Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 05/11/2020 (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 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 (May-Oct)	N/A	N/A	2.35	Very Wet	2.59	Very Wet	3.80	Very Wet
Multi Seasonal (May-Apr)	N/A	N/A	3.03	Wet	3.13	Wet	5.65	Very 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.

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

Tributary Hydrologic Conditions Graph:

-1960 cfs 14-day running average for Lake Okeechobee Net Inflow through 05/11/2020.
According to the classification in Tributary Hydrologic Conditions table, this condition is Dry.

-2.68 for Palmer Drought Index on 05/09/2020.
According to the classification in Tributary Hydrologic Conditions table, this condition is Dry.

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

LORS2008 Classification Tables:

Lake Okeechobee Stage on 05/11/2020

Lake Okeechobee Stage: **11.20 feet**

Lake Okeechobee Management Zone/Band		Bottom Elevation (feet, NGVD)	Current Lake Stage
High Lake Management Band		16.45	
Operational Band	High sub-band	15.86	
	Intermediate sub-band	15.17	
	Low sub-band	13.23	
Base Flow sub-band		12.60	
Beneficial Use sub-band		10.80	← 11.20 ft
Water Shortage Management Band			

Part C and Part D of LORS2008:

With Lake Okeechobee stage below the Base-Flow Sub-Band, Part C **nor** Part D of the 2008 LORS suggest releases to the WCAs or Estuaries required to manage lake stages.

Adaptive Protocol's Release Guidance: Caloosahatchee Estuary

The SFWMD's Lake Okeechobee Adaptive Protocol's Release Guidance suggests no S-77 release to the Caloosahatchee Estuary unless the Governing Board recommends otherwise.

LORS2008 Implementation on 05/11/2020 (ENSO Neutral Condition):

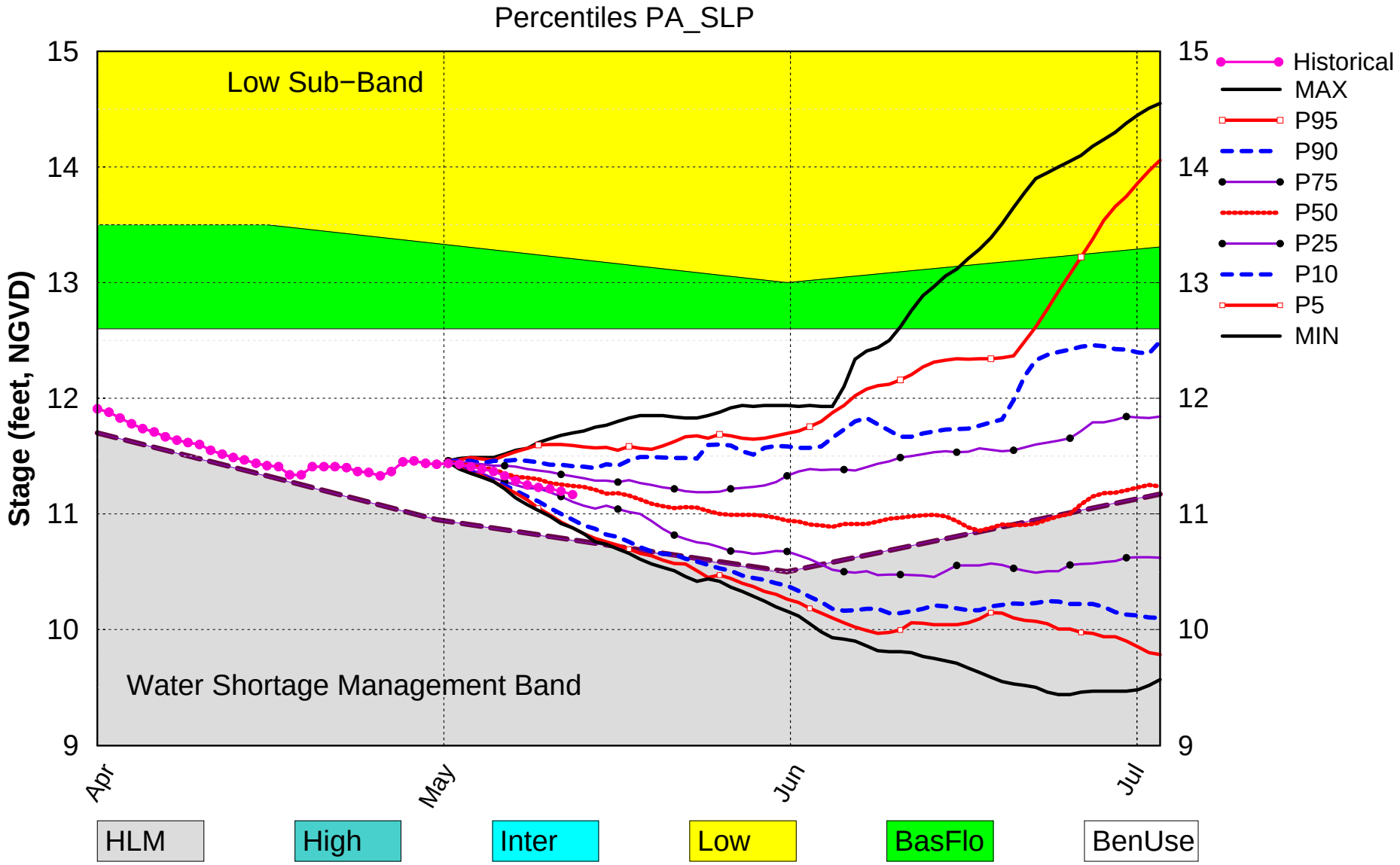
Status for week ending on 05/11/2020:

Water Supply Risk Evaluation

Area	Indicator	Value	Color Coded Scoring Scheme
LOK	Projected LOK Stage for the next two months	Beneficial Use Sub band	M
	Palmer Index for LOK Tributary Conditions	-2.68 (Extremely Dry)	H
	CPC Precipitation Outlook	1 month: Above Normal	L
		3 months: Above Normal	L
	LOK Seasonal Net Inflow Outlook	2.59 ft (Normal to Extremely Wet)	L
	ENSO Forecast (positive)		
	LOK Multi-Seasonal Net Inflow Outlook	3.13 ft (Normal)	M
	ENSO Forecast (positive)		
WCAs	WCA 1: Site 1-8C	Above Line 1 (15.78 ft)	L
	WCA 2A: Site S-11B	Below Line 2 (9.69 ft)	H
	WCA-3A: S-333 HW	Below Line 2 (7.10 ft)	H
LEC	Service Area 1	Year-Round Irrigation Rule in effect	L
	Service Area 2	Year-Round Irrigation Rule in effect	M
	Service Area 3	Year-Round Irrigation Rule in effect	H

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.

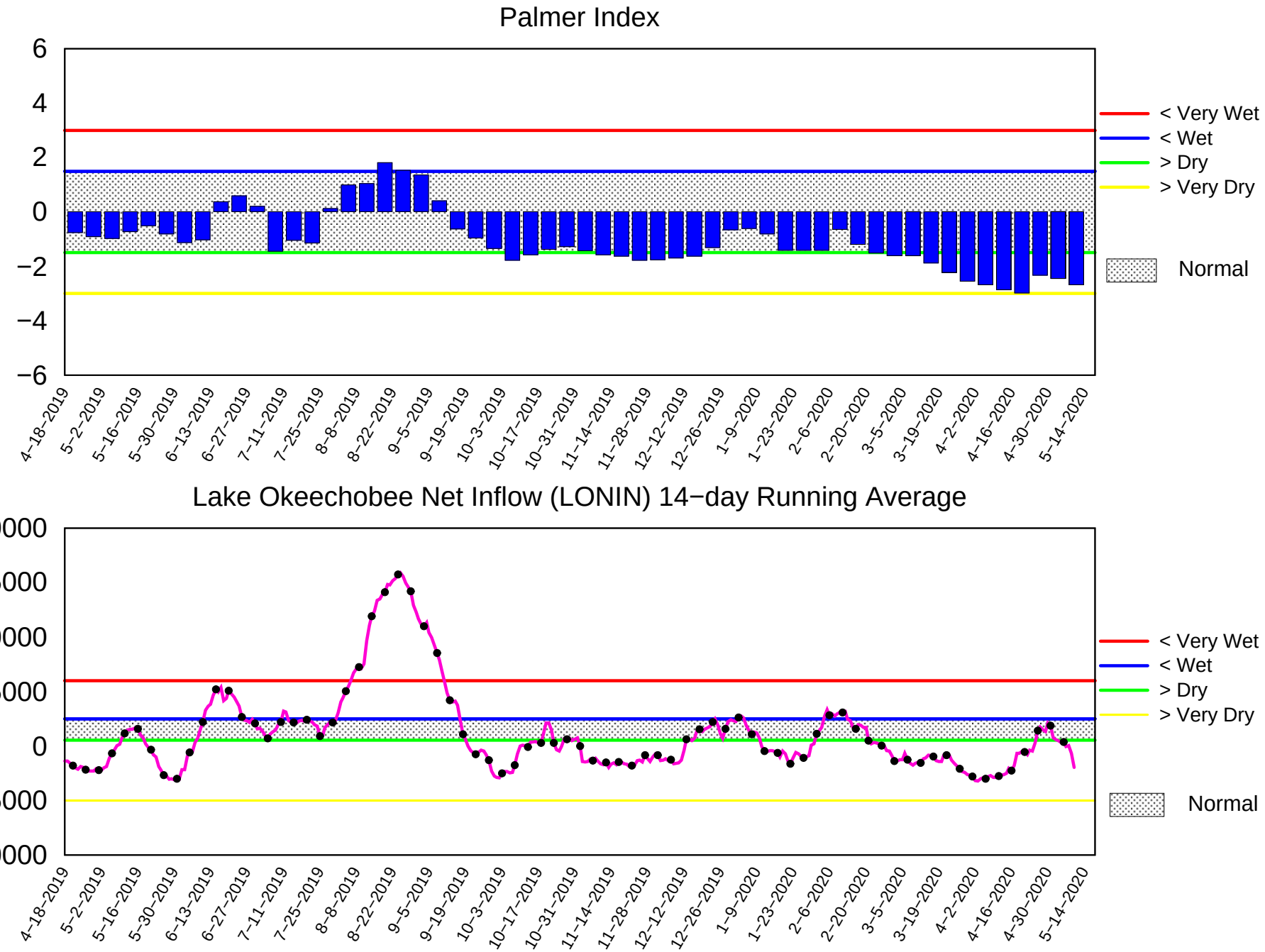
Lake Okeechobee SFWMM May 2020 Position Analysis



(See assumptions on the Position Analysis Results website)

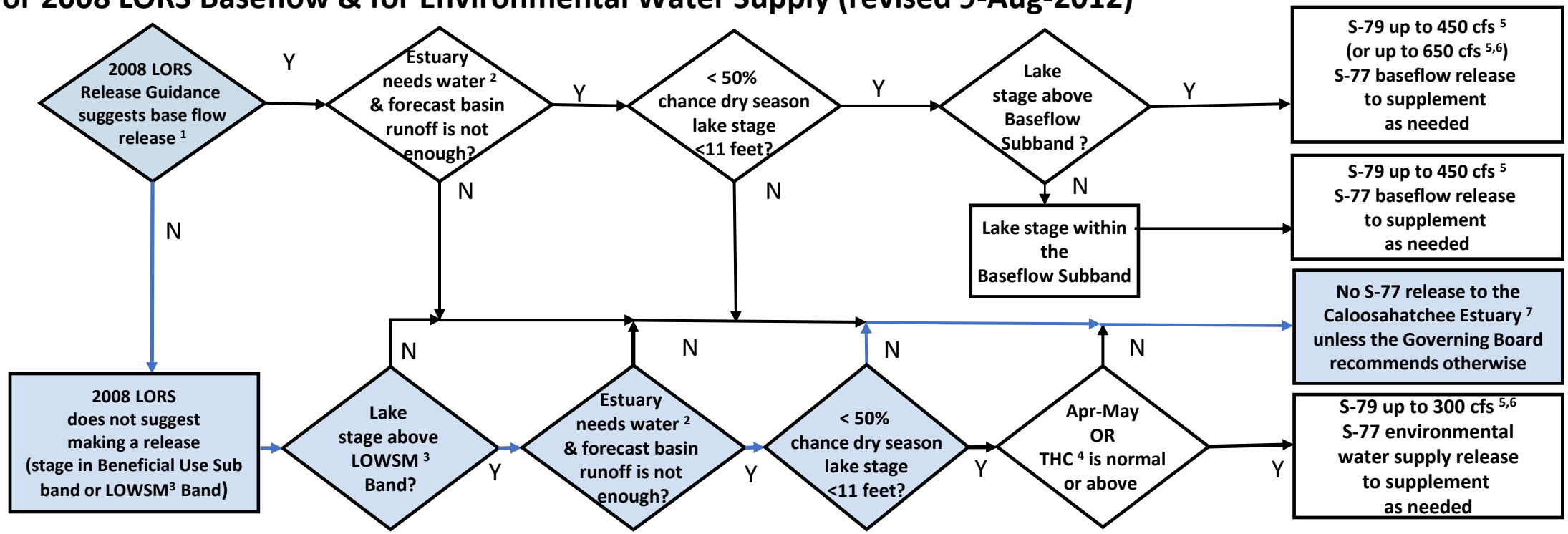
Tue May 12 08:37:33 EDT 2020

Tributary Basin Condition Indicators as of May 11 2020



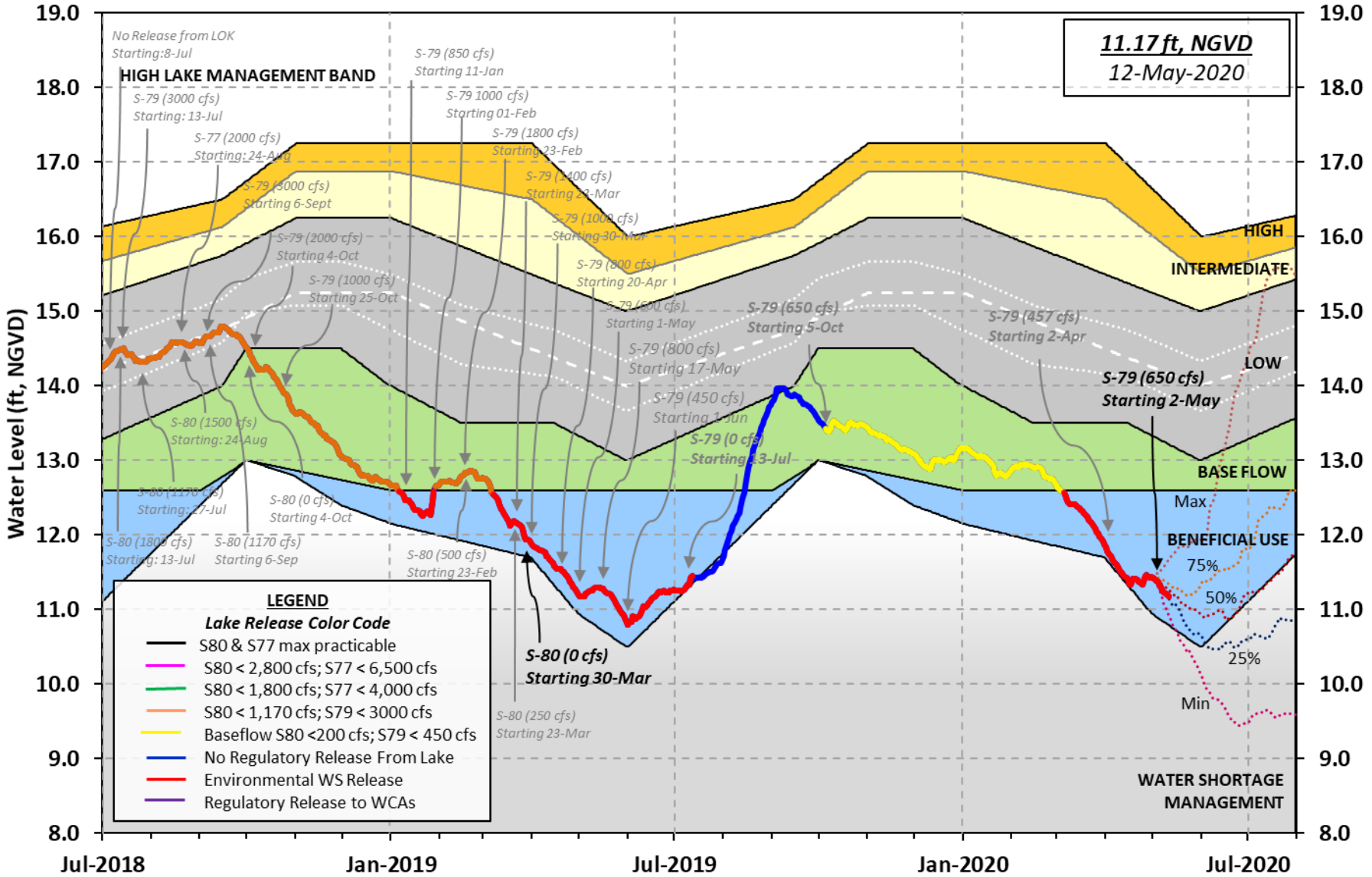
Mon May 11 13:37:25 EDT 2020

Flowchart to Guide Recommendations for Lake Okeechobee Releases to the Caloosahatchee Estuary for 2008 LORS Baseflow & for Environmental Water Supply (revised 9-Aug-2012)



[1]The 2008 LORS Release Guidance (Part D) can suggest baseflow releases in the Intermediate, Low, or Baseflow Subbands.
[2]Estuary "needs" water when the 30-day moving average salinity at I-75 bridge is projected to exceed 5 practical salinity units (psu) within 2 weeks.
[3]LOWSM = Lake Okeechobee Water Shortage Management.
[4]Tributary Hydrologic Condition (THC) is based on classification of Lake Okeechobee Net Inflow and Palmer Index.
[5]Can release less than the "up to" limit if lower release is sufficient to reach or sustain desired estuary salinity; cfs = cubic feet per second.
[6]After reviewing conditions in Water Conservation Areas (WCAs), Stormwater Treatment Areas (STAs), ENP, St. Lucie Estuary and Lake Okeechobee.
[7]Should this condition be reached, the Governing Board will be briefed at their next regularly scheduled meeting as part of the State of the Water Resources agenda item.

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 10 MAY 2020

Okeechobee Lake Regulation	Elevation (ft-NGVD)	Last Year (ft-NGVD)	2YRS Ago (ft-NGVD)
*Okeechobee Lake Elevation	11.20	11.28	12.89 (Official Elv)

Bottom of High Lake Mngmt= 16.45 Top of Water Short Mngmt= 10.80
Currently in Operational Management Band

Simulated Average LORS2008 [1965-2000] 12.16
Difference from Average LORS2008 -0.96

10MAY (1965-2007) Period of Record Average 13.36
Difference from POR Average -2.16

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

++Navigation Depth (Based on 2007 Channel Condition Survey) Route 1 ÷ 5.14'
++Navigation Depth (Based on 2008 Channel Condition Survey) Route 2 ÷ 3.34'
Bridge Clearance = 52.35'

---

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

L001	L005	L006	LZ40	S4	S352	S308	S133
11.13	11.27	11.25	11.19	11.33	11.28	11.11	11.08

*Combination Okeechobee Avg-Daily Lake Average = 11.20 (*See Note)

Okeechobee Inflows (cfs):

S65E	404	S65EX1	393	Fisheating Cr	-NR-
S154	0	S191	0	S135 Pumps	0
S84	142	S133 Pumps	0	S2 Pumps	0
S84X	0	S127 Pumps	0	S3 Pumps	0
S71	0	S129 Pumps	0	S4 Pumps	0
S72	0	S131 Pumps	0	C5	0

Total Inflows: 939

Okeechobee Outflows (cfs):

S135 Culverts	0	S354	281	S77	3
S127 Culverts	0	S351	362	S308	-105
S129 Culverts	0	S352	227		
S131 Culverts	0	L8 Canal Pt	44		

Total Outflows: 811

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

Okeechobee Pan Evaporation (inches):

S77	0.00	S308	0.07

Average Pan Evap x 0.75 Pan Coefficient = 0.03" = 0.00'

Lake Average Precipitation using NEXRAD: = 0.20" = 0.02'

Evaporation - Precipitation: = -0.17" = -0.01'
Evaporation - Precipitation using Lake Area of 730 square miles
is equal to 3411 cfs into the lake.
Lake Okeechobee (Change in Storage) Flow is -3630 cfs or -7200 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:	12.04	10.94	0	0	0	0	0	0	(cfs)		
S193:	------										
S191:	16.50	10.97	0	0.0	0.0	0.0					
S135 Pumps:	12.89	11.03	0	0	0	0	0		(cfs)		
S135 Culverts:			0	0.0	0.0						
North West Shore											
S65E:	20.91	10.94	404	0.0	0.0	0.5	0.0	0.0	0.0		
S65EX1:	20.91	10.94	393								
S127 Pumps:	11.84	11.10	0	0	0	0	0	0	(cfs)		
S127 Culvert:			0	0.0							
S129 Pumps:	12.19	11.72	0	0	0	0			(cfs)		
S129 Culvert:			0	0.0							
S131 Pumps:	12.24	11.45	0	0	0				(cfs)		
S131 Culvert:			0								
Fisheating Creek											
nr Palmdale	------	-NR-									
nr Lakeport	------										
C5:	------	-NR-	0	-NR-	-NR-	-NR-					
South Shore											
S4 Pumps:	11.40	11.47	0	0	0	0			(cfs)		
S169:	11.49	11.47	72	5.0	5.0	5.0					
S310:	11.30		9								
S3 Pumps:	------	11.42	0	-NR-	-NR-	-NR-			(cfs)		
S354:	11.42	------	281	2.0	2.0						
S2 Pumps:	9.91	-NR-	0	0	0	0	0		(cfs)		
S351:	-NR-	9.91	362	2.0	2.0	2.0					
S352:	11.26	10.35	227	2.0	2.0						
C10A:	-NR-	11.38		8.0	8.0	8.0	0.0	0.0			
L8 Canal PT		11.15	44								

S351 and S352 Temporary Pumps/S354 Spillway

S351:	9.91	-NR-	362	-NR-	-NR-	-NR-	-NR-	-NR-	-NR-		
S352:	10.35	11.26	227	-NR-	-NR-	-NR-	-NR-				
S354:	------	11.42	281	-NR-	-NR-	-NR-	-NR-				

Caloosahatchee River (S77, S78, S79)											
S47B:	11.44	11.05		0.0	0.0						
S47D:	10.98	10.98	12	6.4							

```
  S77:
    Spillway and Sector Preferred Flow:
               11.35     10.83       3  0.0  0.0  0.0  0.0
    Flow Due to Lockages+:           0

  S78:
    Spillway and Sector Flow:
               10.88      2.64     151    0.5  0.0  0.0  0.0
    Flow Due to Lockages+:           7

  S79:
    Spillway and Sector Flow:
                2.83      0.86     163    0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0
    Flow Due to Lockages+:           3
    Percent of flow from S77         2%
    Chloride             (ppm)       0


St. Lucie Canal (S308, S80)
  S308:
    Spillway and Sector Preferred Flow:
               11.13     11.15    -105  3.0  3.0  3.0  3.0
    Flow Due to Lockages+:           0

  S153:        18.91     10.93       0    0.0  0.0
  S80:
    Spillway and Sector Flow:
               11.16      0.89       0    0.0  0.0  0.0  0.0  0.0  0.0  0.0
    Flow Due to Lockages+:        -NR-
    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:	18.55	18.55	18.55	65	3
S78:	2.44	2.44	2.44	19	0
S79:	4.25	4.25	4.25	20	4
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:	46.30	46.30	46.30	57	6
S80:	7.99	7.99	7.99	70	6
Okeechobee Average	32.42	4.99	4.99		

(Sites S78, S79 and S80 not included)

Oke Nexrad Basin Avg	0.20	0.20	0.20

Okeechobee Lake Elevations		10 MAY 2020	11.20	Difference from 10MAY20
10MAY20	-1 Day =	09 MAY 2020	11.22	0.02
10MAY20	-2 Days =	08 MAY 2020	11.23	0.03
10MAY20	-3 Days =	07 MAY 2020	11.25	0.05
10MAY20	-4 Days =	06 MAY 2020	11.29	0.09
10MAY20	-5 Days =	05 MAY 2020	11.33	0.13
10MAY20	-6 Days =	04 MAY 2020	11.37	0.17
10MAY20	-7 Days =	03 MAY 2020	11.39	0.19
10MAY20	-30 Days =	10 APR 2020	11.52	0.32
10MAY20	-1 Year =	10 MAY 2019	11.28	0.08
10MAY20	-2 Year =	10 MAY 2018	12.89	1.69

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
10MAY20	Today =	10 MAY 2020	-1897	MON	-2714
10MAY20	-1 Day =	09 MAY 2020	-628	SUN	-1378
10MAY20	-2 Days =	08 MAY 2020	62	SAT	-2961
10MAY20	-3 Days =	07 MAY 2020	5	FRI	-5818
10MAY20	-4 Days =	06 MAY 2020	408	THU	-4338
10MAY20	-5 Days =	05 MAY 2020	390	WED	-4133
10MAY20	-6 Days =	04 MAY 2020	579	TUE	-1007
10MAY20	-7 Days =	03 MAY 2020	668	MON	-1974
10MAY20	-8 Days =	02 MAY 2020	845	SUN	-2356
10MAY20	-9 Days =	01 MAY 2020	1978	SAT	-478
10MAY20	-10 Days =	30 APR 2020	2230	FRI	2584
10MAY20	-11 Days =	29 APR 2020	1421	THU	-561
10MAY20	-12 Days =	28 APR 2020	1597	WED	-3235
10MAY20	-13 Days =	27 APR 2020	1832	TUE	1815

S65E

			Average Flow over previous 14 days		Avg-Daily Flow
10MAY20	Today=	10 MAY 2020	511	MON	466
10MAY20	-1 Day =	09 MAY 2020	502	SUN	334
10MAY20	-2 Days =	08 MAY 2020	515	SAT	313
10MAY20	-3 Days =	07 MAY 2020	516	FRI	476
10MAY20	-4 Days =	06 MAY 2020	500	THU	440
10MAY20	-5 Days =	05 MAY 2020	490	WED	683
10MAY20	-6 Days =	04 MAY 2020	464	TUE	779
10MAY20	-7 Days =	03 MAY 2020	430	MON	654
10MAY20	-8 Days =	02 MAY 2020	404	SUN	522
10MAY20	-9 Days =	01 MAY 2020	389	SAT	534
10MAY20	-10 Days =	30 APR 2020	373	FRI	524
10MAY20	-11 Days =	29 APR 2020	357	THU	522
10MAY20	-12 Days =	28 APR 2020	342	WED	496
10MAY20	-13 Days =	27 APR 2020	328	TUE	414

S65EX1

			Average Flow over previous 14 days		Avg-Daily Flow
10MAY20	Today=	10 MAY 2020	207	MON	393
10MAY20	-1 Day =	09 MAY 2020	196	SUN	280
10MAY20	-2 Days =	08 MAY 2020	194	SAT	277

10MAY20	-3 Days =	07 MAY 2020	191	FRI	210
10MAY20	-4 Days =	06 MAY 2020	186	THU	152
10MAY20	-5 Days =	05 MAY 2020	188	WED	0
10MAY20	-6 Days =	04 MAY 2020	188	TUE	0
10MAY20	-7 Days =	03 MAY 2020	188	MON	85
10MAY20	-8 Days =	02 MAY 2020	184	SUN	222
10MAY20	-9 Days =	01 MAY 2020	174	SAT	223
10MAY20	-10 Days =	30 APR 2020	158	FRI	221
10MAY20	-11 Days =	29 APR 2020	142	THU	220
10MAY20	-12 Days =	28 APR 2020	126	WED	261
10MAY20	-13 Days =	27 APR 2020	108	TUE	354

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)
10 MAY 2020	0	245	314	292
09 MAY 2020	834	681	256	17
08 MAY 2020	763	839	36	109
07 MAY 2020	1741	1794	218	17
06 MAY 2020	1275	1296	854	268
05 MAY 2020	1289	1410	621	1010
04 MAY 2020	1615	1682	766	1425
03 MAY 2020	1462	1487	1284	1803
02 MAY 2020	1117	1201	1197	1369
01 MAY 2020	1002	1039	904	1464
30 APR 2020	815	926	880	1548
29 APR 2020	720	855	744	963
28 APR 2020	148	237	602	904
27 APR 2020	1	-76	614	1236

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)
10 MAY 2020	19	718	450	-NR-	87
09 MAY 2020	80	0	0	0	70
08 MAY 2020	-16	0	0	0	-20
07 MAY 2020	395	504	248	210	99
06 MAY 2020	307	1985	975	684	129
05 MAY 2020	376	2072	1189	938	46
04 MAY 2020	255	1411	840	815	41
03 MAY 2020	104	769	0	732	12
02 MAY 2020	76	583	54	607	-61
01 MAY 2020	62	827	123	537	-47
30 APR 2020	12	377	104	119	87
29 APR 2020	-20	1138	215	311	-40
28 APR 2020	-94	569	0	0	-62
27 APR 2020	9	0	0	0	-96

DATE	S-308 Discharge (ALL DAY) (AC-FT)	Below S-308 Discharge (ALL-DAY) (AC-FT)	S-80 Discharge (ALL-DAY) (AC-FT)
10 MAY 2020	-1569	-208	-NR-
09 MAY 2020	-1012	-40	42
08 MAY 2020	696	193	26
07 MAY 2020	-607	-274	33
06 MAY 2020	609	154	41
05 MAY 2020	626	-48	-NR-

04 MAY 2020	-563	54	25
03 MAY 2020	-1635	18	40
02 MAY 2020	-1403	-54	47
01 MAY 2020	-640	-159	48
30 APR 2020	172	93	39
29 APR 2020	-7	94	9
28 APR 2020	-604	79	24
27 APR 2020	-1984	-222	31

*** 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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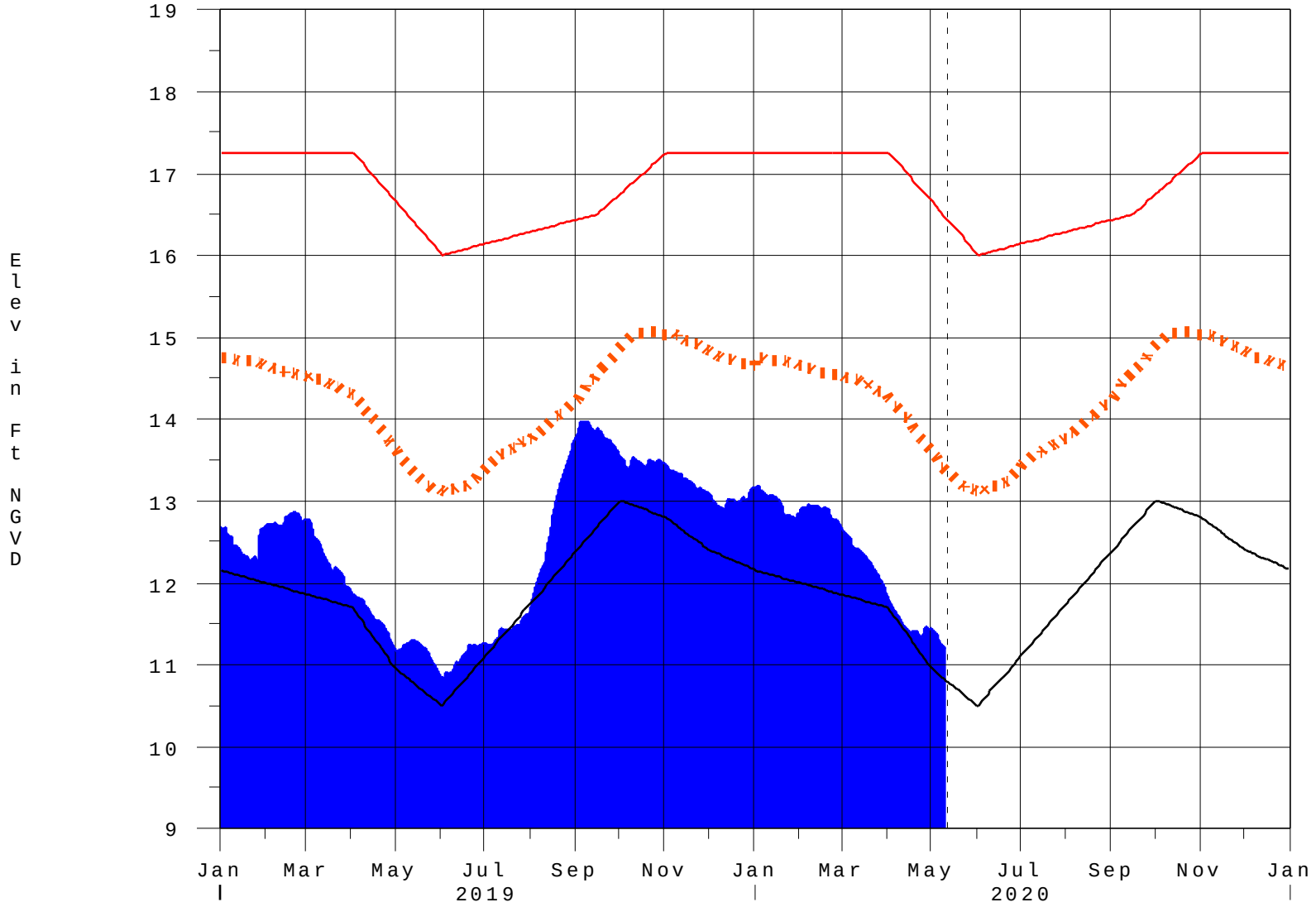
Report Generated 11MAY2020 @ 23:39 ** Preliminary Data - Subject to Revision **

Lake Okeechobee

11MAY20 13:30:21



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