

Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 9/19/2016 (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	1.70	Wet	2.04	Very Wet	3.11	Very Wet
Multi Seasonal (Sep-Apr)	N/A	N/A	1.65	Normal	2.02	Normal	3.10	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:](#)

8109 cfs 14-day running average for Lake Okeechobee Net Inflow through 9/18/2016. According to the classification in [Tributary Hydrologic Conditions](#) table, this condition is Very Wet.

-0.03 for Palmer Index on 9/17/2016.

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 9/19/2016

Lake Okeechobee Stage: **15.44 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		16.55	
Operational Band	High sub-band	16.18	
	Intermediate sub-band	15.78	
	Low sub-band	14.10	← 15.44
Base Flow sub-band		12.83	
Beneficial Use sub-band		12.75	
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 9/19/2016 (ENSO Neutral Condition):

Status for week ending **9/20/2016**:

District wide, Raindar rainfall was 1.64 inches for the week. Lake stage on 9/19/2016 was 15.44 ft, up 0.22 ft from last week.

The updated September 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 **Very Wet**. The PDSI indicates normal condition and the LONIN is Very Wet. The classification is based on the wetter of the two.

Water Supply Risk Evaluation

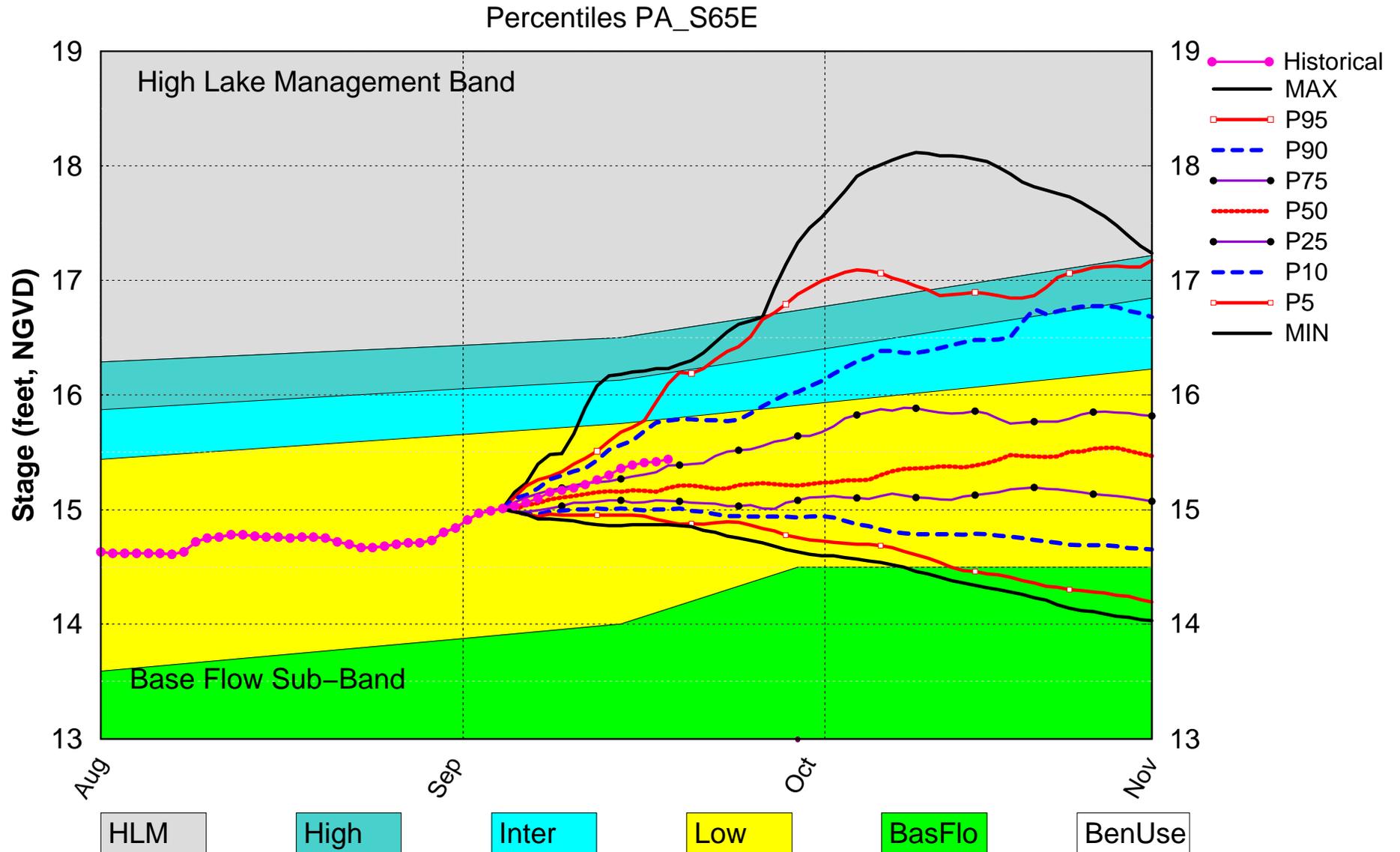
Area	Indicator	Value	Color Coded Scoring Scheme
LOK	Projected LOK Stage for the next two months	Low Sub-Band	L
	Palmer Index for LOK Tributary Conditions	-0.03 (Normal)	L
	CPC Precipitation Outlook	1 month: Normal	L
		3 months: Below Normal	M
	LOK Seasonal Net Inflow Forecast ENSO Neutral Years	2.04 ft (Normal to Extremely Wet)	L
	LOK Multi-Seasonal Net Inflow Forecast ENSO Neutral Years	2.02 ft (Normal)	M
WCAs	WCA 1: Site 1-7, Site 1-8T, & Site 1-9 Average	Above Line 1 (16.69 ft)	L
	WCA 2A: Site 2-17 HW	Above Line1 (13.02 ft)	L
	WCA-3A: 3 Station Average (Site 63, 64 and 65)	Above Line 1 (10.81 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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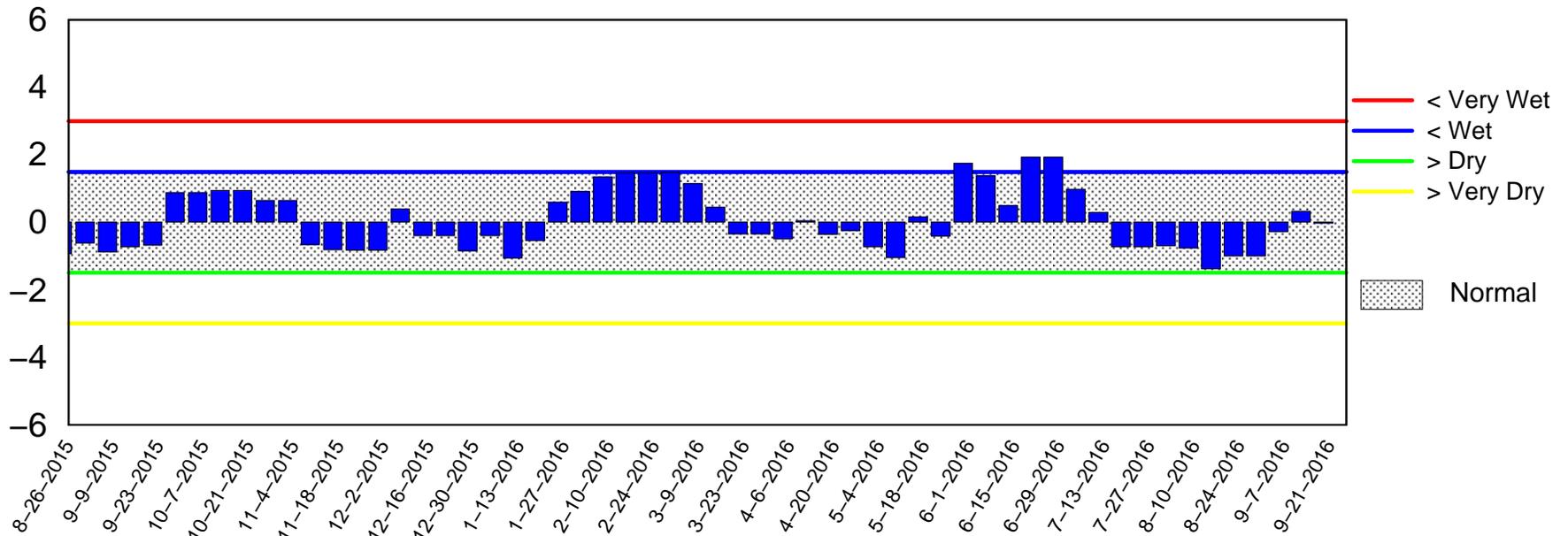
Lake Okeechobee SFWMM Sept 2016 Dynamic Position Analysis



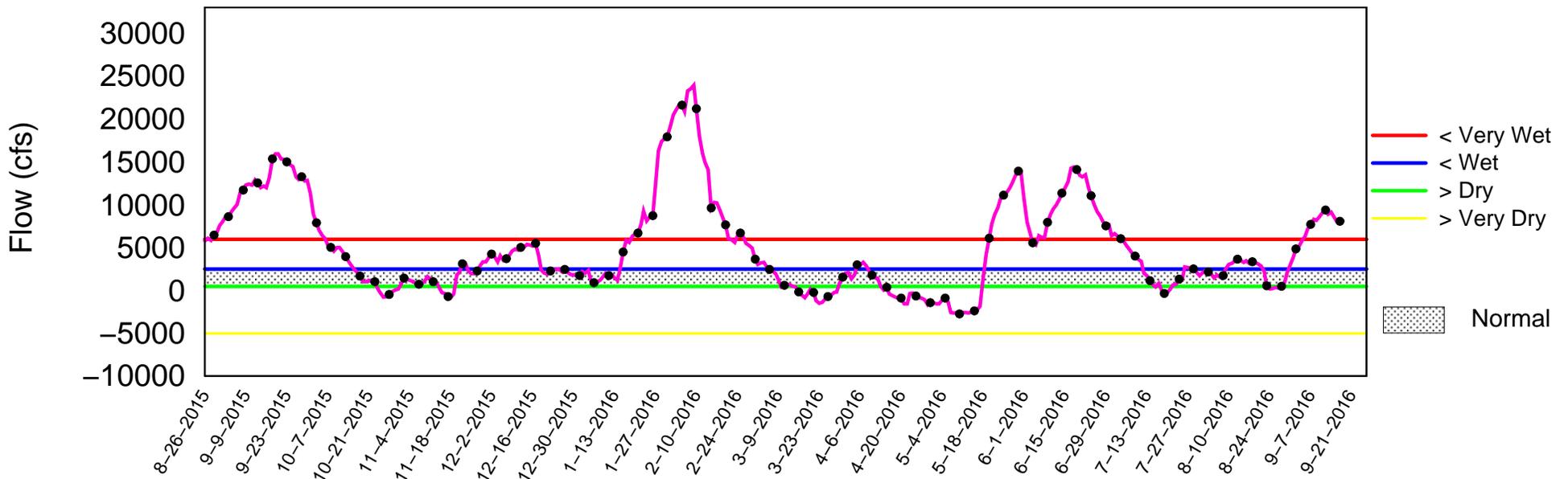
(See assumptions on the Position Analysis Results website)

Tributary Basin Condition Indicators as of September 19 2016

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

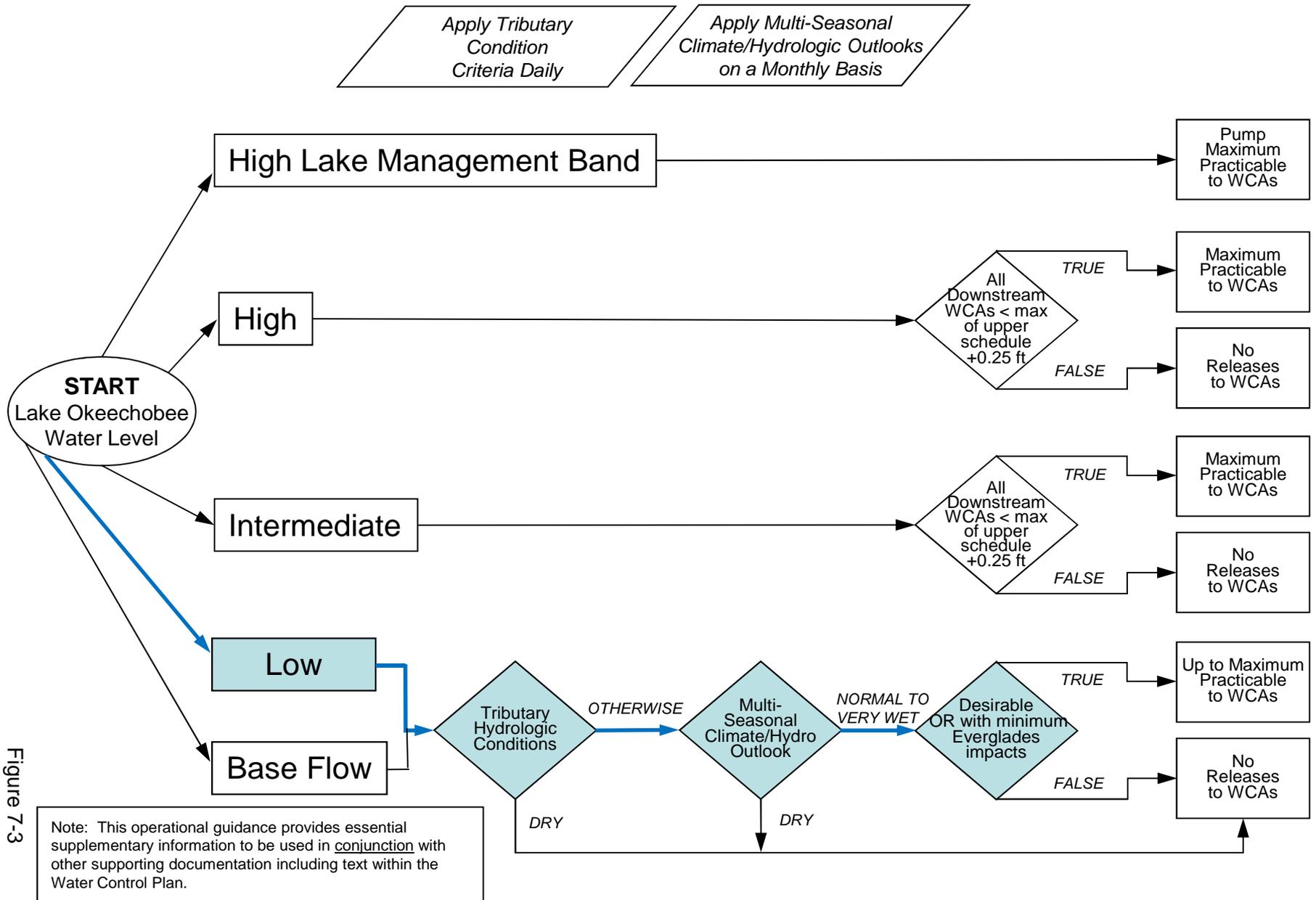


Figure 7-3

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

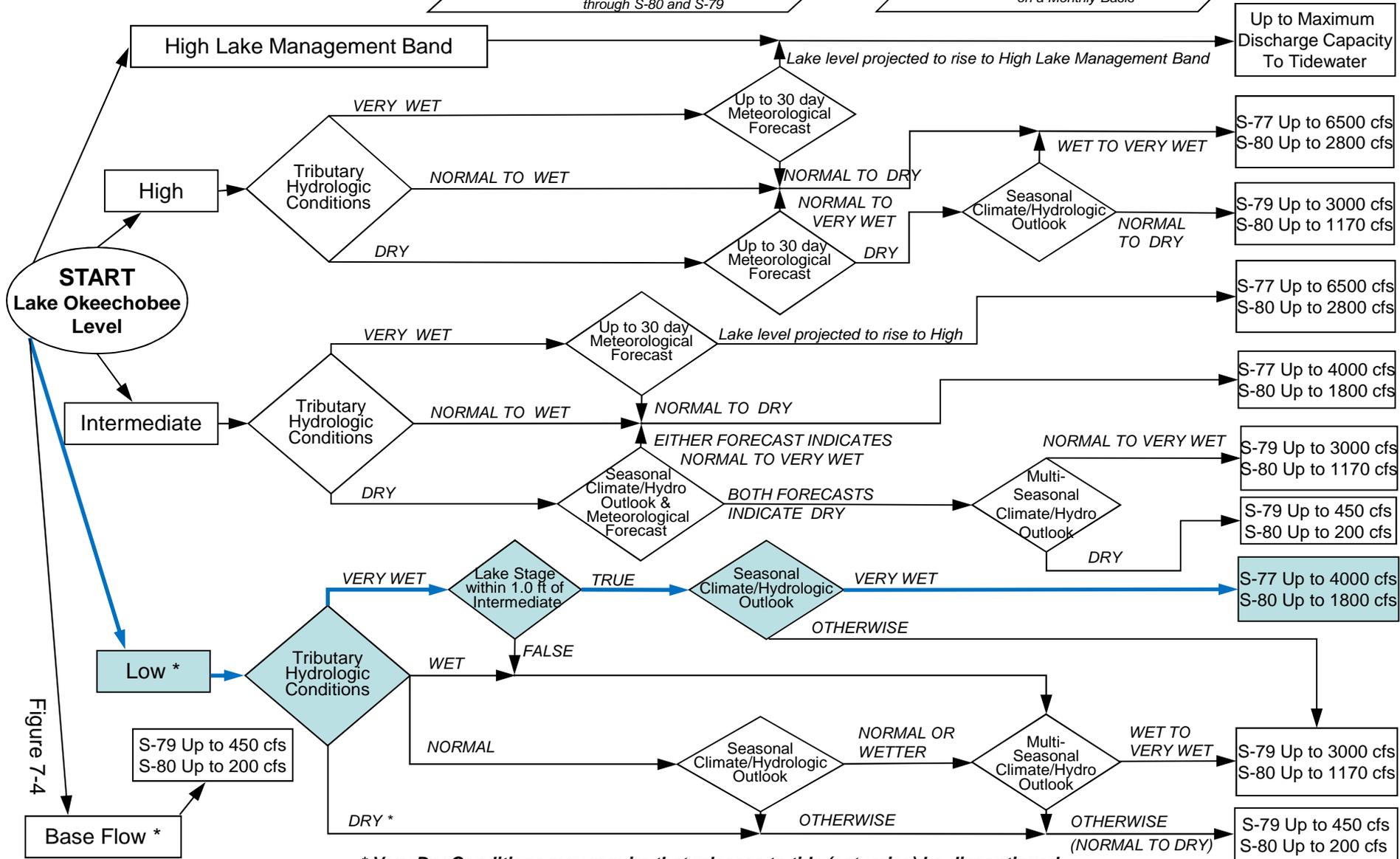
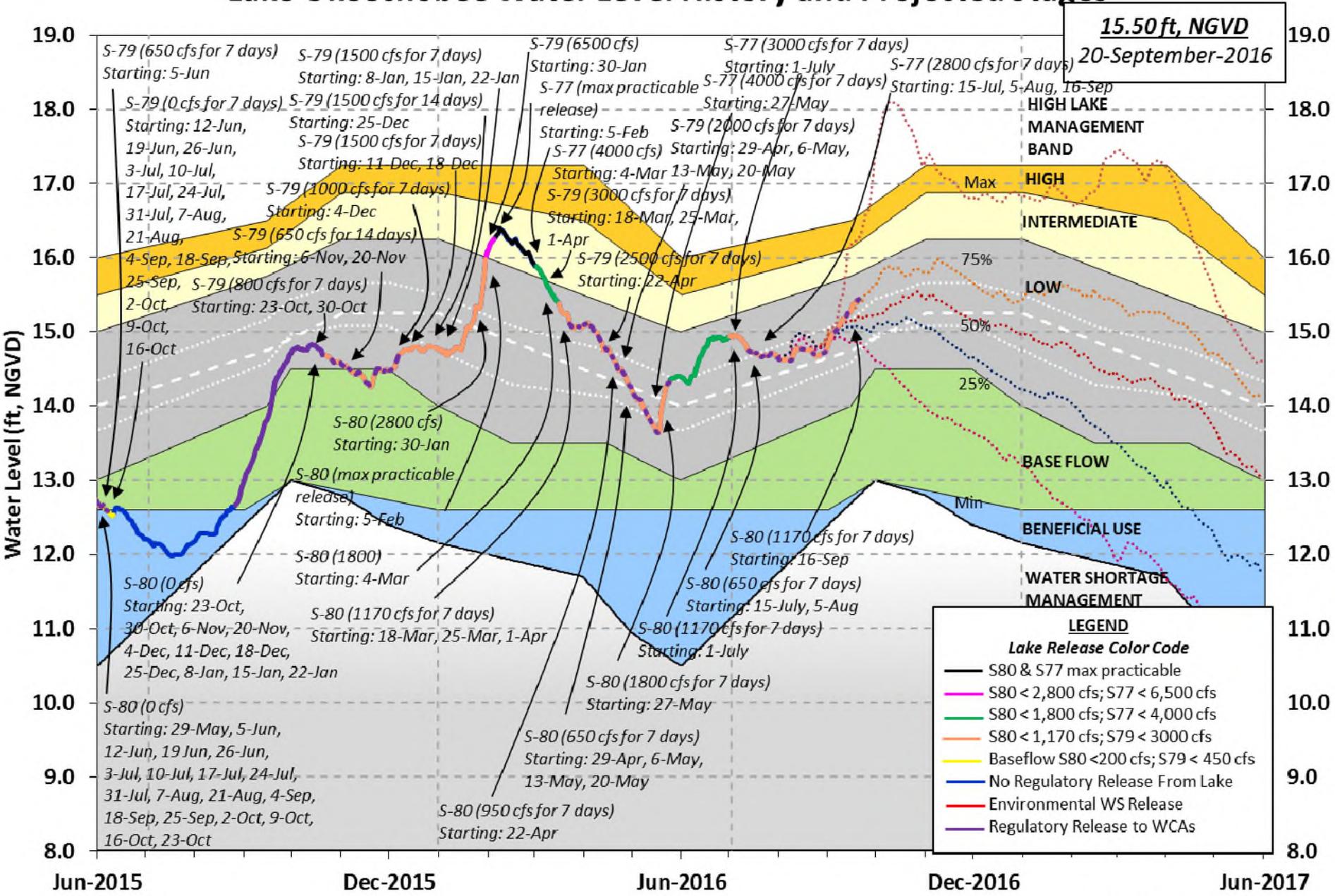


Figure 7-4

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

Lake Okeechobee Water Level History and Projected Stages



15.50 ft, NGVD
20-September-2016

LEGEND

Lake Release Color Code

- S80 & S77 max practicable
- S80 < 2,800 cfs; S77 < 6,500 cfs
- S80 < 1,800 cfs; S77 < 4,000 cfs
- S80 < 1,170 cfs; S79 < 3000 cfs
- Baseflow S80 < 200 cfs; S79 < 450 cfs
- No Regulatory Release From Lake
- Environmental WS Release
- Regulatory Release to WCAs

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

Data Ending 2400 hours 19 SEP 2016

Okeechobee Lake Regulation	Elevation	Last Year	2YRS Ago
	(ft-NGVD)	(ft-NGVD)	(ft-NGVD)
*Okeechobee Lake Elevation	15.50	14.31	14.60 (Official Elv)
Bottom of High Lake Mngmt=	16.56	Top of Water Short Mngmt=	12.77
Currently in Operational Management Band			

Simulated Average LORS2008 [1965-2000]	13.60
Difference from Average LORS2008	1.90

19SEP (1965-2007) Period of Record Average	14.65
Difference from POR Average	0.85

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

++Navigation Depth (Based on 2007 Channel Condition Survey) Route 1 ÷ 9.44'
 ++Navigation Depth (Based on 2008 Channel Condition Survey) Route 2 ÷ 7.64'
 Bridge Clearance = 49.37'

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

L001	L005	L006	LZ40	S4	S352	S308	S133
15.40	15.55	15.50	15.49	15.48	15.69	15.48	15.41

*Combination Okeechobee Avg-Daily Lake Average = 15.50
 (*See Note)

Okeechobee Inflows (cfs):

S65E	5493	C5	-85	Fisheating Cr	932
S154	156	S191	763	S135 Pumps	133
S84	406	S133 Pumps	119	S2 Pumps	0
S84X	809	S127 Pumps	76	S3 Pumps	0
S71	268	S129 Pumps	68	S4 Pumps	0
S72	170	S131 Pumps	49		
Total Inflows:	9357				

Okeechobee Outflows (cfs):

S135 Culverts	0	S354	0	S77	2908
S127 Culverts	0	S351	0	S77Below	2857
S129 Culverts	0	S352	0	S308	-NR-
S131 Culverts	0	L8 Canal Pt	-6	S308Below	1564
Total Outflows:	No Report Due To Missing S77 or S308 Discharge Data				

S310:	15.52		5						
S3 Pumps:	10.35	15.52	0	0	0	0			(cfs)
S354:	15.52	10.35	0	0.0	0.0				
S2 Pumps:	10.45	15.53	0	0	0	0	0		(cfs)
S351:	15.53	10.45	0	0.0	0.0	0.0			
S352:	15.71	10.05	0	0.0	0.0				
C10A:	-NR-	12.60		0.0	0.0	0.0	0.0	0.0	
L8 Canal PT		12.42	-6						

S351 and S352 Temporary Pumps/S354 Spillway

S351:	10.45	15.53	0	-NR--NR--NR--NR--NR--NR-
S352:	10.05	15.71	0	-NR--NR--NR--NR-
S354:	10.35	15.52	0	-NR--NR--NR--NR-

Caloosahatchee River (S77, S78, S79)

S47B:	13.14	11.64		2.0	2.0
S47D:	11.20	11.16	130	6.0	

S77:

Spillway and Sector Flow:							
15.43	11.28	2906	2.5	3.0	3.0	2.5	
Flow Due to Lockages+:		2					

S77 Below USGS Flow Gage 2857

S78:

Spillway and Sector Flow:							
-NR-	-NR-	-NR-	0.0	0.0	7.0	2.0	
Flow Due to Lockages+:		-NR-					

S79:

Spillway and Sector Flow:									
3.29	1.56	5910	2.0	3.0	3.0	3.0	3.0	3.0	2.0

1.0

Flow Due to Lockages+:	2
Percent of flow from S77	49%
Chloride (ppm)	44

St. Lucie Canal (S308, S80)

S308:

Spillway and Sector Flow:							
15.50	14.13	1584	0.0	0.0	0.0	0.0	
Flow Due to Lockages+:		-NR-					

S308 Below USGS Flow Gage 1564

S153:	19.14	14.53	31	0.5	0.0
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S80:

Spillway and Sector Flow:									
13.75	1.89	1252	0.0	1.8	1.8	0.0	1.8	1.8	0.0
Flow Due to Lockages+:		11							
Percent of flow from S308		127%							

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

Speedy Point Top Salinity (mg/ml) ****
 Speedy Point Bottom Salinity (mg/ml) 2713

+ 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:	0.50	3.16	3.27	200	0	
S78:	0.06	0.19	1.62	-NR-	-NR-	
S79:	0.01	0.01	0.62	214	1	
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:	0.05	0.05	0.44	49	0	
S80:	0.01	0.01	0.05	164	1	
Okeechobee Average	0.28	0.25	0.29			
(Sites S78, S79 and S80 not included)						

Oke Nexrad Basin Avg	-NR-	0.64	1.26			

Okeechobee Lake Elevations	19 SEP 2016	15.50	Difference from	
19SEP16				
19SEP16 -1 Day =	18 SEP 2016	15.44	-0.06	
19SEP16 -2 Days =	17 SEP 2016	15.42	-0.08	
19SEP16 -3 Days =	16 SEP 2016	15.41	-0.09	
19SEP16 -4 Days =	15 SEP 2016	15.39	-0.11	
19SEP16 -5 Days =	14 SEP 2016	15.36	-0.14	
19SEP16 -6 Days =	13 SEP 2016	15.30	-0.20	
19SEP16 -7 Days =	12 SEP 2016	15.26	-0.24	
19SEP16 -30 Days =	20 AUG 2016	14.75	-0.75	
19SEP16 -1 Year =	19 SEP 2015	14.31	-1.19	
19SEP16 -2 Year =	19 SEP 2014	14.60	-0.90	

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
19SEP16	Today =	19 SEP 2016	8953	TUE	17429
19SEP16	-1 Day =	18 SEP 2016	8116	MON	7193
19SEP16	-2 Days =	17 SEP 2016	8069	SUN	5495
19SEP16	-3 Days =	16 SEP 2016	8086	SAT	6894
19SEP16	-4 Days =	15 SEP 2016	8570	FRI	7423
19SEP16	-5 Days =	14 SEP 2016	9152	THU	13242
19SEP16	-6 Days =	13 SEP 2016	8892	WED	9401
19SEP16	-7 Days =	12 SEP 2016	9374	TUE	9993
19SEP16	-8 Days =	11 SEP 2016	9070	MON	8366
19SEP16	-9 Days =	10 SEP 2016	8605	SUN	6507
19SEP16	-10 Days =	09 SEP 2016	8360	SAT	5959
19SEP16	-11 Days =	08 SEP 2016	8288	FRI	11215
19SEP16	-12 Days =	07 SEP 2016	7713	THU	9120
19SEP16	-13 Days =	06 SEP 2016	7158	WED	7100

S65E

Average Flow over previous 14 days					Avg-Daily Flow
19SEP16	Today=	19 SEP 2016	5060	TUE	5667
19SEP16	-1 Day =	18 SEP 2016	4897	MON	5253
19SEP16	-2 Days =	17 SEP 2016	4758	SUN	5413
19SEP16	-3 Days =	16 SEP 2016	4612	SAT	5732
19SEP16	-4 Days =	15 SEP 2016	4430	FRI	5410
19SEP16	-5 Days =	14 SEP 2016	4228	THU	5642
19SEP16	-6 Days =	13 SEP 2016	3945	WED	5287
19SEP16	-7 Days =	12 SEP 2016	3678	TUE	5633
19SEP16	-8 Days =	11 SEP 2016	3371	MON	5416
19SEP16	-9 Days =	10 SEP 2016	3059	SUN	5243
19SEP16	-10 Days =	09 SEP 2016	2768	SAT	4654
19SEP16	-11 Days =	08 SEP 2016	2511	FRI	3882
19SEP16	-12 Days =	07 SEP 2016	2305	THU	3784
19SEP16	-13 Days =	06 SEP 2016	2105	WED	3820

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)
19 SEP 2016	5768	5666	-NR-	11724
18 SEP 2016	5819	5666	6333	10067
17 SEP 2016	5684	6146	6486	10950
16 SEP 2016	4327	4542	5609	8940
15 SEP 2016	1422	1388	2974	7545
14 SEP 2016	9	194	2659	8513
13 SEP 2016	221	576	3032	4654
12 SEP 2016	1008	1072	1987	6140
11 SEP 2016	1276	1104	2462	7642
10 SEP 2016	1277	1197	2491	7603
09 SEP 2016	1563	1635	2995	7993
08 SEP 2016	9	313	4180	11433
07 SEP 2016	3	358	4316	11572

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)
06 SEP 2016	1	316	3744	11488	
19 SEP 2016	9	0	0	0	-12
18 SEP 2016	-16	0	0	0	-7
17 SEP 2016	-10	0	0	0	-16
16 SEP 2016	-47	0	9	0	-14
15 SEP 2016	-101	0	292	0	124
14 SEP 2016	-175	0	0	0	271
13 SEP 2016	-109	0	0	0	371
12 SEP 2016	-77	0	36	0	408
11 SEP 2016	2	0	216	0	437
10 SEP 2016	-56	0	999	0	431
09 SEP 2016	-121	0	0	0	429
08 SEP 2016	-251	0	0	0	394
07 SEP 2016	-238	0	0	0	364
06 SEP 2016	-194	0	83	0	277

DATE	S-308 Discharge (ALL DAY) (AC-FT)	Below S-308 Discharge (ALL-DAY) (AC-FT)	S-80 Discharge (ALL-DAY) (AC-FT)
19 SEP 2016	-NR-	3102	1970
18 SEP 2016	6	-111	44
17 SEP 2016	544	452	380
16 SEP 2016	1745	522	719
15 SEP 2016	1566	21	501
14 SEP 2016	251	-49	216
13 SEP 2016	908	499	715
12 SEP 2016	1237	1104	1102
11 SEP 2016	1352	1936	1242
10 SEP 2016	3	1677	1542
09 SEP 2016	2	1155	929
08 SEP 2016	3	38	758
07 SEP 2016	243	167	1004
06 SEP 2016	540	507	-NR-

*** 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

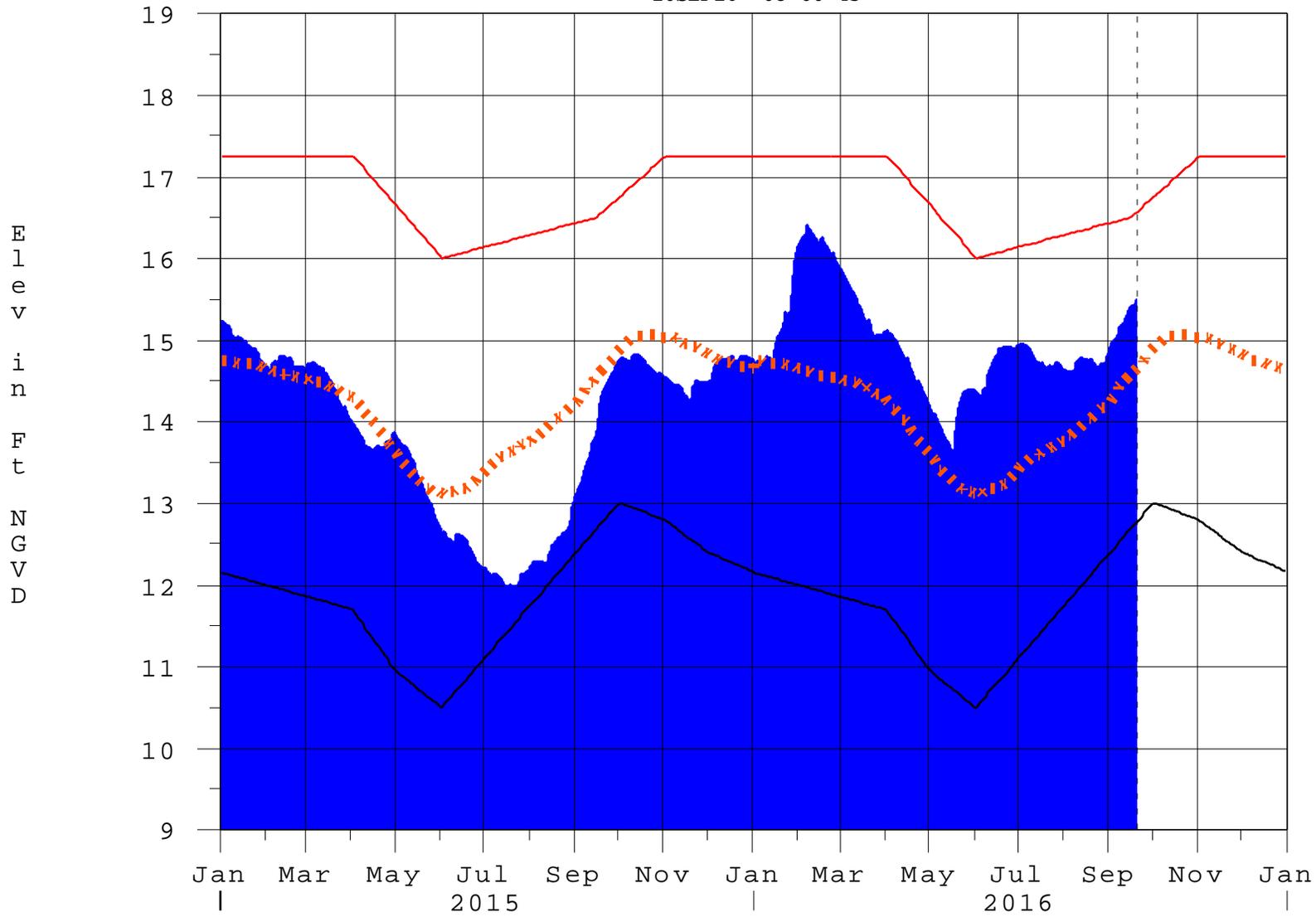
++ For more information see the Jacksonville District Navigation website at <http://www.saj.usace.army.mil/>

\$ For information regarding Lake Okeechobee Service Area water restrictions please refer to www.sfwmd.gov

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Report Generated 20SEP2016 @ 07:50 ** Preliminary Data - Subject to Revision
**

Lake Okeechobee

20SEP16 08:00:43



- 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