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: September 29, 2015

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Stage in East Lake Toho has declined to 0.3 feet above schedule and continues to decline; Toho is 0.2 feet below schedule, and Kissimmee-Cypress-Hatchineha (KCH) is 0.3 feet below schedule. Discharge from East Toho is being adjusted to return to the regulation line. Discharge from KCH is being adjusted following the discharge zones in the standing recommendation discharge plan for S65/S65A. Over the past week, average discharges were 2330, 2655 and 5130 cfs at S65, S65A, and S65E, respectively, over the past week. Monday afternoon discharges: were 1900, 1950, 3600, and 4300 cfs at S65, S65A, S65C, and S65E, respectively. Dissolved oxygen continues to be low in the Kissimmee River, averaging 0.74 mg/L over the past week and 0.64 mg/L on Sunday. Kissimmee River mean floodplain depth is currently 1.56 feet.

Lake Okeechobee is at 14.67 feet NGVD, having risen 0.26 feet over the past week, and 1.8 feet over the past month's level. This ascension rate is almost four times faster than the preferred ascension rate of no more than 0.5 feet per month, putting any remaining apple snail reproduction at risk due to the inundation of egg masses. The Lake is in the Low Flow Operational Sub-band. Satellite imagery indicates increasing chlorophyll levels, mostly in the west and southwest areas of the Lake's nearshore and pelagic zone.

Over the past week, total freshwater inflow to the St. Lucie and Caloosahatchee estuaries was dominated by local basin runoff, averaging 2274 cfs to the St. Lucie and 4654 cfs to the Caloosahatchee. In the St. Lucie Estuary, salinity increased to the fair range for adult oysters. In the Caloosahatchee Estuary, salinity continued to be in the good range for adult oysters at Shell Point and Sanibel, but remained in the poor range at Cape Coral. Salinities were also in the good range for tape grass in the upper Caloosahatchee Estuary.

Rainfall in the Everglades was moderate to heavy, with basin-wide average rainfall ranging from 1.69 to 4.80 inches. Basin-wide stages rose from 0.14 feet to 0.39 feet. The 30-day salinity at the MFL site in Florida Bay decreased to 11.2 psu while daily salinity rose to 9.1 psu. The cumulative inflow from the five creeks into Florida Bay has increased to 101,571 acre-feet, but still below the 105,000 acre-feet criterion. More rainfall is needed to approach seasonally normal conditions in Florida Bay but the northern WCAs are approaching stages preferred for the late wet season. Water levels in the Everglades remain lower than they were a year ago.

Weather Conditions and Forecast

A wet pattern, then a dry weekend as Tropical Storm Joaquin stays east of the area. An upper level trough in the western Gulf of Mexico is interacting with a developing non-tropical surface low over the northeastern Gulf of Mexico, which is moving northward. The upper trough will continue to stream

moisture and pulses of energy across the District generating clouds and areas of moderate rain with embedded showers and a few thunderstorms today. The surface low should exit to the northeast Wednesday and the upper trough is forecast to shift eastward which should bring active thunderstorm days Wednesday and Thursday. Tropical Storm Joaquin is expected to remain to the east of the northern Bahamas for the next few days and then the trough over Florida is expected to move this system off to the north and east by the end of the week. The trough is also expected to bring drier air over the District for the weekend.

KISSIMMEE BASIN

Kissimmee Basin Rainfall

The Upper Kissimmee Basin received 1.32 inches of rainfall in the past week and the Lower Basin received 0.96 inches (SFWMD Daily Rainfall Report 9/28/2015).

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: 9/29/2015

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)						
							9/27/15	9/20/15	9/13/15	9/6/15	8/30/15	9/8/15	8/23/15
Lakes Hart and Mary Jane	S62	254	LKMJ	59.9	R	60.0	-0.1	0.0	0.1	0.4	0.3	0.3	-0.1
Lakes Myrtle, Preston, and Joel	S57	142	S57	60.8	R	61.0	-0.2	0.2	0.4	0.1	-0.1	-0.1	-0.1
Alligator Chain	S60	102	ALLI	63.0	R	63.3	-0.3	-0.3	-0.3	-0.2	-0.1	-0.1	-0.3
Lake Gentry	S63	137	LKGT	60.8	R	61.0	-0.2	-0.3	-0.2	-0.2	0.2	0.2	-0.2
East Lake Toho	S59	957	TOHOE	57.3	R	57.0	0.3	0.8	1.3	1.2	0.4	0.4	0.2
Lake Toho	S61	1098	TOHOW	53.8	R	54.0	-0.2	-0.1	0.0	0.2	0.3	0.3	-0.1
Lakes Kissimmee, Cypress, and Hatchineha	S65	2329	LKISSP, KUB011, LKIS5B	51.2	R	51.5	-0.3	-0.2	-0.1	0.0	0.1	0.1	0.2

* 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 Dual Trend; reported values are averages through midnight of the Sunday prior to the report date unless otherwise specified.

Report Date: **9/29/2015**

Metric	Location	Sunday's 1-day average	Weekly Average**									
			9/27/15	9/20/15	9/13/15	9/6/15	8/30/15	8/23/15	8/16/15	8/9/15	8/2/15	7/26/15
Discharge (cfs)	S-65	1887	**2329**	3923	4603	4525	3970	2629	1557	1125	250	145
Discharge (cfs)	S-65A	1971	**2655**	5089	6066	6098	4585	2783	1488	1030	345	284
Discharge (cfs)	S-65C	3982	**4558**	5476	5643	4961	3464	1995	1710	905	752	682
Headwater stage (feet NGVD)		36.8	**35.4**	35.5	35.3	35.4	35.3	35.3	35.4	34.8	34.2	34.2
Discharge (cfs)	S-65D****	4508	**5253**	6193	6236	5553	3764	2328	1759	1059	881	774
Discharge (cfs)	S-65E	4466	**5133**	6064	5906	5323	3539	2122	1551	885	724	550
DO concentration (mg/L)***	Phase I river channel	0.64	**0.74**	0.34	0.58	0.68	0.97	2.23	3.84	3.54	4.30	4.85
Mean depth (feet)*	Phase I floodplain	**1.56**	N/A	2.14	2.12	2.35	1.73	1.29	0.95	1.09	0.51	0.44

* 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.

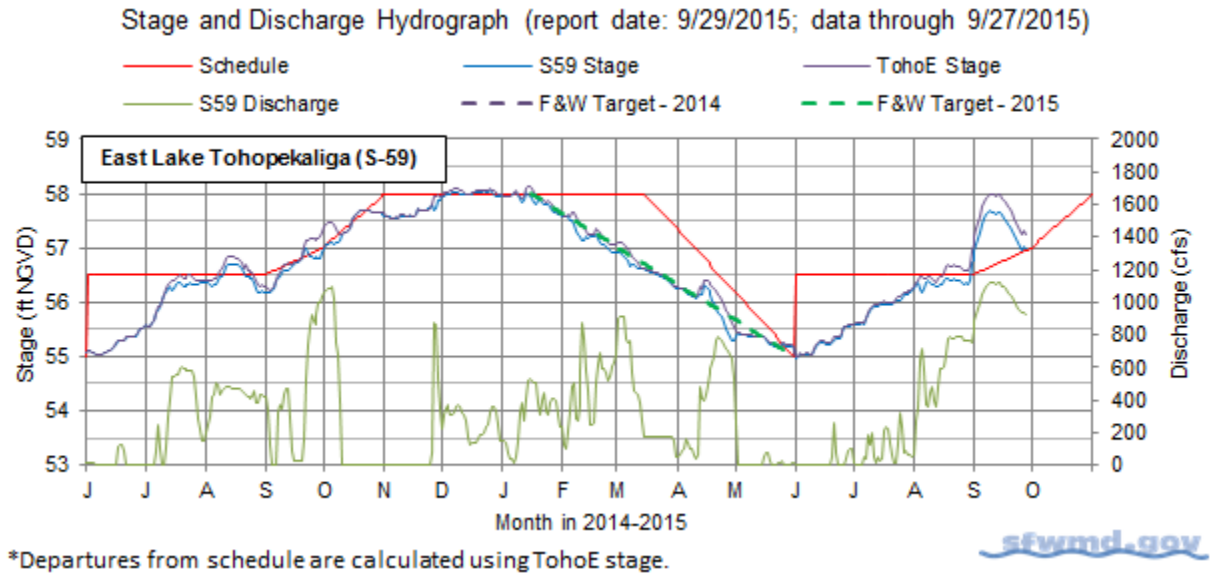
DATA ARE PROVISIONAL

Water Management Recommendations

Kissimmee Basin Recommendations and Operational Actions

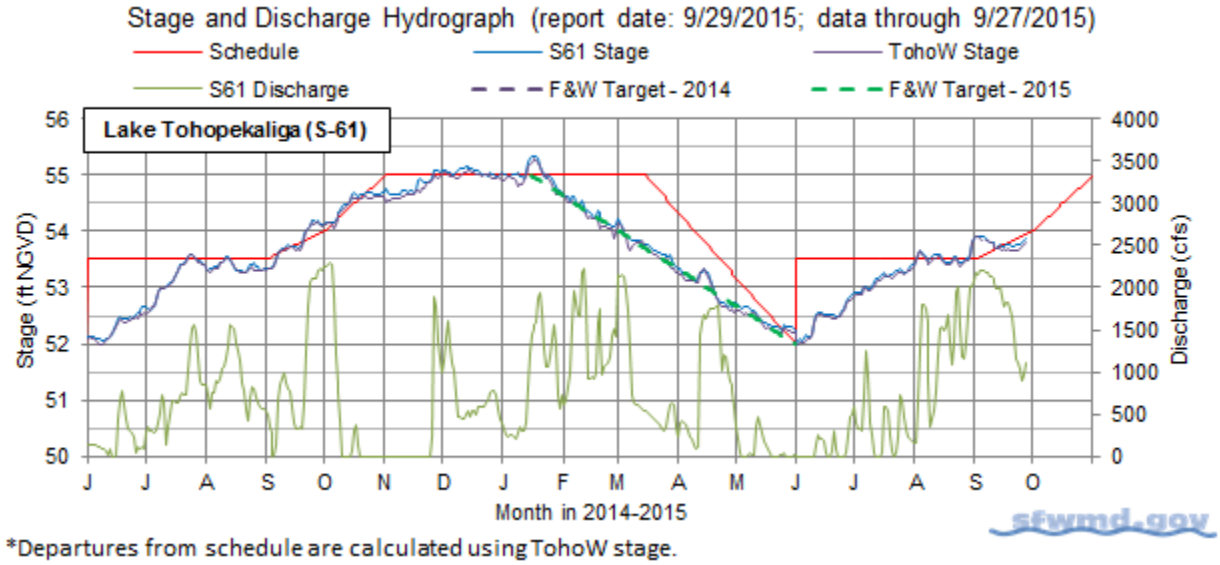
Date	Recommendation	Purpose	Outcome	Source
9/28/2015	No new recommendations.			
9/22/2015	No new recommendations.			
9/15/2015	No new recommendations.			
9/8/2015	No new recommendations.			
9/1/2015	No new recommendations.			
8/25/2015	No new recommendations.			
8/18/2015	No new recommendations.			
8/11/2015	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.			
1/27/2015	Starting today, follow a new SK recession line for KCH, which will be drawn from today's stage to regulation stage on March 1.	Snail kite recession in KCH	Implemented	

KCOL Hydrographs (through Sunday midnight)



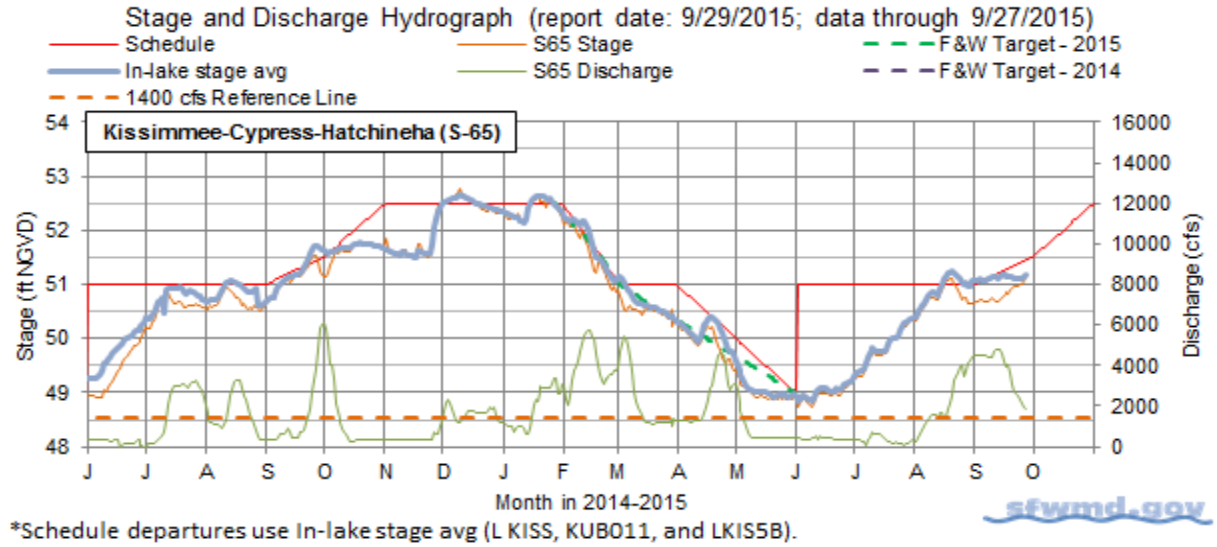
*Departures from schedule are calculated using TohoE stage.

Figure 1.



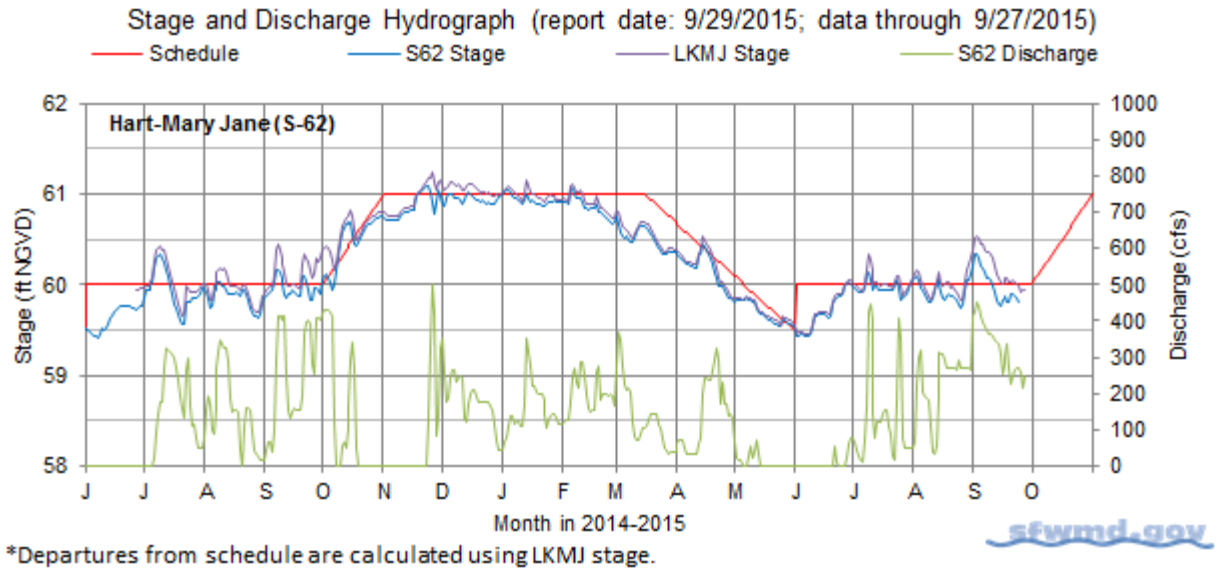
*Departures from schedule are calculated using TohoW stage.

Figure 2.



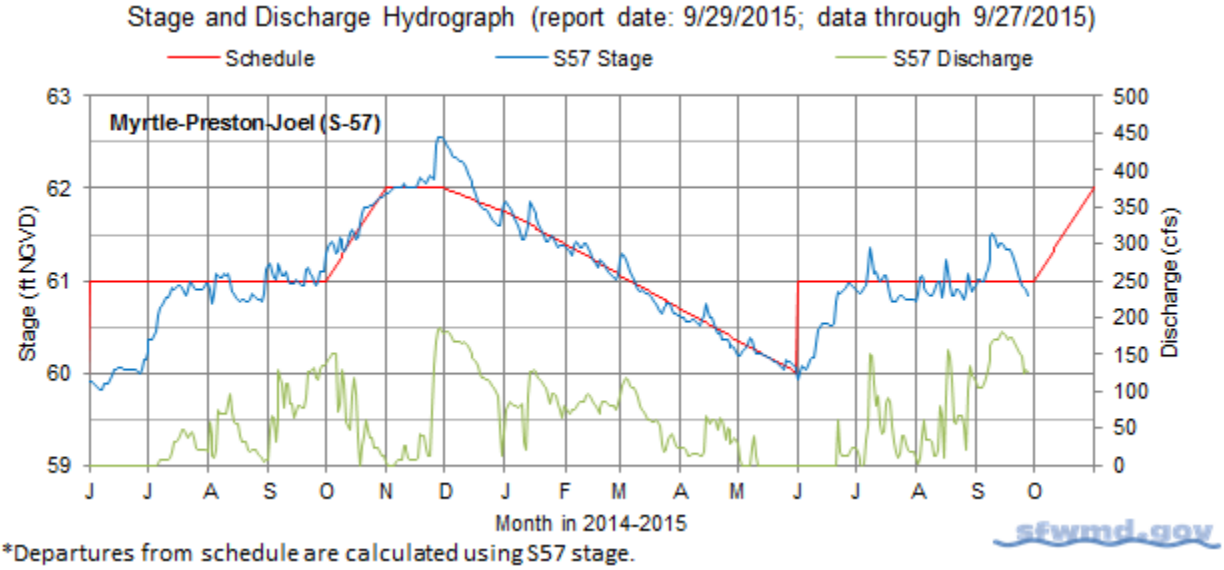
*Schedule departures use In-lake stage avg (L KISS, KUBO11, and LKIS5B).

Figure 3.



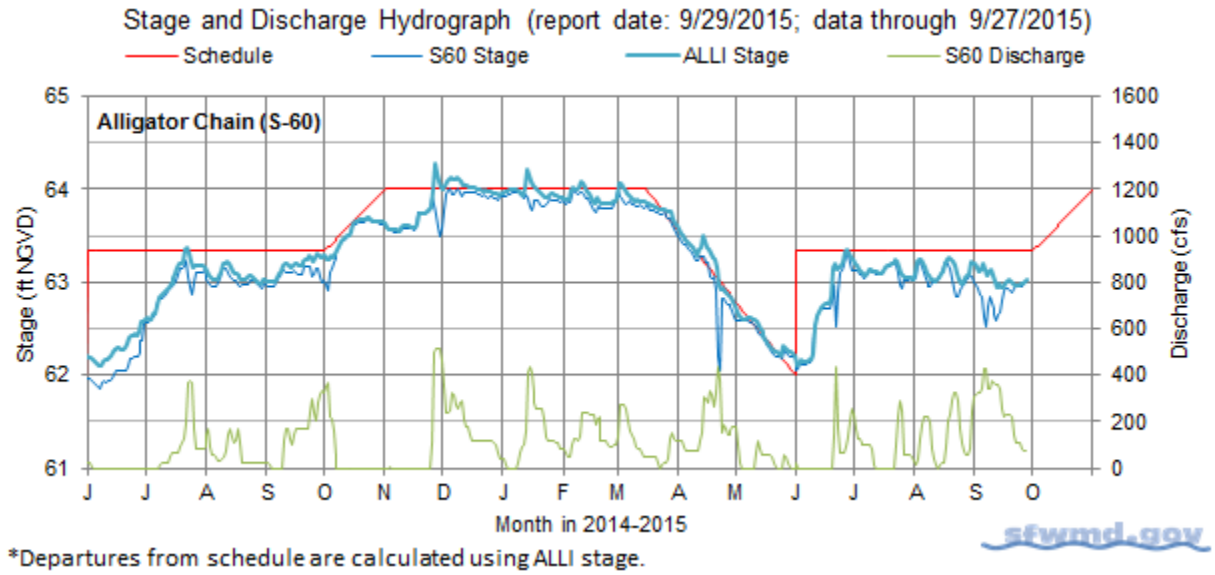
*Departures from schedule are calculated using LKMJ stage.

Figure 4.



*Departures from schedule are calculated using S57 stage.

Figure 5.



*Departures from schedule are calculated using ALLI stage.

Figure 6.

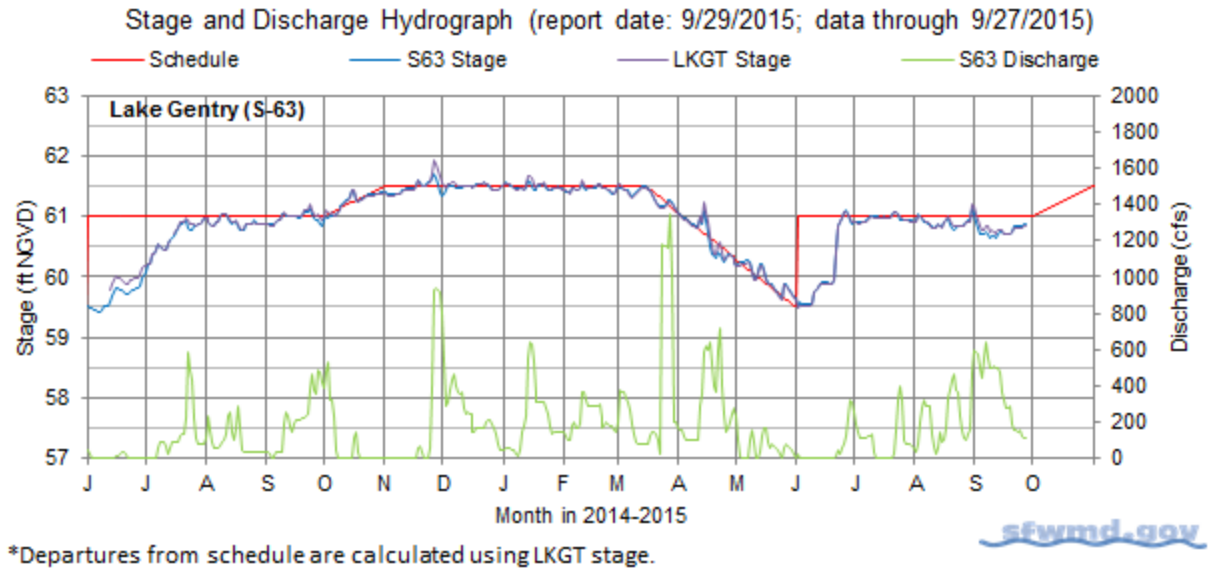


Figure 7.

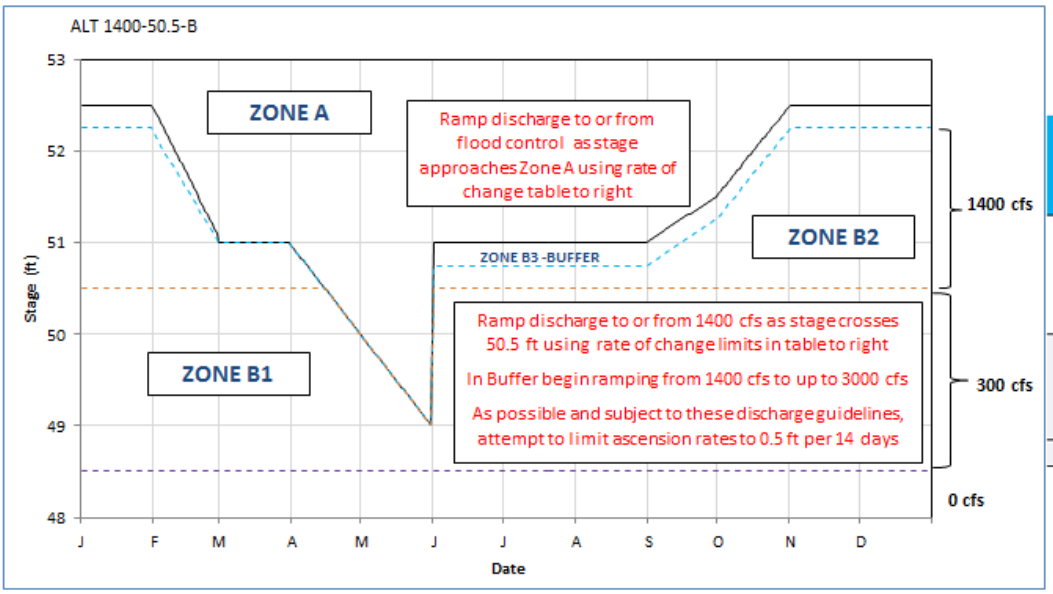


Table 1. Discharge Rate of Change Limits for S65/S65A
****Rate limits apply only in Zone B****

	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.

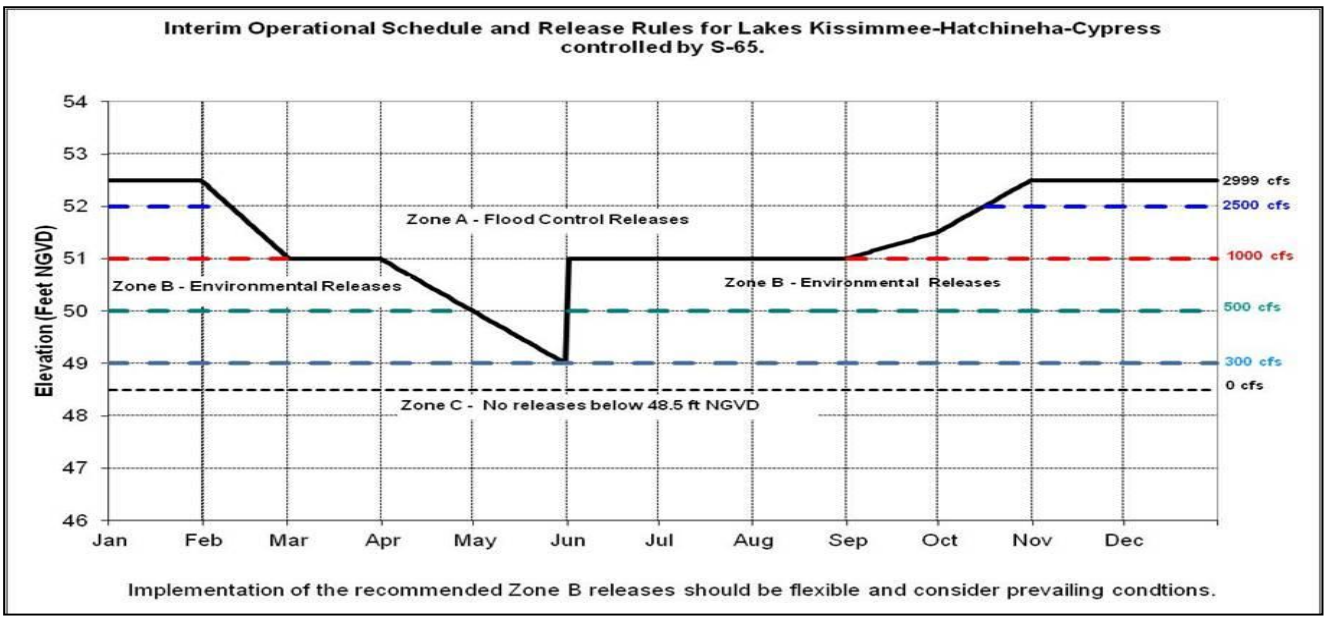


Figure 8b. Interim operations schedule for S-65. The discharge schedule shown to the right has not been used in recent years or in Wet Season 2015.

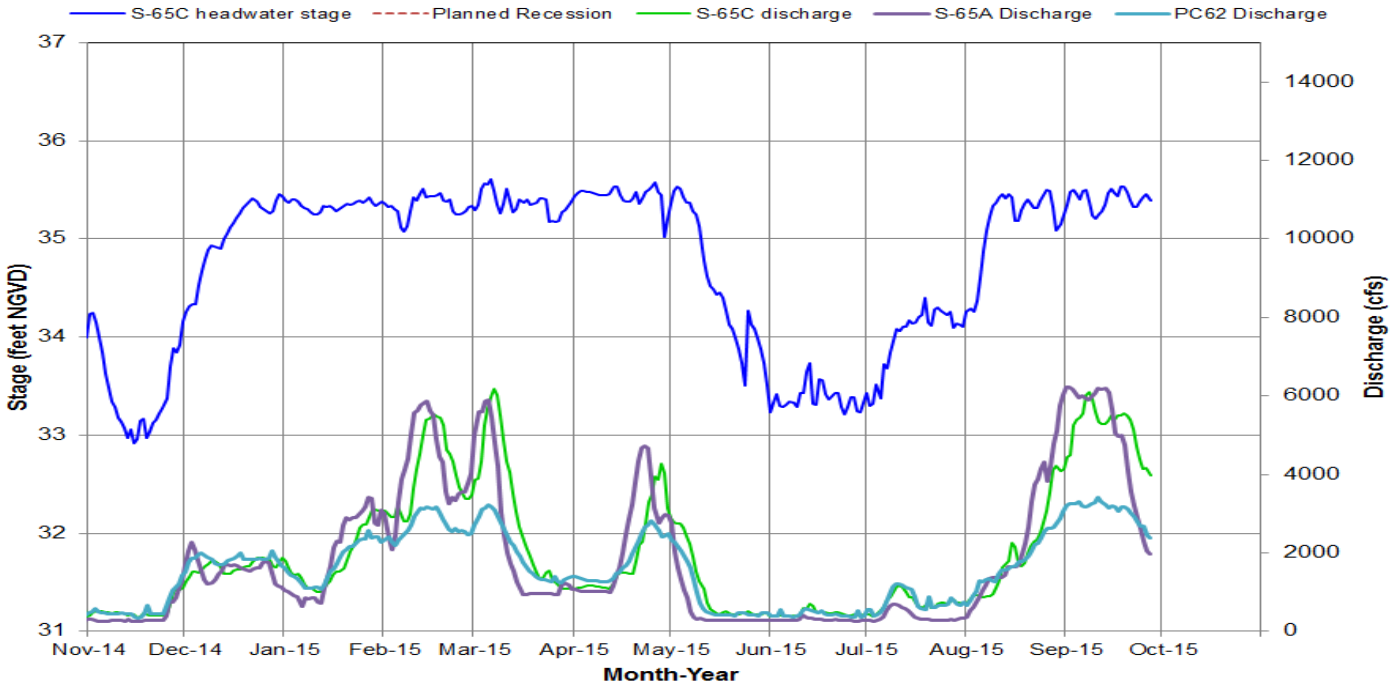


Figure 9. S-65C headwater stage in relation to discharge at S-65C, S-65A, and PC62.

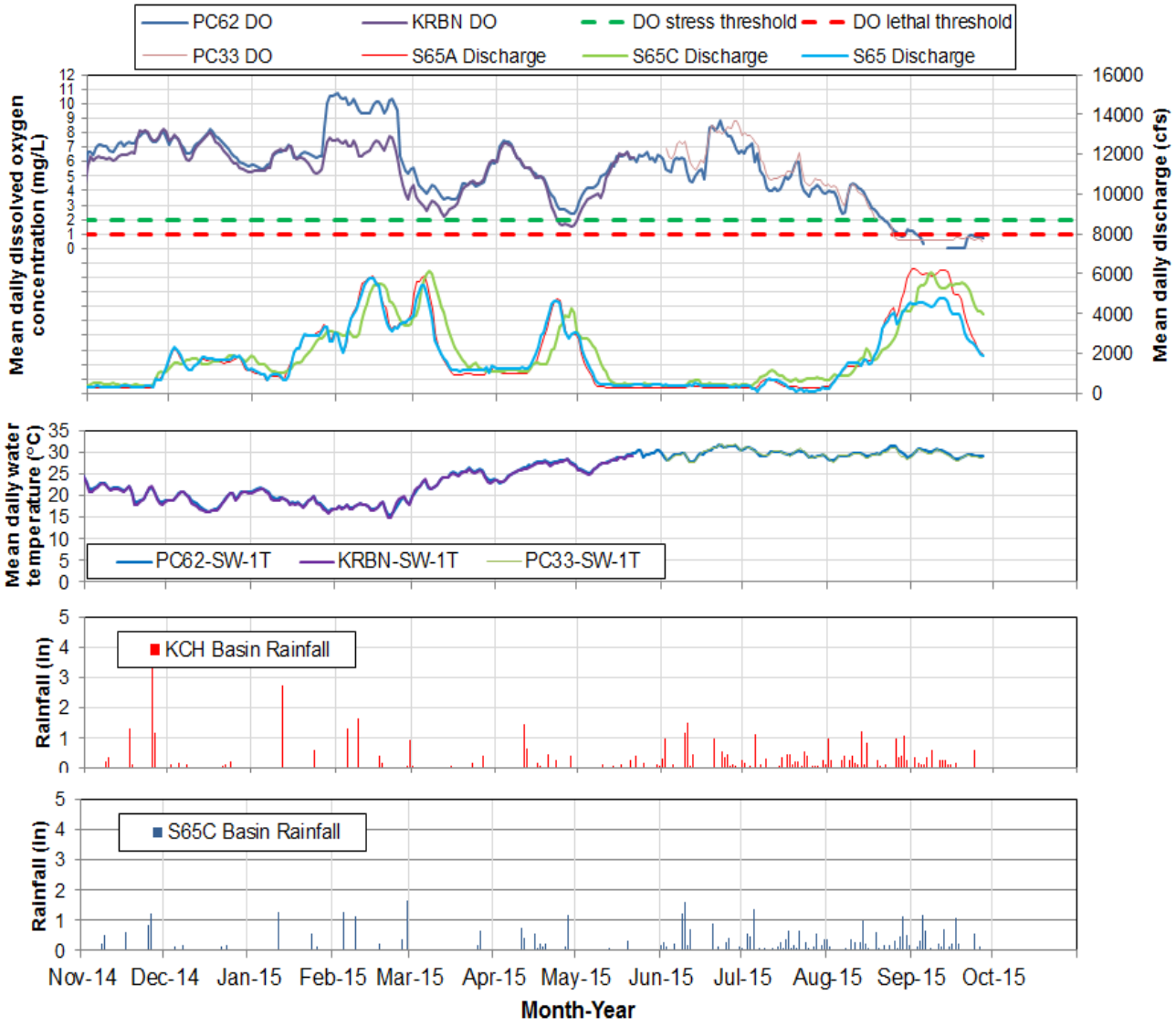
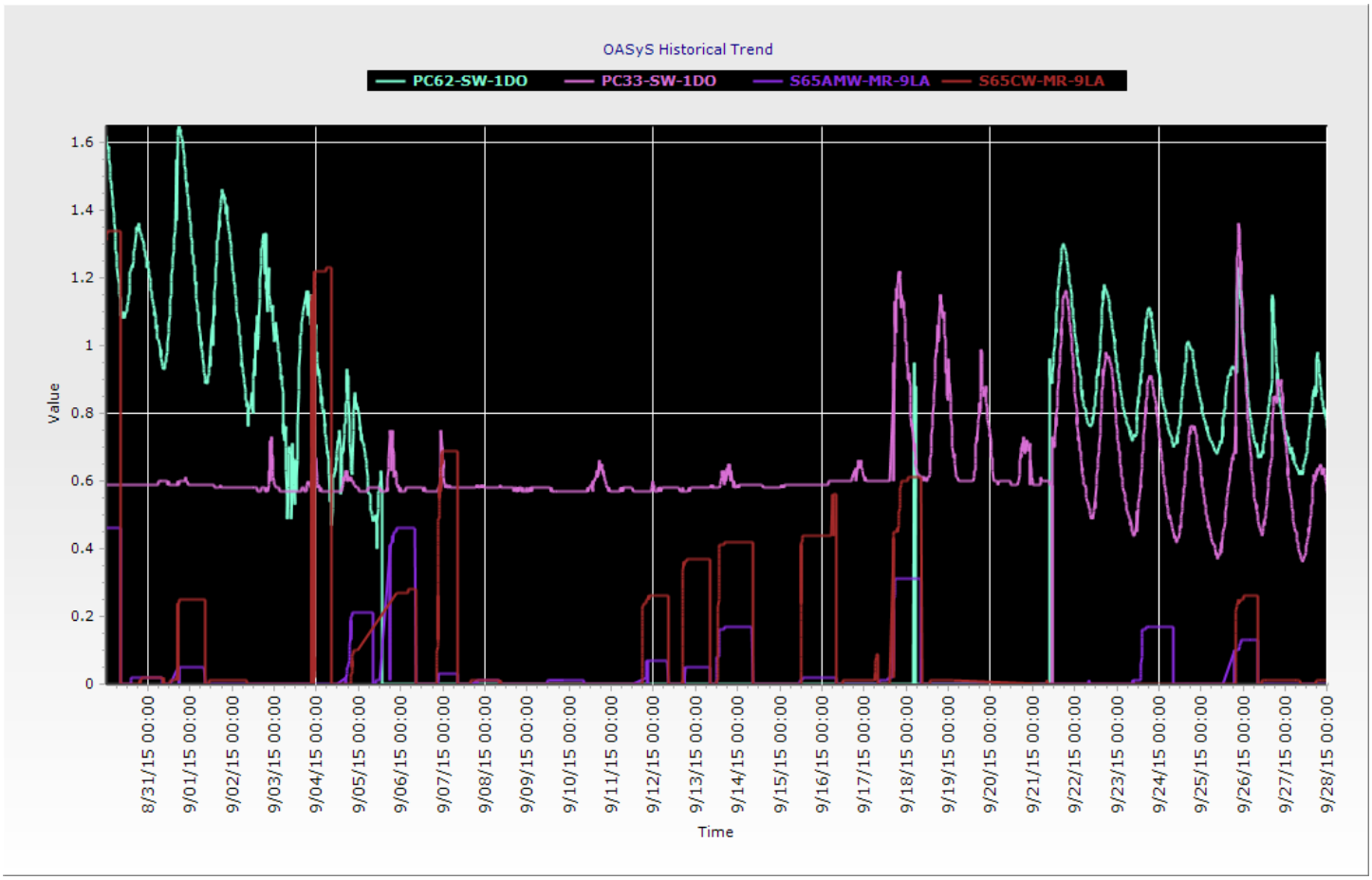


Figure 10. Mean daily DO, discharge, temperature and rainfall in the Phase I river channel.



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

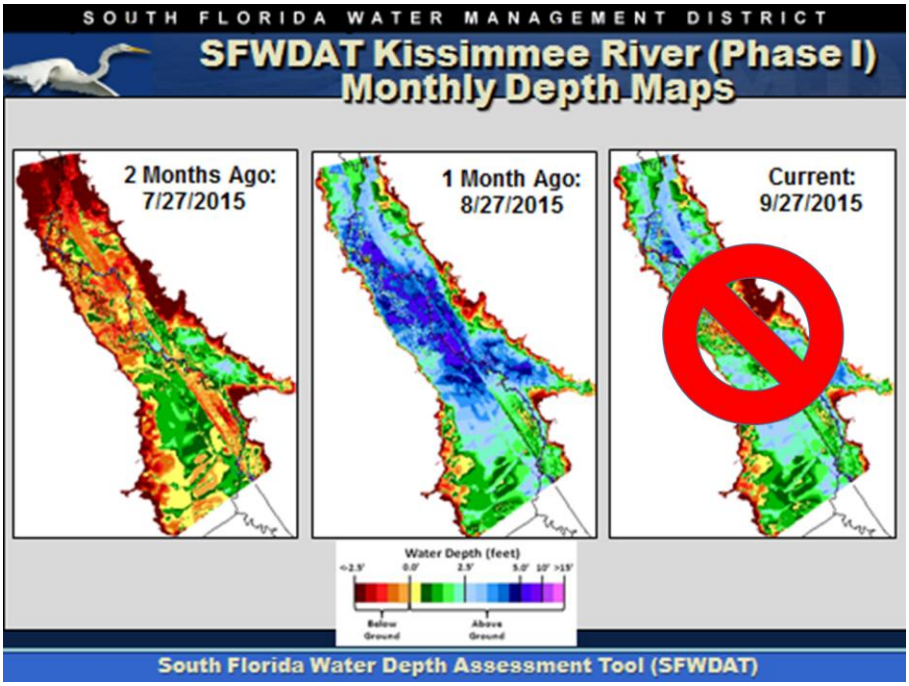
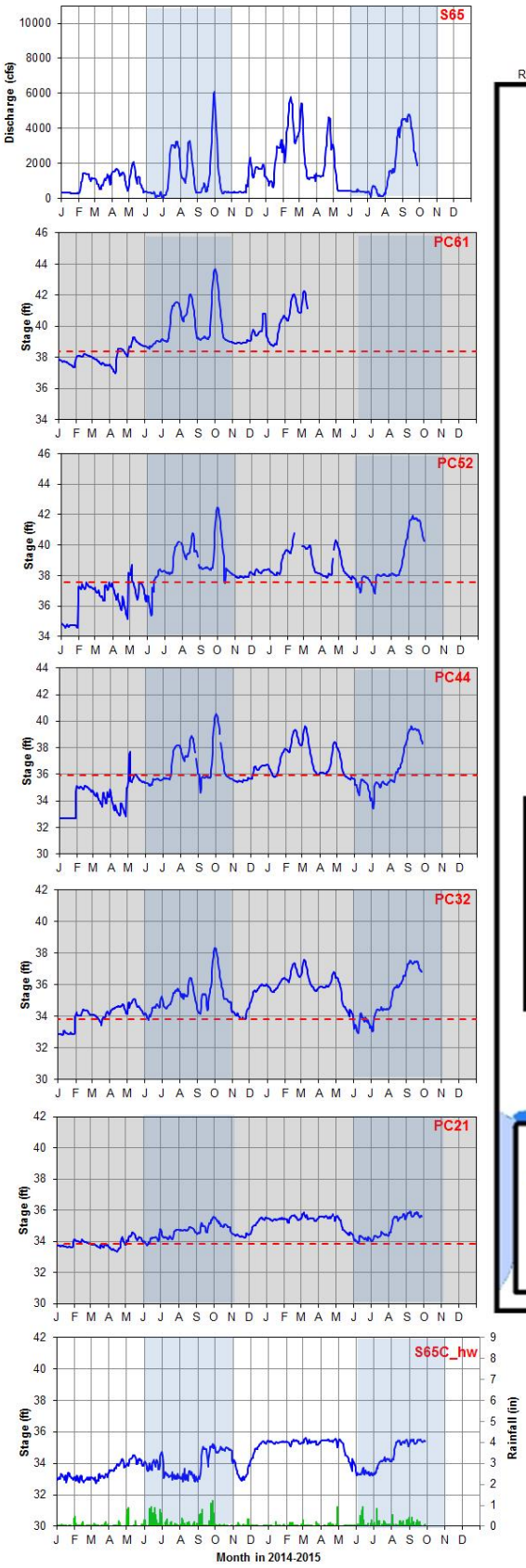


Figure 11. Phase I area floodplain water depths for this week, one month ago, and two months ago. Note that the WDAT color-coding has been modified to accommodate greater water depths; these maps are not directly comparable to Kissimmee Basin WDAT maps published prior to Jan. 16, 2012. Note data for the week of 9/27/2015 is not available.

Kissimmee River Hydrographs



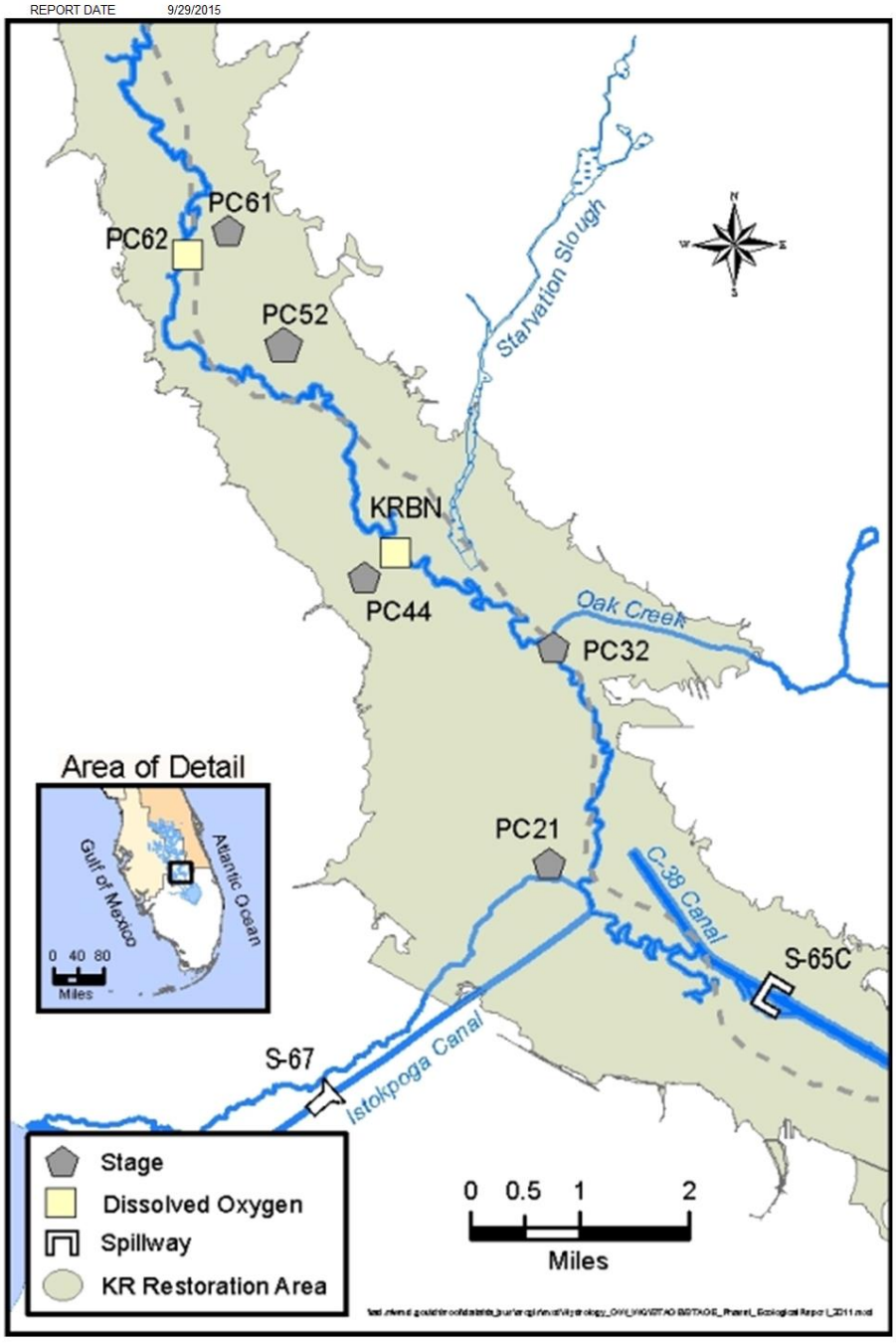


Figure 12. Discharge at S65, stages at five monitoring stations in the Phase I area of the Kissimmee River floodplain, and headwater stage at S65-C since January 1, 2013. The most recent data (~2 weeks) are provisional real-time data from SFWMD Dual Trend; previous data are from SFWMD DB-HYDRO (validated).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

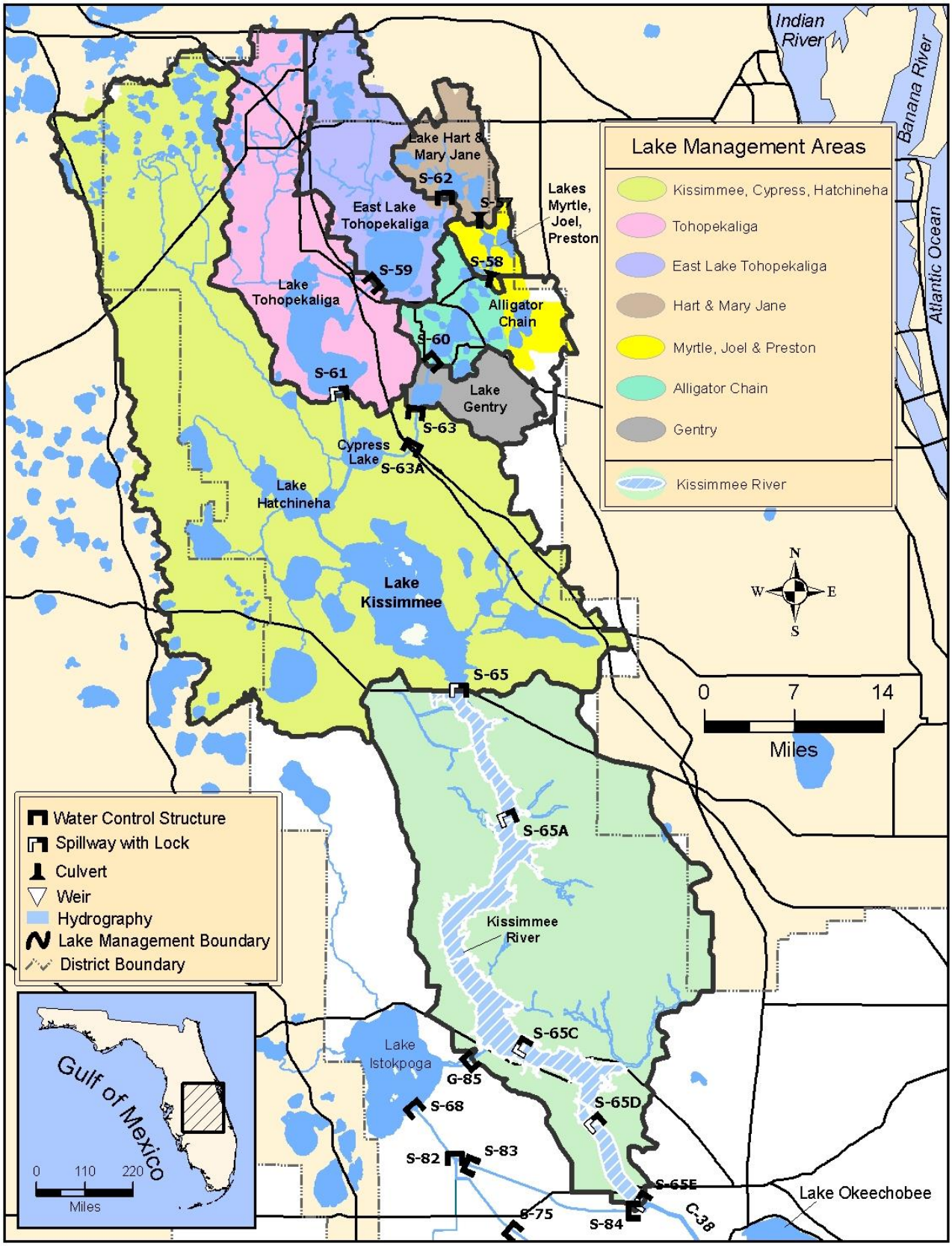


Figure 13. The Kissimmee Basin.

LAKE OKEECHOBEE

According to the USACO web site, Lake Okeechobee stage is at 14.67 feet NGVD for the period ending at midnight on September 28, 2015. Lake stage increased by 0.26 feet over the past week. The Lake is now 1.80 feet higher than it was a month ago and 0.47 feet lower than it was a year ago (Figure 1). The Lake is in the Low Flow Operational Sub-band. (Figure 2). According to RAINDAR, 0.52 inches of rain fell directly over the Lake during the past seven days. Similar or higher amounts of rain fell in much of the surrounding watershed (Figure 3).

Based on USACE reported values, current Lake inflow is approximately 8628 cfs, consisting of inflows as indicated below.

Structure	Flow cfs
S65E	4599
S154	71
S84 & 84X	1371
S71	354
S72	84
C5	0
S191	349
S133 PUMPS	97
S127 PUMPS	0
S129 PUMPS	49
S131 PUMPS	34
S135 PUMPS	206
Fisheating Creek	1414
S2 Pumps	0
S3 Pumps	0
S4 Pumps	0

Outflows consisted of 169 cfs exiting to the L8 through Culvert 10A. Corrected evapotranspiration this past week was equivalent to an outflow of 3000 cfs. Change in elevation equivalents and average weekly flows for major structures are presented in Figure 4.

Mean nearshore region total phosphorus (TP) values for September showed a sharp increase, while in the pelagic region mean TP values decreased relative to August values. Mean total suspended solids values declined compared to August values (Figure 5).

Monthly chlorophyll monitoring indicated the presence of bloom conditions at two western nearshore sites and at Culvert 10A (>40 µg/L). Two western nearshore sites near the mouth of the Kissimmee River had low positive microcystin values (Figure 6).

The most recent MODIS satellite image (September 26) (Figure 7) indicates low to moderate chlorophyll values primarily on the west side of the nearshore region and in portions of the pelagic region. However, large portions of the southwest and south nearshore regions were obscured by cloud cover. Overall, there appears to be an increase in chlorophyll values relative to last week's image.

Water Management Recommendations

Lake levels continue to increase with the current monthly ascension rate continuing to exceed the preferred rate of 0.5 feet per month. It is probable that this ascension rate will continue to have some negative impacts on apple snail recruitment due to drowning egg clutches. The Lake is near the top of its optimal stage range for this time of year. Any activities which contribute to reducing the current rate of rise in Lake stage would be ecologically beneficial.

Future recommendations for the short term will depend in large measure on the remainder of the wet season rainfall patterns and amounts. The operational goal continues to be to maintain a steady increase in water levels not to exceed 0.5 feet per month (0.125 feet/week) throughout the wet season until a Lake stage of 15.5 feet NGVD is reached.

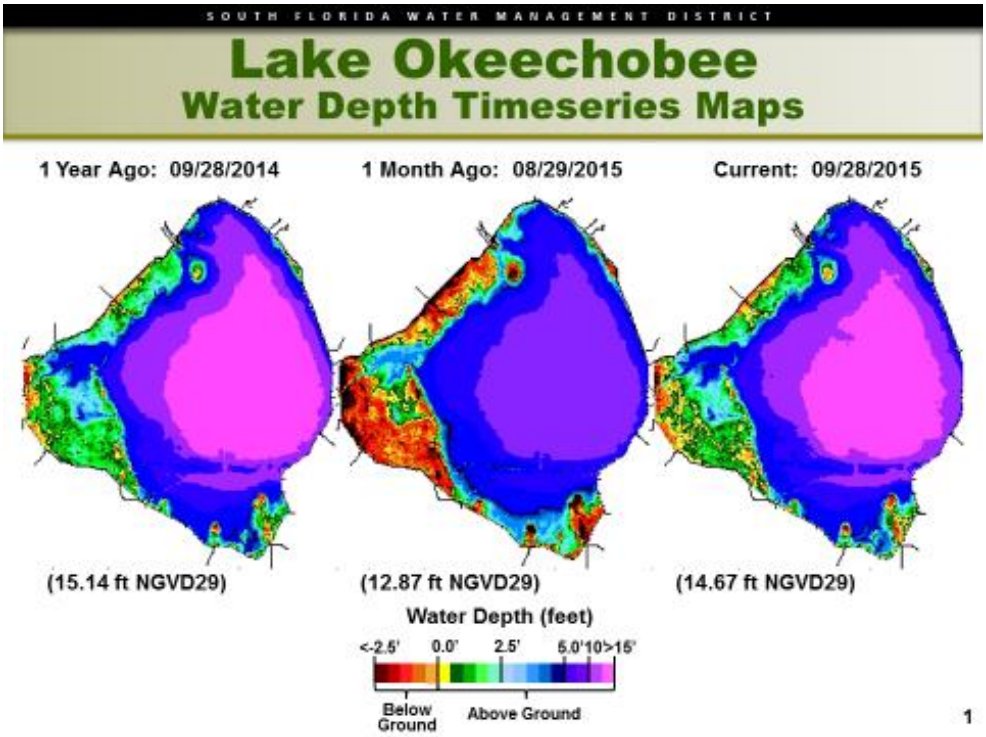


Figure 1

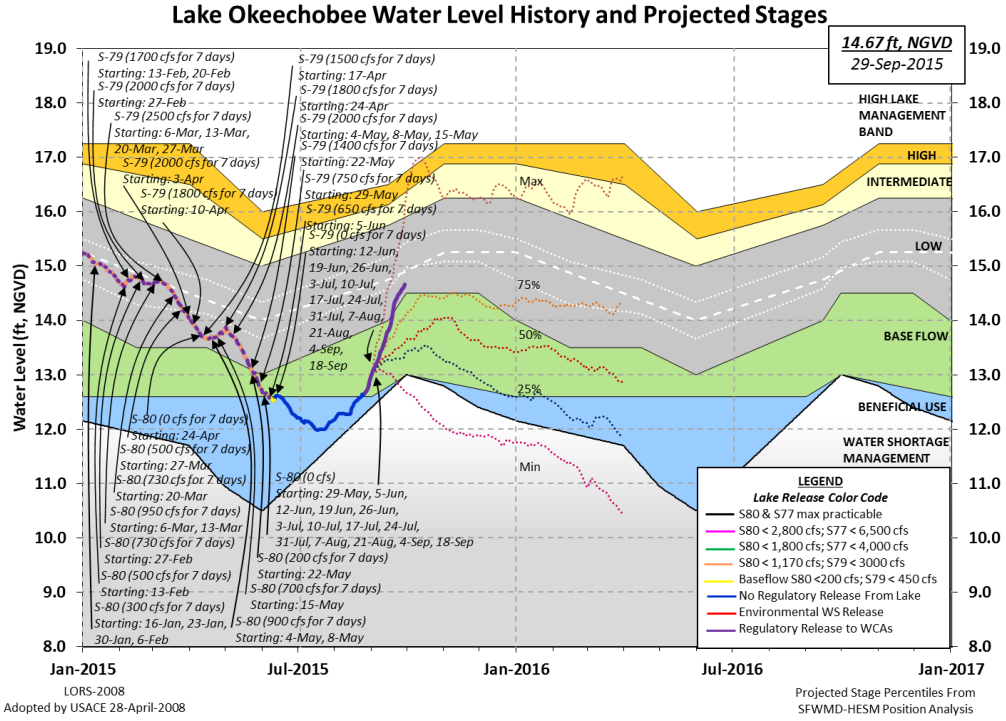

Lake Okeechobee Water Level History and Projected Stages
14.67 ft, NGVD
29-Sep-2015
Water Level (ft, NGVD)
19.0
18.0
17.0
16.0
15.0
14.0
13.0
12.0
11.0
10.0
9.0
8.0
Jan-2015
Jul-2015
Jan-2016
Jul-2016
Jan-2017
HIGH LAKE MANAGEMENT BAND
HIGH
INTERMEDIATE
LOW
BASE FLOW
BENEFICIAL USE
WATER SHORTAGE MANAGEMENT
Max
75%
50%
25%
Min
S-79 (1700 cfs for 7 days) Starting: 13-Feb, 20-Feb
S-79 (2000 cfs for 7 days) Starting: 27-Feb
S-79 (2500 cfs for 7 days) Starting: 6-Mar, 13-Mar, 20-Mar, 27-Mar
S-79 (2000 cfs for 7 days) Starting: 3-Apr
S-79 (1800 cfs for 7 days) Starting: 10-Apr
S-79 (1500 cfs for 7 days) Starting: 17-Apr
S-79 (1800 cfs for 7 days) Starting: 24-Apr
S-79 (2000 cfs for 7 days) Starting: 4-May, 8-May, 15-May
S-79 (1400 cfs for 7 days) Starting: 22-May
S-79 (750 cfs for 7 days) Starting: 29-May
S-79 (650 cfs for 7 days) Starting: 5-Jun
S-79 (0 cfs for 7 days) Starting: 12-Jun, 19-Jun, 26-Jun, 3-Jul, 10-Jul, 17-Jul, 24-Jul, 31-Jul, 7-Aug, 21-Aug, 4-Sep, 18-Sep
S-80 (0 cfs for 7 days) Starting: 24-Apr
S-80 (500 cfs for 7 days) Starting: 27-Mar
S-80 (730 cfs for 7 days) Starting: 20-Mar
S-80 (950 cfs for 7 days) Starting: 6-Mar, 13-Mar
S-80 (730 cfs for 7 days) Starting: 27-Feb
S-80 (500 cfs for 7 days) Starting: 13-Feb
S-80 (300 cfs for 7 days) Starting: 16-Jan, 23-Jan, 30-Jan, 6-Feb
S-80 (0 cfs) Starting: 29-May, 5-Jun, 12-Jun, 19 Jun, 26-Jun, 3-Jul, 10-Jul, 17-Jul, 24-Jul, 31-Jul, 7-Aug, 21-Aug, 4-Sep, 18-Sep
S-80 (200 cfs for 7 days) Starting: 22-May
S-80 (700 cfs for 7 days) Starting: 15-May
S-80 (900 cfs for 7 days) Starting: 4-May, 8-May
LEGEND
Lake Release Color Code
S80 & S77 max practicable
S80 < 2,800 cfs; S77 < 6,500 cfs
S80 < 1,800 cfs; S77 < 4,000 cfs
S80 < 1,170 cfs; S79 < 3000 cfs
Baseflow S80 <200 cfs; S79 < 450 cfs
No Regulatory Release From Lake
Environmental WS Release
Regulatory Release to WCAs
LORS-2008
Adopted by USACE 28-April-2008
Projected Stage Percentiles From SFWMD-HESM Position Analysis

Figure 2

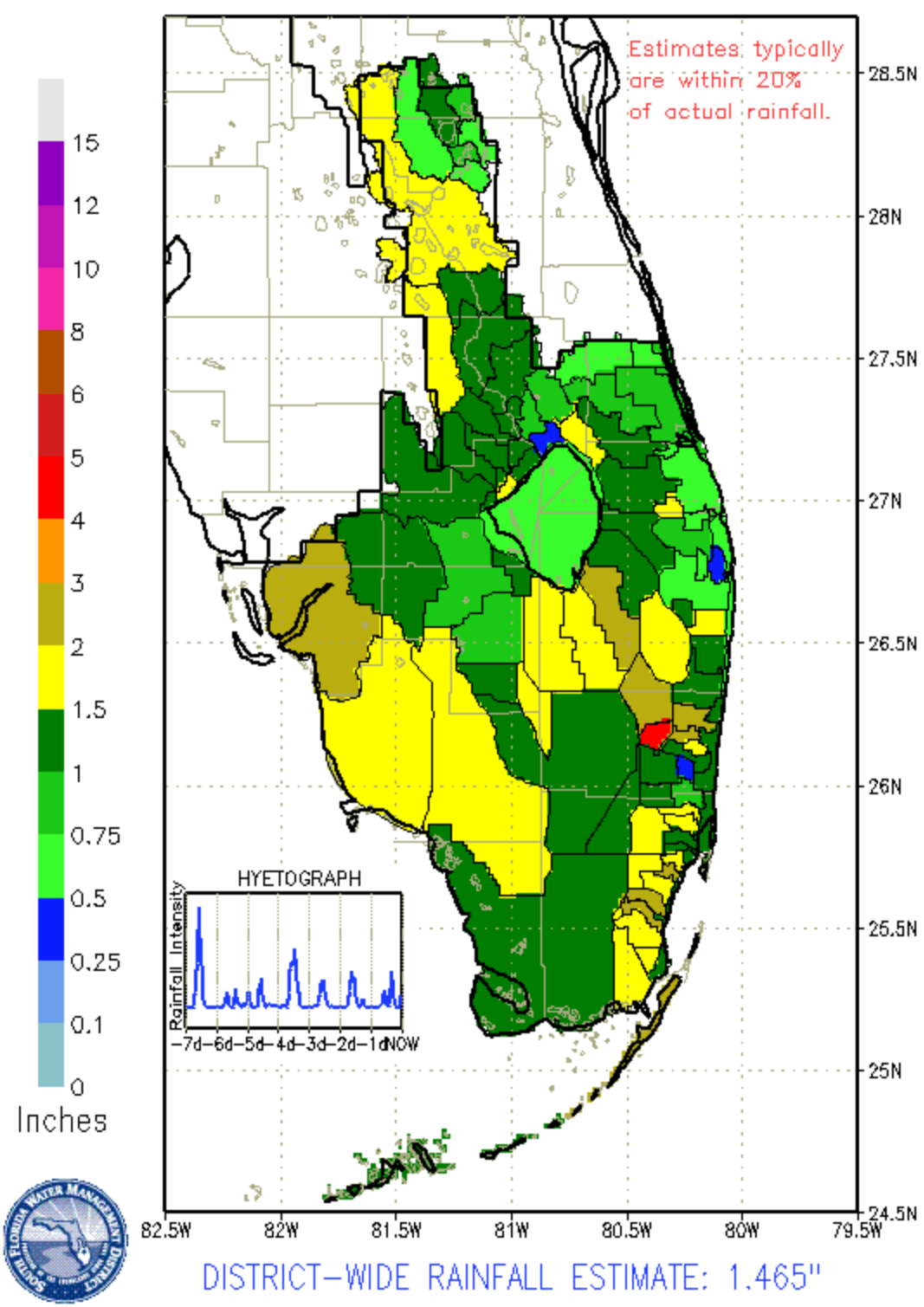

SFWMD PROVISIONAL RAINDAR 7-DAY BASIN RAINFALL ESTIMATES
FROM: 0530 EST, 09/22/2015 THROUGH: 0530 EST, 09/29/2015
Estimates typically are within 20% of actual rainfall.
15
12
10
8
6
5
4
3
2
1.5
1
0.75
0.5
0.25
0.1
0
Inches
HYETOGRAPH
Rainfall Intensity
-7d-6d-5d-4d-3d-2d-1dNOW
28.5N
28N
27.5N
27N
26.5N
26N
25.5N
25N
24.5N
82.5W
82W
81.5W
81W
80.5W
80W
79.5W
DISTRICT-WIDE RAINFALL ESTIMATE: 1.465"

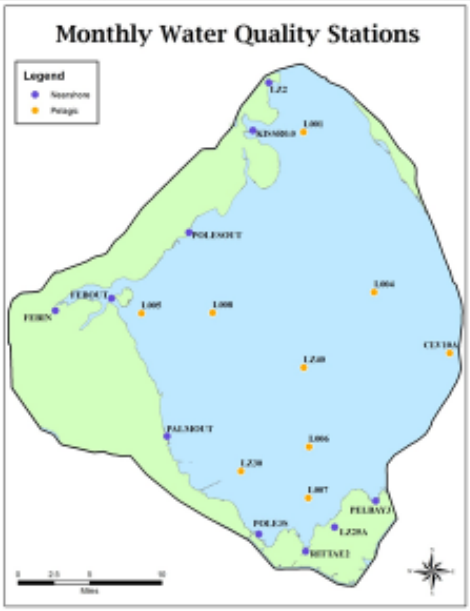
Figure 3

INFLOWS	Average Daily Flow Past Week cfs	Feet of Change Past Week
S65E	4832	0.161
S71 & 72	256	0.009
S84 & 84X	1213	0.041
Fisheating Creek	2193	0.073
Rainfall	N.A.	0.130
OUTFLOWS	**Average Daily Flow Past Week cfs**	**Feet of Change Past Week**
S77	0	0.000
S308	0	0.000
S351	56	0.002
S352	0	0.000
S354	0	0.000
L8	246	0.008
ET	3000	0.100

Figure 4

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Lake Okeechobee
Water Quality



Parameter		Jul 2015	Aug 2015	Sep 2015
TP ppb	Nearshore	67	52	83
	Pelagic	97	107	86
	Lakewide	83	81	85
TSS ppm	Nearshore	11	9	6
	Pelagic	18	21	12
	Lakewide	15	15	9

Figure 5

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Lake Okeechobee
Algal Blooms

BDL = Below Detection Limit		
September 1-2, 2015		
Site	Microcystin ug/L	Chlorophyll *a* ug/L
FEBIN		2.2
FEBOUT		11.4
LZ2	0.35	21.5
KISSR0.0	1.00	24.9
PALMOUT		27.0
PELBAY3		9.7
POLE3S		12.3
POLESOUT	<0.20 BDL	73.5
RITTAE2		7.0
LZ25A		16.1
L001		28.8
L004		16.3
L005	<0.20 BDL	40.4
L006		6.1
L007		12.9
LZ40		36.4
LZ30	<0.20 BDL	15.6
LZ40		7.1
CLV10A	<0.20 BDL	40.2

Figure 6

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Lake Okeechobee
Algal Blooms

Unvalidated Data

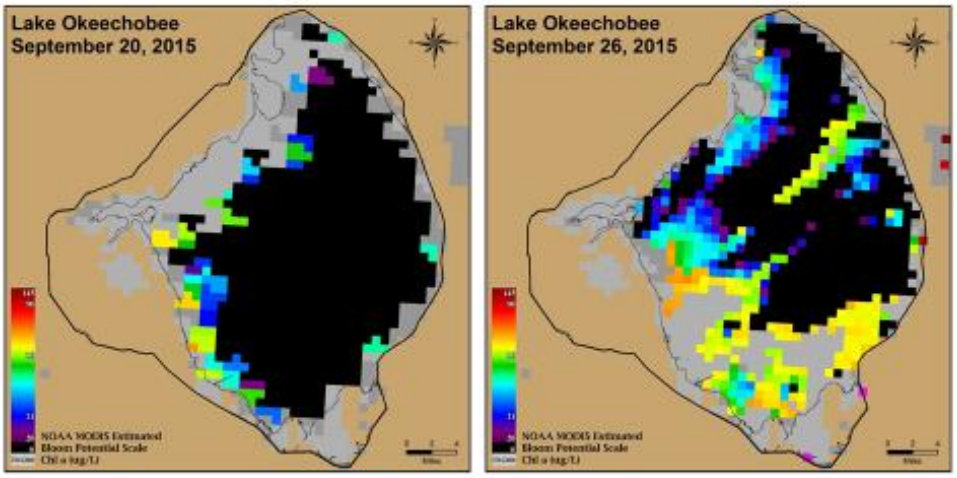


Figure 7

Lake Istokpoga

Lake Istokpoga stage is 39.11 feet NGVD today and is currently 0.01 feet above its regulation schedule (39.10 feet NGVD) which is now undergoing its annual rise to high pool stage (Figure 8). Average flows into the Lake from Arbuckle and Josephine creeks were 890 and 284 cfs respectively, a net decrease from last week. Average discharge from S68 and S68X this past week was 1137 cfs, approximately 40% less than the preceding week. According to RAINDAR, 1.52 inches of rain fell in the Lake Istokpoga watershed during the past seven days.

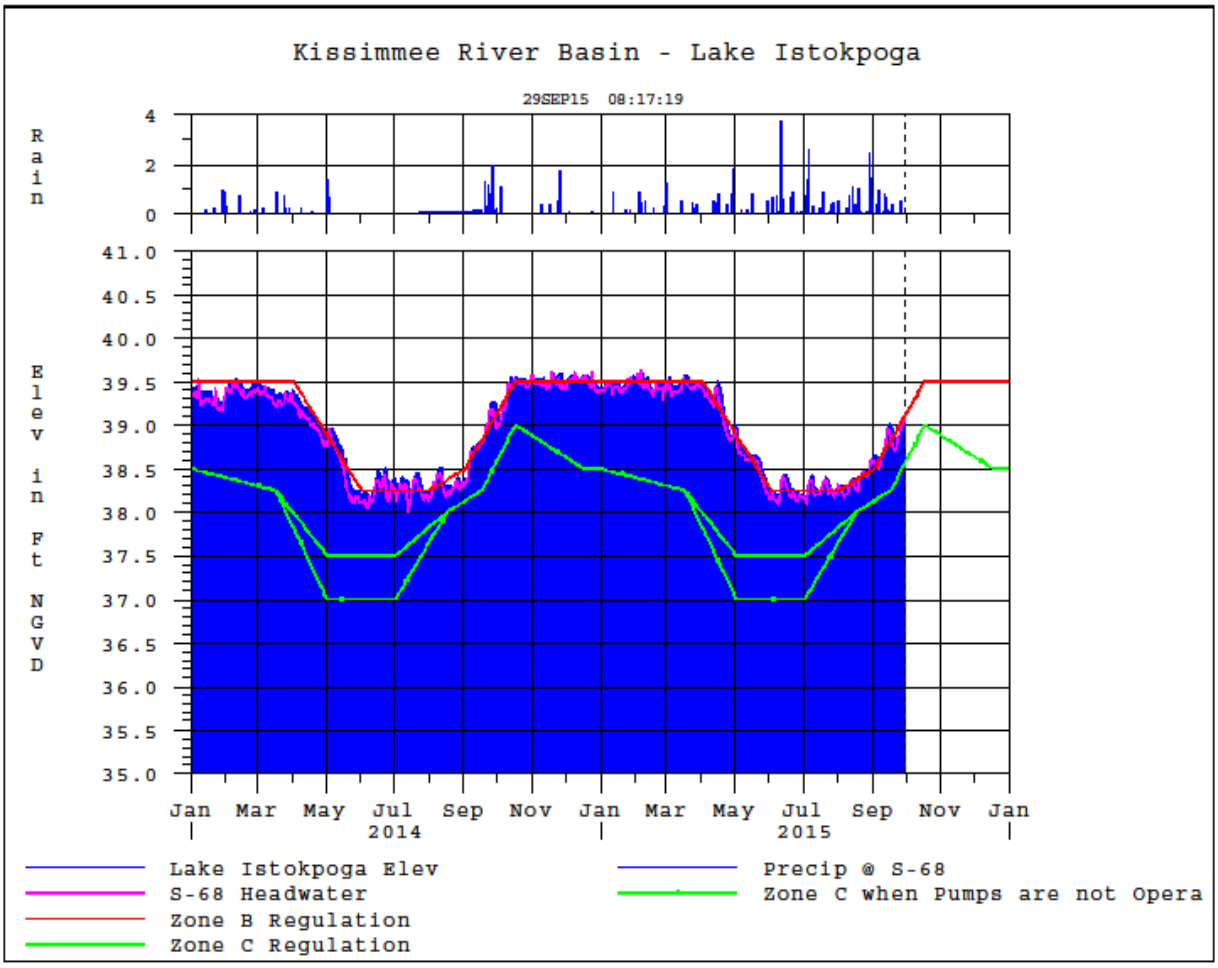


Figure 8

ESTUARIES

St. Lucie Estuary

Over the past week, provisional flows averaged 692 cfs at S-80, 0 cfs at S-308, 575 cfs at S-49 on C-24, 433 cfs at S-97 on C-23, and 194 cfs from Ten Mile Creek at the Gordy Road Structure. Average inflow from tidal basin tributaries is estimated to be 380 cfs (Figures 1 and 2). Total inflow averaged about 2274 cfs last week and 3006 cfs over last month.

Over the past week, salinity increased throughout the estuary with the exception of surface salinity at HR1, which remained the same (Table 1, Figures 3 and 4). The seven-day moving average salinity of

the water column at the US1 Bridge is 6.5. Salinity conditions in the middle estuary have returned to the fair 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)	**1.2** (1.4)	**3.9** (3.4)	NA[1]
US1 Bridge	**4.3** (2.9)	**8.8** (3.3)	10.0-26.0
A1A Bridge	**12.4** (8.0)	**23.1** (15.0)	NA

[1]Envelope not applicable

Caloosahatchee Estuary

During the past week, provisional flows averaged approximately 1 cfs at S-77, 529 cfs at S-78, and 2599 cfs at S-79. Average inflow from tidal basin tributaries is estimated to be 2055 cfs (Figures 5 and 6). Total inflow averaged 4654 cfs last week and 5187 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 good range for oysters at Shell Point and Sanibel, but within the poor range at Cape Coral (Figure 9). The 30-day moving average surface salinity is 0.2 at Val I-75 and 0.2 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	**0.2*** (0.2*)	**0.2*** (0.2*)	0.0-5.0[2]
Ft. Myers Yacht Basin	**0.2** (0.2)	**0.2** (0.2)	NA
Cape Coral	**2.1** (0.6)	**2.5** (0.6)	10.0-30.0
Shell Point	**15.6** (10.8)	**18.5** (14.6)	10.0-30.0
Sanibel	**25.4** (23.4)	**27.1** (26.1)	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	2.5 – 5.7
Dissolved Oxygen (mg/l)	NA	NA	3.9 – 5.8

The Florida Fish and Wildlife Research Institute reported on September 25, 2015, that *Karenia brevis*, the Florida red tide organism, was detected in background to very low concentrations in thirteen samples collected in, along, and offshore of, Manatee, Sarasota, and Charlotte counties this week. Additional samples collected throughout southwest Florida did not contain *K. brevis.*

Water Management Recommendations

Lake Okeechobee's water level is within the Low Flow Operational Sub-band; the tributary hydrological conditions are Very Wet; and the seasonal and multi-seasonal forecasts are Very Wet and Wet, respectively. The Lake Okeechobee Regulation Schedule (LORS) recommends 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. Local basin runoff is more than sufficient to maintain salinity within the preferred ranges of oysters and submerged aquatic vegetation in both estuaries. There are no ecological benefits associated with additional releases from Lake Okeechobee.

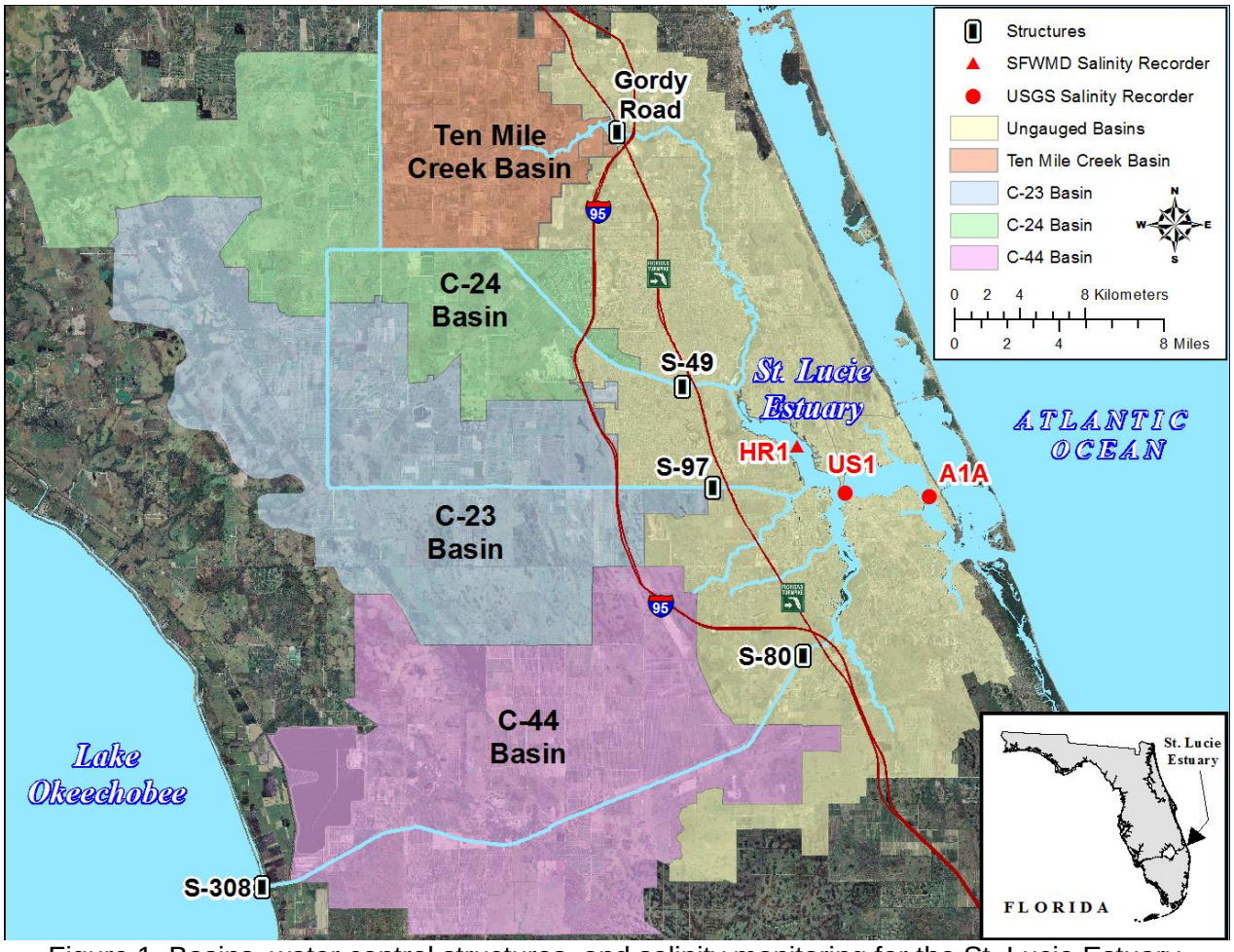


Figure 1. Basins, water control structures, and salinity monitoring for the St. Lucie Estuary.

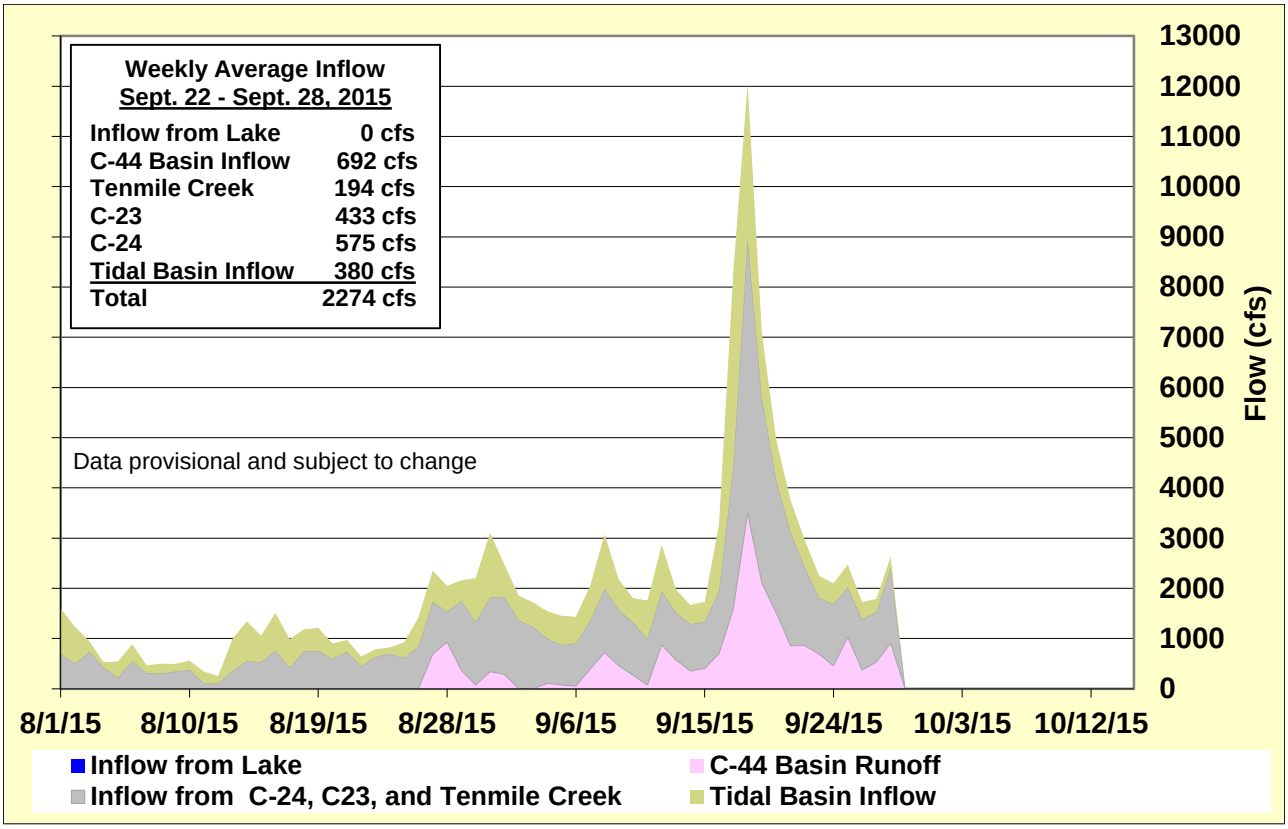


Figure 2. Estimated surface freshwater inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and tidal basins into the St. Lucie Estuary.

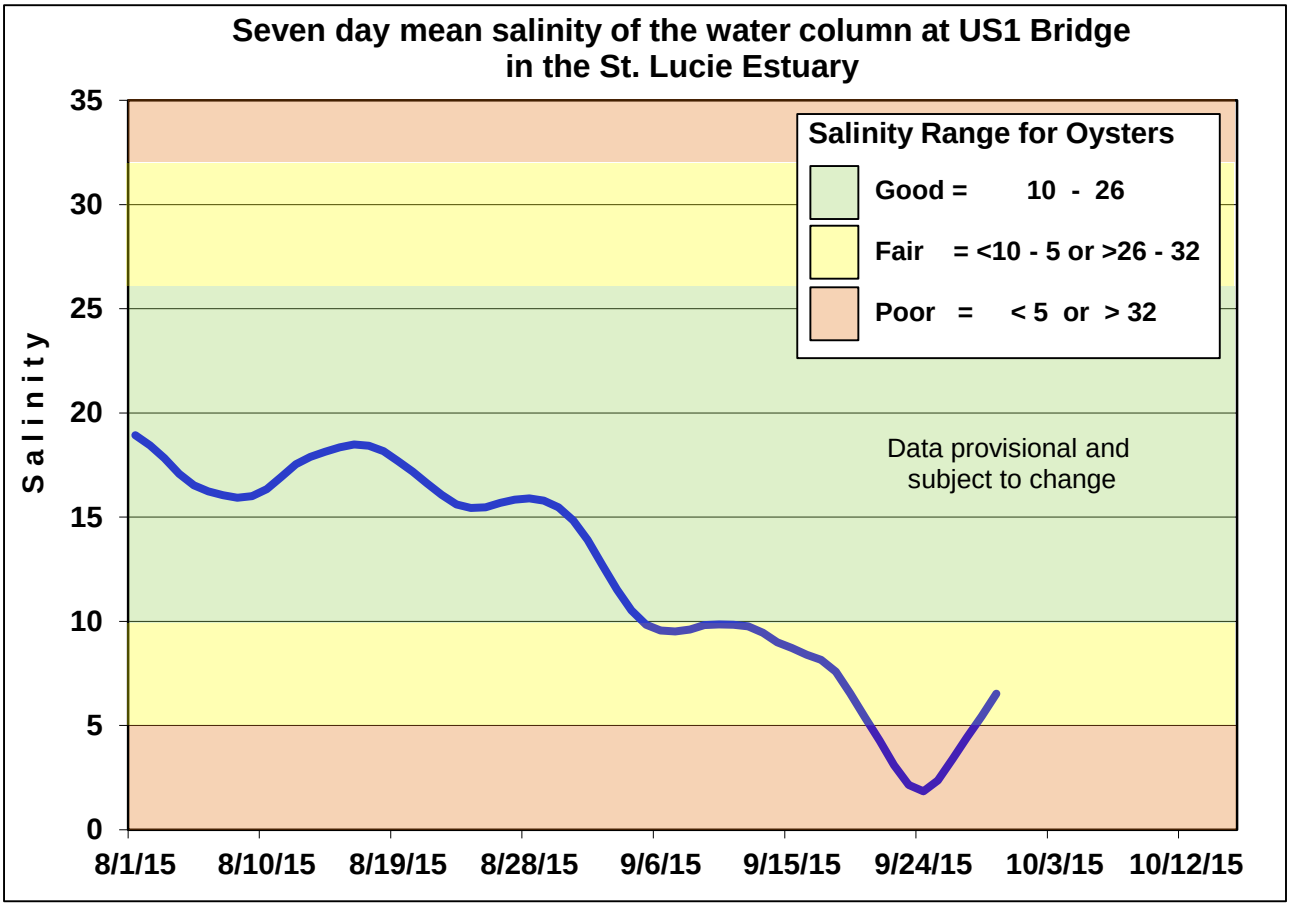


Figure 3. Seven-day mean salinity of the water column at the U.S. Highway 1 Bridge.

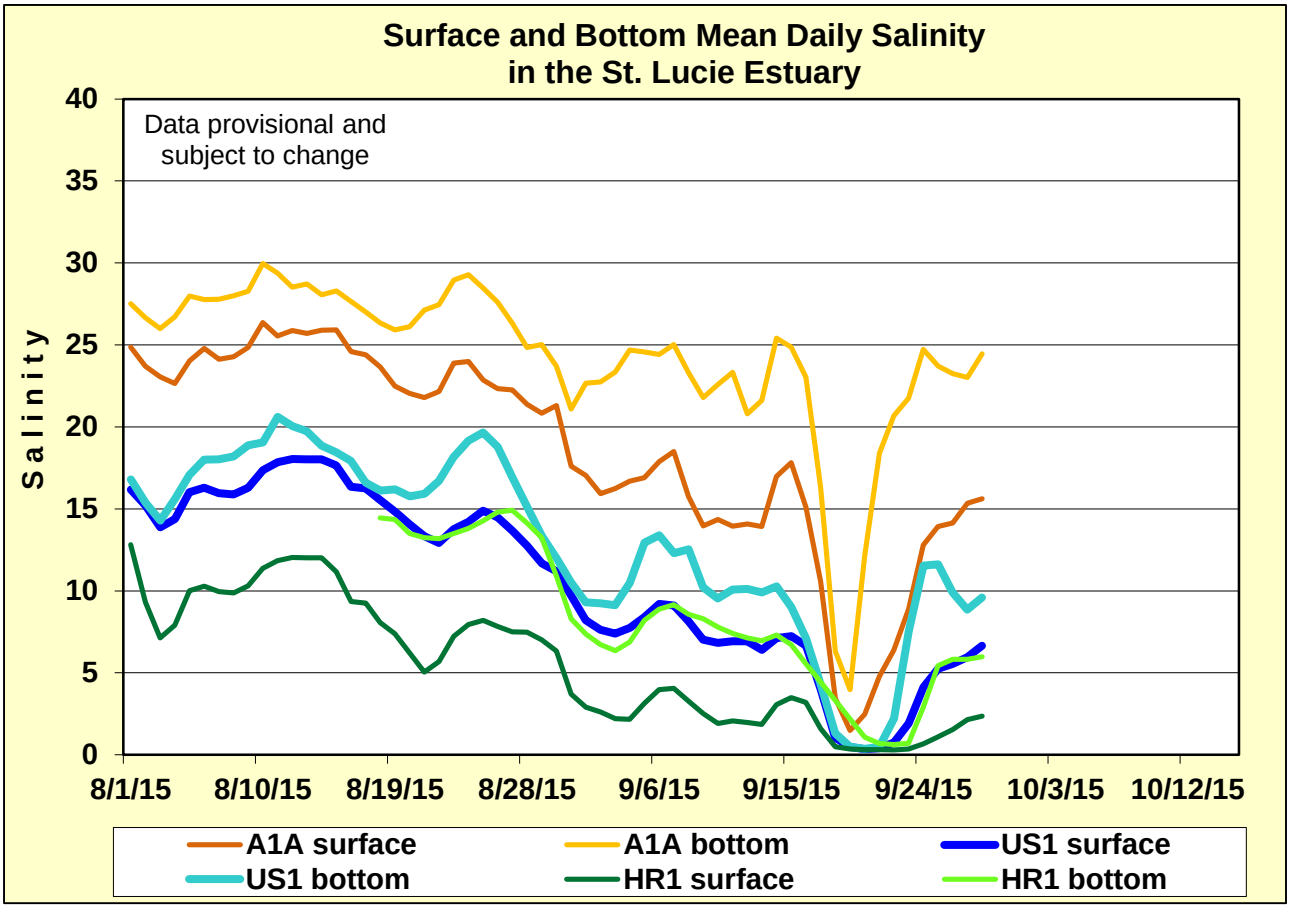


Figure 4. Daily mean salinity at the A1A, US1 and estimated HR1 stations.

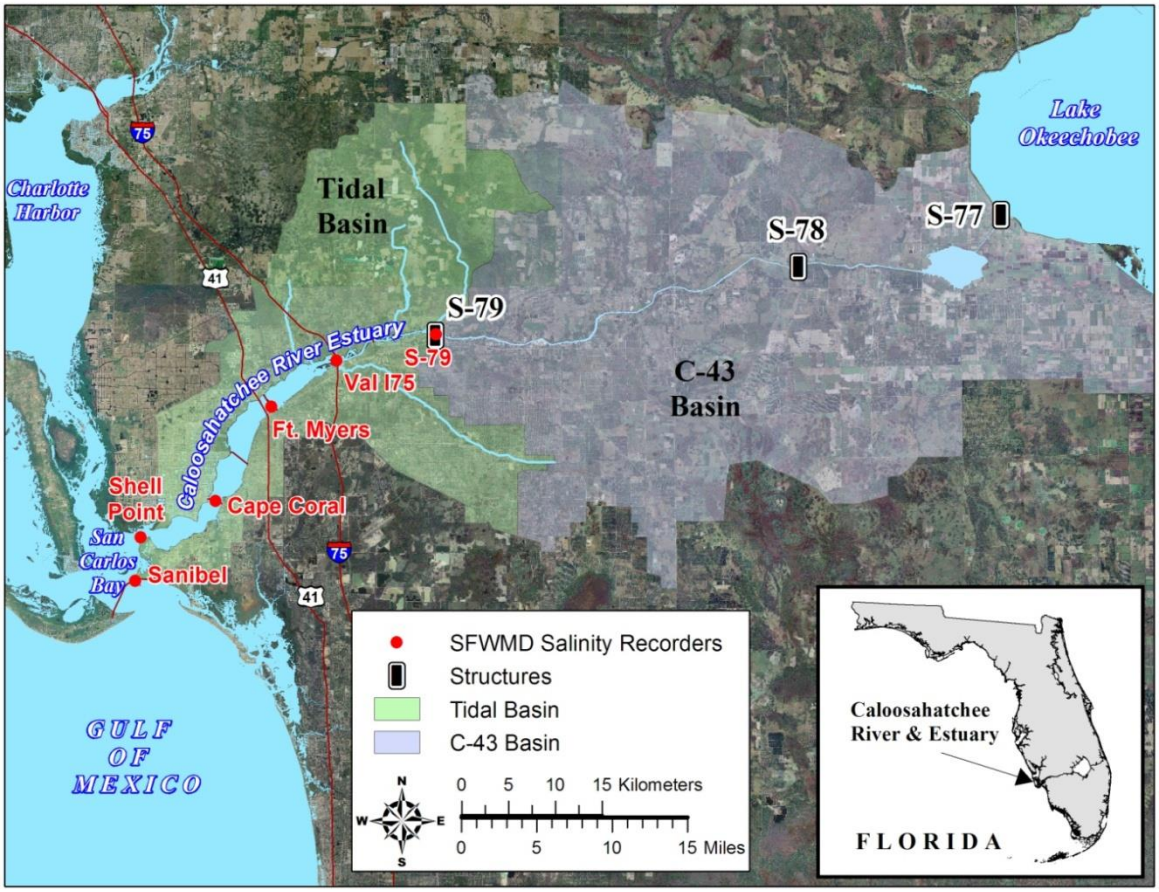


Figure 5. Basins, water control structures, and salinity monitoring for the Caloosahatchee Estuary.

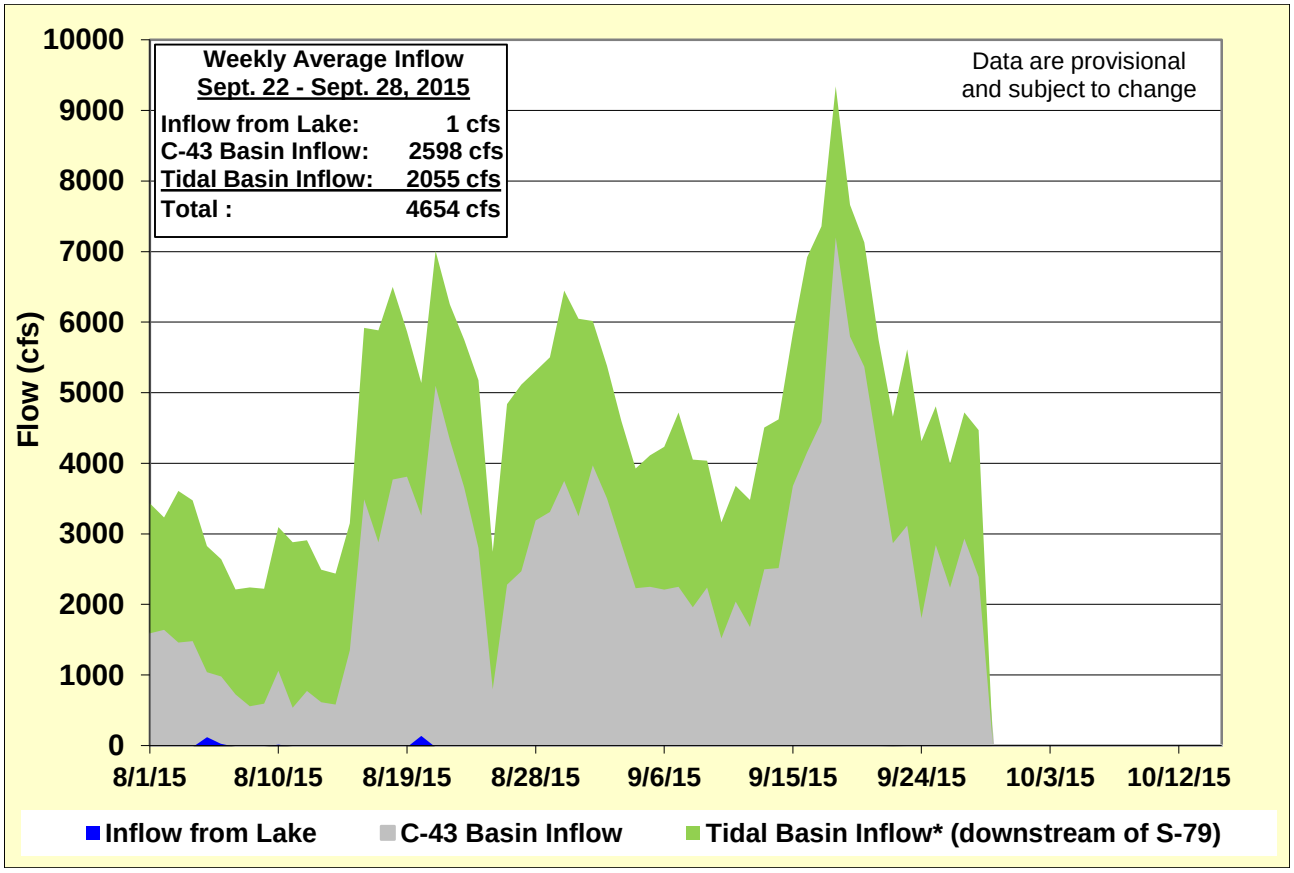
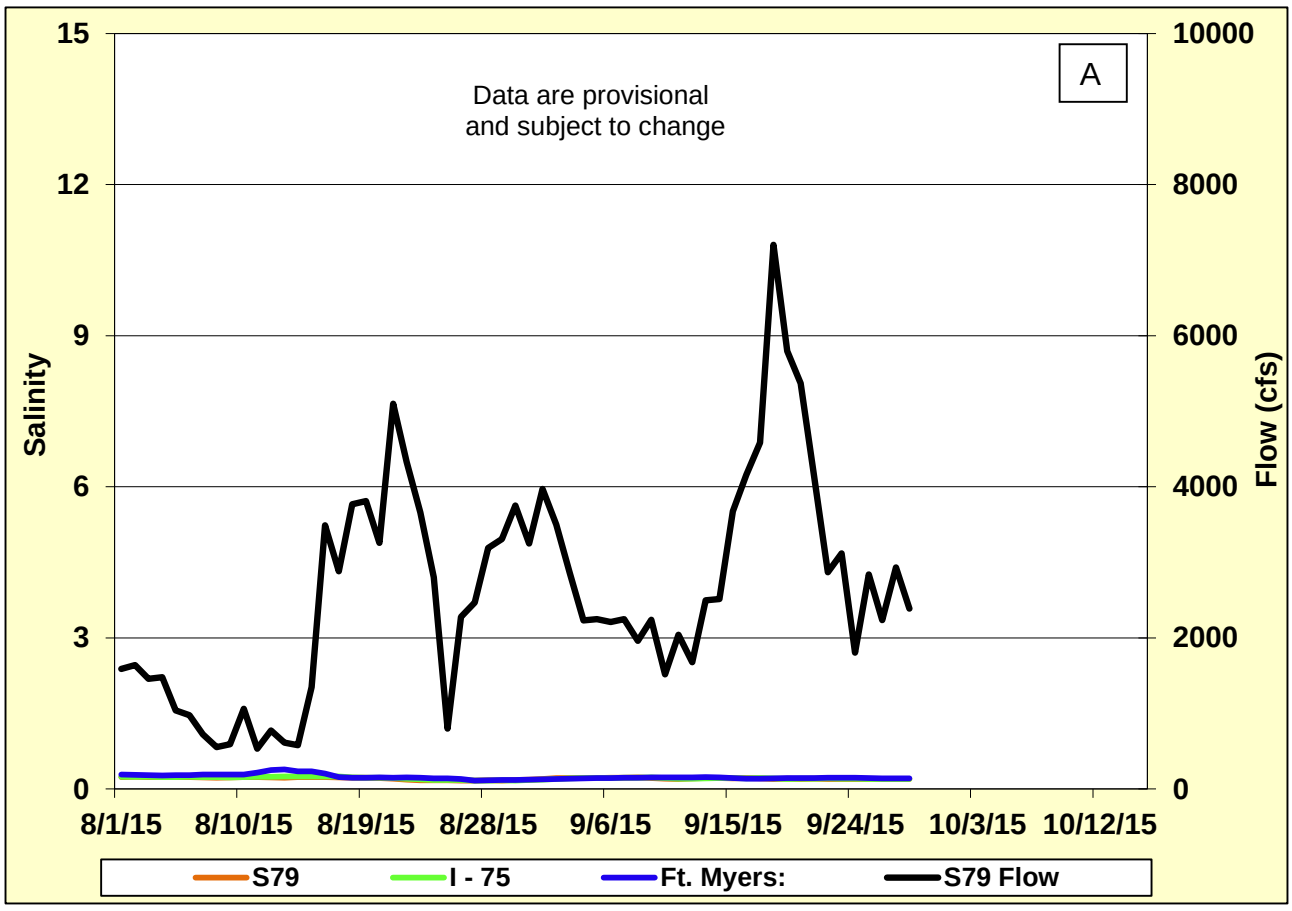


Figure 6. Surface freshwater inflows from Lake Okeechobee, runoff from the C-43 basin, and tributaries in the tidal basin into the Caloosahatchee River Estuary.



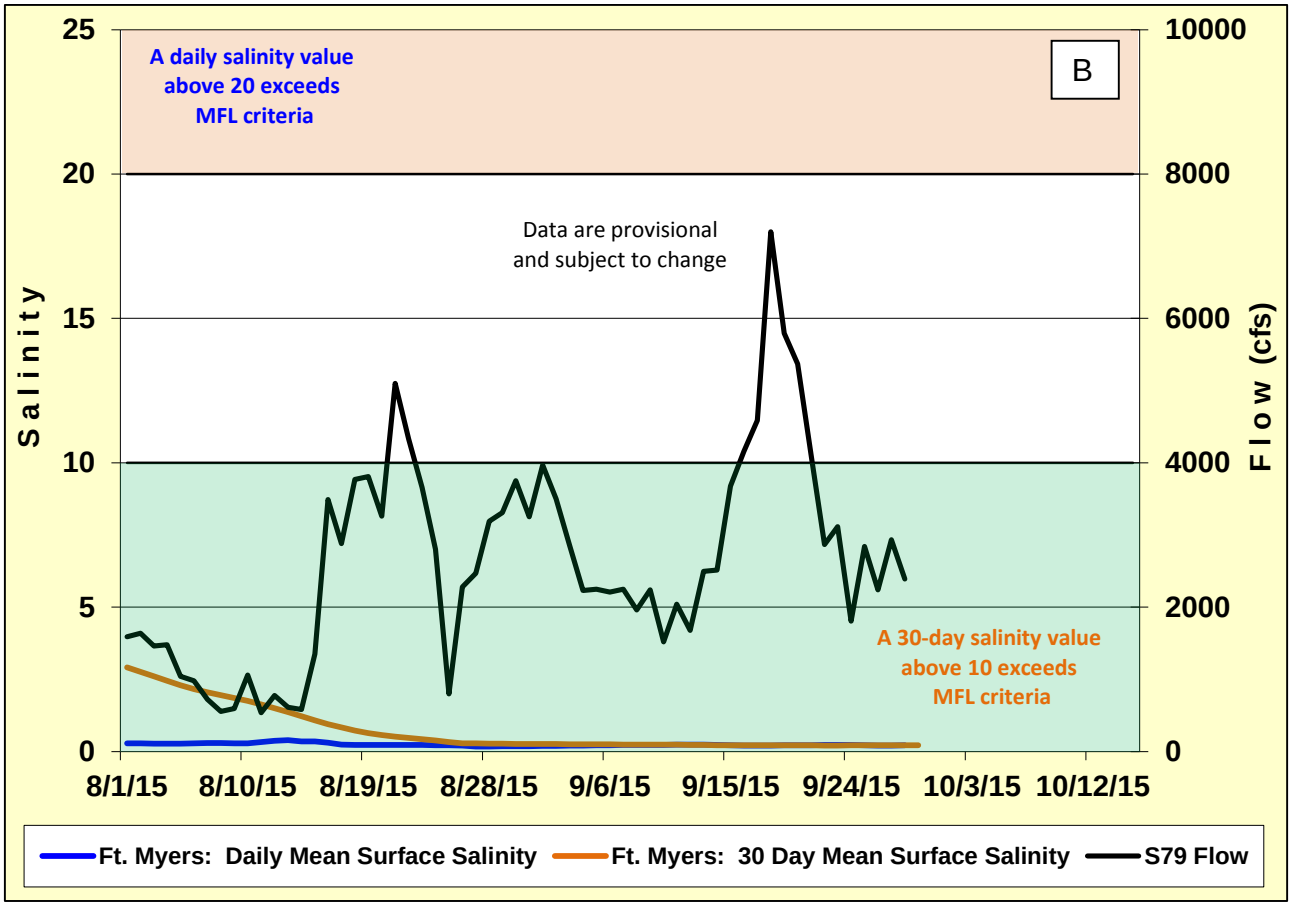


Figure 7. Daily mean flows at S-79 and salinity at upper estuary monitoring stations (A) and 30-day moving average salinity at Ft. Myers (B).

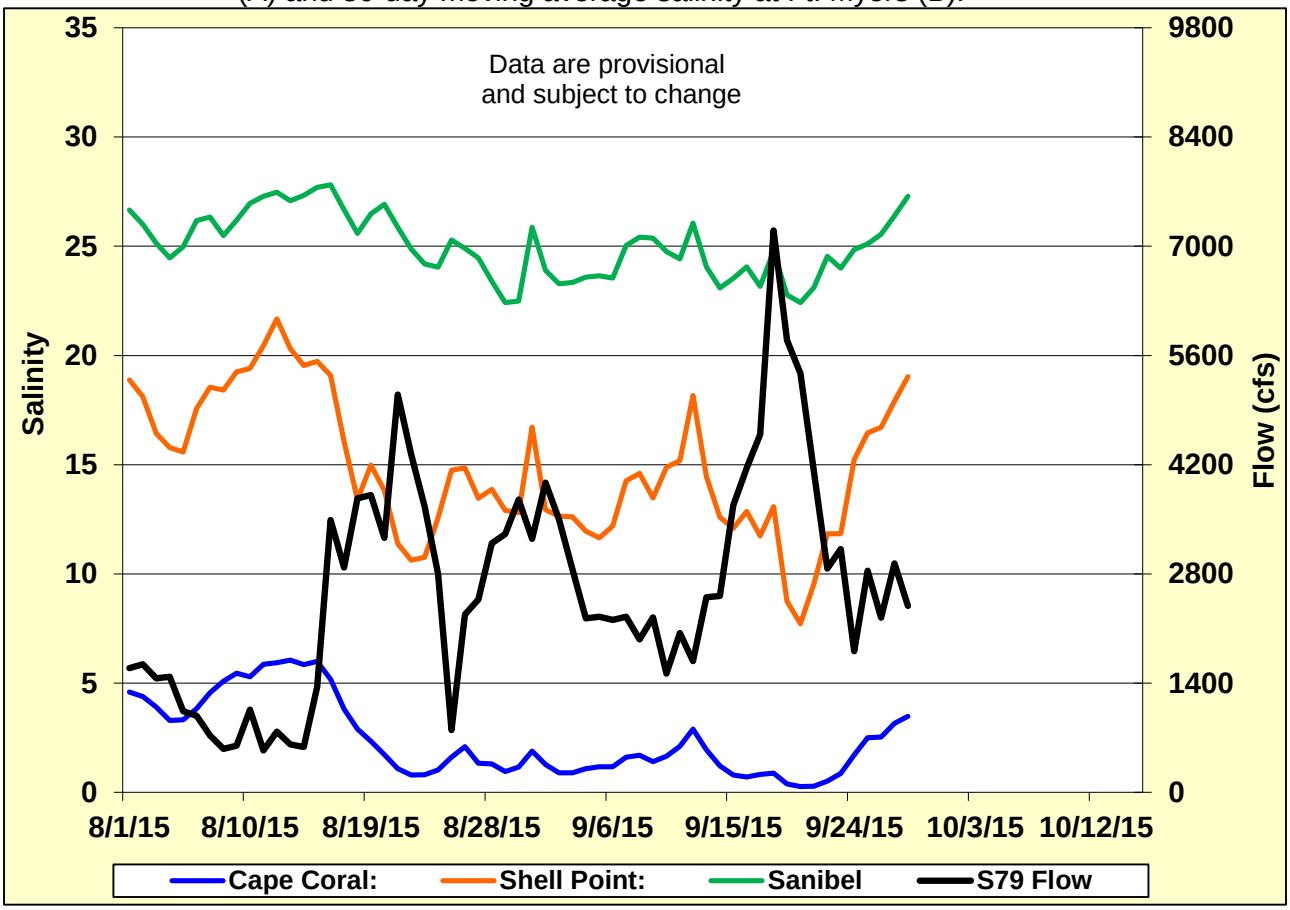


Figure 8. Daily mean flows at S-79 and salinity at lower estuary stations.

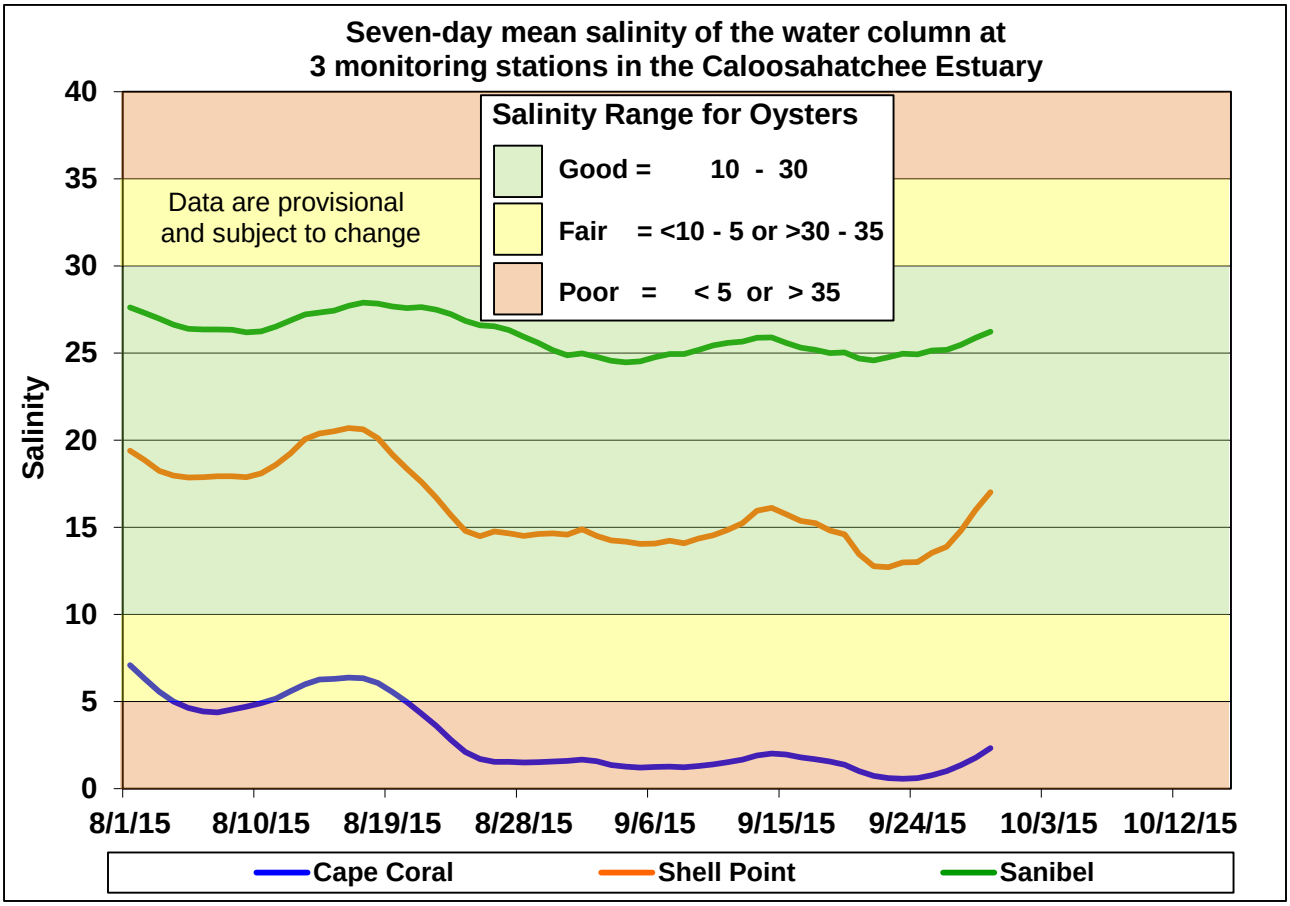
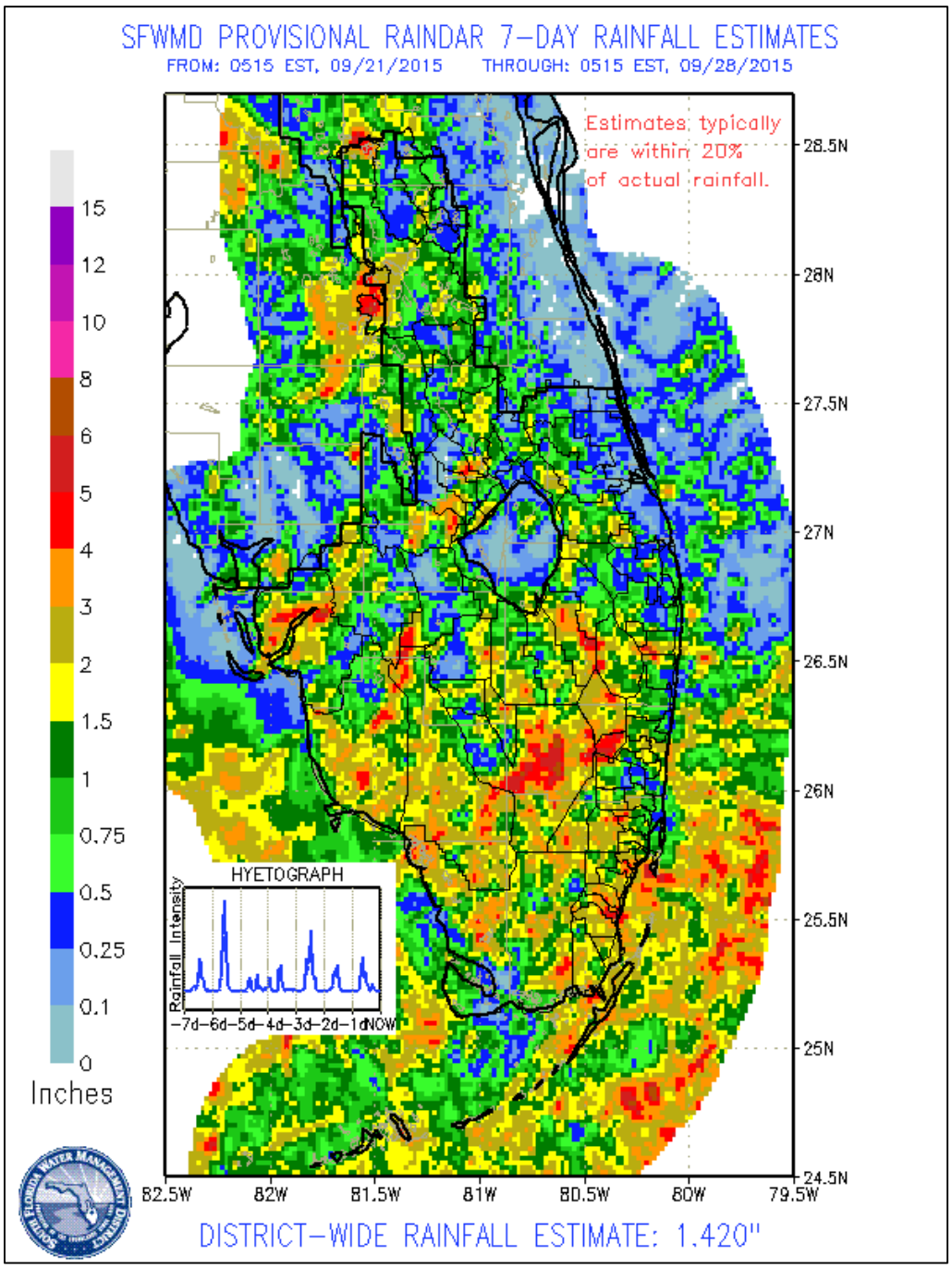


Figure 9. Seven-day mean salinity at Cape Coral Bridge, Shell Point and Sanibel Bridge monitoring stations.

GREATER EVERGLADES

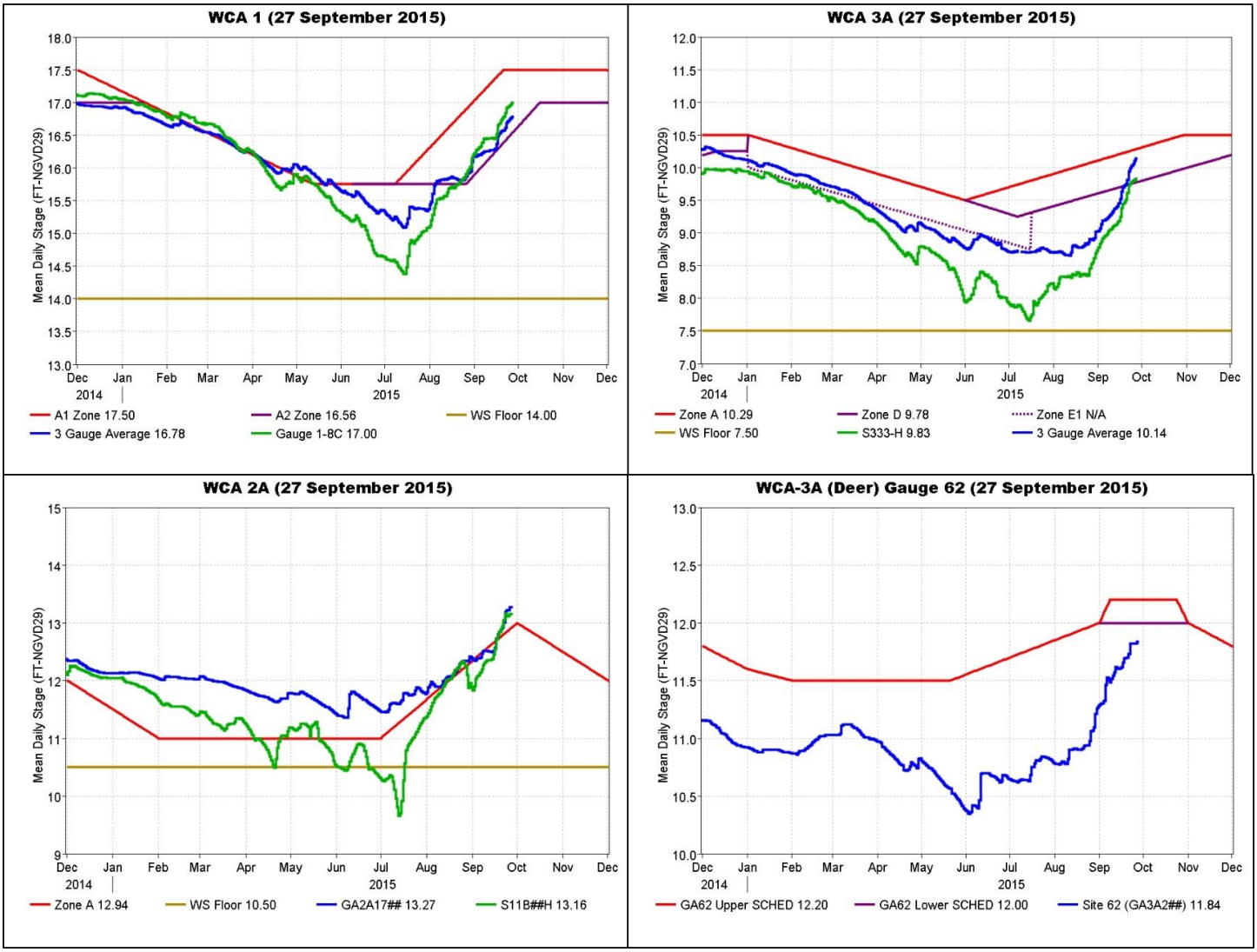
Rainfall was high with basin averages ranging from 1.69 inches in Everglades National Park (ENP) to 4.80 inches in WCA-2B. The local basin maximum rainfall was 6.78 inches in WCA-3A. Basin-wide stages rose from 0.14 feet to 0.39 feet throughout the Everglades. Pan evaporation was very high last week at 1.85 inches, 48% above the 1.25-inch pre-project average.

Everglades Region	Rainfall (Inches)	Stage Change (feet)
WCA-1	1.84	0.24
WCA-2A	2.65	0.34
WCA-2B	4.80	0.39
WCA-3A	2.59	0.33
WCA-3B	2.09	0.14
ENP	1.69	0.32



Regulation Schedules

Stages rose throughout the Everglades. In WCA-1, the three gauge average wetlands stage is 0.22 feet above Zone A2 line and 0.72 feet below regulation. The WCA-2A stage is 0.33 feet above regulation. In WCA-3A, stages are in Zone D and 0.15 feet below regulation. The water level at the northwestern WCA-3A gauge stage (gauge 62) also has risen and is now 0.16 feet below the lower regulation schedule.



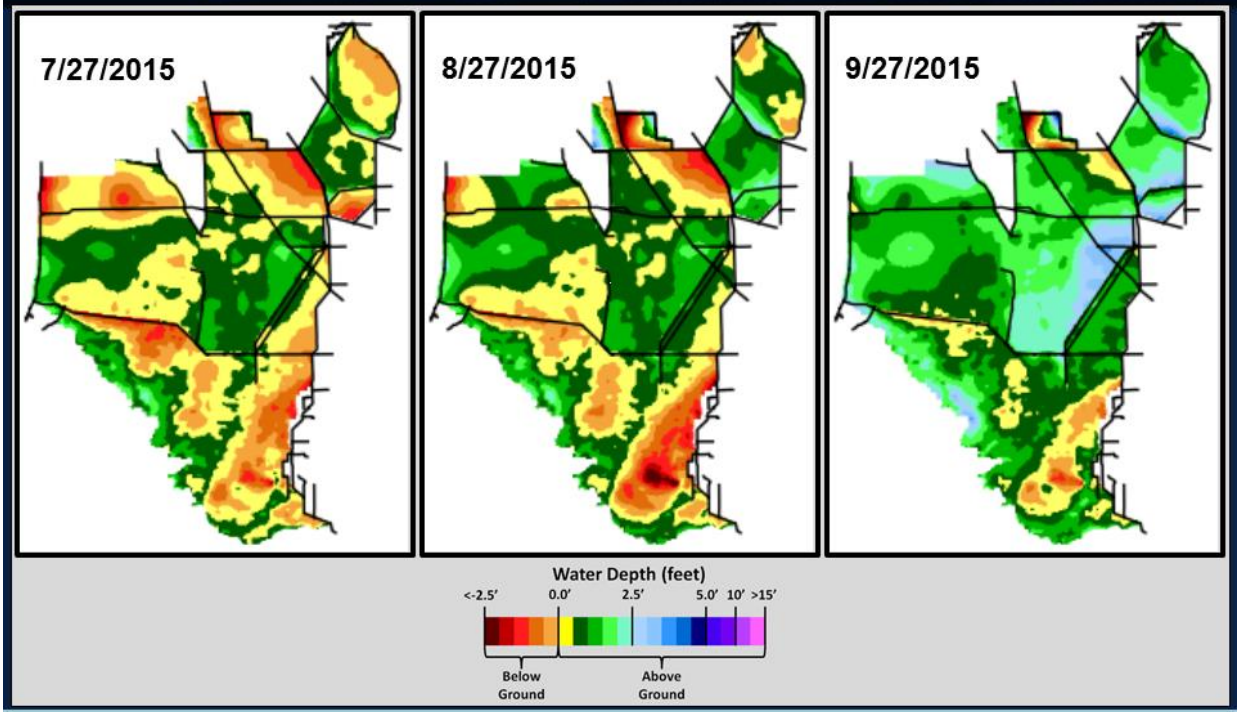
Water Depths and Changes

Water levels are much higher than one and two months ago and are now more typical of a normal wet season. Water depths at the monitored gauges range from 1.06 feet (WCA-3B) to 3.45 feet (WCA-2B). Depths have been rising in far northeastern WCA-3A and are probably above ground.

Stages are higher than a week ago and up to two feet above stages a month ago. Compared to a year ago, stage differences remain up to one foot lower than in 2014. Last week's stage gauge changes ranged from 0.07 feet to 0.43 feet.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

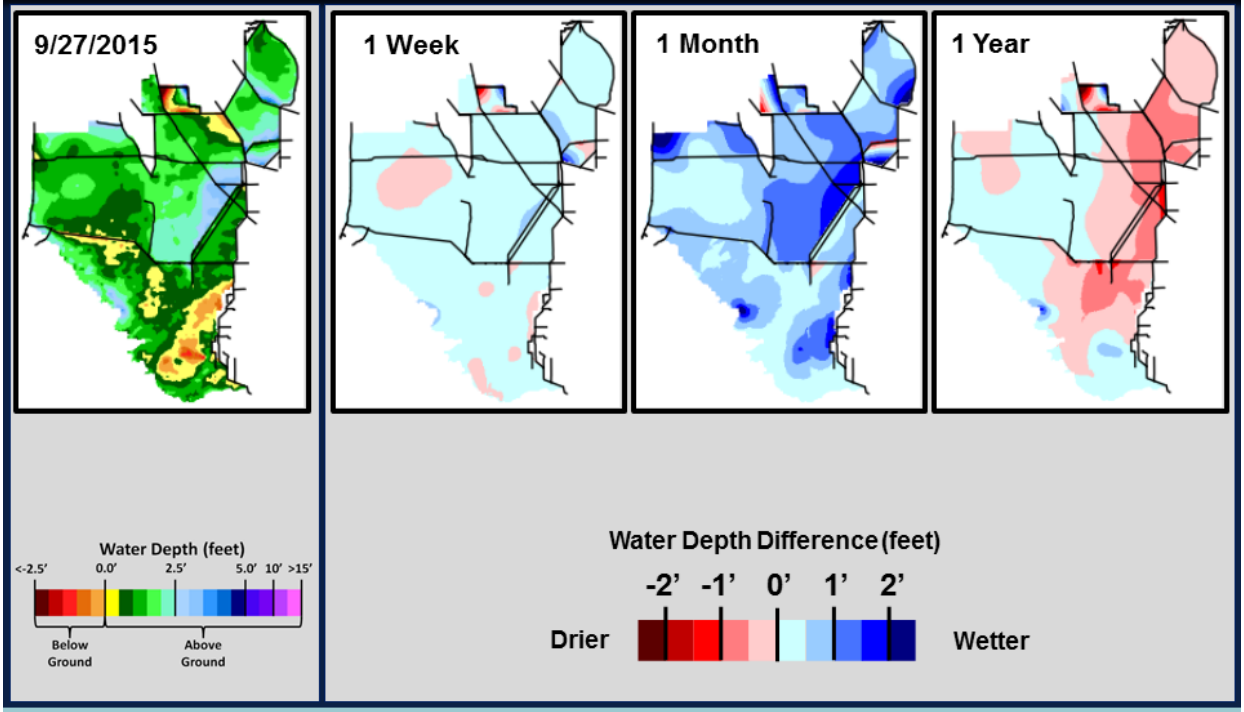
SFWDAT Water Depth Monthly Snapshots



South Florida Water Depth Assessment Tool (SFWDAT)

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

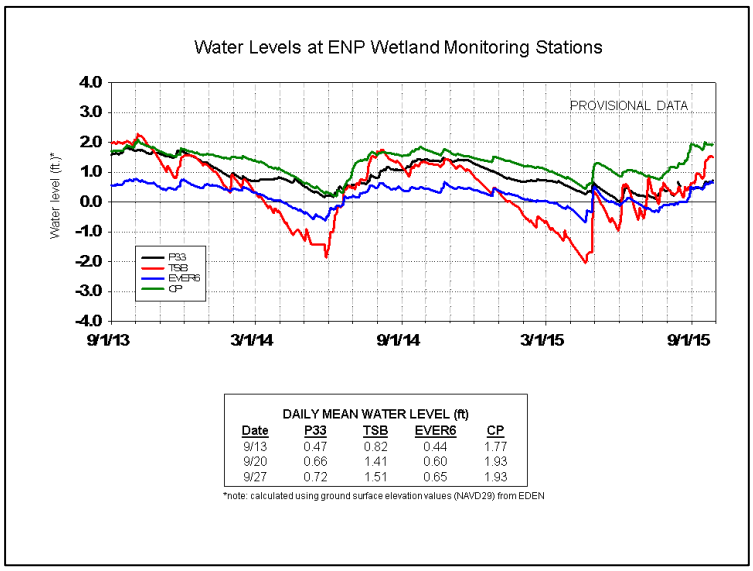
SFWDAT Everglades Difference Maps (Present – Past)



South Florida Water Depth Assessment Tool (SFWDAT)

Everglades National Park (ENP) and Florida Bay

Water levels are higher than a month ago in Taylor Slough and the ENP panhandle and are generally rising. Water levels near the Florida Bay shoreline have increased rapidly over the weekend, suggesting wind driven upstream surges.



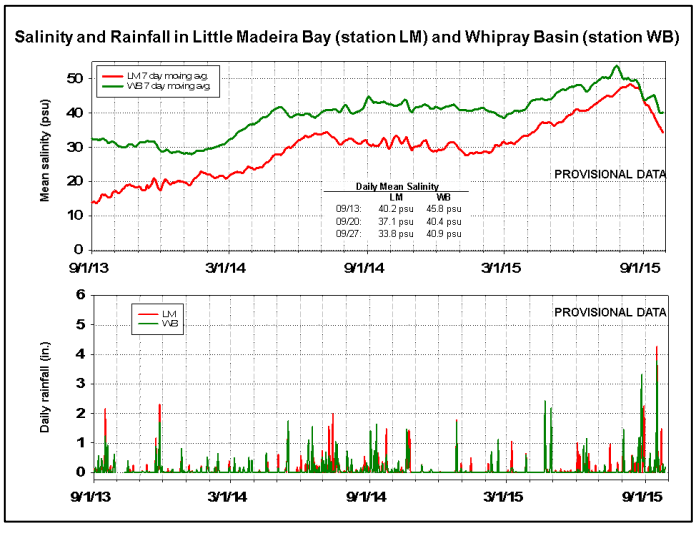
DAILY MEAN WATER LEVEL (ft)

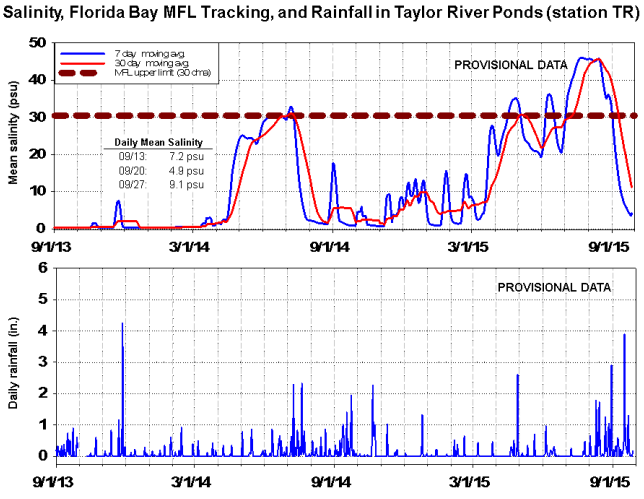
Date	P33	TSB	EVER6	CP
9/13	0.47	0.82	0.44	1.77
9/20	0.66	1.41	0.60	1.93
9/27	0.72	1.51	0.65	1.93

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

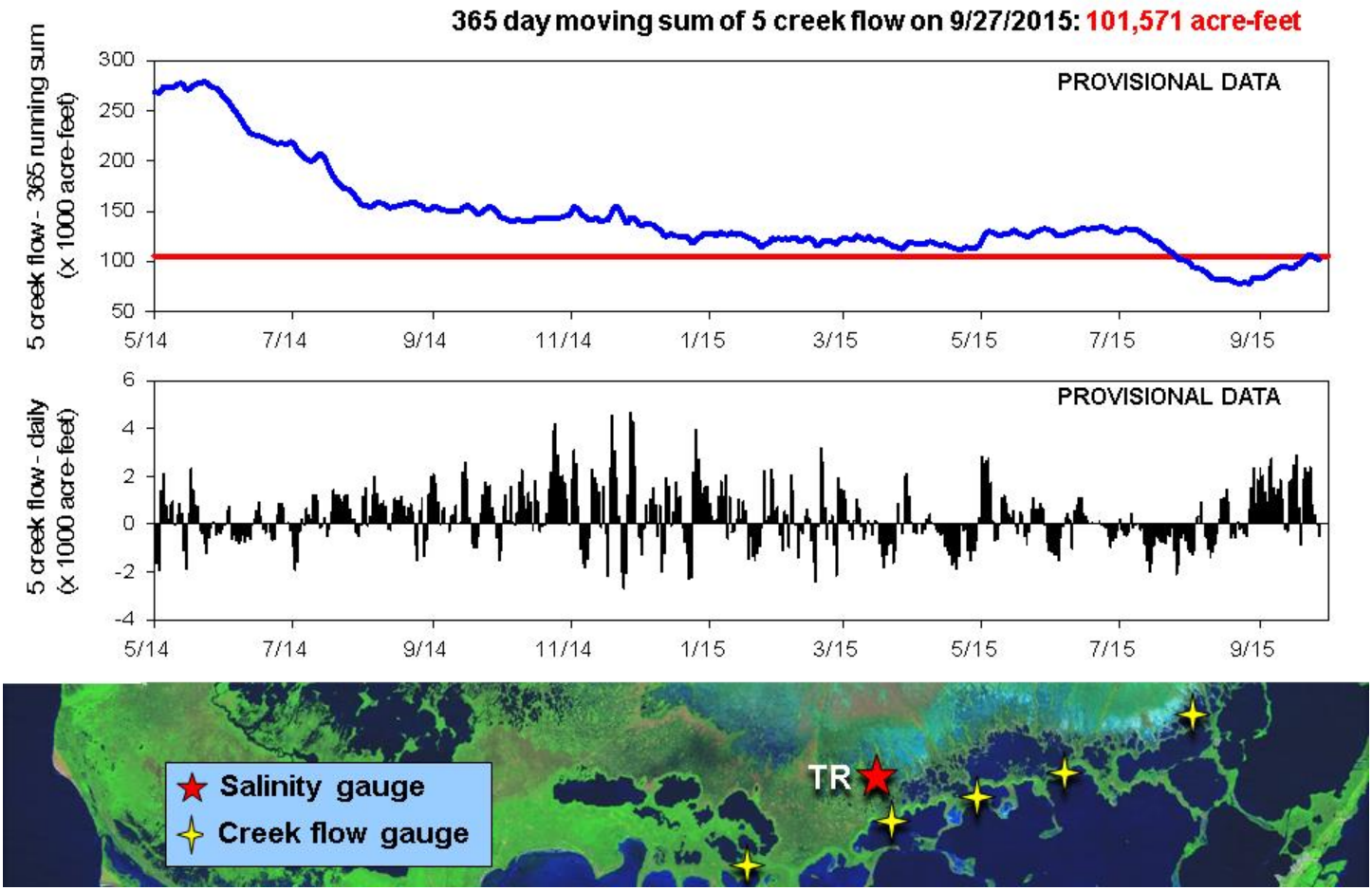
Salinity in the eastern areas of Florida Bay decreased with rainfall, but rose elsewhere. Upstream surges of saltwater again flowed into the transition zone ponds. Salinities in Florida Bay are now six to 20 psu above average. The daily average salinity at the Minimum Flows and Levels (MFL) sentinel site increased to 9.1 psu (less than one psu is typical for this time of year), while the 30-day moving average decreased to 11.2 psu.

The 365-day running sum of the cumulative flow from the five creeks feeding Florida Bay rose to over 106,000 acre-feet before decreasing to 101,571 acre-feet, an increase but still below the 105,000 acre-feet criterion. Daily differences in the 365-day running sum of the cumulative flow from these creeks represents the difference between current daily flow and flow a year ago. Cumulative flow from the five creeks for the last week (September 21-27) was 7,548 acre-feet, less than last week's flow of 10,787 acre-feet. Creek flow is provisional data from the USGS.





5 Creek Cumulative Flow and Florida Bay MFL Flow Criteria Tracking



Water Management Recommendations

- We recommend moving water south into ENP as much as possible.
- Water inflow into WCA-2B should cease and instead be routed into northern WCA-3A to protect any remaining apple snail egg clusters, which are harmed when stages rise more than 0.50 feet in less than three weeks.
- Rainfall has raised stages in far northeastern WCA-3A. Water can still be routed there to maintain stages above ground but it is no longer as high a priority as it was formerly when stages were below ground.

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

Summary of Everglades Recommendations, Sept. 29, 2015 (SFWMD) (red is new text)

Area	Current Condition	Cause(s)	Recommendation	Reasons
WCA-1	Stages increased from 0.22' to 0.25'	Rainfall, ET, management	Target rainfall driven wetland stages at the top of Zone A2. 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 and to take advantage of rain events.
WCA-2A	Stage increased 0.34'	Rainfall, ET, management	Recommend ascension rates up to 0.25 ft/wk, or 0.5 ft/14 days. High season target stage of 13 ft NGVD at 2-17 on Oct 1 (13.26' on 9/28)	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 increased 0.38' to 0.40'	Rainfall, ET, management	Water inflow normally flowing into WCA-2B should cease because of the presence of high numbers of apple snail egg clusters. Water should be routed instead into northern WCA-3A.	High stages preclude wading bird use, but provide good habitat for ducks.
WCA-3A NE	Stage increased 0.41'	Rainfall, ET, management	Water levels at gauge 63 are above ground, and water levels farther northeast are rising. Recommend continuing releases into far NE 3A to protect peat and wetlands until all water levels are above ground again. Average water stage of gauges 62 and 63 should remain under 11.60 feet. 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 also to allow taking advantage of rain events.
WCA-3A NW	Stage increased 0.20'	Rainfall, ET, management		
Central WCA-3A S	Stage increased 0.43'	Rainfall, ET, management	Move water into WCA-3A as much as possible. Season's dry conditions are improving, but eat and prey populations need higher water levels for the upcoming dry season conditions. Wet season target is 10.67 3AVG by Oct 30 (10.16' on 9/28). 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. Avoid or minimize discharge through S-12A and S-12B through at least August 15 and as long as possible to benefit Cape Sable seaside sparrow nesting and habitat conditions.
Southern WCA-3A S	Stage increased 0.28'	Rainfall, ET, management		
WCA-3B	Stages increased from 0.07' to 0.24'	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 0.32'	ET, rainfall, topography, management	Discharges to the Park with 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	1.5 inches below average in the north to average in southwest	Rain, ET, inflows	Move water southward as possible	Provide freshwater buffer for ecosystems and freshen saline conditions downstream
FB- Salinity	6-20 psu above average	Rain, ET, inflows, wind.	Move water southward as possible	Southward flows are still needed to reverse/slow salinity increases