

# Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 8/28/2017 (ENSO Neutral Condition)

## Lake Okeechobee Net Inflow Outlook:

The Lake Okeechobee Net Inflow Outlook has been computed using 4 methods: Croley's method<sup>1</sup>, the SFWMD empirical method<sup>2</sup>, a sub-sampling of Neutral years<sup>3</sup> and a sub-sampling of warm years of the Atlantic Multi-decadal Oscillation (AMO) in combination with Neutral ENSO years<sup>4</sup>. The results for Croley's method and the SFWMD empirical method are based on the [CPC Outlook](#).

Table of the Lake Okeechobee Net Inflow Outlooks in feet of equivalent depth. All methods are updated on a weekly basis with observed net inflow for the current month.

Season	Croley's Method <sup>1*</sup>		SFWMD Empirical Method <sup>2</sup>		Sub-sampling of Neutral ENSO Years <sup>3</sup>		Sub-sampling of AMO Warm + Neutral ENSO Years <sup>4</sup>	
	Value (ft)	<a href="#">Condition</a>	Value (ft)	<a href="#">Condition</a>	Value (ft)	<a href="#">Condition</a>	Value (ft)	<a href="#">Condition</a>
Current (Aug-Jan)	N/A	N/A	2.02	Very Wet	2.48	Very Wet	3.27	Very Wet
Multi Seasonal (Aug-Apr)	N/A	N/A	2.11	Normal	2.53	Wet	3.34	Wet

\*Croley's Method Not Produced For This Report

See [Seasonal](#) and [Multi-Seasonal](#) tables for the classification of Lake Okeechobee Outlooks.

The recommended methods and values for estimating the Lake Okeechobee Net Inflow Outlook are shaded and should be used in the LORS2008 Release Guidance Flow Charts.

## [Tributary Hydrologic Conditions Graph:](#)

**3106 cfs** 14-day running average for Lake Okeechobee Net Inflow through 8/27/2017. According to the classification in [Tributary Hydrologic Conditions](#) table, this condition is Wet.

**-0.80** for Palmer Index on 8/26/2017.

According to the classification in [Tributary Hydrologic Conditions](#) table, this condition is Normal.

The wetter of the two conditions above is **Wet**.

## [LORS2008 Classification Tables:](#)

### Lake Okeechobee Stage on 8/26/2017

Lake Okeechobee Stage: **13.50 feet**

[USACE Report for Lake Okeechobee](#)

[Lake Okeechobee Stage Hydrograph](#)

Lake Okeechobee Management Zone/Band		Bottom Elevation (feet, NGVD)	Current Lake Stage
High Lake Management Band		16.41	
Operational Band	High sub-band	16.02	
	Intermediate sub-band	15.62	
	Low sub-band	13.82	
Base Flow sub-band		12.60	← 13.50
Beneficial Use sub-band		12.30	
Water Shortage Management Band			

**[Part C of LORS2008: Discharge to WCA's](#)**

Release Guidance Flow Chart Outcome: No releases to the WCAs.

**[Part D of LORS2008: Discharge to Tidewater](#)**

Release Guidance Flow Chart Outcome: S-79 up to 450 cfs and S-80 up to 200 cfs.

**Technical Input Summaries from:**

- [Lake Okeechobee Division](#)
- [Coastal Ecosystems](#)
- [Everglades Ecosystems Division](#)
- [Water Supply Department](#)
- [Water Resource Management Release Recommendation](#)
- [Kissimmee Watershed Environmental Conditions](#)
- [Environmental Conditions for Systems Operations](#)

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**[Back to U.S. Army Corps of Engineers LORSS Homepage](#)**

## LORS2008 Implementation on 8/28/2017 (ENSO Neutral Condition):

### Status for week ending 8/28/2017:

District wide, Raindar rainfall was 2.97 inches for the week. Lake stage on 8/28/2017 was 13.50 ft, up 0.11 ft from last week.

The updated August 15 2017 SFWMM Dynamic Position Analysis [percentile graph](#) for Lake Okeechobee show that the current lake stage is in the Base Flow Operational Sub-Band.

The LORS2008 tributary [indices](#) are classified as **Wet**. The PDSI indicates normal condition and the LONIN is Wet. The classification is based on the wetter of the two.

### Water Supply Risk Evaluation

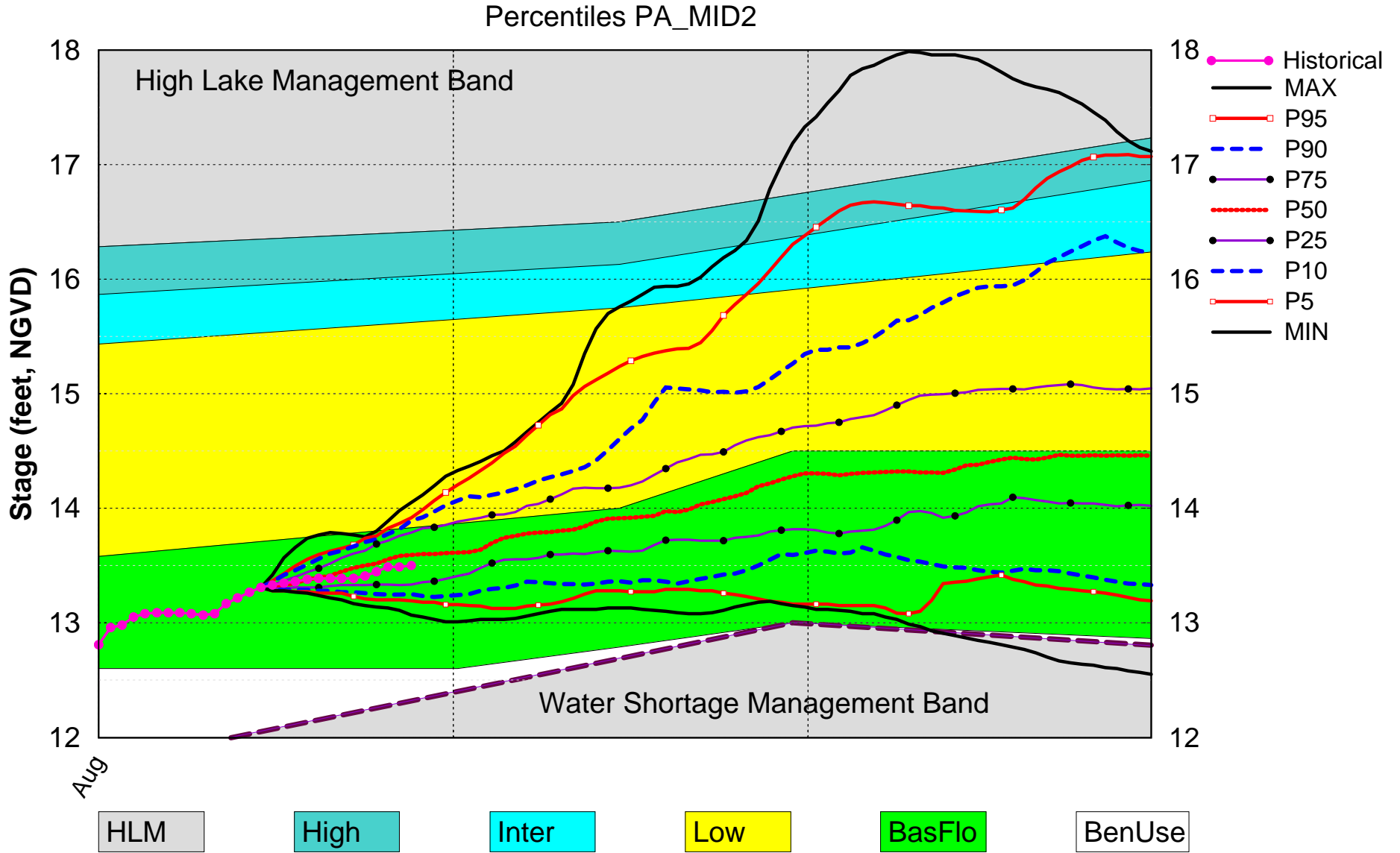
Area	Indicator	Value	Color Coded Scoring Scheme
LOK	Projected LOK Stage for the next two months	Base Flow Sub Band	M
	Palmer Index for LOK Tributary Conditions	-0.80 (Normal)	L
	CPC Precipitation Outlook	1 month: Normal	L
		3 months: Above Normal	L
	LOK Seasonal Net Inflow Outlook ENSO La Nina Years	2.48 ft (Normal)	L
	LOK Multi-Seasonal Net Inflow Outlook ENSO La Nina Years	2.53 ft (Normal)	M
WCAs	WCA 1: Site 1-7, Site 1-8T, & Site 1-9 Average	Above Line 1 (16.75 ft)	L
	WCA 2A: Site 2-17 HW	Above Line 1 (13.94 ft)	L
	WCA-3A: 3 Station Average (Site 63, 64 and 65)	Above Line 1 (11.13 ft)	L
LEC	Service Area 1	Year-Round Irrigation Rule in effect	L
	Service Area 2	Year-Round Irrigation Rule in effect	L
	Service Area 3	Year-Round Irrigation Rule in effect	L

Note: The water supply risk classification based on the Palmer index, as well as the LOK seasonal and multi-seasonal net inflow outlooks use slightly different classification intervals than those used by the 2008-LORS.

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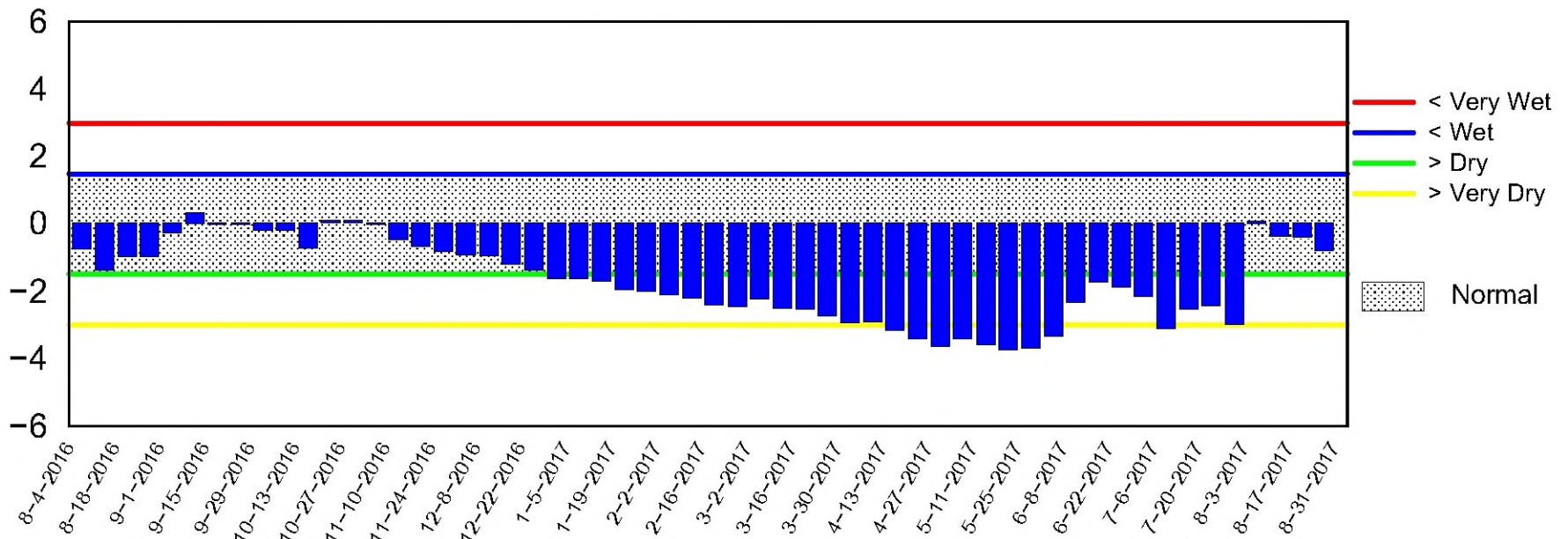
# Lake Okeechobee SFWMM August 15 2017 Dynamic Position Analysis



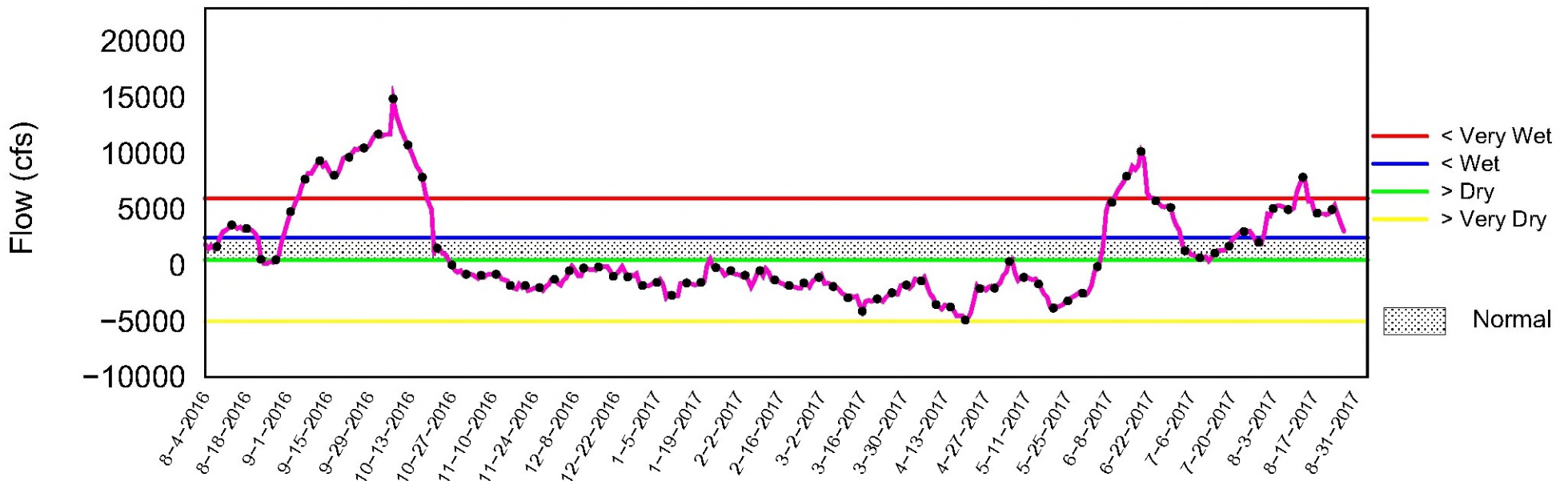
(See assumptions on the Position Analysis Results website)

# Tributary Basin Condition Indicators as of August 28 2017

## Palmer Index



## Lake Okeechobee Net Inflow (LONIN) 14-day Running Average



# 2008 LORS

## Part C: Establish Allowable Lake Okeechobee Releases to the Water Conservation Areas

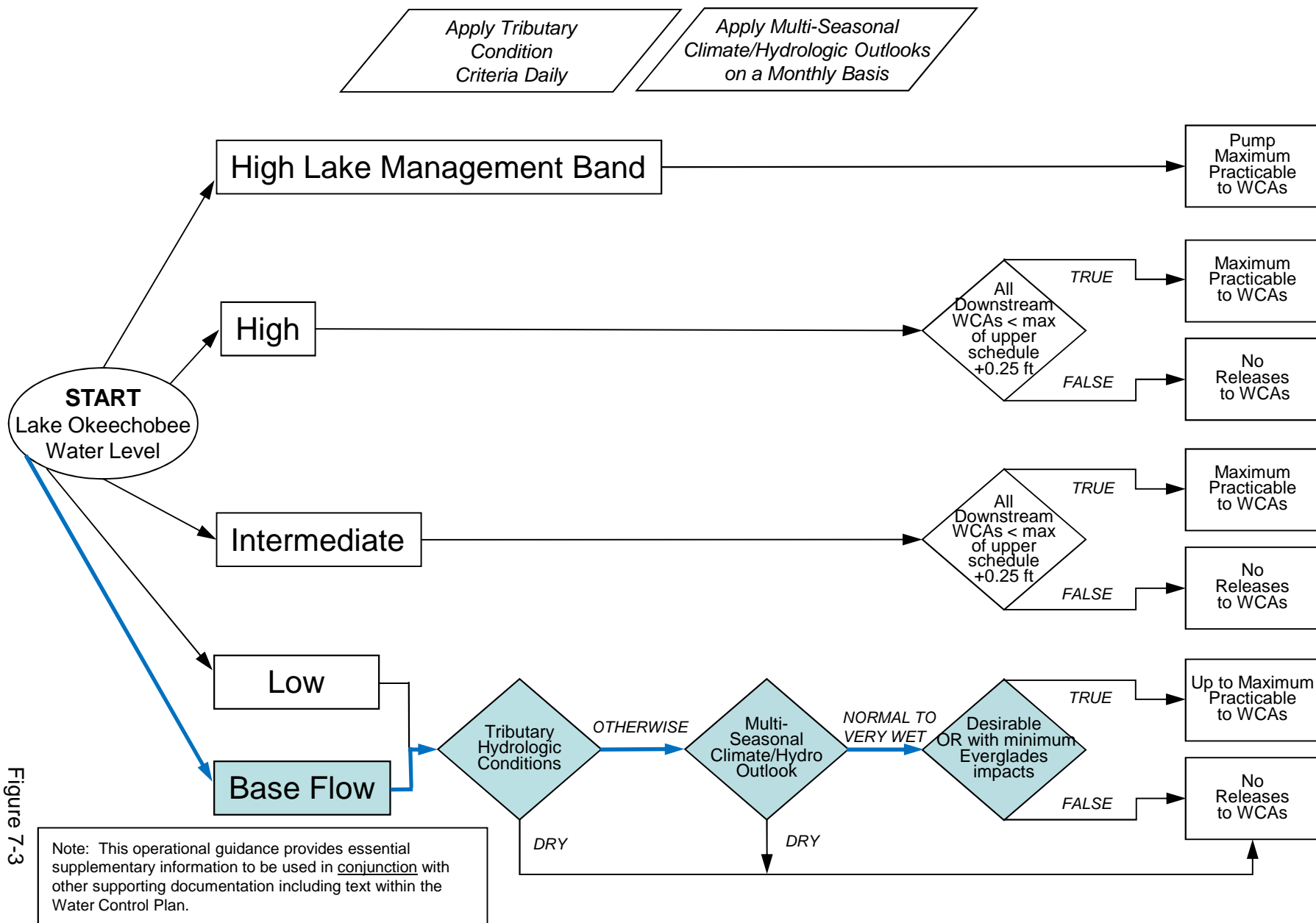


Figure 7-3

# 2008 LORS

## Part D: Establish Allowable Lake Okeechobee Releases to Tide (Estuaries)

Note: This operational guidance provides essential supplementary information to be used in conjunction with other supporting documentation including text within the Water Control Plan.

When conducting Base Flow releases, flows can be distributed East and West up to 650 cfs as needed to minimize impacts or provide benefits through S-80 and S-79

Apply Meteorological Forecasts on a Weekly Basis; apply Seasonal and Multi-Seasonal Climate/Hydrologic Outlooks on a Monthly Basis

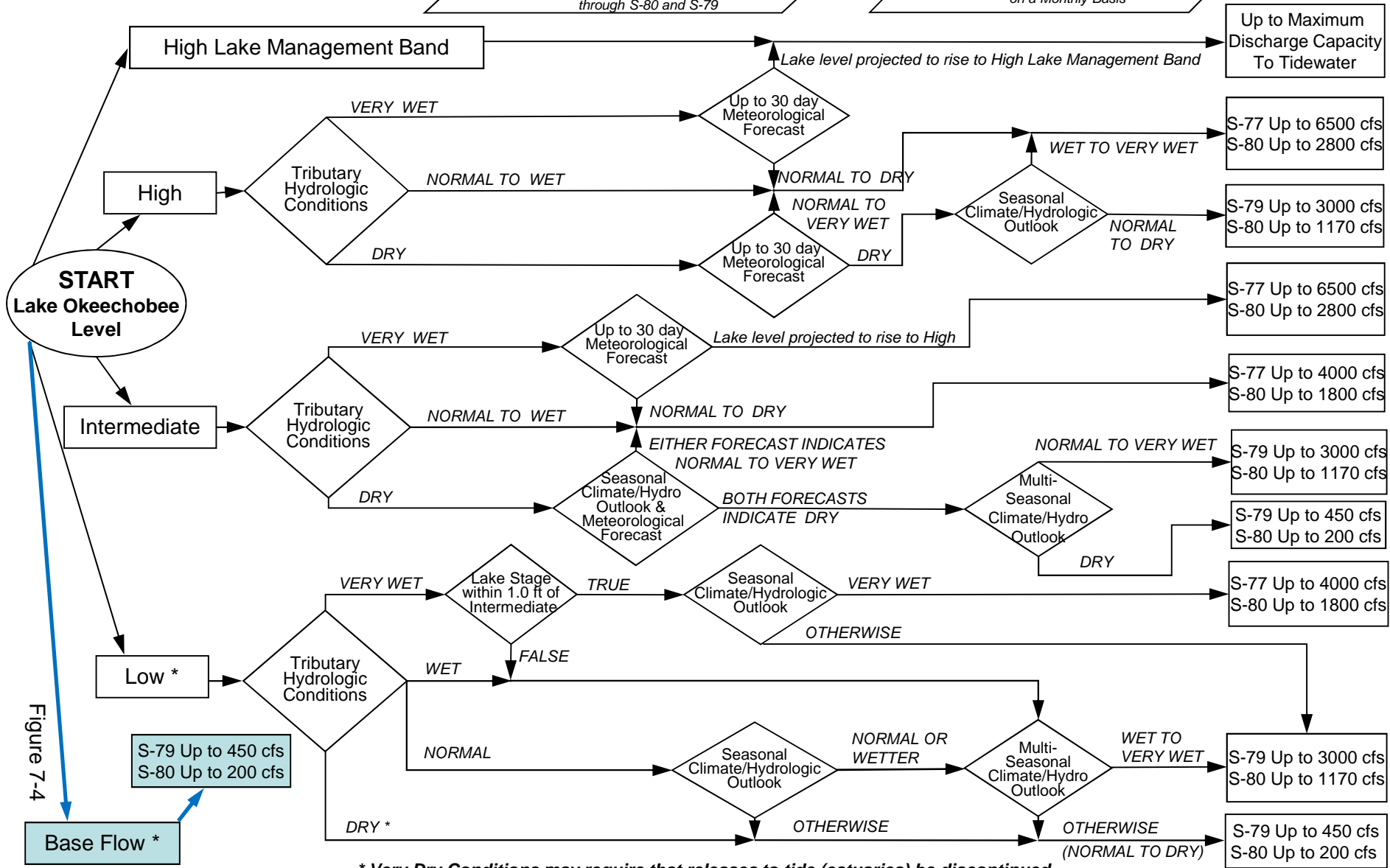
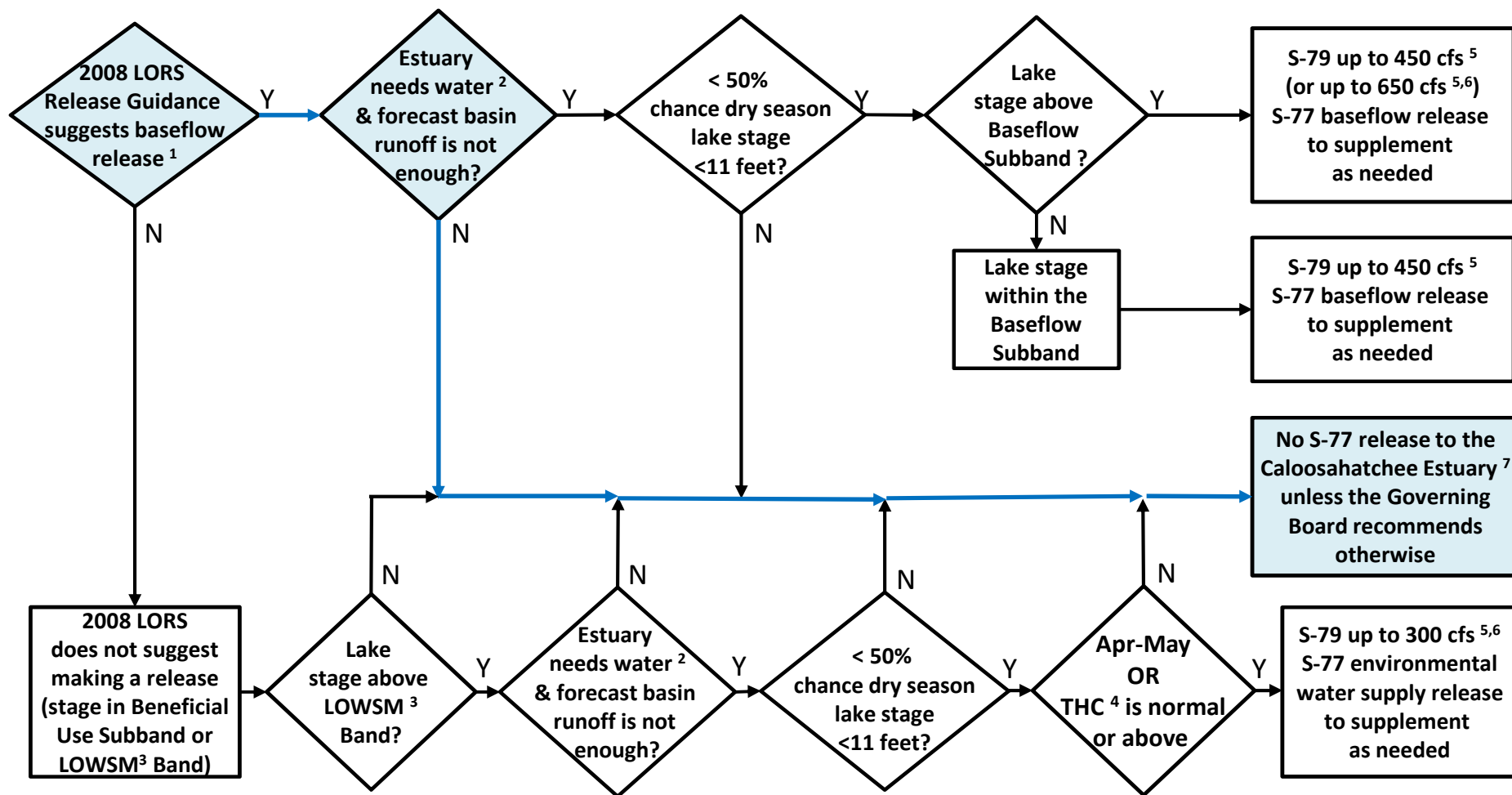


Figure 7-4



# Flowchart to Guide Recommendations for Lake Okeechobee Releases to the Caloosahatchee Estuary for 2008 LORS Baseflow & for Environmental Water Supply (revised 9-Aug-2012)



<sup>1</sup>The 2008 LORS Release Guidance (Part D) can suggest baseflow releases in the Intermediate, Low, or Baseflow Subbands.

<sup>2</sup>Estuary “needs” water when the 30-day moving average salinity at I-75 bridge is projected to exceed 5 practical salinity units (psu) within 2 weeks.

<sup>3</sup>LOWSM = Lake Okeechobee Water Shortage Management.

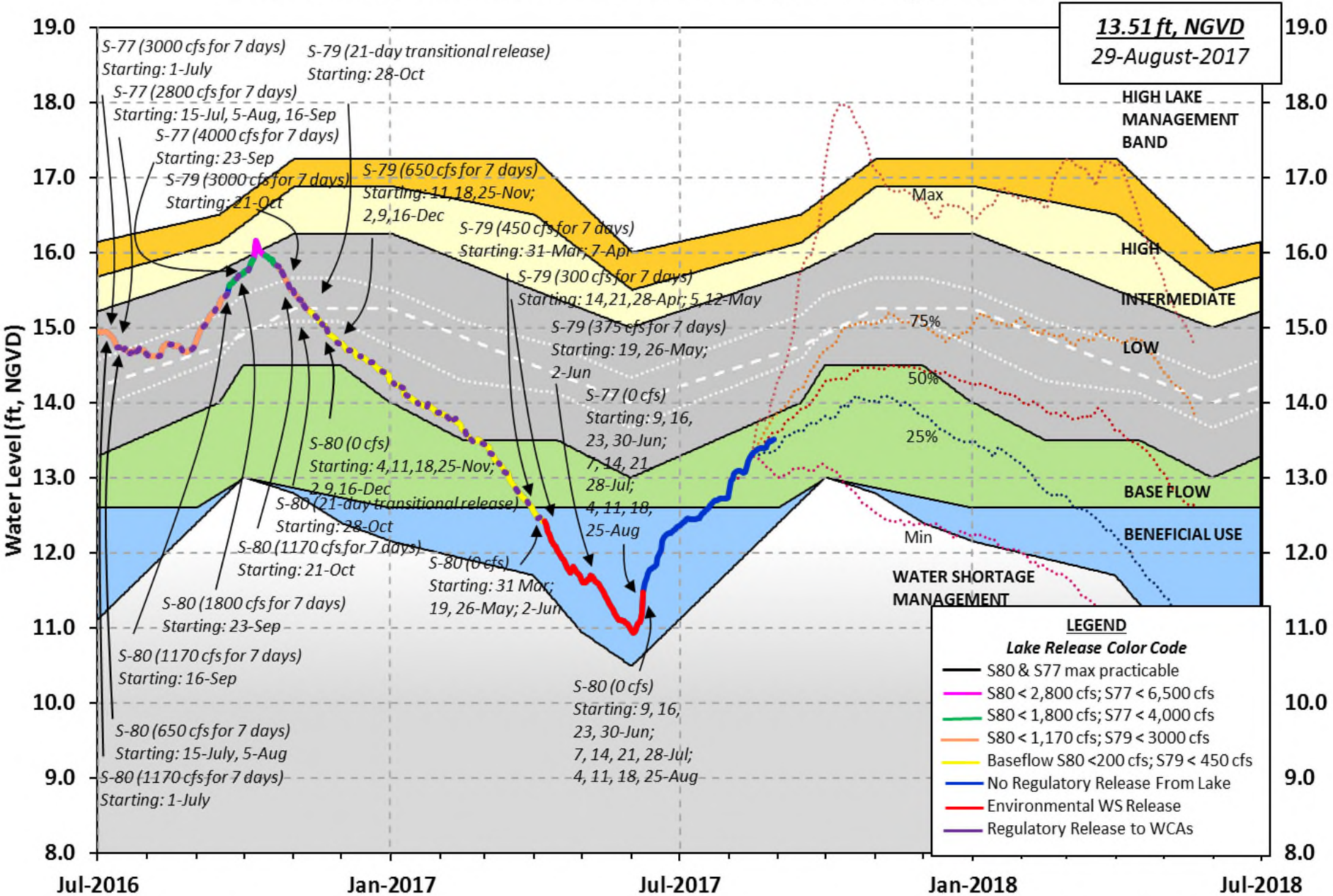
<sup>4</sup>Tributary Hydrologic Condition (THC) is based on classification of Lake Okeechobee Net Inflow and Palmer Index.

<sup>5</sup>Can release less than the “up to” limit if lower release is sufficient to reach or sustain desired estuary salinity; cfs = cubic feet per second.

<sup>6</sup>After reviewing conditions in Water Conservation Areas (WCAs), Stormwater Treatment Areas (STAs), ENP, St. Lucie Estuary and Lake Okeechobee.

<sup>7</sup>Should this condition be reached, the Governing Board will be briefed at their next regularly scheduled meeting as part of the State of the Water Resources agenda item

# Lake Okeechobee Water Level History and Projected Stages







S169:	13.35	11.20	0	0.0	0.0	0.0			
S310:	13.31		11						
S3 Pumps:	9.45	13.36	0	0	0	0			(cfs)
S354:	13.36	9.45	0	0.0	0.0				
S2 Pumps:	10.00	13.39	0	0	0	0	0		(cfs)
S351:	13.39	10.00	0	0.0	0.0	0.0			
S352:	13.69	9.37	0	0.0	0.0				
C10A:	-NR-	13.78		8.0	8.0	8.0	0.0	0.0	
L8 Canal PT		13.49	-NR-						

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S351 and S352 Temporary Pumps/S354 Spillway

S351:	10.00	13.39	0	-NR-	-NR-	-NR-	-NR-	-NR-	-NR-
S352:	9.37	13.69	0	-NR-	-NR-	-NR-	-NR-		
S354:	9.45	13.36	0	-NR-	-NR-	-NR-	-NR-		

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Caloosahatchee River (S77, S78, S79)

S47B:	13.77	11.04		0.5	0.5				
S47D:	11.06	11.04	78	6.5					

S77:

Spillway and Sector Flow:									
	13.39	11.14	0.00	0.0	0.0	0.0	0.0	0.0	
Flow Due to Lockages+:			1						

S77 Below USGS Flow Gage -8

S78:

Spillway and Sector Flow:									
	10.92	3.71	336	0.0	0.0	0.0	1.0		
Flow Due to Lockages+:			8						

S79:

Spillway and Sector Flow:										
	3.28	2.40	3156	2.0	2.0	2.0	3.0	3.0	2.0	2.0

2.0

Flow Due to Lockages+:			1						
Percent of flow from S77			0%						
Chloride (ppm)			61						

St. Lucie Canal (S308, S80)

S308:

Spillway and Sector Flow:									
	13.47	13.68	*****	2.0	2.0	2.0	2.0		
Flow Due to Lockages+:			-0						

S308 Below USGS Flow Gage -456

S153:	18.45	13.49	69	0.5	0.0				
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S80:

Spillway and Sector Flow:									
	13.75	0.38	0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Due to Lockages+:			8						
Percent of flow from S308			NA	%					

Steele Point Top Salinity (mg/ml) \*\*\*\*

Steele Point Bottom Salinity (mg/ml) \*\*\*\*

Speedy Point Top Salinity (mg/ml) \*\*\*\*

Speedy Point Bottom Salinity (mg/ml) \*\*\*\*

+ Flow Due to lockages is computed utilizing average daily headwater and tailwater along with total number of lockages for the day to calculate a volume which is then converted to an average discharge in cfs.

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Daily Precipitation Totals Speed (mph)	1-Day (inches)	3-Day (inches)	7-Day (inches)	Direction (Degø)	Wind ---
S133 Pump Station:	-NR-	0.00	0.00		
S193:	-NR-	0.00	0.00	-NR-	-NR-
Okeechobee Field Station:	-NR-	0.00	0.00		
S135 Pump Station:	-NR-	0.00	0.00		
S127 Pump Station:	-NR-	0.00	0.00		
S129 Pump Station:	-NR-	0.00	0.00		
S131 Pump Station:	-NR-	0.00	0.00		
S77:	0.22	0.33	1.10	208	2
S78:	0.05	0.36	1.01	223	6
S79:	1.87	4.32	5.21	186	3
S4 Pump Station:	-NR-	0.00	0.00		
Clewiston Field Station:	-NR-	0.00	0.00		
S3 Pump Station:	-NR-	0.00	0.00		
S2 Pump Station:	-NR-	0.00	0.00		
S308:	0.00	0.04	0.17	181	12
S80:	0.00	0.01	0.01	0	0
Okeechobee Average (Sites S78, S79 and S80 not included)	0.11	0.03	0.10		
Oke Nexrad Basin Avg	-NR-	0.08	0.87		

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Okeechobee Lake Elevations	27 AUG 2017	13.50	Difference from
27AUG17			
27AUG17 -1 Day =	26 AUG 2017	13.49	-0.01
27AUG17 -2 Days =	25 AUG 2017	13.49	-0.01
27AUG17 -3 Days =	24 AUG 2017	13.45	-0.05
27AUG17 -4 Days =	23 AUG 2017	13.41	-0.09
27AUG17 -5 Days =	22 AUG 2017	13.39	-0.11
27AUG17 -6 Days =	21 AUG 2017	13.39	-0.11
27AUG17 -7 Days =	20 AUG 2017	13.39	-0.11
27AUG17 -30 Days =	28 JUL 2017	12.72	-0.78
27AUG17 -1 Year =	27 AUG 2016	14.71	1.21
27AUG17 -2 Year =	27 AUG 2015	12.72	-0.78

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Long Term Mean 30day Avearge ET for Lake Alfred (Inches) = 4.37

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Lake Okeechobee Net Inflow (LONIN)

Average Flow over the previous 14 days					Avg-Daily Flow
27AUG17	Today =	27 AUG 2017	3994	MON	-NR-
27AUG17	-1 Day =	26 AUG 2017	4596	SUN	-NR-
27AUG17	-2 Days =	25 AUG 2017	5095	SAT	8268
27AUG17	-3 Days =	24 AUG 2017	6014	FRI	8268
27AUG17	-4 Days =	23 AUG 2017	5556	THU	-NR-
27AUG17	-5 Days =	22 AUG 2017	5041	WED	0
27AUG17	-6 Days =	21 AUG 2017	4956	TUE	0
27AUG17	-7 Days =	20 AUG 2017	5003	MON	0
27AUG17	-8 Days =	19 AUG 2017	5012	SUN	-NR-
27AUG17	-9 Days =	18 AUG 2017	4824	SAT	4235
27AUG17	-10 Days =	17 AUG 2017	4975	FRI	2118
27AUG17	-11 Days =	16 AUG 2017	5861	THU	4248
27AUG17	-12 Days =	15 AUG 2017	5838	WED	4307
27AUG17	-13 Days =	14 AUG 2017	7605	TUE	8501

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S65E

Average Flow over previous 14 days					Avg-Daily Flow
27AUG17	Today=	27 AUG 2017	0	MON	0
27AUG17	-1 Day =	26 AUG 2017	0	SUN	0
27AUG17	-2 Days =	25 AUG 2017	0	SAT	0
27AUG17	-3 Days =	24 AUG 2017	0	FRI	0
27AUG17	-4 Days =	23 AUG 2017	0	THU	0
27AUG17	-5 Days =	22 AUG 2017	0	WED	0
27AUG17	-6 Days =	21 AUG 2017	0	TUE	0
27AUG17	-7 Days =	20 AUG 2017	0	MON	0
27AUG17	-8 Days =	19 AUG 2017	0	SUN	0
27AUG17	-9 Days =	18 AUG 2017	0	SAT	0
27AUG17	-10 Days =	17 AUG 2017	19	FRI	0
27AUG17	-11 Days =	16 AUG 2017	50	THU	0
27AUG17	-12 Days =	15 AUG 2017	50	WED	0
27AUG17	-13 Days =	14 AUG 2017	50	TUE	0

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S65EX1

Average Flow over previous 14 days					Avg-Daily Flow
27AUG17	Today=	27 AUG 2017	2196	MON	2126
27AUG17	-1 Day =	26 AUG 2017	2190	SUN	2218
27AUG17	-2 Days =	25 AUG 2017	2176	SAT	1969
27AUG17	-3 Days =	24 AUG 2017	2185	FRI	2553
27AUG17	-4 Days =	23 AUG 2017	2154	THU	1941
27AUG17	-5 Days =	22 AUG 2017	2176	WED	1997
27AUG17	-6 Days =	21 AUG 2017	2206	TUE	2010
27AUG17	-7 Days =	20 AUG 2017	2239	MON	2021
27AUG17	-8 Days =	19 AUG 2017	2283	SUN	2187
27AUG17	-9 Days =	18 AUG 2017	2325	SAT	2206
27AUG17	-10 Days =	17 AUG 2017	2353	FRI	2284
27AUG17	-11 Days =	16 AUG 2017	2363	THU	2405
27AUG17	-12 Days =	15 AUG 2017	2333	WED	2455

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 Lake Okeechobee Outlets Last 14 Days

	S-77	Below S-77	S-78	S-79
	Discharge	Discharge	Discharge	Discharge
	(ALL DAY)	(ALL-DAY)	(ALL DAY)	(ALL DAY)
DATE	(AC-FT)	(AC-FT)	(AC-FT)	(AC-FT)
27 AUG 2017	2	-16	681	6292
26 AUG 2017	3	45	682	4807
25 AUG 2017	3	250	672	5519
24 AUG 2017	2	-43	482	1823
23 AUG 2017	2	-320	7	648
22 AUG 2017	3	-150	193	1462
21 AUG 2017	6	-25	630	2999
20 AUG 2017	3	113	459	2315
19 AUG 2017	9	142	19	1899
18 AUG 2017	3	-23	437	2918
17 AUG 2017	5	181	1522	4030
16 AUG 2017	1	566	1581	3450
15 AUG 2017	2	760	1829	5422
14 AUG 2017	2	818	2479	5166

	S-310	S-351	S-352	S-354	L8 Canal Pt
	Discharge	Discharge	Discharge	Discharge	Discharge
	(ALL DAY)	(ALL DAY)	(ALL DAY)	(ALL DAY)	(ALL DAY)
DATE	(AC-FT)	(AC-FT)	(AC-FT)	(AC-FT)	(AC-FT)
27 AUG 2017	22	0	0	0	-NR-
26 AUG 2017	17	0	0	0	-NR-
25 AUG 2017	-83	0	0	0	-341
24 AUG 2017	-57	0	0	0	-66
23 AUG 2017	-86	0	0	0	-NR-
22 AUG 2017	-26	0	0	0	-202
21 AUG 2017	-19	0	0	0	-338
20 AUG 2017	-67	0	0	0	-162
19 AUG 2017	-82	0	0	0	-NR-
18 AUG 2017	-121	0	0	0	-405
17 AUG 2017	-137	0	0	0	-386
16 AUG 2017	-190	0	0	0	26
15 AUG 2017	-296	0	0	0	143
14 AUG 2017	-195	0	0	0	61

	S-308	Below S-308	S-80
	Discharge	Discharge	Discharge
	(ALL DAY)	(ALL-DAY)	(ALL-DAY)
DATE	(AC-FT)	(AC-FT)	(AC-FT)
27 AUG 2017	-1124	-903	15
26 AUG 2017	-1343	-1194	19
25 AUG 2017	-916	-1002	20
24 AUG 2017	-2	-247	26
23 AUG 2017	-0	6	11
22 AUG 2017	-816	-150	25
21 AUG 2017	-805	-317	26
20 AUG 2017	-1156	-466	33
19 AUG 2017	-1722	-635	44
18 AUG 2017	-1198	-741	11



17 AUG 2017	-1333	-892	18
16 AUG 2017	-735	-894	26
15 AUG 2017	-1238	-NR-	11
14 AUG 2017	-NR-	-NR-	7

\*\*\* NOTE: Discharge (ALL DAY) is computed using Spillway, Sector Gate and Lockages Discharges from 0015 hrs to 2400 hrs.

(I) - Flows preceded by "I" signify an instantaneous flow computed from the single value reported for the day

\* On 11 May 1999, Lake Okeechobee Elevation was switched from Instantaneous 2400 value to an average-daily lake average. On 14 Mar 2001, due to the isolation of various gages within the standard 10 stations, the average of the interior 4 station gages was used as the Lake Okeechobee Elevation. On 05 November 2010, Lake Okeechobee Elevation was switched to a 9 gage mix of interior and edge gages to obtain a more reliable representation of the lake level. On 09 May 2011, Lake Okeechobee Elevation was switched to a 8 gage mix of interior and edge gages to obtain a more reliable representation of the lake level due to isolation of S135 from low lake levels. Today Lake Okeechobee elevation is determined from the 4 Int & 4 Edge stations

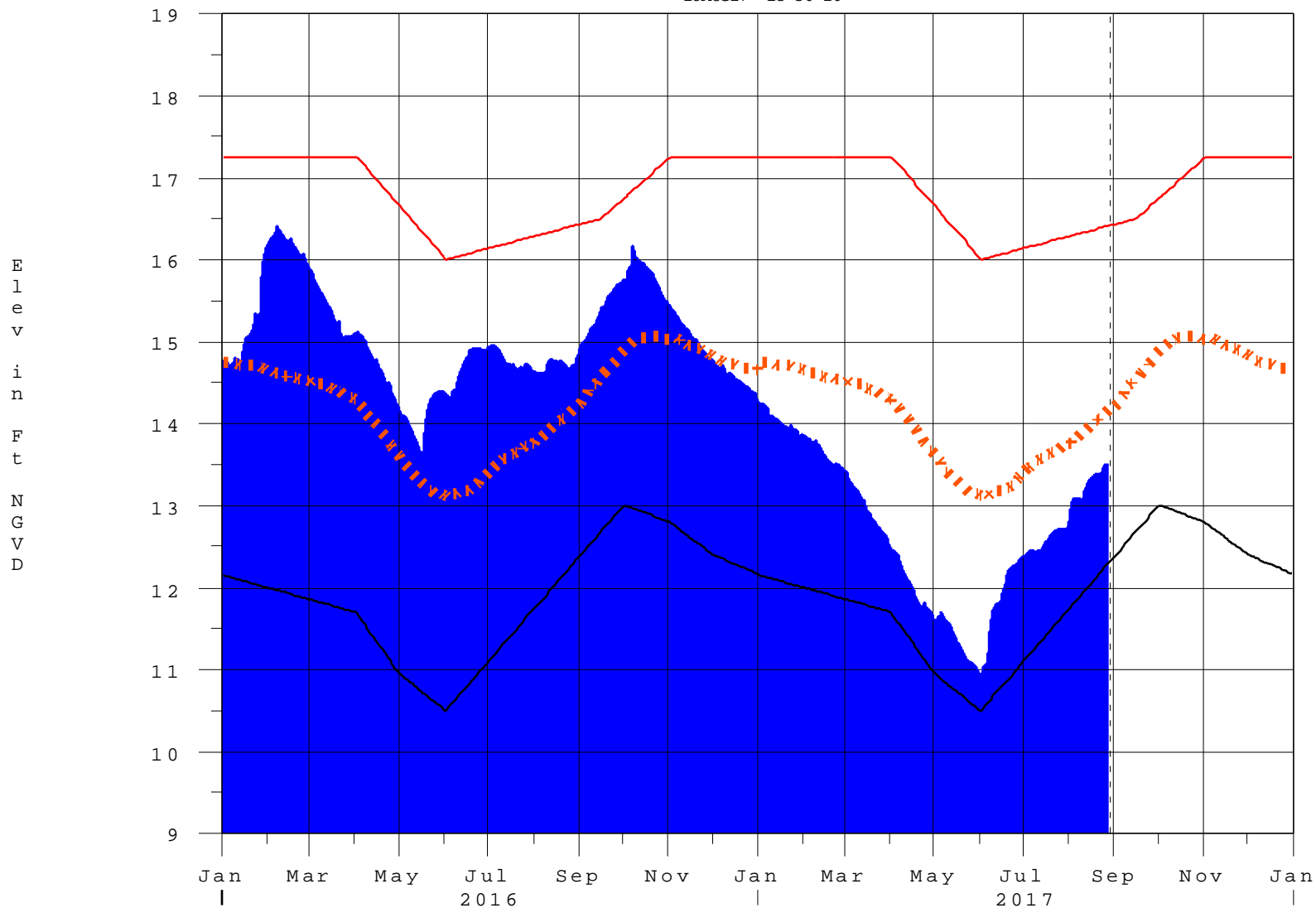
++ For more information see the Jacksonville District Navigation website at <http://www.saj.usace.army.mil/>

\$ For information regarding Lake Okeechobee Service Area water restrictions please refer to [www.sfwmd.gov](http://www.sfwmd.gov)

Report Generated 28AUG2017 @ 13:38 \*\* Preliminary Data - Subject to Revision \*\*

# Lake Okeechobee

28AUG17 13:30:20



- High Lake Management
- Okeechobee Avg Elev
- Average Elev [1965-2007]
- Water Shortage Management

# Classification Tables

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Supplemental Tables used in conjunction with the LORS2008 Release

Guidance Flow Charts

- [Class Limits for Tributary Hydrologic Conditions](#)

Table K-2 in the Lake Okeechobee Water Control Plan

- [6-15 Day Precipitation Outlook Categories](#)

Table ?? in the Lake Okeechobee Water Control Plan

- [Classification of Lake Okeechobee Net Inflow for Seasonal Outlook](#)

Table K-3 in the Lake Okeechobee Water Control Plan

- [Classification of Lake Okeechobee Net Inflow for Multi-Seasonal Outlook](#)

Table K-4 in the Lake Okeechobee Water Control Plan

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Tributary Hydrologic Classification*	Palmer Index Class Limits	2-wk Mean L.O. Net Inflow Class Limits
Very Wet	3.0 or greater	Greater $\geq$ 6000 cfs
Wet	1.5 to 2.99	2500 - 5999 cfs
Near Normal	-1.49 to 1.49	500 - 2499 cfs
Dry	-2.99 to -1.5	-5000 – 500 cfs
Very Dry	-3.0 or less	Less than -5000 cfs

\* use the wettest of the two indicators

**Classification of Lake Okeechobee Net Inflow Seasonal Outlook\***

<b>Lake Net Inflow Prediction</b> <b>[million acre-feet]</b>	<b>Equivalent Depth**</b> <b>[feet]</b>	<b>Lake Okeechobee</b> <b>Net Inflow</b> <b>Seasonal Outlook</b>
> 0.93	> 2.0	Very Wet
0.71 to 0.93	1.51 to 2.0	Wet
0.35 to 0.70	0.75 to 1.5	Normal
< 0.35	< 0.75	Dry

**\*\*Volume-depth conversion based on average lake surface area of 467,000 acres**

## Classification of Lake Okeechobee Net Inflow Multi-Seasonal Outlook\*

<b>Lake Net Inflow Prediction</b> <b>[million acre-feet]</b>	<b>Equivalent Depth**</b> <b>[feet]</b>	<b>Lake Okeechobee Net Inflow Multi-Seasonal Outlook</b>
> 2.0	> 4.3	Very Wet
1.18 to 2.0	2.51 to 4.3	Wet
0.5 to 1.17	1.1 to 2.5	Normal
< 0.5	< 1.1	Dry

**\*\*Volume-depth conversion based on average lake surface area of 467,000 acres**

**6-15 Day Precipitation Outlook Categories\***

<b>6-15 Day Precipitation Outlook Categories</b>	<b>WSE Decision Tree Categories</b>
Above Normal	Wet to Very Wet
Normal	Normal
Below Normal	Dry

\* Corresponds to Table 7-6 in the Lake Okeechobee Water Control Plan

Under Construction