

# Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 11/28/2016 (ENSO La Nina 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 La Nina ENSO Years <sup>3</sup>		Sub-sampling of AMO Warm + La Nina 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 (Nov-Apr)	N/A	N/A	0.07	Dry	-0.31	Dry	-0.55	Dry
Multi Seasonal (Nov-Oct)	N/A	N/A	2.39	Normal	2.64	Wet	1.91	Normal

\*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:](#)

**-2219 cfs** 14-day running average for Lake Okeechobee Net Inflow through 11/27/2016. According to the classification in [Tributary Hydrologic Conditions](#) table, this condition is Dry.

**-0.84** for Palmer Index on 11/26/2016.

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 11/28/2016

Lake Okeechobee Stage: **14.80 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		17.25	
Operational Band	High sub-band	16.88	
	Intermediate sub-band	16.25	
	Low sub-band	14.50	← 14.80
Base Flow sub-band		12.75	
Beneficial Use sub-band		12.44	
Water Shortage Management Band			

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

Release Guidance Flow Chart Outcome: Up to maximum practicable releases to the WCAs if desirable or with minimum everglades impacts; otherwise no releases.

### [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](#)
- [Operations Department](#)

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

## LORS2008 Implementation on 11/28/2016 (ENSO La Nina Condition):

### Status for week ending 11/28/2016:

District wide, Raindar rainfall was 0.01 inches for the week. Lake stage on 11/28/2016 was 14.80 ft, down 0.18 ft from last week.

The updated November 2016 SFWMM Dynamic Position Analysis [percentile graph](#) for Lake Okeechobee show that the current lake stage is in the Low Operational Sub-Band.

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

### Water Supply Risk Evaluation

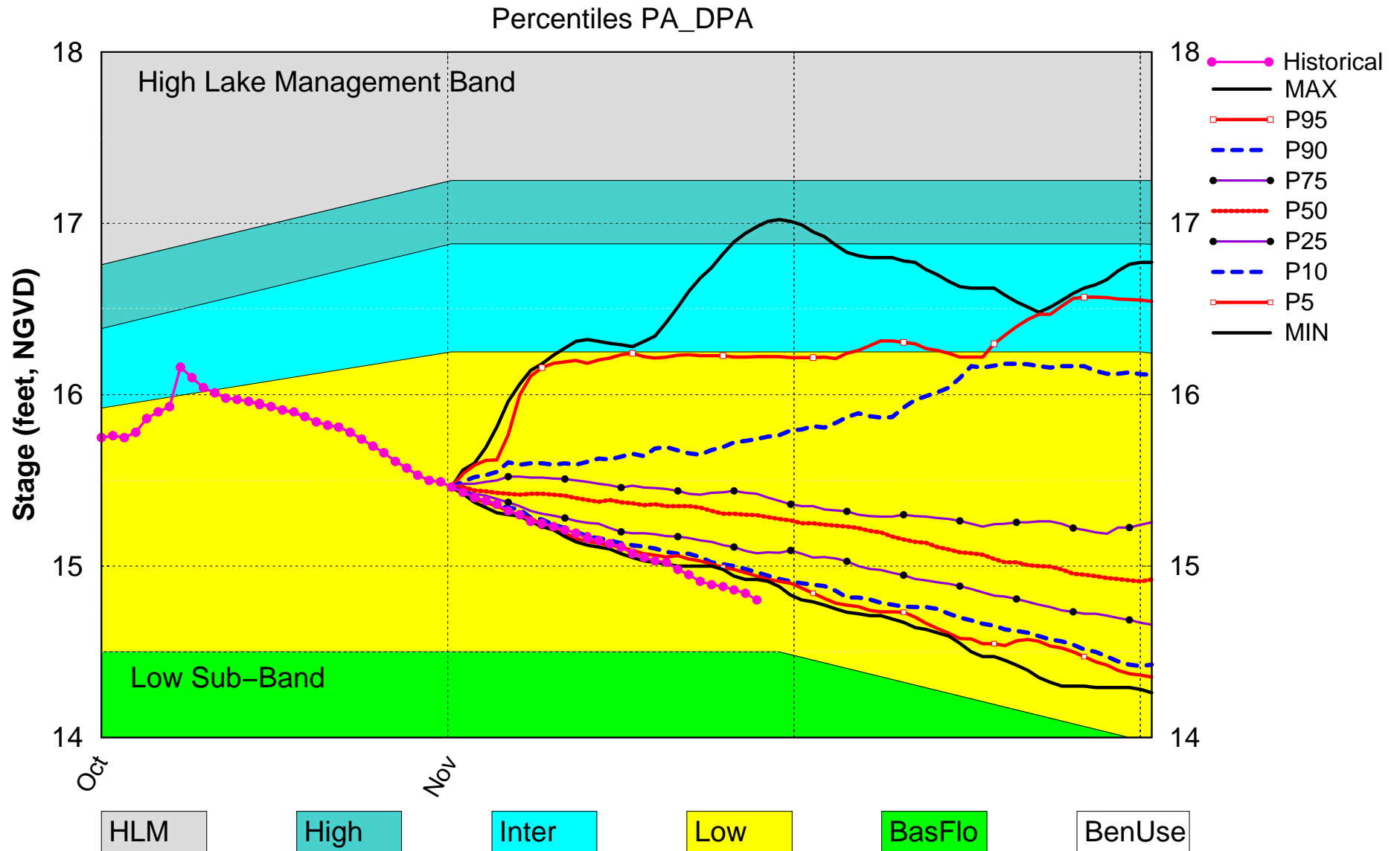
Area	Indicator	Value	Color Coded Scoring Scheme
LOK	Projected LOK Stage for the next two months	Low Sub-Band	L
	Palmer Index for LOK Tributary Conditions	-0.84 (Normal)	L
	CPC Precipitation Outlook	1 month: Below Normal	M
		3 months: Below Normal	M
	LOK Seasonal Net Inflow Outlook ENSO La Nina Years	-0.31 ft (Extremely Dry)	H
	LOK Multi-Seasonal Net Inflow Outlook ENSO La Nina Years	2.64 ft (Normal)	M
	WCAs	WCA 1: Site 1-7, Site 1-8T, & Site 1-9 Average	Above Line 1 (16.62 ft)
WCA 2A: Site 2-17 HW		Above Line1 (12.64 ft)	L
WCA-3A: 3 Station Average (Site 63, 64 and 65)		Above Line 1 (10.05 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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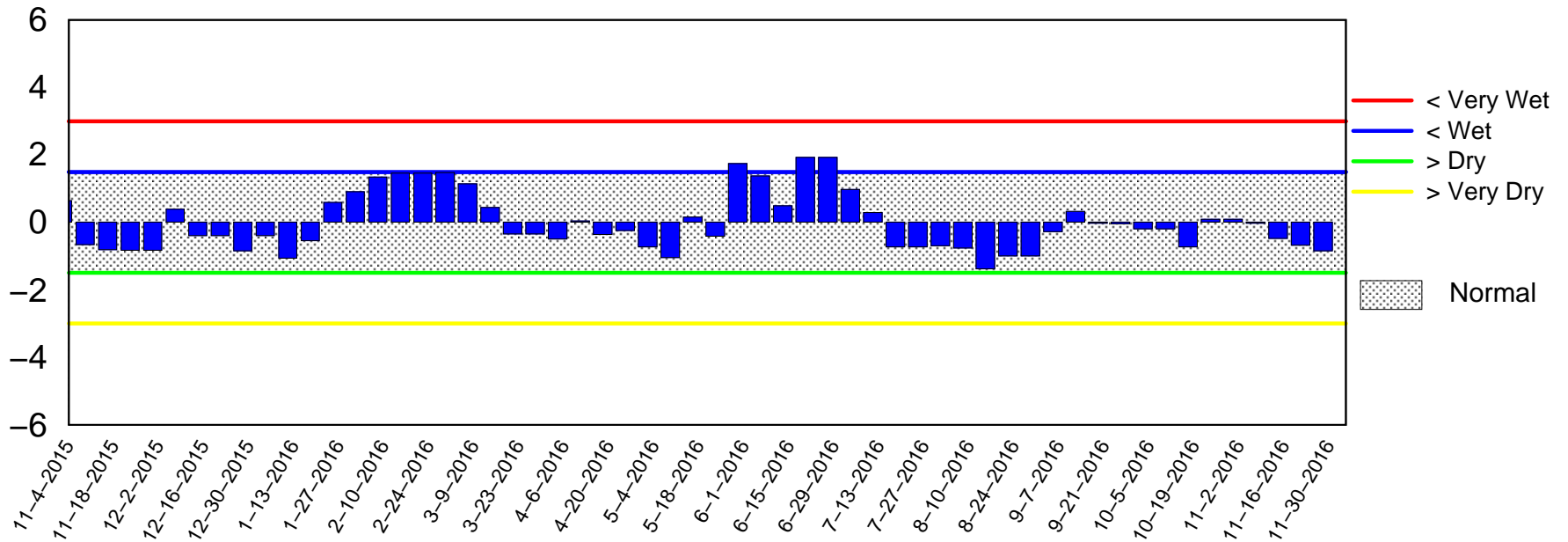
# Lake Okeechobee SFWMM Nov 2016 Dynamic Position Analysis



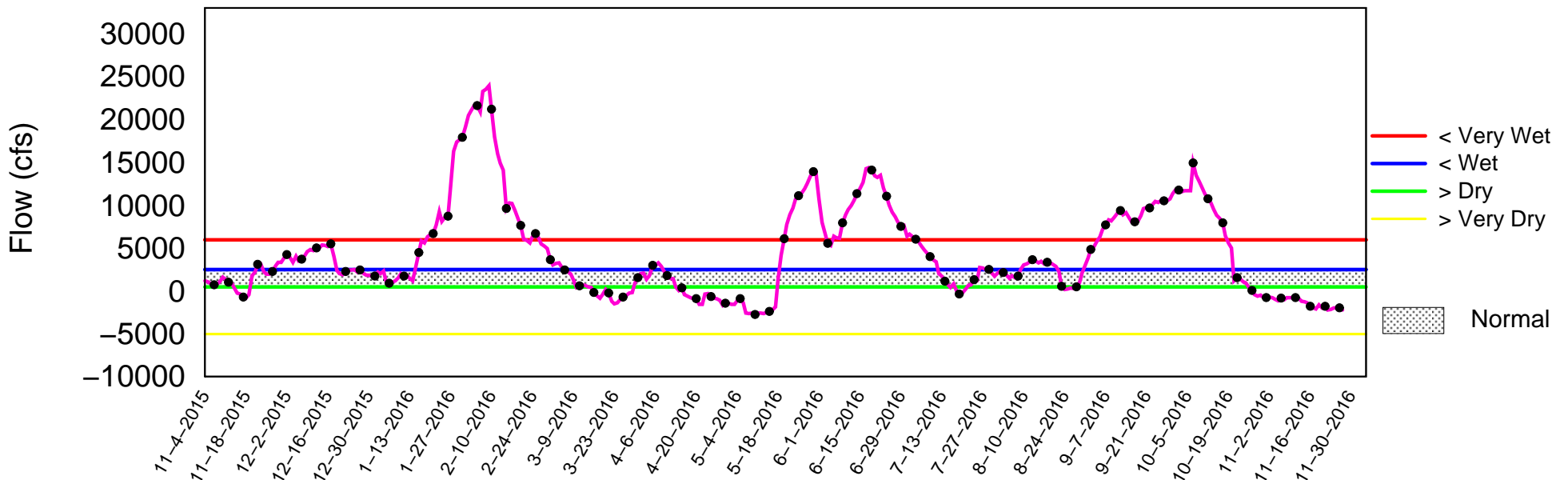
(See assumptions on the Position Analysis Results website)

# Tributary Basin Condition Indicators as of November 28 2016

## Palmer Index



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



Mon Nov 28 14:43:57 EST 2016

# 2008 LORS

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

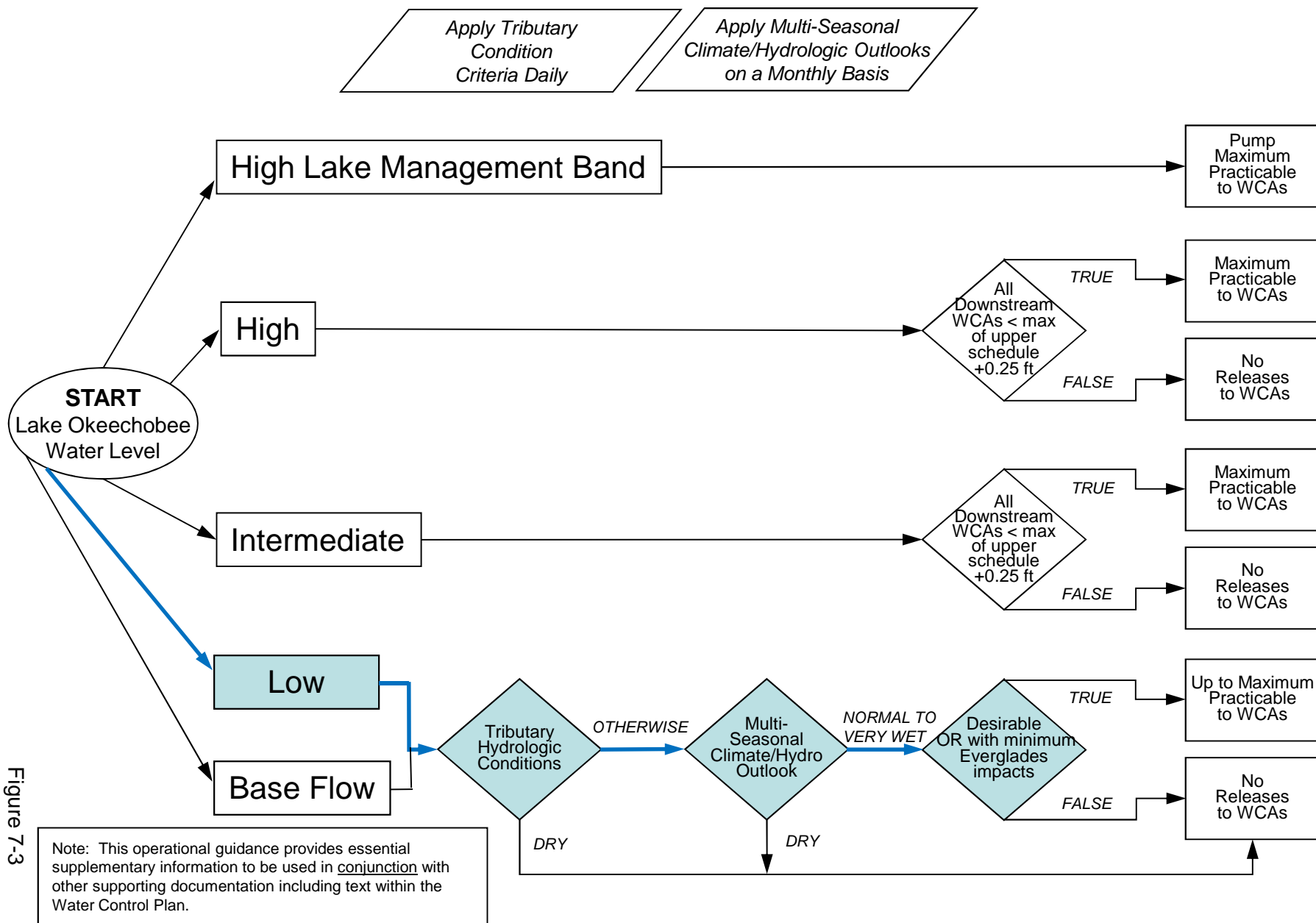


Figure 7-3

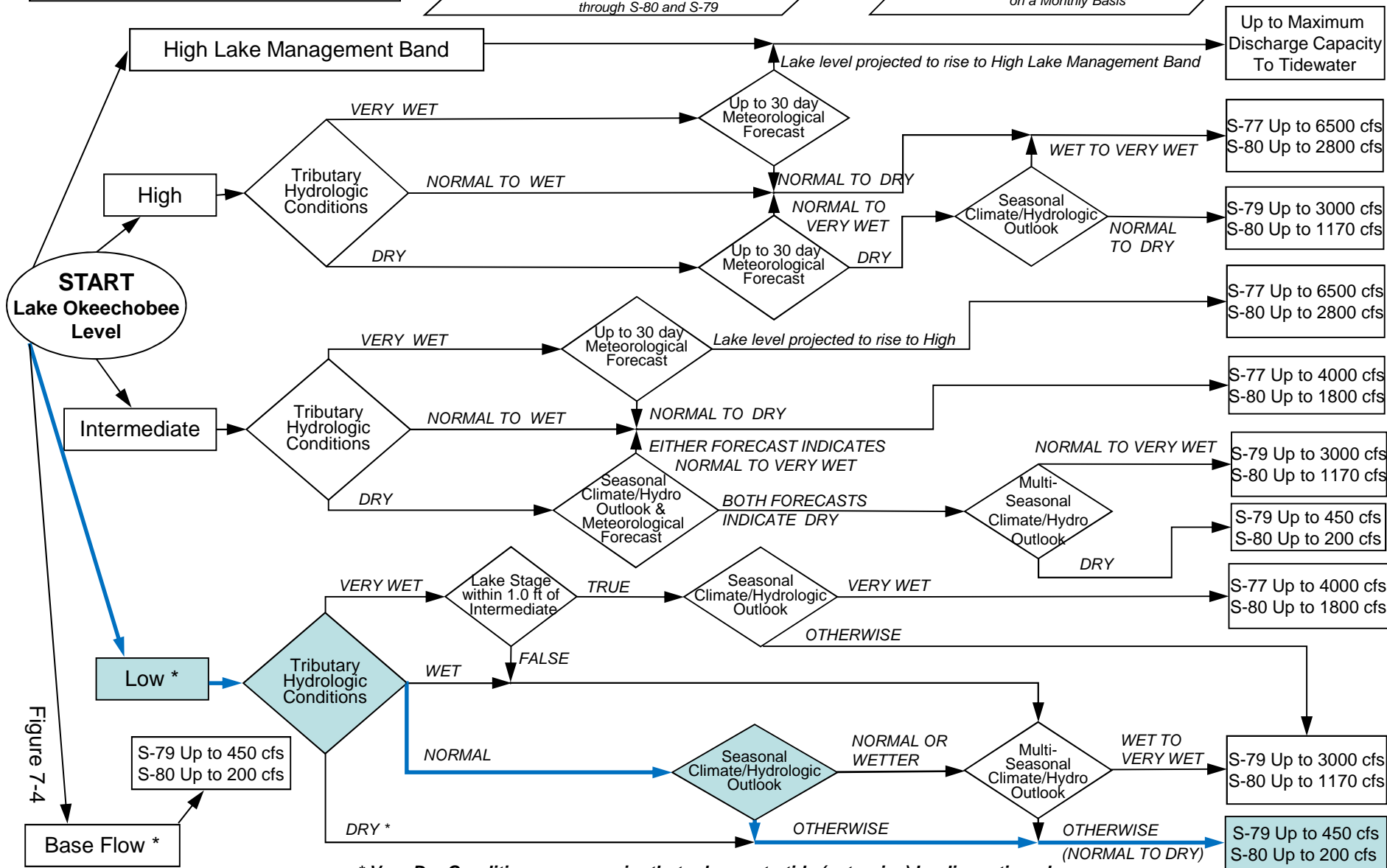
# 2008 LORS

## 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



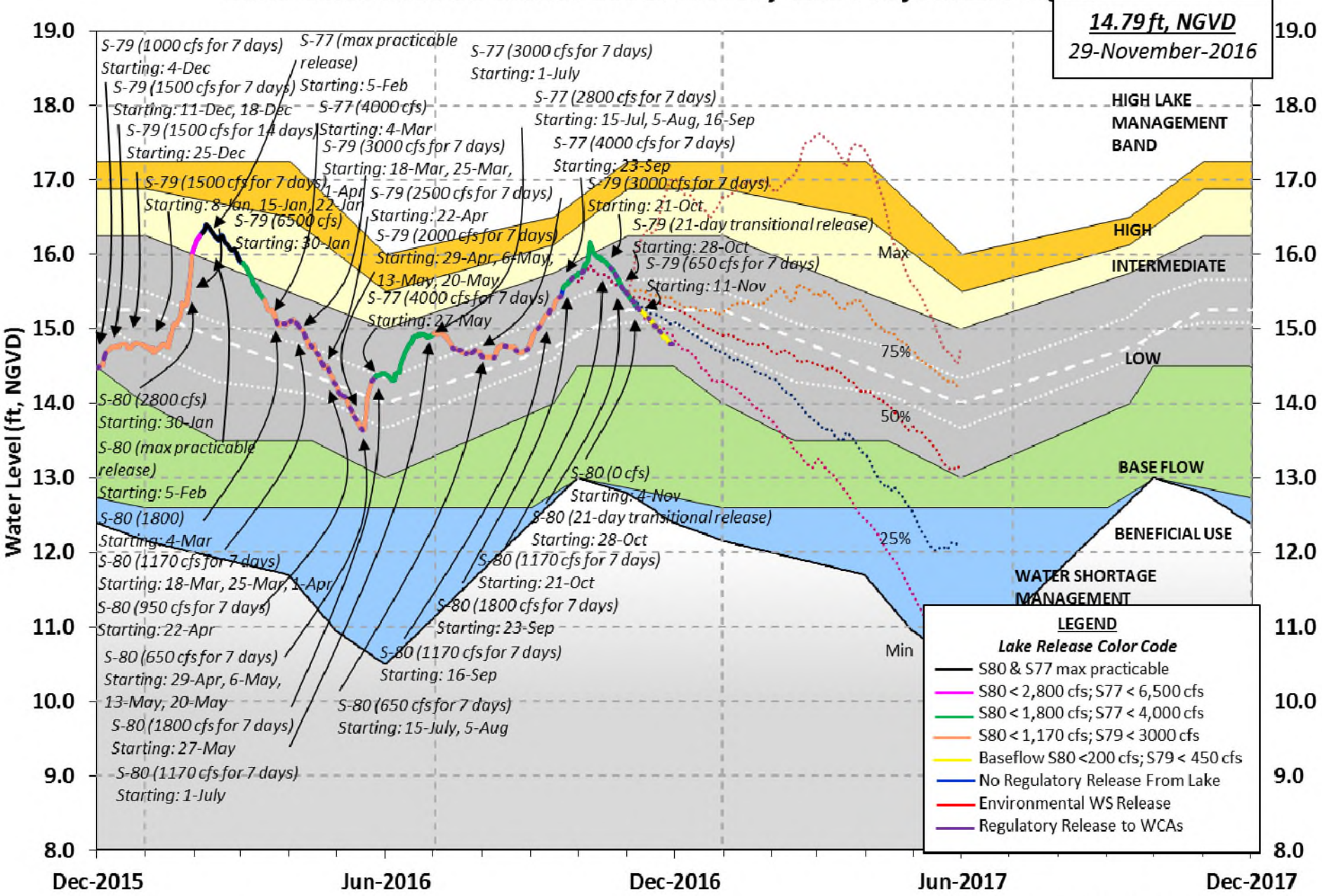
\* Very Dry Conditions may require that releases to tide (estuaries) be discontinued

Figure 7-4



# Lake Okeechobee Water Level History and Projected Stages

**14.79 ft, NGVD**  
29-November-2016



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

Data Ending 2400 hours    27 NOV 2016

Okeechobee Lake Regulation	Elevation	Last Year	2YRS Ago
	(ft-NGVD)	(ft-NGVD)	(ft-NGVD)
*Okeechobee Lake Elevation	14.80	14.48	15.61 (Official Elv)
Bottom of High Lake Mngmt= 17.25    Top of Water Short Mngmt= 12.44			
Currently in Operational Management Band			

Simulated Average LORS2008 [1965-2000]	13.80
Difference from Average LORS2008	1.00

27NOV (1965-2007) Period of Record Average	14.86
Difference from POR Average	-0.06

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

++Navigation Depth (Based on 2007 Channel Condition Survey) Route 1 ÷ 8.74'

++Navigation Depth (Based on 2008 Channel Condition Survey) Route 2 ÷ 6.94'

Bridge Clearance = -NR-'

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

L001	L005	L006	LZ40	S4	S352	S308	S133
14.60	-NR-	-NR-	14.82	14.99	14.98	14.77	14.65

\*Combination Okeechobee Avg-Daily Lake Average = 14.80  
 (\*See Note)

Okeechobee Inflows (cfs):

S65E	784	C5	-122	Fisheating Cr	5
S154	0	S191	0	S135 Pumps	0
S84	0	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		
Total Inflows:	667				

Okeechobee Outflows (cfs):

S135 Culverts	0	S354	560	S77	-NR-
S127 Culverts	0	S351	1012	S77Below	1275
S129 Culverts	0	S352	451	S308	-NR-
S131 Culverts	0	L8 Canal Pt	208	S308Below	36
Total Outflows:	No Report Due To Missing S77 or S308 Discharge Data				



S310:	14.89		24						
S3 Pumps:	11.15	14.94	0	0	0	0			(cfs)
S354:	14.94	11.15	560	0.8	0.9				
S2 Pumps:	10.99	14.94	0	0	0	0	0		(cfs)
S351:	14.94	10.99	1012	1.6	1.6	1.4			
S352:	14.91	11.15	451	0.7	0.8				
C10A:	-NR-	13.79		0.0	0.0	8.0	0.0	0.0	
L8 Canal PT		13.61	208						

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S351 and S352 Temporary Pumps/S354 Spillway

S351:	10.99	14.94	1012	-NR-	-NR-	-NR-	-NR-	-NR-	-NR-
S352:	11.15	14.91	451	-NR-	-NR-	-NR-	-NR-		
S354:	11.15	14.94	560	-NR-	-NR-	-NR-	-NR-		

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Caloosahatchee River (S77, S78, S79)

S47B:	13.21	11.15		0.0	0.0				
S47D:	11.20	11.21	36	6.0					

S77:

Spillway and Sector Flow:									
	-NR-	-NR-	-NR-	0.0	2.5	2.5	0.0		
Flow Due to Lockages+:			-NR-						

S77 Below USGS Flow Gage 1275

S78:

Spillway and Sector Flow:									
	-NR-	-NR-	-NR-	-NR-	-NR-	-NR-	-NR-		
Flow Due to Lockages+:			-NR-						

S79:

Spillway and Sector Flow:										
	-NR-	-NR-	-NR-	0.0	0.0	1.0	1.0	1.0	1.0	0.0

0.0

Flow Due to Lockages+:			-NR-						
Percent of flow from S77			-NR-%						
Chloride (ppm)			-N						

St. Lucie Canal (S308, S80)

S308:

Spillway and Sector Flow:									
	-NR-	-NR-	-NR-	0.0	0.0	0.0	0.0		
Flow Due to Lockages+:			-NR-						

S308 Below USGS Flow Gage 36

S153:	19.09	13.43	0	0.0	0.0				
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S80:

Spillway and Sector Flow:										
	-NR-	-NR-	-NR-	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Flow Due to Lockages+:			-NR-						
Percent of flow from S308			-NR-%						

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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	----- 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:	-NR-	0.00	0.00	-NR- -NR-
S78:	-NR-	0.00	0.00	-NR- -NR-
S79:	-NR-	0.00	0.00	-NR- -NR-
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:	-NR-	0.00	0.00	-NR- -NR-
S80:	-NR-	0.00	0.00	-NR- -NR-
Okeechobee Average	-NR-	0.00	0.00	
(Sites S78, S79 and S80 not included)				
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Oke Nexrad Basin Avg	0.00	0.00	0.00	
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Okeechobee Lake Elevations	27 NOV 2016	14.80	Difference from
27NOV16			27NOV16
27NOV16 -1 Day =	26 NOV 2016	14.84	0.04
27NOV16 -2 Days =	25 NOV 2016	14.86	0.06
27NOV16 -3 Days =	24 NOV 2016	14.88	0.08
27NOV16 -4 Days =	23 NOV 2016	14.89	0.09
27NOV16 -5 Days =	22 NOV 2016	14.91	0.11
27NOV16 -6 Days =	21 NOV 2016	14.95	0.15
27NOV16 -7 Days =	20 NOV 2016	14.98	0.18
27NOV16 -30 Days =	28 OCT 2016	15.53	0.73
27NOV16 -1 Year =	27 NOV 2015	14.48	-0.32
27NOV16 -2 Year =	27 NOV 2014	15.61	0.81

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

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Lake Okeechobee Net Inflow (LONIN)

Average Flow over the previous 14 days					Avg-Daily Flow
27NOV16	Today =	27 NOV 2016	-2271	MON	-5215
27NOV16	-1 Day =	26 NOV 2016	-1821	SUN	-1207
27NOV16	-2 Days =	25 NOV 2016	-2010	SAT	-1138
27NOV16	-3 Days =	24 NOV 2016	-2025	FRI	1134
27NOV16	-4 Days =	23 NOV 2016	-2185	THU	-1010
27NOV16	-5 Days =	22 NOV 2016	-2269	WED	-4831
27NOV16	-6 Days =	21 NOV 2016	-1789	TUE	-2646
27NOV16	-7 Days =	20 NOV 2016	-1979	MON	-5530
27NOV16	-8 Days =	19 NOV 2016	-1640	SUN	947
27NOV16	-9 Days =	18 NOV 2016	-2111	SAT	-1080
27NOV16	-10 Days =	17 NOV 2016	-2020	FRI	-1466
27NOV16	-11 Days =	16 NOV 2016	-1794	THU	-6164
27NOV16	-12 Days =	15 NOV 2016	-1348	WED	-NR-
27NOV16	-13 Days =	14 NOV 2016	-1241	TUE	-1319

S65E

Average Flow over previous 14 days					Avg-Daily Flow
27NOV16	Today=	27 NOV 2016	925	MON	904
27NOV16	-1 Day =	26 NOV 2016	927	SUN	923
27NOV16	-2 Days =	25 NOV 2016	930	SAT	918
27NOV16	-3 Days =	24 NOV 2016	935	FRI	918
27NOV16	-4 Days =	23 NOV 2016	939	THU	922
27NOV16	-5 Days =	22 NOV 2016	939	WED	928
27NOV16	-6 Days =	21 NOV 2016	943	TUE	932
27NOV16	-7 Days =	20 NOV 2016	950	MON	932
27NOV16	-8 Days =	19 NOV 2016	957	SUN	916
27NOV16	-9 Days =	18 NOV 2016	965	SAT	912
27NOV16	-10 Days =	17 NOV 2016	973	FRI	918
27NOV16	-11 Days =	16 NOV 2016	980	THU	921
27NOV16	-12 Days =	15 NOV 2016	987	WED	965
27NOV16	-13 Days =	14 NOV 2016	995	TUE	939

Lake Okeechobee Outlets Last 14 Days

DATE	S-77 Discharge (ALL DAY) (AC-FT)	Below S-77 Discharge (ALL-DAY) (AC-FT)	S-78 Discharge (ALL DAY) (AC-FT)	S-79 Discharge (ALL DAY) (AC-FT)
27 NOV 2016	-NR-	2527	-NR-	-NR-
26 NOV 2016	1704	1771	-NR-	1896
25 NOV 2016	1679	1729	836	1485
24 NOV 2016	1752	1776	447	1002
23 NOV 2016	1504	1532	692	668
22 NOV 2016	1553	2354	1014	1151
21 NOV 2016	1787	2970	1389	1687
20 NOV 2016	1853	2417	1380	2217
19 NOV 2016	1812	1888	1399	2130
18 NOV 2016	1415	1631	-NR-	1524
17 NOV 2016	1239	1358	-NR-	604
16 NOV 2016	1245	1114	-NR-	629
15 NOV 2016	1643	1802	719	1011

DATE	S-310 Discharge (ALL DAY) (AC-FT)	S-351 Discharge (ALL DAY) (AC-FT)	S-352 Discharge (ALL DAY) (AC-FT)	S-354 Discharge (ALL DAY) (AC-FT)	L8 Canal Pt Discharge (ALL DAY) (AC-FT)
14 NOV 2016	1847	2190	1384	1276	
27 NOV 2016	48	2007	894	944	412
26 NOV 2016	17	2161	898	970	404
25 NOV 2016	66	2124	924	940	406
24 NOV 2016	34	2122	1166	833	410
23 NOV 2016	67	2154	1225	738	419
22 NOV 2016	78	2138	1370	752	425
21 NOV 2016	105	1892	1031	1035	413
20 NOV 2016	138	1791	347	978	432
19 NOV 2016	126	1991	960	904	434
18 NOV 2016	136	1920	1251	789	449
17 NOV 2016	119	1896	1063	795	460
16 NOV 2016	133	1600	849	962	448
15 NOV 2016	-NR-	1573	865	984	-NR-
14 NOV 2016	144	1836	700	817	439

DATE	S-308 Discharge (ALL DAY) (AC-FT)	Below S-308 Discharge (ALL-DAY) (AC-FT)	S-80 Discharge (ALL-DAY) (AC-FT)
27 NOV 2016	-NR-	71	-NR-
26 NOV 2016	5	-18	86
25 NOV 2016	194	219	42
24 NOV 2016	157	241	19
23 NOV 2016	463	428	56
22 NOV 2016	365	177	48
21 NOV 2016	166	8	40
20 NOV 2016	257	66	44
19 NOV 2016	280	-25	51
18 NOV 2016	541	416	25
17 NOV 2016	4	118	39
16 NOV 2016	6	-10	38
15 NOV 2016	7	12	31
14 NOV 2016	106	-52	56

\*\*\* 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)

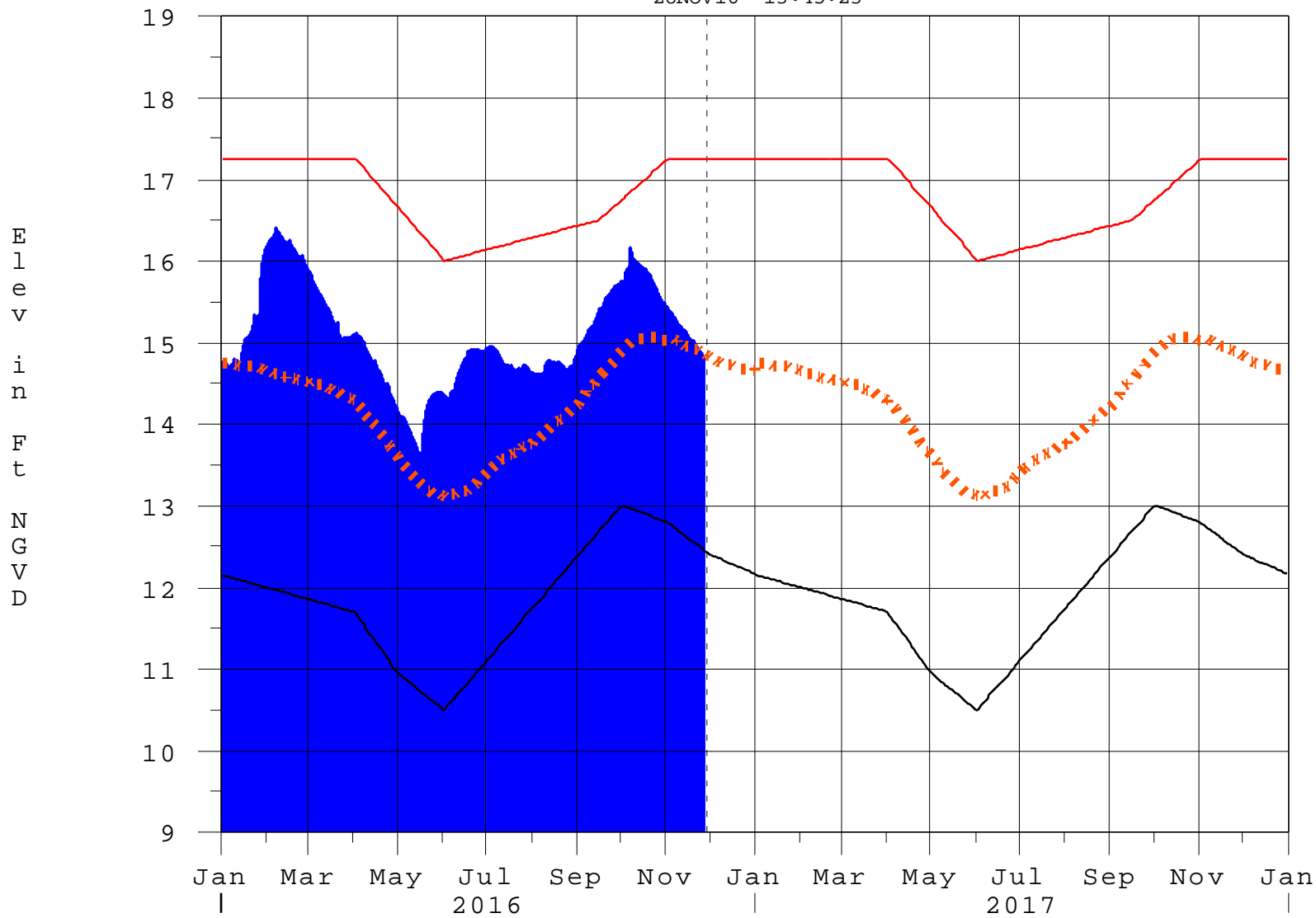
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Report Generated 28NOV2016 @ 13:39 \*\* Preliminary Data - Subject to Revision  
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# Lake Okeechobee

28NOV16 13:45:23



- 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 Net Inflow 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