Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 12/18/2017 (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 (Dec-May)	N/A	N/A	0.17	Dry	-0.32	Dry	-0.35	Dry
Multi Seasonal (Dec-Oct)	N/A	N/A	2.53	Wet	2.41	Normal	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:

448 cfs 14-day running average for Lake Okeechobee Net Inflow through 12/17/2017.
According to the classification in Tributary Hydrologic Conditions table, this condition is Dry.

1.60 for Palmer Index on 12/16/2017.
According to the classification in Tributary Hydrologic Conditions table, this condition is Wet.

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

LORS2008 Classification Tables:

Lake Okeechobee Stage on 12/18/2017

Lake Okeechobee Stage: **15.73 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	14.23	← 15.73
Base Flow sub-band		12.66	
Beneficial Use sub-band		12.27	
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**

Back to Lake Okeechobee Operations Main Page

Back to U.S. Army Corps of Engineers LORSS Homepage

LORS2008 Implementation on 12/18/2017 (ENSO Neutral Condition):

Status for week ending 12/18/2017:

District wide, Raindar rainfall was 0.00 inches for the week. Lake stage on 12/18/2017 was 15.73 ft, down 0.15 ft from last week.

The updated December 2017 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 **Wet**. The PDSI indicates Wet 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	1.60 (Normal)	L
	CPC Precipitation Outlook	1 month: Normal	L
		3 months: Below Normal	M
	LOK Seasonal Net Inflow Outlook	-0.32 ft (Extremely Dry)	H
	ENSO La Nina Years		
	LOK Multi-Seasonal Net Inflow Outlook	2.41 ft (Normal)	M
	ENSO La Nina Years		
WCAs	WCA 1: Site 1-7, Site 1-8T, & Site 1-9 Average	Above Line 1 (17.34 ft)	L
	WCA 2A: Site 2-17 HW	Above Line 1 (13.00 ft)	L
	WCA-3A: 3 Station Average (Site 63, 64 and 65)	Above Line 1 (10.96 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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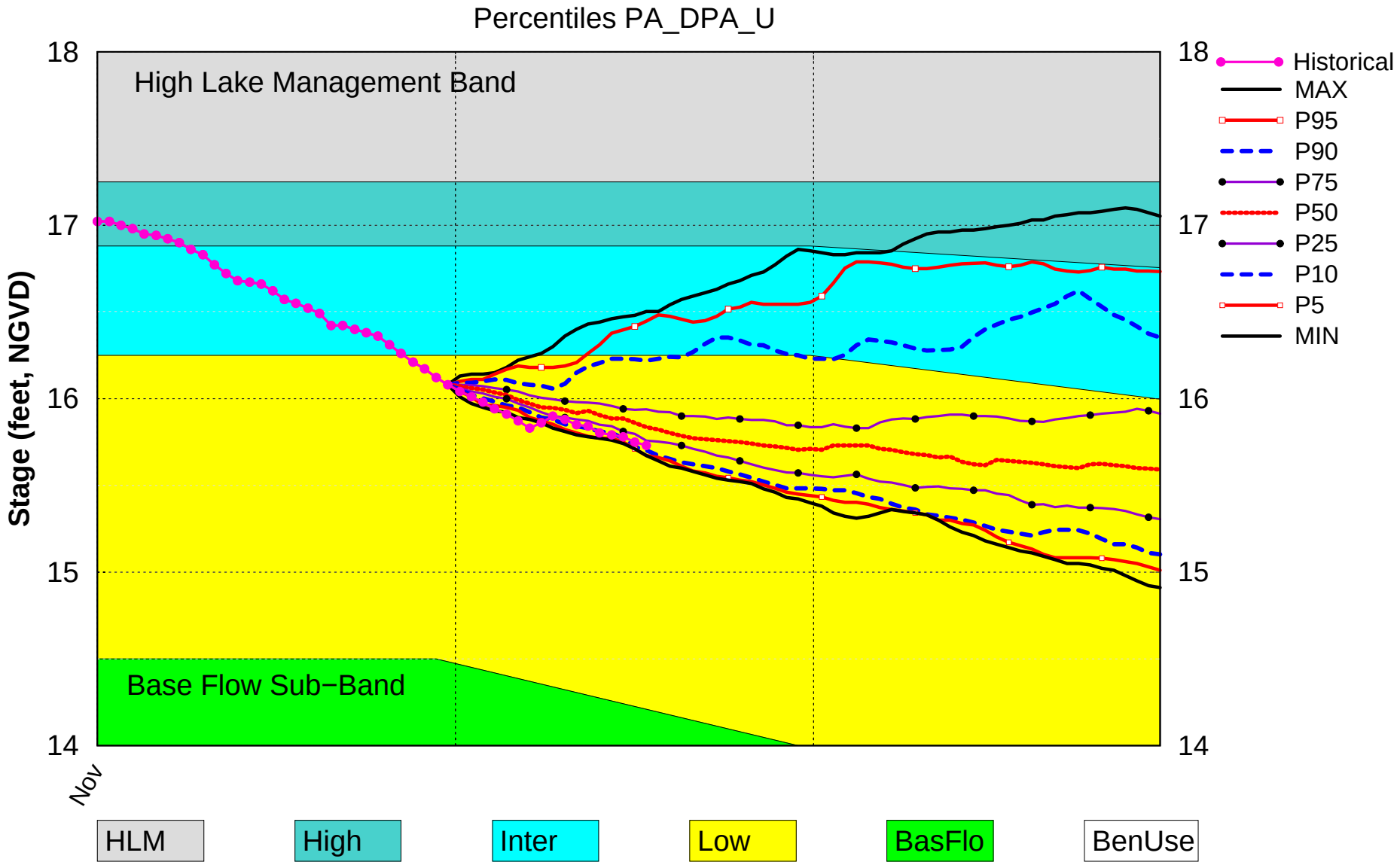
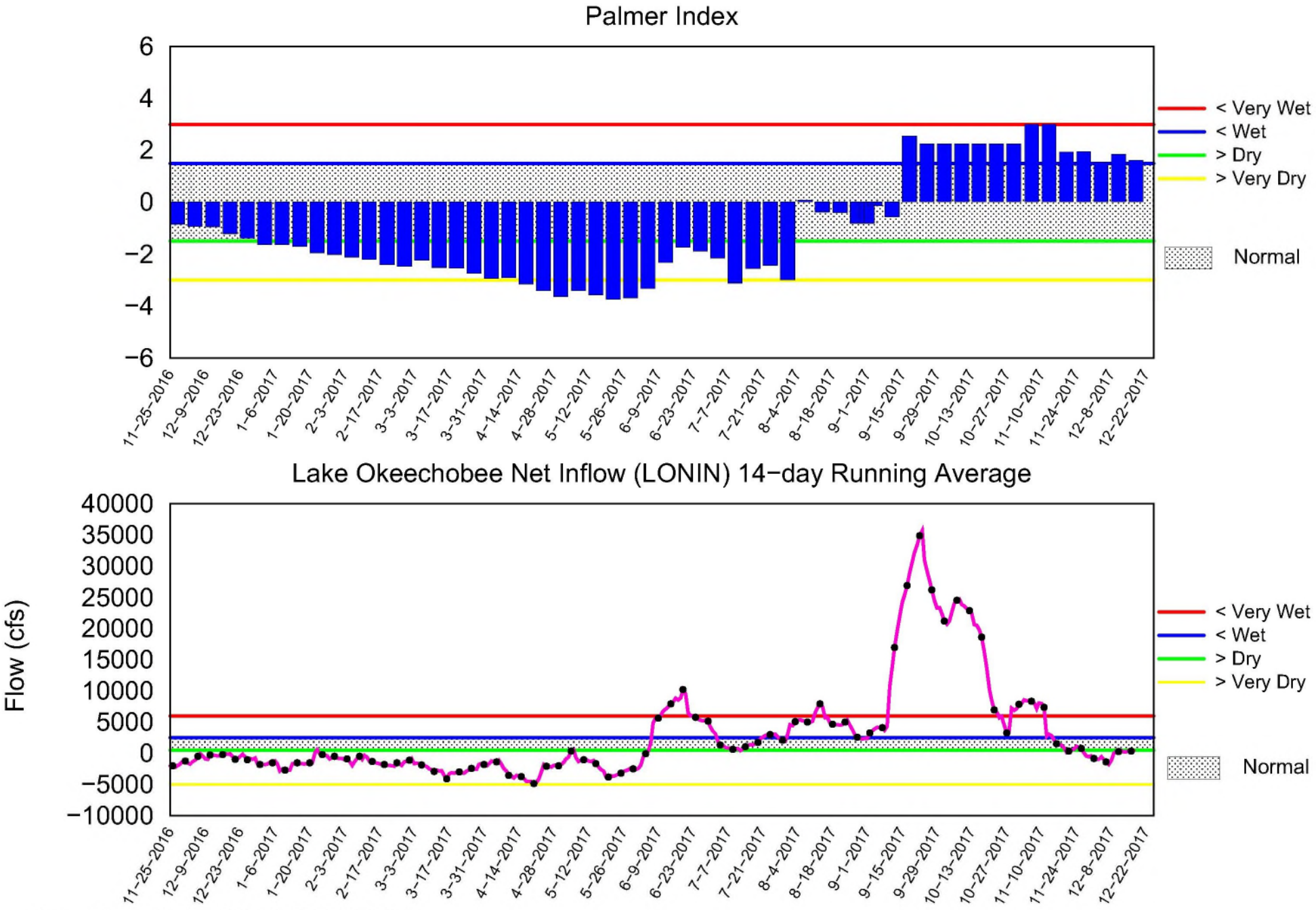
Lake Okeechobee SFWMM December 2017 Position Analysis



(See assumptions on the Position Analysis Results website)

Mon Dec 18 15:34:05 EST 2017

Tributary Basin Condition Indicators as of December 18 2017



Mon Dec 18 15:25:12 EST 2017

2008 LORS

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

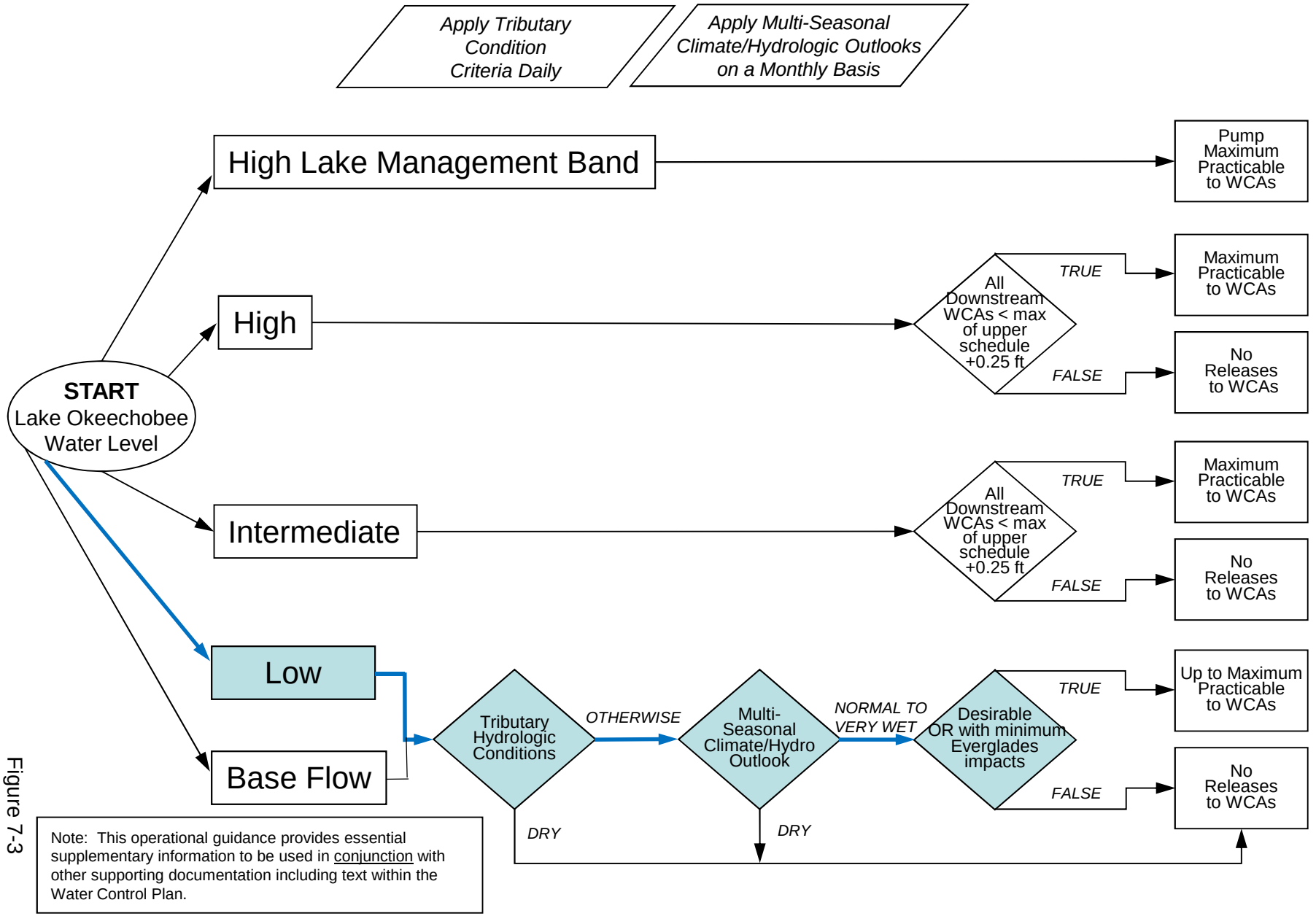


Figure 7-3

2008 LORS

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

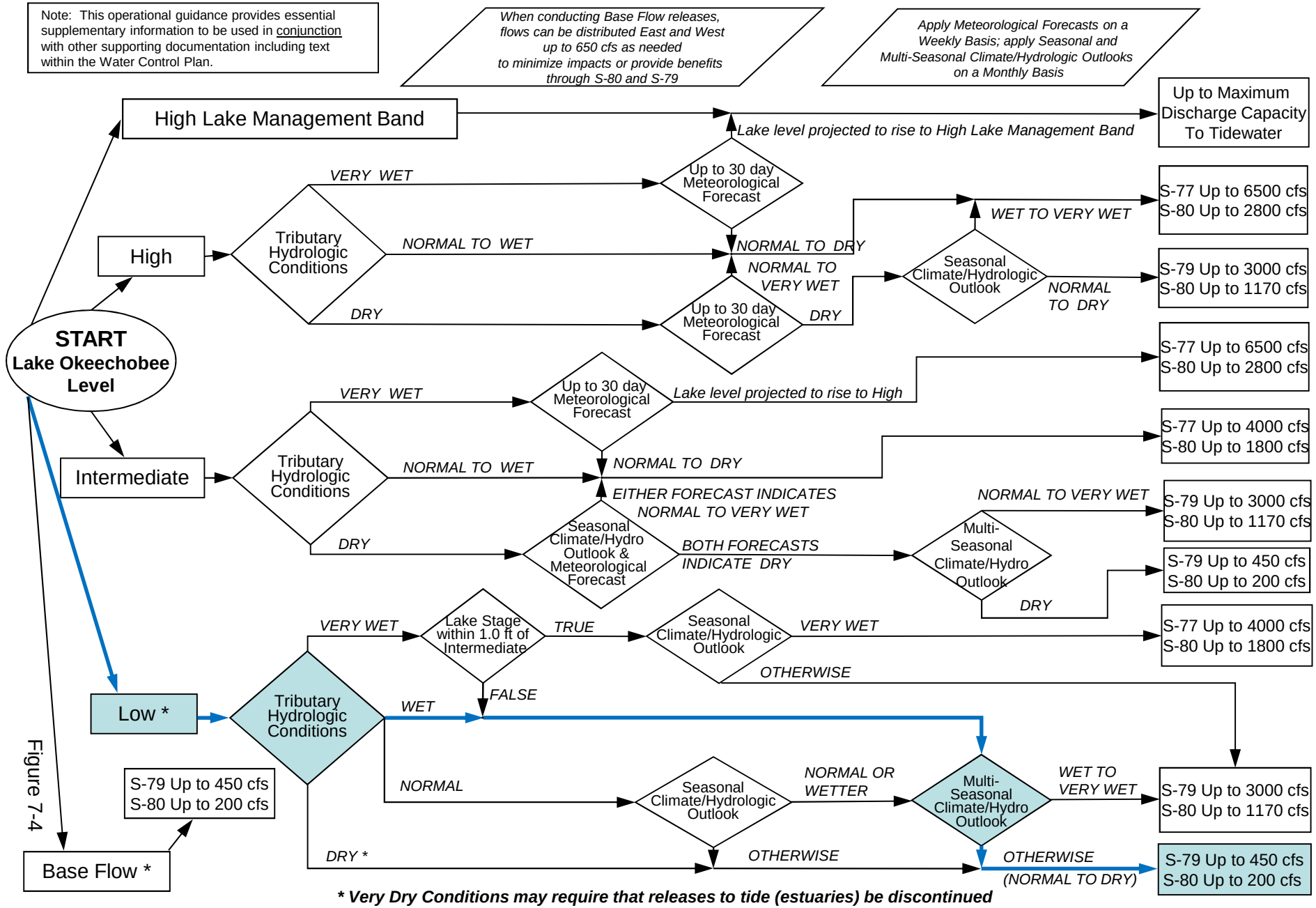
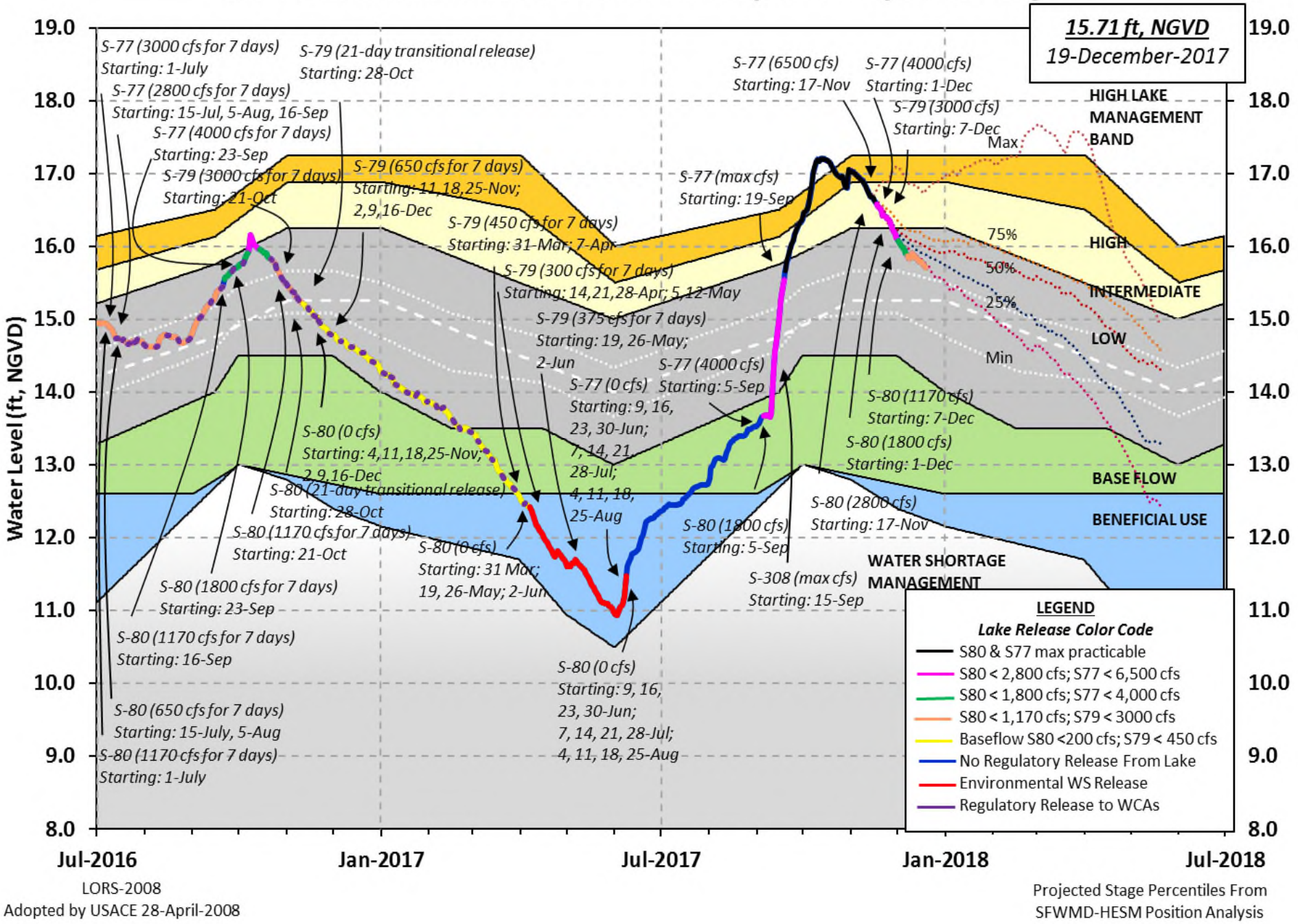


Figure 7-4

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

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 17 DEC 2017

Okeechobee Lake Regulation	Elevation (ft-NGVD)	Last Year (ft-NGVD)	2YRS Ago (ft-NGVD)
*Okeechobee Lake Elevation	15.73	14.54	14.80 (Official Elv)

Bottom of High Lake Mngmt= 17.25 Top of Water Short Mngmt= 12.27
Currently in Operational Management Band

Simulated Average LORS2008 [1965-2000] 13.62
Difference from Average LORS2008 2.11

17DEC (1965-2007) Period of Record Average 14.71
Difference from POR Average 1.02

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

++Navigation Depth (Based on 2007 Channel Condition Survey) Route 1 ÷ 9.67'
++Navigation Depth (Based on 2008 Channel Condition Survey) Route 2 ÷ 7.87'
Bridge Clearance = 49.50'

---

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

L001	L005	L006	LZ40	S4	S352	S308	S133
15.69	15.75	15.75	15.69	15.78	15.85	15.68	15.64

*Combination Okeechobee Avg-Daily Lake Average = 15.73 (*See Note)

Okeechobee Inflows (cfs):

S65E	0	S65EX1	836	Fisheating Cr	123
S154	37	S191	42	S135 Pumps	0
S84	0	S133 Pumps	0	S2 Pumps	0
S84X	0	S127 Pumps	0	S3 Pumps	0
S71	134	S129 Pumps	0	S4 Pumps	0
S72	0	S131 Pumps	0	C5	0

Total Inflows: 1171

Okeechobee Outflows (cfs):

S135 Culverts	0	S354	0	S77	3210
S127 Culverts	0	S351	0	S308	1860
S129 Culverts	0	S352	0		
S131 Culverts	0	L8 Canal Pt	7		

Total Outflows: 5078

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

Okeechobee Pan Evaporation (inches):
  S77 0.16 S308 0.14
  Average Pan Evap x 0.75 Pan Coefficient = 0.11" = 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

	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:	13.74	15.65	0	0	0	0	0	0	(cfs)		
S193:											
S191:	19.54	15.64	42	0.0	0.0	0.1					
S135 Pumps:	13.52	15.61	0	0	0	0	0		(cfs)		
S135 Culverts:			0	0.0	0.0						
North West Shore											
S65E:	21.14	15.52	0	0.0	0.0	0.0	0.0	0.0	0.0		
S65EX1:	21.14	15.52	836								
S127 Pumps:	13.69	15.70	0	0	0	0	0	0	(cfs)		
S127 Culvert:			0	0.0							
S129 Pumps:	13.07	15.73	0	0	0	0			(cfs)		
S129 Culvert:			0	0.0							
S131 Pumps:	12.95	15.76	0	0	0				(cfs)		
S131 Culvert:			0								
Fisheating Creek											
nr Palmdale		30.81	123								
nr Lakeport											
C5:		-NR-	0	-NR-	-NR-	-NR-					
South Shore											
S4 Pumps:	11.04	15.75	0	0	0	0			(cfs)		
S169:	14.38	11.02	0	0.0	0.0	0.0					
S310:	15.66		2								

```
  S3 Pumps:     9.68     15.74       0      0    0    0            (cfs)
  S354:        15.74      9.68       0    0.0  0.0
  S2 Pumps:     9.49     15.76       0      0    0    0    0       (cfs)
  S351:        15.76      9.49       0    0.0  0.0  0.0
  S352:        15.85      9.51       0    0.0  0.0
  C10A:         -NR-     12.58            8.0   8.0   8.0   0.0   0.0
  L8 Canal PT            12.40       7
```

S351 and S352 Temporary Pumps/S354 Spillway

```
  S351:         9.49     15.76       0  -NR--NR--NR--NR--NR--NR-
  S352:         9.51     15.85       0  -NR--NR--NR--NR-
  S354:         9.68     15.74       0  -NR--NR--NR--NR-
```

```
Caloosahatchee River (S77, S78, S79)
  S47B:        14.87     10.91            0.0  0.0
  S47D:        10.94     10.92      92    6.6
  S77:
    Spillway and Sector Flow:
                15.58     11.01  ******  2.5  2.5  2.5  2.5
    Flow Due to Lockages+:            6

  S77 Below USGS Flow Gage        3204

  S78:
    Spillway and Sector Flow:
                10.73      2.99    3019    1.0  3.5  3.5  1.0
    Flow Due to Lockages+:           10

  S79:
    Spillway and Sector Flow:
                 3.05      1.53    4068    0.0  1.0  2.0  2.0  2.0  2.0  2.0
2.0
    Flow Due to Lockages+:            8
    Percent of flow from S77        79%
    Chloride            (ppm)     40


St. Lucie Canal (S308, S80)
  S308:
    Spillway and Sector Flow:
                15.68     14.00  ******  1.9  1.9  1.9  1.9
    Flow Due to Lockages+:            4

  S308 Below USGS Flow Gage       1575
  S153:        19.09     13.78      23    0.0  0.0
  S80:
    Spillway and Sector Flow:
                13.52      0.94    1567    1.5  0.0  0.0  1.0  0.0  0.0  1.5
    Flow Due to Lockages+:           26
    Percent of flow from S308      118%

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

Speedy Point Top Salinity (mg/ml) 8672
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:	0.00	0.00	0.07	88	3
S78:	0.00	0.00	0.00	87	2
S79:	0.00	0.00	0.00	216	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:	0.00	0.00	0.00	176	1
S80:	0.00	0.00	0.00	5	0
Okeechobee Average (Sites S78, S79 and S80 not included)	0.00	0.00	0.01		
Oke Nexrad Basin Avg	-NR-	0.00	0.00		

Okeechobee Lake Elevations 17 DEC 2017 15.73 Difference from 17DEC17

17DEC17 -1 Day =	16 DEC 2017	15.75	0.02
17DEC17 -2 Days =	15 DEC 2017	15.78	0.05
17DEC17 -3 Days =	14 DEC 2017	15.79	0.06
17DEC17 -4 Days =	13 DEC 2017	15.80	0.07
17DEC17 -5 Days =	12 DEC 2017	15.84	0.11
17DEC17 -6 Days =	11 DEC 2017	15.85	0.12
17DEC17 -7 Days =	10 DEC 2017	15.88	0.15
17DEC17 -30 Days =	17 NOV 2017	16.55	0.82
17DEC17 -1 Year =	17 DEC 2016	14.54	-1.19
17DEC17 -2 Year =	17 DEC 2015	14.80	-0.93

Long Term Mean 30day Avearge ET for Lake Alfred (Inches) = 2.09

Lake Okeechobee Net Inflow (LONIN)

		Average Flow over the previous 14 days			Avg-Daily Flow
17DEC17	Today =	17 DEC 2017	766480	MON	731
17DEC17	-1 Day =	16 DEC 2017	766404	SUN	-1943
17DEC17	-2 Days =	15 DEC 2017	766498	SAT	489
17DEC17	-3 Days =	14 DEC 2017	766287	FRI	-381
17DEC17	-4 Days =	13 DEC 2017	766227	THU	-6389
17DEC17	-5 Days =	12 DEC 2017	766440	WED	639
17DEC17	-6 Days =	11 DEC 2017	766351	TUE	-3145
17DEC17	-7 Days =	10 DEC 2017	766314	MON	-478
17DEC17	-8 Days =	09 DEC 2017	766072	SUN	12715
17DEC17	-9 Days =	08 DEC 2017	764882	SAT	11138
17DEC17	-10 Days =	07 DEC 2017	764285	FRI	-2321
17DEC17	-11 Days =	06 DEC 2017	764642	THU	-2012
17DEC17	-12 Days =	05 DEC 2017	764988	WED	******
17DEC17	-13 Days =	04 DEC 2017	-412	TUE	-1140

S65E

		Average Flow over previous 14 days			Avg-Daily Flow
17DEC17	Today=	17 DEC 2017	42	MON	0
17DEC17	-1 Day =	16 DEC 2017	96	SUN	0
17DEC17	-2 Days =	15 DEC 2017	159	SAT	0
17DEC17	-3 Days =	14 DEC 2017	237	FRI	0
17DEC17	-4 Days =	13 DEC 2017	319	THU	0
17DEC17	-5 Days =	12 DEC 2017	406	WED	23
17DEC17	-6 Days =	11 DEC 2017	495	TUE	0
17DEC17	-7 Days =	10 DEC 2017	591	MON	0
17DEC17	-8 Days =	09 DEC 2017	690	SUN	0
17DEC17	-9 Days =	08 DEC 2017	790	SAT	0
17DEC17	-10 Days =	07 DEC 2017	894	FRI	0
17DEC17	-11 Days =	06 DEC 2017	1000	THU	0
17DEC17	-12 Days =	05 DEC 2017	1105	WED	0
17DEC17	-13 Days =	04 DEC 2017	1201	TUE	558

S65EX1

		Average Flow over previous 14 days			Avg-Daily Flow
17DEC17	Today=	17 DEC 2017	727	MON	836
17DEC17	-1 Day =	16 DEC 2017	667	SUN	815
17DEC17	-2 Days =	15 DEC 2017	609	SAT	863
17DEC17	-3 Days =	14 DEC 2017	547	FRI	916
17DEC17	-4 Days =	13 DEC 2017	482	THU	913
17DEC17	-5 Days =	12 DEC 2017	416	WED	847
17DEC17	-6 Days =	11 DEC 2017	356	TUE	837
17DEC17	-7 Days =	10 DEC 2017	296	MON	780
17DEC17	-8 Days =	09 DEC 2017	240	SUN	921
17DEC17	-9 Days =	08 DEC 2017	175	SAT	550
17DEC17	-10 Days =	07 DEC 2017	143	FRI	564
17DEC17	-11 Days =	06 DEC 2017	110	THU	532
17DEC17	-12 Days =	05 DEC 2017	82	WED	598
17DEC17	-13 Days =	04 DEC 2017	62	TUE	201

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)
17 DEC 2017	6267	6353	5989	8055
16 DEC 2017	6798	6716	6596	9030
15 DEC 2017	3830	3433	4005	6002
14 DEC 2017	2518	2264	1988	2912
13 DEC 2017	3274	3073	3434	4969
12 DEC 2017	3715	3537	3938	4840
11 DEC 2017	4061	4194	4935	6712
10 DEC 2017	4287	4789	6179	7794
09 DEC 2017	5174	5484	6015	8913
08 DEC 2017	6376	6634	6568	7351
07 DEC 2017	8187	8485	7938	10283
06 DEC 2017	8237	8323	7919	10643
05 DEC 2017	8217	******	7983	9595
04 DEC 2017	8228	8671	8057	9766

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)
17 DEC 2017	3	-NR-	0	0	14
16 DEC 2017	8	-NR-	0	0	27
15 DEC 2017	12	-NR-	0	0	5
14 DEC 2017	27	-NR-	0	0	4
13 DEC 2017	13	-NR-	0	0	-2
12 DEC 2017	4	-NR-	0	0	5
11 DEC 2017	12	-NR-	0	0	10
10 DEC 2017	212	-NR-	0	0	8
09 DEC 2017	76	-NR-	0	0	59
08 DEC 2017	12	-NR-	0	0	6
07 DEC 2017	99	-NR-	0	0	15
06 DEC 2017	178	-NR-	99	452	9
05 DEC 2017	31	147208	676	652	23
04 DEC 2017	18	254197	301	682	21

DATE	S-308 Discharge (ALL DAY) (AC-FT)	Below S-308 Discharge (ALL-DAY) (AC-FT)	S-80 Discharge (ALL-DAY) (AC-FT)
17 DEC 2017	3667	3123	3156
16 DEC 2017	3052	2301	3246
15 DEC 2017	2527	1830	2471
14 DEC 2017	1972	1277	2256
13 DEC 2017	2012	1452	1822
12 DEC 2017	2920	2023	2248
11 DEC 2017	3447	2457	2709
10 DEC 2017	3858	2854	3097
09 DEC 2017	3477	2474	3273
08 DEC 2017	3379	2550	2876
07 DEC 2017	4102	3247	3532
06 DEC 2017	4097	3626	3531
05 DEC 2017	4035	-NR-	3555

04 DEC 2017   4116   -NR-   3593

*** 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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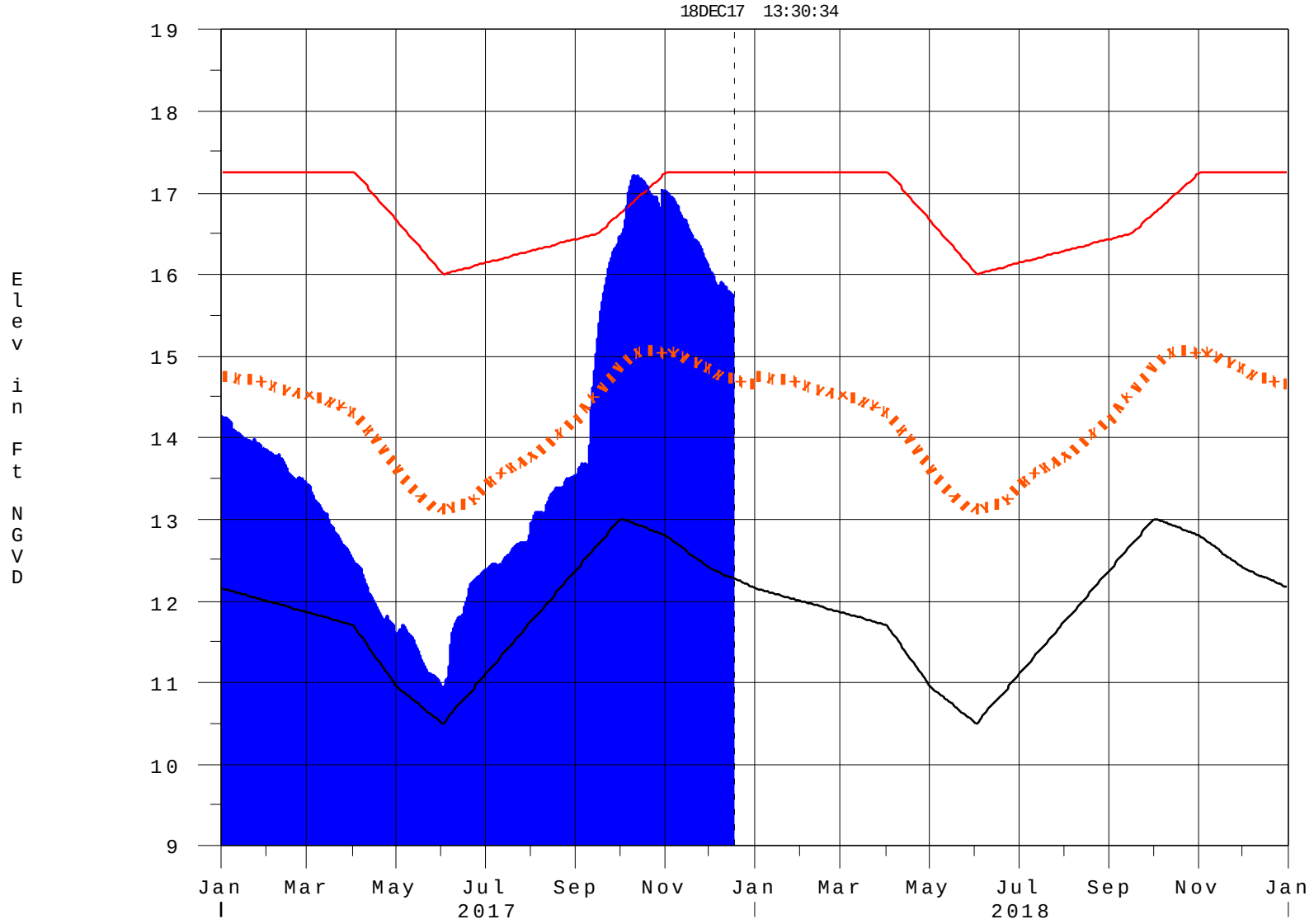
* On 11 May 1999, Lake Okeechobee Elevation was switched from
Instantaneous 2400 value to an average-daily lake average.
On 14 Mar 2001, due to the isolation of various gages within the standard
10 stations, the average of the interior 4 station gages was used
as the Lake Okeechobee Elevation.
On 05 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 18DEC2017 @ 13:15 ** Preliminary Data - Subject to Revision **

Lake Okeechobee



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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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