Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 11/22/2021 (ENSO Condition: La Nina watch)

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 ENSO Neutral years[3] and a sub-sampling of warm years of the Atlantic Multi-decadal Oscillation (AMO) in combination with ENSO Neutral 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 La Nina Years[3]		Sub-sampling of AMO Warm + La Nina Years[4]	
	Value (ft)	Condition	Value (ft)	Condition	Value (ft)	Condition	Value (ft)	Condition
Current (Oct-Mar)	N/A	N/A	0.57	Dry	-0.18	Dry	-0.16	Dry
Multi Seasonal (Oct-Apr)	N/A	N/A	3.24	Wet	2.55	Wet	2.34	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:

1286 cfs 14-day running average for Lake Okeechobee Net Inflow through 11/22/2021.
According to the classification in Tributary Hydrologic Conditions table, this condition is Near Normal.

-1.58 for Palmer Drought Index on 11/20/2021.
According to the classification in Tributary Hydrologic Conditions table, this condition is Dry.

The wetter of the two conditions above is **Near Normal.**

LORS2008 Classification Tables:

Lake Okeechobee Stage on 11/22/2021:

Lake Okeechobee Stage: **16.07 feet**

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	14.50	← 16.07 ft
Base Flow sub-band		12.78	
Beneficial Use sub-band		12.52	
Water Shortage Management Band			

Part C of LORS2008: Discharge to WCAs

Up to Maximum Practicable to the WCAs if Desirable or with Minimum Everglades Impacts; otherwise no releases.

Part D of LORS2008: Discharge to Tide

Up to 450 cfs at S-79 and up to 200 cfs at S-80.

LORS2008 Implementation on 11/22/2021 (ENSO Condition- La Nina Watch):

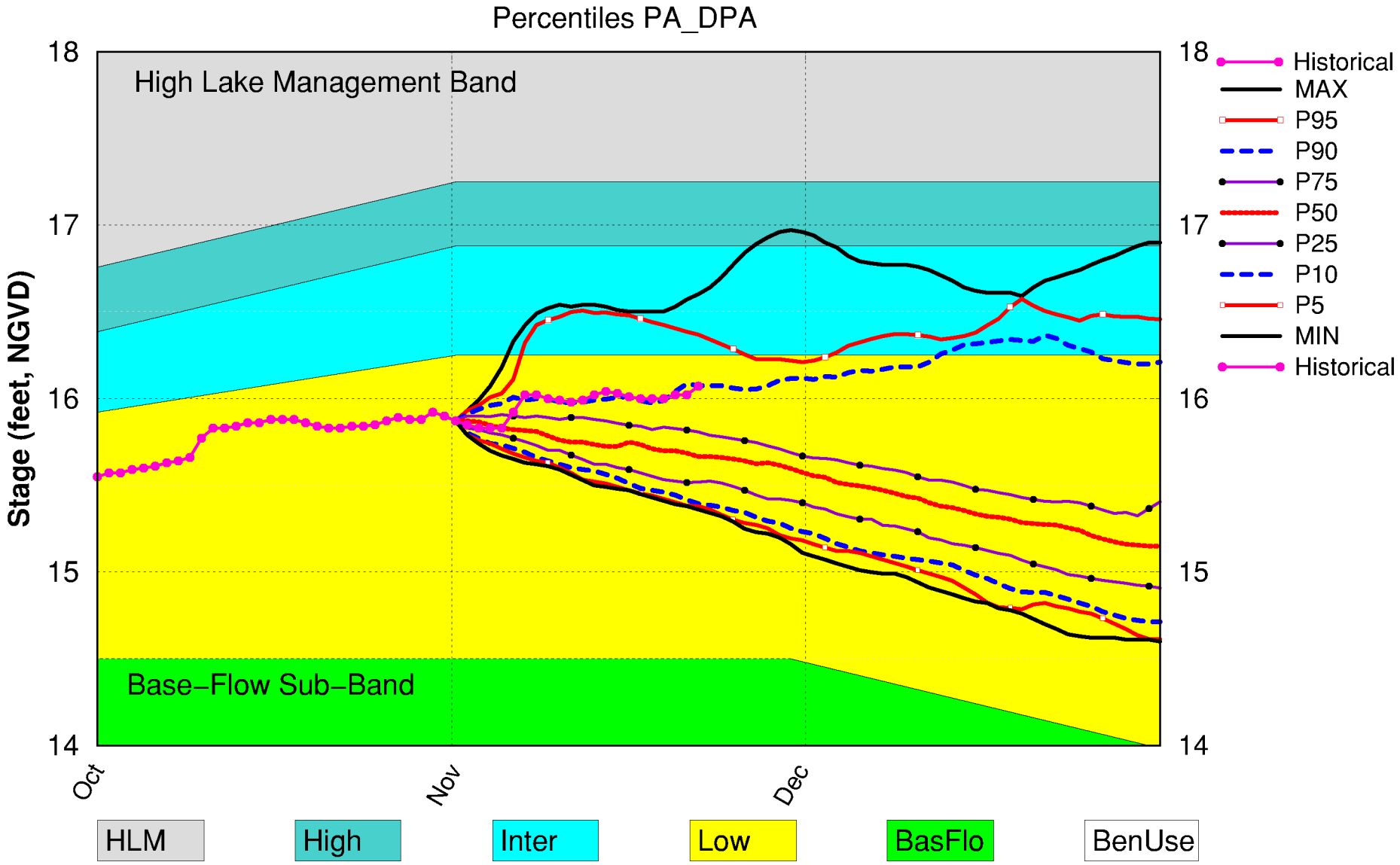
Status for week ending 11/22/2021:

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 Drought Index for LOK Tributary Conditions	-1.58 (Dry)	M
	CPC Precipitation Outlook	1 month: Below Normal	M
		3 months: Below Normal	H
	LOK Seasonal Net Inflow Outlook	-0.18 ft	H
	ENSO Forecast	Extremely Dry	
	LOK Multi-Seasonal Net Inflow Outlook	2.55 ft	M
	ENSO Forecast	Normal	
WCAs	WCA 1: 3 Station Average (Sites 1-7, 1-8T and 1-9)	Above Line 1 (17.49 ft)	L
	WCA 2A: Site 2-17	Above Line 1 (13.52 ft)	L
	WCA-3A: 3 Station Average (Sites 63, 64, and 65)	Above Line 1 (10.54 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.

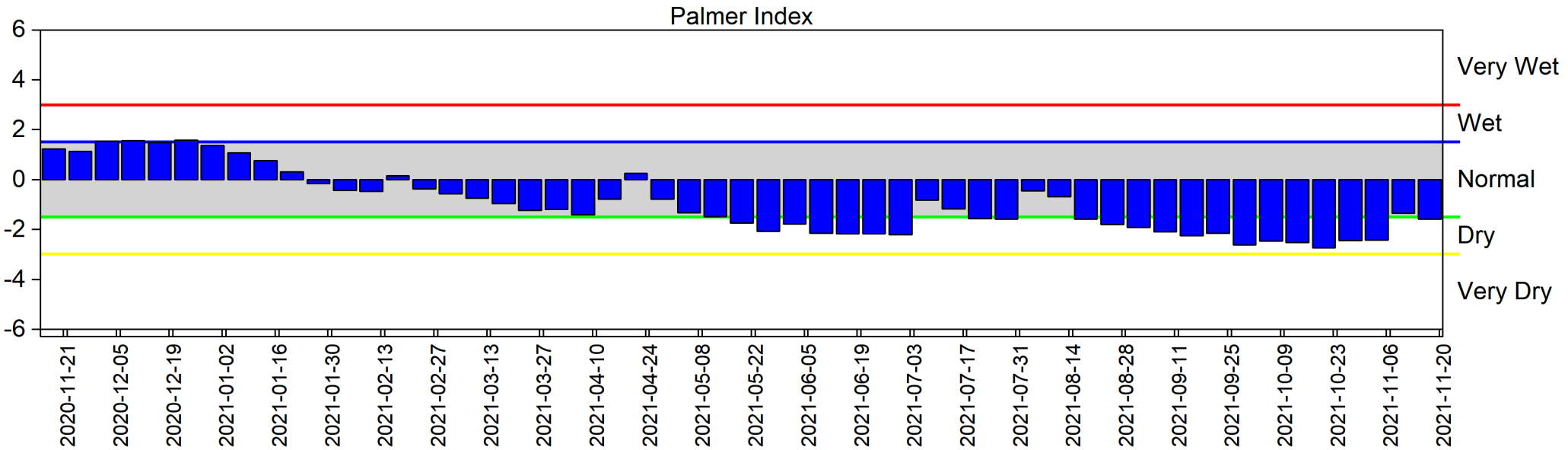
Lake Okeechobee SFWMM Nov 2021 Position Analysis

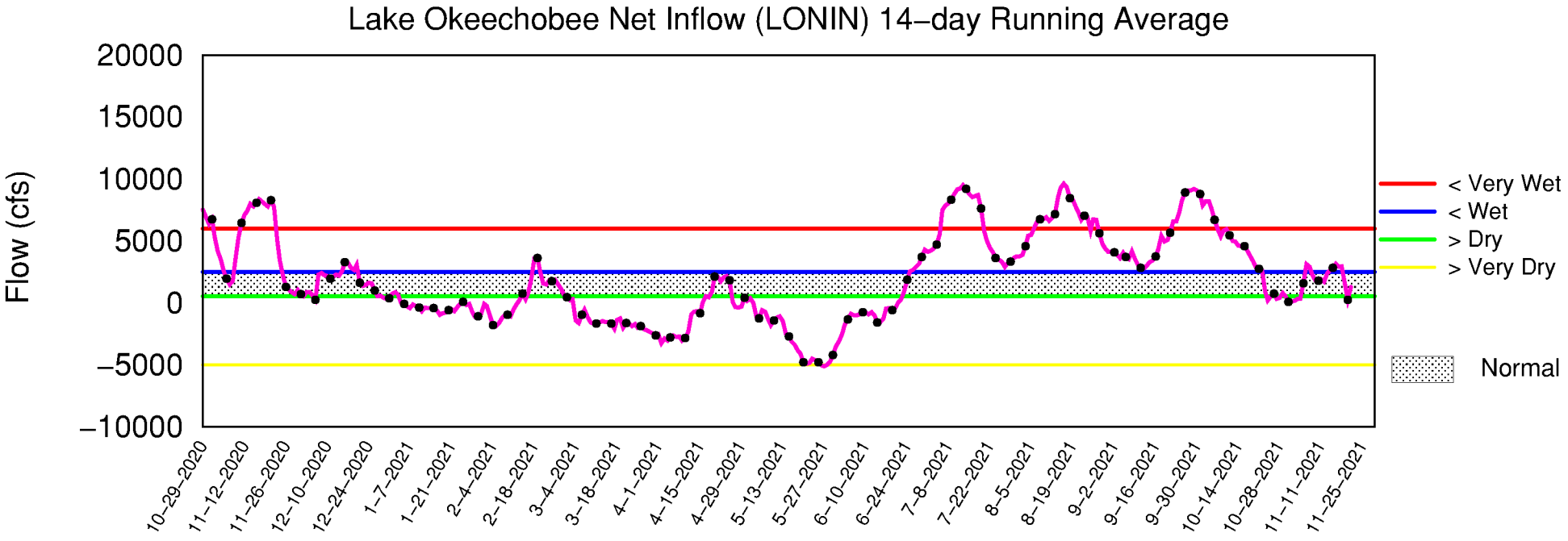


(See assumptions on the Position Analysis Results website)

Mon Nov 22 2021

Tributary Basin Condition Indicators as of November 22 2021





Mon Nov 22 13:36:11 EST 2021

2008 LORS

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

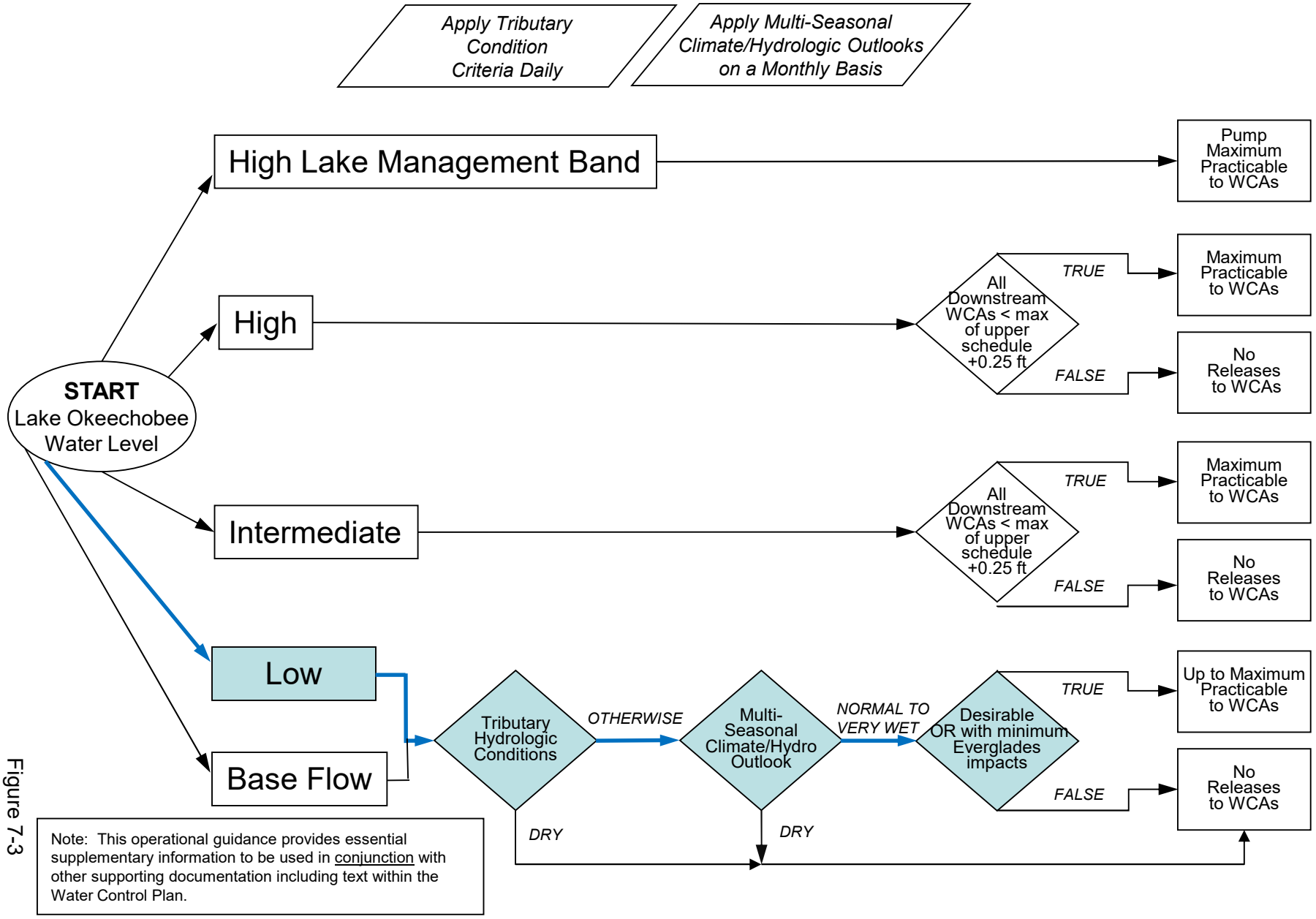


Figure 7-3

2008 LORS

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

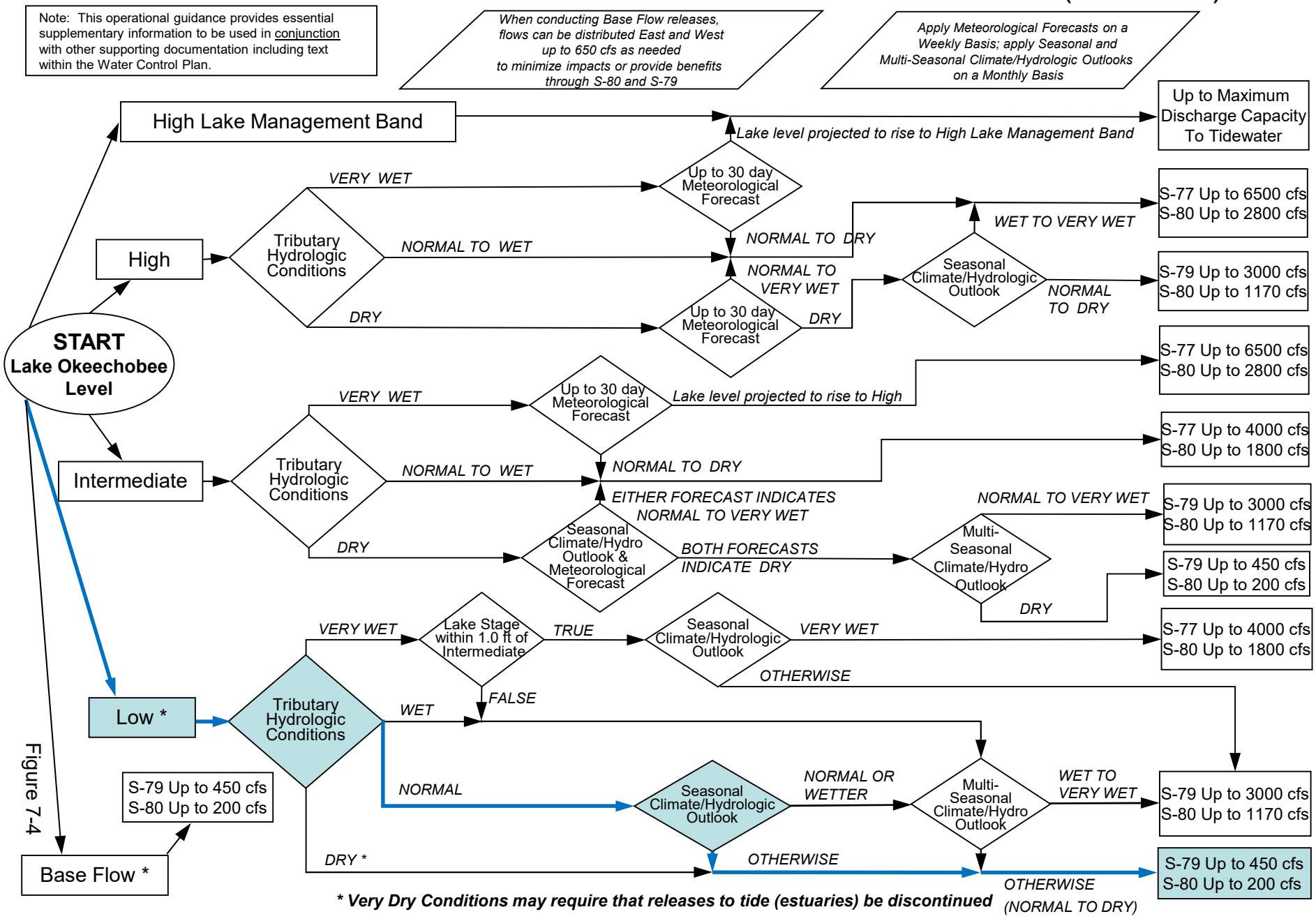
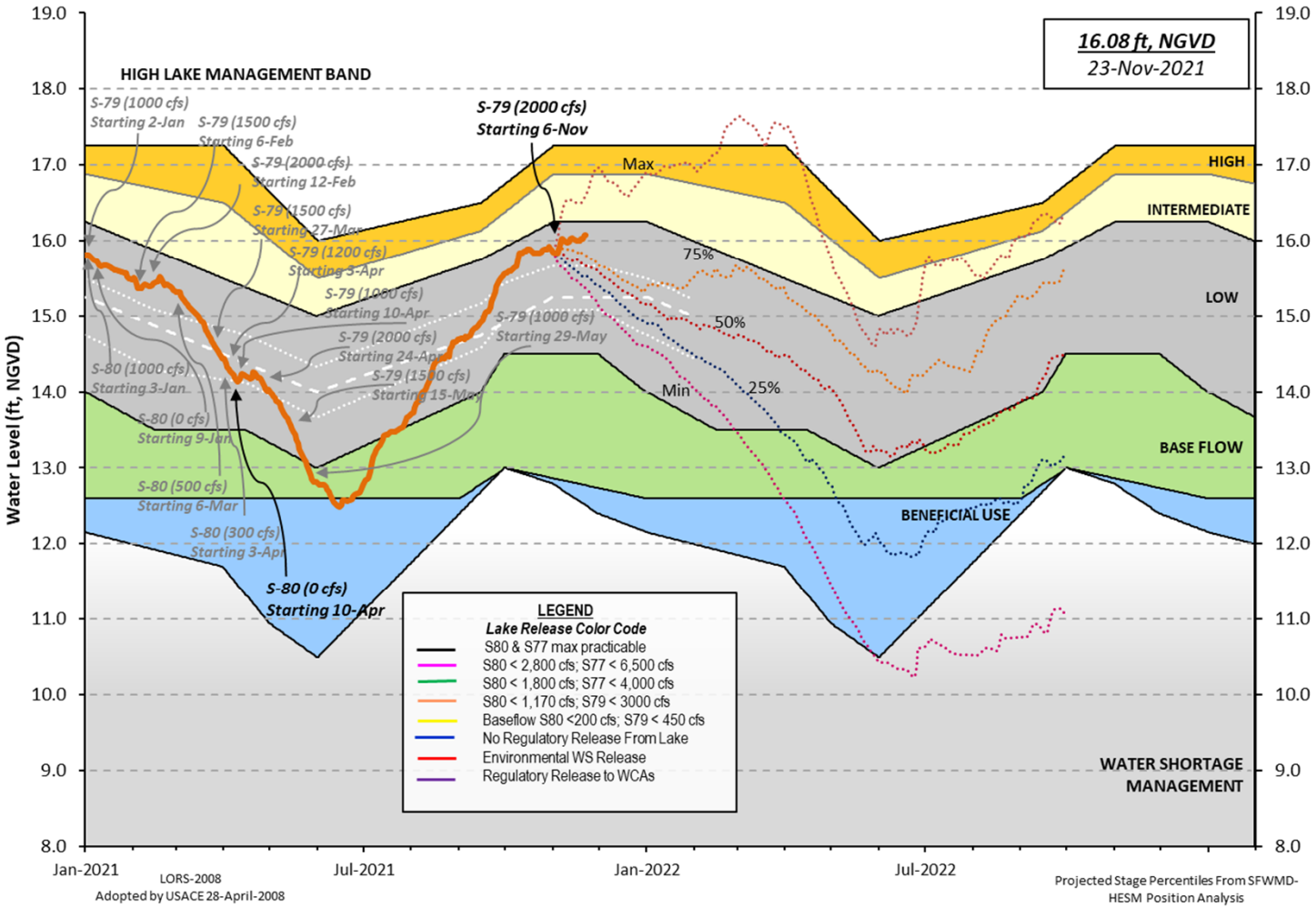


Figure 7-4

Lake Okeechobee Water Level History and Projected Stages



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

Data Ending 2400 hours 21 NOV 2021

Okeechobee Lake Regulation	Elevation (ft-NGVD)	Last Year (ft-NGVD)	2YRS Ago (ft-NGVD)	
*Okeechobee Lake Elevation	16.07	16.28	13.16	(Official Elv)

Bottom of High Lake Mngmt= 17.25 Top of Water Short Mngmt= 12.52
Currently in Operational Management Band

Simulated Average LORS2008 [1965-2000] 13.85
Difference from Average LORS2008 2.22

21NOV (1965-2007) Period of Record Average 14.91
Difference from POR Average 1.15

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

++Navigation Depth (Based on 2007 Channel Condition Survey) Route 1 ÷ 10.01'
++Navigation Depth (Based on 2008 Channel Condition Survey) Route 2 ÷ 8.21'
Bridge Clearance = 49.13'

---

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

L001	L005	L006	LZ40	S4	S352	S308	S133
16.00	16.08	16.08	16.04	16.15	16.17	16.01	15.93

*Combination Okeechobee Avg-Daily Lake Average = 16.07 (*See Note)

Okeechobee Inflows (cfs):

S65E	728	S65EX1	0	Fisheating Cr	159
S154	27	S191	0	S135 Pumps	110
S84	171	S133 Pumps	0	S2 Pumps	0
S84X	51	S127 Pumps	0	S3 Pumps	0
S71	173	S129 Pumps	22	S4 Pumps	0
S72	0	S131 Pumps	11	C5	0

Total Inflows: 1451

Okeechobee Outflows (cfs):

S135 Culverts	-NR-	S354	0	S77	1140
S127 Culverts	0	S351	0	S308	2
S129 Culverts	0	S352	0		
S131 Culverts	0	L8 Canal Pt	-NR-		

Total Outflows: 1142

****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	0.17	S308	-NR-

Average Pan Evap x 0.75 Pan Coefficient = -NR-" = -NR-'

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 11344 cfs or 22500 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:	13.43	15.87	0	0	0	0	0	0				(cfs)
S193:												
S191:	19.42	15.86	0	0.0	0.0	0.0						
S135 Pumps:	13.34	15.86	110	37	24	18	37					(cfs)
S135 Culverts:			-NR-	-NR-	-NR-							
North West Shore												
S65E:	20.97	15.76	728	0.4	0.4	0.1	0.3	0.8	0.4			
S65EX1:	20.97	15.76	0									
S127 Pumps:	13.44	15.93	0	0	0	0	0	0				(cfs)
S127 Culvert:			0	0.0								
S129 Pumps:	12.83	16.02	22	24	0	0						(cfs)
S129 Culvert:			0	0.0								
S131 Pumps:	12.78	16.03	11	12	0							(cfs)
S131 Culvert:			0									
Fisheating Creek												
nr Palmdale		31.41	159									
nr Lakeport												
C5:		-NR-	0	-NR-	-NR-	-NR-						
South Shore												
S4 Pumps:	11.26	16.14	0	0	0	0						(cfs)
S169:		-NR-	-NR-	-NR-	-NR-	-NR-						
S310:	16.06		-0									
S3 Pumps:	9.97	16.19	0	0	0	0						(cfs)
S354:	16.19	9.97	0	0.0	0.0							
S2 Pumps:	9.61	-NR-	0	-NR-	-NR-	-NR-	-NR-					(cfs)
S351:	-NR-	9.61	0	0.0	0.0	0.0						
S352:	16.16	11.45	0	0.1	0.0							
C10A:	-NR-	16.41		8.0	8.0	8.0	0.0	0.0				
L8 Canal PT			-NR-									

S351 and S352 Temporary Pumps/S354 Spillway

S351:	9.61	-NR-	0	-NR-	-NR-	-NR-	-NR-	-NR-	-NR-		
S352:	11.45	16.16	0	-NR-	-NR-	-NR-	-NR-				
S354:	9.97	16.19	0	-NR-	-NR-	-NR-	-NR-				

Caloosahatchee River (S77, S78, S79)								
S47B:	13.28	12.88		0.0	0.5			
S47D:	12.88	11.21	0	0.0				
S77:								
Spillway and Sector Preferred Flow:								
	15.91	11.10	1134	0.0	2.5	2.5	0.0	
Flow Due to Lockages+:			6					
S78:								

```
    Spillway and Sector Flow:
              11.10      3.01    1286    1.0  0.0  2.5  0.5
    Flow Due to Lockages+:           7

  S79:
    Spillway and Sector Flow:
               3.17      1.81    1836    0.0  0.0  0.0  2.5  2.5  2.3  0.0  0.0
    Flow Due to Lockages+:           9
    Percent of flow from S77        62%
    Chloride            (ppm)      0


St. Lucie Canal (S308, S80)
  S308:
    Spillway and Sector Preferred Flow:
              16.06     14.37       0  0.0  0.0  0.0  0.0
    Flow Due to Lockages+:           2

  S153:        18.90     14.16      31    0.0  0.0
  S80:
    Spillway and Sector Flow:
              14.46      2.31     442    0.0  0.0  0.0  0.5  0.0  0.0  0.0
    Flow Due to Lockages+:          11
    Percent of flow from S308        0%

  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:	2.49	2.50	2.51	33	4
S78:	3.19	3.32	3.33	23	1
S79:	3.35	3.36	3.45	313	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:	1.15	2.04	2.04	8	2
S80:	10.25	12.11	12.17	329	1
Okeechobee Average (Sites S78, S79 and S80 not included)	1.82	0.35	0.35		
Oke Nexrad Basin Avg	-NR-	0.00	0.00		

```
Okeechobee Lake Elevations  21 NOV 2021          16.07 Difference from 21NOV21
   21NOV21  -1 Day  =       20 NOV 2021          16.02            -0.05
```

21NOV21	-2 Days =	19 NOV 2021	16.02	-0.05
21NOV21	-3 Days =	18 NOV 2021	16.00	-0.07
21NOV21	-4 Days =	17 NOV 2021	16.00	-0.07
21NOV21	-5 Days =	16 NOV 2021	16.00	-0.07
21NOV21	-6 Days =	15 NOV 2021	16.01	-0.06
21NOV21	-7 Days =	14 NOV 2021	16.03	-0.04
21NOV21	-30 Days =	22 OCT 2021	15.84	-0.23
21NOV21	-1 Year =	21 NOV 2020	16.28	0.21
21NOV21	-2 Year =	21 NOV 2019	13.16	-2.91

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
21NOV21	Today =	21 NOV 2021	2223	MON	12478
21NOV21	-1 Day =	20 NOV 2021	1291	SUN	587
21NOV21	-2 Days =	19 NOV 2021	1361	SAT	5435
21NOV21	-3 Days =	18 NOV 2021	2769	FRI	1288
21NOV21	-4 Days =	17 NOV 2021	2681	THU	1518
21NOV21	-5 Days =	16 NOV 2021	2601	WED	-1488
21NOV21	-6 Days =	15 NOV 2021	2389	TUE	-3408
21NOV21	-7 Days =	14 NOV 2021	2483	MON	-1893
21NOV21	-8 Days =	13 NOV 2021	2084	SUN	5454
21NOV21	-9 Days =	12 NOV 2021	1141	SAT	6705
21NOV21	-10 Days =	11 NOV 2021	1375	FRI	2168
21NOV21	-11 Days =	10 NOV 2021	1197	THU	-2168
21NOV21	-12 Days =	09 NOV 2021	1236	WED	-NR-
21NOV21	-13 Days =	08 NOV 2021	1529	TUE	-NR-

S65E

		Average Flow over previous 14 days			Avg-Daily Flow
21NOV21	Today=	21 NOV 2021	1474	MON	826
21NOV21	-1 Day =	20 NOV 2021	1533	SUN	1141
21NOV21	-2 Days =	19 NOV 2021	1578	SAT	1270
21NOV21	-3 Days =	18 NOV 2021	1613	FRI	1397
21NOV21	-4 Days =	17 NOV 2021	1610	THU	1493
21NOV21	-5 Days =	16 NOV 2021	1614	WED	1572
21NOV21	-6 Days =	15 NOV 2021	1611	TUE	1627
21NOV21	-7 Days =	14 NOV 2021	1609	MON	1619
21NOV21	-8 Days =	13 NOV 2021	1611	SUN	1629
21NOV21	-9 Days =	12 NOV 2021	1614	SAT	1632
21NOV21	-10 Days =	11 NOV 2021	1618	FRI	1612
21NOV21	-11 Days =	10 NOV 2021	1628	THU	1603
21NOV21	-12 Days =	09 NOV 2021	1641	WED	1596
21NOV21	-13 Days =	08 NOV 2021	1659	TUE	1615

S65EX1

		Average Flow over previous 14 days			Avg-Daily Flow
21NOV21	Today=	21 NOV 2021	0	MON	0
21NOV21	-1 Day =	20 NOV 2021	0	SUN	0
21NOV21	-2 Days =	19 NOV 2021	0	SAT	0
21NOV21	-3 Days =	18 NOV 2021	0	FRI	0
21NOV21	-4 Days =	17 NOV 2021	0	THU	0
21NOV21	-5 Days =	16 NOV 2021	0	WED	0
21NOV21	-6 Days =	15 NOV 2021	0	TUE	0
21NOV21	-7 Days =	14 NOV 2021	0	MON	0
21NOV21	-8 Days =	13 NOV 2021	0	SUN	0
21NOV21	-9 Days =	12 NOV 2021	0	SAT	0
21NOV21	-10 Days =	11 NOV 2021	0	FRI	0
21NOV21	-11 Days =	10 NOV 2021	0	THU	0
21NOV21	-12 Days =	09 NOV 2021	0	WED	0
21NOV21	-13 Days =	08 NOV 2021	0	TUE	0

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)
21 NOV 2021	2272	2729	2568	3669
20 NOV 2021	1147	1682	2031	3498
19 NOV 2021	1756	2086	2540	4803
18 NOV 2021	2618	2991	2562	4597
17 NOV 2021	2989	-NR-	3638	4873
16 NOV 2021	1552	1838	2609	3698
15 NOV 2021	2320	2163	1954	3945
14 NOV 2021	751	899	2491	4766
13 NOV 2021	1945	2342	2160	3720
12 NOV 2021	19	291	1959	4260
11 NOV 2021	11	552	1793	4221
10 NOV 2021	7	229	1572	3792
09 NOV 2021	152	297	2117	5475
08 NOV 2021	464	1225	2416	7160

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)
21 NOV 2021	-0	0	0	0	-NR-
20 NOV 2021	66	0	0	0	-NR-
19 NOV 2021	2	0	0	0	-NR-
18 NOV 2021	6	0	0	0	-NR-
17 NOV 2021	5	0	0	0	-NR-
16 NOV 2021	9	0	0	0	-NR-
15 NOV 2021	4	0	0	0	-NR-
14 NOV 2021	118	0	0	0	-NR-
13 NOV 2021	81	0	0	0	-NR-
12 NOV 2021	-1	0	0	0	-NR-
11 NOV 2021	5	0	0	0	-NR-
10 NOV 2021	-0	0	0	0	-NR-
09 NOV 2021	10	0	0	0	-NR-
08 NOV 2021	3	0	0	0	-NR-

DATE	S-308 Discharge (ALL DAY) (AC-FT)	Below S-308 Discharge (ALL-DAY) (AC-FT)	S-80 Discharge (ALL-DAY) (AC-FT)
21 NOV 2021	5	-NR-	913
20 NOV 2021	6	-NR-	21
19 NOV 2021	13	-NR-	43
18 NOV 2021	10	-NR-	61
17 NOV 2021	16	-NR-	57
16 NOV 2021	10	-NR-	43
15 NOV 2021	8	-NR-	39
14 NOV 2021	9	-NR-	131
13 NOV 2021	13	-NR-	25
12 NOV 2021	9	-NR-	272
11 NOV 2021	12	-NR-	42
10 NOV 2021	8	-NR-	52
09 NOV 2021	-NR-	-NR-	38
08 NOV 2021	-NR-	-NR-	101

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

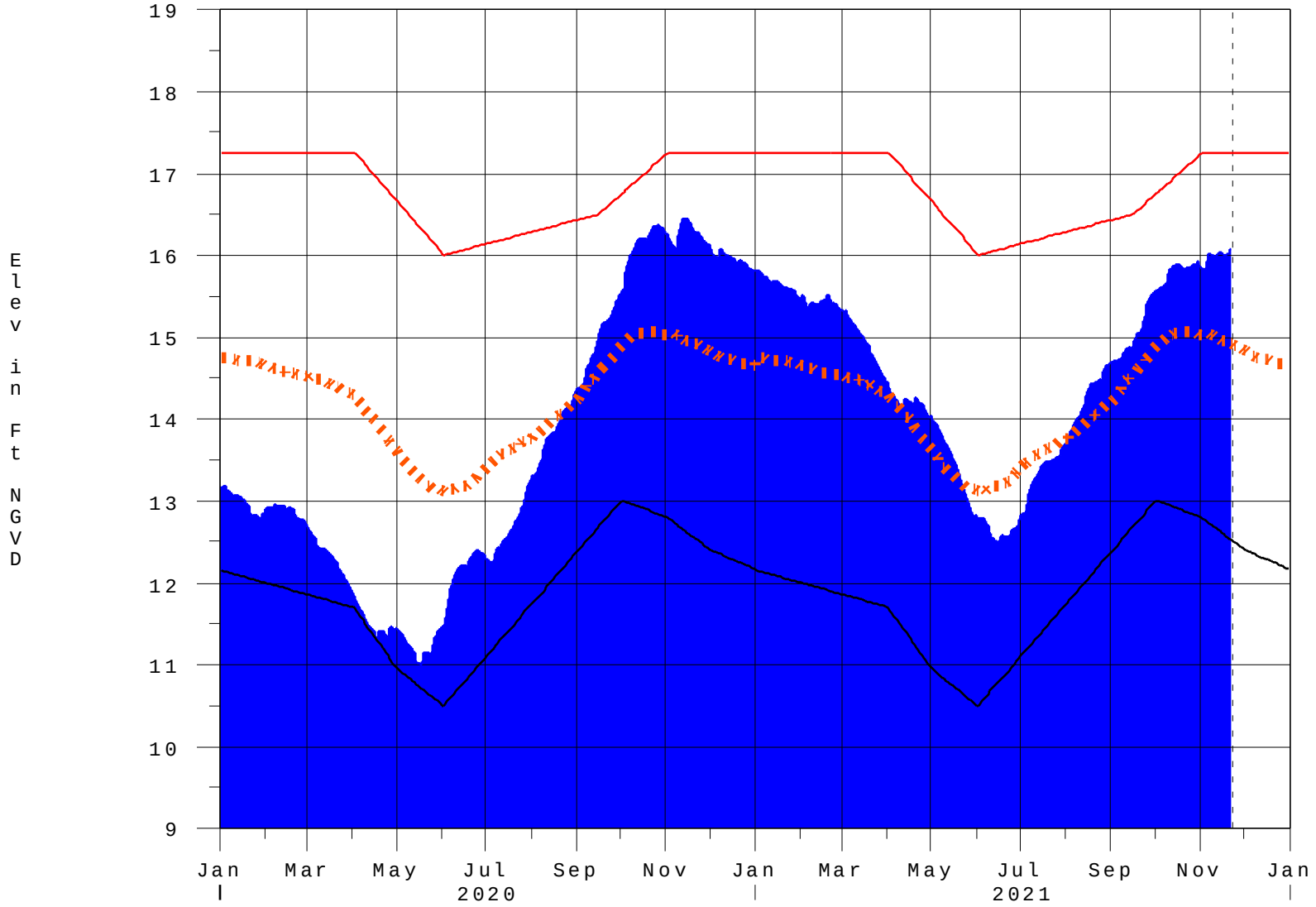
(I) - Flows preceeded by "I" signify an instantaneous
flow computed from the single value reported for the day

* 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 22NOV2021 @ 10:39 ** Preliminary Data - Subject to Revision **

Lake Okeechobee

22NOV21 11:00:26



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