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, Chief, Engineering and Construction Bureau
Paul Linton, Administrator, Water Control Operations Section

FROM: SFWMD Staff Environmental Advisory Team

DATE: March 7, 2017

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Weather Conditions and Forecast

Spotty, minor rains likely each day into the weekend. High pressure will continue to dominate our weather this week even as a cold front pushes into the area late Wednesday. Some weak showers are possible with the front, but the next chance for widespread, appreciable rainfall doesn't arrive until next Tuesday/Wednesday.

Kissimmee

On Sunday, stage was 1.1 feet below regulation schedule in East Lake Toho and Lake Toho, and 0.7 feet below schedule in Kissimmee-Cypress-Hatchineha. Over the past week, discharge at S65, S65A, and S65E averaged 877, 682, and 769 cfs, respectively. Tuesday morning discharges were ~910 cfs, and 710 cfs, and 830 cfs, respectively at S65, S65A, and S65E. Dissolved oxygen data in the Kissimmee River averaged 8.83 mg/L over the past week. Kissimmee River mean floodplain depth on Sunday is 0.07 feet. No new recommendations.

Lake Okeechobee

As of midnight March 5, 2017, Lake stage was 13.28 feet NGVD and in the Base flow sub-band. The current weekly recession rate of 0.18 feet equates to a projected monthly recession rate of 0.72 feet, which is well above the recommended 0.50 feet per month or lower guideline. A too rapid decrease in Lake levels may jeopardize the upcoming nesting season by drying out foraging locations near the colonies and lowering water levels under nests allowing for increased risk of predation. The goal should be to slow the current recession rate and maintain it at below 0.50 feet per month. Both nearshore and pelagic total phosphorus (TP) and total suspended solids (TSS) concentrations decreased in February compared to last month's values suggesting less windy conditions prevailed in February. The February chlorophyll data indicated no recent bloom activity and all toxin levels were below detection limits.

Estuaries

Total discharge to the St. Lucie estuary average 224 cfs over the past week with 0 cfs (0%) coming from Lake Okeechobee as the USACE has stopped flow through the S-80 structure for the foreseeable future. Salinities decreased slightly throughout the estuary last week. The seven-day average salinity at the US1 Bridge is in the good range for adult oysters. Total inflow to the Caloosahatchee estuary averaged 779 cfs over the past week with 596 cfs (77%) coming from the Lake. The 30-day average surface salinity at the Ft. Myers monitoring station is 9.6 and has been below 10 for the past twelve days. The 30-day average surface salinity at Val I-75 is 3.1. Salinity conditions between Val I-75 and Ft. Myers are improving but tape grass has likely suffered some mortality. The next sampling is planned for this month. Salinity conditions are in the good range for adult oysters at the Cape Coral Bridge and Shellpoint, while in the fair range at the Sanibel Causeway. The 30-day moving average salinity at the

I-75 Bridge is forecast to be 4.5 in the next two weeks if no flow comes through the S-79 structure; however, daily salinity is forecast to reach 6.1.

Stormwater Treatment Areas

Over the past week, the STAs/FEBs received approximately 6,300 acre-feet of Lake releases. The total amount of Lake releases sent to the STAs/FEBs in WY2017 (since May 1, 2016) is approximately 191,100 acre-feet. Most STA cells are at or near target depths, except STA-5/6 emergent aquatic vegetation cells which are drying out. Operational restrictions are in place for structure repairs and vegetation rehabilitation in STA-1E and construction activities in STA-1W. This week, if Lake releases are sent to the WCAs and the conditions allow, releases will be sent to STA-2 and STA-3/4.

Everglades

Water levels across the Everglades decreased at a recession rate while categorized as “fair” based on general seasonal criteria, stage conditions at this time suggest that faster than – 0.09 feet per week may be detrimental to wading bird foraging conditions throughout the nesting season. Weekly stage changes ranged from −0.16 (WCA-2B) to −0.08 (WCA-3B) feet last week. Water levels decreased again this week with the largest decrease in Northern Taylor Slough as is typical for this time of year. After the elevated salinities of the previous week, the daily average salinity at TR returned to 0.9 psu by the end of the week. The upstream flows from last week have ended so salinities have decreased near the shoreline and upstream. The weekly creek flow from the five creeks was twice the amount that flowed upstream last week, with 8,700 acre-feet flowing into the bay this week.

Supporting Information

KISSIMMEE BASIN

Kissimmee Basin Rainfall

The Upper Kissimmee Basin received 0.00 inches of rainfall in the past week and the Lower Basin received 0.04 inches (SFWMD Daily Rainfall Report 03/06/2017).

Upper Kissimmee Basin

Stages and departures in the Kissimmee Chain of Lakes (KCOL) are shown in Table1.

Table 1. Departures from KCOL flood regulation (F) or temporary schedules (T, A, or S) (feet NGVD). Discharge and stage data are provisional real-time data from SFWMD OASyS DualTrend; reported values are averages through midnight of the Sunday prior to the report date unless otherwise specified.

Report Date: **3/7/2017**

Water Body	Structure/Site	Discharge (cfs), week's average**	Stage Monitoring Site***	Lake Stage (feet)	Schedule*	Regulation (R) or Target (S or T) Stage (feet)	Daily Departure (feet)						
							3/5/17	2/26/17	2/19/17	2/12/17	2/5/17	1/29/17	1/22/17
Lakes Hart and Mary Jane	S62	10	LKMJ	60.6	R	61.0	-0.4	-0.2	-0.2	0.0	-0.1	0.0	0.0
Lakes Myrtle, Preston, and Joel	S57	2	S57	61.0	R	61.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0
Alligator Chain	S60	0	ALLI	63.2	R	64.0	-0.8	-0.7	-0.7	-0.7	-0.7	-0.6	-0.6
Lake Gentry	S63	0	LKGT	61.2	R	61.5	-0.3	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1
East Lake Toho	S59	159	TOHOE	56.9	R	58.0	-1.1	-0.8	-0.8	-0.5	-0.3	-0.1	0.0
Lake Toho	S61	416	TOHOW, S61	53.9	R	55.0	-1.1	-0.8	-0.8	-0.6	-0.3	-0.1	0.0
Lakes Kissimmee, Cypress, and Hatchineha	S65	877	LKISSP, KUB011, LKIS5B	50.3	R	51.0	-0.7	-0.8	-1.1	-1.4	-1.8	-2.0	-2.1

* T = temporary schedule, R = USACE flood control schedule, S = temporary snail kite schedule, A = projected ascension line, N/A= not applicable or data not available.

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

*** Names of in-lake monitoring sites and structures used to determine lake stage; if more than one site is listed, an average is reported.

DATA ARE PROVISIONAL

Lower Kissimmee Basin

Discharges and stages at Lower Basin structures are shown in Table 2. SFWDAT depth maps for the Phase I restoration area are shown in Figure 12. Kissimmee River floodplain stages at selected stations are shown in Figure 13.

Table 2. Mean weekly discharge at S-65x structures, and mean weekly Phase I area river channel dissolved oxygen and floodplain mean water depth. Discharge and stage data are provisional real-time data from SFWMD OASyS DualTrend; reported values are averages through midnight of the Sunday prior to the report date unless otherwise specified.

Report Date: **3/7/2017**

Metric	Location	Sunday's 1-day average	Weekly Average**									
			3/5/17	2/26/17	2/19/17	2/12/17	2/5/17	1/29/17	1/22/17	1/15/17	1/8/17	1/1/17
Discharge (cfs)	S-65	913	**877**	732	710	507	482	465	473	475	487	555
Discharge (cfs)	S-65A	718	**682**	569	550	387	378	368	364	368	461	497
Discharge (cfs)	S-65D****	782	**721**	688	540	538	730	1274	1292	1268	1293	1411
Discharge (cfs)	S-65E****	828	**769**	744	597	523	513	398	386	375	452	626
DO concentration (mg/L)***	Phase I river channel	10.41	**8.83**	7.66	8.26	8.96	8.54	8.13	7.97	7.94	7.12	N/A
Mean depth (feet)*	Phase I floodplain	0.07	**0.07**	0.07	0.06	0.06	0.06	0.06	0.06	0.07	0.07	0.09

* 1-day spatial average from South Florida Water Depth Assessment Tool (SFWDAT).

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

*** DO is the average for PC62 and PC33 .

**** S-65D discharge combines discharge at S-65D, S-65DX1, and S-65DX2; S65E discharge combines S65E and S65EX1.

DATA ARE PROVISIONAL; N/A indicates that data were not available.

Water Management Recommendations

Kissimmee Basin Adaptive Recommendations and Operational Actions

Date	Recommendation	Purpose	Outcome	Source
3/7/2017	No new recommendations.			
2/22/2017	Increase discharge at S65 to establish and maintain a stage recession on KCH to reach low pool (49 ft) by May 1, as possible subject to rainfall and construction needs. Maintain 49 ft or lower for the month of May as possible.	Wet season storage, aquatic plant management.		KB Operations.
2/21/2017	No new recommendations.			
2/14/2017	Increase S65 and S65A discharge by 200 cfs.	Allow stage to decline in KCH.		SFWMD Water Management /KB Ops
2/7/2017	No new recommendations.			
1/25/2017	Make releases from East Lake Tohopekaliga and Lake Tohopekaliga to achieve a recession rate of 0.2 feet per week. Releases will not be made to compensate for direct rain on the lakes, but adjustments may be made for changes in inflow to maintain the 0.2 feet per week recession rate to the extent available capacity in Lake Kissimmee allows.	To prepare for the 2017 wet season, facilitate the ongoing Kissimmee River Restoration Construction (backfilling of the C-38), and provide more desirable recession rates for East Lake Tohopekaliga and Lake Tohopekaliga, the SFWMD will follow the below guiding criteria to the extent it does not conflict with other water related needs (e.g. Kissimmee River Flows, Kissimmee River Restoration Construction, and flood control).		SFWMD Water Management Section/KB Ops
1/24/2017	No new recommendations.			
1/17/2017	No new recommendations.			
1/10/2017	No new recommendations.			
12/2/2016-1/3/2017	Reduce discharge at S65 to minimum (300 cfs +/- 50 cfs) using the table in Figure 8a. Continue reducing headwater stage at S65C at a rate of ~1 ft/week through mid-January per request from USACE.	To facilitate KRRP construction in Pool BC.	Implemented	USACE/WCO/ KB Ops
12/20/2016	No new recommendations.			
12/13/2016	No new recommendations.			
12/6/2016	No new recommendations.			
11/29/2016	No new recommendations.			
11/22/2016	No new recommendations.			
11/15/2016	No new recommendations.			
11/8/2016	No new recommendations.			
10/25/2016	Allow S65C headwater stage to decline to approximately 33 feet NGVD over the next few days.	To help reduce stage in Pool C to facilitate MacArthur Ditch backfilling	Implemented	USACE/ KB Ops
10/24/2016	No new recommendations.			
10/17/2016	Temporarily reduce discharge at S65A to 700 cfs following the discharge rampdown schedule in Figure 8a.	To facilitate MacArthur Ditch backfilling over the next 2-3 weeks.	Implemented	KB Operations
10/10/2016	No new recommendations.			
10/3/2016	No new recommendations.			

KCOL Hydrographs (through Sunday midnight)

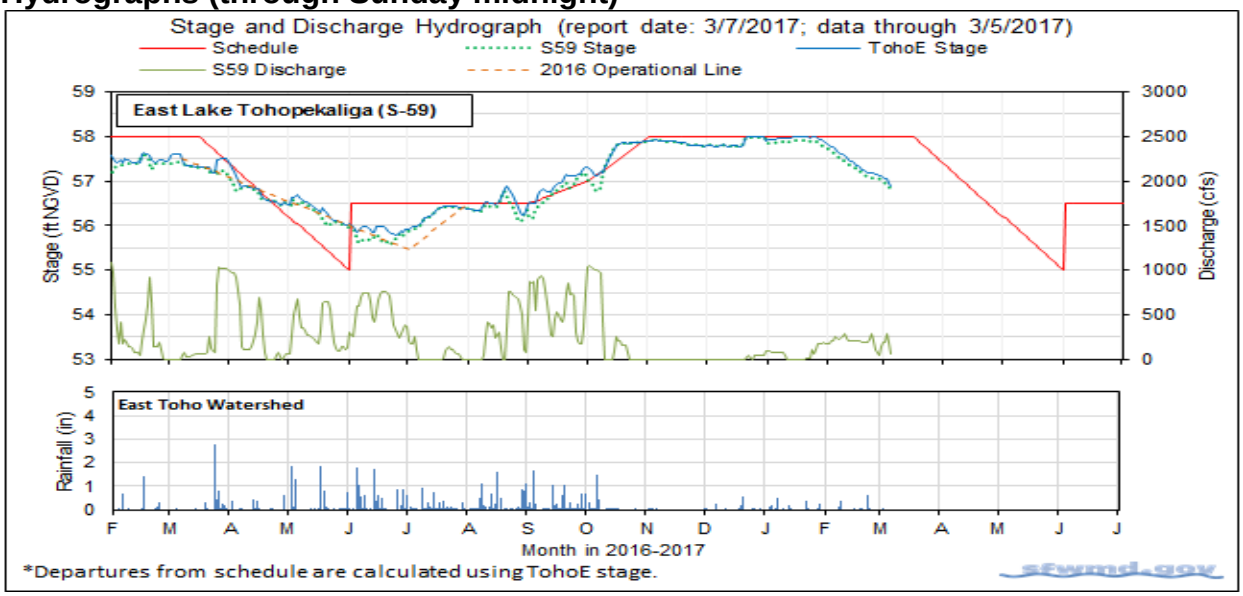


Figure 1.

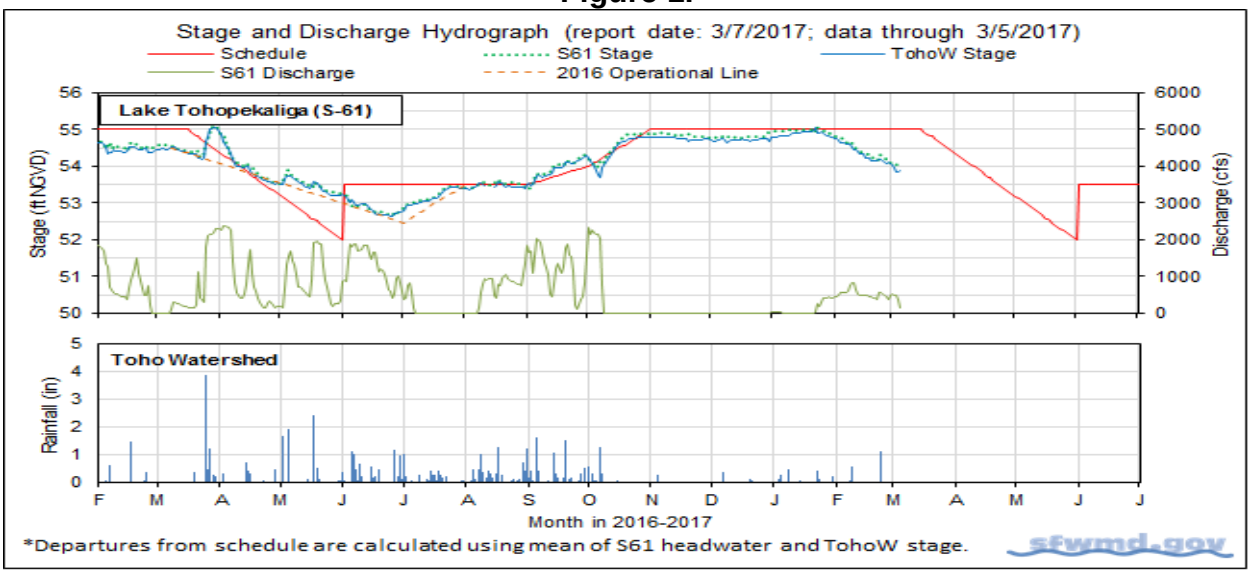


Figure 2.

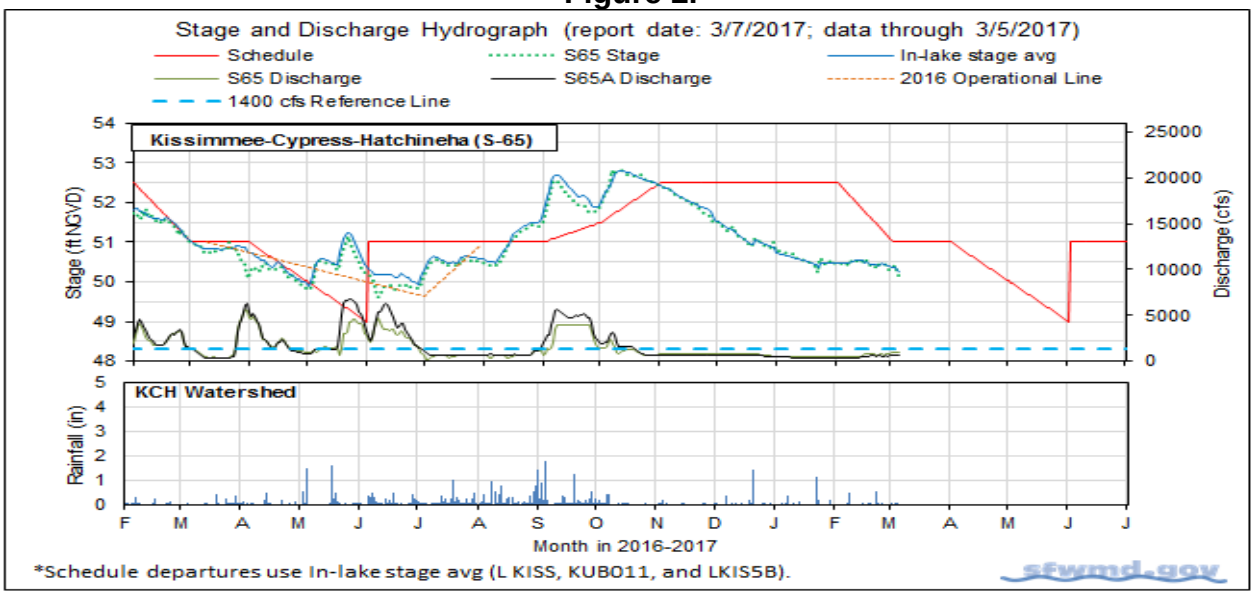


Figure 3.

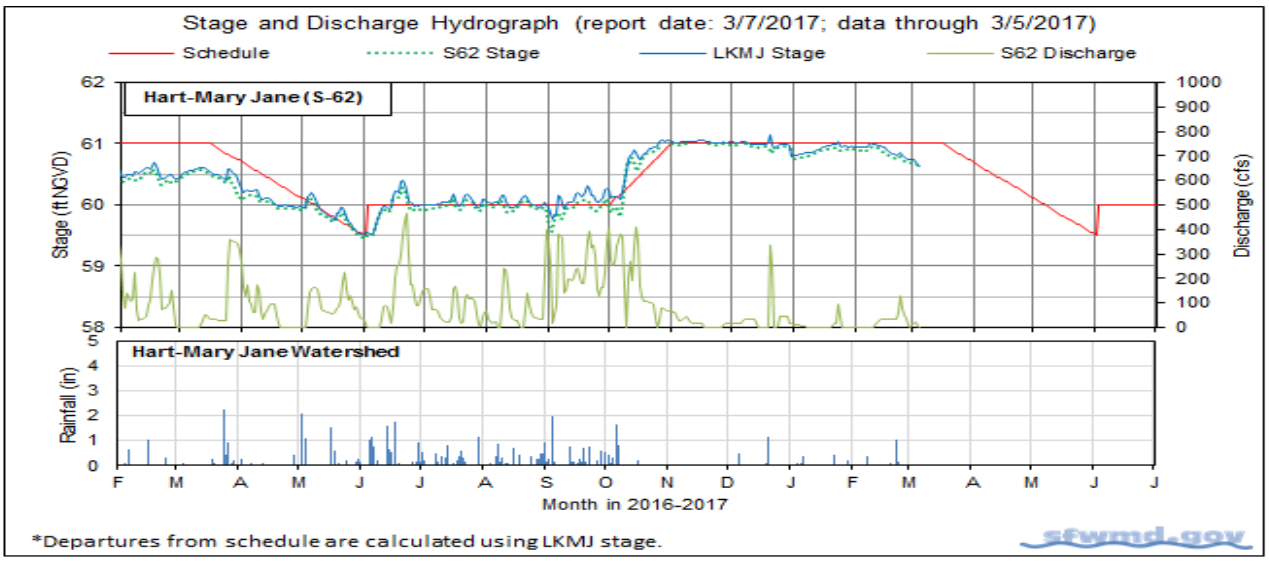


Figure 4.

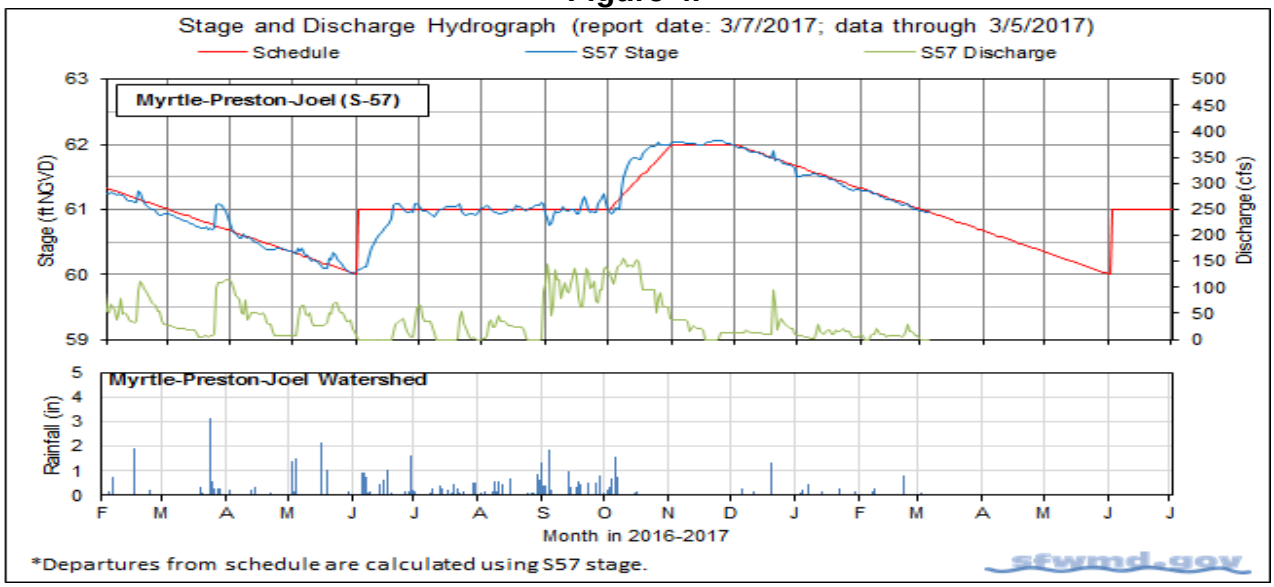


Figure 5.

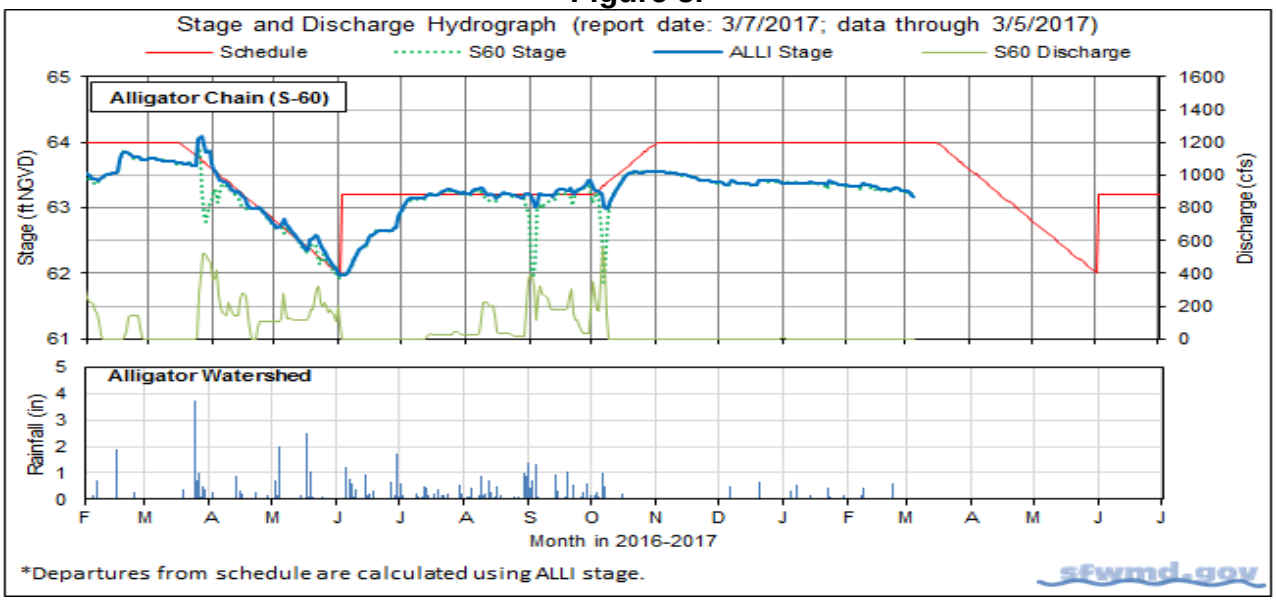


Figure 6.

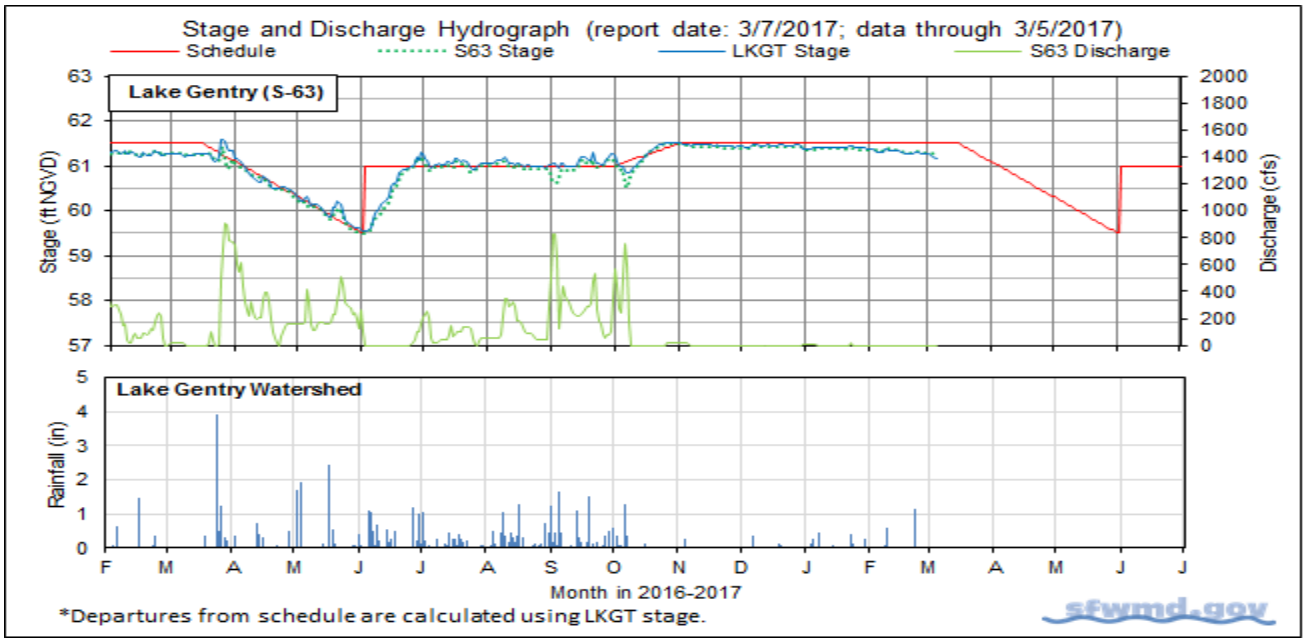


Figure 7

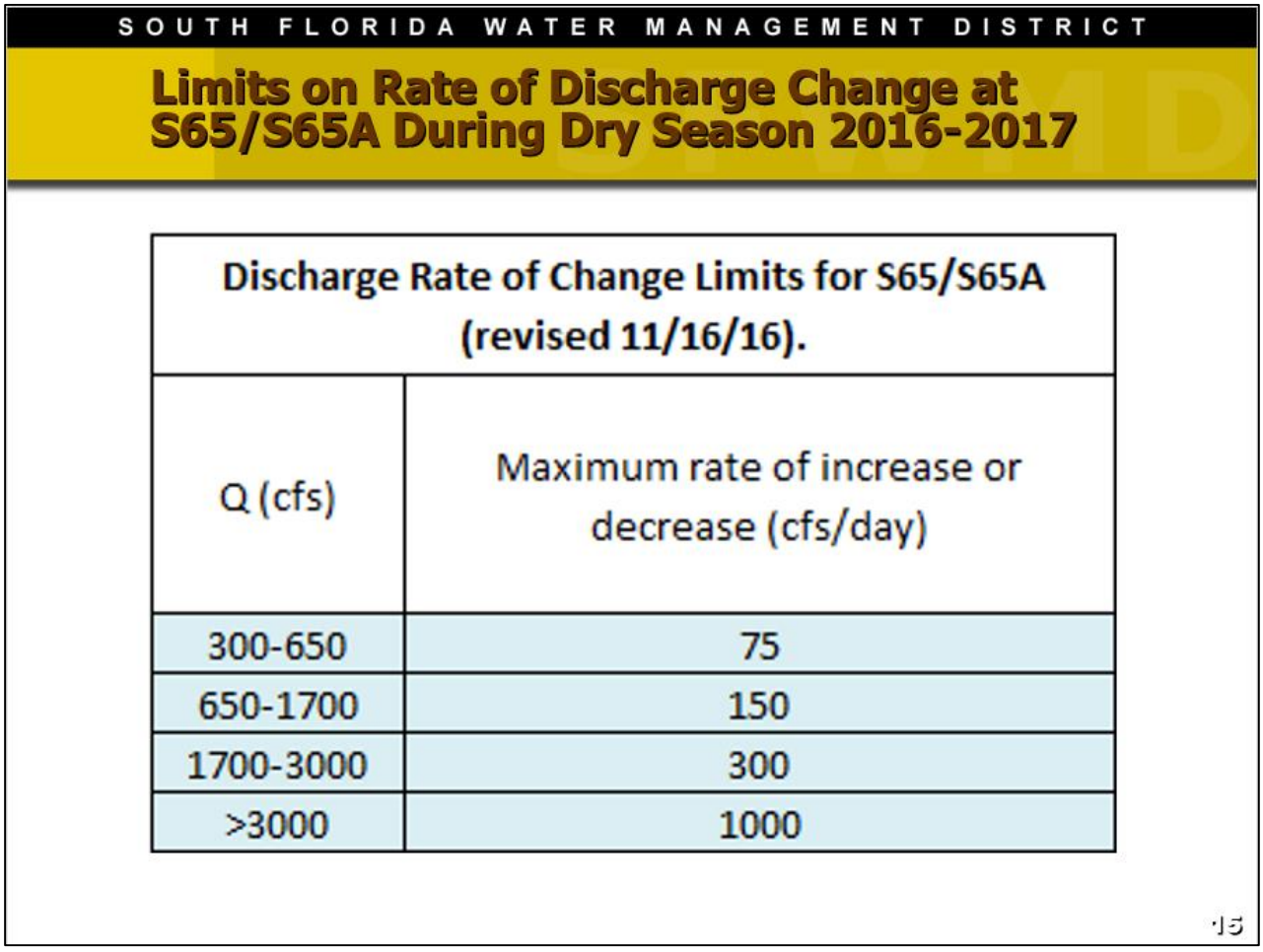


Figure 8. Limits on rate of discharge change at S65/S65A for the 2016-2017 Dry Season.

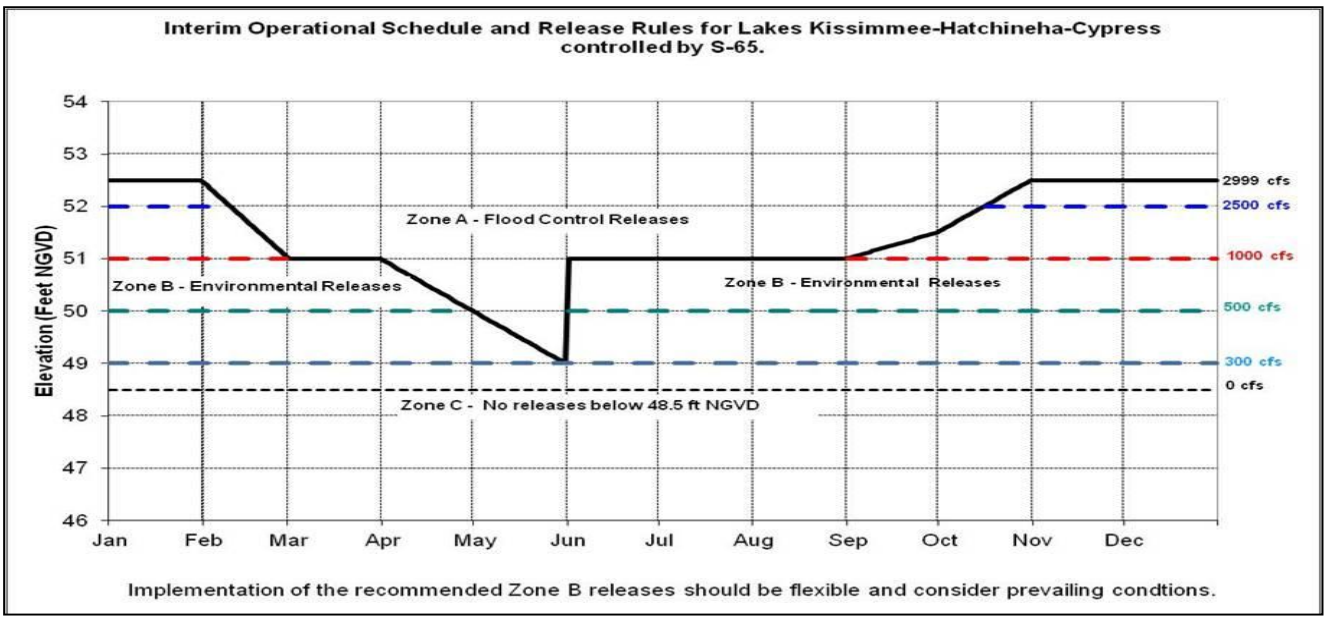


Figure 9. Interim operations schedule for S-65. The discharge schedule shown to the right has not been used in recent years or in Wet Season 2015.

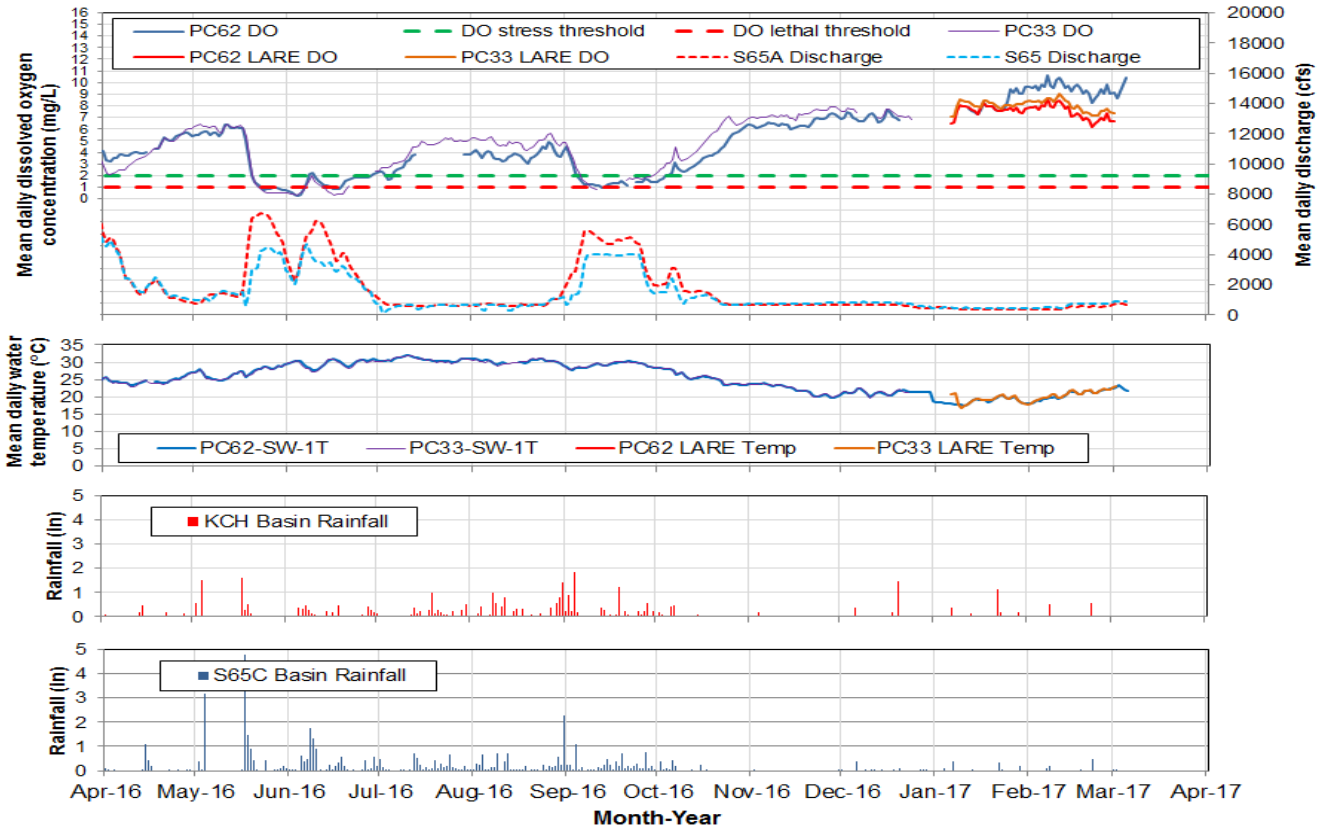


Figure 10. Mean daily Dissolved Oxygen, discharge, temperature and rainfall in the Phase I river channel.

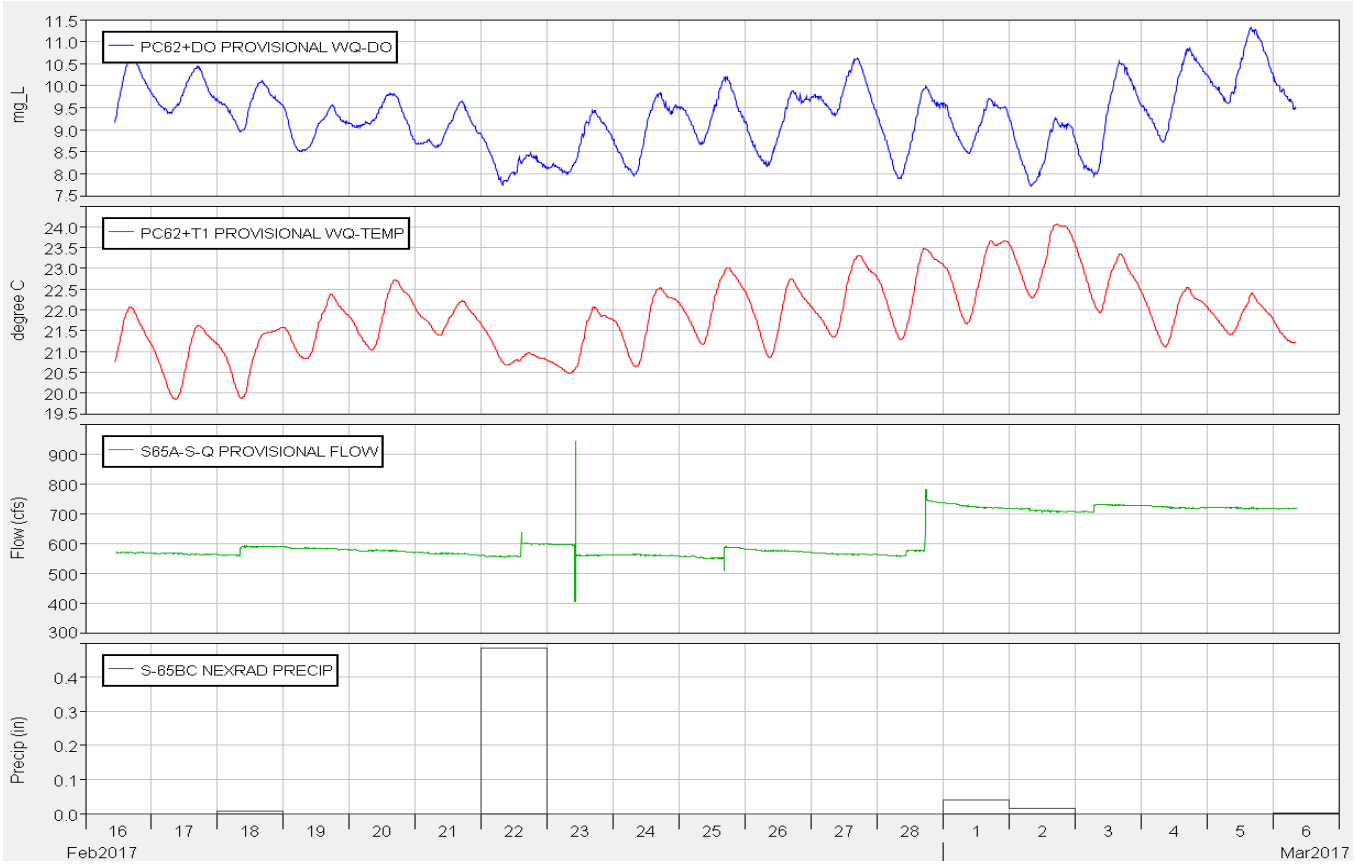


Figure 11. Phase I river channel dissolved oxygen and water temperature (measured at 15 minute intervals) and Pool BC daily rainfall.

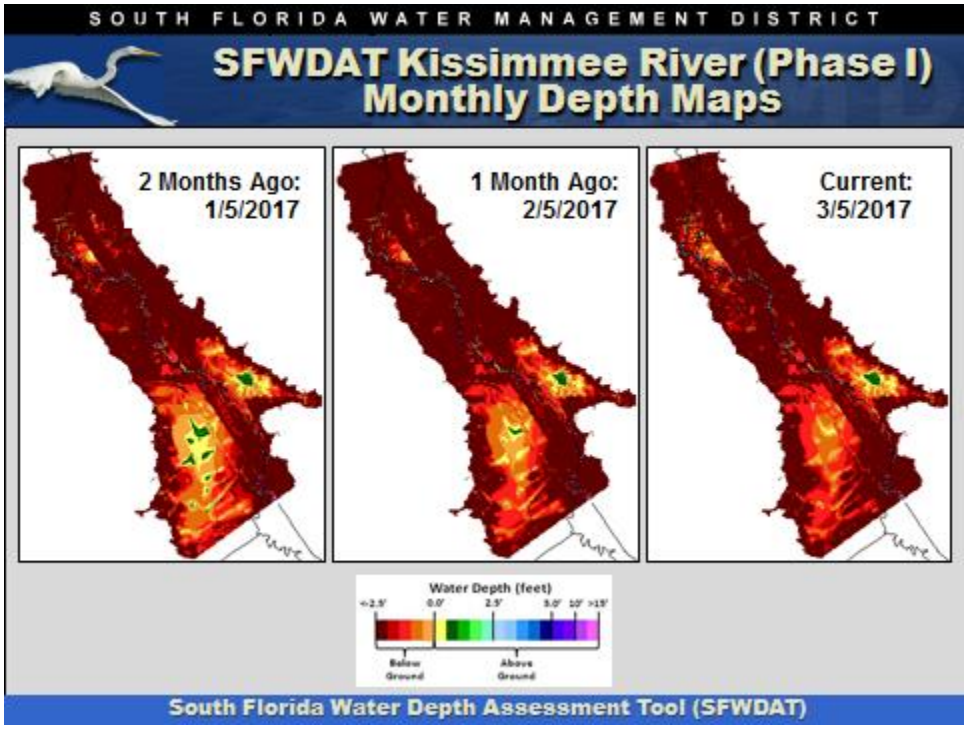
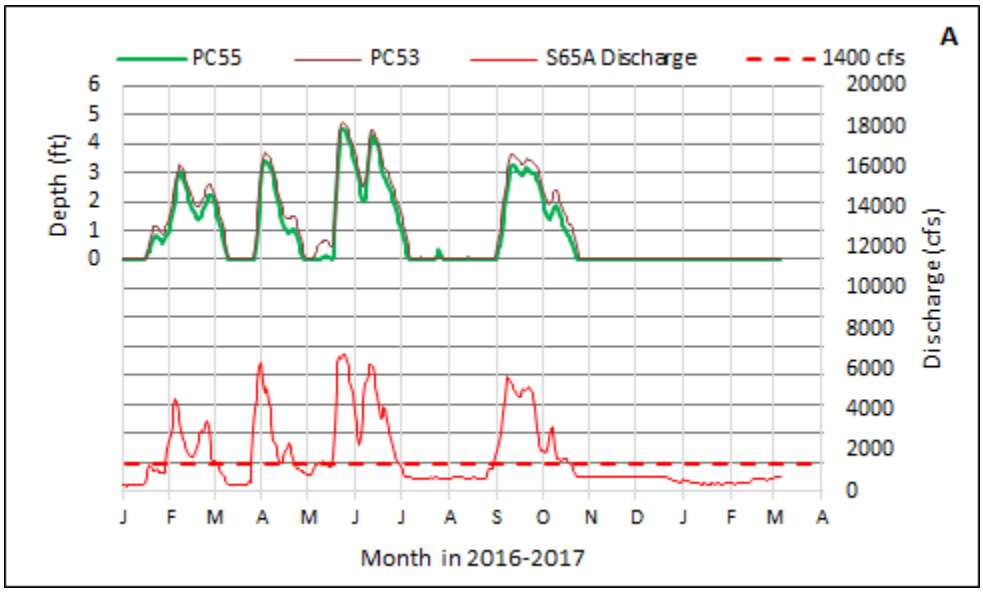
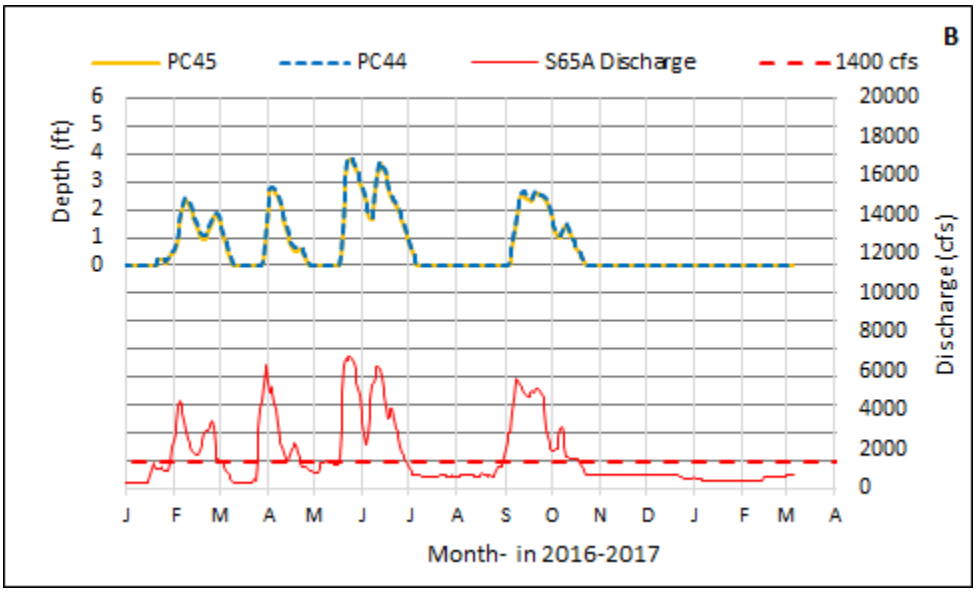


Figure 12. Phase I area floodplain water depths for this week, one month ago, and two months ago. Note that the WDAT color-coding has been modified to accommodate greater water depths; these maps are not directly comparable to Kissimmee Basin WDAT maps published prior to Jan. 16, 2012.





Insert. Water depth at selected northern Kissimmee River floodplain sites on (A) the PC5's transect and (B) the PC4's transect, with S65A discharge.

Kissimmee River Hydrographs

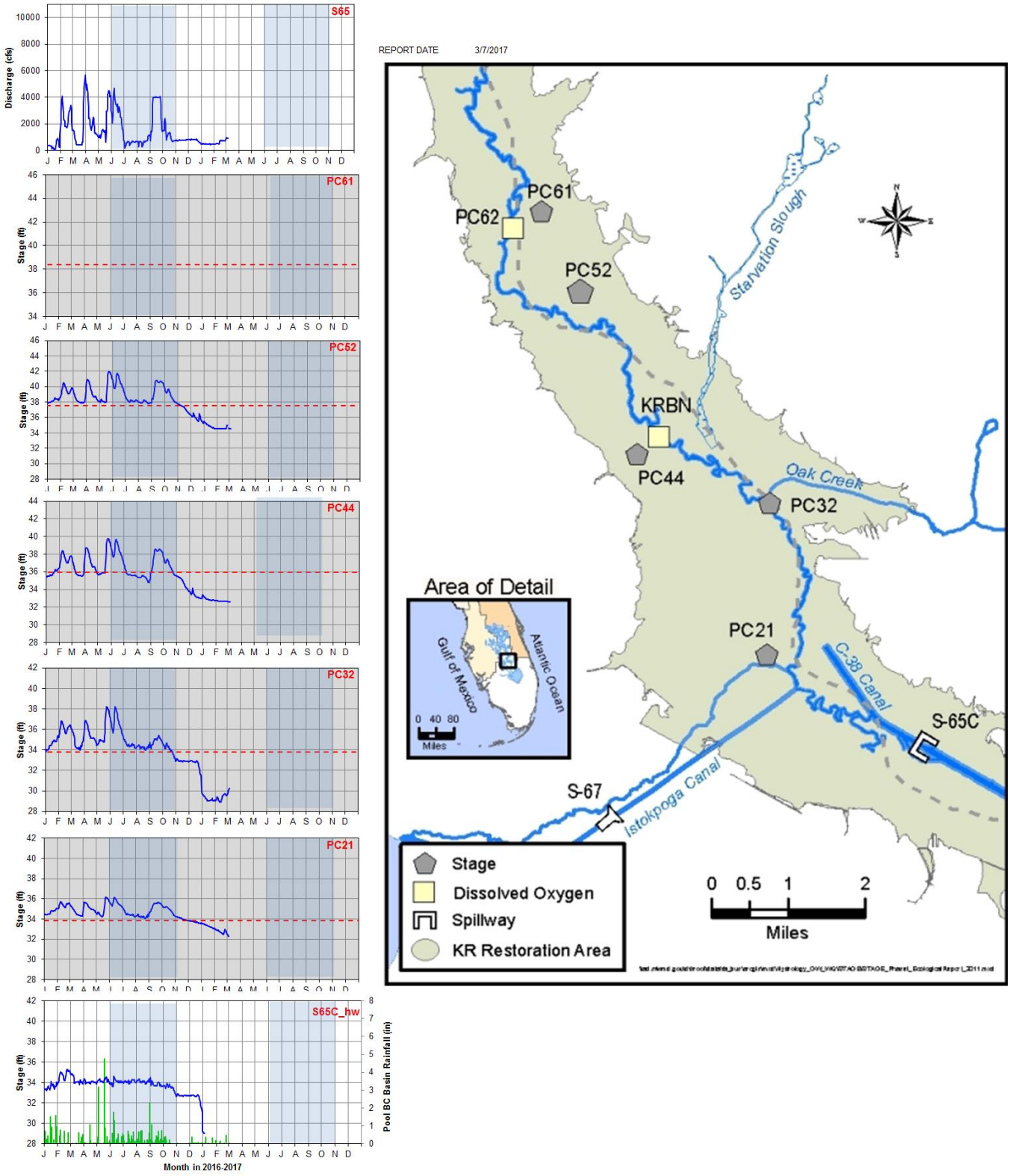


Figure 13. Discharge at S65, stages at five monitoring stations in the Phase I area of the Kissimmee River floodplain, and headwater stage at S65-C since January 1, 2015. The most recent data (~2 weeks) are provisional real-time data from SFWMD DualTrend; previous data are from SFWMD DB-HYDRO (validated). Dashed lines are ground elevations.

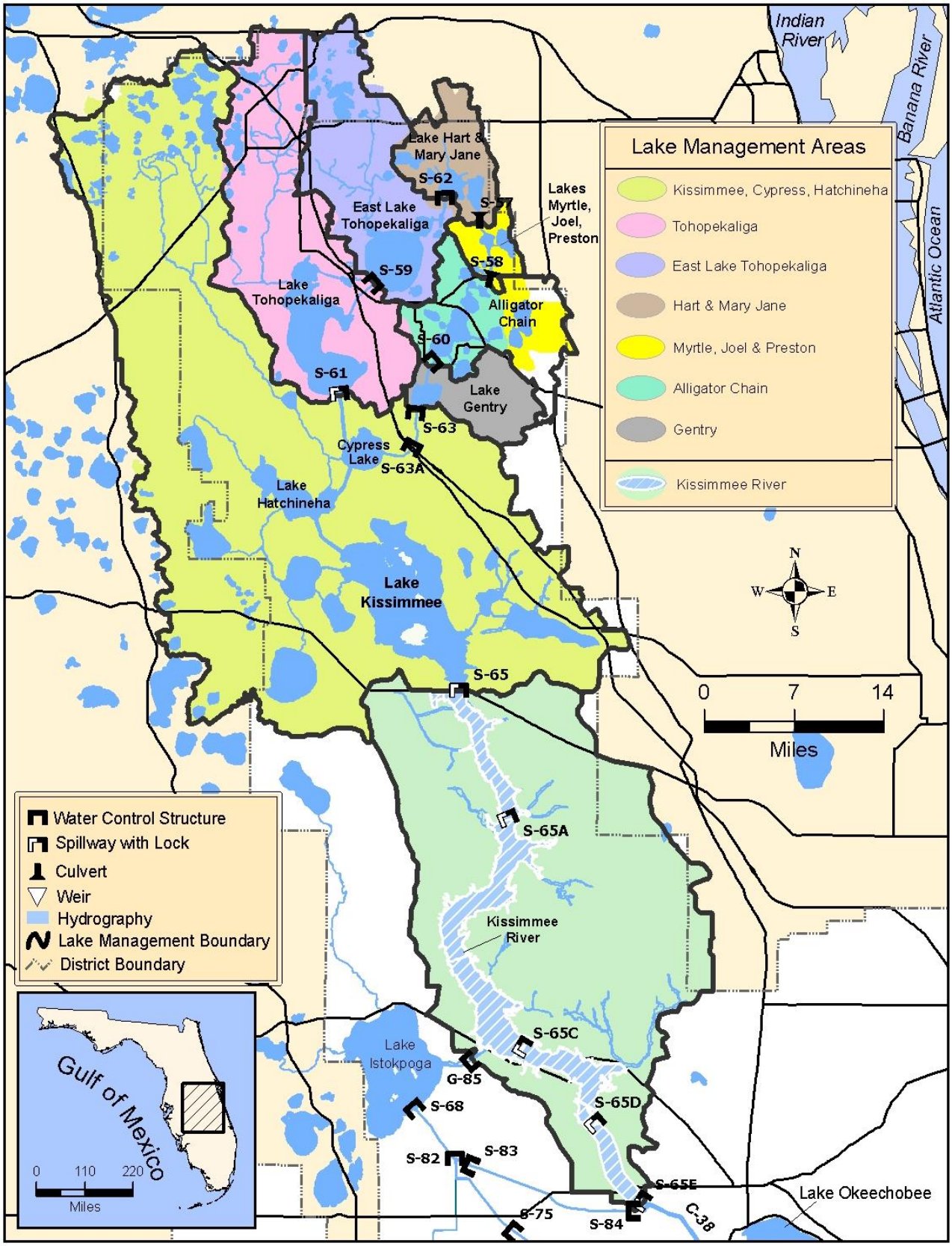


Figure 14. The Kissimmee Basin

LAKE OKEECHOBEE

According to the USACE web site, Lake Okeechobee stage is at 13.28 feet NGVD for the period ending at midnight on March 5, 2017. This value is based on the use of four interior Lake stations (L001, L005, L006, and LZ40) and four perimeter stations (S352, S4, S308 and S133). Lake stage decreased by 0.18 feet over the past week and is 0.54 feet lower than it was a month ago and 2.44 feet lower than it was a year ago (Figure 1). The Lake is currently in the Base flow sub-band (Figure 2). According to RAINDAR, 0.095 inches of rain fell directly over the Lake during the past seven days (Figure 3). Similar amounts of rain fell throughout the surrounding watershed with the exception of the east coast which received greater amounts of rainfall.

Based on USACE reported values, current Lake inflow is approximately 713 cfs as detailed below.

Structure	Flow cfs
S65E	0
S65EX1	828
S154	0
S84 & 84X	0
S71	0
S72	0
C5 (Nicodemus slough dispersed storage)	-115
S191	0
S133 PUMPS	0
S127 PUMPS	0
S129 PUMPS	0
S131 PUMPS	0
S135 PUMPS	0
Fisheating Creek	1
S2 Pumps	0
S3 Pumps	0
S4 Pumps	0

Current Lake outflow is approximately 3,234 cfs with 1,520 cfs exiting at S77, 243 cfs exiting at S308 and 161 cfs exiting at the L8 canal through Culvert 10A. Approximately 1,310 cfs is being directed south through S351, S352 and S354. Corrected evapotranspiration value based on the L006 weather platform solar radiation data for this past week was 828 cfs.

Change in elevation equivalents and average weekly flows (midnight February 27, 2017 to midnight March 5, 2017) for major structures are presented in Figure 4. Weekly average values for S77 and S308 are based on USGS data for the below structure gauges.
Based on the Lake Okeechobee wading bird habitat suitability index, there are currently approximately 30,533 acres of suitable foraging habitat for long-legged birds and 14,767 acres for long and short-legged birds on the Lake (Figure 5). Currently, conditions are good for wading birds but a slower recession rate is needed to keep wading bird foraging areas hydrated and to help maintain water levels under wading bird nests in the upcoming nesting season thereby reducing the risk of predation by raccoons and other animals.

February chlorophyll data (collected on February 7 and 8, 2017) indicated the absence of bloom activity at the seventeen sites that were sampled (Figure 6). Additionally, none of the six routine microcystin

sampling sites had values above the analytical limit of detection (0.20 ug/L). The two sites in Fisheating Bay (FEBIN and FEBOUT) were not sampled.

February Total Phosphorus (TP) and Total Suspended Solids (TSS) concentrations decreased in all regions compared to January values suggesting less windy conditions prevailed in February (Figure 7). Average wind speed at LZ40, the weather platform in the central region of the Lake, was 10.4 mph in January compared to 9.1 mph in February. Additionally, average maximum wind speed for the two months was 28.4 mph and 16.6 mph, respectively.

Water Management Recommendations

Lake stage is 13.28 feet NGVD and is in the Base flow sub-band. The current weekly recession rate of 0.18 feet equates to a projected monthly recession rate of 0.72 feet, which is well above the recommended 0.50 feet per month or less guideline. A too rapid decrease in Lake levels may jeopardize the upcoming nesting season by drying out foraging locations near the colonies and lowering water levels under nests allowing for increased risk of predation.

The goal should be to slow the monthly recession rate to less than 0.50 feet per month. Actions which contribute to a slower recession are essential to protect critical components of the Lake's floral (bulrush and submerged aquatic vegetation) and faunal (wading birds, snail kites and fish) communities.

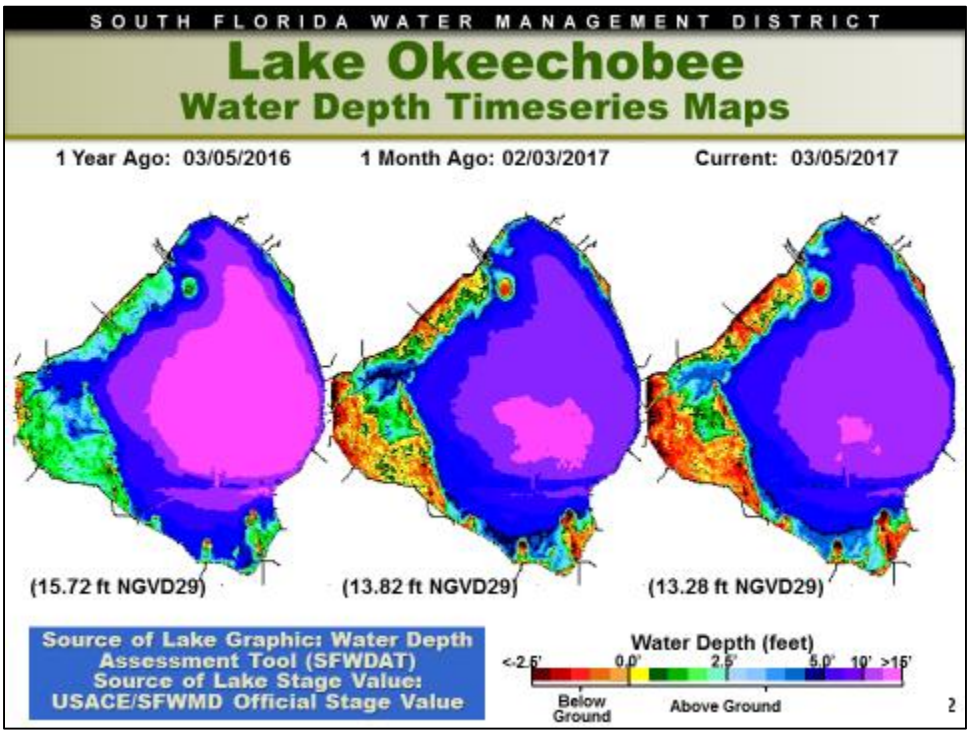


Figure 1

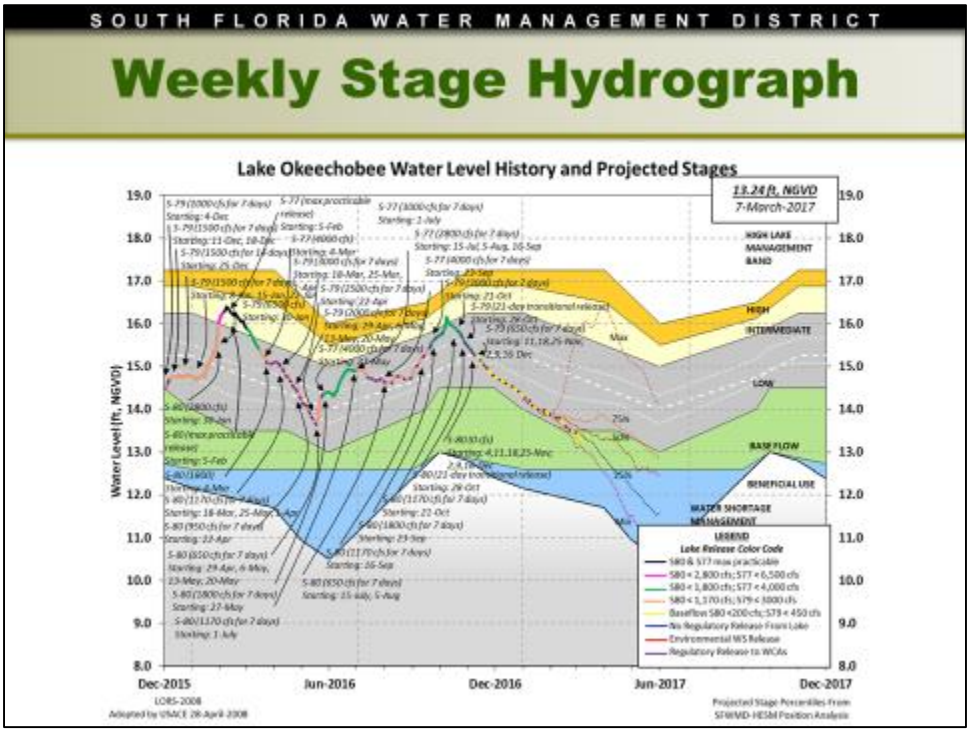

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
Weekly Stage Hydrograph
Lake Okeechobee Water Level History and Projected Stages
13.24 ft, NGVD
7-March-2017
HIGH LAKE MANAGEMENT BAND
HIGH
INTERMEDIATE
LOW
BASE FLOW
BENEFICIAL USE
WATER SHORTAGE MANAGEMENT
LEGEND
Lake Release Color Code
Water Level (ft, NGVD)
Dec-2015
Jun-2016
Dec-2016
Jun-2017
Dec-2017

Figure 2

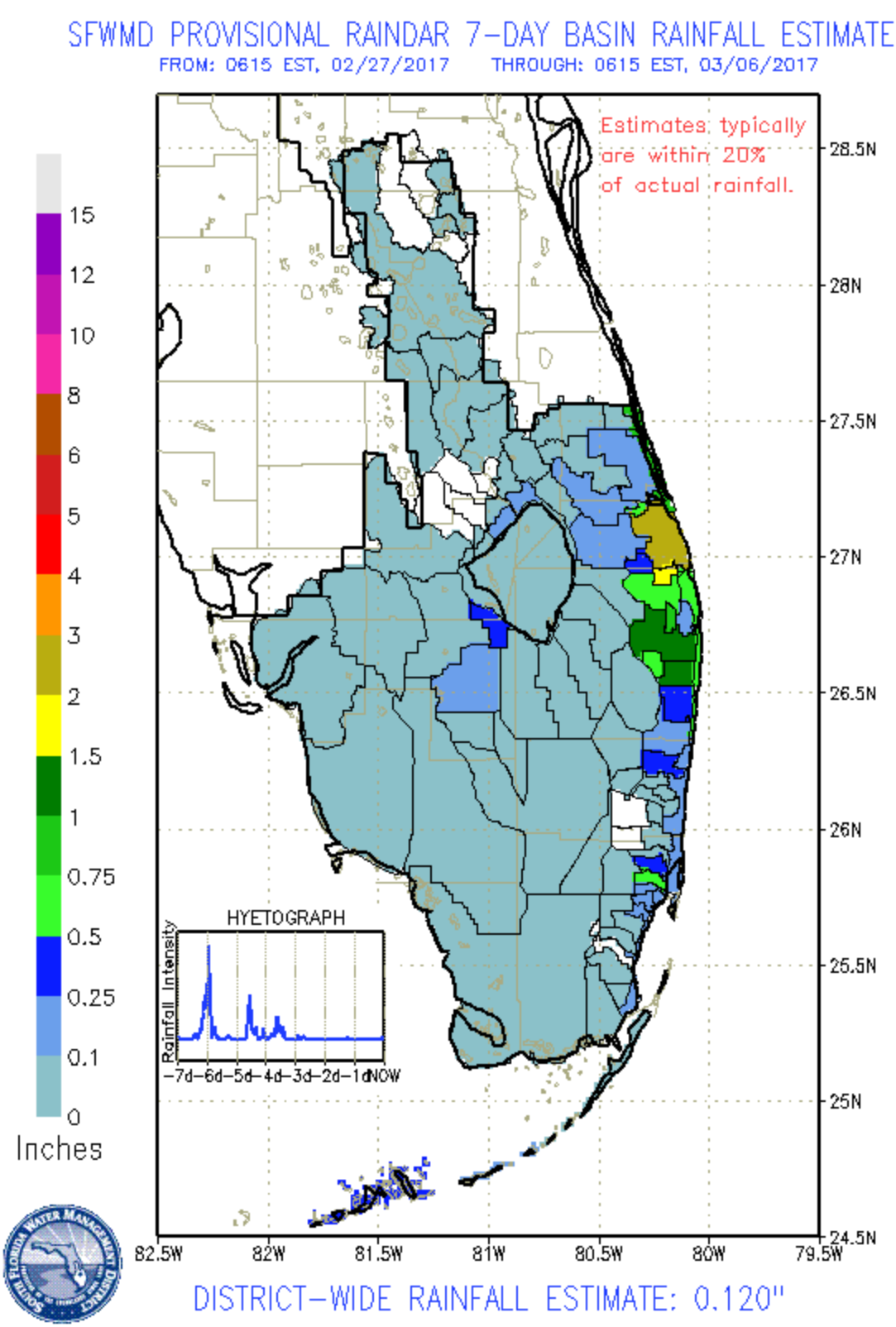

SFWMD PROVISIONAL RAINDAR 7-DAY BASIN RAINFALL ESTIMATES
FROM: 0615 EST, 02/27/2017 THROUGH: 0615 EST, 03/06/2017
Estimates typically are within 20% of actual rainfall.
15
12
10
8
6
5
4
3
2
1.5
1
0.75
0.5
0.25
0.1
0
Inches
HYETOGRAPH
Rainfall Intensity
-7d-6d-5d-4d-3d-2d-1dNOW
28.5N
28N
27.5N
27N
26.5N
26N
25.5N
25N
24.5N
82.5W
82W
81.5W
81W
80.5W
80W
79.5W
DISTRICT-WIDE RAINFALL ESTIMATE: 0.120"

Figure 3

INFLOWS	Average Daily Flow Past Week cfs	Feet of Change Past Week
S65E & S65EX1	767	0.028
S71 & 72	0	0.000
S84 & 84X	0	0.000
Fisheating Creek	3	0.000
Rainfall	N.A.	0.008
OUTFLOWS	**Average Daily Flow Past Week cfs**	**Feet of Change Past Week**
S77	952	0.034
S308	116	0.004
S351	751	0.027
S352	151	0.005
S354	705	0.025
L8	226	0.008
ET	828	0.030

Figure 4

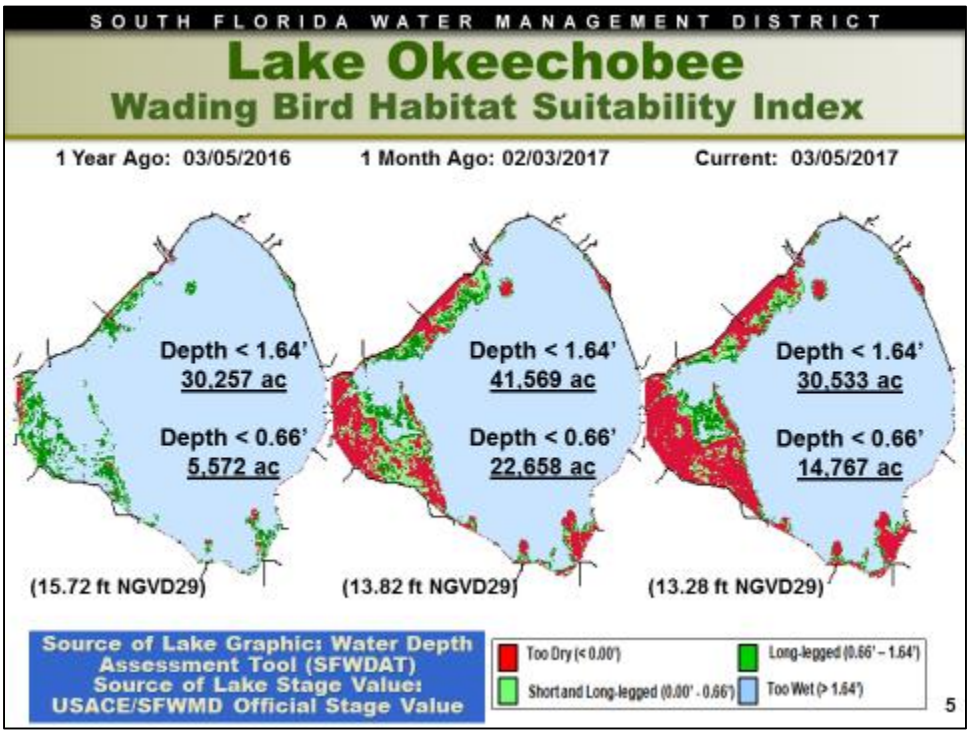


Figure 5

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Lake Okeechobee
Water Quality

Feb 7 to Feb 8, 2017		
Site	Chlorophyll *a* (ug/L)	Microcystin (ug/L)
Nearshore Stations		
FEBIN	Not Sampled	
FEBOUT	Not Sampled	
KISSR0.0	15.1	0.20
LZ2	20.3	0.20
LZ25A	5.2	
PALMOUT	15.6	
PELBAY3	8.3	
POLE3S	31.3	
POLESOUT	14.8	0.20
RITTAE2	34.6	
L001	13.1	
L004	13.8	
L005	17.4	0.20
L006	4.6	
L007	10.2	
L008	11.4	
LZ30	9.6	0.20
LZ40	12.6	
CLV10A	6.2	0.20

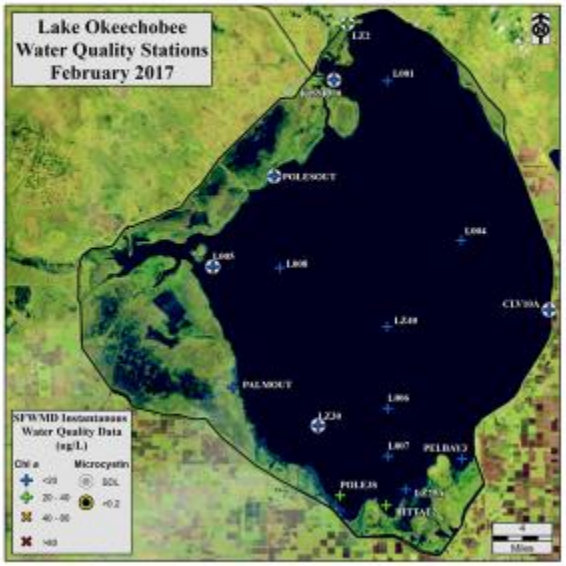


Figure 6

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Lake Okeechobee
Water Quality

Parameter		Dec 2016	Jan 2017	Feb 2017
TP (ppb)	Nearshore	77	153	94
	Pelagic	141	277	129
	Lakewide	107	218	112
TSS (ppm)	Nearshore	9	41	14
	Pelagic	26	111	23
	Lakewide	17	78	19

NOTE: The two Fisheating Bay sites (FEBIN and FEBOUT) were not sampled.

Figure 7

Lake Istokpoga

The Lake Istokpoga regulation schedule is at winter pool stage of 39.50 feet NGVD. Lake stage is 38.95 feet NGVD and is currently 0.55 feet below regulation stage (Figure 8). Average flows into the Lake from Arbuckle and Josephine creeks were 54 cfs and 13 cfs respectively, which is a decrease from last week's total flow. Average discharge from S68 and S68X this past week was 69 cfs, a slight

decrease from the previous week's flow. According to RAINDAR, 0.069 inches of rain fell in the Lake Istokpoga watershed during the past seven days.

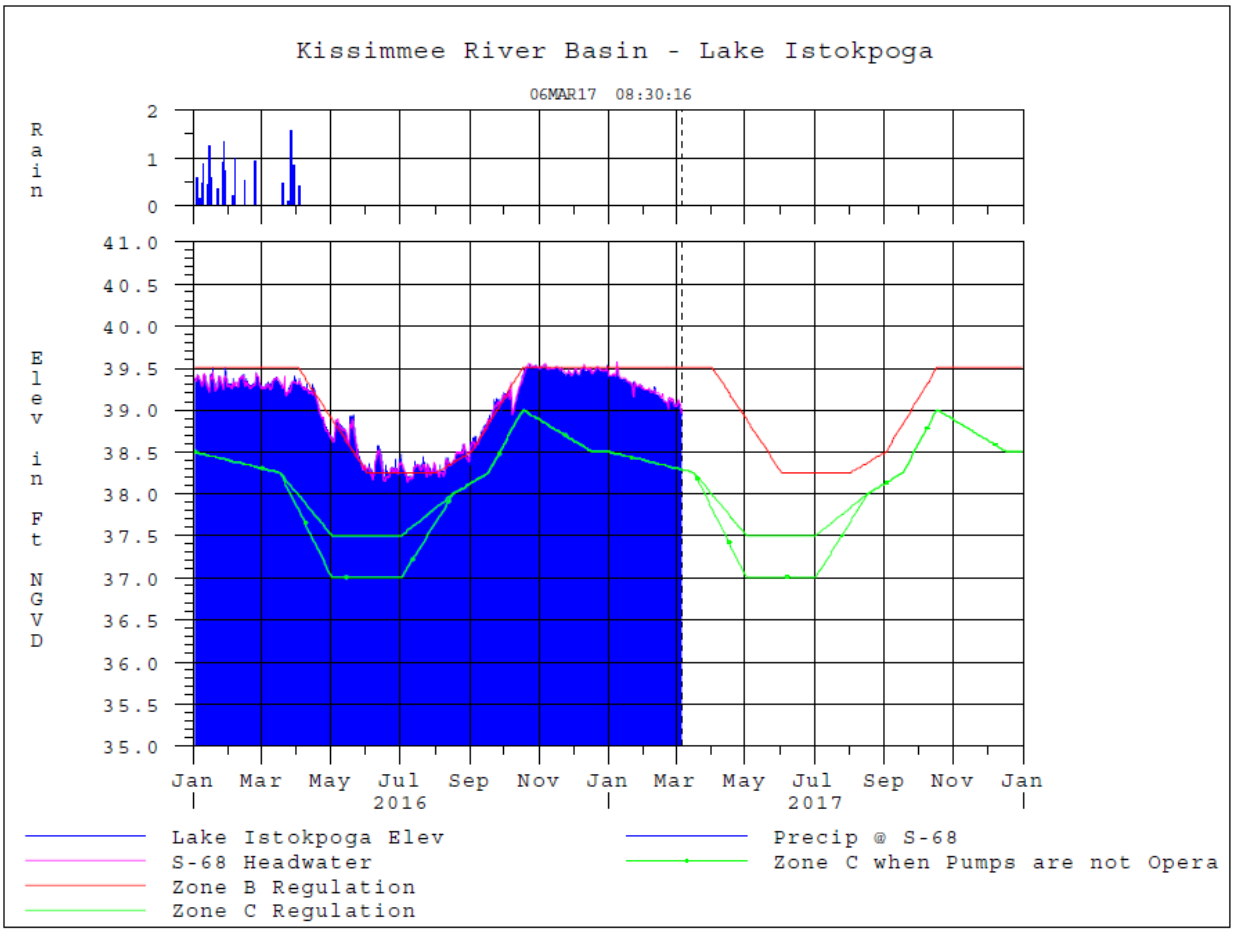


Figure 8

ESTUARIES

St. Lucie Estuary

Over the past week, provisional flows averaged about 0 cfs at S-80, 160 cfs downstream of S-308, 0 cfs at S-49 on C-24, 0 cfs at S-97 on C-23, and 52 cfs from Ten Mile Creek at the Gordy Road Structure. Average inflow from tidal basin tributaries is estimated to be 172 cfs (Figures 1 and 2). Total inflow averaged about 224 cfs last week and 156 cfs over last month.

Over the past week, surface salinity remained about the same throughout the estuary (Table 1, Figures 3 and 4). The seven-day moving average salinity of the water column at the US1 Bridge is about 25.9. Salinity conditions in the middle estuary are just within the good range for the adult eastern oyster.

Table 1. Seven-day average salinity at three monitoring stations 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 (N. Fork)	**25.2** (25.2)	**25.5** (26.7)	NA[1]
US1 Bridge	**25.7** (26.9)	**26.0** (27.5)	10.0-26.0
A1A Bridge	**31.1** (32.1)	**31.9** (32.7)	NA

[1]Envelope not applicable

Caloosahatchee Estuary

During the past week, provisional flows averaged approximately 1,064 cfs downstream of S-77, 632 cfs at S-78, and 724 cfs at S-79. Average inflow from tidal basin tributaries is estimated to be 146 cfs (Figures 5 and 6). Total inflow averaged 779 cfs last week and 790 cfs over last month.

Over the past week, salinity decreased throughout the estuary (Table 2, Figures 7 and 8). The seven-day average salinity values are within the good range for adult oysters at Cape Coral and Shell Point and in the fair range at Sanibel (Figure 9). The 30-day moving average surface salinity is 3.1 at Val I-75 and 9.6 at Ft. Myers. The 30-day moving average salinity at Ft. Myers has been below 10 for 12 consecutive days. Salinity conditions between Val I-75 and Ft. Myers are improving but tape grass has likely suffered some mortality. Without discharges at S-79, the 30-day moving average salinity at Val I-75 is forecast be 4.5 within two weeks (Figure 10).

Table 2. Seven-day average salinity at six monitoring stations in the Caloosahatchee Estuary. Current average is in bold face type, previous average in parentheses. The envelope reflects the preferred salinity range for tape grass (*Vallisneria americana)* at Val I-75 and for adult eastern oysters (*Crassostrea virginica*) elsewhere.

Sampling Site	Surface	Bottom	Envelope
S-79 (Franklin Lock)	**1.9** (2.6)	**2.0** (2.7)	NA[1]
*Val I75	**3.0** (3.2)	**3.8** (6.2)	0.0-5.0[2]
Ft. Myers Yacht Basin	**9.3** (9.5)	**10.2** (12.9)	NA
Cape Coral	**16.9** (17.8)	**18.0** (19.6)	10.0-30.0
Shell Point	**26.4** (27.4)	**27.7** (28.4)	10.0-30.0
Sanibel	**31.8** (NR)	**32.3** (NR)	10.0-30.0

[1]Envelope not applicable, [2]Envelope is based on a 30-day average, NR=Not Reporting.
*Val I75 is temporarily offline due to site construction,
Salinity values are estimated using models developed for this site.

Monitoring data collected by the River, Estuary and Coastal Observing Network of Sanibel-Captiva Conservation Foundation using continuous sensors are summarized in Table 3 as concentration ranges of Chlorophyll *a* and dissolved oxygen at Beautiful Island, Ft. Myers, and Shell Point in the Caloosahatchee Estuary. Live Data will be unavailable until website upgrades are complete.

Table 3. Weekly ranges of Chlorophyll *a* (a measure of algal biomass) and dissolved oxygen concentrations at three monitoring stations maintained by the Sanibel-Captiva Conservation Foundation.

	RECON Monitoring Stations		
	Beautiful Island	**Ft. Myers**	**Shell Point**
Chlorophyll *a* (µg/l)	4.22 – 7.24	5.71 – 19.25	1.23 – 16.25 Spikes to 79.5 (Mar2-3)
Dissolved Oxygen (mg/l)	5.75 – 8.55	6.02 – 9.18	No Data

The Florida Fish and Wildlife Research Institute reported on March 3, 2017, that *Karenia brevis*, the Florida red tide organism, persists in Southwest Florida from southern Pinellas to Collier counties. *Karenia brevis* was observed in background to low concentrations in twenty samples collected from Lee County.

<u>Water Management Recommendations</u>

Salinity conditions in the upper portion of the Caloosahatchee estuary are improving. While the 30-day average salinity at the I-75 Bridge is forecast to remain below 5 with no inflow at S-79, the daily salinity is forecast to reach 6.1 within two weeks. Therefore, it is recommended that runoff from the C-43 basin be supplemented with Lake Okeechobee water as a pulsed release of up to 650 cfs through S-79.

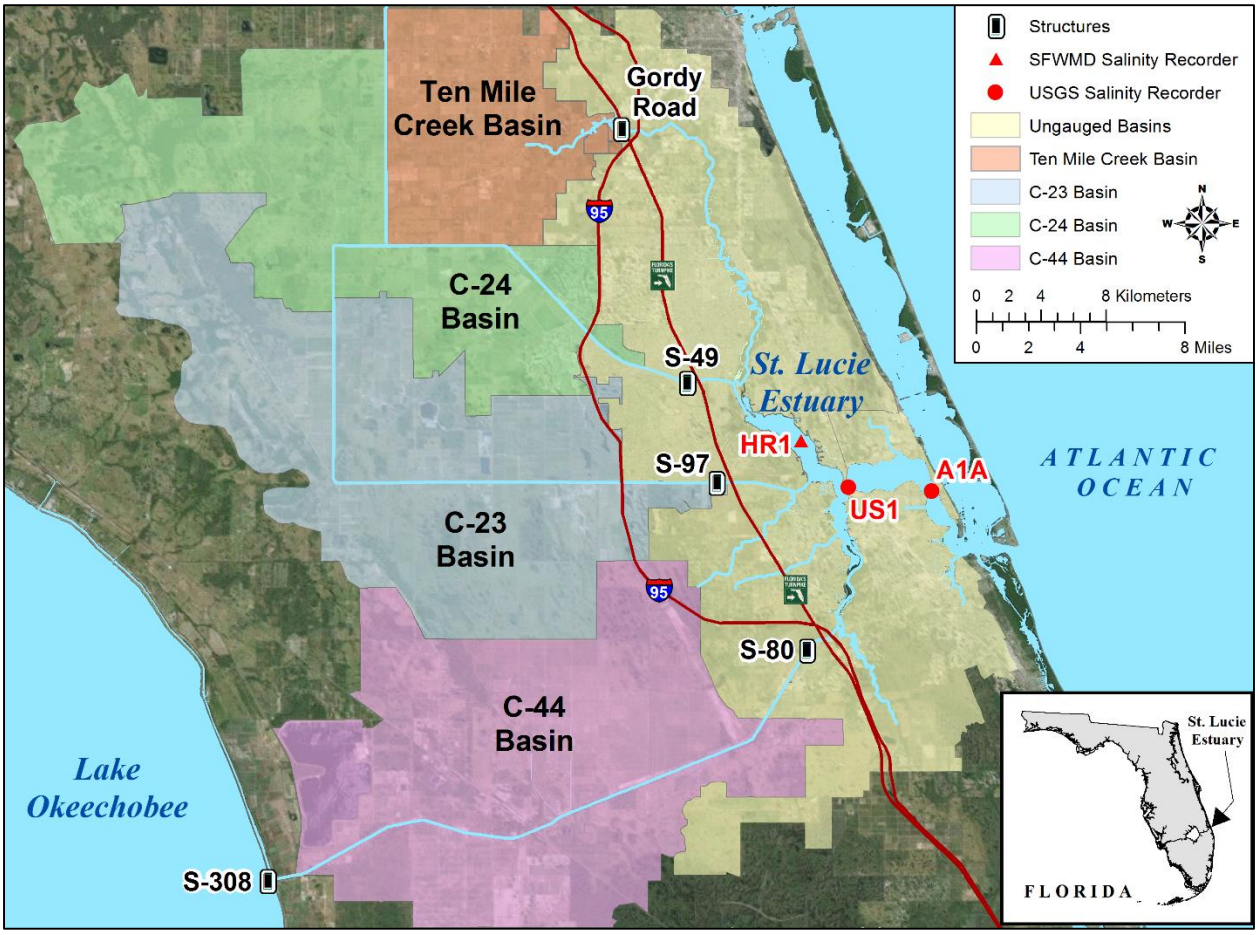


Figure 1. Basins, water control structures, and salinity monitoring for the St. Lucie Estuary.

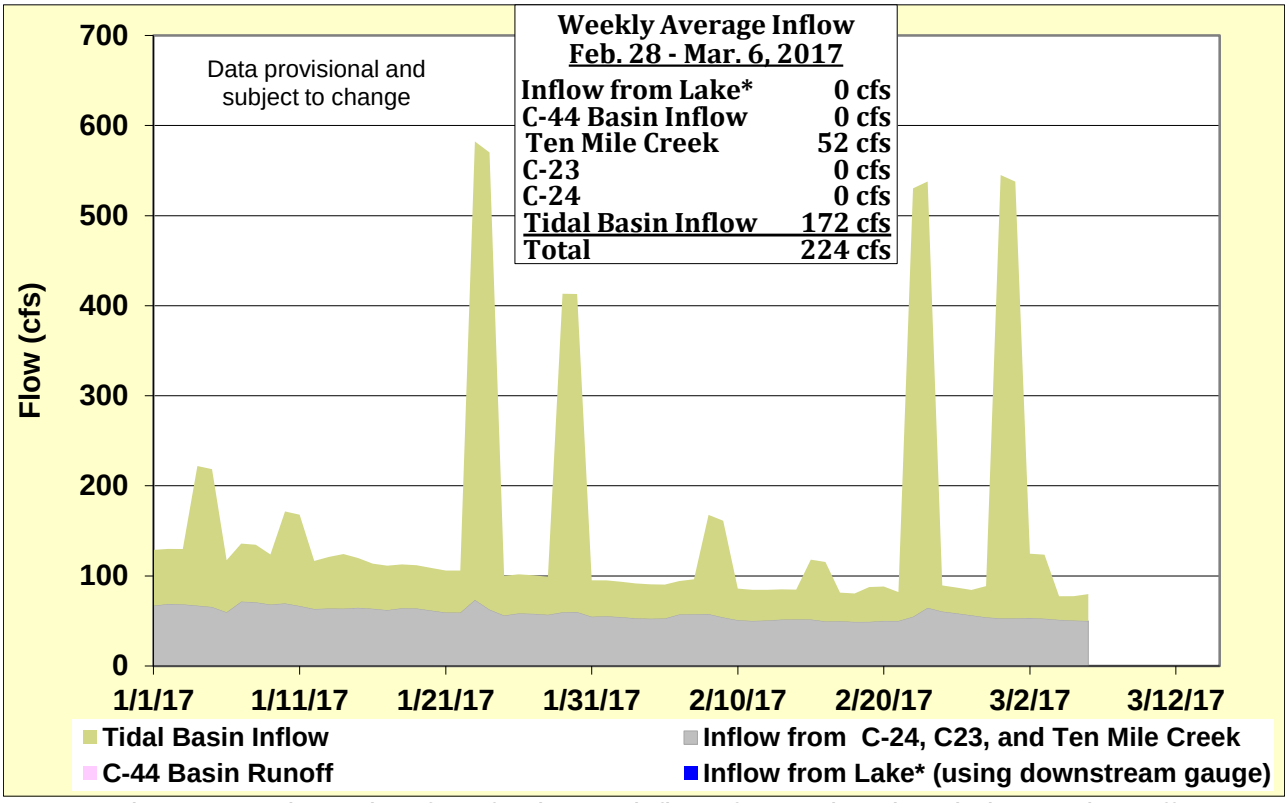


Figure 2. Estimated surface freshwater inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and tidal basins into the St. Lucie Estuary.

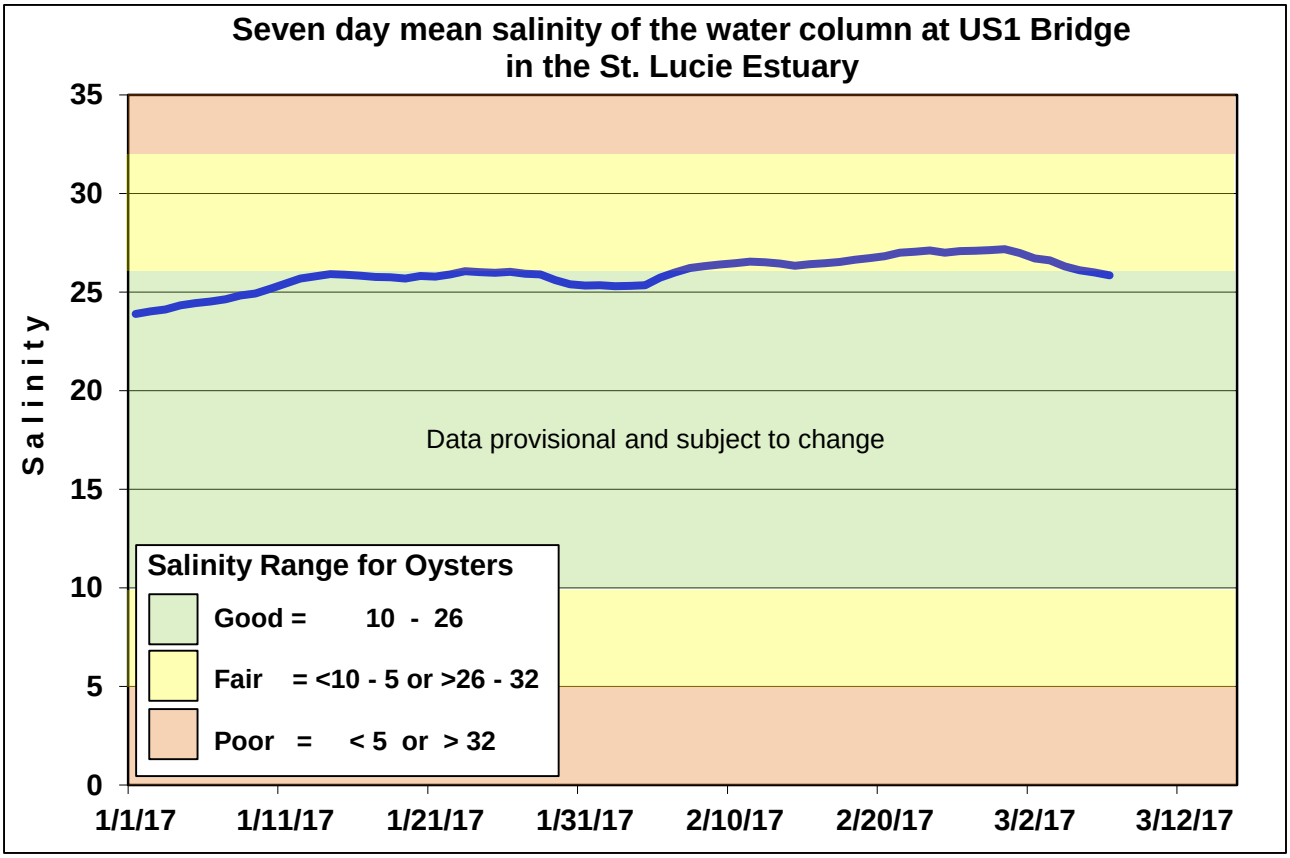


Figure 3. Seven-day mean salinity of the water column at the U.S. Highway 1 Bridge.

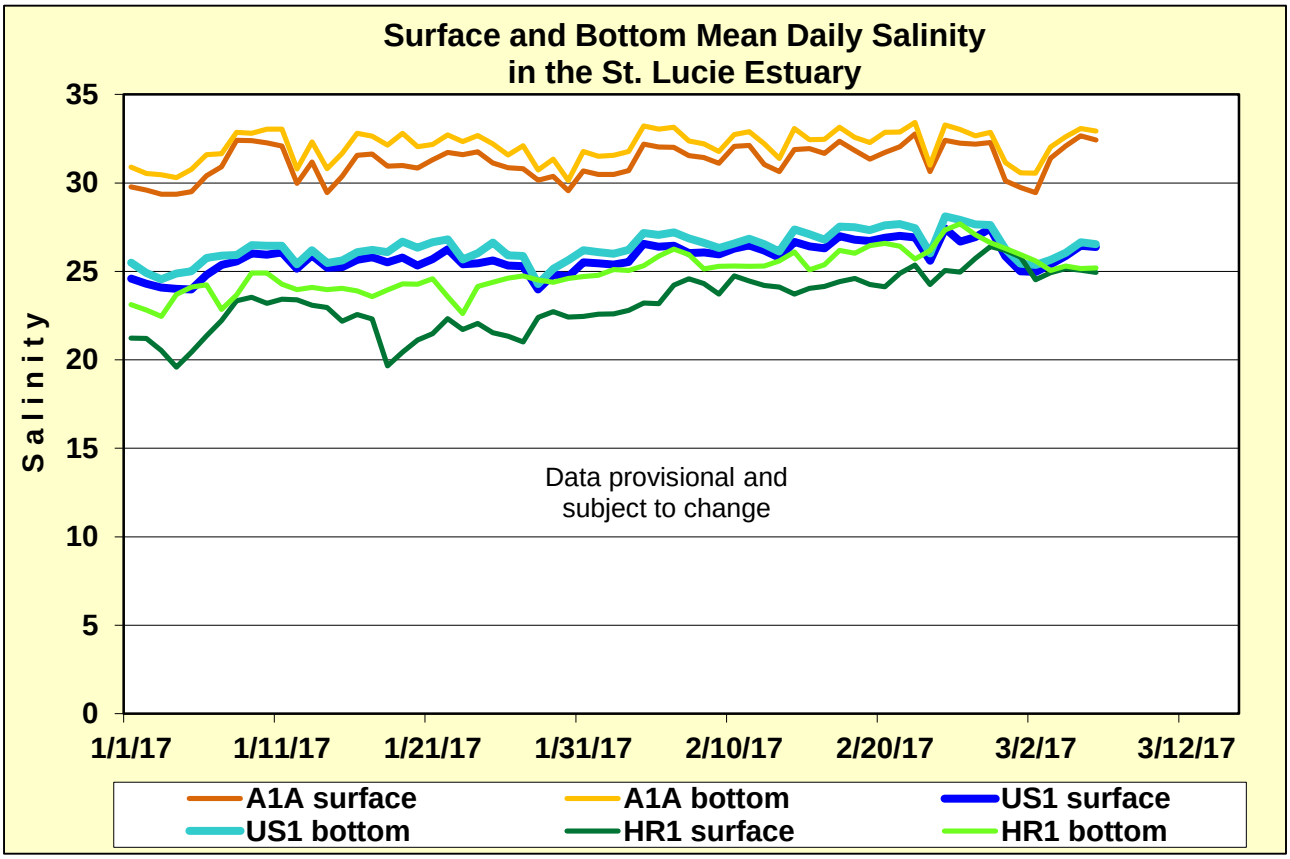


Figure 4. Daily mean salinity at the A1A, US1 and estimated HR1 stations.

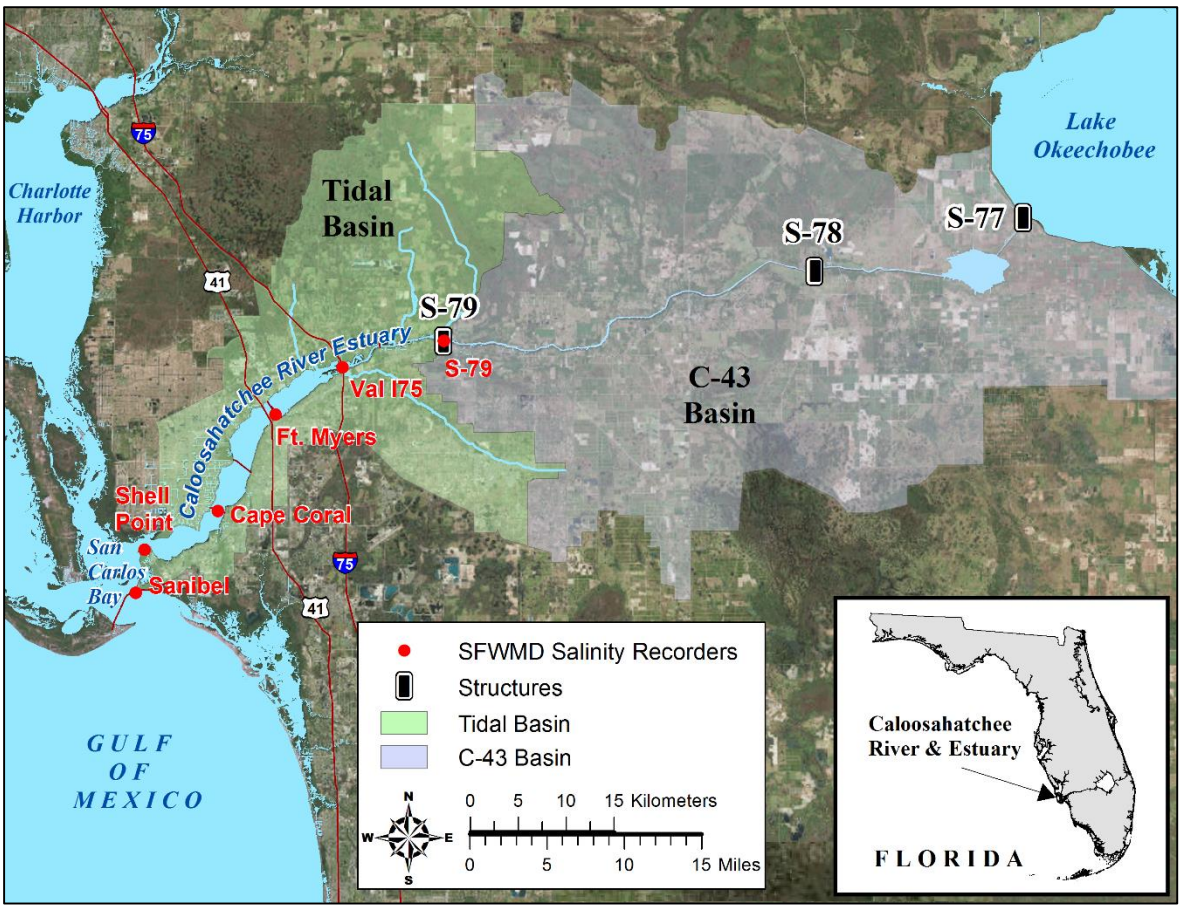


Figure 5. Basins, water control structures, and salinity monitoring for the Caloosahatchee Estuary.

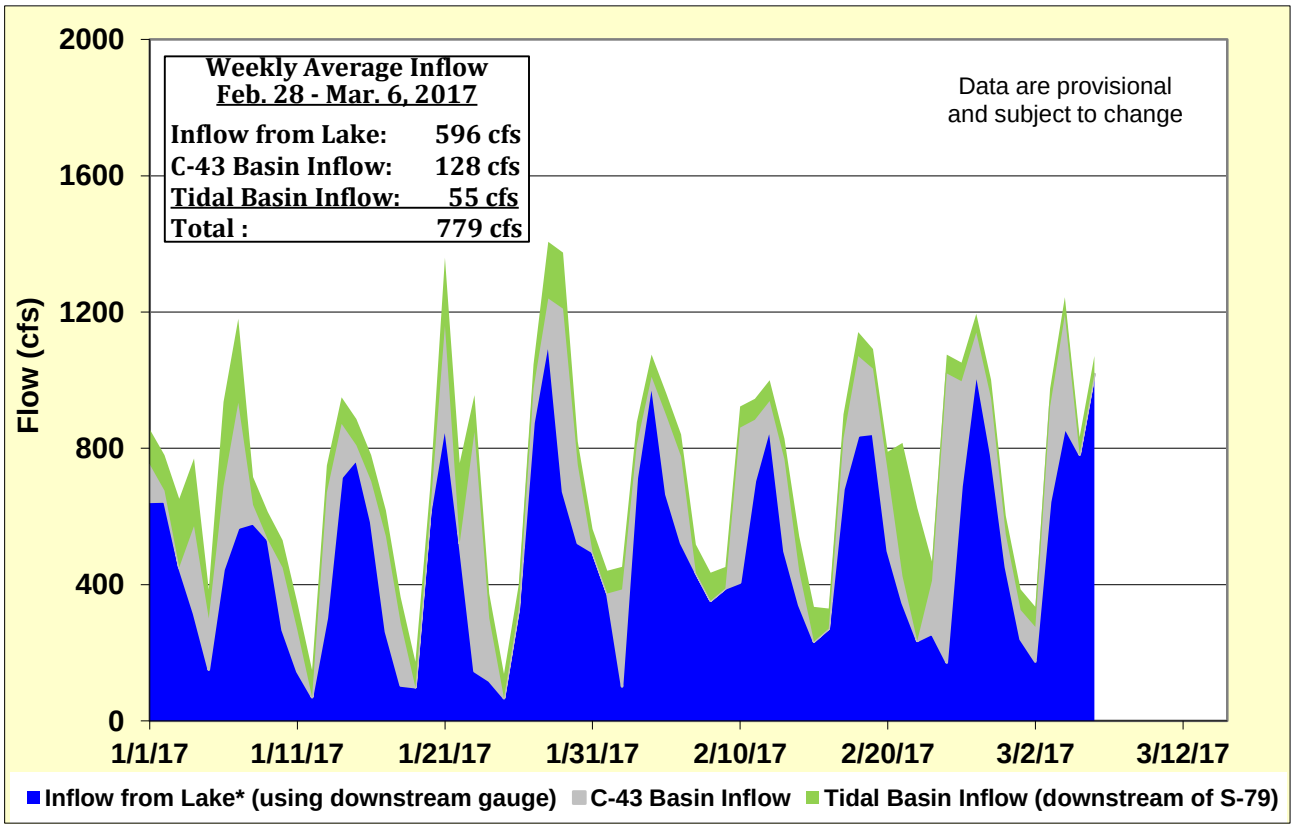
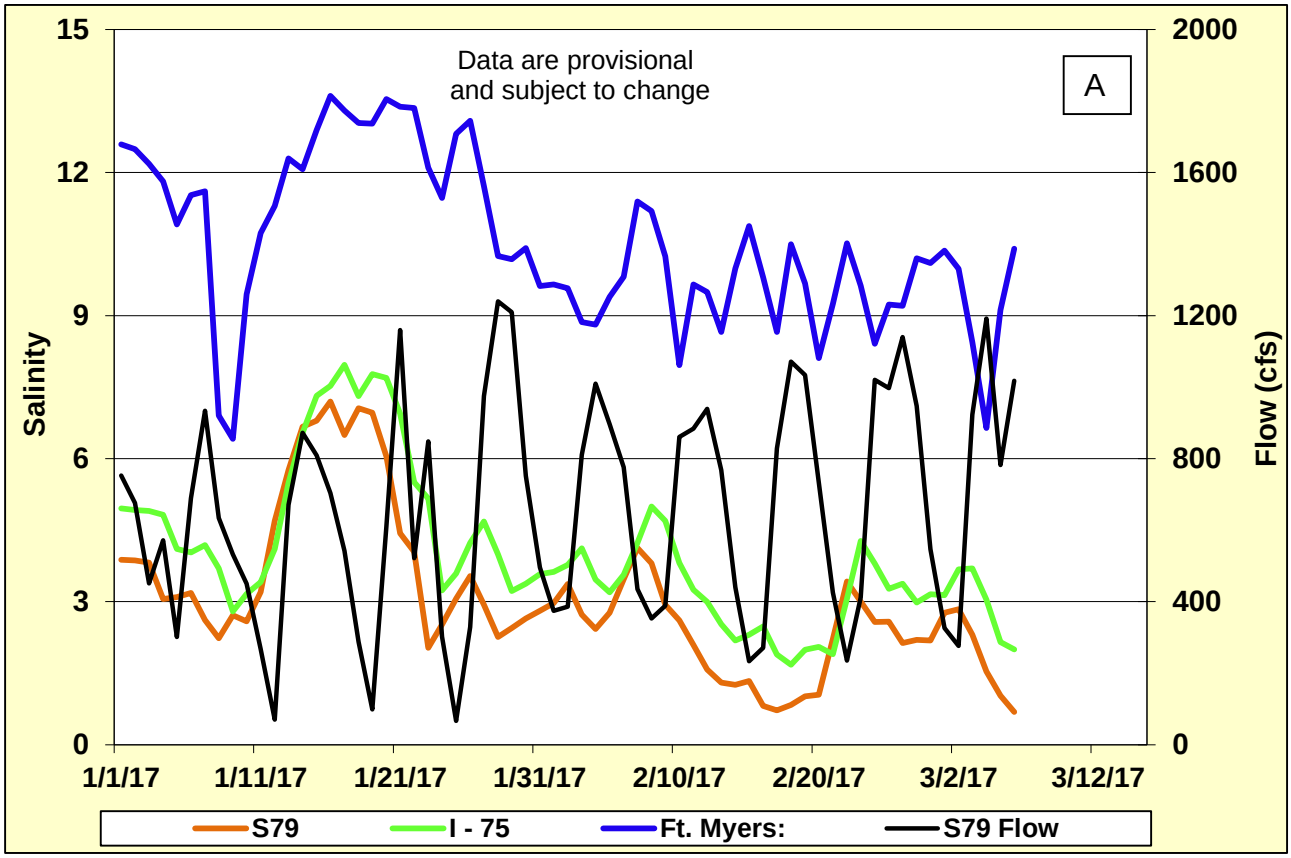


Figure 6. Freshwater inflows from Lake Okeechobee, runoff from the C-43 basin, and tributaries in the tidal basin into the Caloosahatchee River Estuary.



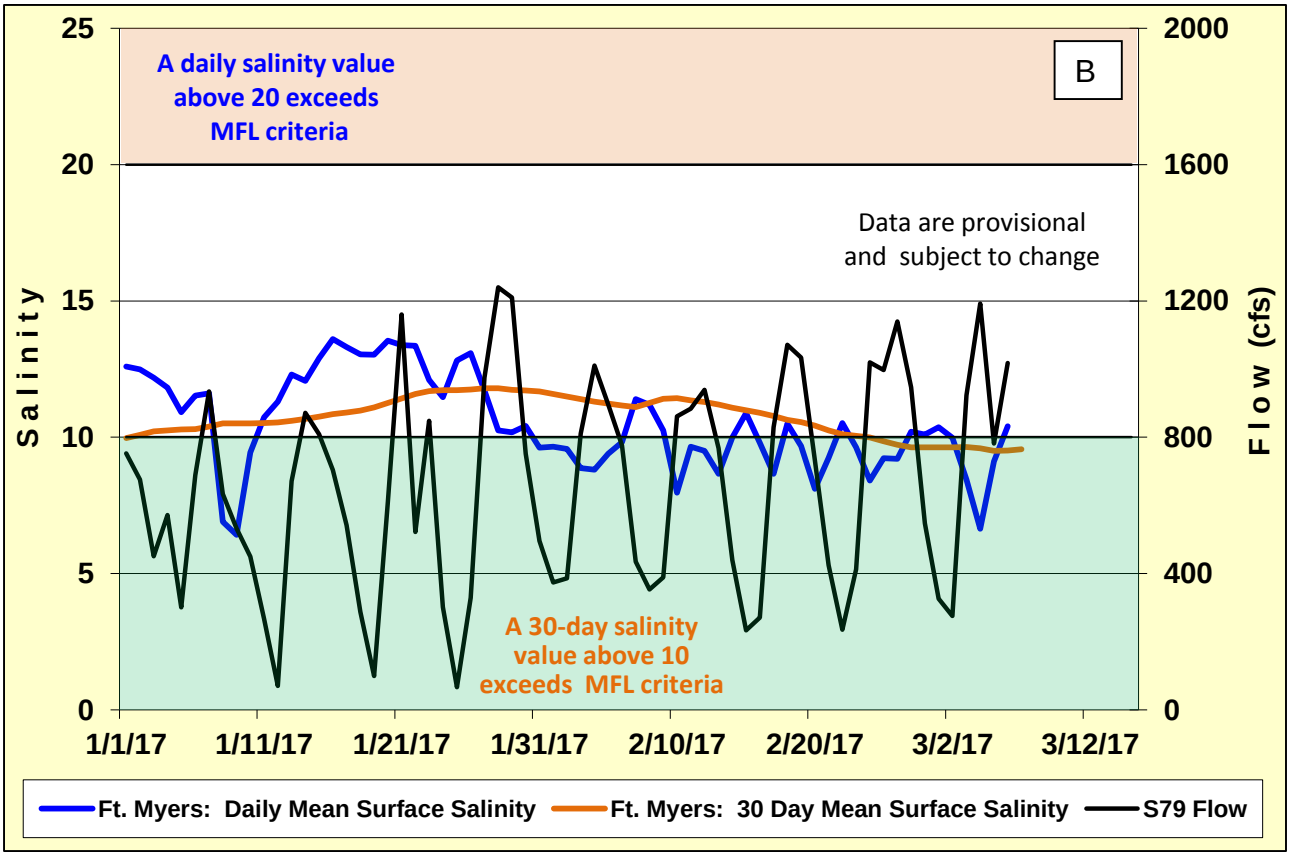


Figure 7. Daily mean flows at S-79 and salinity at upper estuary monitoring stations (A) and 30-day moving average salinity at Ft. Myers (B).

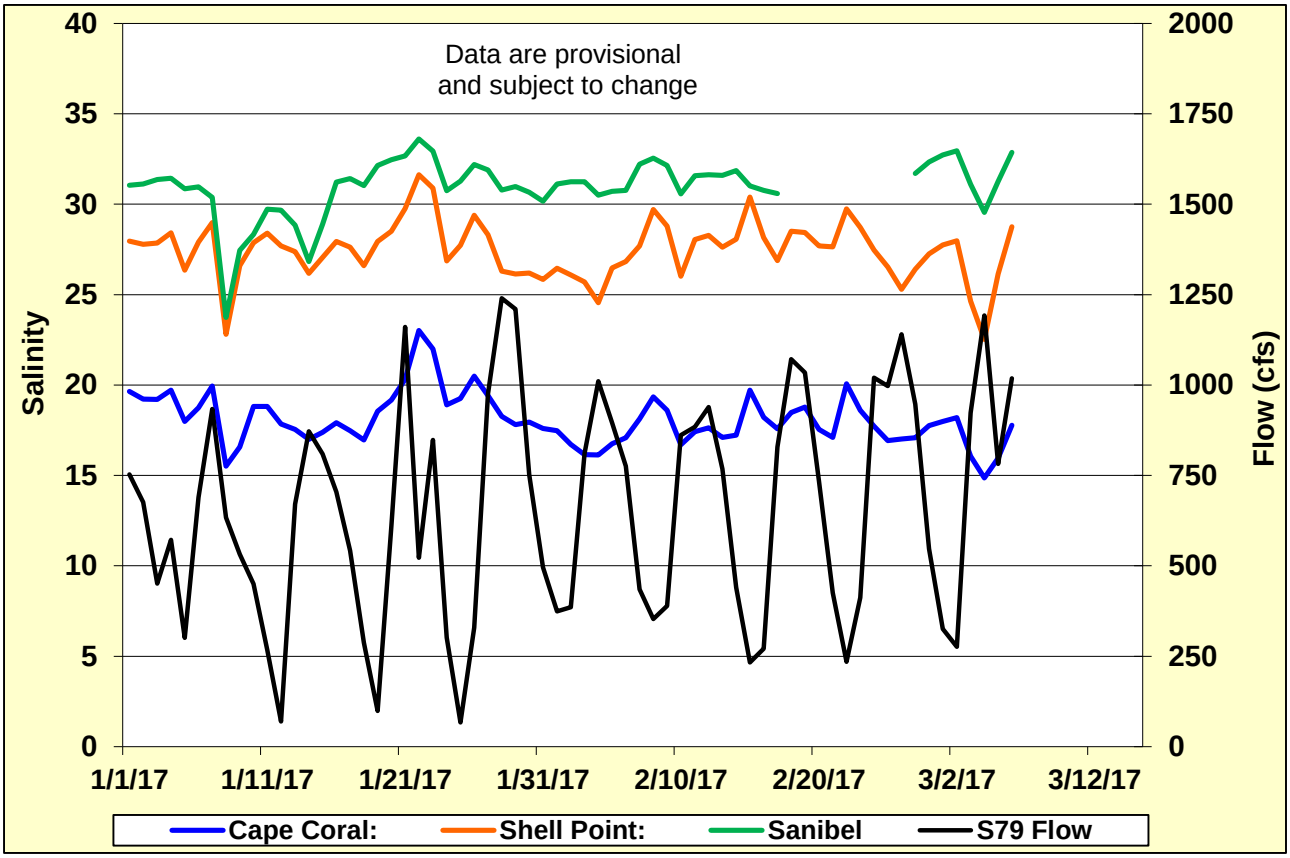


Figure 8. Daily mean flows at S-79 and salinity at lower estuary stations.

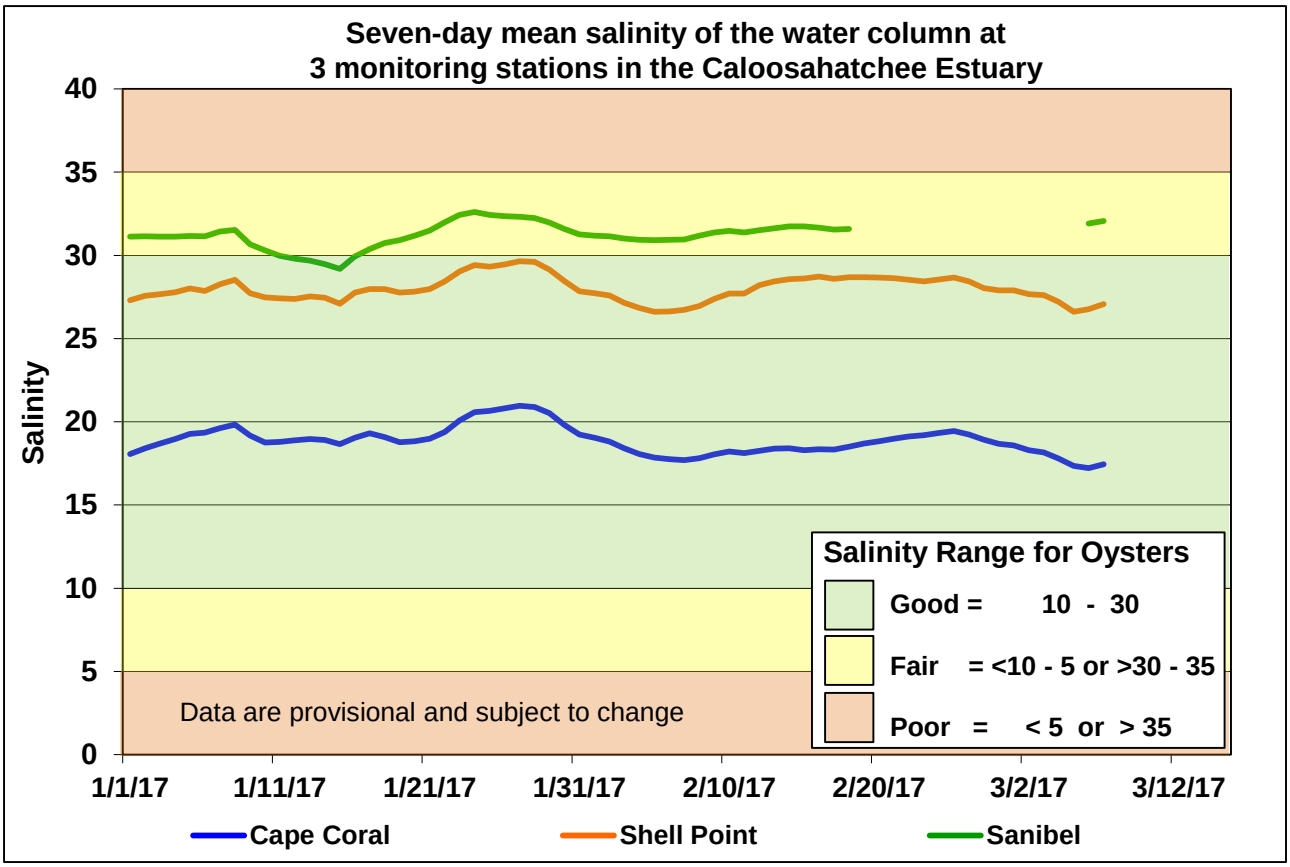


Figure 9. Seven-day mean salinity at Cape Coral Bridge, Shell Point and Sanibel Bridge monitoring stations.

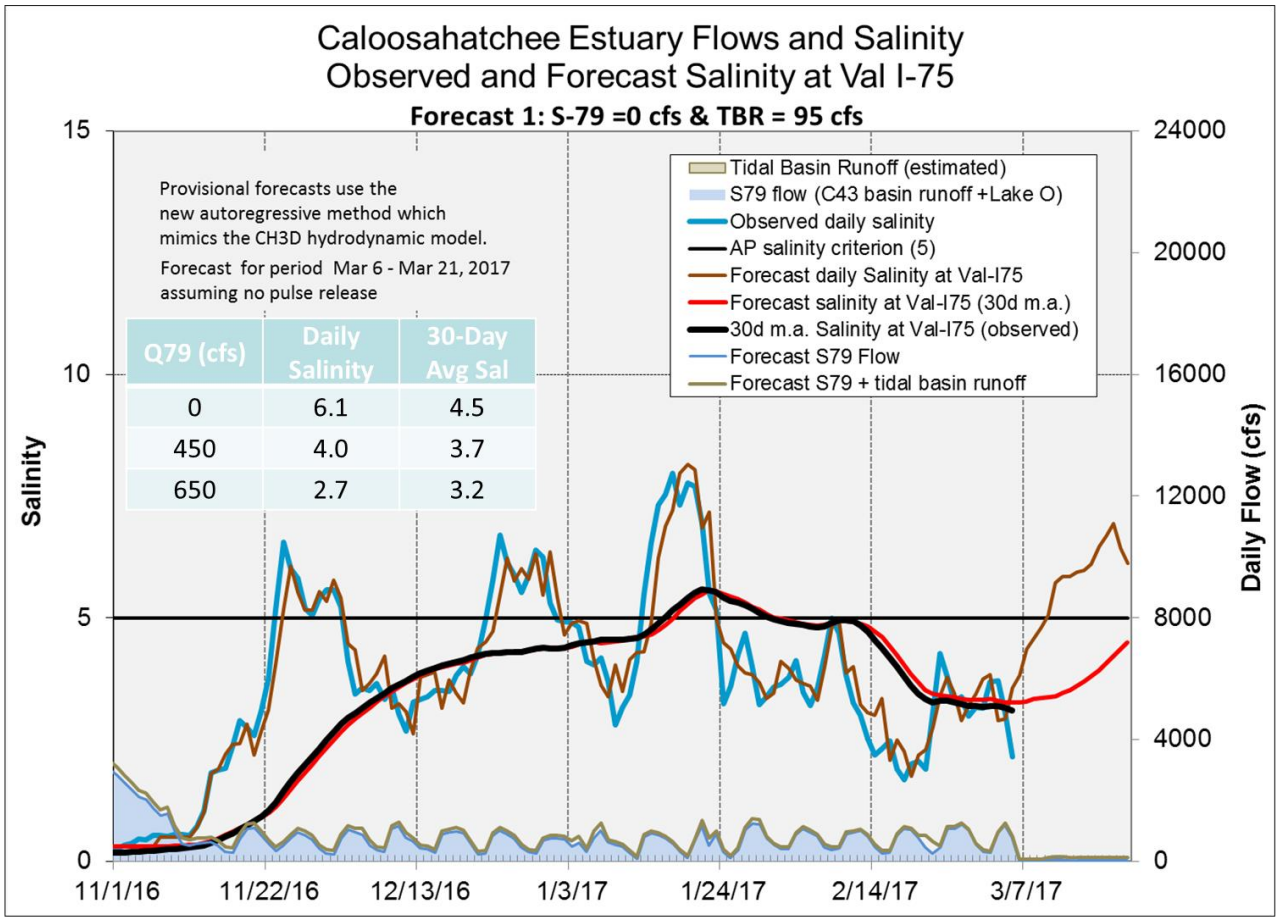


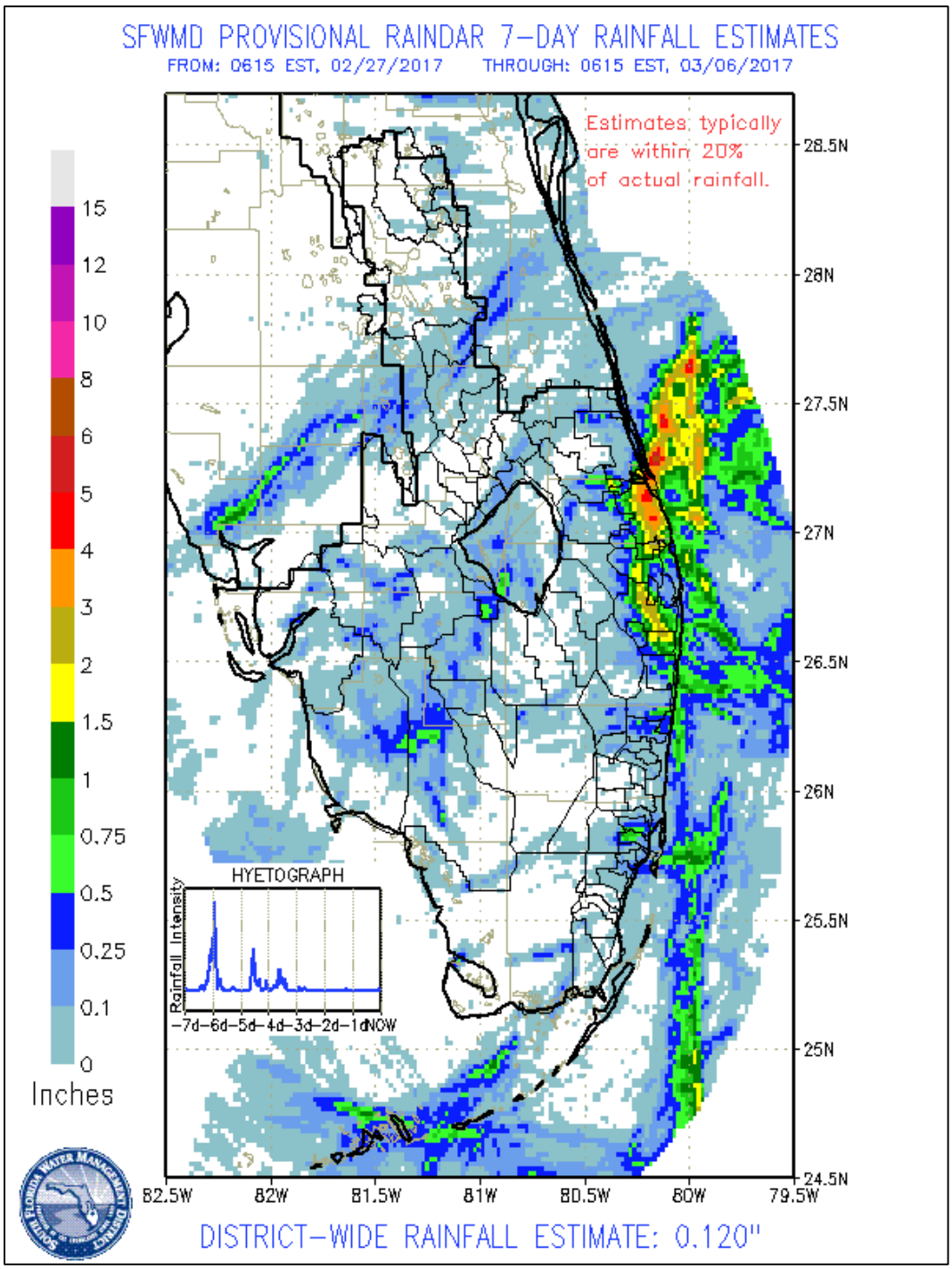
Figure 10. 14-day salinity forecast at Val I-75 assuming no releases at S-79.

GREATER EVERGLADES

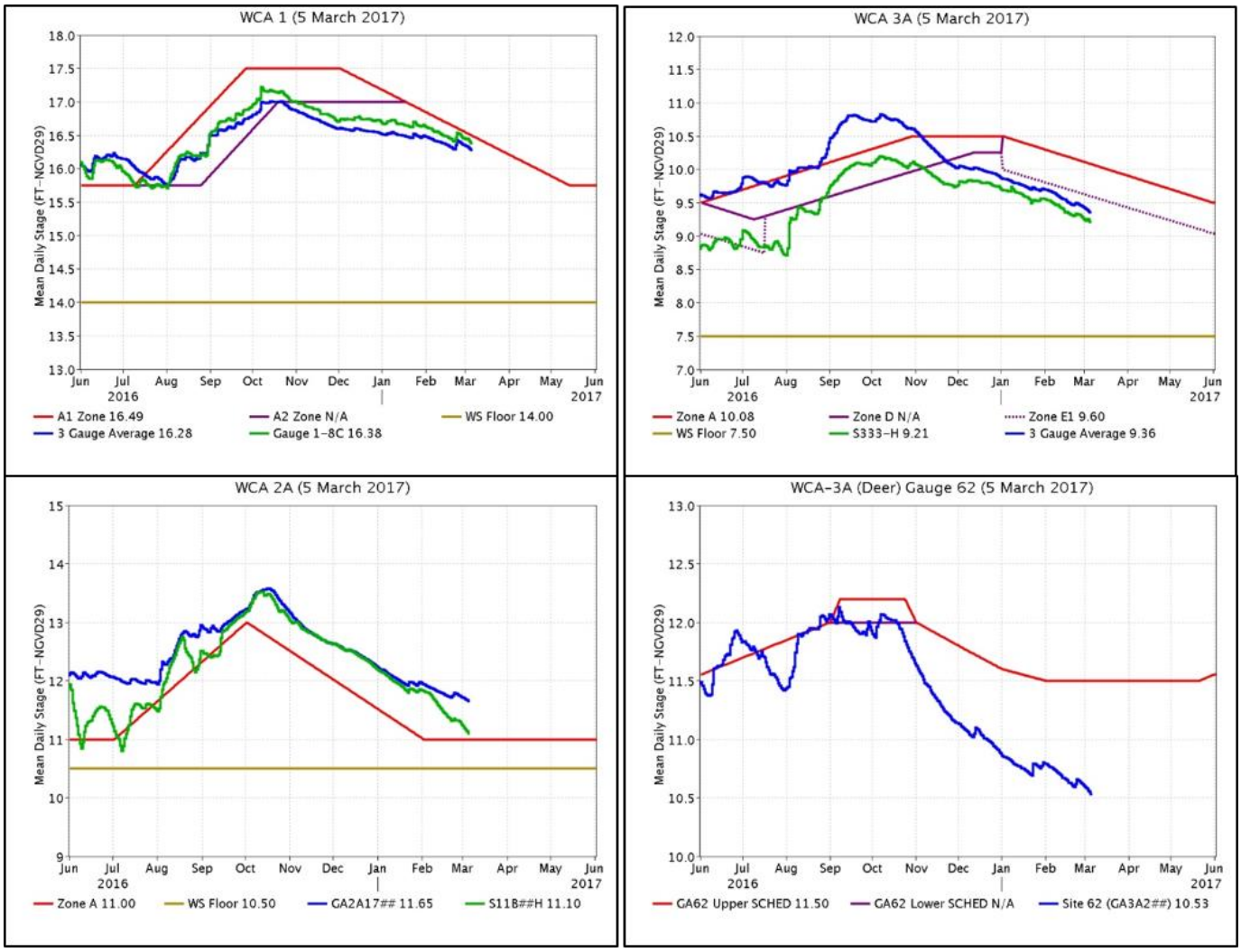
District-wide RAINDAR estimated rainfall for the last week was minimal across the Everglades. Within the WCAs and Northeast Everglades National Park (ENP) water levels decreased on average – 0.11 feet.

Everglades Region	Rainfall (Inches)	Stage Change (feet)
WCA-1	0.05	-0.11
WCA-2A	0.08	-0.10
WCA-2B	0.08	-0.16
WCA-3A	0.02	-0.11
WCA-3B	0.01	-0.08
ENP	0.02	-0.11

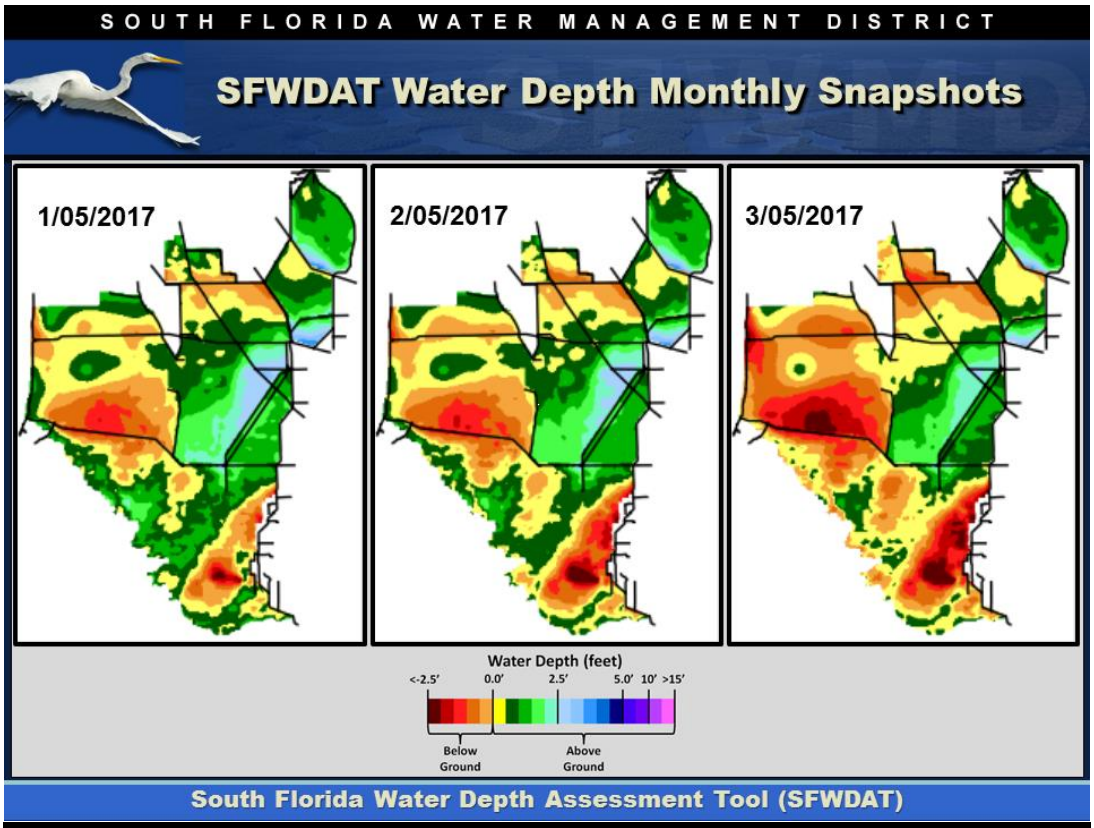
Good
Fair
Poor

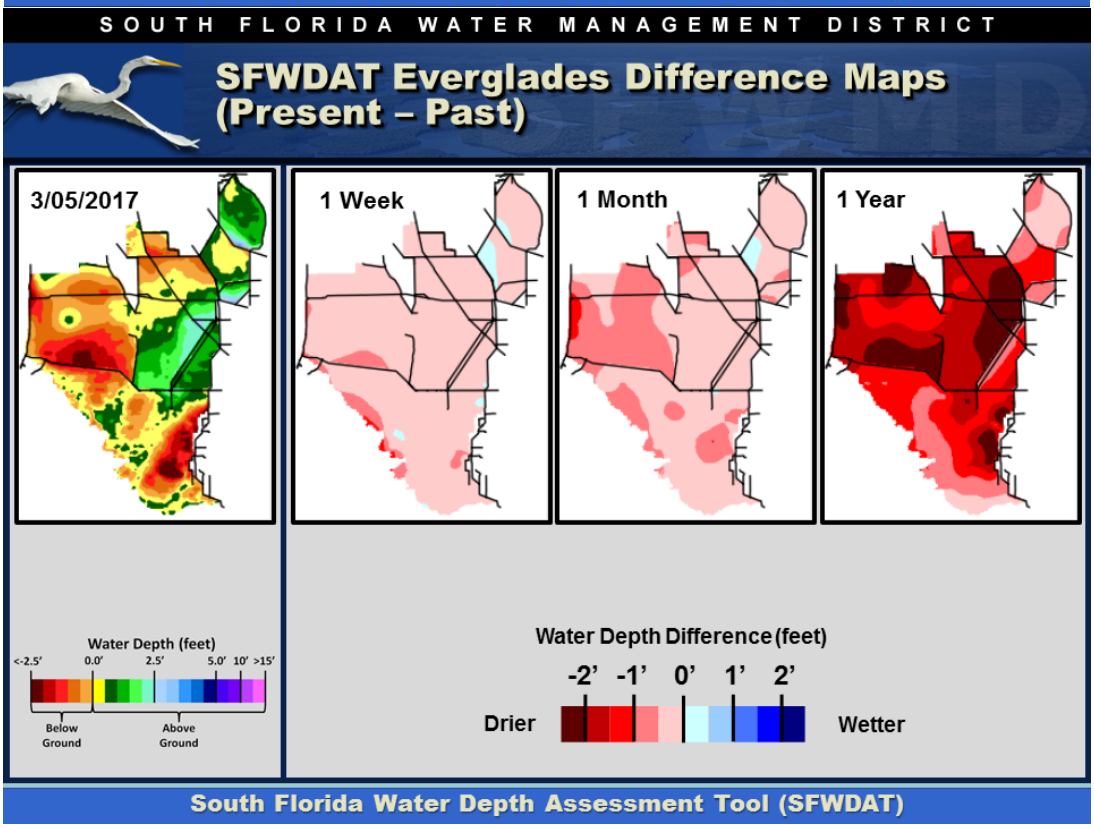


Regulation Schedules: Stages are below regulation for three of the four areas. The WCA-1 three-gauge average is −0.21 feet below zone A1, the northwestern WCA-3A gauge stage (gauge 62) is −0.97 feet below the upper schedule, and the WCA-3A three-gauge average stage is -0.24 feet below zone E1. The WCA-2A canal stage remains above regulation by 0.65 feet.



Water Depths and Changes: This week's water depths at monitored gauges other than in WCA-2B range from 0.28 feet (northeast WCA-3A) to 1.93 feet (southern WCA-3A). Individual gauge changes ranged from −0.08 feet to −0.12 feet.





Wading Birds (Foraging)

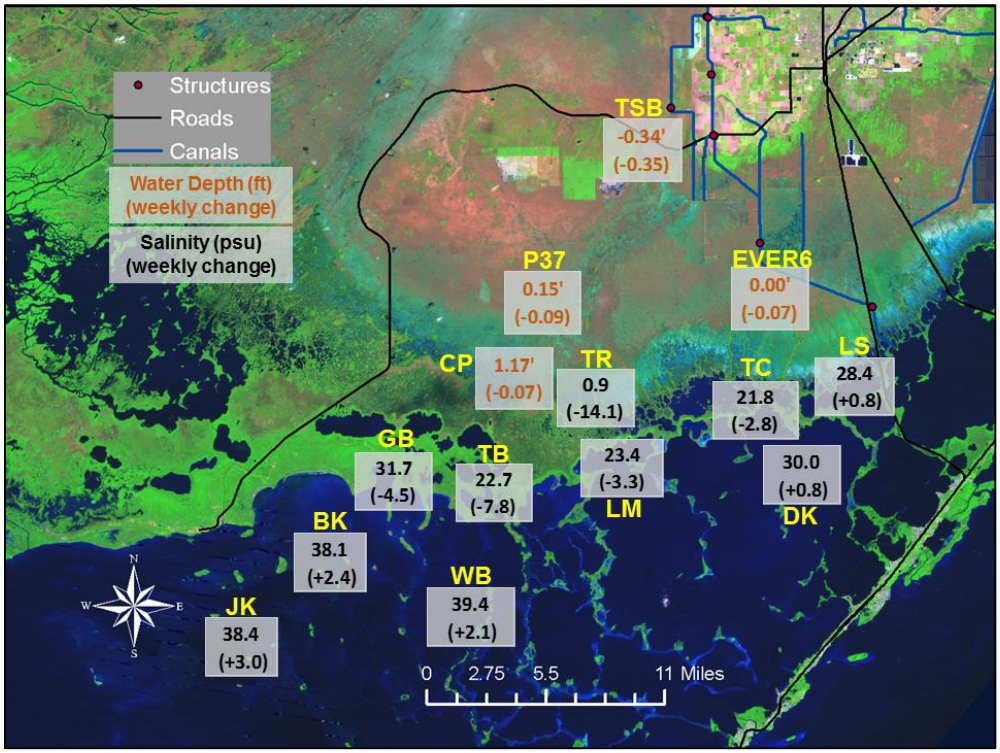
1. Foraging depths, based upon EDEN data were found to be optimal (green) or suitable (pale brown and pale blue) in the following locations:
    1. northern and central WCA-1,
    2. central and southern WCA-2A,

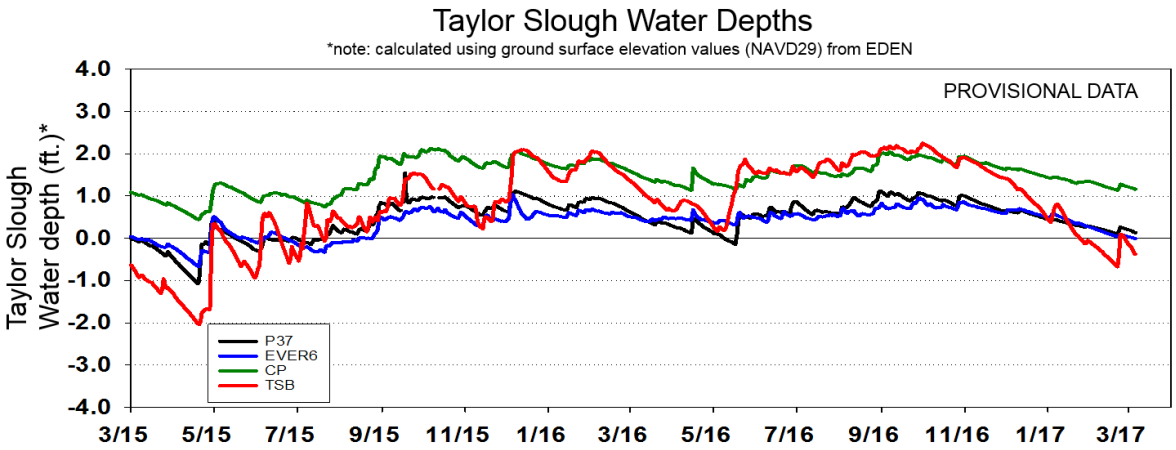
3. southeastern WCA-3AN,
4. central WCA-3AS,
5. northern Shark River slough, and
6. along extensive sections of ENP's marsh mangrove ecotone.

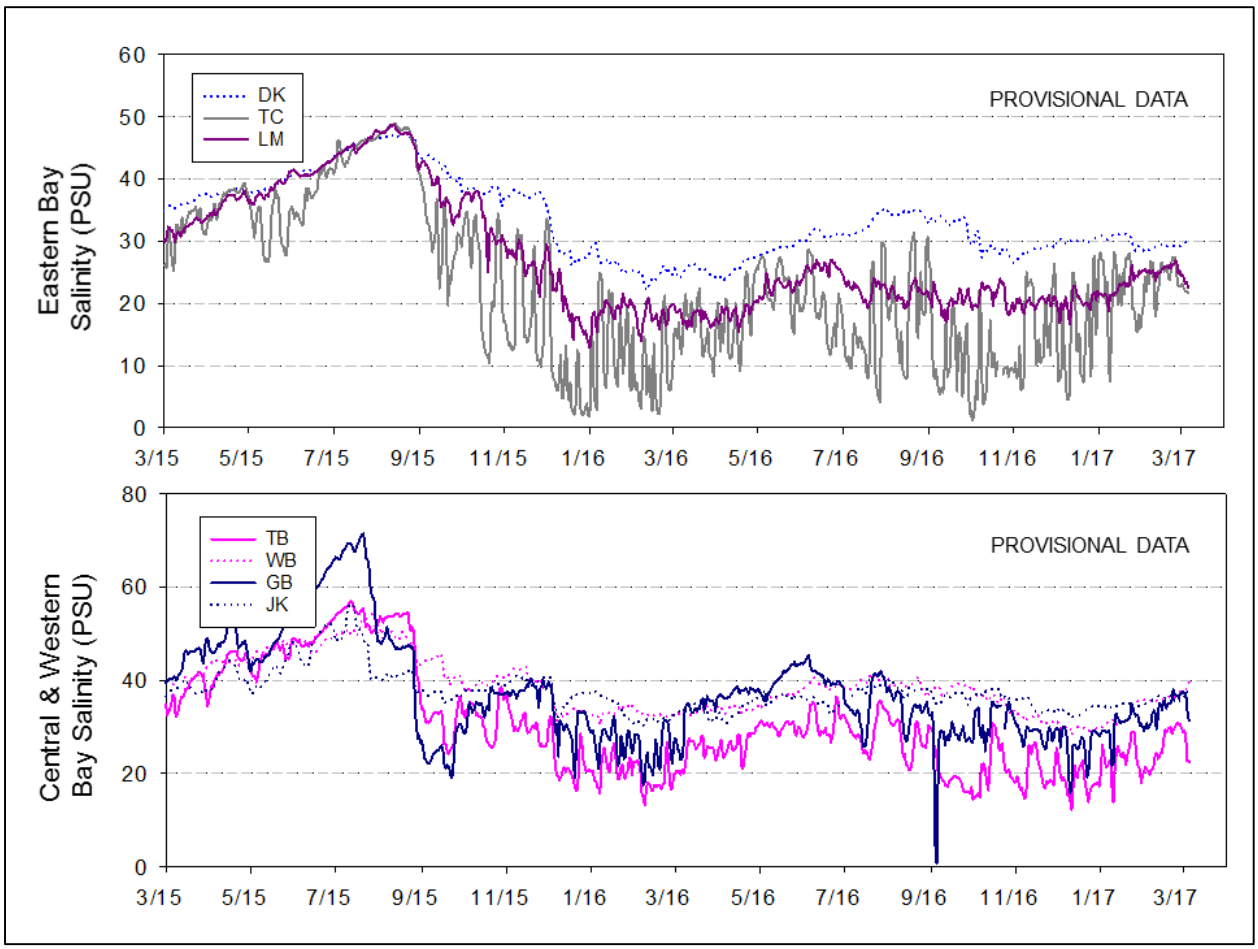
2. These suitable foraging areas were verified with observations of large foraging flocks during District aerial surveys on March 2 and 6 (e.g. 2,100 birds in WCA1). As noted last week, large numbers of birds continue to forage in areas classified "too dry" for foraging in eastern WCA3-AN (~4,000 birds).

Wading Birds (Nesting)

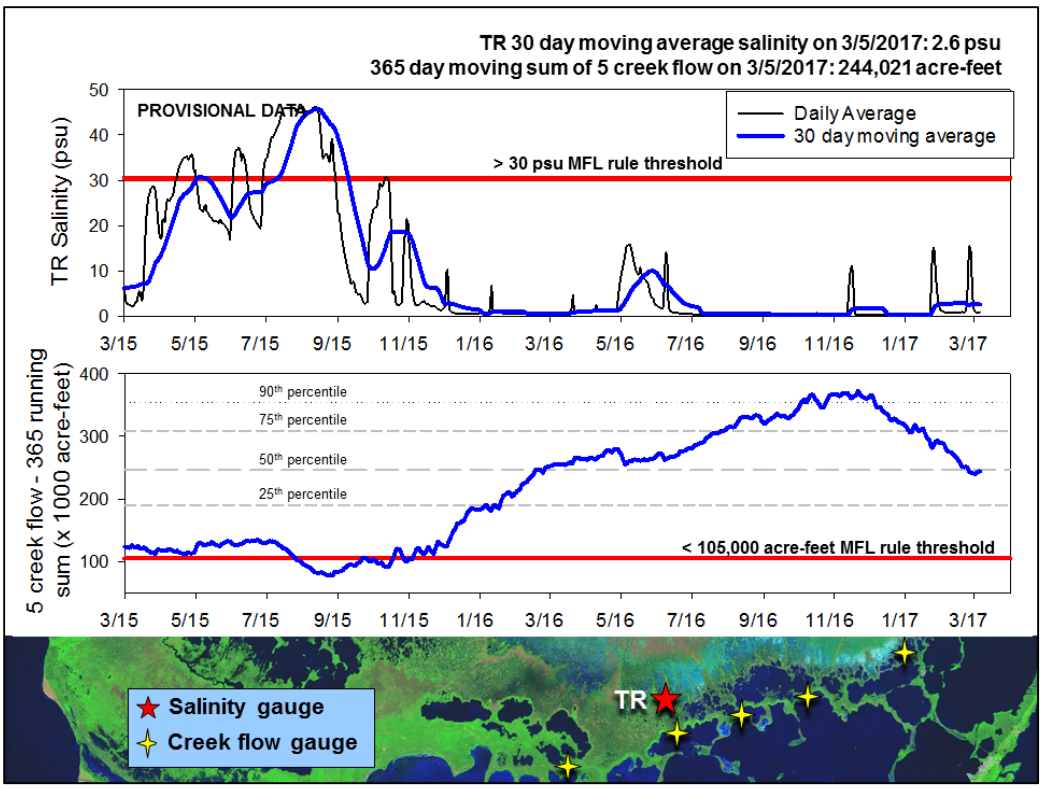
WCA-1 (TOTAL = 1,077)
New Colony 4: no nests
Boat Ramp: 80 GREG nests; Roosting WHIB, TRHE and LBHE
New Colony 2: no nests
Colony 70: no nests
Tyger/178: No nests
Colony 73: 80 GREG nests
Viveta: 100 GREG nests
Lox 99: 570 GREG nests; Roosting WHIB and LBHE
WCA-2A (TOTAL = 130)
Shiva; No nests
Rhea: 130 GREG nests
WCA-3A (TOTAL = 7,783)
Alley N: 900 GREG nests; 40+ ROSP nests; Roosting WHIB
6th Bridge: 6000+ WHIB pairs either on nests or courting, 80 GREG nests; ?ROSP nests
Cypress City: 70 GREG nests, 8 ROSP nests
Crossover: no nests
Jetport: 120 WOST nests
Jetport S: 400 WOST nests, 80 GREG nests; 5+ ROSP nests.
Hidden: 80 GREG nests
ENP (TOTAL = 210)
Tamiami W: 120 WOST nests, 90 GREG


Structures
Roads
Canals
Water Depth (ft)
(weekly change)
Salinity (psu)
(weekly change)
TSB
-0.34'
(-0.35)
P37
0.15'
(-0.09)
EVER6
0.00'
(-0.07)
CP
1.17'
(-0.07)
TR
0.9
(-14.1)
TC
21.8
(-2.8)
LS
28.4
(+0.8)
GB
31.7
(-4.5)
TB
22.7
(-7.8)
23.4
(-3.3)
LM
30.0
(+0.8)
DK
BK
38.1
(+2.4)
WB
39.4
(+2.1)
JK
38.4
(+3.0)
N
W
E
S
0 2.75 5.5 11 Miles


Taylor Slough Water Depths
*note: calculated using ground surface elevation values (NAVD29) from EDEN
PROVISIONAL DATA
Taylor Slough
Water depth (ft.)*
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
3/15
5/15
7/15
9/15
11/15
1/16
3/16
5/16
7/16
9/16
11/16
1/17
3/17
P37
EVER6
CP
TSB



Florida Bay MFL: After the elevated salinities of the previous week, the daily average salinity at TR returned to 0.9 psu by the end of the week. The 30-day moving average decreased slightly to 2.6 psu this week. The 365-day moving sum of flow from the five creeks identified by stars on the map increased about 2,000 acre-feet to end at 244,021 acre-feet (below the average of 257,628 acre-feet). The weekly creek flow from the five creeks was twice the amount that flowed upstream last week with 8,700 acre-feet flowing into the bay this week.



Water Management Recommendations

- Water levels across the Everglades decreased at a recession rate while categorized as “fair” based on general seasonal criteria, stage conditions at this time and these water depths suggest that faster than – 0.07 feet per week may dry out all areas before the end of the breeding season.

- The seasonal Multispecies Management Team (interagency group related to ERTP schedule) recommends retaining water to the extent possible to slow recessions everywhere in the Everglades. Recession rates need to be evaluated as a function of previous water depths. While a recession rate faster than -0.16 feet/week might have minimal effect in the very short term (a week or two), in the long term it may result in over drying in all but the wettest years.

- Water depths in southern WCA-3A should stay below 2.5 feet throughout the dry season to protect tree island forests from further high water conditions like those experienced in 2016.

More specific recommendations appear in the summary table below. The red text represents new or modified information or recommendations.

Everglades Ecological Recommendations, Mar. 6th, 2017 (red is new)

Area	Current Condition	Cause(s)	Recommendation	Reasons
WCA-1	Stages decreased −0.08' to −0.12'	Rainfall, ET, management	Operate for dry season conditions and, when possible, restrict recession rates to -0.03' to -0.07' per week. Moderate reversals, when possible.	Retain water for the upcoming dry season while protecting habitat and wildlife and preparing for wading bird breeding season.
WCA-2A	Stages decreased −0.10'	Rainfall, ET, management	Maintain slower recession rates. Retain water and restrict recession rates to less than -0.09' per week.	Protect habitat and wildlife. Support nesting wading birds. Retain water to provide foraging habitat later in the breeding season.
WCA-2B	Stages decreased −0.16'	Rainfall, ET, management	Restrict recession rates to -0.05' to -0.09' per week.	Protect habitat and wildlife. Support nesting wading birds.
WCA-3A NE	Stages decreased −0.12'	Rainfall, ET, management	Restrict recession rates to -0.05' to -0.07' per week to prevent the area from drying out too early for wading bird nesting. Continue moving water through S-150 as possible. Water for northwestern 3A (via the G404) is also desired. Prioritize S-11C over S-11A to get water near the Alley North Colony.	Protect habitat and wildlife. Support nesting wading birds, particularly in Alley North colony. Reduce fire risk as season progresses. Recession rate at gauge 63 (location closest to Alley North wading bird colony) increases from −.07 to −.10 feet/week
WCA-3A NW	Stages decreased −0.10'	Rainfall, ET, management		
Central WCA-3A S	Stages decreased −0.11'	Rainfall, ET, management	Restrict recession rates to -0.05' to -0.09' per week. When flows are changed a gradual reduction is recommended (stepping down over several days).	Keeping depths below 2.5' at gauge 65 is important to allow tree island vegetation to recover from stress of the recent extended inundation duration. Protect habitat, wildlife and support wading bird breeding.
Southern WCA-3A S	Stages decreased −0.10'	Rainfall, ET, management		
WCA-3B	Stages decreased −0.08' to− 0.09'	Rainfall, ET, management	Restrict recession rates to -0.05' to 0.-09' per week.	Protect habitat and wildlife and prepare for wading bird breeding season.
ENP-SRS	Stages decreased −0.11'	ET, rainfall, topography, management	Make discharges to the Park according to the ERTP rainfall plan.	Keep peat wet to promote native habitat and maintain wetland plant and animal communities. Protect habitat and wildlife and prepare for wading bird breeding season.
ENP-CSSS habitats	S-12A, S-12B, S-344, S-343A, S-343B are closed. 100 cfs discharge from S-333	Rainfall, ET, management	Follow rainfall plan for releases and current ERTP guidelines. Follow guidance in C-111 Western Spreader Canal Project operations manual. Care should be taken to avoid overdrying eastern subpopulations C and F.	Future operations need to continue to provide appropriate hydrological and habitat conditions for CSSS. Current and forecasted conditions are conducive for a successful sparrow breeding season. Dry conditions are expected for much of the sparrow breeding season.
Taylor Slough		Rain, ET, inflows	Move water southward as possible	Provide freshwater buffer for ecosystems, maintain low salinity conditions downstream, and maintain slow recession rates.
FB- Salinity		Rain, ET, inflows, wind	Move water southward as possible	Maintain low salinity conditions and prevent early salinity increases.