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: October 20, 2015

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Stages in East Lake Toho and Toho are ~0.4 feet below schedule; Kissimmee-Cypress-Hatchineha (KCH) is 1.1 feet below schedule. Discharge from East Toho and Toho is currently zero. Discharge from KCH is currently ~1500 cfs at S65, and we are following the discharge zones in the standing recommendation discharge plan for S65/S65A. Over the past week, discharge at S65 averaged 1540 cfs and at S65A 1460 cfs; discharge at S65E averaged 2200 cfs over the past week. Monday afternoon discharges: S65 ~1600 cfs; S65A ~1435 cfs; S65C ~1870 cfs; S65E ~1790 cfs. Dissolved Oxygen (DO) in the Kissimmee River averaged 2.50 mg/L over the past week and 2.98 mg/L on Sunday, and is currently rising with the reductions in discharge to the Kissimmee River and lower water temperatures. Kissimmee River mean floodplain depth is currently 1.25 feet.

Lake Okeechobee experienced a reversal in Lake Stage over the past week. Lake Stage is at 14.69 feet NGVD which is a decrease of 0.14 feet over the past seven days. The lake is in the low flow sub-band and ecological conditions are good.

Over past week, total freshwater inflow to both estuaries was dominated by local basin runoff, averaging 249 cfs to the St. Lucie and 760 cfs to the Caloosahatchee. In the St. Lucie Estuary, salinity remained in the good range for adult oysters in the mid-estuary. In the Caloosahatchee Estuary, salinity continued to be in the good range for adult oysters at Shell Point and Sanibel, and increased to the borderline between fair and good ranges at Cape Coral. Salinities were also in the good range for tape grass in the upper Caloosahatchee Estuary. If releases are to be made next week, pulse releases averaging 200~500 cfs at S-80 and 650~1200 cfs at S-79 will help maintain salinities in the healthy ranges for adult oysters and submerged aquatic vegetation in both estuaries.

Basin-wide stages in the Everglades generally rose except in WCAs -2A and -2B. Conditions in the WCAs are finally typical of the end of the wet season. The 30-day salinity at the Florida Bay Minimum Flows and Levels (MFL) site rose this week to 18.7 psu but the cumulative inflow from the five creeks into Florida Bay increased to 105,700 acre-feet, slightly above the 105,000 acre feet criterion for only the second time since August. Much more rainfall is required to approach seasonally normal conditions in Florida Bay and Everglades National Park (ENP).

Weather Conditions and Forecast

Windy. Strong high pressure centered over the southeast US has helped strengthen the pressure gradient to 8mb between Jacksonville and the Keys. This gradient supports winds of around 25 mph. The large scale pattern locks into its current configuration for the entire week with high pressure over the southeastern US and low pressure over the southwestern US and southwestern Atlantic. Surface winds

will begin to decrease slightly tomorrow, but strong breezes and fast moving, weak showers blowing through mainly eastern sections of the District will likely dominate through the weekend.

KISSIMMEE BASIN

Kissimmee Basin Rainfall

The Upper Kissimmee Basin received 0.01 inches of rainfall in the past week and the Lower Basin received 0.11 inches (SFWMD Daily Rainfall Report 10/19/2015).

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: 10/20/2015

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)	Sunday Departure (feet)						
							10/18/15	10/11/15	10/4/15	9/27/15	9/20/15	9/13/15	9/6/15
Lakes Hart and Mary Jane	S62	0	LKMJ	60.3	R	60.6	**-0.3**	0.0	-0.1	-0.1	0.0	0.1	0.4
Lakes Myrtle, Preston, and Joel	S57	2	S57	61.5	R	61.6	**-0.1**	-0.1	0.1	-0.2	0.2	0.4	0.1
Alligator Chain	S60	0	ALLI	63.2	R	63.7	**-0.5**	-0.4	-0.3	-0.3	-0.3	-0.3	-0.2
Lake Gentry	S63	0	LKGT	61.2	R	61.3	**-0.1**	-0.1	-0.1	-0.2	-0.3	-0.2	-0.2
East Lake Toho	S59	0	TOHOE	57.2	R	57.6	**-0.4**	-0.1	0.0	0.3	0.8	1.3	1.2
Lake Toho	S61	0	TOHOW	54.2	R	54.6	**-0.4**	-0.1	-0.1	-0.2	-0.1	0.0	0.2
Lakes Kissimmee, Cypress, and Hatchineha	S65	1540	LKISSP, KUB011, LKIS5B	51.0	R	52.1	**-1.1**	-0.5	-0.2	-0.3	-0.2	-0.1	0.0

* 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 11. Kissimmee River floodplain stages at selected stations are shown in Figure 12.

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: **10/20/2015**

Metric	Location	Sunday's 1-day average	Weekly Average**									
			10/18/15	10/11/15	10/4/15	9/27/15	9/20/15	9/13/15	9/6/15	8/30/15	8/23/15	8/16/15
Discharge (cfs)	S-65	1554	**1540**	1370	1534	2329	3923	4603	4525	3970	2629	1557
Discharge (cfs)	S-65A	1428	**1457**	1483	1694	2655	5089	6066	6098	4585	2783	1488
Discharge (cfs)	S-65C	2061	**2151**	2579	3300	4558	5476	5643	4961	3464	1995	1710
Headwater stage (feet NGVD)		36.0	**35.4**	35.3	35.3	35.4	35.5	35.3	35.4	35.3	35.3	35.4
Discharge (cfs)	S-65D****	2131	**2291**	2882	3891	5253	6193	6236	5553	3764	2328	1759
Discharge (cfs)	S-65E	2074	**2203**	2787	3853	5133	6064	5906	5323	3539	2122	1551
DO concentration (mg/L)***	Phase I river channel	2.98	**2.50**	1.65	0.93	0.74	0.34	0.58	0.68	0.97	2.23	3.84
Mean depth (feet)*	Phase I floodplain	**1.25**	N/A	1.44	1.64	2.06	2.76	2.80	2.89	2.24	1.61	1.21

* 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 starting June 2.PC33 omitted for week of Aug16. DO for week of Sept 15-22 is for PC33 only.

**** S-65D discharge combines discharge at S-65D, S-65DX1, and S-65DX2

***** 1-day spatial average from field measurements in Pools A and BC

N/A Not applicable or data not available.

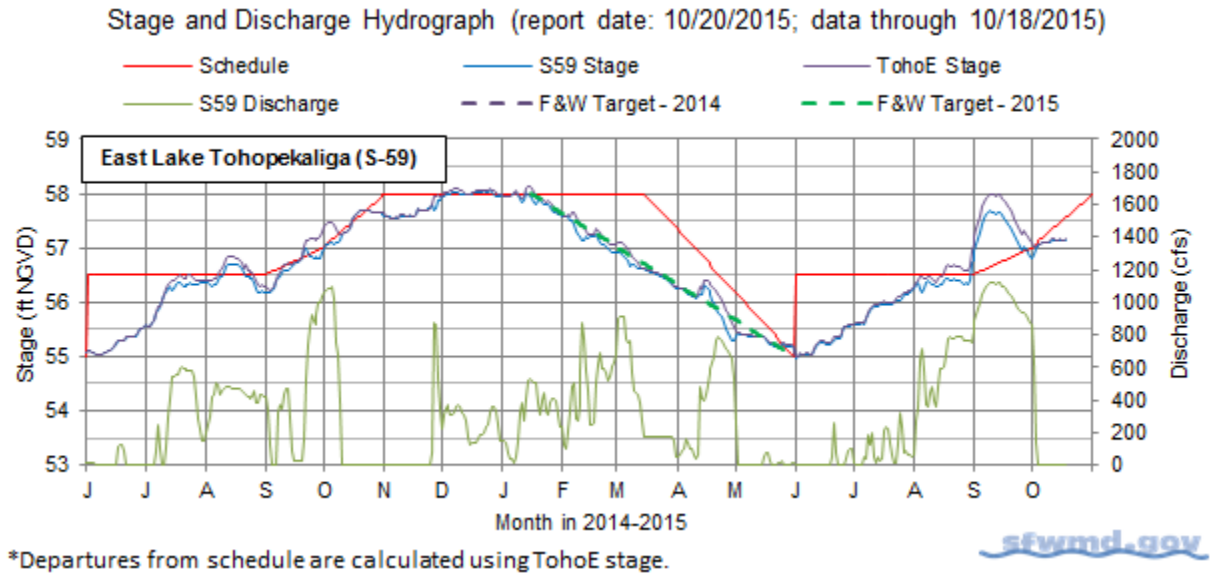
DATA ARE PROVISIONAL

Water Management Recommendations

Kissimmee Basin Recommendations and Operational Actions

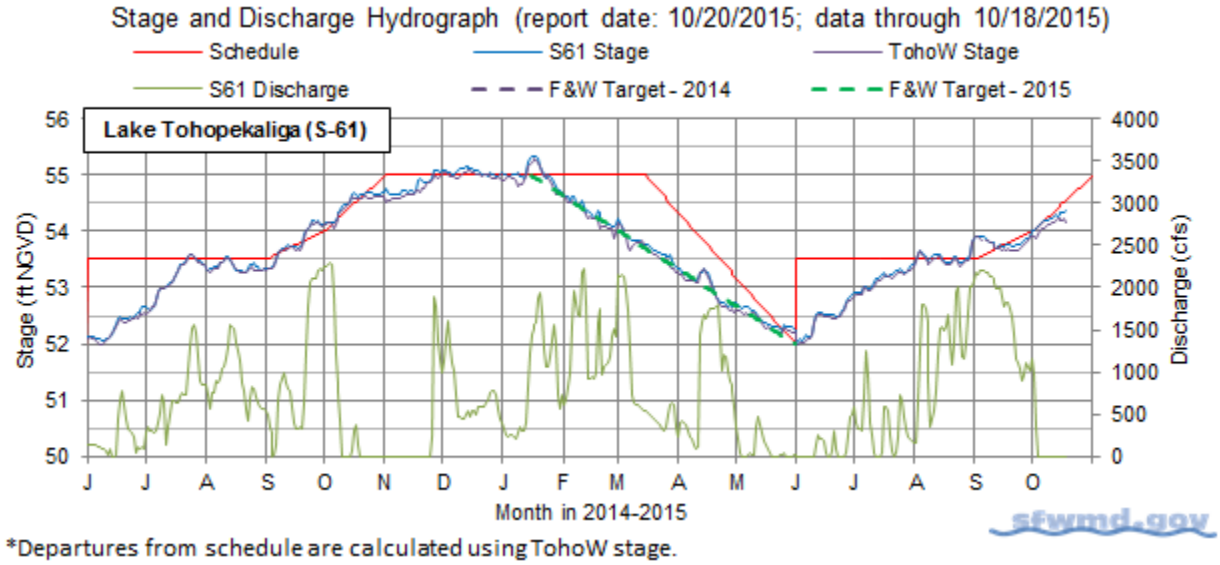
Date	Recommendation	Purpose	Outcome	Source
10/20/2015	No new recommendations.			
10/13/2015	No new recommendations.			
10/6/2015	No new recommendations.			
9/28/2015	No new recommendations.			
9/22/2015	No new recommendations.			
9/15/2015	No new recommendations.			
9/8/2015	No new recommendations.			
9/1/2015	No new recommendations.			
8/25/2015	No new recommendations.			
8/18/2015	No new recommendations.			
8/11/2015	No new recommendations.			
8/4/2015	No new recommendations.			
7/28/2015	No new recommendations.			
7/14/2015	No new recommendations.			
6/30/2015	No new recommendations.			
6/23/2015	No new recommendations.			
6/16/2015	No new recommendations.			
6/9/2015	No new recommendations.			
6/1/2015	For S65/65A maintain 300 cfs as long as stage is above 48.5 ft. When stage approaches 50.5 ft begin transitioning to 1400 cfs using the rampup/rampdown guidelines in standing recommendation.	Allow KCH lake stage to rise	Implemented	KB Operations
5/29/2015	2015 KB Wet Season Standing Recommendations provided to Operations Control	Comprehensive wet season guidance	Implemented	KB Operations
5/26/2015	No new recommendations.			
5/19/2015	No new recommendations.			
5/12/2015	No new recommendations.			
5/5/2015	No new recommendations.			
4/7/2015	No new recommendations.			
3/31/2015	No new recommendations.			
3/24/2015	No new recommendations.			
3/17/2015	No new recommendations.			
3/9/2015	No new recommendations.			
3/4/2015	No new recommendations.			
2/23/2015	No new recommendations.			
2/17/2015	No new recommendations.			
2/10/2015	No new recommendations.			
2/3/2015	No new recommendations.			

KCOL Hydrographs (through Sunday midnight)



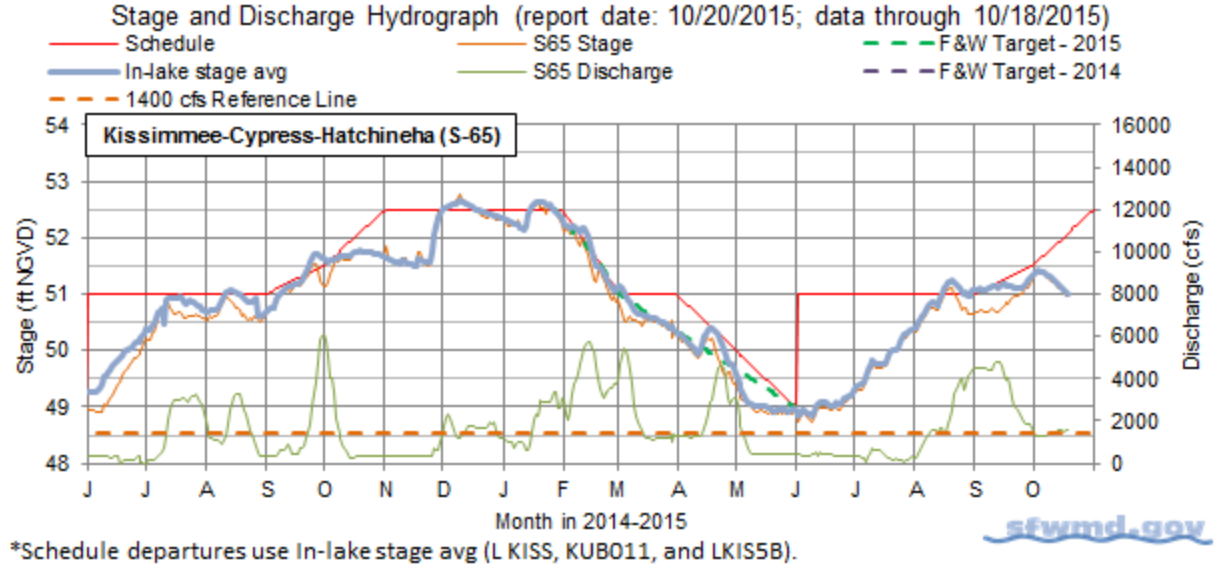
*Departures from schedule are calculated using TohoE stage.

Figure 1.



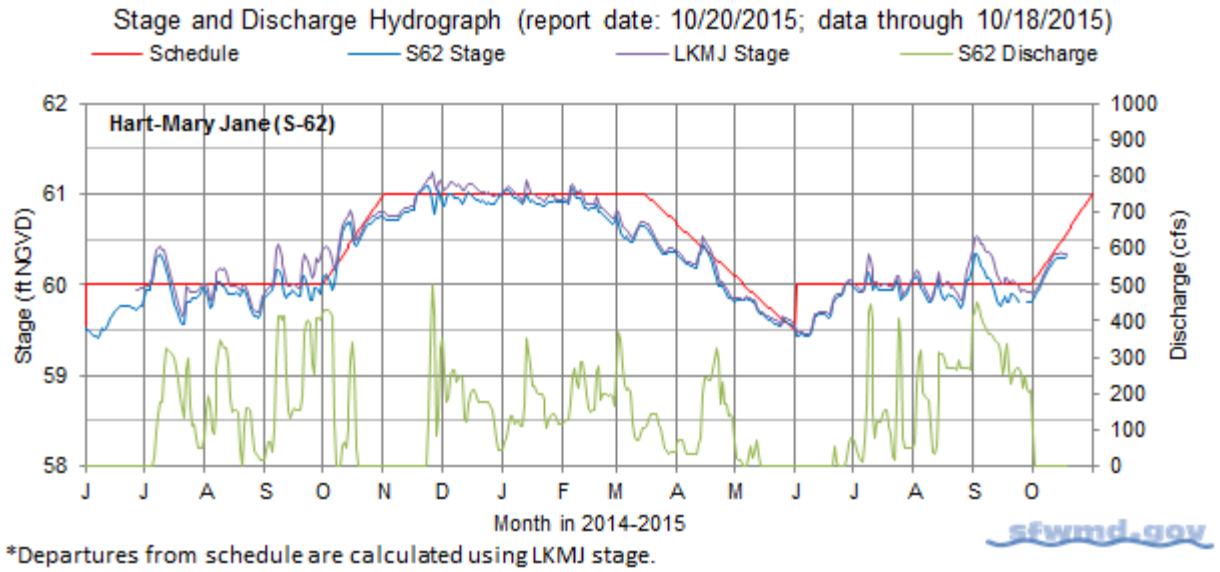
*Departures from schedule are calculated using TohoW stage.

Figure 2.



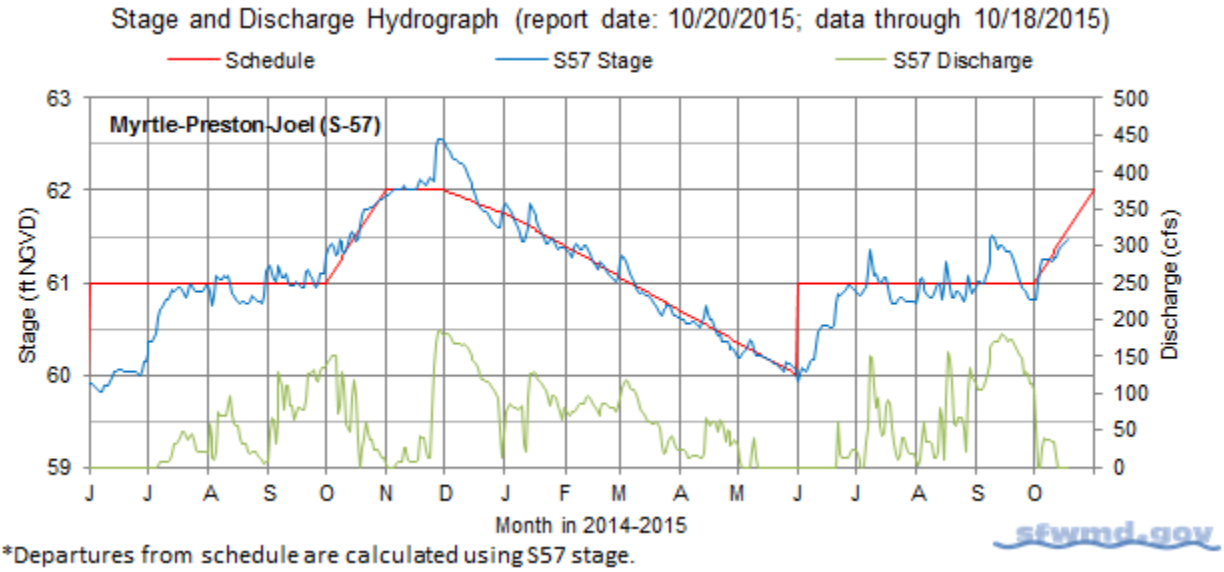
*Schedule departures use In-lake stage avg (L KISS, KUBO11, and LKIS5B).

Figure 3.



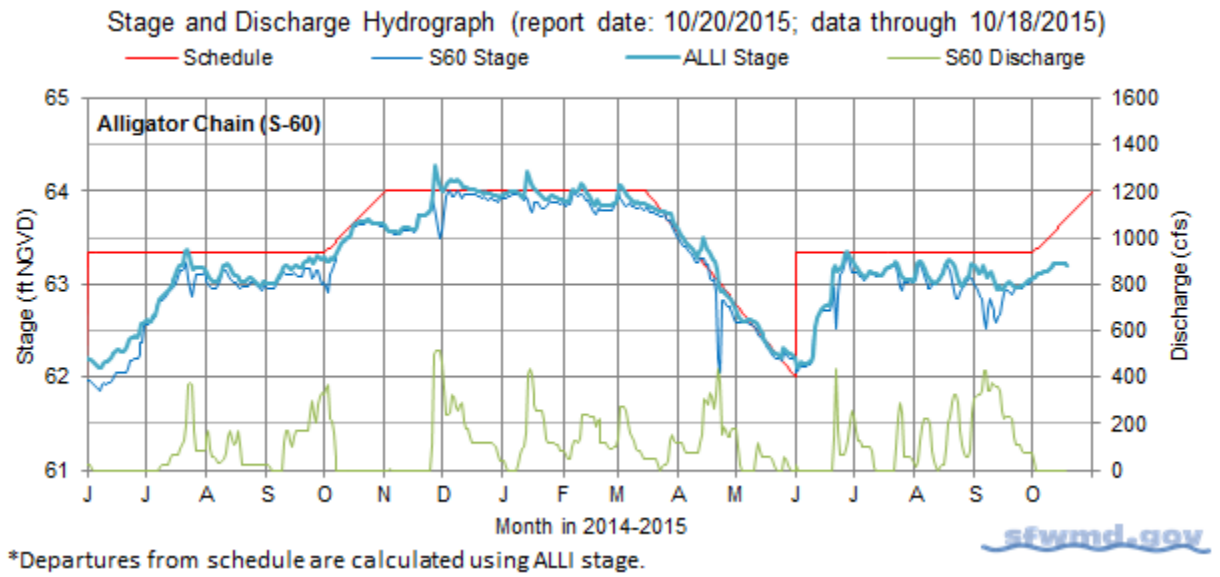
*Departures from schedule are calculated using LKMJ stage.

Figure 4.



*Departures from schedule are calculated using S57 stage.

Figure 5.



*Departures from schedule are calculated using ALLI stage.

Figure 6.

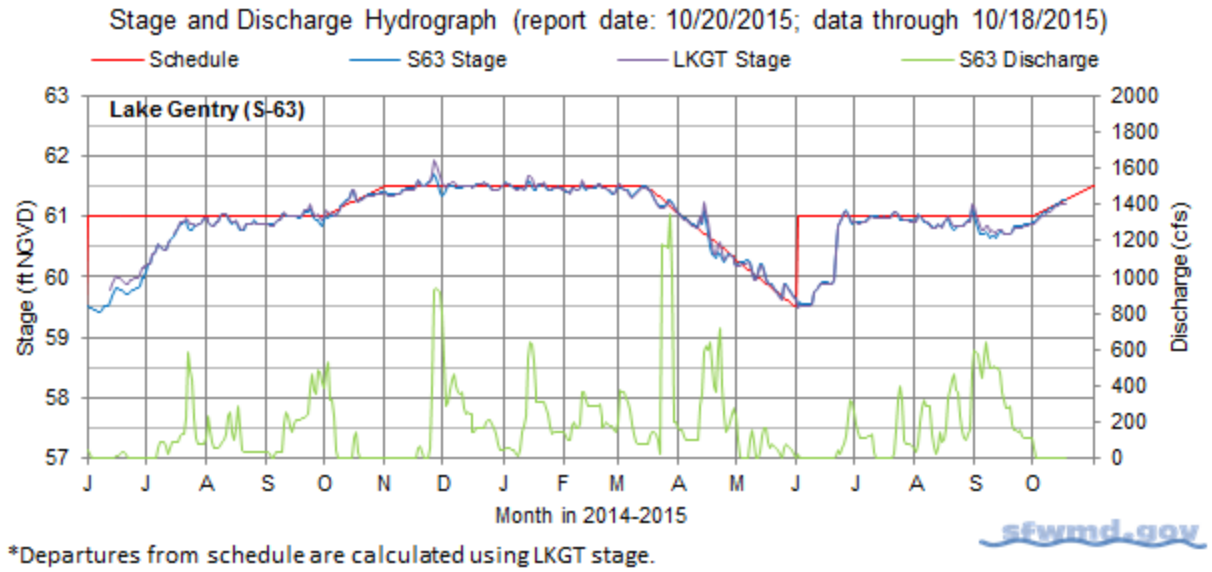


Figure 7.

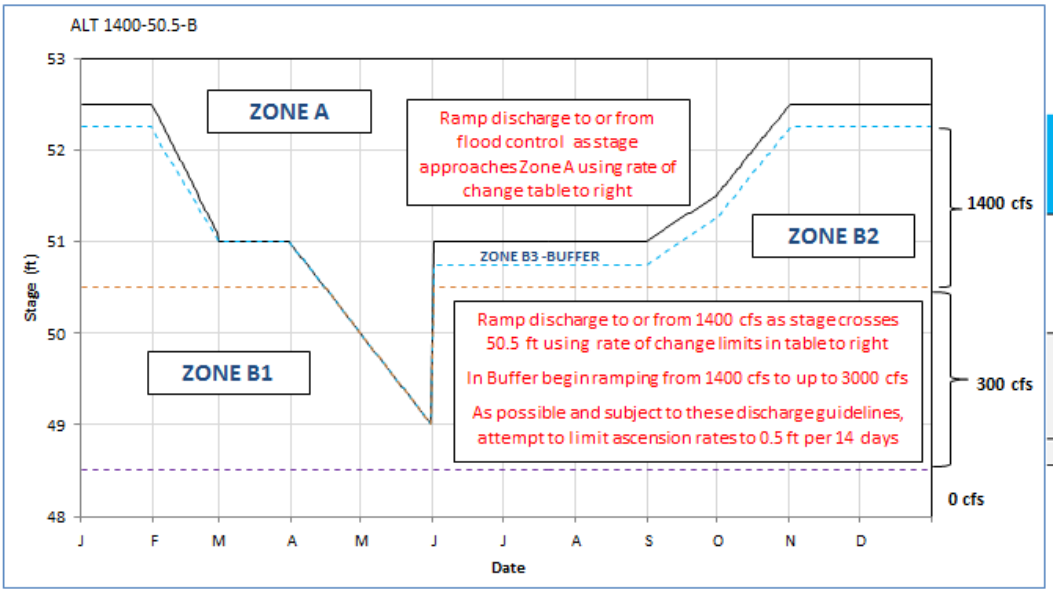


Table 1. Discharge Rate of Change Limits for S65/S65A
****Rate limits apply only in Zone B****

	Q (cfs)	Maximum rate of increase (cfs/day)	Maximum rate of decrease (cfs/day)
Zone B	0-300	50	-50
	300-1400	150	-75
	1400-2500	300	-300
	2500-3000	1000	-1000
Zone A	No limits		

Figure 8a. Final S65 operational plan for Wet Season 2015.

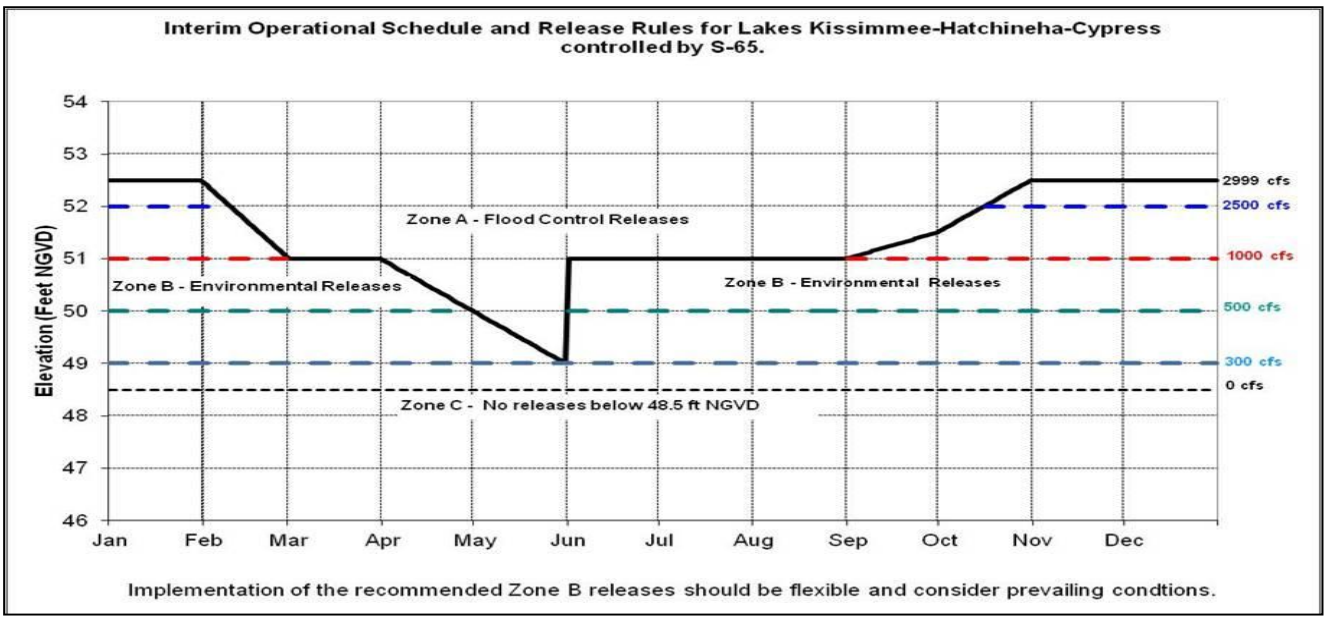


Figure 8b. Interim operations schedule for S-65. The discharge schedule shown to the right has not been used in recent years or in Wet Season 2015.

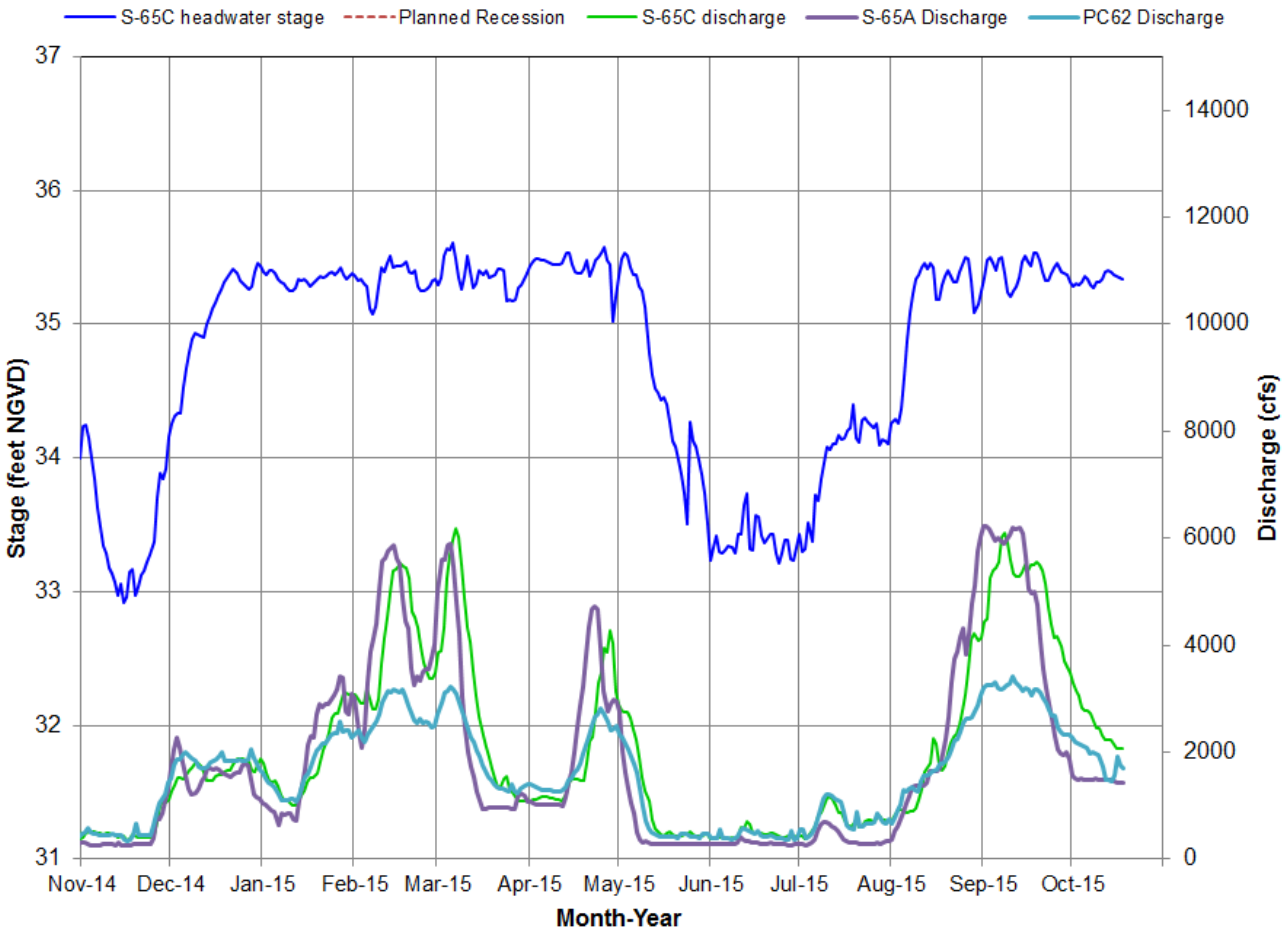


Figure 9. S-65C headwater stage in relation to discharge at S-65C, S-65A, and PC62.

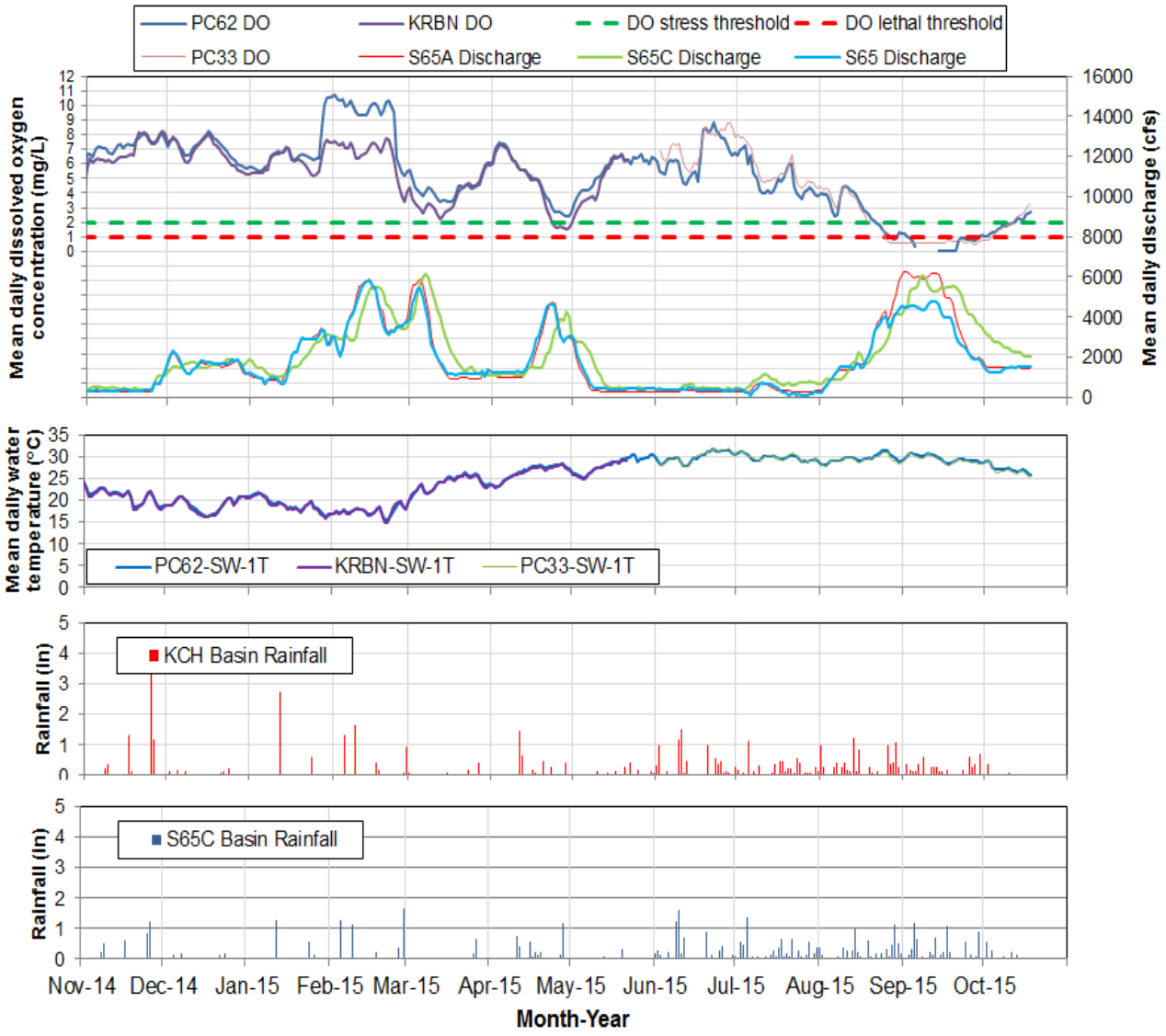
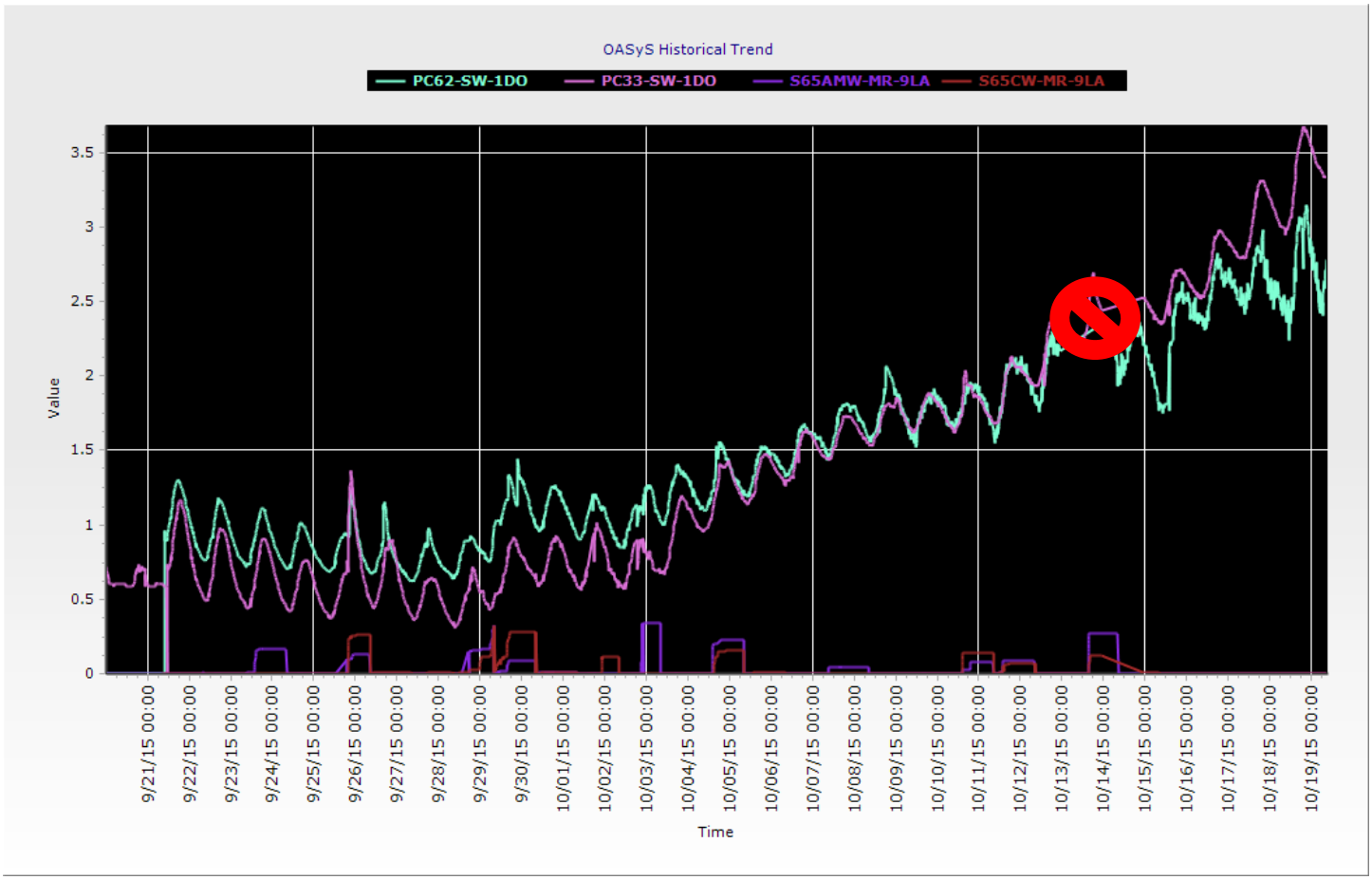


Figure 10. Mean daily DO, discharge, temperature and rainfall in the Phase I river channel.



Insert A. Phase I river channel DO (measured at 15 minute intervals) and rainfall at S65A and S65C.

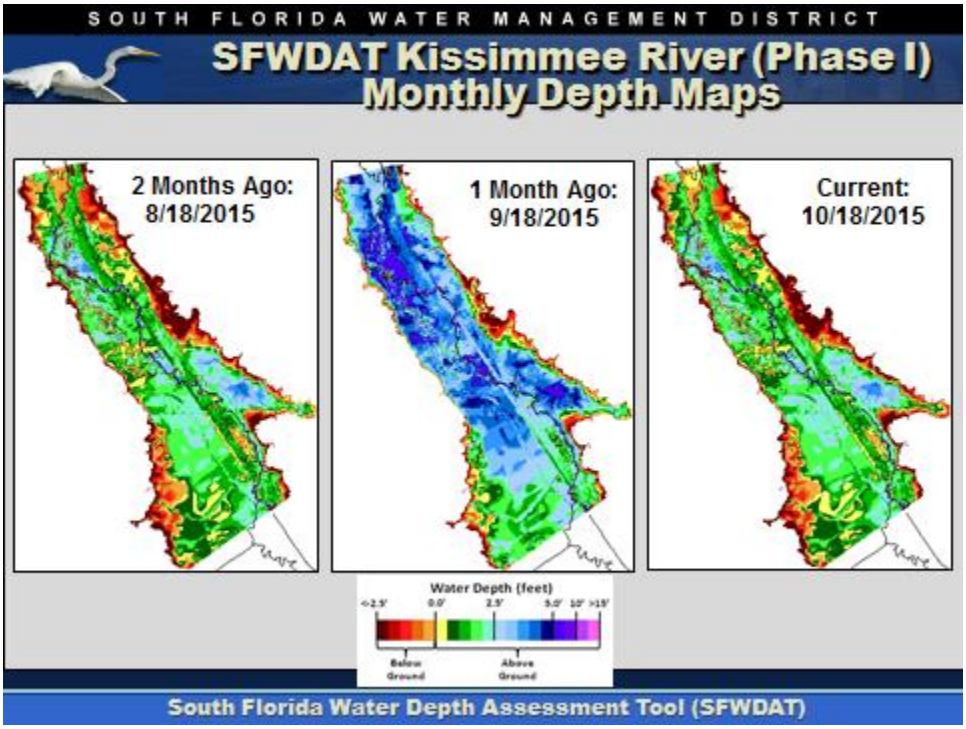


Figure 11. Phase I area floodplain water depths for this week, one month ago, and two months ago. Note that the WDAT color-coding has been modified to accommodate greater water depths; these maps are not directly comparable to Kissimmee Basin WDAT maps published prior to Jan. 16, 2012.

Kissimmee River Hydrographs

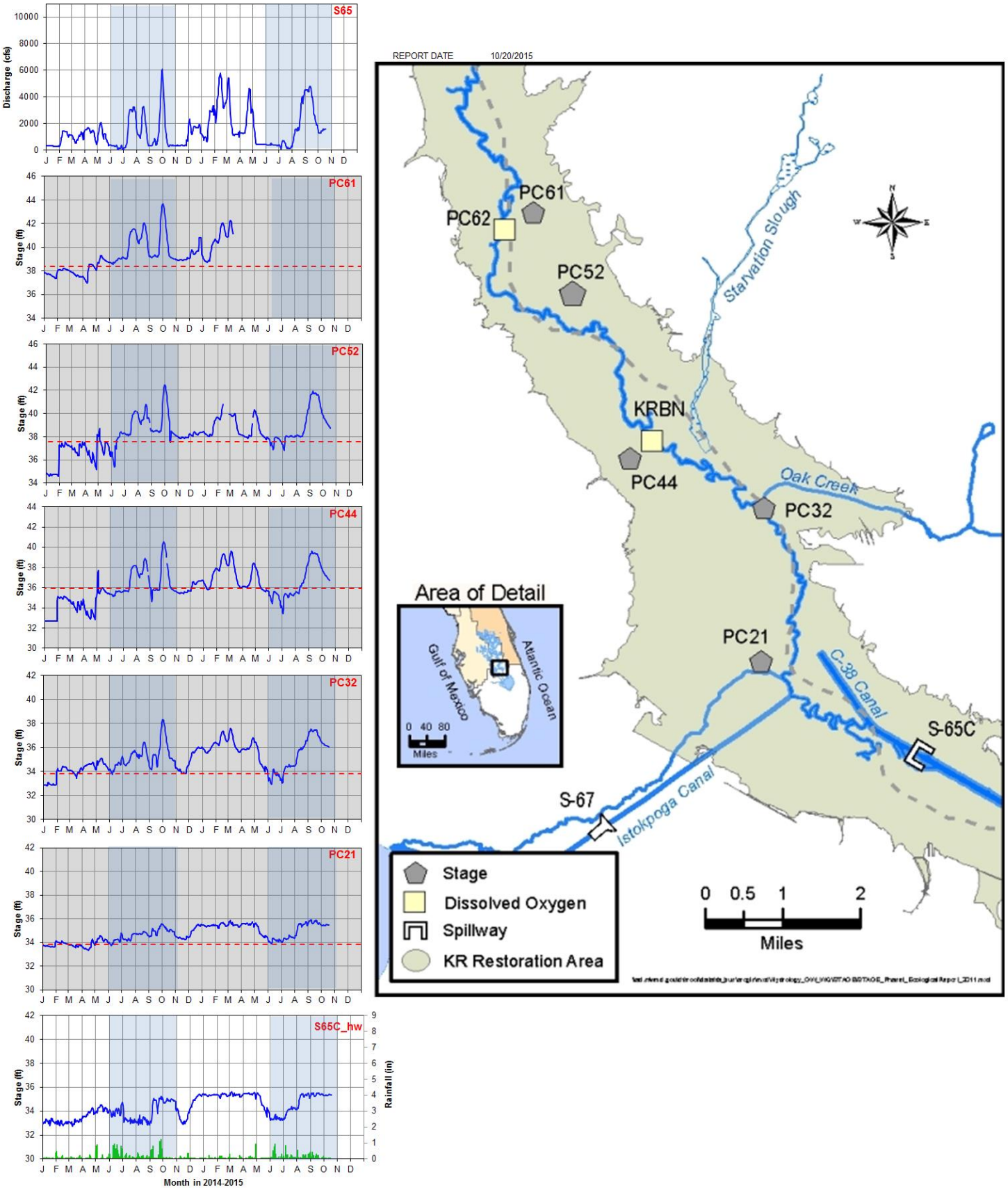


Figure 12. Discharge at S65, stages at five monitoring stations in the Phase I area of the Kissimmee River floodplain, and headwater stage at S65-C since January 1, 2013. The most recent data (~2 weeks) are provisional real-time data from SFWMD DualTrend; previous data are from SFWMD DB-HYDRO (validated). Dashed lines are ground elevations.

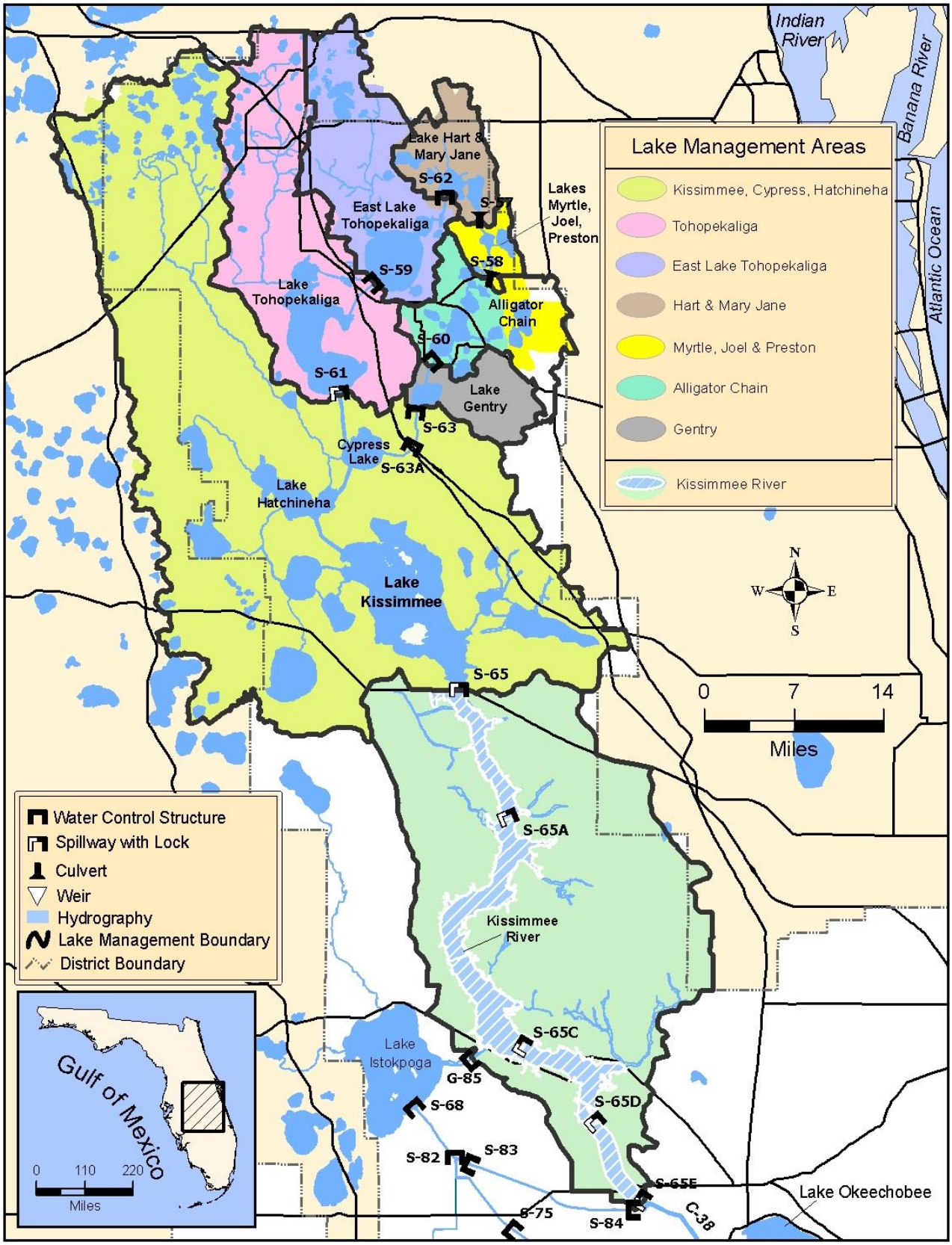


Figure 13. The Kissimmee Basin.

LAKE OKEECHOBEE

Lake Okeechobee experienced a reversal in Lake Stage over the past week. Lake stage is at 14.69 feet NGVD which is a decrease of 0.14 feet over the past seven days. The lake is in the low flow sub-band and ecological conditions are good.

Hydrologic Conditions

According to the United States Corps of Engineers (USACOE) web site, Lake Okeechobee stage is at 14.69 feet NGVD for the period ending at midnight on October 19, 2015. Lake stage decreased by 0.14 feet over the past week. The Lake is now 0.38 feet higher than it was a month ago and 1.10 feet lower than it was a year ago (Figure 1). The Lake is in the low flow sub-band (Figure 2). According to RAINDAR, 0.029 inches of rain fell directly over the Lake during the past seven days. Similar amounts of rain fell in most of the surrounding watershed with higher amounts of rain along the lower east coast and southern most portions of the watershed (Figure 3).

Based on USACOE reported values, current Lake inflow is approximately 3,289 cfs, consisting of inflows as indicated below.

Structure	Flow cfs
S65E	2115
S154	27
S84 & 84X	186
S71	254
S72	0
C5	0
S191	0
S133 PUMPS	0
S127 PUMPS	0
S129 PUMPS	0
S131 PUMPS	0
S135 PUMPS	0
Fisheating Creek	707
S2 Pumps	0
S3 Pumps	0
S4 Pumps	0

Outflows consisted of 2,212 cfs exiting through S77 (115 cfs), S351 (788 cfs), S354 (146 cfs) S352 (908 cfs) and to the L8 canal through Culvert 10A (255 cfs). Corrected ET this past week was equivalent to an outflow of 1,809 cfs.

Change in elevation equivalents and average weekly flows for major structures are presented in Figure 4.

Monthly chlorophyll monitoring indicated the presence of bloom conditions (>40 µg/L) at one southwestern site (LZ30) and slightly elevated chlorophyll levels (20 – 40 µg/L) at most of the southern nearshore sites (Figure 5). Microcystin values are not yet available.

Water Management Recommendations

Lake levels decreased and the current monthly rate of change is within the preferred rate of no more than 0.5 feet per month. However, if lake levels continue to decline at the current rate of 0.14 feet per week the optimal monthly recession rate will be exceeded. Any activities which contribute to a slight reduction in the current rate of decrease in Lake Stage would be ecologically beneficial.

Future recommendations for the short term will depend in large measure on the near-term rainfall patterns and amounts. The operational goal continues to be to maintain a steady change (increase/decrease) in water levels not to exceed 0.5 feet per month (0.125 feet/week).

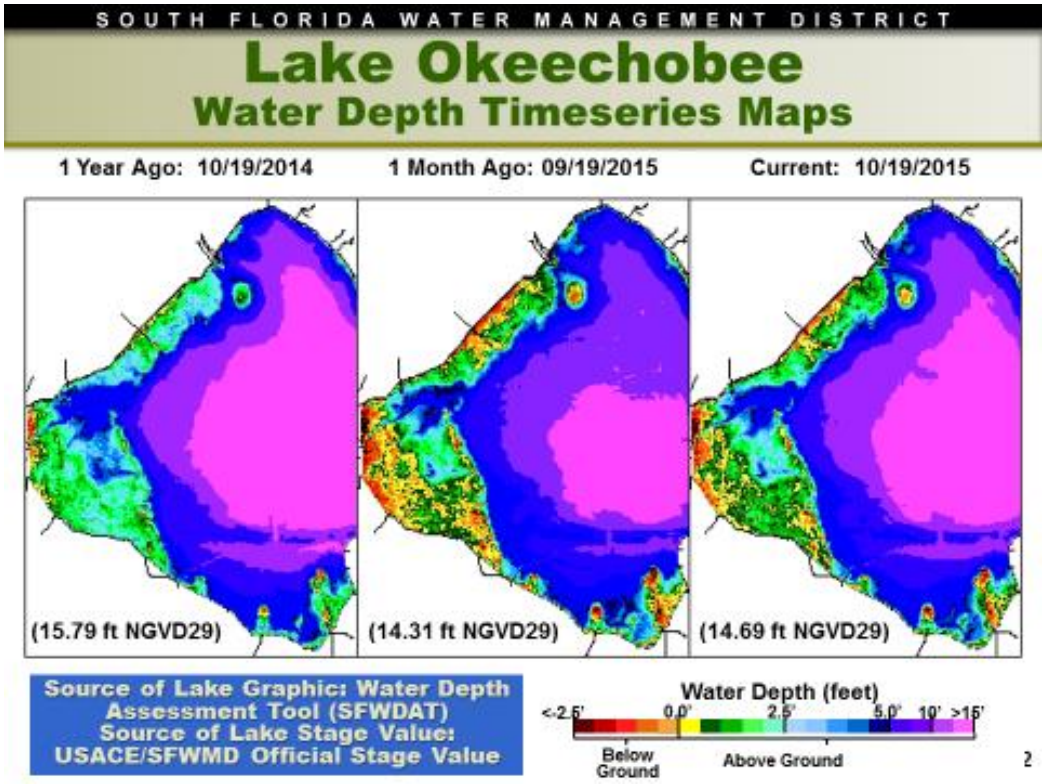


Figure 1

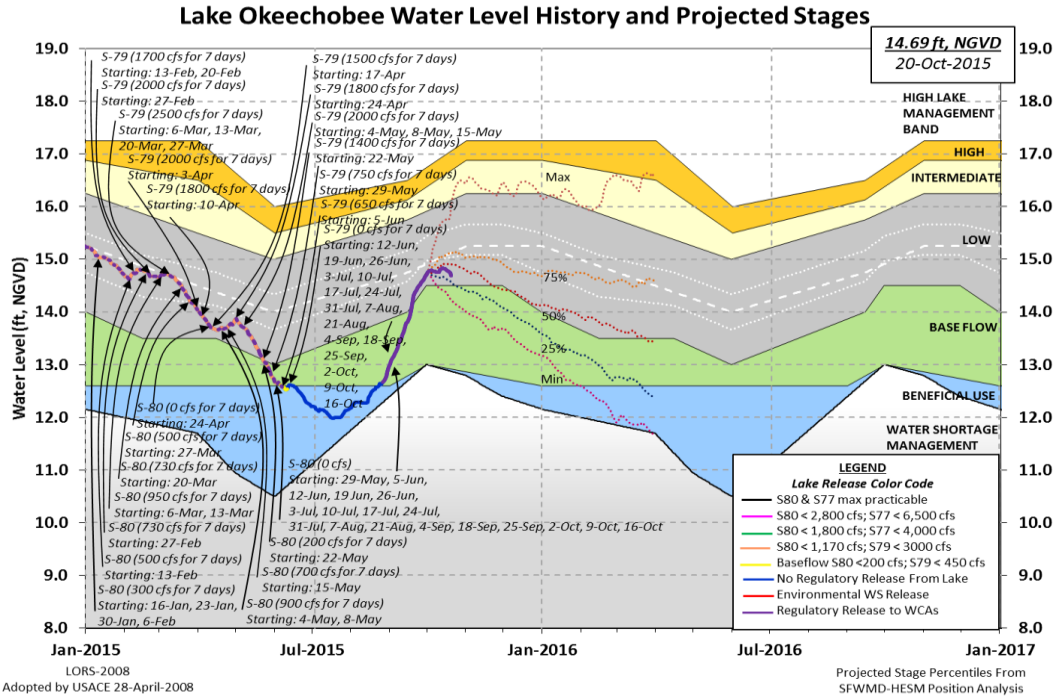


Figure 2

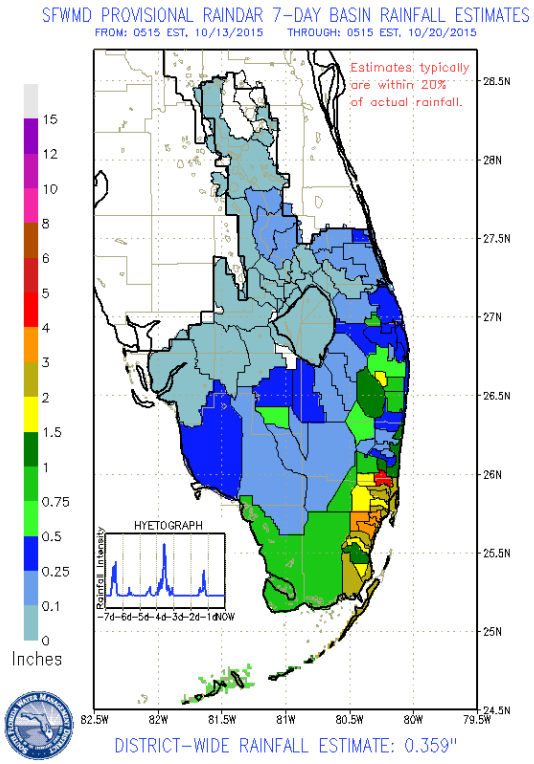


Figure 3

INFLOWS	Average Daily Flow Past Week cfs	Feet of Change Past Week
S65E	2103	0.070
S71 & 72	80	0.003
S84 & 84X	771	0.026
Fisheating Creek	652	0.022
Rainfall	N.A.	0.002
OUTFLOWS	**Average Daily Flow Past Week cfs**	**Feet of Change Past Week**
S77	174	0.006
S308	89	0.003
S351	549	0.018
S352	952	0.032
S354	358	0.012
L8	339	0.011
ET	1809	0.060

Figure 4

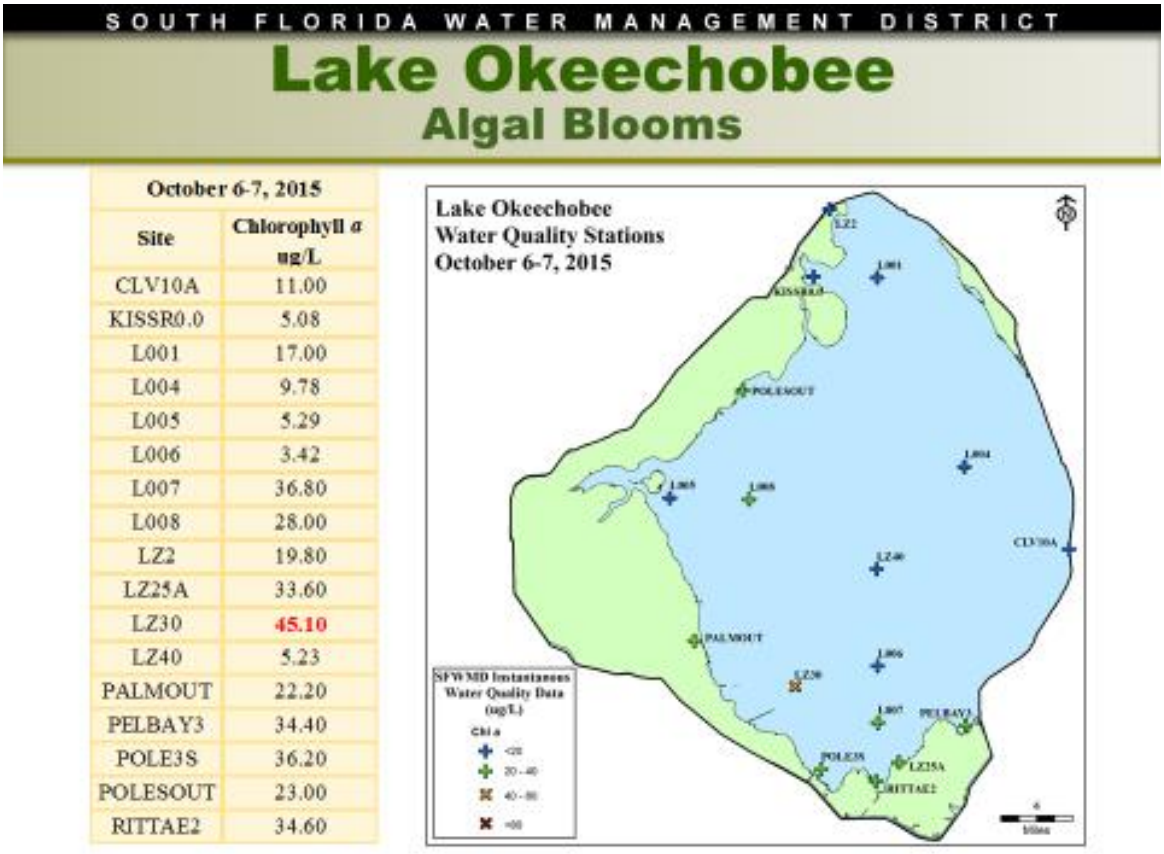


Figure 5

Lake Istokpoga:

Lake Istokpoga stage is 39.36 feet NGVD today and is currently 0.14 feet below its regulation schedule of 39.50 feet NGVD, which is peak high pool (Figure 6). Average flows into the Lake from Arbuckle and Josephine creeks were 635 and 98 cfs respectively, a decrease of 140 cfs from last week. Average discharge from S68 and S68X this past week was 816 cfs, an increase of 438 cfs from the preceding week. According to RAINDAR, 0.085 inches of rain fell in the Lake Istokpoga watershed during the past seven days.

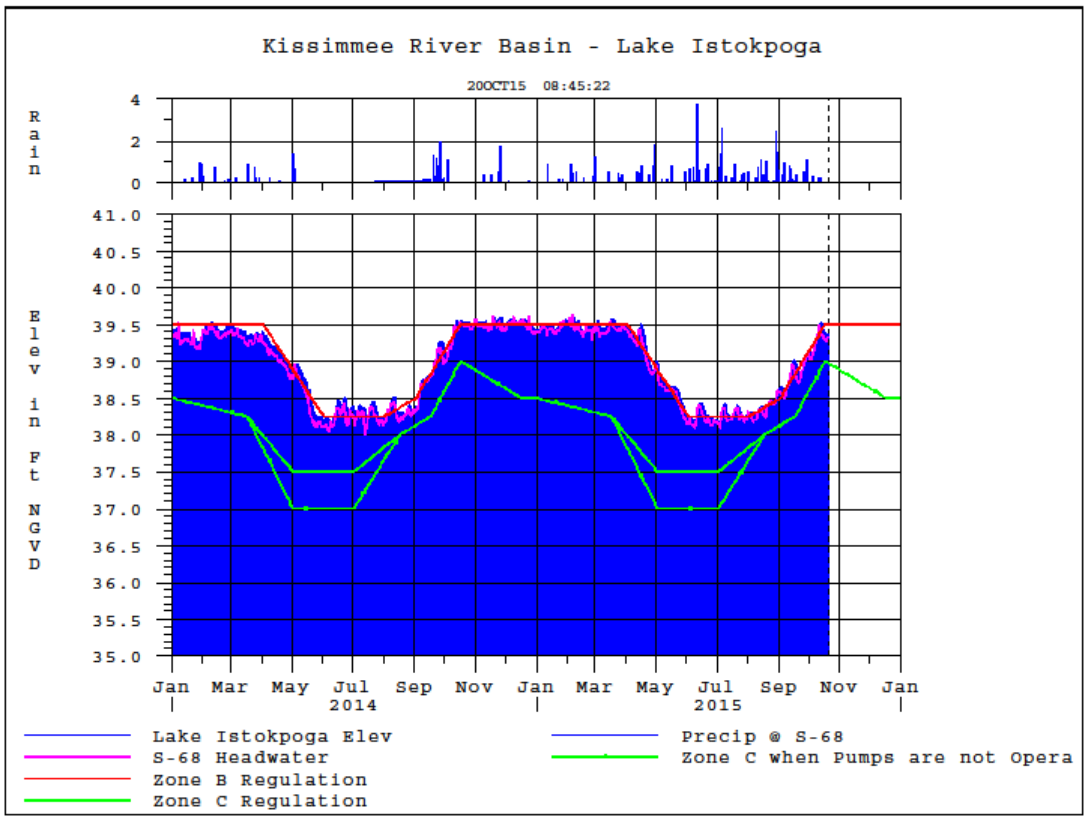


Figure 6

ESTUARIES

St. Lucie Estuary:
Over the past week, provisional flows averaged 0 cfs at S-80, 121 cfs at S-308, 0 cfs at S-49 on C-24, 0 cfs at S-97 on C-23, and 102 cfs from Ten Mile Creek at the Gordy Road Structure. Average inflow from tidal basin tributaries is estimated to be 147 cfs (Figures 1 and 2). Total inflow averaged about 249 cfs last week and 1411 cfs over last month.

Over the past week, surface salinity increased throughout the estuary (Table 1, Figures 3 and 4). The seven-day moving average salinity of the water column at the US1 Bridge is 16.4. Salinity conditions in the middle estuary remain 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)	**12.1** (10.6)	**15.3** (15.7)	NA[1]
US1 Bridge	**15.8** (14.3)	**17.0** (18.5)	10.0-26.0
A1A Bridge	**24.3** (21.4)	**27.4** (26.9)	NA

[1]Envelope not applicable

Caloosahatchee Estuary:
During the past week, provisional flows averaged approximately 143 cfs at S-77, 0 cfs at S-78, and 148 cfs at S-79. Average inflow from tidal basin tributaries is estimated to be 612 cfs (Figures 5 and 6). Total inflow averaged 760 cfs last week and 2874 cfs over last month.

Over the past week, salinity increased upstream of Val I75 and throughout the estuary downstream of Val I75 (Table 2, Figures 7 and 8). The seven-day average salinity values are within the good range for oysters at Shell Point and Sanibel, but within the fair range at Cape Coral (Figure 9). The 30-day moving average surface salinity is 0.3 at Val I-75 and 0.7 at Ft. Myers. Salinity conditions at Val I-75 are in the good range 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)	**0.2** (0.2)	**0.2** (0.2)	NA[1]
*Val I75	**0.4*** (0.2*)	**0.7*** (0.3*)	0.0-5.0[2]
Ft. Myers Yacht Basin	**1.9** (0.6)	**2.9** (0.8)	NA
Cape Coral	**NR** (5.2)	**NR** (7.6)	10.0-30.0
Shell Point	**20.9** (19.3)	**~22.0** (~21.5)	10.0-30.0
Sanibel	**28.3** (28.1)	**29.1** (29.4)	10.0-30.0

[1]Envelope not applicable, [2]Envelope is based on a 30-day average.
*Val I75 is temporarily offline due to bridge construction.
Salinity values are estimated using models developed for the 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)	NA	NA	2.0 – 6.4
Dissolved Oxygen (mg/l)	NA	NA	4.6 – 6.9

The Florida Fish and Wildlife Research Institute reported on October 16, 2015, that *Karenia brevis*, the Florida red tide organism, was detected in background to very low concentrations in six samples collected in, along, and offshore of Charlotte and Lee counties. A bloom of *K. brevis* is currently present along and offshore of Manatee and Sarasota counties in Southwest Florida. Background to medium concentrations of *K. brevis* was detected in 27 samples collected in and alongshore of Pinellas, Manatee and Sarasota counties. *Karenia brevis* was not detected in or alongshore of Collier and Monroe counties. Fish kills and respiratory irritation have been reported at St. Casey Key Beach and offshore of Venice (Sarasota County).

Water Management Recommendations

Lake Okeechobee's water level is within the Low Operational Sub-band; the tributary hydrological conditions are Normal; and the seasonal and multi-seasonal forecasts are Wet and Wet, respectively. The Lake Okeechobee Regulation Schedule (LORS) recommends releases up to 3000 cfs at S-79 and 1170 cfs at S-80.

Currently, the USACE is not releasing water from Lake Okeechobee to the Caloosahatchee and St. Lucie estuaries. If releases are to be made under LORS guidance, flows averaging 650~1200 cfs at S-79 will help maintain salinity conditions in the Caloosahatchee Estuary favorable for both tape grass downstream of I-75 Bridge (upper estuary) and adult oysters downstream of Cape Coral Bridge (lower estuary). Similarly, flows averaging 200~500 cfs at S-80 will not lower salinity beyond the favorable range for adult oysters downstream of US1 Bridge in the St. Lucie Estuary provided that watershed inflow continues to be low. The releases should be conducted in a pulse pattern to mitigate potential stratification and phytoplankton accumulation in the water column. Suggested pulse schedules are given below in Table 4.

Table 4. Schedules for 7-day pulse releases at S-80 and S-79

	7-day pulses at S-80							
Day	200 cfs	300 cfs	400 cfs	500 cfs	650 cfs	800 cfs	950 cfs	1170 cfs
1	200	300	400	500	650	800	950	1290
2	600	700	800	900	1100	1200	1400	1800
3	300	500	650	800	900	1100	1200	1500
4	200	300	450	600	800	900	1100	1300
5	100	200	300	400	600	700	900	1000
6	0	100	200	300	400	600	700	800
7	0	0	0	0	100	300	400	500
	7-day pulses at S-79							
Day	650 cfs	800 cfs	1000 cfs	1200 cfs	1500 cfs	2000 cfs	2600 cfs	3000 cfs
1	1150	1300	1500	1700	2000	2500	3100	3500
2	1400	1700	1900	2100	2400	3100	3900	4300
3	900	1100	1600	1800	2100	2600	3400	3800
4	600	700	900	1100	1400	1900	2500	2900
5	400	500	700	900	1200	1700	2300	2700
6	100	300	400	600	900	1400	2000	2400
7	0	0	0	200	500	800	1000	1400

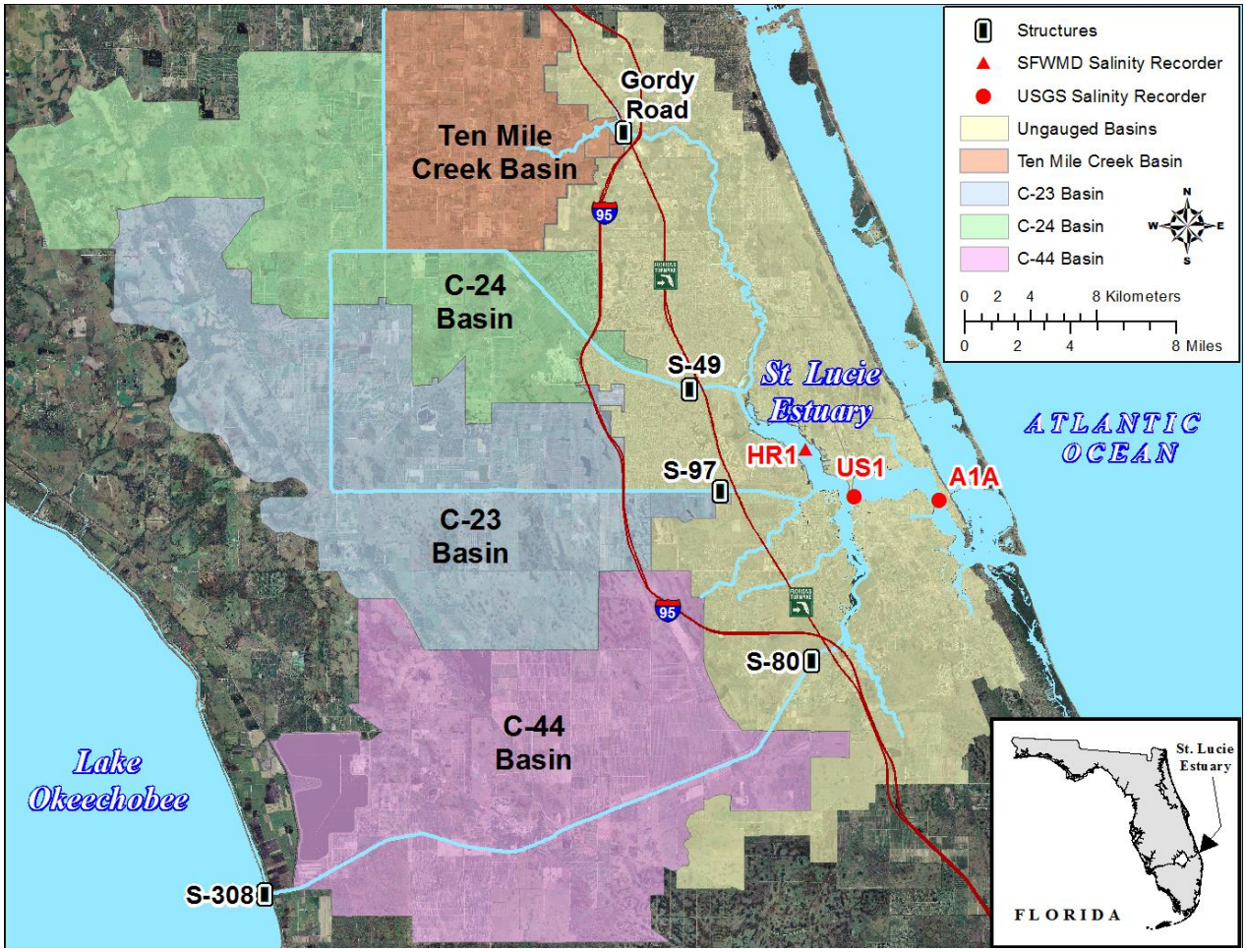


Figure 1. Basins, water control structures, and salinity monitoring for the St. Lucie Estuary.

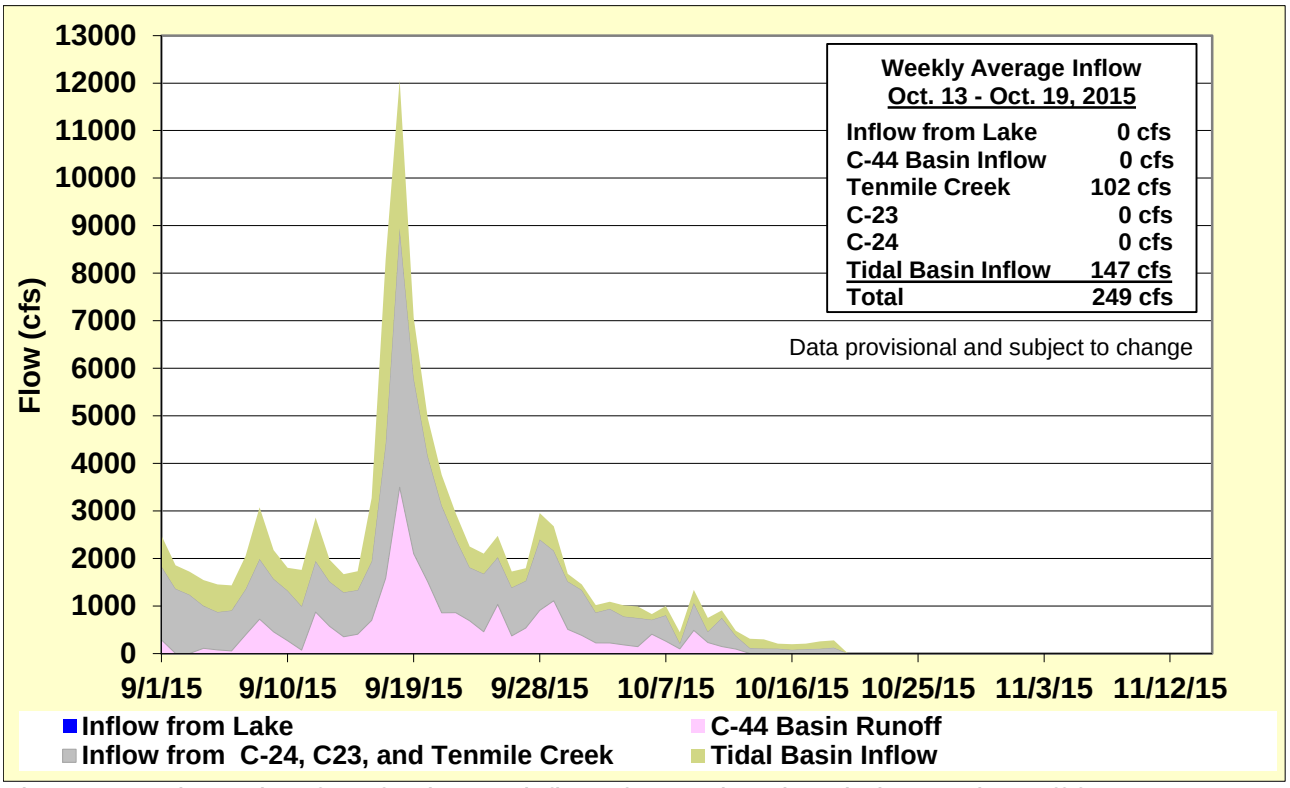


Figure 2. Estimated surface freshwater inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and tidal basins into the St. Lucie Estuary.

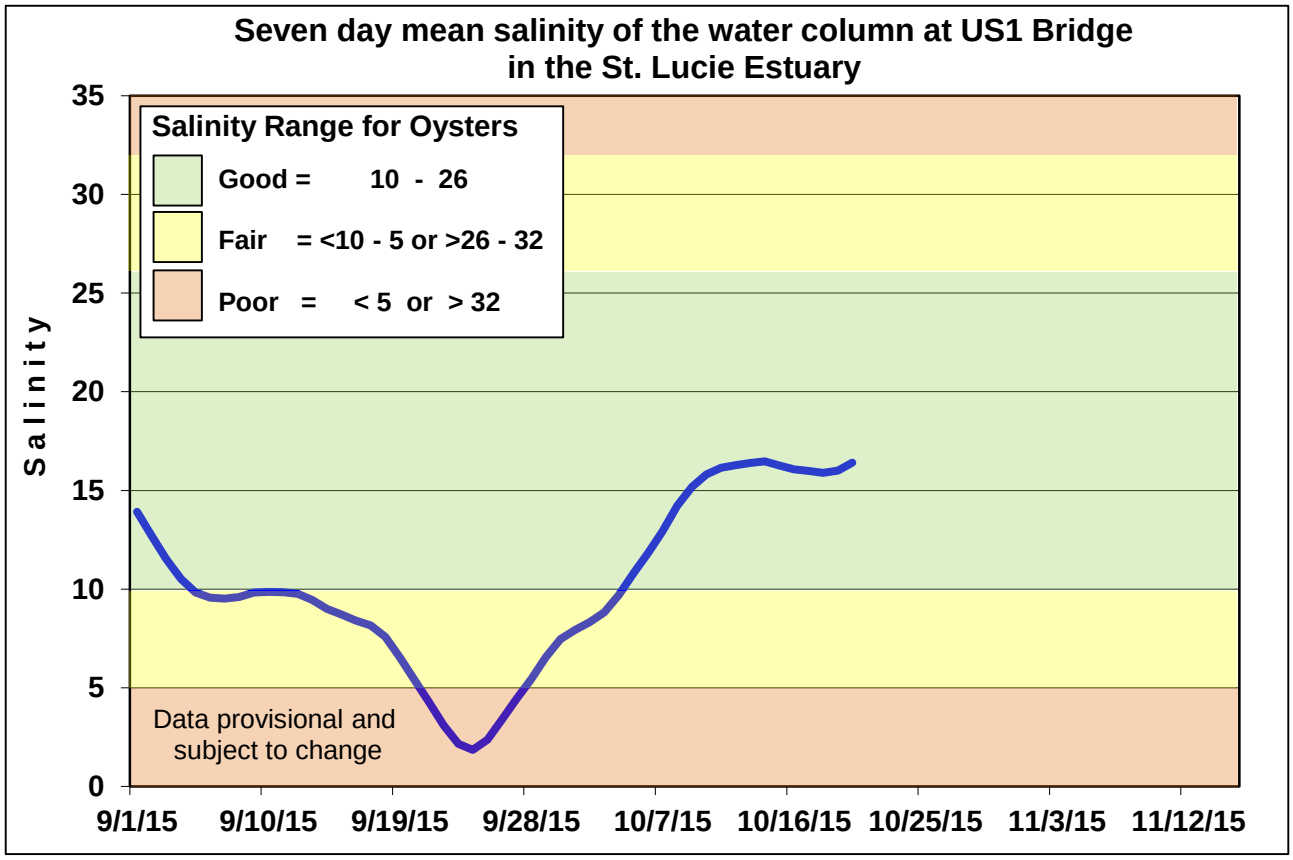


Figure 3. Seven-day mean salinity of the water column at the U.S. Highway 1 Bridge.

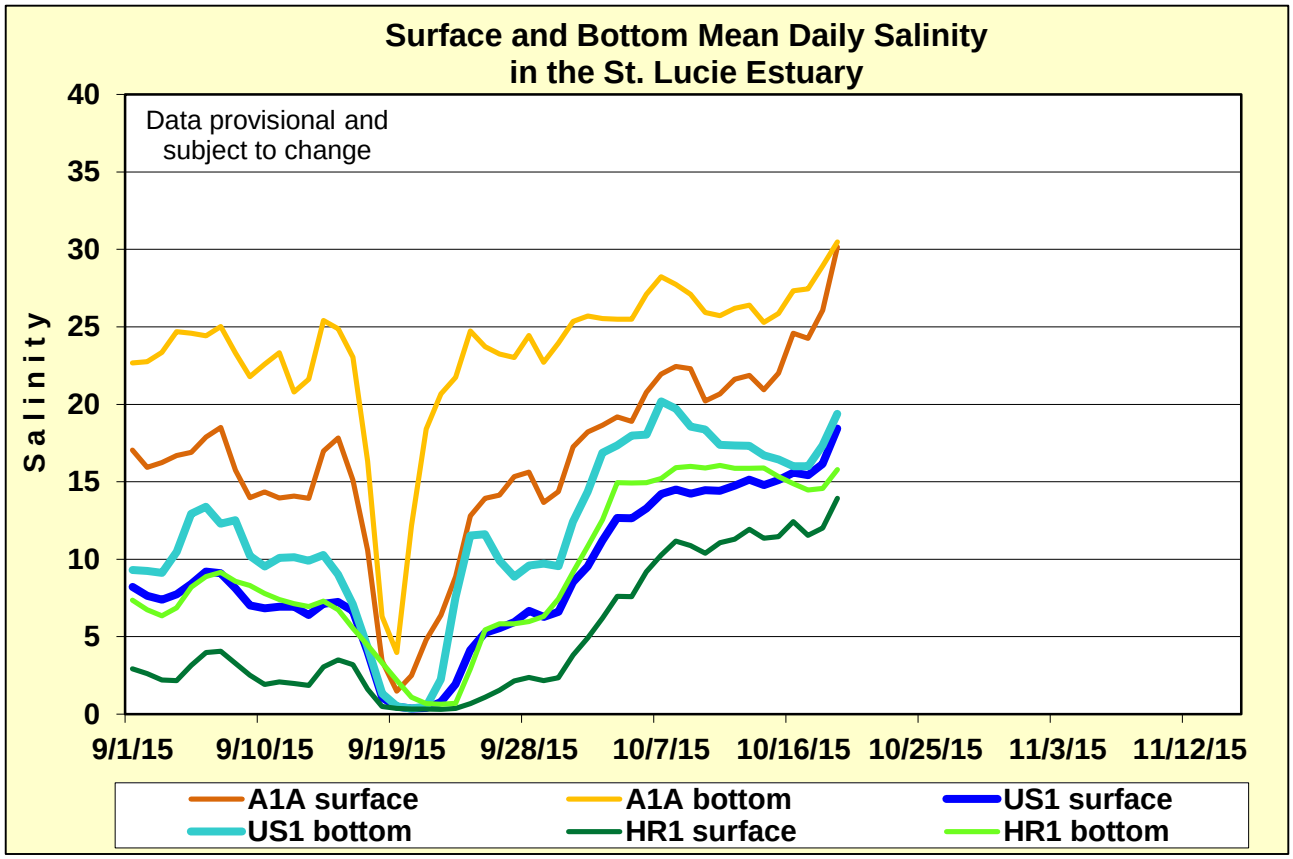


Figure 4. Daily mean salinity at the A1A, US1 and estimated HR1 stations.

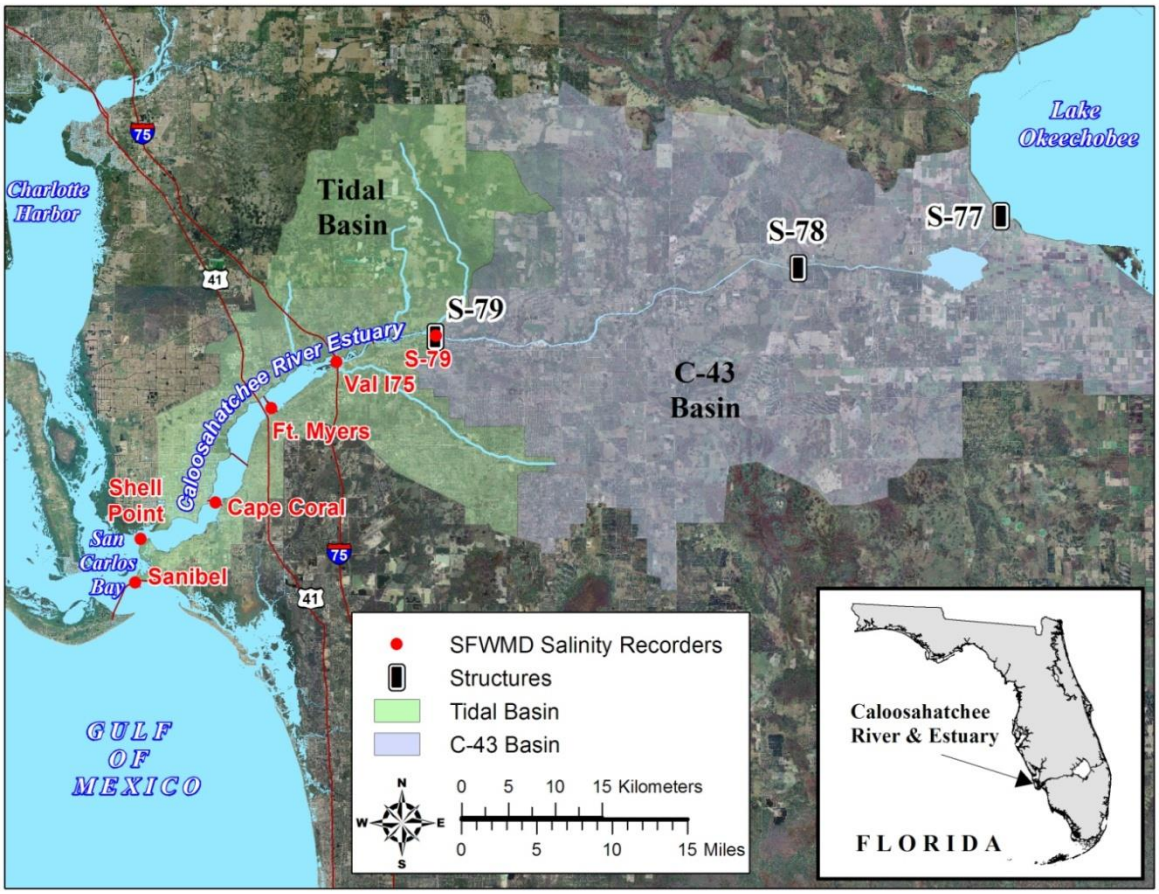


Figure 5. Basins, water control structures, and salinity monitoring for the Caloosahatchee Estuary.

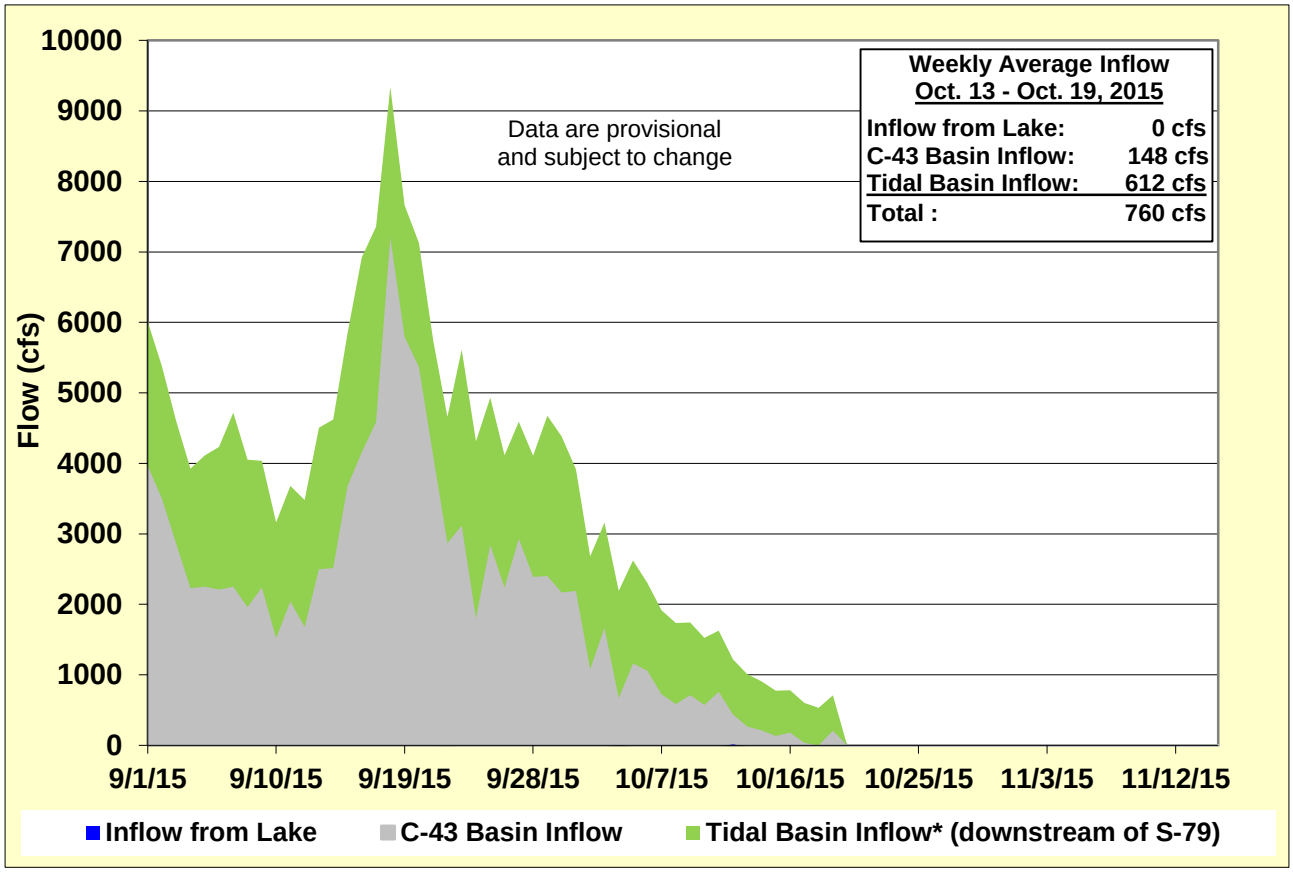
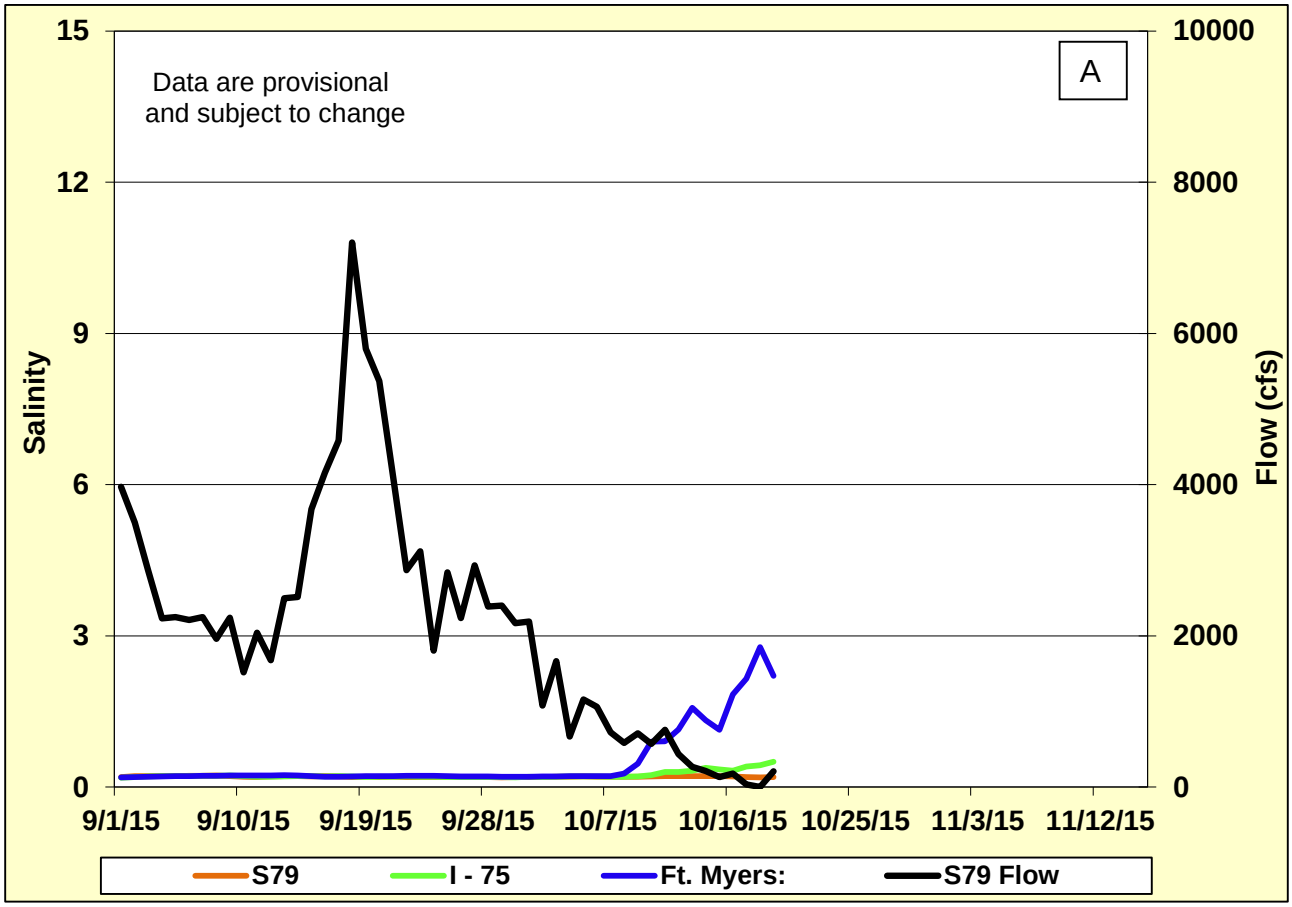


Figure 6. Surface freshwater inflows from Lake Okeechobee, runoff from the C-43 basin, and tributaries in the tidal basin into the Caloosahatchee River Estuary.



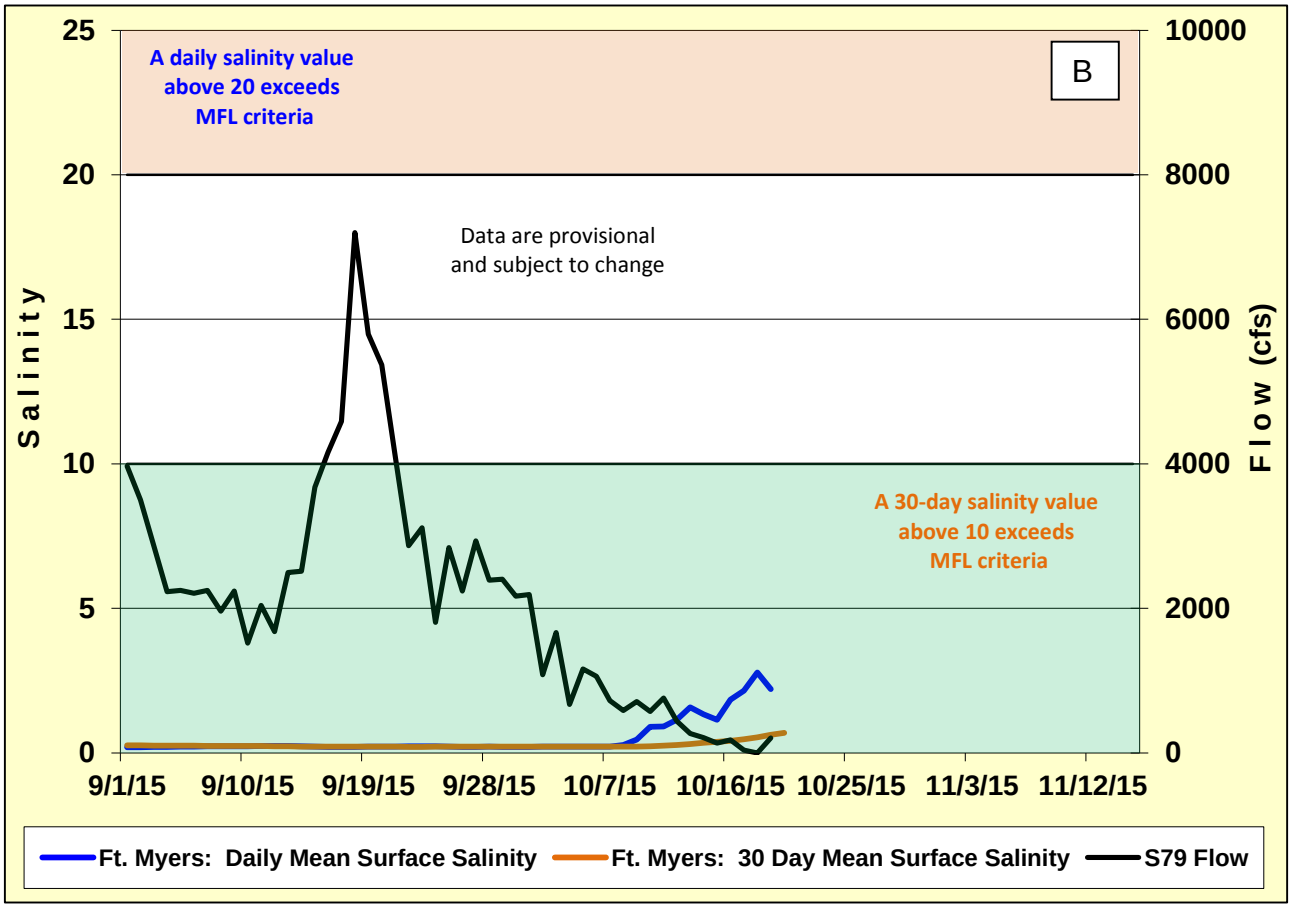


Figure 7. Daily mean flows at S-79 and salinity at upper estuary monitoring stations (A) and 30-day moving average salinity at Ft. Myers (B).

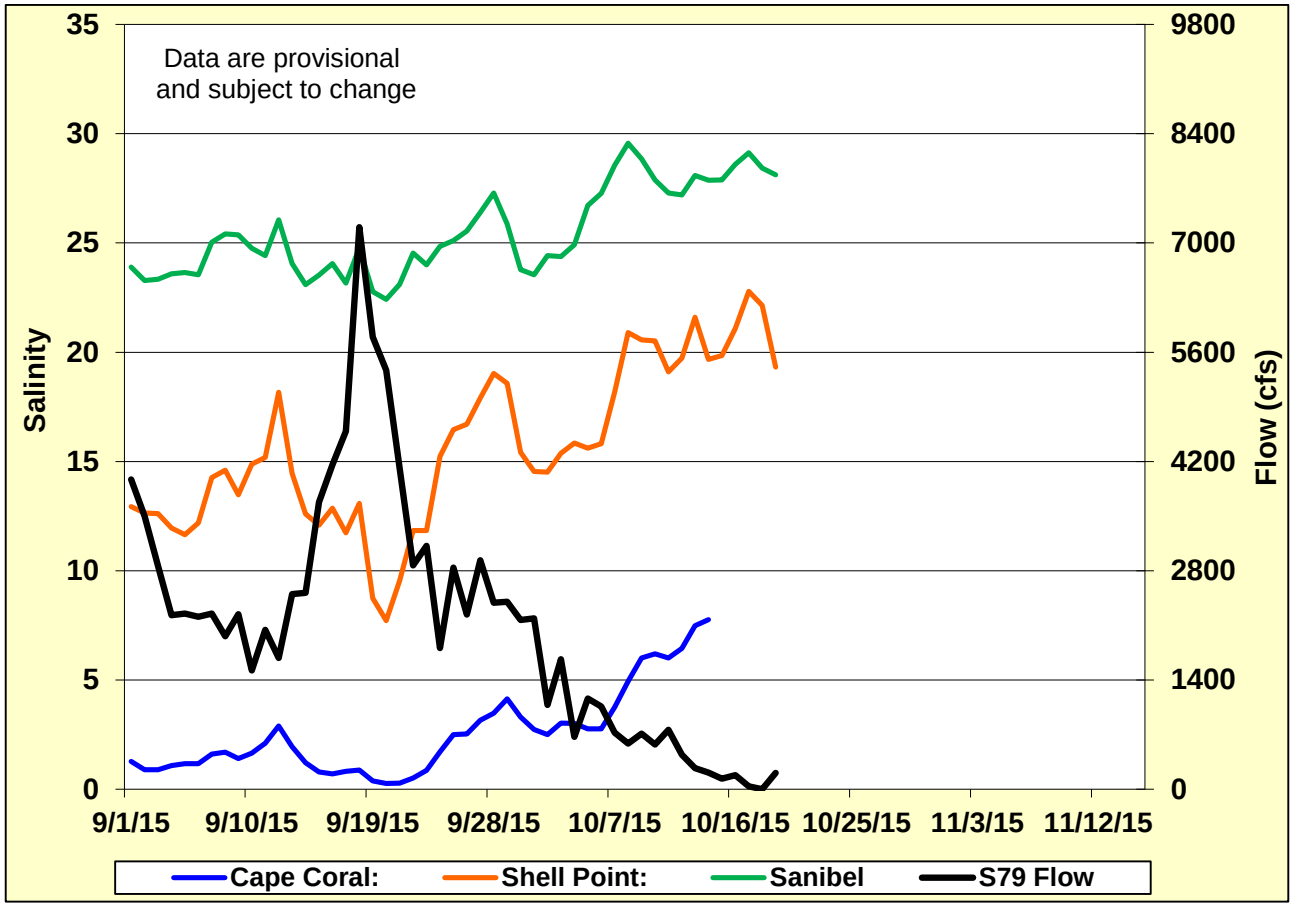


Figure 8. Daily mean flows at S-79 and salinity at lower estuary stations.

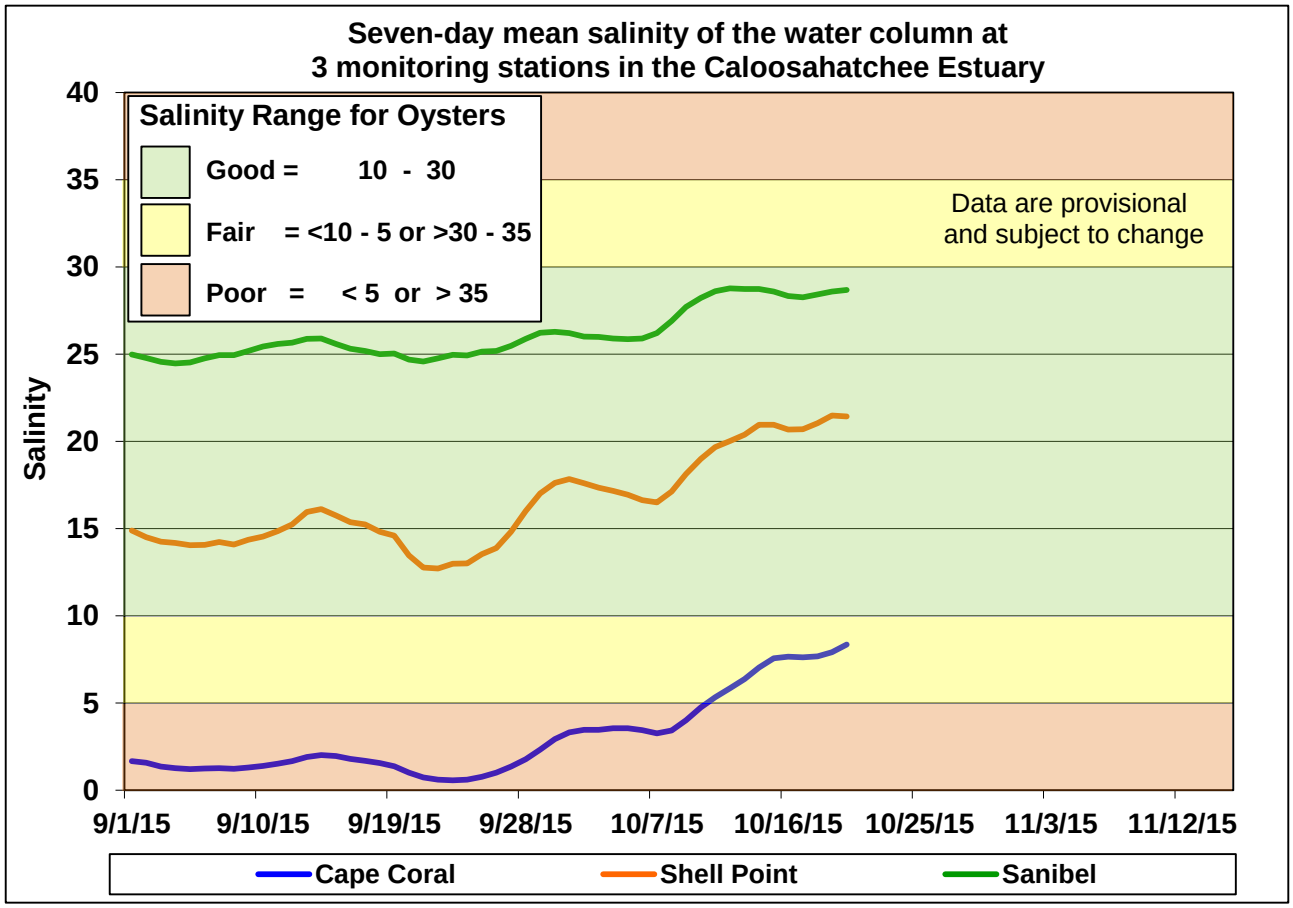
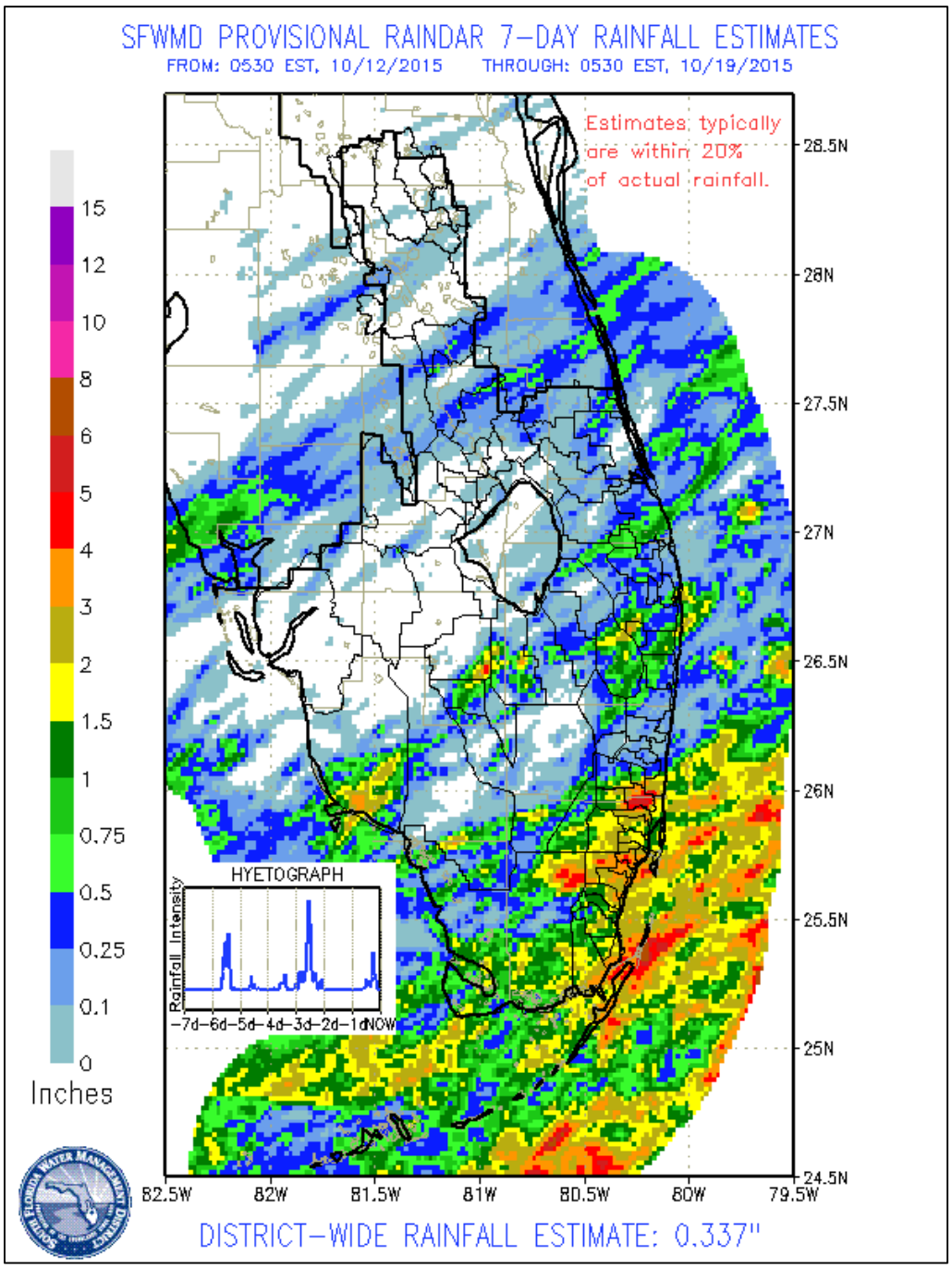


Figure 9. Seven-day mean salinity at Cape Coral Bridge, Shell Point and Sanibel Bridge monitoring stations.

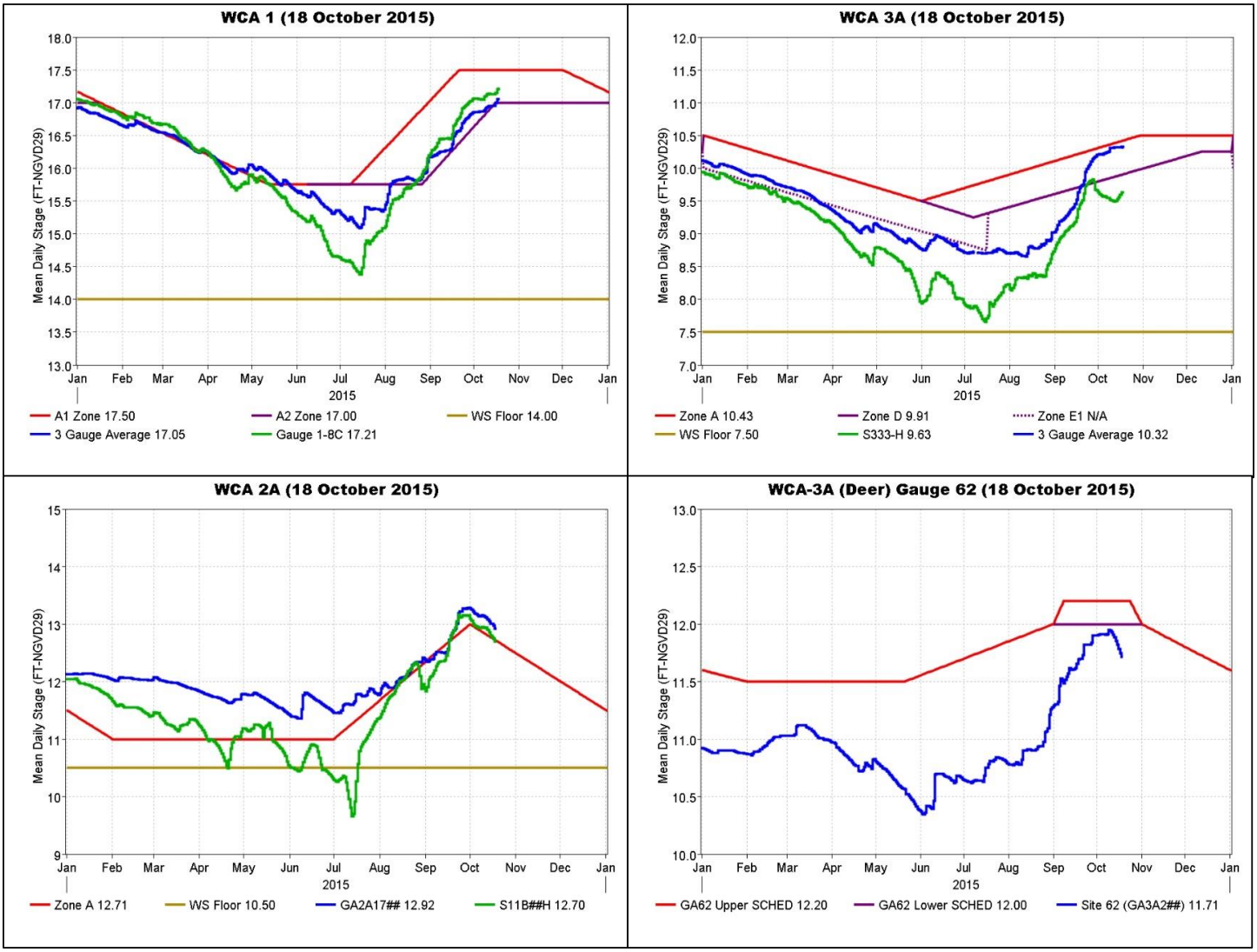
GREATER EVERGLADES

Rainfall was light with basin averages again below an inch. The local basin maximum rainfall was 4.99 inches in Everglades National Park (ENP), where most rainfall was centered. Basin-wide stage changes were similar to last week's, ranging from -0.06 feet to 0.09 feet. Pan evaporation was 1.32 inches, 18% above the 1.12-inch pre-project average.

Everglades Region	Rainfall (Inches)	Stage Change (feet)
WCA-1	0.92	0.09
WCA-2A	0.37	-0.06
WCA-2B	0.12	-0.05
WCA-3A	0.22	0.07
WCA-3B	0.90	0.01
ENP	0.92	0.07



Regulation Schedules: Stage changes varied at the regulation schedule sites last week. In WCA-1, the wetlands stage rose and is 0.45 feet below regulation and slightly above the Zone A2 line. The WCA-2A stage decreased by 0.24 feet and now is 0.21 feet above regulation. In WCA-3A, the 3-gauge average stage remains in Zone D at 0.11 feet below regulation. The water level at the northwestern WCA-3A gauge stage (gauge 62) decreased by 0.23 feet and is 0.29 feet below the lower regulation schedule.

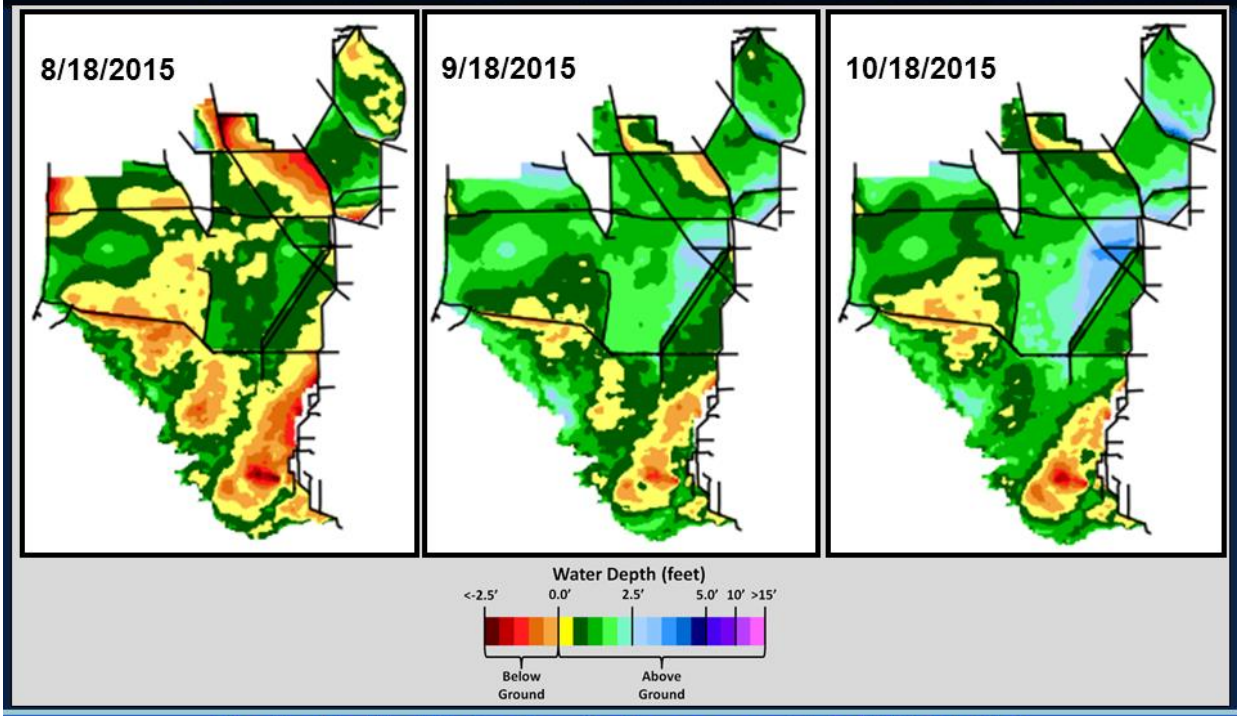


Water Depths and Changes: Water levels are above those one and two months ago. Most areas are inundated except those at higher elevations (ENP and Holey Land Wildlife Management Area). Water depths at the monitored gauges range from 1.16 feet (WCA-3B) to 2.40 feet (WCA-3A), excluding WCA-2B. Stages in southern WCA-3A and elsewhere remain below those of concern for tree islands (depths and duration).

Stages are mixed relative to a week ago and over one foot higher than a month ago in parts of the region. Compared to a year ago, stages are also mixed with depths both lower and higher. Stage gauge changes last week ranged from -0.24 feet to 0.19 feet.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

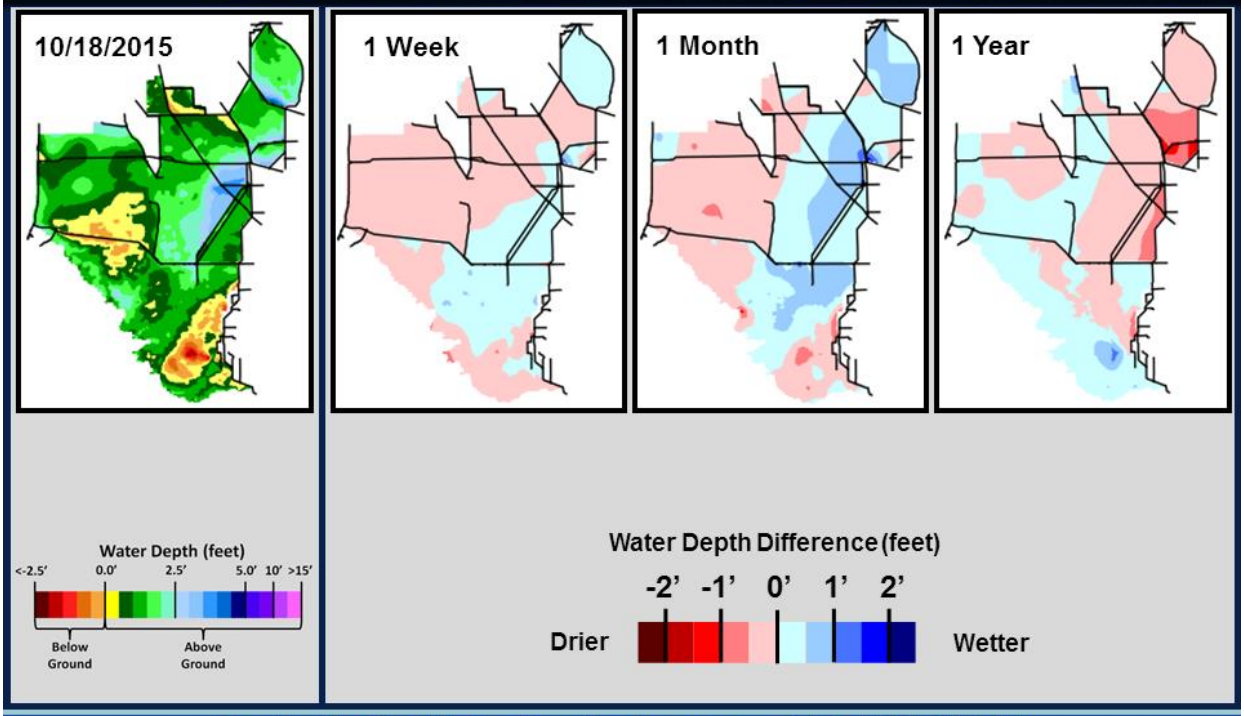
SFWDAT Water Depth Monthly Snapshots



South Florida Water Depth Assessment Tool (SFWDAT)

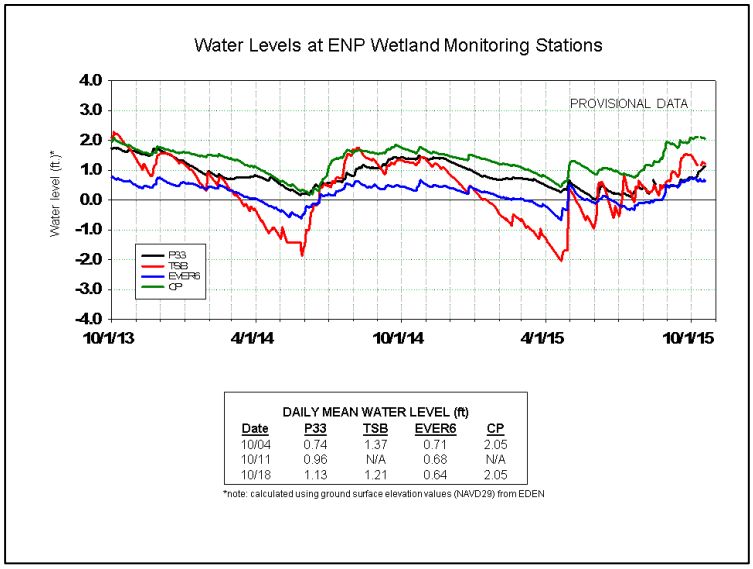
SOUTH FLORIDA WATER MANAGEMENT DISTRICT

SFWDAT Everglades Difference Maps (Present – Past)



South Florida Water Depth Assessment Tool (SFWDAT)

Everglades National Park (ENP) and Florida Bay: Water levels are similar to or lower than a week ago in Taylor Slough and the ENP panhandle. Despite moderate to heavy rain in the eastern areas, water levels are still declining.



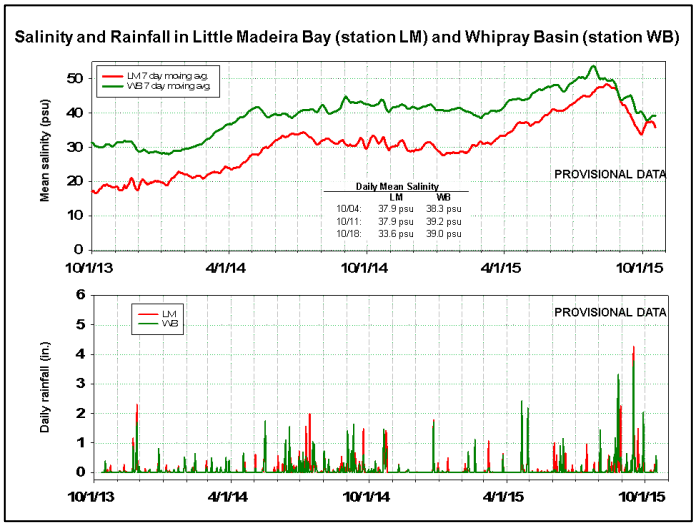
DAILY MEAN WATER LEVEL (ft)

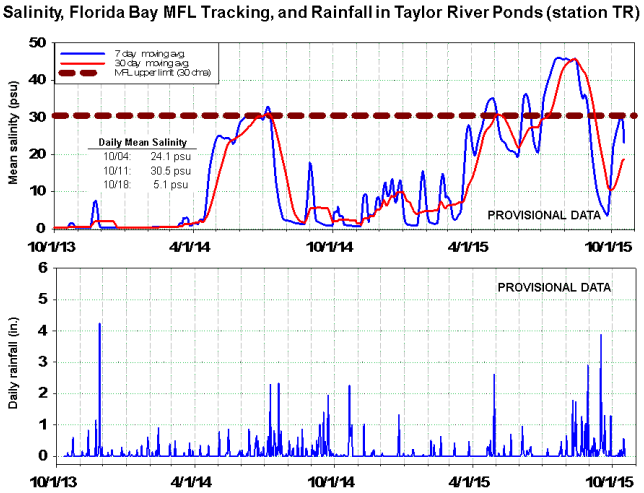
Date	P33	TSB	EVER6	CP
10/04	0.74	1.37	0.71	2.05
10/11	0.96	N/A	0.68	N/A
10/18	1.13	1.21	0.64	2.05

*note: calculated using ground surface elevation values (NAVD29) from EDEN

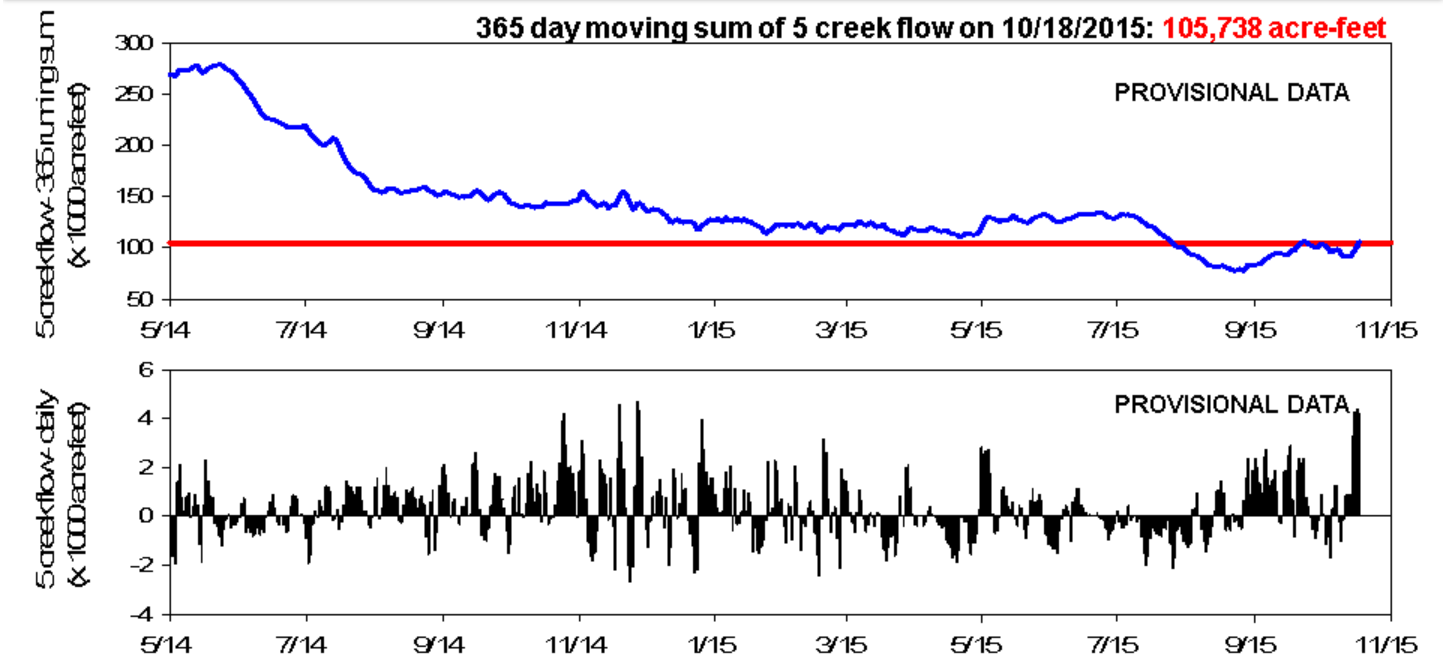
Salinities declined in Florida Bay over the last week and are now eight to 16 psu above average for this time of year. As creek flow into Florida Bay started up again, the daily average salinity at the MFL sentinel site decreased to 5.1 psu, which though still above average is much closer than previous weeks to the 1 psu or lower salinity that is typical for this time of year. The decrease took place mostly over the weekend when salinity dropped 19 psu over two days. The 30-day moving average salinity has increased to 18.7 psu.

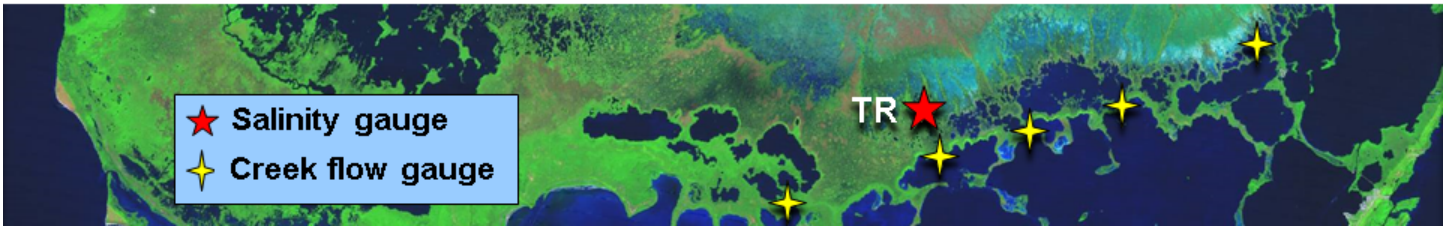
The 365-day running sum of the cumulative flow from the five creeks feeding Florida Bay finally crossed above the 105,000 acre-feet MFL criterion on Sunday, October 18, and is 105,738-acre feet. Daily differences in the 365-day running sum of the cumulative flow from these creeks represent the difference between current daily flow and flow a year ago. Cumulative flow from the five creeks for last week was 18,748 acre-feet after two weeks of reversed upstream flow. USGS creek flow data are provisional.





5 Creek Cumulative Flow and Florida Bay MFL Flow Criteria Tracking





<u>Water management recommendations</u>:

- We recommend moving as much water south into ENP and Florida Bay as possible and for as long as possible.

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

Summary of Everglades Recommendations, October 19, 2015 (SFWMD) (red is new text)

Area	Current Condition	Cause(s)	Recommendation	Reasons
WCA-1	Stages increased from 0.07' to 0.13'	Rainfall, ET, management	Recommend ascension rates no more than 0.25 ft/wk, or 0.5 ft/14 days.	Promote native habitat and maintain wetland plant communities. Moderate ascension rates to protect habitats and sensitive species and to take advantage of rain events.
WCA-2A	Stage decreased -0.24'	Rainfall, ET, management	Recommend ascension rates no more than 0.25 ft/wk, or 0.5 ft/14 days.	Promote native habitat and maintain wetland plant communities. Moderate ascension rates to protect habitats and sensitive species and to take advantage of rain events.
WCA-2B	Stage decreased -0.01' to -0.05'	Rainfall, ET, management	Recommend ascension rates no more than 0.25 ft/wk, or 0.5 ft/14 days.	High stages generally preclude wading bird use, but can provide good habitat for wading bird foraging as stages drop at the end of the dry season.
WCA-3A NE	Stage decreased -0.02'	Rainfall, ET, management	Water levels in northeastern WCA-3A are now above ground. Continuing releases into far northeastern 3A are optional now, but can continue as desired. Average water stage of gauges 62 and 63 should remain under 11.60 feet (11.26' on 10/19) for terrestrial wildlife. Recommend ascension rates up to 0.25 ft/wk, or 0.5 ft/14 days maximum to protect apple snail egg clusters.	Promote native habitat and maintain wetland plant communities. Moderate ascension rates to protect habitats and sensitive species in 3A, and also to allow taking advantage of rain events.
WCA-3A NW	Stage decreased -0.23'	Rainfall, ET, management		
Central WCA-3A S	Stage unchanged	Rainfall, ET, management	Continue to move water into WCA-3A. Conditions have improved greatly since mid-summer. El Nino conditions will probably produce higher than normal dry season stages. The wet season stage target is 10.67 3AVG by Oct 30 (10.32' on 10/19). Recommend ascension rates up to 0.25 ft/wk, or 0.5 ft/14 days.	Promote native habitat and maintain wetland plant communities. Moderate ascension rates to protect habitats and sensitive species in 3A, and take advantage of rain events.
Southern WCA-3A S	Stage increased 0.03'	Rainfall, ET, management		
WCA-3B	Stages increased from 0.07' to 0.18'	Rainfall, ET, management	Recommend ascension rates up to 0.25 ft/wk, or 0.5 ft/14 days.	Promote native habitat and maintain wetland plant communities. Provide foraging habitat for wading birds.
ENP-SRS	Stage increased 0.07'	ET, rainfall, topography, management	Make discharges to the Park according to the ERTP rainfall plan. Water deliveries to Shark Slough should be made through S-333, then through S-12D and S-12C.	Promote native habitat and maintain wetland plant communities.
ENP-CSSS habitats	Nesting is complete. Conditions are now wet.	Rainfall, ET, management	Follow rainfall plan for releases	Provide habitat and appropriate nesting conditions for CSSS.
Taylor Slough	5 inches below average in the north to 2 inches above average in the southwest	Rain, ET, inflows	Move water southward as possible	Provide freshwater buffer for ecosystems and freshen saline conditions downstream
FB- Salinity	Still 8-16 psu above average	Rain, ET, inflows, wind.	Move water southward as possible	Southward flows are still needed to reverse/slow salinity increases