438	553
Headwater Stage (feet NGVD)	S-65D ²	25.67	25.80	25.86	25.82	25.79	25.76	25.77	25.78	25.76	25.75
Discharge (cfs)	S-65E ²	859	905	880	844	861	759	713	601	434	502
Discharge (cfs)	S-67	0	0	0	0	0	0	0	0	4	0
DO (mg/L) ³	Phases I & II/III river channel	9.1	8.4	7.8	8.2	8.9	9.1	8.5	8.0	8.3	8.2
Mean depth (feet) ⁴	Phase I floodplain	0.25	0.26	0.26	0.27	0.24	0.18	0.18	0.25	0.20	0.26

¹Seven-day average of weighted daily means through Sunday midnight.

²S-65A discharge combines S-65A with auxillary structures; 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.

³DO is the average for sondes at KRBN, PC62, PC33, PD62R, and PD42R.

⁴1-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)

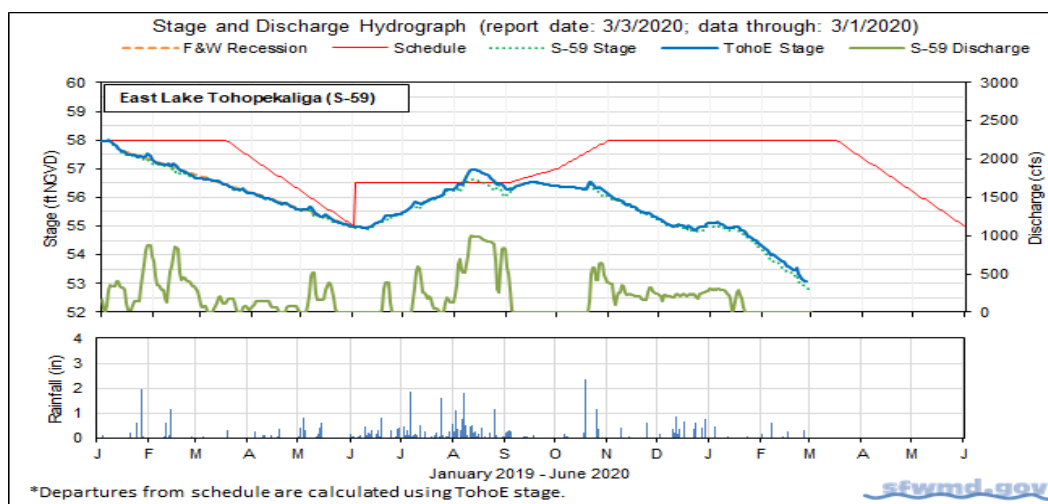


Figure 1.

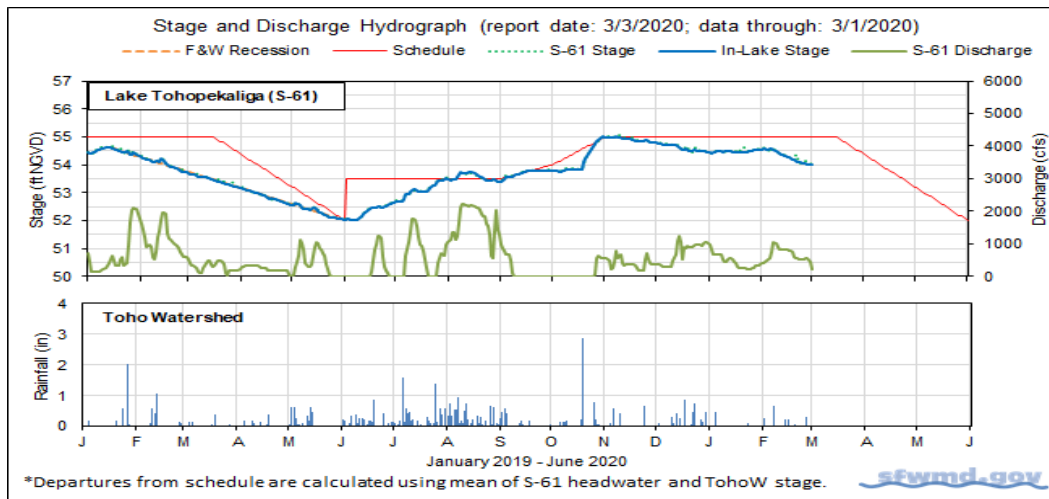


Figure 2.

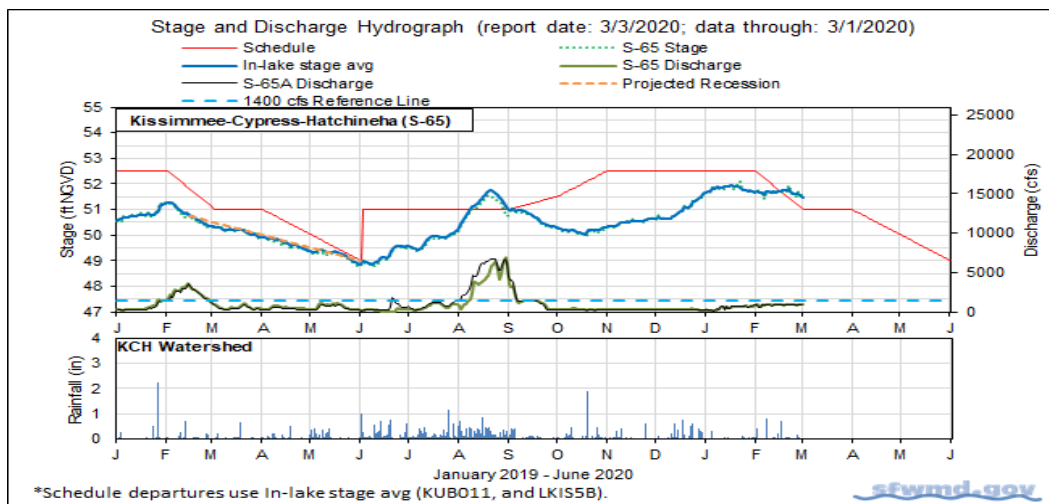


Figure 3.

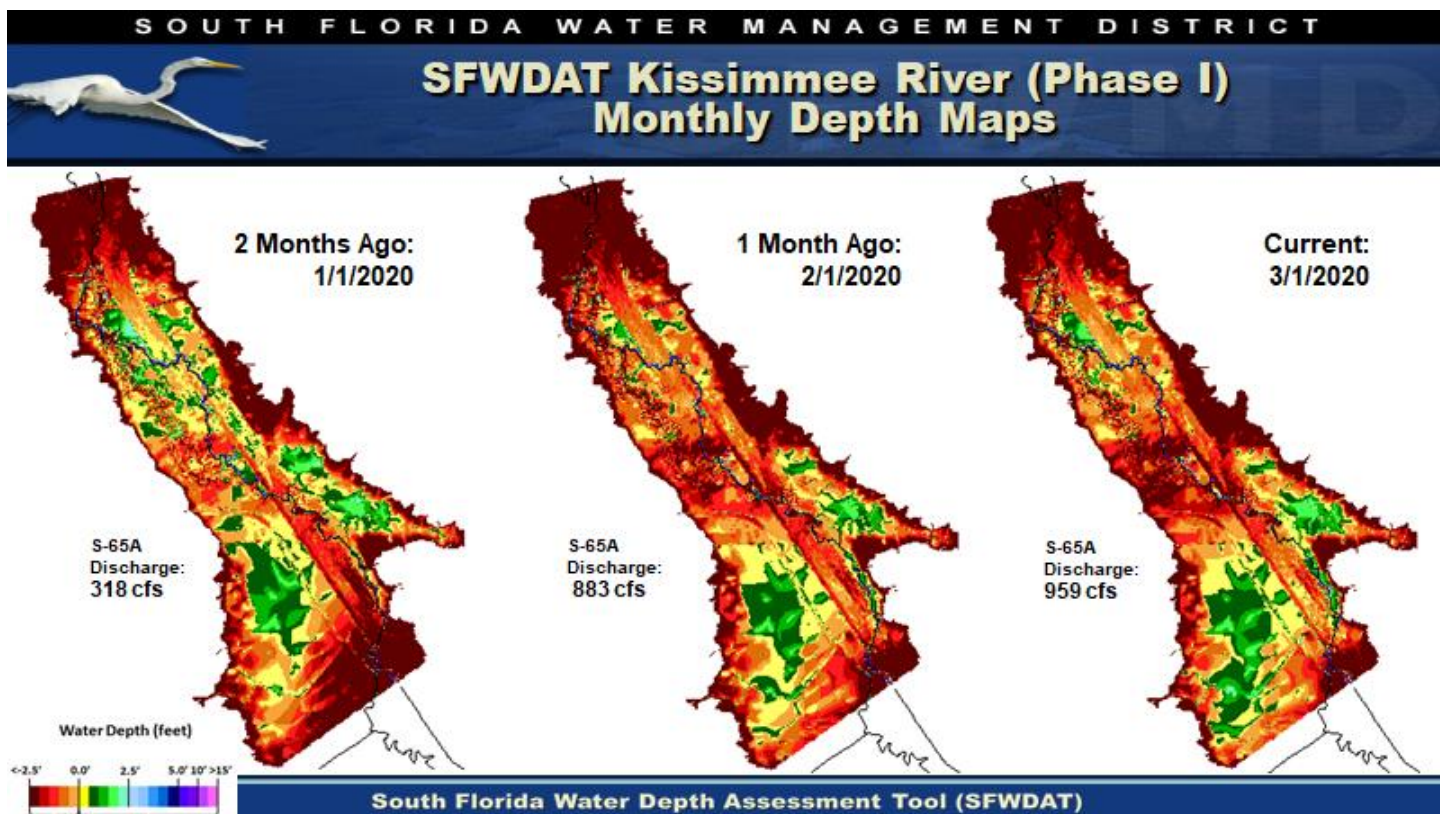
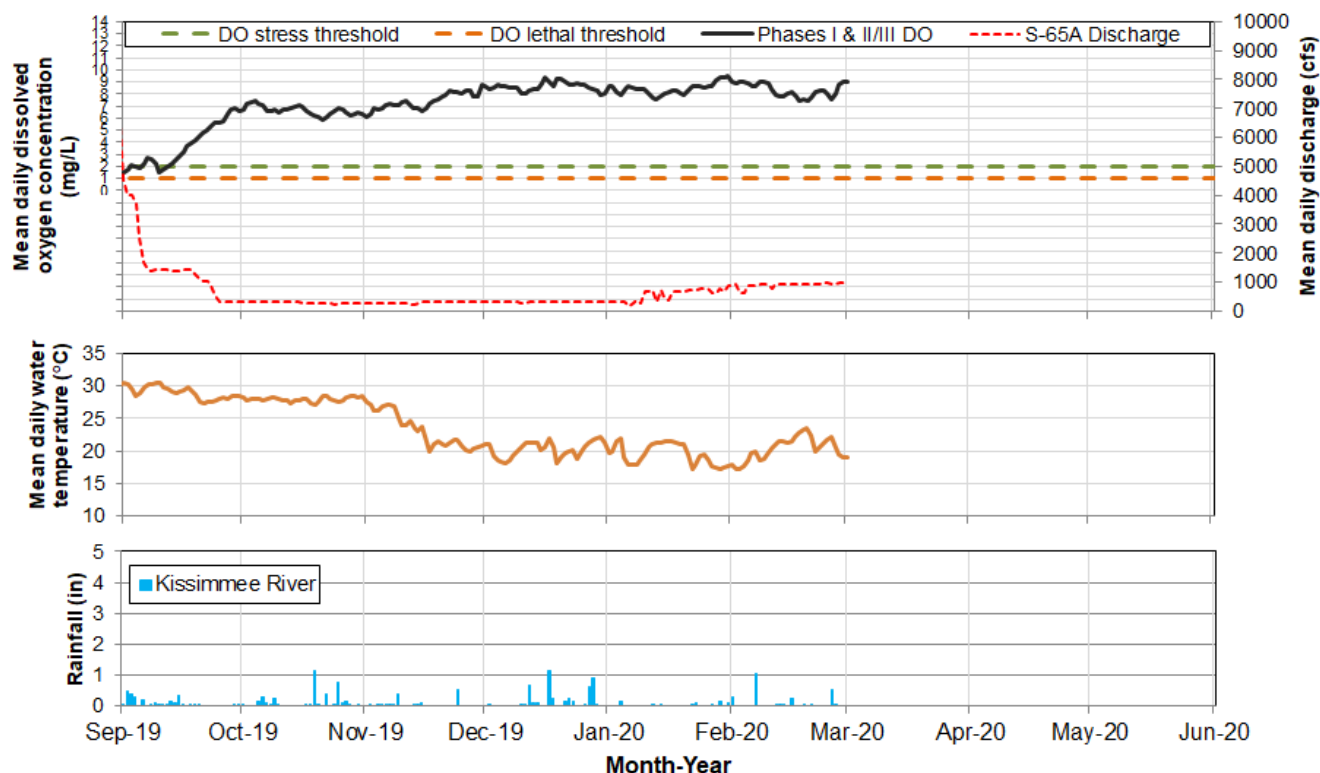


Figure 4. Phase I area floodplain water depths for this week, one month ago, and two months ago. Note that the WDAT color-coding has been modified to accommodate greater water depths; these maps are not directly comparable to Kissimmee Basin WDAT maps published prior to January 16, 2012.



Report Date: 3/3/2020; data are through: 3/1/2020.

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

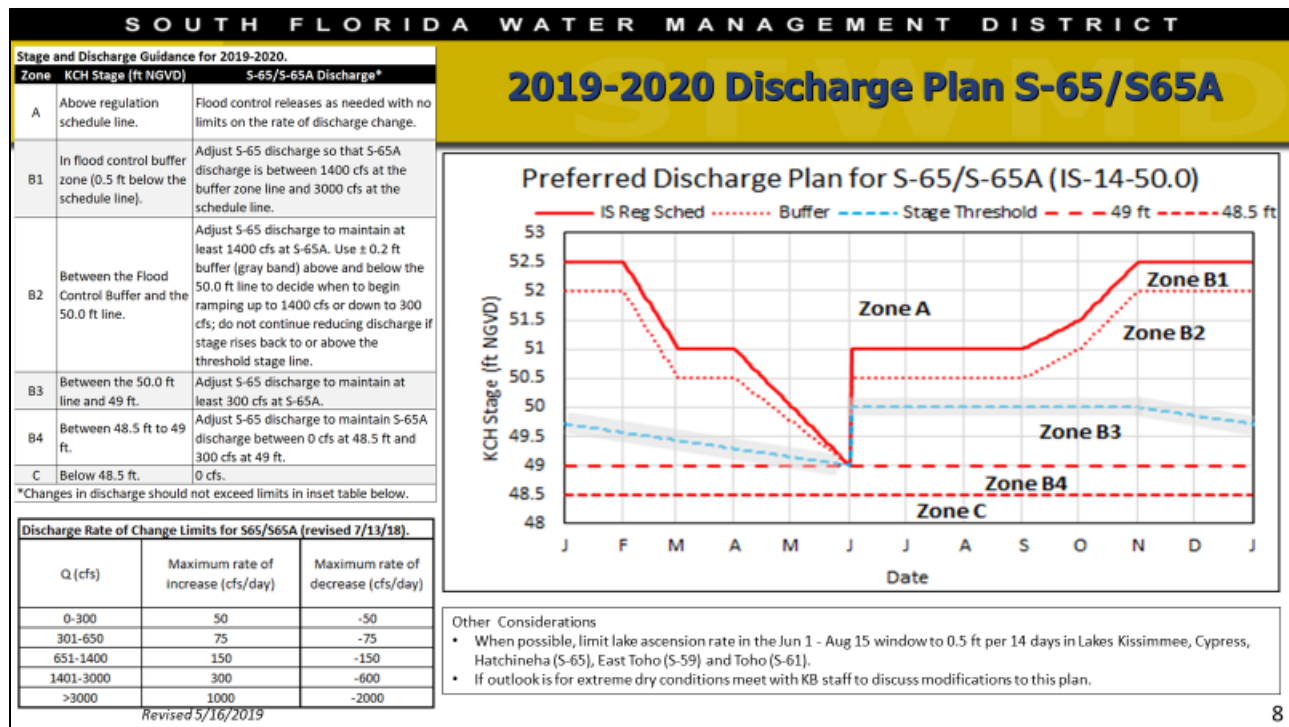


Figure 6. The 2019-2020 Discharge Plan for S-65/S-65A.

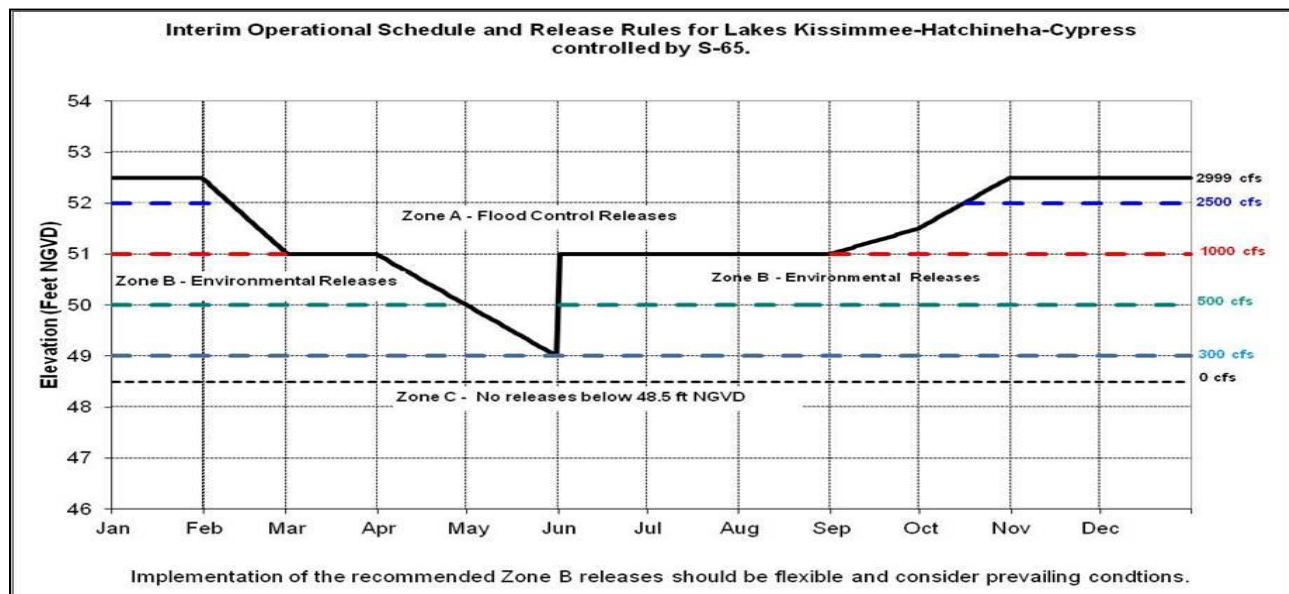


Figure 7. Interim operations schedule for S-65. The discharge schedule shown to the right has not been used in recent years.

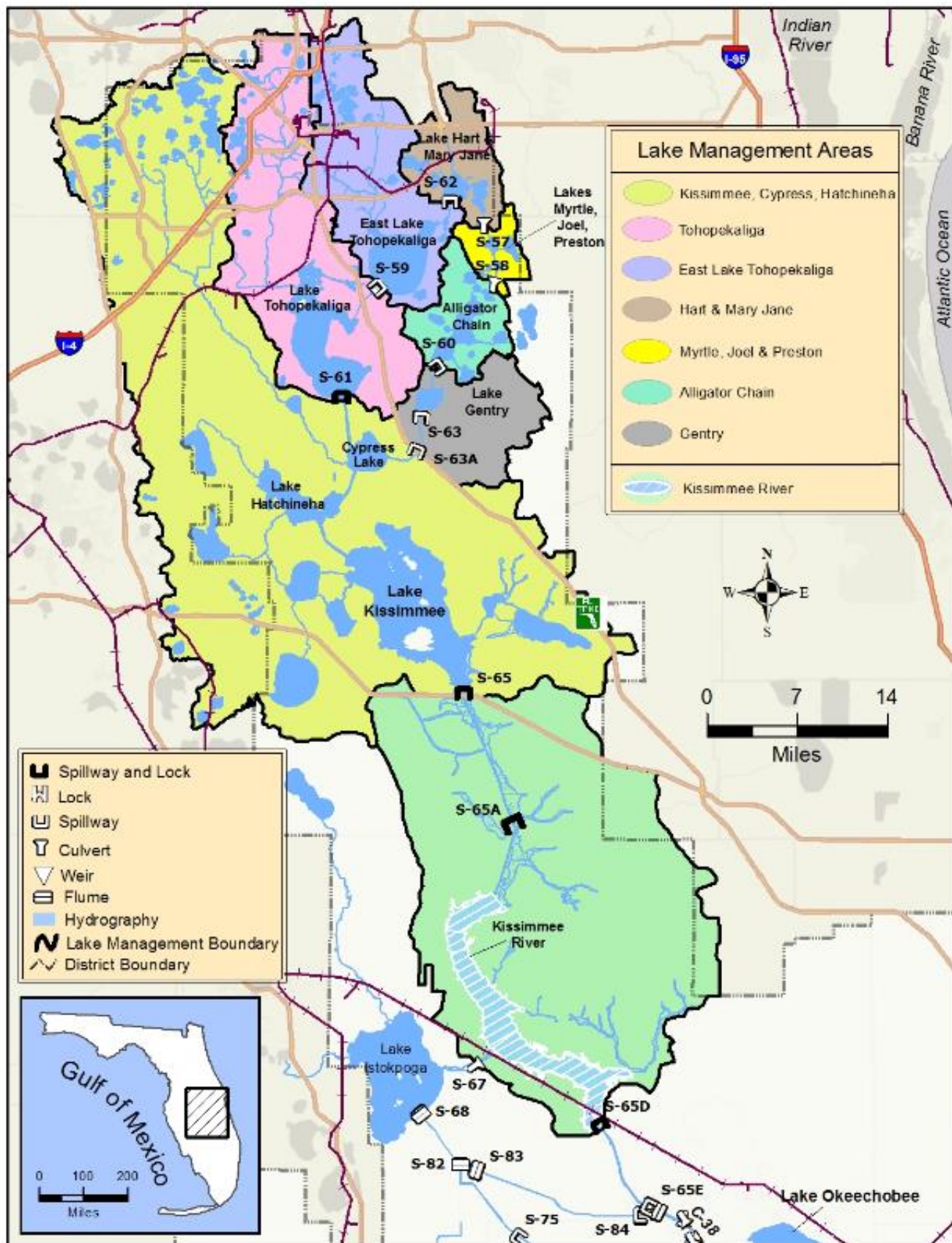


Figure 8. The Kissimmee Basin.

LAKE OKEECHOBEE

Lake Okeechobee stage is 12.62 feet NGVD, 0.27 feet lower than a month ago and 0.14 feet lower than a year ago (Figure 1). The Lake is currently 1.11 feet below the preferred ecological envelope (Figure 2). Lake stages moved up into the Low sub-band on September 4, 2019 then moved back down into the Base Flow sub-band on September 11, 2019 where it has remained since (Figure 3). Lake stage has been gradually declining from around 14.0 feet NGVD since early September 2019 but hovered near 13.0 feet NGVD through December 2019 and January 2020. According to RAINДАР, 0.37 inches of rain fell directly over the Lake during the past week, while watershed rainfall averaged 0.31 inches (Figure 4).

The average daily inflows (minus rainfall) was similar to the previous week at 930 cfs, and outflows were 3,175 cfs higher than the previous weeks' 2,634 cfs. Most of the inflow came from the Kissimmee River (S-65E & S-65EX1), while most of the outflows (2,030 cfs) were released south through the S-350 structures. Releases west through S-77 (C-43/Caloosahatchee Canal) and east through the S-308 (C-44/St Lucie Canal) totaled 1,026 cfs. 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 (March 1, 2020) using NOAA's cyanobacteria monitoring product derived from EUMETSAT's Sentinel 3 OLCI sensor data suggested low-moderate potential for cyanobacterial blooms across the majority of the Lake, with slightly increased bloom risk potential along the NW shore and near Fisheating Bay (Figure 6).

Water Management Summary

Lake Okeechobee stage was 12.62 feet NGVD on March 2, 2020, down 0.15 feet from the previous week, and down 0.27 feet from the previous month. The Lake remains in the Base Flow sub-band and is 0.02 feet above the Beneficial Use sub-band. Water levels moved below the ecological envelope (which varies seasonally from 12.5 – 15.5 feet NGVD +/- 0.5 feet) on October 15, 2019 and are currently 1.11 feet below the bottom of the 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. Wading bird and snail kite nesting efforts are likely to be lower for the second consecutive year on the Lake if stages continue below the ecological envelope throughout 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	897	889	0.4
S-71 & S-72	15	5	0.0
S-84 & S-84X	6	6	0.0
Fisheating Creek	26	27	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	4	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	0	813	0.4
Total	944	1744	0.8

OUTFLOWS	Previous week Avg Daily CFS	Avg Daily Flow cfs	Equivalent Depth Week Total (in)
S-77	386	531	0.2
S-308	439	495	0.2
S-351	1005	1144	0.5
S-352	0	101	0.0
S-354	944	785	0.4
L-8 Outflow	78	119	0.1
ET	1164	366	0.2
Total	4015	3541	1.6

Provisional Data

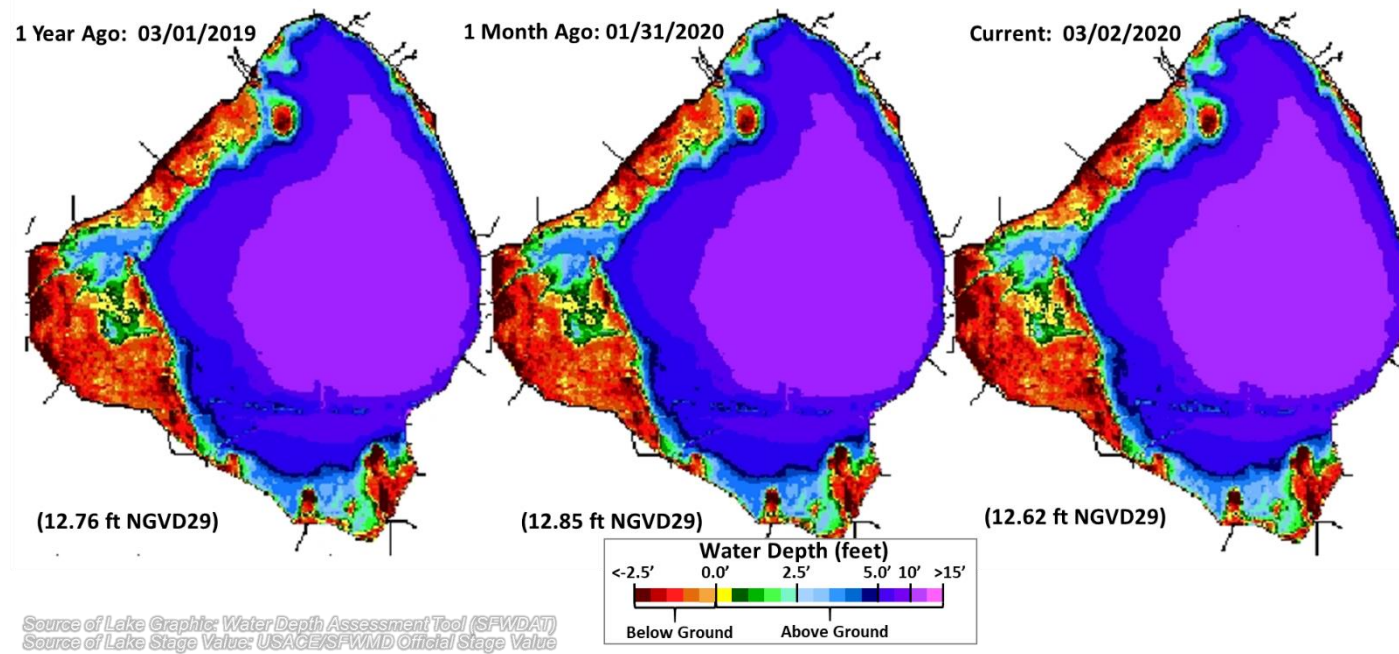


Figure 1. Water depth estimates on Lake Okeechobee based on the South Florida Water Depth Assessment Tool.

Lake Okeechobee Stage vs (Draft) Ecological Envelope

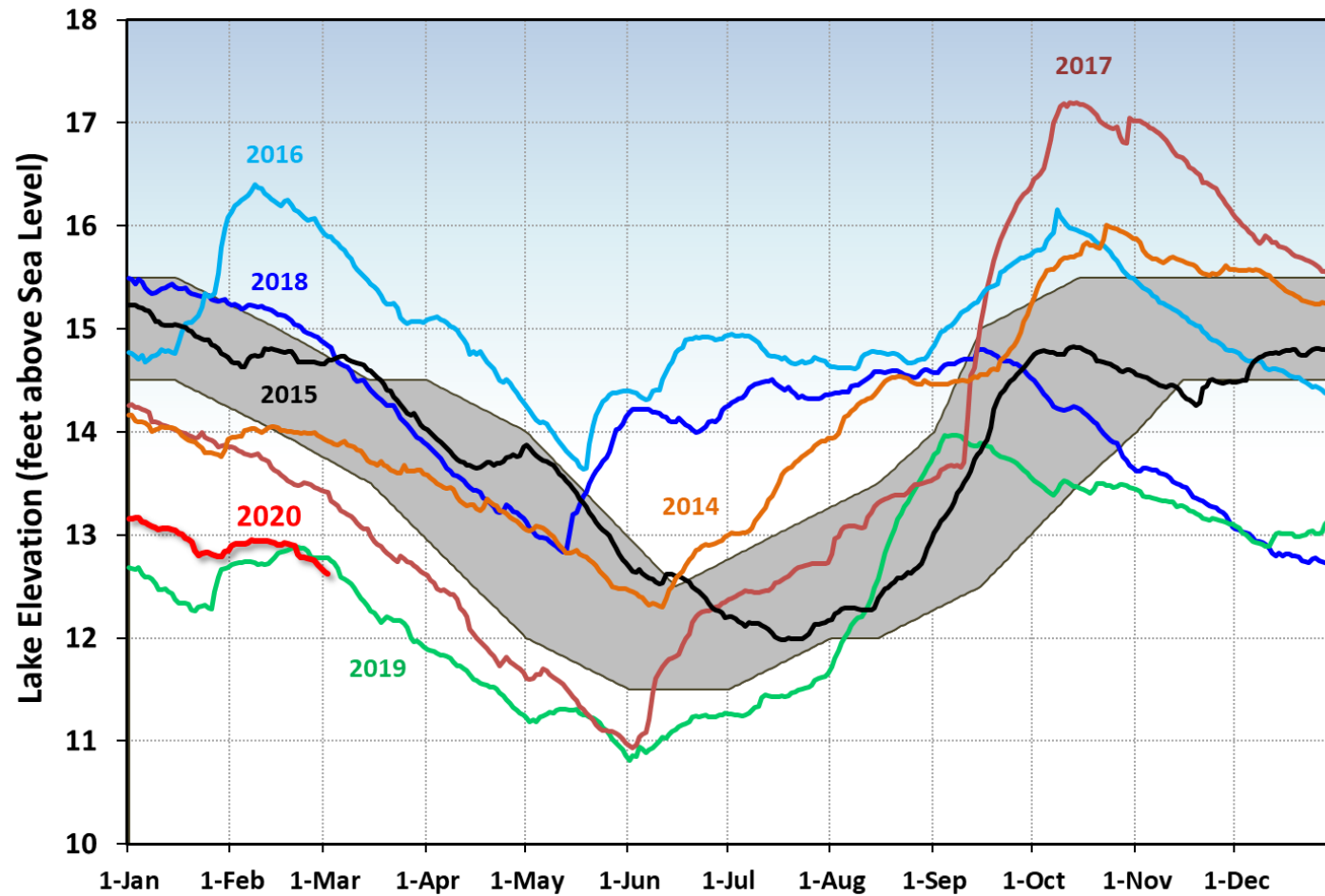


Figure 2. Select annual stage hydrographs for Lake Okeechobee in comparison to the (Draft) updated Ecological Envelope.

Lake Okeechobee Water Level History and Projected Stages

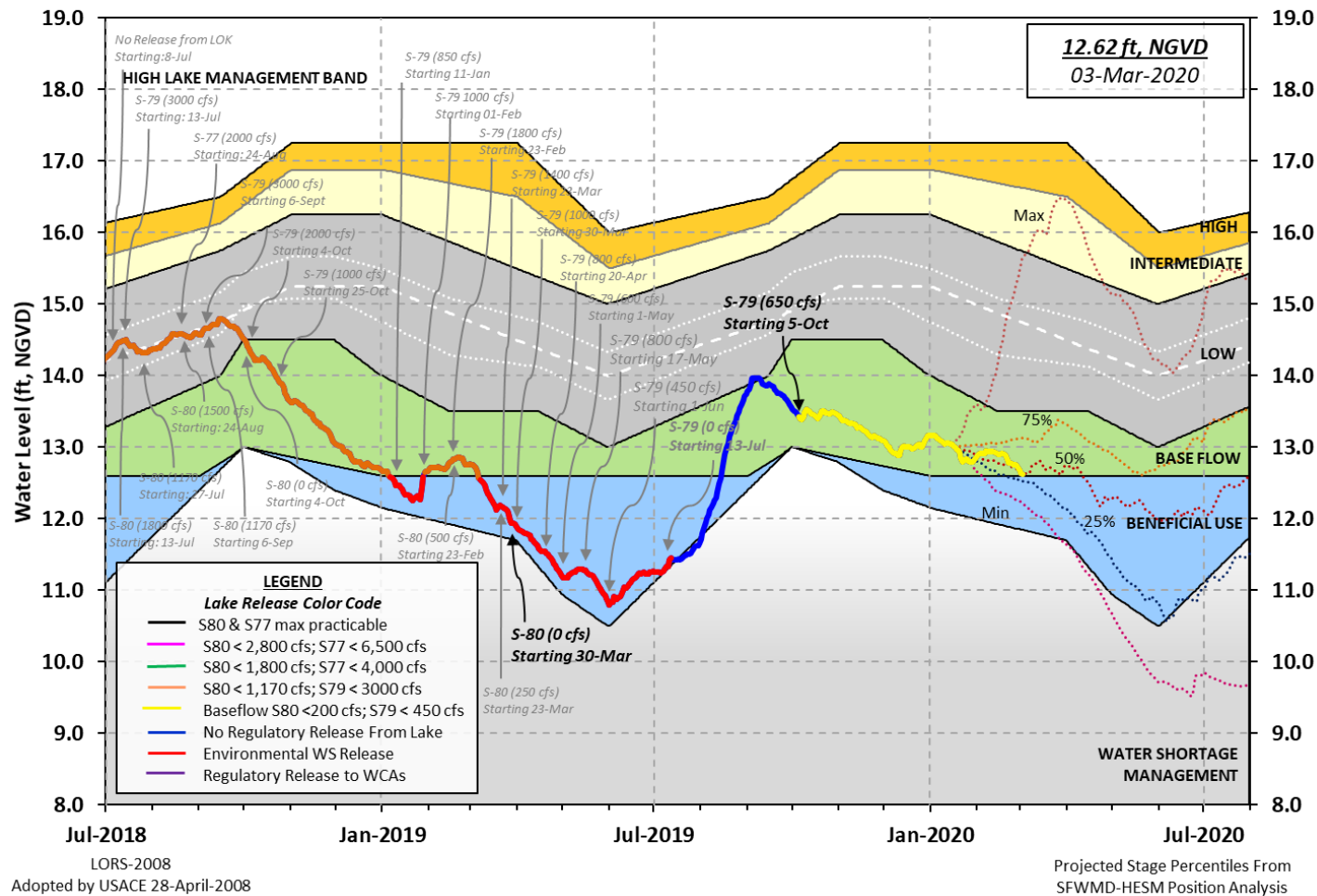


Figure 3. Recent Lake Okeechobee stage and releases, with projected stages based on a dynamic position analysis.

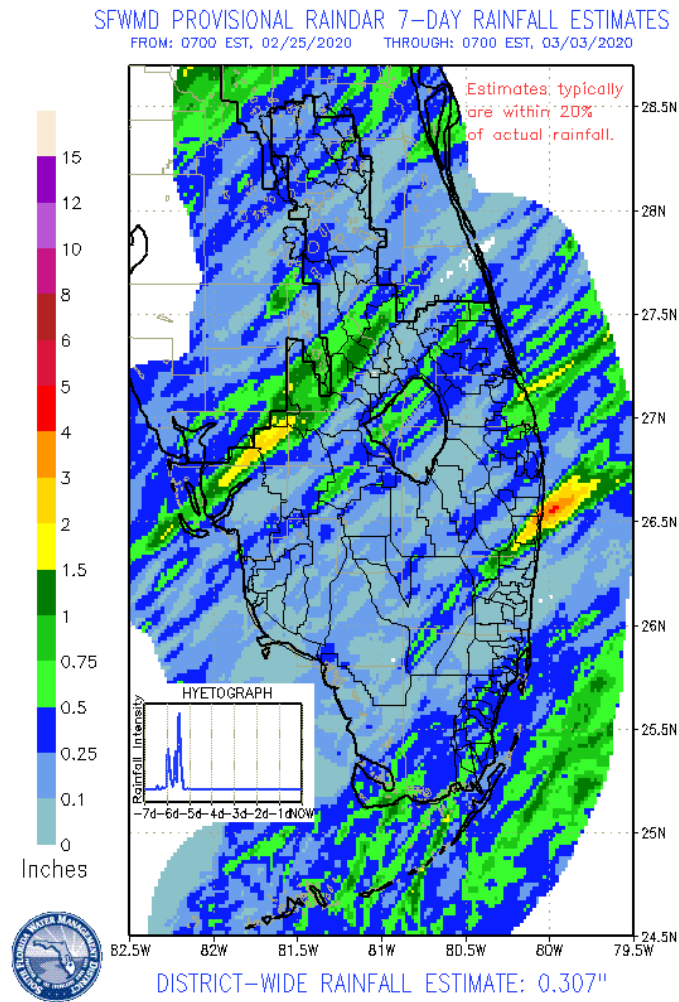


Figure 4. 7-Day rainfall estimates by RAINDAR.

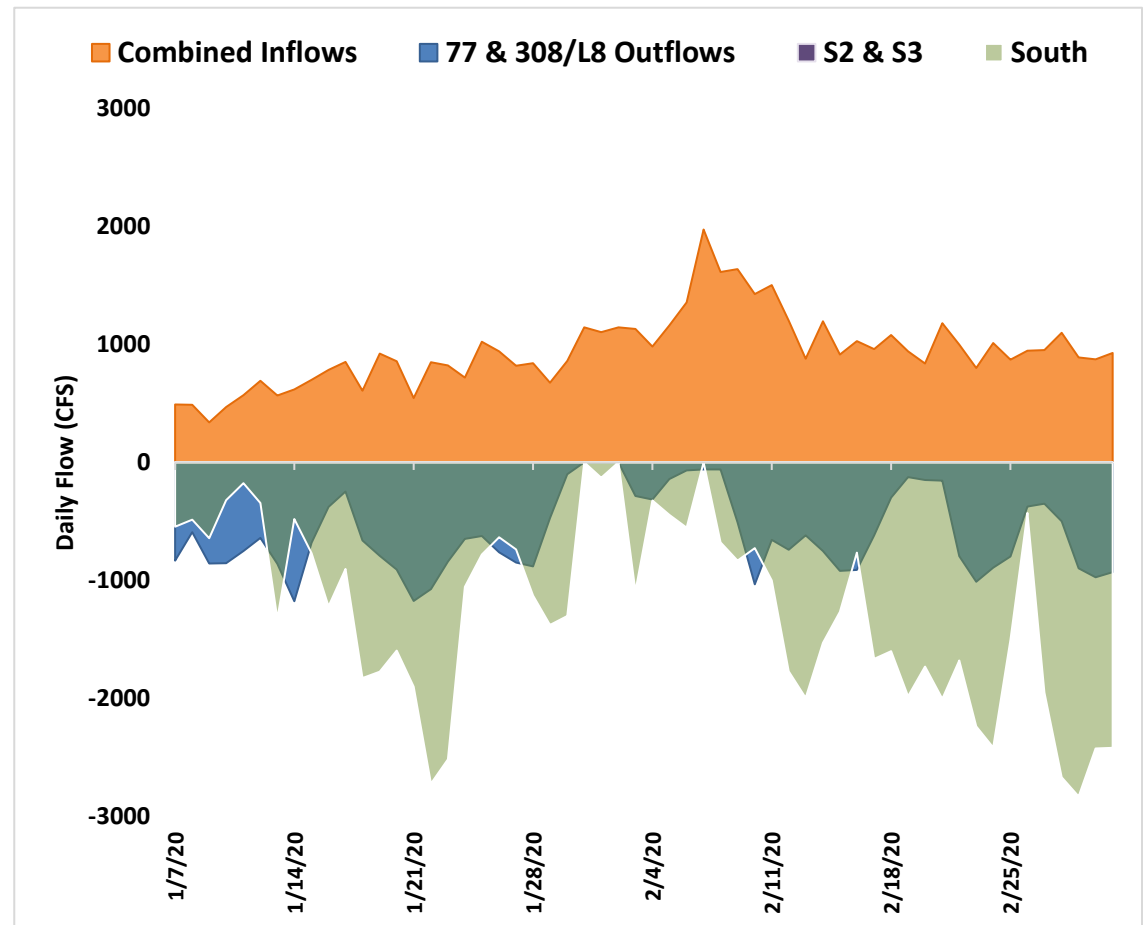


Figure 5. Major inflows (orange) and outflows (blue) of Lake Okeechobee, including the S-350 structures designated as South (green). The L-8 Canal flows through Culvert 10A are included as outflows when positive, and as inflows when backflowing into the Lake. All inflows and outflows are shown as positive 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.

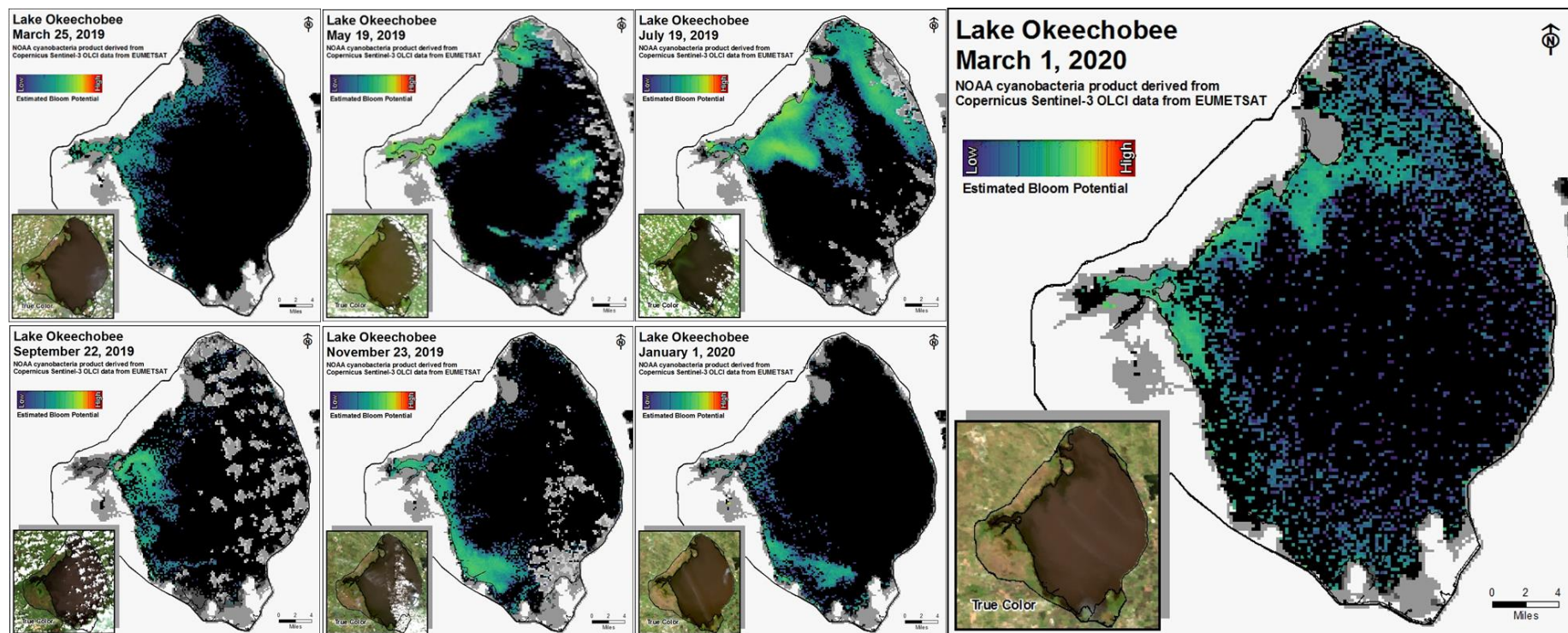


Figure 6. Potential for cyanobacterial blooms on Lake Okeechobee in 2019 and 2020, based on NOAA's harmful algal bloom monitoring system derived from Copernicus Sentinel-3 OLCI data from EUMETSAT. Gray indicates cloud cover.

ESTUARIES

St. Lucie Estuary:

Last week total inflow to the St. Lucie Estuary averaged approximately 436 cfs (Figures 1 and 2) and last month inflow averaged about 695 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	314
S-80	0
S-308	164
S-49 on C-24	0
S-97 on C-23	37
Gordy Rd. structure on Ten Mile Creek	85

Over the past week in the estuary, salinity increased to US1 Bridge and decreased downstream (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 20.2. 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)	15.6 (14.0)	18.7 (18.3)	NA ¹
US1 Bridge	19.5 (19.1)	21.1 (20.9)	10.0-26.0
A1A Bridge	26.0 (28.3)	27.7 (30.4)	NA ¹

¹Envelope not applicable

Caloosahatchee Estuary:

Last week total inflow to the Caloosahatchee Estuary averaged approximately 669 cfs (Figures 5 and 6) and last month inflow averaged about 869 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	531
S-78	407
S-79	552
Tidal Basin Inflow	117

Over the past week in the estuary, surface salinity increased downstream of S-79 (Table 4, Figures 7 & 8). The seven-day average salinity values are within the good range for adult eastern oysters at Cape Coral and at Shell Point and in the fair 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 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 reflects the preferred salinity range for associated sampling sites.

Sampling Site	Surface	Bottom	Envelope
S-79 (Franklin Lock)	1.9 (2.0)	1.9 (2.0)	NA ¹
Val I75	2.6 (2.2)	3.2 (2.6)	0.0-5.0 ²
Ft. Myers Yacht Basin	9.7 (9.2)	11.0 (11.4)	NA
Cape Coral	18.9 (17.1)	19.9 (19.4)	10.0-30.0
Shell Point	28.3 (27.4)	28.4 (27.6)	10.0-30.0
Sanibel	30.6 (30.2)	31.9 (31.6)	10.0-30.0

¹Envelope not applicable and ²Envelope is based on a 2-week forecast 30-day average (see Table 5 below).

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 2.8 to 6.4 at the end of the two week period for pulse release at S-79 ranging from 0 to 1000 cfs and Tidal Basin inflows of 95 cfs. The 30-day moving average surface salinity at Val I-75 is forecast to be between 2.6 and 3.9 (Table 5). The current salinity conditions at Val I-75 are within 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	95	6.4	3.9
B	450	95	5.3	3.4
C	650	95	3.9	2.8
D	800	95	3.4	2.7
E	1000	95	2.8	2.6

Red tide

The Florida Fish and Wildlife Research Institute reported on February 28, 2020, that *Karenia brevis*, the Florida red tide dinoflagellate, was not observed in samples collected from Lee County. *Karenia brevis* was observed at very low concentrations in one sample collected offshore of Martin and Palm Beach Counties. (No samples were analyzed this week from St. Lucie, Broward, or Miami-Dade Counties).

Water Management Recommendations

Lake stage is in the Base Flow sub-band. Tributary conditions are dry. The 2008 LORS suggests release of up to 450 cfs at S-79 and up to 200 cfs at S-80.

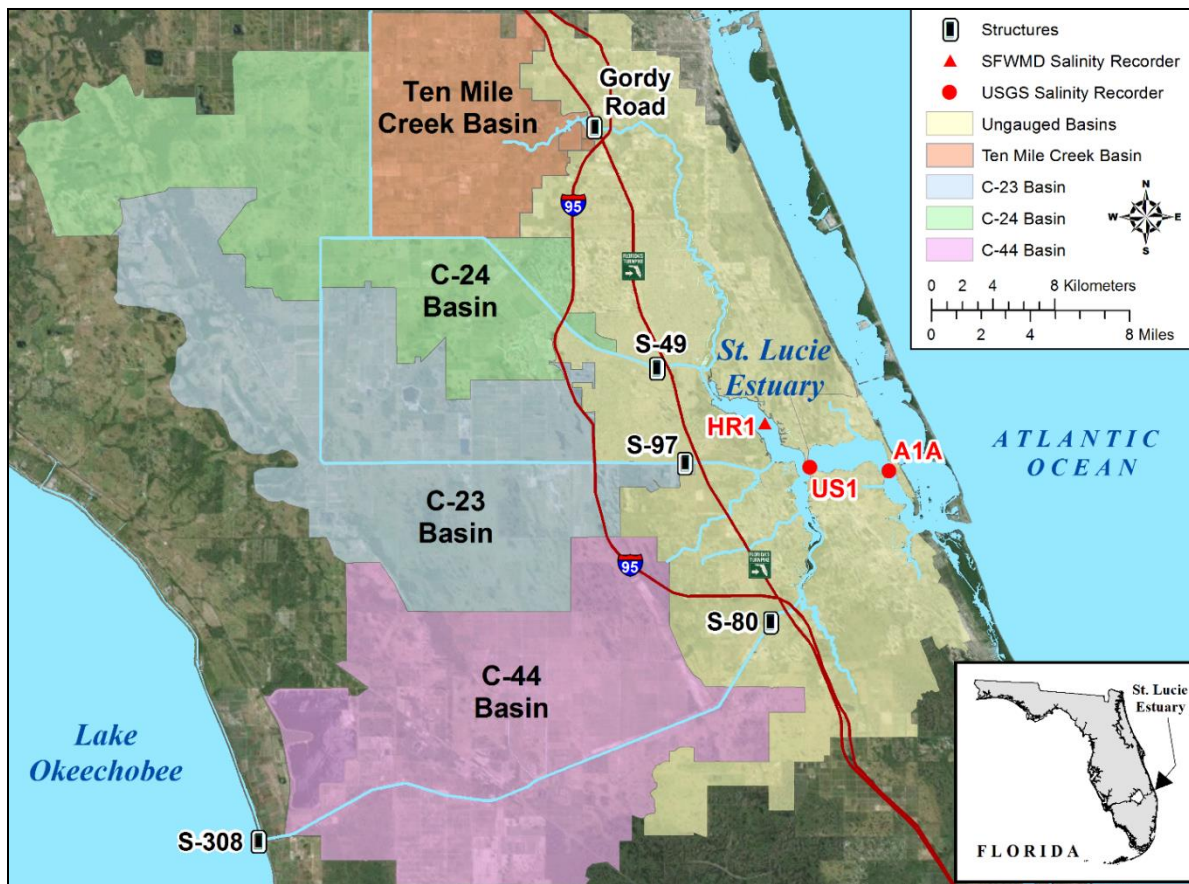


Figure 1. Basins, water control structures, and salinity monitoring for the St. Lucie Estuary.

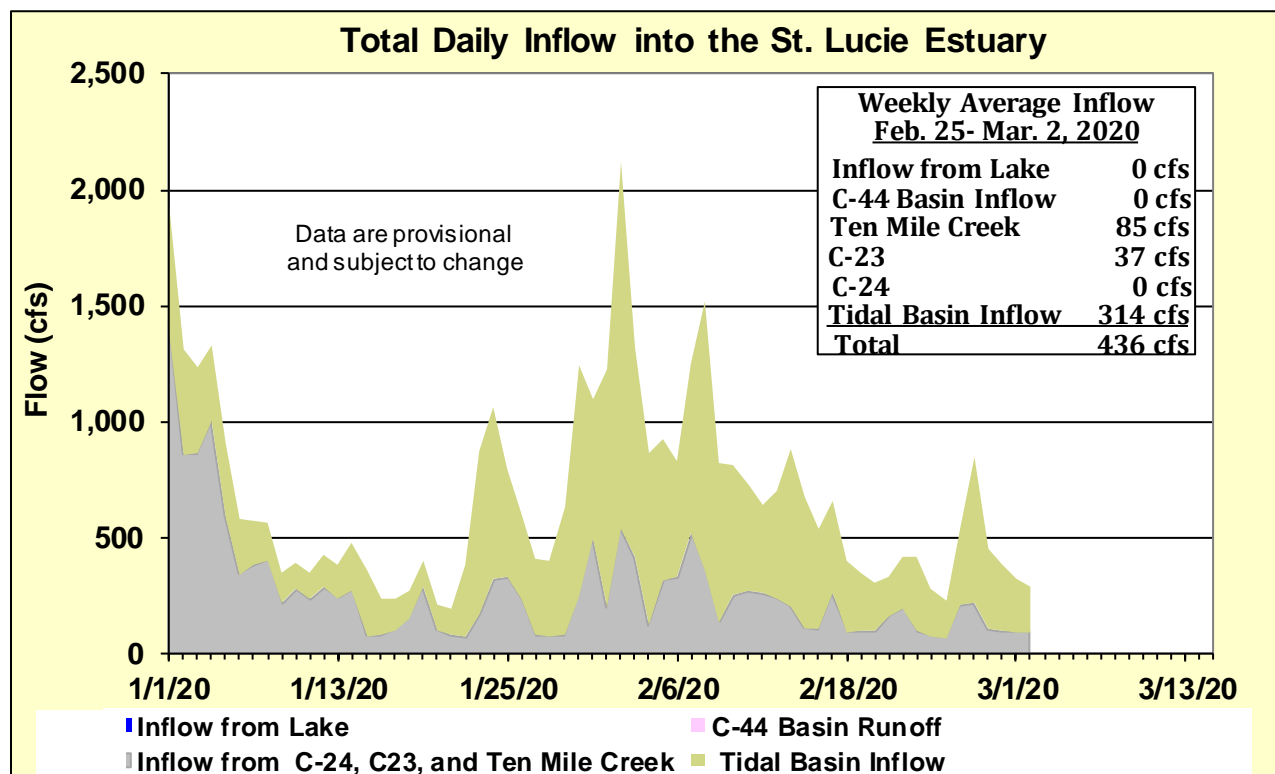


Figure 2. Total daily inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and tidal basin into the St. Lucie Estuary.

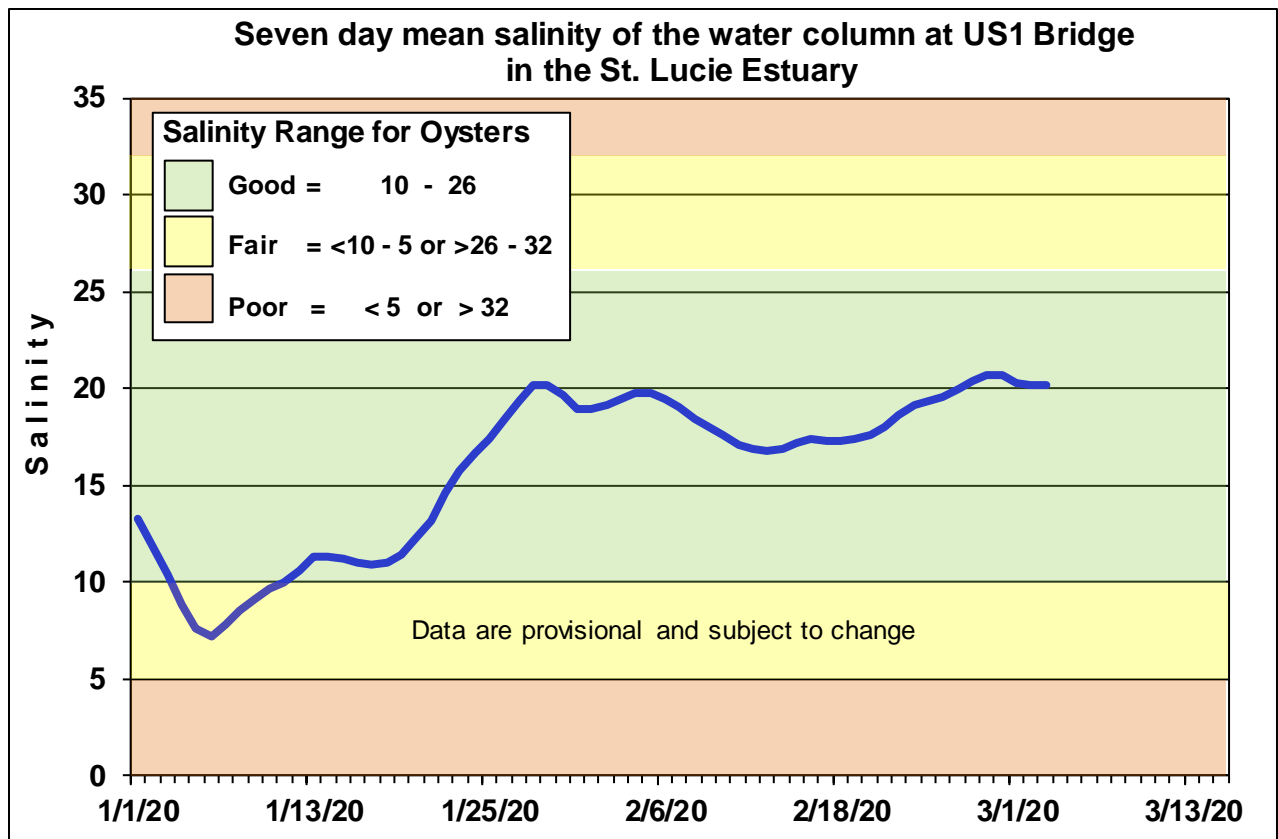


Figure 3. Seven-day mean salinity of the water column at the US1 Bridge.

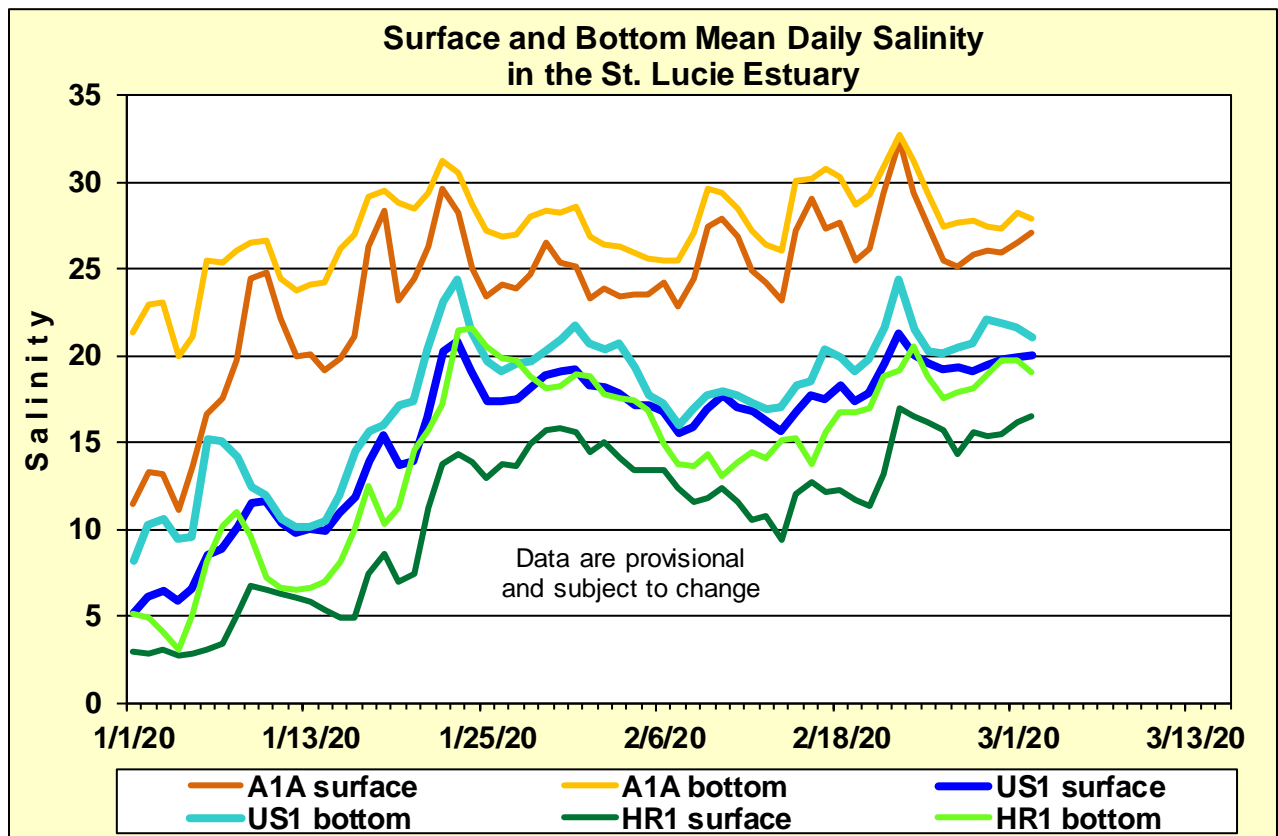


Figure 4. Daily mean salinity at the A1A, US1, and HR1 stations.

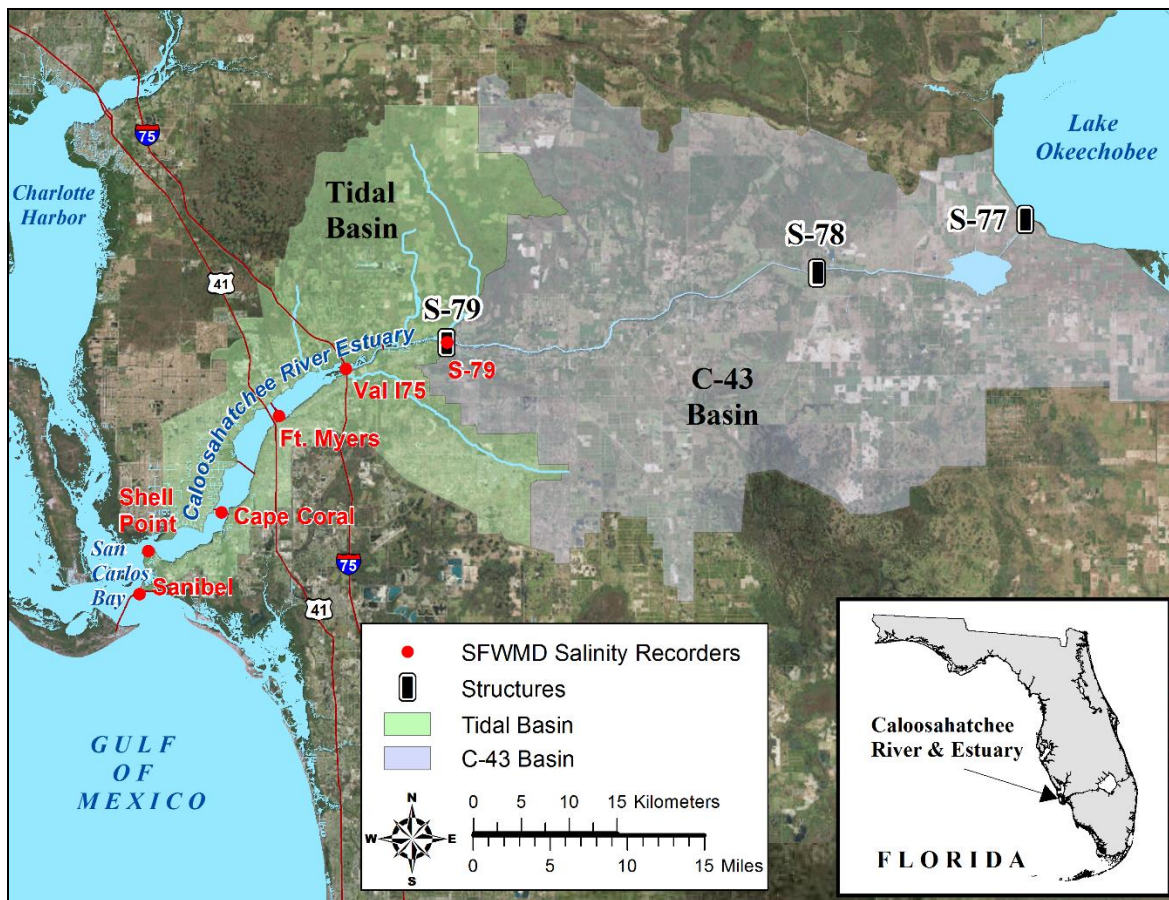


Figure 5. Basins, water control structures, and salinity monitoring for the Caloosahatchee Estuary.

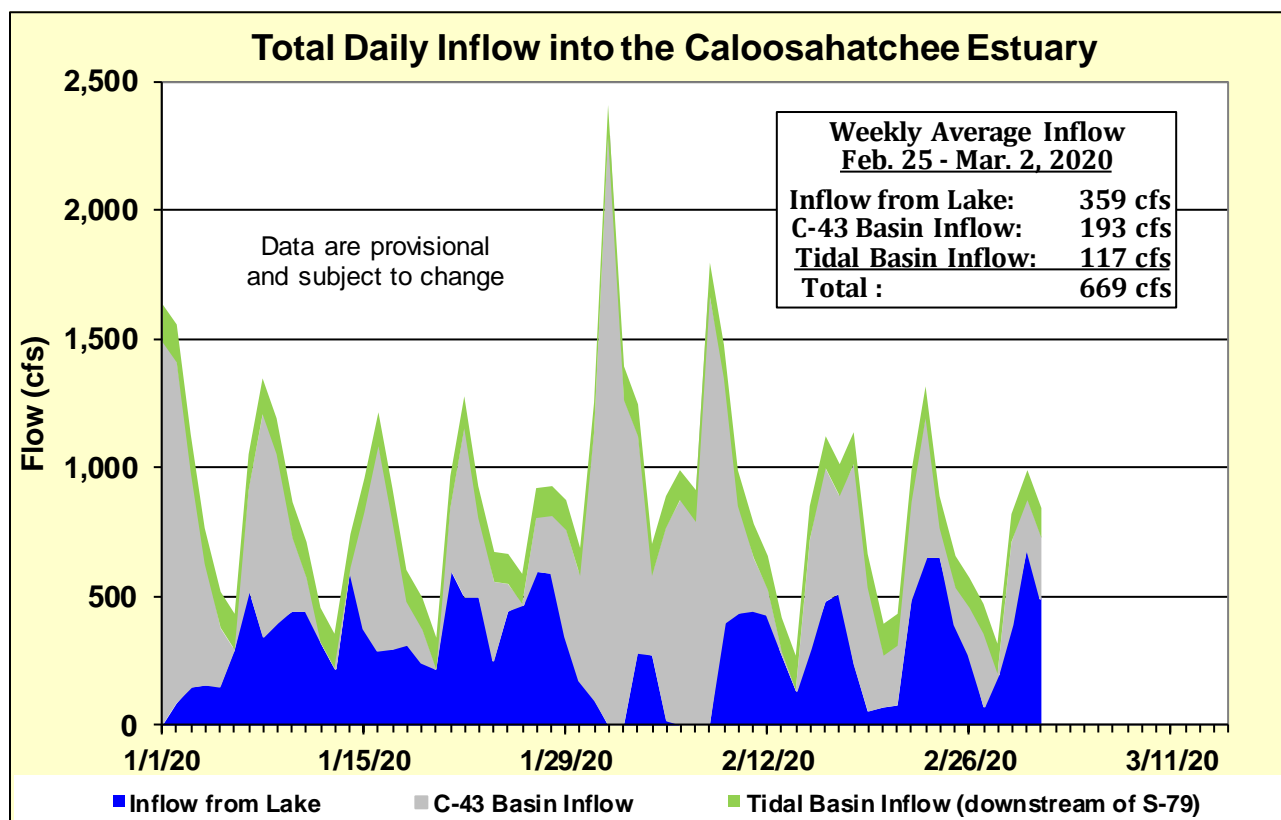


Figure 6. Total daily inflows from Lake Okeechobee, runoff from the C-43 basin

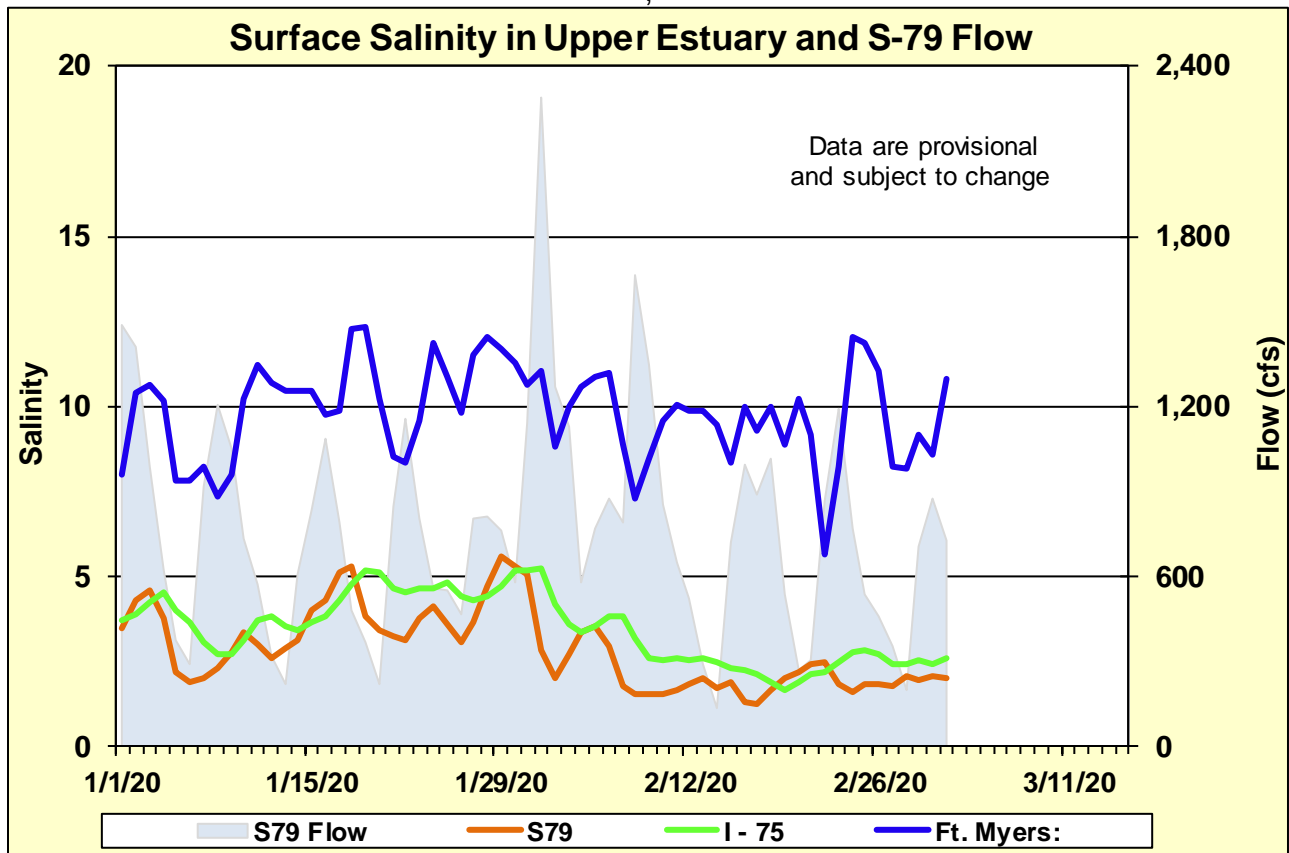


Figure 7. Daily mean flows at S-79 and salinity at upper estuary monitoring stations.

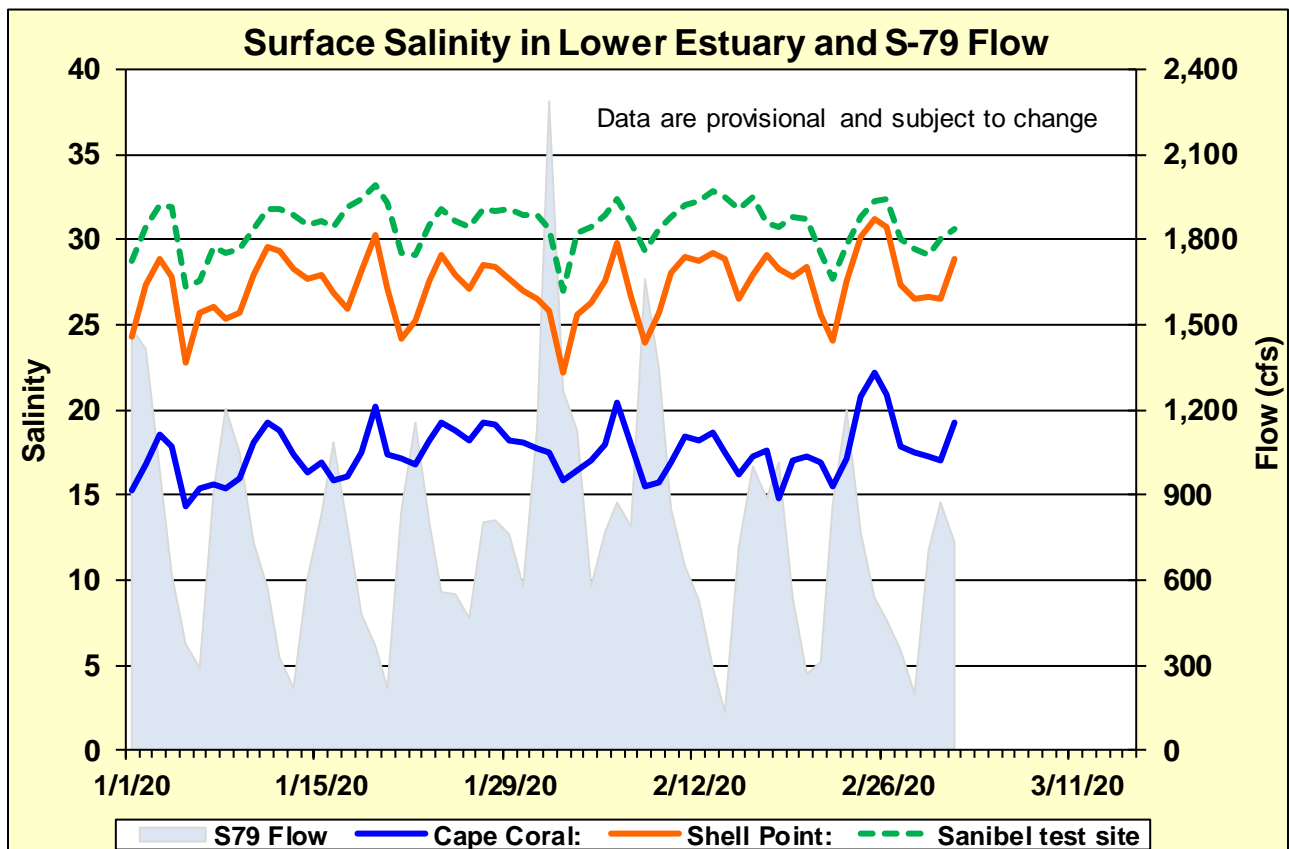


Figure 8. Daily mean flows at S-79 and salinity at lower estuary stations.

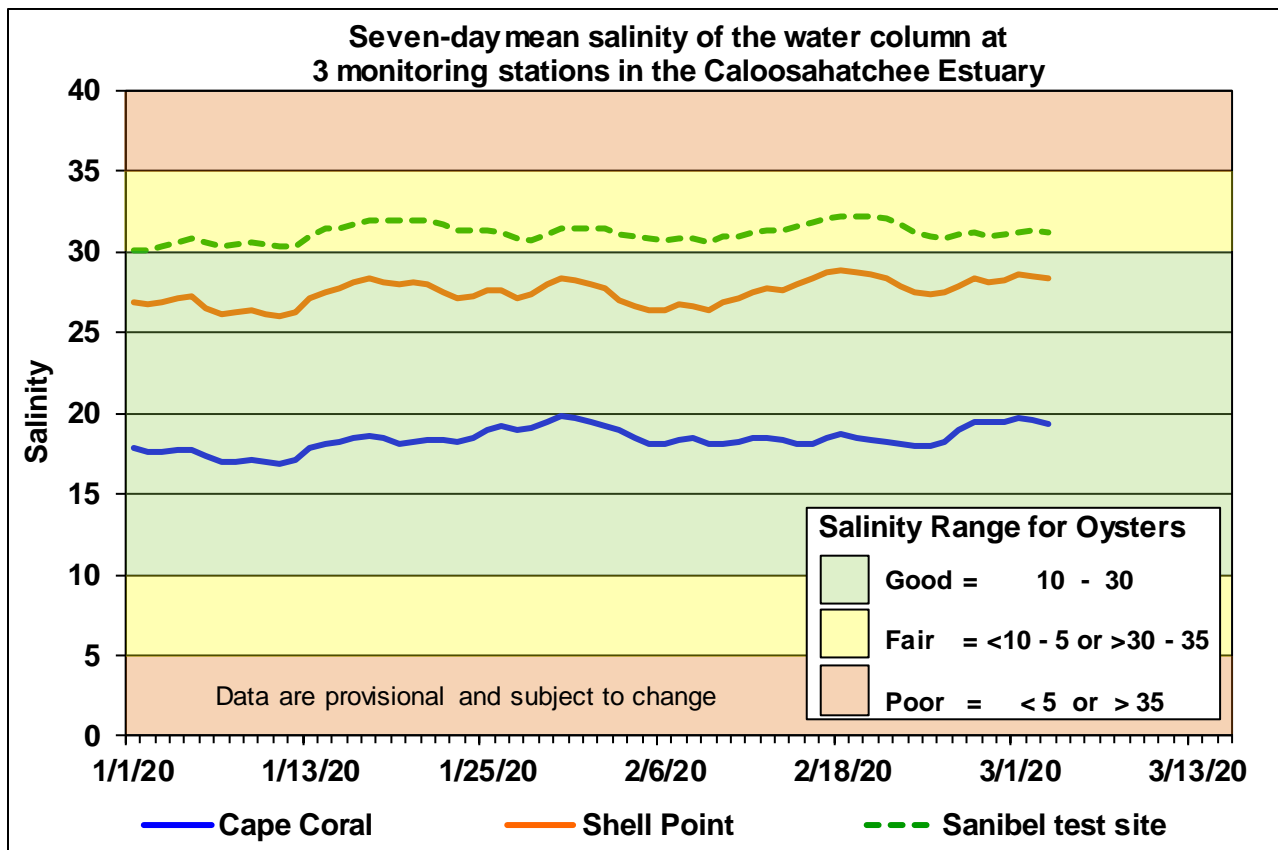


Figure 9. Seven-day mean salinity at Cape Coral, Shell Point, and Sanibel monitoring stations.

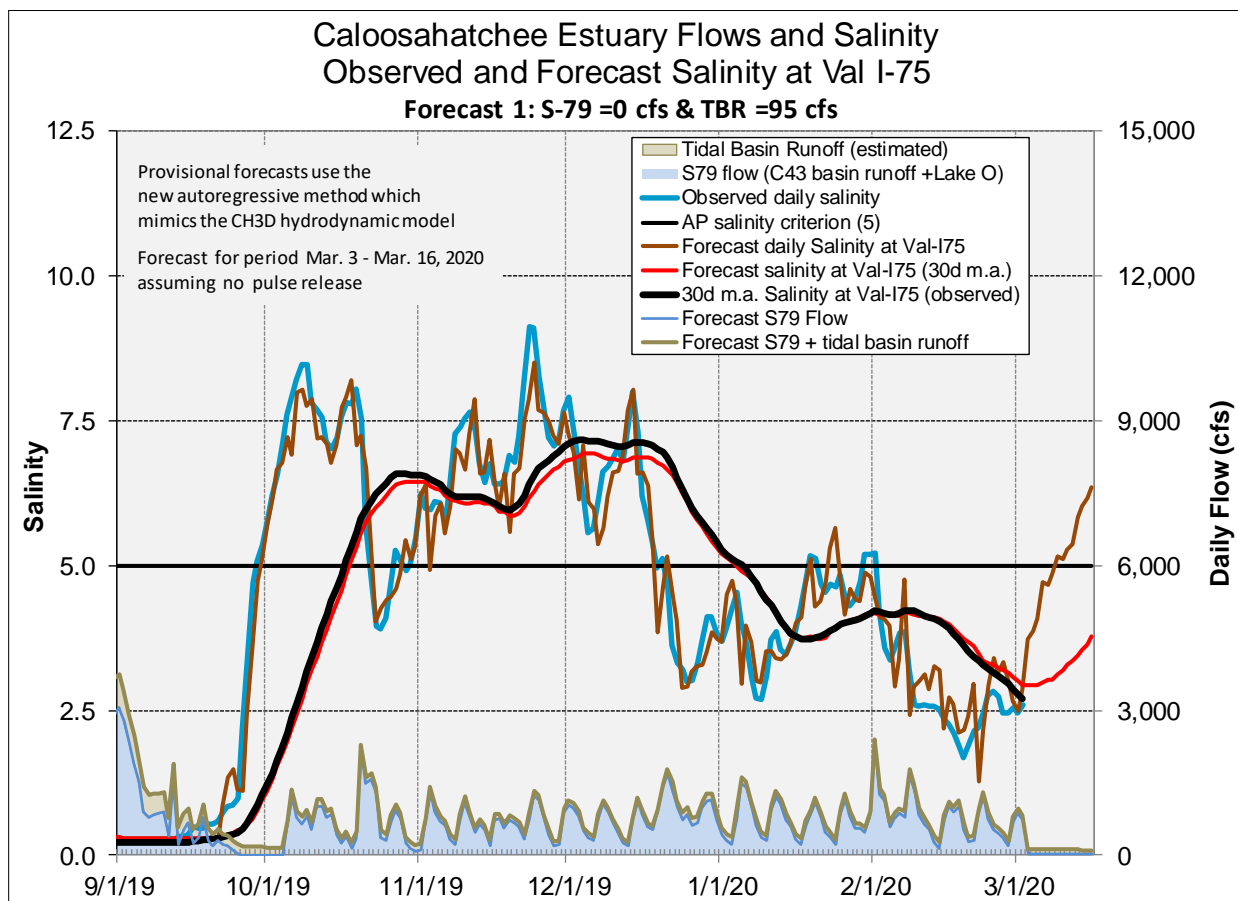

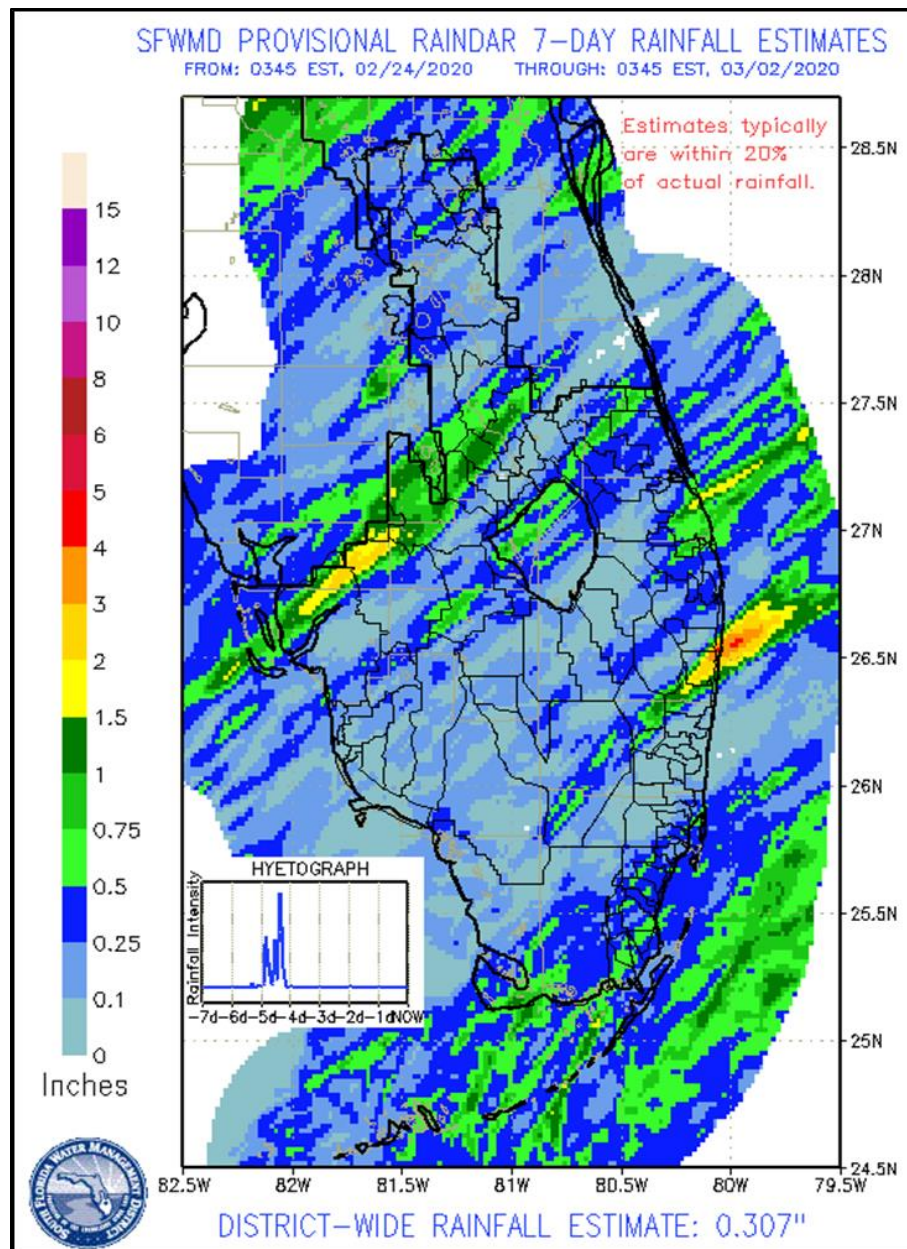


Figure 10. Forecasted Val I-75 surface salinity assuming no pulse release at S-79.

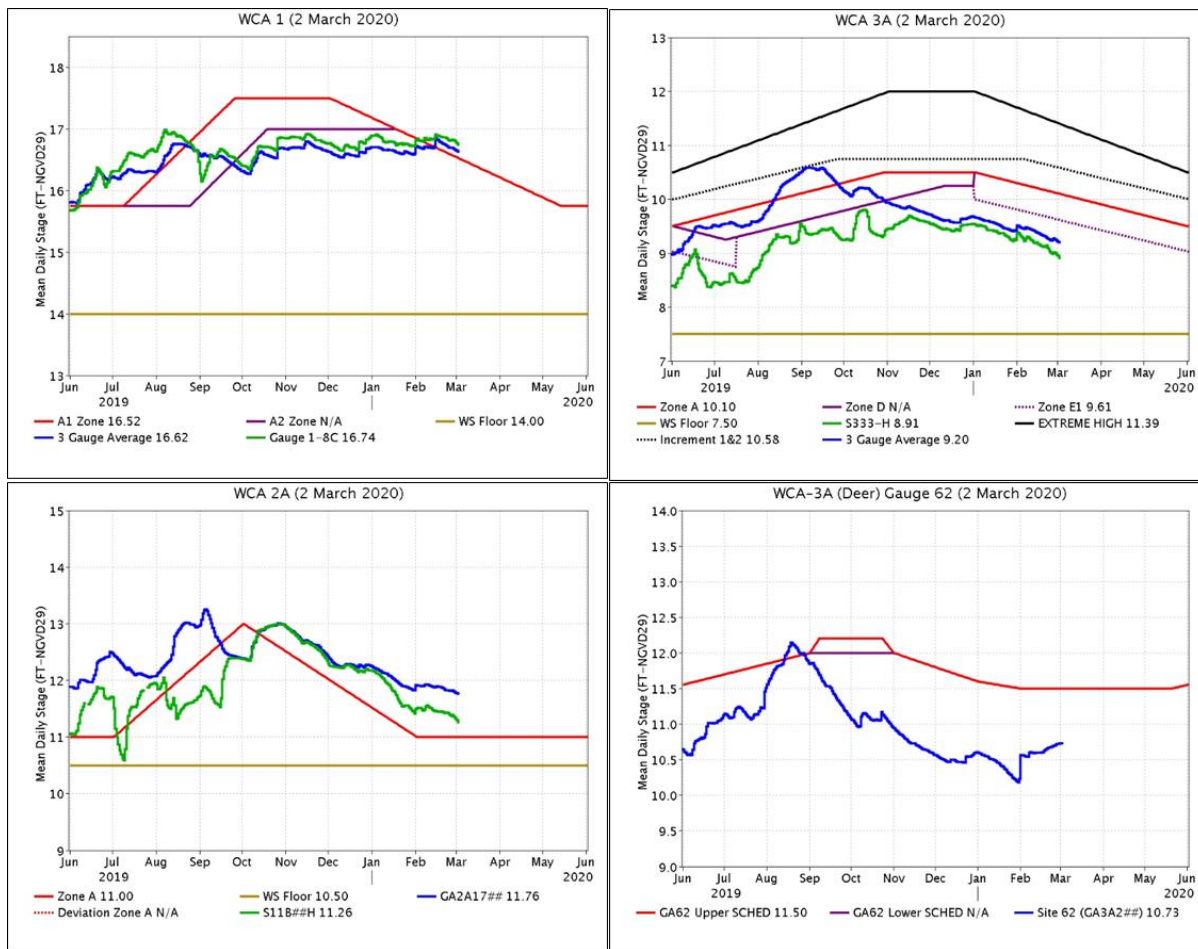
EVERGLADES

Near average amounts of precipitation fell evenly across the Everglades last week. At the gauges monitored for this report stages fell on average 0.07 feet last week, slightly slower than the week prior. Evaporation was estimated at 1.40 inches last week, a significant increase from last week.

Everglades Region	Rainfall (Inches)	Stage Change (feet)	 Good Fair Poor
WCA-1	0.23	-0.09	
WCA-2A	0.40	-0.06	
WCA-2B	0.37	-0.09	
WCA-3A	0.22	-0.03	
WCA-3B	0.10	-0.07	
ENP	0.29	-0.11	



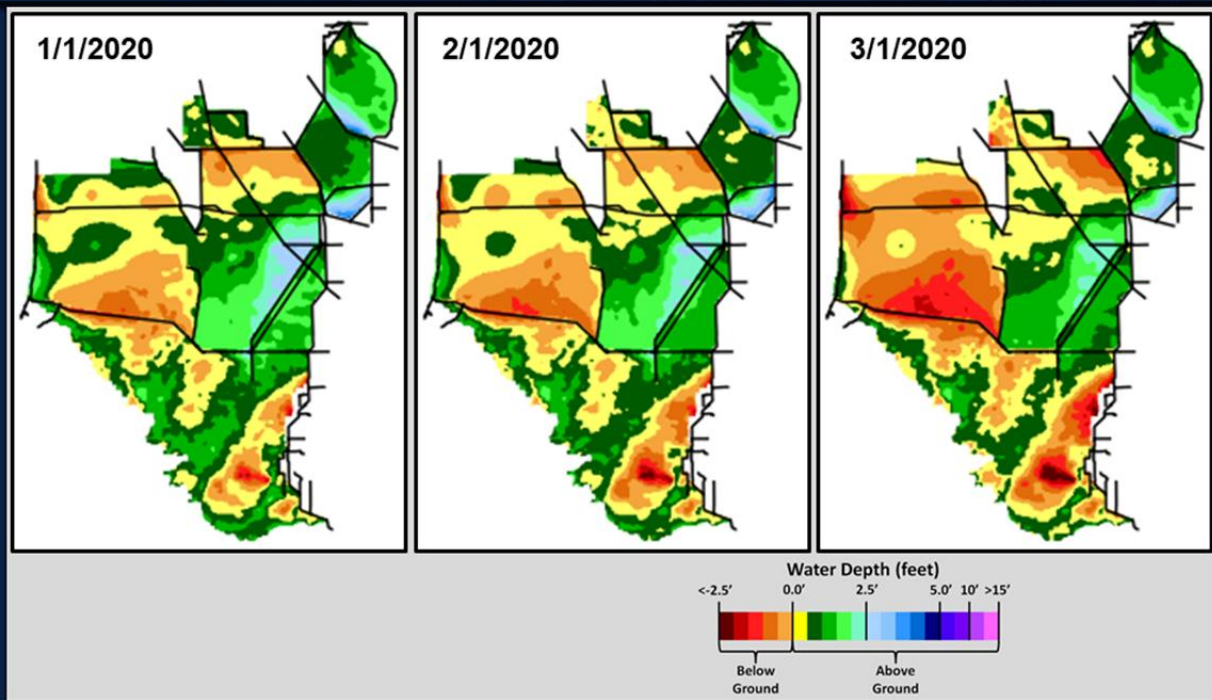
Regulation Schedules: WCA-1: Stage at the 1-8C Gauge fell in parallel to the regulation line last week, currently 0.10 feet above the falling Zone A1 line. WCA-2A: Stage at Gauge S11-B trended towards the Zone A regulation line last week now 0.26 feet above the stable regulation line. WCA-3A: The three-gauge average stage trends down and away from parallel to the falling Zone E1 regulation line last week, currently 0.41 feet below. WCA-3A at gauge 62 (northwest corner): Stage trends towards the stable upper schedule but remains well below, currently 0.77 feet below the regulation line.



Water Depths: The WDAT tool for spatial interpolation of depth monthly snapshots indicate depths more than 1.0 foot below ground in extreme northeast WCA-3A North, surface water is still present in the areas surrounding the Alley North colony in that basin. Depths remain stable and above 3.0 feet across most of WCA-2B. Hydrologic connectivity has gradually diminished over the last two months but remains in Shark River, Taylor and Lostman's Sloughs. Comparing WDAT water levels from present, depths changes over the last month are not highly significant with the exception being the northwestern corner of WCA-3A which is significantly deeper. Looking back one year the stage differences are mixed and more significant. The northeast corner of WCA-3A is significantly lower in stage, as is most of the eastern half of WCA-3 North and the rest of the basin slightly drier. Within WCA-2A, the region just north of the L-35B levee is significantly drier.



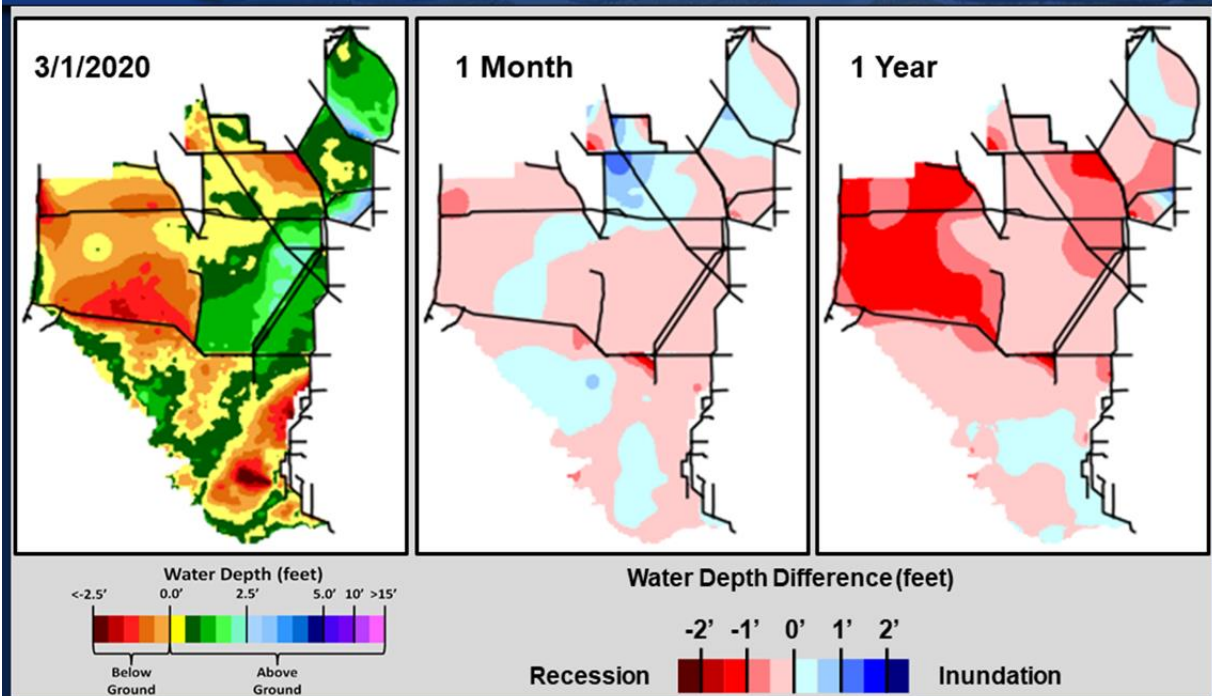
SFWDAT Water Depth Monthly Snapshots



South Florida Water Depth Assessment Tool (SFWDAT)

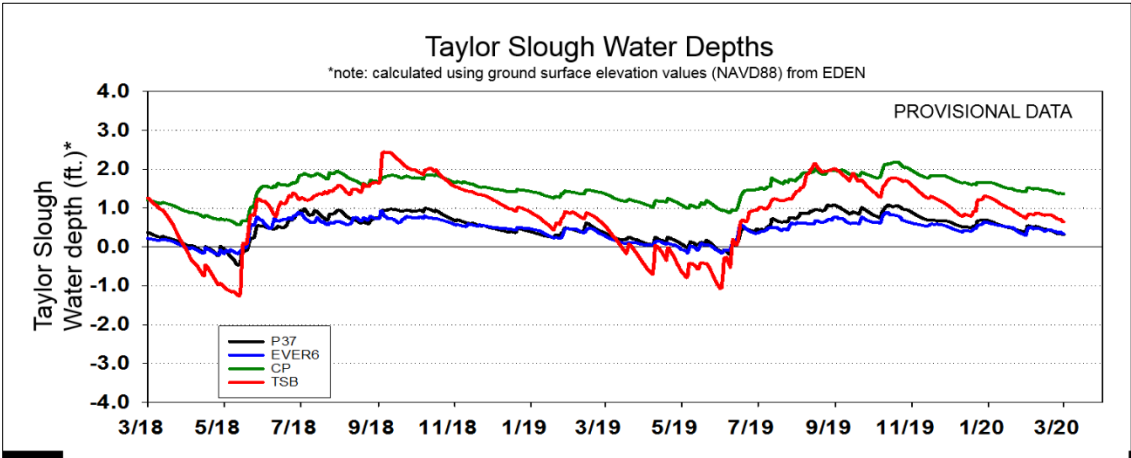
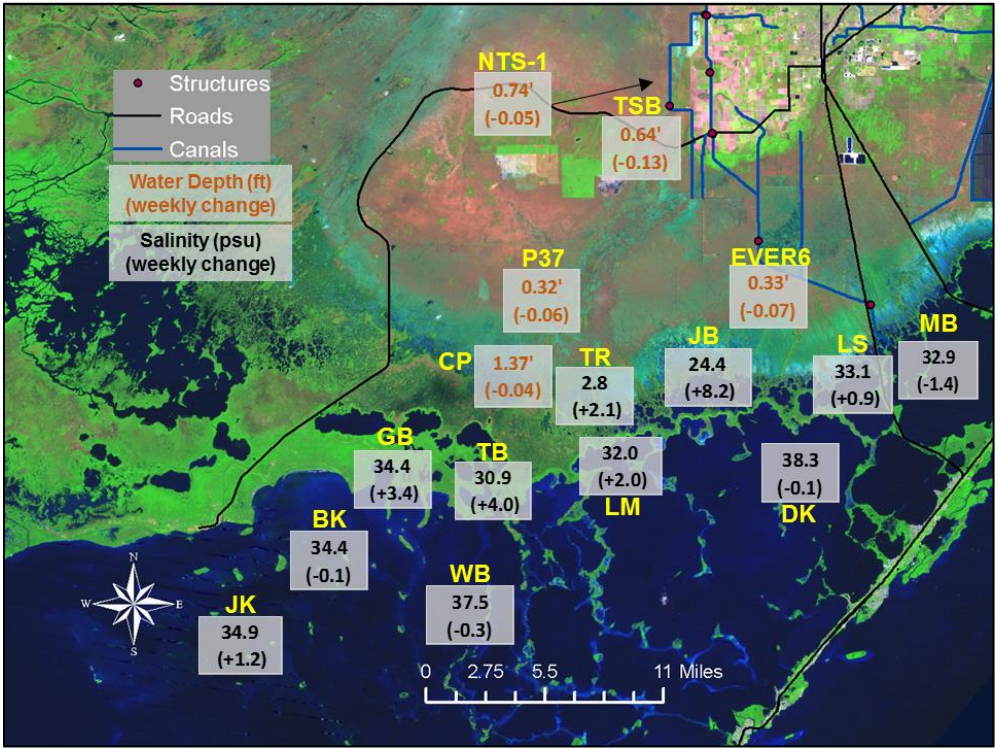


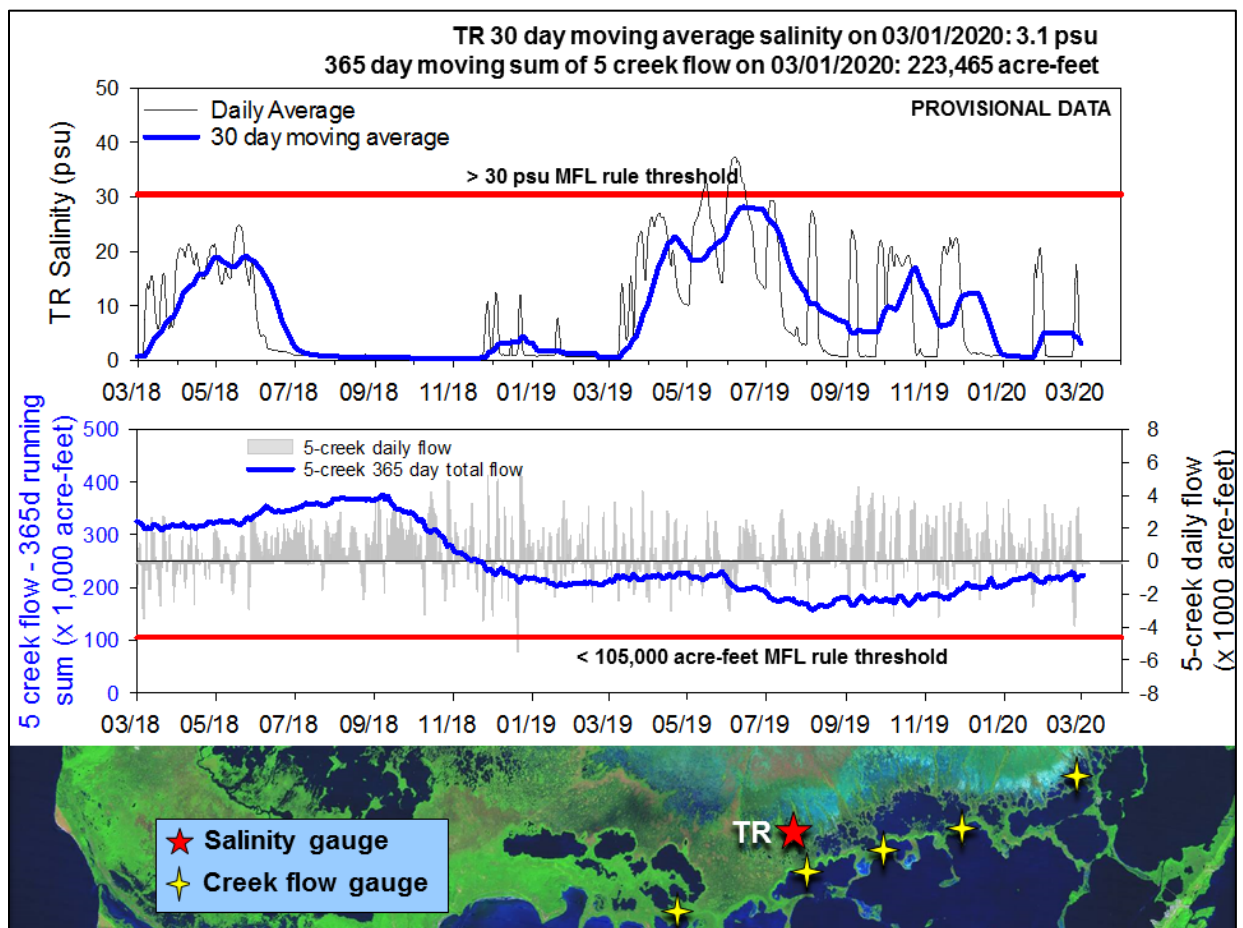
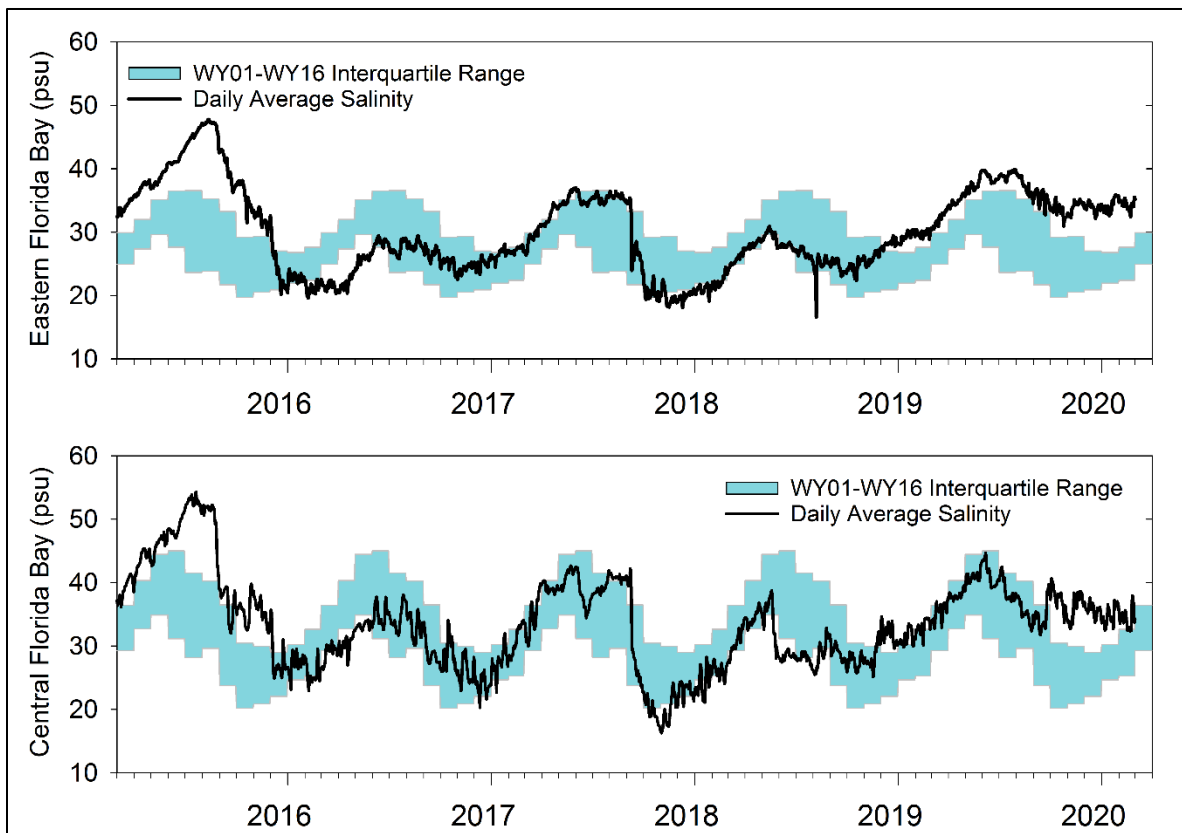
SFWDAT Everglades Difference Maps (Present – Past)



South Florida Water Depth Assessment Tool (SFWDAT)

Taylor Slough Water Levels: An average of 0.43 inches of rain fell over Taylor Slough and Florida Bay this last week and stages decreased an average of -0.07 feet. Upper Taylor Slough (west of S-332D impoundment) is 17 inches higher than its historical average (indicating success in keeping water within Everglades National Park along the eastern boundary) while the rest of Taylor Slough is 5 inches higher than the historical average.





Florida Bay Salinities: Average salinity in Florida Bay increased 2.1 psu this week. The nearshore area is 6.0 psu above its historical average while the rest of the Bay is 5.0 psu above its historical average. We are entering the time of year when salinities will begin increasing more rapidly with higher temperatures and dry conditions.

Florida Bay MFL: Salinity at the TR station in the mangrove zone (tracked for the Florida Bay MFL) spiked upwards but returned to 3.0 psu by Sunday. The 30-day moving average decreased 2.0 psu to 3.1 psu. Weekly flow from the five creeks identified by yellow stars on the map totaled almost -900 acre-feet last week with the negative flows of the first half of the week overriding the positive flows for the second half. The 365-day moving sum of flow from the five creeks (tracked as part of the Florida Bay MFL criteria) decreased 5,000 acre-feet this week to end at 223,465 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

Current stages in northeastern WCA-3A are low for this time of year and salinities are high in Florida Bay. Conserving water within the WCA-3A and moving low nutrient water south has many ecological benefits, these benefits are unrealized when flows are lost to tide. Discharges into northern WCA-3A have the potential to slow recessions near the important Alley North wading bird colony and the only foraging flocks of note currently in the WCAs. Maintaining saturated soils in over-drained portions of the Everglades, like WCA-3A Northeast, conserves peat and lowers the risk of muck fires, and depths there are well below average. Any available water sent through the S-150 post construction 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 which is problematic as the dry season progresses. Given those conditions and the recent strength of the CSSS populations within sub-population D, if water was available it would be ecologically beneficial to explore any flexibility in water management in spite of the current restrictions imposed by the CSSS 2016 Bio Opinion. More specific recommendations appear in the summary table below. The red text represents new or modified information or recommendations.

SFWMD Everglades Ecological Recommendations, March 3rd, 2020 (red is new)

Area	Weekly change	Recommendation	Reasons
WCA-1	Stage decreased by 0.09'	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 0.06'	Moderating the recession rate and conserving water in this basin has ecological benefit as downstream basins are below seasonal average.	Protect upstream/downstream habitat and wildlife. Provide wading bird foraging opportunities later in the dry season.
WCA-2B	Stage decreased by 0.09'	Conserving water in this basin has benefit.	Protect upstream/downstream habitat and wildlife.
WCA-3A NE	Stage increased by 0.01'	Conserving water and slowing the recession in this basin has ecological benefit as current water depths are below seasonal averages. Inflows to this region have great ecological benefit.	Protect and conserve peat soils. Provide stage conditions that are conducive for successful wading bird nesting at the Alley North wading bird colony.
WCA-3A NW	Stage increased by 0.05'	Conserving water and slowing the recession in this basin has ecological benefit as current water depths are below seasonal averages. Inflows to this region have ecological benefit.	
Central WCA-3A S	Stage decreased by 0.06'	Conserving water in this basin has ecological benefit as current water depths are below seasonal averages.	Protect upstream/downstream habitat and wildlife. Provide wading bird foraging opportunities later in the dry season.
Southern WCA-3A S	Stage decreased by 0.11'		
WCA-3B	Stage decreased by 0.07'	Conserving water in this basin has benefit.	Protect tree islands, upstream/downstream habitat and wildlife.
ENP-SRS	Stage decreased by 0.11'	Make discharges to the Park according to the 2012 WCP rainfall plan.	Protect upstream/downstream habitat and wildlife.
Taylor Slough	Stage changes ranged from -0.04' to -0.13'	Move water southward as possible	When available, provide freshwater buffer for downstream conditions.
FB- Salinity	Salinity changes ranged -0.3 to +8.2 psu	Move water southward as possible	When available, provide freshwater to maintain low salinity buffer and promote water movement.