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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: September 13, 2016

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Weather Conditions and Forecast

Showers/storms focused west through north of the Lake each day into the weekend. A weak tropical low moved inland over east central Florida earlier this morning. Most of the associated activity has been confined to the northern and eastern periphery of the center of circulation. However, as the low moves slowly northwestward showers/storms will fill-in over the peninsula with heaviest rains likely over the Upper Kissimmee. The low is expected to be over north Florida tomorrow with one axis of convergence extending southward, hence the continued focus for rains over the Kissimmee Valley. Confidence is low for Thursday as the location and structure of the slow moving tropical low is uncertain; so, this forecast keeps a focus of activity extending across south central Florida.

Kissimmee

On Sunday, stages in East Lake Toho, Lake Toho, and Kissimmee-Cypress-Hatchineha were above schedule by 0.1, 0.1 and 1.4 feet, respectively. Over the past week, discharge at S65, S65A, and S65E averaged 3,290, 5,101, and 4,077 cfs, respectively. Tuesday morning discharges were: ~3,985 cfs, ~4,935 cfs, ~5,213 cfs, and ~4,894 cfs, respectively at S65, S65A, S65C, and S65E. Dissolved oxygen in the Kissimmee River averaged 1.35 mg/L over the past week and declined to 0.96 mg/L on Sunday. Kissimmee River mean floodplain depth on Sunday was 2.17 feet. As discharge is ramped up or down at S65/S65A we recommend using the rampup/rampdown schedule shown in Figure 8a.

Lake Okeechobee

Lake Okeechobee is at 15.25 feet NGVD having increased by 0.22 feet over the past week in response to the heavy rainfall associated with the recent tropical depression. The Lake remains in the low flow sub-band. Algal bloom conditions appear to be dissipating with no bloom activity detected in the current satellite imagery.

Estuaries

Total discharge to the St. Lucie estuary average 2,645 over the past week with 574 cfs (22%) coming from Lake Okeechobee. Salinity at the US1 Bridge is in the poor range for oysters. Total inflow to the Caloosahatchee estuary averaged 6,373 cfs over the past week with 585 cfs (9%) coming from the Lake. Salinity conditions are good for tape grass in the upper estuary. Salinity conditions are good for oysters at the Sanibel Causeway and Shellpoint, but in the poor range at the Cape Coral Bridge.

Stormwater Treatment Areas

Over the past week, the STAs/FEBs received approximately 2,500 acre-feet of Lake regulatory releases. The total amount of Lake regulatory releases sent to the STAs/FEBs in WY2017 (since May 1, 2016) is approximately 69,300 acre-feet. All STA cells are at or above target depths. Operational

restrictions are in place for vegetation rehabilitation in STA-1E and STA-5/6 and structure repairs are underway in STA-1E. In addition, nests of Endangered Species Act (ESA) protected species have been observed in STA-5/6. This week, as conditions allow, Lake releases will be sent to STA-1E.

Everglades

Stage changes in the WCAs and northeastern Everglades National Park (ENP) ranged from -0.06 feet to +0.21 feet. High water levels have caused FWC to initiate closures within the WCAs for wildlife protection. The 30-day moving average salinity at the Florida Bay MFL site is 0.4 psu and the cumulative 365-day inflow from the five creeks into Florida Bay decreased to 335,508 acre-feet.

KISSIMMEE BASIN

Kissimmee Basin Rainfall

The Upper Kissimmee Basin received 0.30 inches of rainfall in the past week and the Lower Basin received 0.46 inches (SFWMD Daily Rainfall Report 09/12/2016).

Upper Kissimmee Basin

Stages and departures in the Kissimmee Chain of Lakes (KCOL) are shown in **Table 1**.

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: 9/13/2016

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)						
							9/11/16	9/4/16	8/28/16	8/21/16	8/14/16	8/7/16	7/31/16
Lakes Hart and Mary Jane	S62	259	LKMJ	60.1	R	60.0	0.1	-0.1	0.0	0.1	0.0	0.1	0.1
Lakes Myrtle, Preston, and Joel	S57	105	S57	61.0	R	61.0	0.0	-0.1	0.1	0.0	0.0	0.0	0.0
Alligator Chain	S60	249	ALLI	63.2	R	63.2	0.0	-0.1	0.0	0.0	0.0	0.1	0.0
Lake Gentry	S63	329	LKGT	61.0	R	61.0	0.0	-0.1	0.0	0.0	0.0	0.1	0.1
East Lake Toho	S59	790	TOHOE	56.8	R	56.7	0.1	-0.1	-0.3	0.3	0.0	-0.2	-0.1
Lake Toho	S61	1611	TOHOW, S61	53.8	R	53.7	0.1	0.0	0.0	0.0	0.0	0.0	-0.1
Lakes Kissimmee, Cypress, and Hatchineha	S65	3290	LKISSP, KUB011, LKIS5B	52.6	R	51.2	1.4	1.2	0.5	0.4	-0.1	-0.5	-0.4

* 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: 9/13/2016

Metric	Location	Sunday's 1-day average	Weekly Average**									
			9/11/16	9/4/16	8/28/16	8/21/16	8/14/16	8/7/16	7/31/16	7/24/16	7/17/16	7/10/16
Discharge (cfs)	S-65	3996	3290	1080	841	624	532	579	643	642	545	552
Discharge (cfs)	S-65A	5212	5101	2538	808	666	661	694	638	660	633	660
Discharge (cfs)	S-65C	5052	3760	2124	928	1024	1081	1000	1219	1091	1119	1489
Headwater stage (feet NGVD)		33.7	33.8	34.1	34.1	34.0	34.1	34.3	34.1	34.0	34.1	34.2
Discharge (cfs)	S-65D****	5182	3971	2172	1181	1140	1142	1037	1284	1263	1272	1835
Discharge (cfs)	S-65E	5172	4077	2900	910	1061	1137	986	1158	1181	1147	1755
DO concentration (mg/L)***	Phase I river channel	0.96	1.35	3.88	4.75	4.04	4.09	4.58	4.76	4.91	4.40	2.74
Mean depth (feet)*	Phase I floodplain	2.17	1.71	0.39	0.36	0.44	0.63	0.62	1.18	1.93	2.33	3.12

* 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

DATA ARE PROVISIONAL

Water Management Recommendations

Kissimmee Basin Adaptive Recommendations and Operational Actions

Date	Recommendation	Purpose	Outcome	Source
9/13/2016	No new recommendations.			
9/6/2016	No new recommendations.			
8/30/2016	Use figure 8a as possible for discharge rampup/rampdown at S65/S65A.			
8/23/2016	No new recommendations.			
8/16/2016	No new recommendations.			
8/9/2016	No new recommendations.			
8/2/2016	No new recommendations.			
7/26/2016	No new recommendations.			
7/19/2016	No new recommendations.			
7/12/2016	No new recommendations.			
6/30/2016	Ramp down S65/S65A discharge by 150 cfs per day to 650 cfs and hold at 650 cfs until lake stage rises to Zone A of the schedule. When stage enters Zone A, ramp up S65 discharge to 1,400 cfs as stage rises from 0.0 to 0.6 feet above the regulation line unless there is a large rainfall event. This ramp up schedule will be reevaluated when the regulation schedule reaches 52.0 feet NGVD.	The ramp down in S65/S65A discharge is intended to lessen the impact of Lake Okeechobee releases on naturally occurring algal blooms. Holding discharge at 650 cfs reflects consideration for the Snail Kites nesting in the Kissimmee River floodplain.	Implemented	SFWMD Operations Control
6/28/2016	No new recommendations.			
6/21/2016	No new recommendations.			
6/14/2016	No new recommendations.			
6/7/2016	No new recommendations.			
5/31/2016	No new recommendations.			
5/24/2016	No new recommendations.			
5/17/2016	No new recommendations.			
5/10/2016	No new recommendations.			
5/3/2016	No new recommendations.			
4/26/2016	No new recommendations.			
4/19/2016	No new recommendations.			
4/12/2016	No new recommendations.			
4/5/2016	No new recommendations.			
3/29/2016	No new recommendations.			
3/22/2016	No new recommendations.			
3/15/2016	No new recommendations.			
3/8/2016	No new recommendations.			
3/1/2016	No new recommendations.			
2/23/2016	No new recommendations.			
2/16/2016	No new recommendations.			
2/9/2016	No new recommendations.			
2/1/2016	Begin F&W recessions in East Toho, Toho, and KCH per the requested recession lines shown in the 2015-16 Dry Season Standing Recommendation (SR). Use Table 2 for guidance on rates of change in discharge to control departures from the line in KCH, and the reversal guidelines shown in the SR for Toho and East.	Initiate and manage lake stage recessions in East Toho, Toho, and KCH for the benefit of fish and wildlife, while avoiding harm to the Kissimmee River	TBD	KB Tech Team

KCOL Hydrographs (through Sunday midnight)

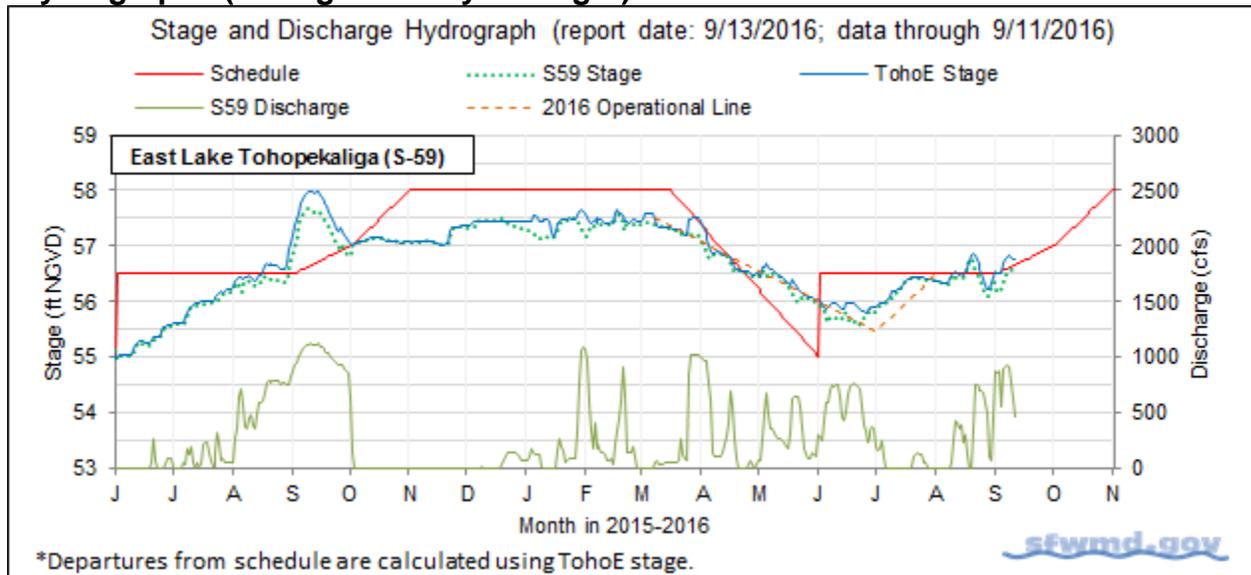


Figure 1.

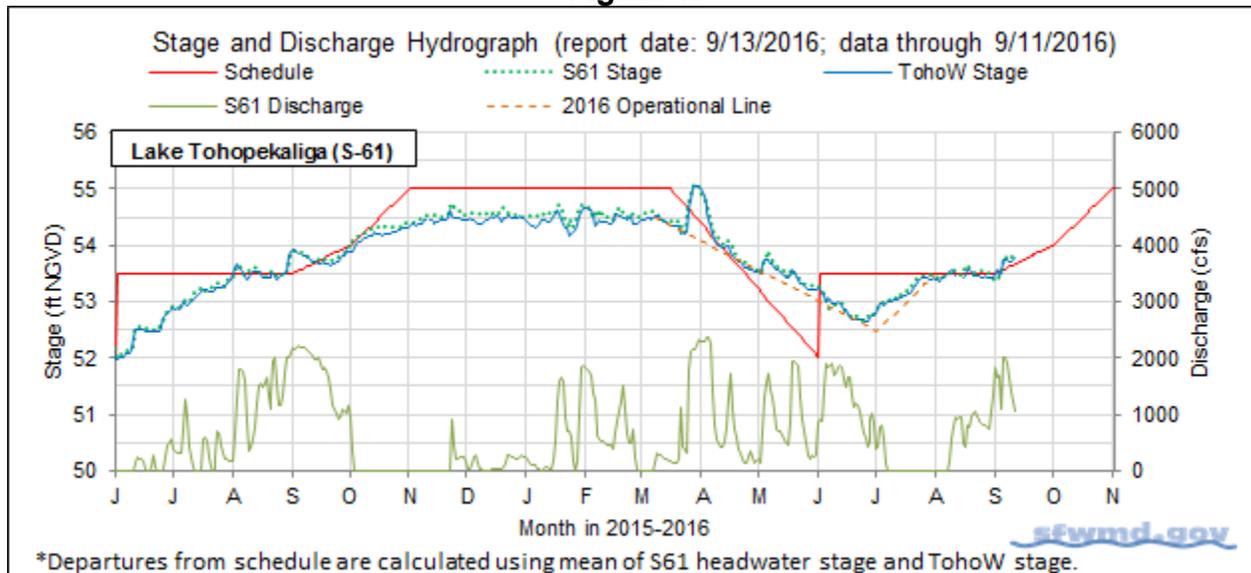


Figure 2.

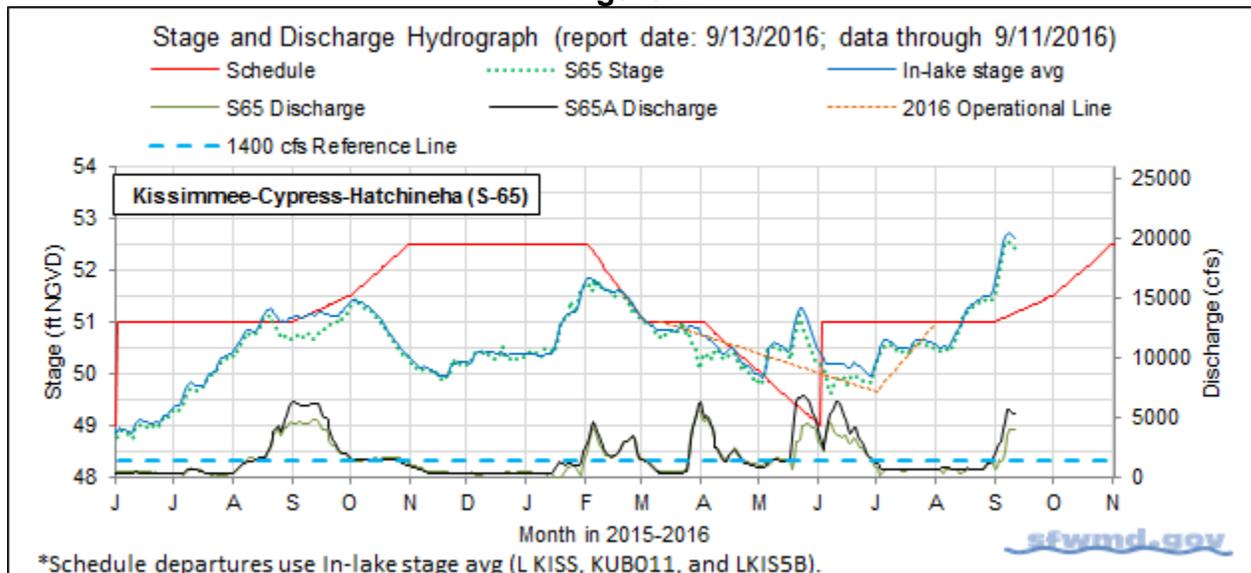


Figure 3.

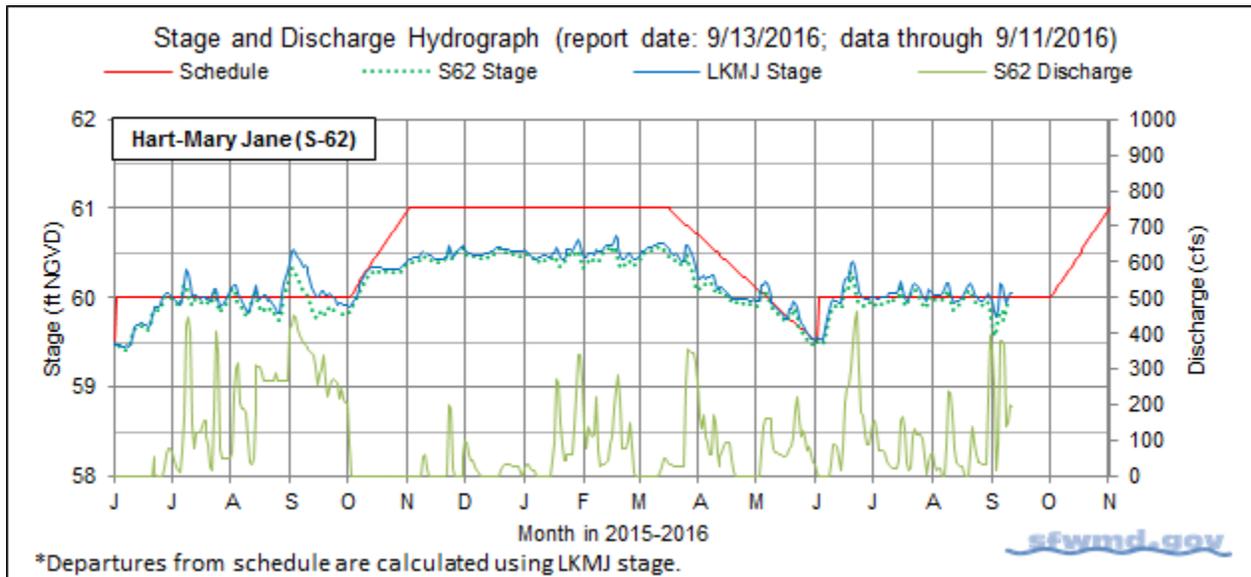


Figure 4.

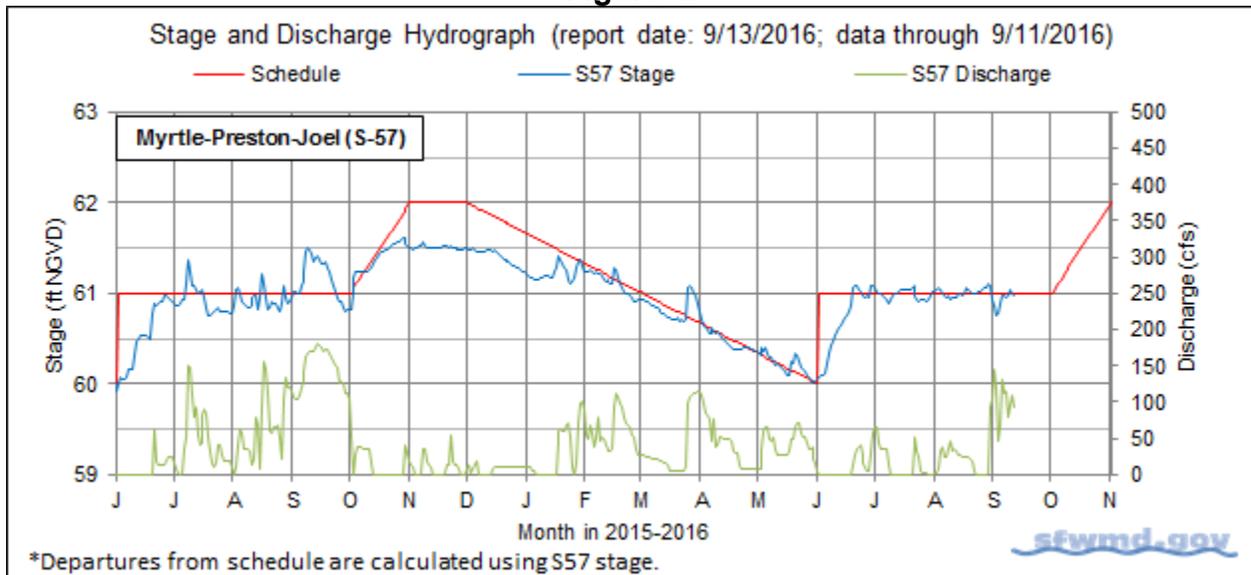


Figure 5.

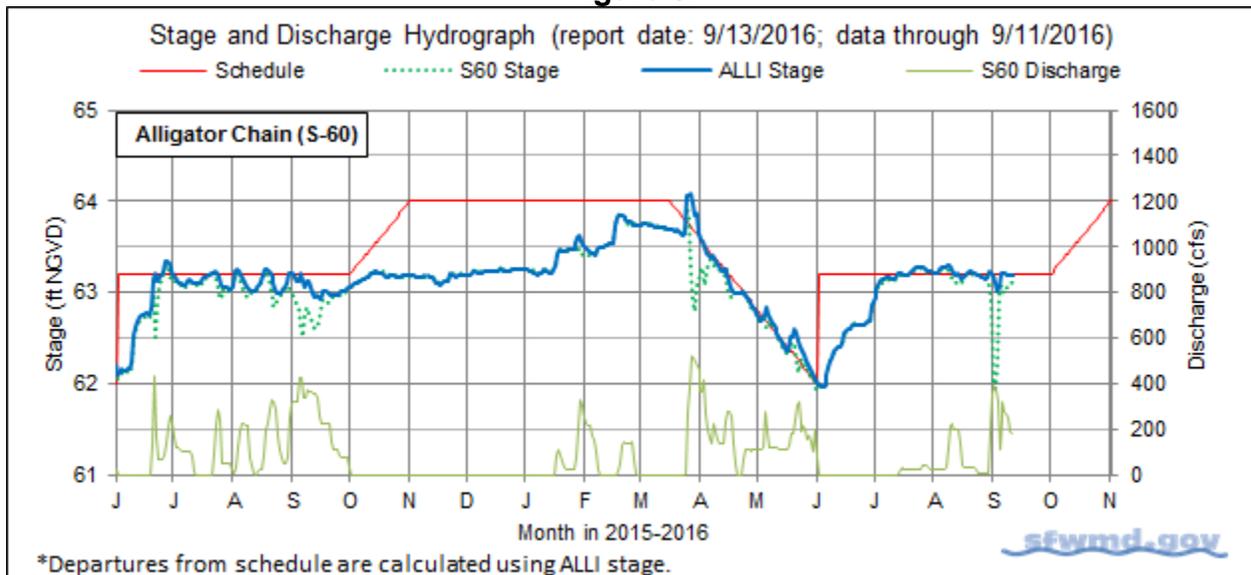


Figure 6.

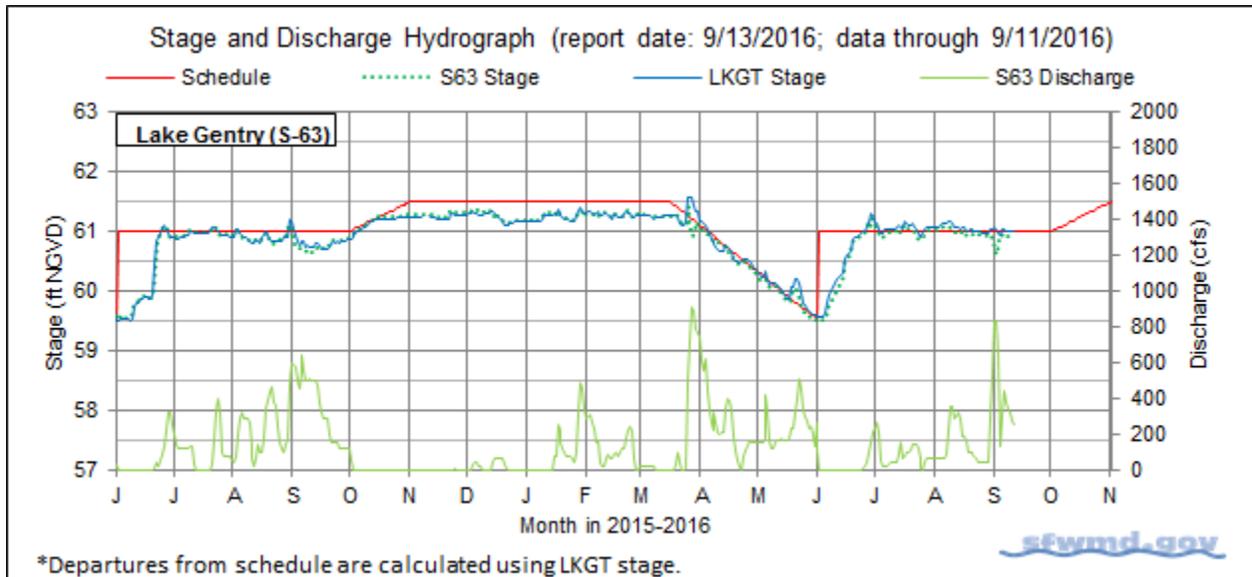


Figure 7.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Limits on Rate of Discharge Change at S65/S65A During Wet Season 2016

Discharge Rate of Change Limits for S65/S65A (revised 6/30/16).		
Q (cfs)	Maximum rate of increase (cfs/day)	Maximum rate of decrease (cfs/day)
650-1450	150	-150
1450-1700	250	-250
1700-2600	300	-300
2600-3000	400	-400
>3000	1000	-1000

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Figure 8a. Limits on rate of discharge change at S65/S65A for the 2016 Wet Season.

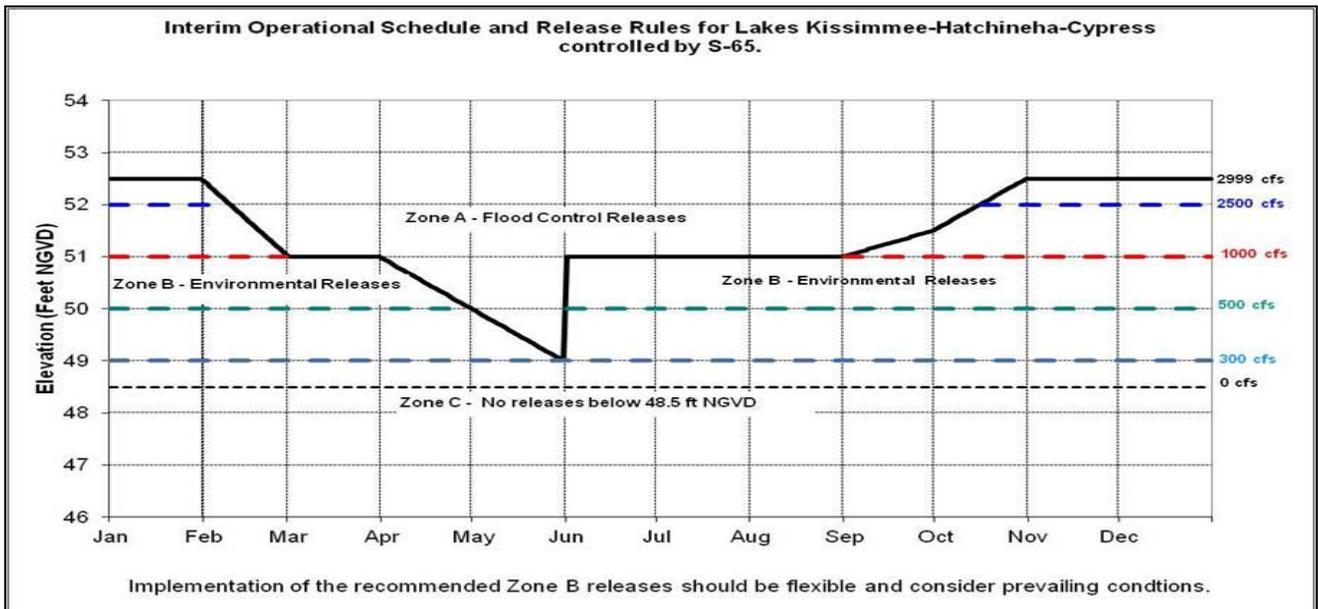


Figure 8b. Interim operations schedule for S-65. The discharge schedule shown to the right has not been used in recent years or in Wet Season 2015.

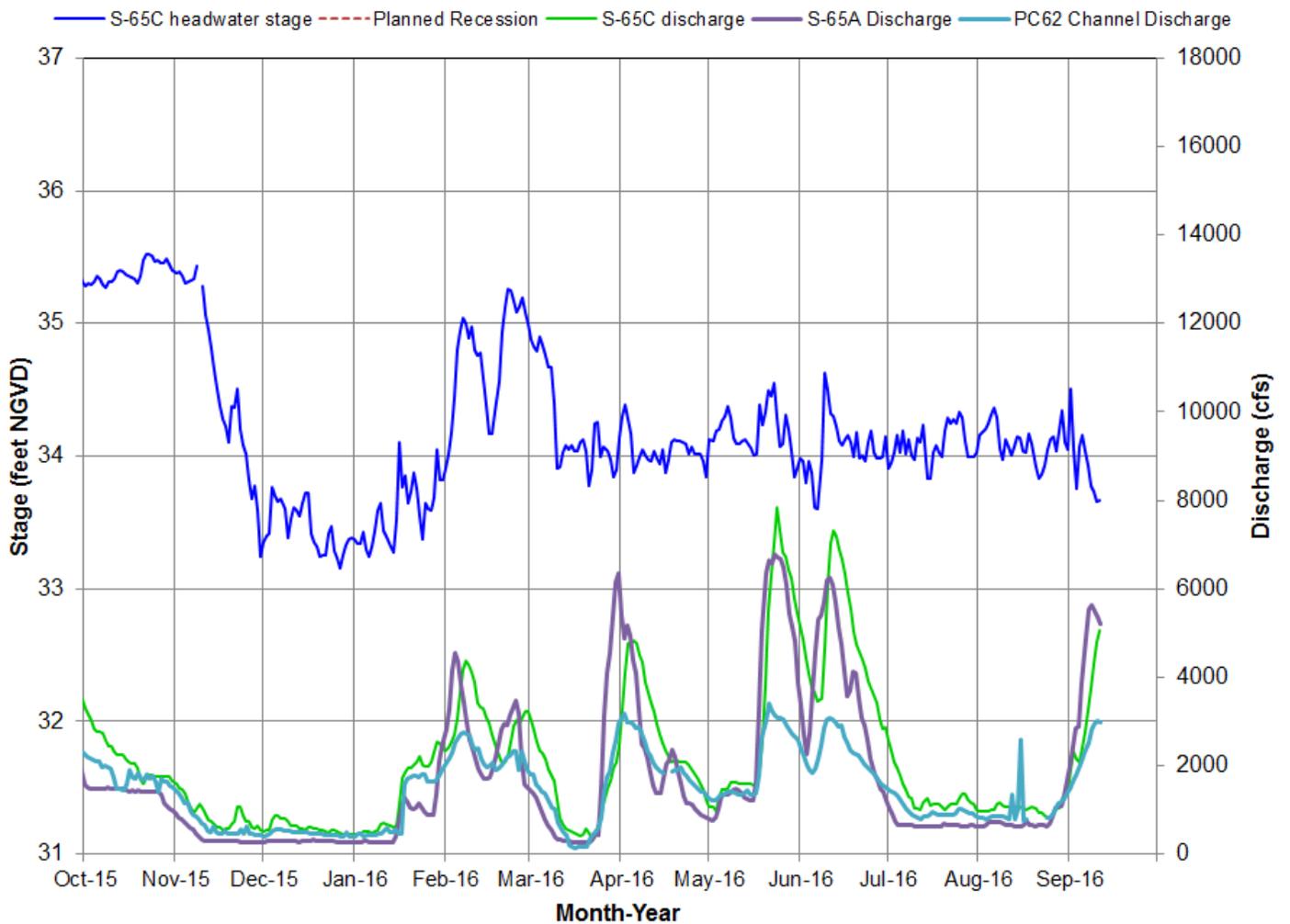


Figure 9. S65C headwater stage in relation to discharge at S65C, S65A, and PC62.

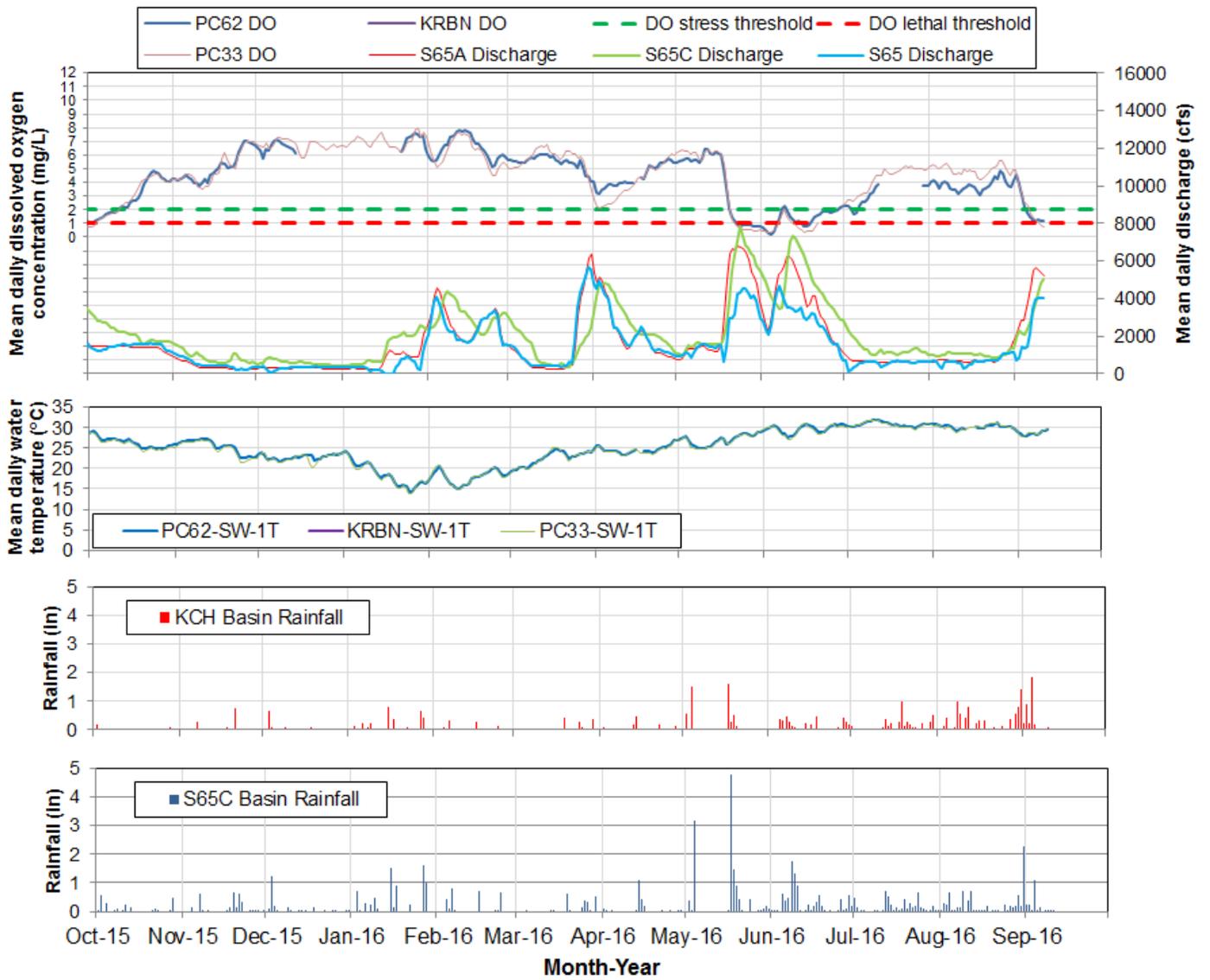


Figure 10. Mean daily Dissolved Oxygen, discharge, temperature and rainfall in the Phase I river channel.

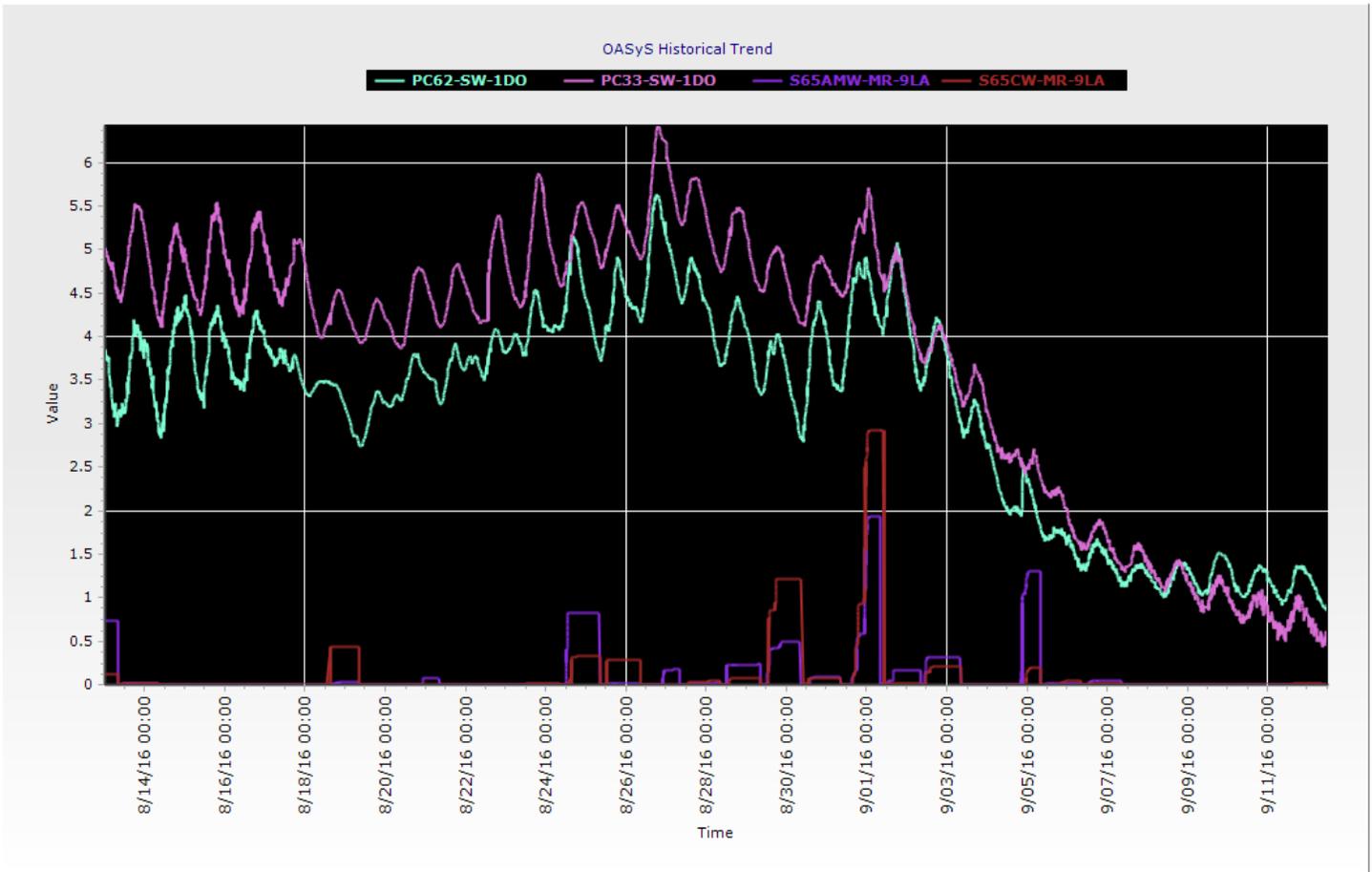


Figure 11. Phase I river channel dissolved oxygen (measured at 15 minute intervals) and rainfall at S65A and S65C.

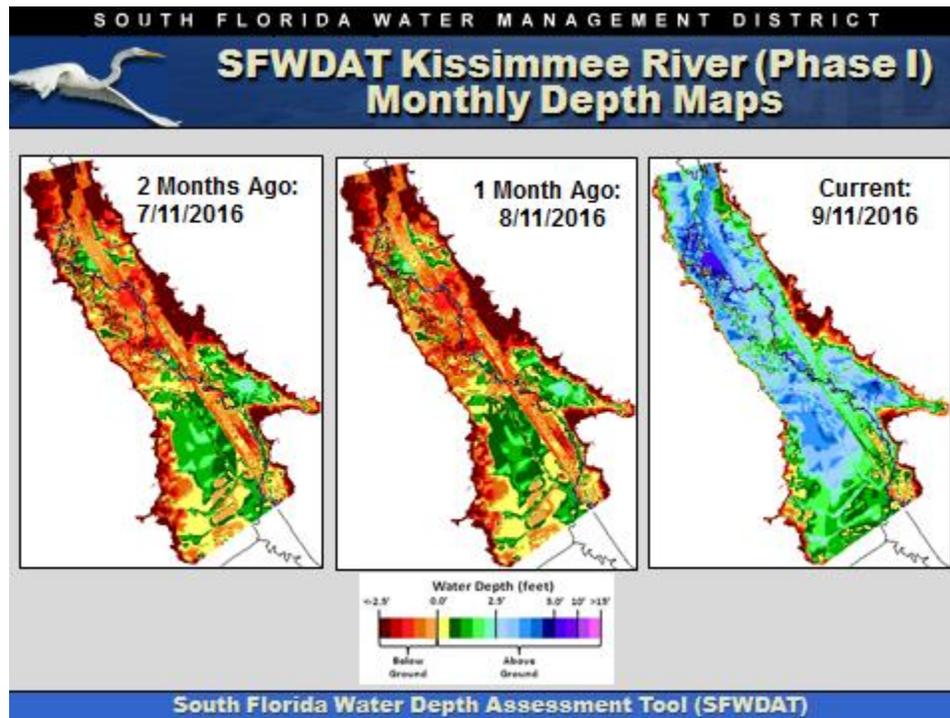
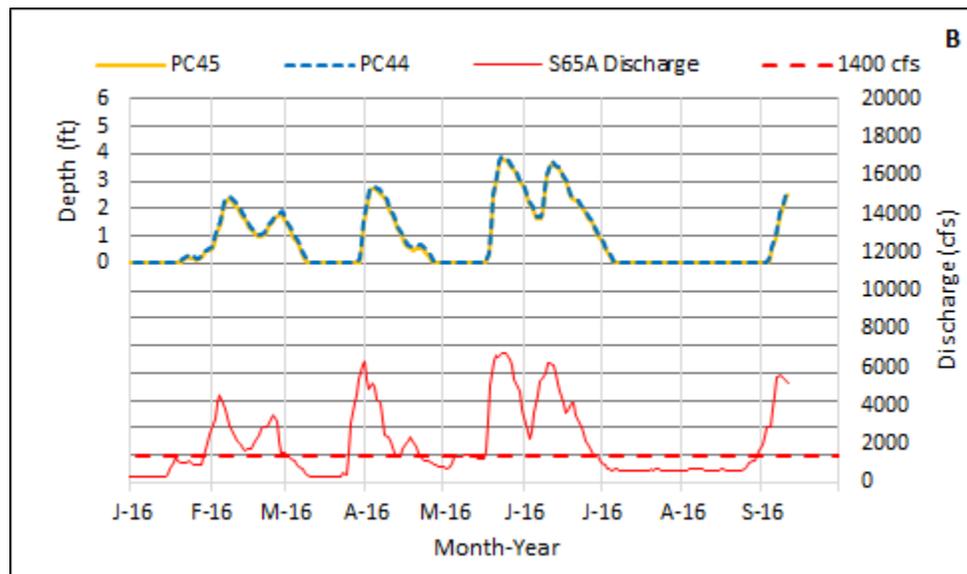
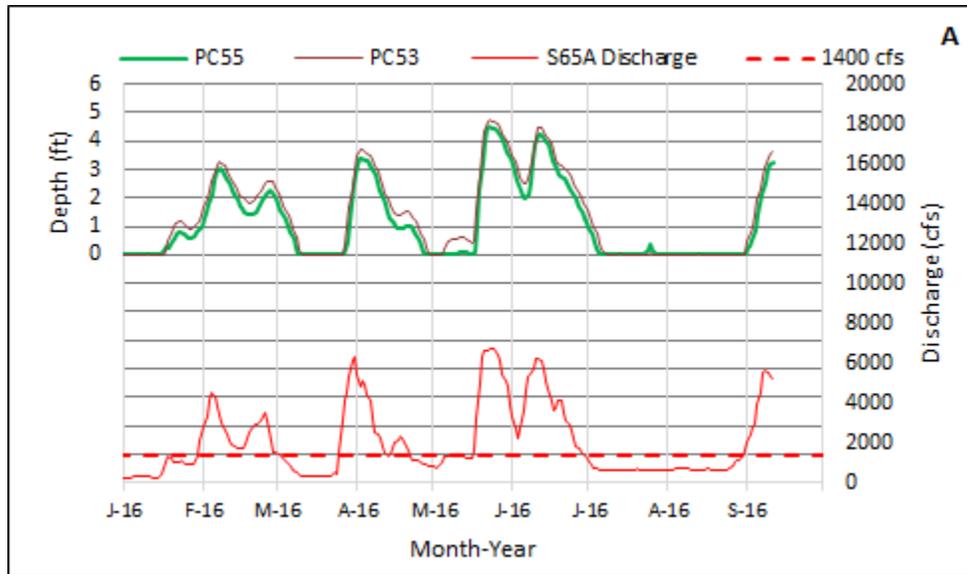


Figure 12. Phase I area floodplain water depths for this week, one month ago, and two months ago. Note that the WDAT color-coding has been modified to accommodate greater water depths; these maps are not directly comparable to Kissimmee Basin WDAT maps published prior to Jan. 16, 2012.



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

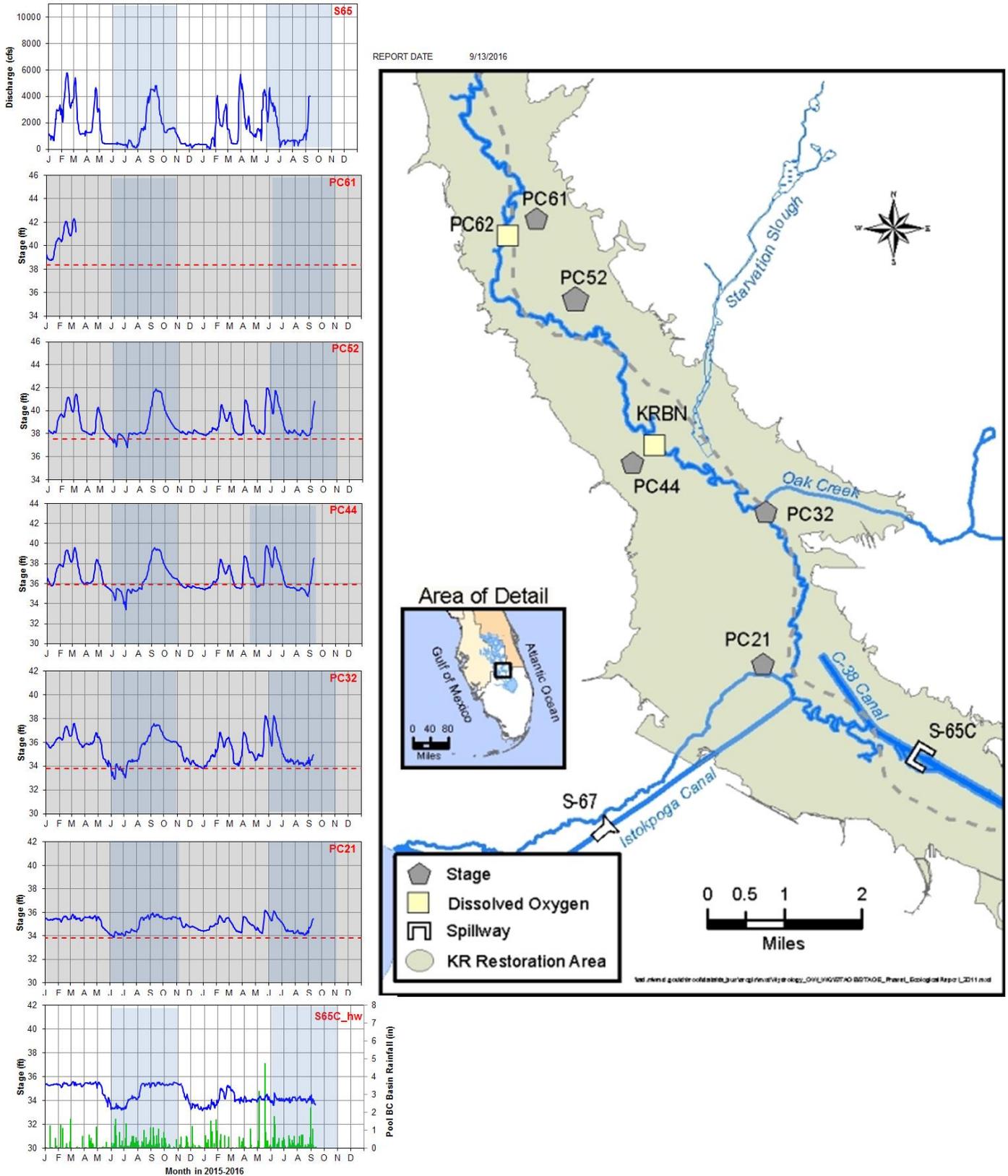


Figure 13. Discharge at S65, stages at five monitoring stations in the Phase I area of the Kissimmee River floodplain, and headwater stage at S65-C since January 1, 2015. The most recent data (~2

weeks) are provisional real-time data from SFWMD DualTrend; previous data are from SFWMD DB-HYDRO (validated). Dashed lines are ground elevations.

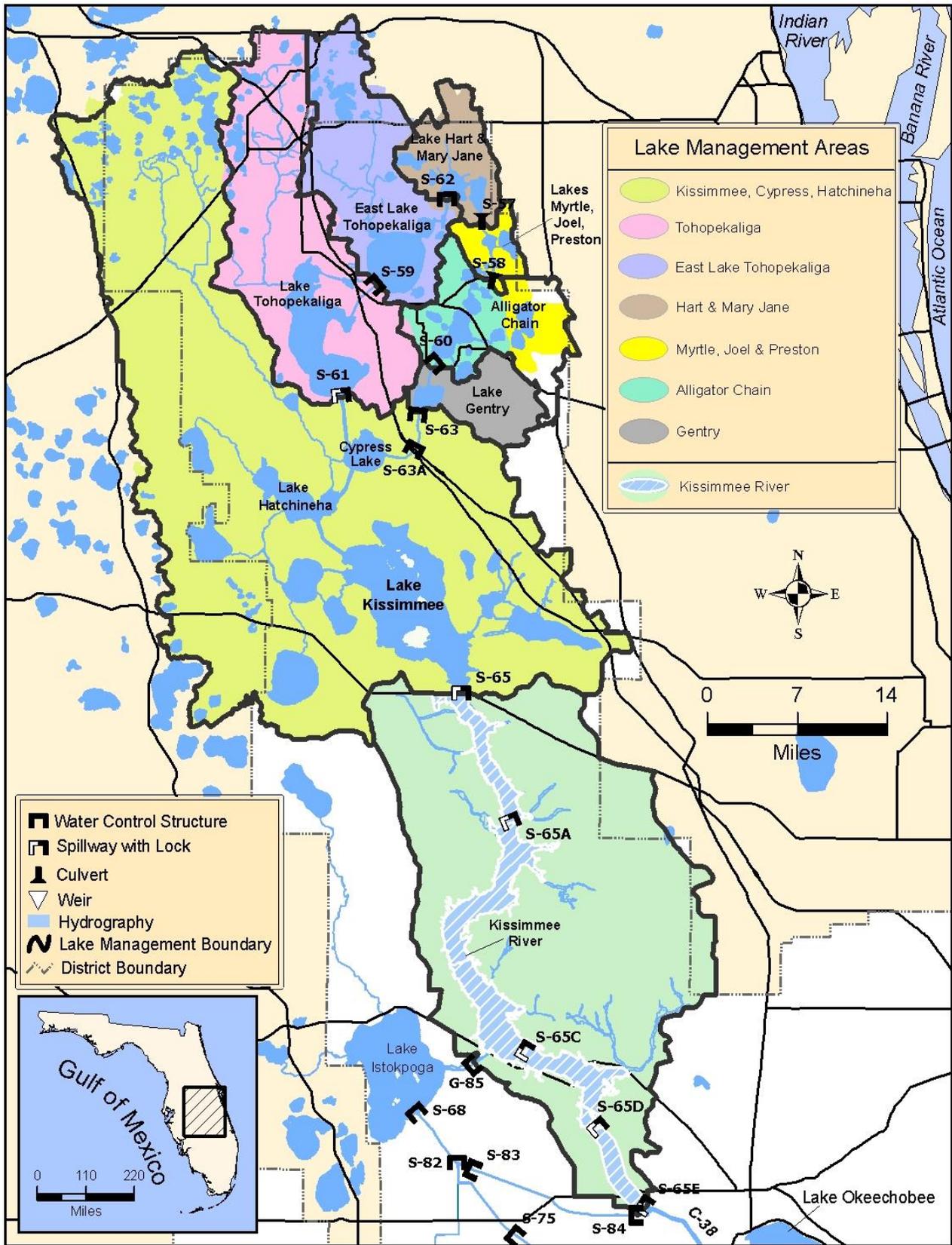


Figure 14. The Kissimmee Basin.

LAKE OKEECHOBEE

According to the United States Army Corps of Engineers (USACOE) web site Lake Okeechobee stage is at 15.25 feet NGVD for the period ending at midnight on September 12, 2016. 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 increased by 0.22 feet over the past week and is 0.471 feet higher than it was a month ago and 1.52 feet higher than it was a year ago (Figure 1). The Lake is in the low flow sub-band (Figure 2). According to RAINDAR, 0.55 inches of rain fell directly over the Lake during the past seven days. The surrounding watershed experienced lower rainfall amounts to the north of the Lake and similar or greater rainfall amounts in the rest of the watershed (Figure 3).

Based on USACOE reported values, current Lake inflow is approximately 7955 cfs as detailed below.

Structure	Flow cfs
S65E	5372
S154	99
S84 & 84X	813
S71	332
S72	23
C5(Nicodemus slough dispersed storage)	-109
S191	218
S133 PUMPS	123
S127 PUMPS	62
S129 PUMPS	0
S131 PUMPS	0
S135 PUMPS	73
Fisheating Creek	950
S2 Pumps	0
S3 Pumps	0
S4 Pumps	0

Current Lake outflow is approximately 541 cfs exiting at S77, 557 cfs exiting at S308 and 206 cfs exiting to the L8 canal through Culvert 10A. Additionally, approximately 18 cfs is exiting through S352. There is no flow through S351 or S354. Corrected ET value based on the L006 weather platform solar radiation data for this past week was 2,600 cfs. Change in elevation equivalents and average weekly flows 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.

The most recent satellite images (MODIS for August 22 and September 4) (Figure 5) indicate an apparent continued lessening of bloom conditions.

Water Management Recommendations

Although lake stage had remained essentially static over the preceding two months, it has increased by nearly one half foot over the past two weeks. From an ecological perspective, lake stage has been above optimal levels since the February rain event resulting in the loss of SAV and an increase in the occurrence of cyanobacterial blooms relative to recent years.

Future short-term recommendations are highly dependent on near-term rainfall patterns and amounts. However, the goal should be to limit the rate of lake stage increase to avoid exceeding the top of the preferred stage envelope (15.5 feet NGVD) during the remainder of the year. Near optimal lake stages will be necessary this coming spring and summer to provide conditions conducive to the reestablishment of the SAV acreage lost this year due to high lake stages.

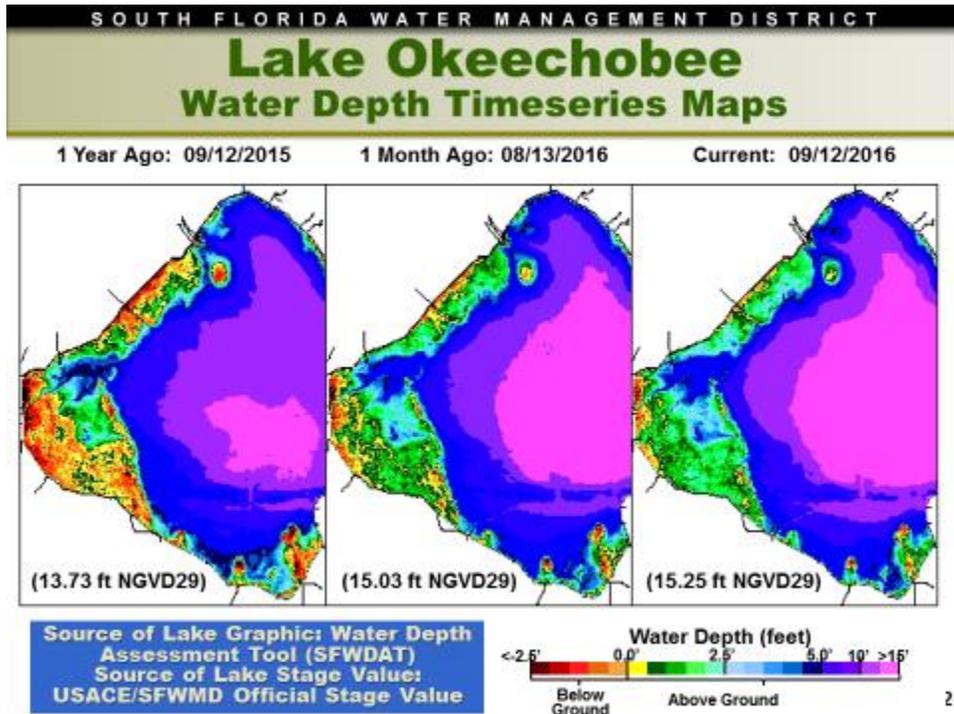
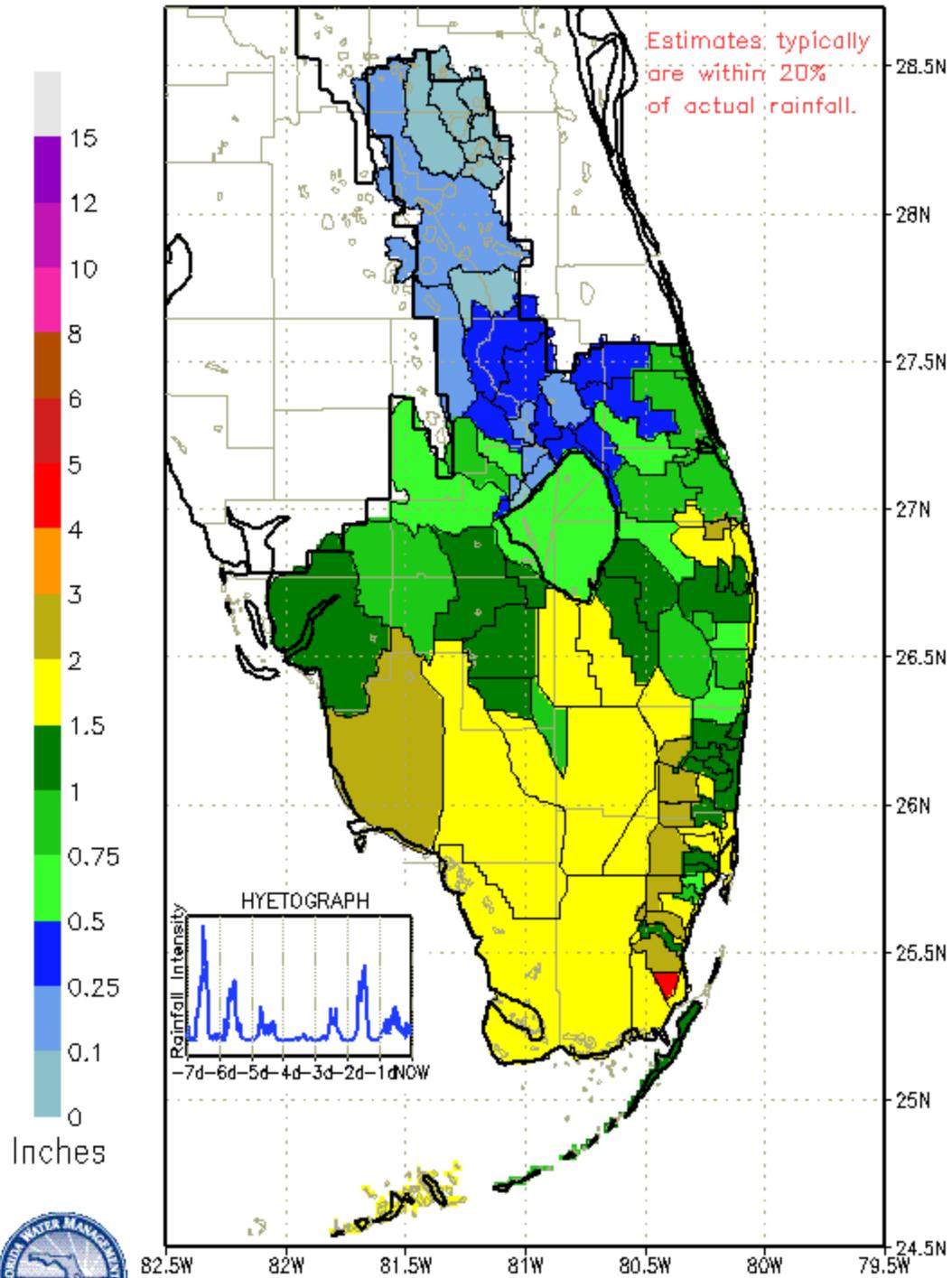


Figure 1

SFWMD PROVISIONAL RAINFAR 7-DAY BASIN RAINFALL ESTIMATES

FROM: 0215 EST, 09/06/2016 THROUGH: 0215 EST, 09/13/2016



DISTRICT-WIDE RAINFALL ESTIMATE: 1.087"

Figure 3

INFLOWS	Average Daily Flow Past Week cfs	Feet of Change Past Week
S65E	4373	0.142
S71 & 72	619	0.020
S84 & 84X	1231	0.040
Fisheating Creek	1608	0.052
Rainfall	N.A.	0.046
OUTFLOWS	Average Daily Flow Past Week cfs	Feet of Change Past Week
S77	585	0.019
S308	469	0.015
S351	0	0.000
S352	133	0.004
S354	0	0.000
L8	250	0.008
ET	2600	0.085

Figure 4

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Lake Okeechobee

Algal Blooms

Unvalidated and Experimental Data

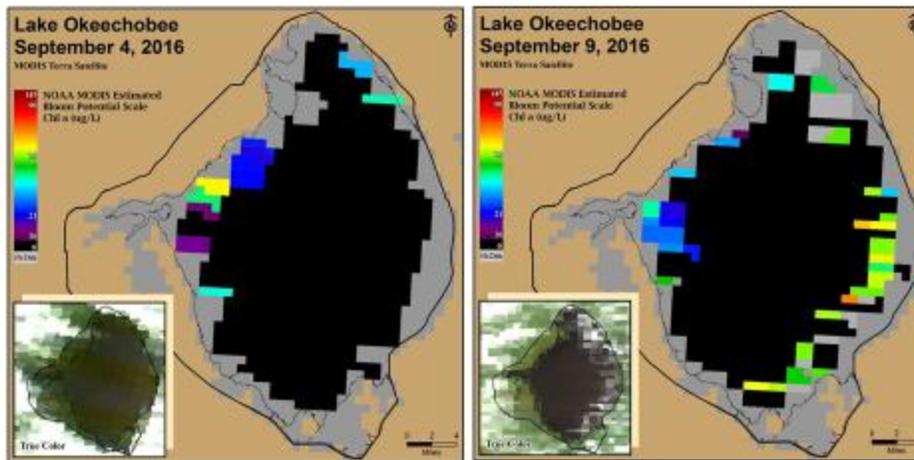


Figure 5

Lake Istokpoga:

The Lake Istokpoga regulation schedule began its ascension towards winter pool stage of 39.50 feet NGVD on August 2, 2016. Lake Stage is 38.79 feet NGVD and is currently 0.05 feet above its regulation stage of 38.74 feet NGVD (Figure 6). Average flows into the Lake from Arbuckle and Josephine creeks were 1059 cfs and 305 cfs respectively, an increase from the previous week. Average discharge from S68 and S68X this past week was 1,234 cfs, an increase from the preceding two weeks. According to RAINДАР 0.25 inches of rain fell in the Lake Istokpoga watershed during the past seven days.

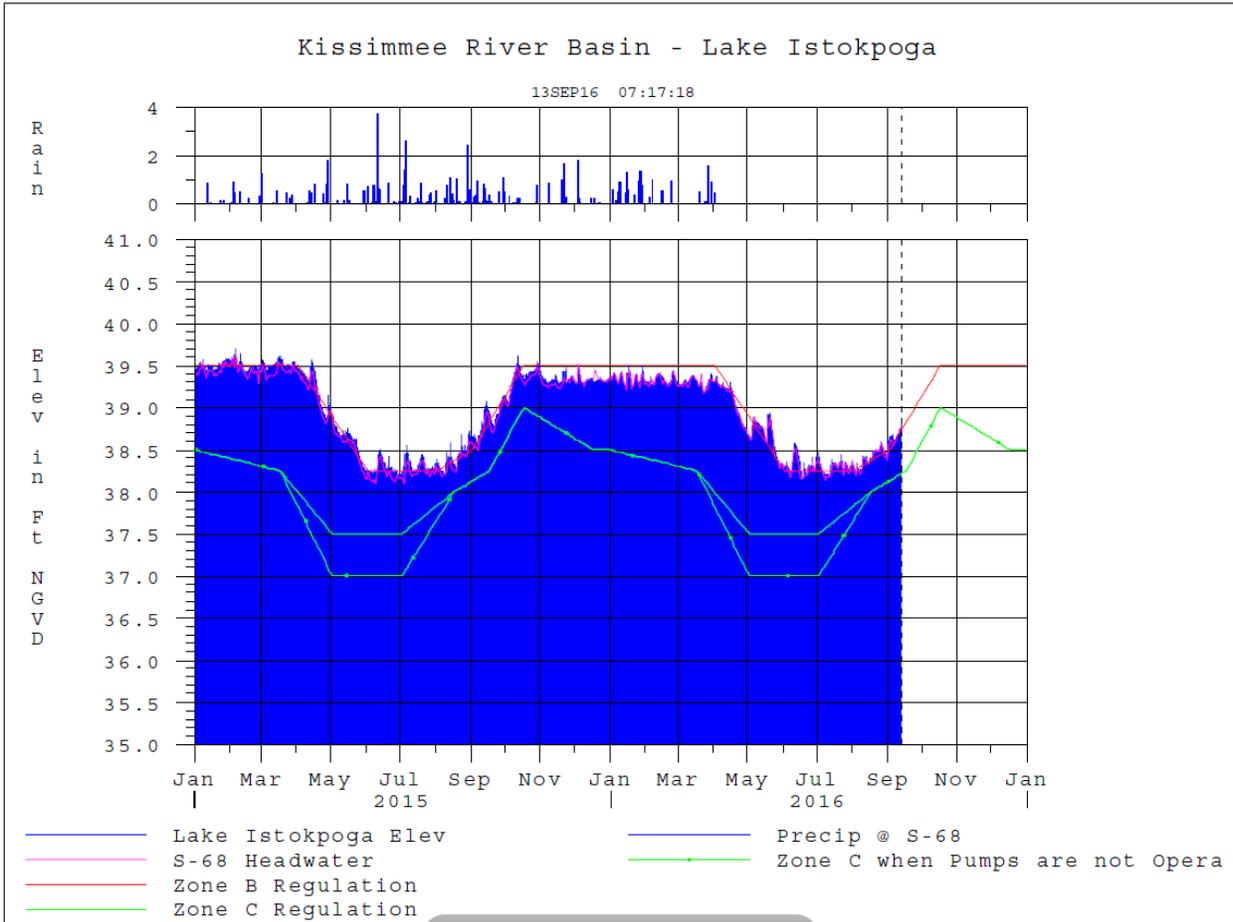


Figure 6

ESTUARIES

St. Lucie Estuary:

Over the past week, provisional flows averaged about 926 cfs at S-80, 469 cfs downstream of S-308, 574 cfs at S-49 on C-24, 258 cfs at S-97 on C-23, and 230 cfs from Ten Mile Creek at the Gordy Road Structure. Average inflow from tidal basin tributaries is estimated to be 657 cfs (Figures 1 and 2). Total inflow averaged about 2645 cfs last week and 1989 cfs over last month.

Over the past week, surface salinity decreased 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 2.5. Salinity conditions in the middle estuary are in the poor 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)	0.6 (3.0)	1.1 (3.4)	NA ¹
US1 Bridge	1.9 (4.9)	3.1 (6.6)	10.0-26.0
A1A Bridge	14.6 (17.3)	19.3 (18.6)	NA

¹Envelope not applicable

Caloosahatchee Estuary:

During the past week, provisional flows averaged approximately 585 cfs downstream of S-77, 1,591 cfs at S-78, and 4,598 cfs at S-79. Average inflow from tidal basin tributaries is estimated to be 1,775 cfs (Figures 5 and 6). Total inflow averaged 6,373 cfs last week and 4,536 cfs over last month.

Over the past week in the estuary, salinity remained about fresh to Cape Coral Bridge and decreased downstream (Table 2, Figures 7 and 8). The seven-day average salinity values are within the good range for adult oysters at Shell Point and at Sanibel and in the poor range at Cape Coral (Figure 9). The 30-day moving average surface salinity at Val I-75 and Ft. Myers are unavailable. Salinity conditions at Val I-75 are still 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	0.2 (NE ⁴)	0.2 (NE)	0.0-5.0 ²
Ft. Myers Yacht Basin	0.2 (NR ³)	0.2 (NR)	NA
Cape Coral	NR (6.4)	NR (7.8)	10.0-30.0
Shell Point	10.0 (18.5)	16.2 (20.6)	10.0-30.0
Sanibel	23.0 (28.5)	27.0 (29.7)	10.0-30.0

¹Envelope not applicable, ²Envelope is based on a 30-day average, ³Not Reporting, ⁴No Estimate.

*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 <i>a</i> (µg/l)	5.3 – 6.1	5.0 – 6.0	1.4 – 5.0
Dissolved Oxygen (mg/l)	4.2 – 5.0	5.6 – 6.4	4.5 – 6.4

The Florida Fish and Wildlife Research Institute reported on September 9, 2016, that *Karenia brevis*, the Florida red tide organism, was observed in background concentrations in two samples collected from Lee County.

Water Management Recommendations

Given the current estuarine conditions, there are no ecological benefits associated with additional releases from Lake Okeechobee.

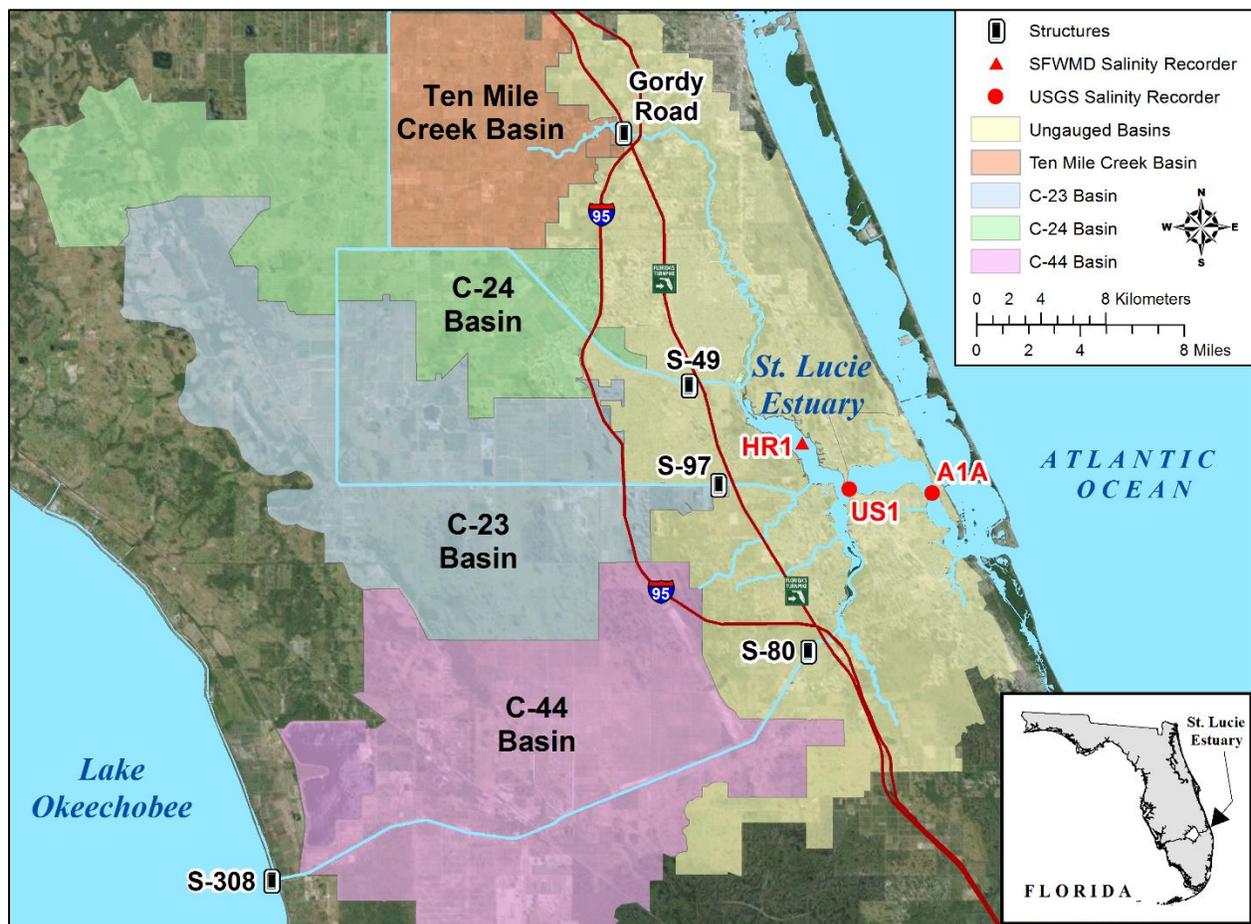


Figure 1. Basins, water control structures, and salinity monitoring for the St. Lucie Estuary.

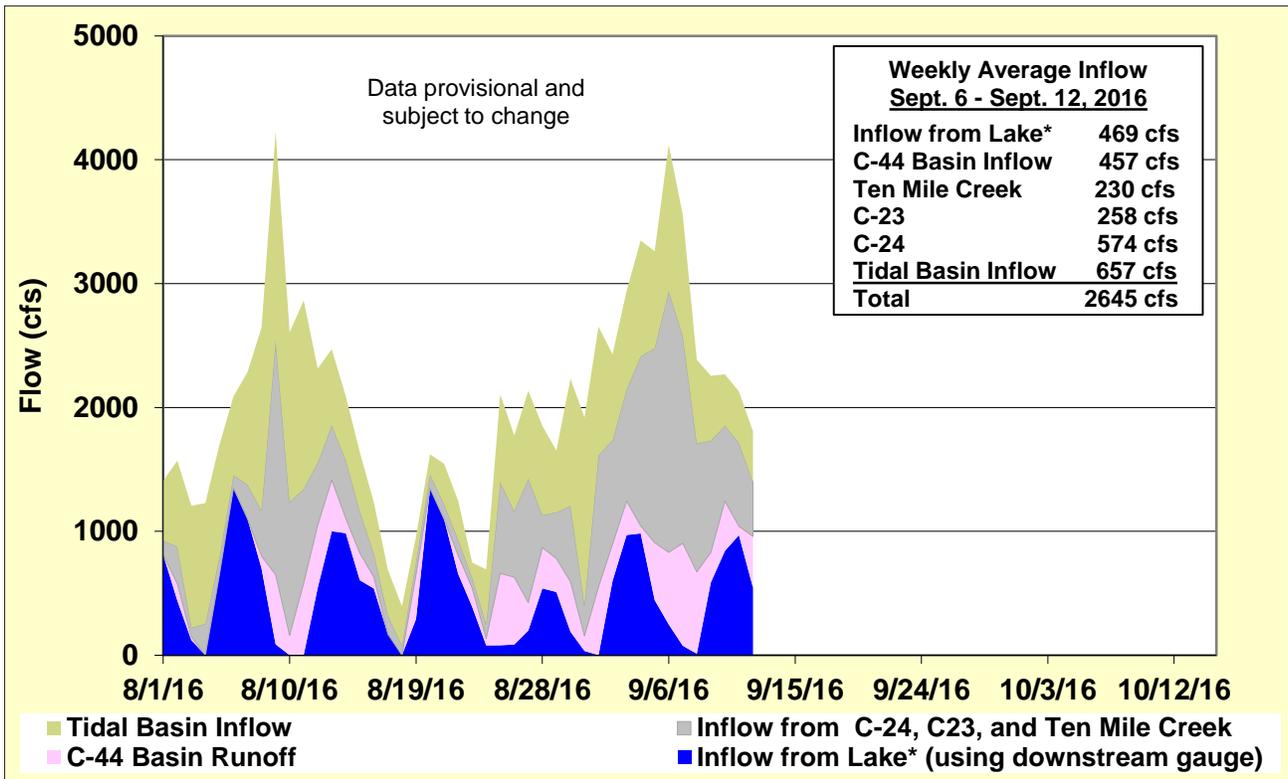


Figure 2. Estimated surface freshwater inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and tidal basins into the St. Lucie Estuary.

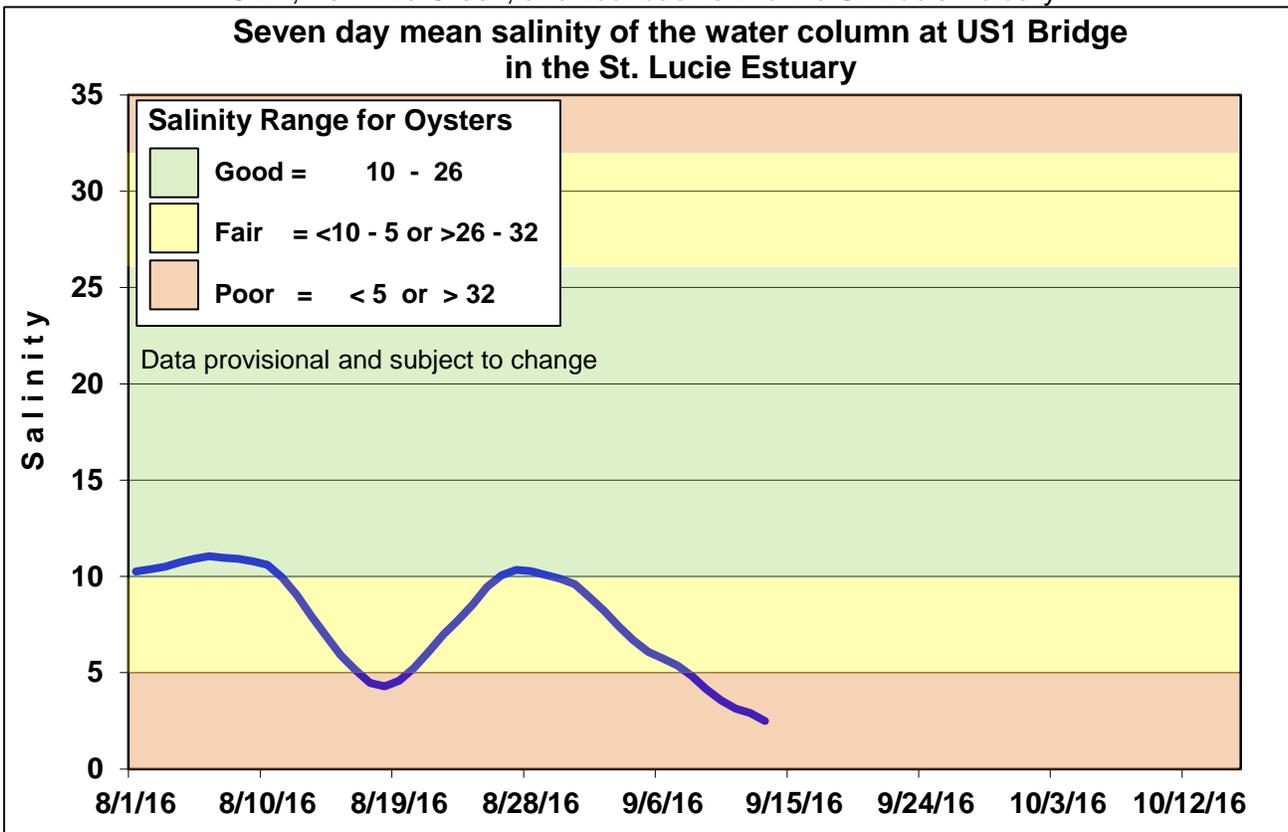


Figure 3. Seven-day mean salinity of the water column at the U.S. Highway 1 Bridge.

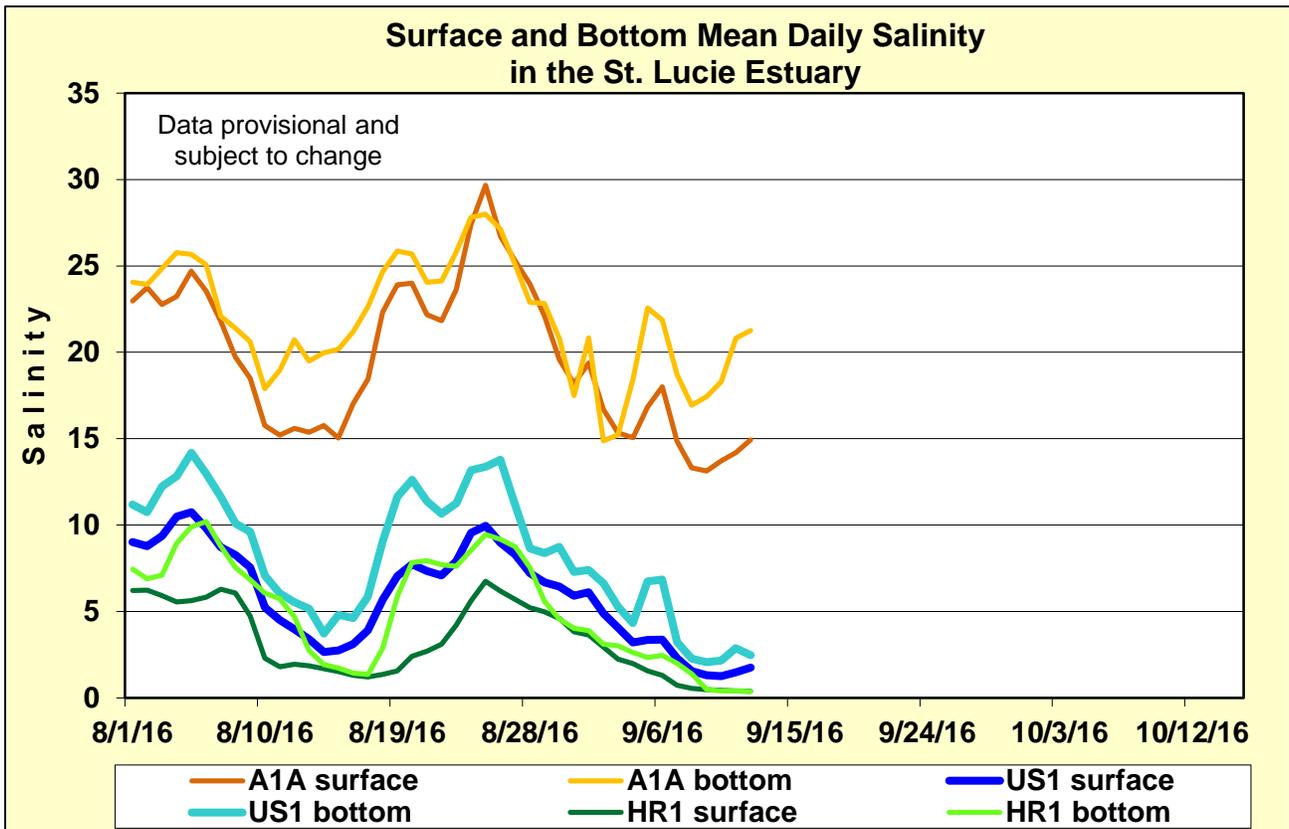


Figure 4. Daily mean salinity at the A1A, US1 and estimated HR1 stations.

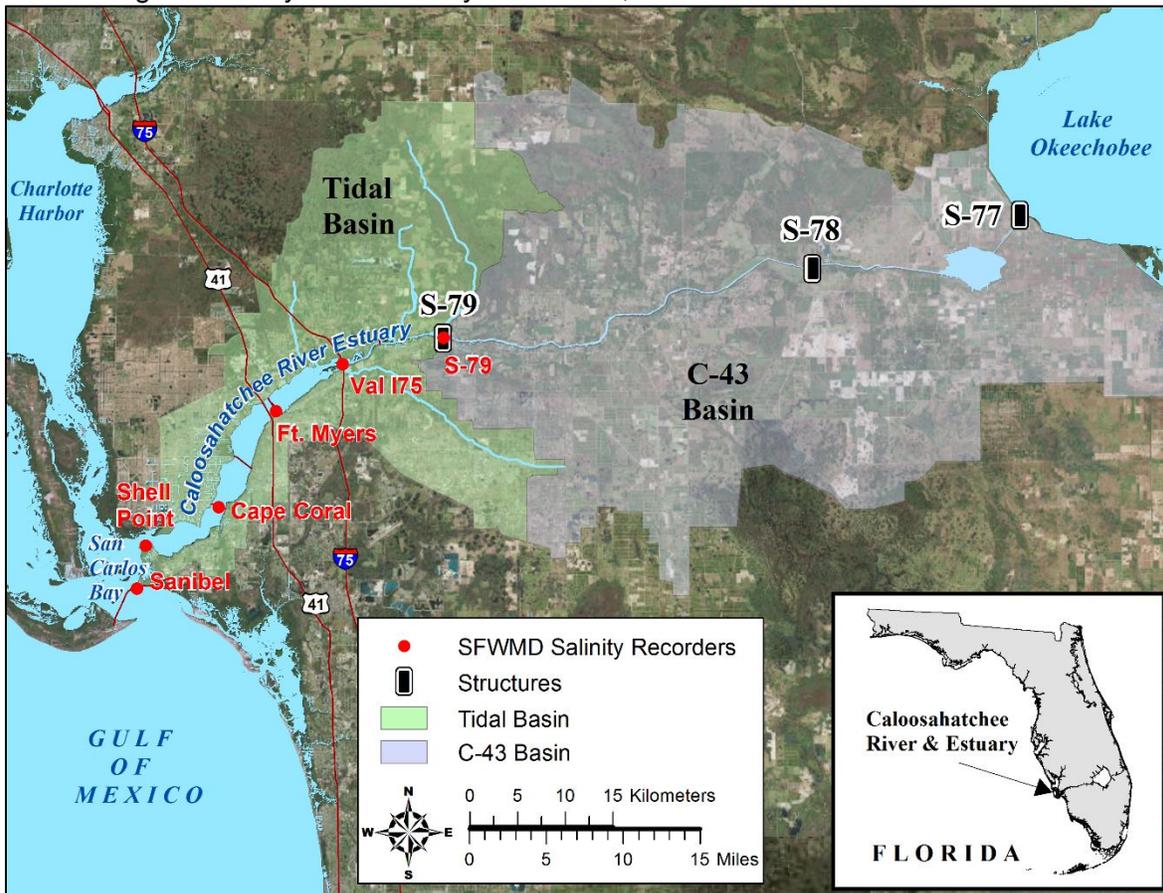


Figure 5. Basins, water control structures, and salinity monitoring for the Caloosahatchee Estuary.

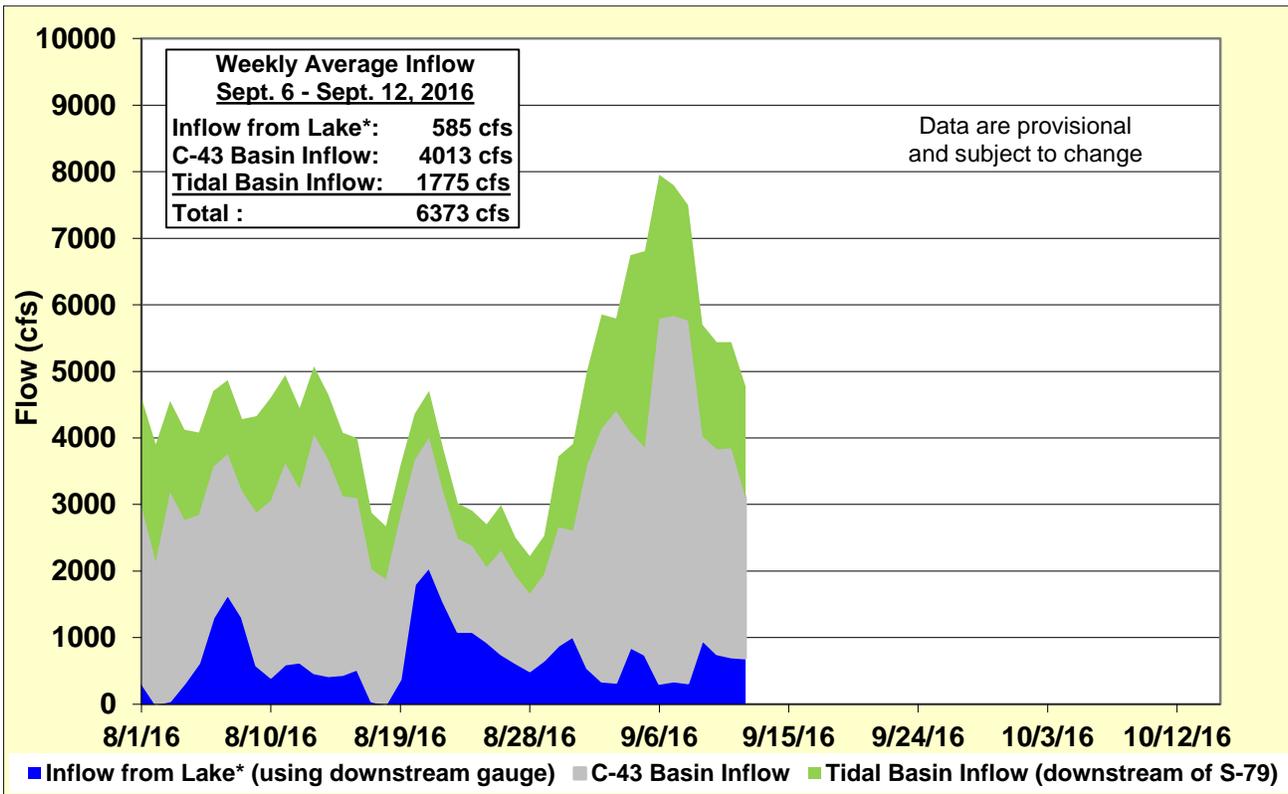
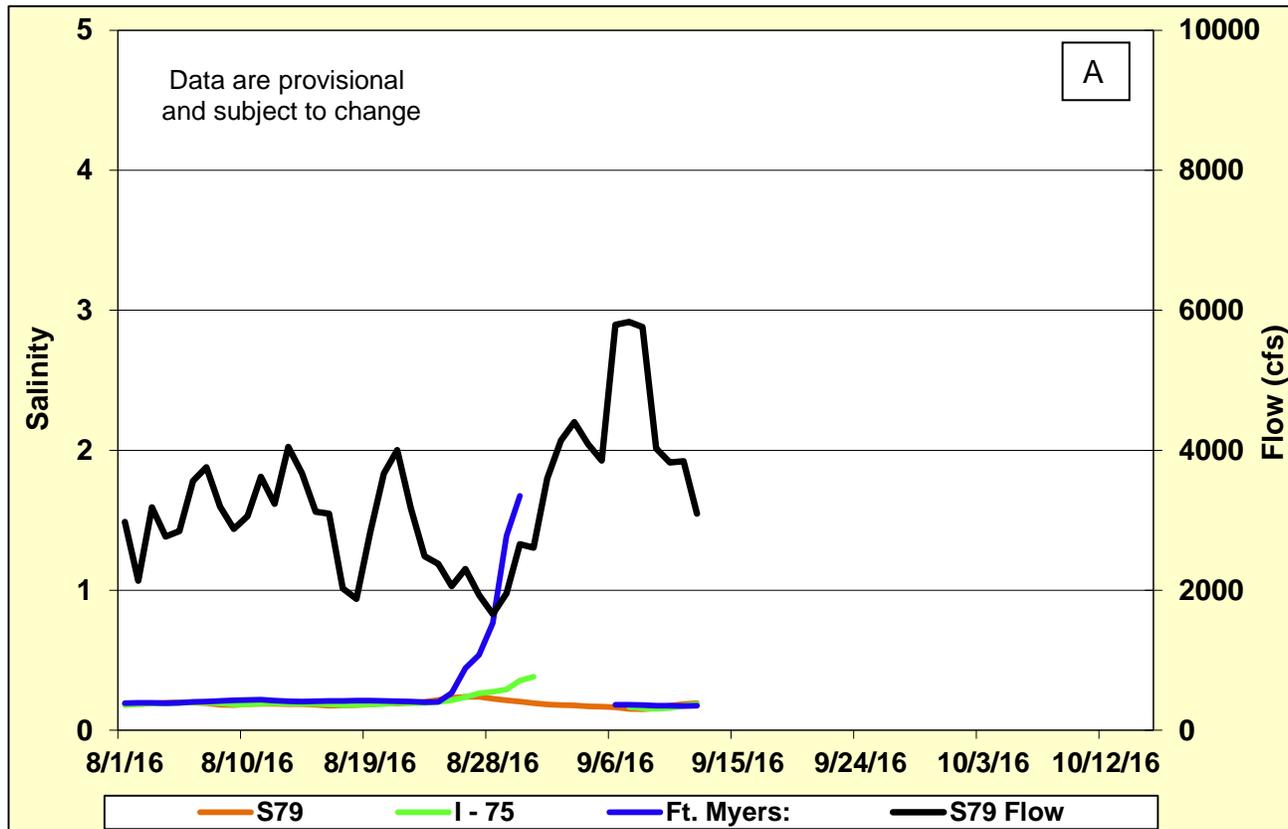


Figure 6. Freshwater inflows from Lake Okeechobee, runoff from the C-43 basin, and tributaries in the tidal basin into the Caloosahatchee River Estuary.



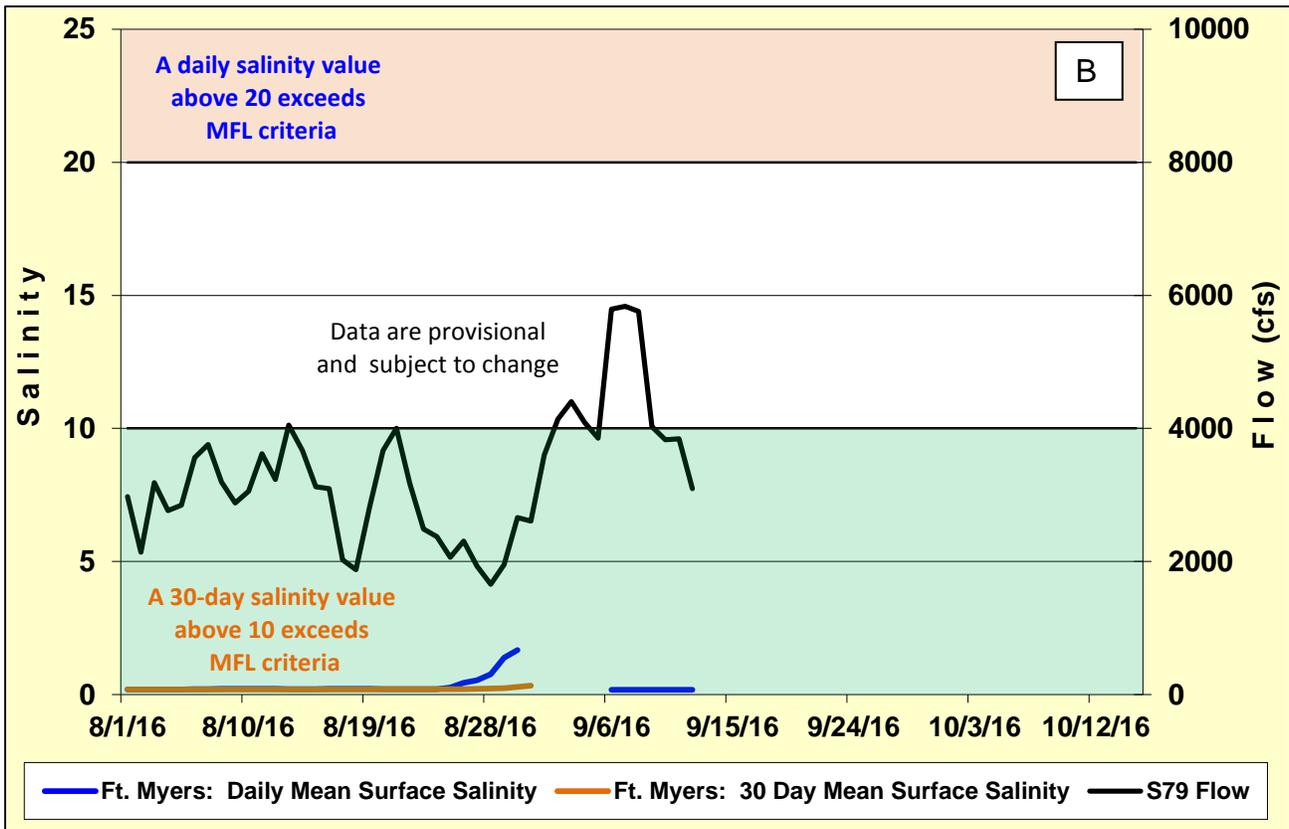


Figure 7. Daily mean flows at S-79 and salinity at upper estuary monitoring stations (A) and 30-day moving average salinity at Ft. Myers (B).

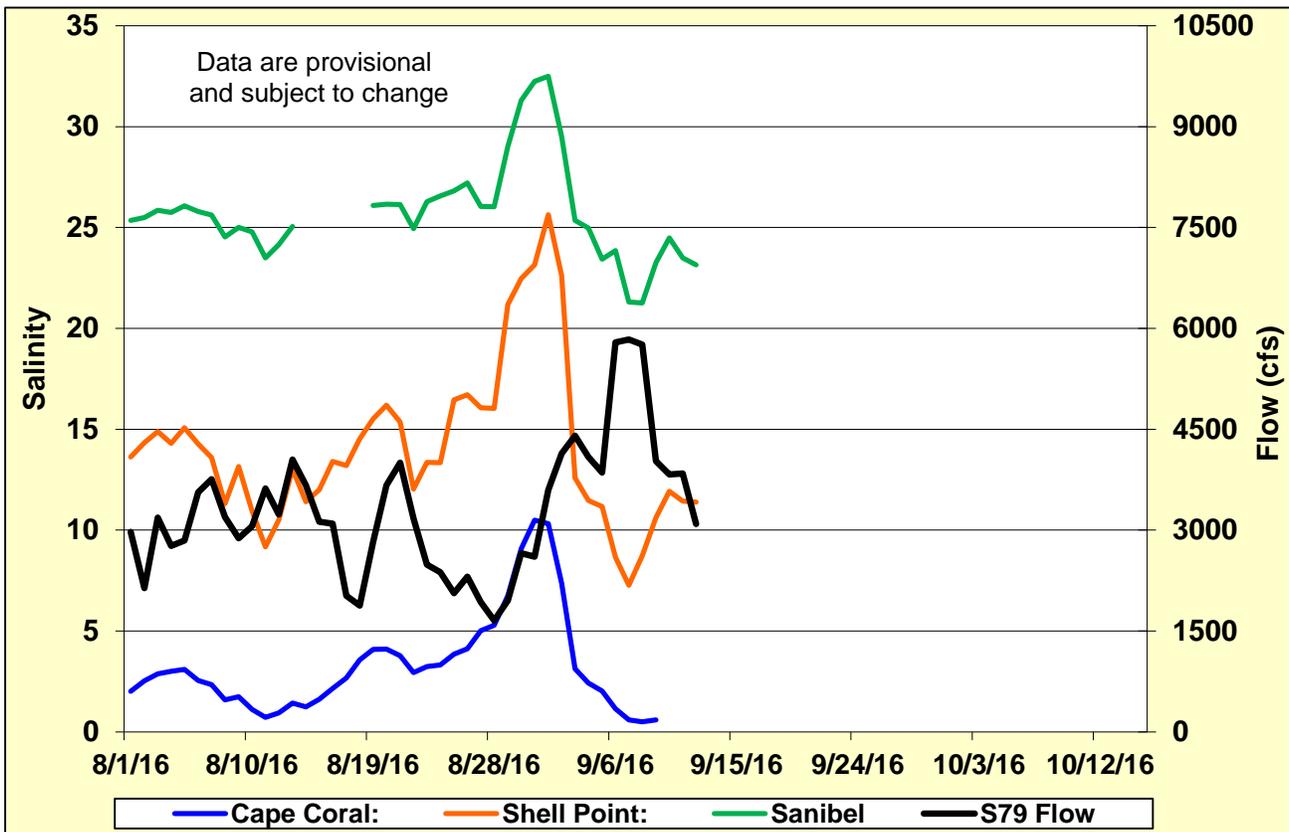


Figure 8. Daily mean flows at S-79 and salinity at lower estuary stations.

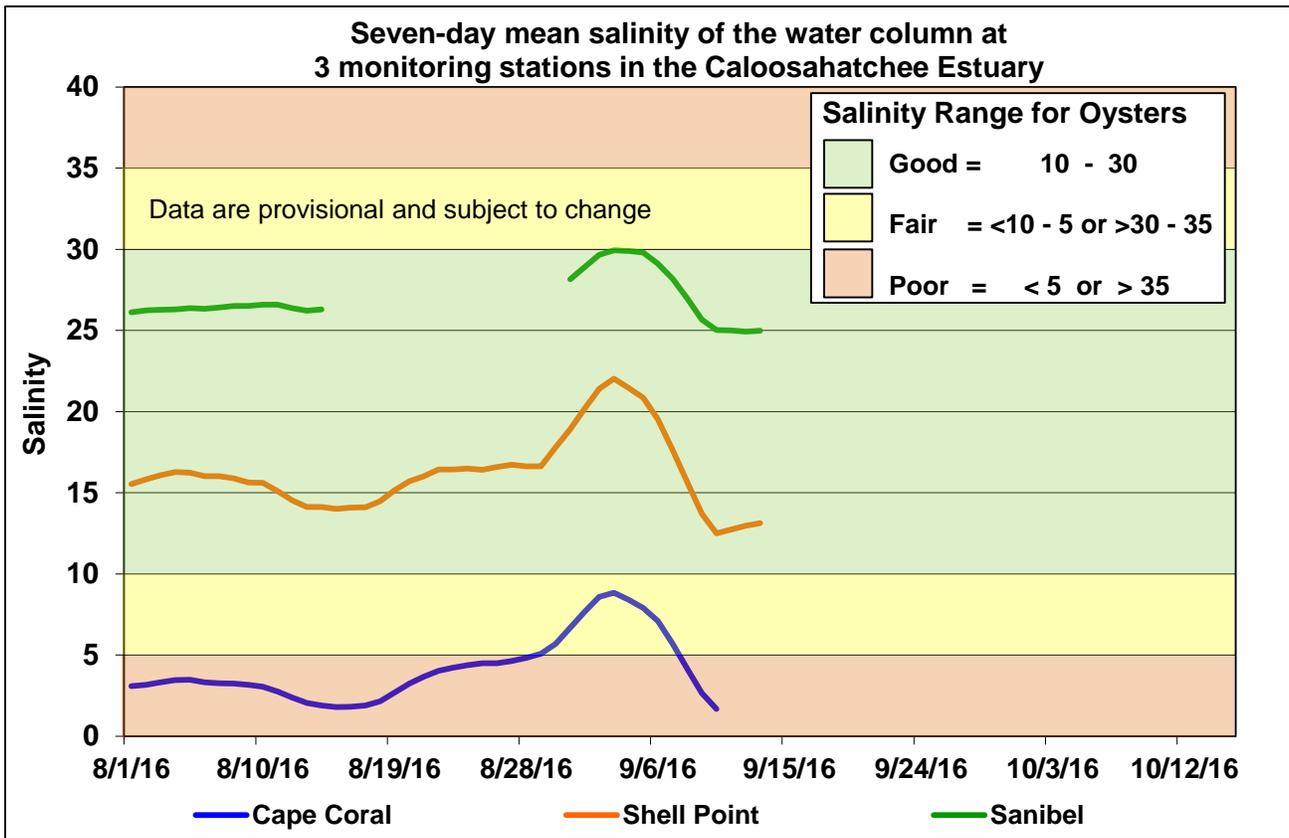


Figure 9. Seven-day mean salinity at Cape Coral Bridge, Shell Point and Sanibel Bridge monitoring stations.

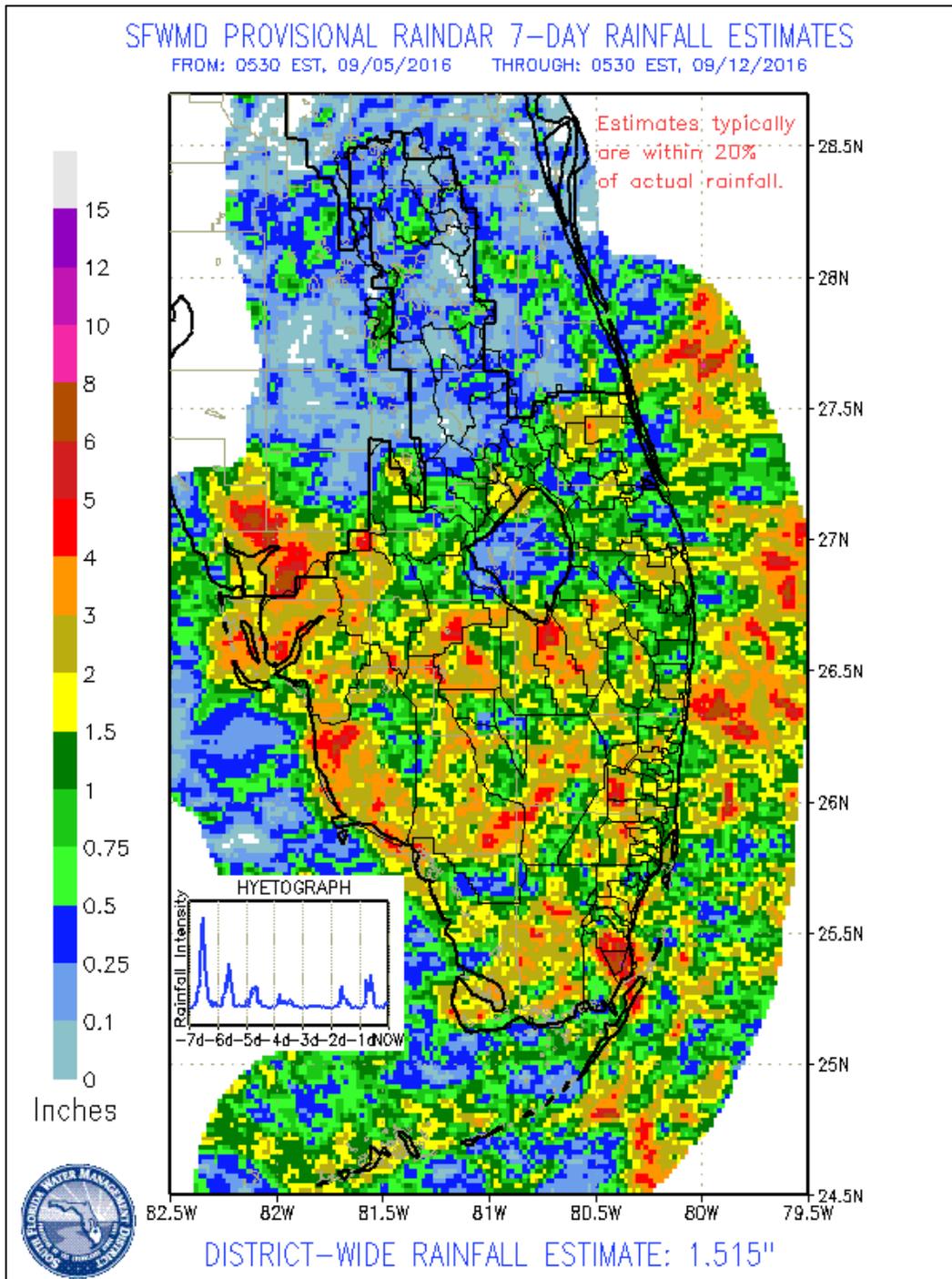
GREATER EVERGLADES

Rainfall in the region was less than last week with the highest basin average of 2.33 inches being only slightly higher than the lowest value from last week (2.22 inches). The local rainfall maximum (5.65 inches) again occurred in ENP.

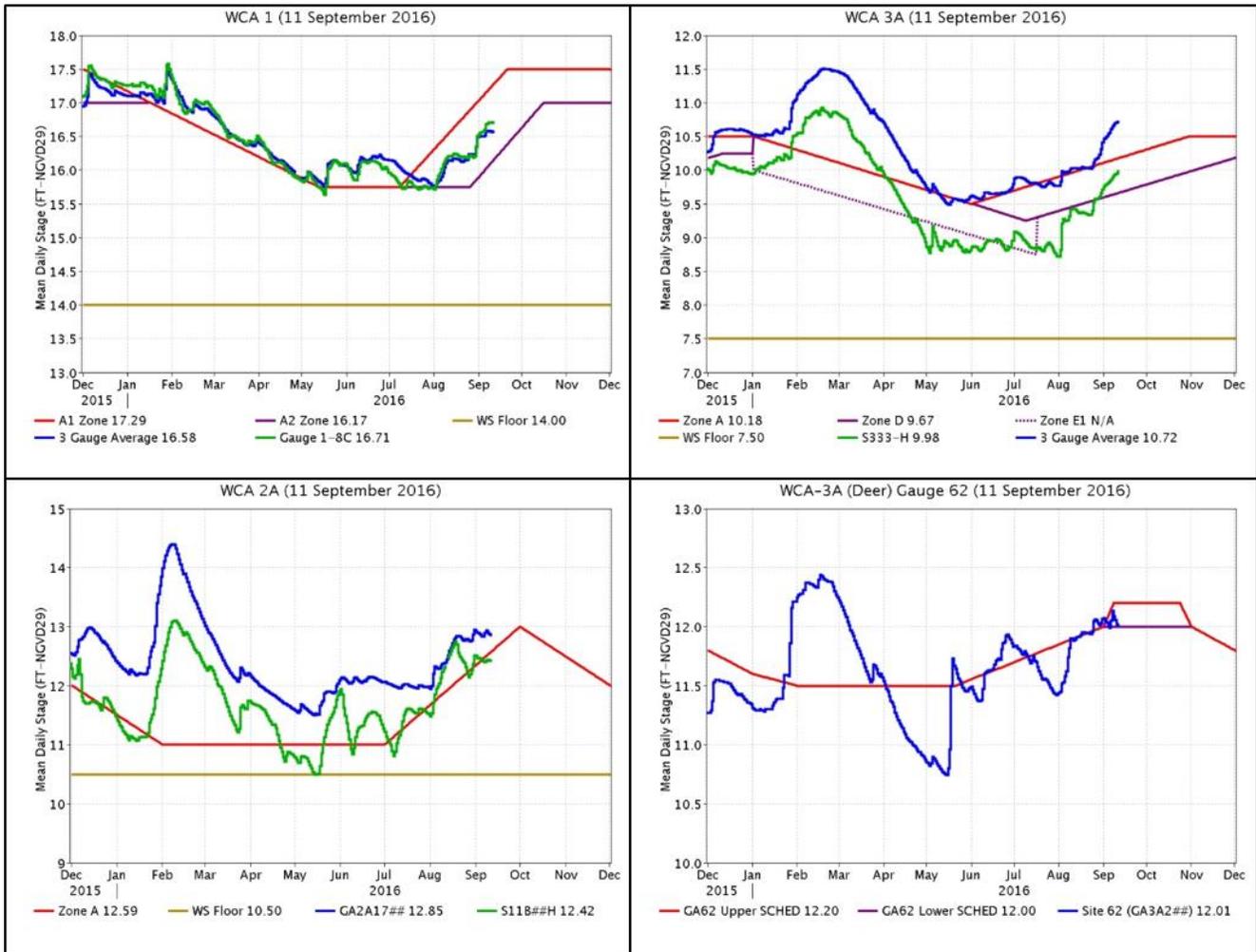
Everglades Region	Rainfall (Inches)	Stage Change (feet)
WCA-1	1.66	0.11
WCA-2A	1.74	0.00
WCA-2B	2.33	0.12
WCA-3A	1.88	0.14
WCA-3B	1.74	0.10
ENP	1.82	-0.06

SFWM D PROVISIONAL RAINDAR 7-DAY RAINFALL ESTIMATES

FROM: 0530 EST, 09/05/2016 THROUGH: 0530 EST, 09/12/2016



Regulation Schedules: Stages remain above regulation for two of the four areas. The WCA-1 three-gauge average is below regulation by 0.71 feet and the northwestern WCA-3A gauge stage (gauge 62) is 0.19 feet below the upper schedule and 0.01 feet above the lower schedule. The other two areas are above schedule: WCA-2A stage is 0.26 feet above regulation and the WCA-3A three-gauge average stage is 0.54 feet above regulation.

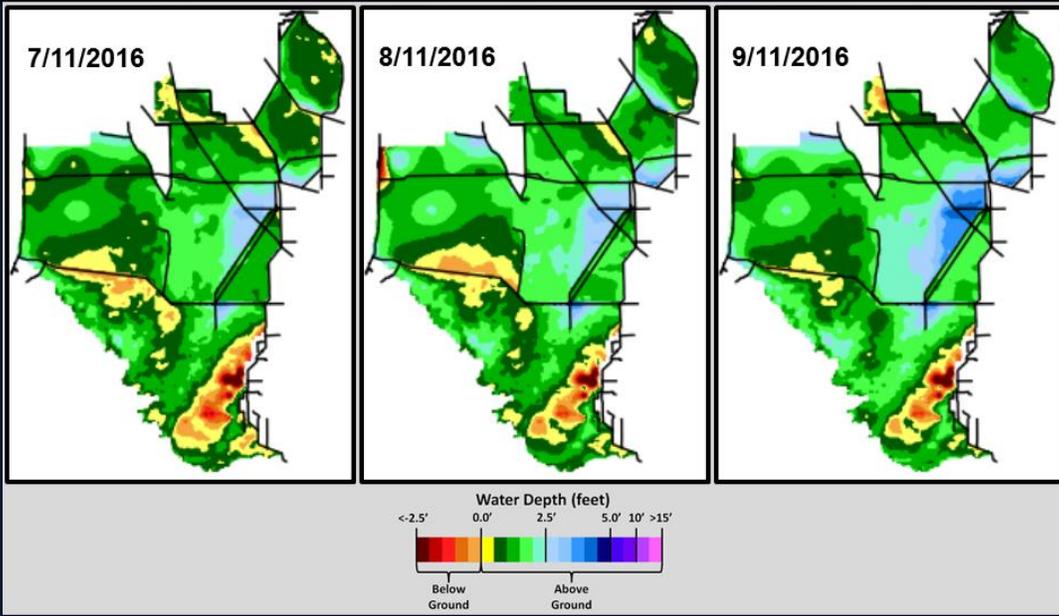


Water Depths and Changes: Water levels are higher than those in August and July. Water depths at monitored gauges other than in WCA-2B range from 1.26 feet to 2.71 feet.

Stage changes were mixed last week with half the area increasing and half decreasing. Individual gauge changes ranged from -0.06 feet (Northeast Shark River Slough) to 0.21 feet (WCA-3A). Stages are higher than a month ago and higher than a year ago in most areas.



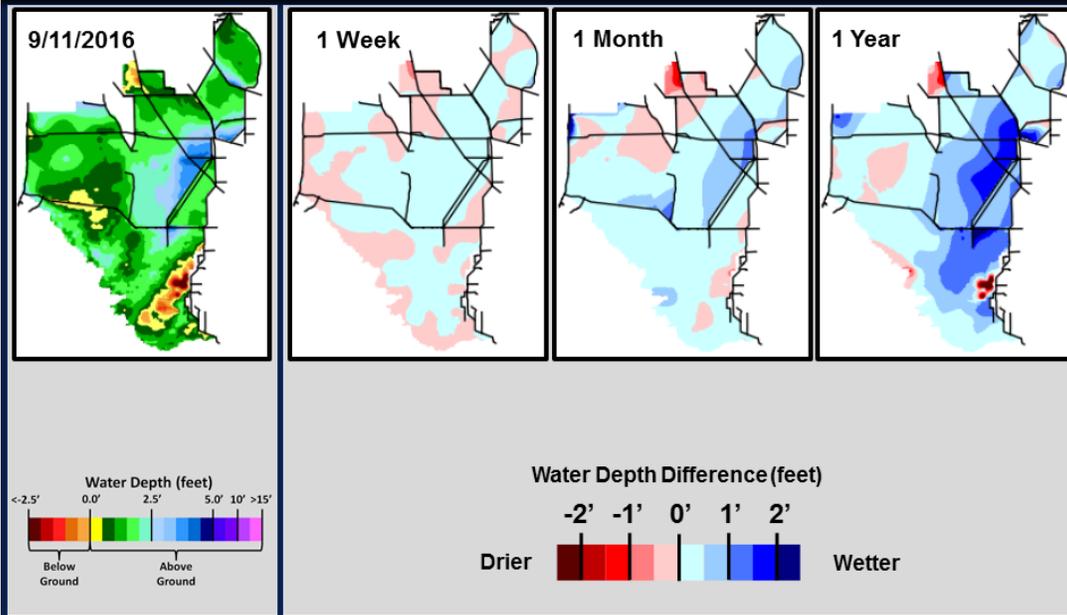
SFWDAT Water Depth Monthly Snapshots



South Florida Water Depth Assessment Tool (SFWDAT)



SFWDAT Everglades Difference Maps (Present - Past)

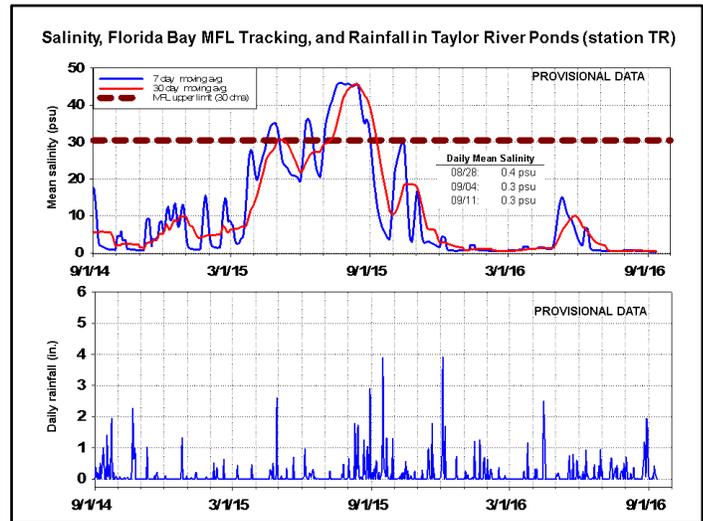
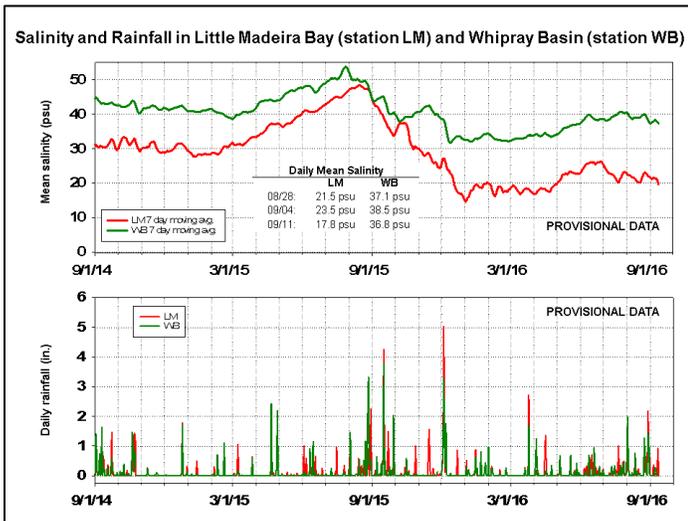
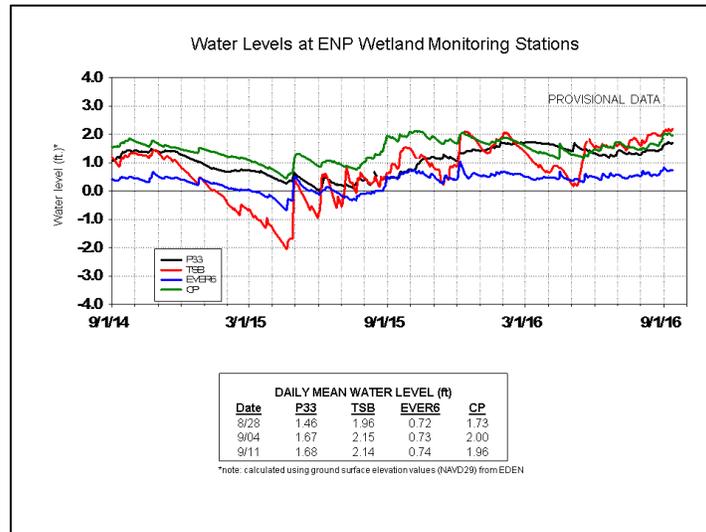


South Florida Water Depth Assessment Tool (SFWDAT)

Everglades National Park (ENP) and Florida Bay: Water level changes were mixed this past week with the largest change being a decrease of -0.04 feet in southwestern Taylor Slough. All areas are still higher than a month ago and remain 1 to 7 inches above average with northern Taylor Slough being the furthest from average.

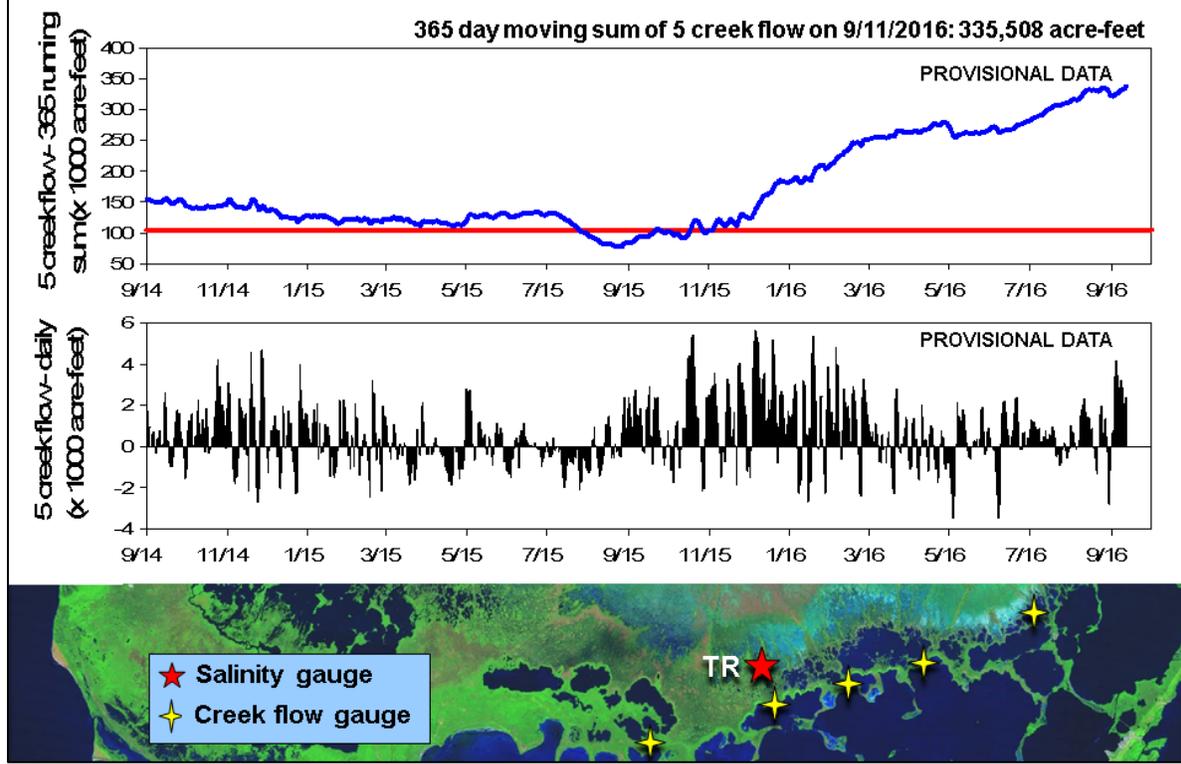
Salinities across Florida Bay are –five psu below to four psu above average. Daily average salinities now range from 14 to 37 psu with the highest salinity still in central Florida Bay. Western Florida Bay has returned to average this week.

The MFL sentinel site TR in the mangrove zone remains near fresh at 0.3 psu, and the 30-day moving average salinity at TR is also at a seasonal 0.4 psu.



The 365-day running sum of the cumulative flow from the five creeks feeding Florida Bay increased slightly to 335,508 acre-feet (above the average of 257,628 acre-feet). Creek flow is provisional data from the USGS and is highly variable.

5 Creek Cumulative Flow and Florida Bay MFL Flow Criteria Tracking



Water management recommendations

- Water levels in WCA-3A and WCA-2A should be lowered. In addition to the closure initiated by the Miccosukee Tribe in western WCA-3A, FWC has initiated closures within WCA-3A and WCA-2A for wildlife protection due to high water levels.
- The depth at gauge 65 (southern WCA-3A) has risen this week to 2.71 feet. We recommend that water depths in southern WCA-3A should remain below 2.5 feet throughout the wet season to protect tree island forests that were inundated for over 20 weeks in the dry season.
- Ascension rates need to remain under 0.25 feet per week to protect habitat and wildlife, including apple snails, prey of the endangered snail kite.

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

Everglades Ecological Recommendations, Sept. 13, 2016 (red is new)

Area	Current Condition	Cause(s)	Recommendation	Reasons
WCA-1	Stages rose 0.03' to 0.15'	Rainfall, ET, management	Limit ascension rates to a maximum of 0.25 ft/week.	Ascension rates of <0.25'/week will protect habitat and wildlife including reproducing apple snails.
WCA-2A	No change from last week	Rainfall, ET, management	Maintain ascension rates <0.25 ft/week. FWC has initiated closures to protect wildlife due to high water levels.	Ascension rates of <0.25'/week will protect habitat and wildlife including reproducing apple snails, prey for endangered snail kites.
WCA-2B	Stages rose 0.12'	Rainfall, ET, management	Limit ascension rates to extent possible with a maximum of 0.25 ft/week.	Ascension rates of <0.25'/week will protect habitat and wildlife including reproducing apple snails.
WCA-3A NE	Stage rose 0.17'	Rainfall, ET, management	Reduce stages in northern WCA-3A. FWC has initiated closures to protect wildlife due to high water levels. Ascension rates should be limited to the extent possible of <0.25 ft/week.	Closures may eliminate deer hunting and possibly hunting of other species. They will also eliminate access to tree islands in WCAs -3A and 2A. Ascension rates not exceeding 0.25'/week will protect habitat and wildlife including reproducing apple snails.
WCA-3A NW	No change from last week	Rainfall, ET, management		
Central WCA-3A S	Stage rose 0.21'	Rainfall, ET, management	Lower water depth at gauge 65. Slow the ascension rates to the extent possible with a maximum of 0.25 ft/week. When flows are changed a gradual reduction is recommended (stepping down over several days). FWC has initiated closures to protect wildlife due to high water levels.	Water depths at gauge 65 should remain below 2.5 feet over this upcoming wet season. 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. Ascension rates of <0.25'/week will protect habitat and wildlife including reproducing apple snails.
Southern WCA-3A S	Stage rose 0.19'	Rainfall, ET, management		
WCA-3B	Stages changed 0.06' to 0.14'	Rainfall, ET, management	Limit ascension rates to extent possible with a maximum of 0.25 ft/week.	Ascension rates of <0.25'/week will protect habitat and wildlife including reproducing apple snails.
ENP-SRS	Stage fell -0.06'	ET, rainfall, topography, management	Make discharges to the Park according to the ERTF rainfall plan.	Keep peat wet to promote native habitat and maintain wetland plant and animal communities.
ENP-CSSS habitats	S-12A and S-12B have been opened.	Rainfall, ET, management	Follow rainfall plan for releases. Gradual reduction in flows through S333, and the S-12 structures when they decrease is recommended (stepping down over several days). Follow guidance in C-111 western spreader canal project operations manual.	Sparrows have ceased breeding for 2016. Future operations need to continue to provide appropriate hydrological and habitat conditions for breeding in subpopulation A.
Taylor Slough	1 to 7 inches above average	Rain, ET, inflows	Move water southward as needed	Provide freshwater buffer for ecosystems and maintain low salinity conditions downstream
FB- Salinity	From -5 psu to 4 psu above average	Rain, ET, inflows, wind	Move water southward as needed	Maintain lower salinity levels.