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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: February 19, 2020

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Weather Conditions and Forecast

A mid-level ridge of high pressure over the northwestern Caribbean Sea is forecast to build northward into Florida through Wednesday. The high-pressure area aloft should provide for unseasonably warm temperatures and generally dry conditions today, except for a few light showers over the southeast. There could also be some shower activity developing over the far northern part of the District this afternoon or over the interior southwest, but whatever rain occurs in either region should be isolated and diminish by or during the early evening. The unusual mid-February warmth will continue into Wednesday but with better prospects for rain over the northern half of the District from the afternoon to early evening due to the arrival of a weak cold front just north of the area. Well removed from the front's influence, little to no rainfall is expected over the southern part of the District. A jet stream disturbance sweeping across the Great Lakes on Thursday is predicted to dive southward into the western Atlantic on Friday, which should cause the front over north Florida to push into the northern half of the District Thursday afternoon and through the remainder of the area by early Friday morning. Before the front passes on Thursday, a westerly steering flow and above normal levels of moisture will favor scattered showers and a few thunderstorms over the northeastern or eastern half of the District, mainly during the afternoon or early evening. The same westerly winds should steer the rains away from the west coast, where relatively dry conditions are expected. A dome of cool surface high pressure building southward in the wake of the front on Friday should induce strong north-northeasterly winds across Florida. The instability generated by the cool air mass blowing over the warm Atlantic waters and considerable low-level moisture lingering behind the frontal boundary will cause enhanced shower activity to form along/near the upper and middle east coasts and gradually extend southward to the lower east coast by the afternoon. Some of the rains could be locally heavy at times, although the orientation of the low-level winds would not likely allow the rains to extend that far inland. Enhanced coastal rains could continue in some form during the first half of Saturday before winding down, but the rains would not likely to be quite as intense since moisture levels should be decreasing by that time. However, with the low-level steering winds veering east-northeasterly, lighter rains would tend to extend farther inland than on Friday. Mild and dry weather is anticipated on Sunday, followed by warmer weather and dry conditions persisting into Monday. The next major weather system should be moving into the eastern United States around that time, and increasing rains chances associated with this feature are predicted to arrive over the northwestern or western half of the District, as soon as Monday evening but more likely early Tuesday morning.

Kissimmee

Tuesday morning stages were 53.5 feet NGVD (4.5 feet below schedule) in East Lake Toho, 54.2 feet NGVD (0.8 feet below schedule) in Toho, and 51.7 feet NGVD (at schedule) in Kissimmee-Cypress-Hatchineha; headwater stages were 46.5 feet NGVD at S-65A and 25.8 feet NGVD at S-65D. Tuesday morning discharges were 861 cfs at S-65, 918 cfs at S-65A, 934 cfs at S-65D and 750 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 recommendation:** Continue to maintain S-65A discharge at 900 cfs or less to protect construction work on the Kissimmee River floodplain (recommendation from USACE.) Continue the snail kite recession on Lake Tohopekaliga to reach low pool (52 feet NGVD) on June 1.

Lake Okeechobee

Lake Okeechobee stage was 12.92 feet NGVD on February 17, 2020, down 0.02 feet from the previous week, and down 0.09 feet from the previous month. The Lake remains in the Base Flow sub-band, where it has been since September 11, 2019. 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 1.03 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 692 cfs over the past week with no flow coming from Lake Okeechobee. Salinities decreased slightly at HR1, remained about the same at US1 and increased at A1A. Salinity at the US1 Bridge is in the good range for adult eastern oysters.

Total inflow to the Caloosahatchee Estuary averaged 732 cfs over the past week with 372 cfs coming from the Lake. Salinity decreased at S-79 and Val I-75, little changed at Cape Coral; and increased at Shell Point and Sanibel. 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 normal. 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, 11,700 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 98,700 ac-feet. The total amount of inflows to the STAs in WY2020 is approximately 887,000 ac-feet. Most STA cells are above target, except STA-1E cells which are near target and 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 Eastern Flow-way for energy dissipater installation, in STA-1E Eastern and Central Flow-way for Eastern 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 for a 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 the WCA-3A remain below average (0.26 feet and 0.77 feet below average for Site 63 in the northeast and Site 62 in the northwest, respectively) for this time of year. 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 water to flow south has important ecological benefit. As wading bird nesting begins in the Everglades, ecological recommendations are for moderating recession rates where and when possible. Generally, this time of year rates from -0.05 to -0.09 feet per week are

desirable to optimize conditions for prey concentration and capture. 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 last week keeping stages and salinities steady. Flows from the 5 creeks that discharge into the Bay were half that of last week. Conditions are slightly better than when the dry season started because of the recent rains, but salinities remain higher than desirable.

Supporting Information

KISSIMMEE BASIN

Kissimmee Basin Rainfall

The Upper Kissimmee Basin received 0.48 inches of rainfall in the past week, and the Lower Basin received 0.33 inches (Nexrad Rainfall 2/17/2020).

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: 2/18/2020

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)						
							2/16/20	2/9/20	2/2/20	1/26/20	1/19/20	1/12/20	1/5/20
Lakes Hart and Mary Jane	S-62	59	LKMJ	60.8	R	61.0	-0.2	0.0	0.0	0.0	-0.1	0.0	0.0
Lakes Myrtle, Preston, and Joel	S-57	15	S-57	61.1	R	61.2	-0.1	0.0	0.1	0.0	0.0	0.1	0.1
Alligator Chain	S-60	0	ALLI	63.5	R	64.0	-0.5	-0.5	-0.5	-0.6	-0.5	-0.5	-0.5
Lake Gentry	S-63	2	LKGT	61.6	R	61.5	0.1	0.0	0.0	-0.1	-0.1	-0.1	-0.1
East Lake Toho	S-59	0	TOHOE	53.6	R	58.0	-4.4	-4.1	-3.7	-3.4	-3.2	-3.1	-2.8
Lake Toho	S-61	825	TOHOW, S-61	54.3	R	55.0	-0.7	-0.5	-0.4	-0.5	-0.5	-0.5	-0.5
Lakes Kissimmee, Cypress, and Hatchineha	S-65	922	KUB011, LKIS5B	51.7	R	51.8	-0.1	-0.4	-0.8	-0.7	-0.6	-0.6	-0.7

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 8. Kissimmee River floodplain stages at selected stations are shown in Figure 9.

Table 2. One-day and seven-day averages of discharge at S-65x structures, of dissolved oxygen (DO) 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: 2/18/2020

Metric	Location	1-Day Average		Average for the Preceding 7-Days ¹							
		2/16/2020	2/16/20	2/9/20	2/2/20	1/26/20	1/19/20	1/12/20	1/5/20	12/29/19	12/22/19
Discharge (cfs)	S-65	951	922	853	808	719	606	408	211	283	317
Discharge (cfs)	S-65A ²	918	895	823	766	736	557	445	314	317	315
Discharge (cfs)	S-65D ²	944	946	881	785	777	632	438	553	454	408
Headwater Stage (feet NGVD)	S-65D ²	25.78	25.82	25.79	25.76	25.77	25.78	25.76	25.75	25.84	25.76
Discharge (cfs)	S-65E ²	960	844	861	759	713	601	434	502	441	386
Discharge (cfs)	S-67	0	0	0	0	0	0	4	0	0	0
DO (mg/L) ³	Phases I & II/III river channel	8.4	8.4	9.0	9.1	8.5	8.0	8.3	8.2	8.6	9.1
Mean depth (feet) ⁴	Phase I floodplain	0.25	0.27	0.24	0.18	0.18	0.25	0.20	0.26	0.23	0.16

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

²S-65A discharge combines S-65A with auxiliary 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)

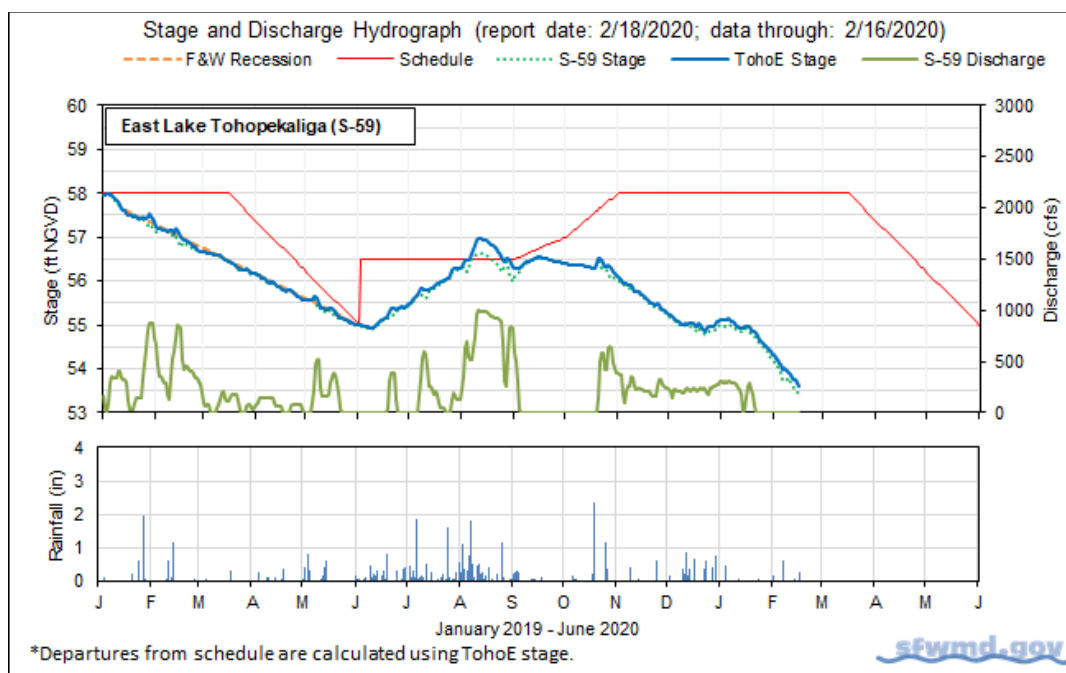


Figure 1.

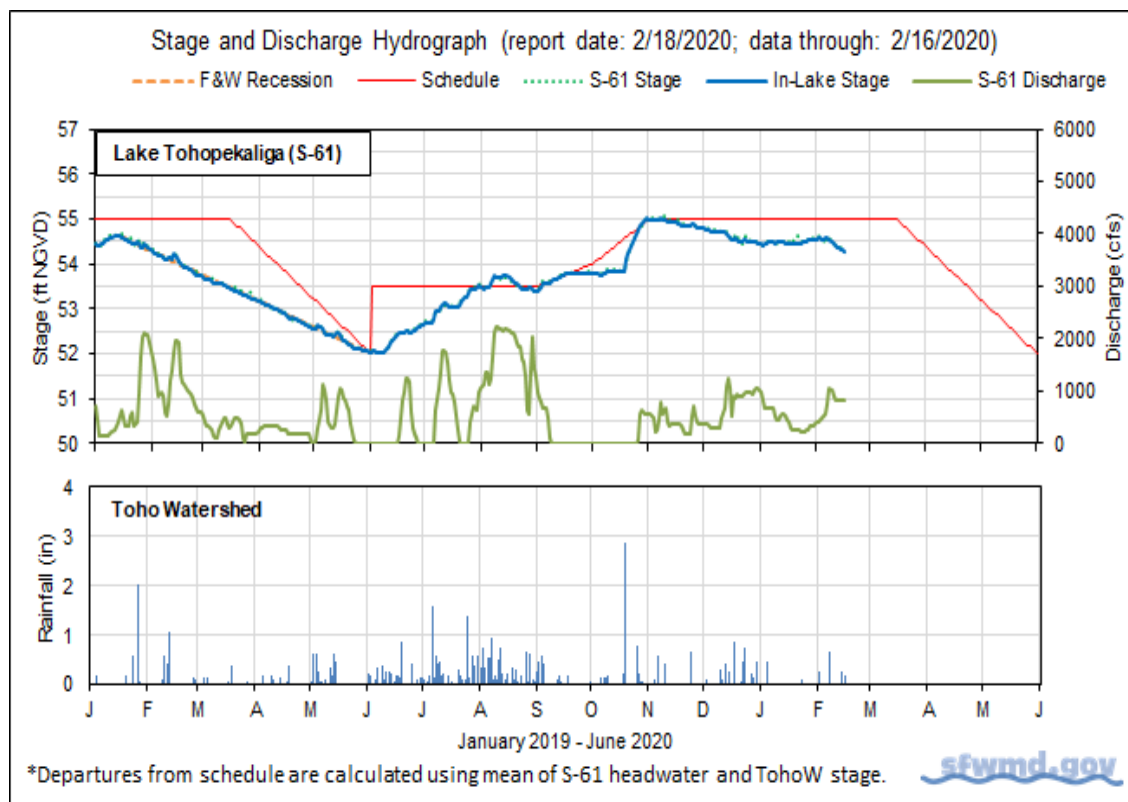


Figure 2.

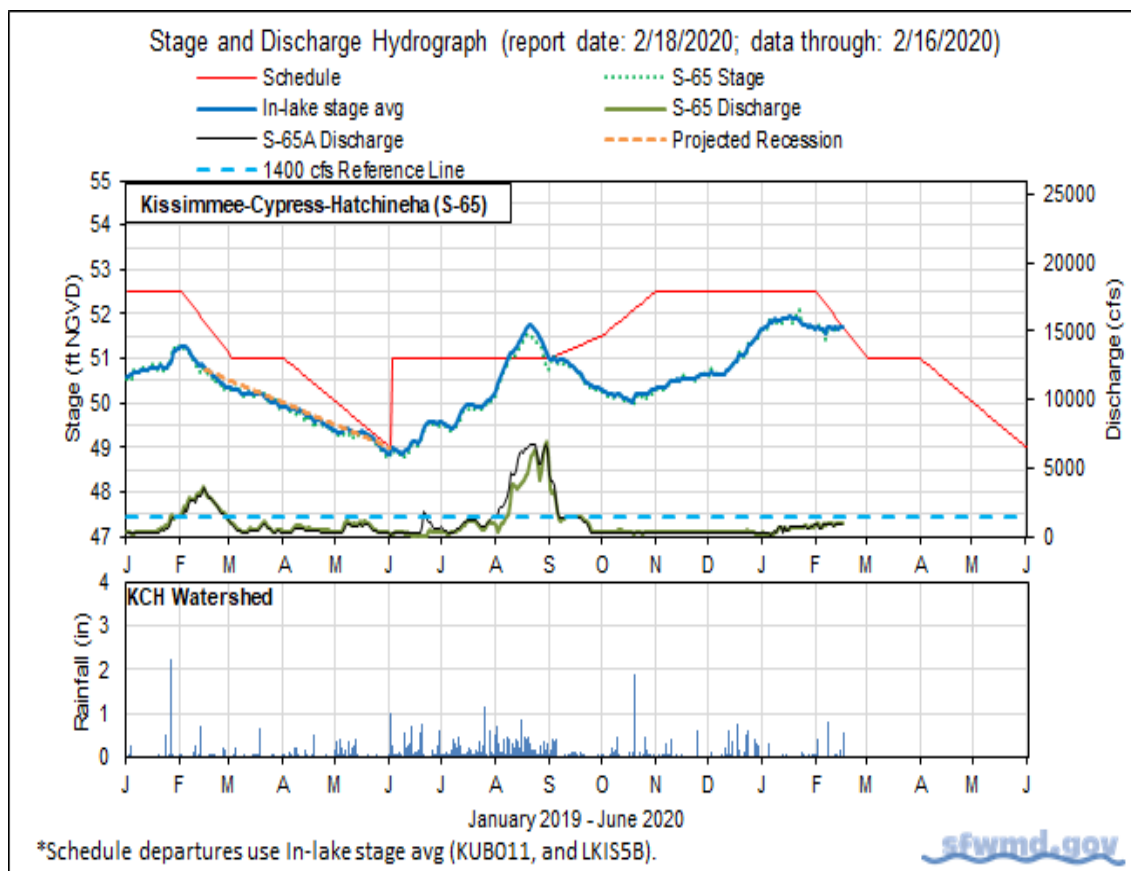


Figure 3.

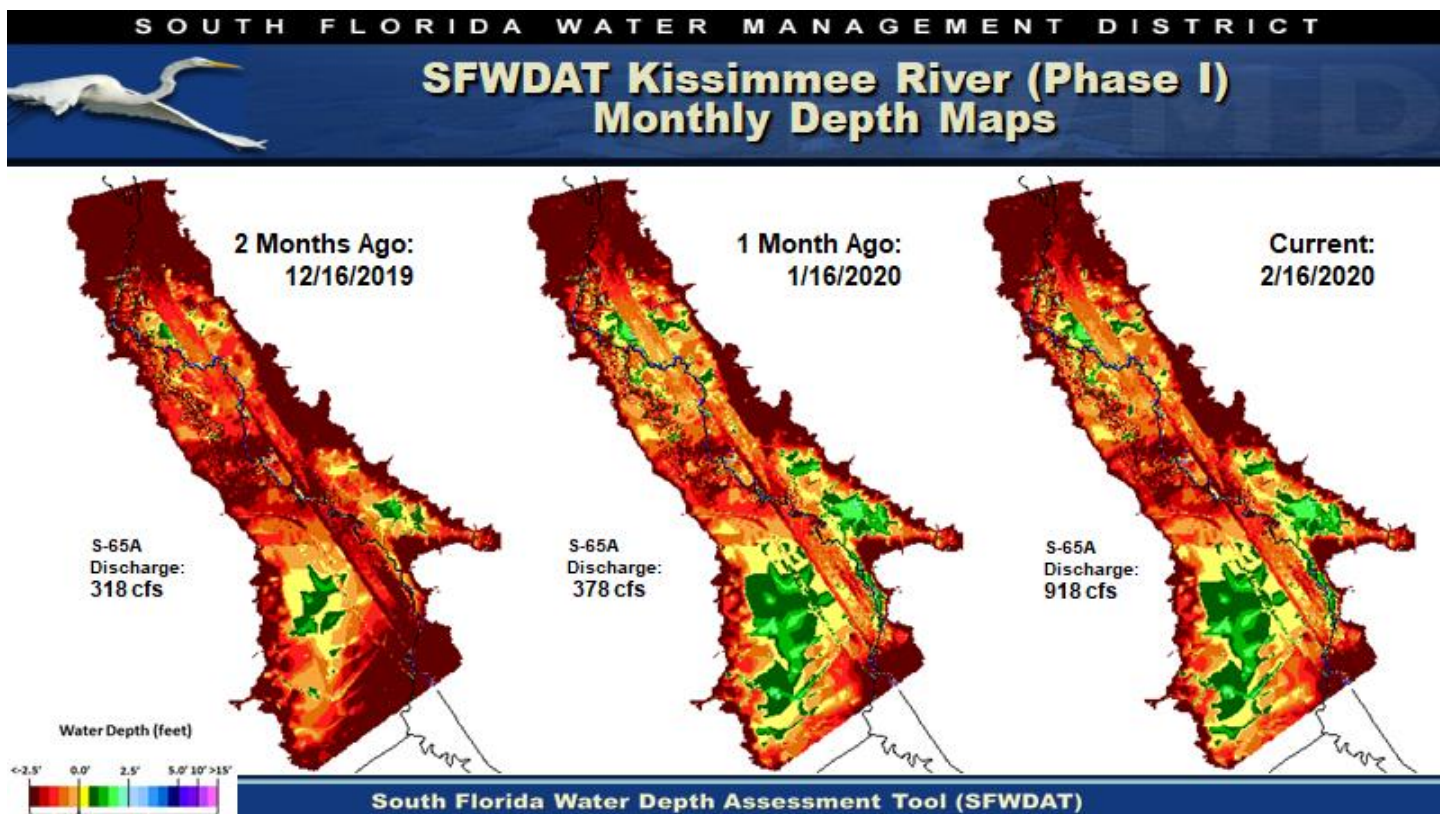
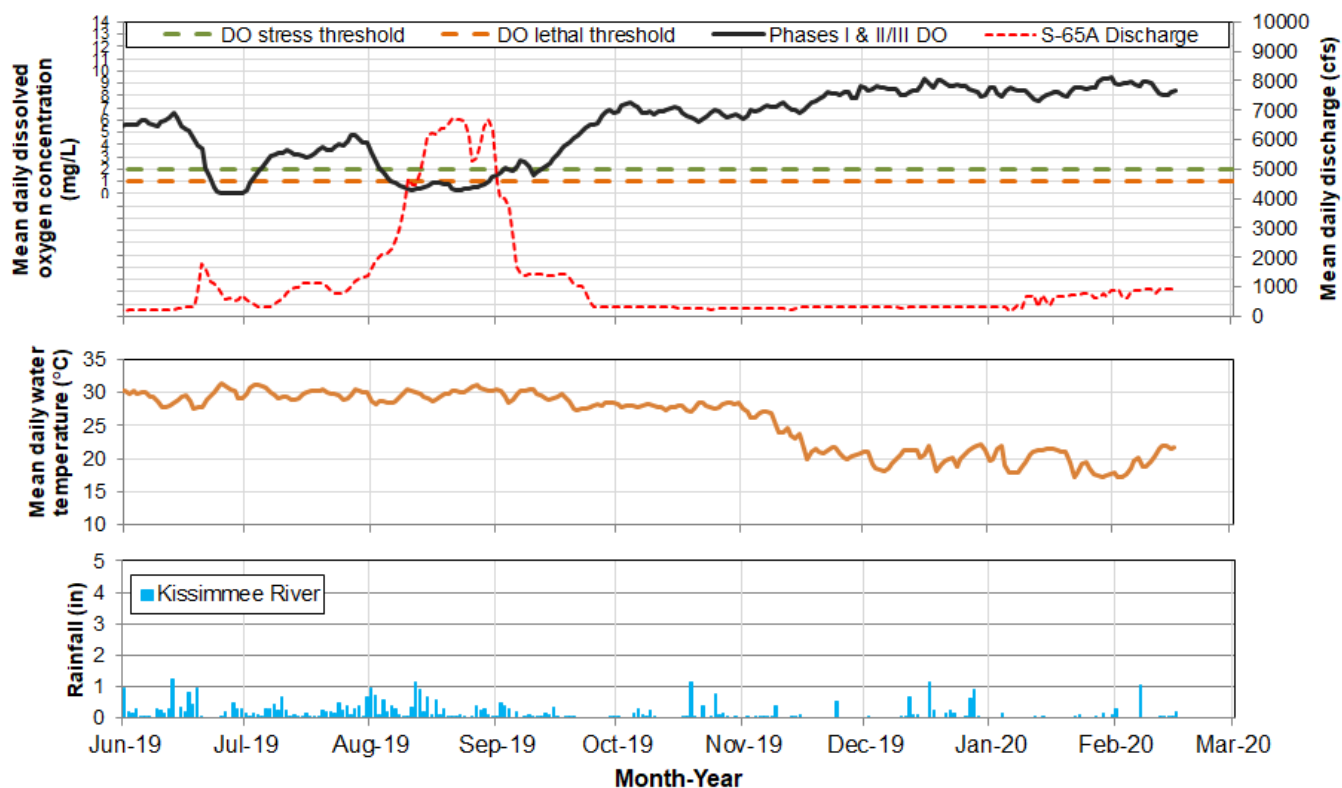


Figure 4. Phase I area floodplain water depths for this week, one month ago, and two months ago. Note that the WDAT color-coding has been modified to accommodate greater water depths; these maps are not directly comparable to Kissimmee Basin WDAT maps published prior to January 16, 2012.



Report Date: 2/18/2020; data are through: 2/16/2020.

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

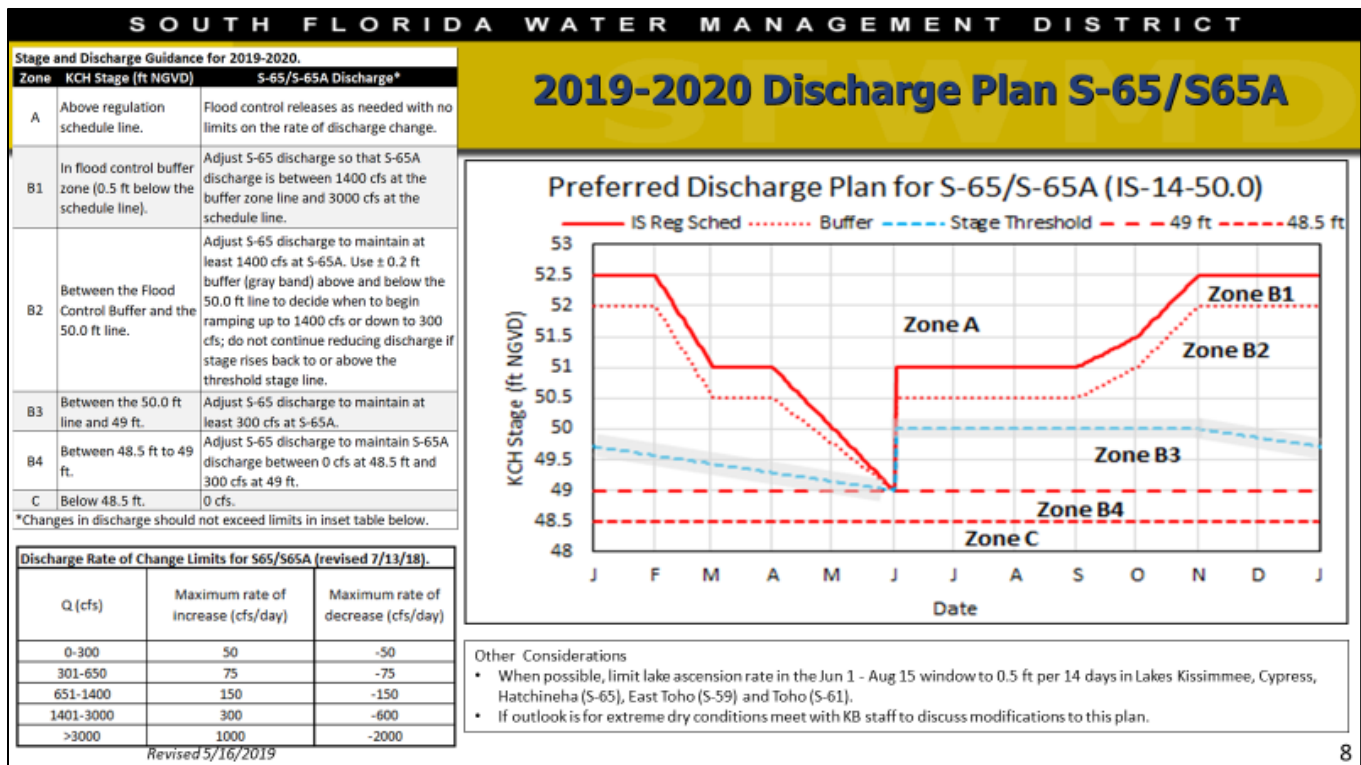


Figure 6. The 2019-2020 Discharge Plan for S-65/S-65A.

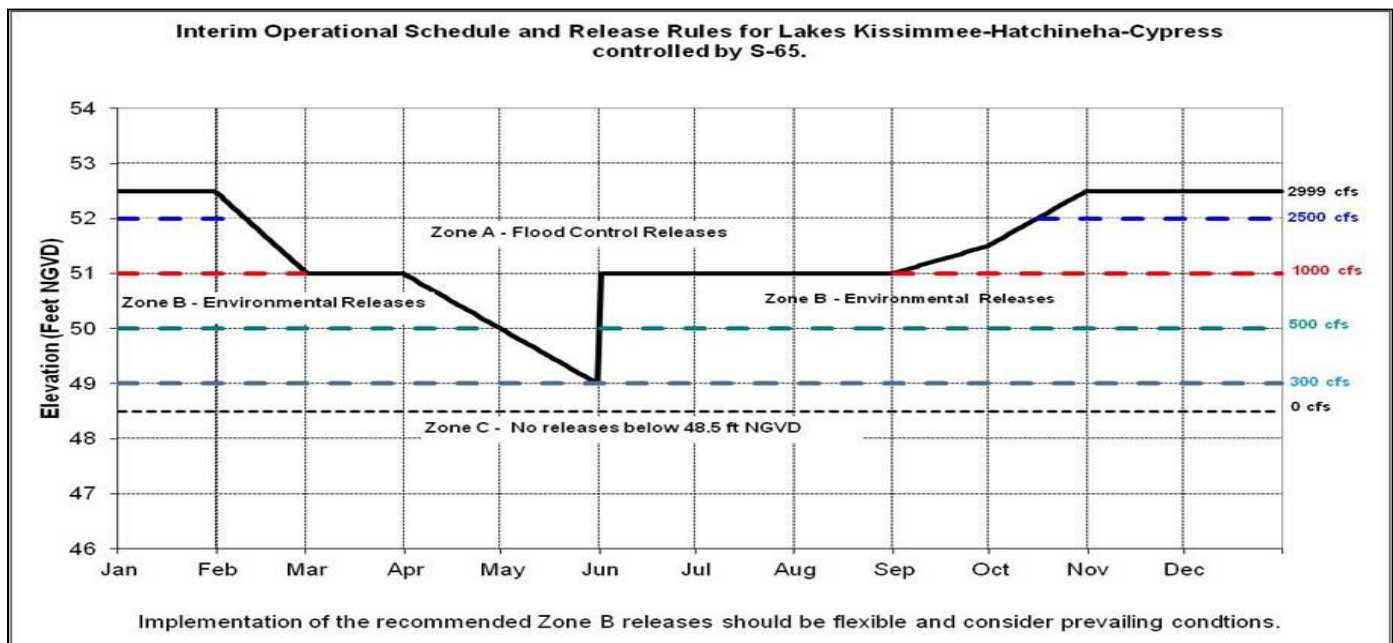


Figure 7. Interim operations schedule for S-65. The discharge schedule shown to the right has not been used in recent years.

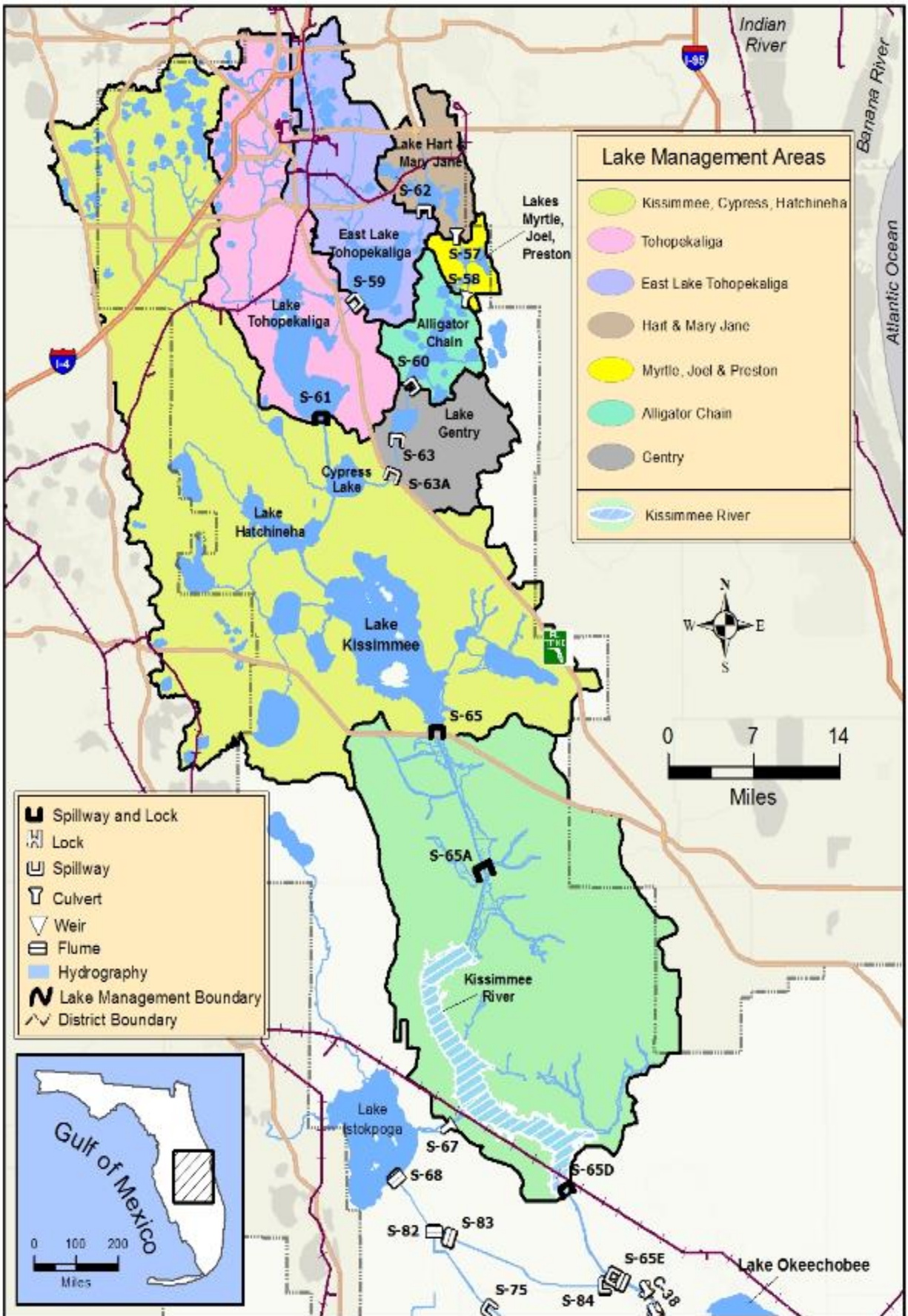


Figure 8. The Kissimmee Basin.

LAKE OKEECHOBEE

Lake Okeechobee stage is 12.92 feet NGVD, 0.09 feet lower than a month ago and 0.09 feet higher than a year ago (Figure 1). The Lake is currently 1.03 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 (Figure 3). Lake stage has hovered around 13.0 feet since late November 2019. According to RAINДАР, 0.44 inches of rain fell directly over the Lake during the past week, which was similar to the district-wide average of 0.40 inches (Figure 4).

The average daily inflows (minus rainfall) decreased by almost 330 cfs from the previous week, while outflows increased by 1,068 cfs. Most of the inflow came from the Kissimmee River (S-65E & S-65EX1) and C-41a (S-84 & S-84X), while most of the outflows were released through S-77 (C-43/Caloosahatchee Canal), S-308 (C-44/St Lucie Canal) and south through the S-350 structures. 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.

The fourth wading bird flight of 2020 was conducted on February 13. There were two flocks consisting of less than 300 total wading birds seen foraging around Lake Okeechobee. Wading bird foraging continues to be dramatically lower than last year including one survey where no birds were reported. The only other time with such a low amount of wading birds using Lake Okeechobee, the lake stage was over 16 feet and the marsh was unsuitable for foraging due to high water levels. In January 2019 lake levels were similar and an average of 14,000 birds were counted. However, from September 2017 to March 2018 lake levels were over 15 feet and inundated the marsh, allowing for prey production to occur throughout these areas. Conversely, water levels have been below 14 feet since October 2018 leaving many areas of the marsh continuously dry for two seasons now. Current conditions on the lake are not favorable for foraging or nesting.

The best available satellite imagery (February 10, 2020) using NOAA's cyanobacteria monitoring product derived from EUMETSAT's Sentinel 3 OLCI sensor data is partially obscured by clouds but showed a slight decrease in bloom potential from the previous week (Figure 6).

Water Management Summary

Lake Okeechobee stage was 12.92 feet NGVD on February 17, 2020, down 0.02 feet from the previous week, and down 0.09 feet from the previous month. The Lake remains in the Base Flow sub-band, where it has been since September 11, 2019. 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 1.03 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	865	840	0.4
S-71 & S-72	59	5	0.0
S-84 & S-84X	375	129	0.1
Fisheating Creek	22	33	0.0
S-154	0	0	0.0
S-191	7	0	0.0
S-133 P	0	0	0.0
S-127 P	0	1	0.0
S-129 P	5	0	0.0
S-131 P	6	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	1224	971	0.4
Total	2562	1982	0.9

OUTFLOWS	Previous week Avg Daily CFS	Avg Daily Flow cfs	Equivalent Depth Week Total (in)
S-77	223	471	0.2
S-308	605	477	0.2
S-351	27	662	0.3
S-352	0	17	0.0
S-354	481	731	0.3
L-8 Outflow	83	131	0.1
ET	1697	1777	0.8
Total	3116	4264	1.9

Provisional Data

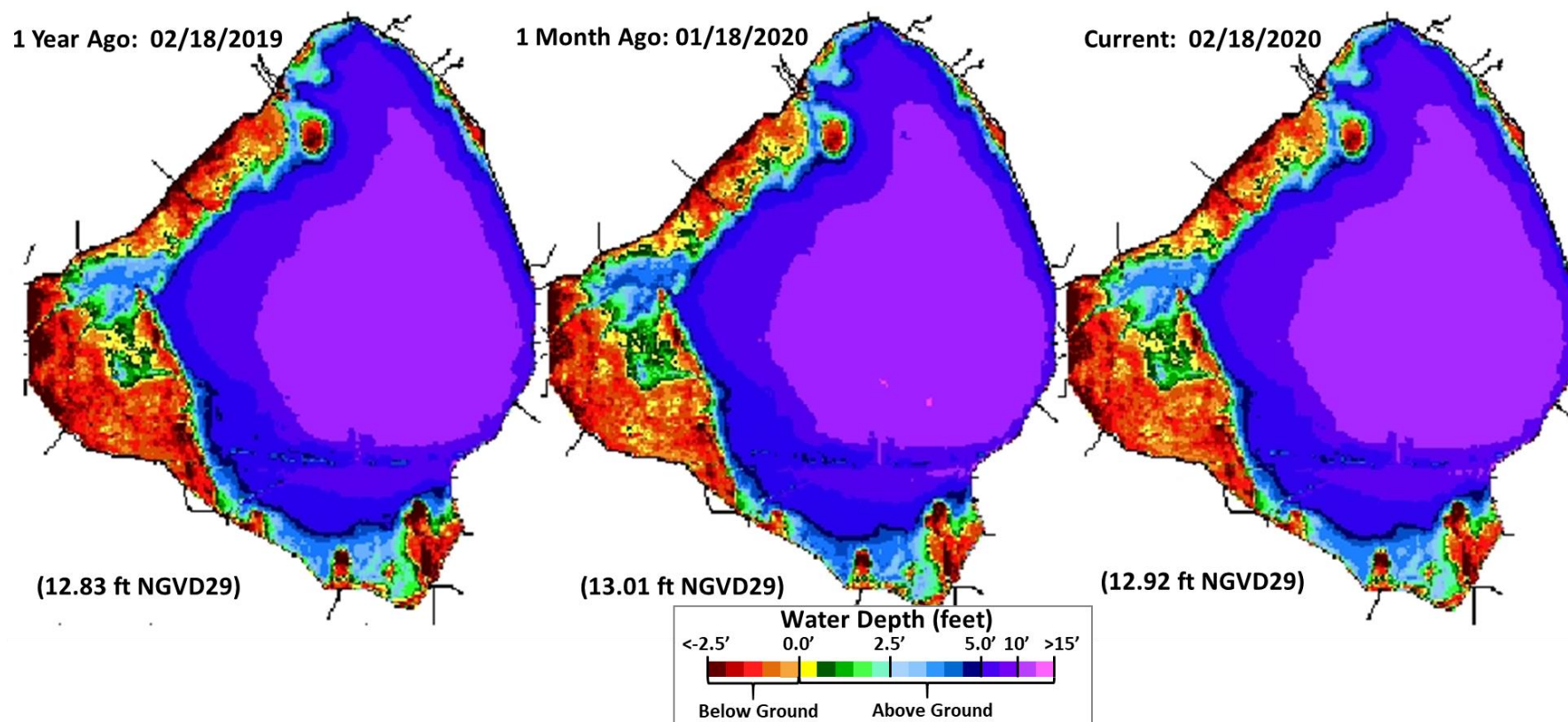


Figure 1. Water depth estimates on Lake Okeechobee based on the South Florida Water Depth Assessment Tool.

Lake Okeechobee Stage vs (Draft) Ecological Envelope

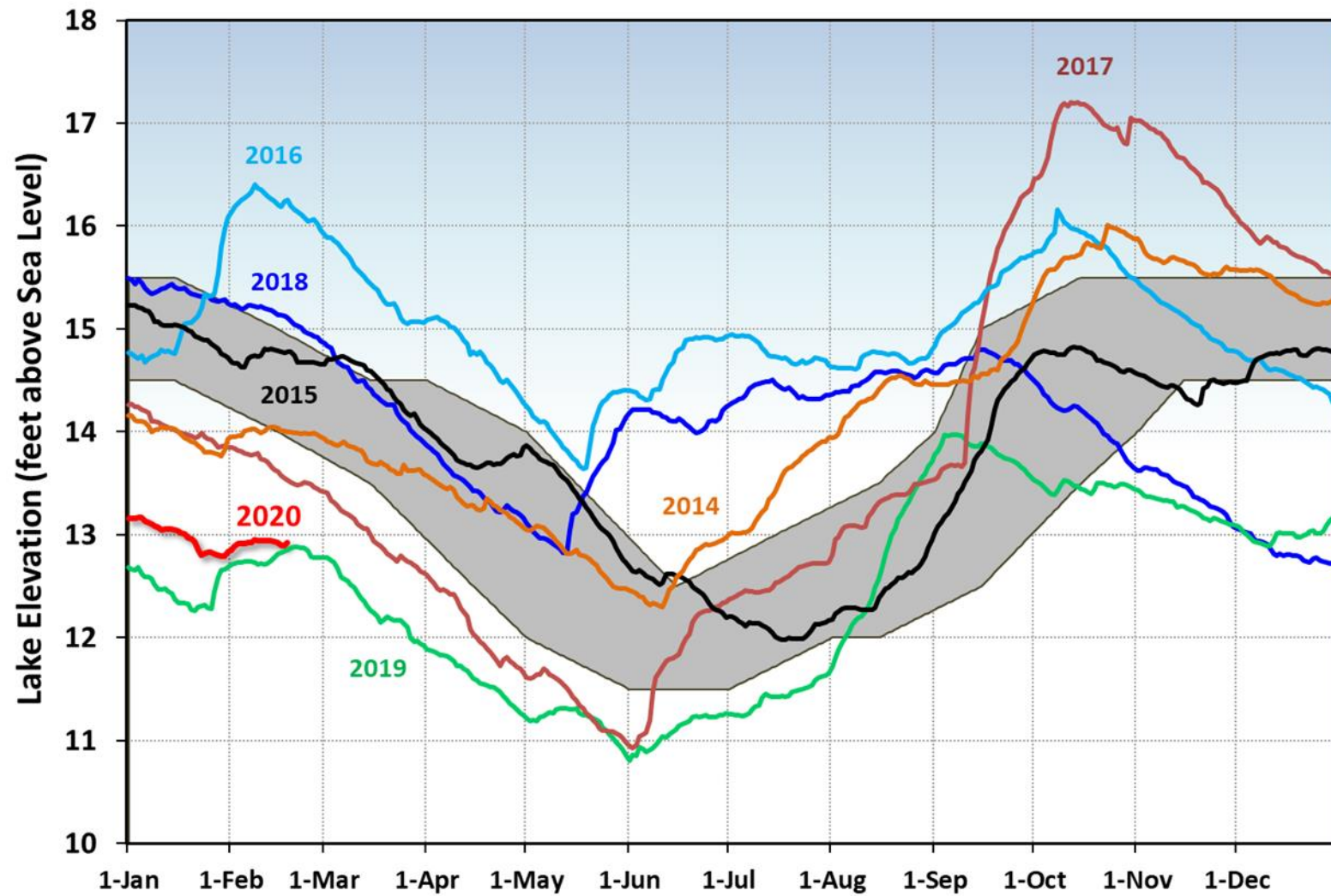
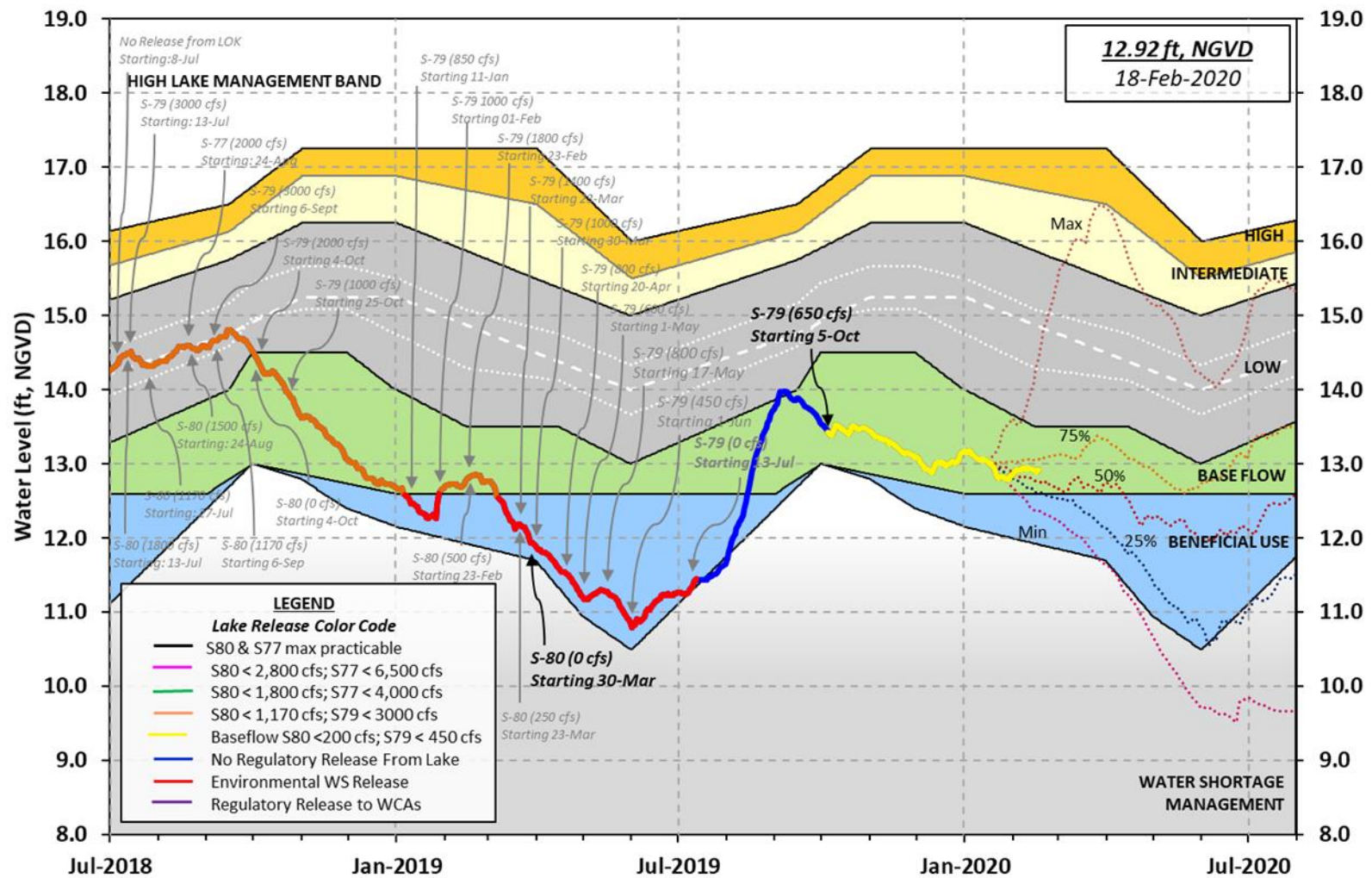


Figure 2. Select annual stage hydrographs for Lake Okeechobee in comparison to the Ecological Envelope.

Lake Okeechobee Water Level History and Projected Stages



LORS-2008
Adopted by USACE 28-April-2008

Projected Stage Percentiles From
SFWMD-HESM Position Analysis

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

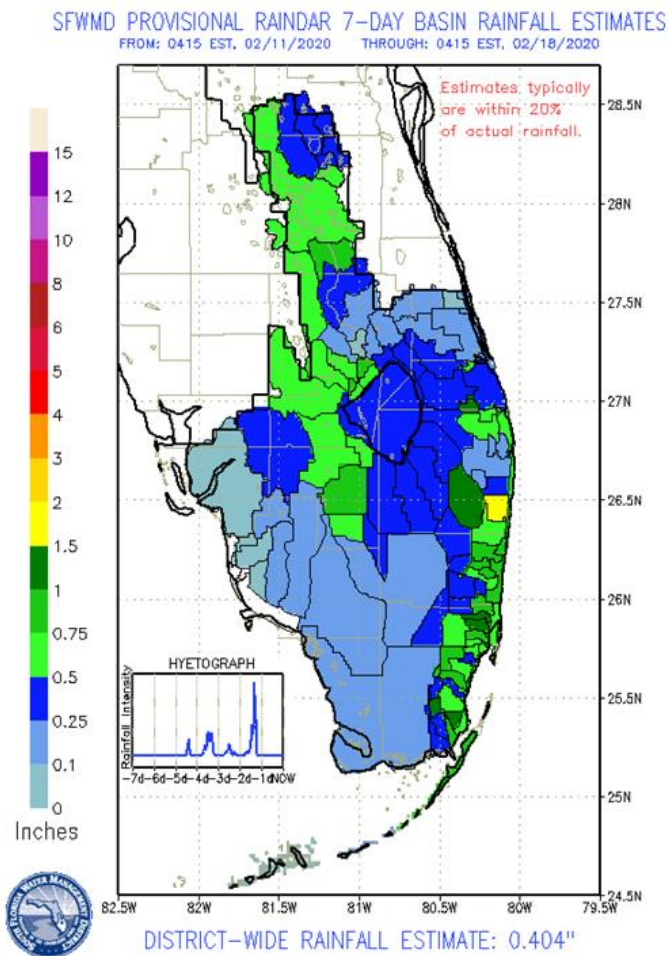


Figure 4. 7-Day rainfall estimates by RAINDAR.

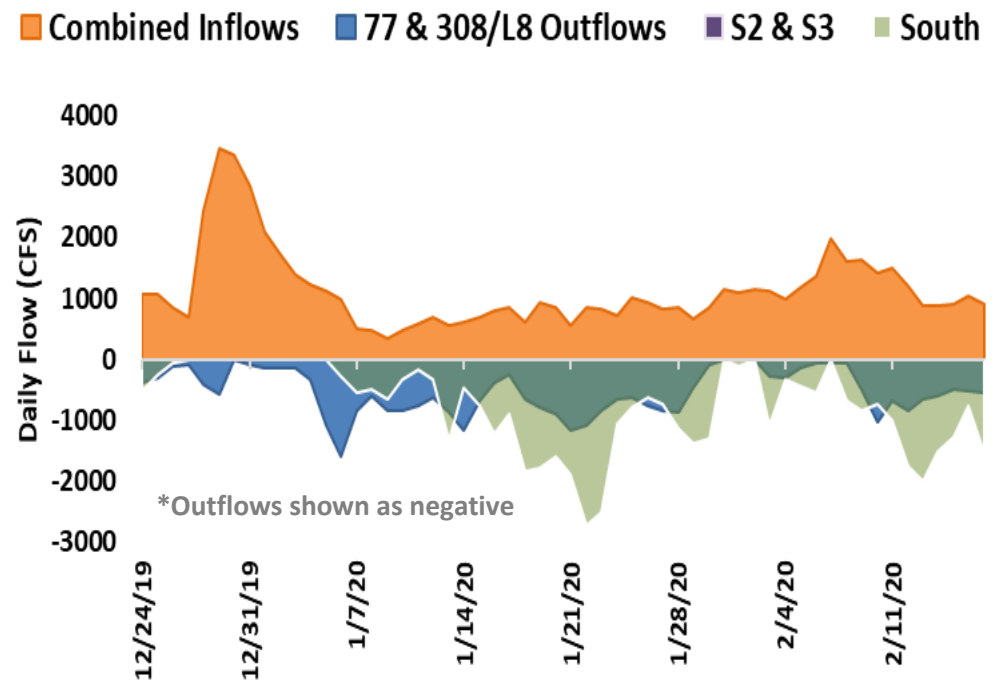


Figure 5. Major inflows (orange) and outflows (blue) of Lake Okeechobee, including the S-350 structures designated as South (green). The L-8 Canal flows through Culvert 10A are included as outflows when positive, and as inflows when backflowing into the Lake. All inflows and outflows are shown as positive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

Wading Bird Foraging Locations February 13, 2020

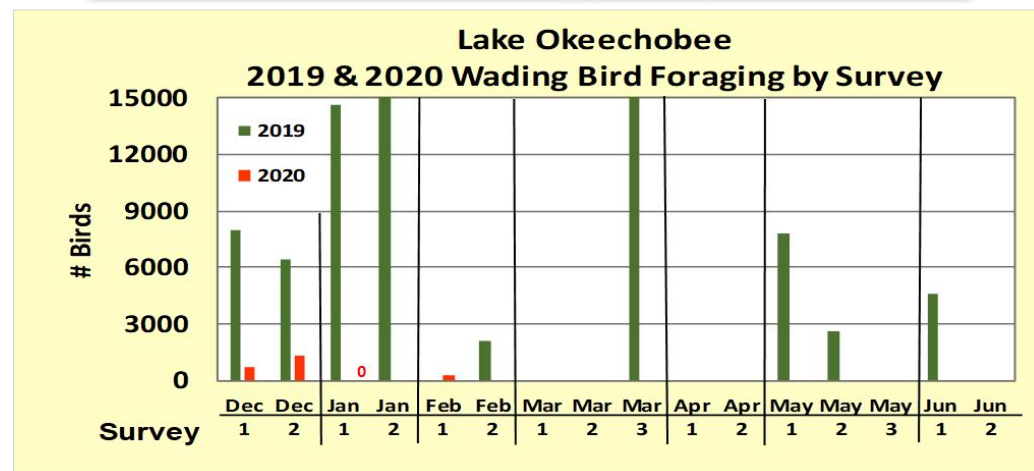
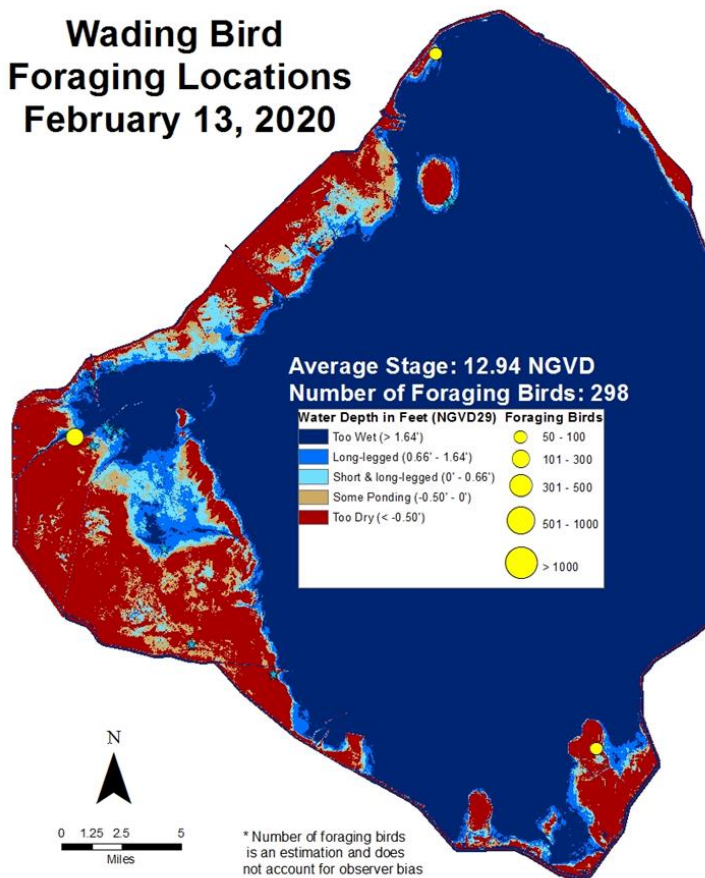


Figure 6. Results of wading bird survey flight from February 13, 2020, and comparison to previous surveys.

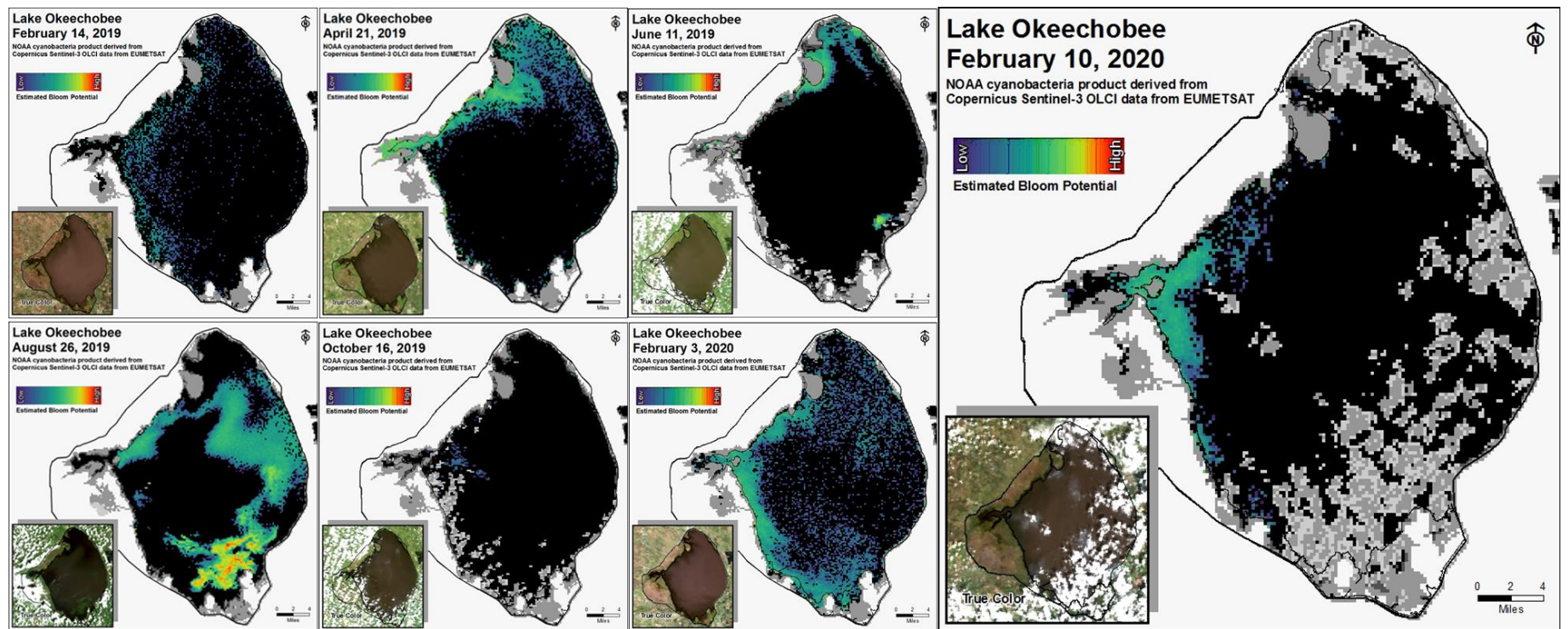


Figure 7. Potential for cyanobacterial blooms on Lake Okeechobee in 2019 and 2020, based on NOAA's harmful algal bloom monitoring system derived from Copernicus Sentinel-3 OLCI data from EUMETSAT. Gray indicates cloud cover.

ESTUARIES

St. Lucie Estuary:

Last week total inflow to the St. Lucie Estuary averaged approximately 692 cfs (Figures 1 and 2) and last month inflow averaged about 827 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	486
S-80	0
S-308	419
S-49 on C-24	41
S-97 on C-23	64
Gordy Rd. structure on Ten Mile Creek	101

Over the past week in the estuary, salinity decreased at HR1, remained about the same at US1 Bridge, and increased at A1A Bridge (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 17.2. 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)	11.3 (12.6)	14.6 (14.9)	NA ¹
US1 Bridge	16.8 (16.8)	18.0 (17.6)	10.0-26.0
A1A Bridge	26.1 (24.8)	28.5 (27.0)	NA ¹

¹Envelope not applicable

Caloosahatchee Estuary:

Last week total inflow to the Caloosahatchee Estuary averaged approximately 732 cfs (Figures 5 and 6) and last month inflow averaged about 949 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	592
S-78	430
S-79	601
Tidal Basin Inflow	131

Over the past week in the estuary, salinity decreased at Val I75, remained about the same at Cape Coral, and increased downstream (Table 4, Figures 7 & 8). The seven-day average salinities 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)	1.7 (2.3)	1.7 (2.4)	NA ¹
Val I75	2.4 (3.3)	3.1 (4.0)	0.0-5.0 ²
Ft. Myers Yacht Basin	9.6 (9.5)	10.7 (11.1)	NA
Cape Coral	17.7 (17.4)	19.7 (19.1)	10.0-30.0
Shell Point	28.5 (26.9)	29.3 (27.5)	10.0-30.0
Sanibel	32.1 (31.0)	32.3 (31.1)	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 2.7 to 6.0 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 110 cfs. The 30-day moving average surface salinity at Val I-75 is forecast to be between 2.9 and 4.0 (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	110	6.0	4.0
B	450	110	5.1	3.5
C	650	110	3.7	3.1
D	800	110	3.4	3.0
E	1000	110	2.7	2.9

Red tide

The Florida Fish and Wildlife Research Institute reported on February 14, 2020, that *Karenia brevis*, the Florida red tide dinoflagellate, was not observed in samples collected from Lee or Palm Beach counties (no samples were analyzed this week from St. Lucie, Martin, or Miami-Dade counties).

Water Management Recommendations

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

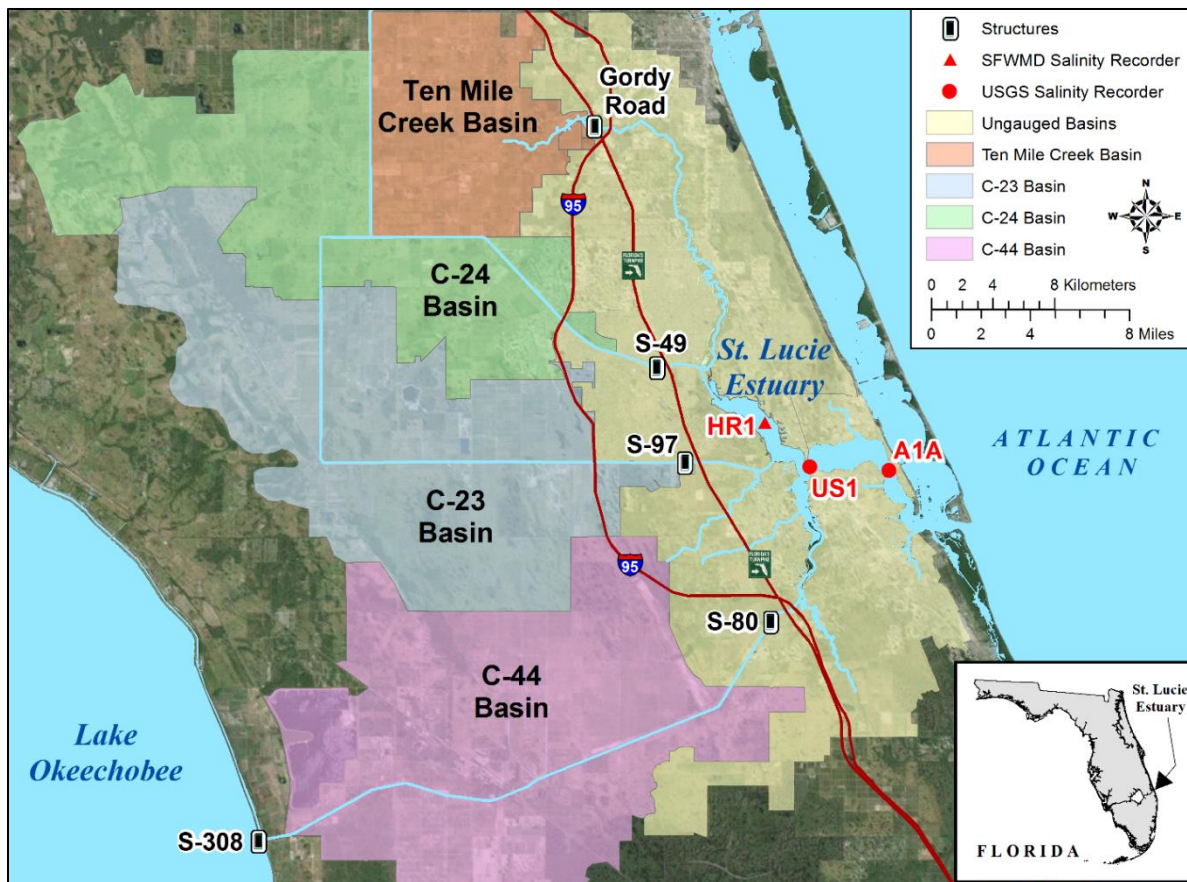


Figure 1. Basins, water control structures, and salinity monitoring for the St. Lucie Estuary.

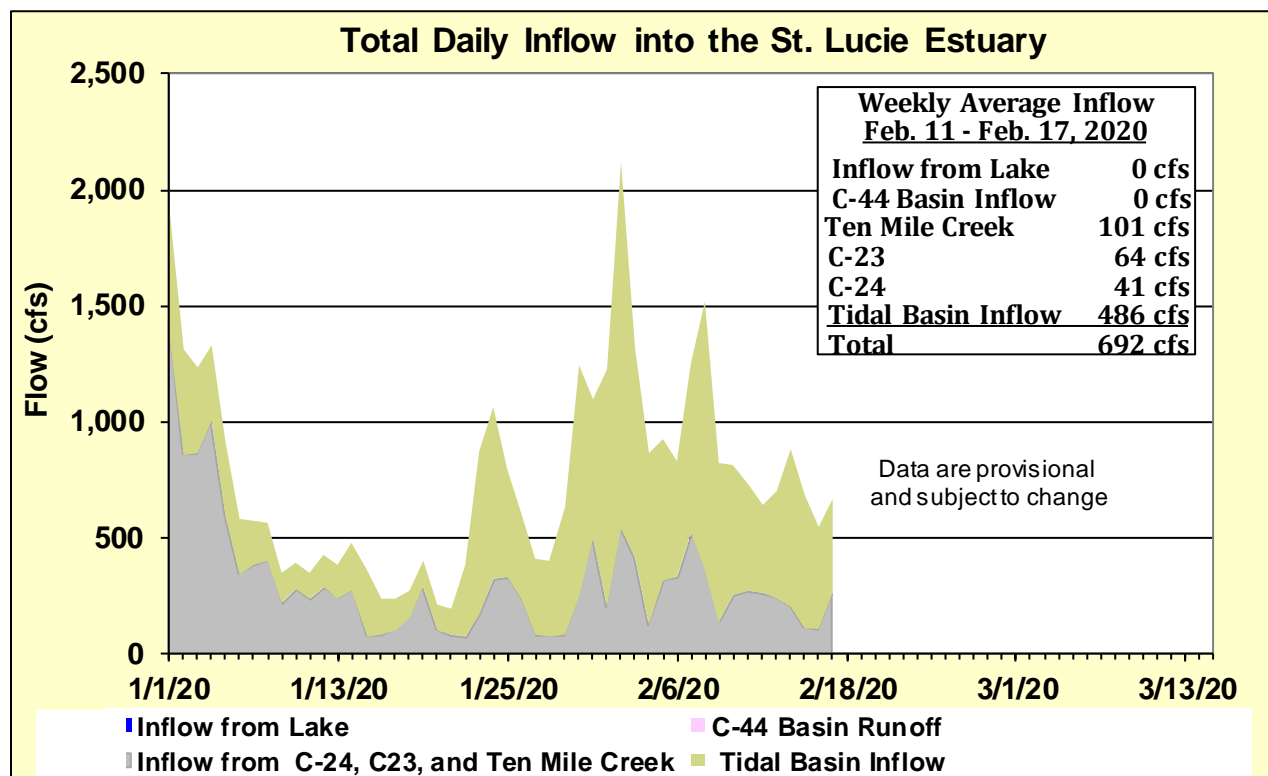


Figure 2. Total daily inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and tidal basin into the St. Lucie Estuary.

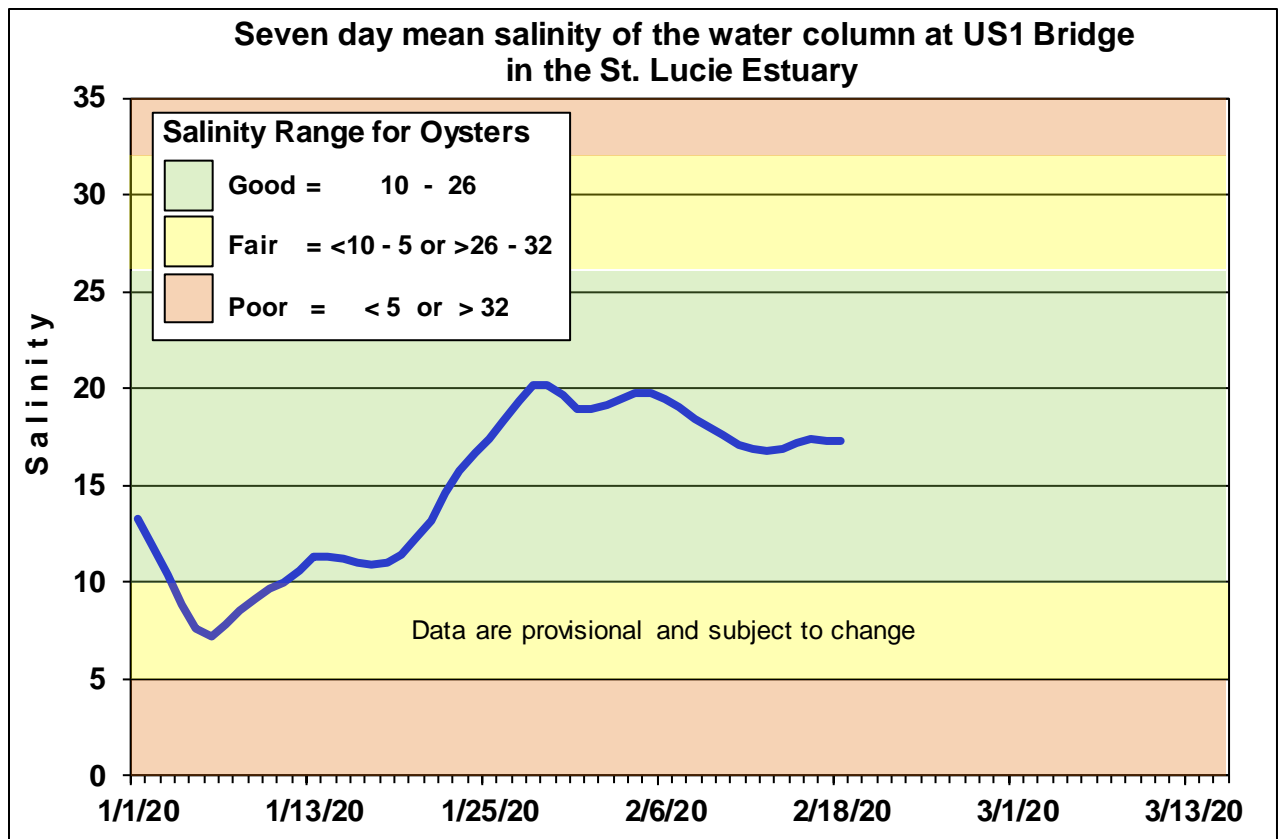


Figure 3. Seven-day mean salinity of the water column at the US1 Bridge.

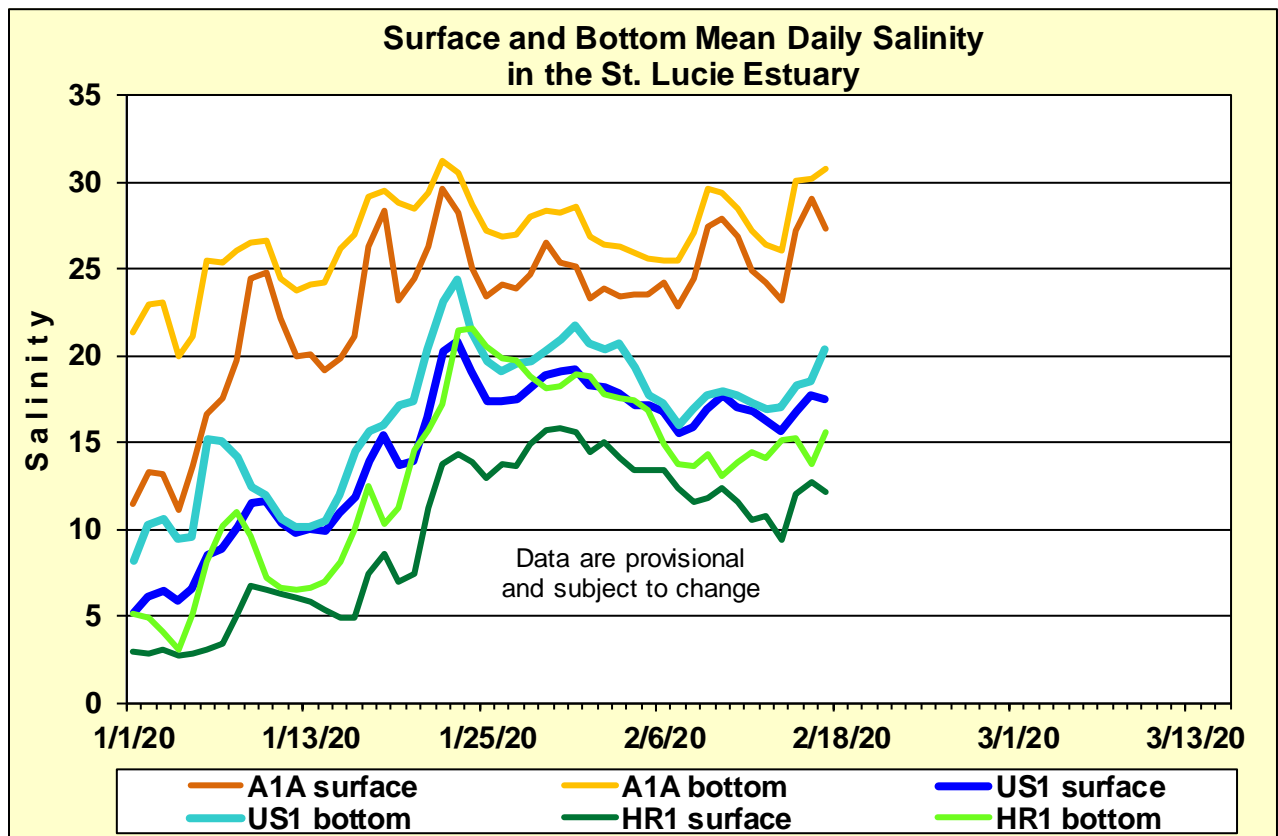


Figure 4. Daily mean salinity at the A1A, US1, and HR1 stations.

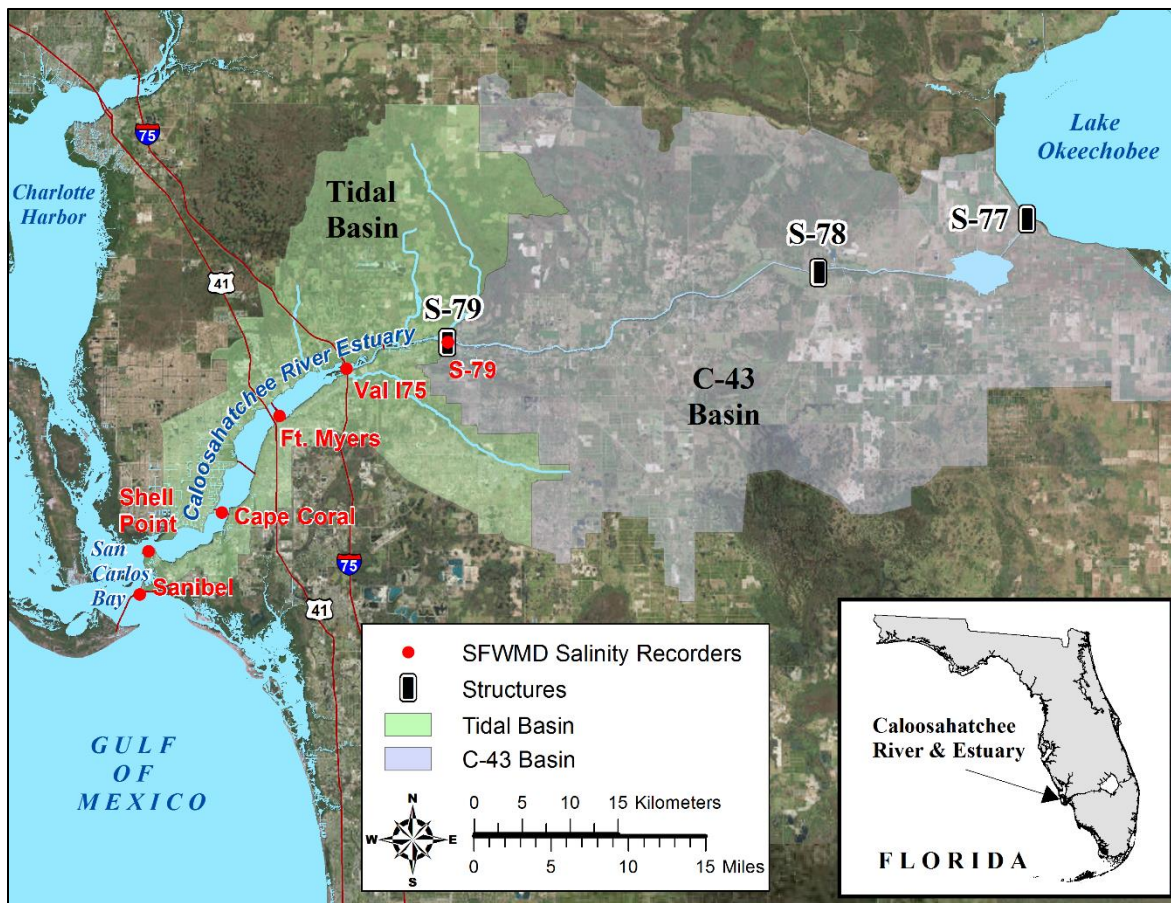


Figure 5. Basins, water control structures, and salinity monitoring for the Caloosahatchee Estuary.

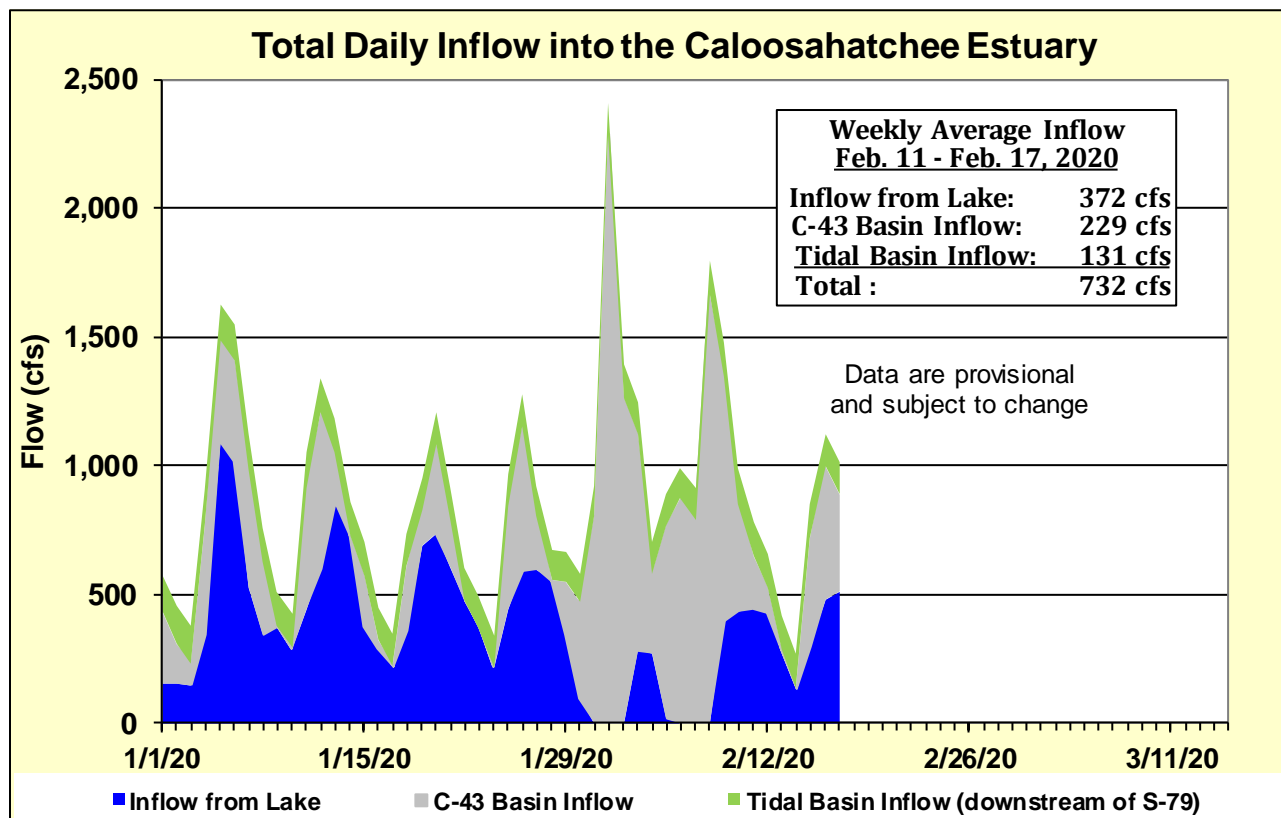


Figure 6. Total daily inflows from Lake Okeechobee, runoff from the C-43 basin

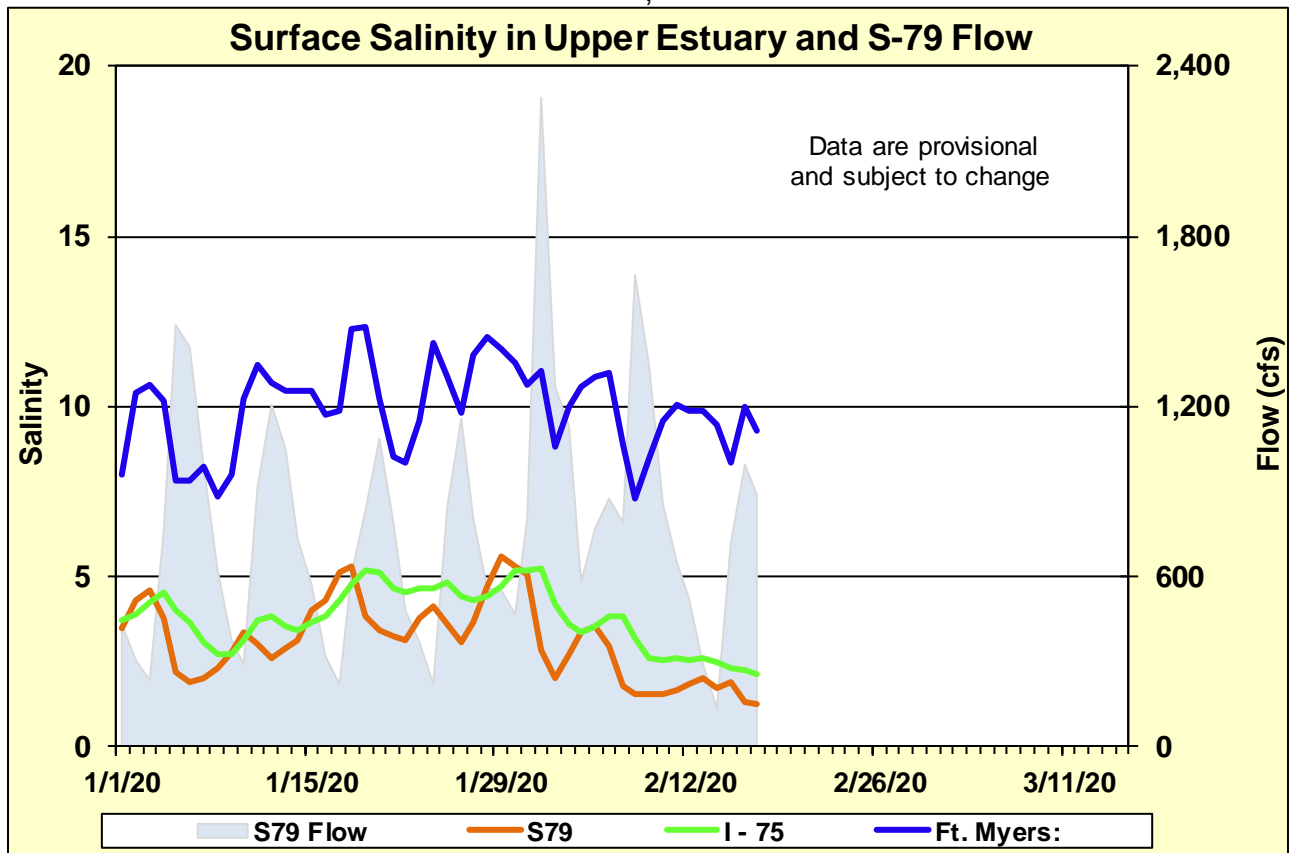


Figure 7. Daily mean flows at S-79 and salinity at upper estuary monitoring stations.

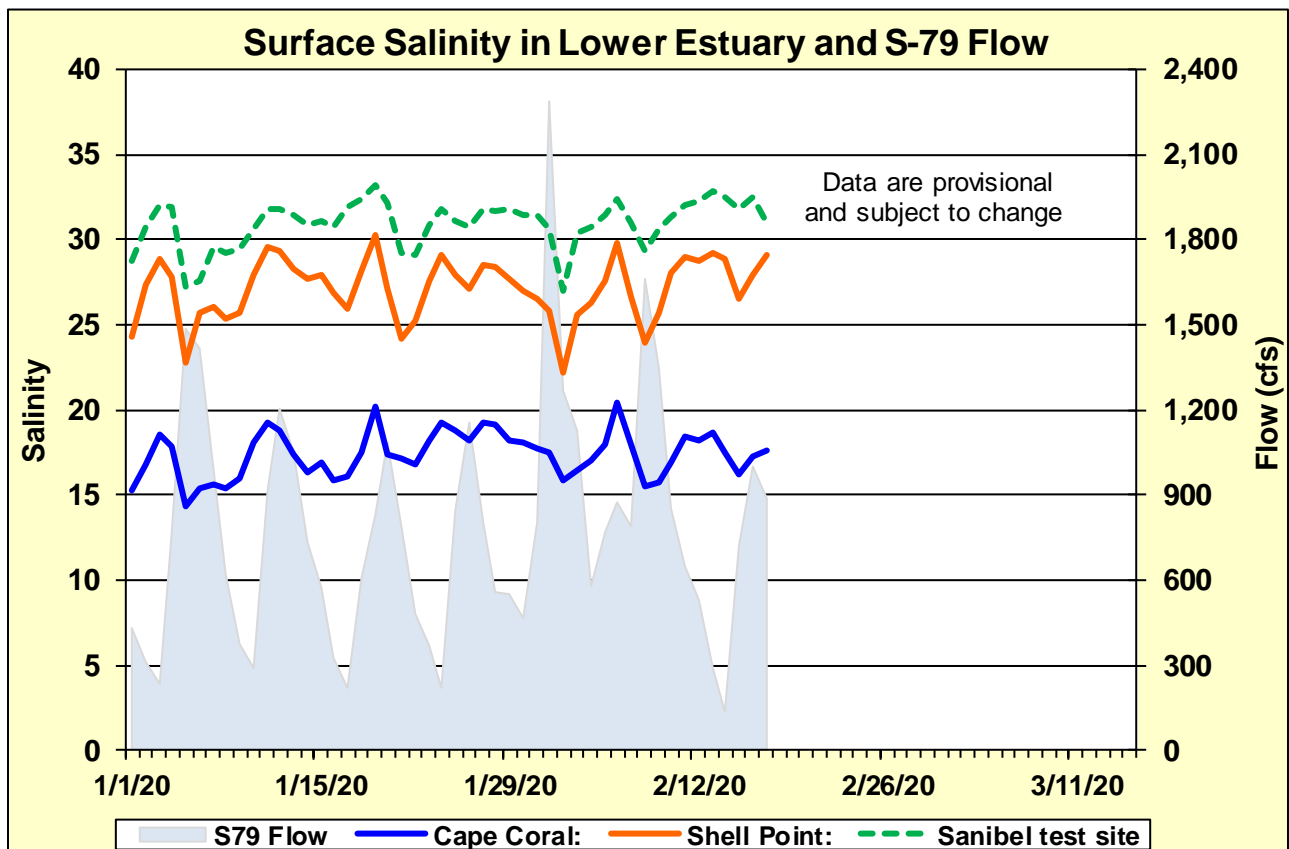


Figure 8. Daily mean flows at S-79 and salinity at lower estuary stations.

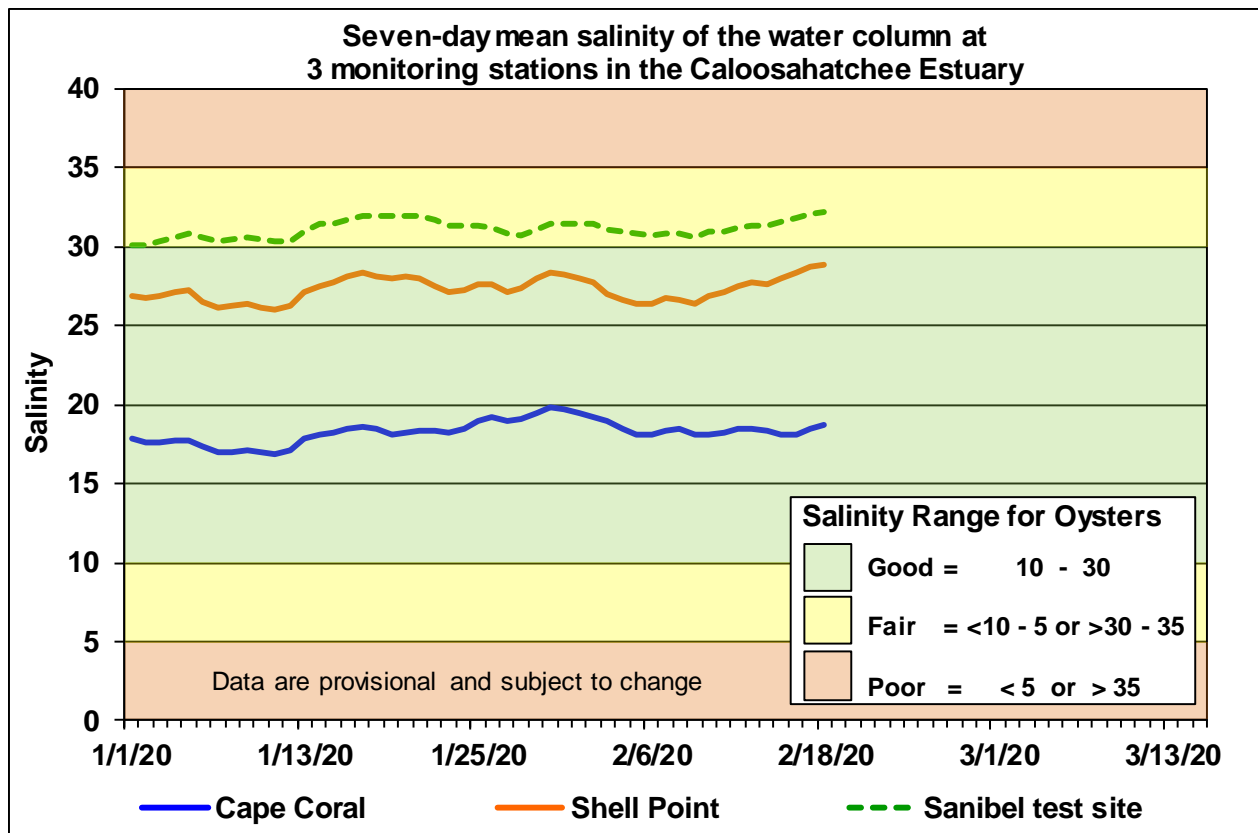


Figure 9. Seven-day mean salinity at Cape Coral, Shell Point, and Sanibel monitoring stations.

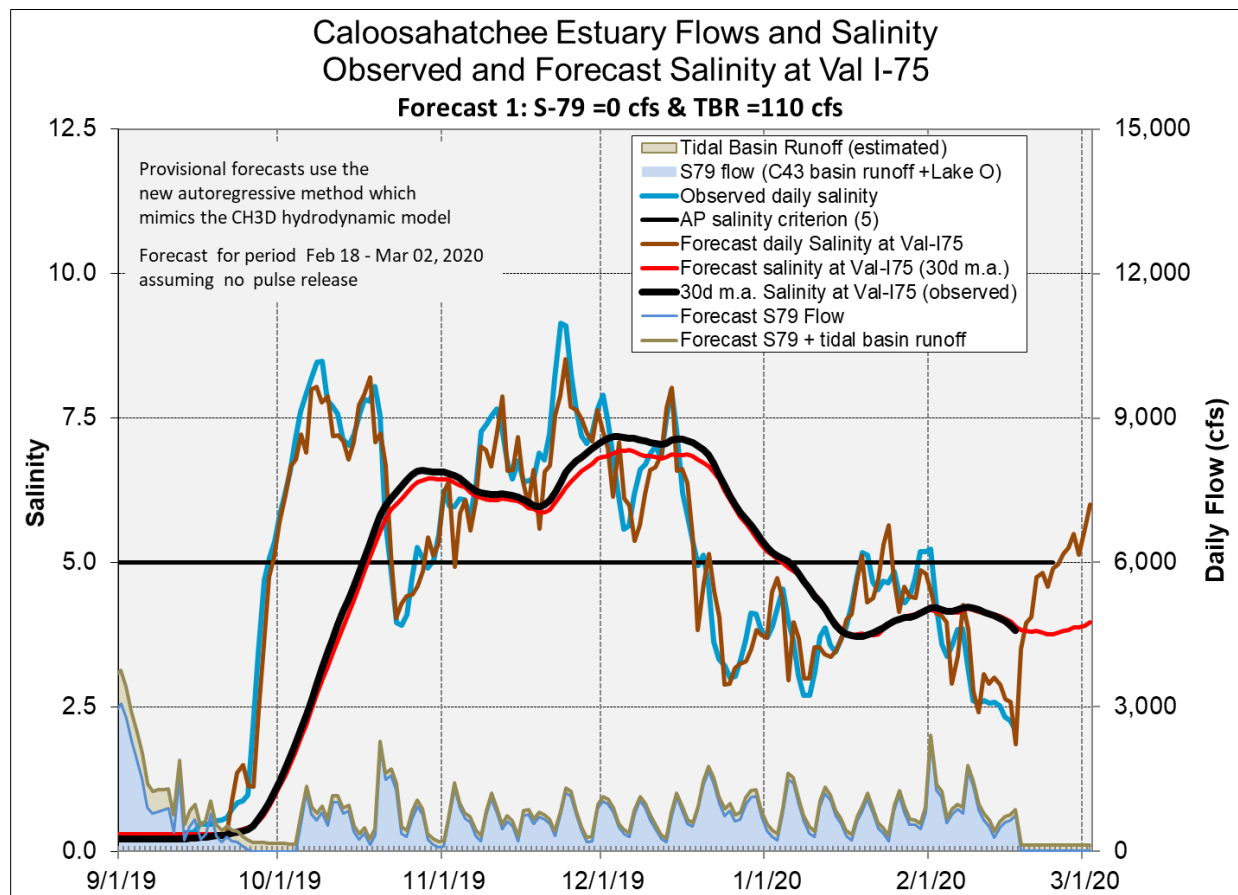
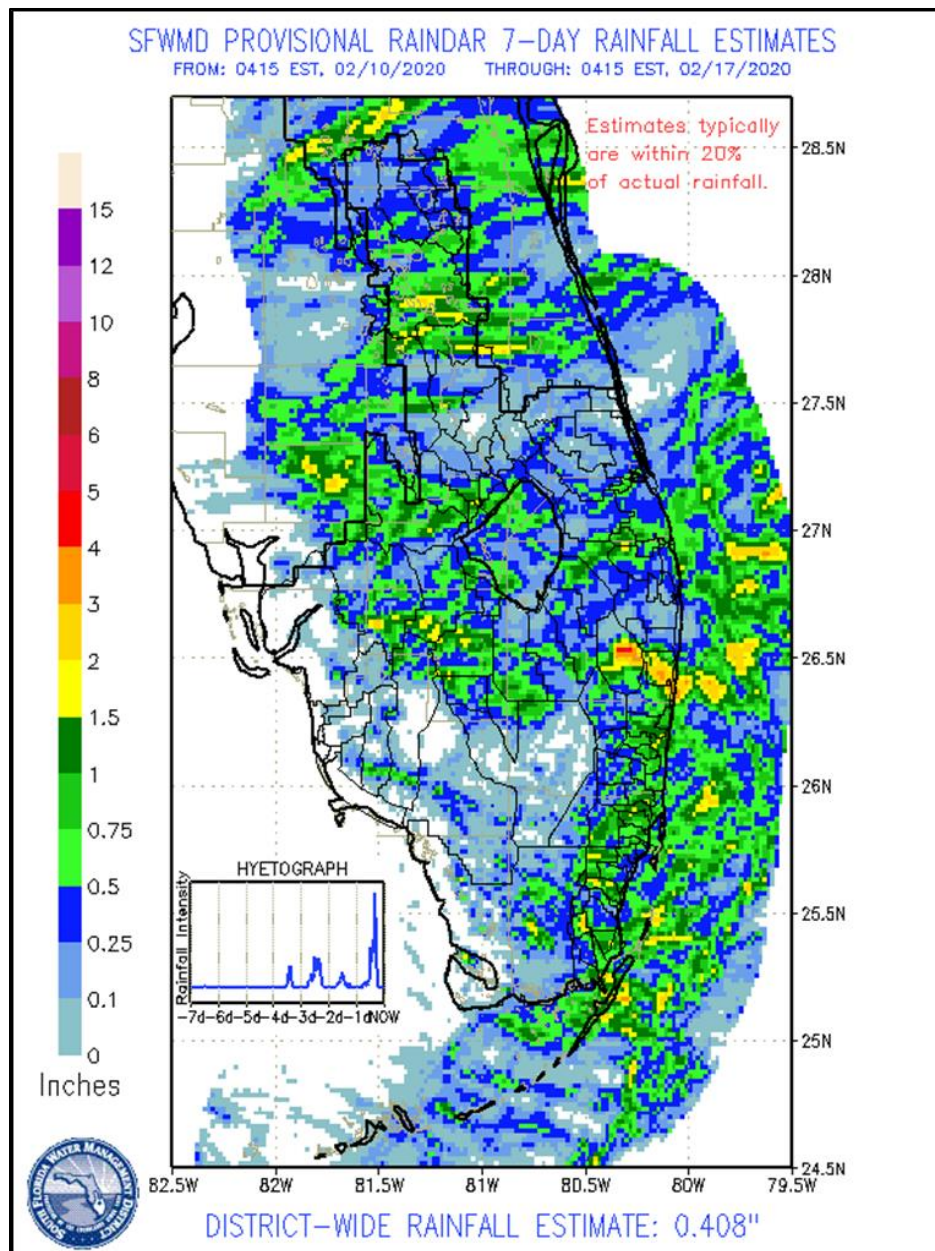


Figure 10. Forecasted Val I-75 surface salinity assuming no pulse release at S-79.

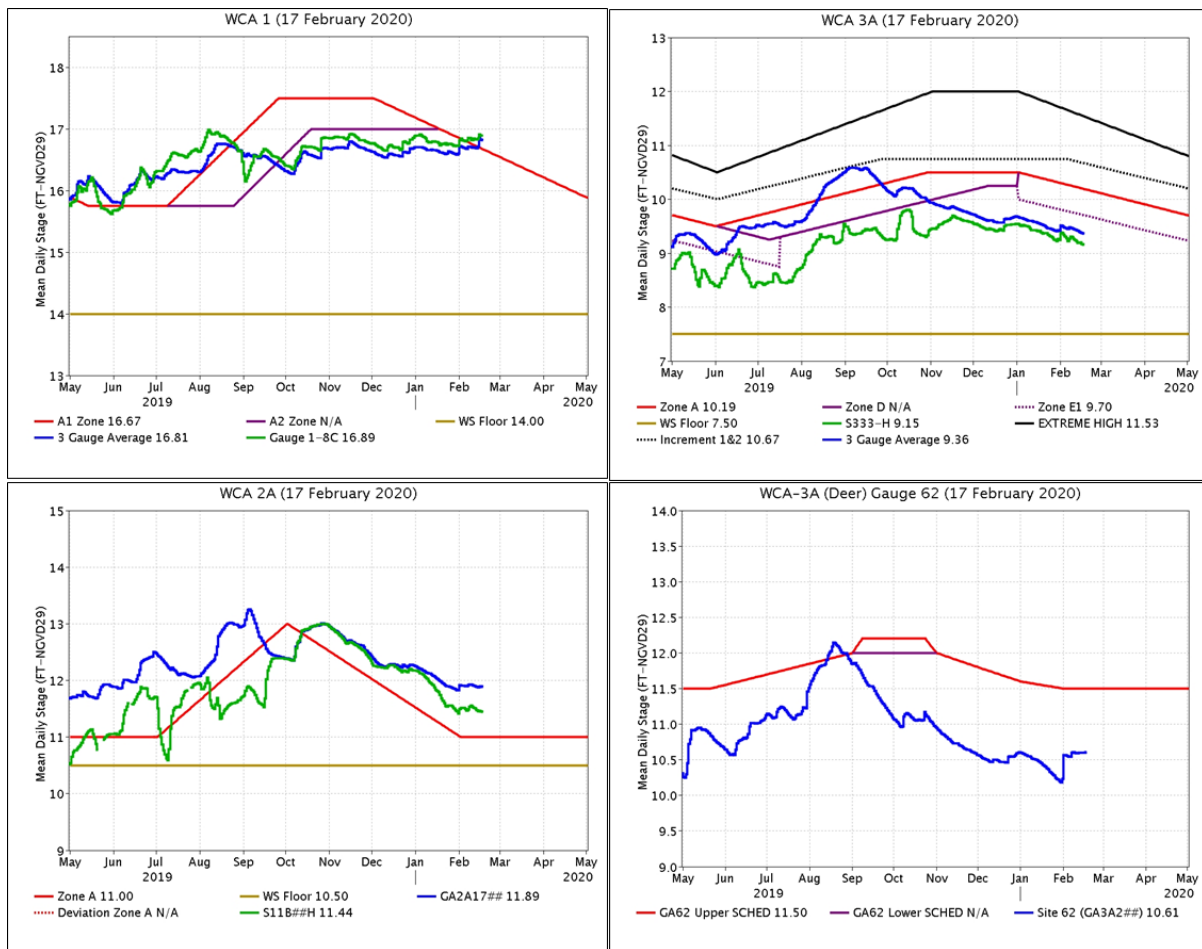
EVERGLADES

Sporadic amounts of precipitation fell in across the Everglades last week with more than double falling in WCA-1 than the other basins. Excluding WCA-1, at the gauges monitored for this report stages fell on average 0.05 feet last week.

Everglades Region	Rainfall (Inches)	Stage Change (feet)	<div><div></div> Good</div> <div><div></div> Fair</div> <div><div></div> Poor</div>
WCA-1	1.11	+0.13	
WCA-2A	0.41	-0.02	
WCA-2B	0.38	-0.04	
WCA-3A	0.11	-0.06	
WCA-3B	0.27	-0.05	
ENP	0.21	-0.03	



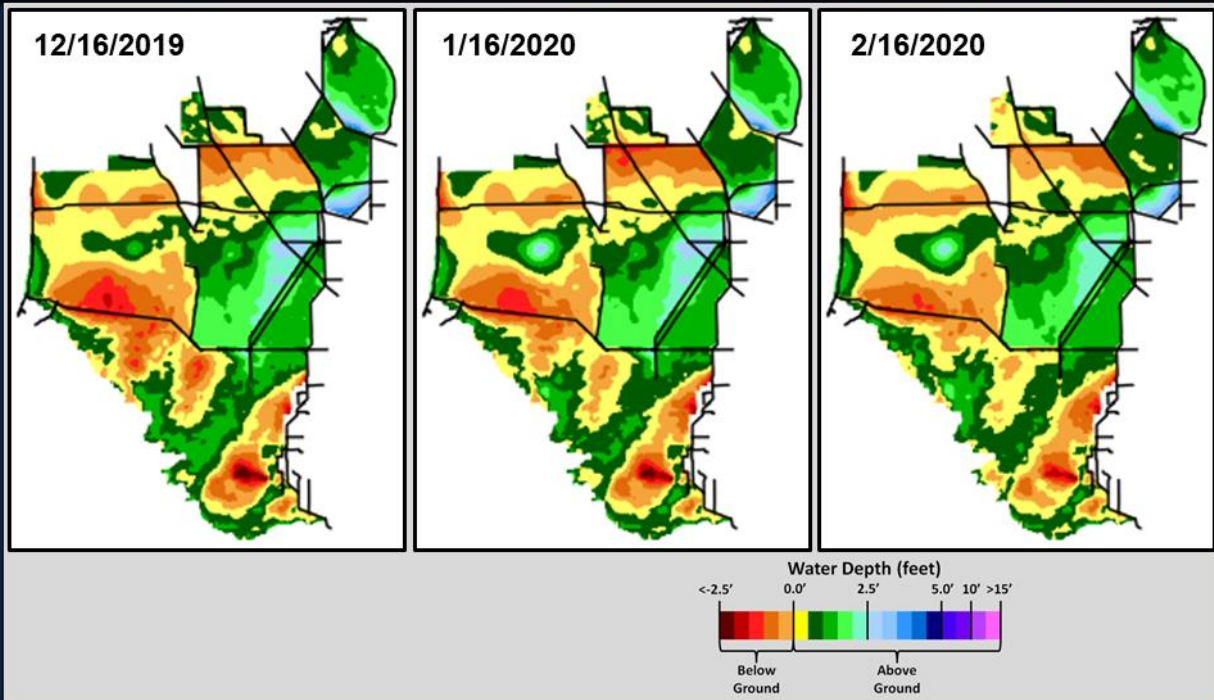
Regulation Schedules: WCA-1: Stage at the 1-8C Gauge rose last week, currently 0.14 feet above the falling Zone A1 regulation line. WCA-2A: Stage at Gauge S11-B trends roughly parallel the Zone A regulation line now 0.44 feet above the stable regulation line. WCA-3A: The three -gauge average stage remains parallel to the falling Zone E1 regulation line last week, currently 0.34 feet below that line. WCA-3A at gauge 62 (northwest corner): Stage remained relatively unchanged over the last few weeks but remains 0.89 feet below the stable upper schedule.



Water Depths: The WDAT tool for spatial interpolation of depth monthly snapshots indicate depths significantly below ground across north east WCA-3A North. Surface water is still present in the areas surrounding the Alley North colony in that basin. Depths remain stable and near 3.5 feet across WCA-2B. Hydrologic connectivity has gradually diminished over the last two months in SRS and Taylor Slough. Comparing WDAT water levels from present, water depths changes over the last month are mixed and not highly significant with the exception being the northwestern corner of WCA-3A, which is significantly deeper. Compared to last year, the northwest corner of WCA-3A is lower in stage, as is most of WCA-3 North, and the rest of the basin is slightly drier. Differences in WCA-1 are minimal. Within WCA-2A, the region north of the L-35B levee is drier, and the northeast corner is wetter.



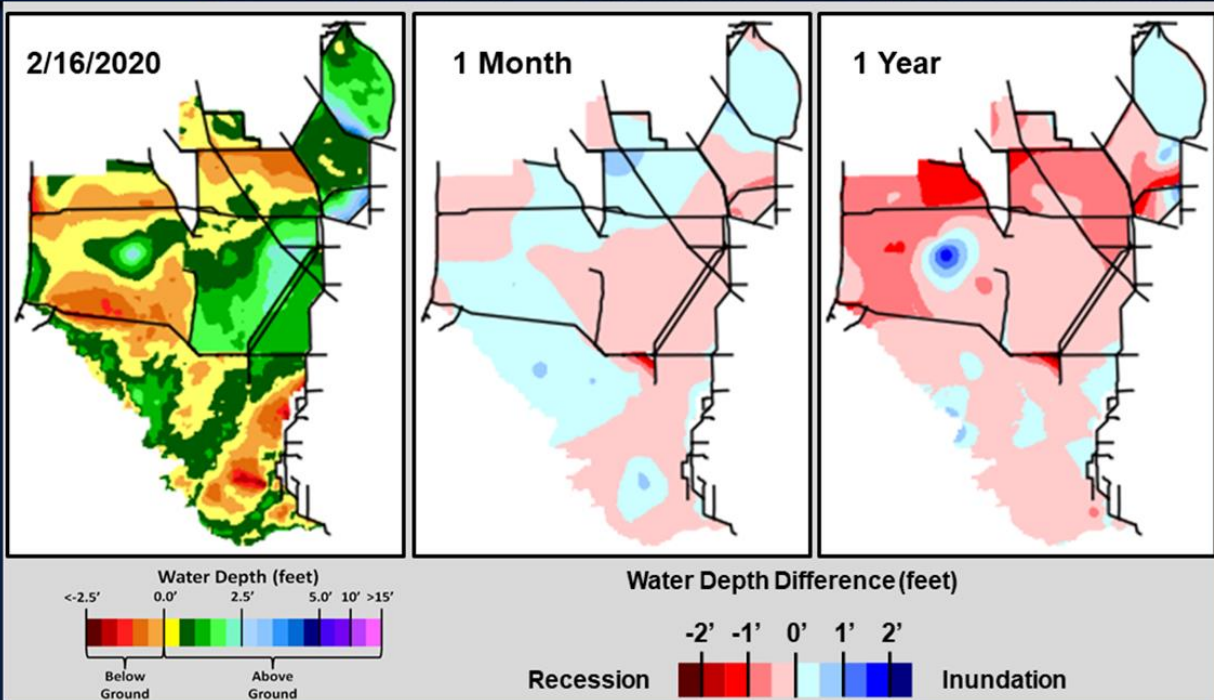
SFWDAT Water Depth Monthly Snapshots



South Florida Water Depth Assessment Tool (SFWDAT)

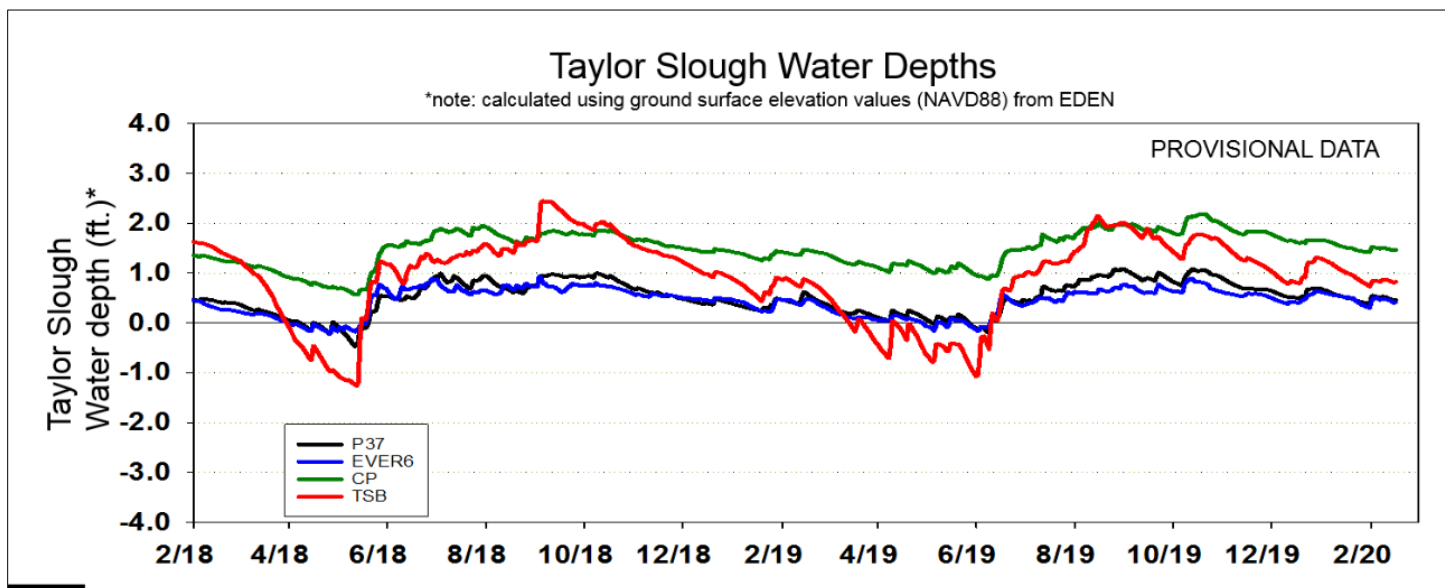
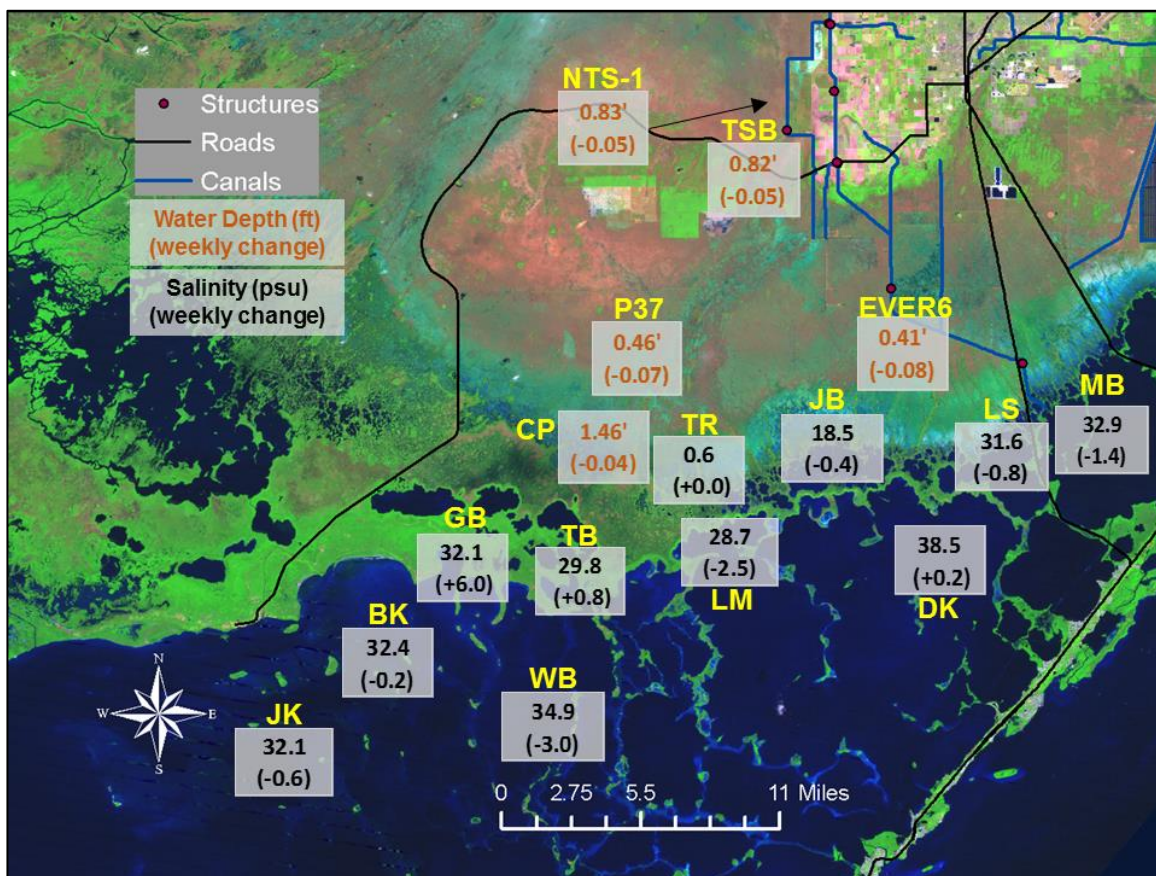


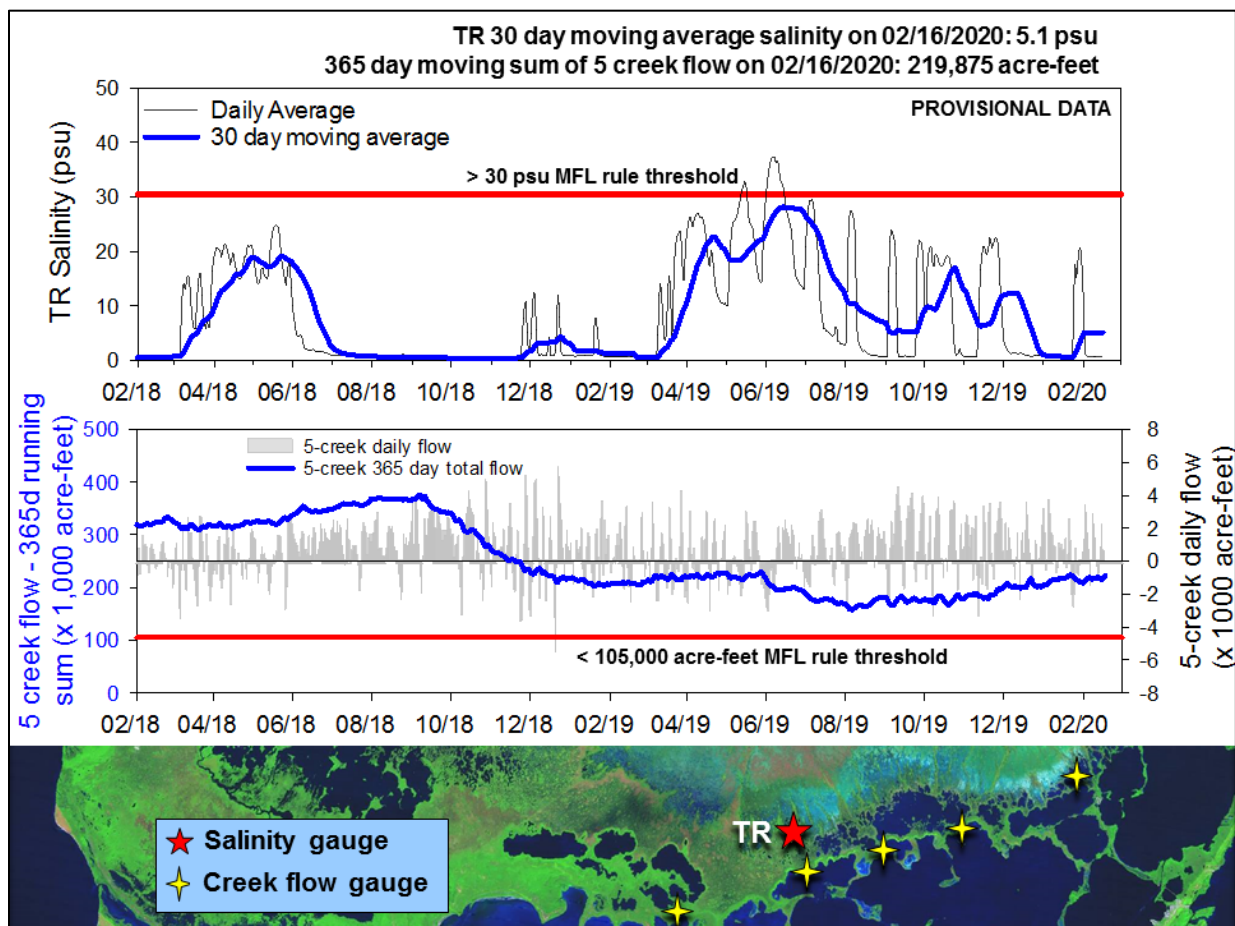
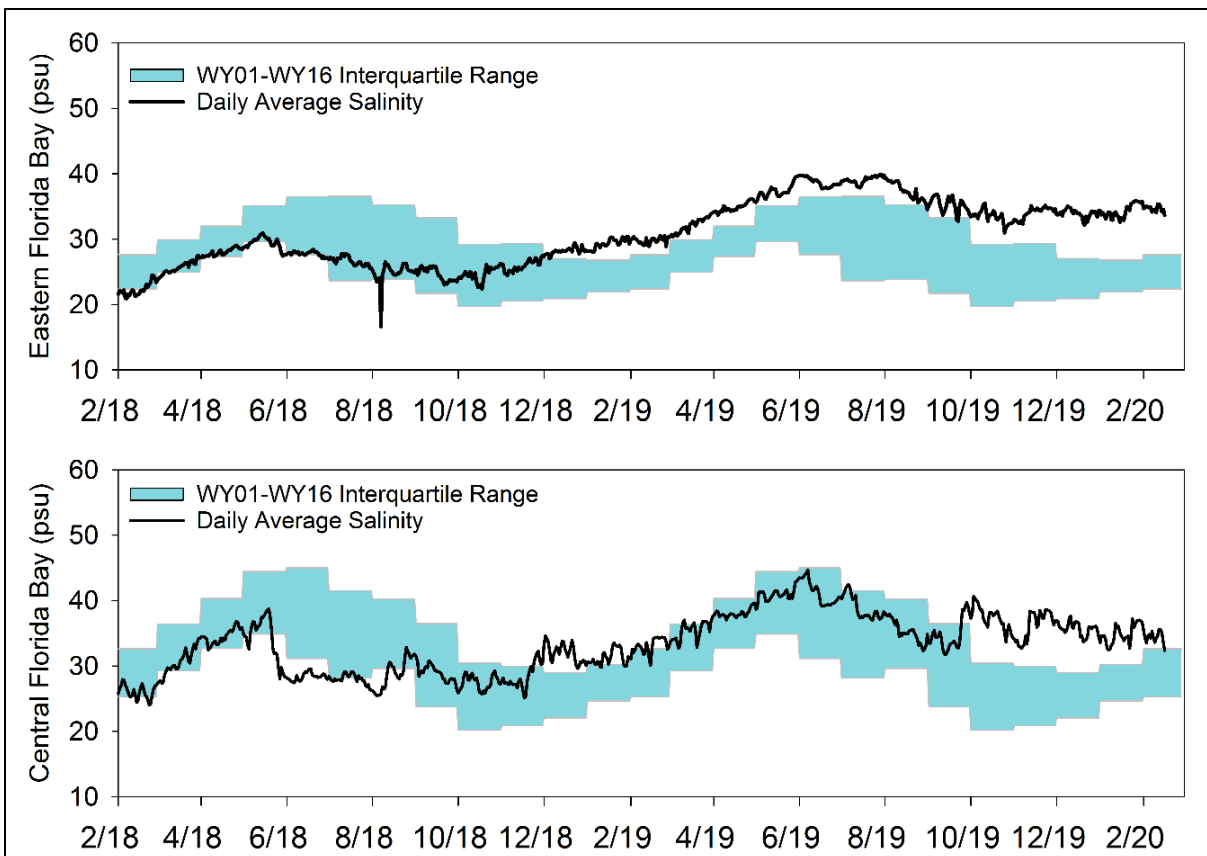
SFWDAT Everglades Difference Maps (Present – Past)



South Florida Water Depth Assessment Tool (SFWDAT)

Taylor Slough Water Levels: An average of 0.37 inches of rain fell over Taylor Slough and Florida Bay last week keeping stages steady. Upper Taylor Slough (west of S-332D impoundment) water depth is 16 inches higher than its historical average while the rest of Taylor Slough is 5 inches higher than the historical average.





Florida Bay Salinities: Average salinity in Florida Bay was unchanged and remains at 31 psu (4 psu above average). The nearshore area is 6 psu above average at 30 psu with very little estuarine gradient within the bay. This is problematic as the dry season progresses. Conditions are slightly better than when the dry season started because of the recent rains but still higher than desirable.

Florida Bay MFL: Salinity at the TR station in the mangrove zone (tracked for the Florida Bay MFL) remained near fresh this week. The 30-day moving average stayed at 5.1 psu. Weekly flow from the 5 creeks identified by yellow stars on the map totaled about 3,000 acre-feet last week which is less than half of last week's flows due to the first half of the week experiencing upstream flows. The 365-day moving sum of flow from the five creeks (tracked as part of the Florida Bay MFL criteria) increased 1,400 acre-feet this week to end at 219,875 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 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. 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. Discharges into the area as well as rainfall increased water depths in WCA-3A Northwest last week, however stage remains below average. Currently flows are restricted from being discharged into the northeast WCA-3A via the S-150 as construction of the L38-West plug nears completion. 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, however both areas need hydration. 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. The current lack of estuarine gradient within the bay is problematic as the dry season progresses. More specific recommendations appear in the summary table below. The red text represents new or modified information or recommendations.

SFWMD Everglades Ecological Recommendations, February 18th, 2020 (red is new)

Area	Weekly change	Recommendation	Reasons
WCA-1	Stage increased by 0.13'	Conserving water in this basin has ecological benefit as current water depths are below seasonal averages.	Protect downstream habitat and wildlife. Provide wading bird foraging opportunities later in the dry season.
WCA-2A	Stage decreased by 0.02'	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 0.04'	Conserving water in this basin has benefit as current water depths in downstream basins are below seasonal averages.	Protect upstream/downstream habitat and wildlife.
WCA-3A NE	Stage decreased by 0.10'	Conserving water in this basin has ecological benefit as current water depths are below seasonal averages.	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 0.02'	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 0.07'	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 0.09'		
WCA-3B	Stage decreased by 0.05'	Conserving water in this basin has benefit as current water depths are below seasonal averages.	Protect tree islands, upstream/downstream habitat and wildlife.
ENP-SRS	Stage decreased by 0.03'	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 -0.08'	Move water southward as possible	When available, provide freshwater buffer for downstream conditions.
FB- Salinity	Salinity changes ranged -3.0 to +6.0 psu.	Move water southward as possible	When available, provide freshwater to maintain low salinity buffer and promote water movement.