Disclaimer: Information contained in the report addresses environmental conditions only and is not the official South Florida Water Management District operations recommendation or decision.

M E M O R A N D U M

TO: John Mitnik, Chief, Operations, Engineering and Construction Bureau
Paul Linton, Chief, Operations Section

FROM: SFWMD Staff Environmental Advisory Team

DATE: July 25, 2017

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Weather Conditions and Forecast

Some scattered shower activity south and southeast this morning should shift inland and west with daytime heating. Steering winds should focus heaviest activity over western areas this afternoon. An upper level low is forecast to develop near central Cuba Wednesday and drift westward Thursday and Friday. This upper level low should bring some instability to the area and steering winds should focus scattered afternoon thunderstorms west and north Wednesday and Thursday with some shower activity persisting Wednesday night near the southern coast. Westerly winds are expected to return to the District and focus afternoon thunderstorm activity over the interior and east Friday and Saturday. Beyond that, a trough is forecast to push into north Florida by the end of the weekend and increase daily thunderstorm activity each day Sunday through Wednesday.

Kissimmee

On Sunday, stage was 0.1 feet above regulation schedule in East Lake Toho and Lake Toho, and 0.3 feet below schedule in Kissimmee-Cypress-Hatchineha (KCH). Over the past week, discharges averaged 342 cfs at S65, 638 cfs at S65A, and 1236 cfs at S65E. Tuesday morning stages and departures from schedule were 56.5 feet NGVD (at schedule) in East Lake Toho, 53.6 feet NGVD (0.1 feet above schedule) in Toho, and 50.9 feet NGVD (0.1 feet below schedule) in KCH; S65A headwater stage was 46.2 feet NGVD. Tuesday morning discharges were 338 cfs at S65, 818 cfs at S65A, and 1,343 cfs at S65E. Dissolved oxygen concentration in the Kissimmee River averaged 1.8 mg/L for the week. Kissimmee River mean floodplain depth on Sunday was 0.68 feet. Recommendations: (7/25/2017) Hold current discharge at S65A, adjusting S65 discharge to maintain current flow to the Kissimmee River.

Lake Okeechobee

Lake stage is 12.70 feet NGVD having increased by 0.14 feet over the past week and 0.44 feet over the past month. Ascension rates over the past month have moderated from the rapid rise in stage that occurred throughout most of June. Conditions continue to be favorable for algal blooms in the central and northern portions of the Lake based on satellite imagery from mid-July, with the first blooms and microcystin detections reported in late June's water quality samples.

Estuaries

Total discharge to the St. Lucie estuary averaged 1,294 cfs over the past week with no Lake Okeechobee releases. Salinities were about the same compared to last week. The seven-day average salinity at the US1 Bridge is now in the good range for adult oysters. Total inflow to the Caloosahatchee estuary averaged 3,870 cfs over the past week with no Lake releases. The 30-day average surface salinity at the Ft. Myers monitoring station is 0.6 and 0.3 at Val I-75. The 30-day average salinity at

ValI-75 is forecast to be 0.4 in two weeks with no flow coming through S-79. Salinity conditions between Val I-75 and Ft. Myers are good for tapegrass. Salinity conditions are in the fair range for adult oysters at the Cape Coral Bridge and in the good range at Shellpoint and the Sanibel Causeway.

Stormwater Treatment Areas

Over the past week, the STAs/FEBs did not receive Lake releases. The total amount of Lake releases sent to the STAs/FEBs in WY2018 (since May 1, 2017) is approximately 16,400 acre-feet. Most STA cells are at or above target depths. Operational restrictions are in place for vegetation rehabilitation in STA-1E. The nest of an Endangered Species Act protected species has been observed in STA-1E and STA-5/6. Due to last month's basin runoff, it is recommended that no Lake releases be sent to the STAs/FEBs this week.

Everglades

Water levels remain elevated in all WCAs, ranging from 0.2 to 1.8 feet above schedule. WCA–3A receives some relief from high water conditions as depths drop in the northern part of that basin, however the southern end (gauge 65) continues to increase in depth. Keeping depths below 2.5 feet at gauge 65 is important to moderate the stress to tree islands caused by flooding when durations last longer than 60-90 days. Depth on July 23 at that location was 3.42 feet, and had exceeded 2.5 feet for 38 days.

Supporting Information

KISSIMMEE BASIN

Kissimmee Basin Rainfall

The Upper Kissimmee Basin received 3.98 inches of rainfall in the past week and the Lower Basin received 2.07 inches (SFWMD Daily Rainfall Report 7/24/2017).

Upper Kissimmee Basin

Stages and departures in the Kissimmee Chain of Lakes (KCOL) are shown in Table1.

Table 1. Departures from KCOL flood regulation (F) or temporary schedules (T, A, or S) (feet NGVD). Discharge and stage data are provisional real-time data from SFWMD OASyS DualTrend; reported values are averages through midnight of the Sunday prior to the report date unless otherwise specified.

Report Date: **7/25/2017**

Water Body	Structure/Site	Discharge (cfs), week's average**	Stage Monitoring Site***	Lake Stage (feet)	Schedule*	Regulation (R) or Target (S or T) Stage (feet)	Daily Departure (feet)						
							7/23/17	7/16/17	7/9/17	7/2/17	6/25/17	6/18/17	6/11/17
Lakes Hart and Mary Jane	S62	85	LKMJ	59.9	R	60.0	-0.1	0.0	0.0	0.1	0.0	-0.1	0.1
Lakes Myrtle, Preston, and Joel	S57	28	S57	61.0	R	61.0	0.0	0.0	0.0	0.0	-0.1	0.0	-0.5
Alligator Chain	S60	41	ALLI	63.2	R	63.2	0.0	-0.5	-0.5	-0.4	-0.5	-0.6	-0.9
Lake Gentry	S63	25	LKGT	60.9	R	61.0	-0.1	-0.4	-0.6	-0.5	-0.7	-0.9	-1.2
East Lake Toho	S59	323	TOHOE	56.6	R	56.5	0.1	-0.4	-0.5	-0.5	-0.6	-0.5	-0.8
Lake Toho	S61	1597	TOHOW, S61	53.6	R	53.5	0.1	-0.1	-0.3	-0.3	-0.6	-0.5	-0.8
Lakes Kissimmee, Cypress, and Hatchineha	S65	342	KUB011, LKIS5B	50.7	R	51.0	-0.3	-1.1	-1.0	-1.0	-1.3	-1.6	-2.3

* T = temporary schedule, R = USACE flood control schedule, S = temporary snail kite schedule, A = projected ascension line, N/A= not applicable or data not available.

** Seven-day average of weighted daily means through Sunday midnight.

*** Names of in-lake monitoring sites and structures used to determine lake stage; if more than one site is listed, an average is reported.

DATA ARE PROVISIONAL

Lower Kissimmee Basin

Discharges and stages at Lower Basin structures are shown in Table 2. SFWDAT depth maps for the Phase I restoration area are shown in Figure 12. Kissimmee River floodplain stages at selected stations are shown in Figure 13.

Table 2. Mean weekly discharge at S-65x structures, and mean weekly Phase I area river channel dissolved oxygen and floodplain mean water depth. Discharge and stage data are provisional real-time data from SFWMD OASyS DualTrend; reported values are averages through midnight of the Sunday prior to the report date unless otherwise specified.

Report Date: **7/25/2017**

Metric	Location	Sunday's 1-day average	Weekly Average**									
			7/23/17	7/16/17	7/9/17	7/2/17	6/25/17	6/18/17	6/11/17	6/4/17	5/28/17	5/21/17
Discharge (cfs)	S-65	59	**342**	160	392	407	455	20	37	145	190	237
Discharge (cfs)	S-65A	671	**638**	575	393	564	1291	477	175	126	121	160
Discharge (cfs)	S-65D****	1303	**1236**	838	875	1715	1426	584	307	174	157	182
Discharge (cfs)	S-65E****	1412	**1321**	886	915	1698	1462	643	350	161	159	182
DO concentration (mg/L)***	Phase I river channel	1.9	**1.8**	3.3	3.3	0.7	0.5	3.5	5.2	7.2	7.9	7.7
Mean depth (feet)*	Phase I floodplain	0.68	**0.69**	0.46	0.37	1.00	0.90	0.27	0.13	0.05	0.05	0.05

* 1-day spatial average from South Florida Water Depth Assessment Tool (SFWDAT).

** Seven-day average of weighted daily means through Sunday midnight.

*** DO is the average for manual sondes at PC62 and PC33; telemetry sondes have been taken offline.

**** S-65D discharge combines discharge at S-65D, S-65DX1, and S-65DX2; S65E discharge combines S65E and S65EX1.

DATA ARE PROVISIONAL; N/A indicates that data were not available.

Water Management Recommendations

Kissimmee Basin Adaptive Recommendations and Operational Actions

Date	Recommendation	Purpose	Outcome	Source
7/25/2017	Hold current discharge at S65A, adjusting S65 discharge to maintain current flow to the Kissimmee River.	Maintain current S65A discharge.		SFWMD Water Mgt, KB Ops
7/23/2017	Increase S65A discharge slowly using Figure 8a toward the seasonal target of 1400 cfs. Hold at 1400 cfs while stage in KCH remains above 50 feet (+/- 0.2 foot).	Reduce current rapid rate of stage rise in KCH; provide Kissimmee River floodplain inundation if conditions stay wet.		KB Ops
7/16/2017	Reduce S65A flow to ~600-650 cfs. As Pool A runoff diminishes keep S65A around 650 +/- 50 cfs by increasing flow from S65.	Maintain moderate discharge to the Kissimmee River from S65A while maintaining S65A headwater within its operating range using flow from S65.	Implemented	SFWMD Water Mgt, KB Ops
7/6/2017	Hold 450 cfs at S65A due to reduced forecast.	Reduced-rainfall forecast led to decision to hold 450 cfs at S65A rather than continuing to ramp up.	Implemented	KB Ops
7/5/2017	Increase S65A flow by 150 cfs today to 450 cfs and by another 150 cfs tomorrow.	Control stage in KCH and Pool A in anticipation of forecast significant rainfall; begin discharge rampup in anticipation of forecast rainfall.	Implemented	KB Ops
6/28/2017	Reduce S65A discharge by a maximum of 150 cfs per day until 300 cfs is reached.	Allow KCH stage to rise before transitioning to 2017 Wet Season discharge plan; facilitate DO recovery in the Kissimmee River by reducing depth in the river channel.	Implemented	KB Ops
6/26/2017	Hold 800 cfs at S65A until further notice.	Maintain reduced discharge to allow stages in KRR project area to decline to facilitate DO recovery.	Implemented	KB Ops
6/22/2017	Reduce discharge by 150 cfs each day on Thursday 6/22, Friday 6/23, Saturday 6/24, and Sunday 6/25. After the Sunday reduction hold at approximately 800 cfs through Monday when new DO data should be available to help guide next steps.	Attempt to allow Kissimmee River dissolved oxygen concentration to rise.	Implemented	KB Ops
6/20/2017	Maintain 1400 cfs at S65A as KCH stage continues to rise. Supplement declining S65A basin runoff by increasing discharge at S65 as needed.	Transition from current operations to 2017 Wet Season discharge plan.	Implemented	KB Ops, SFWMD Water Management

KCOL Hydrographs (through Sunday midnight)

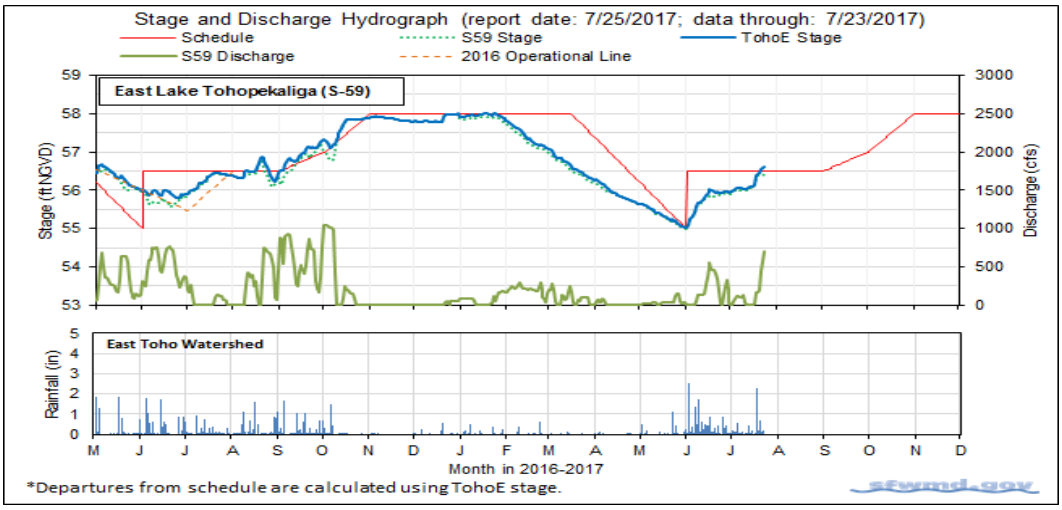


Figure 1.

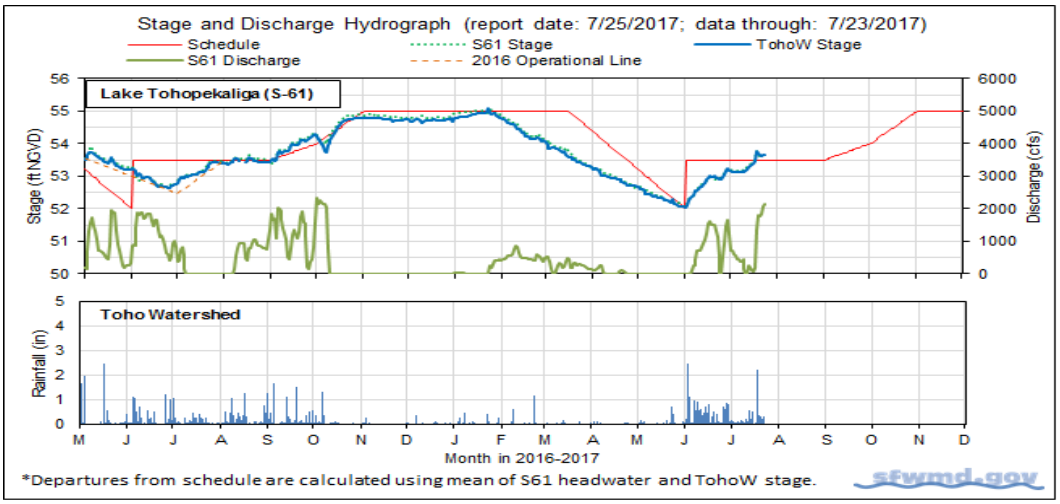


Figure 2.

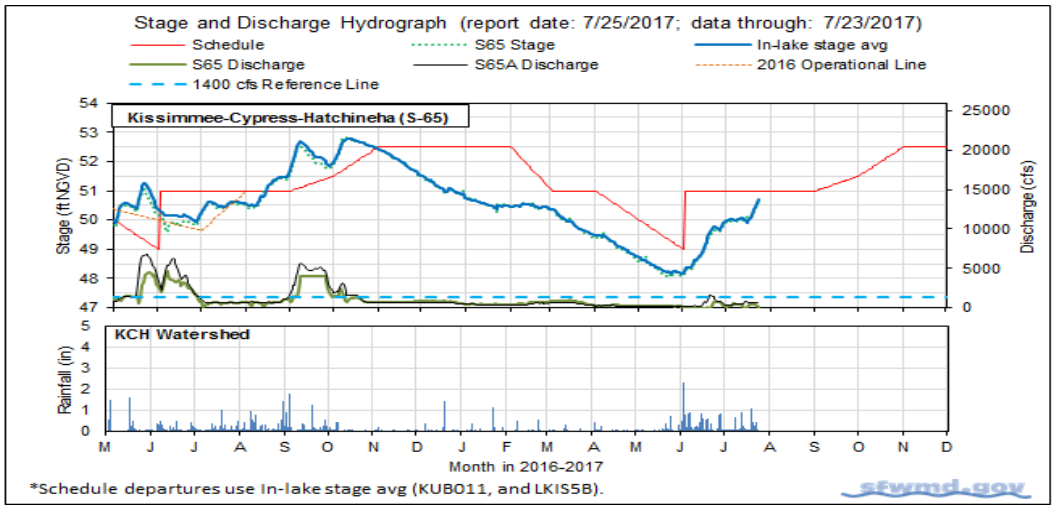


Figure 3.

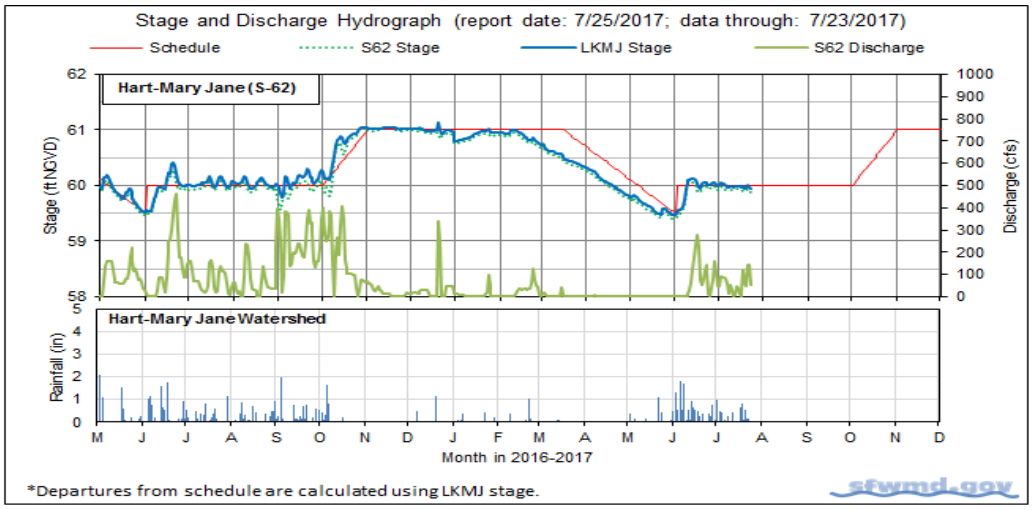


Figure 4.

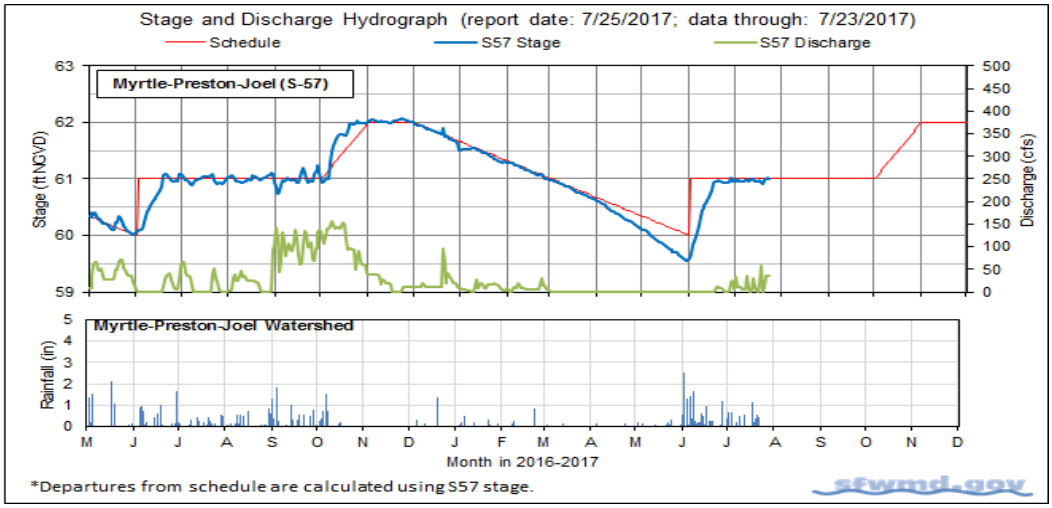


Figure 5.

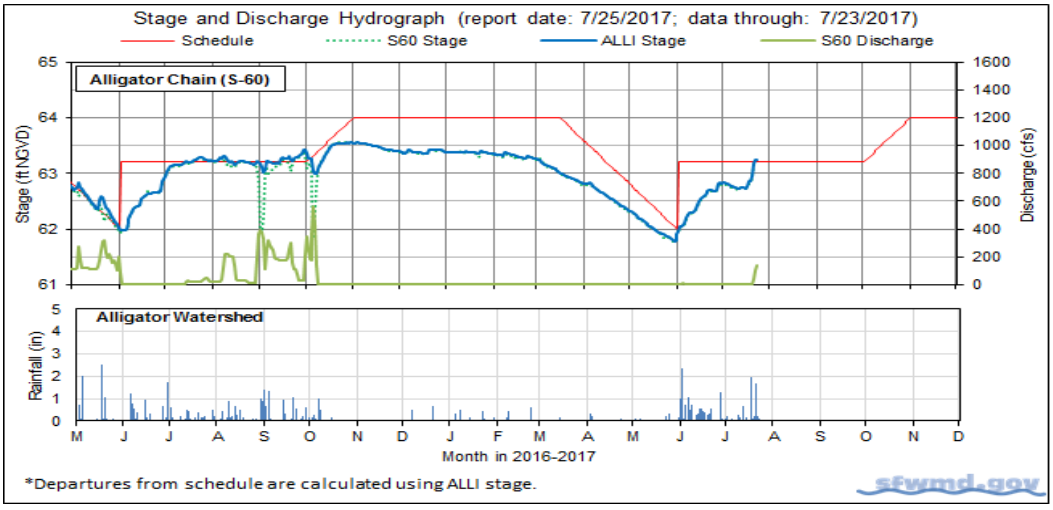
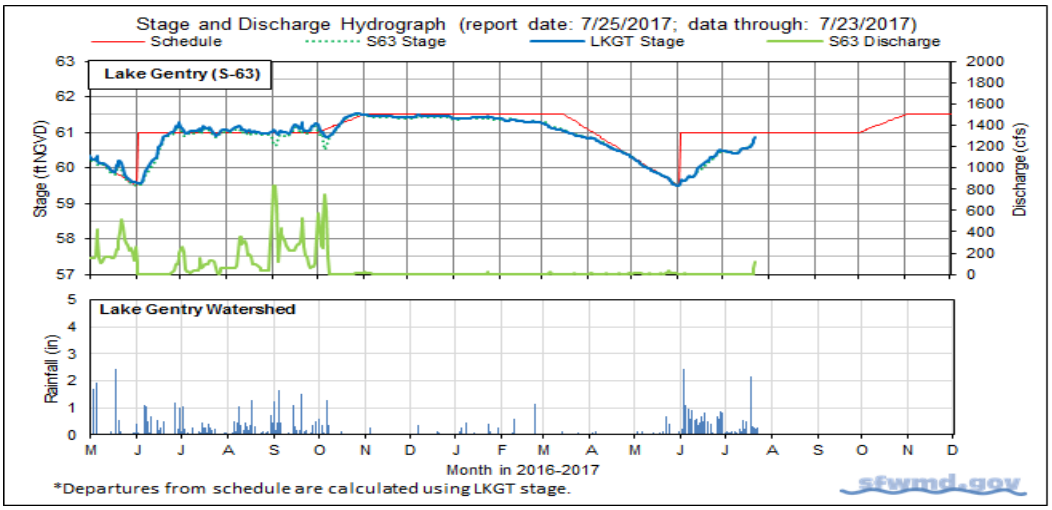


Figure 6.



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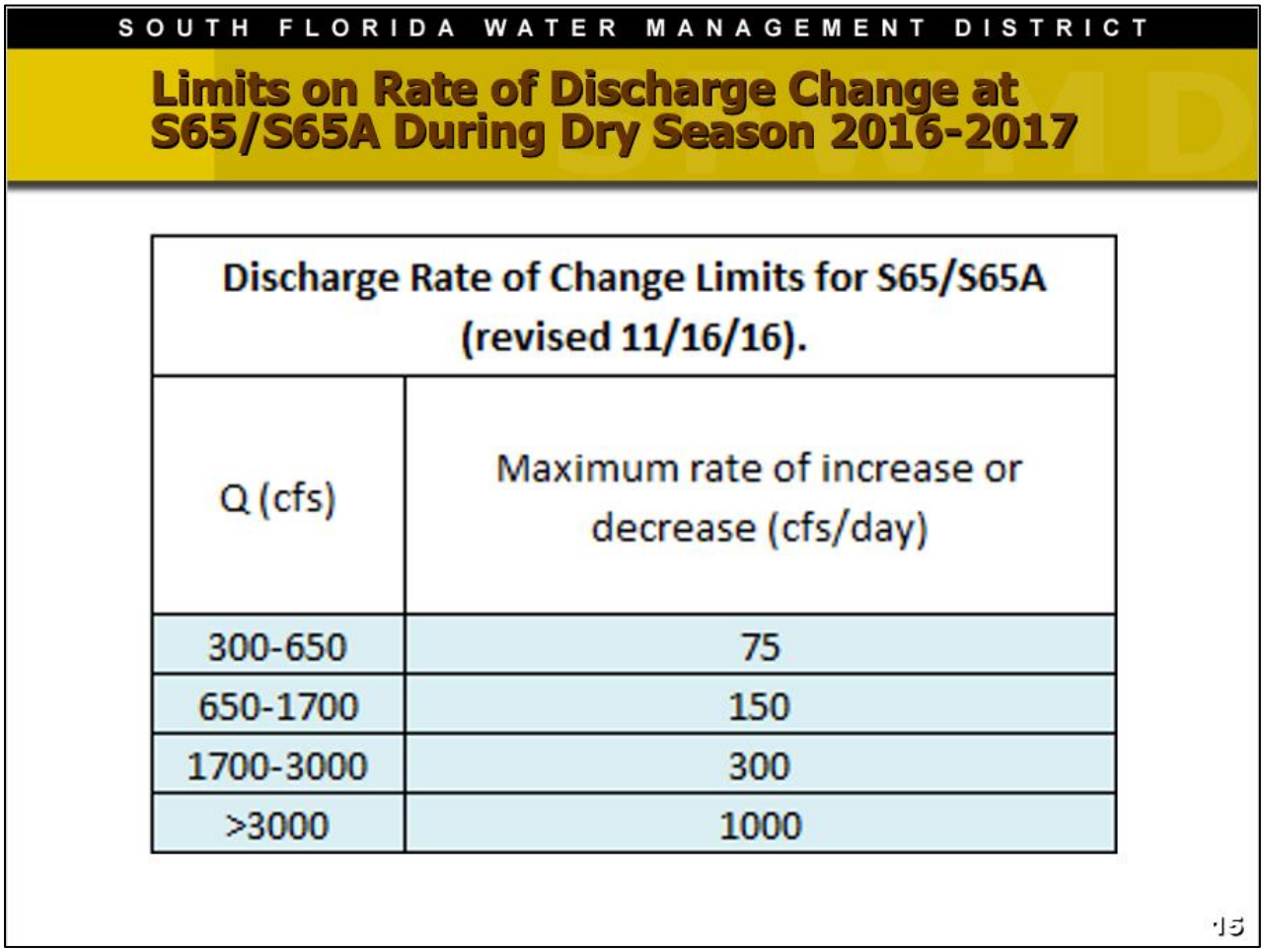


Figure 8. Limits on rate of discharge change at S65/S65A for the 2016-2017 Dry Season.

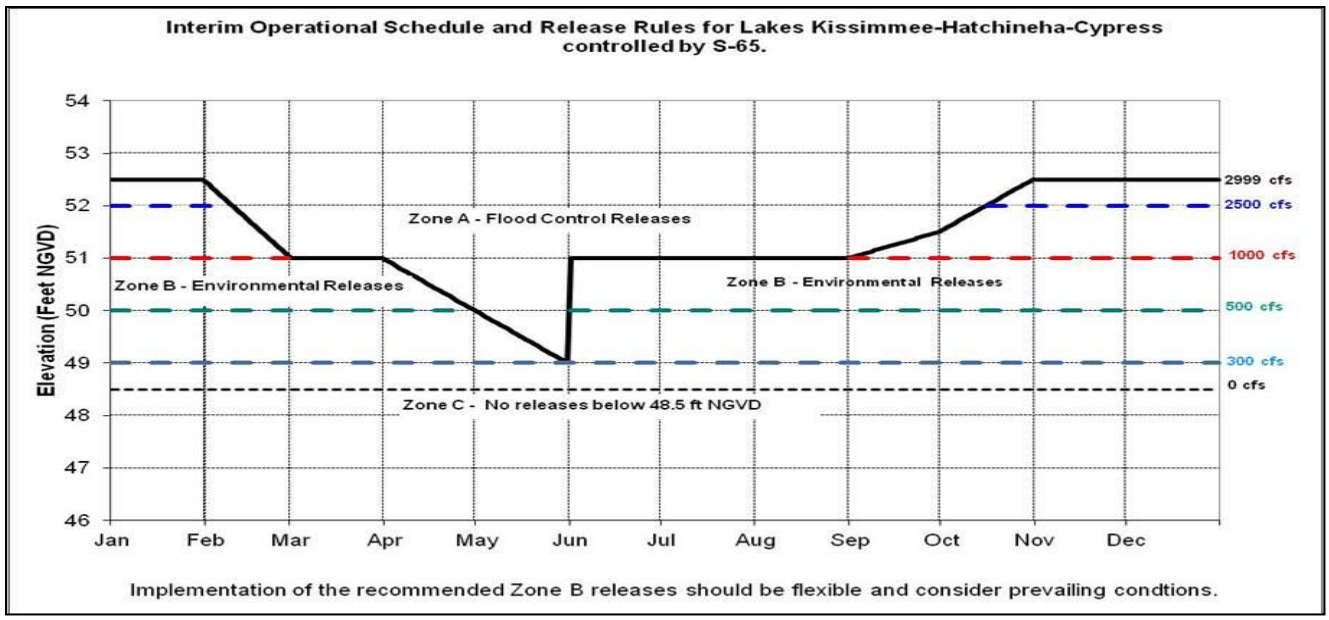
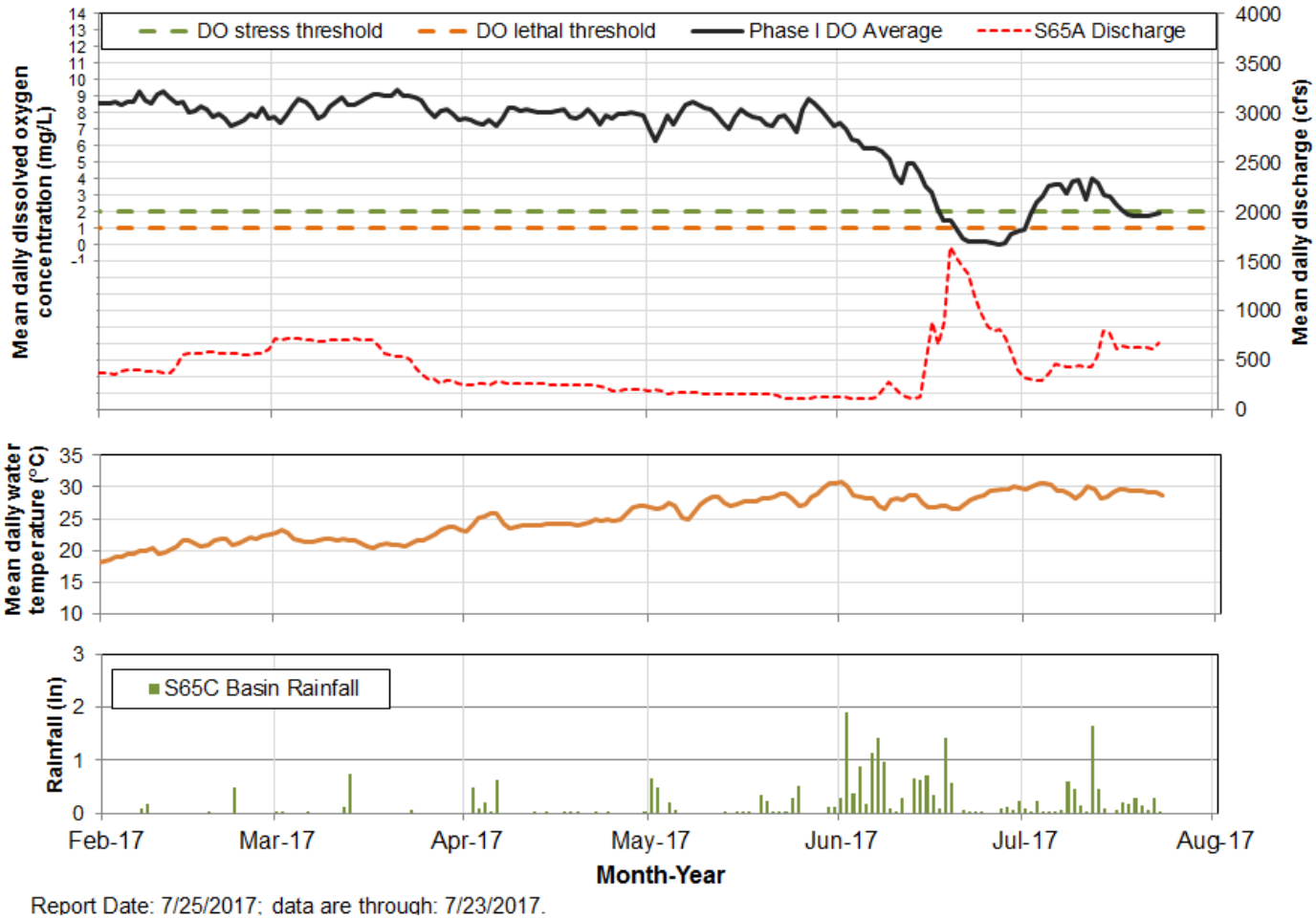


Figure 9. Interim operations schedule for S-65. The discharge schedule shown to the right has not been used in recent years or in Wet Season 2015.



Report Date: 7/25/2017; data are through: 7/23/2017.

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

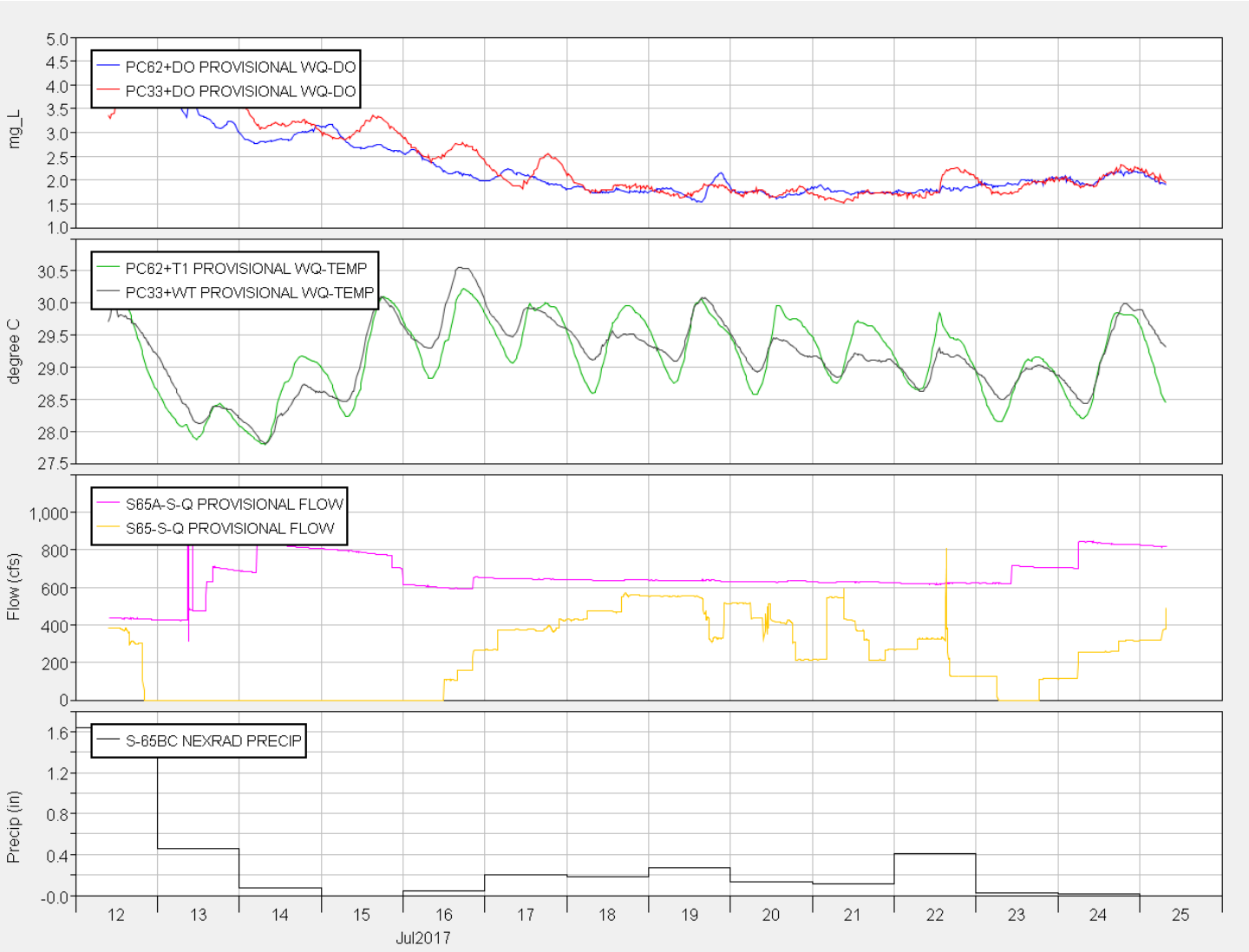


Figure 11. Phase I river channel dissolved oxygen and water temperature (measured at 15 minute intervals) and Pool BC daily rainfall.

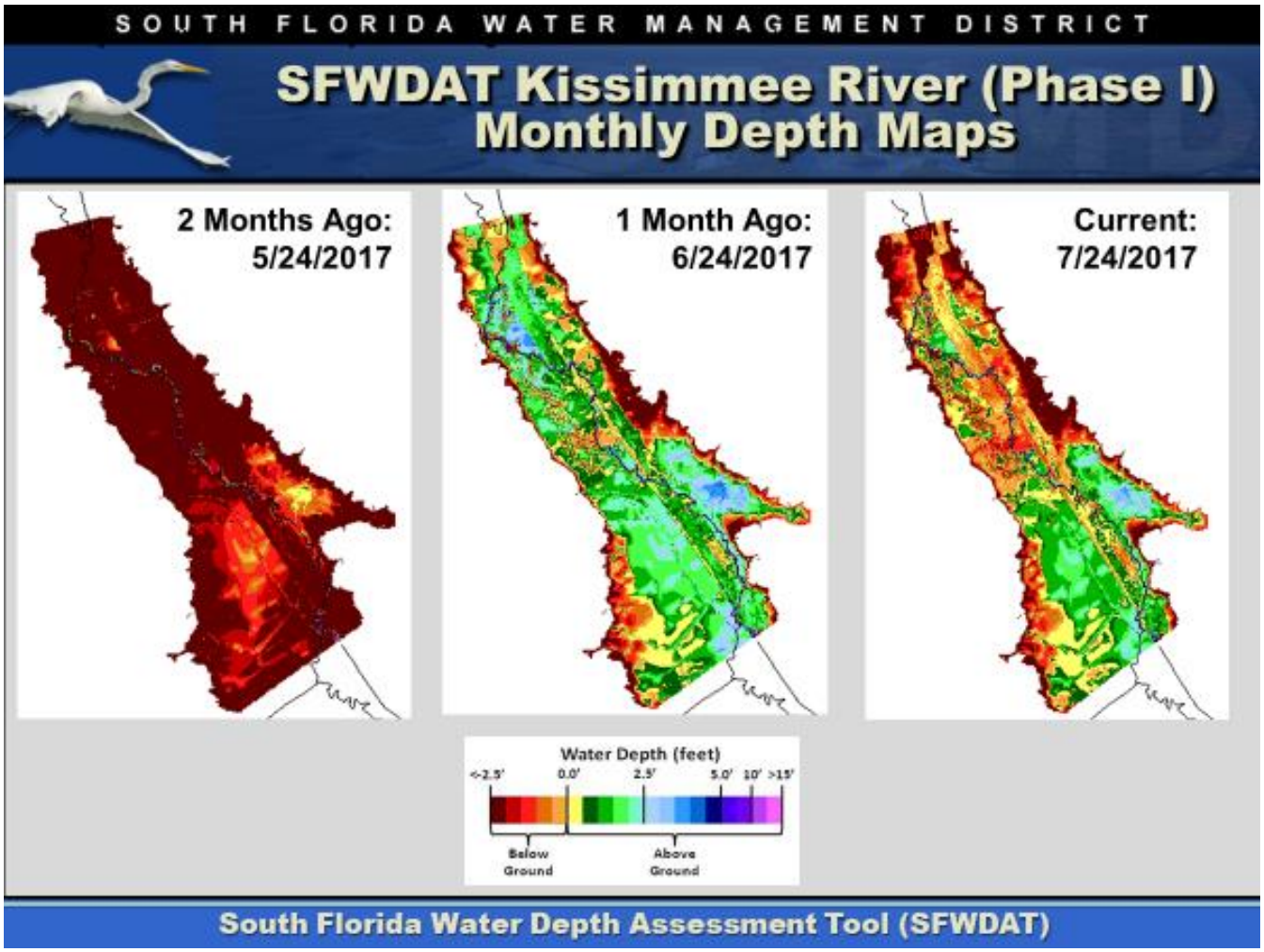
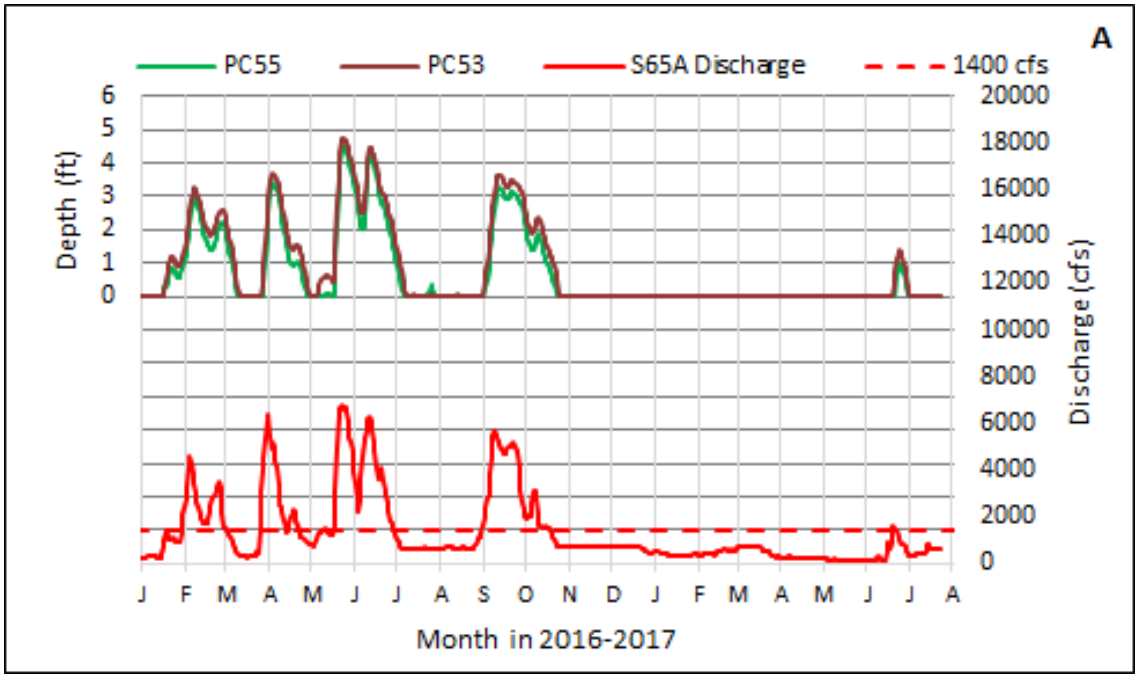
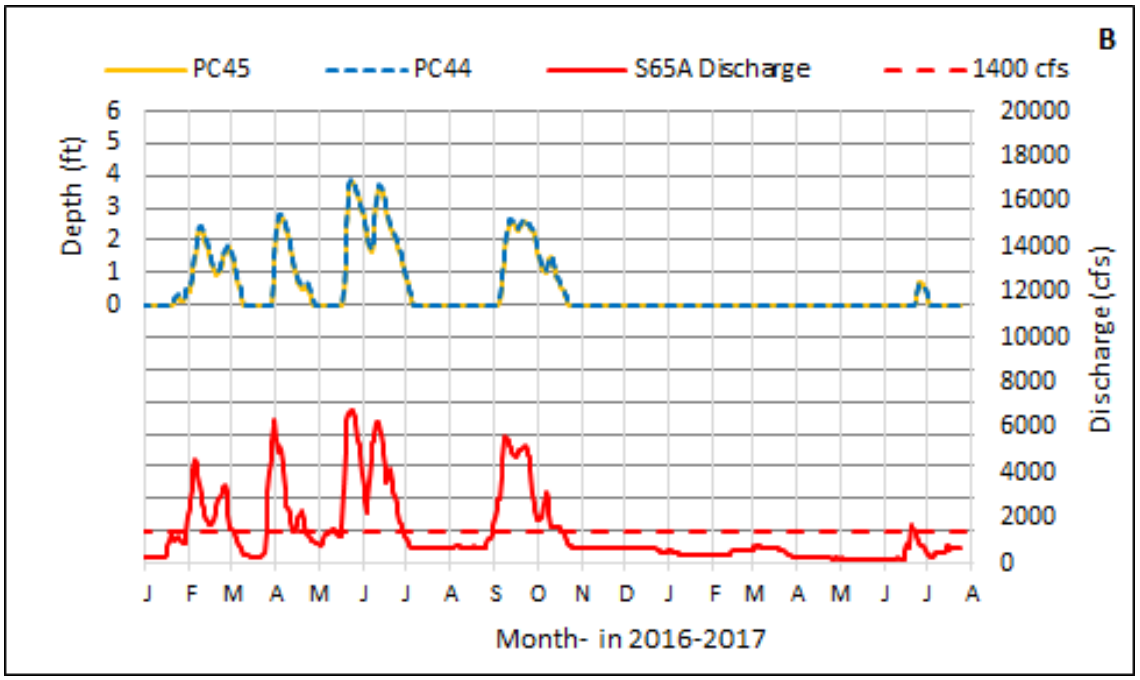


Figure 12. Phase I area floodplain water depths for this week, one month ago, and two months ago. Note that the WDAT color-coding has been modified to accommodate greater water depths; these maps are not directly comparable to Kissimmee Basin WDAT maps published prior to Jan. 16, 2012.





Insert. Water depth at selected northern Kissimmee River floodplain sites on (A) the PC5's transect and (B) the PC4's transect, with S65A discharge.

Kissimmee River Hydrographs

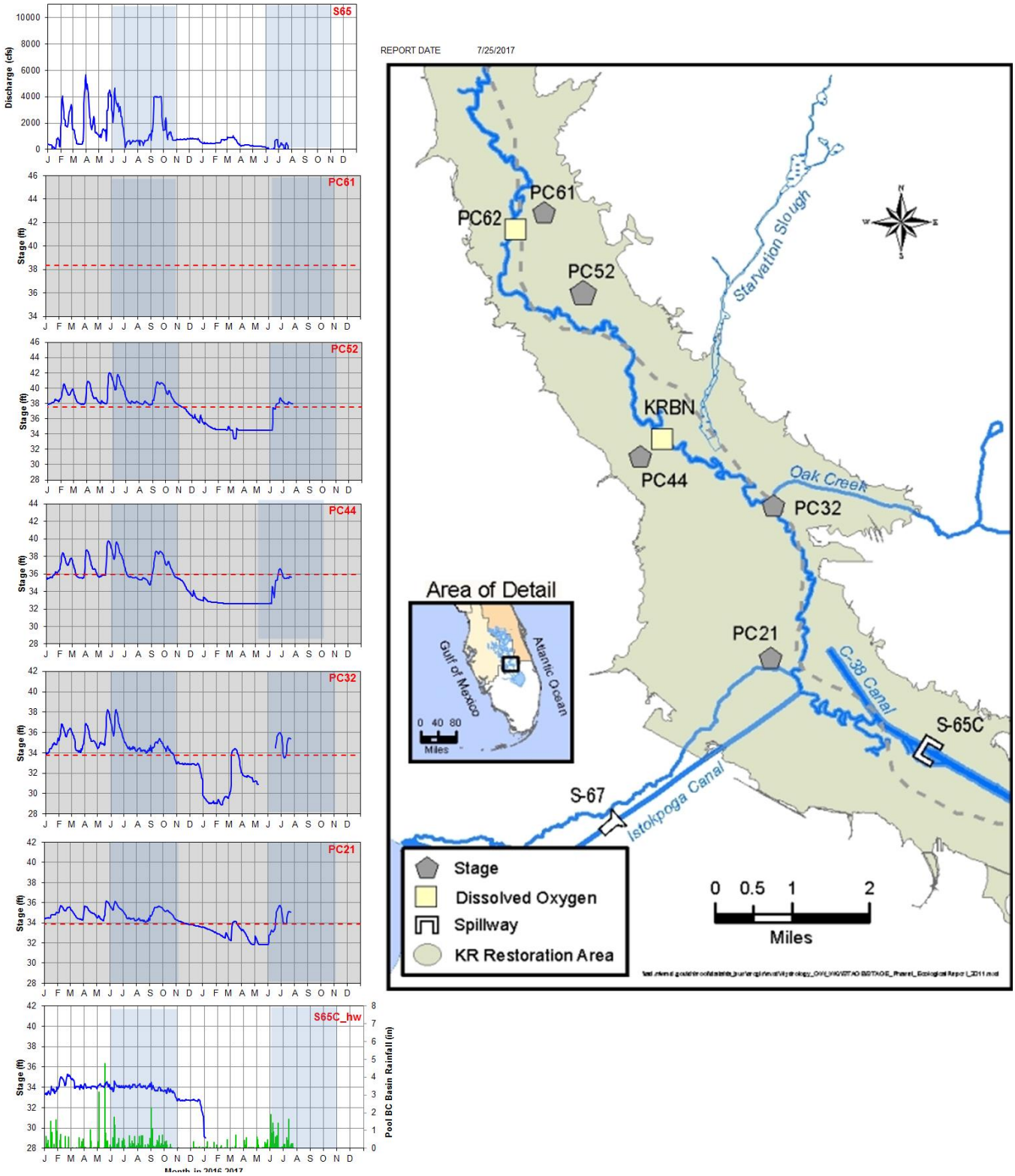


Figure 13. Discharge at S65, stages at five monitoring stations in the Phase I area of the Kissimmee River floodplain, and headwater stage at S65-C since January 1, 2015. The most recent data (~2 weeks) are provisional real-time data from SFWMD DualTrend; previous data are from SFWMD DB-HYDRO (validated).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

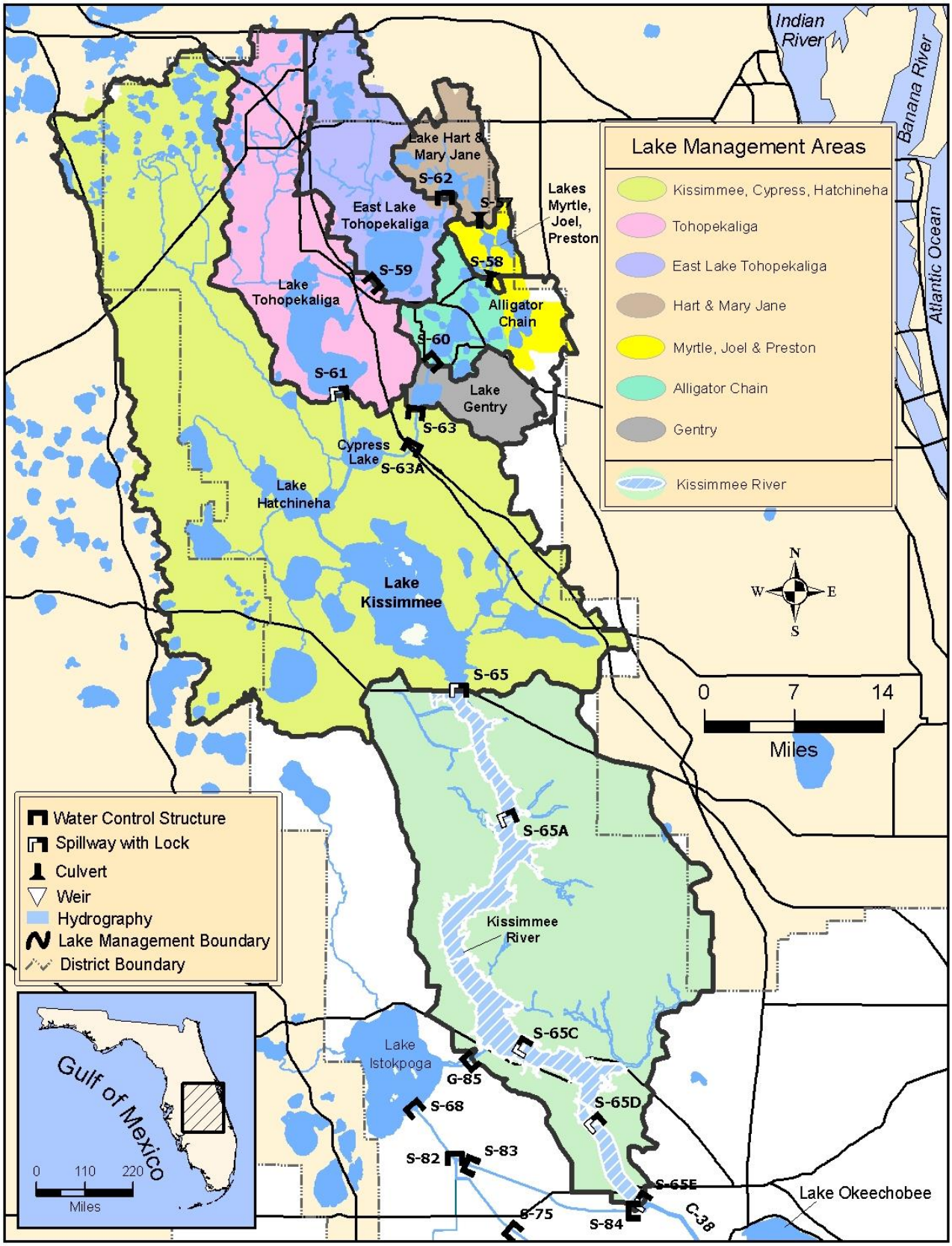


Figure 14. The Kissimmee Basin

LAKE OKEECHOBEE

According to the USACE web site, Lake Okeechobee stage is at 12.70 feet NGVD for the period ending at midnight on July 23, 2017. This value is based on the use of four interior Lake stations (L001, L005, L006 and LZ40) and four perimeter stations (S308, S352, S4 and S133). Lake stage increased by 0.14 feet over the past week and is 0.44 feet higher than it was a month ago and 1.97 feet lower than it was a year ago (Figure 1). The Lake is currently in the Base Flow sub-band (Figure 2). According to RAINDAR, 1.25 inches of rain fell directly over the Lake during the week July 17-23 (Figure 3). Most of the surrounding watershed had similar amounts of rainfall, particularly to the east and south of the Lake. The northern watersheds, however, were much wetter, with two to three times as much rainfall than fell directly on the Lake.

Average daily inflows and outflows for the last week are detailed below.

INFLOWS	Avg Daily Flow cfs	Equivalent Depth Week Total (in)
S65E & S65EX1	1321	0.6
S71 & 72	229	0.1
S84 & 84X	489	0.2
Fisheating Creek	431	0.2
S154	0	0.0
S191	27	0.0
S133 P	0	0.0
S127 P	0	0.0
S129 P	0	0.0
S131 P	0	0.0
S135 P	30	0.0
S2 P	5	0.0
S3 P	0	0.0
S4 P	0	0.0
C5	0	0.0
Rainfall	3445	1.3
Total	**5976**	**2.4**

OUTFLOWS	Avg Daily Flow cfs	Equivalent Depth Week Total (in)
S77 (DS)	30	0.0
S308	-262	-0.1
S351	0	0.0
S352	24	0.0
S354	0	0.0
L8	-211	-0.1
ET	2149	1.0
Total	**1730**	**0.8**

Average daily outflows for the Lake have been negative since the beginning of June, and continued that trend this past week; a total of -473 average daily cfs flowed back into the Lake through S308 (-262 cfs) and the L8 canal through Culvert 10A (-211 cfs). Average daily flows of 30 cfs and 24 cfs went through S77 and S352, respectively. The corrected evapotranspiration value based on the L006 weather platform solar radiation data was the same as the previous week at 0.78 inches for the week.

The approximate change in Lake stage from each structure's total weekly flows (midnight July 10, 2017 to midnight July 16, 2017) for major structures are also presented in the above table.

The most recent satellite imagery (July 16 and July 24) indicates that the bloom potential remains high in the central and northern portions of the Lake in general (Figure 4). The western region near Fisheating Bay and Indian Prairie show high potential for bloom for over a week, as well as a shifting area in the center of the Lake that likely moves considerably from day to day depending on wind patterns. Portions of that central bloom were visible on imagery from the Landsat 8 satellite on July 21 (**Figure 5**).

Water Management Recommendations

The Lake is 12.70 feet NGVD having increased by 0.14 feet over the past week due to rainfall and increased inflows from the Kissimmee River basin. Ascension rates have been moderate over the past month (0.11 feet/week avg), much slower than they were throughout most of June (>0.25 feet/week avg).

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

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

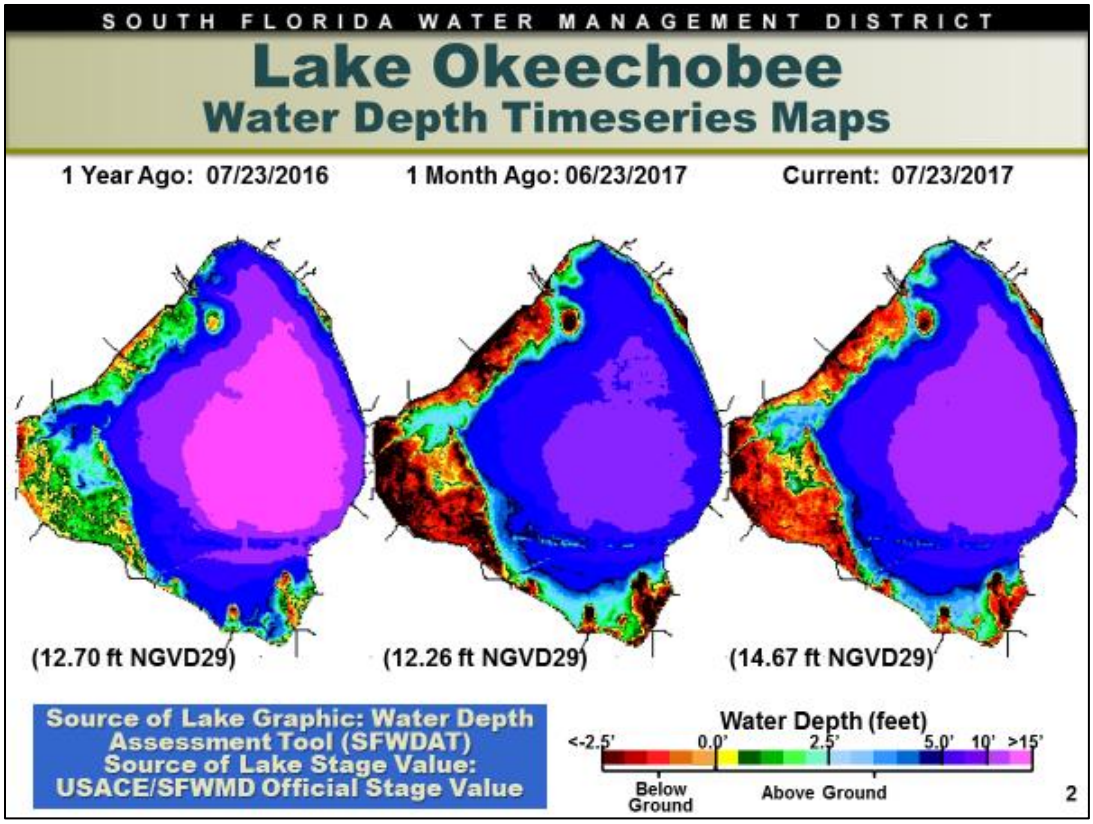


Figure 1

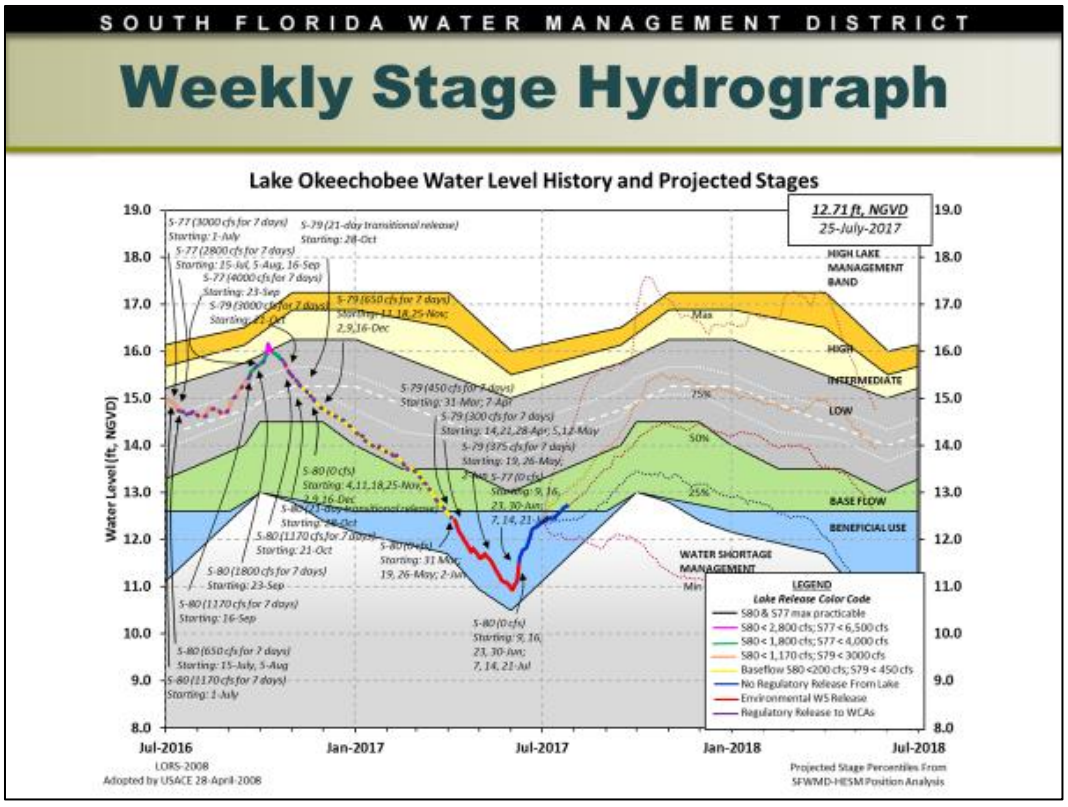


Figure 2

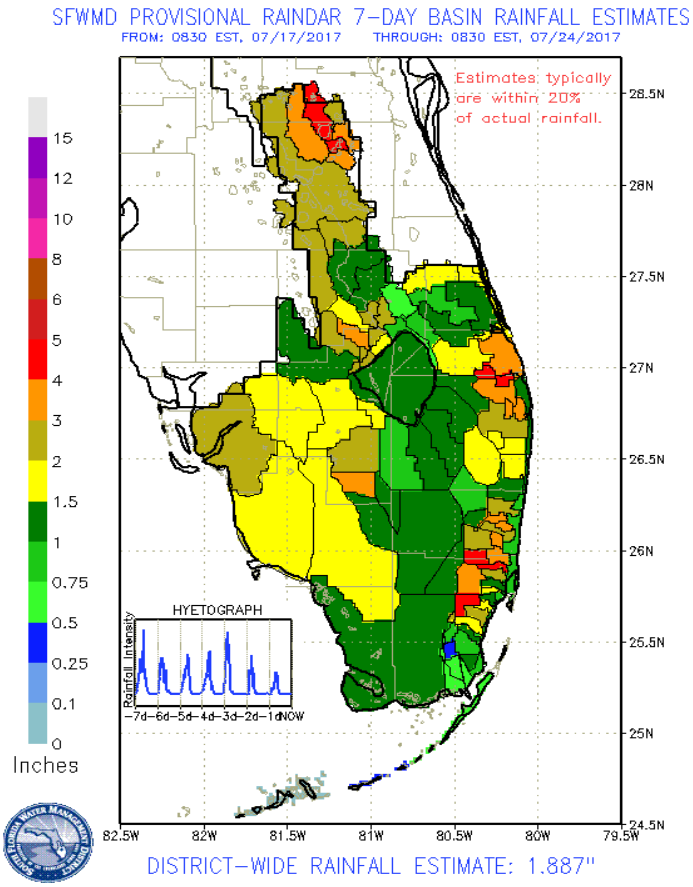


Figure 3

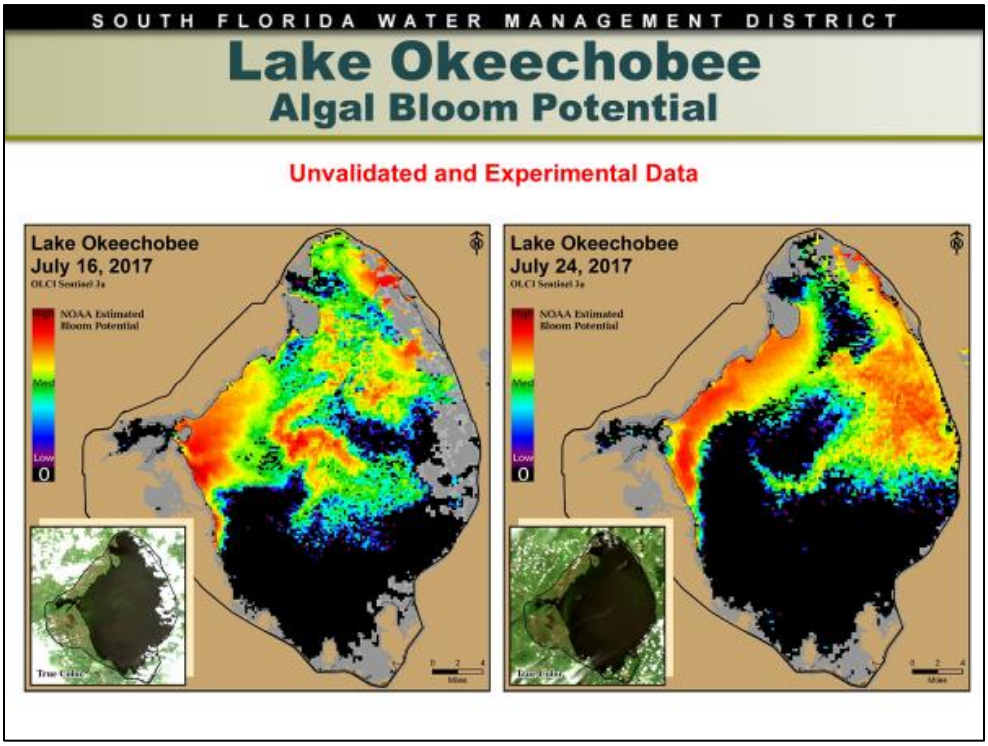


Figure 4

Figure 5

Lake Istokpoga

Lake Istokpoga stage is 38.26 feet NGVD as of midnight July 23, 2017 and is currently 0.01 feet above its low pool regulation schedule of 38.25 feet NGVD (Figure 6). Average daily flows into the Lake from Josephine Creek over the past week were 51 cfs, but no data were reported for Arbuckle Creek. Average daily discharge from S68 and S68X this past week was down to 501 cfs, a slight decrease from the previous week's flow of 635 cfs. According to RAINDAR, 2.37 inches of rain fell in the Lake Istokpoga basin during the past seven days.

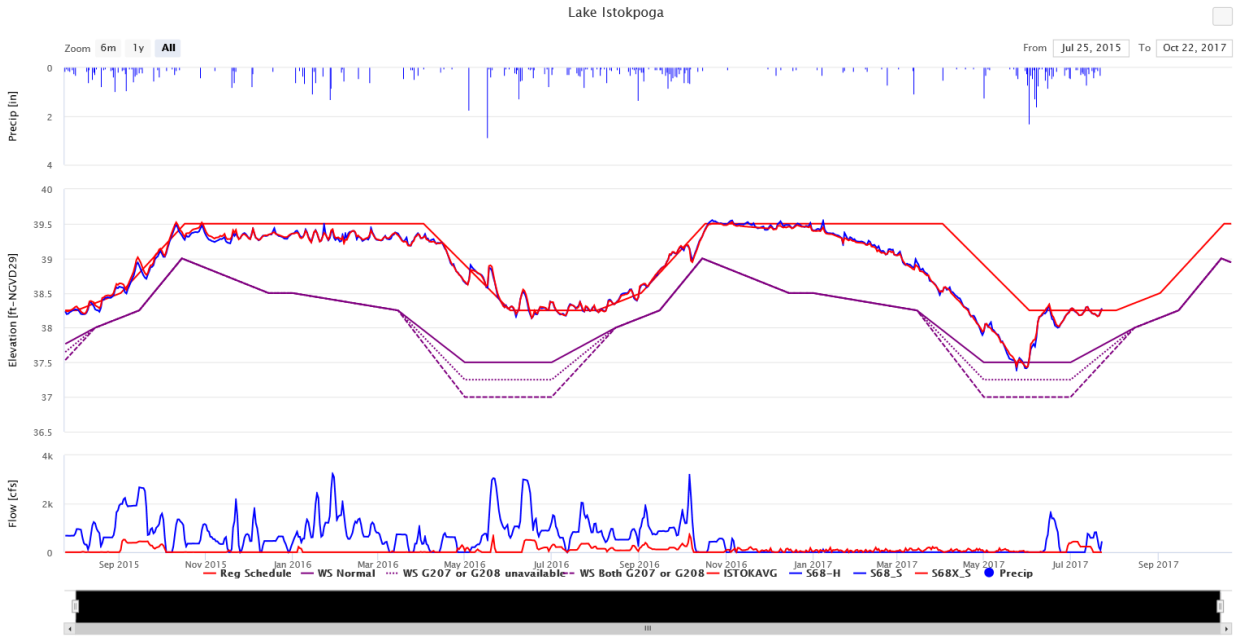


Figure 6

ESTUARIES

St. Lucie Estuary

Over the past week, provisional flows averaged about 0 cfs at S-80, 261 cfs downstream of S-308 flowing into Lake Okeechobee, 201 cfs at S-49 on C-24, 165 cfs at S-97 on C-23, and 170 cfs from Ten Mile Creek at the Gordy Road Structure. Average inflow from tidal basin tributaries is estimated to be 758 cfs (Figures 1 and 2). Total inflow averaged about 1,294 cfs last week and 1,068 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 about 11.1. Salinity conditions in the middle estuary are in the good range for the adult eastern oysters.

Table 1. Seven-day average salinity at three monitoring stations in the St. Lucie Estuary. Current average is in bold face type, previous average in parentheses. The envelope reflects the preferred salinity range for adult eastern oysters (*Crassostrea virginica*) in the middle estuary.

Sampling Site	Surface	Bottom	Envelope
HR1 (N. Fork)	**3.7** (3.9)	**9.0** (8.8)	NA[1]
US1 Bridge	**9.6** (9.7)	**12.6** (11.2)	10.0-26.0
A1A Bridge	**EM**[2] (23.9)	**25.7** (25.8)	NA[1]

[1]Envelope not applicable and [2]Equipment Malfunction.

Continuous monitoring of water quality is conducted at HR1 in the North Fork. Weekly dissolved oxygen data are summarized in Table 2.

Table 2. Weekly dissolved oxygen conditions at HR1 in the North Fork of the St. Lucie Estuary.

Sampling Location	Average DO (mg/l)	Minimum DO (mg/l)	Maximum DO (mg/l)
HR1-Surface	4.99	0.99	8.70
HR1-Bottom	1.65	0.00	5.31

Caloosahatchee Estuary

During the past week, provisional flows averaged approximately 0 cfs at S-77, 727 cfs at S-78, and 2,018 cfs at S-79. Average inflow from tidal basin tributaries is estimated to be 1,852 cfs (Figures 5 & 6). Total inflow averaged 3,870 cfs last week and 3,138 cfs over last month.

Over the past week in the estuary, salinity decreased slightly downstream of ValI75 (Table 3, Figures 7 and 8). The seven-day average salinity values are within the fair range for adult oysters at Cape Coral, and within the good range at Shell Point and Sanibel (Figure 9). The 30-day moving average surface salinity is 0.3 at Val I-75 and 0.6 at Ft. Myers. Salinity at Val I-75 is forecast to be 0.4 in two weeks with no flow through S-79 (Figure 10). Salinity conditions between Val I-75 and Ft. Myers are good for tapegrass. NOAA satellite imagery indicates potential cyanobacterial algae presence in the upper-estuary (Figure 11).

Table 3. Seven-day average salinity at six monitoring stations in the Caloosahatchee Estuary. Current average is in bold face type, previous average in parentheses. The envelope reflects the preferred salinity range for tape grass (*Vallisneria americana)* at Val I-75 and for adult eastern oysters (*Crassostrea virginica*) elsewhere.

Sampling Site	Surface	Bottom	Envelope
S-79 (Franklin Lock)	**0.3** (0.3)	**0.3** (0.3)	NA[1]
*Val I75	**0.3** (0.3)	**0.4** (0.4)	0.0-5.0[2]
Ft. Myers Yacht Basin	**0.6** (1.0)	**0.7** (1.4)	NA
Cape Coral	**5.7** (5.9)	**6.8** (8.3)	10.0-30.0
Shell Point	**17.2** (17.7)	**18.0** (19.0)	10.0-30.0
Sanibel	**27.1** (27.3)	**EM**[3] (EM)	10.0-30.0

[1]Envelope not applicable, [2]Envelope is based on a 30-day average, and [3]Equipment Malfunction.
*Val I75 is temporarily offline due to site construction,
Salinity values are estimated using models developed for this site.

Monitoring data collected by the River, Estuary and Coastal Observing Network of Sanibel-Captiva Conservation Foundation using continuous sensors are summarized in Table 4 as concentration ranges of Chlorophyll *a* and dissolved oxygen at Beautiful Island, Ft. Myers, and Shell Point in the Caloosahatchee Estuary.

Table 4. 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)	Down for maintenance	1.65 – 10.41	1.68 – 17.82
Dissolved Oxygen (mg/l)	Down for maintenance	1.44 – 4.28	No Data

The Florida Fish and Wildlife Research Institute reported on July 21, 2017, that *Karenia brevis*, the Florida red tide organism, was not present in samples collected from Lee County.

Water Management Recommendations

Lake stage is in the Base flow sub-band of 2008 LORS. The 2008 LORS recommends up to 450 cfs at S-79 and 200 cfs at S-80. Given the current estuarine conditions, there are no ecological benefits associated with freshwater releases from Lake Okeechobee.

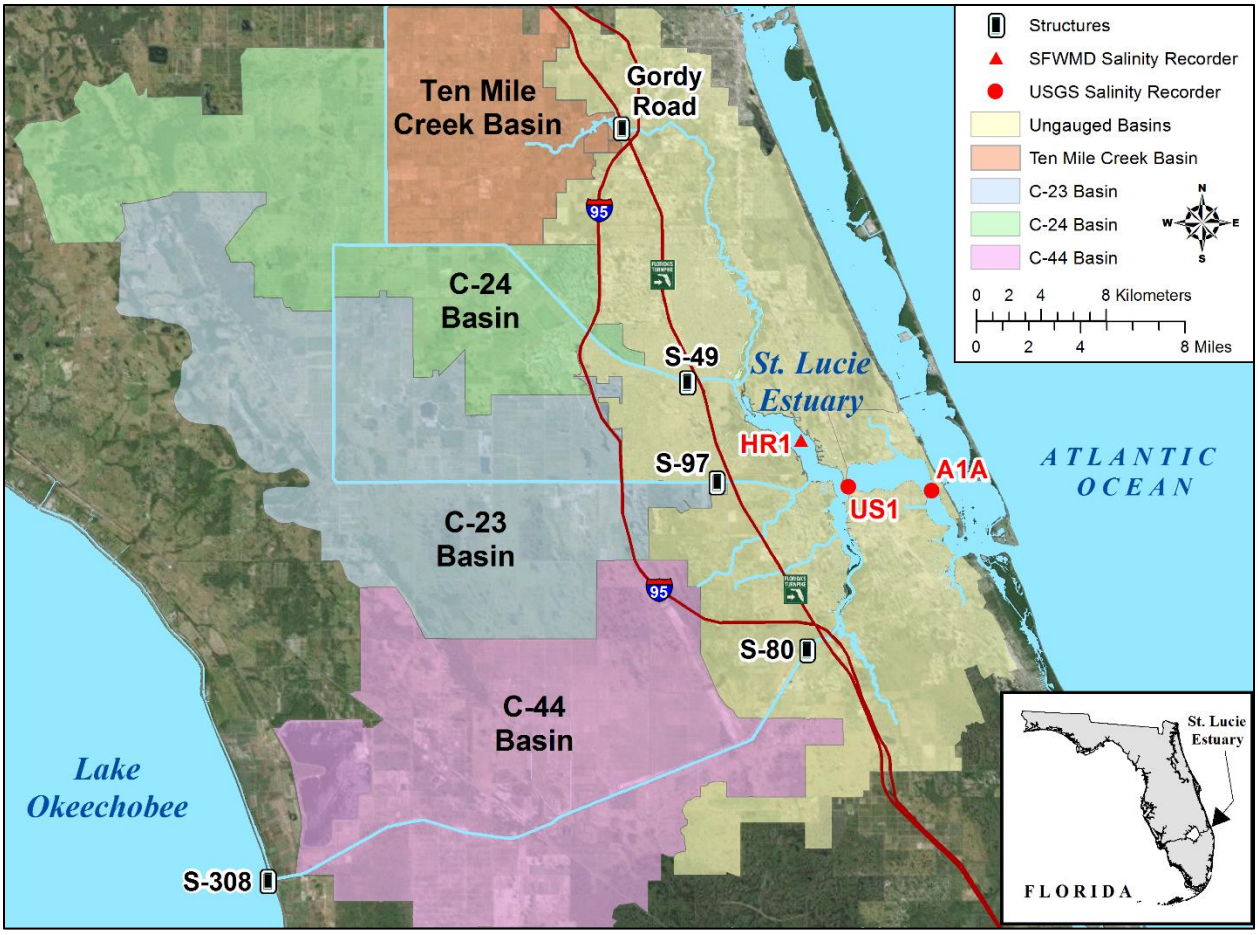


Figure 1. Basins, water control structures, and salinity monitoring for the St. Lucie Estuary.

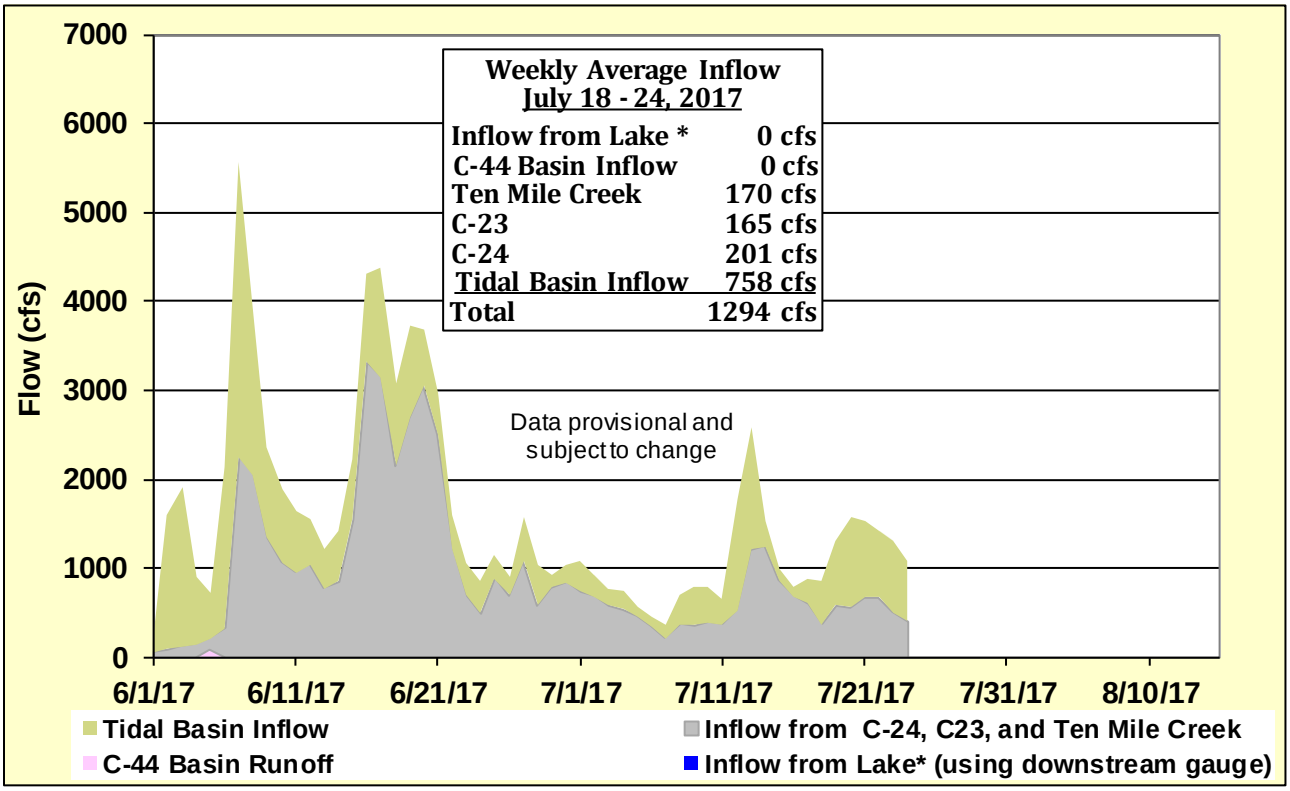


Figure 2. Estimated surface freshwater inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and tidal basins into the St. Lucie Estuary.

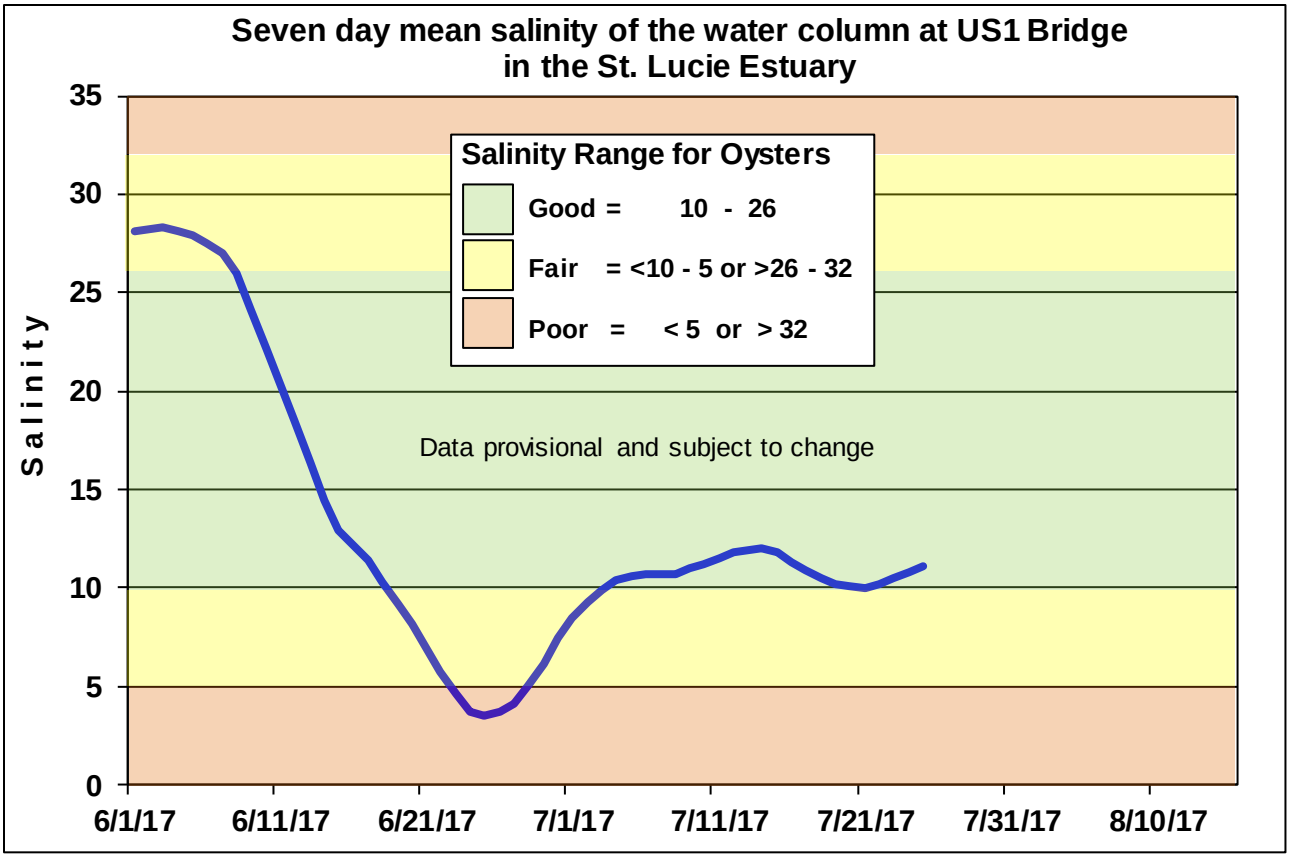


Figure 3. Seven-day mean salinity of the water column at the U.S. Highway 1 Bridge.

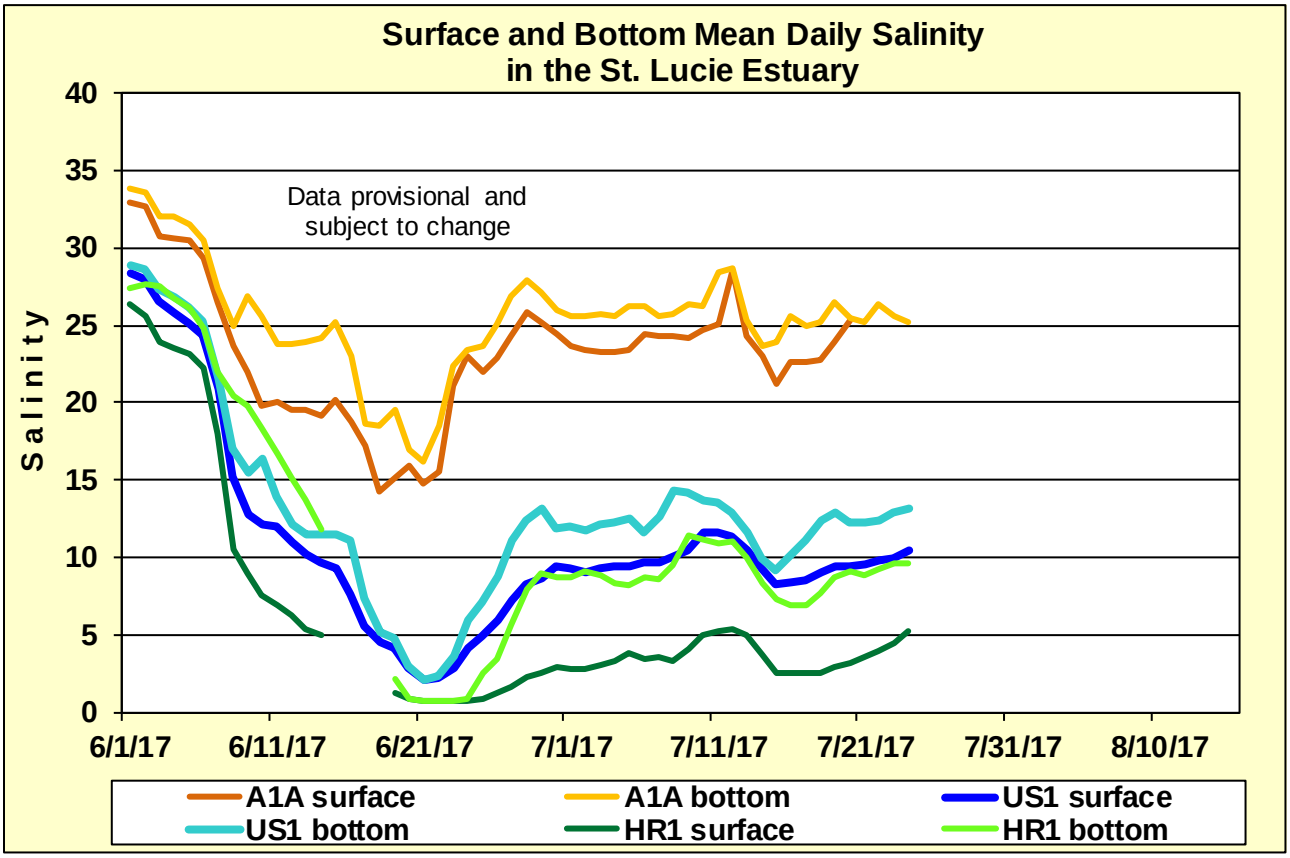


Figure 4. Daily mean salinity at the A1A, US1 and estimated HR1 stations.

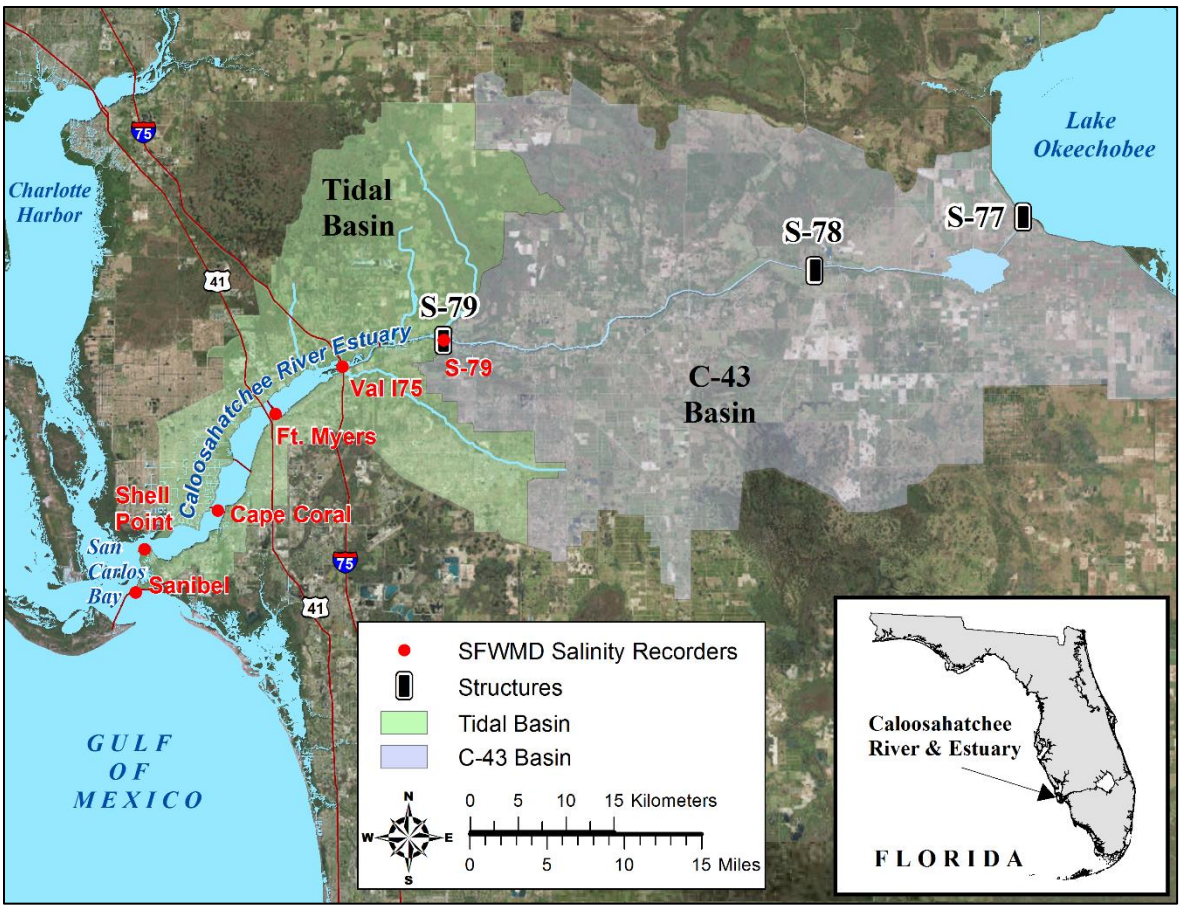


Figure 5. Basins, water control structures, and salinity monitoring for the Caloosahatchee Estuary.

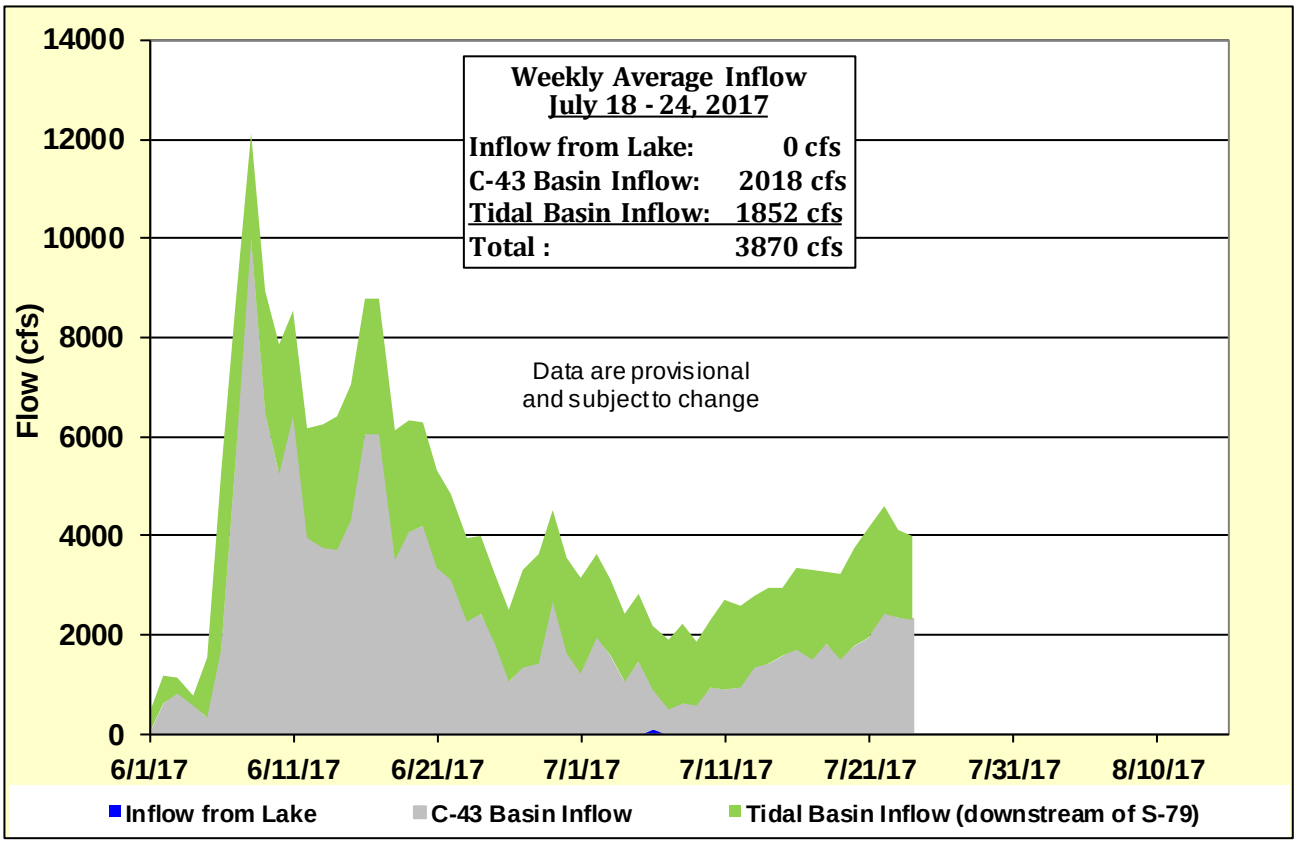
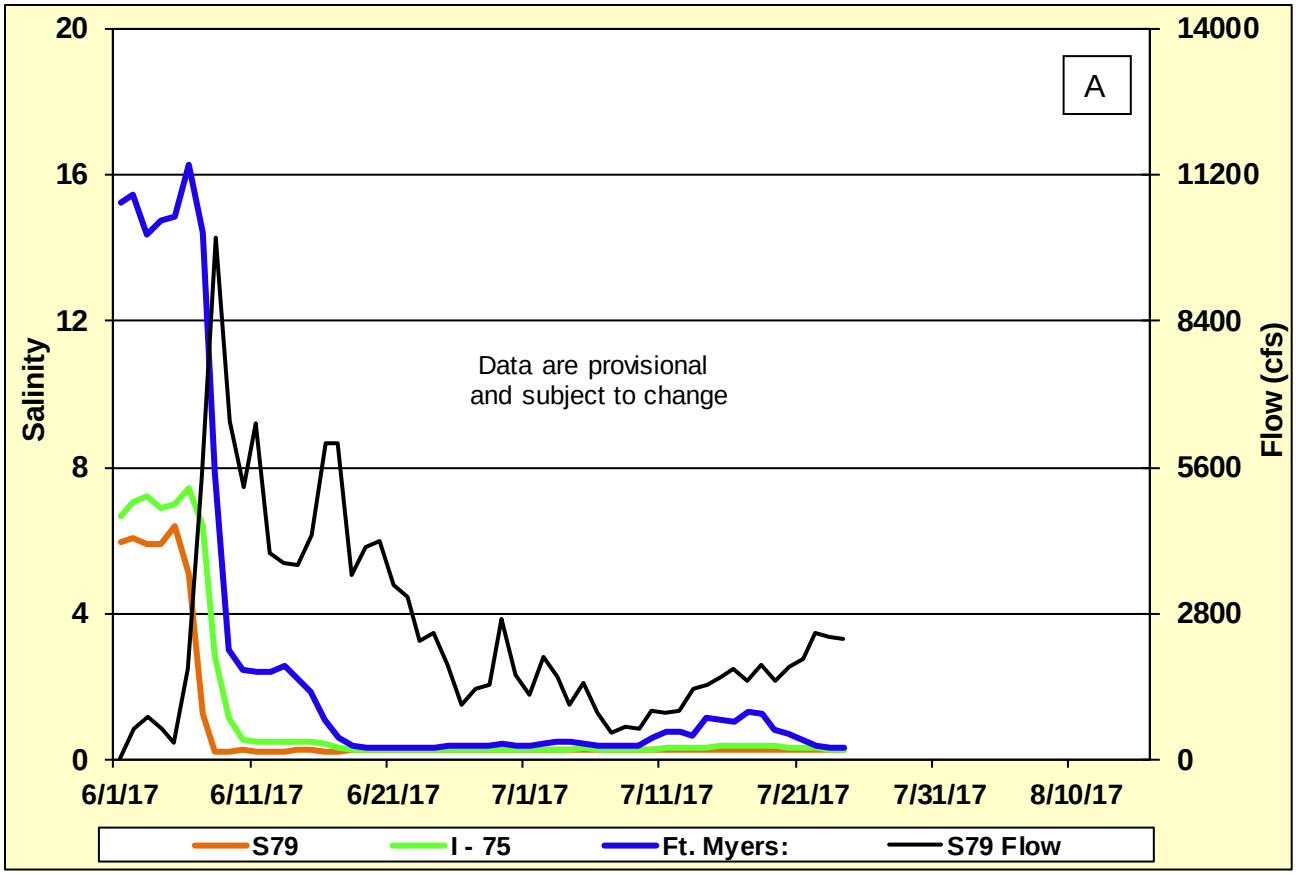


Figure 6. Freshwater inflows from Lake Okeechobee, runoff from the C-43 basin, and tributaries in the tidal basin into the Caloosahatchee River Estuary.



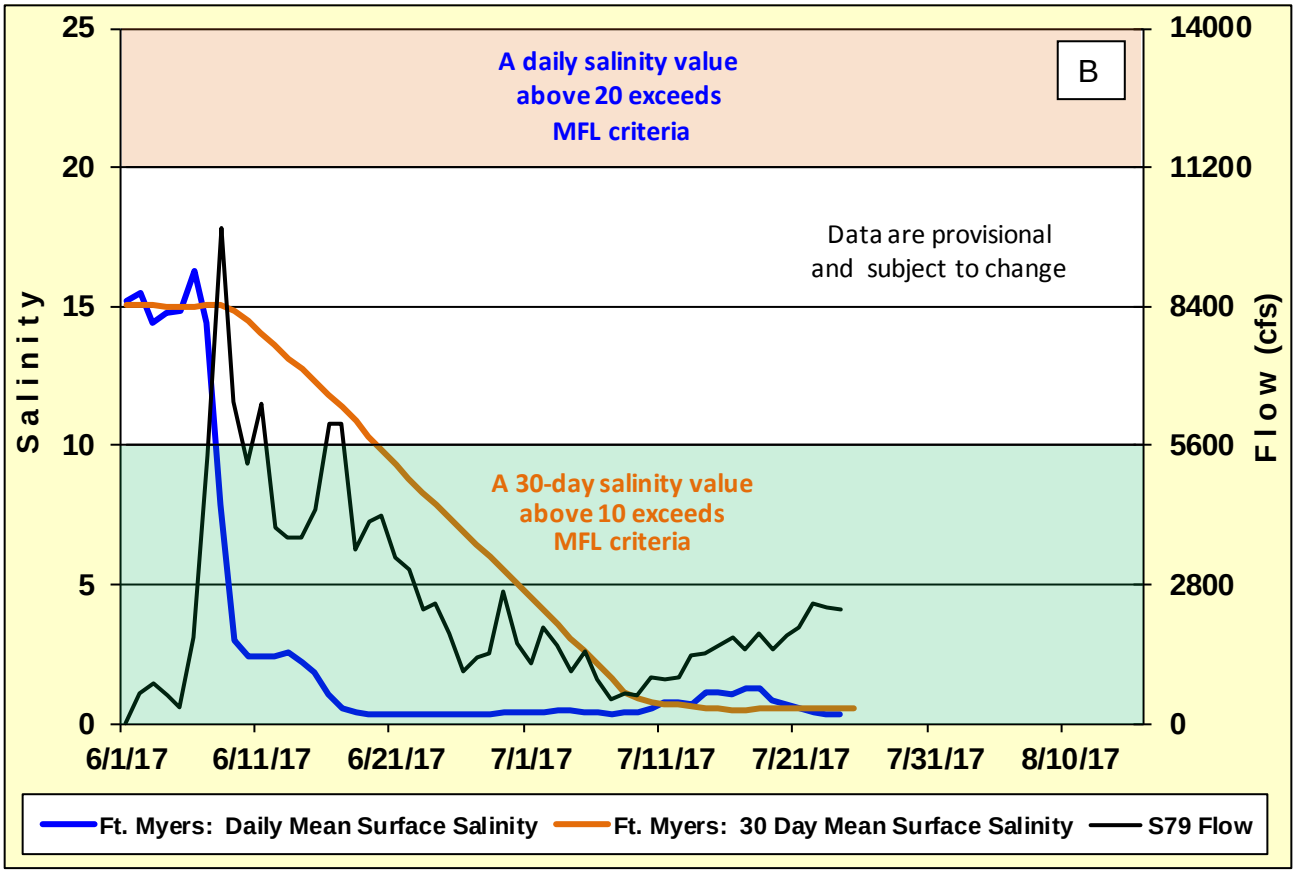


Figure 7. Daily mean flows at S-79 and salinity at upper estuary monitoring stations (A) and 30-day moving average salinity at Ft. Myers (B).

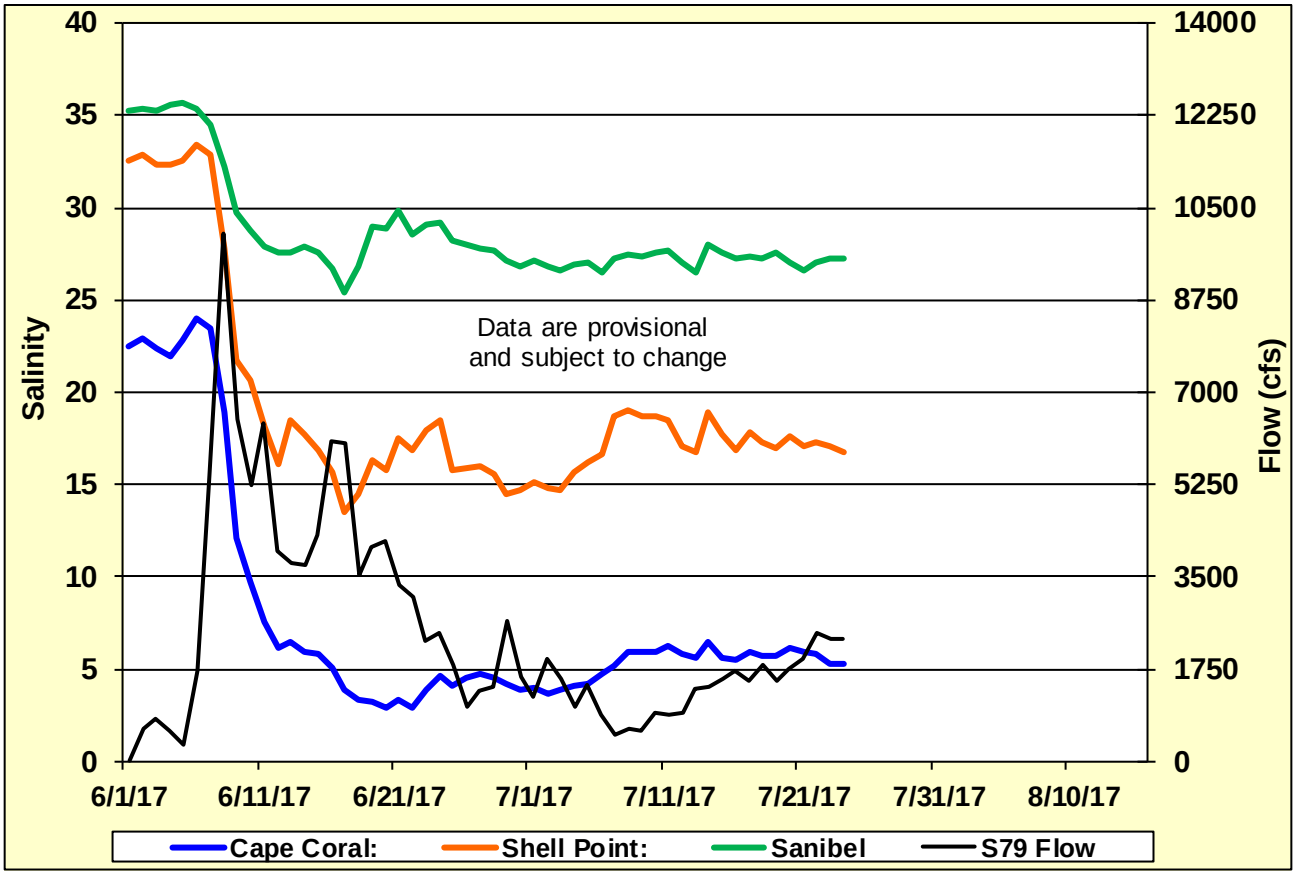


Figure 8. Daily mean flows at S-79 and salinity at lower estuary stations.

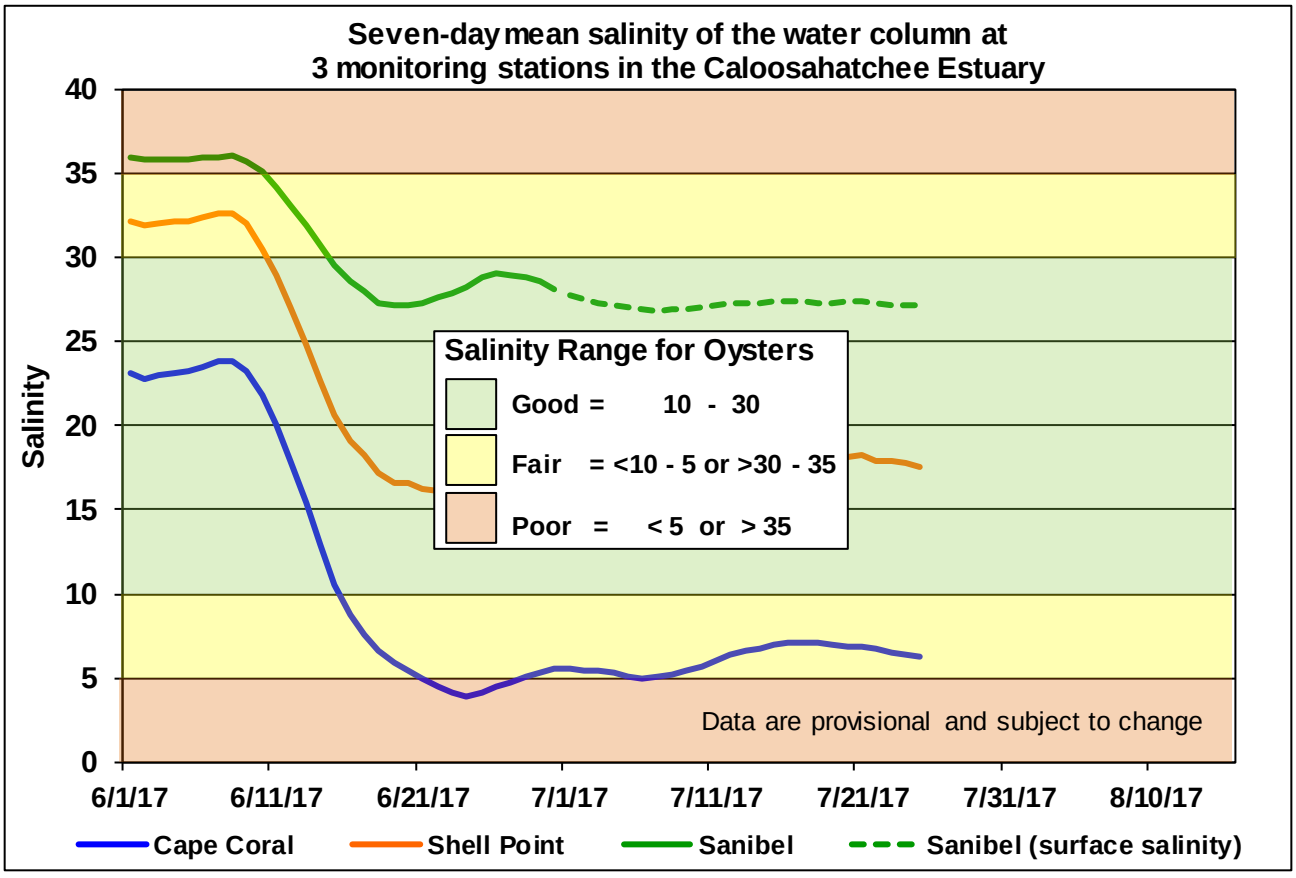


Figure 9. Seven-day mean salinity at Cape Coral Bridge, Shell Point and Sanibel Bridge monitoring stations.

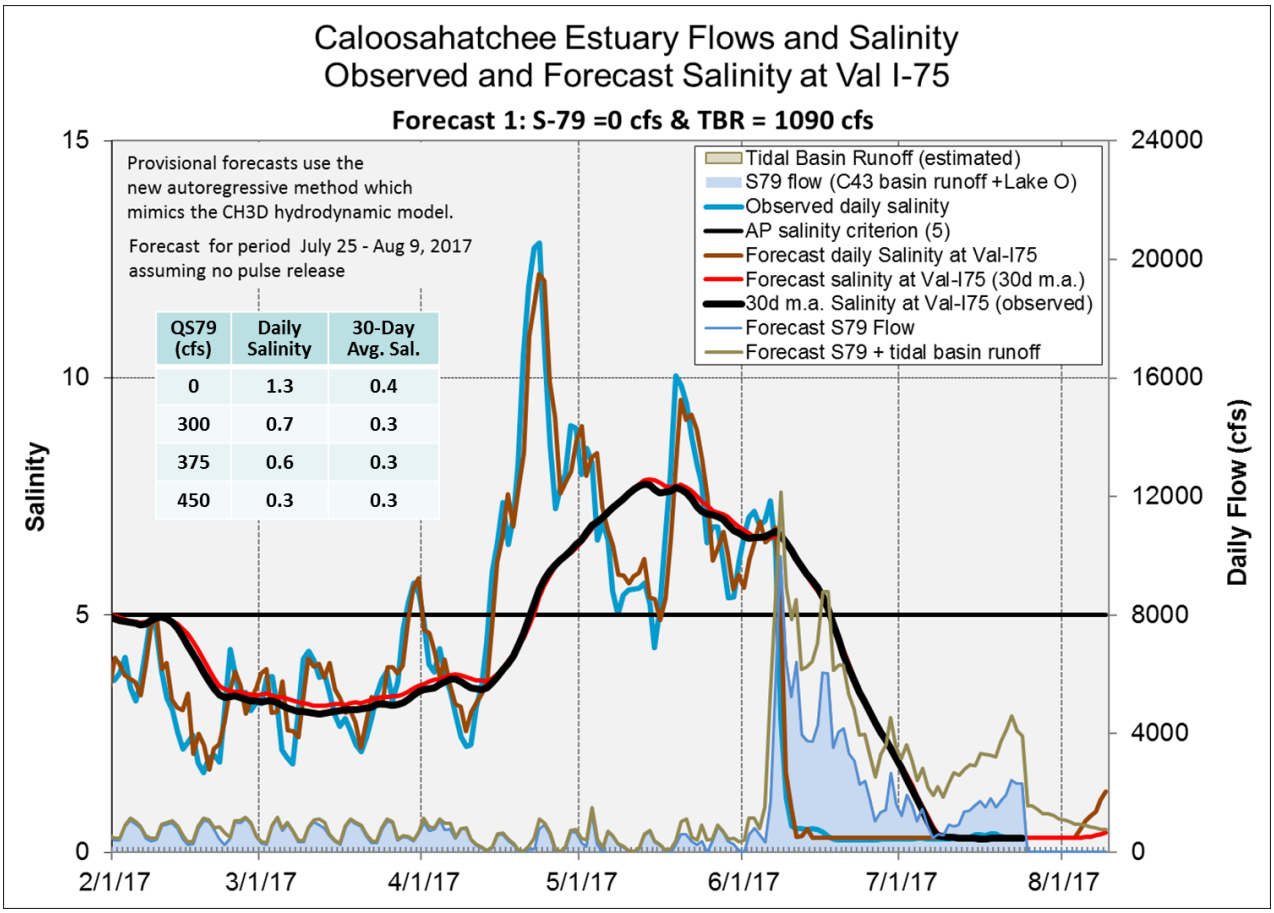


Figure 10. 14-day salinity forecast at Val I-75 assuming no releases at S-79.

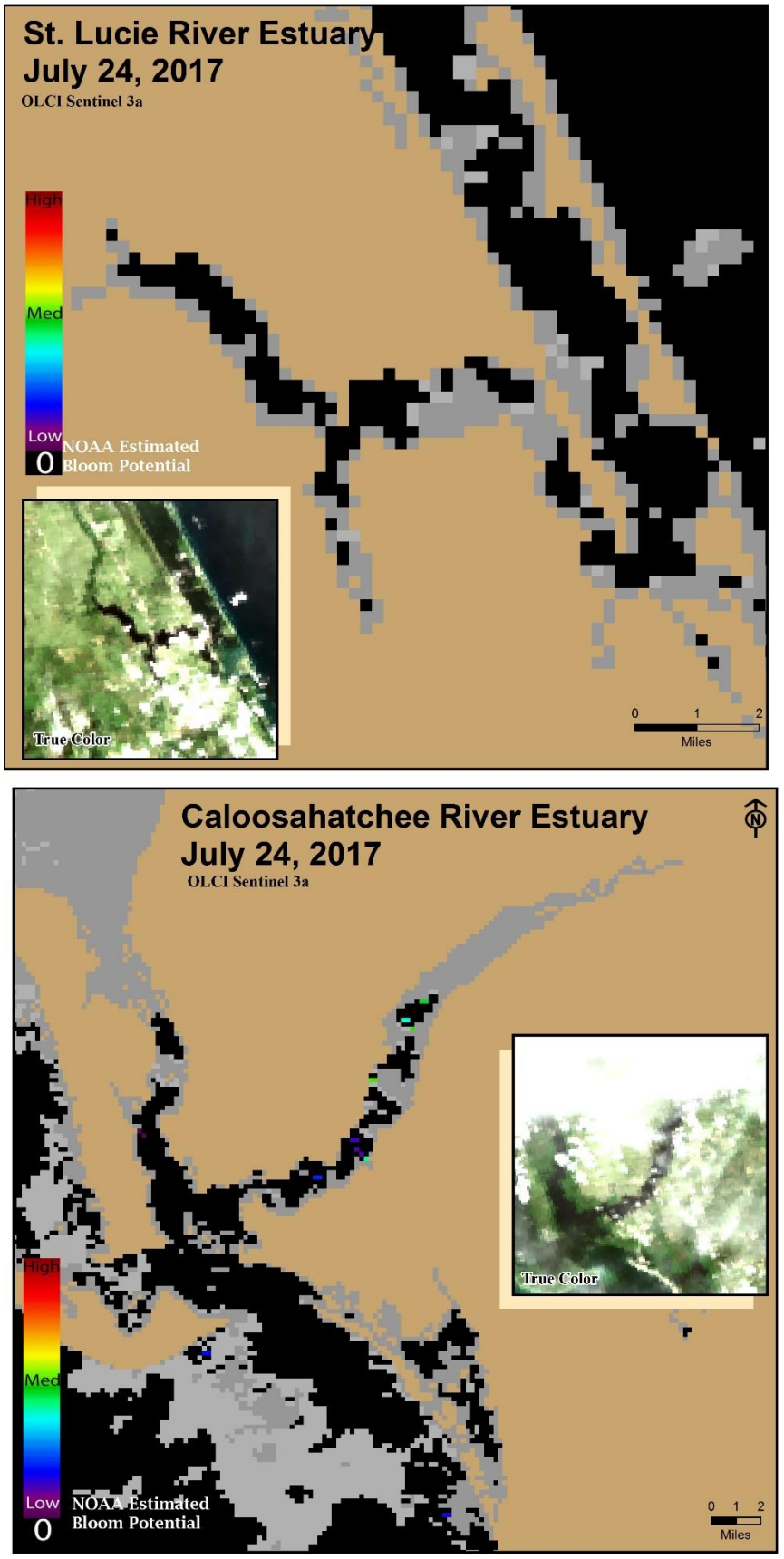
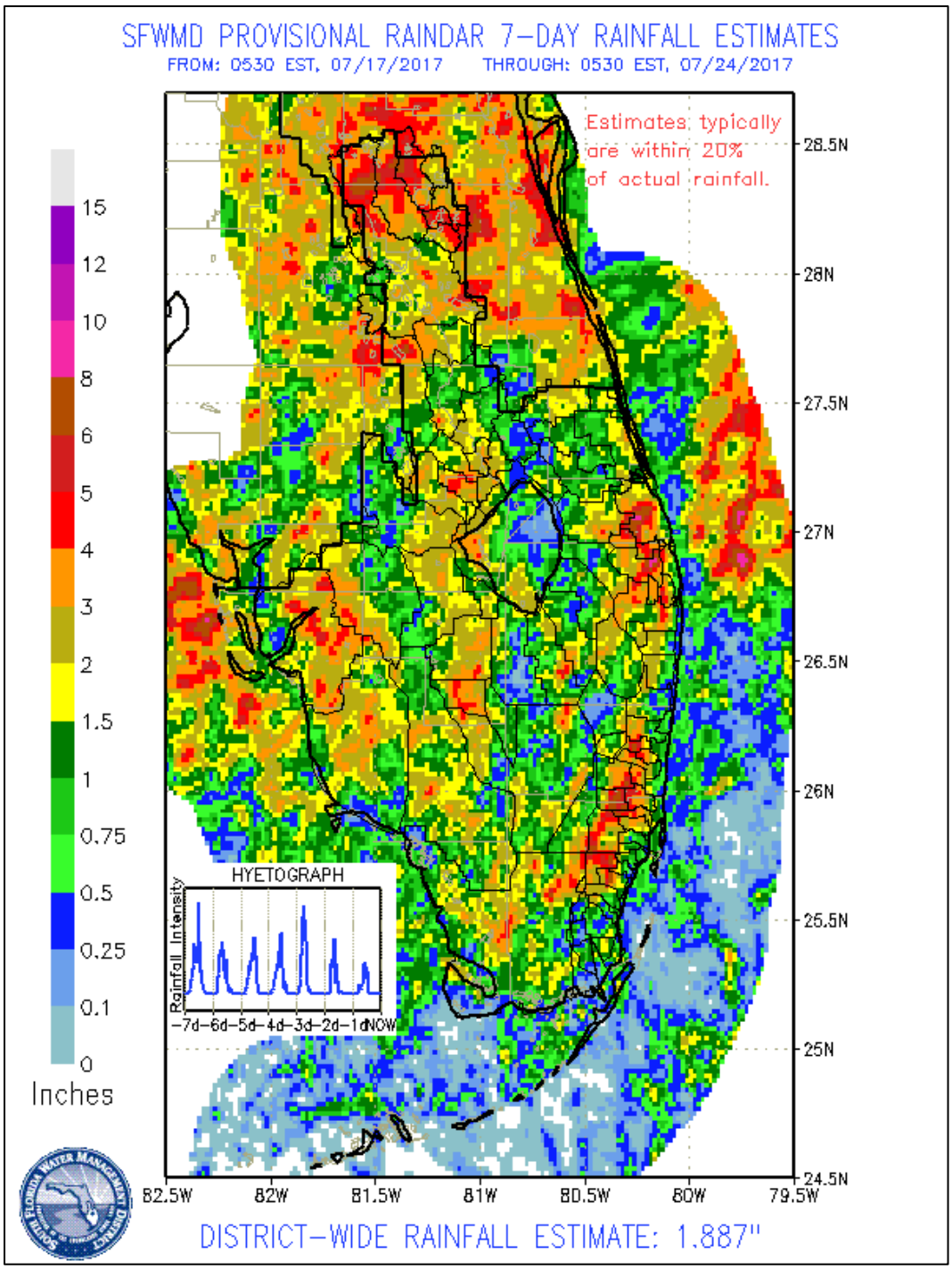


Figure 11. Sentinel 3a Satellite imagery provided by NOAA uses Ocean and Land Color Instrument (OLCI) to estimate cyanobacteria bloom potential in Caloosahatchee Estuary.

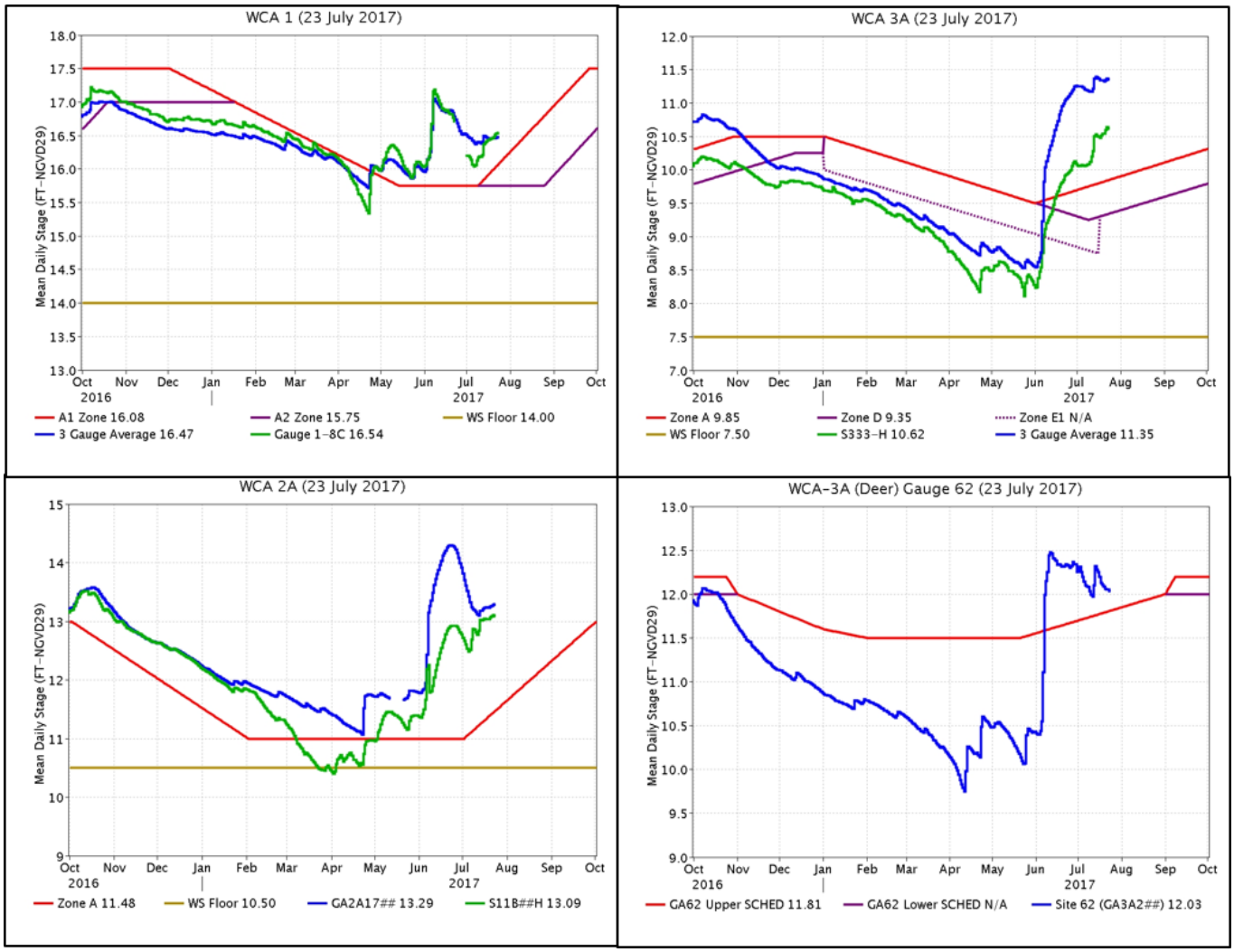
EVERGLADES

Near average rainfall resulted in a moderate increase in stage across the Everglades except for WCA-3A. Stages decreased for the two northern gauges in WCA-3A monitored for this report and the two gauges in the south and central region both increased.

Everglades Region	Rainfall (Inches)	Stage Change (feet)
WCA-1	1.60	+0.02
WCA-2A	0.81	+0.06
WCA-2B	1.45	+0.11
WCA-3A	1.42	−0.05
WCA-3B	1.46	+0.14
ENP	1.47	+0.25

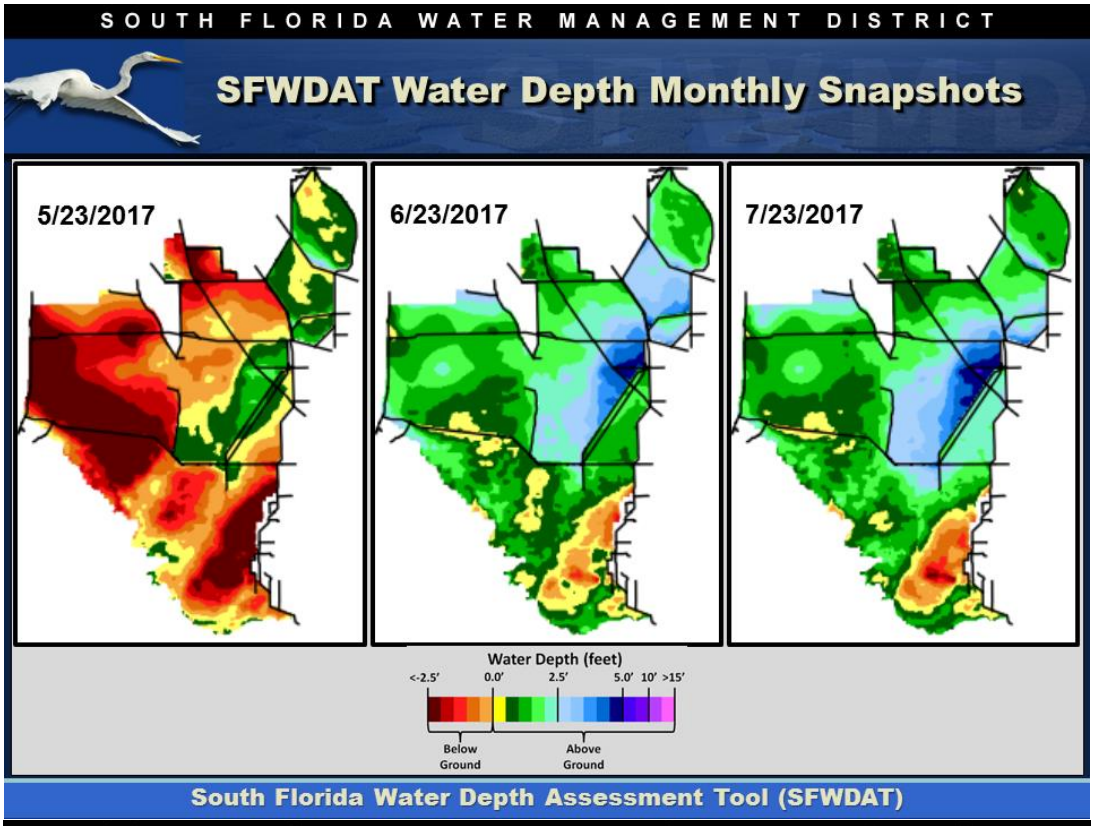


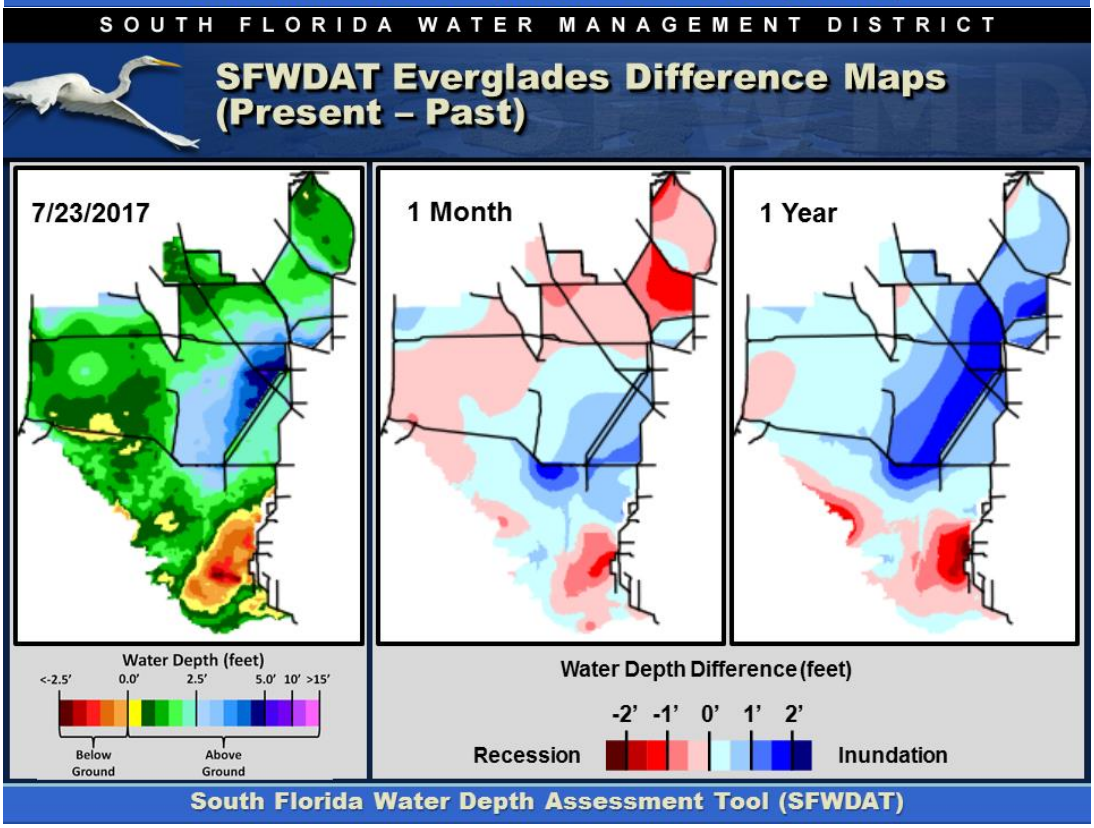
Regulation Schedules: WCA-1 stage remains 0.39 feet above Zone A, and stage difference between the marsh and the canal is minimal. WCA-2A marsh stage at gauge GA2A17 is currently 1.81 feet above zone A. Marsh stage is .16 feet higher than canal stage at S11B. WCA-3A three-gauge average is 1.5 feet above zone A, and .73 feet higher than canal stage. WCA-3A at gauge 62 (Northwest corner) is 0.22 feet above schedule.



Blue – wetlands
Green – canals

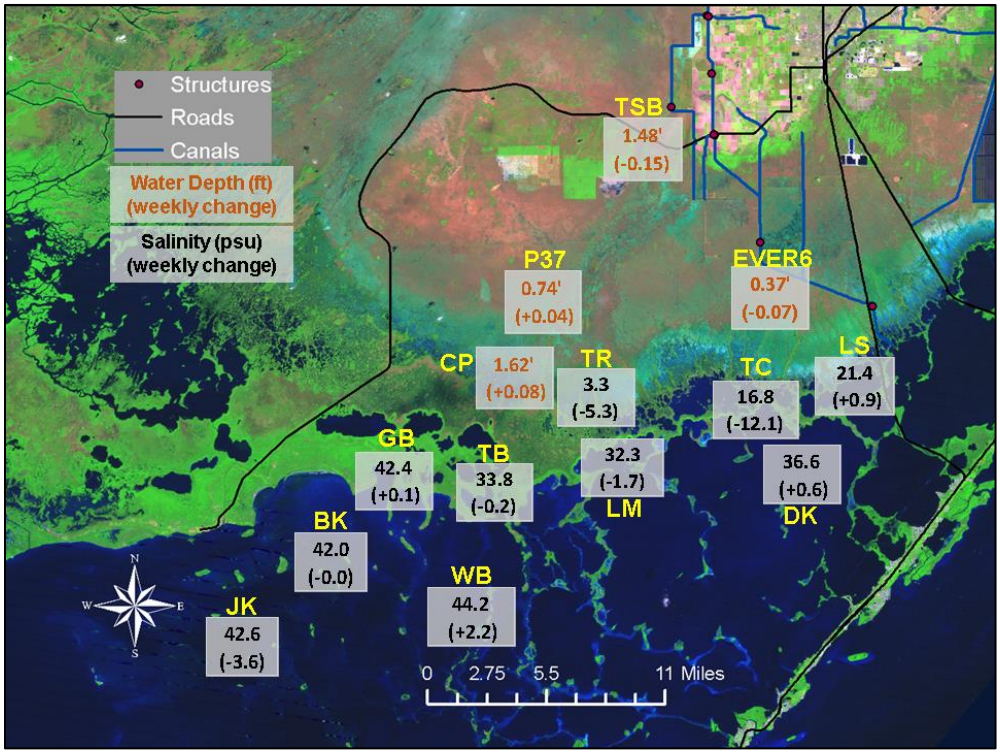
Water Depths and Changes: This week's range of water depths at monitored gauges other than in WCA-2B ranged from 1.18 feet (WCA-1) to 3.42 feet (WCA-3A gauge 65). Over the last week individual gauge changes ranged from 0.01 feet (WCA-3A Central) to +0.25 feet (WCA-3B). Pan evaporation was estimated to be 2.0 inches which is higher than the pre-project estimate 1.43 inches.

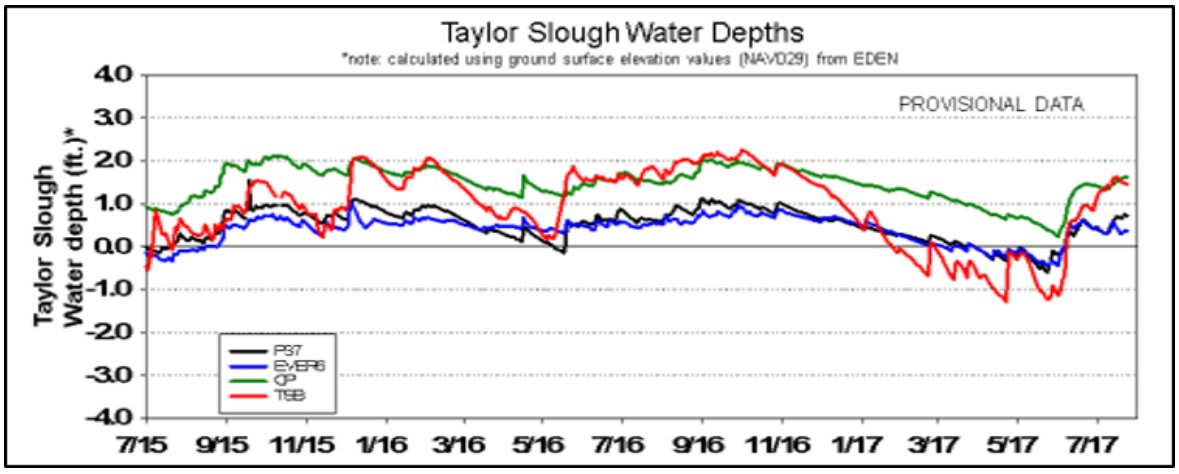


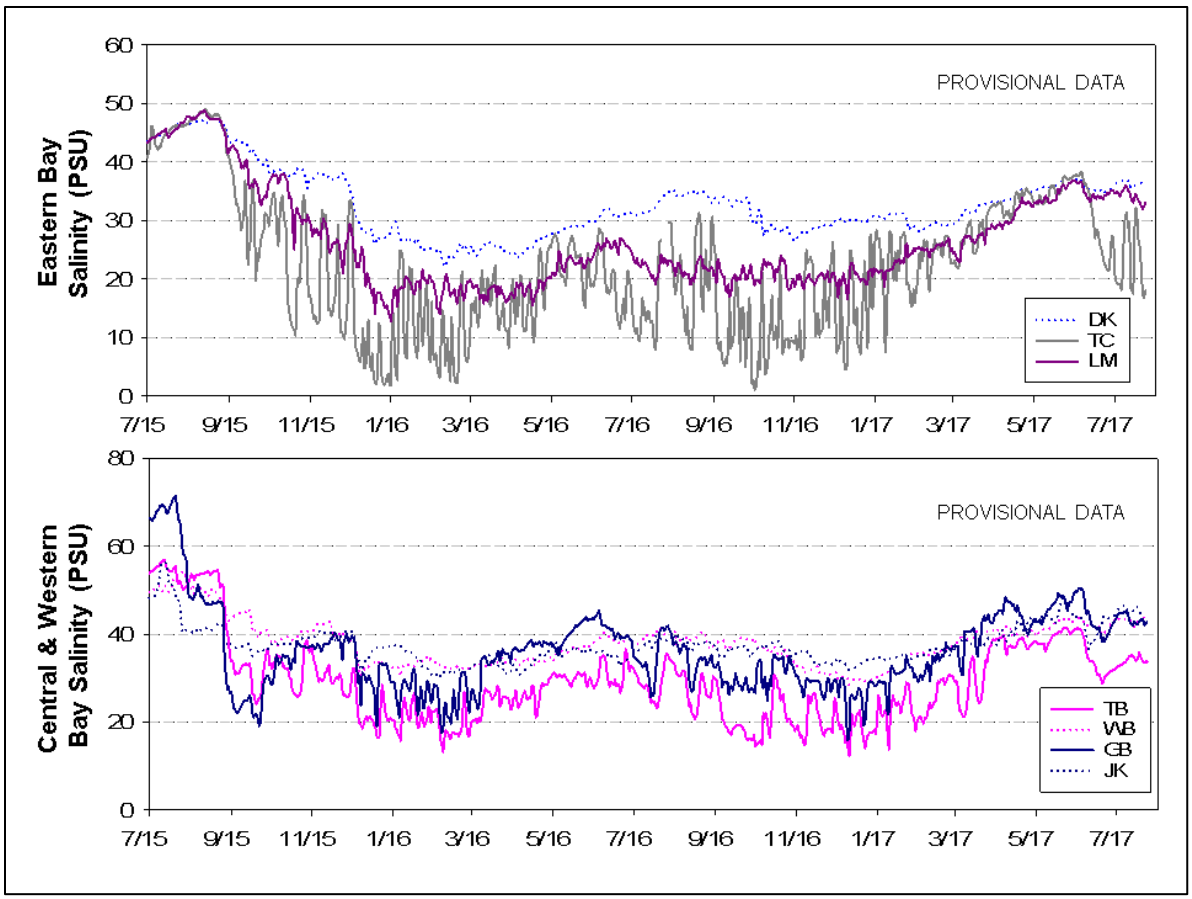


Taylor Slough stages: Water levels in northern Taylor Slough and the Everglades National Park (ENP) panhandle decreased this past week (max of 0.15 feet) while central and southwestern Taylor Slough increased (max of 0.08 feet). All areas are average to four inches above the historic average for this time of year.

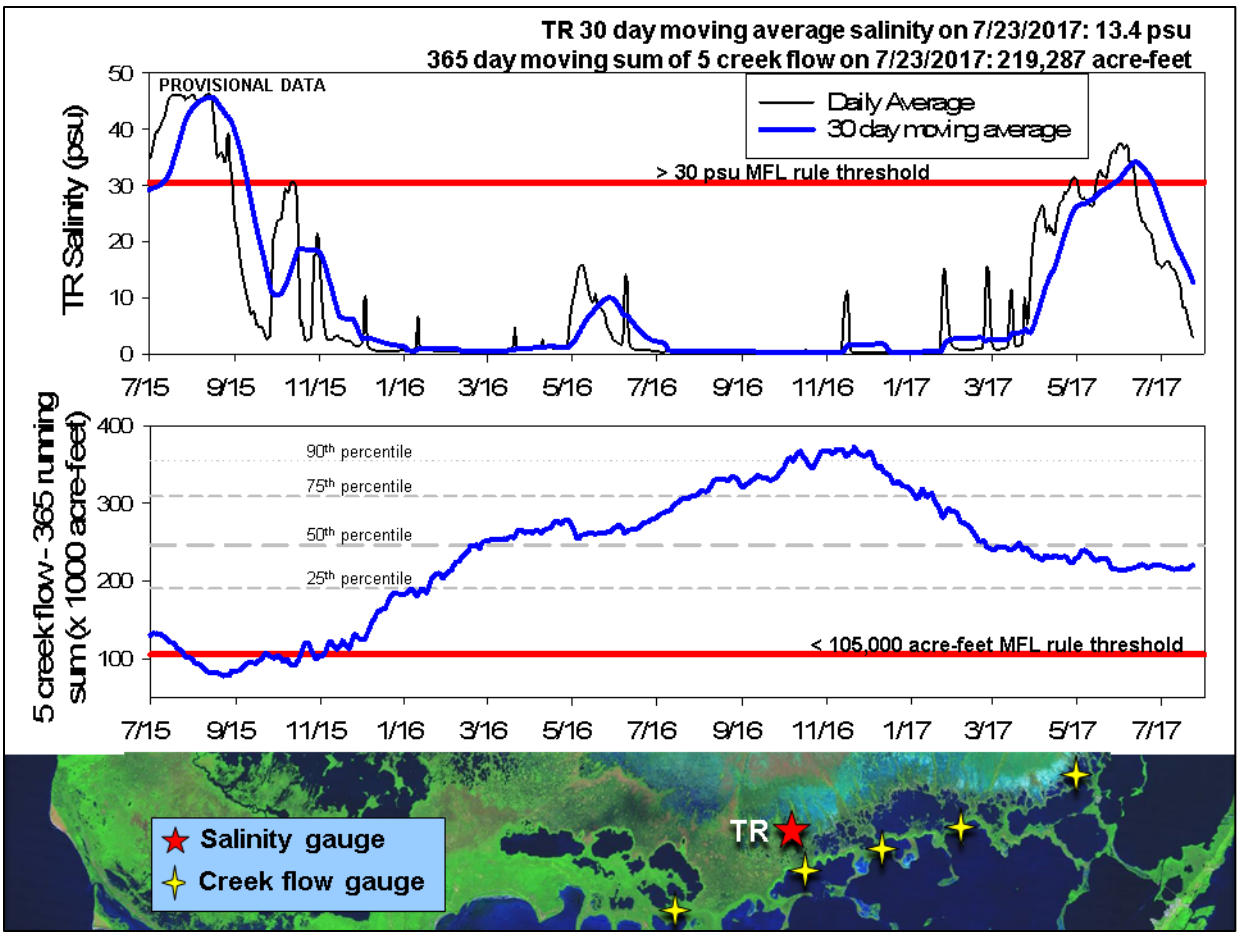
Florida Bay salinity: Salinities changes ranged from −12.1 psu in northeastern Florida Bay to +2.2 psu in central Florida Bay. Salinities currently range from 17 psu in the eastern nearshore to 43 psu in the western bay. Compared to historic averages, current salinities are average to 10 psu above average with the western nearshore being the furthest from average.







Florida Bay MFL: Mangrove zone daily average dropped 5 psu over the last week to reach 3 psu. The 30-day moving average changed −3.3 to end the week at 13.4 psu. The cumulative weekly flow from the five creeks identified by the stars on the map was approximately 3,400 acre-feet which is 40% of the historic average for this time of year. The 365-day moving sum of flow from the five creeks identified by stars on the map increased by about 4,000 acre-feet to 219,287 acre-feet (still below the long-term average of 257,628 acre-feet). Creek flow is provisional data from the USGS and is highly variable.



Water Management Recommendations

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

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

Everglades Ecological Recommendations, July 25th, 2017 (red is new)

Area	Current Condition	Cause(s)	Recommendation	Reasons
WCA-1	Stages changed from -0.05' to +0.12'	Rainfall, ET, management	Moderate ascension rates as possible. Releasing inflows through S-10s to moderate ascension is recommended. Maintaining water levels a minimum of 0.1 ft above WRS until early July is also recommended. Moderating flow rates through structures to 500 cfs steps is recommended.	Achieve high water targets (17.5 ft) to protect habitat and facilitate invasive plant treatments.
WCA-2A	Stages increased +0.06	Rainfall, ET, management	Moderate ascension rates as possible. Moderating flow rates through structures to 500 cfs steps is recommended.	Protect habitat, wildlife and support apple snail reproduction.
WCA-2B	Stages increased from 0.00' to +0.21'	Rainfall, ET, management	Moderate ascension rates as possible. Moderating flow rates through structures to 500 cfs steps is recommended.	Protect habitat, wildlife and support apple snail reproduction.
WCA-3A NE	Stages decreased −0.14'	Rainfall, ET, management	Moderate ascension rates as possible. Moderating flow rates through structures to 500 cfs steps is recommended.	Protect habitat, wildlife and support apple snail reproduction.
WCA-3A NW	Stages decreased −0.13'	Rainfall, ET, management		
Central WCA-3A S	Stages increased +0.01'	Rainfall, ET, management	Moderate ascension rates as possible. Moderating flow rates through structures to 500 cfs steps is recommended.	Protect habitat, wildlife and support apple snail reproduction.
Southern WCA-3A S	Stages increased +0.08'	Rainfall, ET, management		
WCA-3B	Stages changed from −0.23' to +0.25'	Rainfall, ET, management	Moderate ascension rates as possible. Moderating flow rates through structures to 500 cfs steps is recommended.	Protect habitat, wildlife and support apple snail reproduction.
ENP-SRS	Stages increased +0.21'	ET, rainfall, topography, management	Make discharges to the Park according to the 2012 WCP rainfall plan.	Keep peat wet to promote native habitat and maintain wetland plant and animal communities. Protect habitat and wildlife, including apple snail reproduction.
ENP-CSSS habitats		Rainfall, ET, management	Follow rainfall plan for releases and current ERTP guidelines. Follow guidance in C-111 Western Spreader Canal Project operations manual. Care should be taken to avoid overdrying eastern subpopulations C and F.	Future operations need to continue to provide appropriate hydrological and habitat conditions for CSSS. Current and near term forcasted conditions are conducive for continuation of a successful sparrow breeding season.
Taylor Slough	Stage changes ranged −0.15' to +0.08'	Rain, ET, inflows	Move water southward as possible	When available provide freshwater buffer for ecosystems and slow recession rates.
FB- Salinity	Salinity changes ranged −12 to +2 psu.	Rain, ET, inflows, wind	Move water southward as possible	When available provide freshwwater to buffer hypersalinity conditions.