Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 2/5/2018 (ENSO La Nina 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 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 (Feb-Jul)	N/A	N/A	0.54	Dry	0.50	Dry	0.50	Dry
Multi Seasonal (Feb-Oct)	N/A	N/A	2.28	Normal	2.43	Normal	2.12	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:

77 cfs 14-day running average for Lake Okeechobee Net Inflow through 2/4/2018.
According to the classification in Tributary Hydrologic Conditions table, this condition is Dry.

0.06 for Palmer Index on 2/3/2018.
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 2/5/2018

Lake Okeechobee Stage: **15.20 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	16.73	
	Intermediate sub-band	15.96	
	Low sub-band	13.62	← 15.20
Base Flow sub-band		12.60	
Beneficial Use sub-band		11.98	
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 & 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**
- **Environmental Conditions for Systems Operations**

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LORS2008 Implementation on 2/5/2018 (ENSO La Nina Condition):

Status for week ending 2/5/2018:

District wide, Raindar rainfall was 0.31 inches for the week. Lake stage on 2/5/2018 was 15.20 ft, NGVD, down 0.08 ft from last week.

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

The 2008 LORS Tributary Hydrologic Condition (THC) tributary is classified as **Normal**. The PDSI indicates Normal condition and the LONIN is Dry. 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	Low Sub Band	M
	Palmer Index for LOK Tributary Conditions	0.06 (Normal)	L
	CPC Precipitation Outlook	1 month: Below Normal	M
		3 months: Below Normal	H
	LOK Seasonal Net Inflow Outlook	0.50 ft (Dry)	M
	ENSO La Nina Years		
	LOK Multi-Seasonal Net Inflow Outlook	2.43 ft (Normal)	M
	ENSO La Nina Years		
WCAs	WCA 1: Site 1-7, Site 1-8T, & Site 1-9 Average	Above Line 1 (16.83 ft)	L
	WCA 2A: Site 2-17	Above Line 1 (11.91 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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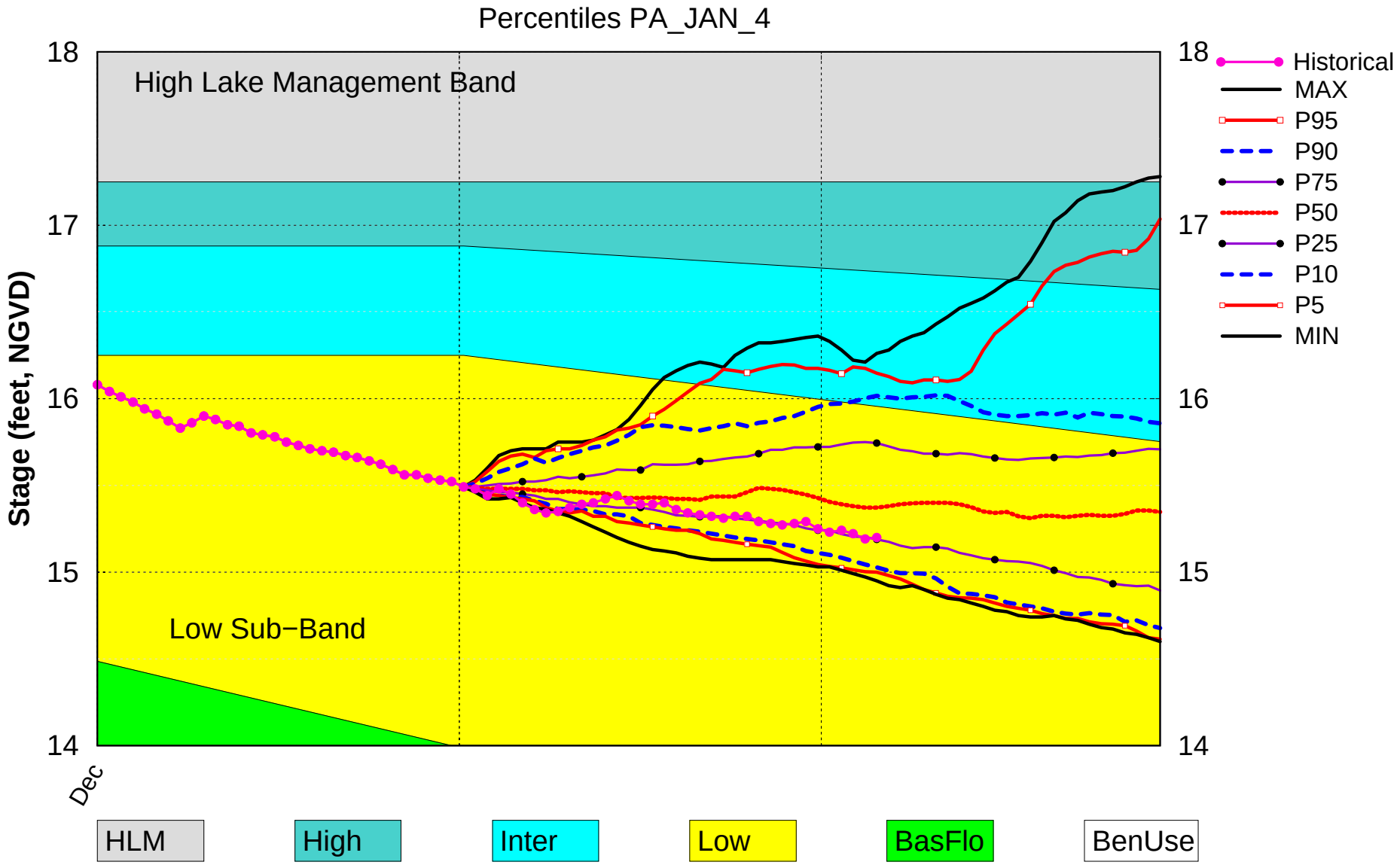
Lake Okeechobee SFWMM Jan 2018 Position Analysis

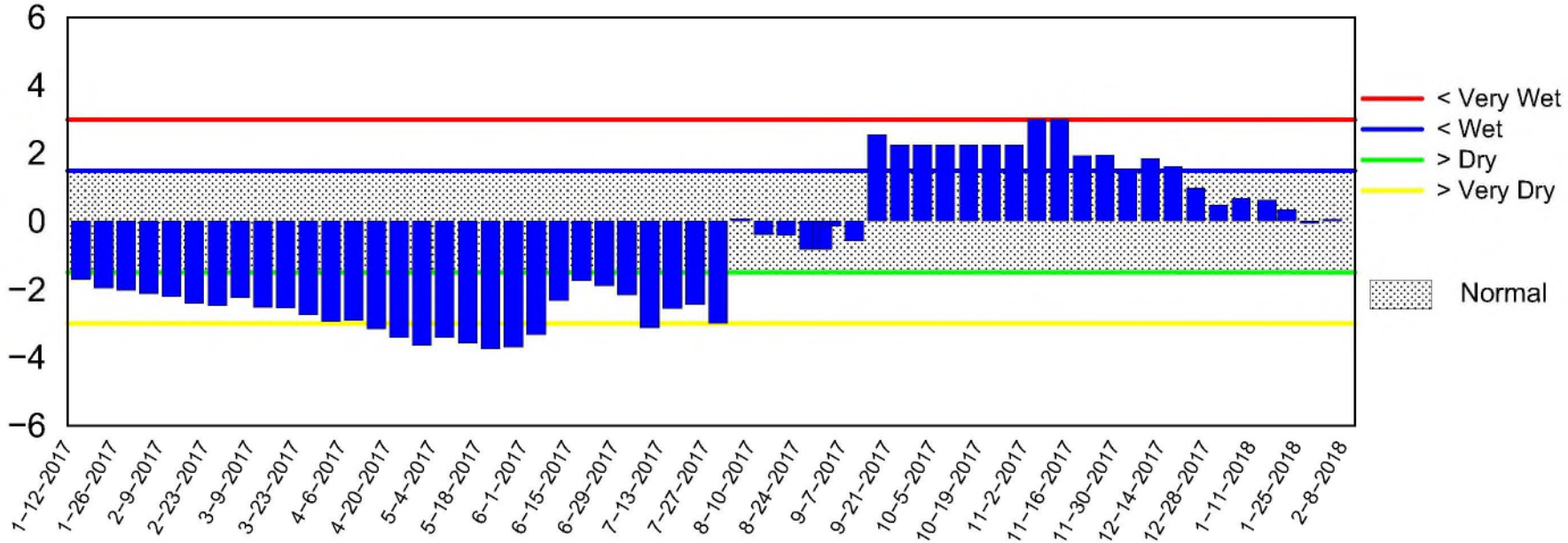


(See assumptions on the Position Analysis Results website)

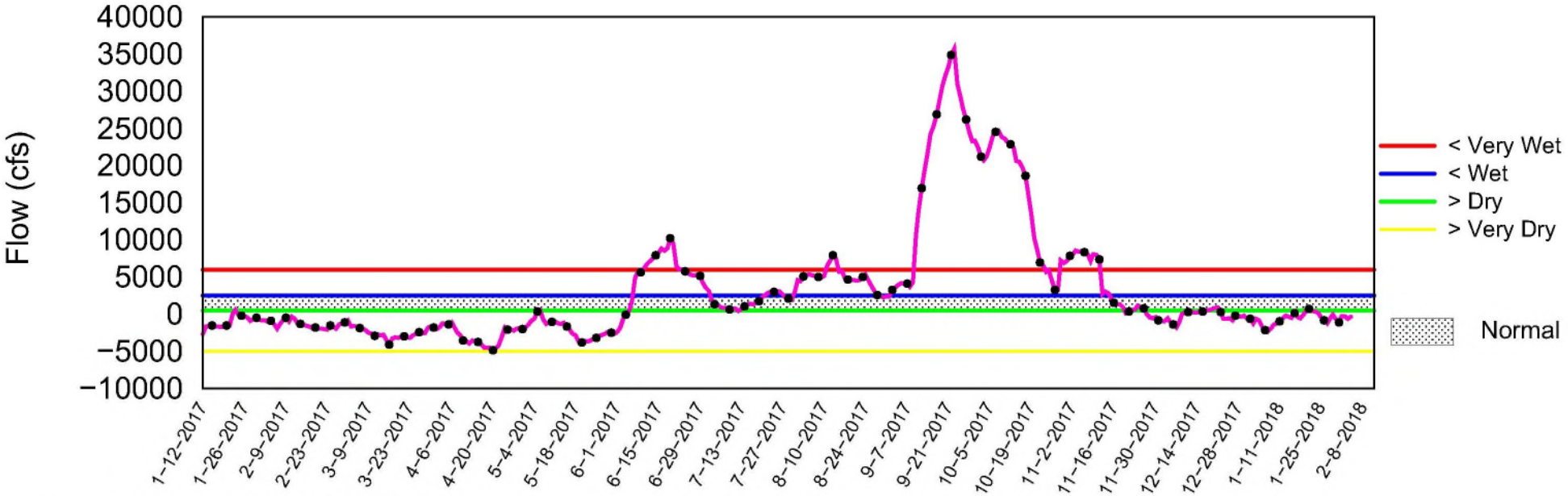
Tue Feb 06 10:29:44 EST 2018

Tributary Basin Condition Indicators as of February 5 2018

Palmer Index



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



Mon Feb 05 17:05:13 EST 2018

2008 LORS

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

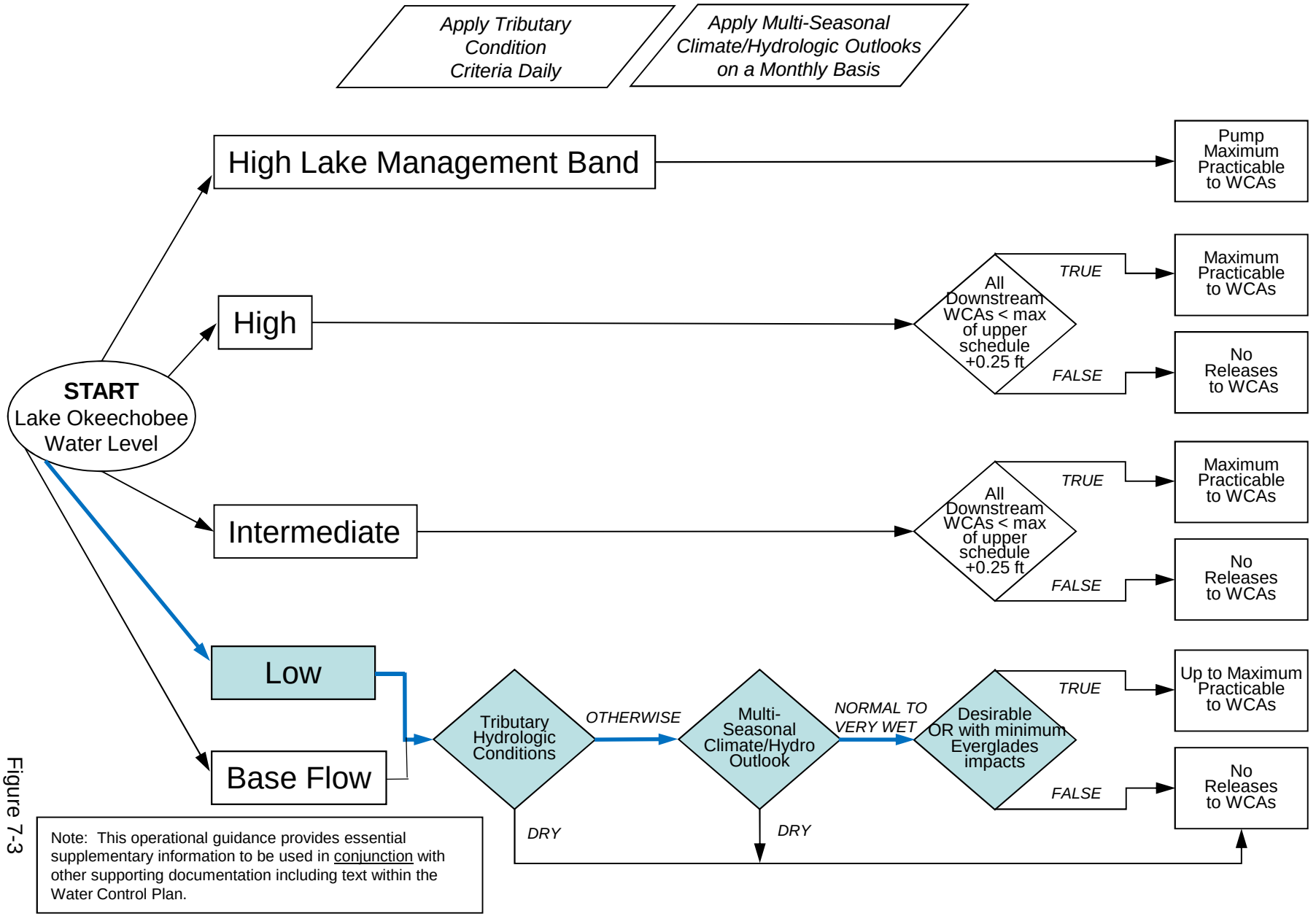


Figure 7-3

2008 LORS

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

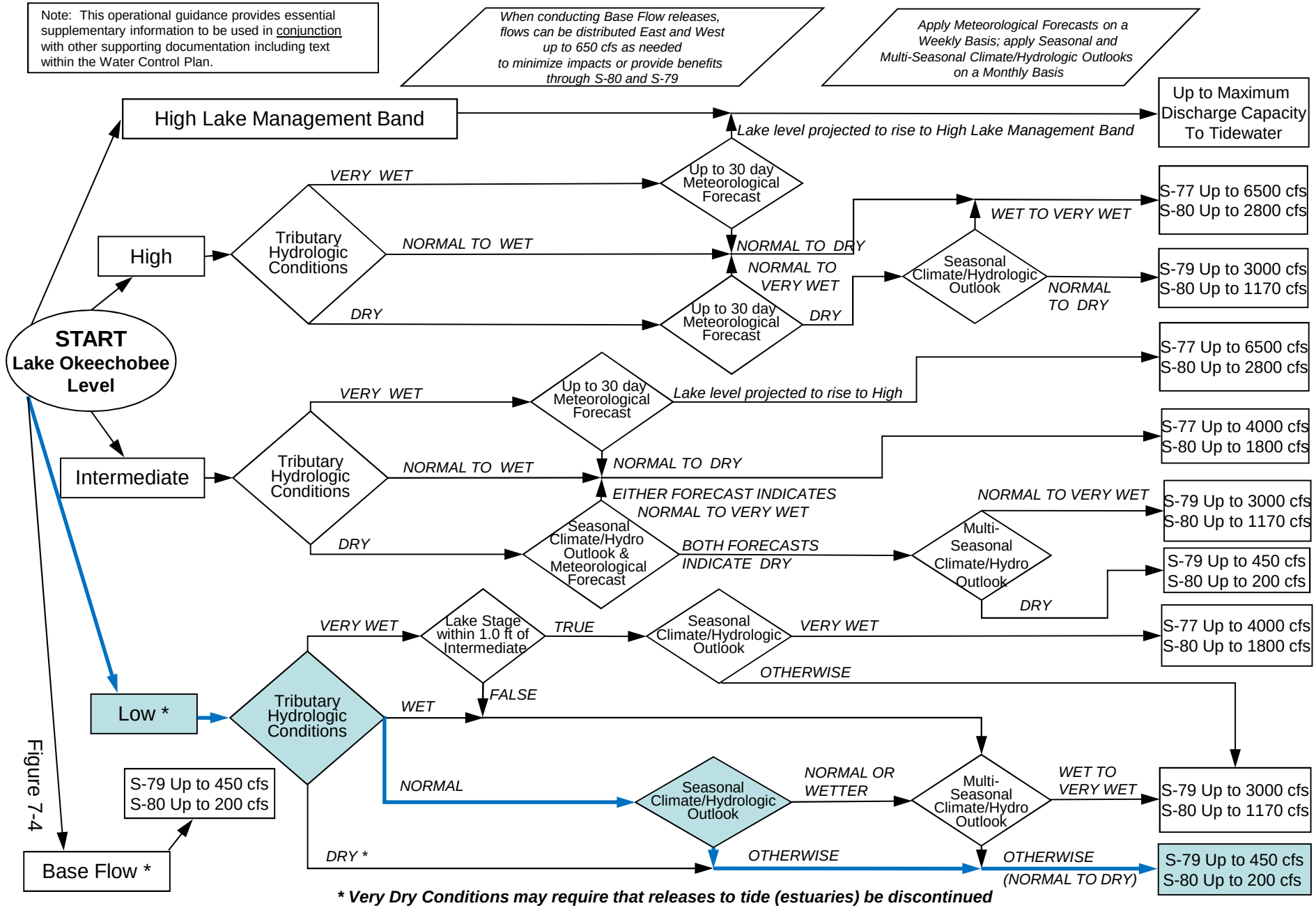
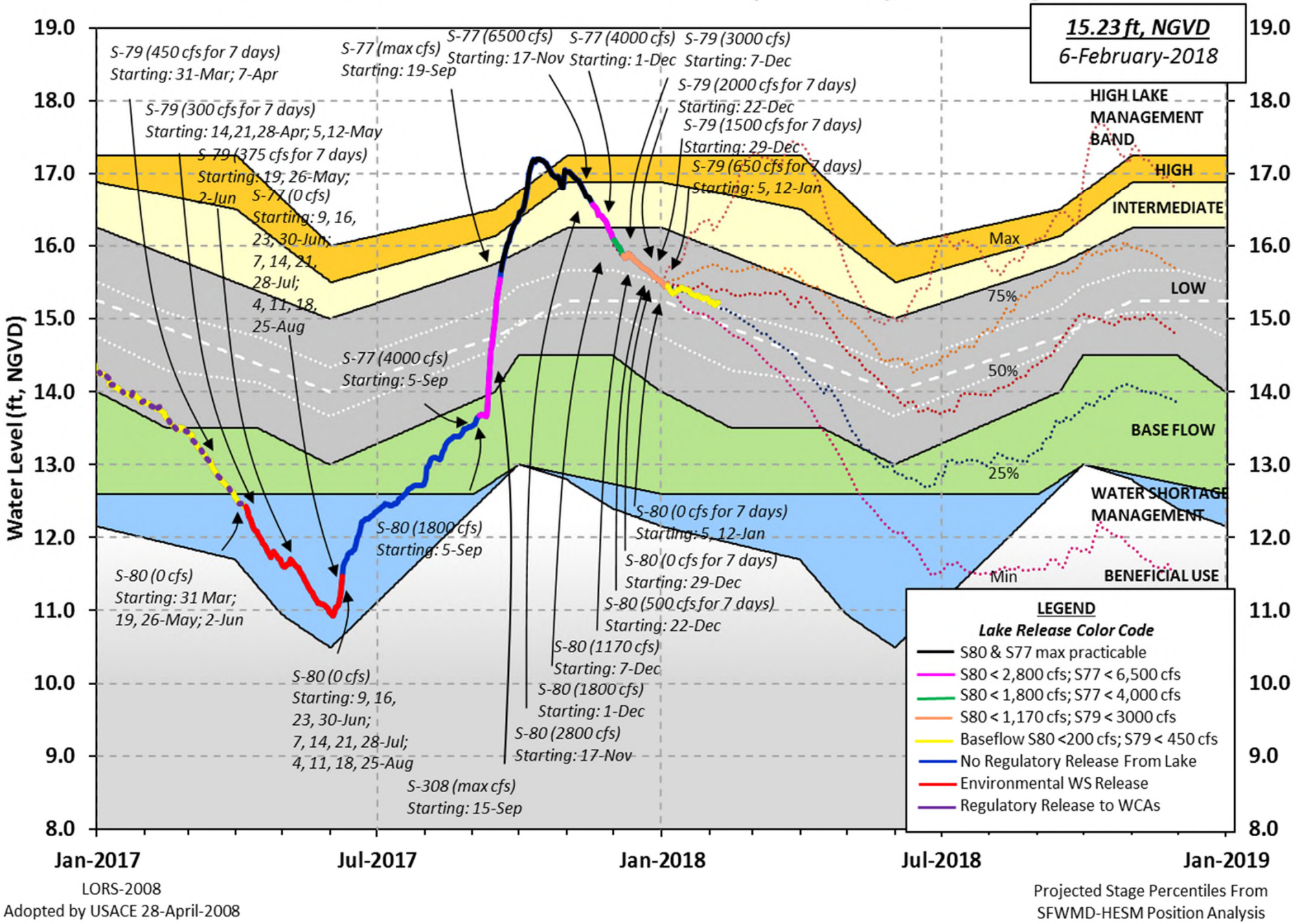


Figure 7-4

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 04 FEB 2018

Okeechobee Lake Regulation	Elevation (ft-NGVD)	Last Year (ft-NGVD)	2YRS Ago (ft-NGVD)
*Okeechobee Lake Elevation	15.20	13.81	16.27 (Official Elv)

Bottom of High Lake Mngmt= 17.25 Top of Water Short Mngmt= 11.98
Currently in Operational Management Band

Simulated Average LORS2008 [1965-2000] 13.48
Difference from Average LORS2008 1.72

04FEB (1965-2007) Period of Record Average 14.63
Difference from POR Average 0.57

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

++Navigation Depth (Based on 2007 Channel Condition Survey) Route 1 ÷ 9.14'
++Navigation Depth (Based on 2008 Channel Condition Survey) Route 2 ÷ 7.34'
Bridge Clearance = 49.25'

---

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

L001	L005	L006	LZ40	S4	S352	S308	S133
15.19	15.21	15.19	15.15	15.20	15.32	15.17	15.16

*Combination Okeechobee Avg-Daily Lake Average = 15.20 (*See Note)

Okeechobee Inflows (cfs):

S65E	0	S65EX1	1007	Fisheating Cr	18
S154	0	S191	0	S135 Pumps	0
S84	0	S133 Pumps	0	S2 Pumps	0
S84X	266	S127 Pumps	0	S3 Pumps	0
S71	61	S129 Pumps	0	S4 Pumps	0
S72	0	S131 Pumps	0	C5	0

Total Inflows: 1352

Okeechobee Outflows (cfs):

S135 Culverts	0	S354	115	S77	1001
S127 Culverts	0	S351	972	S308	10
S129 Culverts	0	S352	87		
S131 Culverts	0	L8 Canal Pt	187		

Total Outflows: 2371

****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 0.00 S308 0.18
  Average Pan Evap x 0.75 Pan Coefficient = 0.07" = 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 2168 cfs or 4300 AC-FT

	Headwater Elevation (ft-msl)	Tailwater Elevation (ft-msl)	Disch (cfs)	Gate Positions #1 (ft)	#2 (ft)	#3 (ft)	#4 (ft)	#5 (ft)	#6 (ft)	#7 (ft)	#8 (ft)
			(I) see note at bottom								
North East Shore											
S133 Pumps:	13.52	15.22	0	0	0	0	0	0	(cfs)		
S193:											
S191:	19.34	15.19	0	0.0	0.0	0.0					
S135 Pumps:	13.26	15.08	0	0	0	0	0		(cfs)		
S135 Culverts:			0	0.0	0.0						
North West Shore											
S65E:	21.04	15.03	0	0.0	0.0	0.0	0.0	0.0	0.0		
S65EX1:	21.04	15.03	1007								
S127 Pumps:	13.43	15.19	0	0	0	0	0	0	(cfs)		
S127 Culvert:			0	0.0							
S129 Pumps:	12.95	15.21	0	0	0	0			(cfs)		
S129 Culvert:			0	0.0							
S131 Pumps:	12.84	15.19	0	0	0				(cfs)		
S131 Culvert:			0								
Fisheating Creek											
nr Palmdale		29.10	18								
nr Lakeport											
C5:		-NR-	0	-NR-	-NR-	-NR-					
South Shore											
S4 Pumps:	11.39	15.29	0	0	0	0			(cfs)		
S169:	15.32	11.38	0	0.0	0.0	0.0					
S310:	15.14		22								

```
  S3 Pumps:    10.73     15.38       0      0    0    0            (cfs)
  S354:        15.38     10.73     115    0.2  0.2
  S2 Pumps:    10.61     15.27       0      0    0    0    0       (cfs)
  S351:        15.27     10.61     972    1.1  1.0  1.1
  S352:        15.44     10.57      87    0.0  0.1
  C10A:         -NR-     13.59           8.0   8.0   8.0   0.0   0.0
  L8 Canal PT            13.42     187
```

S351 and S352 Temporary Pumps/S354 Spillway

```
  S351:        10.61     15.27     972  -NR--NR--NR--NR--NR--NR-
  S352:        10.57     15.44      87  -NR--NR--NR--NR-
  S354:        10.73     15.38     115  -NR--NR--NR--NR-
```

```
Caloosahatchee River (S77, S78, S79)
  S47B:        10.51     11.28           0.0  0.0
  S47D:        11.34     11.34      33   6.5
  S77:
    Spillway and Sector Flow:
               15.16     11.42  996.00  0.0  2.5  0.0  0.0
    Flow Due to Lockages+:           5

  S77 Below USGS Flow Gage         303

  S78:
    Spillway and Sector Flow:
               11.22      3.23     970    1.5  0.0  0.0  1.5
    Flow Due to Lockages+:          20

  S79:
    Spillway and Sector Flow:
                3.28      1.04     880    0.0  0.0  0.5  1.0  1.0  0.0  0.0
0.0
    Flow Due to Lockages+:          12
    Percent of flow from S77       113%
    Chloride            (ppm)     54


St. Lucie Canal (S308, S80)
  S308:
    Spillway and Sector Flow:
               15.14     14.25    7.60  0.0  0.0  0.0  0.0
    Flow Due to Lockages+:           2

  S308 Below USGS Flow Gage         73
  S153:        18.75     14.04       9    0.0  0.0
  S80:
    Spillway and Sector Flow:
               14.33      0.70       0    0.0  0.0  0.0  0.0  0.0  0.0  0.0
    Flow Due to Lockages+:          21
    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.

Daily Precipitation Totals	1-Day (inches)	3-Day (inches)	7-Day (inches)	Wind Direction (Degø)	Wind 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:	0.45	0.45	0.52	183	7
S78:	0.66	0.66	0.70	224	6
S79:	1.48	1.48	1.50	255	3
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	0.05	189	14
S80:	0.00	0.00	0.00	205	13
Okeechobee Average (Sites S78, S79 and S80 not included)	0.25	0.04	0.04		
Oke Nexrad Basin Avg	-NR-	0.00	0.01		

Okeechobee Lake Elevations	04 FEB 2018	15.20	Difference from 04FEB18
04FEB18 -1 Day =	03 FEB 2018	15.19	-0.01
04FEB18 -2 Days =	02 FEB 2018	15.22	0.02
04FEB18 -3 Days =	01 FEB 2018	15.24	0.04
04FEB18 -4 Days =	31 JAN 2018	15.23	0.03
04FEB18 -5 Days =	30 JAN 2018	15.25	0.05
04FEB18 -6 Days =	29 JAN 2018	15.29	0.09
04FEB18 -7 Days =	28 JAN 2018	15.28	0.08
04FEB18 -30 Days =	05 JAN 2018	15.40	0.20
04FEB18 -1 Year =	04 FEB 2017	13.81	-1.39
04FEB18 -2 Year =	04 FEB 2016	16.27	1.07

Long Term Mean 30day Avearge ET for Lake Alfred (Inches) = 2.14

Lake Okeechobee Net Inflow (LONIN)

		Average Flow over the previous 14 days			Avg-Daily Flow
04FEB18	Today =	04 FEB 2018	-293	MON	4532
04FEB18	-1 Day =	03 FEB 2018	-677	SUN	-3169
04FEB18	-2 Days =	02 FEB 2018	-349	SAT	-1228
04FEB18	-3 Days =	01 FEB 2018	-405	FRI	-NR-
04FEB18	-4 Days =	31 JAN 2018	-934	THU	-2886
04FEB18	-5 Days =	30 JAN 2018	-454	WED	-7022
04FEB18	-6 Days =	29 JAN 2018	93	TUE	3516
04FEB18	-7 Days =	28 JAN 2018	-218	MON	4081
04FEB18	-8 Days =	27 JAN 2018	-1138	SUN	-NR-
04FEB18	-9 Days =	26 JAN 2018	-642	SAT	-671
04FEB18	-10 Days =	25 JAN 2018	-147	FRI	-5361
04FEB18	-11 Days =	24 JAN 2018	517	THU	1260
04FEB18	-12 Days =	23 JAN 2018	792	WED	3846
04FEB18	-13 Days =	22 JAN 2018	852	TUE	-412

S65E

		Average Flow over previous 14 days			Avg-Daily Flow
04FEB18	Today=	04 FEB 2018	0	MON	0
04FEB18	-1 Day =	03 FEB 2018	0	SUN	0
04FEB18	-2 Days =	02 FEB 2018	0	SAT	0
04FEB18	-3 Days =	01 FEB 2018	0	FRI	0
04FEB18	-4 Days =	31 JAN 2018	0	THU	0
04FEB18	-5 Days =	30 JAN 2018	0	WED	0
04FEB18	-6 Days =	29 JAN 2018	0	TUE	0
04FEB18	-7 Days =	28 JAN 2018	0	MON	0
04FEB18	-8 Days =	27 JAN 2018	0	SUN	0
04FEB18	-9 Days =	26 JAN 2018	0	SAT	0
04FEB18	-10 Days =	25 JAN 2018	0	FRI	0
04FEB18	-11 Days =	24 JAN 2018	0	THU	0
04FEB18	-12 Days =	23 JAN 2018	0	WED	0
04FEB18	-13 Days =	22 JAN 2018	0	TUE	0

S65EX1

		Average Flow over previous 14 days			Avg-Daily Flow
04FEB18	Today=	04 FEB 2018	804	MON	1007
04FEB18	-1 Day =	03 FEB 2018	776	SUN	940
04FEB18	-2 Days =	02 FEB 2018	755	SAT	896
04FEB18	-3 Days =	01 FEB 2018	736	FRI	916
04FEB18	-4 Days =	31 JAN 2018	717	THU	910
04FEB18	-5 Days =	30 JAN 2018	704	WED	847
04FEB18	-6 Days =	29 JAN 2018	712	TUE	786
04FEB18	-7 Days =	28 JAN 2018	720	MON	870
04FEB18	-8 Days =	27 JAN 2018	732	SUN	662
04FEB18	-9 Days =	26 JAN 2018	749	SAT	660
04FEB18	-10 Days =	25 JAN 2018	756	FRI	689
04FEB18	-11 Days =	24 JAN 2018	765	THU	710
04FEB18	-12 Days =	23 JAN 2018	773	WED	707
04FEB18	-13 Days =	22 JAN 2018	778	TUE	662

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)
04 FEB 2018	1921	601	1966	1724
03 FEB 2018	3020	1043	2051	3083
02 FEB 2018	2079	428	1576	2141
01 FEB 2018	468	-102	143	88
31 JAN 2018	457	12	466	513
30 JAN 2018	679	-69	668	1044
29 JAN 2018	276	-15	671	1134
28 JAN 2018	1830	614	1656	2101
27 JAN 2018	2393	778	2824	2771
26 JAN 2018	490	60	1630	1916
25 JAN 2018	8	-170	29	138
24 JAN 2018	276	222	631	321
23 JAN 2018	933	720	623	912
22 JAN 2018	949	688	624	1296

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)
04 FEB 2018	45	-NR-	147	198	371
03 FEB 2018	59	-NR-	470	420	377
02 FEB 2018	98	-NR-	795	496	364
01 FEB 2018	8	-NR-	531	974	-NR-
31 JAN 2018	96	-NR-	284	0	366
30 JAN 2018	86	-NR-	393	0	371
29 JAN 2018	56	-NR-	299	377	363
28 JAN 2018	29	-NR-	56	531	359
27 JAN 2018	9	-NR-	26	976	-NR-
26 JAN 2018	25	-NR-	0	1063	361
25 JAN 2018	29	-NR-	0	761	372
24 JAN 2018	46	-NR-	0	650	371
23 JAN 2018	28	-NR-	0	758	363
22 JAN 2018	21	-NR-	28	767	366

DATE	S-308 Discharge (ALL DAY) (AC-FT)	Below S-308 Discharge (ALL-DAY) (AC-FT)	S-80 Discharge (ALL-DAY) (AC-FT)
04 FEB 2018	4	144	42
03 FEB 2018	5	48	30
02 FEB 2018	6	0	50
01 FEB 2018	8	143	57
31 JAN 2018	3	136	34
30 JAN 2018	2	28	28
29 JAN 2018	3	-253	45
28 JAN 2018	2	159	36
27 JAN 2018	3	568	27
26 JAN 2018	2	174	27
25 JAN 2018	2	48	36
24 JAN 2018	5	128	57
23 JAN 2018	7	-121	49

22 JAN 2018 3 49 64

*** 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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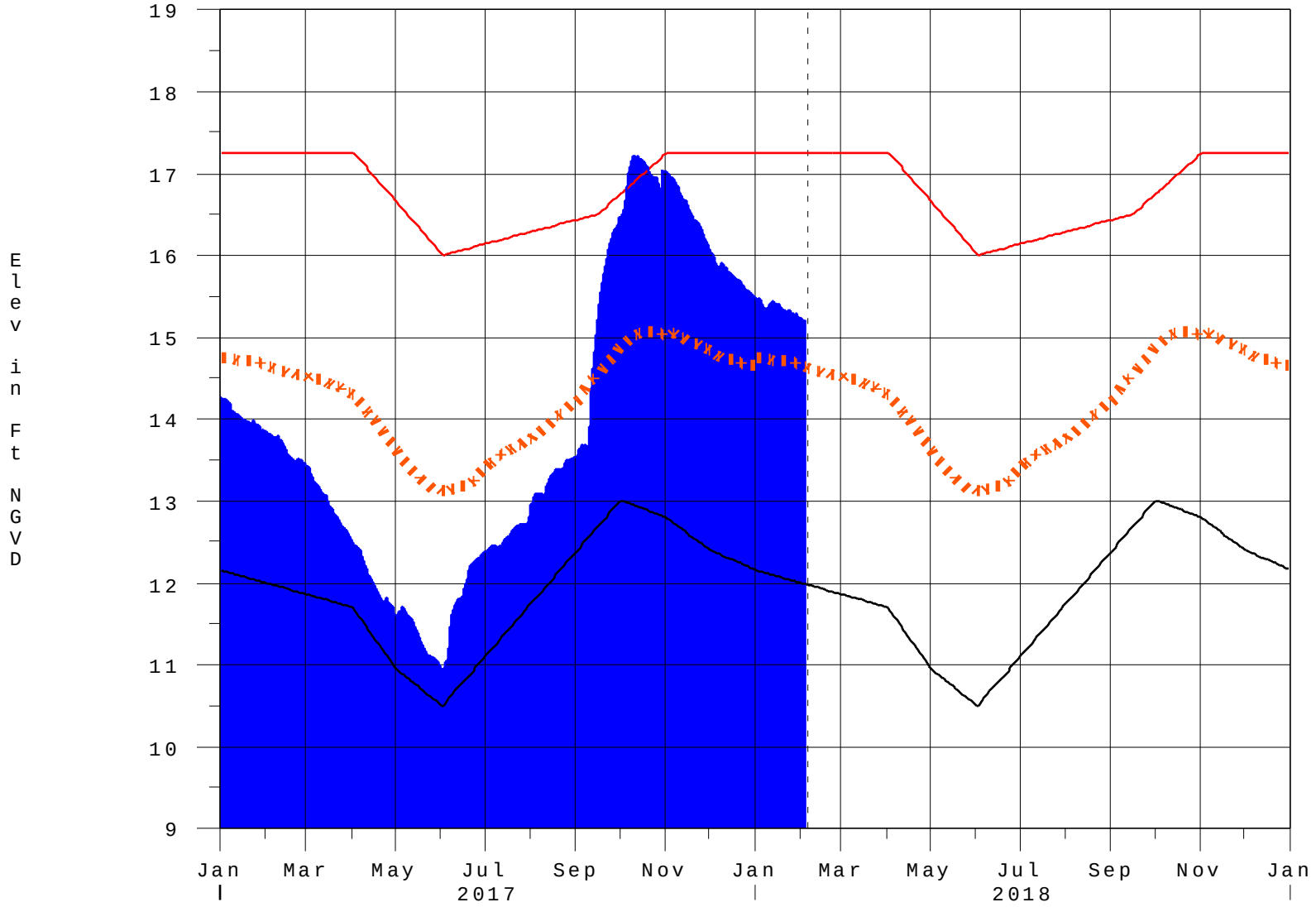
* On 11 May 1999, Lake Okeechobee Elevation was switched from
Instantaneous 2400 value to an average-daily lake average.
On 14 Mar 2001, due to the isolation of various gages within the standard
10 stations, the average of the interior 4 station gages was used
as the Lake Okeechobee Elevation.
On 05 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

Report Generated 05FEB2018 @ 12:40 ** Preliminary Data - Subject to Revision **

Lake Okeechobee

05FEB18 13:17:29



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