

Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 9/5/2016 (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 Neutral 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 (Sep-Feb)	N/A	N/A	1.57	Wet	2.06	Very Wet	3.21	Very Wet
Multi Seasonal (Sep-Apr)	N/A	N/A	1.53	Normal	2.04	Normal	3.21	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:](#)

6320 cfs 14-day running average for Lake Okeechobee Net Inflow through **9/5/2016**. According to the classification in [Tributary Hydrologic Conditions](#) table, this condition is Very Wet.

-0.28 for Palmer Index on 9/3/2016.

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

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

[LORS2008 Classification Tables:](#)

Lake Okeechobee Stage on 9/5/2016

Lake Okeechobee Stage: **15.01 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		16.45	
Operational Band	High sub-band	16.07	
	Intermediate sub-band	15.68	
	Low sub-band	13.91	← 15.01
Base Flow sub-band		12.65	
Beneficial Use sub-band		12.49	
Water Shortage Management Band			

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

Release Guidance Flow Chart Outcome: Up to Maximum Releases to the WCAs if Desirable or with Minimum Everglades Impacts

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

Release Guidance Flow Chart Outcome: S-77 up to 4000 cfs and S-80 up to 1800 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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LORS2008 Implementation on 9/5/2016 (ENSO Neutral Condition):

Status for week ending **9/6/2016**:

District wide, Raindar rainfall was 3.26 inches for the week. Lake stage on 9/5/2016 was 15.01 ft, up 0.30 ft from last week.

The updated August 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 **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

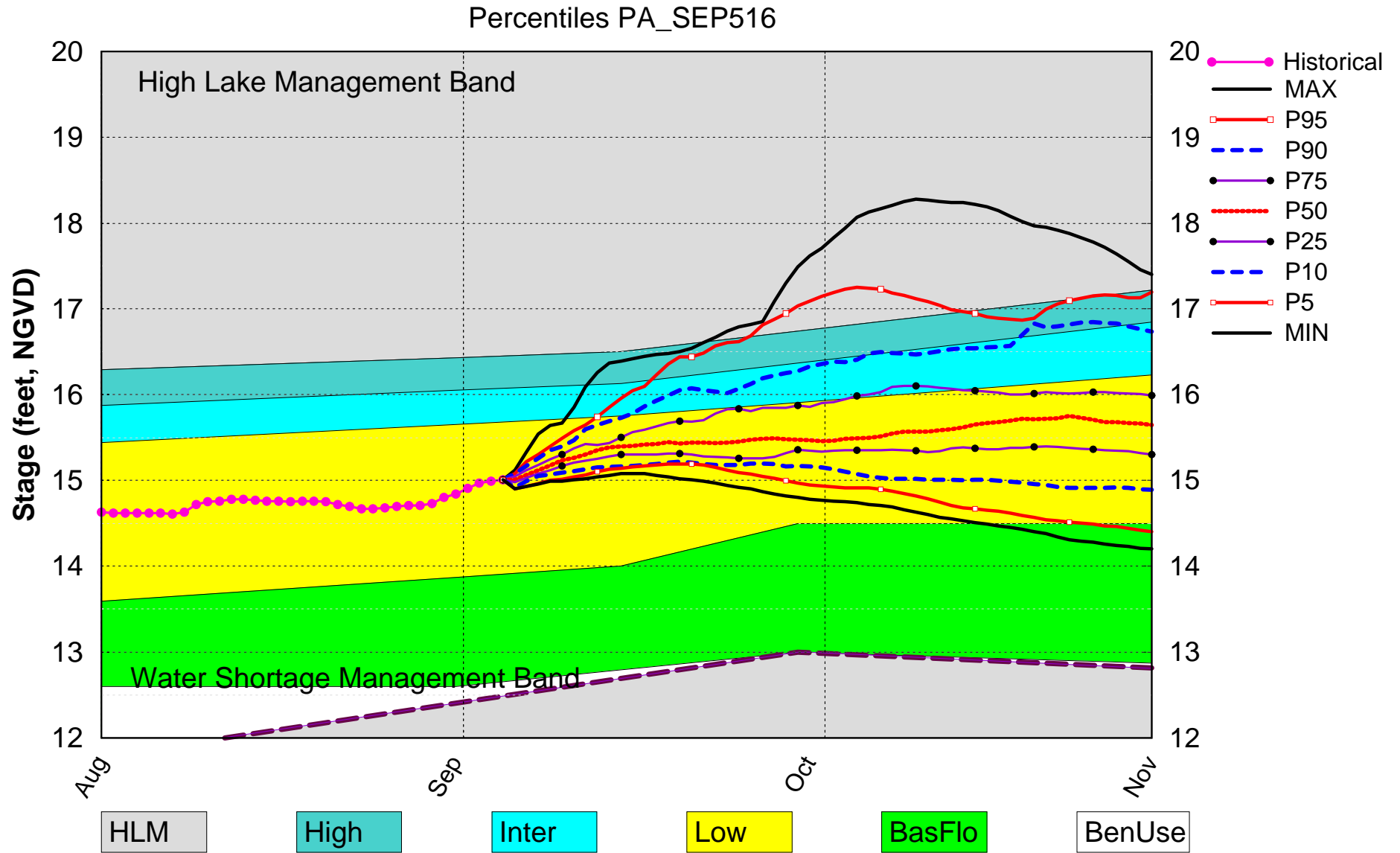
Area	Indicator	Value	Color Coded Scoring Scheme
LOK	Projected LOK Stage for the next two months	Low Sub-Band	L
	Palmer Index for LOK Tributary Conditions	-0.28 (Normal)	L
	CPC Precipitation Outlook	1 month: Normal	L
		3 months: Normal	L
	LOK Seasonal Net Inflow Forecast ENSO Neutral Years	2.06 ft (Normal to Extremely Wet)	L
	LOK Multi-Seasonal Net Inflow Forecast ENSO Neutral Years	2.04 ft (Normal)	M
WCAs	WCA 1: Site 1-7, Site 1-8T, & Site 1-9 Average	Above Line 1 (16.58 ft)	L
	WCA 2A: Site 2-17 HW	Above Line1 (12.83 ft)	L
	WCA-3A: 3 Station Average (Site 63, 64 and 65)	Above Line 1 (10.60 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 forecasts use slightly different classification intervals than those used by the 2008-LORS.

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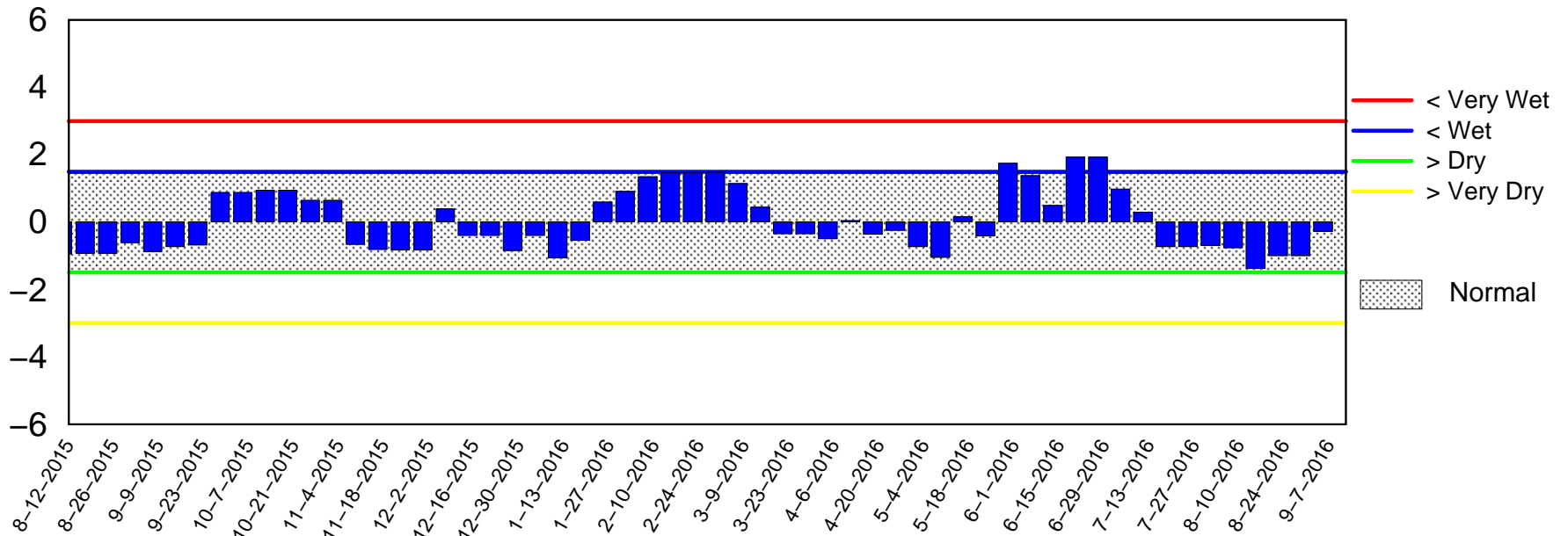
Lake Okeechobee SFWMM Sept 2016 Dynamic Position Analysis



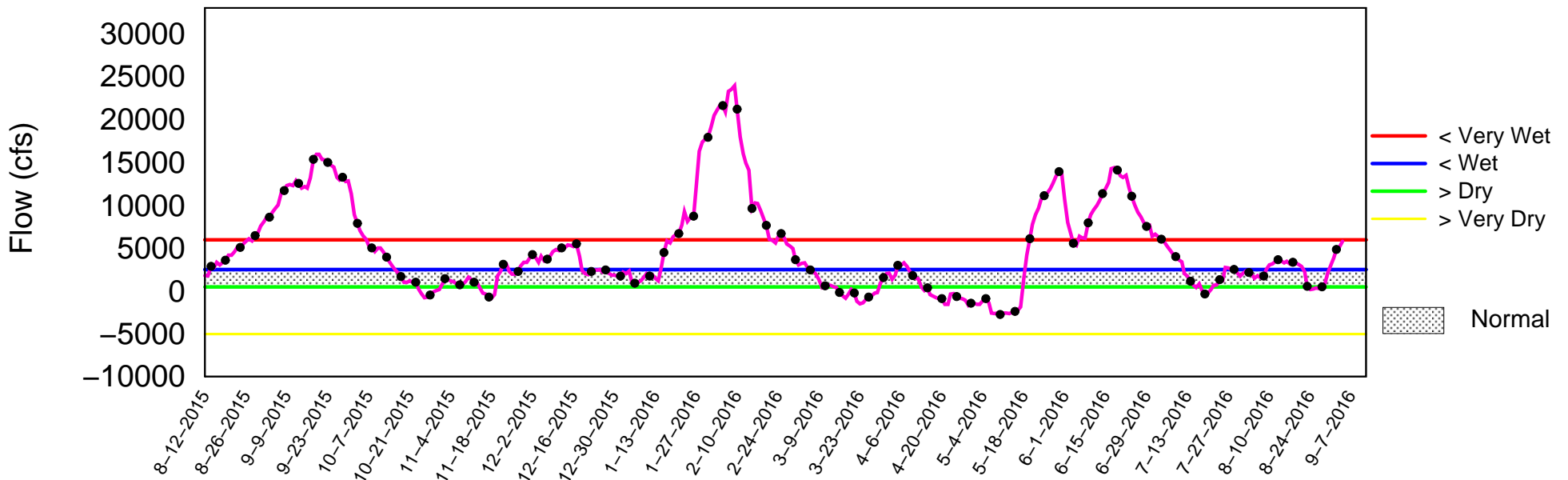
(See assumptions on the Position Analysis Results website)

Tributary Basin Condition Indicators as of September 6 2016

Palmer Index



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



Tue Sep 6 09:01:31 2016

2008 LORS

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

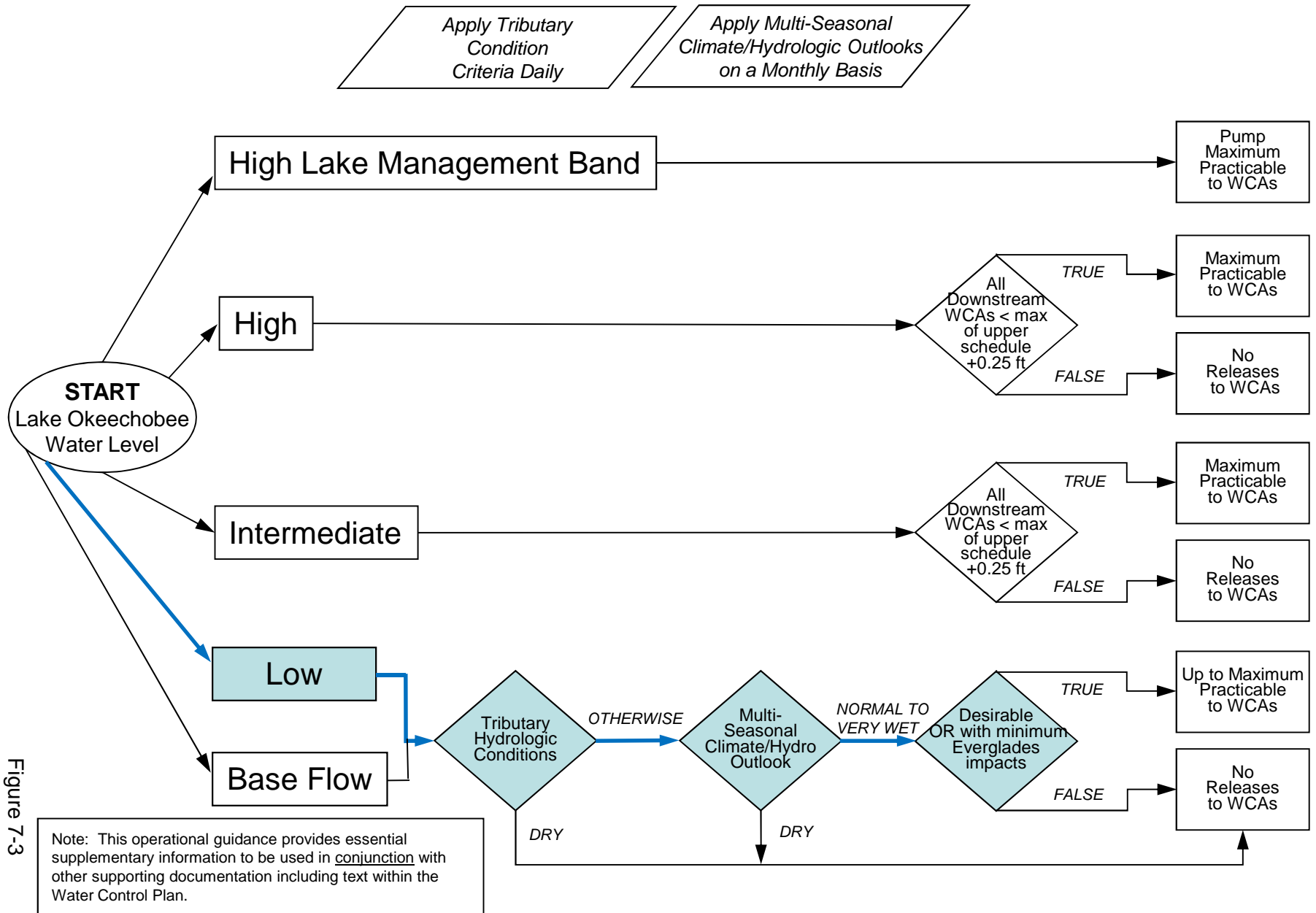


Figure 7-3

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

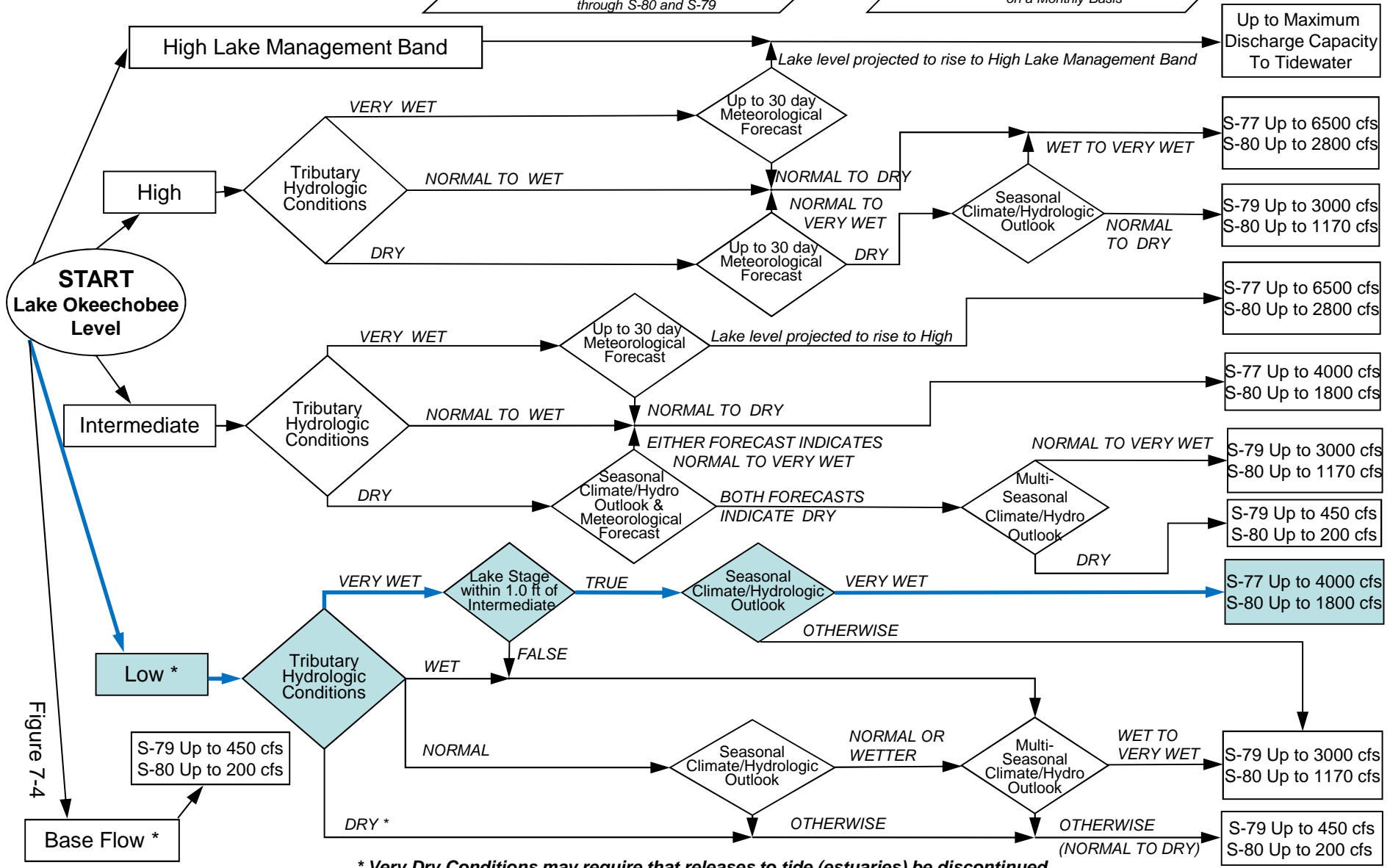
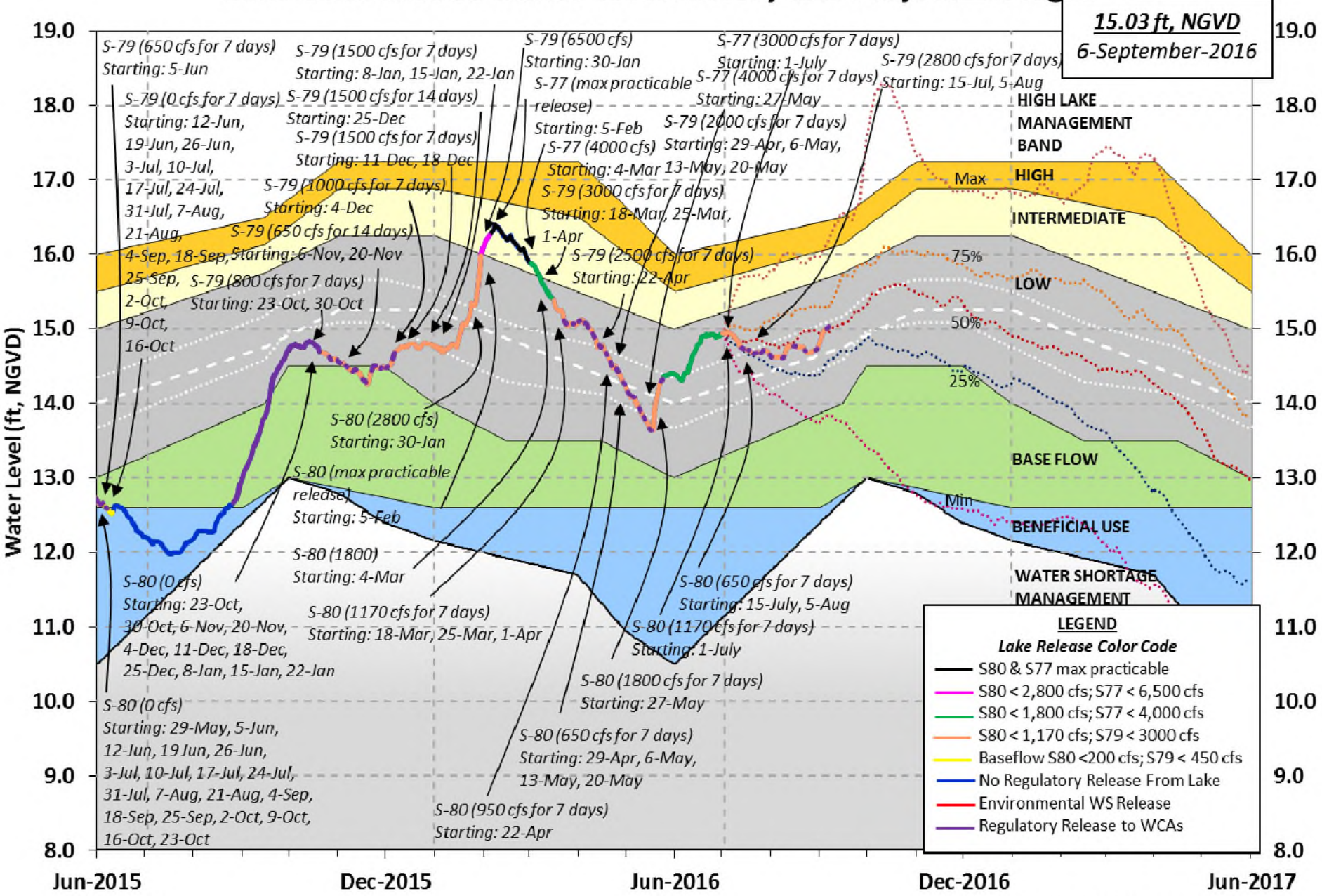


Figure 7-4

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

Lake Okeechobee Water Level History and Projected Stages

15.03 ft, NGVD
6-September-2016



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

Data Ending 2400 hours 05 SEP 2016

Okeechobee Lake Regulation	Elevation	Last Year	2YRS Ago
	(ft-NGVD)	(ft-NGVD)	(ft-NGVD)
*Okeechobee Lake Elevation	15.03	13.26	14.48 (Official Elv)
Bottom of High Lake Mngmt=	16.45	Top of Water Short Mngmt=	12.48
Currently in Operational Management Band			
Simulated Average LORS2008 [1965-2000]		13.34	
Difference from Average LORS2008		1.69	
05SEP (1965-2007) Period of Record Average		14.36	
Difference from POR Average		0.67	

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

++Navigation Depth (Based on 2007 Channel Condition Survey) Route 1 ÷ 8.97'
 ++Navigation Depth (Based on 2008 Channel Condition Survey) Route 2 ÷ 7.17'
 Bridge Clearance = 48.99'

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

L001	L005	L006	LZ40	S4	S352	S308	S133
14.89	15.11	15.05	15.03	15.13	15.20	15.00	14.84

*Combination Okeechobee Avg-Daily Lake Average = 15.03
 (*See Note)

Okeechobee Inflows (cfs):

S65E	3128	C5	-77	Fisheating Cr	1542
S154	111	S191	1343	S135 Pumps	0
S84	1514	S133 Pumps	331	S2 Pumps	0
S84X	811	S127 Pumps	132	S3 Pumps	0
S71	950	S129 Pumps	0	S4 Pumps	0
S72	134	S131 Pumps	0		
Total Inflows:	9919				

Okeechobee Outflows (cfs):

S135 Culverts	0	S354	0	S77	(Not Used)
S127 Culverts	0	S351	0	S77Below	597
(USED)					
S129 Culverts	0	S352	327	S308	(Not Used)

S131 Culverts 0 L8 Canal Pt 4 S308Below 451
 (USED)
 Total Outflows: 1379

****S77 Structure outflow is being used to compute Total Outflow.
 ****S308 Structure outflow is being used to compute Total Outflow.

Okeechobee Pan Evaporation (inches):
 S77 0.27 S308 0.16
 Average Pan Evap x 0.75 Pan Coefficient = 0.16" = 0.01'

Lake Average Precipitation using NEXRAD: = -NR- = -NR-'

Evaporation - Precipitation: = -NR- = -NR-'
 Evaporation - Precipitation using Lake Area of 730 square miles
 is equal to -NR-
 Lake Okeechobee (Change in Storage) Flow is 4336 cfs or 8600 AC-FT

Note: Headwater, tailwater, and stage values below are instantaneous values unless otherwise specified.

---	Headwater Tailwater		Disch	----- Gate Positions -----						
	Elevation	Elevation		#1	#2	#3	#4	#5	#6	#7
#8	(ft-msl)	(ft-msl)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
	(I) see note at bottom									
North East Shore										
S133 Pumps:	13.41	14.76	331	0	33	40	140	140	(cfs)	
S193:										
S191:	18.80	14.96	1343	1.2	1.2	1.8				
S135 Pumps:	13.63	14.97	0	0	0	0	0		(cfs)	
S135 Culverts:			0	0.0	0.0					
North West Shore										
S65E:	21.15	14.90	3128	1.0	1.6	1.5	1.6	1.6	1.6	
S127 Pumps:	13.96	15.12	132	42	55	0	3	15	(cfs)	
S127 Culvert:			0	0.0						
S129 Pumps:	13.39	15.09	0	0	0	0			(cfs)	
S129 Culvert:			0	0.0						
S131 Pumps:	13.23	15.11	0	0	0				(cfs)	
S131 Culvert:			0							
Fisheating Creek										
nr Palmdale		33.35	1542							
nr Lakeport										
C5:	15.14	15.14	-77	5.3	5.2	5.3				

South Shore

S4 Pumps:	12.42	15.12	0	0	0	0				(cfs)
S169:	15.15	12.40	0	0.0	0.0	0.0				
S310:	15.07		-41							
S3 Pumps:	10.12	15.13	0	0	0	0				(cfs)
S354:	15.13	10.12	0	0.0	0.0					
S2 Pumps:	9.87	15.17	0	0	0	0	0	0		(cfs)
S351:	15.17	9.87	0	0.0	0.0	0.0				
S352:	15.30	10.47	327	0.4	0.4					
C10A:	-NR-	12.48		0.0	0.0	8.0	0.0	0.0		
L8 Canal PT		12.33	4							

S351 and S352 Temporary Pumps/S354 Spillway

S351:	9.87	15.17	0	-NR--NR--NR--NR--NR--NR-
S352:	10.47	15.30	327	-NR--NR--NR--NR-
S354:	10.12	15.13	0	-NR--NR--NR--NR-

Caloosahatchee River (S77, S78, S79)

S47B:	14.43	12.11		2.0	2.5					
S47D:	11.69	11.62	120	6.0						
S77:										
Spillway and Sector Flow:										
15.10	11.65	597	0.0	0.0	0.0	0.0				
Flow Due to Lockages+:		4								
S77 Below USGS Flow Gage		597								
S78:										
Spillway and Sector Flow:										
11.71	3.12	1171	2.5	0.0	1.0	0.0				
Flow Due to Lockages+:		11								
S79:										
Spillway and Sector Flow:										
3.16	1.77	3855	2.0	2.0	3.0	3.0	3.0	3.0	2.0	
2.0										
Flow Due to Lockages+:		3								
Percent of flow from S77		9%								
Chloride (ppm)		40								

St. Lucie Canal (S308, S80)

S308:										
Spillway and Sector Flow:										
15.07	14.51	451	1.0	1.0	1.0	1.0				
Flow Due to Lockages+:		1								
S308 Below USGS Flow Gage		451								
S153:	18.99	14.28	196	0.6	0.6					
S80:										
Spillway and Sector Flow:										
14.54	1.36	908	0.0	0.5	0.5	0.0	0.5	0.5	0.0	
Flow Due to Lockages+:		18								
Percent of flow from S308		62%								

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

Speedy Point Top Salinity (mg/ml) 6179
 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.

	----- 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:	0.27	0.36	1.75	15	2
S78:	0.14	0.35	1.39	354	2
S79:	2.74	2.75	4.20	128	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:	0.03	0.03	0.10	33	1
S80:	0.00	0.28	2.55	103	1
Okeechobee Average	0.15	0.03	0.14		
(Sites S78, S79 and S80 not included)					

Oke Nexrad Basin Avg	-NR-	0.20	1.71		

Okeechobee Lake Elevations	05 SEP 2016	15.03	Difference from
05SEP16			
05SEP16 -1 Day =	04 SEP 2016	15.01	-0.02
05SEP16 -2 Days =	03 SEP 2016	14.99	-0.04
05SEP16 -3 Days =	02 SEP 2016	14.97	-0.06
05SEP16 -4 Days =	01 SEP 2016	14.91	-0.12
05SEP16 -5 Days =	31 AUG 2016	14.84	-0.19
05SEP16 -6 Days =	30 AUG 2016	14.80	-0.23
05SEP16 -7 Days =	29 AUG 2016	14.73	-0.30
05SEP16 -30 Days =	06 AUG 2016	14.62	-0.41
05SEP16 -1 Year =	05 SEP 2015	13.26	-1.77
05SEP16 -2 Year =	05 SEP 2014	14.48	-0.55

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

Lake Okeechobee Net Inflow (LONIN)

Average Flow over the previous 14 days				Avg-Daily Flow
05SEP16	Today =	05 SEP 2016	6378 TUE	5715
05SEP16	-1 Day =	04 SEP 2016	5836 MON	6529
05SEP16	-2 Days =	03 SEP 2016	5113 SUN	5733
05SEP16	-3 Days =	02 SEP 2016	4767 SAT	13678
05SEP16	-4 Days =	01 SEP 2016	4024 FRI	15566
05SEP16	-5 Days =	31 AUG 2016	2944 THU	9605
05SEP16	-6 Days =	30 AUG 2016	2008 WED	16148
05SEP16	-7 Days =	29 AUG 2016	751 TUE	-NR-
05SEP16	-8 Days =	28 AUG 2016	608 MON	1851
05SEP16	-9 Days =	27 AUG 2016	407 SUN	3086
05SEP16	-10 Days =	26 AUG 2016	278 SAT	4948
05SEP16	-11 Days =	25 AUG 2016	308 FRI	3165
05SEP16	-12 Days =	24 AUG 2016	270 THU	1348
05SEP16	-13 Days =	23 AUG 2016	684 WED	-4459

S65E

Average Flow over previous 14 days				Avg-Daily Flow
05SEP16	Today=	05 SEP 2016	1901 TUE	3351
05SEP16	-1 Day =	04 SEP 2016	1733 MON	3318
05SEP16	-2 Days =	03 SEP 2016	1569 SUN	3390
05SEP16	-3 Days =	02 SEP 2016	1409 SAT	3160
05SEP16	-4 Days =	01 SEP 2016	1281 FRI	2580
05SEP16	-5 Days =	31 AUG 2016	1182 THU	1683
05SEP16	-6 Days =	30 AUG 2016	1146 WED	1543
05SEP16	-7 Days =	29 AUG 2016	1126 TUE	1335
05SEP16	-8 Days =	28 AUG 2016	1119 MON	1052
05SEP16	-9 Days =	27 AUG 2016	1132 SUN	1165
05SEP16	-10 Days =	26 AUG 2016	1136 SAT	1063
05SEP16	-11 Days =	25 AUG 2016	1143 FRI	987
05SEP16	-12 Days =	24 AUG 2016	1163 THU	983
05SEP16	-13 Days =	23 AUG 2016	1194 WED	1008

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)
05 SEP 2016		1184	2344	7650
04 SEP 2016		1406	2602	8119
03 SEP 2016		322	2402	8743
02 SEP 2016		357	2615	8214
01 SEP 2016		827	2848	7138
31 AUG 2016		1744	2328	5170
30 AUG 2016		1757	1756	-NR-
29 AUG 2016		945	2046	3877
28 AUG 2016		683	1480	3294
27 AUG 2016		947	1767	3840

26 AUG 2016	1217	2517	4580
25 AUG 2016	1577	2547	4090
24 AUG 2016	1892	2571	4715
23 AUG 2016	1894	2585	4939

	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)
05 SEP 2016	-81	0	648	0	8
04 SEP 2016	8	0	1063	0	1
03 SEP 2016	-86	0	734	0	1
02 SEP 2016	-152	0	387	0	-9
01 SEP 2016	-128	0	44	0	5
31 AUG 2016	-113	0	0	0	17
30 AUG 2016	18	0	468	0	14
29 AUG 2016	0	0	1003	-NR-	13
28 AUG 2016	21	1053	843	0	11
27 AUG 2016	13	333	234	0	13
26 AUG 2016	-22	0	0	0	17
25 AUG 2016	-0	196	16	107	10
24 AUG 2016	26	0	293	153	164
23 AUG 2016	22	0	496	178	398

	S-308	Below S-308	S-80
	Discharge	Discharge	Discharge
	(ALL DAY)	(ALL-DAY)	(ALL-DAY)
DATE	(AC-FT)	(AC-FT)	(AC-FT)
05 SEP 2016		894	1024
04 SEP 2016		1980	1235
03 SEP 2016		1915	1554
02 SEP 2016		1186	1007
01 SEP 2016		-193	620
31 AUG 2016		89	164
30 AUG 2016		391	633
29 AUG 2016		1019	843
28 AUG 2016		1081	954
27 AUG 2016		394	482
26 AUG 2016		180	794
25 AUG 2016		170	1314
24 AUG 2016		170	164
23 AUG 2016		790	593

*** 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

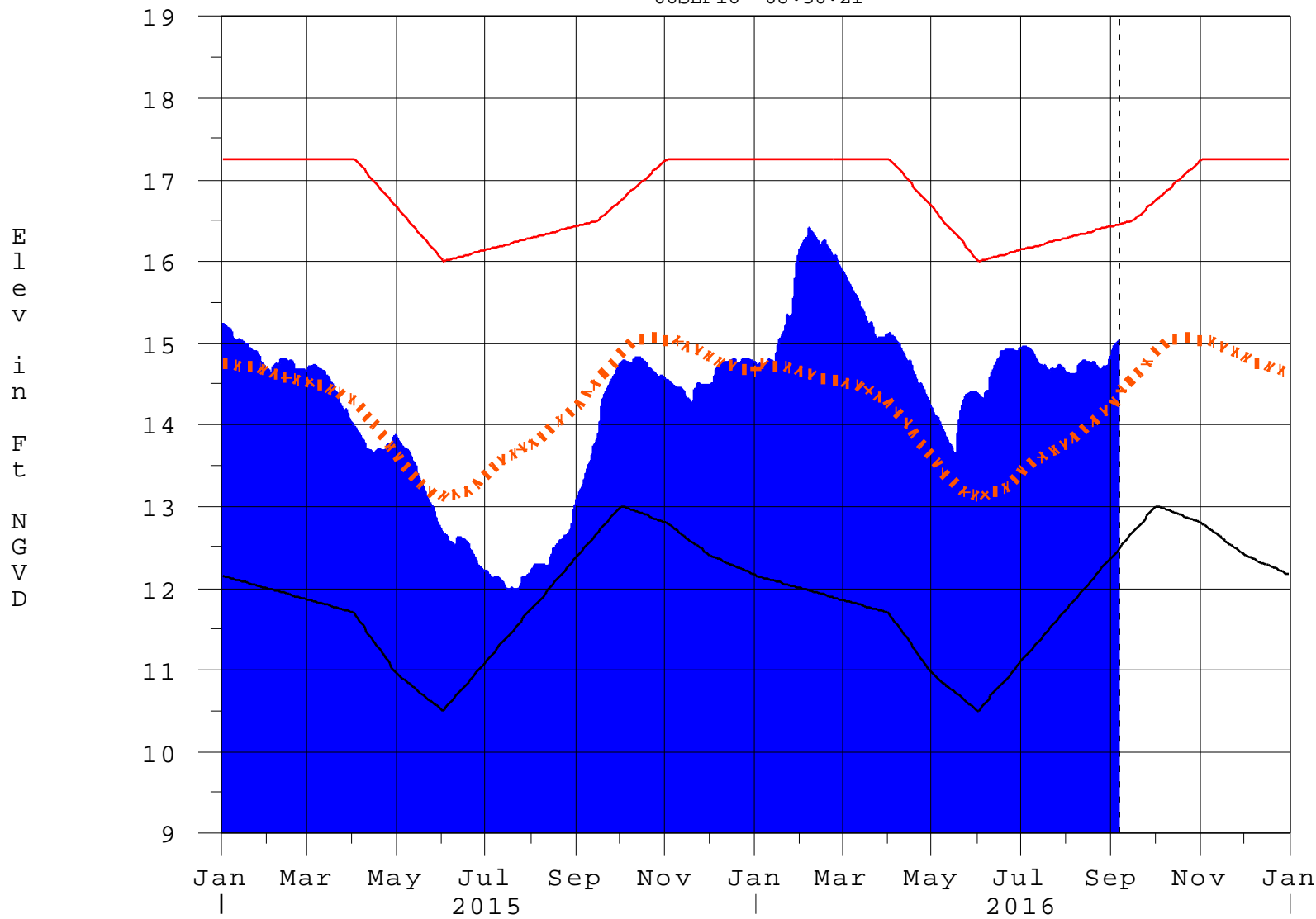
++ For more information see the Jacksonville District Navigation website at <http://www.saj.usace.army.mil/>

\$ For information regarding Lake Okeechobee Service Area water restrictions

please refer to www.sfwmd.gov

Lake Okeechobee

06SEP16 08:30:21



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

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