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, Operations, Engineering and Construction Bureau
Paul Linton, Chief, Operations Section

FROM: SFWMD Staff Environmental Advisory Team

DATE: July 11, 2017

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Weather Conditions and Forecast

Showers and thunderstorms focused south and west today. An upper level low has spun up near the southeast coast and it is expected to drift west-southwest. Instability near the center of the low should help produce showers and thunderstorms south this morning and tonight and steering winds should focus afternoon thunderstorm activity along the west coast. Drier air on the north side of the upper low should suppress shower development over central Florida today and Wednesday and afternoon thunderstorms should be focused west again on Wednesday. Moisture is expected to increase across the southern half of the District bringing scattered shower activity Wednesday night and Thursday. Daytime heating should then generate scattered afternoon thunderstorms over the interior and west Friday and Saturday.

Kissimmee

On Sunday, stage was 0.5 feet below regulation schedule in East Lake Toho, 0.3 feet below regulation schedule in Lake Toho, and 1.0 feet below schedule in Kissimmee-Cypress-Hatchineha (HCH). Over the past week, discharge at S65, S65A, and S65E averaged 392 cfs, 393 cfs, and 915 cfs, respectively. Tuesday morning discharges were ~352 cfs, 437 cfs, and 680 cfs respectively at S65, S65A, and S65E. Dissolved oxygen concentration in the Kissimmee River averaged 3.3 mg/L for the week. Kissimmee River mean floodplain depth on Sunday was 0.30 feet. Recommendations: (July 5, 2017) Increase S65A flow by 150 cfs today to 450 cfs and by another 150 cfs tomorrow. The purpose is to control stage in KCH and Pool A in anticipation of forecast significant rainfall. (July 6, 2017) Hold 450 cfs at S65A due to reduced forecast. Reduced rainfall forecast led to decision to hold 450 cfs at S65A rather than continuing to ramp up discharge.

Lake Okeechobee

Lake stage is 12.44 feet NGVD having increased by 0.04 feet over the past week and 0.77 feet over the past month. Ascension rates over the past two weeks were much slower than they were throughout most of June. The aerial herbicide treatments of a total of 3,500 acres of torpedograss and 1,600 acres of cattail in the Indian Prairie and Moore Haven marshes and Moonshine Bay that began in May have been completed. June chlorophyll *a* data indicated bloom conditions (Chla > 40 μg/L) occurred at five sites (four nearshore and one pelagic), however, seven nearshore sites were too shallow to sample. Four of the five microcystin samples that were collected were below detection. A value of 1.1 μg/L was recorded at KISSR0.0 in the north.

Estuaries

Total discharge to the St. Lucie estuary averaged 624 cfs over the past week (versus 1,062 cfs a week before) with 0 cfs (0%) coming from Lake Okeechobee. Salinities at HR1 and US1 Bridge monitoring stations were higher compared to the week before, and the same at A1A station. The seven-day

average salinity at the US1 Bridge was in the good range for adult oysters (fair last week). Total inflow to the Caloosahatchee estuary averaged 2,116 cfs over the past week (versus 3,457 cfs a week before) with 0 cfs (0%) coming from the Lake. The 30-day moving average surface salinity is 0.3 at Val I-75 and 0.7 at Ft. Myers monitoring stations. Salinity conditions between Val I-75 and Ft. Myers are improving for tape grass. Salinity conditions are in the fair range for adult oysters at the Cape Coral Bridge (conditions are improving), and remain to be in the good range at Shellpoint and the Sanibel Causeway.

Stormwater Treatment Areas

Over the past week, the STAs/FEBs did not receive Lake releases. The total amount of Lake releases sent to the STAs/FEBs in WY2018 (since May 1, 2017) is approximately 15,400 acre-feet. Most STA cells are at or above target depths. Operational restrictions are in place for vegetation rehabilitation in STA-1E. The nest of an Endangered Species Act protected species has been observed in STA-1E and STA-5/6. Due to last month's basin runoff, it is recommended that no Lake releases be sent to the STAs/FEBs this week.

Everglades

Water levels continue their steady decrease in WCA-1 and -2A this past week, and WCA-3A also decreased. All WCAs are at least 0.6 feet above schedule with WCA-2A being the furthest from schedule at 2.02 feet above schedule. Keeping depths below 2.5 feet at gauge 65 is important to moderate the stress to tree islands caused by flooding when durations last longer than 60-90 days. Depth on July 10 at that location was 3.06 feet, and had exceeded 2.5 feet for 24 days. Salinity conditions at the Florida Bay TR site within the mangrove zone continue to improve. Daily average salinities decreased −1 psu over the last week to reach 15 psu. The 30-day moving average changed −4.7 to end the week at 20.9 psu.

Supporting Information

KISSIMMEE BASIN

Kissimmee Basin Rainfall

The Upper Kissimmee Basin received 1.01 inches of rainfall in the past week and the Lower Basin received 0.97 inches (SFWMD Daily Rainfall Report 7/10/2017).

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: **7/11/2017**

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)						
							7/9/17	7/2/17	6/25/17	6/18/17	6/11/17	6/4/17	5/28/17
Lakes Hart and Mary Jane	S62	66	LKMJ	60.0	R	60.0	**0.0**	0.1	0.0	-0.1	0.1	-0.4	-0.1
Lakes Myrtle, Preston, and Joel	S57	13	S57	61.0	R	61.0	**0.0**	0.0	-0.1	0.0	-0.5	-1.1	-0.4
Alligator Chain	S60	0	ALLI	62.7	R	63.2	**-0.5**	-0.4	-0.5	-0.6	-0.9	-1.1	-0.3
Lake Gentry	S63	0	LKGT	60.4	R	61.0	**-0.6**	-0.5	-0.7	-0.9	-1.2	-1.3	0.0
East Lake Toho	S59	103	TOHOE	56.0	R	56.5	**-0.5**	-0.5	-0.6	-0.5	-0.8	-1.2	-0.1
Lake Toho	S61	467	TOHOW, S61	53.2	R	53.5	**-0.3**	-0.3	-0.6	-0.5	-0.8	-1.1	-0.1
Lakes Kissimmee, Cypress, and Hatchineha	S65	392	KUB011, LKIS5B	50.0	R	51.0	**-1.0**	-1.0	-1.3	-1.6	-2.3	-2.6	-0.9

* 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: **7/11/2017**

Metric	Location	Sunday's 1-day average	Weekly Average**									
			7/9/17	7/2/17	6/25/17	6/18/17	6/11/17	6/4/17	5/28/17	5/21/17	5/14/17	5/7/17
Discharge (cfs)	S-65	359	**392**	407	455	20	37	145	190	237	234	258
Discharge (cfs)	S-65A	438	**393**	564	1291	477	175	126	121	160	167	184
Discharge (cfs)	S-65D****	662	**875**	1715	1426	584	307	174	157	182	198	252
Discharge (cfs)	S-65E****	657	**915**	1698	1462	643	350	161	159	182	173	260
DO concentration (mg/L)***	Phase I river channel	3.9	**3.3**	0.7	0.5	3.5	5.2	7.2	7.9	7.7	8.0	7.4
Mean depth (feet)*	Phase I floodplain	0.30	**0.37**	0.99	0.90	0.27	0.13	0.05	0.05	0.05	0.05	0.05

* 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 manual sondes at PC62 and PC33; telemetry sondes have been taken offline.

**** 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
7/6/2017	Hold 450 cfs at S65A due to reduced forecast.	Reduced-rainfall forecast led to decision to hold 450 cfs at S65A rather than continuing to ramp up.	Implemented	KB Ops
7/5/2017	Increase S65A flow by 150 cfs today to 450 cfs and by another 150 cfs tomorrow.	Control stage in KCH and Pool A in anticipation of forecast significant rainfall; begin discharge rampup in anticipation of forecast rainfall.	Implemented	KB Ops
6/28/2017	Reduce S65A discharge by a maximum of 150 cfs per day until 300 cfs is reached.	Allow KCH stage to rise before transitioning to 2017 Wet Season discharge plan; facilitate DO recovery in the Kissimmee River by reducing depth in the river channel.	Implemented	KB Ops
6/26/2017	Hold 800 cfs at S65A until further notice.	Maintain reduced discharge to allow stages in KRR project area to decline to facilitate DO recovery.	Implemented	KB Ops
6/22/2017	Reduce discharge by 150 cfs each day on Thursday 6/22, Friday 6/23, Saturday 6/24, and Sunday 6/25. After the Sunday reduction hold at approximately 800 cfs through Monday when new DO data should be available to help guide next steps.	Attempt to allow Kissimmee River dissolved oxygen concentration to rise.	Implemented	KB Ops
6/20/2017	Maintain 1400 cfs at S65A as KCH stage continues to rise. Supplement declining S65A basin runoff by increasing discharge at S65 as needed.	Transition from current operations to 2017 Wet Season discharge plan.	Implemented	KB Ops, SFWMD Water Management
6/15/2017	Attempt to slow the rates of stage rise in Lakes Toho and East Toho by increasing discharge from S59 into Toho and S61 into KCH.	Slow rates of rise in Lakes Toho and East Toho.	Implemented	KB Ops, SFWMD Water Management
6/15/2017	Increase discharge from S65A as necessary using the discharge rates of change table in Figure 8a.	Lower stage in Pool A following rainfall directly over the S65A Basin.	Implemented	SFWMD Water Management, KB Ops
6/13/2017	No new recommendations.			
6/6/2017	No new recommendations.			
5/30/2017	No new recommendations.			
5/22/2017	No new recommendations.			
5/15/2017	Reduce discharge at S65/S65A by 40-50 cfs	Reduce rate of stage decline in KCH while maintaining discharge to the Kissimmee River.	Implemented	KB Ops
5/9/2017	No new recommendations.			
5/3/2017	Reduce discharge at S65/S65A by 50 cfs	Reduce rate of stage decline in KCH		SFWMD Water Management/KB Ops
4/25/2017	Reduce discharge at S65/S65A by 50 cfs	Reduce rate of stage decline in KCH	Implemented	SFWMD Water Management/KB Ops
4/17/2017	No new recommendations.			
4/11/2017	No new recommendations.			
3/30/2017	Reduce discharge at S-59 and S-61 so that stage in these lakes declines to respective low pools on May 31; reduce discharge at S-65 to 300 cfs.	Reduce rate of stage decline in East Toho, Toho, and KCH.	Implemented	SFWMD Water Management/KB Ops
3/23/2017	Reduce S-65 discharge by 75 cfs per day through 3/25 for a target discharge of ~500 cfs.	Reduce rate of stage decline in KCH.	Implemented	SFWMD Water Management/KB Ops
3/16/2017	Reduce S-65 and S-65A discharge by 150 cfs.	Reduce rate of stage decline in KCH.	Implemented	SFWMD Water Management/KB Ops

KCOL Hydrographs (through Sunday midnight)

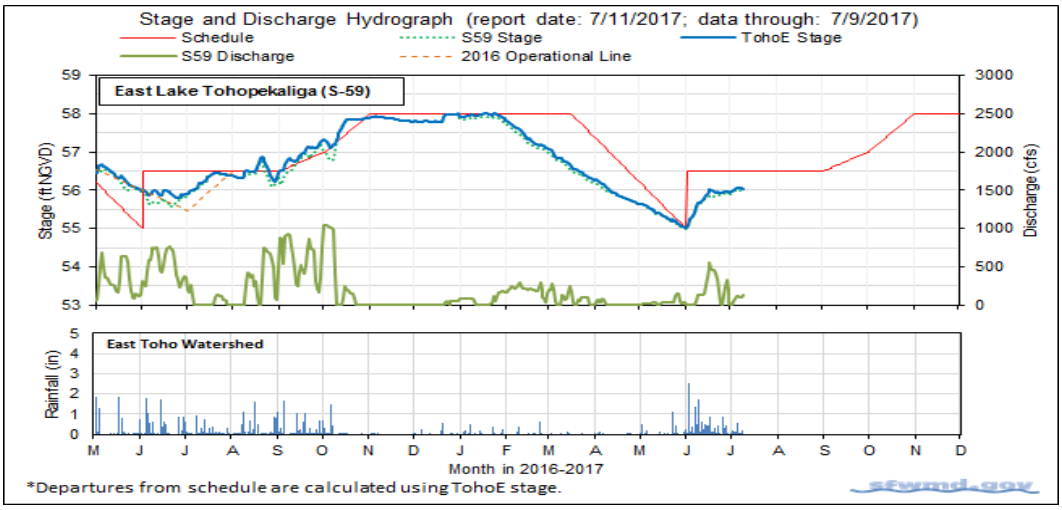


Figure 1.

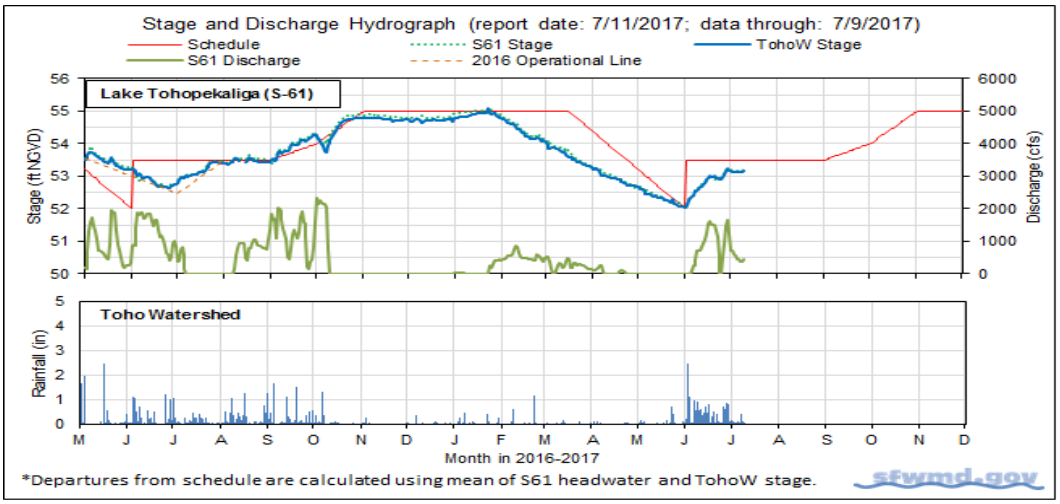


Figure 2.

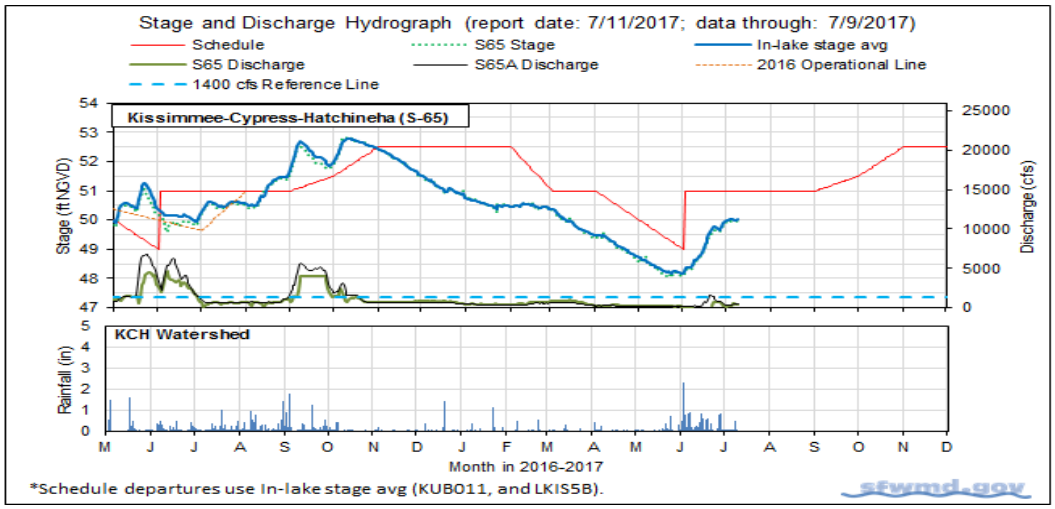


Figure 3.

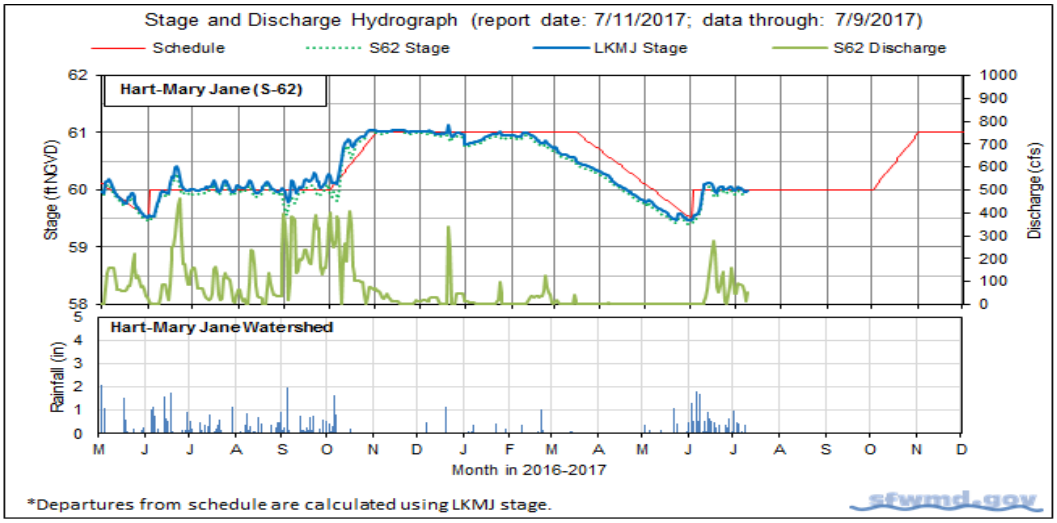


Figure 4.

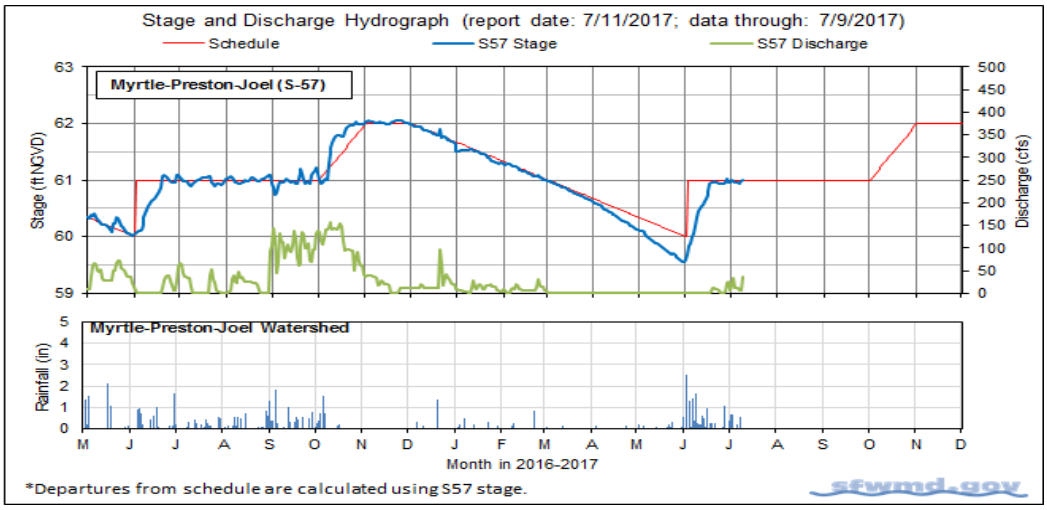


Figure 5.

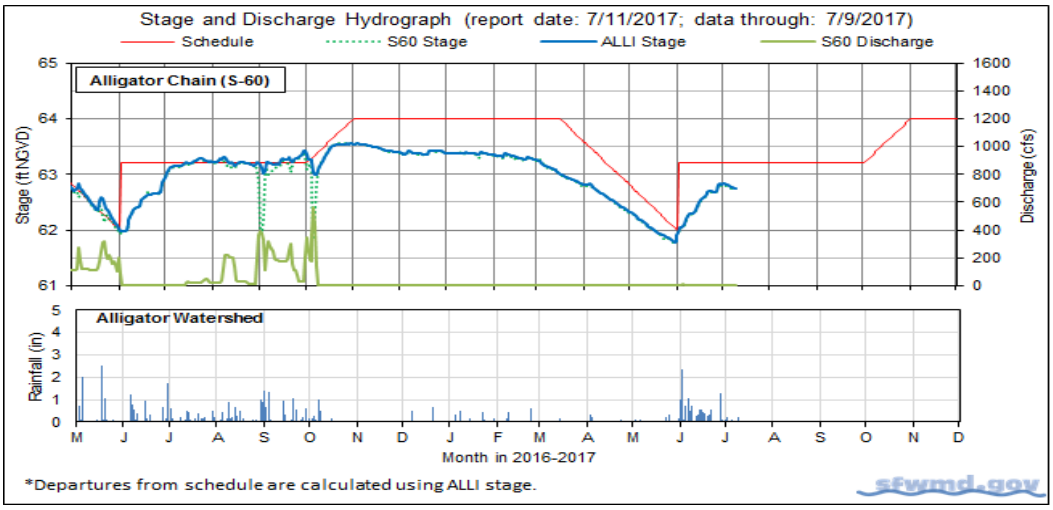


Figure 6.

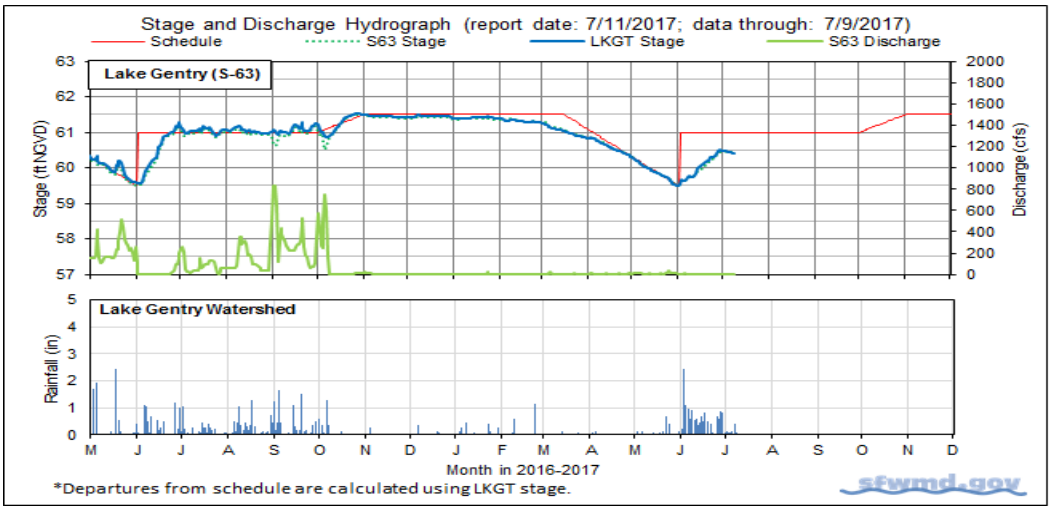


Figure 7.

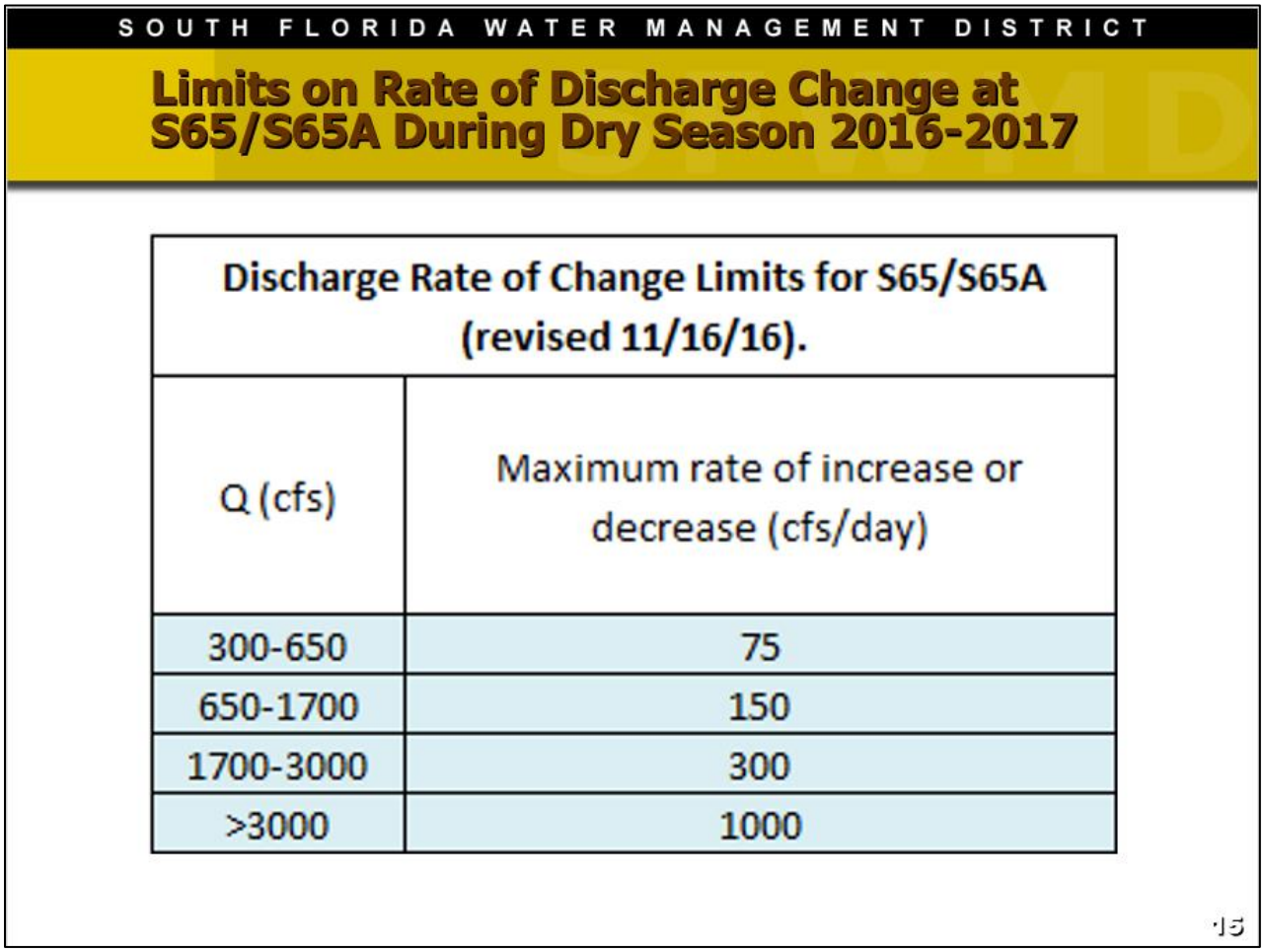


Figure 8. Limits on rate of discharge change at S65/S65A for the 2016-2017 Dry Season.

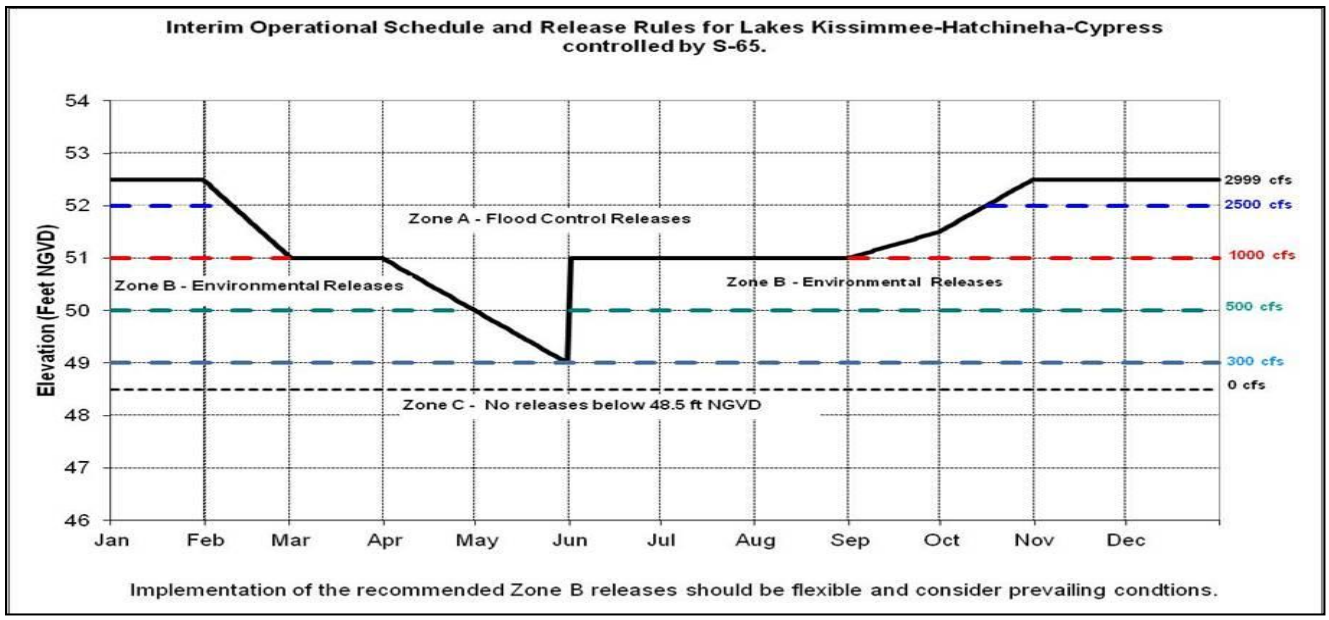


Figure 9. Interim operations schedule for S-65. The discharge schedule shown to the right has not been used in recent years or in Wet Season 2015.

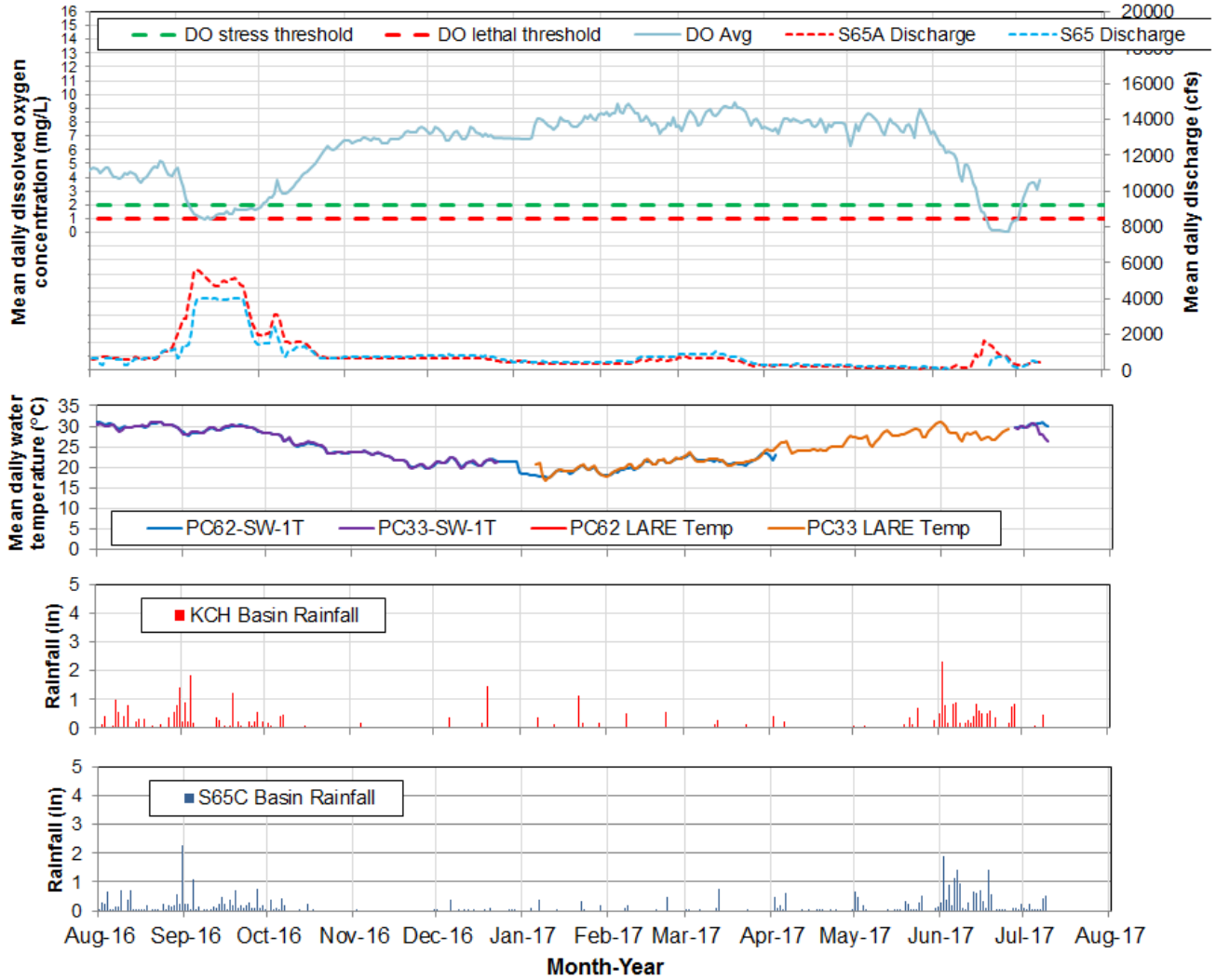


Figure 10. Mean daily Dissolved Oxygen, discharge, temperature and rainfall in the Phase I river channel.

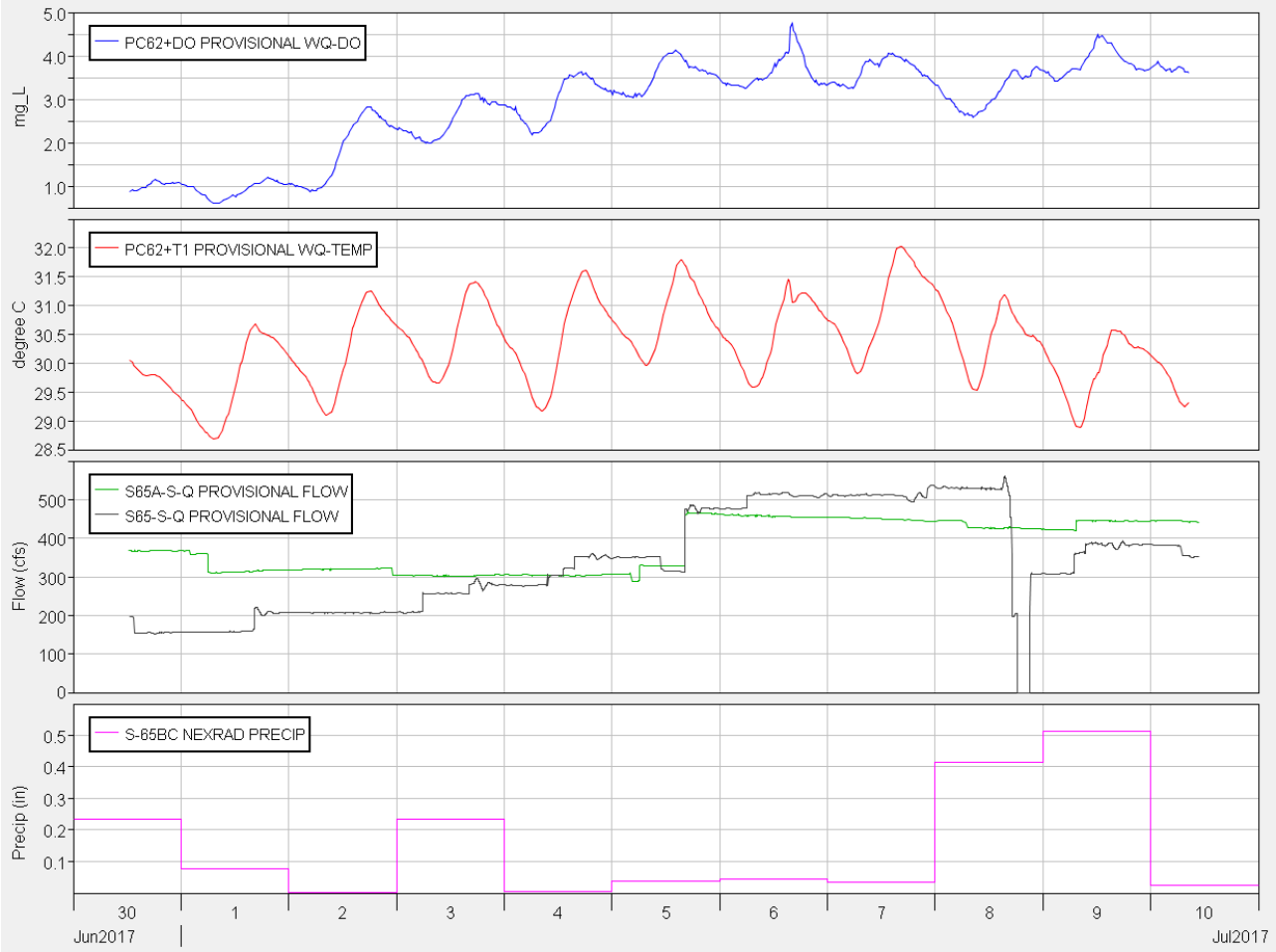


Figure 11. Phase I river channel dissolved oxygen and water temperature (measured at 15 minute intervals) and Pool BC daily rainfall.

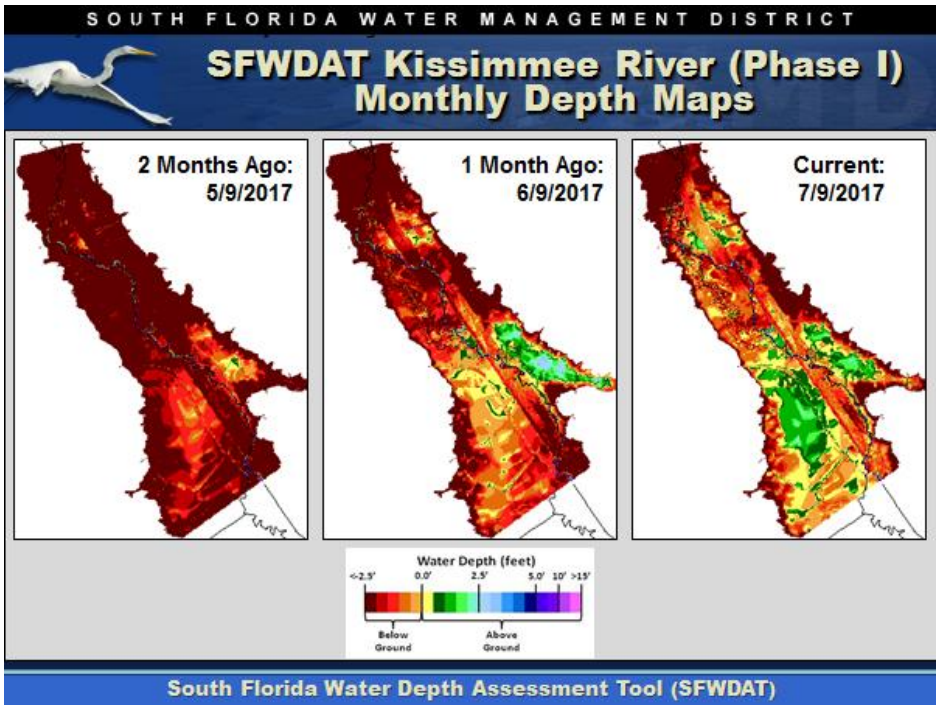
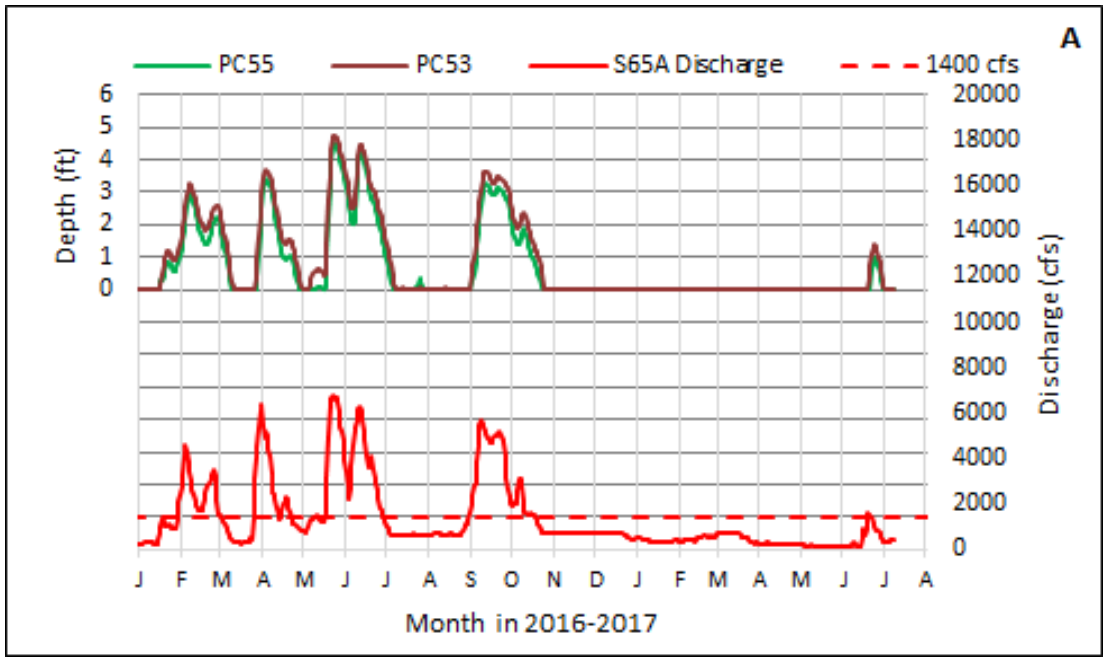
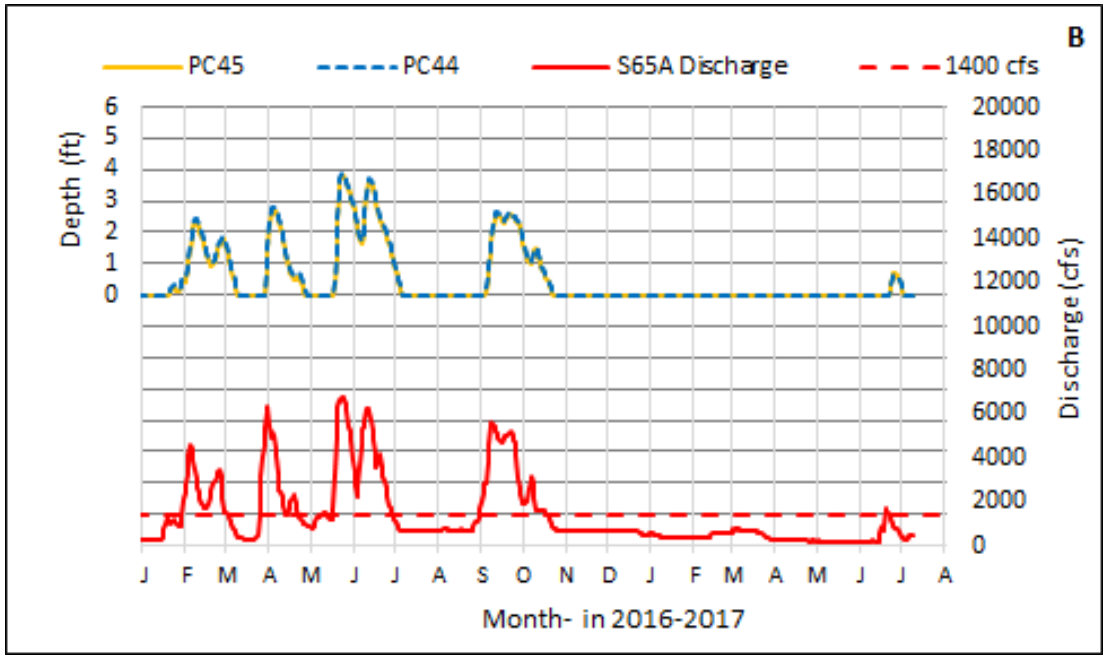


Figure 12. Phase I area floodplain water depths for this week, one month ago, and two months ago. Note that the WDAT color-coding has been modified to accommodate greater water depths; these maps are not directly comparable to Kissimmee Basin WDAT maps published prior to Jan. 16, 2012.





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

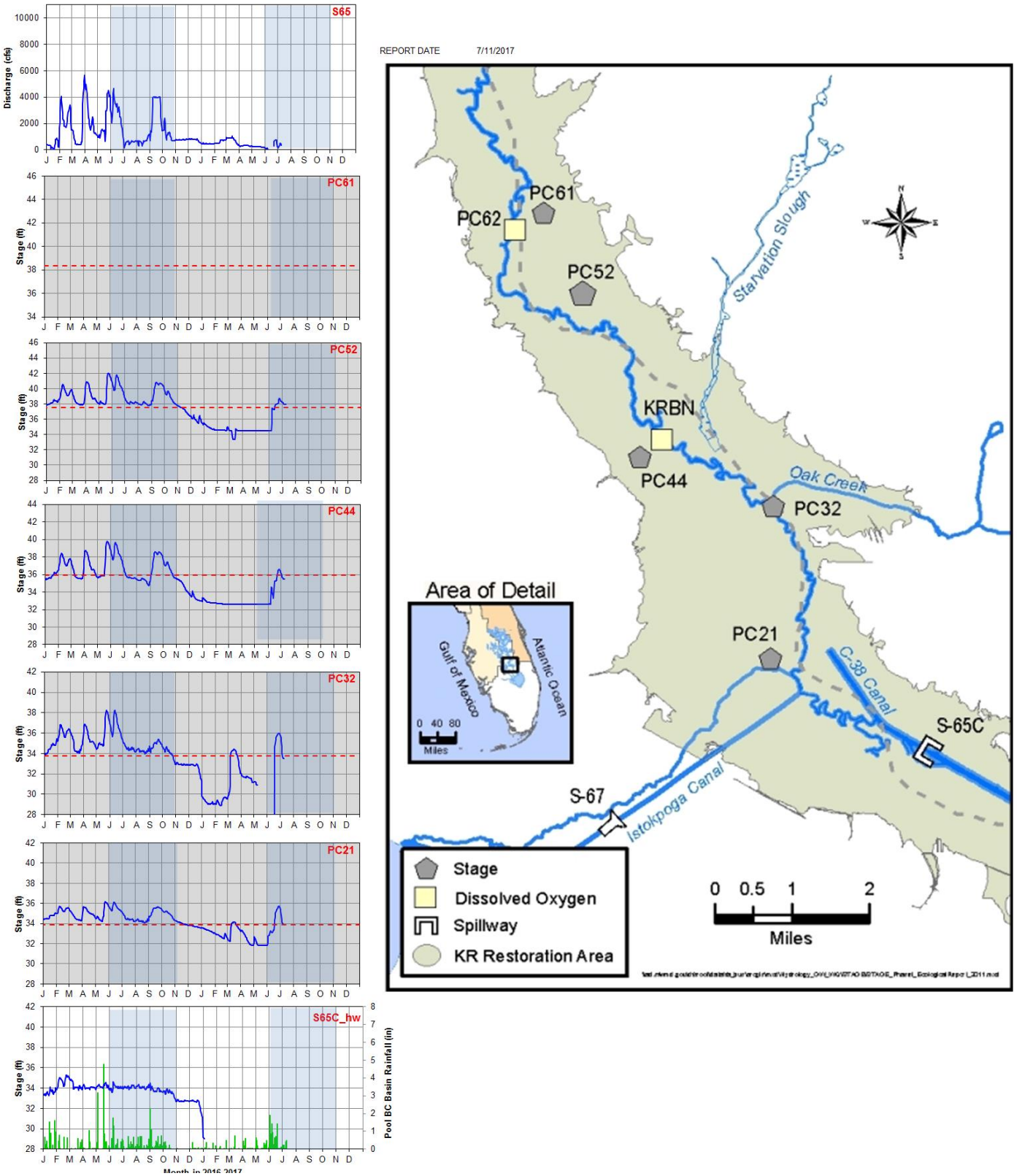


Figure 13. Discharge at S65, stages at five monitoring stations in the Phase I area of the Kissimmee River floodplain, and headwater stage at S65-C since January 1, 2015. The most recent data (~2 weeks) are provisional real-time data from SFWMD DualTrend; previous data are from SFWMD DB-HYDRO (validated).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

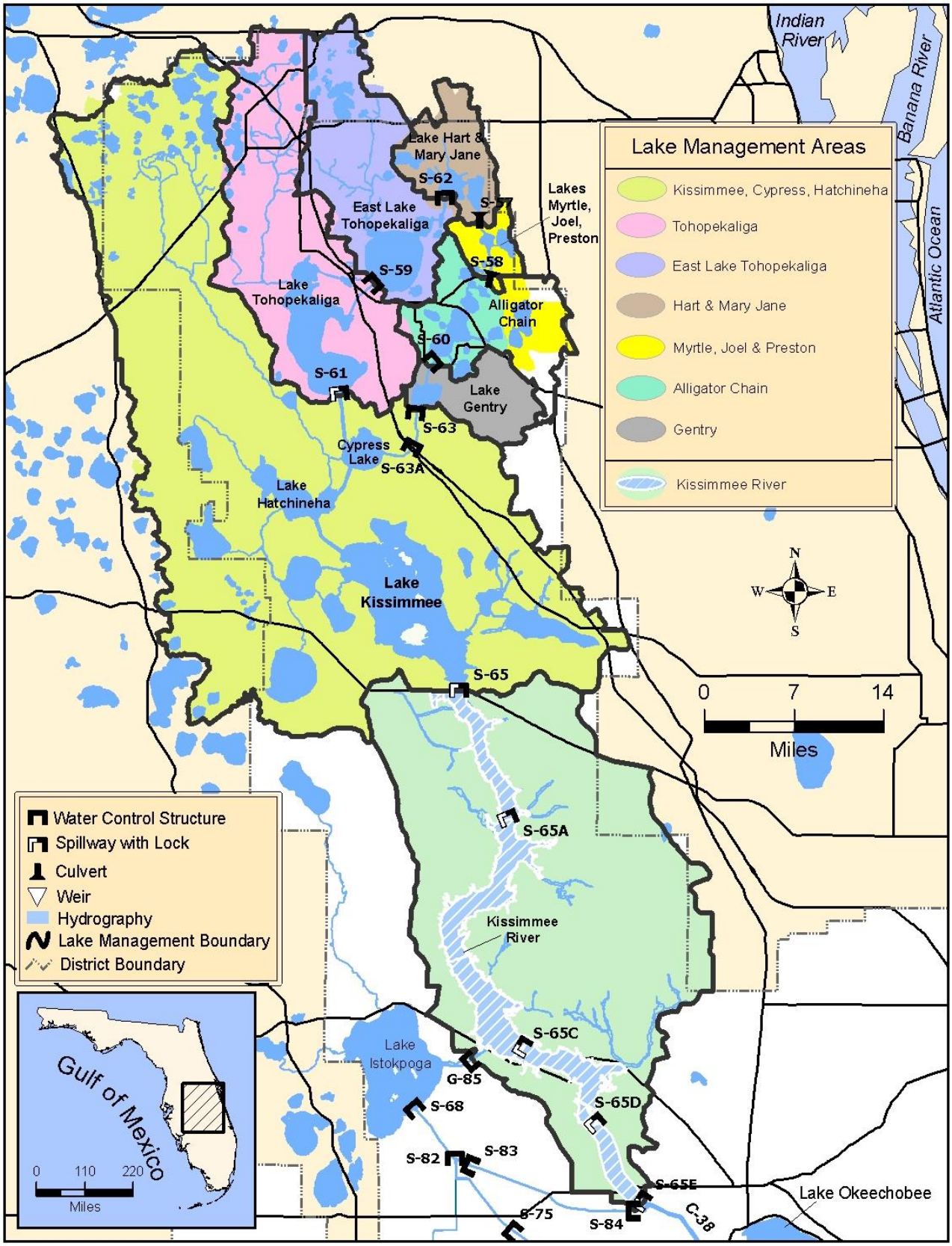


Figure 14. The Kissimmee Basin

LAKE OKEECHOBEE

According to the USACE web site, Lake Okeechobee stage is at 12.44 feet NGVD for the period ending at midnight on July 9, 2017. This value is based on the use of four interior Lake stations (L001, L005, L006 and LZ40) and four perimeter stations (S308, S352, S4 and S133). Lake stage increased by 0.04 feet over the past week and is 0.77 feet higher than it was a month ago and 2.42 feet lower than it was a year ago (Figure 1). The Lake is currently in the Beneficial Use sub-band (Figure 2). According to RAINDAR, 0.60 inches of rain fell directly over the Lake during the past seven days (Figure 3). Similar or greater amounts of rain fell in most of the watershed except for the lower east coast and a few pockets north of the Lake which received less amounts of rainfall.

Based on USACE reported values, current Lake inflow is approximately 1,483 cfs as detailed below.

Structure	Flow cfs
S65E	0
S65EX1	643
S154	0
S84 & 84X	231
S71	45
S72	0
C5 (Nicodemus slough dispersed storage)	0
S191	0
S133 PUMPS	0
S127 PUMPS	0
S129 PUMPS	0
S131 PUMPS	0
S135 PUMPS	0
Fisheating Creek	564
S2 Pumps	0
S3 Pumps	0
S4 Pumps	0

Current Lake outflow is actually negative, totaling -627 cfs. Approximately 253 cfs is entering the Lake through S308 and 375 cfs is entering from the L8 canal through Culvert 10A. Approximately 2 cfs is exiting through S77 and no flow is being directed south through S351, S352 and S354. The corrected evapotranspiration value based on the L006 weather platform solar radiation data increased slightly from 1.23 inches the previous week to 1.40 inches for this past week.

Change in elevation equivalents and average weekly flows (midnight July 3, 2017 to midnight July 9, 2017) for major structures are presented in Figure 4.

June chlorophyll and microcystin data collected on June 20 - 21 indicated the presence of blooms at three of the 10 nearshore sampling sites and one of the nine pelagic sites (Figure 5). However, seven nearshore sites were not sampled because of low water depths. One of the five microcystin sites that was sampled had a value above the analytical limit of detection. One site in the north (LZ2) was not sampled.

The aerial herbicide treatments of torpedo grass and cattail in the Indian Prairie and Moore Haven marshes and Moonshine Bay that began in May have been completed. The Florida Fish and Wildlife Conservation Commission (FWC) treated 1,500 acres of torpedograss and 100 acres of cattail in the

Indian Prairie marsh and 1,500 acres of cattail in Moonshine Bay. The District treated an additional 1,900 acres of torpedograss in the Moore Haven marsh (Figure 6).

The most recent satellite imagery (July 4 and July 9) indicates that the bloom potential seems to be intensifying in the northeastern and western regions (Figure 7).

Water Management Recommendations

The Lake is 12.44 feet NGVD having increased by 0.04 feet over the past week. Ascension rates over the past two weeks (average of 0.08 feet per week) were much slower than they were throughout most of June (average of >0.25 feet per week).

The submerged and emergent vegetation communities in the nearshore region have likely benefited from low water levels this dry season, helping to offset impacts from high water levels in February and October of 2016. Slow-to-moderate ascension rates will enable this new growth to keep up with rising water levels.

Activities that maintain a moderate ascension rate (<0.5 feet per month) in Lake Okeechobee would be ecologically beneficial at this time and would be protective of the Lake's emergent wetland and submerged aquatic flora and its associated fauna.

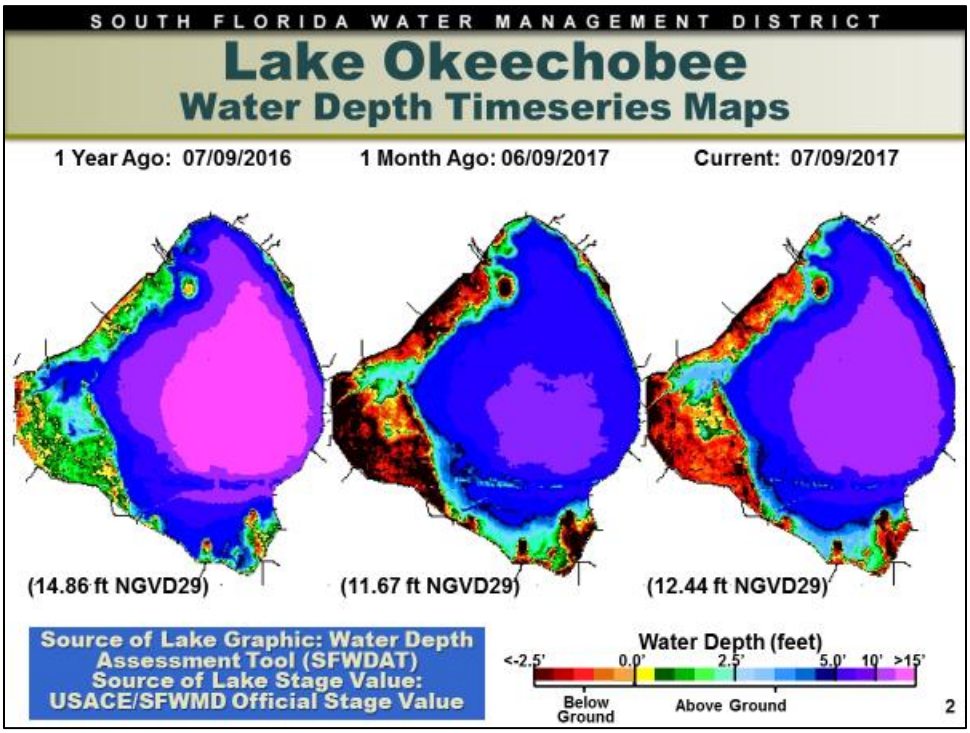


Figure 1

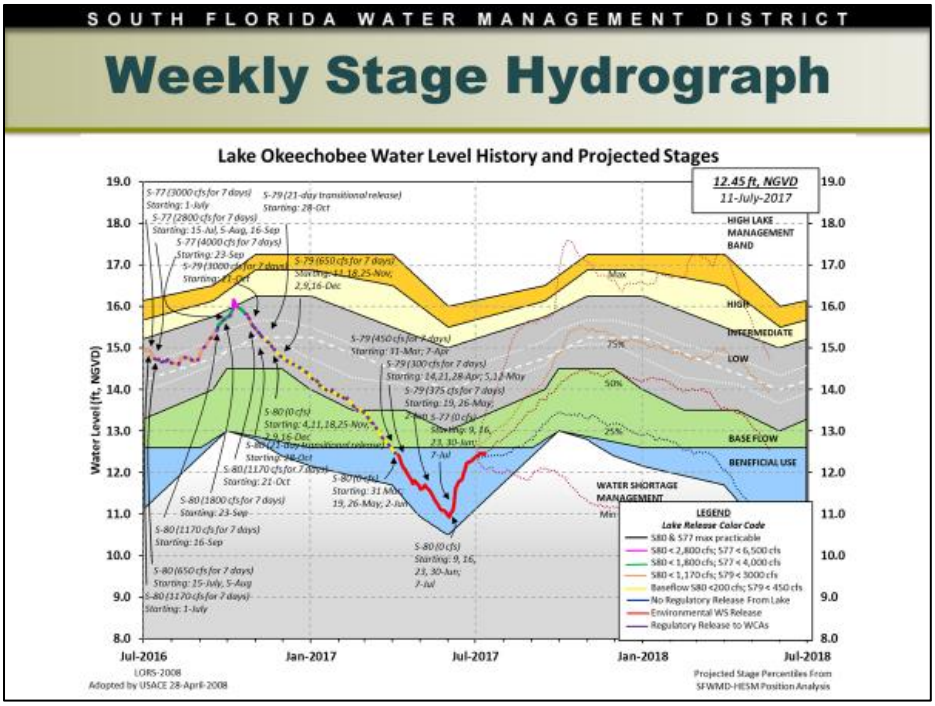


Figure 2

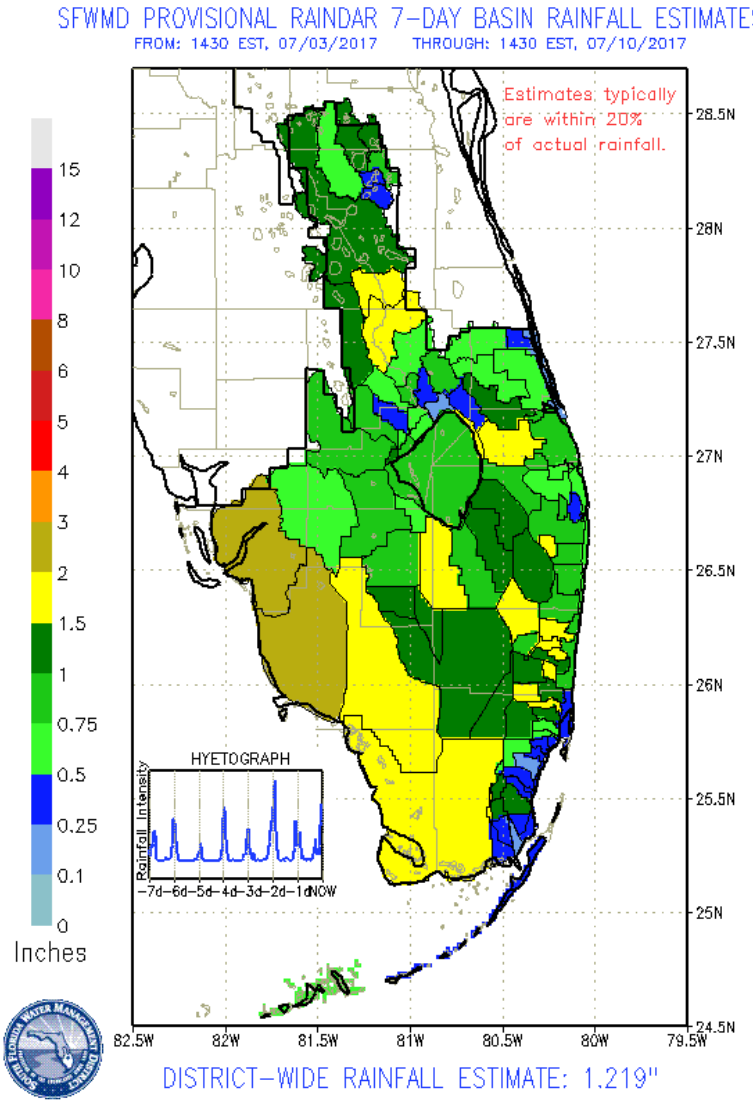


Figure 3

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Weekly Total Flows As Elevation Changes

Week of July 3 – July 9

INFLOWS	Avg Daily Flow cfs	Equivalent Depth Week Total (in)
S65E & S65EX1	915	0.4
S71 & 72	28	0.0
S84 & 84X	399	0.2
Fisheating Creek	526	0.2
S154	0	0.0
S191	22	0.0
S133 P	0	0.0
S127 P	0	0.0
S129 P	10	0.0
S131 P	0	0.0
S135 P	52	0.0
S2 P	355	0.2
S3 P	4	0.0
S4 P	11	0.0
C5	0	0.0
Rainfall	1664	0.6
Total	**3986**	**1.7**

OUTFLOWS	Avg Daily Flow cfs	Equivalent Depth Week Total (in)
S77	87	0.0
S308	-254	-0.1
S351	0	0.0
S352	0	0.0
S354	0	0.0
L8	-429	-0.2
ET	3202	1.4
Total	**2606**	**1.2**

*Data are provisional

Figure 4

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Lake Okeechobee Water Quality

June 20 - 21, 2017		
Site	Chlorophyll a (ug/L)	Microcystin (ug/L)
Nearshore Stations		
FEBIN	Not Sampled	
FEBOUT	Not Sampled	
KISSR0.0	49.6	1.1
LZ2	Not Sampled	
LZ25A	Not Sampled	
PALMOUT	46.2	
PELBAY3	Not Sampled	
POLE3S	Not Sampled	
POLESOUT	69.2	0.2
RITTAE2	Not Sampled	
Pelagic Stations		
L001	21.4	
L004	11.5	
L005	55.0	0.2
L006	6.7	
L007	3.6	
L008	14.6	
LZ30	6.8	0.2
LZ40	9.1	
CLV10A	11.6	0.2

Figure 5

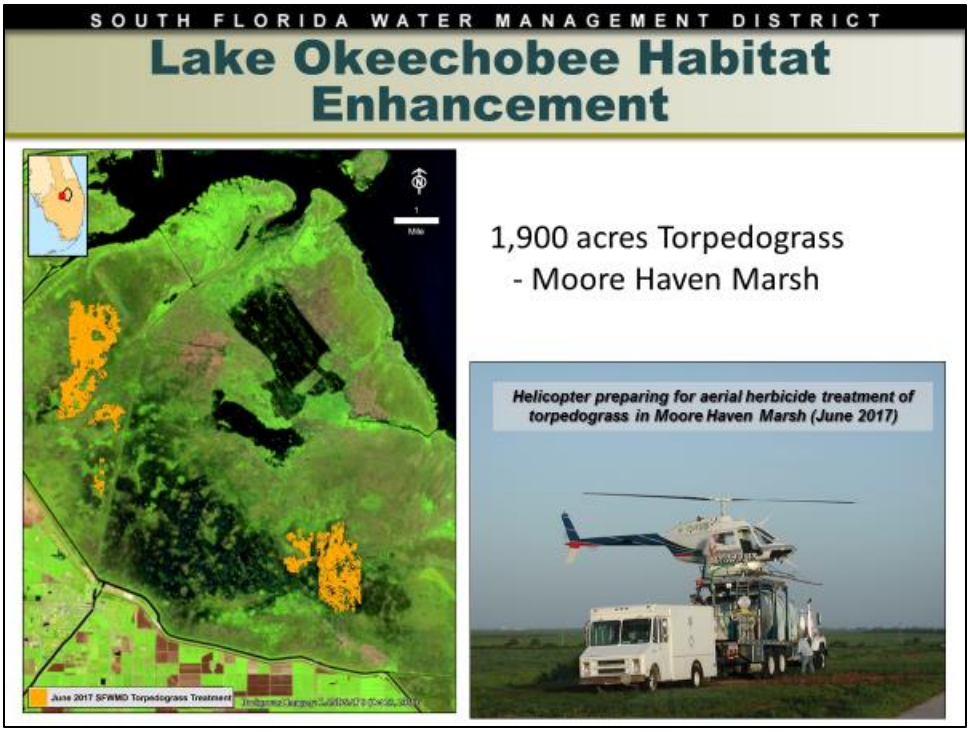


Figure 6

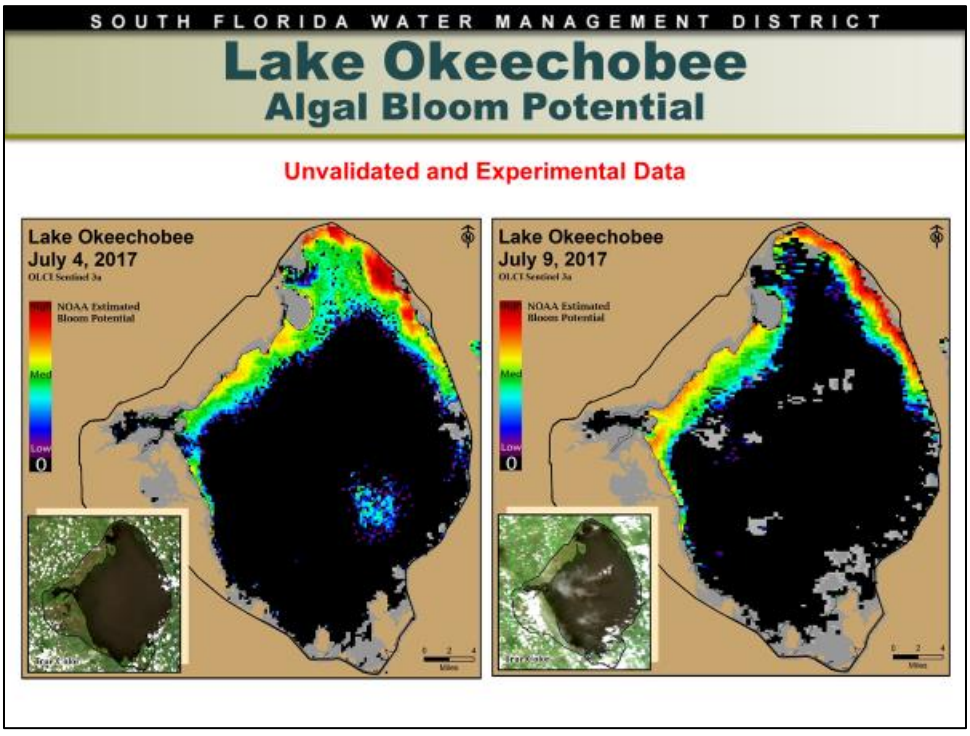


Figure 7

Lake Istokpoga

Lake Istokpoga stage is 38.20 feet NGVD as of midnight July 9, 2017 and is currently 0.05 feet below its low pool regulation schedule of 38.25 feet NGVD (Figure 8). Average flows into the Lake from Josephine creek over the past week was 557 cfs. No data were reported for Arbuckle creek. Average discharge from S68 and S68X this past week was 360 cfs, an increase from the previous week's flow

of 203 cfs. According to RAINDAR, 1.21 inches of rain fell directly over Lake Istokpoga during the past seven days.

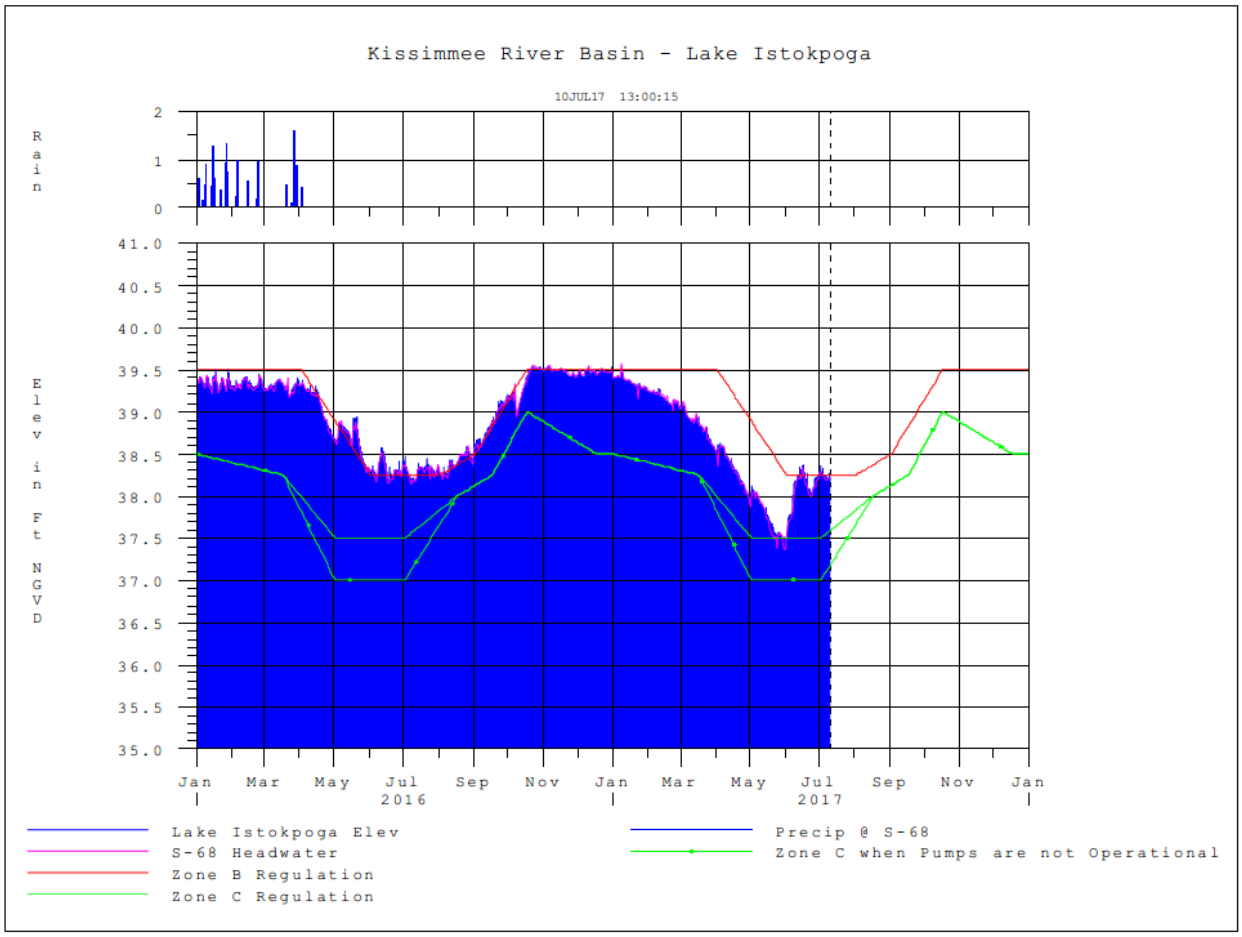


Figure 8

ESTUARIES

St. Lucie Estuary

Over the past week, provisional flows averaged about 0 cfs at S-80, 250 cfs downstream of S-308 flowing into Lake Okeechobee, 91 cfs at S-49 on C-24, 149 cfs at S-97 on C-23, and 142 cfs from Ten Mile Creek at the Gordy Road Structure. Average inflow from tidal basin tributaries is estimated to be 242 cfs (Figures 1 and 2). Total inflow averaged about 624 cfs last week and 1,583 cfs over last month.

Over the past week in the estuary, salinity increased to downstream of US1 Bridge and remained about the same at A1A Bridge (Table 1, Figures 3 and 4). The seven-day moving average salinity of the water column at the US1 Bridge is about 11.5. Salinity conditions in the middle estuary are in the good range for the adult eastern oysters.

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)	**3.8** (2.5)	**9.4** (8.3)	NA[1]
US1 Bridge	**10.0** (8.7)	**13.0** (12.0)	10.0-26.0
A1A Bridge	**24.1** (24.3)	**26.0** (26.4)	NA[1]

[1]Envelope not applicable

Caloosahatchee Estuary

During the past week, provisional flows averaged approximately 40 cfs at S-77, 105 cfs at S-78, and 860 cfs at S-79. Average inflow from tidal basin tributaries is estimated to be 1,256 cfs (Figures 5 & 6). Total inflow averaged 2,116 cfs last week and 4,478 cfs over last month.

Over the past week in the estuary, salinity remained the same to Ft. Myers Yacht Basin and increased downstream (Table 2, Figures 7 and 8). The seven-day average salinity values are within the fair range for adult oysters at Cape Coral, and within the good range at Shell Point and at Sanibel (Figure 9). The 30-day moving average surface salinity is 0.3 at Val I-75 and 0.7 at Ft. Myers. Salinity conditions between Val I-75 and Ft. Myers are improving for tape grass.

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)	**0.3** (0.3)	**0.3** (0.3)	NA[1]
*Val I75	**0.3** (0.3)	**0.3** (0.3)	0.0-5.0[2]
Ft. Myers Yacht Basin	**0.4** (0.4)	**0.5** (0.4)	NA
Cape Coral	**5.2** (4.1)	**6.8** (6.6)	10.0-30.0
Shell Point	**17.7** (15.0)	**19.1** (17.8)	10.0-30.0
Sanibel	**27.2** (27.1)	**EM**[3] (26.5)	10.0-30.0

[1]Envelope not applicable, [2]Envelope is based on a 30-day average, and [3]Equipment Malfunction.
*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.

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)	0.12 – 7.18	4.87 – 14.10	1.67 – 11.18
Dissolved Oxygen (mg/l)	1.75 – 3.37	2.40 – 5.41	No Data

The Florida Fish and Wildlife Research Institute reported on July 7, 2017, that *Karenia brevis*, the Florida red tide organism, was not present in samples collected from Lee County.

Water Management Recommendations

Lake stage is in the Beneficial Use sub-band of 2008 LORS. The 2008 LORS/Adaptive Protocols recommend no S-77 releases unless the Governing Board recommends otherwise. Given the current estuarine conditions, there are no ecological benefits associated with additional releases from Lake Okeechobee.

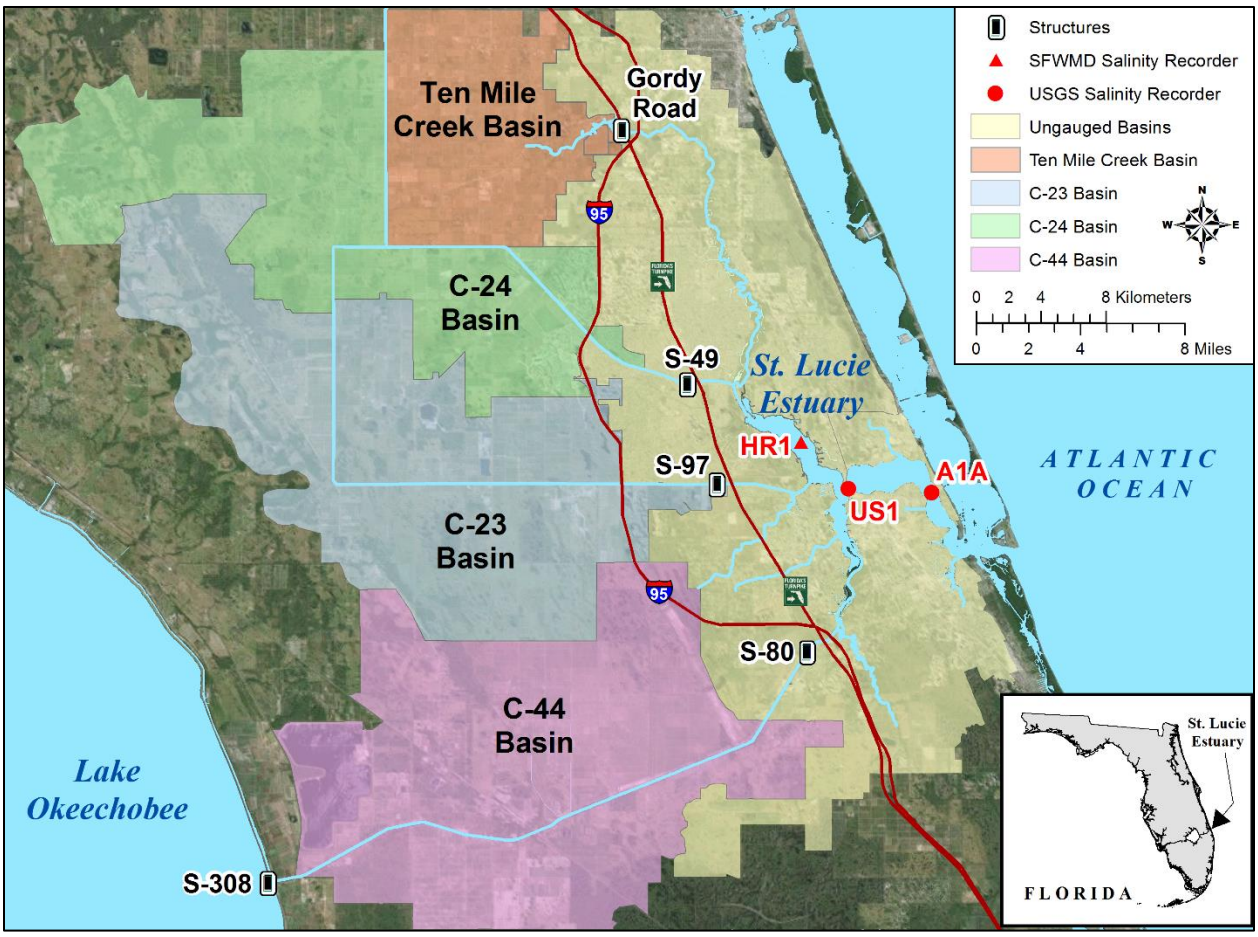


Figure 1. Basins, water control structures, and salinity monitoring for the St. Lucie Estuary.

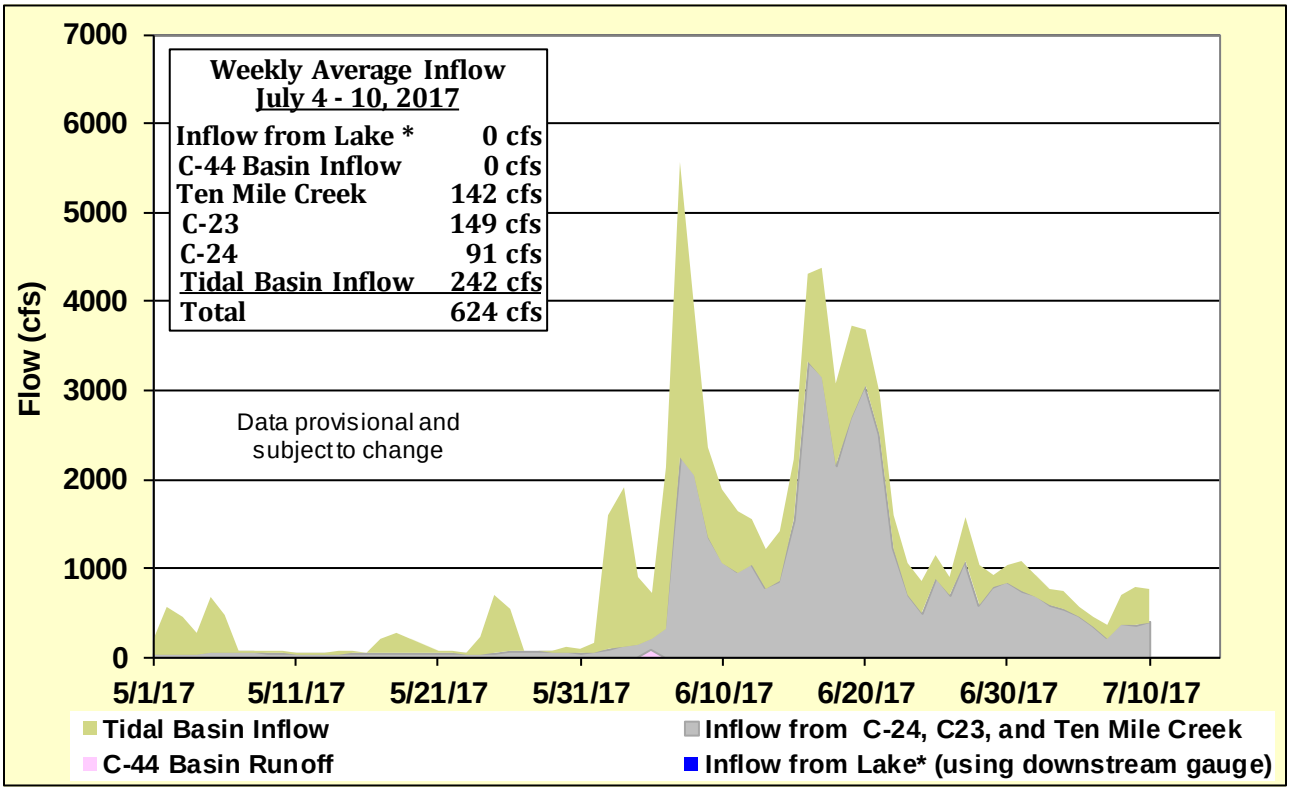


Figure 2. Estimated surface freshwater inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and tidal basins into the St. Lucie Estuary.

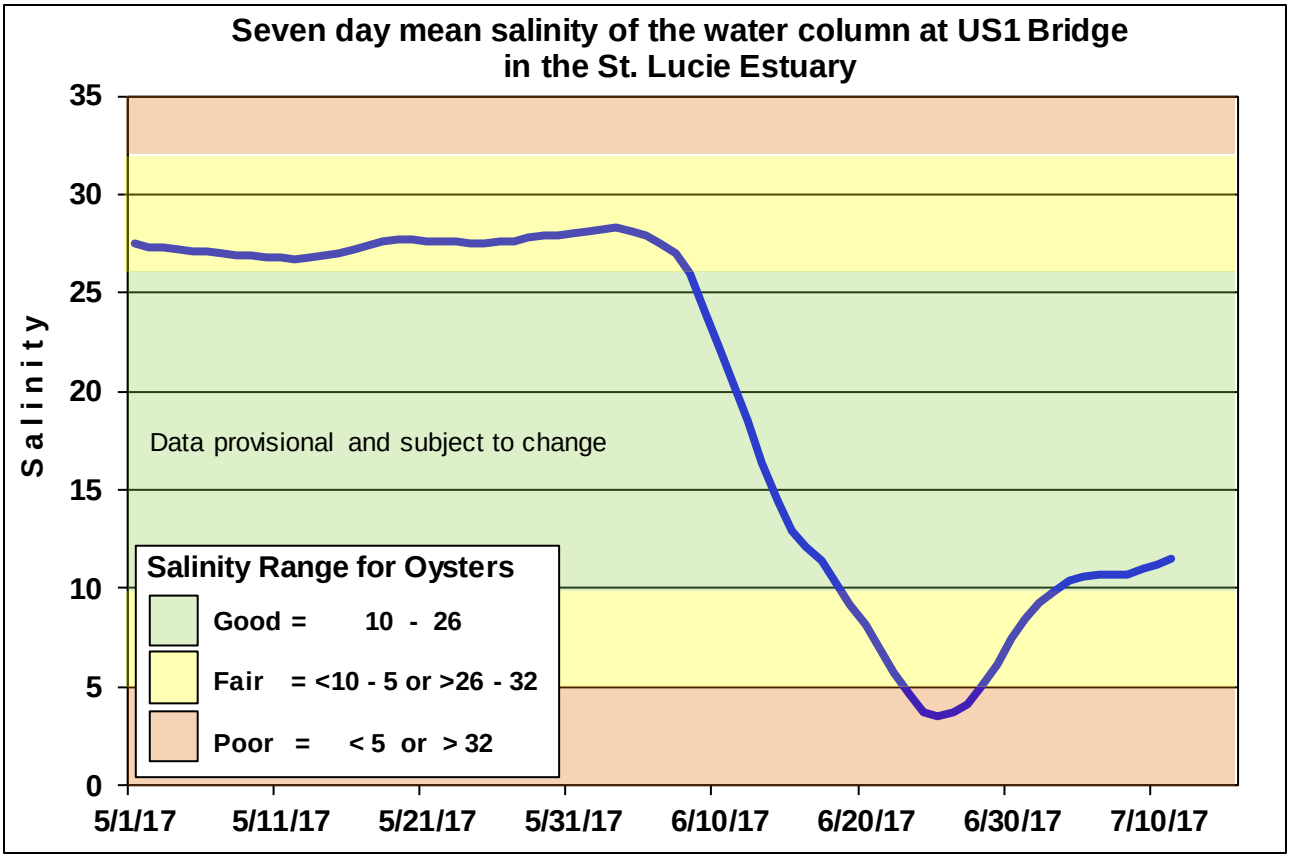


Figure 3. Seven-day mean salinity of the water column at the U.S. Highway 1 Bridge.

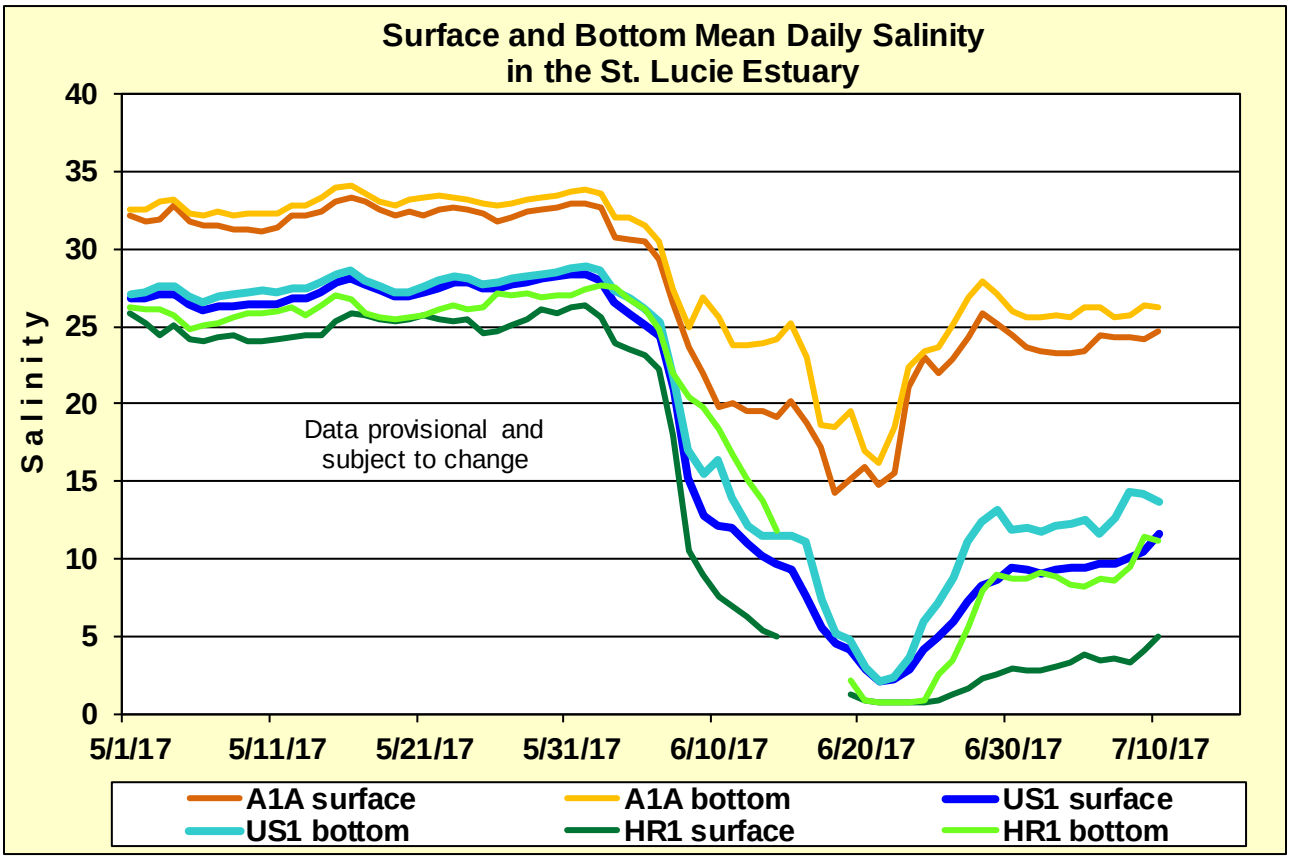


Figure 4. Daily mean salinity at the A1A, US1 and estimated HR1 stations.

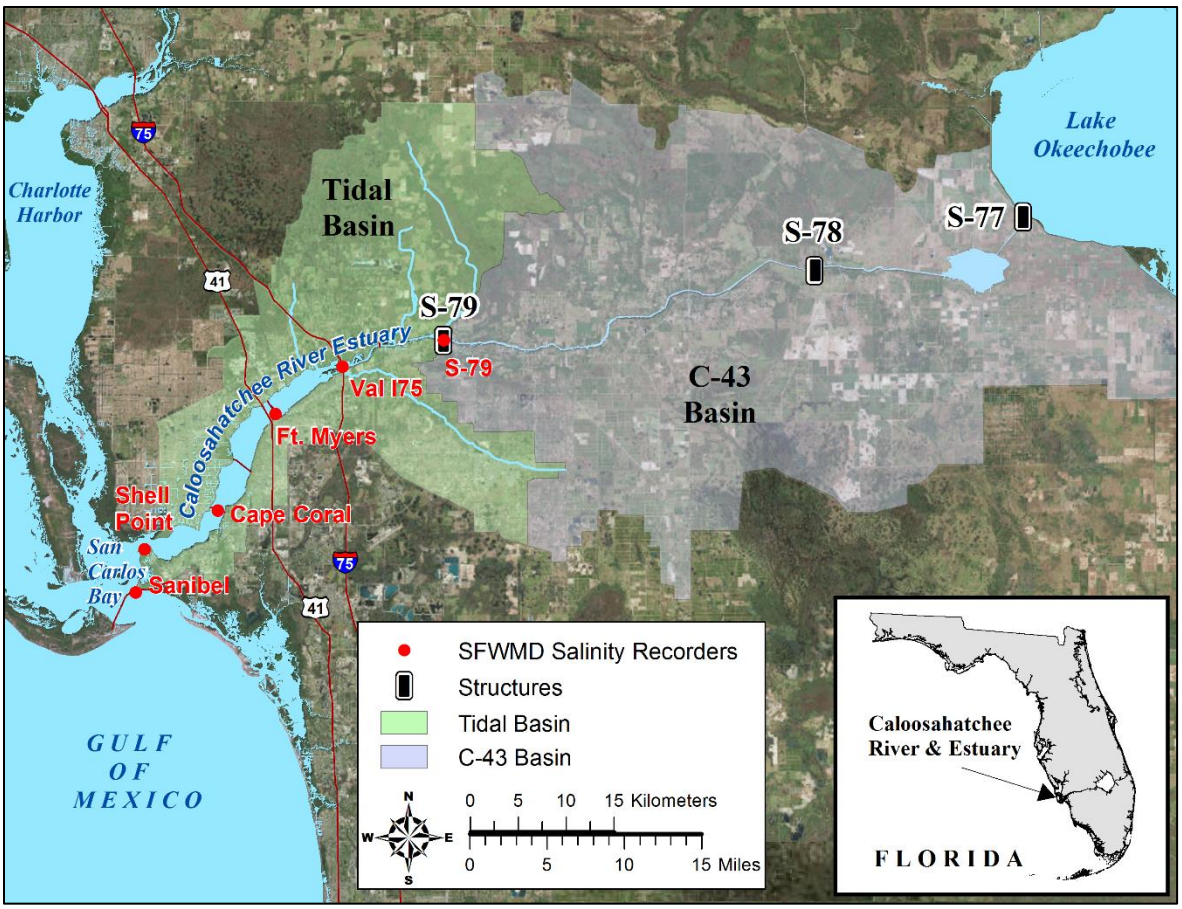


Figure 5. Basins, water control structures, and salinity monitoring for the Caloosahatchee Estuary.

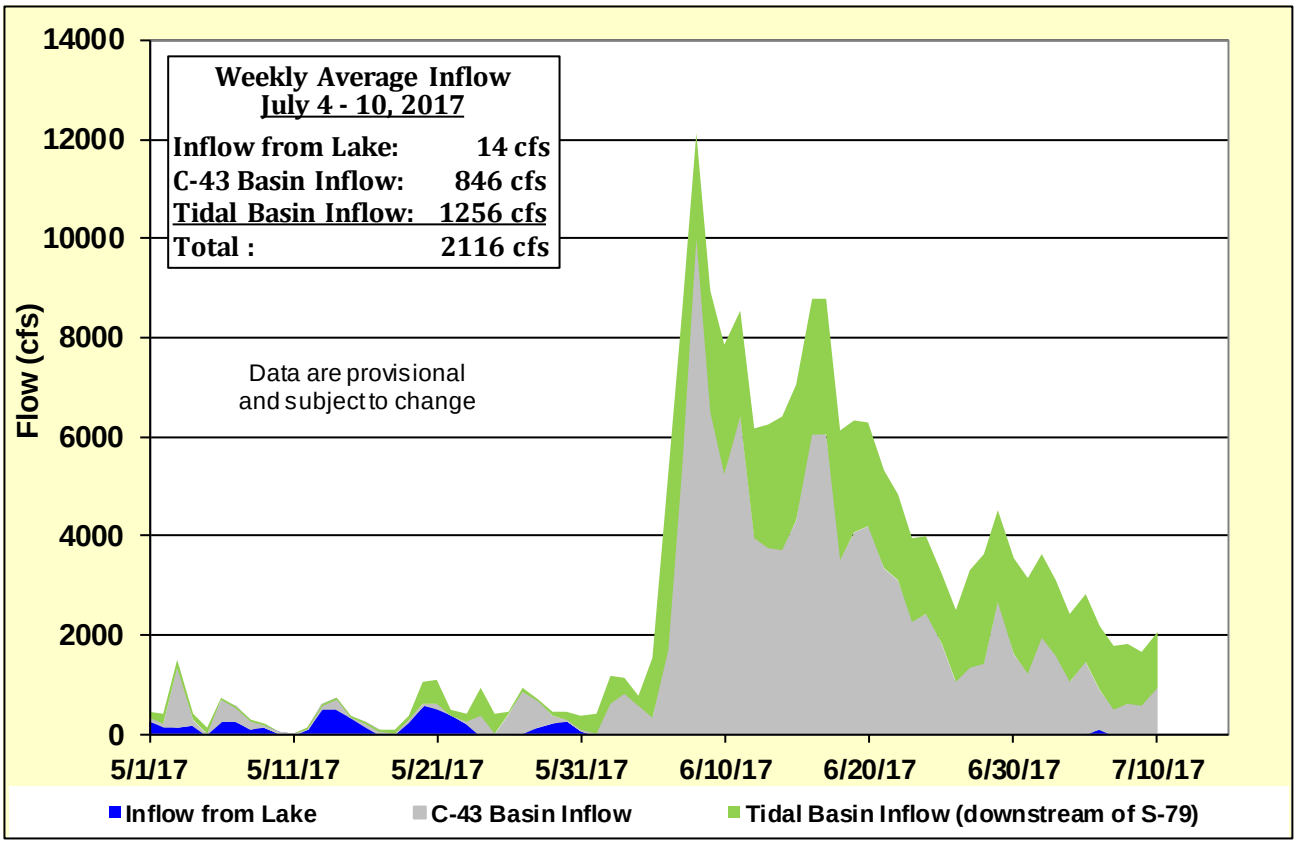
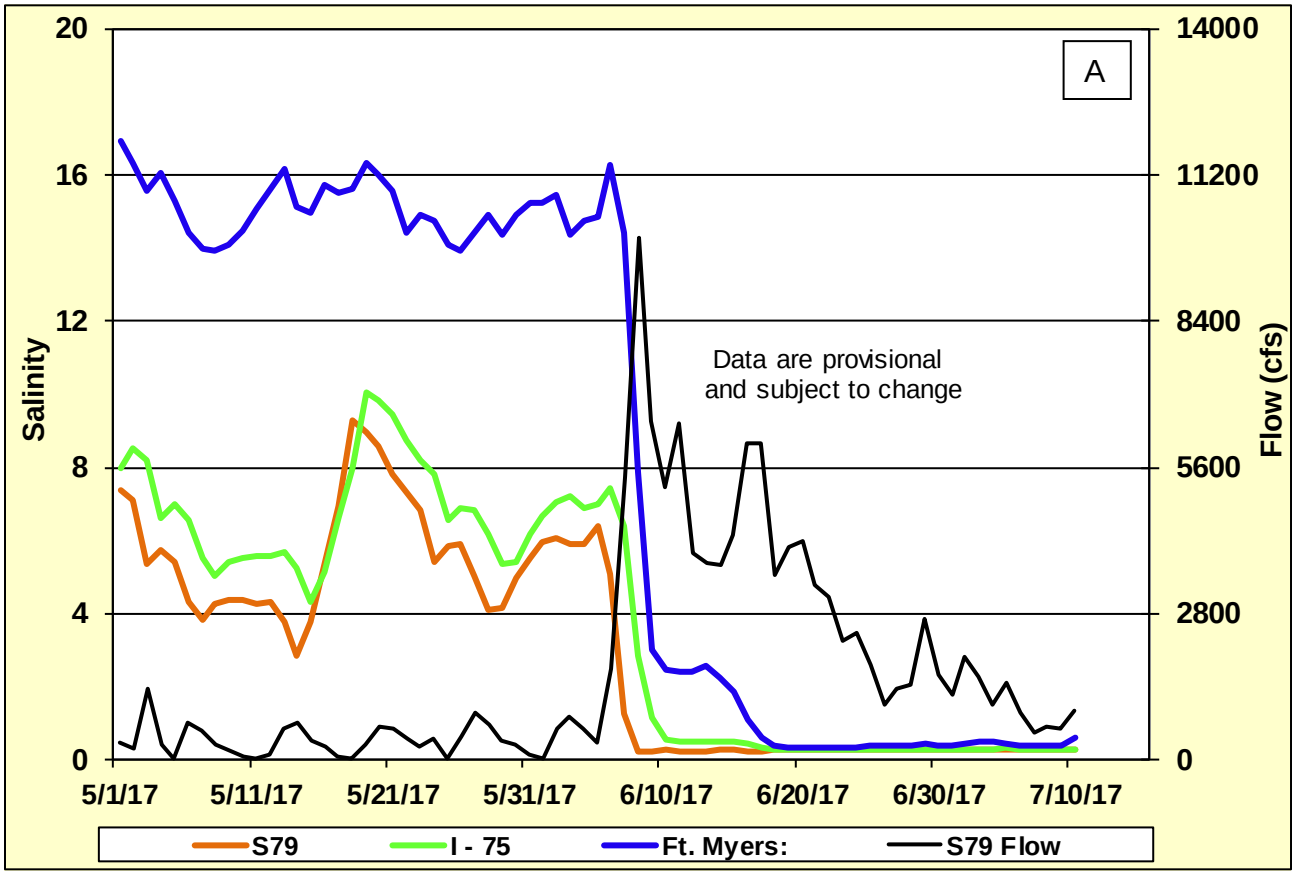


Figure 6. Freshwater inflows from Lake Okeechobee, runoff from the C-43 basin, and tributaries in the tidal basin into the Caloosahatchee River Estuary.



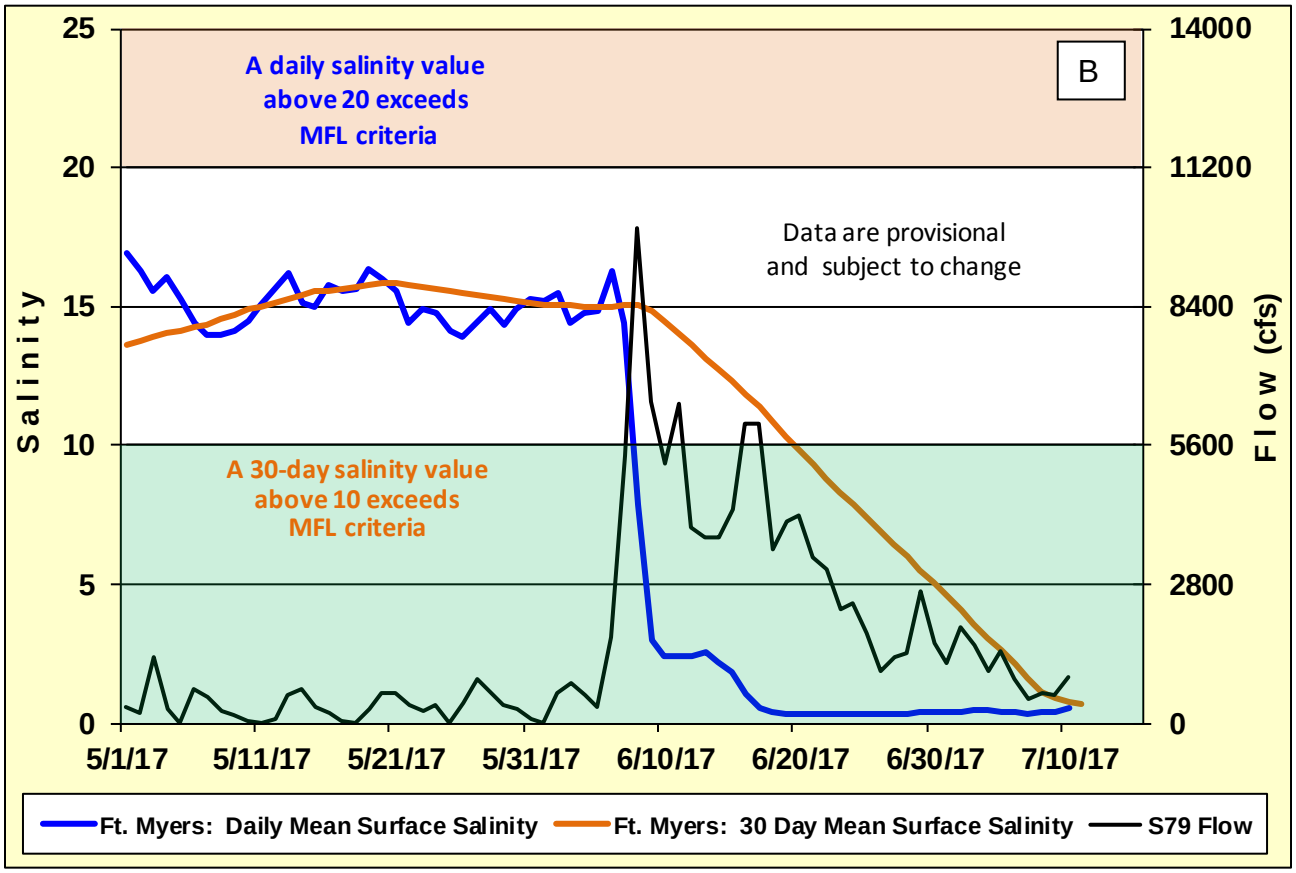


Figure 7. Daily mean flows at S-79 and salinity at upper estuary monitoring stations (A) and 30-day moving average salinity at Ft. Myers (B).

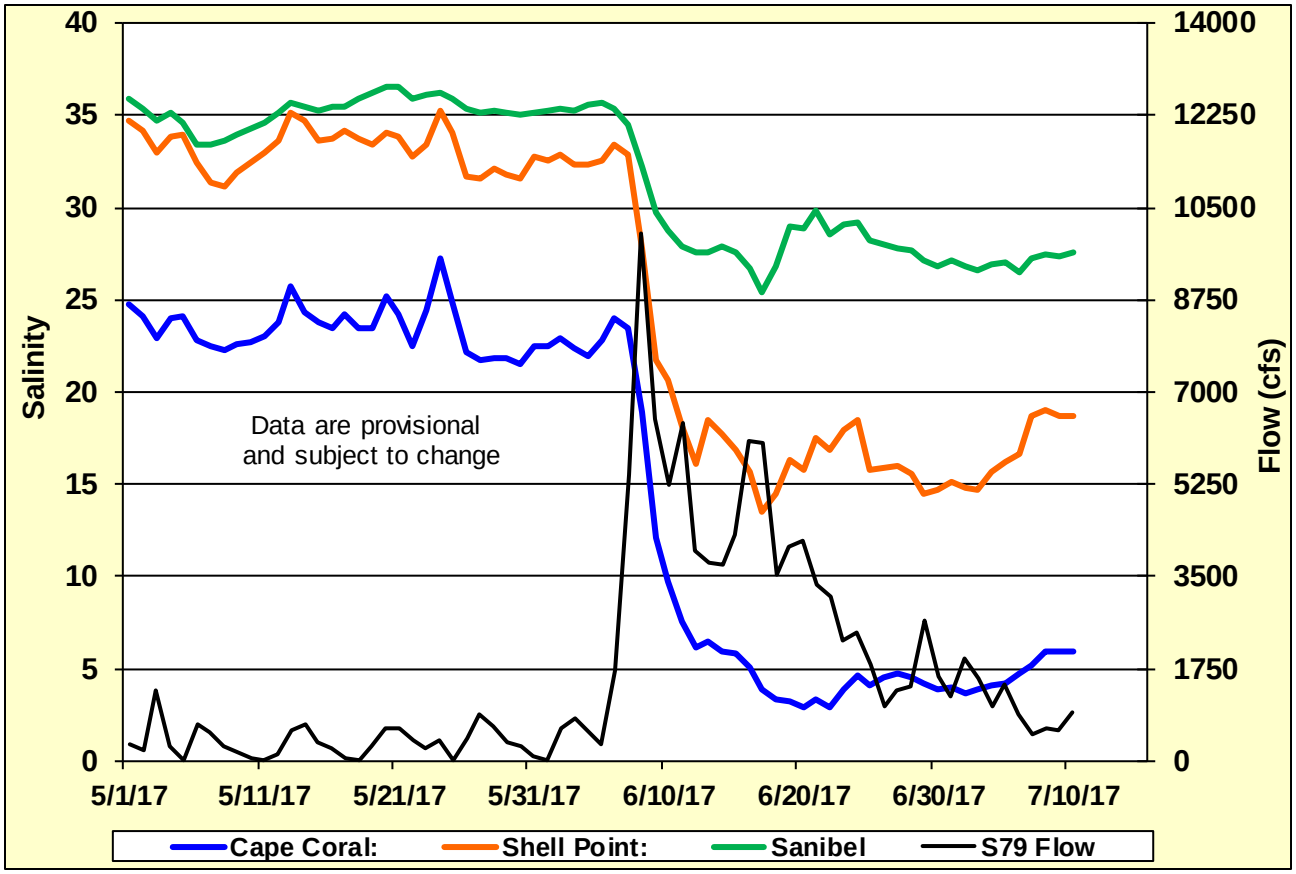


Figure 8. Daily mean flows at S-79 and salinity at lower estuary stations.

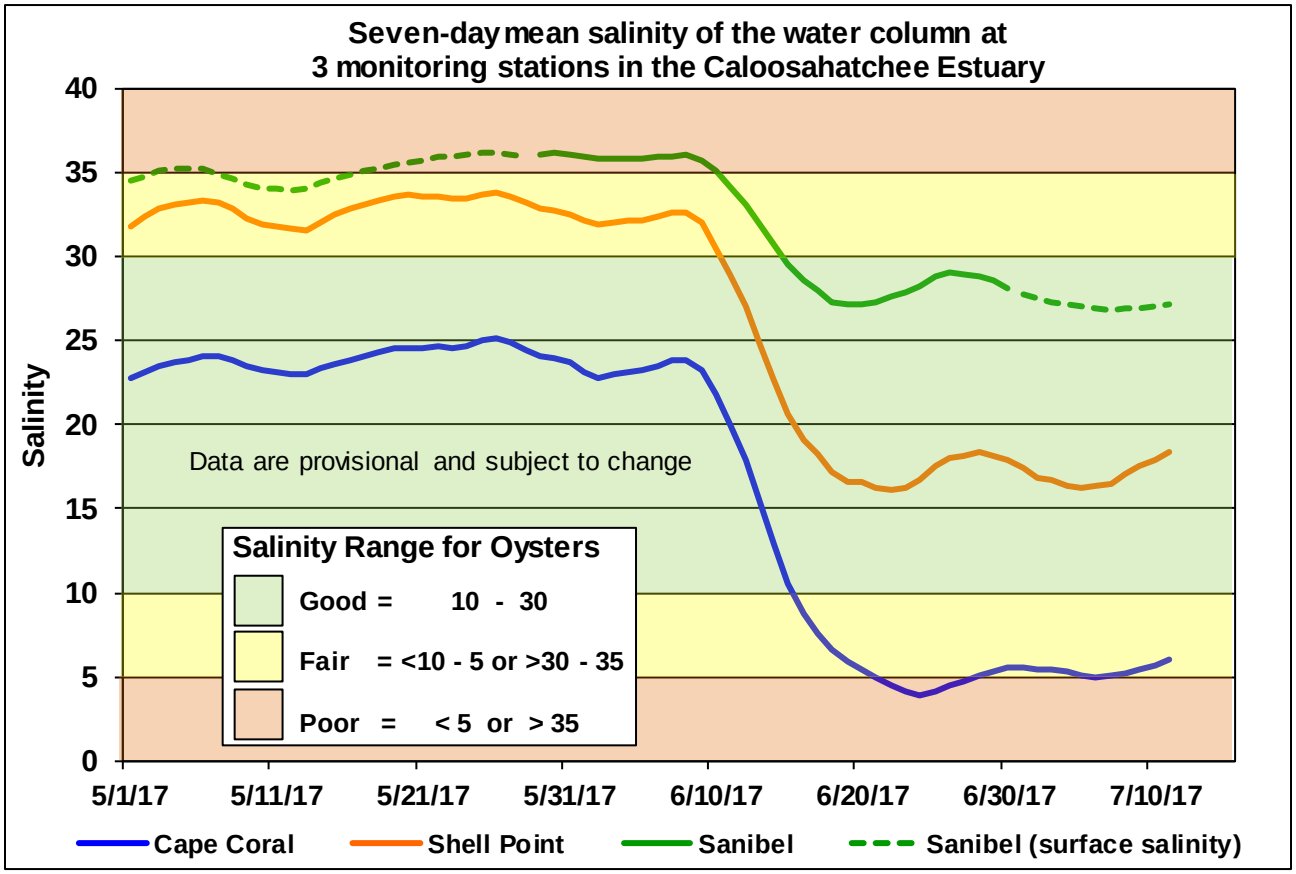
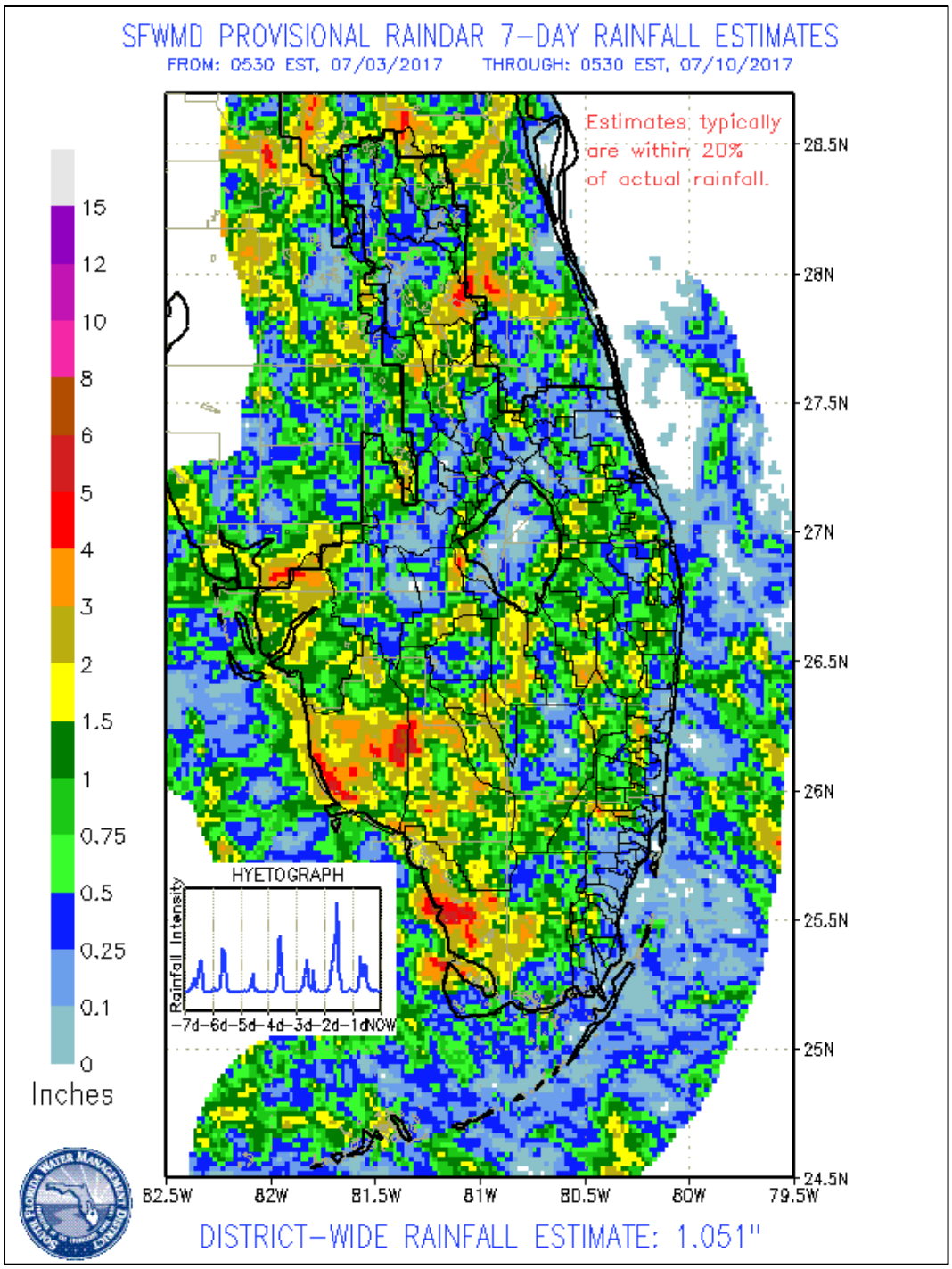


Figure 9. Seven-day mean salinity at Cape Coral Bridge, Shell Point and Sanibel Bridge monitoring stations.

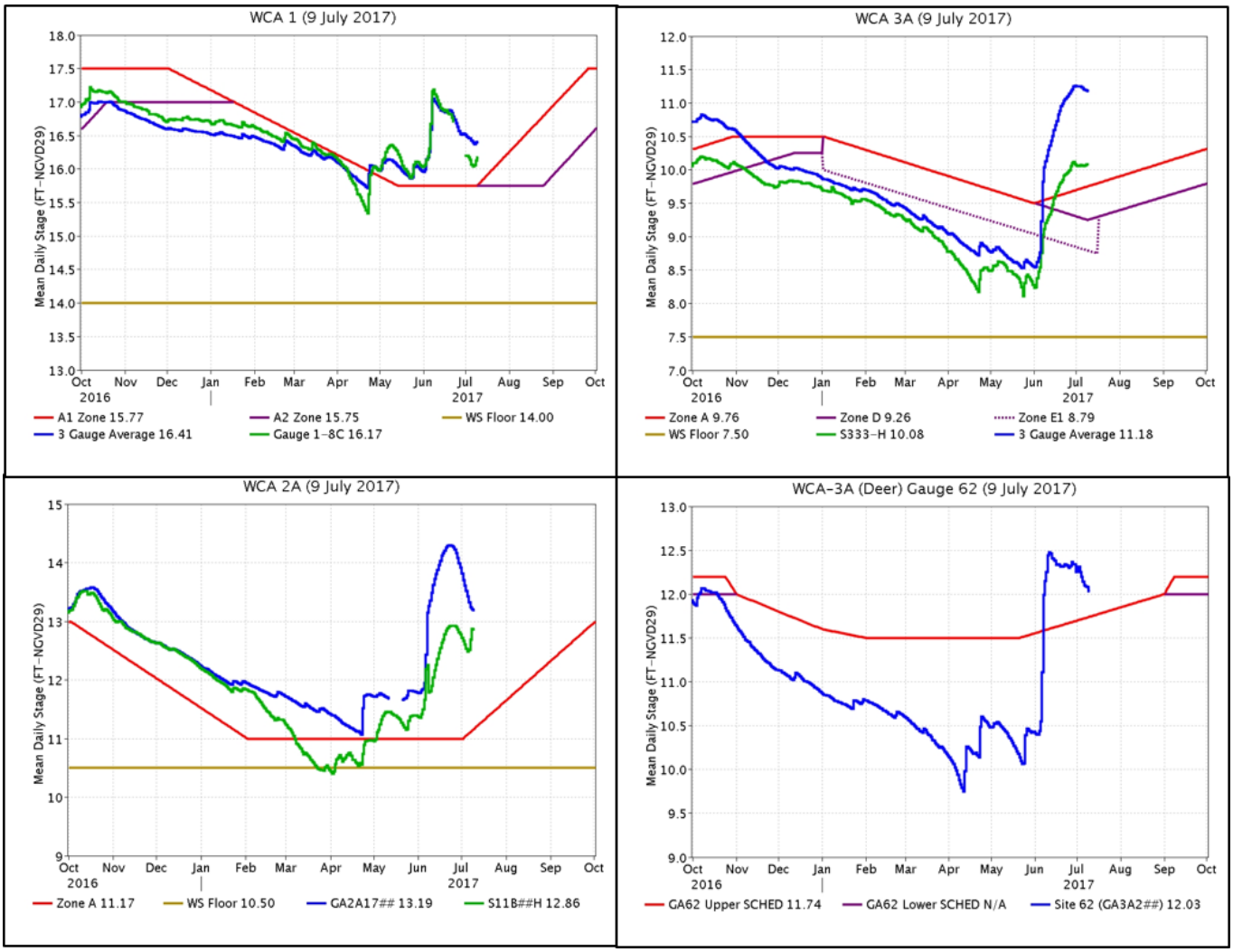
EVERGLADES

Rainfall was consistent across the WCAs and Everglades National Park (ENP) this past week. Water levels in WCA-1 and -2A continue to decrease, WCA-3A also decreased this week while WCA-2B, -3B, and Northeast ENP increased over the last week.

Everglades Region	Rainfall (Inches)	Stage Change (feet)
WCA-1	1.13	−0.06
WCA-2A	1.02	−0.49
WCA-2B	0.86	+0.06
WCA-3A	1.01	−0.13
WCA-3B	1.07	+0.14
ENP	1.60	+0.25

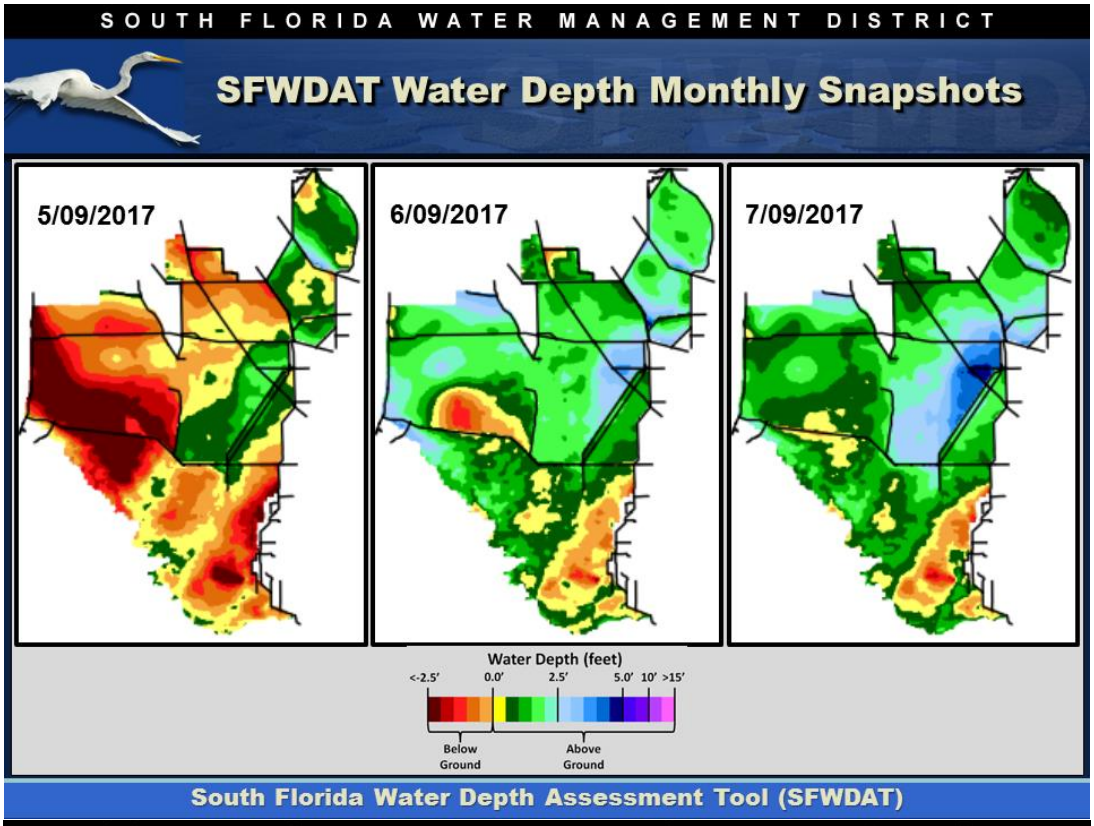


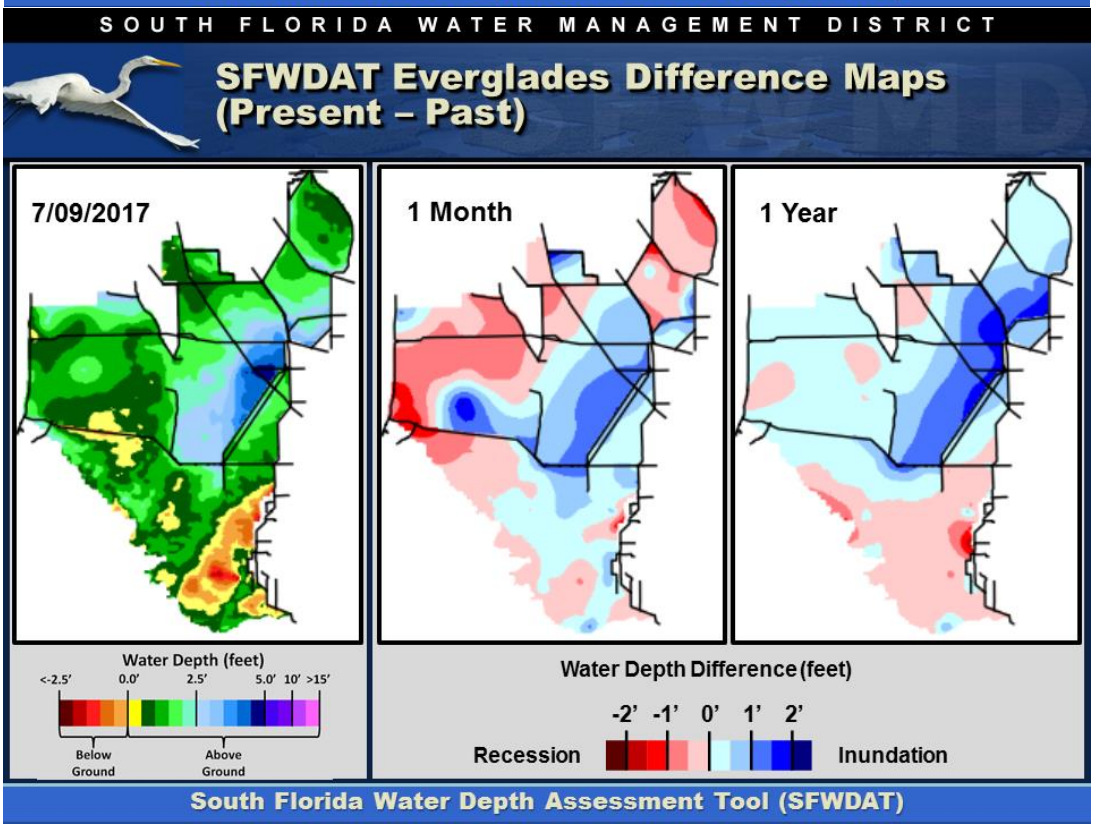
Regulation Schedules: WCA-1 stage is 0.64 feet above Zone A. WCA-2A the marsh stage at gauge GA2A17 is currently 2.02 feet above Zone A (0.66-foot decrease from last week) and canal stage at S11B is 1.69 feet above Zone A. WCA-3A three-gauge average is 1.42 feet above Zone A, 1.92 feet above Zone D and 2.39 above Zone E1. WCA-3A at gauge 62 (Northwest corner) is 0.29 feet above schedule.



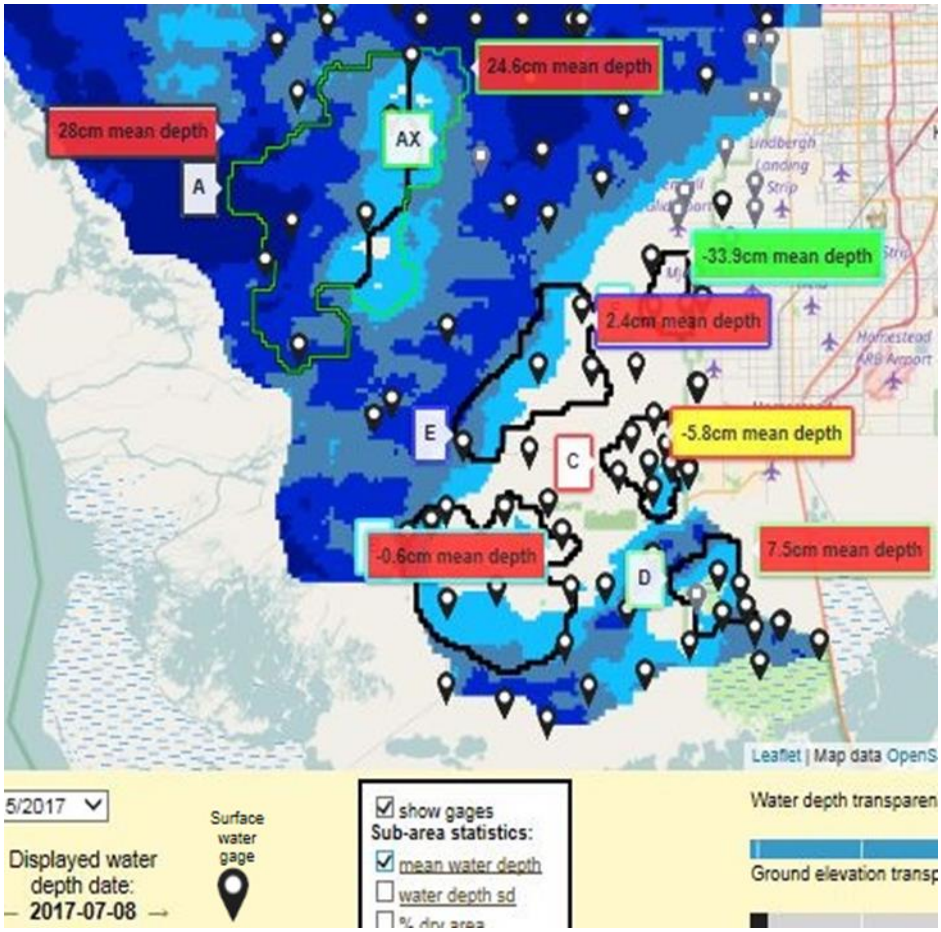
Blue – wetlands
Green – canals

Water Depths and Changes: This week's range of water depths at monitored gauges other than in WCA-2B ranged from 1.21 feet (WCA-1) to 3.06 feet (WCA-3A gauge 65). Over the last week individual gauge changes ranged from +0.02 feet (Central and Southern WCA-3A) to -0.49 feet (WCA-2A). Pan evaporation was estimated to be 1.81 inches (down from 2.5 inches from the previous week) which is higher than the pre-project estimate 1.45 inches.



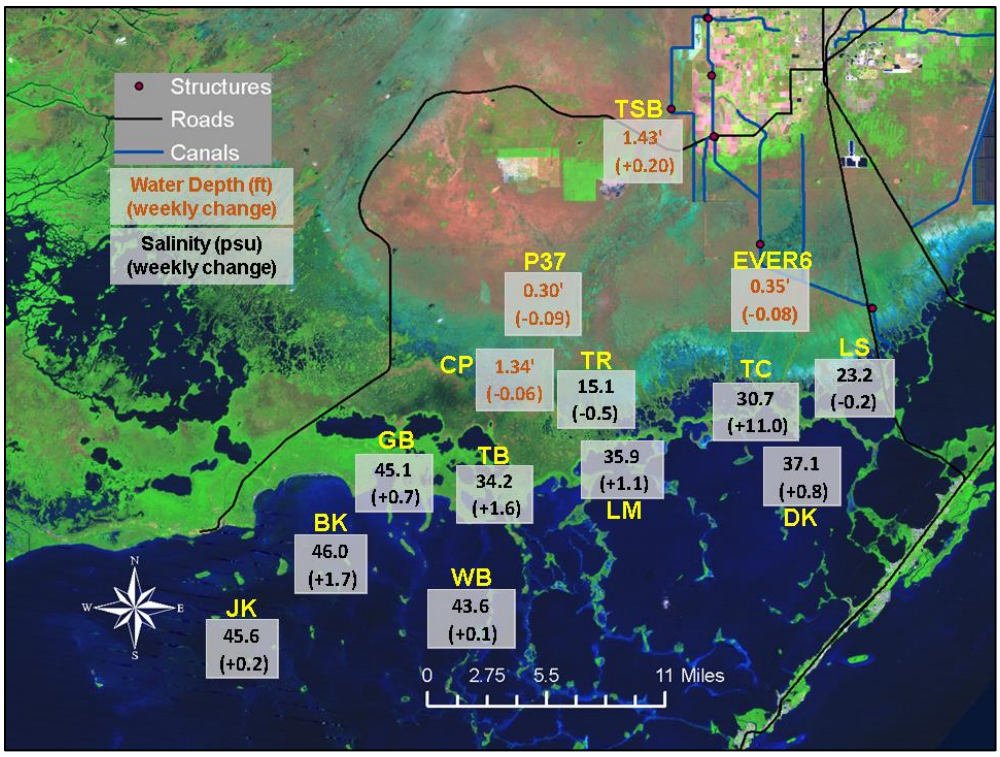


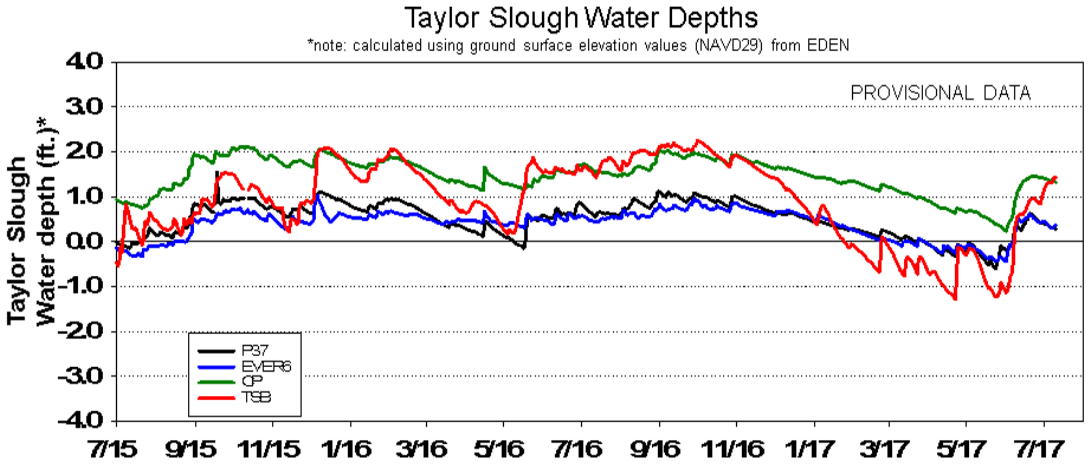
Cape Sable Seaside Sparrow Report July 3 – 7, 2017: Sparrows are still found on breeding territories in all subpopulations being monitored (A, B, C). Three nests still active in sub-population B. This study monitors relatively small study plots and these plots may not be representative of field/breeding conditions throughout the entire CSSS population.

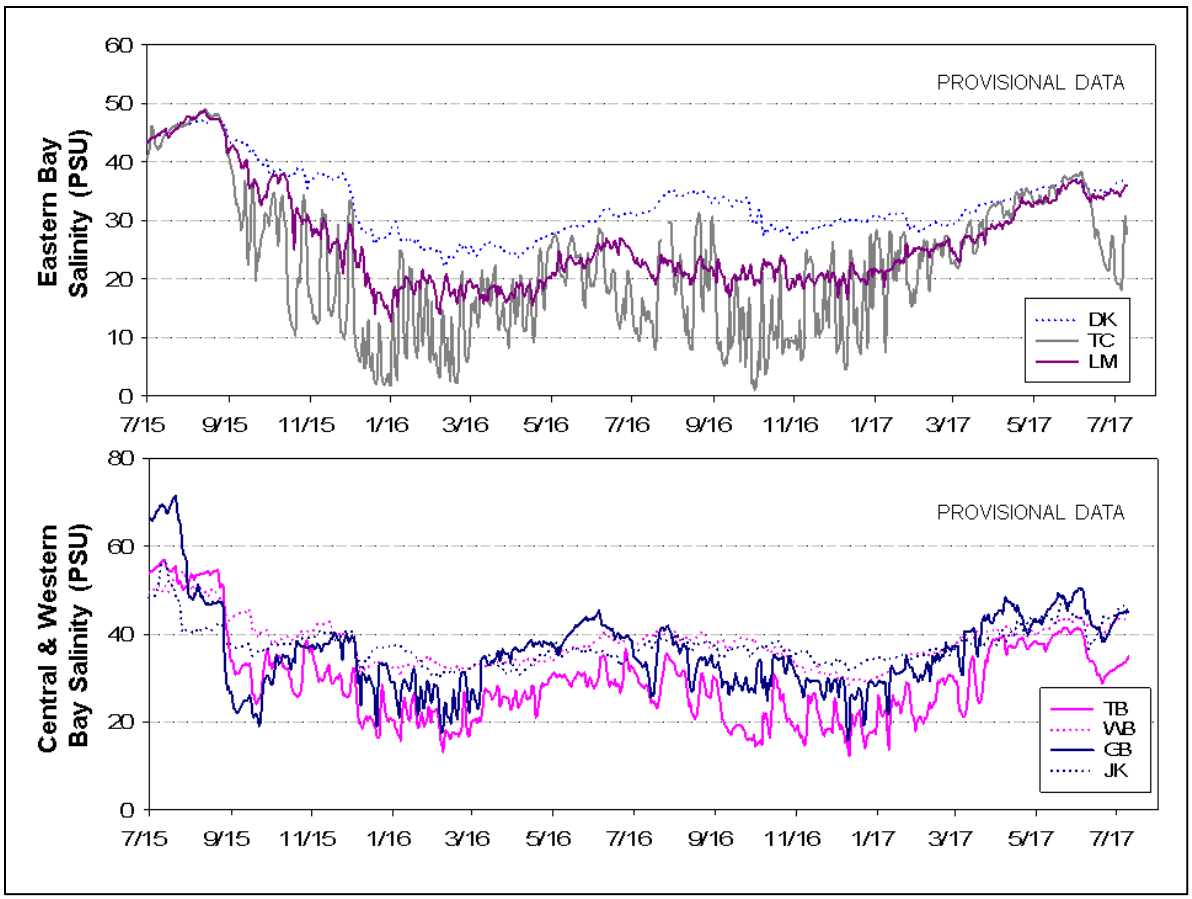


Taylor Slough stages: Rainfall was again sparse within Taylor Slough and over Florida Bay this last week with the highest amount of 1.5 inches in southwestern Taylor Slough. Northern Taylor Slough was the only area that increased in depth again. All gauges measured at least 0.30 feet of water depth with central Taylor Slough at the shallowest. Northern Taylor Slough, at five inches greater than the historic average, is the only area to be more than 0.5 inches from average depth for this time of year.

Florida Bay salinity: Upstream surges this weekend raised coastal salinities so that all areas are 4 to 13 psu above average. Salinities currently range from 31 psu in the eastern nearshore to 46 psu in the western bay.

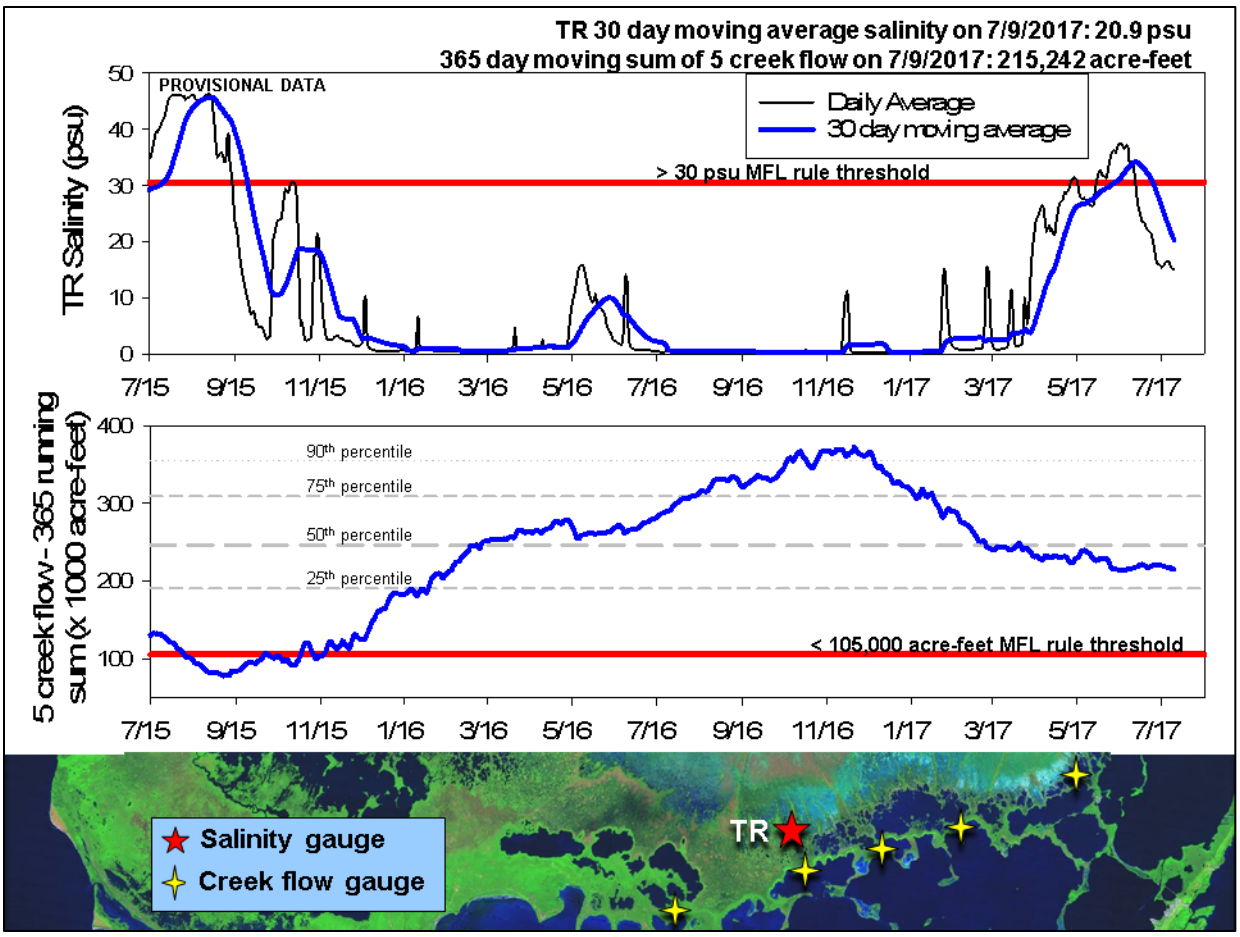

Structures
Roads
Canals
Water Depth (ft)
(weekly change)
Salinity (psu)
(weekly change)
TSB
1.43'
(+0.20)
P37
0.30'
(-0.09)
EVER6
0.35'
(-0.08)
CP
1.34'
(-0.06)
TR
15.1
(-0.5)
TC
30.7
(+11.0)
LS
23.2
(-0.2)
GB
45.1
(+0.7)
TB
34.2
(+1.6)
35.9
(+1.1)
LM
37.1
(+0.8)
DK
BK
46.0
(+1.7)
WB
43.6
(+0.1)
JK
45.6
(+0.2)
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
7/15
9/15
11/15
1/16
3/16
5/16
7/16
9/16
11/16
1/17
3/17
5/17
7/17
P37
EVER6
CP
TSB



Florida Bay MFL

Mangrove zone daily average changed −4 psu over the last week to reach 16 psu. The 30-day moving average changed −4.8 psu to end the week at 25.6 psu. Mangrove zone daily average changed −1 psu over the last week to reach 15 psu. The 30-day moving average changed −4.7 psu to end the week at 20.9 psu. The cumulative weekly flow from the five creeks identified by the stars on the map was just under 2,000 acre-feet which is a quarter of the historic average for this time of year. The 365-day moving sum of flow from the five creeks identified by stars on the map changed −4,000 acre-feet to 215,242 acre-feet (still below the long-term average of 257,628 acre-feet). Creek flow is provisional data from the USGS and is highly variable.



Water Management Recommendations

The rate of stage flux should be moderated as possible in all the WCAs, as apple snail production can be negatively affected by rapid changes in water depth. Limiting ascensions to 0.25 feet/week will help to avoid drowning of apple snail egg clusters.

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

Everglades Ecological Recommendations, July 11th, 2017 (red is new)

Area	Current Condition	Cause(s)	Recommendation	Reasons
WCA-1	Stages decreased from -0.01' to -0.12'	Rainfall, ET, management	Moderate ascension rates as possible. Releasing inflows through S-10s to moderate ascension is recommended. Maintaining water levels a minimum of 0.1 ft above WRS until early July is also recommended. Moderating flow rates through structures to 500 cfs steps is recommended.	Achieve high water targets (17.5 ft) to protect habitat and facilitate invasive plant treatments.
WCA-2A	Stages decreased −0.49'	Rainfall, ET, management	Moderate ascension rates as possible. Moderating flow rates through structures to 500 cfs steps is recommended.	Protect habitat, wildlife and support apple snail reproduction.
WCA-2B	Stages increased +0.03 to +0.09	Rainfall, ET, management	Moderate ascension rates as possible. Moderating flow rates through structures to 500 cfs steps is recommended.	Protect habitat, wildlife and support apple snail reproduction.
WCA-3A NE	Stages decreased −0.29'	Rainfall, ET, management	Moderate ascension rates as possible. Moderating flow rates through structures to 500 cfs steps is recommended.	Protect habitat, wildlife and support apple snail reproduction.
WCA-3A NW	Stages decreased −0.26'	Rainfall, ET, management		
Central WCA-3A S	Stage remains unchanged from last week	Rainfall, ET, management	Moderate ascension rates as possible. Moderating flow rates through structures to 500 cfs steps is recommended.	Protect habitat, wildlife and support apple snail reproduction.
Southern WCA-3A S	Stages increased +0.02'	Rainfall, ET, management		
WCA-3B	Stages increased +0.21'	Rainfall, ET, management	Moderate ascension rates as possible. Moderating flow rates through structures to 500 cfs steps is recommended.	Protect habitat, wildlife and support apple snail reproduction.
ENP-SRS	Stages increased +0.02'	ET, rainfall, topography, management	Make discharges to the Park according to the 2012 WCP rainfall plan.	Keep peat wet to promote native habitat and maintain wetland plant and animal communities. Protect habitat and wildlife, including apple snail reproduction.
ENP-CSSS habitats	5 of the 7 sub-population habitats are outside of preferred range mean water depth for CSSS breeding season	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 near term forcasted conditions are conducive for continuation of a successful sparrow breeding season.
Taylor Slough	Stage changes ranged −0.09' to +0.11'	Rain, ET, inflows	Move water southward as possible	When available provide freshwater buffer for ecosystems and slow recession rates.
FB- Salinity	Salinity changes ranged 0 to +11 psu.	Rain, ET, inflows, wind	Move water southward as possible	When available provide freshwwater to buffer hypersalinity conditions.