

# Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 7/8/2019 (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 La Nina 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 (Jul-Dec)	N/A	N/A	2.38	Very Wet	2.64	Very Wet	3.76	Very Wet
Multi Seasonal (Jul-Apr)	N/A	N/A	2.83	Wet	3.08	Wet	5.01	Very 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.

\*\*Sub-sampling is a weighted average of ENSO conditions based on the ENSO forecast used.

[Tributary Hydrologic Conditions Graph:](#)

**1329 cfs** 14-day running average for Lake Okeechobee Net Inflow through 7/7/2019. According to the classification in [Tributary Hydrologic Conditions](#) table, this condition is Normal.

**-1.45** for Palmer Index on 7/6/2019.

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

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

[LORS2008 Classification Tables:](#)

**Lake Okeechobee Stage on 7/1/2019**

Lake Okeechobee Stage: **11.34 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		16.17	
Operational Band	High sub-band	15.71	
	Intermediate sub-band	15.26	
	Low sub-band	13.35	
Base Flow sub-band		12.60	
Beneficial Use sub-band			← 11.34
Water Shortage Management Band		11.24	

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

Lake Okeechobee stage is within the Beneficial Use Sub-band therefore, no releases to the WCAs to manage lake stages

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

Lake Okeechobee stage is within the Beneficial Use Sub-band therefore, no releases to the St. Lucie or Caloosahatchee Estuaries to manage lake stages.

**[Adaptive Protocol's Release Guidance: Caloosahatchee Estuary](#)**

Release Guidance Flow Chart Outcome: No releases.

**[Back to Lake Okeechobee Operations Main Page](#)**

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

## LORS2008 Implementation on 07/8/2019 (ENSO El Niño Condition):

### Status for week ending 07/8/2019:

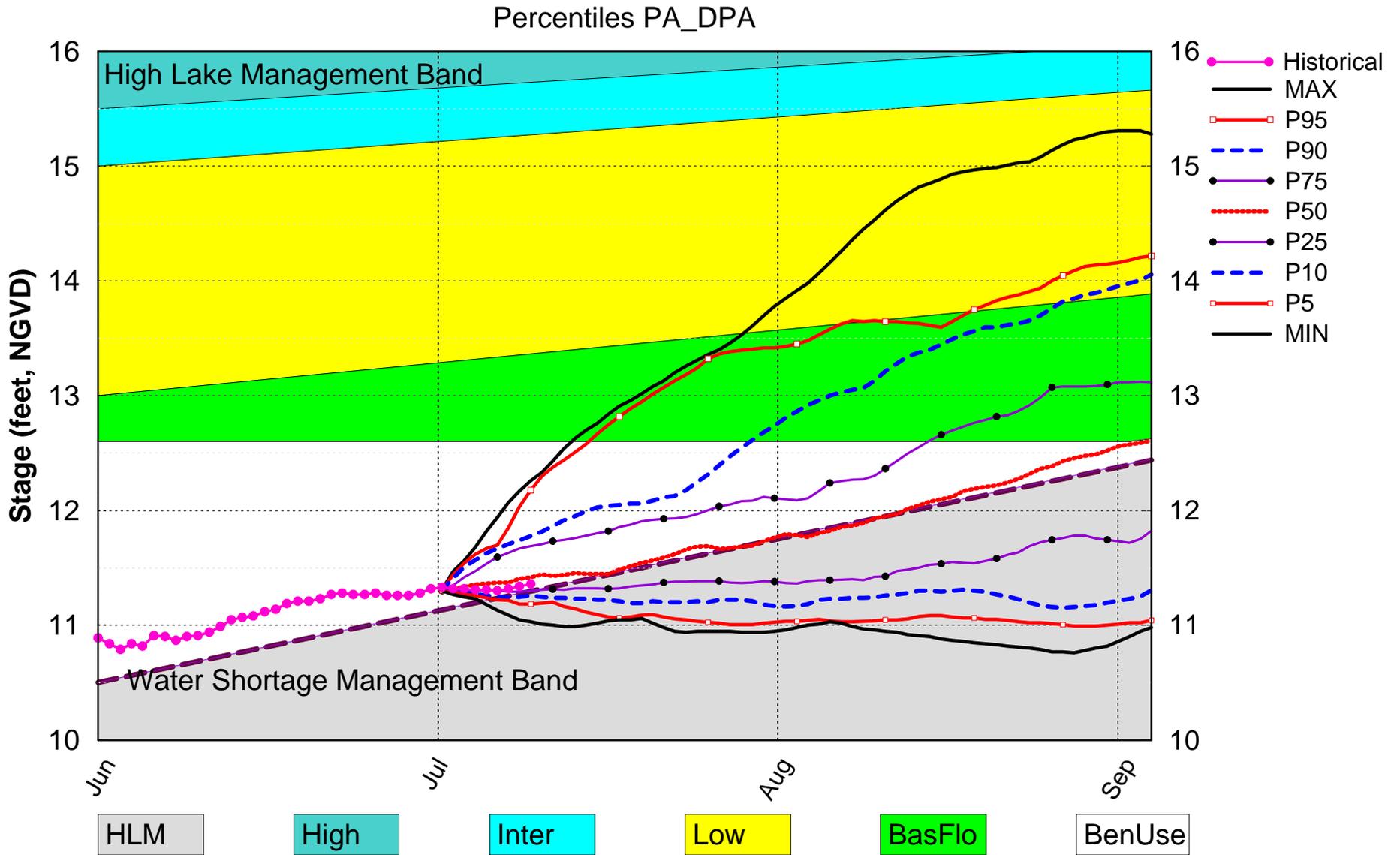
District wide, Raindar rainfall was 1.91 inches for the week. Lake stage on 7/8/2019 was 11.34 ft, NGVD, up 0.01 ft from last week. The updated June 2019 SFWMM Dynamic Position Analysis [percentile graph](#) for Lake Okeechobee show that the current lake stage is in the Beneficial Use Sub-band. The LORS2008 Tributary Hydrologic Conditions (THC) are classified as **Normal**. The PDI indicates normal conditions and the LONIN is normal. The THC classification is based on the wetter of the two [indices](#).

### Water Supply Risk Evaluation

Area	Indicator	Value	Color Coded Scoring Scheme
LOK	Projected LOK Stage for the next two months	Beneficial Use Sub-Band	M
	Palmer Index for LOK Tributary Conditions	-1.45 (Dry)	M
	CPC Precipitation Outlook	1 month: Normal	L
		3 months: Normal	L
	LOK Seasonal Net Inflow Outlook	2.64 ft (Normal to Extremely Wet)	L
	ENSO Forecast (positive)		
	LOK Multi-Seasonal Net Inflow Outlook	3.08 ft (Normal)	M
ENSO Forecast (positive)			
WCAs	WCA 1: Canal Gauge (Site 1-8C)	Above Line 1 (16.27 ft)	L
	WCA 2A: Site 2-17 HW	Above Line 1 (12.29 ft)	L
	WCA-3A: 3 Station Average (Site 63, 64, and 65)	Above Line 1 (9.54 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.

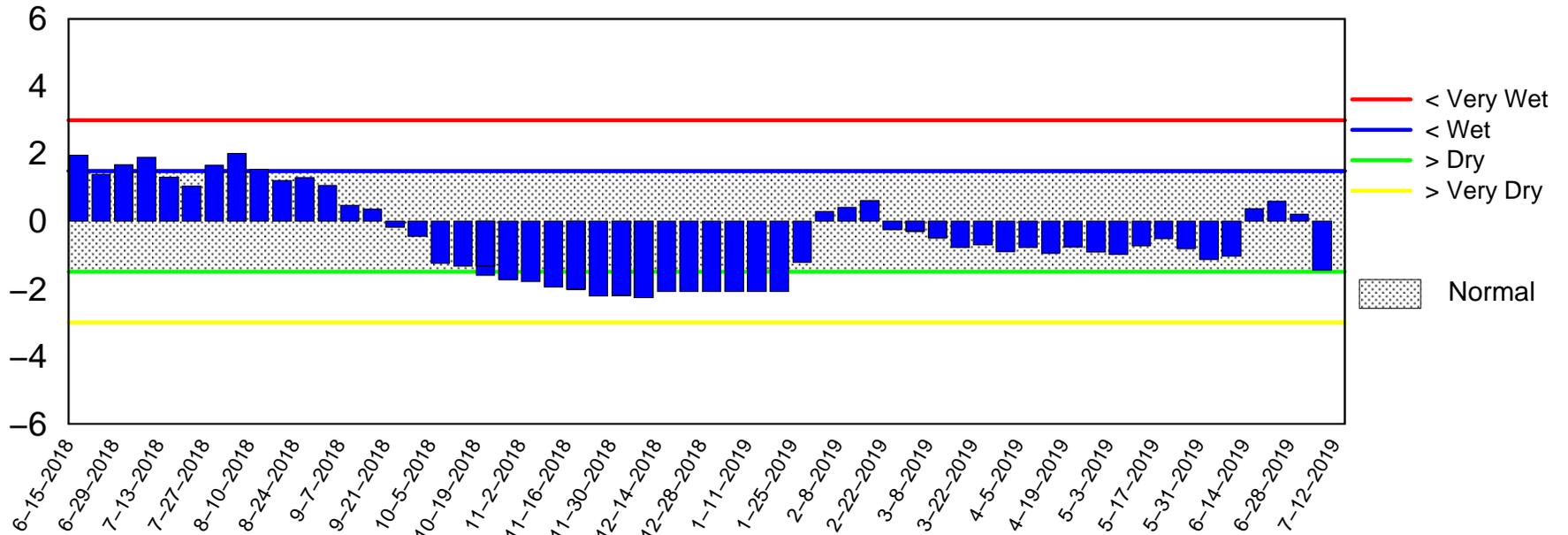
# Lake Okeechobee SFWMM July 2019 Position Analysis



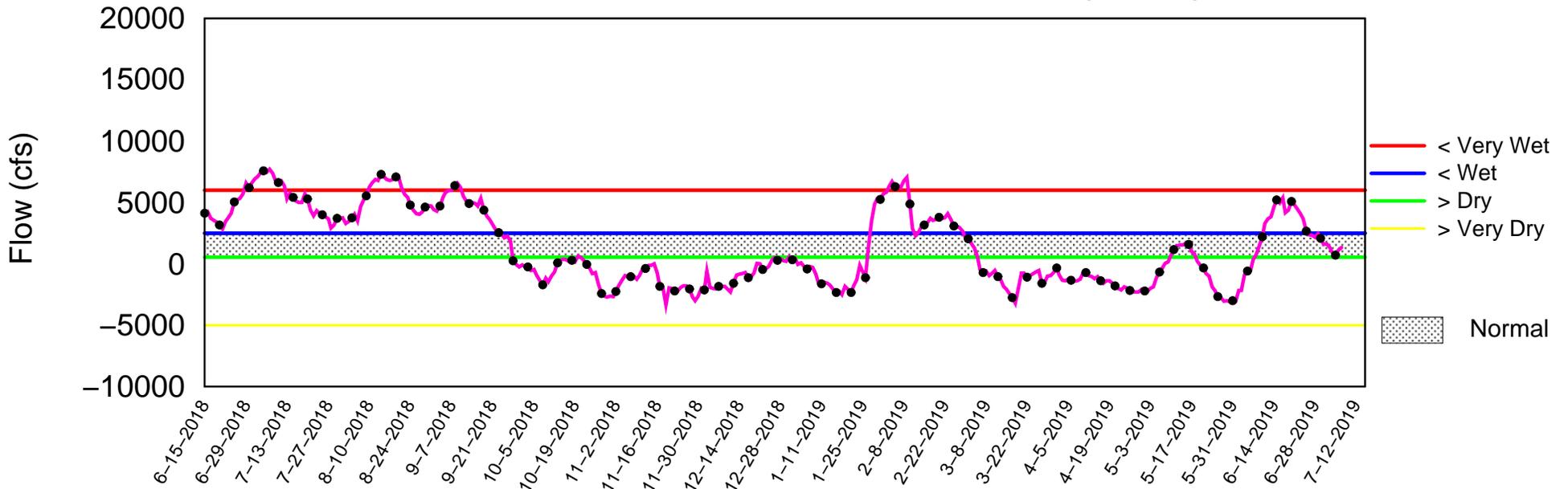
(See assumptions on the Position Analysis Results website)

# Tributary Basin Condition Indicators as of July 8 2019

## 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

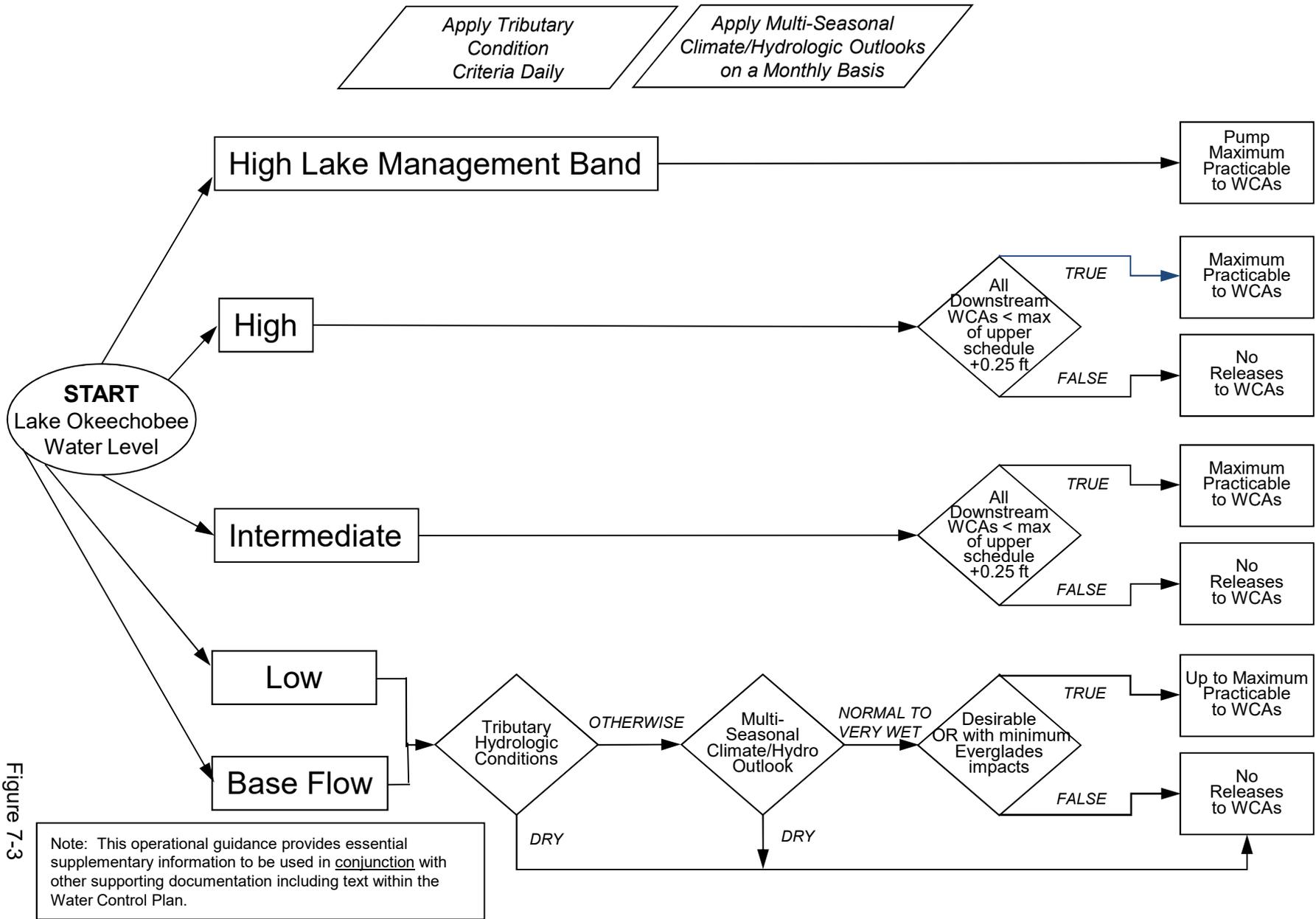


Figure 7-3

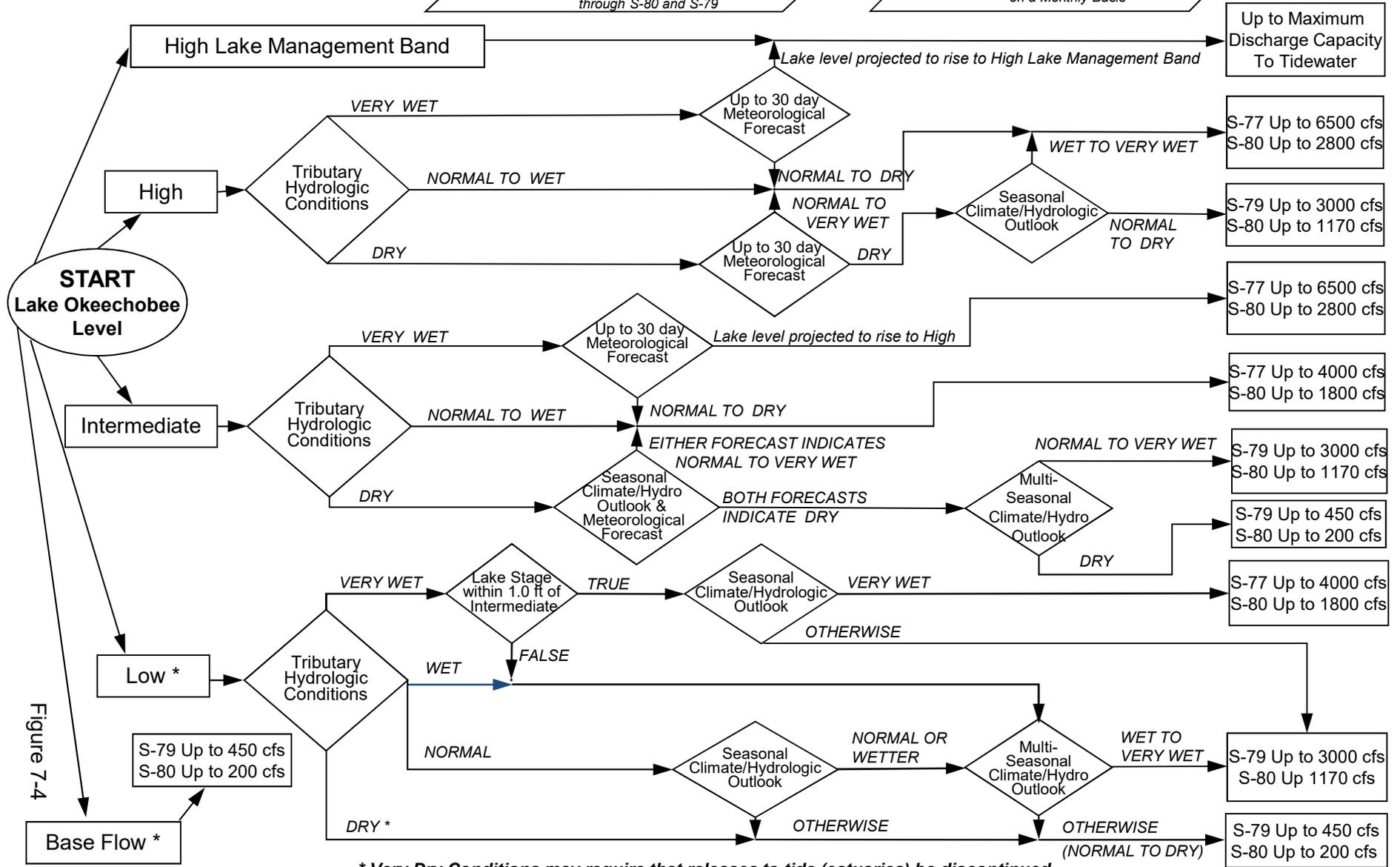
# 2008 LORS

## 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

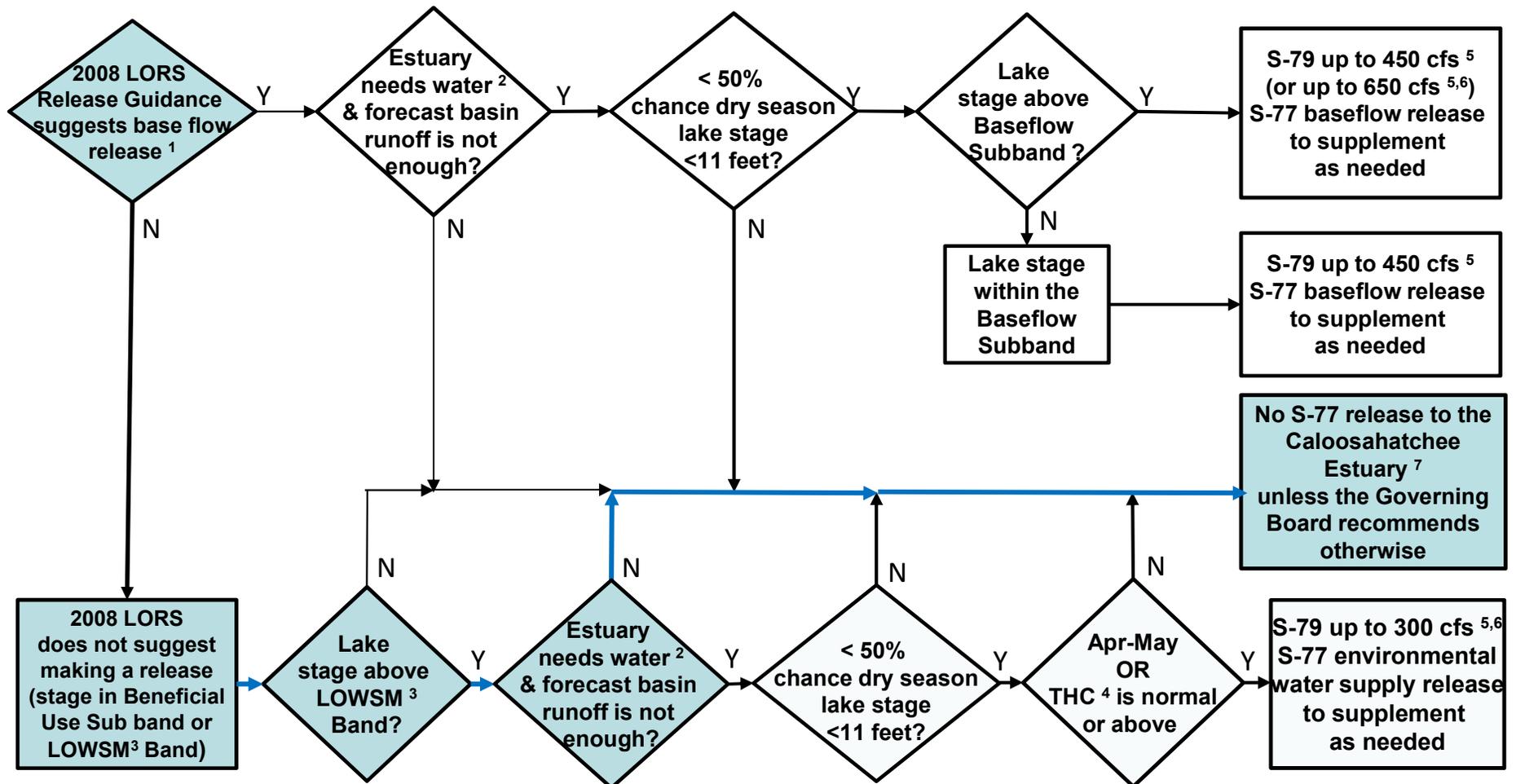
Apply Meteorological Forecasts on a Weekly Basis; apply Seasonal and Multi-Seasonal Climate/Hydrologic Outlooks on a Monthly Basis



\* Very Dry Conditions may require that releases to tide (estuaries) be discontinued

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.

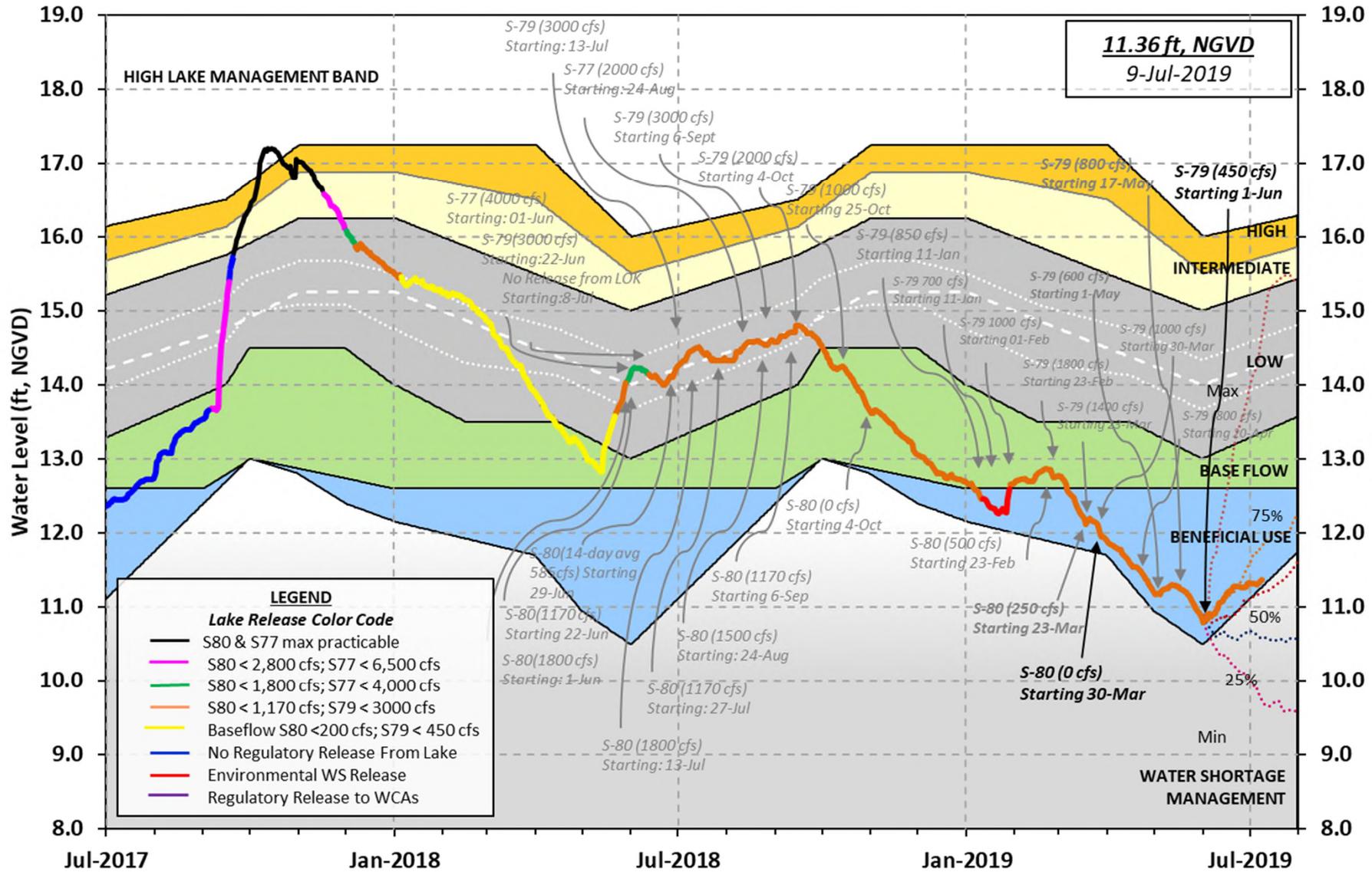
<sup>4</sup>Tributary Hydrologic Condition (THC) is based on classification of Lake Okeechobee Net Inflow and Palmer Index.

<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







S3 Pumps:	10.77	11.30	0	0	0	0			(cfs)
S354:	11.30	10.77	0	0.0	0.0				
S2 Pumps:	11.27	-NR-	0	0	0	0	0		(cfs)
S351:	-NR-	11.27	0	0.0	0.0	0.0			
S352:		10.88	0	0.0	0.0				
C10A:	-NR-	11.51		8.0	8.0	8.0	0.0	0.0	
L8 Canal PT		11.32	-6						

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S351 and S352 Temporary Pumps/S354 Spillway

S351:	11.27	-NR-	0	-NR-	-NR-	-NR-	-NR-	-NR-	-NR-
S352:	10.88		0	-NR-	-NR-	-NR-	-NR-		
S354:	10.77	11.30	0	-NR-	-NR-	-NR-	-NR-		

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Caloosahatchee River (S77, S78, S79)

S47B:	11.02	11.07		0.0	0.0				
S47D:	11.12	11.11	-14	5.6					

S77:

Spillway and Sector Preferred Flow:

11.01	10.99	0	0.0	0.0	0.0	0.0		
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Flow Due to Lockages+: -0

S78:

Spillway and Sector Flow:

10.92	3.13	604	2.0	0.0	0.0	0.0		
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Flow Due to Lockages+: 5

S79:

Spillway and Sector Flow:

3.19	1.59	1808	1.0	1.0	2.0	2.0	1.0	0.0	0.0
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0.0

Flow Due to Lockages+: 4

Percent of flow from S77 0%

Chloride (ppm) 52

St. Lucie Canal (S308, S80)

S308:

Spillway and Sector Preferred Flow:

11.30	13.73	0	0.0	0.0	0.0	0.0		
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Flow Due to Lockages+: -3

S153:	19.09	13.61	0	0.0	0.0			
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S80:

Spillway and Sector Flow:

13.78	0.61	390	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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Flow Due to Lockages+: 11

Percent of flow from S308 0%

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.  
 ++ Preferred flow is determined from either the spillway discharge or the below flow meter daily

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				----- Wind ---	
Daily Precipitation Totals	1-Day	3-Day	7-Day	Direction	
Speed	(inches)	(inches)	(inches)	(Degø)	
(mph)					
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:	16.33	17.10	17.11	193	2
S78:	11.00	11.01	11.02	221	1
S79:	16.23	17.03	18.24	117	2
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:	16.55	17.18	17.33	142	4
S80:	12.32	12.40	12.40	158	1
Okeechobee Average	16.44	2.64	2.65		
(Sites S78, S79 and S80 not included)					
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Oke Nexrad Basin Avg	-NR-	0.00	0.00		
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Okeechobee Lake Elevations	07 JUL 2019		11.34	Difference from
	07JUL19			
07JUL19 -1 Day =	06 JUL 2019	11.32		-0.02
07JUL19 -2 Days =	05 JUL 2019	11.30		-0.04
07JUL19 -3 Days =	04 JUL 2019	11.31		-0.03
07JUL19 -4 Days =	03 JUL 2019	11.31		-0.03
07JUL19 -5 Days =	02 JUL 2019	11.32		-0.02
07JUL19 -6 Days =	01 JUL 2019	11.32		-0.02
07JUL19 -7 Days =	30 JUN 2019	11.33		-0.01
07JUL19 -30 Days =	07 JUN 2019	10.90		-0.44
07JUL19 -1 Year =	07 JUL 2018	14.42		3.08
07JUL19 -2 Year =	07 JUL 2017	-NR-		-NR-

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Long Term Mean 30day Avearge ET for Lake Alfred (Inches) = 4.56

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Lake Okeechobee Net Inflow (LONIN)  
 Average Flow over the previous 14 days | Avg-Daily Flow

07JUL19	Today =	07 JUL 2019	1350	MON	3529
07JUL19	-1 Day =	06 JUL 2019	1113	SUN	3697
07JUL19	-2 Days =	05 JUL 2019	720	SAT	-1061
07JUL19	-3 Days =	04 JUL 2019	925	FRI	964
07JUL19	-4 Days =	03 JUL 2019	1375	THU	-658
07JUL19	-5 Days =	02 JUL 2019	1681	WED	664
07JUL19	-6 Days =	01 JUL 2019	1634	TUE	-1672
07JUL19	-7 Days =	30 JUN 2019	2009	MON	1975
07JUL19	-8 Days =	29 JUN 2019	2498	SUN	7421
07JUL19	-9 Days =	28 JUN 2019	2220	SAT	4868
07JUL19	-10 Days =	27 JUN 2019	2384	FRI	875
07JUL19	-11 Days =	26 JUN 2019	2451	THU	80
07JUL19	-12 Days =	25 JUN 2019	2704	WED	-3592
07JUL19	-13 Days =	24 JUN 2019	3728	TUE	1815

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S65E					
Average Flow over previous 14 days					Avg-Daily Flow
07JUL19	Today=	07 JUL 2019	1067	MON	568
07JUL19	-1 Day =	06 JUL 2019	1101	SUN	583
07JUL19	-2 Days =	05 JUL 2019	1133	SAT	690
07JUL19	-3 Days =	04 JUL 2019	1148	FRI	863
07JUL19	-4 Days =	03 JUL 2019	1149	THU	1090
07JUL19	-5 Days =	02 JUL 2019	1120	WED	1056
07JUL19	-6 Days =	01 JUL 2019	1081	TUE	914
07JUL19	-7 Days =	30 JUN 2019	1036	MON	1296
07JUL19	-8 Days =	29 JUN 2019	963	SUN	1088
07JUL19	-9 Days =	28 JUN 2019	904	SAT	1565
07JUL19	-10 Days =	27 JUN 2019	803	FRI	1564
07JUL19	-11 Days =	26 JUN 2019	706	THU	1437
07JUL19	-12 Days =	25 JUN 2019	622	WED	1189
07JUL19	-13 Days =	24 JUN 2019	556	TUE	1041

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S65EX1					
Average Flow over previous 14 days					Avg-Daily Flow
07JUL19	Today=	07 JUL 2019	463	MON	320
07JUL19	-1 Day =	06 JUL 2019	461	SUN	276
07JUL19	-2 Days =	05 JUL 2019	462	SAT	380
07JUL19	-3 Days =	04 JUL 2019	447	FRI	344
07JUL19	-4 Days =	03 JUL 2019	437	THU	389
07JUL19	-5 Days =	02 JUL 2019	432	WED	694
07JUL19	-6 Days =	01 JUL 2019	406	TUE	744
07JUL19	-7 Days =	30 JUN 2019	368	MON	743
07JUL19	-8 Days =	29 JUN 2019	332	SUN	740
07JUL19	-9 Days =	28 JUN 2019	293	SAT	486
07JUL19	-10 Days =	27 JUN 2019	275	FRI	288
07JUL19	-11 Days =	26 JUN 2019	260	THU	375
07JUL19	-12 Days =	25 JUN 2019	233	WED	423
07JUL19	-13 Days =	24 JUN 2019	208	TUE	289

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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)
07 JUL 2019		-0	81	1211	3589
06 JUL 2019		-1	50	728	2824
05 JUL 2019		-0	50	307	1942
04 JUL 2019		-0	-5	305	2314
03 JUL 2019		-0	-22	314	2227
02 JUL 2019		-0	-277	430	3863
01 JUL 2019		-0	88	310	3778
30 JUN 2019		1	143	317	2630
29 JUN 2019		468	766	641	2463
28 JUN 2019		1302	1783	763	1525
27 JUN 2019		206	96	296	1643
26 JUN 2019		162	93	373	1302
25 JUN 2019		77	-27	609	1523
24 JUN 2019		-41	201	594	3150

		S-310	S-351	S-352	S-354	L8 Canal Pt
		Discharge	Discharge	Discharge	Discharge	Discharge
		(ALL DAY)				
DATE		(AC-FT)	(AC-FT)	(AC-FT)	(AC-FT)	(AC-FT)
07 JUL 2019		32	0	0	0	-13
06 JUL 2019		36	0	42	242	-4
05 JUL 2019		249	482	121	646	-1
04 JUL 2019		158	1174	0	549	0
03 JUL 2019		224	1535	0	520	-20
02 JUL 2019		59	715	0	424	-80
01 JUL 2019		46	0	0	161	-97
30 JUN 2019		87	0	0	293	-63
29 JUN 2019		111	0	0	0	-51
28 JUN 2019		177	659	0	345	-58
27 JUN 2019		240	787	0	650	-31
26 JUN 2019		152	0	0	0	-27
25 JUN 2019		54	0	0	0	-46
24 JUN 2019		-78	0	0	0	-57

		S-308	Below S-308	S-80
		Discharge	Discharge	Discharge
		(ALL DAY)	(ALL-DAY)	(ALL-DAY)
DATE		(AC-FT)	(AC-FT)	(AC-FT)
07 JUL 2019		-7	-122	776
06 JUL 2019		-15	-114	877
05 JUL 2019		-8	-182	594
04 JUL 2019		-5	80	15
03 JUL 2019		-10	-104	19
02 JUL 2019		-16	-118	41
01 JUL 2019		-8	-75	23
30 JUN 2019		-12	-193	49
29 JUN 2019		-13	95	37
28 JUN 2019		-7	197	40
27 JUN 2019		-7	80	32
26 JUN 2019		-7	-19	15
25 JUN 2019		-7	-17	29
24 JUN 2019		-11	-121	26

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

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

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\* 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)

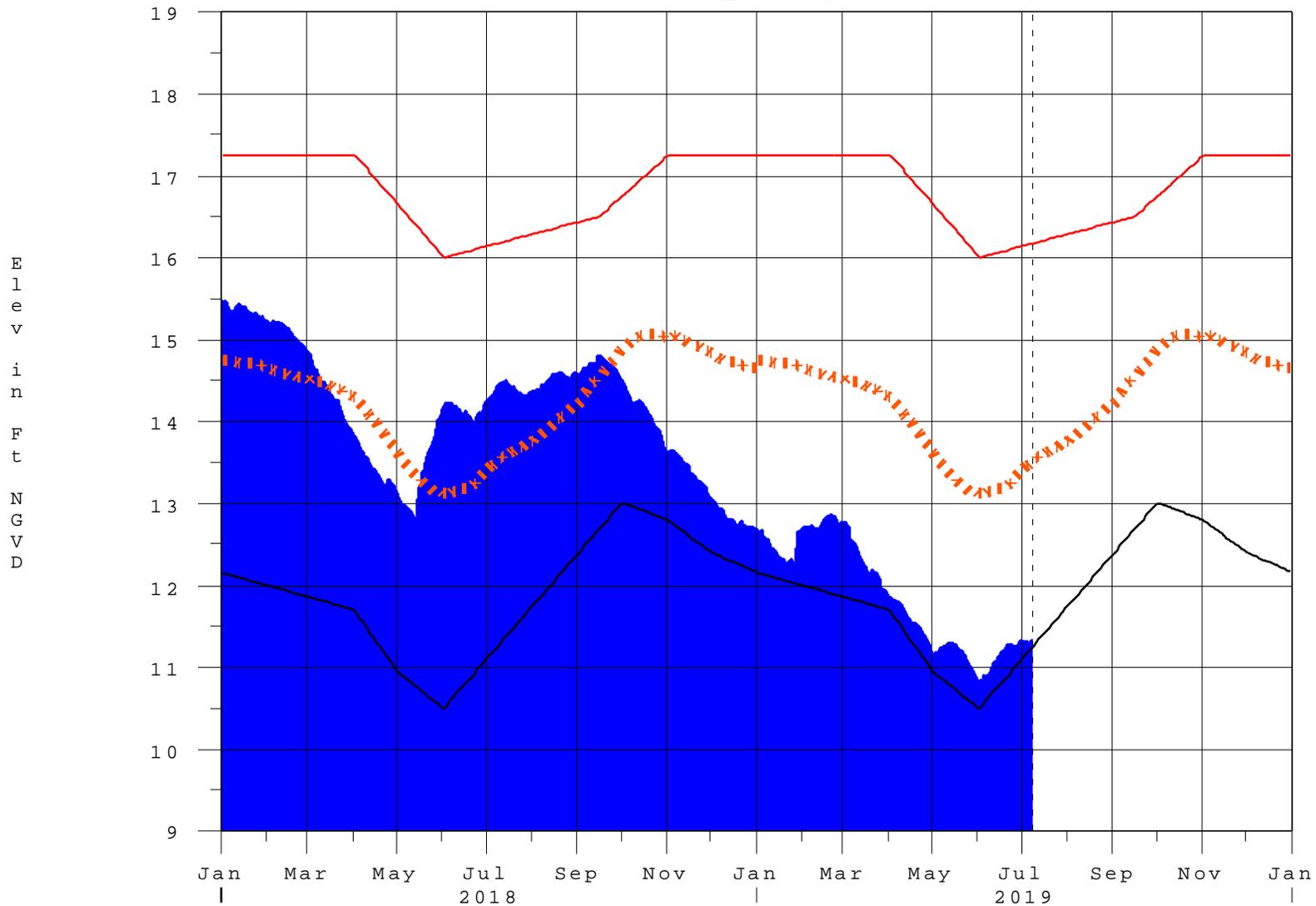
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Report Generated 08JUL2019 @ 16:39 \*\* Preliminary Data - Subject to Revision  
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# Lake Okeechobee

08JUL19 16:30:23



- 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</b> <b>Net Inflow</b> <b>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