Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 10/2/2018 (ENSO Neutral Condition)

Lake Okeechobee Net Inflow Outlook:

The Lake Okeechobee Net Inflow Outlook has been computed using 4 methods: Croley's method[1], the SFWMD empirical method[2], a sub-sampling of Neutral years[3] and a sub-sampling of warm years of the Atlantic Multi-decadal Oscillation (AMO) in combination with La Nina ENSO years[4]. 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 ENSO Years[3]		Sub-sampling of AMO Warm + ENSO Years[4]	
	Value (ft)	Condition	Value (ft)	Condition	Value (ft)	Condition	Value (ft)	Condition
Current (Sep-Feb)	N/A	N/A	0.98	Normal	1.74	Wet	0.44	Dry
Multi Seasonal (Sep-Apr)	N/A	N/A	3.02	Wet	3.92	Wet	2.15	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.

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

Tributary Hydrologic Conditions Graph:

- 254 cfs 14-day running average for Lake Okeechobee Net Inflow through 10/2/2018.
According to the classification in Tributary Hydrologic Conditions table, this condition is Dry.

-0.44 for Palmer Index on 9/29/2018.
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 10/2/2018

Lake Okeechobee Stage: **14.53 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		16.74	
Operational Band	High sub-band	16.37	
	Intermediate sub-band	15.91	
	Low sub-band	14.50	← 14.53
Base Flow sub-band		12.99	
Beneficial Use sub-band		13.00	
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 3000 cfs & S-80 Up to 1170 cfs.

Back to Lake Okeechobee Operations Main Page

Back to U.S. Army Corps of Engineers Homepage

LORS2008 Implementation on 10/01/2018 (ENSO Neutral Condition):

Water Supply Risk Evaluation

Status for week ending 10/01/2018:

District wide, Raindar rainfall was 0.60 inches for the week. Lake stage on 10/1/2018 was 14.53 ft, down 0.16 ft from last week.

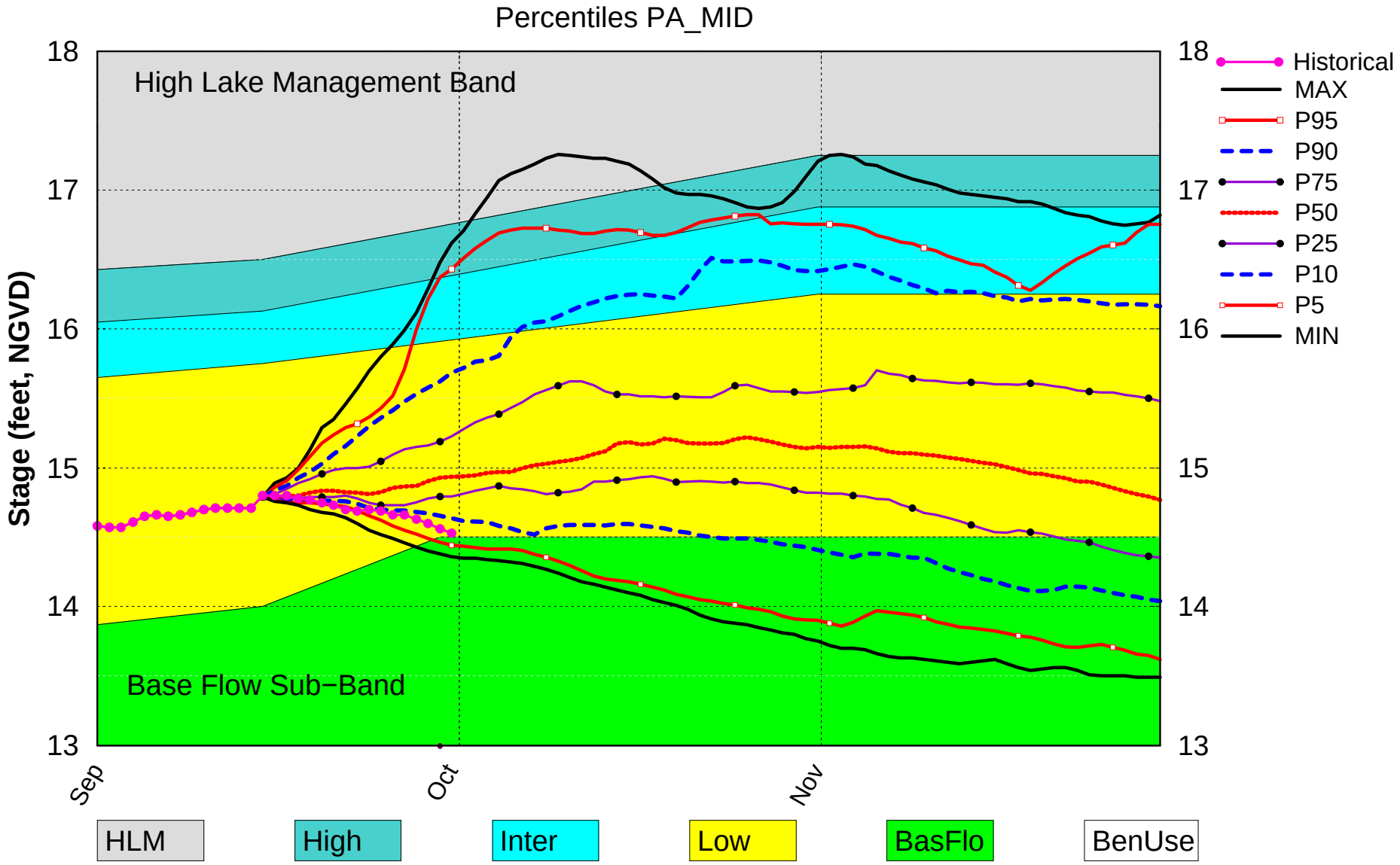
The updated Mid-September 2018 SFWMM Dynamic Position Analysis percentile graph for Lake Okeechobee show that the current lake stage is in the Low Operational Sub-Band.

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.

Area	Indicator	Value	Color Coded Scoring Scheme
LOK	Projected LOK Stage for the next two months	Low/Baseflow Sub Band	L
	Palmer Index for LOK Tributary Conditions	-0.44 (Normal)	L
	CPC Precipitation Outlook	1 month: Normal	L
		3 months: Above Normal	L
	LOK Seasonal Net Inflow Outlook	1.74 ft (Wet)	L
	ENSO Years		
	LOK Multi-Seasonal Net Inflow Outlook	3.92 ft (Wet)	L
	ENSO Conditions		
WCAs	WCA 1: Station Average (Site 1-7, Site 1-8T, Site 1-9)	Above Line 1 (16.51 ft)	L
	WCA 2A: Site 2-17	Above Line 1 (13.12 ft)	L
	WCA-3A: 3 Station Average (Site 63, 64 and 65)	Above Line 1 (10.47 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.

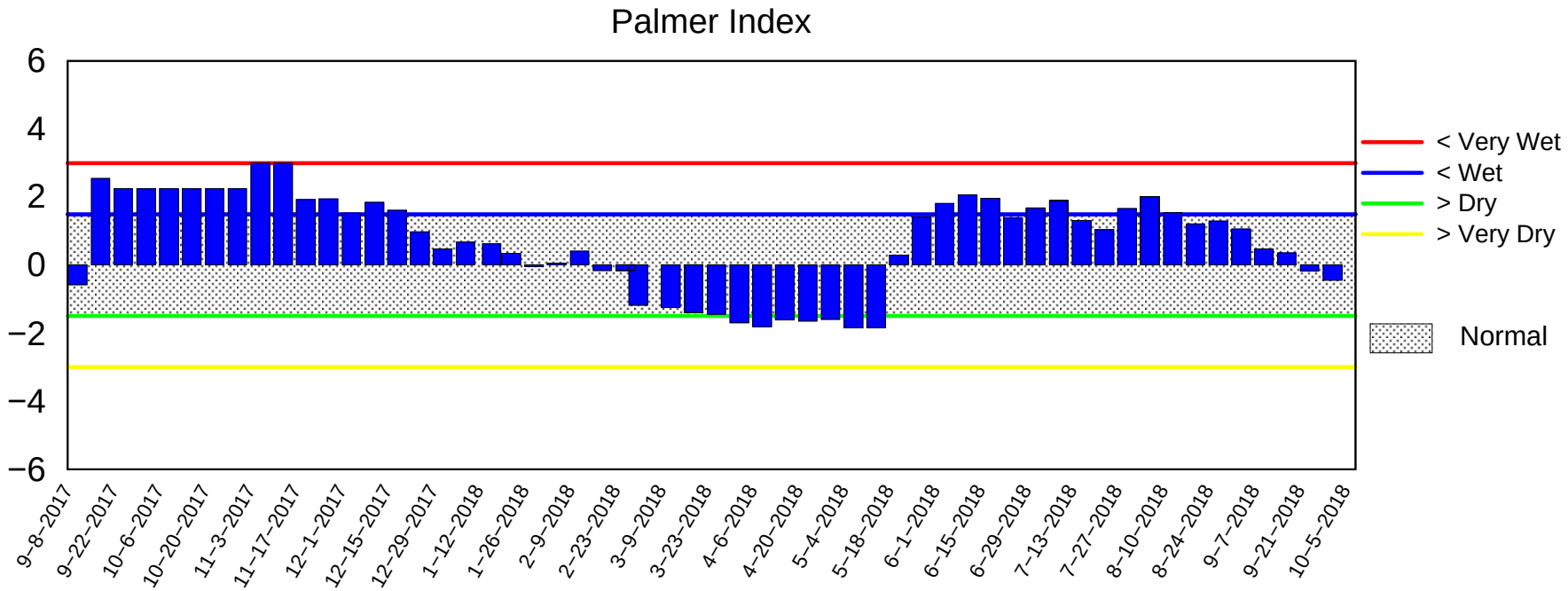
Lake Okeechobee SFWMM Sep 2018 Mid−Month Position Analysis

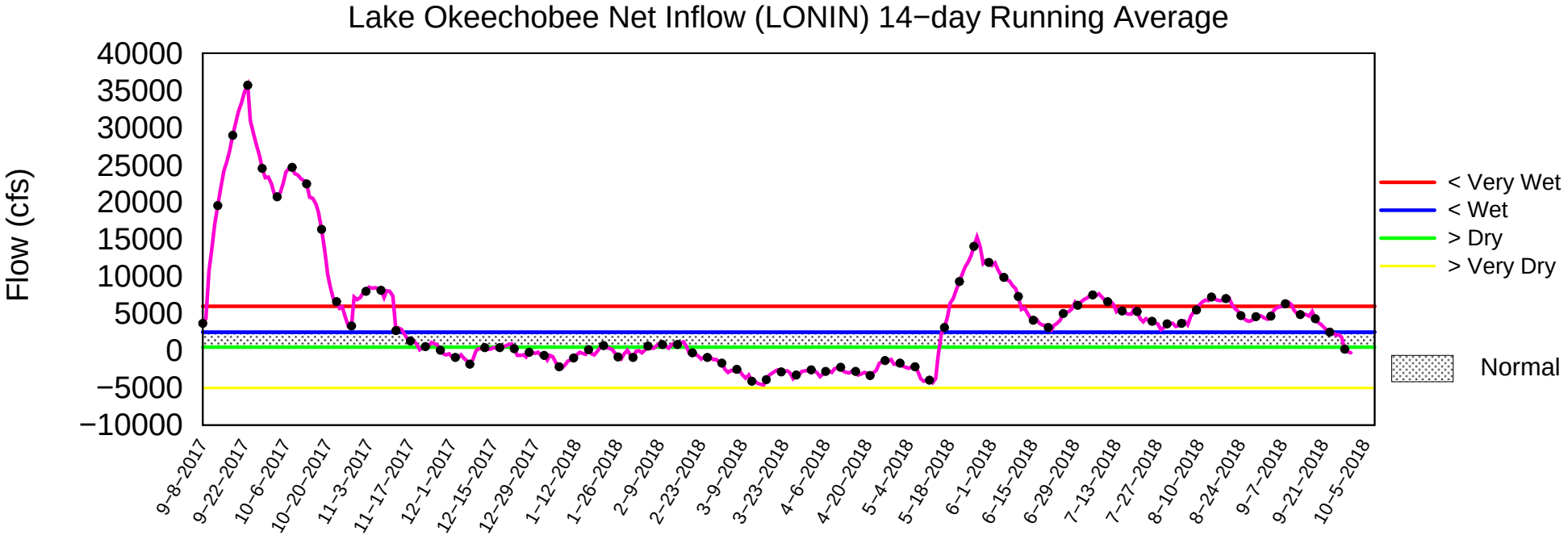


(See assumptions on the Position Analysis Results website)

Mon Oct 01 16:08:54 EDT 2018

Tributary Basin Condition Indicators as of October 1 2018





Tue Oct 02 08:20:55 EDT 2018

2008 LORS

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

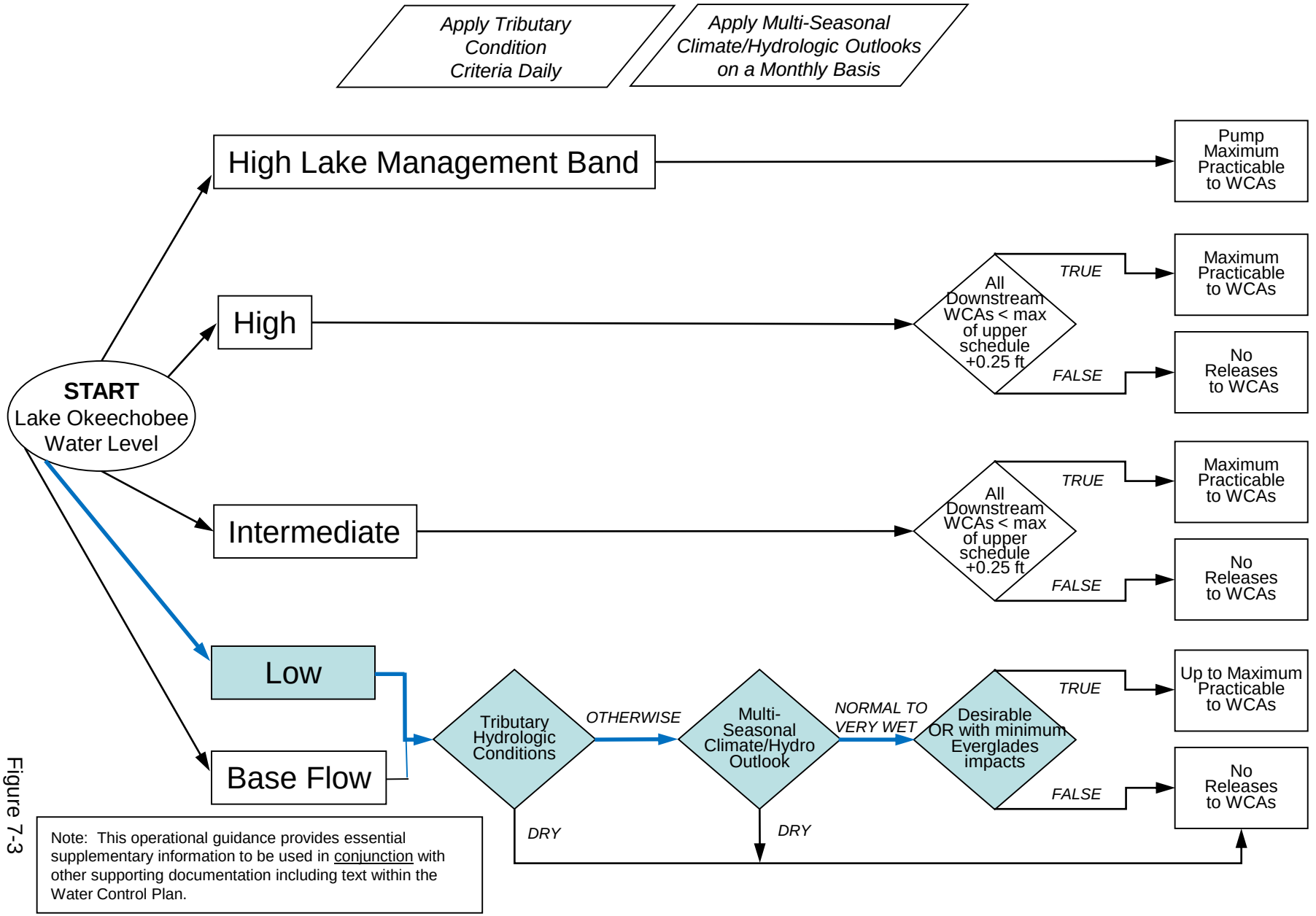


Figure 7-3

2008 LORS

Part D: Establish Allowable Lake Okeechobee Releases to Tide (Estuaries)

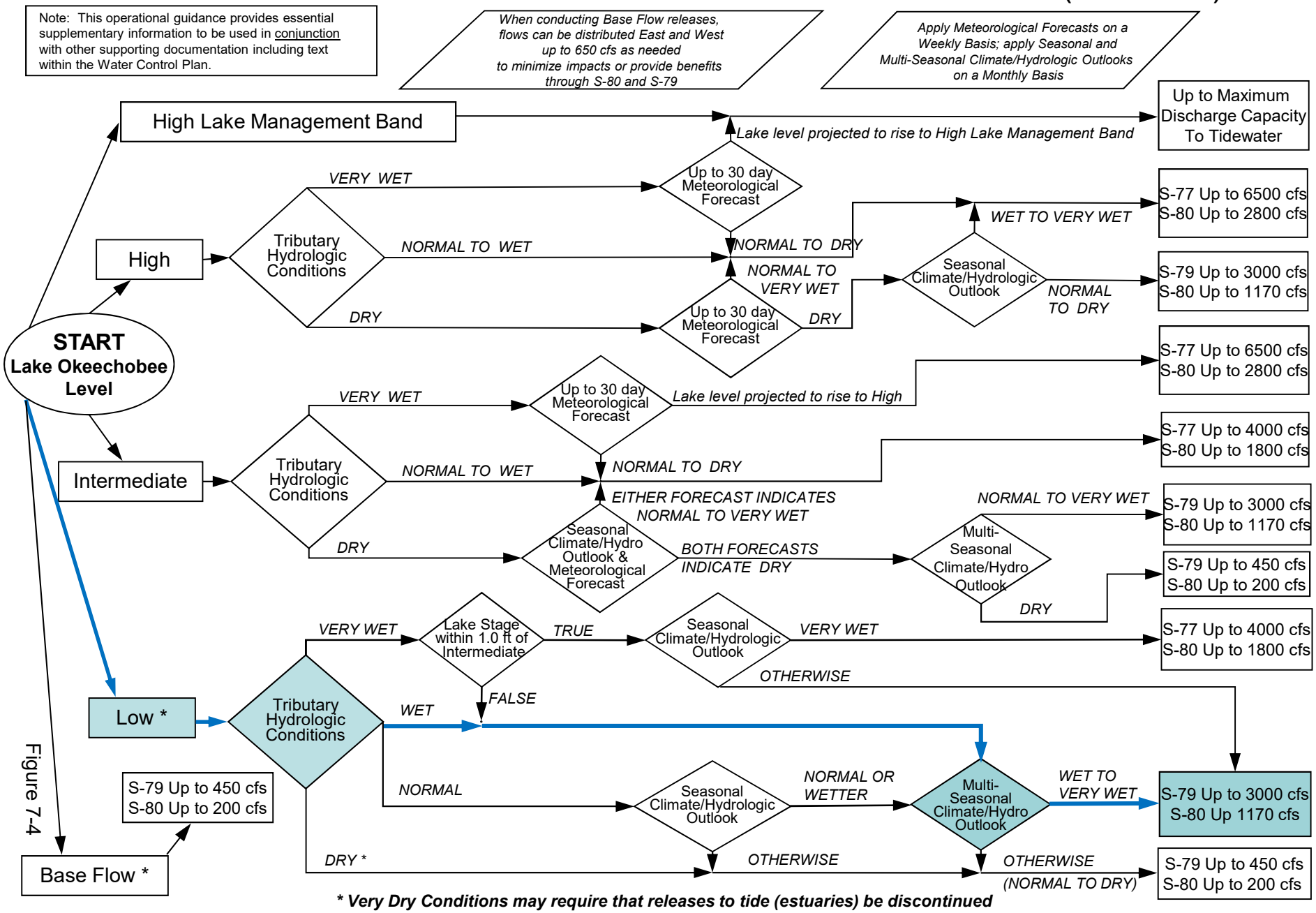
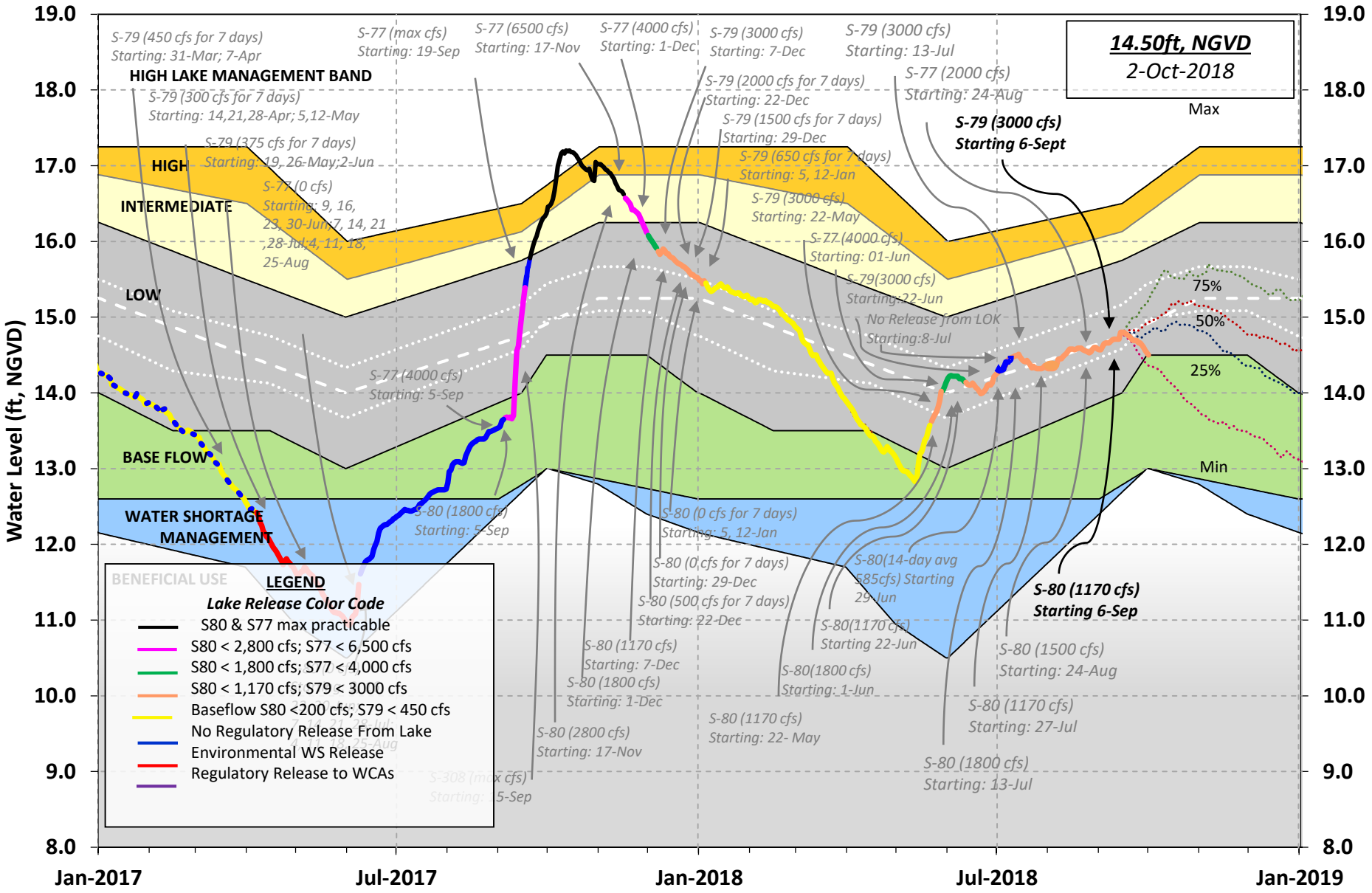


Figure 7-4

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 30 SEP 2018

Okeechobee Lake Regulation	Elevation (ft-NGVD)	Last Year (ft-NGVD)	2YRS Ago (ft-NGVD)	
*Okeechobee Lake Elevation	14.53	16.46	15.75	(Official Elv)

Bottom of High Lake Mngmt= 16.74 Top of Water Short Mngmt= 13.00
Currently in Operational Management Band

Simulated Average LORS2008 [1965-2000] 13.77
Difference from Average LORS2008 0.76

30SEP (1965-2007) Period of Record Average 14.87
Difference from POR Average -0.34

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

++Navigation Depth (Based on 2007 Channel Condition Survey) Route 1 ÷ 8.47'
++Navigation Depth (Based on 2008 Channel Condition Survey) Route 2 ÷ 6.67'
Bridge Clearance = 49.40'

---

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

L001	L005	L006	LZ40	S4	S352	S308	S133
14.45	14.65	14.57	14.50	14.68	14.63	14.40	14.39

*Combination Okeechobee Avg-Daily Lake Average = 14.53 (*See Note)

Okeechobee Inflows (cfs):

S65E	0	S65EX1	1884	Fisheating Cr	173
S154	0	S191	0	S135 Pumps	0
S84	0	S133 Pumps	0	S2 Pumps	0
S84X	0	S127 Pumps	0	S3 Pumps	0
S71	70	S129 Pumps	0	S4 Pumps	0
S72	0	S131 Pumps	0	C5	0

Total Inflows: 2127

Okeechobee Outflows (cfs):

S135 Culverts	0	S354	1323	S77	2164
S127 Culverts	0	S351	782	S308	0
S129 Culverts	0	S352	350		
S131 Culverts	0	L8 Canal Pt	1		

Total Outflows: 4619

****S77 structure flow is being used to compute Total Outflow.
****S308 structure flow is being used to compute Total Outflow.

Okeechobee Pan Evaporation (inches):

S77	0.29	S308	0.25

Average Pan Evap x 0.75 Pan Coefficient = 0.20" = 0.02'

Lake Average Precipitation using NEXRAD: = 0.08" = 0.01'

Evaporation - Precipitation: = 0.12" = 0.01'
Evaporation - Precipitation using Lake Area of 730 square miles
is equal to 2405 cfs out of the lake.
Lake Okeechobee (Change in Storage) Flow is -6353 cfs or -12600 AC-FT

	Headwater Elevation (ft-msl)	Tailwater Elevation (ft-msl)	Disch (cfs) (I) see note at bottom	Gate Positions #1 (ft)	#2 (ft)	#3 (ft)	#4 (ft)	#5 (ft)	#6 (ft)	#7 (ft)	#8 (ft)
North East Shore											
S133 Pumps:	13.61	14.37	0	0	0	0	0	0	(cfs)		
S193:											
S191:	18.33	14.34	0	0.0	0.0	0.0					
S135 Pumps:	13.33	14.38	0	0	0	0	0		(cfs)		
S135 Culverts:			0	0.0	0.0						
North West Shore											
S65E:	20.85	14.15	0	0.0	0.0	0.0	0.0	-0.0	0.0		
S65EX1:	20.85	14.15	1884								
S127 Pumps:	13.29	14.38	0	0	0	0	0	0	(cfs)		
S127 Culvert:			0	0.0							
S129 Pumps:	12.84	14.62	0	0	0	0			(cfs)		
S129 Culvert:			0	0.0							
S131 Pumps:	12.85	14.64	0	0	0				(cfs)		
S131 Culvert:			0								
Fisheating Creek											
nr Palmdale		31.49	173								
nr Lakeport											
C5:		-NR-	0	-NR-	-NR-	-NR-					
South Shore											
S4 Pumps:	11.38	14.69	0	0	0	0			(cfs)		
S169:	14.68	11.36	0	0.0	0.0	0.0					
S310:	14.61		29								
S3 Pumps:	10.04	14.64	0	0	0	0			(cfs)		
S354:	14.64	10.04	1323	2.2	2.2						
S2 Pumps:	10.40	14.64	0	0	0	0	0		(cfs)		
S351:	14.64	10.40	782	0.8	1.1	1.0					
S352:	14.67	10.64	350	0.6	0.6						
C10A:	-NR-	12.49		8.0	8.0	8.0	0.0	0.0			
L8 Canal PT		12.31	1								
S351 and S352 Temporary Pumps/S354 Spillway											
S351:	10.40	14.64	782	-NR-	-NR-	-NR-	-NR-	-NR-	-NR-		
S352:	10.64	14.67	350	-NR-	-NR-	-NR-	-NR-				
S354:	10.04	14.64	1323	-NR-	-NR-	-NR-	-NR-				
Caloosahatchee River (S77, S78, S79)											
S47B:	13.54	12.21		0.0	0.0						
S47D:	11.31	11.31	-42	6.5							

```
  S77:
    Spillway and Sector Preferred Flow:
               14.58     11.21    2160  3.0  3.0  3.0  0.0
    Flow Due to Lockages+:           4

  S78:
    Spillway and Sector Flow:
               11.09      2.75    1686    0.0  3.0  2.5  0.0
    Flow Due to Lockages+:          11

  S79:
    Spillway and Sector Flow:
                2.78      1.11    2981    1.0  1.0  1.5  1.5  2.0  2.0  1.0  1.0
    Flow Due to Lockages+:           9
    Percent of flow from S77        72%
    Chloride             (ppm)     51


St. Lucie Canal (S308, S80)
  S308:
    Spillway and Sector Preferred Flow:
               14.44     14.10       0  0.0  0.0  0.0  0.0
    Flow Due to Lockages+:           0

  S153:        18.84     13.91       0    0.0  0.0
  S80:
    Spillway and Sector Flow:
               14.13      0.94       0    0.0  0.0  0.0  0.0  0.0  0.0  0.0
    Flow Due to Lockages+:          13
    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
```

Daily Precipitation Totals	1-Day (inches)	3-Day (inches)	7-Day (inches)	----- Wind ---- Direction (Degø)	Speed (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:	15.80	15.80	15.80	41	6
S78:	3.68	3.68	4.48	7	3
S79:	-6.60	-6.60	-5.65	360	0
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:	3.18	3.18	3.47	62	2
S80:	0.00	0.00	0.00	-NR-	-NR-
Okeechobee Average	9.49	1.46	1.48		

(Sites S78, S79 and S80 not included)

Oke Nexrad Basin Avg	0.08	0.09	0.45

Okeechobee Lake Elevations				Difference from 30SEP18
30SEP18	-1 Day =	29 SEP 2018	14.56	0.03
30SEP18	-2 Days =	28 SEP 2018	14.60	0.07
30SEP18	-3 Days =	27 SEP 2018	14.63	0.10
30SEP18	-4 Days =	26 SEP 2018	14.66	0.13
30SEP18	-5 Days =	25 SEP 2018	14.66	0.13
30SEP18	-6 Days =	24 SEP 2018	14.69	0.16
30SEP18	-7 Days =	23 SEP 2018	14.70	0.17
30SEP18	-30 Days =	31 AUG 2018	14.58	0.05
30SEP18	-1 Year =	30 SEP 2017	16.46	1.93
30SEP18	-2 Year =	30 SEP 2016	15.75	1.22

Long Term Mean 30day Avearge ET for Lake Alfred (Inches) = 3.91

Lake Okeechobee Net Inflow (LONIN)

			Average Flow over the previous 14 days		Avg-Daily Flow
30SEP18	Today =	30 SEP 2018	-94	MON	-1737
30SEP18	-1 Day =	29 SEP 2018	54	SUN	-3588
30SEP18	-2 Days =	28 SEP 2018	342	SAT	-1483
30SEP18	-3 Days =	27 SEP 2018	1960	FRI	-1678
30SEP18	-4 Days =	26 SEP 2018	2306	THU	5140
30SEP18	-5 Days =	25 SEP 2018	2165	WED	-1519
30SEP18	-6 Days =	24 SEP 2018	2473	TUE	1477
30SEP18	-7 Days =	23 SEP 2018	2649	MON	5061
30SEP18	-8 Days =	22 SEP 2018	2715	SUN	1695
30SEP18	-9 Days =	21 SEP 2018	3116	SAT	-1813
30SEP18	-10 Days =	20 SEP 2018	3695	FRI	763
30SEP18	-11 Days =	19 SEP 2018	3821	THU	-1102
30SEP18	-12 Days =	18 SEP 2018	4344	WED	17
30SEP18	-13 Days =	17 SEP 2018	5202	TUE	-2547

S65E

			Average Flow over previous 14 days		Avg-Daily Flow
30SEP18	Today=	30 SEP 2018	0	MON	0
30SEP18	-1 Day =	29 SEP 2018	0	SUN	0
30SEP18	-2 Days =	28 SEP 2018	0	SAT	0
30SEP18	-3 Days =	27 SEP 2018	0	FRI	0
30SEP18	-4 Days =	26 SEP 2018	0	THU	0
30SEP18	-5 Days =	25 SEP 2018	0	WED	0
30SEP18	-6 Days =	24 SEP 2018	0	TUE	0
30SEP18	-7 Days =	23 SEP 2018	0	MON	0
30SEP18	-8 Days =	22 SEP 2018	0	SUN	0
30SEP18	-9 Days =	21 SEP 2018	0	SAT	0
30SEP18	-10 Days =	20 SEP 2018	0	FRI	0
30SEP18	-11 Days =	19 SEP 2018	0	THU	0
30SEP18	-12 Days =	18 SEP 2018	0	WED	0
30SEP18	-13 Days =	17 SEP 2018	0	TUE	0

S65EX1

			Average Flow over previous 14 days		Avg-Daily Flow
30SEP18	Today=	30 SEP 2018	2178	MON	1884
30SEP18	-1 Day =	29 SEP 2018	2225	SUN	2105
30SEP18	-2 Days =	28 SEP 2018	2269	SAT	1874

30SEP18	-3 Days =	27 SEP 2018	2358	FRI	1983
30SEP18	-4 Days =	26 SEP 2018	2450	THU	2067
30SEP18	-5 Days =	25 SEP 2018	2582	WED	2232
30SEP18	-6 Days =	24 SEP 2018	2720	TUE	2283
30SEP18	-7 Days =	23 SEP 2018	2880	MON	2401
30SEP18	-8 Days =	22 SEP 2018	3045	SUN	2547
30SEP18	-9 Days =	21 SEP 2018	3198	SAT	2249
30SEP18	-10 Days =	20 SEP 2018	3364	FRI	2082
30SEP18	-11 Days =	19 SEP 2018	3541	THU	2188
30SEP18	-12 Days =	18 SEP 2018	3701	WED	2376
30SEP18	-13 Days =	17 SEP 2018	3851	TUE	2220

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)
30 SEP 2018	4290	3888	3368	5917
29 SEP 2018	4408	3988	3486	6396
28 SEP 2018	2850	2416	3475	5003
27 SEP 2018	2803	2542	2460	6442
26 SEP 2018	4260	3731	3192	5869
25 SEP 2018	4376	3775	3203	5802
24 SEP 2018	3863	3363	3203	5903
23 SEP 2018	4003	3627	3231	6809
22 SEP 2018	4335	3676	3210	7124
21 SEP 2018	4438	3838	3143	6913
20 SEP 2018	3478	3190	2674	5036
19 SEP 2018	431	675	1483	5334
18 SEP 2018	340	549	1509	5892
17 SEP 2018	1177	1112	1494	6039

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)
30 SEP 2018	58	1551	601	1769	1
29 SEP 2018	76	1384	654	1751	5
28 SEP 2018	65	1110	543	1715	5
27 SEP 2018	71	505	383	1555	3
26 SEP 2018	11	162	468	1249	-3
25 SEP 2018	25	34	819	1001	-1
24 SEP 2018	13	0	258	1257	6
23 SEP 2018	53	0	103	1390	-5
22 SEP 2018	13	357	311	1578	1
21 SEP 2018	6	247	137	1491	5
20 SEP 2018	14	1283	0	1188	7
19 SEP 2018	-77	812	0	1087	-1
18 SEP 2018	-262	487	0	559	-14
17 SEP 2018	-375	381	200	224	12

DATE	S-308 Discharge (ALL DAY) (AC-FT)	Below S-308 Discharge (ALL-DAY) (AC-FT)	S-80 Discharge (ALL-DAY) (AC-FT)
30 SEP 2018	1	190	26
29 SEP 2018	652	799	732
28 SEP 2018	2845	2922	2661
27 SEP 2018	3507	3659	3527
26 SEP 2018	3642	3847	4003
25 SEP 2018	2980	3140	3539

24 SEP 2018	1434	1299	1770
23 SEP 2018	1	-117	253
22 SEP 2018	573	593	762
21 SEP 2018	2352	2256	2609
20 SEP 2018	3684	3931	3572
19 SEP 2018	3715	4455	4034
18 SEP 2018	2783	2566	3541
17 SEP 2018	1289	-NR-	1789

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

(I) - Flows preceeded 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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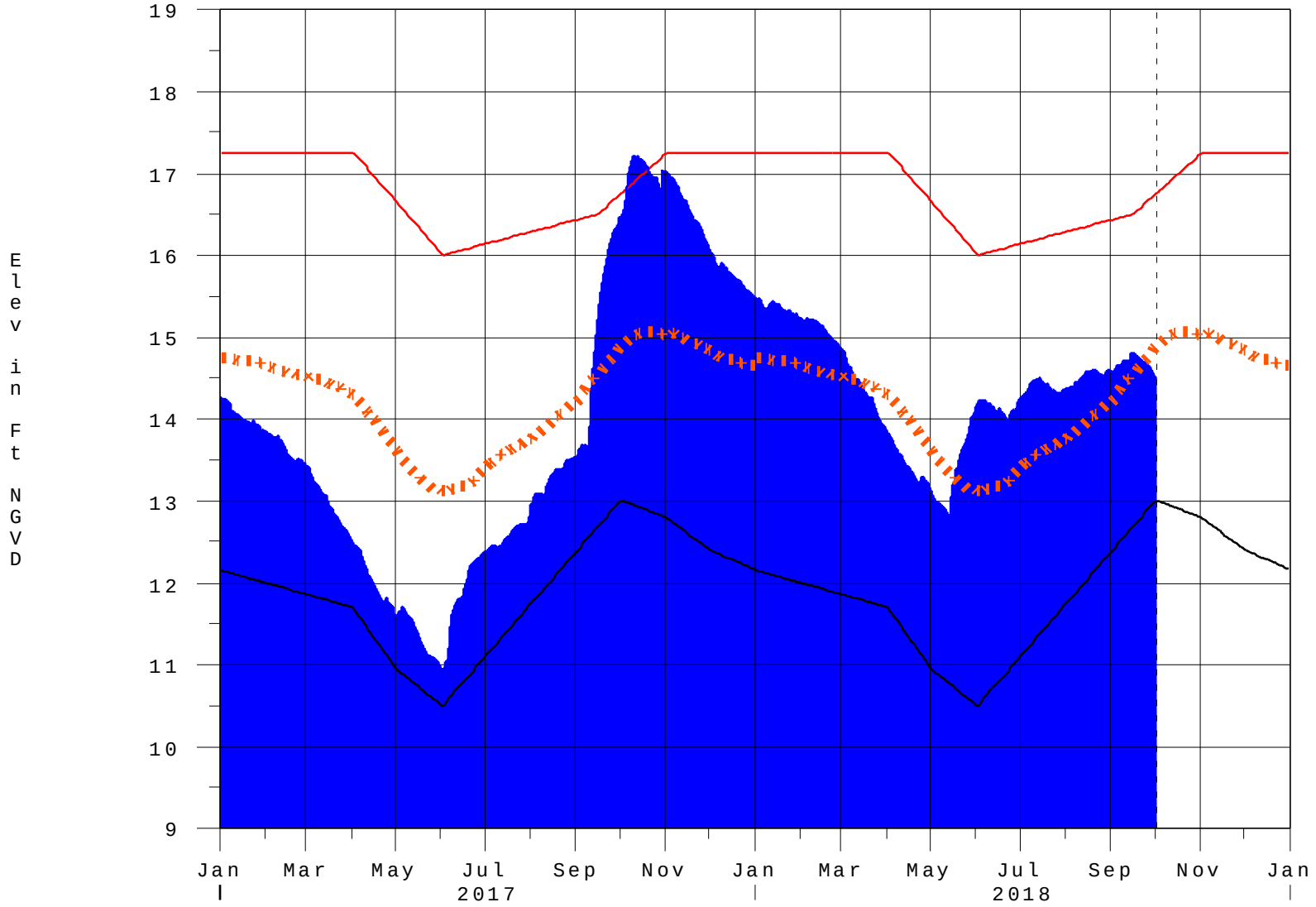
Report Generated 01OCT2018 @ 23:39 ** Preliminary Data - Subject to Revision **

Lake Okeechobee

02OCT18 08:00:21



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

Back to Lake Okeechobee Operations Main Page

Back to U.S. Army Corps of Engineers Lake Okeechobee Operations Homepage

Tributary Hydrologic Classification*	Palmer Index Class Limits	2-wk Mean L.O. Net Inflow Class Limits
Very Wet	3.0 or greater	Greater >= 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