

Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 7/15/2019 (ENSO Neutral Condition)

Lake Okeechobee Net Inflow Outlook:

The Lake Okeechobee Net Inflow Outlook has been computed using 4 methods: Croley's method¹, the SFWMD empirical method², a sub-sampling of Neutral years³ and a sub-sampling of warm years of the Atlantic Multi-decadal Oscillation (AMO) in combination with La Nina ENSO years⁴. 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 ^{1*}		SFWMD Empirical Method ²		Sub-sampling of Neutral ENSO Years ³		Sub-sampling of AMO Warm + Neutral ENSO Years ⁴	
	Value (ft)	Condition	Value (ft)	Condition	Value (ft)	Condition	Value (ft)	Condition
Current (Jul-Dec)	N/A	N/A	2.39	Very Wet	2.67	Very Wet	3.73	Very Wet
Multi Seasonal (Jul-Apr)	N/A	N/A	2.84	Wet	3.12	Wet	4.98	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:](#)

2150 cfs 14-day running average for Lake Okeechobee Net Inflow through 7/14/2019. According to the classification in [Tributary Hydrologic Conditions](#) table, this condition is Normal.

-1.04 for Palmer Index on 7/13/2019.

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 7/15/2019

Lake Okeechobee Stage: **11.48 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		16.20	
Operational Band	High sub-band	15.76	
	Intermediate sub-band	15.31	
	Low sub-band	13.41	
Base Flow sub-band		12.60	
Beneficial Use sub-band			← 11.48
Water Shortage Management Band		11.39	

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 07/15/2019 (ENSO El Niño Condition):

Status for week ending 07/15/2019:

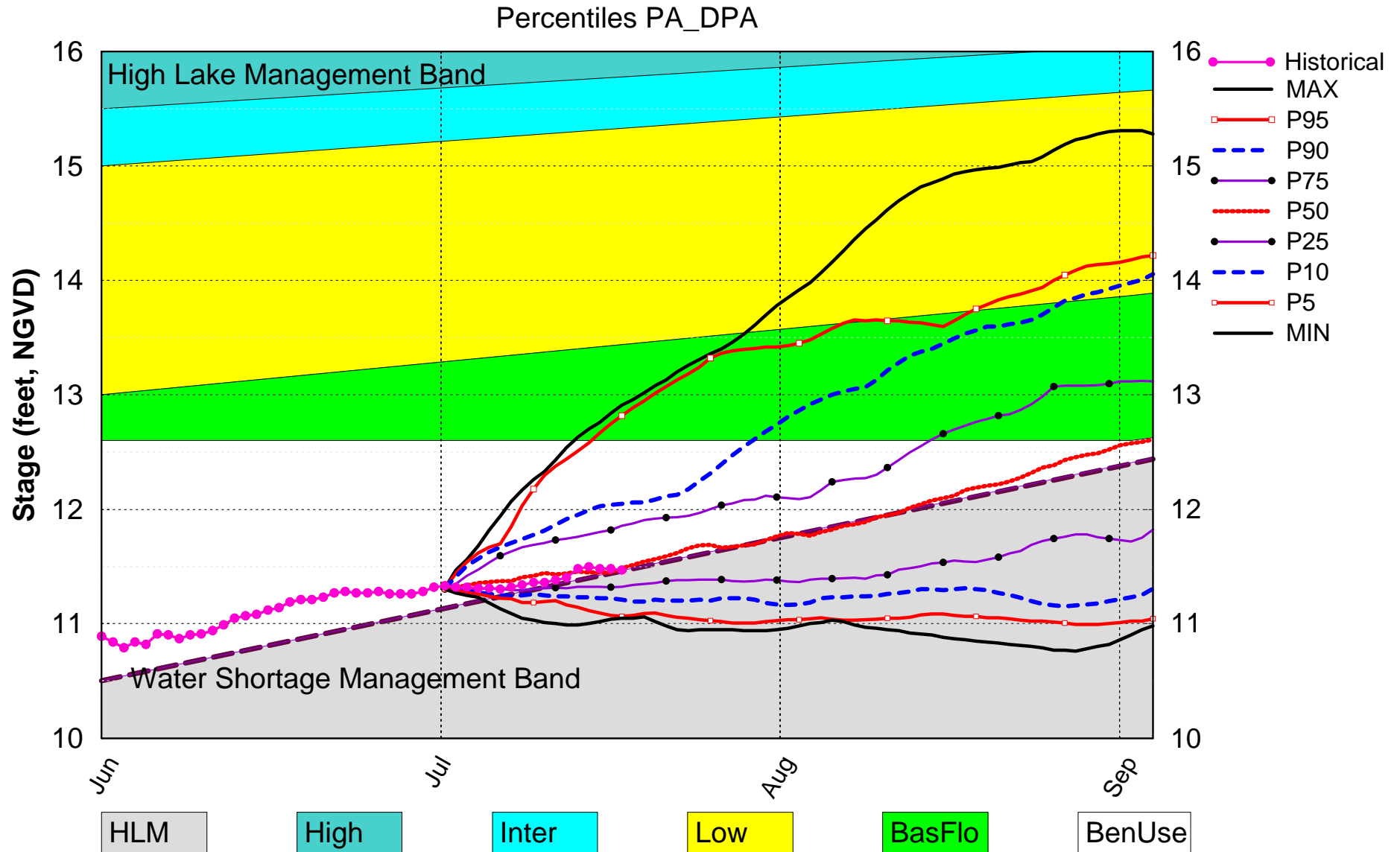
District wide, Raindar rainfall was 1.09 inches for the week. Lake stage on 7/15/2019 was 11.47 ft, NGVD, up 0.13 ft from last week. The updated July 2019 SFWMM Dynamic Position Analysis [percentile graph](#) for Lake Okeechobee show that the current lake stage is in the Beneficial Use Sub-band. The 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	-1.04 (Dry)	M
	CPC Precipitation Outlook	1 month: Normal	L
		3 months: Normal	L
	LOK Seasonal Net Inflow Outlook	2.67 ft	L
	ENSO Forecast (positive)	(Normal to Extremely Wet)	
	LOK Multi-Seasonal Net Inflow Outlook	3.12 ft (Normal)	M
	ENSO Forecast (positive)		
WCAs	WCA 1: Canal Gauge (Site 1-8C)	Above Line 1 (16.33 ft)	L
	WCA 2A: Site 2-17 HW	Above Line 1 (12.15 ft)	L
	WCA-3A: 3 Station Average (Site 63, 64, and 65)	Above Line 1 (9.55 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.

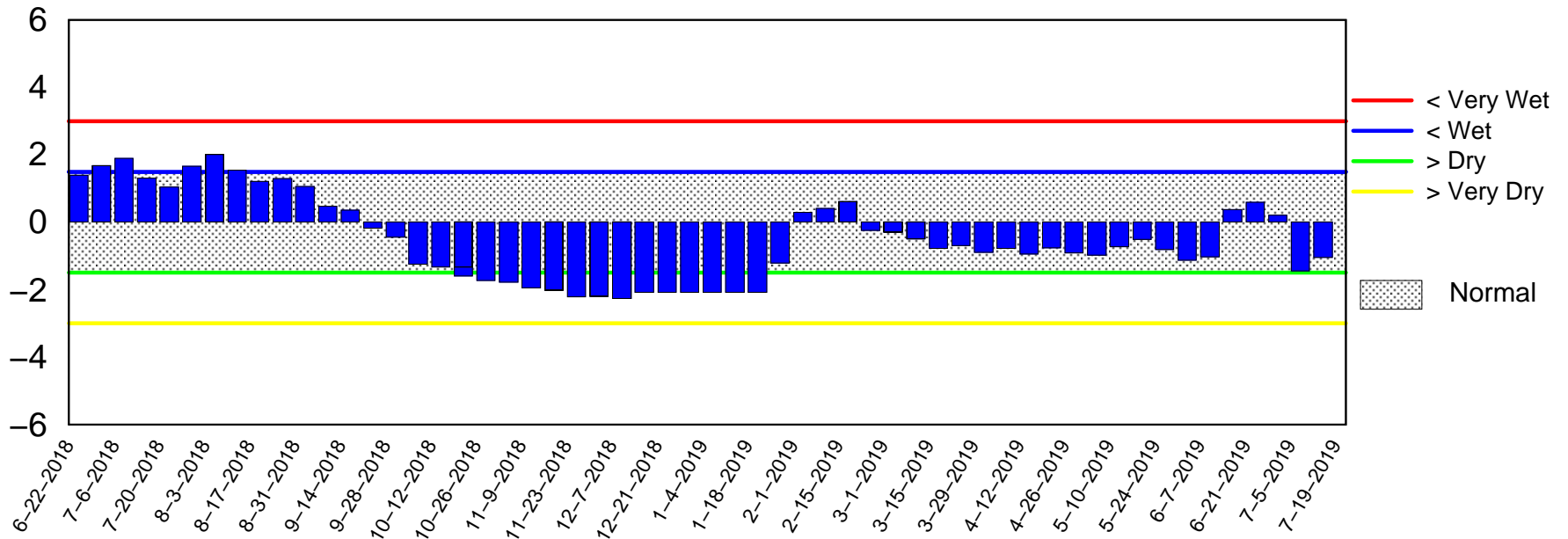
Lake Okeechobee SFWMM July 2019 Position Analysis



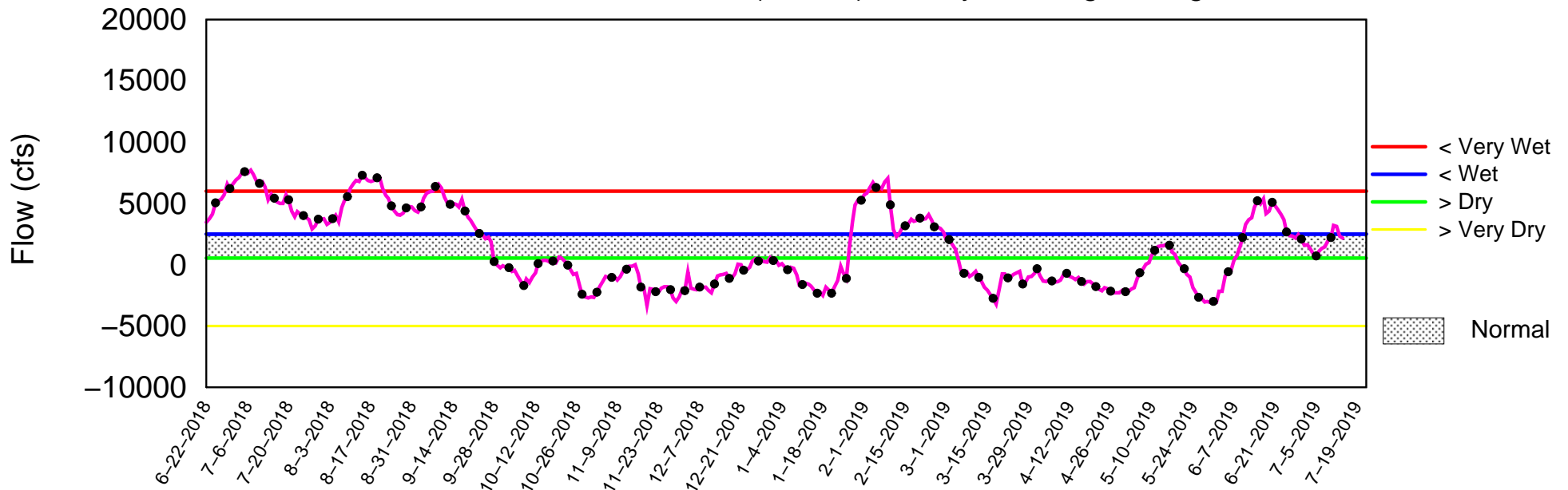
(See assumptions on the Position Analysis Results website)

Tributary Basin Condition Indicators as of July 15 2019

Palmer Index



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



Tue Jul 16 09:04:55 2019

2008 LORS

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

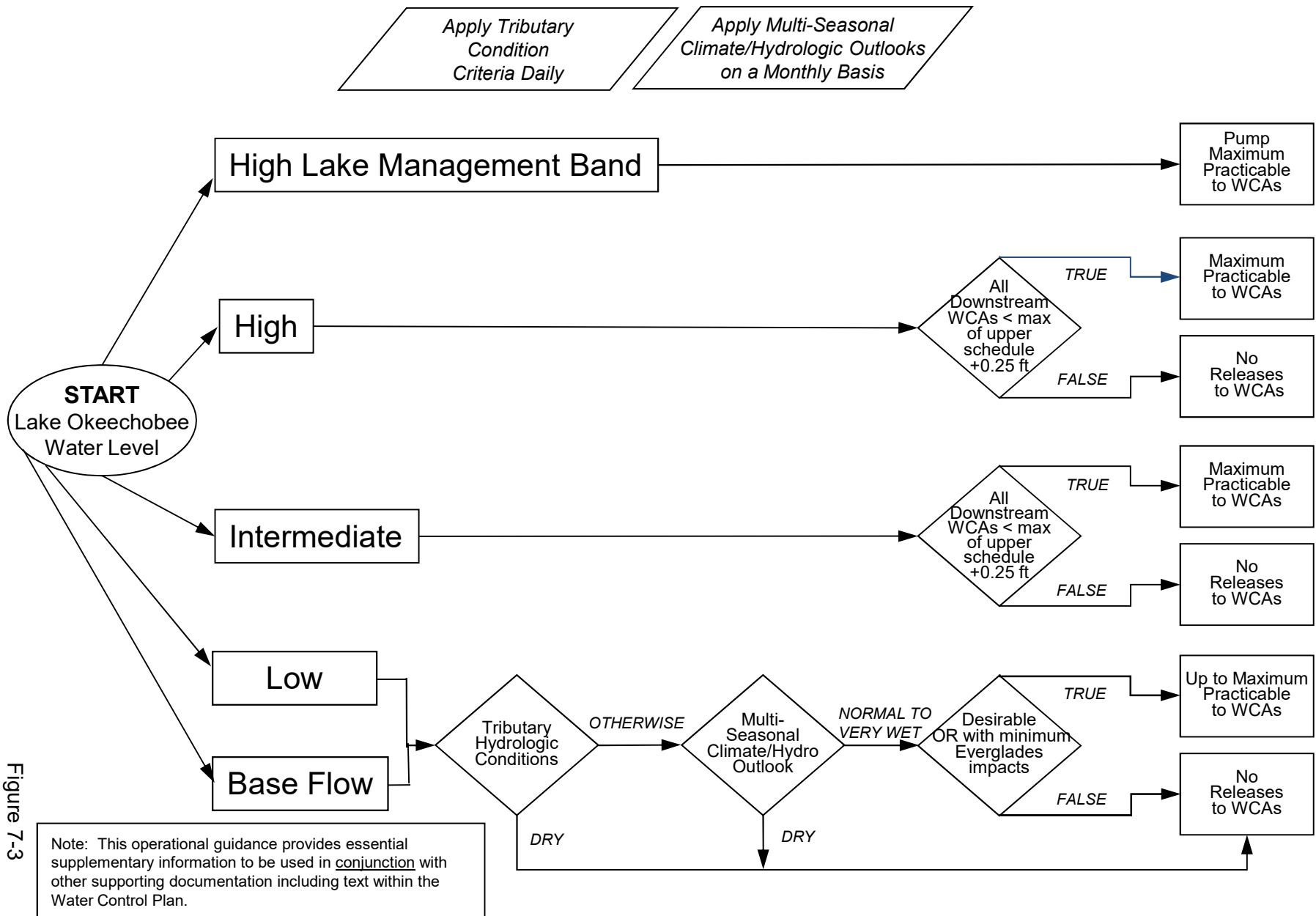


Figure 7-3

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

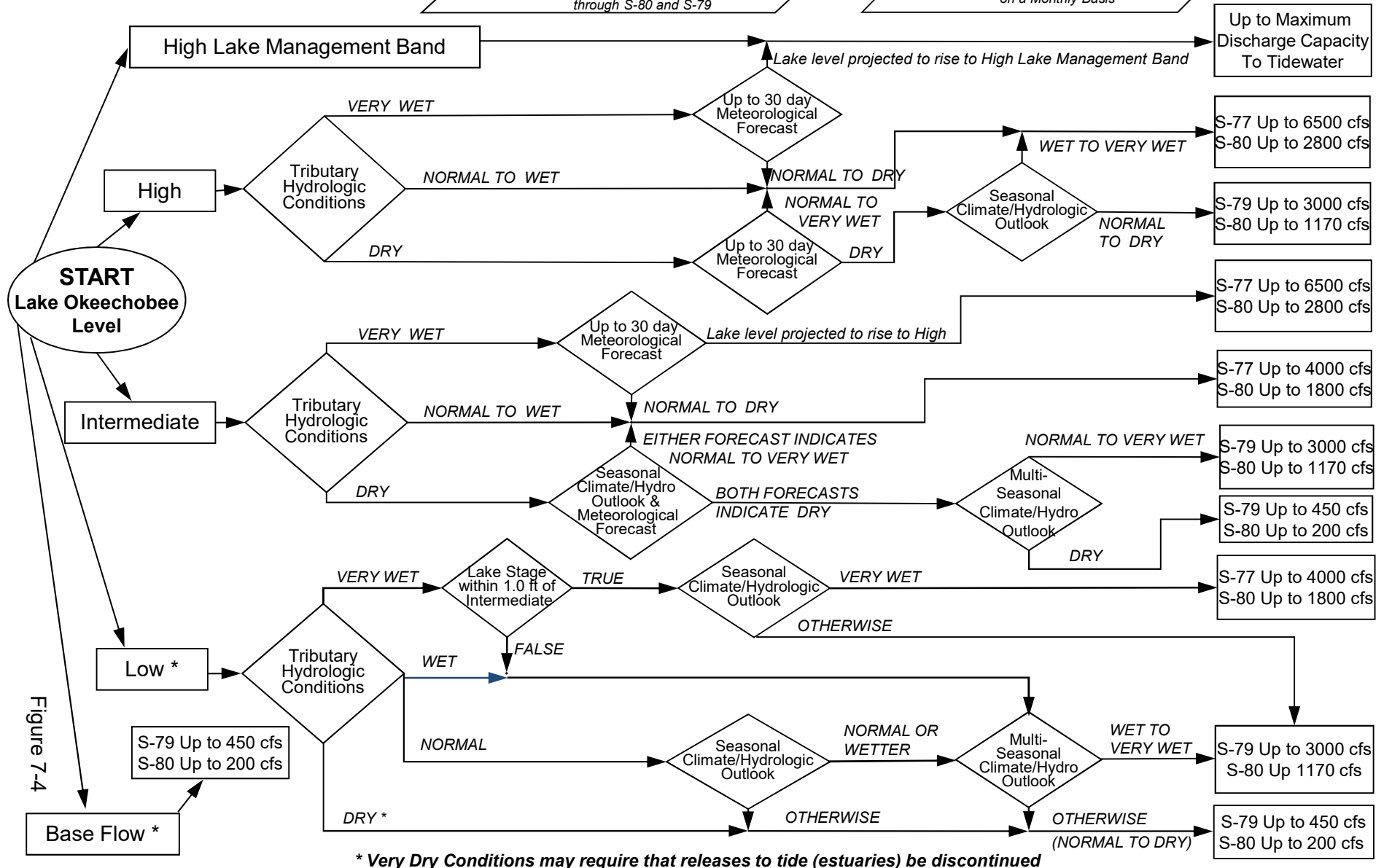
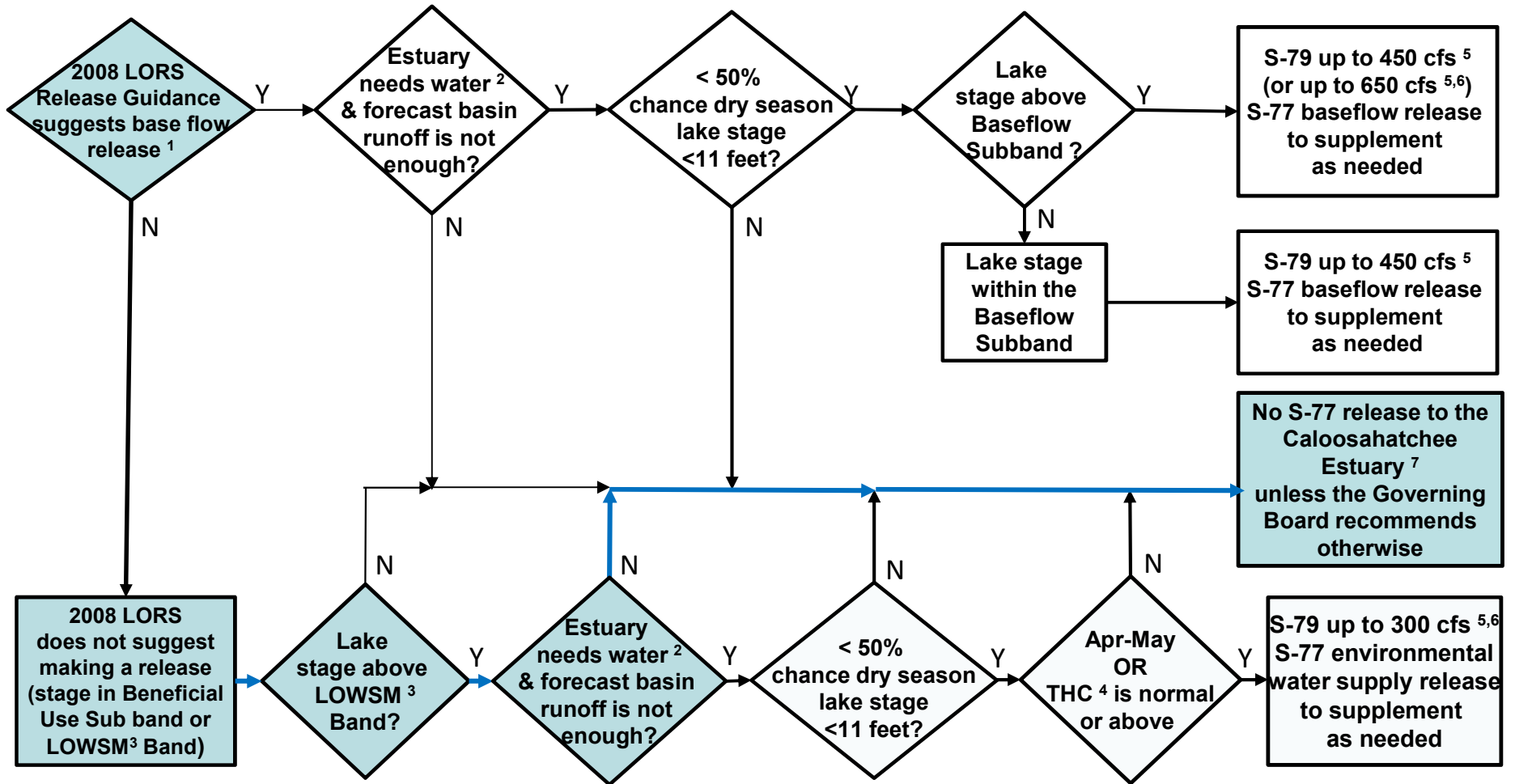


Figure 7-4

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



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

²Estuary “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.

³LOWSM = Lake Okeechobee Water Shortage Management.

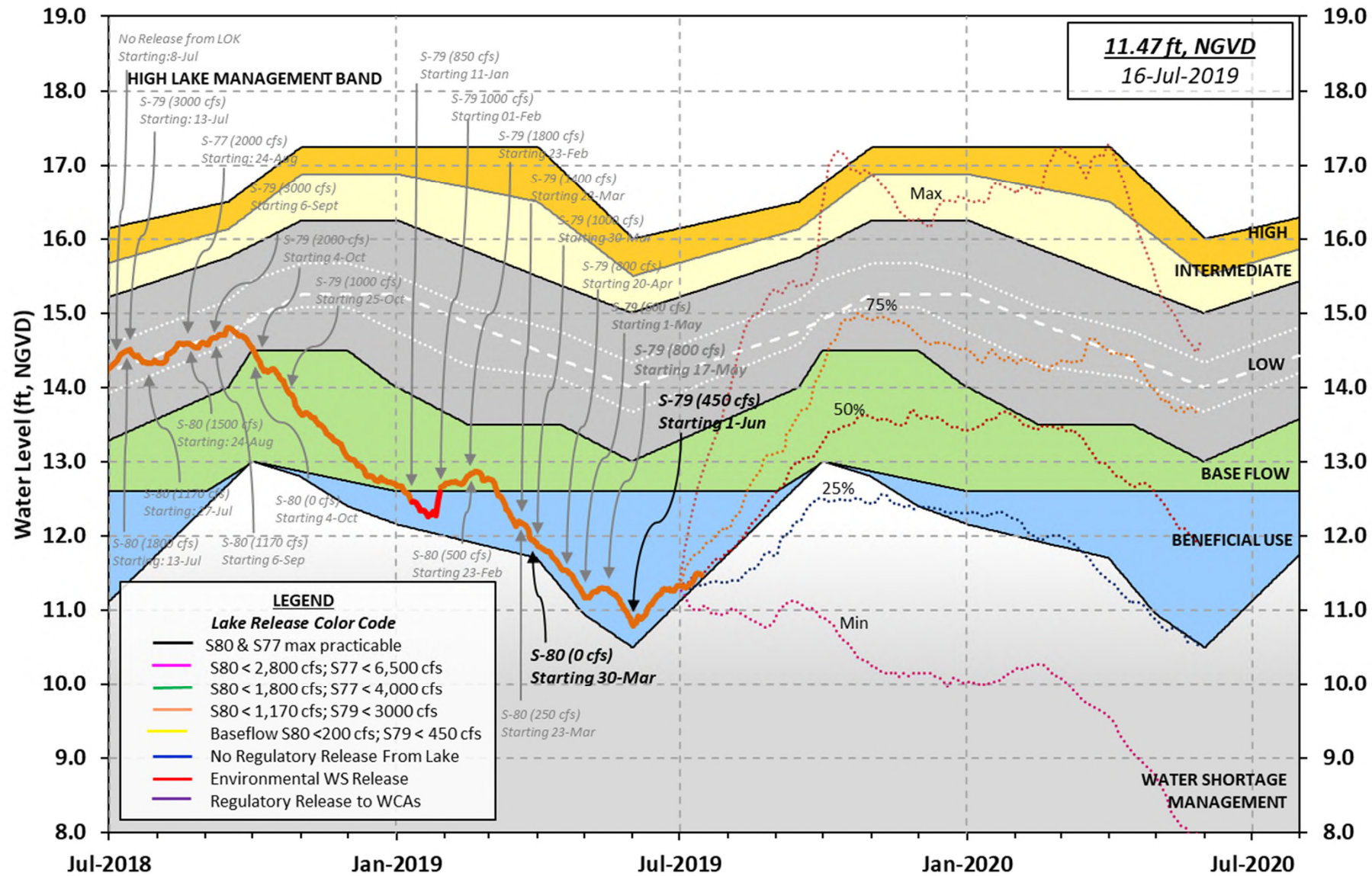
⁴Tributary Hydrologic Condition (THC) is based on classification of Lake Okeechobee Net Inflow and Palmer Index.

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

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

⁷Should 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



LORS-2008
Adopted by USACE 28-April-2008

Projected Stage Percentiles From
SFWMD-HESM Position Analysis

U. S. Army Corps of Engineers, Jacksonville District
 Lake Okeechobee and Vicinity Report
 ** Preliminary Data - Subject to Revision **

Data Ending 2400 hours 14 JUL 2019

Okeechobee Lake Regulation	Elevation	Last Year	2YRS Ago
	(ft-NGVD)	(ft-NGVD)	(ft-NGVD)
*Okeechobee Lake Elevation	11.48	14.51	-NR- (Official Elv)
Bottom of High Lake Mngmt=	16.20	Top of Water Short Mngmt=	11.39
Currently in Operational Management Band			

Simulated Average LORS2008 [1965-2000] 12.47
 Difference from Average LORS2008 -0.99

14JUL (1965-2007) Period of Record Average 13.58
 Difference from POR Average -2.10

Today Lake Okeechobee elevation is determined from the 4 Int & 4 Edge stations

++Navigation Depth (Based on 2007 Channel Condition Survey) Route 1 ÷
 5.42'

++Navigation Depth (Based on 2008 Channel Condition Survey) Route 2 ÷
 3.62'

Bridge Clearance = 49.69'

4 Interior and 4 Edge Okeechobee Lake Average (Avg-Daily values):

L001	L005	L006	LZ40	S4	S352	S308	S133
11.42	11.75	11.44	11.44	11.55	-NR-	11.36	11.37

*Combination Okeechobee Avg-Daily Lake Average = 11.48
 (*See Note)

Okeechobee Inflows (cfs):

S65E	788	S65EX1	382	Fisheating Cr	80
S154	0	S191	0	S135 Pumps	0
S84	656	S133 Pumps	0	S2 Pumps	0
S84X	0	S127 Pumps	0	S3 Pumps	0
S71	0	S129 Pumps	0	S4 Pumps	0
S72	0	S131 Pumps	0	C5	0
Total Inflows: 1905					

Okeechobee Outflows (cfs):

S135 Culverts	0	S354	0	S77	0
S127 Culverts	0	S351	0	S308	-4
S129 Culverts	0	S352	0		
S131 Culverts	0	L8 Canal Pt	-48		
Total Outflows: -52					

S4 Pumps:	11.57	11.57	0	0	0	0	(cfs)
S169:	11.58	11.58	30	4.9	4.9	4.9	
S310:	11.49		18				

S3 Pumps:	10.18	11.49	0	0	0	0		(cfs)
S354:	11.49	10.18	0	0.0	0.0			
S2 Pumps:	9.63	-NR-	0	0	0	0	0	(cfs)
S351:	-NR-	9.63	0	0.0	0.0	0.0		
S352:		9.41	0	0.0	0.0			
C10A:	-NR-	11.65		8.0	8.0	8.0	0.0	0.0
L8 Canal PT		11.51	-48					

S351 and S352 Temporary Pumps/S354 Spillway

S351:	9.63	-NR-	0	-NR-	-NR-	-NR-	-NR-	-NR-	-NR-
S352:	9.41		0	-NR-	-NR-	-NR-	-NR-		
S354:	10.18	11.49	0	-NR-	-NR-	-NR-	-NR-		

Caloosahatchee River (S77, S78, S79)

S47B:	11.70	11.13		0.0	0.0
S47D:	11.14	11.14	23	5.2	

S77:

Spillway and Sector Preferred Flow:

	11.49	11.04	0	0.0	0.0	0.0	0.0
Flow Due to Lockages+:			0				

S78:

Spillway and Sector Flow:

	10.95	2.82	829	0.0	2.5	0.0	0.0
Flow Due to Lockages+:			-NR-				

S79:

Spillway and Sector Flow:

	3.00	0.65	2927	2.0	2.0	2.0	2.0	2.0	1.0	1.0
0.0										
Flow Due to Lockages+:			9							
Percent of flow from S77			0%							
Chloride		(ppm)	52							

St. Lucie Canal (S308, S80)

S308:

Spillway and Sector Preferred Flow:

	11.31	13.81	0	0.0	0.0	0.0	0.0
Flow Due to Lockages+:			-4				

S153:	18.76	13.67	19	0.0	0.0
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S80:

Spillway and Sector Flow:

	13.90	1.27	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Due to Lockages+:			16							
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.
 ++ Preferred flow is determined from either the spillway discharge or the below flow meter daily

				----- 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:	19.80	19.80	23.27	125	6
S78:	12.62	13.35	14.24	109	3
S79:	18.23	18.45	20.23	112	6
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:	17.12	17.12	17.69	76	5
S80:	14.14	14.14	15.96	144	1
Okeechobee Average	18.46	2.84	3.15		
(Sites S78, S79 and S80 not included)					

Oke Nexrad Basin Avg	-NR-	0.00	0.00		

Okeechobee Lake Elevations	14 JUL 2019	11.48	Difference from
14JUL19			
14JUL19 -1 Day =	13 JUL 2019	11.48	0.00
14JUL19 -2 Days =	12 JUL 2019	11.50	0.02
14JUL19 -3 Days =	11 JUL 2019	11.48	0.00
14JUL19 -4 Days =	10 JUL 2019	11.40	-0.08
14JUL19 -5 Days =	09 JUL 2019	11.38	-0.10
14JUL19 -6 Days =	08 JUL 2019	11.36	-0.12
14JUL19 -7 Days =	07 JUL 2019	11.34	-0.14
14JUL19 -30 Days =	14 JUN 2019	11.12	-0.36
14JUL19 -1 Year =	14 JUL 2018	14.51	3.03
14JUL19 -2 Year =	14 JUL 2017	-NR-	-NR-

Long Term Mean 30day Avearge ET for Lake Alfred (Inches) = 4.54

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

14JUL19	Today =	14 JUL 2019	2184	MON	0
14JUL19	-1 Day =	13 JUL 2019	2325	SUN	-3630
14JUL19	-2 Days =	12 JUL 2019	3114	SAT	3630
14JUL19	-3 Days =	11 JUL 2019	3202	FRI	14520
14JUL19	-4 Days =	10 JUL 2019	2228	THU	3529
14JUL19	-5 Days =	09 JUL 2019	1981	WED	3529
14JUL19	-6 Days =	08 JUL 2019	1473	TUE	3529
14JUL19	-7 Days =	07 JUL 2019	1350	MON	3529
14JUL19	-8 Days =	06 JUL 2019	1113	SUN	3697
14JUL19	-9 Days =	05 JUL 2019	720	SAT	-1061
14JUL19	-10 Days =	04 JUL 2019	925	FRI	964
14JUL19	-11 Days =	03 JUL 2019	1375	THU	-658
14JUL19	-12 Days =	02 JUL 2019	1681	WED	664
14JUL19	-13 Days =	01 JUL 2019	1634	TUE	-1672

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S65E					
Average Flow over previous 14 days					Avg-Daily Flow
14JUL19	Today=	14 JUL 2019	789	MON	905
14JUL19	-1 Day =	13 JUL 2019	817	SUN	774
14JUL19	-2 Days =	12 JUL 2019	839	SAT	872
14JUL19	-3 Days =	11 JUL 2019	889	FRI	774
14JUL19	-4 Days =	10 JUL 2019	945	THU	812
14JUL19	-5 Days =	09 JUL 2019	990	WED	560
14JUL19	-6 Days =	08 JUL 2019	1035	TUE	552
14JUL19	-7 Days =	07 JUL 2019	1070	MON	581
14JUL19	-8 Days =	06 JUL 2019	1102	SUN	575
14JUL19	-9 Days =	05 JUL 2019	1135	SAT	675
14JUL19	-10 Days =	04 JUL 2019	1151	FRI	867
14JUL19	-11 Days =	03 JUL 2019	1152	THU	1126
14JUL19	-12 Days =	02 JUL 2019	1120	WED	1057
14JUL19	-13 Days =	01 JUL 2019	1081	TUE	914

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S65EX1					
Average Flow over previous 14 days					Avg-Daily Flow
14JUL19	Today=	14 JUL 2019	372	MON	382
14JUL19	-1 Day =	13 JUL 2019	398	SUN	297
14JUL19	-2 Days =	12 JUL 2019	429	SAT	317
14JUL19	-3 Days =	11 JUL 2019	441	FRI	221
14JUL19	-4 Days =	10 JUL 2019	446	THU	307
14JUL19	-5 Days =	09 JUL 2019	451	WED	272
14JUL19	-6 Days =	08 JUL 2019	462	TUE	262
14JUL19	-7 Days =	07 JUL 2019	463	MON	320
14JUL19	-8 Days =	06 JUL 2019	461	SUN	276
14JUL19	-9 Days =	05 JUL 2019	462	SAT	380
14JUL19	-10 Days =	04 JUL 2019	447	FRI	344
14JUL19	-11 Days =	03 JUL 2019	437	THU	389
14JUL19	-12 Days =	02 JUL 2019	432	WED	694
14JUL19	-13 Days =	01 JUL 2019	406	TUE	744

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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)
14 JUL 2019		1	182	-NR-	5855
13 JUL 2019		0	545	2109	4364
12 JUL 2019		0	52	1750	6599
11 JUL 2019		0	100	1968	3613
10 JUL 2019		-0	164	2558	6143
09 JUL 2019		-0	153	1718	5059
08 JUL 2019		0	89	1167	3909
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

		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)
14 JUL 2019		35	0	0	0	-96
13 JUL 2019		-166	0	0	0	-116
12 JUL 2019		-386	0	0	0	-55
11 JUL 2019		-248	0	0	0	-57
10 JUL 2019		-227	0	0	0	-109
09 JUL 2019		-312	0	0	0	-185
08 JUL 2019		-95	0	0	0	-110
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

		S-308	Below S-308	S-80
		Discharge	Discharge	Discharge
		(ALL DAY)	(ALL-DAY)	(ALL-DAY)
DATE		(AC-FT)	(AC-FT)	(AC-FT)
14 JUL 2019		-9	35	31
13 JUL 2019		-8	244	19
12 JUL 2019		-15	41	34
11 JUL 2019		-8	-78	-NR-
10 JUL 2019		-4	90	1650
09 JUL 2019		-10	-45	1351
08 JUL 2019		-6	-217	532
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

*** 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

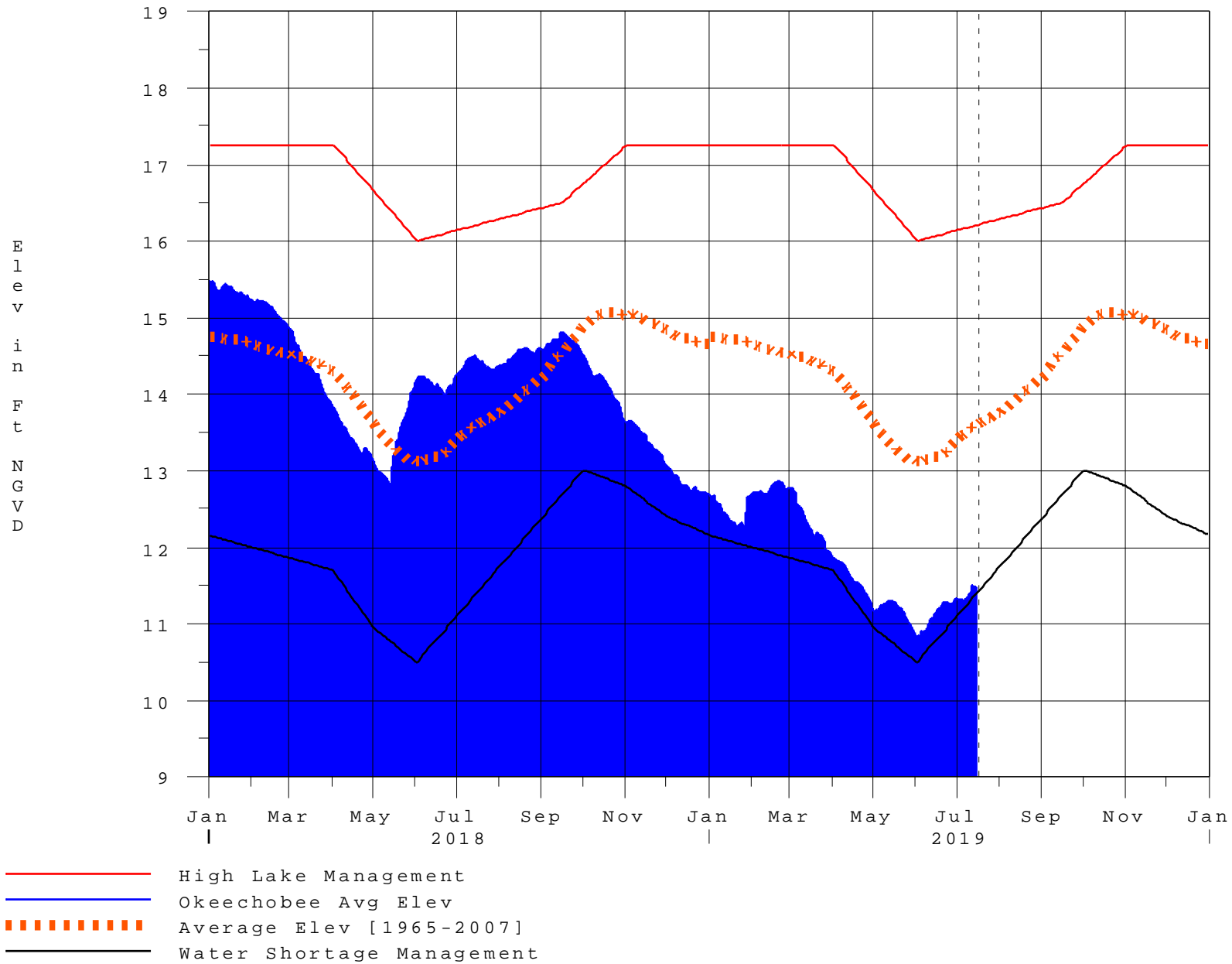
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* On 11 May 1999, Lake Okeechobee Elevation was switched from
Instantaneous 2400 value to an average-daily lake average.
On 14 Mar 2001, due to the isolation of various gages within the
standard
10 stations, the average of the interior 4 station gages 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 Okechobee 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

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Report Generated 15JUL2019 @ 23:39 ** Preliminary Data - Subject to Revision
**

Lake Okeechobee

16JUL19 07:45:24



Classification Tables

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*

Lake Net Inflow Prediction [million acre-feet]	Equivalent Depth** [feet]	Lake Okeechobee Net Inflow Seasonal Outlook
> 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*

Lake Net Inflow Prediction [million acre-feet]	Equivalent Depth** [feet]	Lake Okeechobee Net Inflow Multi-Seasonal Outlook
> 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*

6-15 Day Precipitation Outlook Categories	WSE Decision Tree Categories
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