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: July 06, 2015

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Stages in Lakes East Toho, Toho, and Kissimmee-Cypress-Hatchineha (KCH) have been rising at a moderate rate. Discharge through S-65 has been maintained at ~300 cfs and at S65A at approximately the minimum discharge to the Kissimmee River of ~300 cfs +/- 50 cfs. Sunday's average discharge at S-65E was 430 cfs; on Tuesday morning S65E discharge is near ~730 cfs. Kissimmee River dissolved oxygen concentration averaged 7.26 mg/L over the past week and 6.62 mg/L on Sunday; Kissimmee River mean floodplain depth is 0.22 feet.

Lake Okeechobee is at 12.15 feet NGVD, in the Beneficial Use Sub-band and Lake stage continues to be just below optimal for this time of year. Wading bird foraging habitat continues to be mostly too dry. Satellite imagery indicates low to moderately high bloom conditions persisting in the western and southern nearshore regions, with low to moderate bloom conditions in the north and northwest nearshore regions, which appear to have somewhat diminished. Low to moderate bloom conditions continue to extend into the pelagic zone primarily on the west and south sides of the lake, while on the east side of the lake, no blooms were recorded.

Over past week, total freshwater inflow to both estuaries was dominated by local basin runoff and averaged 453 cfs to the St. Lucie and 1899 cfs to the Caloosahatchee. In the St Lucie Estuary, salinity was in the good range for adult oysters. In the Caloosahatchee Estuary, salinity continued to be in the good range for adult oysters, at Cape Coral, Shell Point and in the fair range at Sanibel. Salinities were also in the good range for tape grass in the upper-Caloosahatchee estuary, and are forecasted to remain so over the next two weeks, even with zero cfs flow through S-79.

Rainfall was moderate across the Water Conservation Areas and most of Everglades National Park (ENP) causing water levels to decrease last week. Water levels remain below ground in northeastern WCA-3A and northeastern ENP. Extra water continues to be needed in far northeastern WCA-3A (near the southeastern corner of STA-3/4) to protect the peat soils. The 30-day moving average salinities at the Florida Bay Minimum Flows and Levels sentinel site increased to 29.7 psu and daily average salinities in the nearshore areas of Florida Bay remain hypersaline (greater than 40 psu).

Weather Conditions and Forecast

An active thunderstorm day. Wind flow between and an upper level low located over the east-central Gulf of Mexico and a second upper low located to the east of the Bahamas is bringing favorable conditions for thunderstorm development today. A mid-level trough should help focus heaviest thunderstorm activity over the interior and northeast this afternoon. Daily afternoon thunderstorm coverage should then decrease Wednesday through Saturday and steering winds should focus activity over western areas.

KISSIMMEE BASIN

Kissimmee Basin Rainfall

The Upper Kissimmee Basin received 1.96 inches of rainfall in the past week and the Lower Basin received 2.91 inches (SFWMD Daily Rainfall Report 7/6/2015).

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: **7/7/2015**

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)						
							7/5/15	6/28/15	6/21/15	6/14/15	6/7/15	5/31/15	5/24/15
Lakes Hart and Mary Jane	S62	46	LKMJ	59.9	R	60.0	**-0.1**	0.1	-0.1	-0.3	-0.5	0.0	-0.1
Lakes Myrtle, Preston, and Joel	S57	11	S57	60.9	R	61.0	**-0.1**	-0.1	-0.1	-0.5	-0.8	0.0	-0.1
Alligator Chain	S60	158	ALLI	63.1	R	63.3	**-0.2**	0.0	-0.1	-0.5	-1.1	0.2	0.0
Lake Gentry	S63	177	LKGT	60.9	R	61.0	**-0.1**	0.0	-0.6	-1.1	-1.5	0.1	-0.1
East Lake Toho	S59	30	TOHOE	55.6	R	56.5	**-0.9**	-0.9	-1.2	-1.2	-1.4	0.2	-0.1
Lake Toho	S61	390	TOHOW	52.9	R	53.5	**-0.6**	-0.7	-1.0	-1.0	-1.4	0.2	-0.1
Lakes Kissimmee, Cypress, and Hatchineha	S65	314	LKISSP, KUB011, LKIS5B	49.4	R	51.0	**-1.6**	-1.8	-1.9	-1.9	-2.1	0.0	-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 DualTrend; reported values are averages through midnight of the Sunday prior to the report date unless otherwise specified.

Report Date: **7/7/2015**

Metric	Location	Sunday's 1-day average	Weekly Average**							
			7/5/15	6/28/15	6/21/15	6/14/15	6/7/15	5/31/15	5/24/15	5/17/15	5/10/15
Discharge (cfs)	S-65	218	**314**	352	395	423	392	421	421	425	837
Discharge (cfs)	S-65A	302	**277**	273	296	331	285	285	285	288	672
Discharge (cfs)	S-65C	531	**430**	435	478	533	390	450	450	613	2101
Headwater stage (feet NGVD)		33.5	**33.4**	33.3	33.4	33.5	33.3	33.9	33.9	34.5	35.3
Discharge (cfs)	S-65D****	568	**480**	515	588	628	454	558	558	728	2257
Discharge (cfs)	S-65E	432	**325**	361	415	468	285	380	380	487	2081
DO concentration (mg/L)***	Phase I river channel	6.62	**7.26**	8.09	7.24	5.81	6.27	6.35	6.36	5.86	4.05
Mean depth (feet)*	Phase I floodplain	**0.22**	N/A	0.19	0.25	0.33	0.12	0.14	0.23	0.39	0.73

* 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 of KRBN and PC62 through May 21,2015; is for PC62 only for May 22-June 1; and is the average for PC62 and PC33 starting June 2..

**** 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.

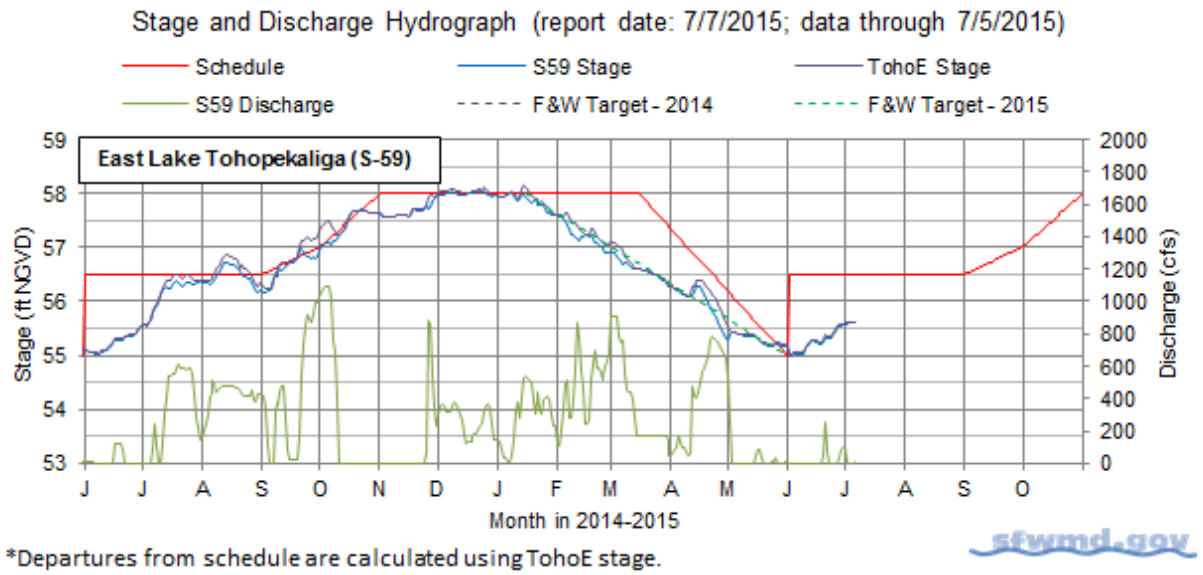
DATA ARE PROVISIONAL

Water Management Recommendations

Kissimmee Basin Recommendations and Operational Actions

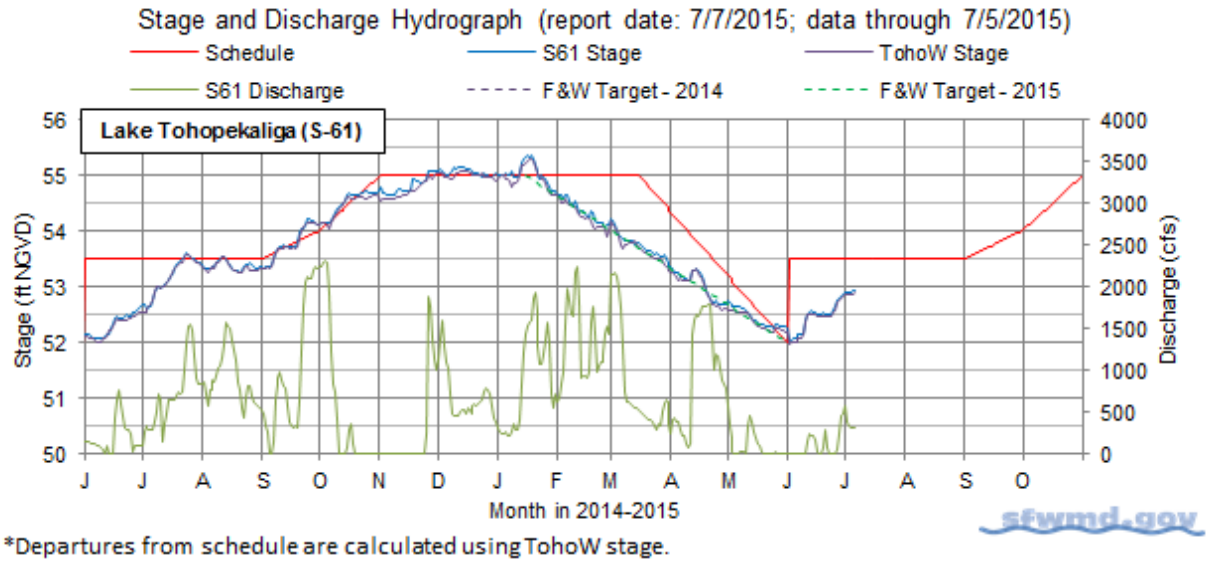
Date	Recommendation	Purpose	Outcome	Source
7/7/2015	No new recommendations.			
6/30/2015	No new recommendations.			
6/23/2015	No new recommendations.			
6/16/2015	No new recommendations.			
6/9/2015	No new recommendations.			
6/1/2015	For S65/65A maintain 300 cfs as long as stage is above 48.5 ft. When 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)



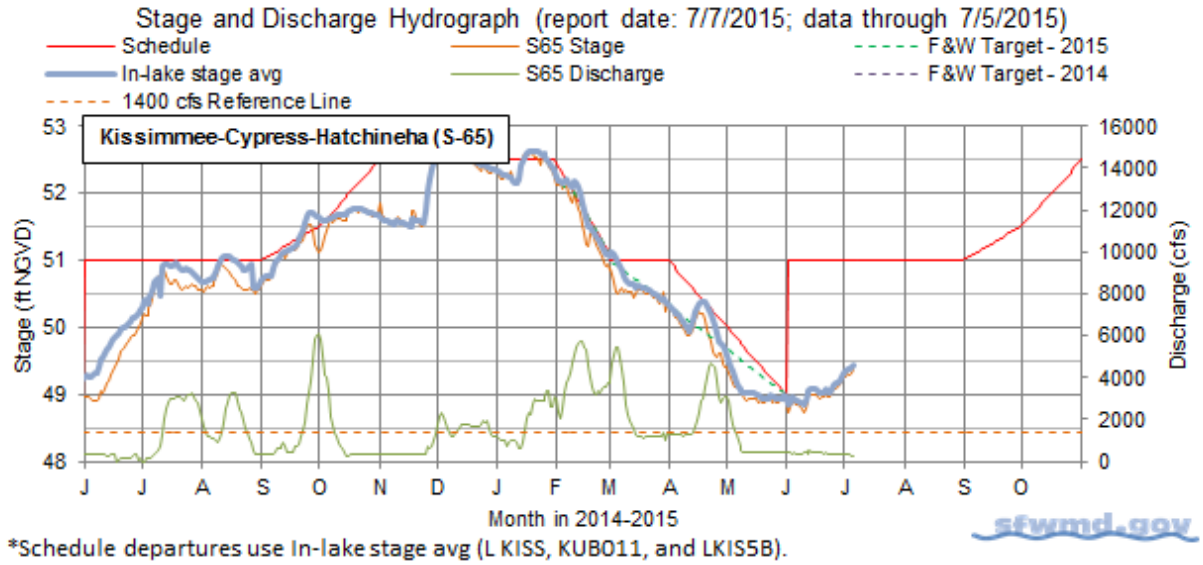
*Departures from schedule are calculated using TohoE stage.

Figure 1.



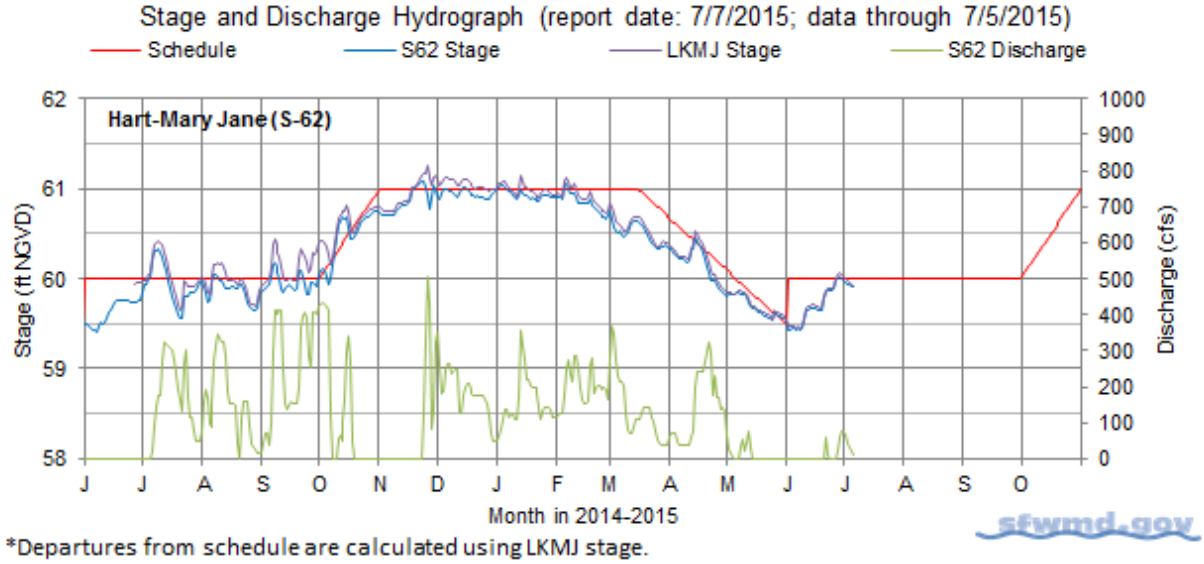
*Departures from schedule are calculated using TohoW stage.

Figure 2.



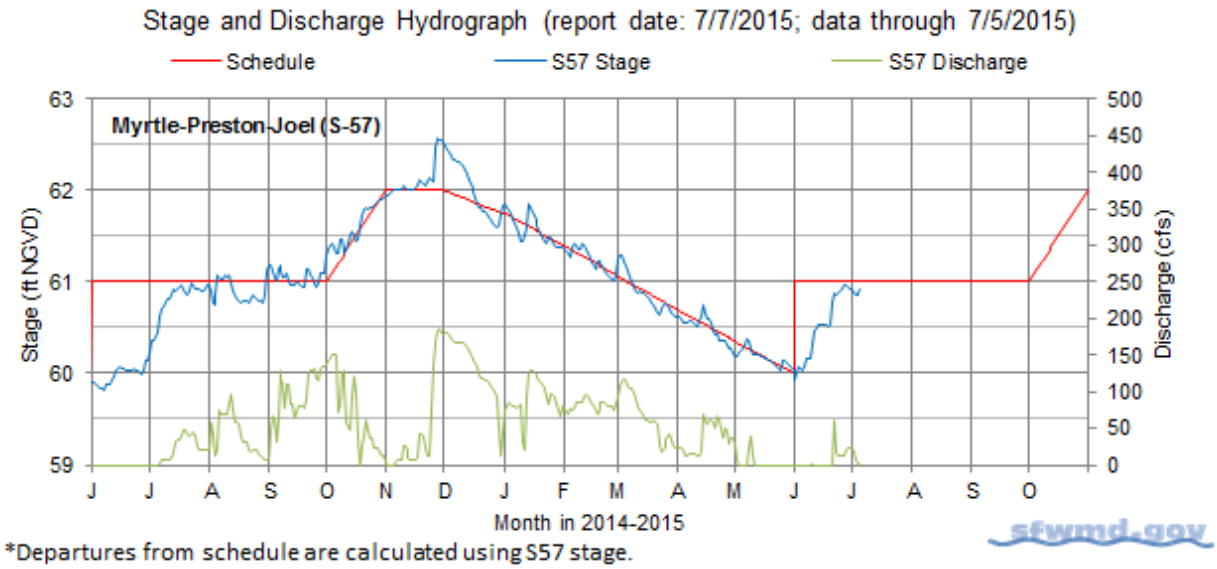
*Schedule departures use In-lake stage avg (L KISS, KUBO11, and LKIS5B).

Figure 3.



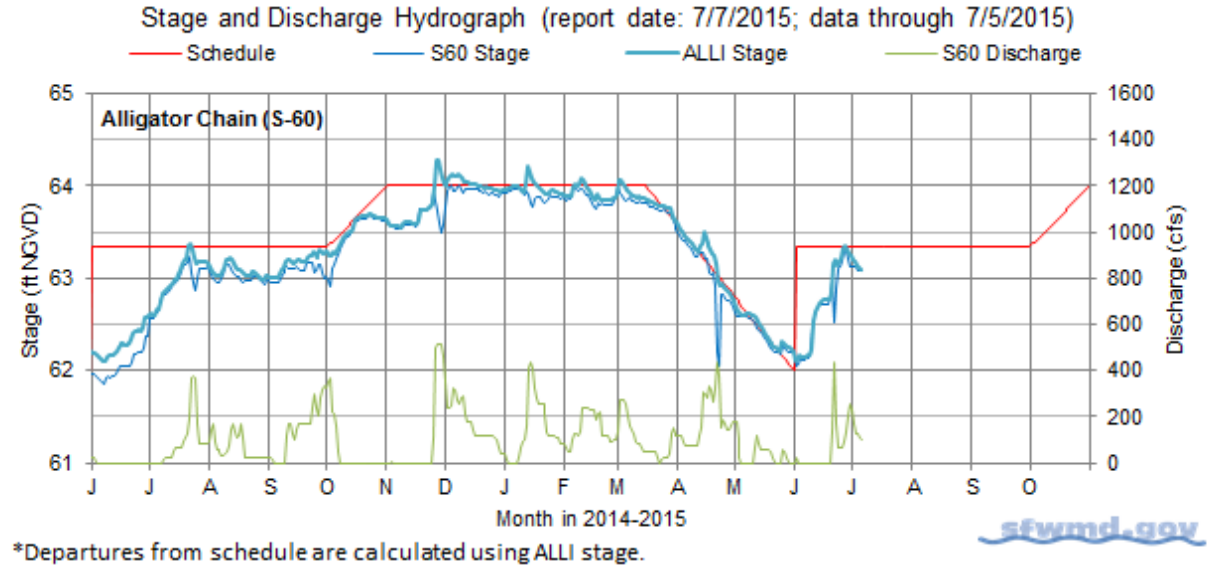
*Departures from schedule are calculated using LKMJ stage.

Figure 4.



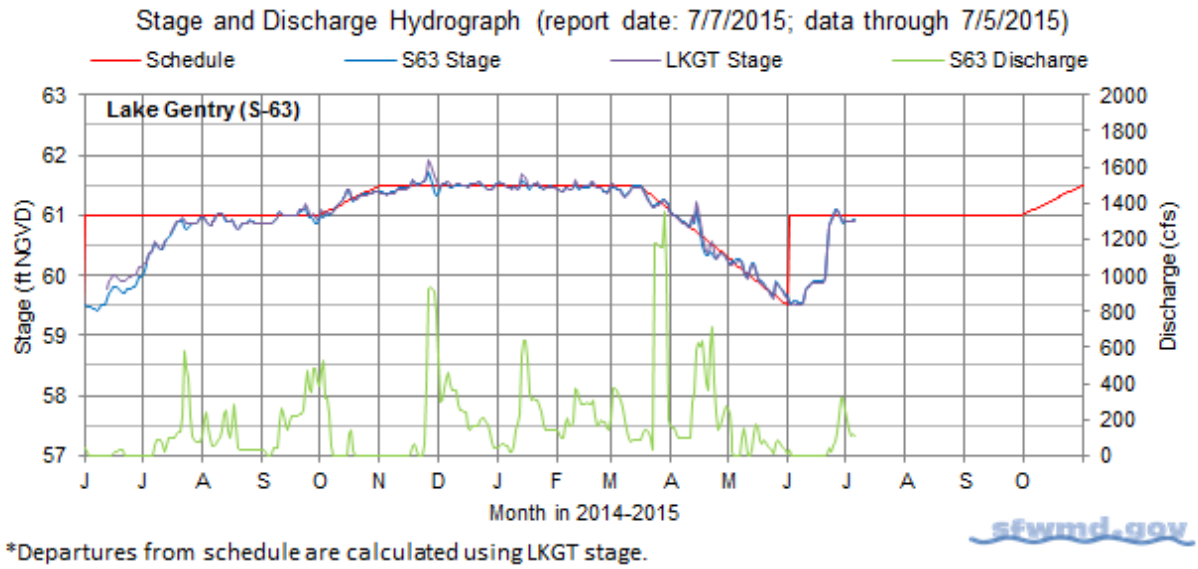
*Departures from schedule are calculated using S57 stage.

Figure 5.



*Departures from schedule are calculated using ALLI stage.

Figure 6.



*Departures from schedule are calculated using LKGT stage.

Figure 7.

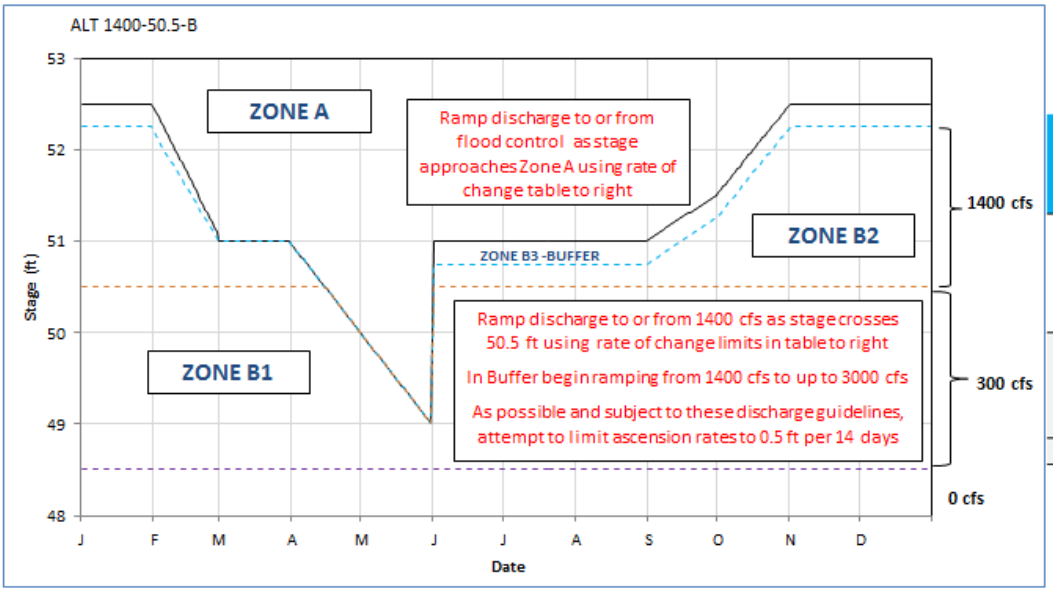


Table 1. Discharge Rate of Change Limits for S65/S65A
****Rate limits apply only in Zone B****

	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.

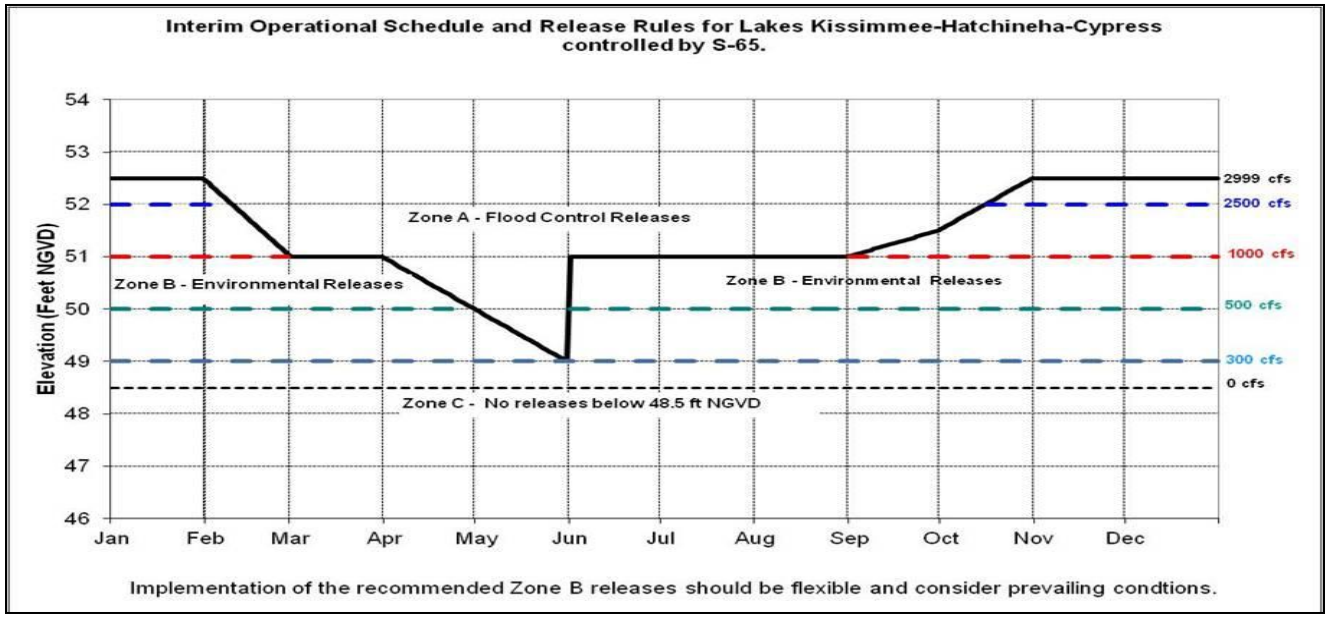


Figure 8b. Interim operations schedule for S-65. The discharge schedule shown to the right has not been used in recent years or in Wet Season 2015.

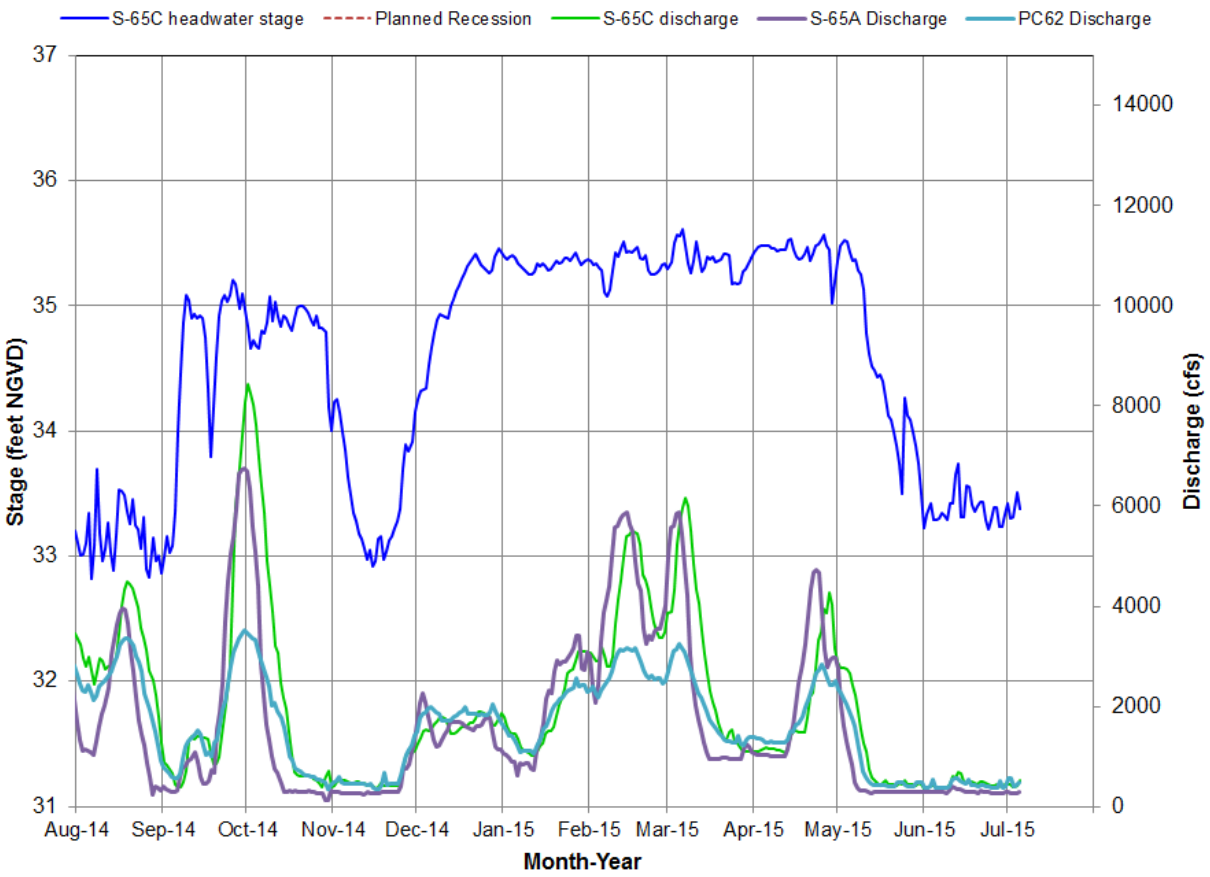


Figure 9. S-65C headwater stage in relation to discharge at S-65C, S-65A, and PC62.

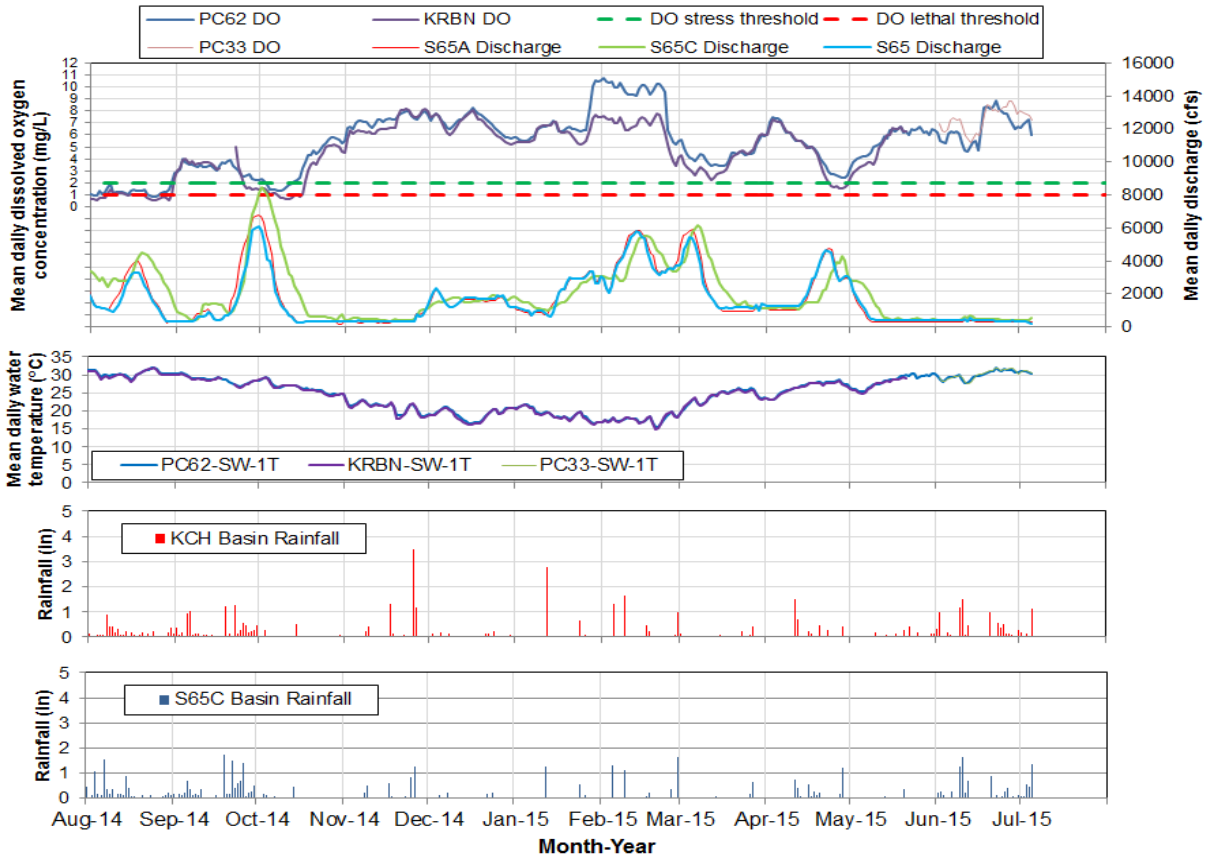
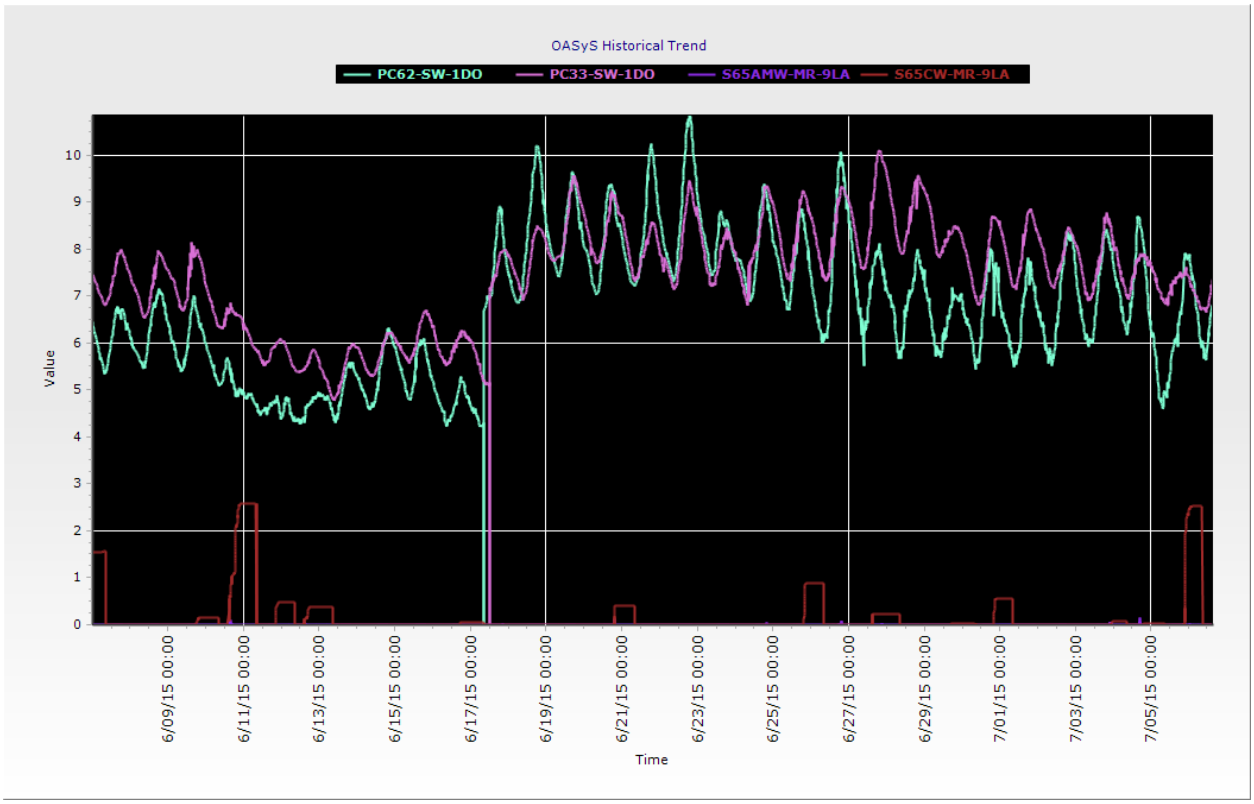


Figure 10. Mean daily Dissolved Oxygen, discharge, temperature and rainfall in the Phase I river channel.



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

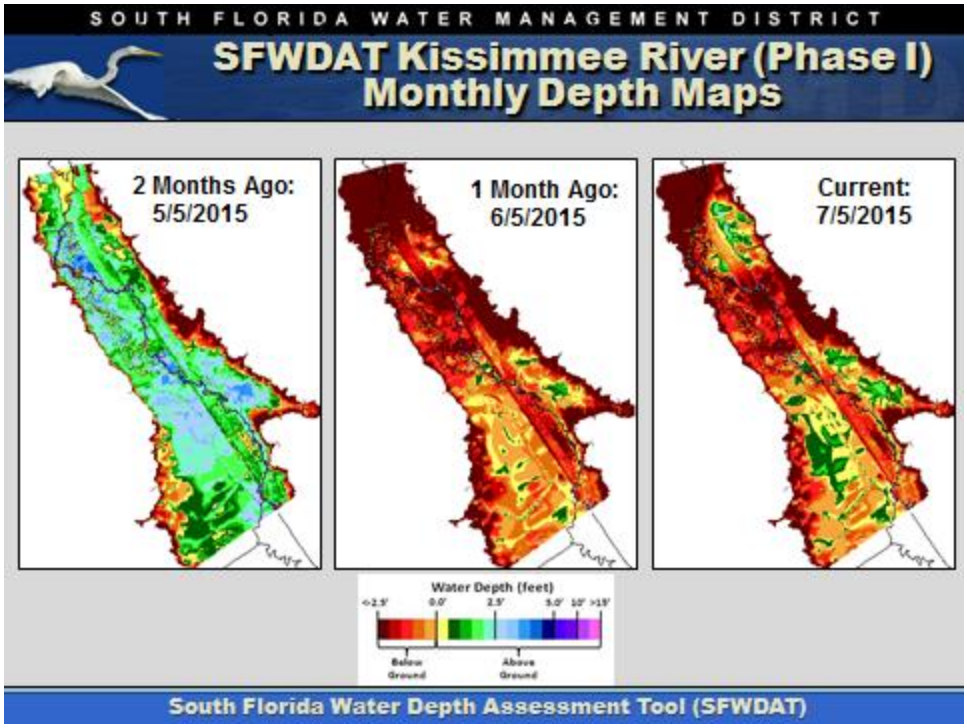


Figure 11. Phase I area floodplain water depths for this week, one month ago, and two months ago. Note that the WDAT color-coding has been modified to accommodate greater water depths; these maps are not directly comparable to Kissimmee Basin WDAT maps published prior to Jan. 16, 2012.

Kissimmee River Hydrographs

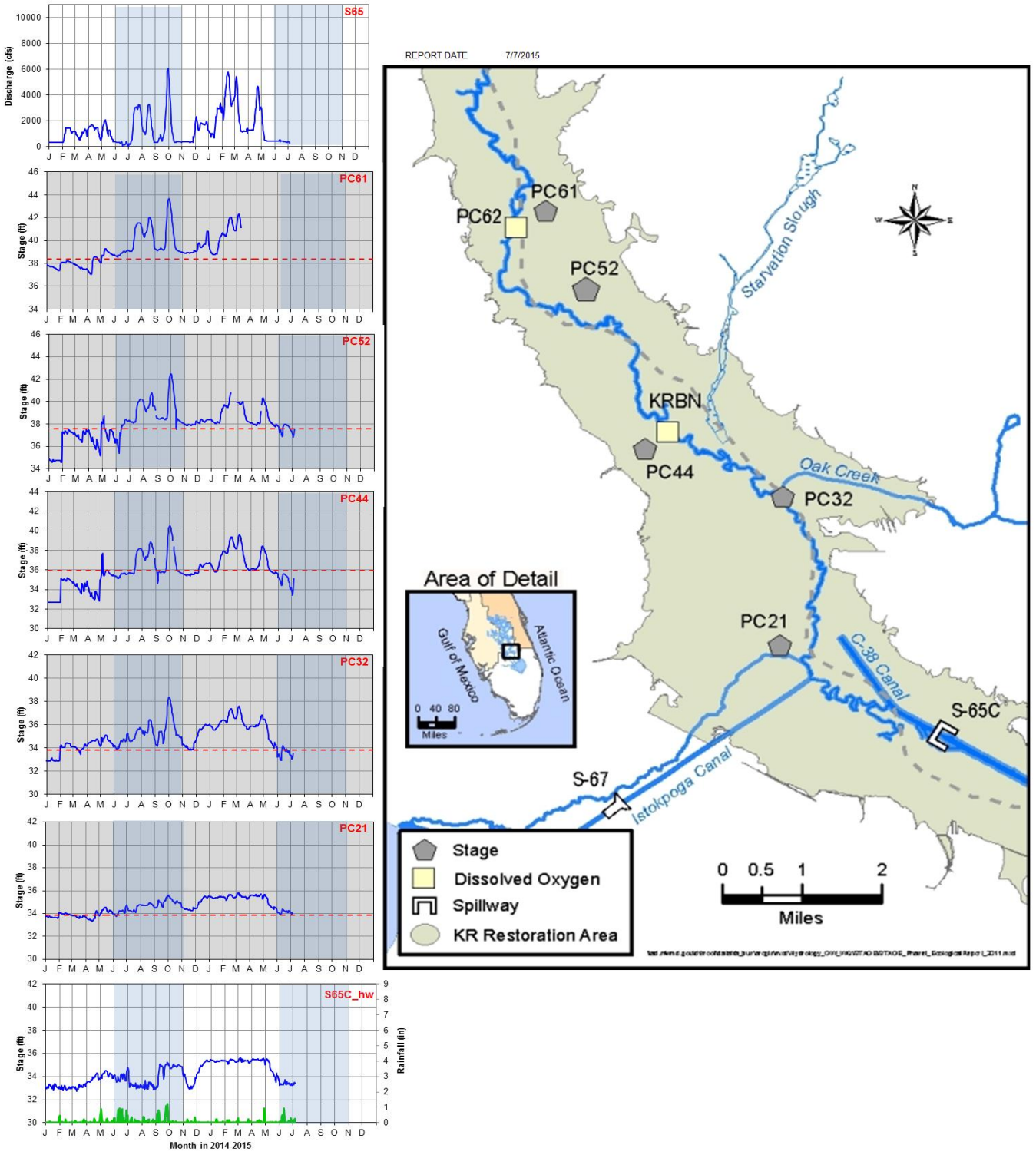


Figure 12. Discharge at S65, stages at five monitoring stations in the Phase I area of the Kissimmee River floodplain, and headwater stage at S65-C since January 1, 2013. The most recent data (~2 weeks) are provisional real-time data from SFWMD DualTrend; previous data are from SFWMD DB-HYDRO (validated).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

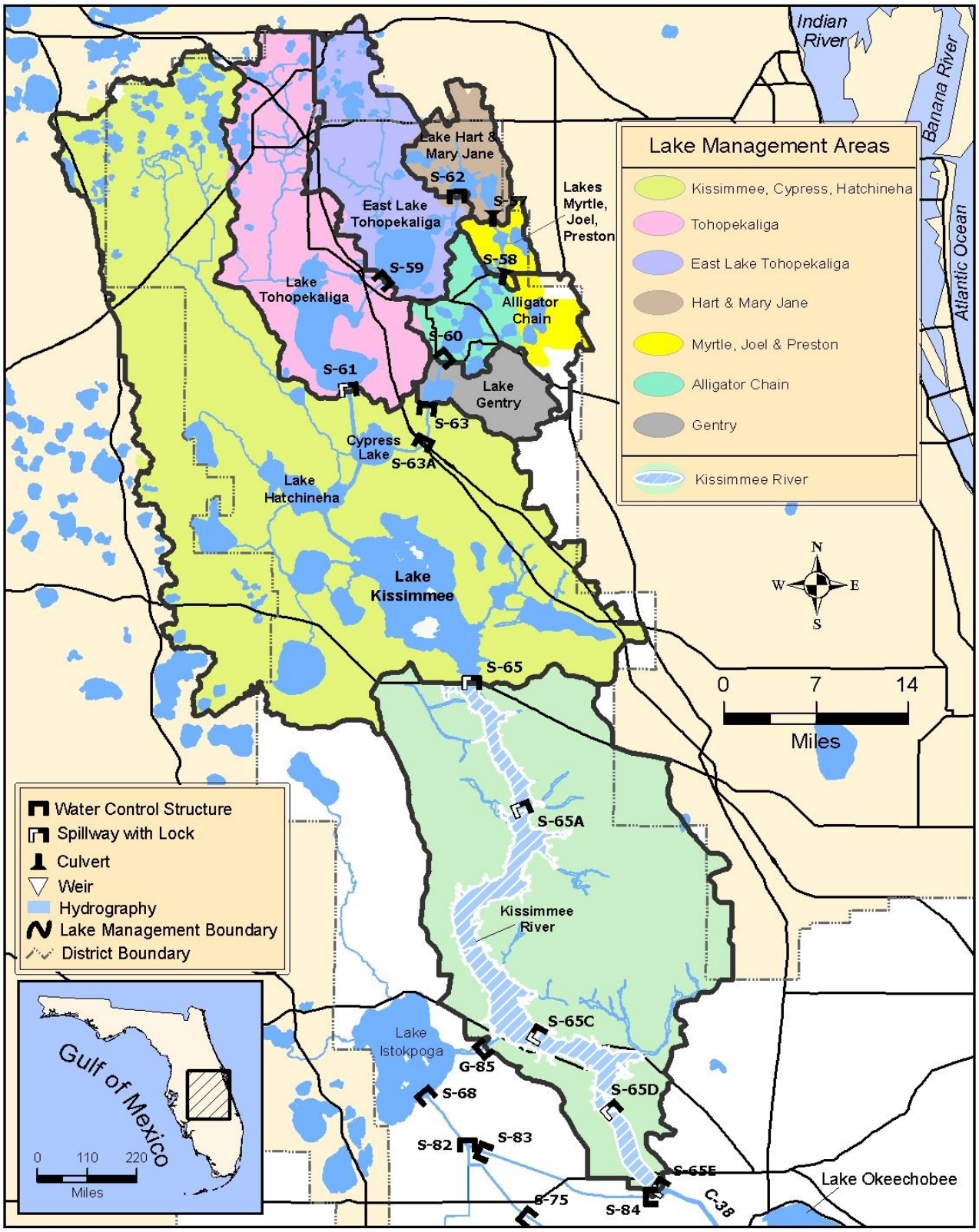


Figure 13. The Kissimmee Basin.

LAKE OKEECHOBEE

Lake Okeechobee is at 12.15 feet NGVD, in the Beneficial Use Sub-band and Lake stage continues to be just below optimal for this time of year. Wading bird foraging habitat continues to be mostly too dry. Satellite imagery indicates low to moderately high bloom conditions persisting in the western and southern nearshore regions, with low to moderate bloom conditions in the north and northwest nearshore regions, which appear to have somewhat diminished. Low to moderate bloom conditions continue to extend into the pelagic zone primarily on the west and south sides of the lake, while on the east side of the lake, no blooms were recorded.

Hydrologic Conditions

According to the United States Army Corps of Engineers (USACE) web site, Lake Okeechobee stage is at 12.15 feet NGVD for the period ending at midnight on July 6, 2015. This value is usually based on the use of four interior Lake stations (L001, L005, L006, and LZ40) and the following four perimeter stations (S-352, S-4, S-308, and S-133) but there was no value for LZ40. There was a net decrease in Lake stage of 0.05 feet. over the past seven days. The Lake is now 0.43 feet lower than it was a month ago and 0.87 feet lower than it was a year ago (Figure 1). The Lake is in the beneficial use Sub-band (Figure 2). The current stage is 1.35 feet below the historical average for this date and 0.22 feet below the LORS 2008 simulated average. According to RAINDAR, 1.04 inches of rain on average fell directly over the Lake during the past seven days. Similar or greater amounts fell in most of the surrounding watershed, especially north and west of the lake (Figure 3).

Current Lake inflow is approximately 2016 cfs consisting of flows as indicated below.

Structure	**Flow cfs**
S65E	834 (325 weekly average)
S154	0
S84	0
S71	866
S72	11
C5	1
S191	0
S133 PUMPS	0
S127 PUMPS	0
S129 PUMPS	0
S131 PUMPS	0
S135 PUMPS	0
Fisheating Creek	182
S2 Pumps	0
S3 Pumps	0
S4 Pumps	0

Outflows from the Lake consist of 1722 cfs exiting at S351, S352, and S354 and 37 cfs exiting through S77. There is no reported flow through S308, and the S308 and L8 are reporting backflows of 3 and 1 cfs, respectively. Corrected average weekly evapotranspiration was 3723 cfs; approximately 19% less than the value reported last week.

Change in elevation equivalents based on total weekly flows for major structures, rainfall and evapotranspiration are presented in Figure 4.

Since the last official wading bird survey of the year conducted on June 11, 2015, wading birds utilizing the Lake may continue to be in decline, which is consistent with the continuing recession and reduction in available foraging habitat (Figure 5).

June total phosphorus (TP) concentrations in the nearshore are slightly lower than in April and May while they remain little changed in the pelagic zone. The lake wide average June TP concentration likewise has changed little over the past three months, possibly slightly decreasing. Average total suspended solids (TSS) concentrations in both the nearshore and pelagic zones appear to have increased slightly and likewise for the lake wide average TSS concentration. Decreased inflows due to a drier than normal June, along with a potential increase in nutrient uptake by increased submerged aquatic vegetation (SAV) and associated epiphytes in the nearshore zone may be related to that regions slight decline in average TP concentration (Figure 6).

The most recent MODIS satellite imagery (June 26) indicates low to moderately high potential bloom conditions persisted in the west and south nearshore areas while bloom conditions appear to have decreased in the north and northwest areas. Potential bloom conditions continue to appear in the west and southern sides of the pelagic zone while no potential blooms appeared to occur on the east side of the lake (Figure 7).

Water Management Recommendations

The Lake recession has slowed down over the past week and the Lake continues to be a bit below the optimal Lake stage for this time of year. Future recommendations for the short term will depend in large measure on wet season rainfall patterns and amounts with the operational goal being to maintain a steady change in Lake stage not to exceed 0.5 feet per month. From an ecological perspective, this could be either a continuing recession or the beginning of the typical summer ascension, although the beginning of the typical summer ascension would be preferable.

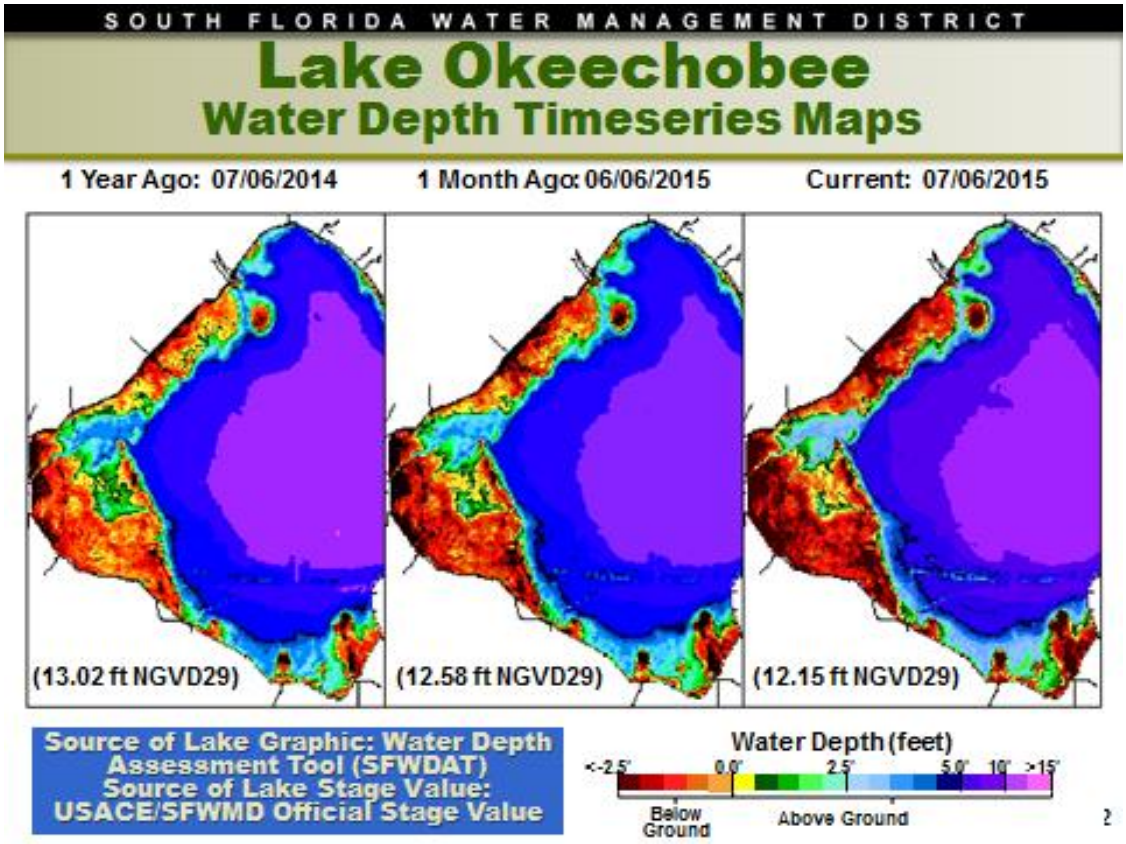

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
Lake Okeechobee
Water Depth Timeseries Maps
1 Year Ago: 07/06/2014
1 Month Ago: 06/06/2015
Current: 07/06/2015
(13.02 ft NGVD29)
(12.58 ft NGVD29)
(12.15 ft NGVD29)
Source of Lake Graphic: Water Depth Assessment Tool (SFWDAT)
Source of Lake Stage Value: USACE/SFWMD Official Stage Value
Water Depth (feet)
<-2.5'
0.0'
2.5'
5.0'
10'
>15'
Below Ground
Above Ground

Figure 1

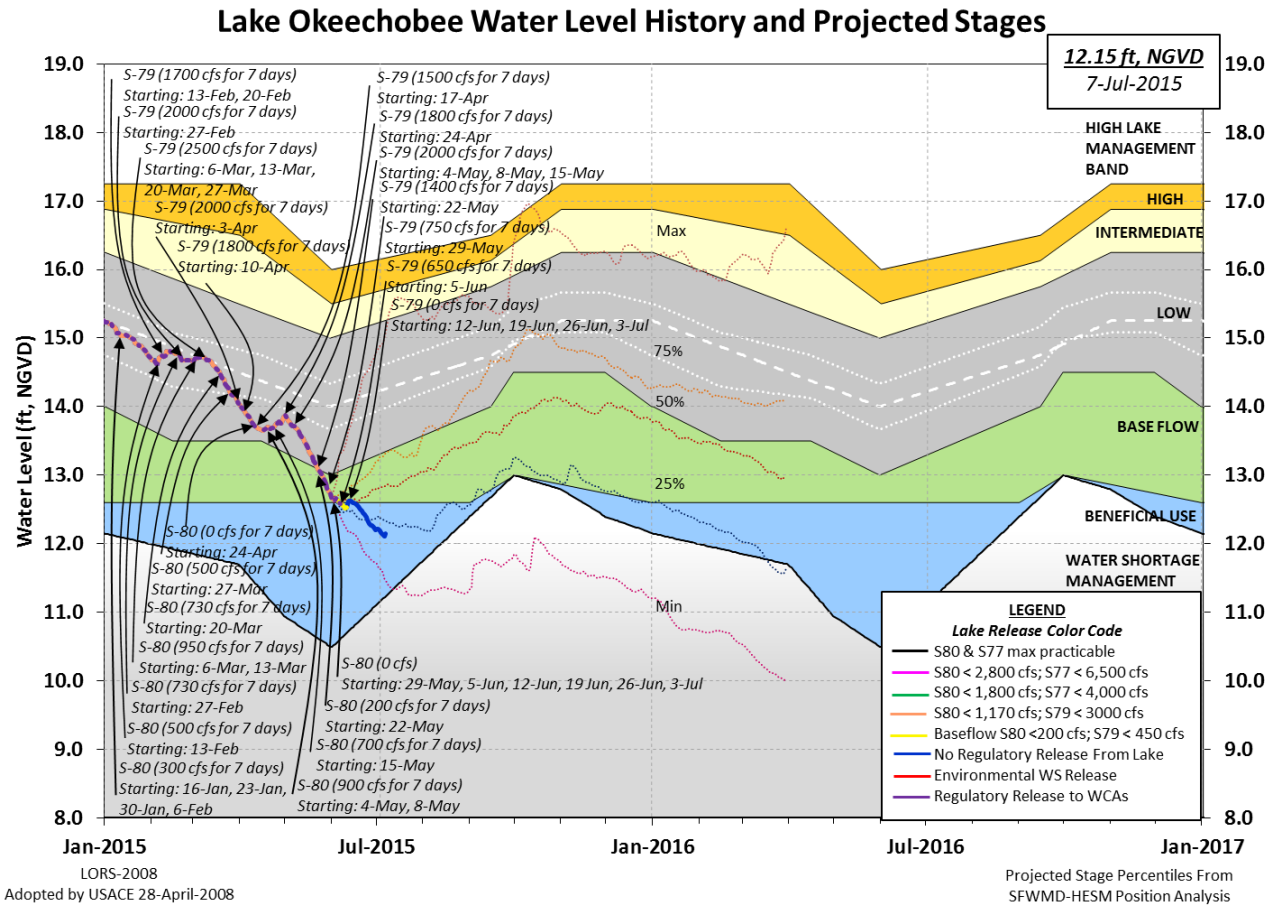

Lake Okeechobee Water Level History and Projected Stages
12.15 ft, NGVD
7-Jul-2015
HIGH LAKE MANAGEMENT BAND
HIGH
INTERMEDIATE
LOW
BASE FLOW
BENEFICIAL USE
WATER SHORTAGE MANAGEMENT
Max
75%
50%
25%
Min
Water Level (ft, NGVD)
19.0
18.0
17.0
16.0
15.0
14.0
13.0
12.0
11.0
10.0
9.0
8.0
Jan-2015
Jul-2015
Jan-2016
Jul-2016
Jan-2017
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
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
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

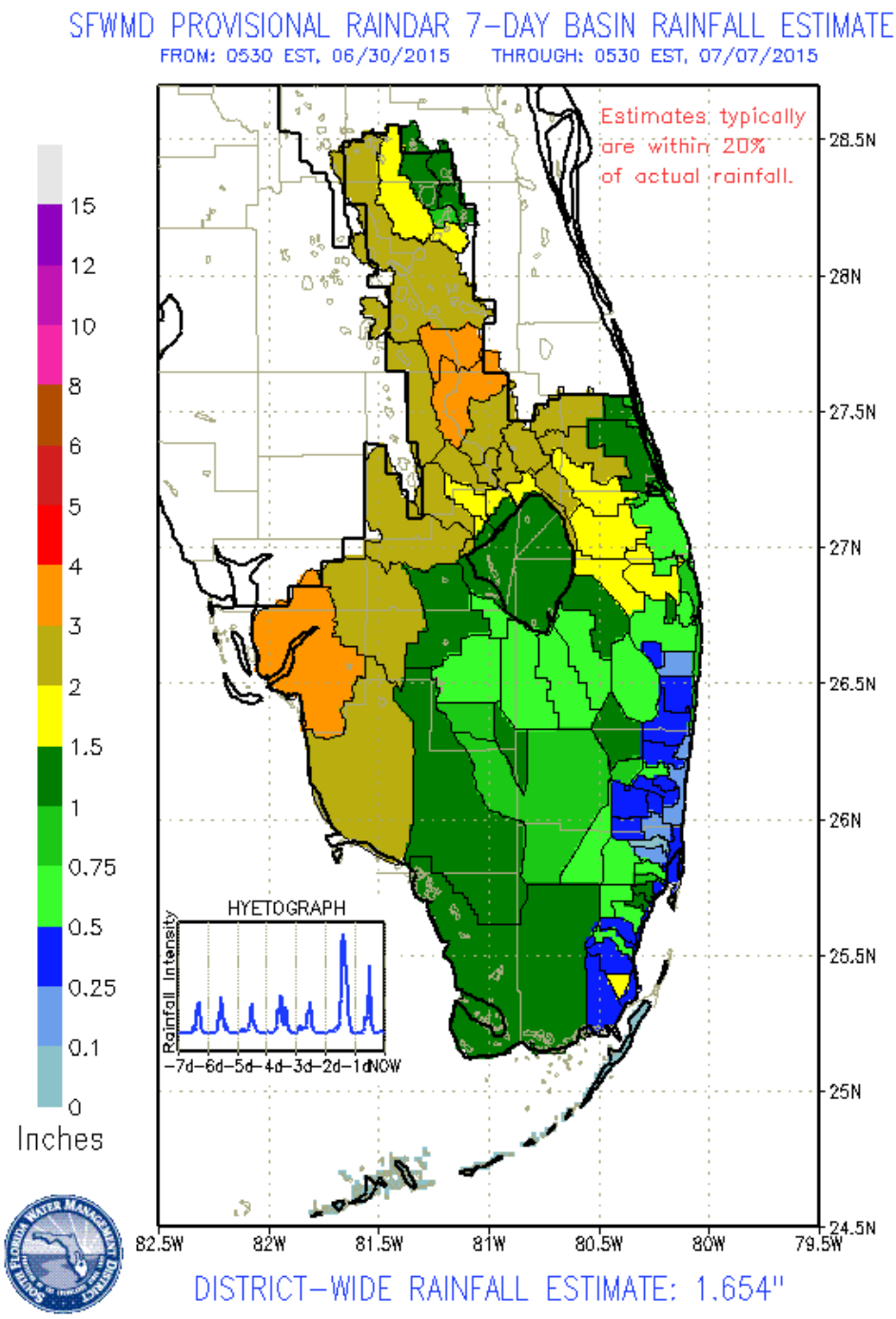

SFWMD PROVISIONAL RAINDAR 7-DAY BASIN RAINFALL ESTIMATES
FROM: 0530 EST, 06/30/2015 THROUGH: 0530 EST, 07/07/2015
Estimates typically are within 20% of actual rainfall.
15
12
10
8
6
5
4
3
2
1.5
1
0.75
0.5
0.25
0.1
0
Inches
HYETOGRAPH
Rainfall Intensity
-7d-6d-5d-4d-3d-2d-1dNOW
28.5N
28N
27.5N
27N
26.5N
26N
25.5N
25N
24.5N
82.5W
82W
81.5W
81W
80.5W
80W
79.5W
DISTRICT-WIDE RAINFALL ESTIMATE: 1.654"

Figure 3

INFLOWS	FT OF CHANGE OVER PAST WEEK
S65E	**0.032**
S71 & 72	**0.007**
S84 & 84X	**0.009**
Fisheating Creek	**0.007**
Rainfall	**0.087**
OUTFLOWS	**FT OF CHANGE OVER PAST WEEK**
S77	**0.001**
S308	**0.000**
S351	**0.030**
S352	**0.018**
S354	**0.028**
ET	**0.143**

Figure 4

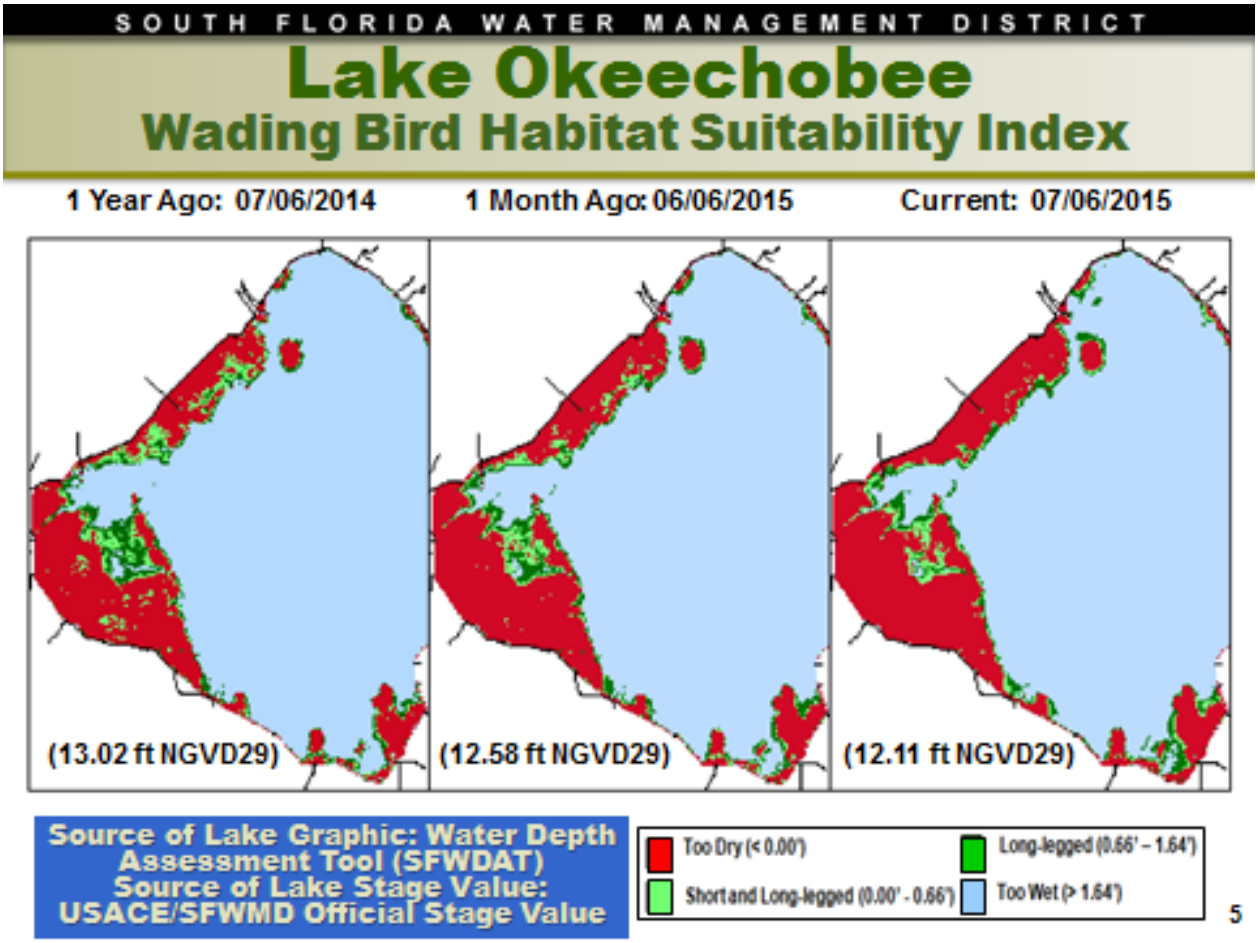
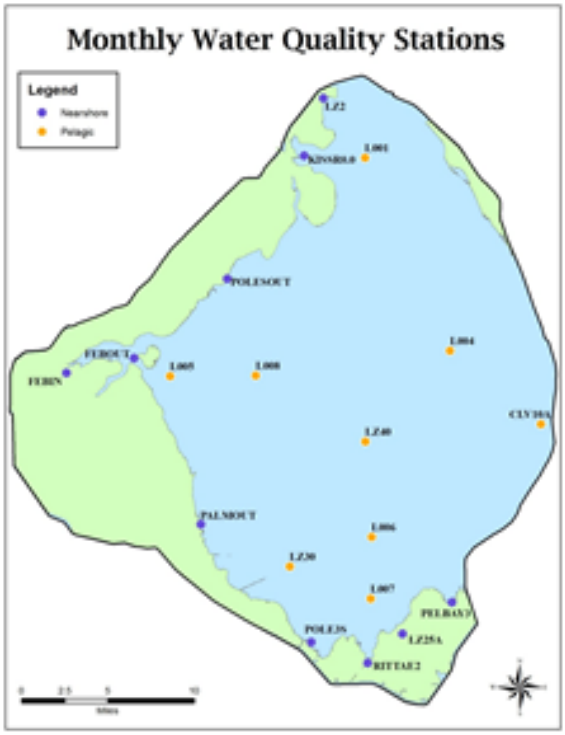

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
Lake Okeechobee
Wading Bird Habitat Suitability Index
1 Year Ago: 07/06/2014
1 Month Ago: 06/06/2015
Current: 07/06/2015
(13.02 ft NGVD29)
(12.58 ft NGVD29)
(12.11 ft NGVD29)
Source of Lake Graphic: Water Depth Assessment Tool (SFWDAT)
Source of Lake Stage Value: USACE/SFWMD Official Stage Value
Too Dry (< 0.00')
Long-legged (0.66' – 1.64')
Short and Long-legged (0.00' - 0.66')
Too Wet (> 1.64')
5

Figure 5

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Lake Okeechobee
Water Quality



Parameter		Apr 2015	May 2015	Jun 2015
TP ppb	Nearshore	101	97	92
	Pelagic	133	132	130
	Lakewide	116	115	112
TSS ppm	Nearshore	7	10	10
	Pelagic	15	16	20
	Lakewide	11	13	16

Figure 6

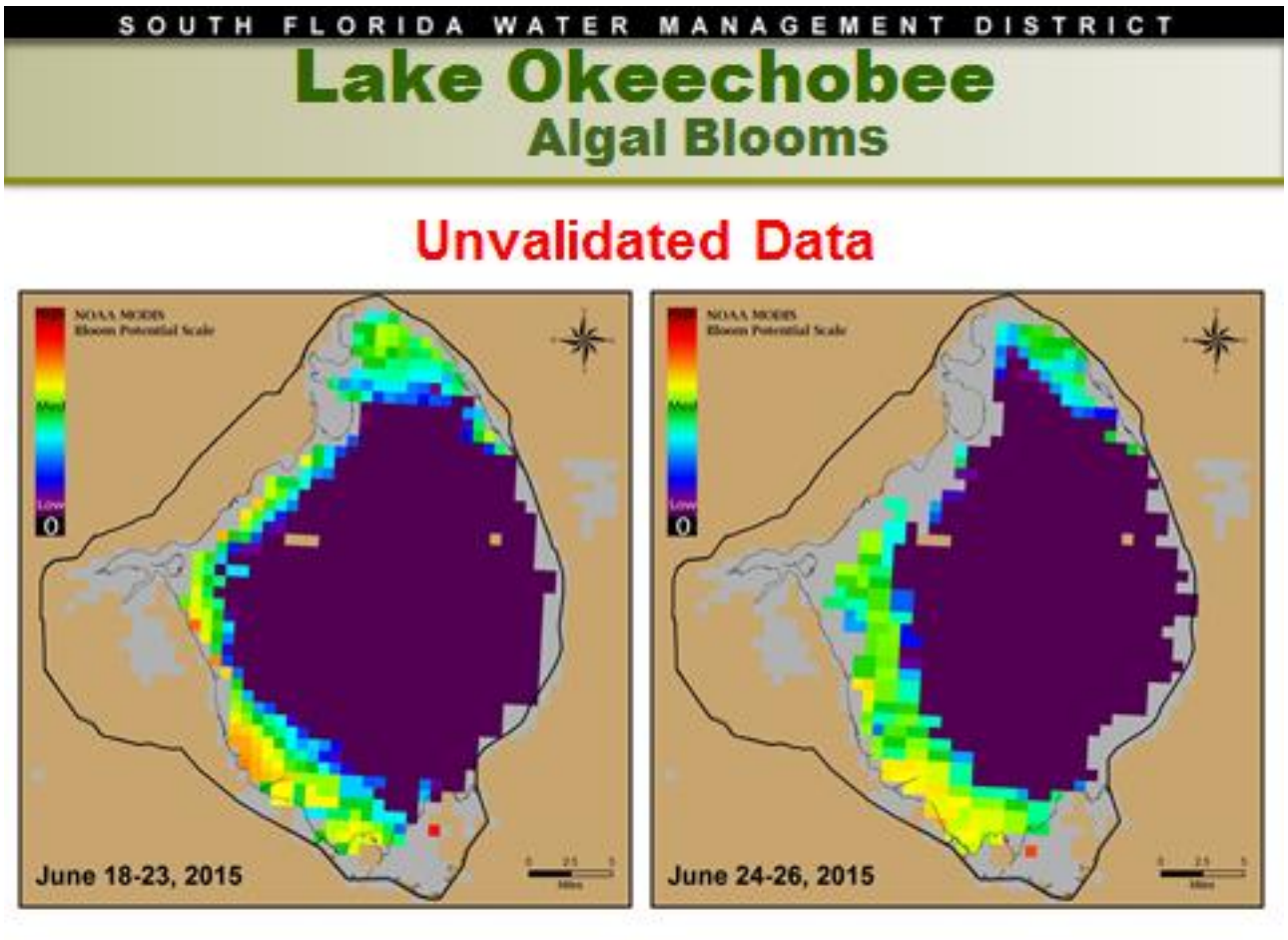

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
Lake Okeechobee
Algal Blooms
Unvalidated Data
NOAA MODIS
Bloom Potential Scale
High
Med
Low
0
June 18-23, 2015
NOAA MODIS
Bloom Potential Scale
High
Med
Low
0
June 24-26, 2015

Figure 7

Lake Istokpoga:

Lake Istokpoga stage is 38.42 feet NGVD today. The lake has risen slightly above its annual low pool stage (38.25 ft. NGVD). It is currently 0.17 feet above its regulation schedule (Figure 8). Average flows into the Lake from Arbuckle and Josephine creeks were 70 and 79 cfs, up a bit from last week. Average discharge from S68 and S68X this past week was 73 cfs, a slight decrease from the preceding week. According to RAINDAR 2.79 inches of rain fell in the Lake Istokpoga watershed during the past seven days, up a significant amount over the previous seven days.

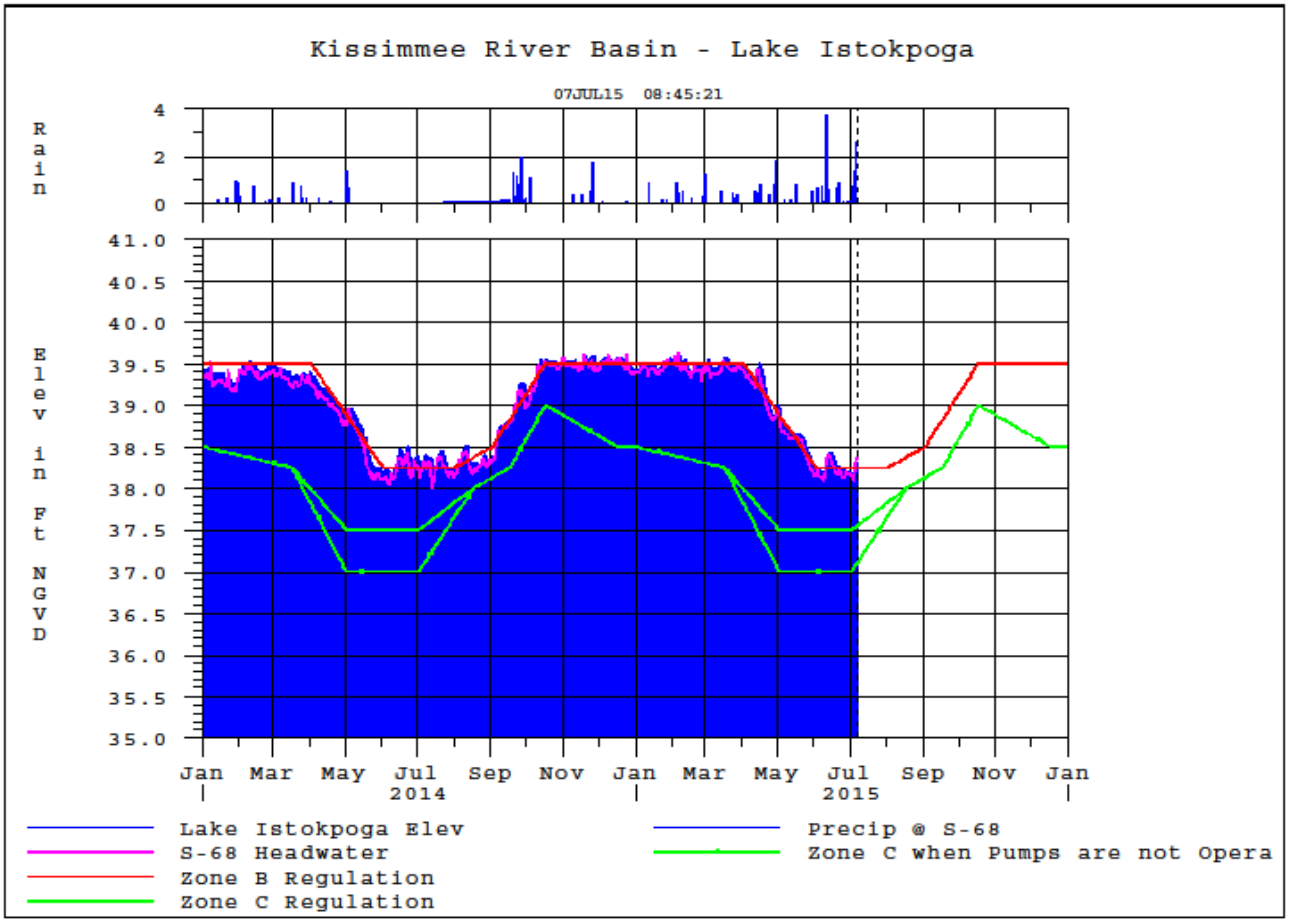


Figure 8

ESTUARIES

St. Lucie Estuary:
Over the past week, provisional flows averaged 0 cfs at S-80, 0 cfs at S-308, 129 cfs at S-49 on C-24, 27 cfs at S-97 on C-23, and 94 cfs from Ten Mile Creek at the Gordy Road Structure. Average inflow from tidal basin tributaries is estimated to be 203 cfs (Figures 1 and 2). Total inflow averaged 453 cfs last week and 368 cfs over last month,

Over the past week, salinity remained about the same throughout the estuary (Table 1, Figures 3 and 4). The seven-day moving average salinity of the water column at the US1 Bridge is 21.3. Salinity conditions in the middle estuary are in 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)	**~16.0** (~14)	**NR** (~17)	NA[1]
US1 Bridge	**20.7** (20.2)	**21.9** (22.1)	10.0-26.0
A1A Bridge	**28.3** (~27)	**30.8** (~30)	NA

[1]Envelope not applicable

Caloosahatchee Estuary:
During the past week, provisional flows averaged approximately 52 cfs at S-77, 11 cfs at S-78, and 407 cfs at S-79. Average inflow from tidal basin tributaries is estimated to be 1492 cfs (Figures 5 and 6). Total inflow averaged 1899 cfs last week and 1003 cfs over last month.

Over the past week in the estuary, average salinity decreased downstream of Ft. Myers Yacht Basin and increased upstream of Cape Coral (Table 2, Figures 7 and 8). The seven-day average salinity values are within the good range for oysters at Cape Coral, Shell Point, but in the fair range at Sanibel (Figure 9). The 30-day moving average surface salinity is 1.0 at Val I-75 and 4.7 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)	**0.3** (0.5)	**0.3** (0.5)	NA[1]
*Val I75	**0.8**[*](1.0*)	**1.3**[*](1.8*)	0.0-5.0[2]
Ft. Myers Yacht Basin	**4.7** (4.9)	**5.6** (6.7)	NA
Cape Coral	**~13.0** (11.8)	**~15.0** (14.4)	10.0-30.0
Shell Point	**26.0** (23.8)	**27.0** (24.9)	10.0-30.0
Sanibel	**31.0** (30.3)	**32.2** (31.6)	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.

Salinity forecasts for the next several weeks were constructed for the following scenarios: a) no release (Figure 10), b) 100 cfs, c) 300 cfs, and d) 450 cfs pulse release. There are increased rainfall events expected over the next couple of weeks with a predicted tidal basin runoff of 1800 cfs. The daily salinity at the Val I75 location is predicted to be 0.7, 0.6, 0.4 and 0.3 for the four cases, respectively by July 20, 2015, and the 30-day moving average salinity is predicted to be 0.7, 0.7, 0.6 and 0.6, respectively.

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)	4.2 – 10.7	NA	1.6 – 3.8
Dissolved Oxygen (mg/l)	4.0 – 8.3	NA	3.6 – 6.6

The Florida Fish and Wildlife Research Institute reported on July 2, 2015, that *Karenia brevis*, the Florida red tide organism, was not detected in samples collected this week in, along, or offshore of, Pinellas, Hillsborough, Manatee, Sarasota, Charlotte, or Lee counties.

Water Management Recommendations

Lake Okeechobee's water level is within the Beneficial Use Operational Sub-band; the tributary hydrological conditions are dry; and the seasonal and multi-seasonal forecasts are Normal and Wet, respectively. The Lake Okeechobee Regulation Schedule (LORS) prescribes no releases from either S-80 or S-77.

Currently, the USACE is releasing 0 cfs at S-80 and 0 cfs at S-77. Currently, there are no ecological benefits associated with additional releases from Lake Okeechobee. Local basin runoff is currently maintaining salinity within the tolerance ranges of oysters and submerged aquatic vegetation in both the Caloosahatchee and St. Lucie estuaries. Considering the current lake levels, and anticipated rainfall, lake releases into the estuary, if any under the LORS guidance, should be made at a low level and in a pulsed pattern (Table 4) to mitigate potential stratification and phytoplankton accumulation in the water column.

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

		7-day pulses at S-80							
Day	100 cfs	200 cfs	300 cfs	500 cfs	650 cfs	730 cfs	950 cfs	1100 cfs	1170 cfs
1	100	200	300	500	650	800	950	1200	1290
2	300	600	700	900	1100	1200	1400	1600	1800
3	150	300	500	800	900	1000	1200	1400	1500
4	100	200	300	600	800	800	1100	1200	1300
5	50	100	200	400	600	600	900	1000	1000
6	0	0	100	300	400	500	700	800	800
7	0	0	0	0	100	210	400	500	500
		7-day pulses at S-79							
Day	1000 cfs	1200 cfs	1500 cfs	1700 cfs	2000 cfs	2300 cfs	2500 cfs	2900 cfs	3000 cfs
1	1500	1700	2000	2200	2500	2800	3000	3400	3500
2	1900	2100	2400	2600	3100	3500	3800	4200	4300
3	1600	1800	2100	2300	2600	3000	3300	3700	3800
4	900	1100	1400	1600	1900	2200	2400	2800	2900
5	700	900	1200	1400	1700	2000	2200	2600	2700
6	400	600	900	1100	1400	1700	1800	2300	2400
7	0	200	500	700	800	900	1000	1300	1400

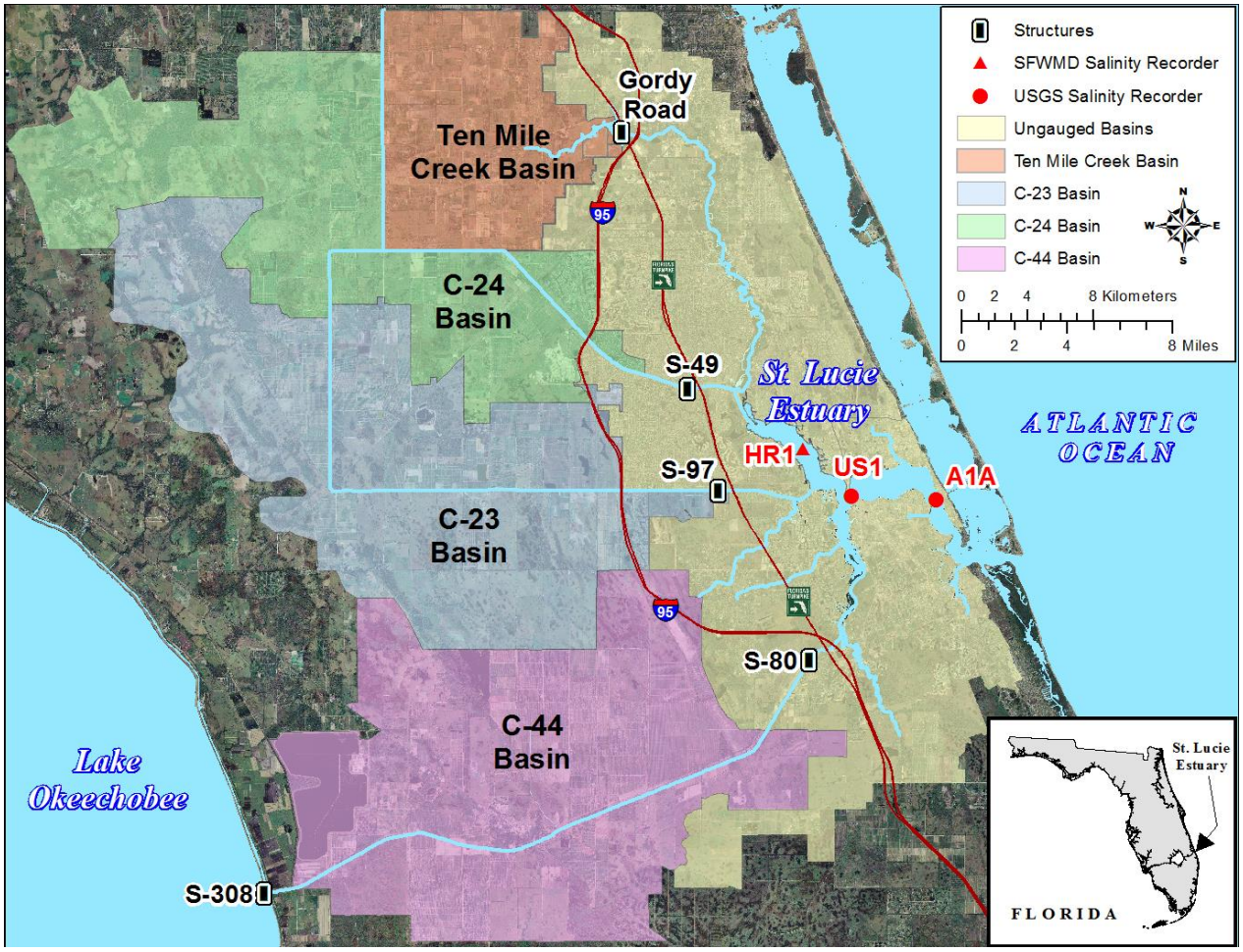


Figure 1. Basins, water control structures, and salinity monitoring for the St. Lucie Estuary.

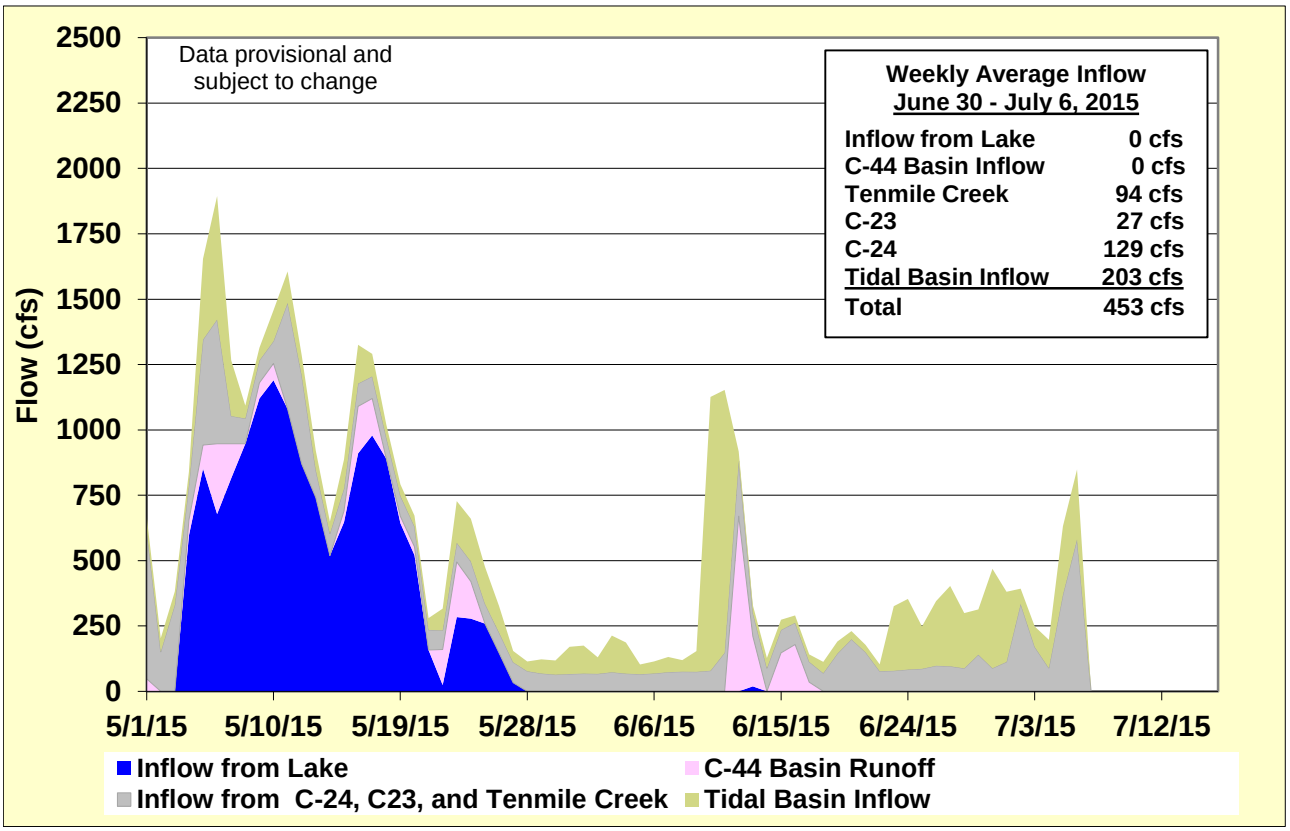


Figure 2. Estimated surface freshwater inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and tidal basins into the St. Lucie Estuary.

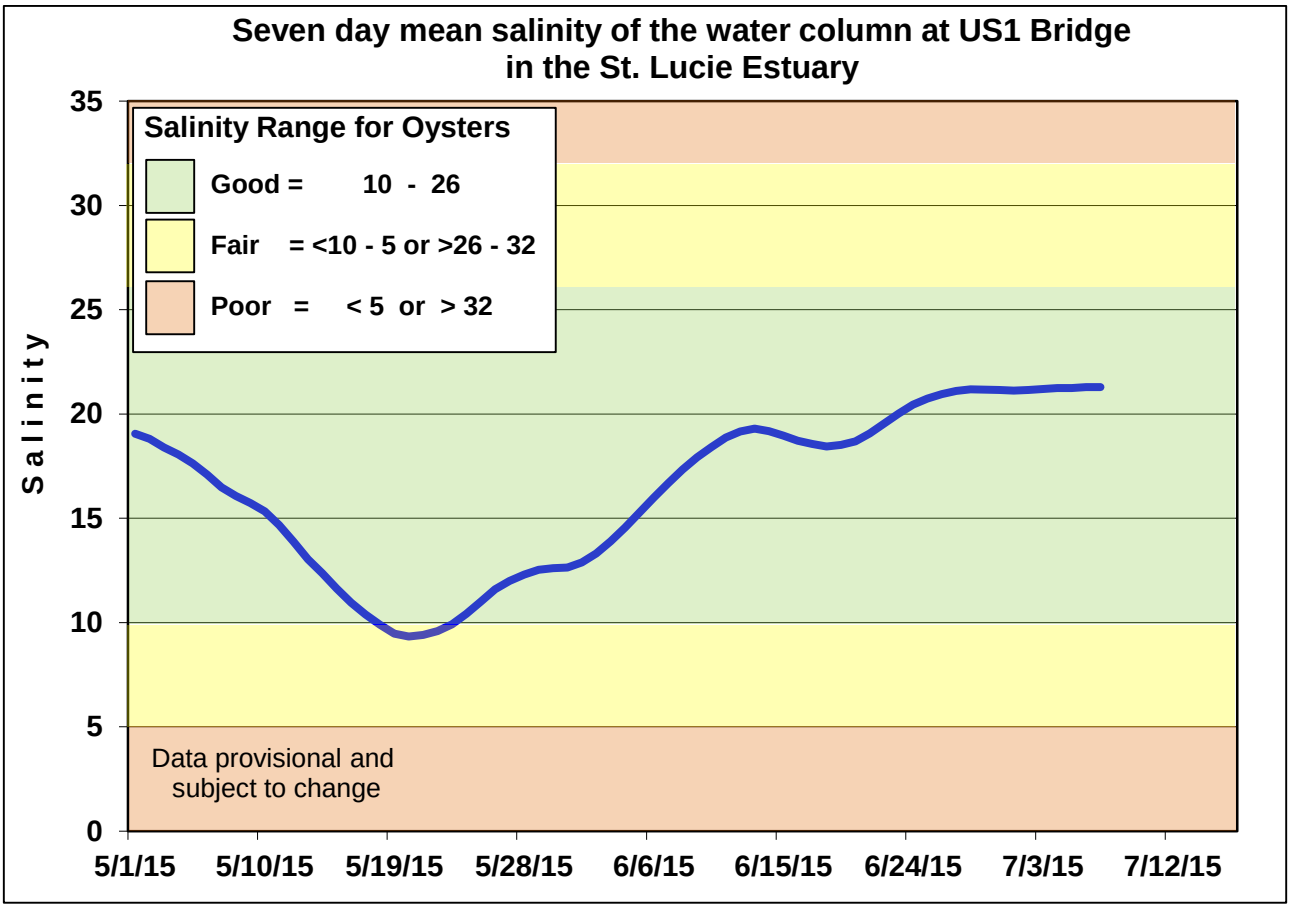


Figure 3. Seven-day mean salinity of the water column at the U.S. Highway 1 Bridge.

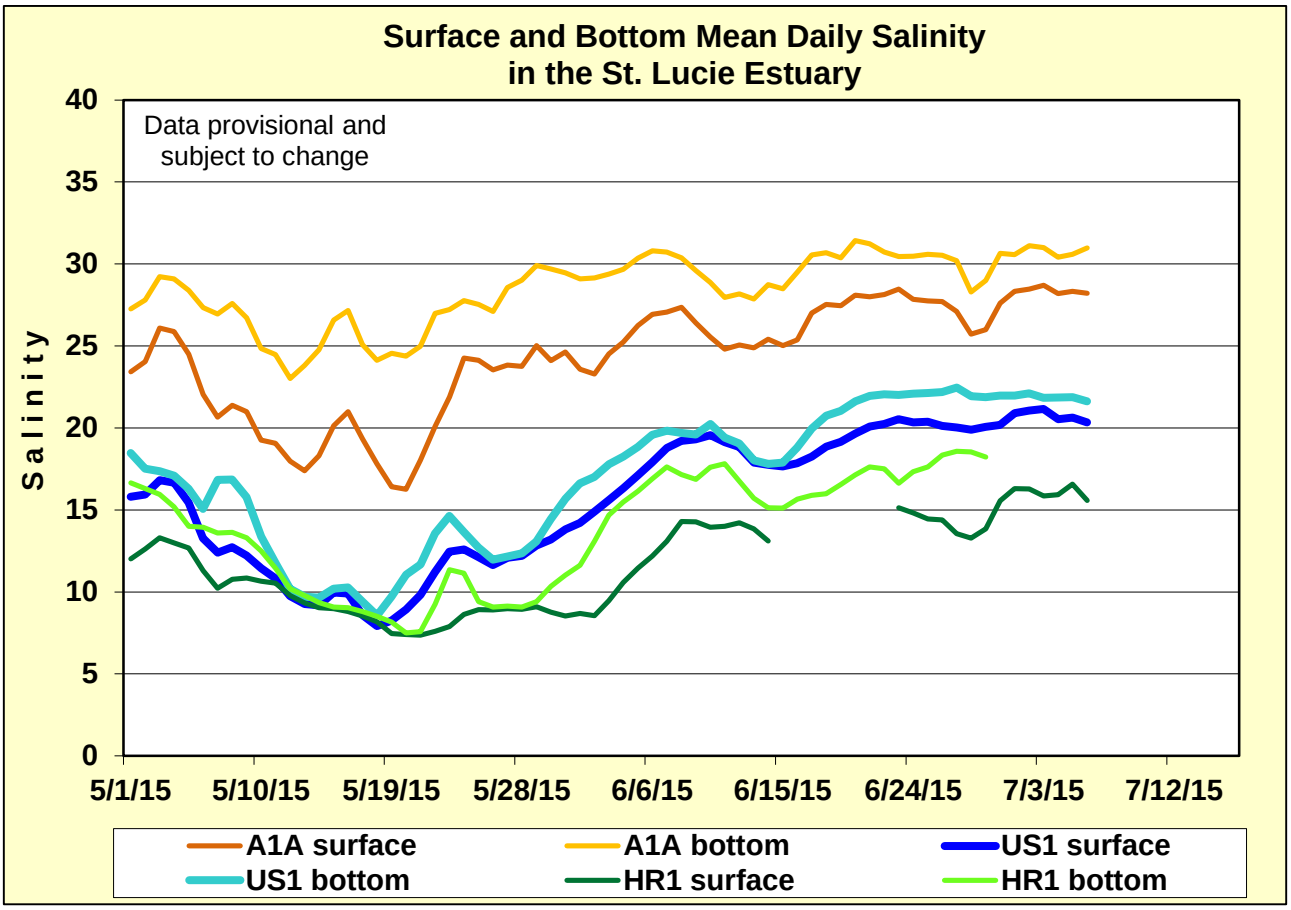


Figure 4. Daily mean salinity at the A1A, US1 and HR1 stations.

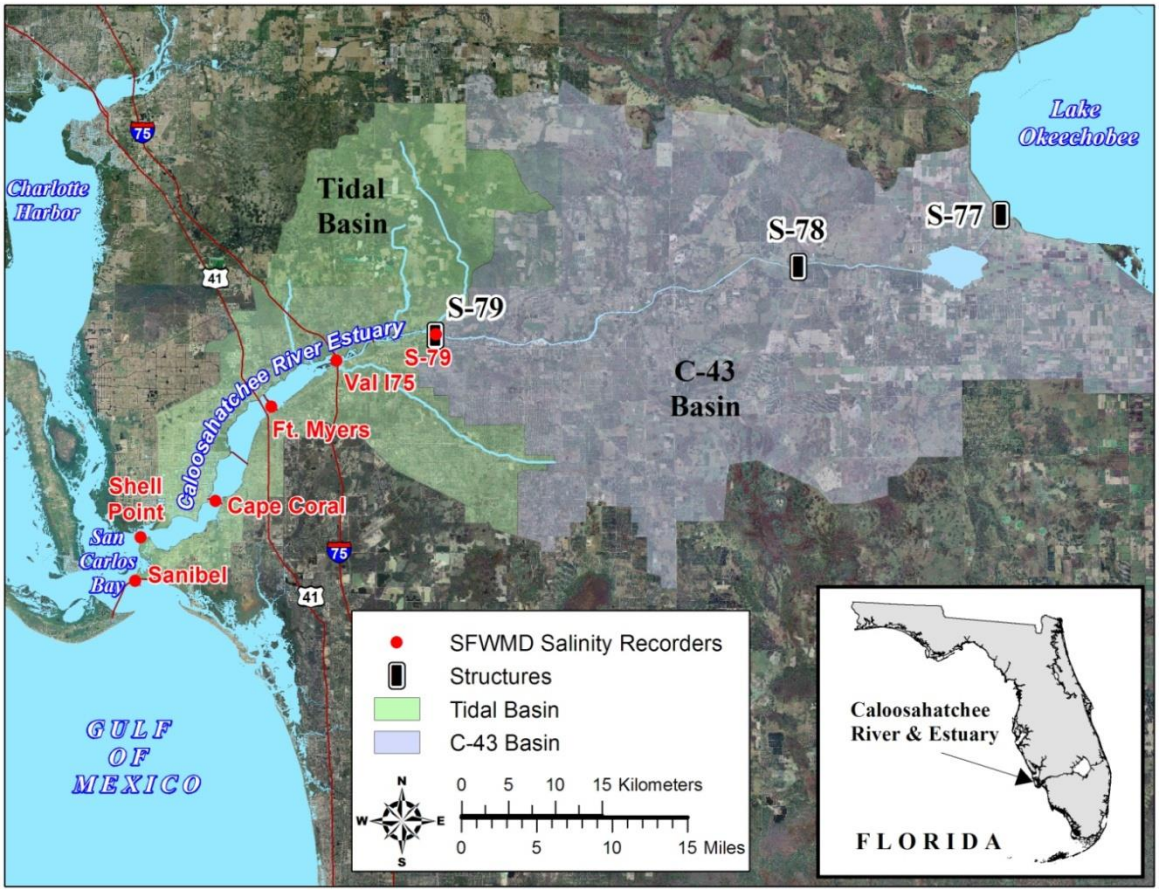


Figure 5. Basins, water control structures, and salinity monitoring for the Caloosahatchee Estuary.

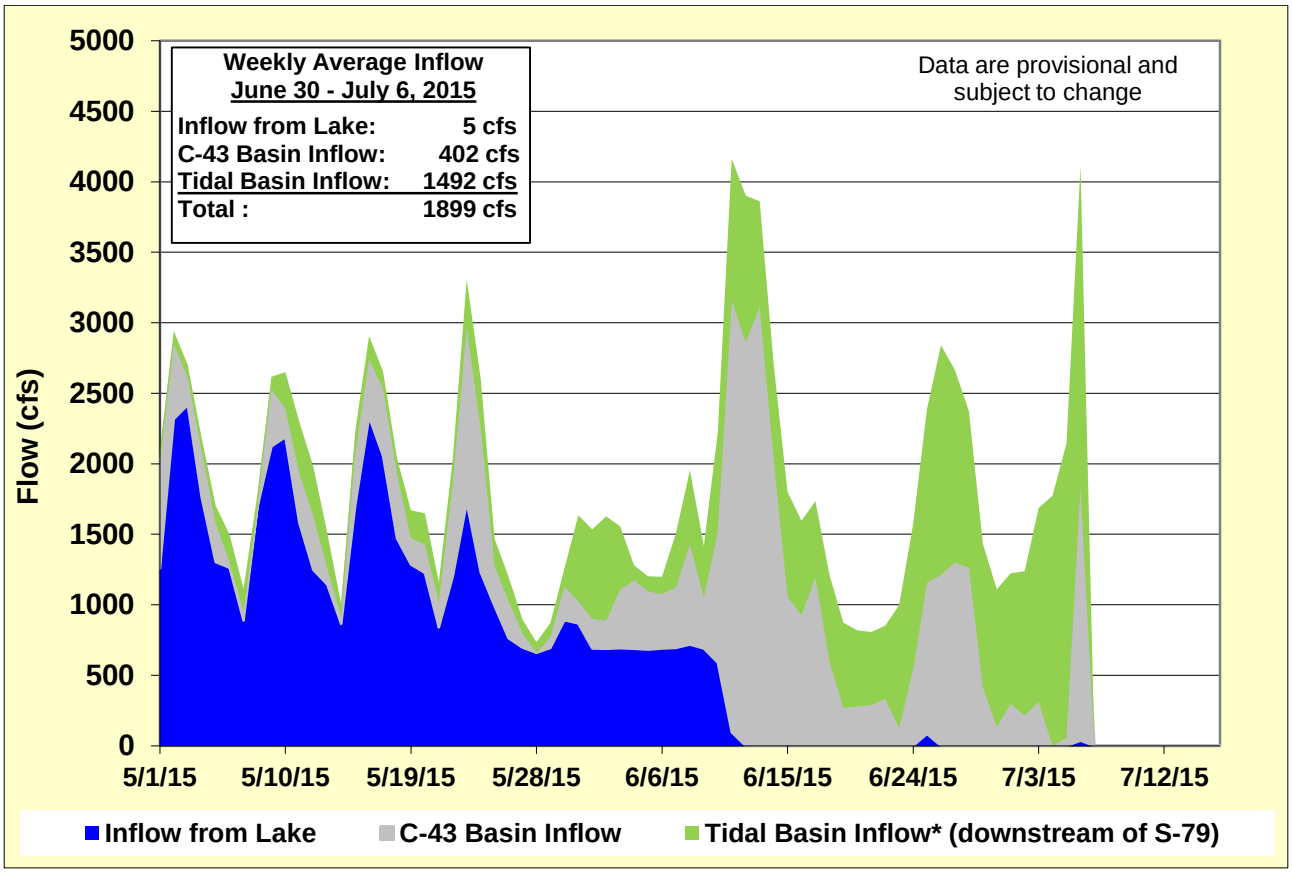
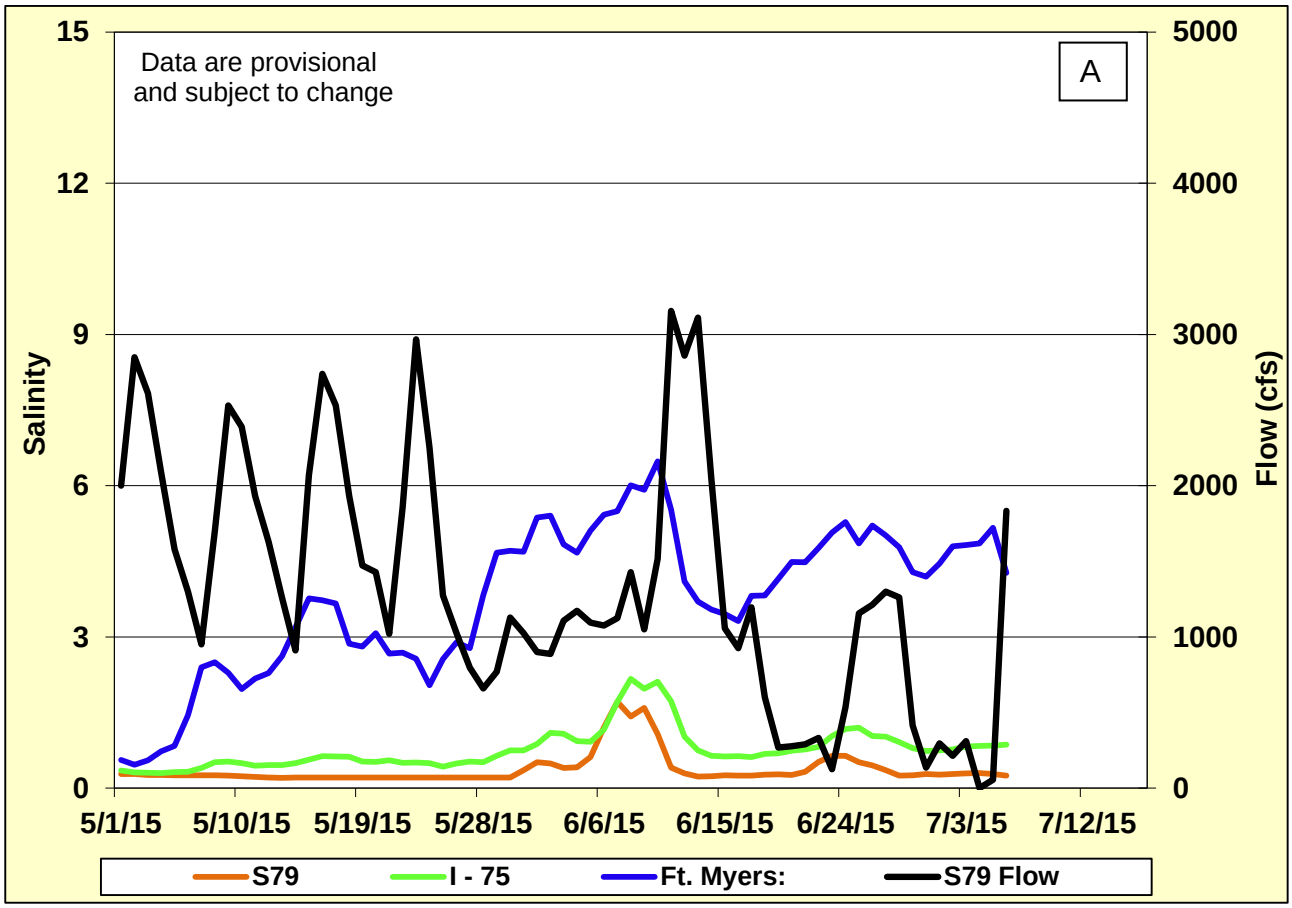


Figure 6. Surface freshwater inflows from Lake Okeechobee, runoff from the C-43 basin and tributaries in the tidal basin into the Caloosahatchee River Estuary.


Data are provisional
and subject to change
A
Salinity
Flow (cfs)
15
12
9
6
3
0
5000
4000
3000
2000
1000
0
5/1/15
5/10/15
5/19/15
5/28/15
6/6/15
6/15/15
6/24/15
7/3/15
7/12/15
S79
I - 75
Ft. Myers:
S79 Flow

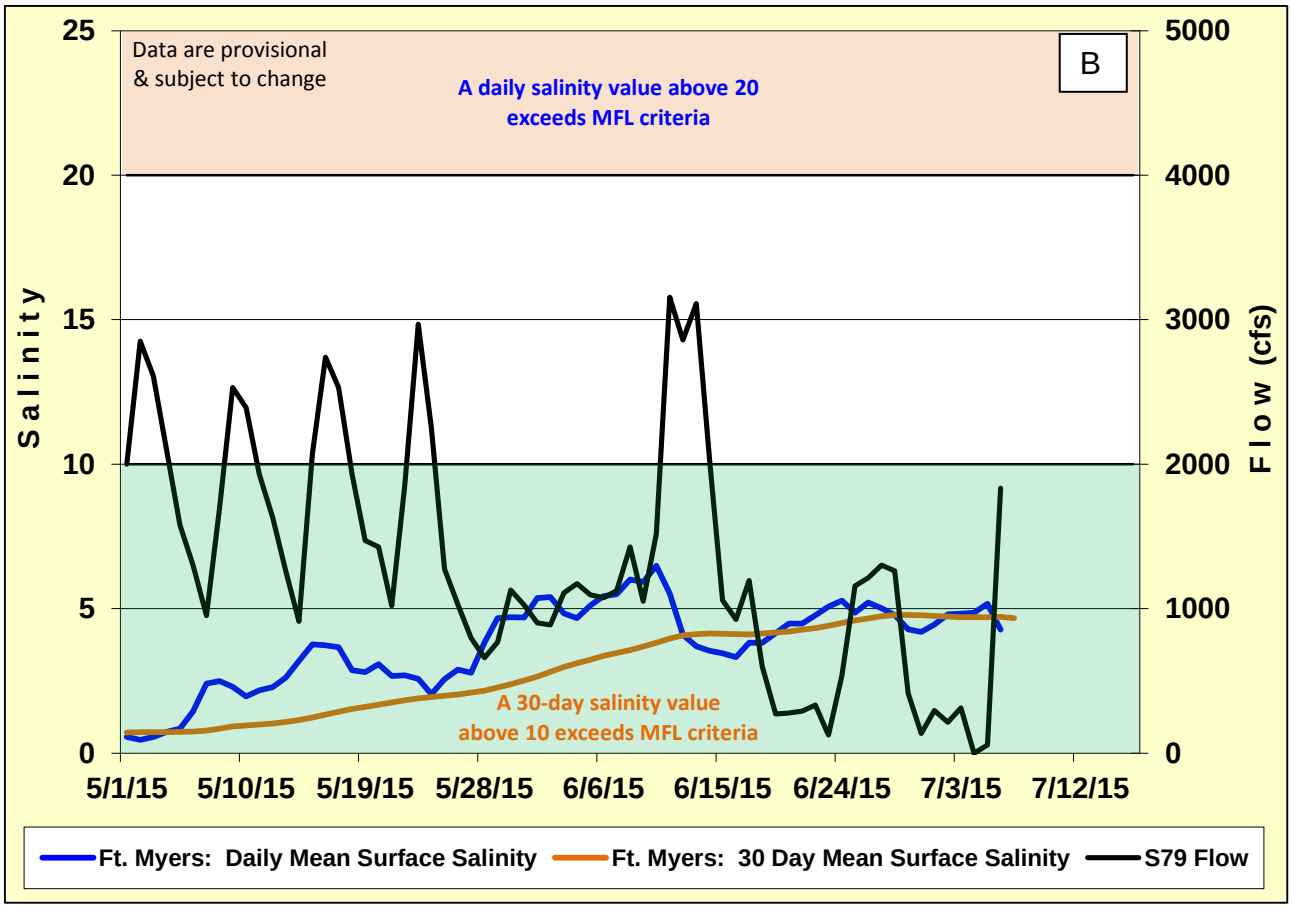


Figure 7. Daily mean flows at S-79 and salinity at upper estuary monitoring stations (A) and 30-day moving average salinity at Ft. Myers (B).

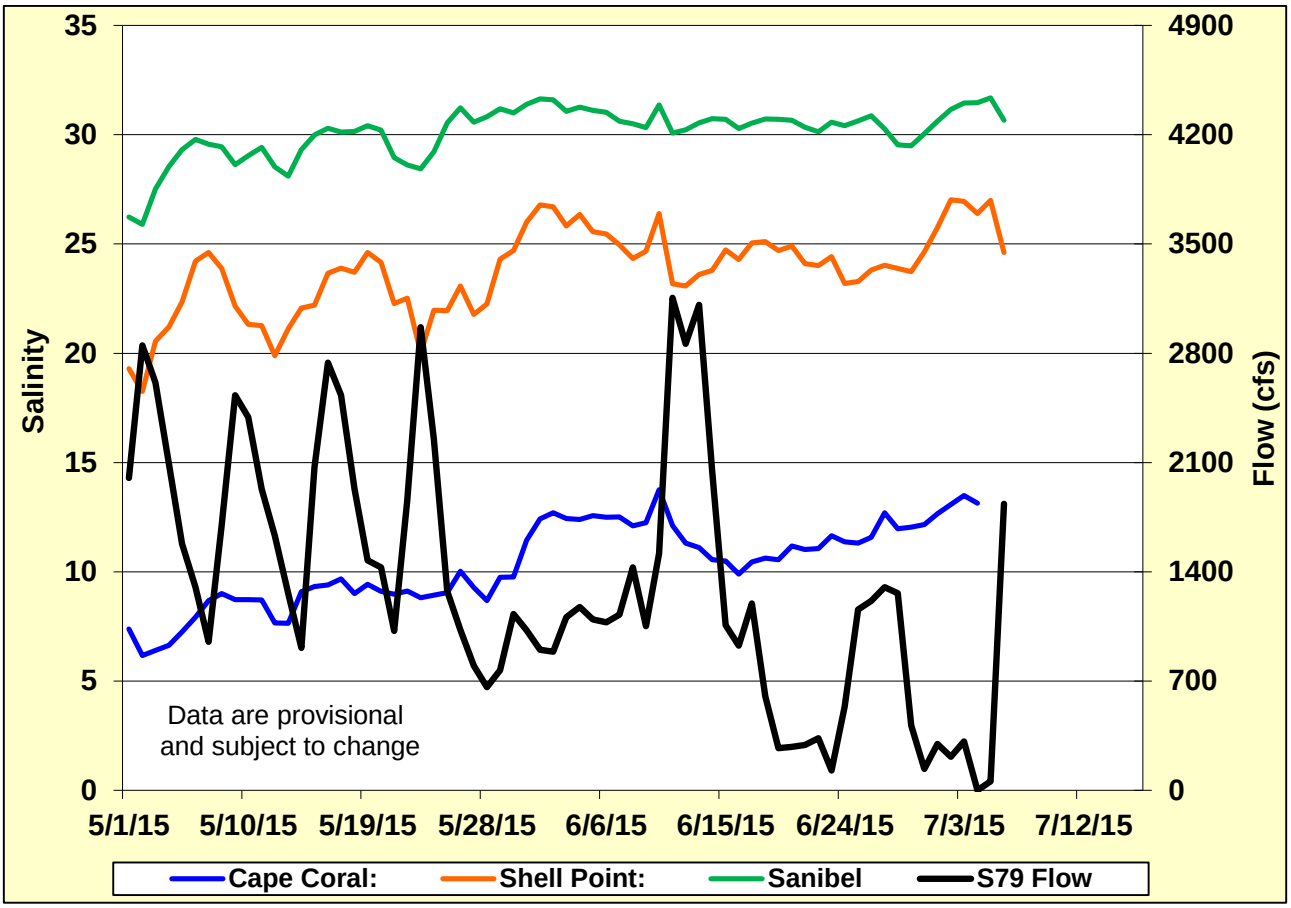


Figure 8. Daily mean flows at S-79 and salinity at lower estuary stations.

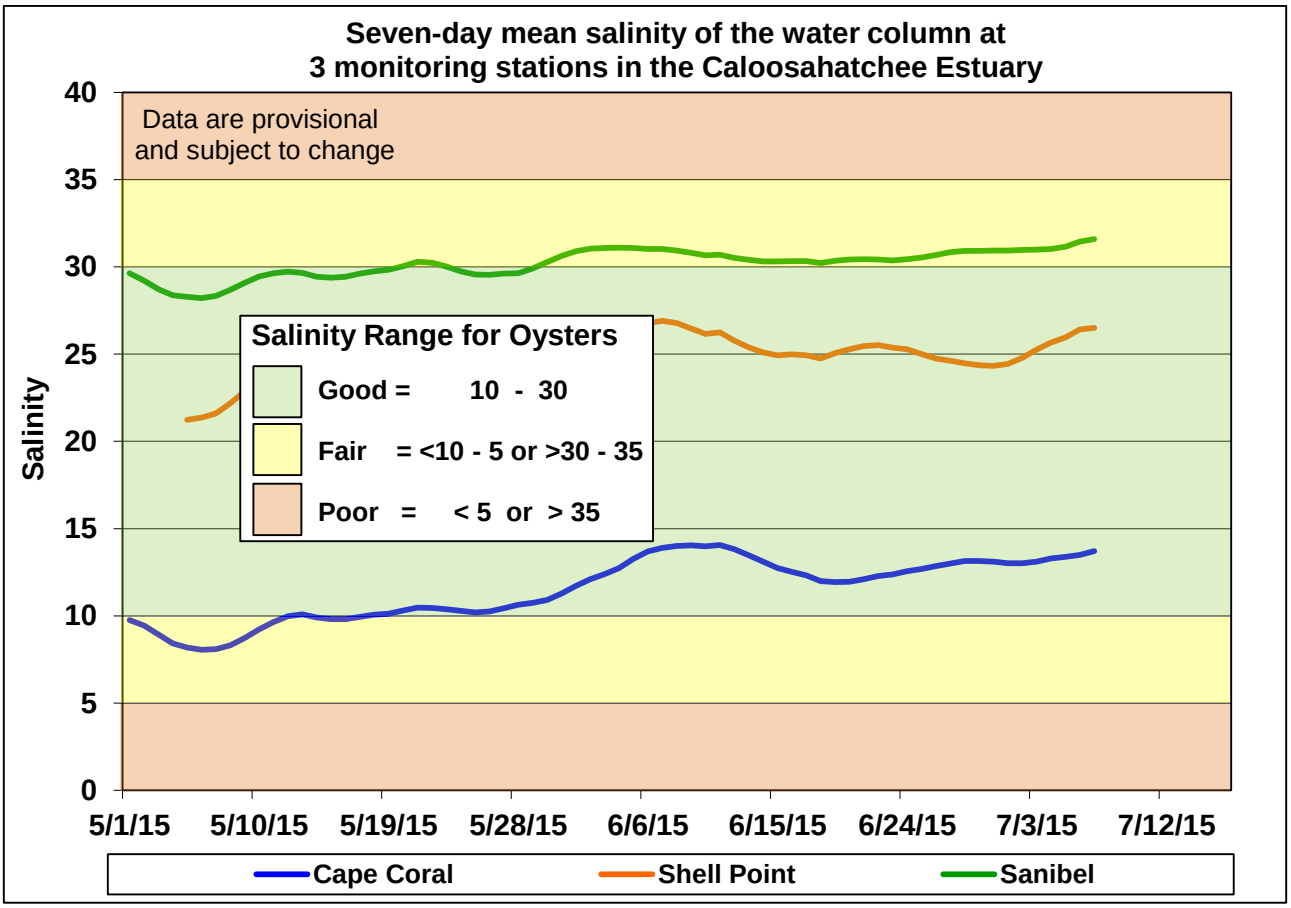


Figure 9. Seven-day mean salinity at Cape Coral Bridge, Shell Point and Sanibel Bridge monitoring stations.

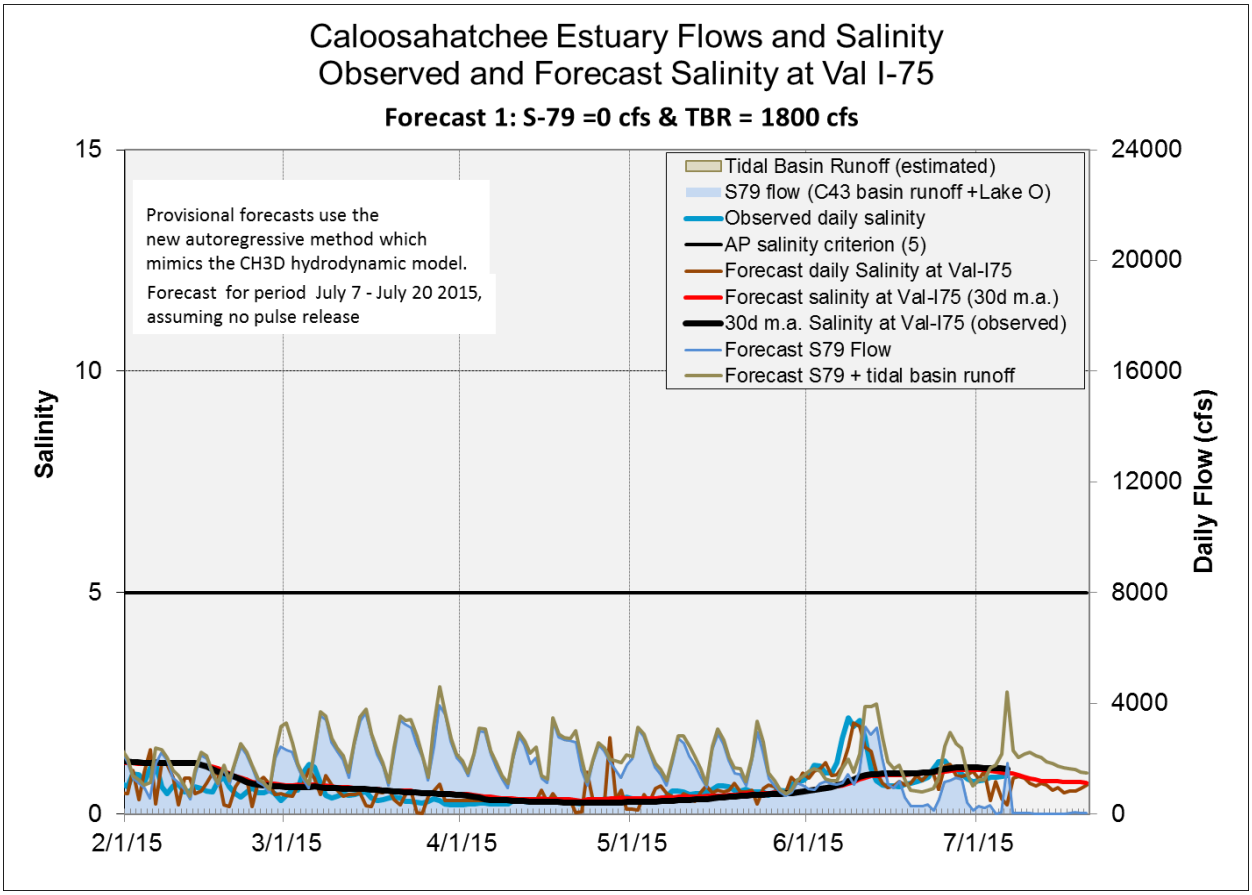


Figure 10. Two-Week Salinity Forecast for Caloosahatchee Val I-75 location assuming 0 cfs flow from S-79 and minor rainfall events within the watershed.

GREATER EVERGLADES

Rainfall was moderate with basin averages ranging from 0.27" to 0.86". Stages continued to decrease through most of the WCAs and northern Everglades National Park (ENP). Pan evaporation was 1.31", 10% below the 1.45" pre-project average.

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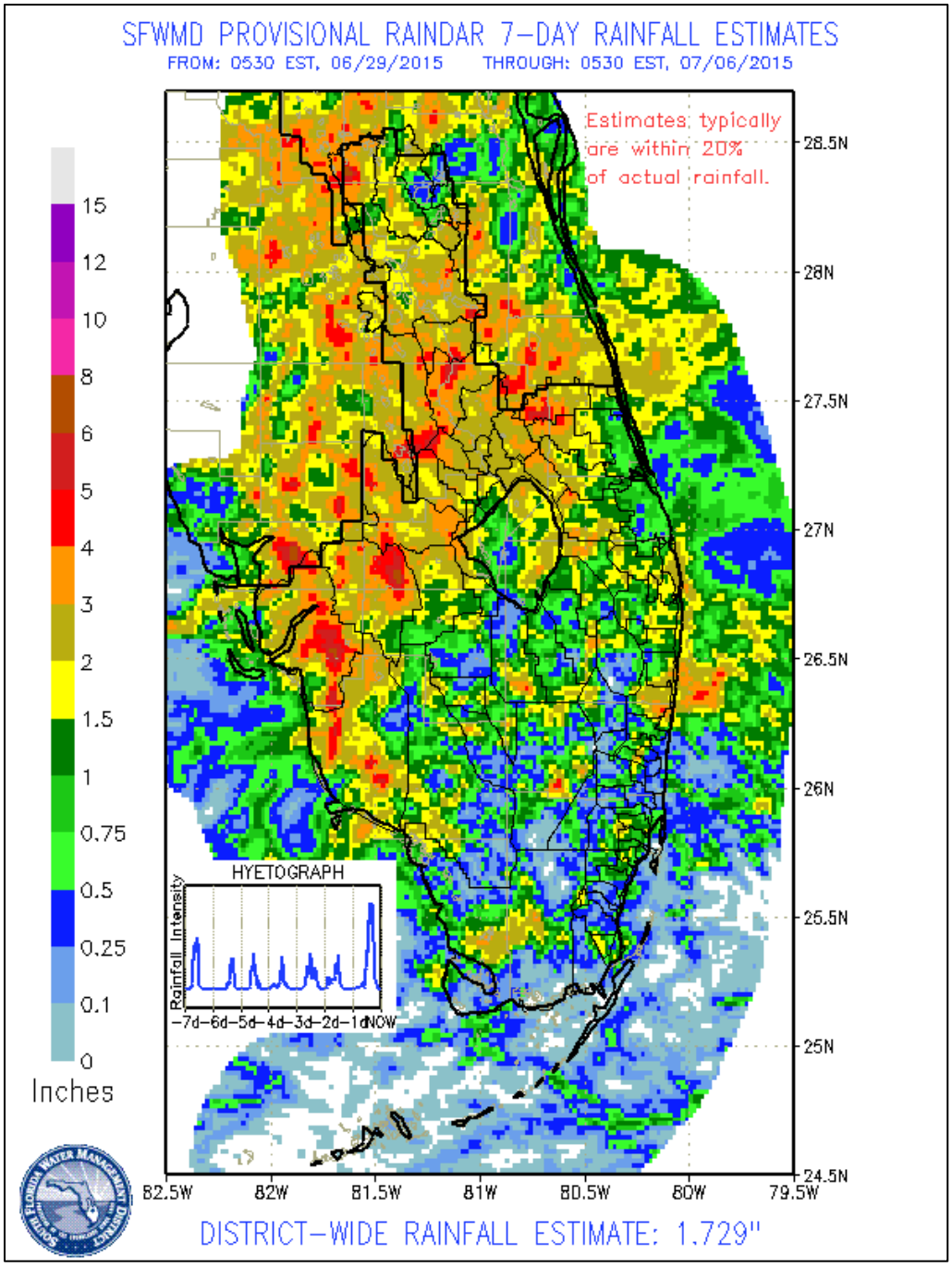
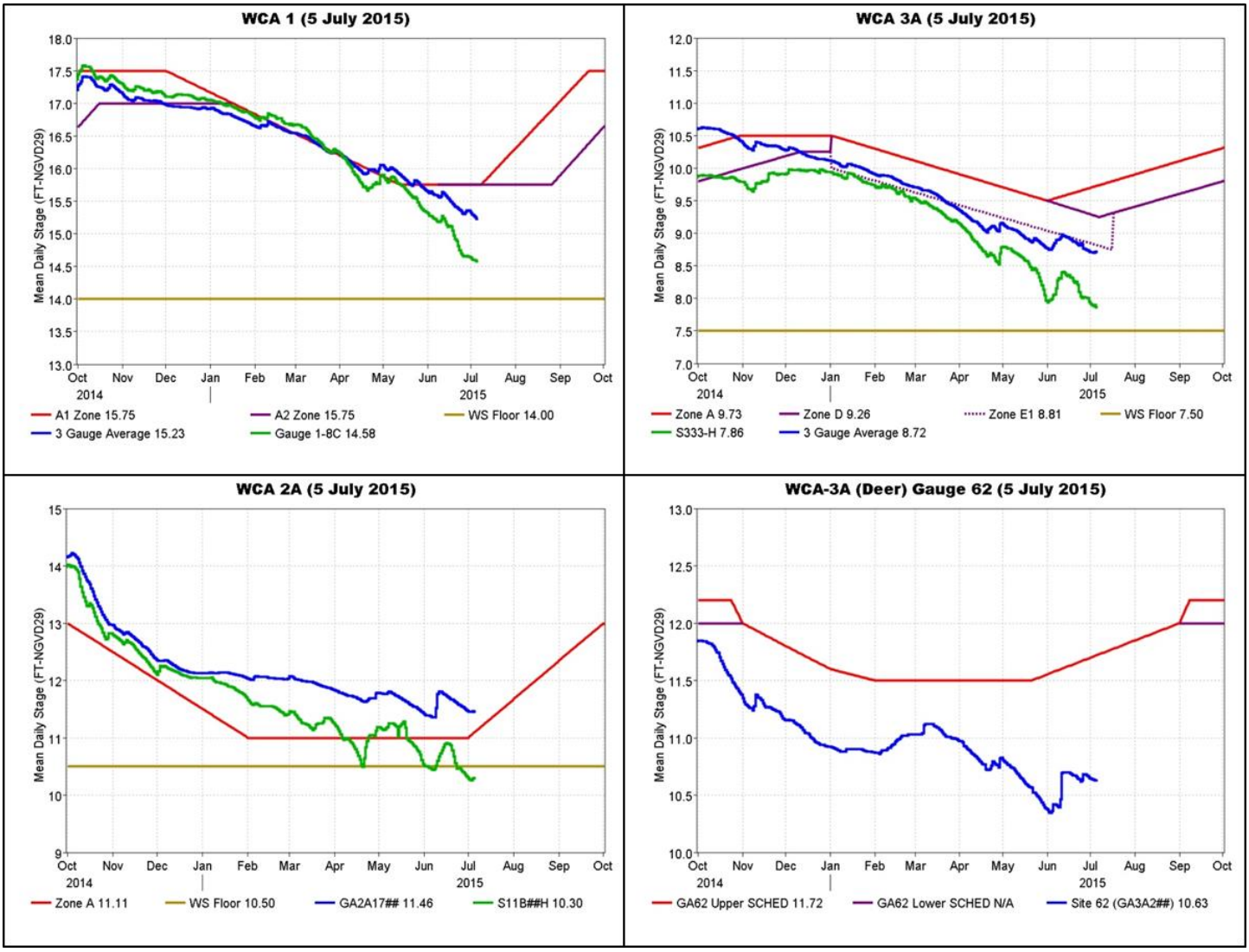
Everglades Region	Rainfall (Inches)	Stage Change (feet)
WCA-1	0.75	-0.15
WCA-2A	0.80	-0.07
WCA-2B	0.27	-0.40
WCA-3A	0.86	-0.04
WCA-3B	0.46	-0.13
ENP	0.73	-0.32



Regulation Schedules: Stages fell slightly at gauges used for the regulation schedules. In WCA-1, the three gauge average in the wetlands decreased to 0.52 feet below regulation. The WCA-2A decreased to 0.35 feet above schedule, and the regulation level is in the period where it increases. In WCA-3A, the three gauge average wetlands stage has declined to 0.09 feet under Zone E1. The water level at the northwestern WCA-3A gauge stage (gauge 62) decreased and is 1.09 feet below the upper regulation schedule.

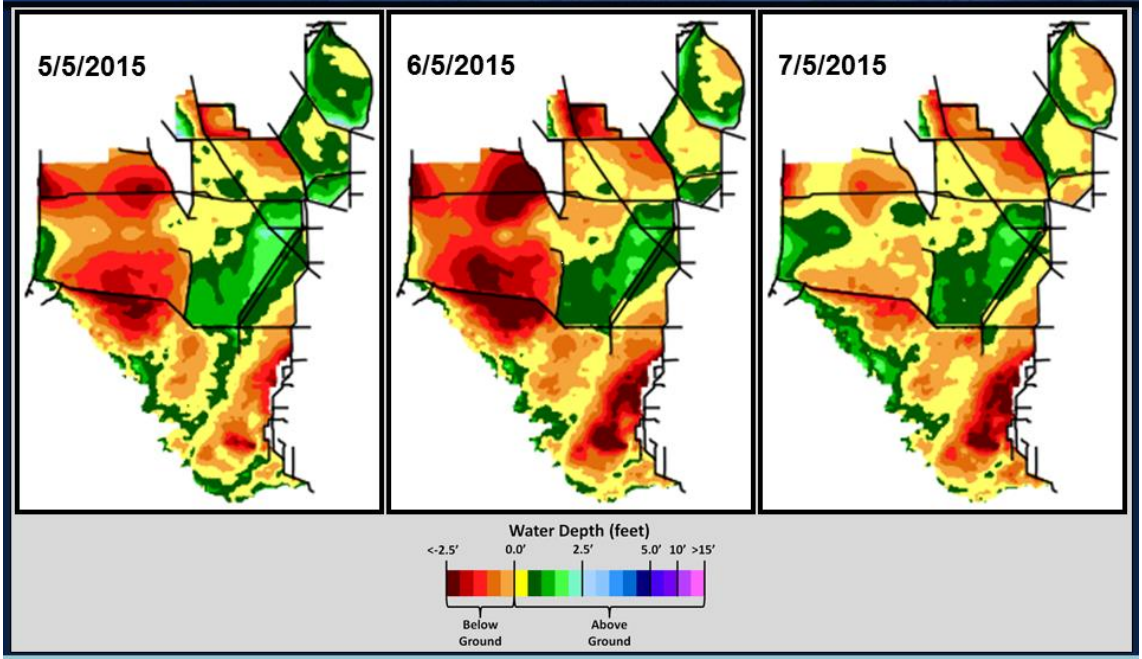


Water Depths and Changes: Normally by late June, water levels are significantly higher than in May. However, excluding Big Cypress Preserve and northwestern ENP, water levels are similar to a month ago with most differences being less than 0.5 feet. The lack of sufficient rainfall has produced relatively low water levels well into the wet season. Water depths at the monitored gauges range from -0.54 feet in northeastern WCA-3A to 1.05 feet in southern WCA-3A.

Stages are mixed relative to last week and last month, but are mostly drier than a year ago. Compared to a week ago, Holey Land Wildlife Management Area and Rotenberger Wildlife Management Area are wetter. Compared to a month ago, northwestern ENP and Big Cypress and 1 to 2 feet wetter.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

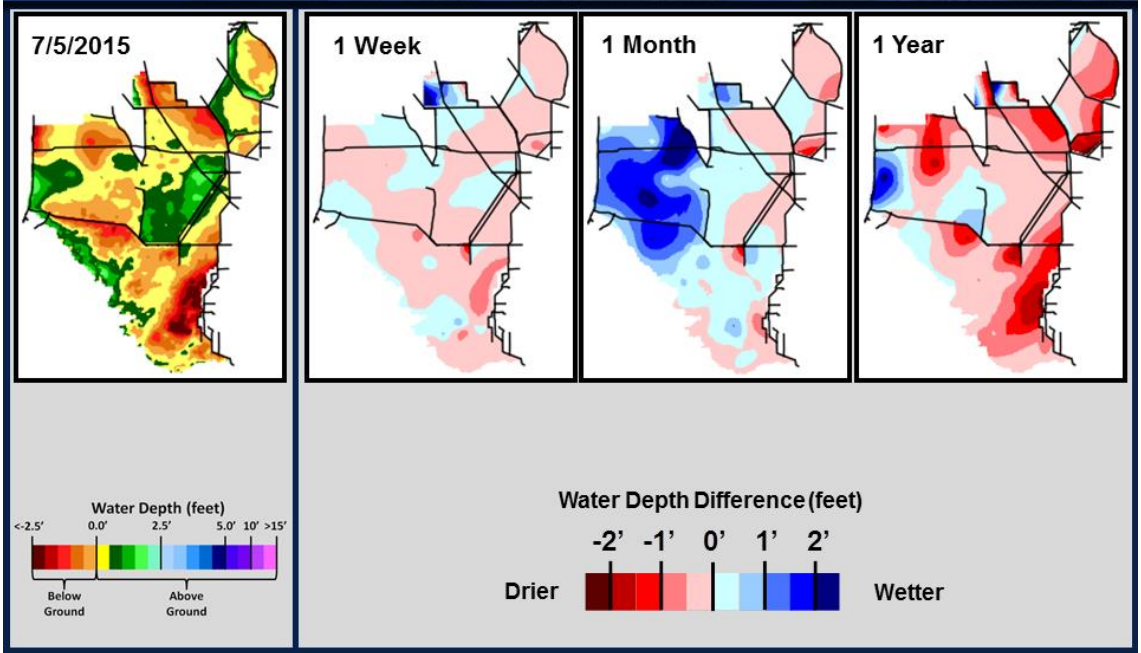
SFWDAT Water Depth Monthly Snapshots



South Florida Water Depth Assessment Tool (SFWDAT)

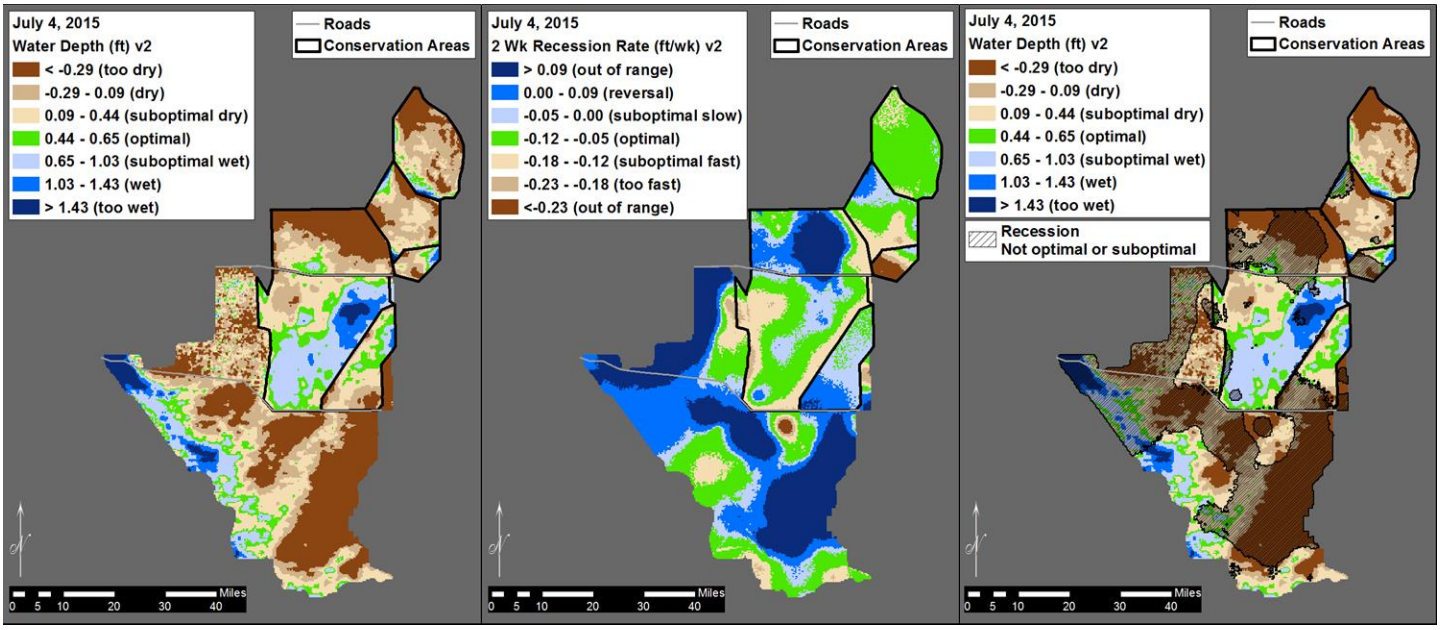
SOUTH FLORIDA WATER MANAGEMENT DISTRICT

SFWDAT Everglades Difference Maps (Present – Past)



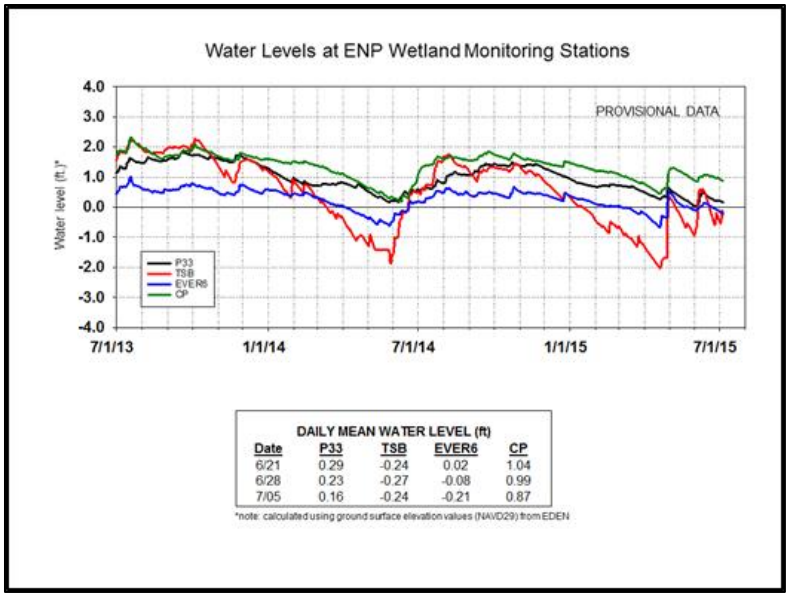
South Florida Water Depth Assessment Tool (SFWDAT)

Wading birds and endangered species: The wading bird surveys have finished for the year, and most breeding has been completed. Foraging conditions in WCA-3A and 3B remain good.



Cape Sable Seaside Sparrow: Due to helicopter difficulties, no update on the existing nest in Subpopulation A was available. Subpopulation B still had eight monitored nests (five with eggs, three with nestlings) as of July 3, after a ninth nest successfully fledged on July 1. Subpopulation D still has one nest active with nestlings as of July 2. This is the pair's third nesting attempt; the second attempt was lost to predation.

Everglades National Park (ENP) and Florida Bay: Water levels are still falling. Heavy rain in Northern Taylor Slough on Friday managed to elevate water levels there, but water levels are still below ground throughout most of Taylor Slough. Compared to the long term averages, which are rising at this time of year, water levels are 14 inches lower than average in northern Taylor Slough and around five to six inches lower than average in southern Taylor Slough and the ENP panhandle.



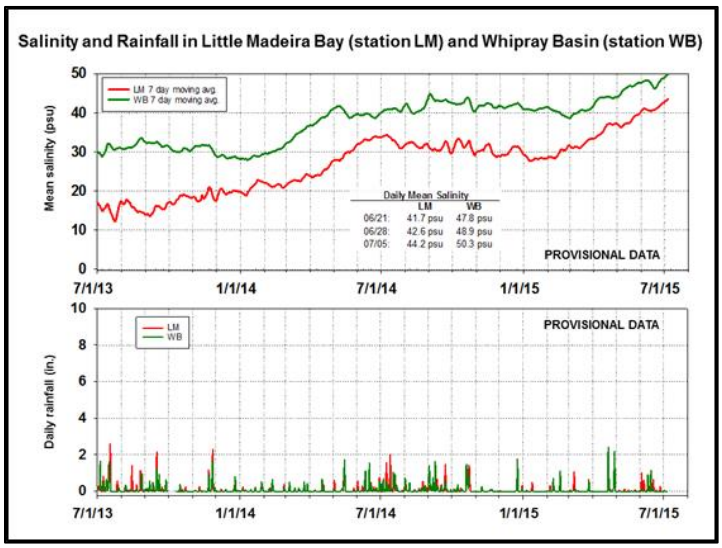
DAILY MEAN WATER LEVEL (ft)

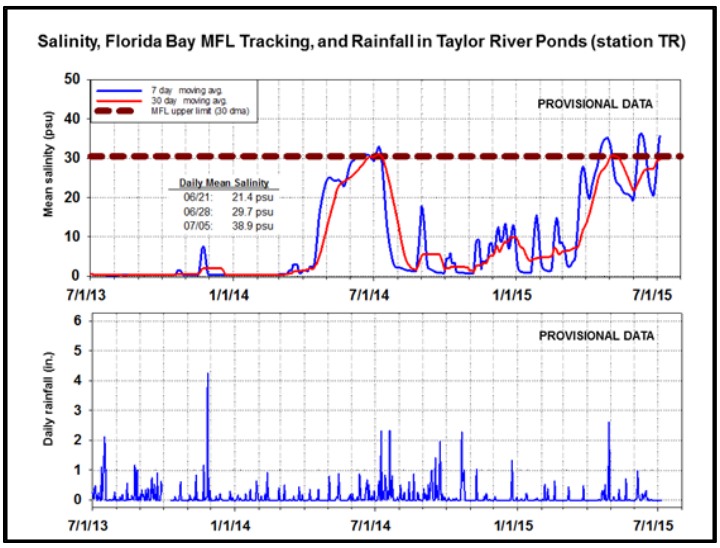
Date	P33	TSB	EVER6	CP
6/21	0.29	-0.24	0.02	1.04
6/28	0.23	-0.27	-0.08	0.99
7/05	0.16	-0.24	-0.21	0.87

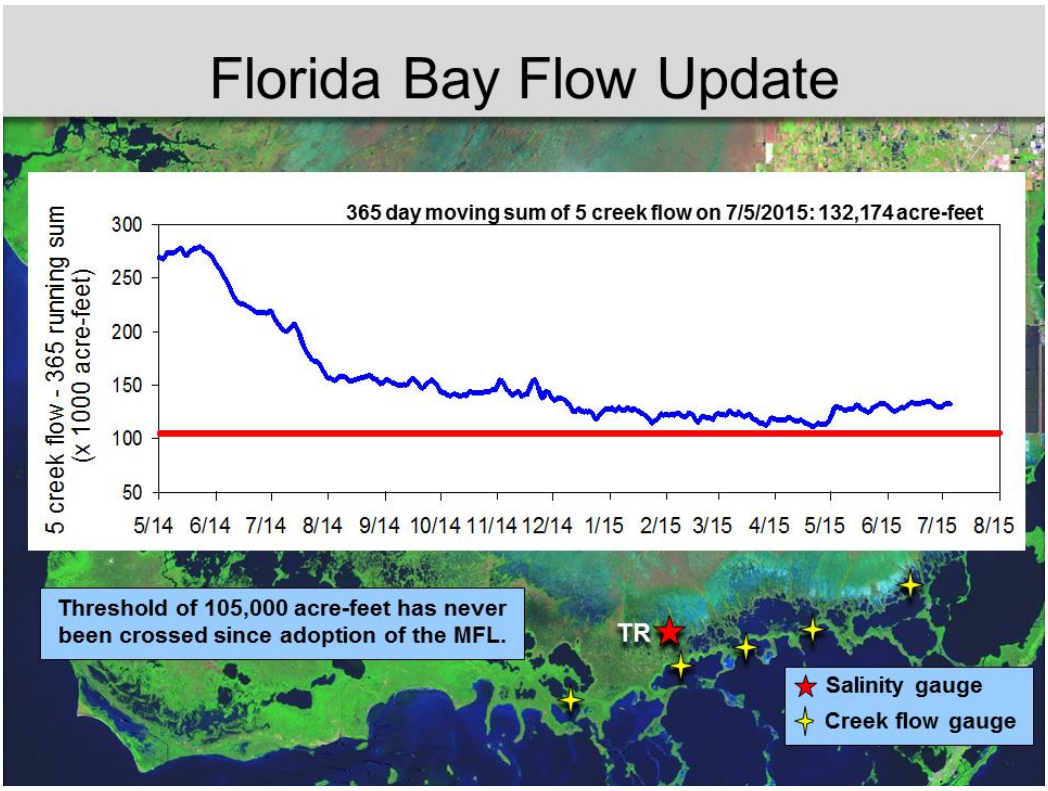
*note: calculated using ground surface elevation values (NAVD29) from EDEN

Salinities in Florida Bay remain elevated and are 12-26 psu above average for this time of year and the Florida Bay nearshore embayments are still 40 psu or greater. The station at Taylor River Pond (TR) experienced the largest increase in salinity bringing the daily average salinity up to 38.9 psu. All of the Florida Bay stations experienced an increase in salinity over the last week when salinities are expected to be decreasing. The 30-day moving average at TR rose to 29.7 psu.

The 365-day running sum of the cumulative flow from the five creeks feeding Florida Bay increased slightly to 132,174 acre-feet.







<u>Water management recommendations</u>:

- We recommend targeting ascension rates of up to 0.25 feet/week (or 0.5 feet per 14 days to allow for large rain events) for the wet season to meet the end of wet season stage targets for environmental needs (prey species support, peat and plant community needs).

- We continue to recommend releases into northeastern WCA-3A while conditions are very dry. Once water levels rise above ground, additional releases should no longer be needed.

- To protect the breeding Cape Sable Seaside Sparrows in Subpopulation A, S-12A and S-12B should remain closed until all breeding is complete. The single breeding pair in Subpopulation D has produced a third nest with nestlings.

Site-specific recommendations appear in the summary table below. The recommendations include revised targets for the wet season given the current dry condition. The red text represents new or modified information or recommendations.

Summary of Everglades Recommendations, July 7, 2015 (SFWMD) (red is new text)

Area	Current Condition	Cause(s)	Recommendation	Reasons
WCA-1	Stages changed -0.2' to -0.1'	Rainfall, ET, management	Follow WRS, targeting rainfall driven marsh stages at the top of Zone A2. Ascension rates up to 0.25 ft/wk, or 0.5 ft/14 days, are recommended.	Promote native habitat and maintain wetland plant communities. Moderate ascension rates to protect habitats and sensitive species, but also to allow taking advantage of rain events.
WCA-2A	Stage decreased -0.07'	Rainfall, ET, management	Ascension rates up to 0.25 ft/wk, or 0.5 ft/14 days, are recommended. High season target stage of 13 ft NGVD at 2-17 on Oct 1	Promote native habitat and maintain wetland plant communities. Moderate ascension rates to protect habitats and sensitive species, but also to allow taking advantage of rain events.
WCA-2B	Stages decreased -0.4'; Gauge EDEN-13 is offline	Rainfall, ET, management	Ascension rates up to 0.25 ft/wk, or 0.5 ft/14 days, are recommended.	High stages preclude wading bird use, but provide good habitat for ducks.
WCA-3A NE	Stage decreased -0.09'; gauge 63 is -0.54' below ground	Rainfall, ET, management	Releases into far NE and NW 3A are strongly recommended to protect peat and wetland ecosystems until water levels are above ground again. Average water stage of gauges 62 and 63 should remain under 11.60 feet. Ascension rates up to 0.25 ft/wk, or 0.5 ft/14 days, are recommended.	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 -0.05'	Rainfall, ET, management		
Central WCA-3A S	Stage increased 0.12'	Rainfall, ET, management	Manage 3AVG in Zone A until Aug 15 or as long as possible. Target wet season high stages (10.67 3AVG) by Oct 30. Ascension rates up to 0.25 ft/wk, or 0.5 ft/14 days, are recommended.	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. Also to facilitate avoiding or minimizing discharge through S-12A and S-12B at least through August 15 and as long as possible to benefit Cape Sable seaside sparrow nesting and habitat conditions.
Southern WCA-3A S	Stage decreased -0.13'	Rainfall, ET, management		
WCA-3B	Stages decreased -0.28' to -0.04'	Rainfall, ET, management	Ascension rates up to 0.25 ft/wk, or 0.5 ft/14 days, are recommended.	Promote native habitat and maintain wetland plant communities. Provide foraging habitat for wading birds.
ENP-SRS	Stage decreased -0.32' to -0.28' below ground again	ET, rainfall, topography, management	Discharges to the Park should be made in accordance 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 continues. Some nest depredation is occurring.	Rainfall, ET, management	Follow ERTP schedule closures and closure plan for Frog Pond and Aerojet structures, and continue to monitor trigger levels. Manage 332 B, C, and D impoundments to avoid exacerbating above ground level water levels in adjoining marsh areas with sparrow breeding. Extend gate closures for S-12A and S-12B until end of nesting.	**Provide habitat and adequate nesting conditions for CSSS.**
Taylor Slough	Dry. 5-14 inches below average	Rain, ET, inflows	Move water southward as possible	Provide freshwater buffer for ecosystems and freshen saline conditions downstream
FB- Salinity	Still 12-26 psu above average	Rain, ET, inflows, wind.	Move water southward as possible	Southward flows are still needed to reverse/slow salinity increases