



The State of New Hampshire  
**DEPARTMENT OF ENVIRONMENTAL SERVICES**



**Clark B. Freise, Assistant Commissioner**

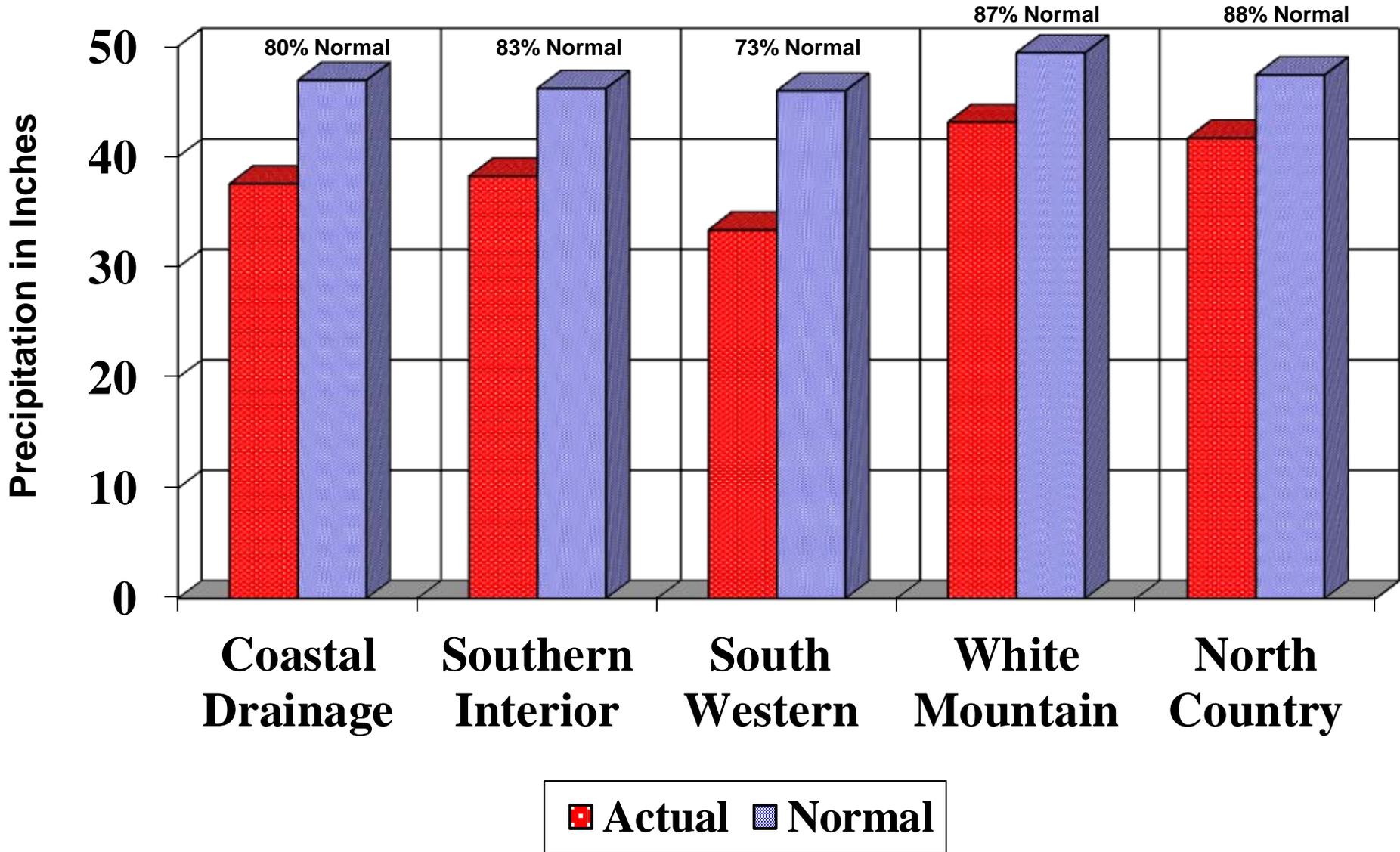
**AGGREGATED PRECIPITATION DATA for N.H.  
 DROUGHT MANAGEMENT AREAS**

	Actual Rainfall (inches)	Normal Rainfall (inches)	Deviation from Normal (inches)	Percent of Normal
<u>Coastal Drainage:</u> Rockingham, Strafford counties				
four month	12.70	15.79	-3.09	80%
six month	18.74	22.77	-4.04	82%
nine month	30.36	35.28	-4.92	86%
twelve month	37.54	46.93	-9.39	80%
<u>Southern Interior:</u> Belknap, Hillsborough, Merrimack counties				
four month	12.87	14.86	-1.99	87%
six month	18.72	21.78	-3.06	86%
nine month	30.00	34.09	-4.10	88%
twelve month	38.23	46.18	-7.94	83%
<u>South Western:</u> Cheshire, Sullivan counties				
four month	12.14	14.44	-2.30	84%
six month	14.38	21.09	-3.94	68%
nine month	23.57	33.37	-7.02	71%
twelve month	33.39	45.97	-9.81	73%
<u>White Mountain:</u> Carroll, Grafton counties				
four month	13.83	15.18	-1.35	91%
six month	20.52	22.49	-1.98	91%
nine month	30.97	35.88	-4.91	86%
twelve month	43.13	49.42	-6.29	87%
<u>North Country:</u> Coos county				
four month	12.36	13.76	-1.40	90%
six month	19.25	20.43	-1.18	94%
nine month	28.45	33.20	-4.75	86%
twelve month	41.68	47.41	-5.73	88%

four month period : February 2017 - May 2017  
 six month period : December 2016 - May 2017  
 nine month period : September 2016 - May 2017  
 twelve month period: June 2016 - May 2017

Source: Northeast River Forecast Center, NH Des Dam Bureau

# TWELVE MONTH AGGREGATED PRECIPITATION DATA for N.H. DROUGHT MANAGEMENT AREAS from June 2016 through May 2017



## MONTHLY PRECIPITATION DATA FOR N.H. COUNTIES



		2016						2017					
		JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MARCH	APRIL	MAY
<u>Coastal drainage</u>													
STRAFFORD	actual	2.58	3.06	2.04	1.92	5.47	3.36	3.35	2.65	3.42	3.74	3.62	1.65
	normal	4.16	3.99	3.73	3.74	4.38	4.50	3.77	3.20	3.30	4.17	4.22	4.10
	deviation	-1.58	-0.93	-1.69	-1.82	1.09	-1.14	-0.42	-0.55	0.12	-0.43	-0.60	-2.45
ROCKINGHAM	actual	1.94	2.38	2.36	2.63	6.25	3.62	3.11	2.96	3.21	3.99	4.01	1.76
	normal	4.10	3.77	3.54	3.76	4.34	4.30	3.73	3.27	3.30	4.19	4.19	4.10
	deviation	-2.16	-1.39	-1.18	-1.13	1.91	-0.68	-0.62	-0.31	-0.09	-0.20	-0.18	-2.34
Average	actual	2.26	2.72	2.20	2.28	5.86	3.49	3.23	2.81	3.32	3.87	3.82	1.71
	normal	4.13	3.88	3.64	3.75	4.36	4.40	3.75	3.24	3.30	4.18	4.21	4.10
	deviation	-1.87	-1.16	-1.44	-1.48	1.50	-0.91	-0.52	-0.43	0.02	-0.32	-0.39	-2.40
<u>Southern Interior</u>													
HILLSBOROUGH	actual	1.80	2.16	3.12	3.27	4.79	3.78	3.06	3.06	2.83	4.63	3.74	1.98
	normal	4.22	3.96	3.76	3.74	4.46	4.22	3.80	3.39	3.29	3.95	4.14	4.10
	deviation	-2.42	-1.80	-0.64	-0.47	0.33	-0.44	-0.74	-0.33	-0.46	0.68	-0.40	-2.12
MERRIMACK	actual	2.42	3.29	2.57	2.51	4.99	3.84	3.17	2.56	3.08	3.76	3.84	2.50
	normal	4.34	4.11	3.75	3.77	4.43	4.15	3.65	3.26	3.09	3.73	3.96	4.01
	deviation	-1.92	-0.82	-1.18	-1.26	0.56	-0.31	-0.48	-0.70	-0.01	0.03	-0.12	-1.51
BELKNAP	actual	2.95	3.47	2.93	1.78	4.81	4.07	3.25	2.43	3.21	3.20	3.53	2.32
	normal	4.25	4.08	3.78	3.65	4.49	4.03	3.58	3.08	3.03	3.58	3.75	3.95
	deviation	-1.30	-0.61	-0.85	-1.87	0.32	0.04	-0.33	-0.65	0.18	-0.38	-0.22	-1.63
Average	actual	2.39	2.97	2.87	2.52	4.86	3.90	3.16	2.68	3.04	3.86	3.70	2.27
	normal	4.27	4.05	3.76	3.72	4.46	4.13	3.68	3.24	3.14	3.75	3.95	4.02
	deviation	-1.88	-1.08	-0.89	-1.20	0.40	-0.24	-0.52	-0.56	-0.10	0.11	-0.25	-1.75
<u>South Western</u>													
CHESHIRE	actual	2.06	2.69	5.07	2.81	3.05	3.45	2.83	2.64	2.81	4.04	3.10	2.38
	normal	4.20	4.36	4.05	3.83	4.60	3.97	3.68	3.42	3.17	3.73	3.79	4.10
	deviation	-2.14	-1.67	1.02	-1.02	-1.55	-0.52	-0.85	-0.78	-0.36	0.31	-0.69	-1.72
SULLIVAN	actual	2.54	3.59	3.68	2.03	3.65	3.40	2.75	2.18	2.73	3.23	3.48	2.50
	normal	4.18	4.36	4.05	3.80	4.51	3.85	3.49	2.72	3.00	3.51	3.66	3.91
	deviation	-1.64	-0.77	-0.37	-1.77	-0.86	-0.45	-0.74	-0.90	-0.27	-0.28	-0.18	-1.41
Average	actual	2.30	3.14	4.38	2.42	3.35	3.43	2.79	-0.55	2.77	3.64	3.29	2.44
	normal	4.19	4.36	4.05	3.82	4.56	3.91	3.59	3.07	3.09	3.62	3.73	4.01
	deviation	-1.89	-1.22	0.33	-1.40	-1.21	-0.49	-0.80	-0.84	-0.32	0.02	-0.44	-1.57
<u>White Mountain</u>													
GRAFTON	actual	3.85	4.39	4.52	1.86	4.08	3.93	3.54	2.53	3.28	3.58	3.53	3.13
	normal	4.58	4.56	4.61	4.10	4.67	4.35	3.70	3.19	2.84	3.45	3.76	4.20
	deviation	-0.73	-0.17	-0.09	-2.24	-0.59	-0.42	-0.16	-0.66	0.44	0.13	-0.23	-1.07
CARROLL	actual	3.92	4.55	3.09	1.44	5.04	4.56	3.97	3.33	3.78	3.59	4.42	2.35
	normal	4.49	4.41	4.42	3.98	4.96	4.72	4.16	3.57	3.31	4.02	4.46	4.32
	deviation	-0.57	0.14	-1.33	-2.54	0.08	-0.16	-0.19	-0.24	0.47	-0.43	-0.04	-1.97
Average	actual	3.89	4.47	3.81	1.65	4.56	4.25	3.76	2.93	3.53	3.59	3.98	2.74
	normal	4.54	4.49	4.52	4.04	4.82	4.54	3.93	3.38	3.08	3.74	4.11	4.26
	deviation	-0.65	-0.02	-0.71	-2.39	-0.26	-0.29	-0.18	-0.45	0.46	-0.15	-0.14	-1.52
<u>North Country</u>													
COOS	actual	3.39	4.22	5.62	2.07	3.56	3.57	3.84	3.05	2.84	3.09	3.51	2.92
	normal	4.79	4.57	4.85	4.00	4.53	4.24	3.58	3.09	2.72	3.21	3.62	4.21
	deviation	-1.40	-0.35	0.77	-1.93	-0.97	-0.67	0.26	-0.04	0.12	-0.12	-0.11	-1.29

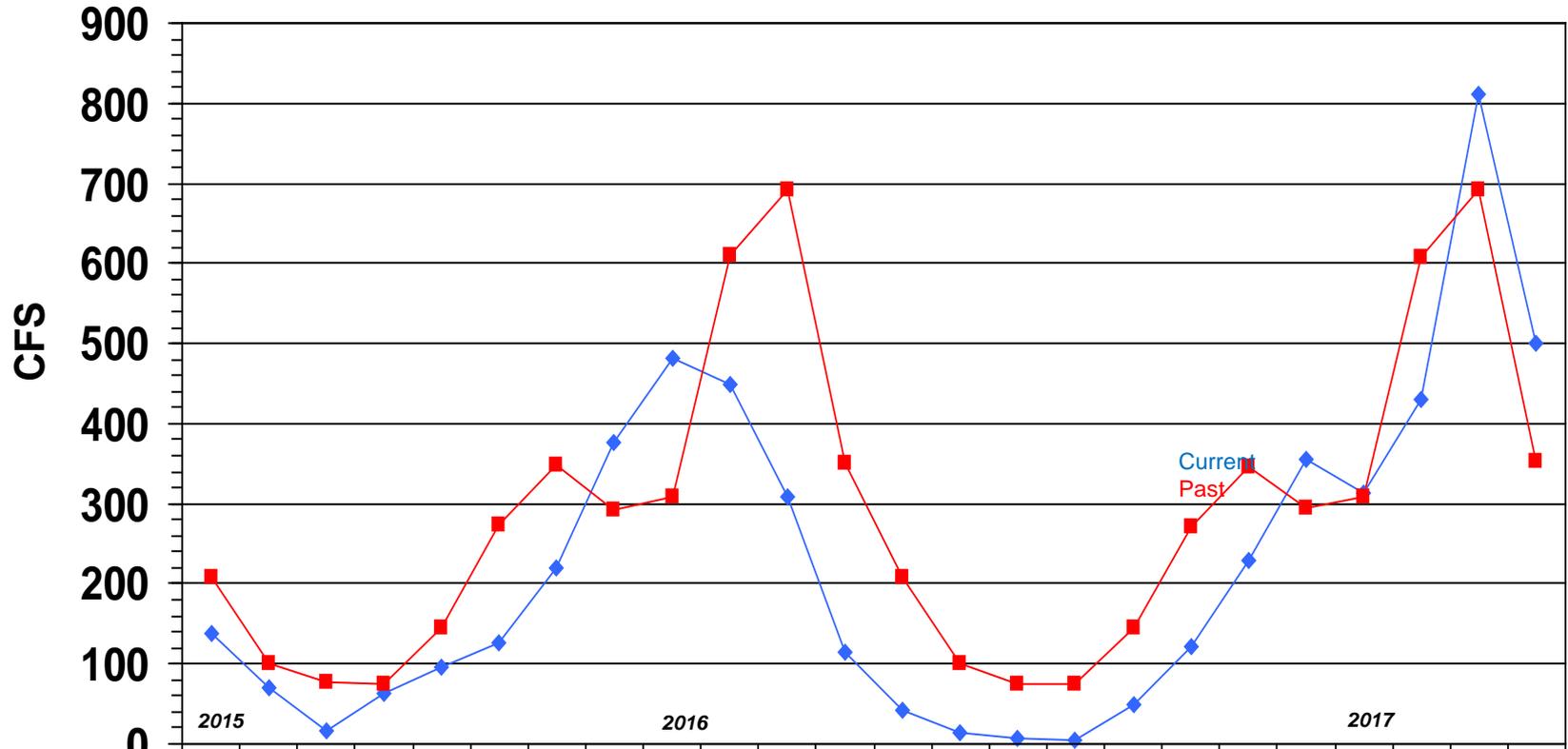
Source: Northeast River Forecast Center, NH DES Dam Bureau

# LAMPREY RIVER near NEWMARKET NH

## Gage# 01073500



### MONTHLY MEAN FLOW COMPARED TO MEAN OF MONTHLY FLOWS



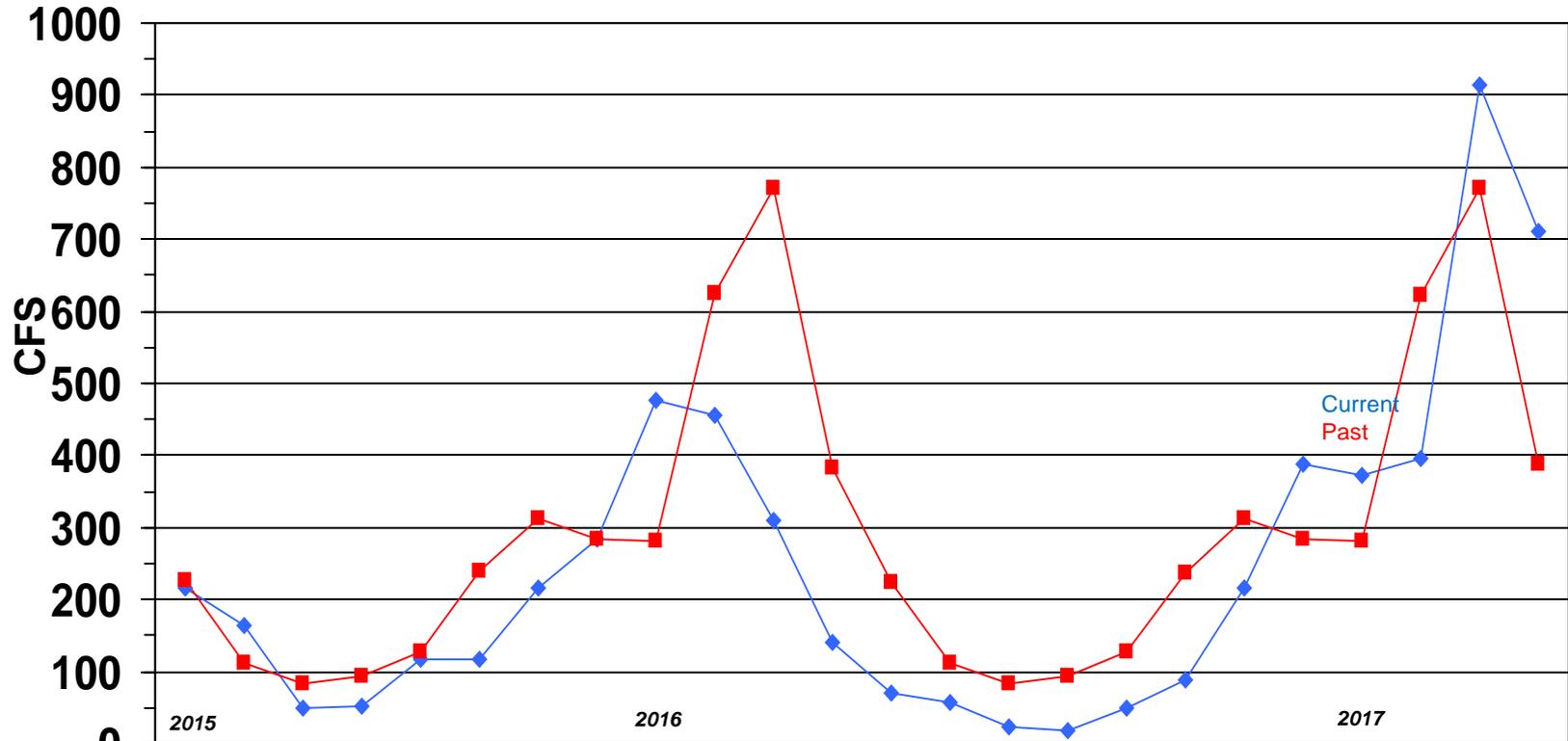
	2015	2016	2017																					
	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
◆ Monthly Mean Flow	137	70	17	63	95	127	219	376	481	450	308	115	43	14	7	5	50	121	230	355	314	429	811	500
■ Mean of Monthly Flows	209	101	76	75	146	273	349	293	309	609	691	350	207	100	75	74	145	271	347	294	309	607	692	352
% of Normal	66%	70%	23%	84%	65%	46%	63%	128%	156%	74%	45%	33%	21%	14%	9%	7%	34%	44%	66%	121%	102%	71%	117%	142%

# SOUHEGAN RIVER at MERRIMACK NH

## Gage# 01094000



### MONTHLY MEAN FLOW COMPARED TO MEAN OF MONTHLY FLOWS

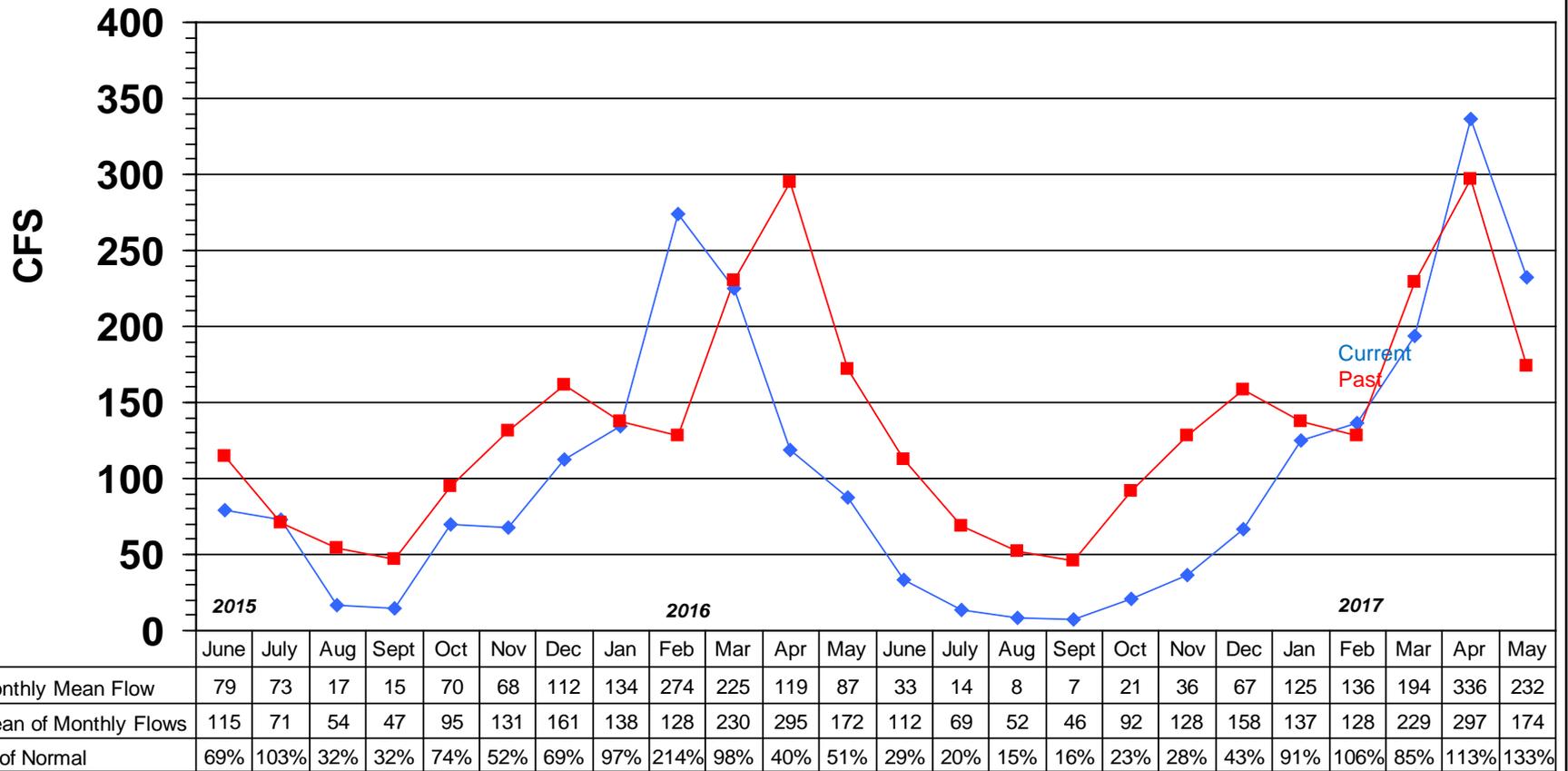


	2015	2016	2017																					
	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
◆ Monthly Mean Flow	216	165	50	52	116	118	216	285	476	457	309	141	71	58	23	17	50	89	217	388	373	395	914	710
■ Mean of Monthly Flows	227	112	83	94	128	239	313	283	281	626	770	384	225	111	83	93	127	237	312	284	282	623	772	388
% of Normal	95%	147%	61%	55%	91%	49%	69%	101%	169%	73%	40%	37%	52%	52%	28%	18%	39%	37%	70%	137%	132%	63%	118%	183%

# SOUCOOK RIVER at PEMBROKE ROAD near CONCORD NH, Gage# 01089100



MONTHLY MEAN FLOW COMPARED TO MEAN OF MONTHLY FLOWS

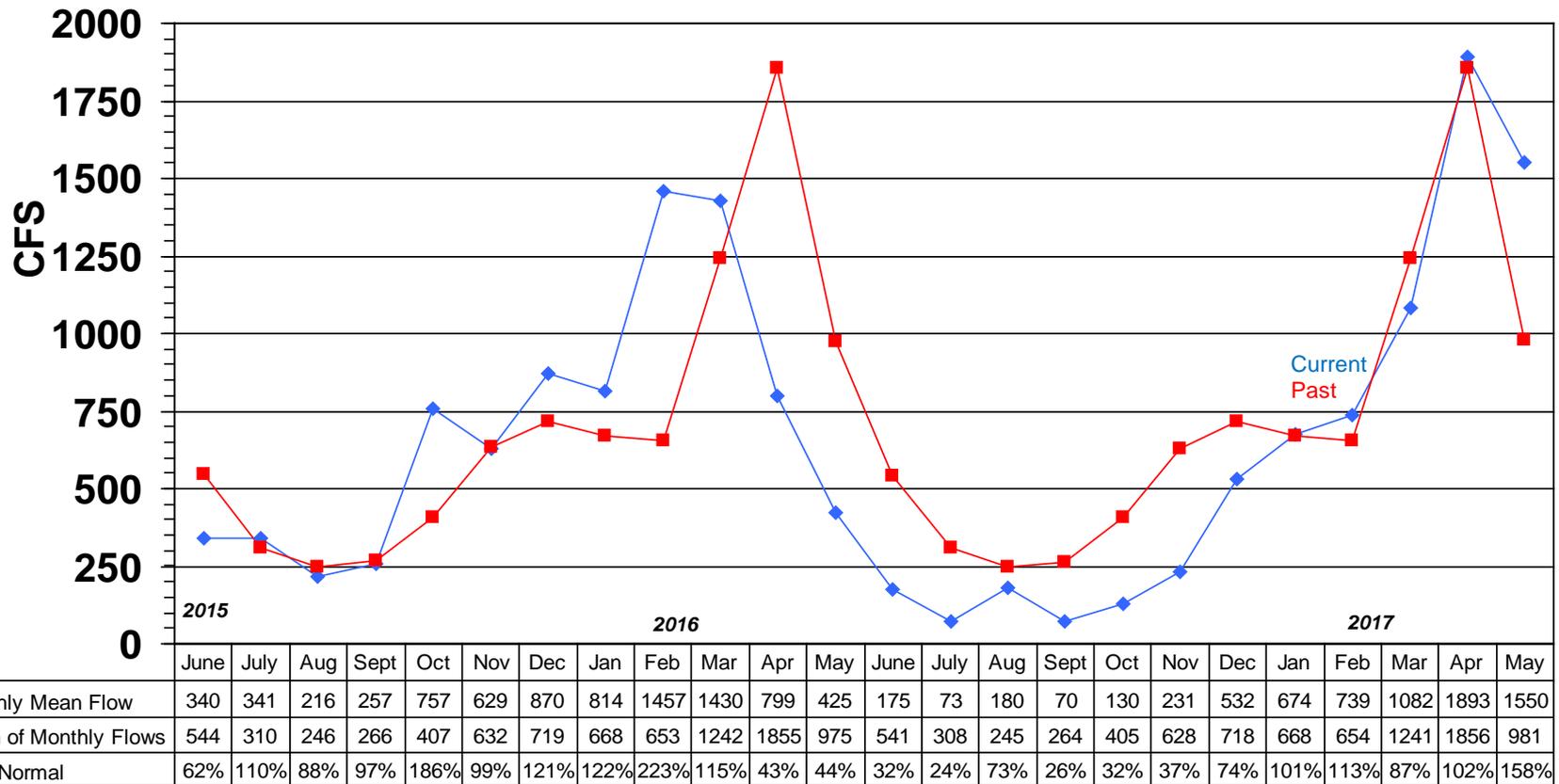


# ASHUELOT RIVER at HINSDALE NH

## Gage# 01161000



### MONTHLY MEAN FLOW COMPARED TO MEAN OF MONTHLY FLOWS

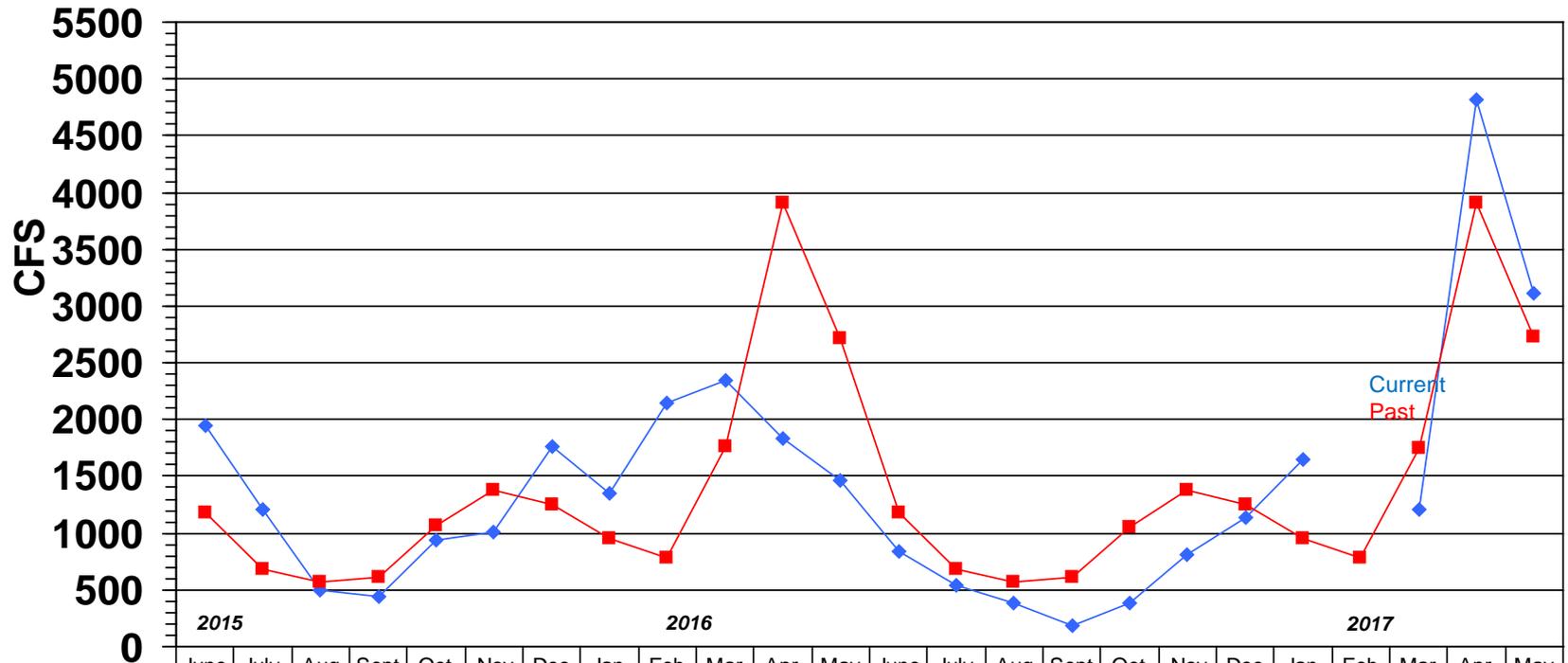


# PEMIGEWASSET RIVER at PLYMOUTH NH

## Gage# 01076500



### MONTHLY MEAN FLOW COMPARED TO MEAN OF MONTHLY FLOWS



	2015	2016												2017										
	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
◆ Monthly Mean Flow	1952	1201	491	443	943	1016	1759	1357	2142	2348	1830	1461	845	538	384	186	390	814	1139	1651	ice	1213	4813	3106
■ Mean of Monthly Flows	1178	682	567	612	1062	1381	1247	949	778	1760	3903	2719	1175	681	565	609	1056	1376	1246	955	778	1755	3911	2722
% of Normal	166%	176%	87%	72%	89%	74%	141%	143%	275%	133%	47%	54%	72%	79%	68%	30%	37%	59%	91%	173%		69%	123%	114%

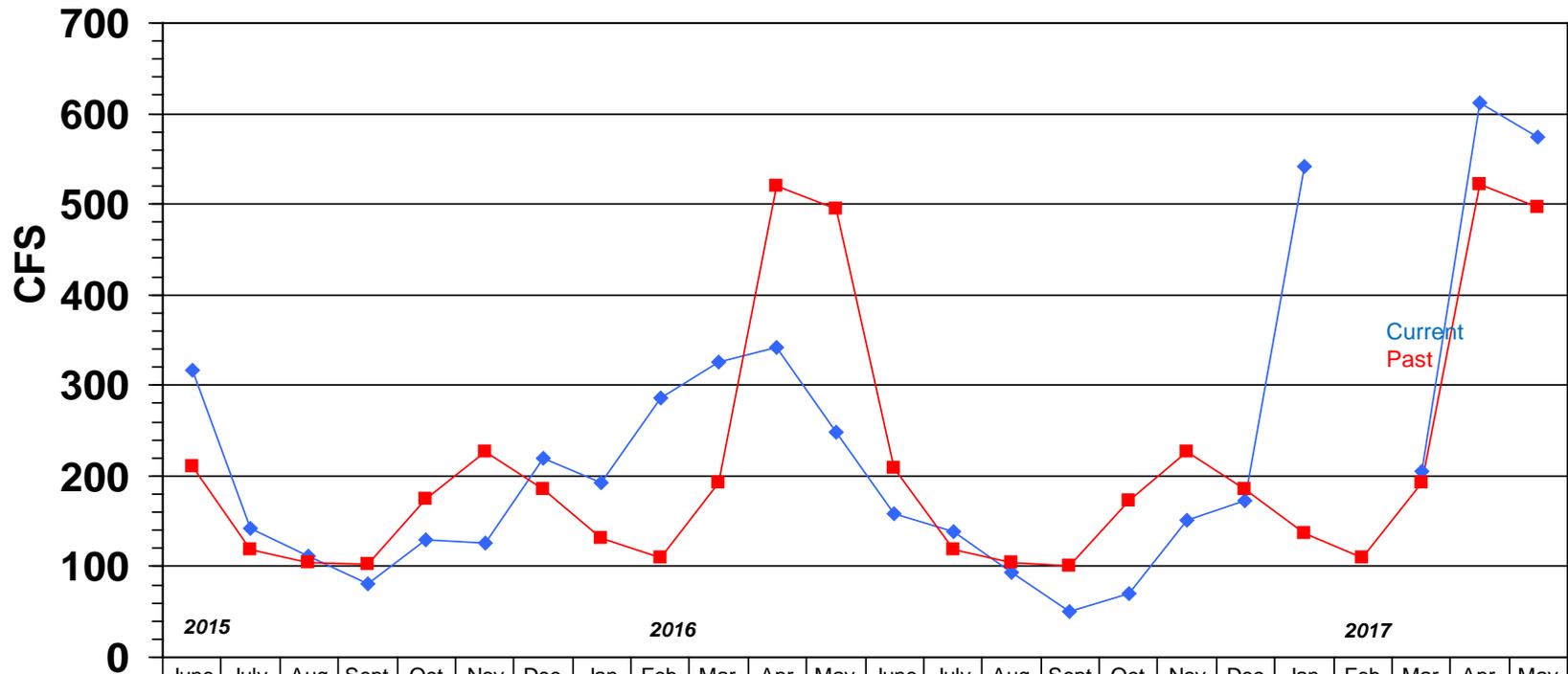
# AMMONOOSUC RIVER at BETHLEHEM JUNCTION NH

## Gage# 01137500



### MONTHLY MEAN FLOW COMPARED TO MEAN OF MONTHLY FLOWS

This station replaces gage# 01137000 which was discontinued by DES at the end of Sept 2004



	2015	2016												2017										
	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Monthly Mean Flow	317	142	112	81	129	126	219	193	287	325	342	249	158	138	94	50	71	152	172	541	ice	205	611	574
Mean of Monthly Flows	210	118	105	102	174	227	185	132	109	192	520	494	209	118	105	101	173	226	185	137	109	193	521	496
% of Normal	151%	120%	107%	79%	74%	55%	118%	146%	263%	169%	66%	50%	76%	117%	89%	50%	41%	67%	93%	395%		106%	117%	116%

## Streamflow data for selected NH stations as of June 1, 2017

Station number	Station name	Est Mean flow (ft3/s)	Long term median flow (ft3/s)	99% flow (ft3/s)	7Q10 flow (ft3/s)	Lowest Period of Record daily flow(ft3/s)	% of Median flow	Below 0.99 Flow?	Below 7Q10 Flow?	Below Record Flow?
<b>Androscoggin River Basin</b>										
01052500	Diamond River near Wentworth Location, NH	327	329	22	16	6.8	99%			
01053500	Androscoggin River at Errol, NH	2550	1930	500	451	0	132%	FALSE	FALSE	FALSE
01054000	Androscoggin River near Gorham, NH	3250	2540	1300	1310	795	128%	FALSE	FALSE	FALSE
<b>Saco River Basin</b>										
01064500	Saco River near Conway, NH	1840	984	105	97	66	187%	FALSE	FALSE	FALSE
01064801	BEARCAMP RIVER AT SOUTH TAMWORTH, NH	578	94	6	4.8	4.5	615%	FALSE	FALSE	FALSE
<b>Piscataqua River Basin</b>										
01072800	COCHECO RIVER NEAR ROCHESTER, NH	195	81	--	--	2.2	241%			FALSE
01073500	LAMPREY RIVER NEAR NEWMARKET, NH	323	168	7	5	--	192%	FALSE	FALSE	
<b>Merrimack River Basin</b>										
01074520	EAST BRANCH PEMIGEWASSET RIVER AT LINCOLN, NH	478	357		49	46	134%		FALSE	FALSE
01075000	PEMIGEWASSET RIVER AT WOODSTOCK, NH	860	593		56	--	145%		FALSE	
01076000	BAKER RIVER NEAR RUMNEY, NH	547	195		15	--	281%		FALSE	
01076500	PEMIGEWASSET RIVER AT PLYMOUTH, NH	3150	1240		118	45	254%		FALSE	FALSE
01078000	SMITH RIVER NEAR BRISTOL, NH	754	104		6.2	2.7	725%		FALSE	FALSE
01081000	WINNIPESAUKEE RIVER AT TILTON, NH	1930	670		136	48	288%		FALSE	FALSE
01081500	MERRIMACK RIVER AT FRANKLIN JUNCTION, NH	7100	2839		551	--	250%		FALSE	
01082000	CONTOOCCOOK RIVER AT PETERBOROUGH, NH	158	96		6.3	--	165%		FALSE	
01085000	CONTOOCCOOK RIVER NEAR HENNIKER, NH	1040	464		37	--	224%		FALSE	
01085500	CONTOOCCOOK R BL HOPKINTON DAM AT W HOPKINTON, NH	1250	519		39	--	241%		FALSE	
01086000	WARNER RIVER AT DAVISVILLE, NH	543	214		5.3	--	254%		FALSE	
01092000	MERRIMACK R NR GOFFS FALLS, BELOW MANCHESTER, NH	10900	4940		644	98*	221%		FALSE	
01094000	SOUHEGAN RIVER AT MERRIMACK, NH	481	200		12.9	--	241%		FALSE	
<b>Connecticut River Basin</b>										
01129200	CONNECTICUT R BELOW INDIAN STREAM NR PITTSBURG, NH	411	367		42	30	112%		FALSE	FALSE
01129500	CONNECTICUT RIVER AT NORTH STRATFORD, NH	1550	1240		176	108	125%		FALSE	FALSE
01131500	CONNECTICUT RIVER NEAR DALTON, NH	2950	2740		389	115	108%		FALSE	FALSE
01137500	AMMONOOSUC RIVER AT BETHLEHEM JUNCTION, NH	294	239		28	21	123%		FALSE	FALSE
01138500	CONNECTICUT RIVER AT WELLS RIVER, VT	6020	5100		690	152*	118%		FALSE	
01144500	CONNECTICUT RIVER AT WEST LEBANON, NH	12600	6850	380*	902	82*	184%		FALSE	
01152500	SUGAR RIVER AT WEST CLAREMONT, NH	1920	317	40	38	14	606%	FALSE	FALSE	FALSE
01154500	CONNECTICUT RIVER AT NORTH WALPOLE, NH	16100	9010	260*	1058	115*	179%		FALSE	
01158000	ASHUELOT RIVER BELOW SURRY MT DAM, NEAR KEENE, NH	310	121	4.5	2.7	0.4	256%	FALSE	FALSE	FALSE
01160350	ASHUELOT RIVER AT WEST SWANZEY, NH	774	384	32	--	--	202%	FALSE		

\*Flow duration and record low mean daily flow significantly affected by reservoir operations

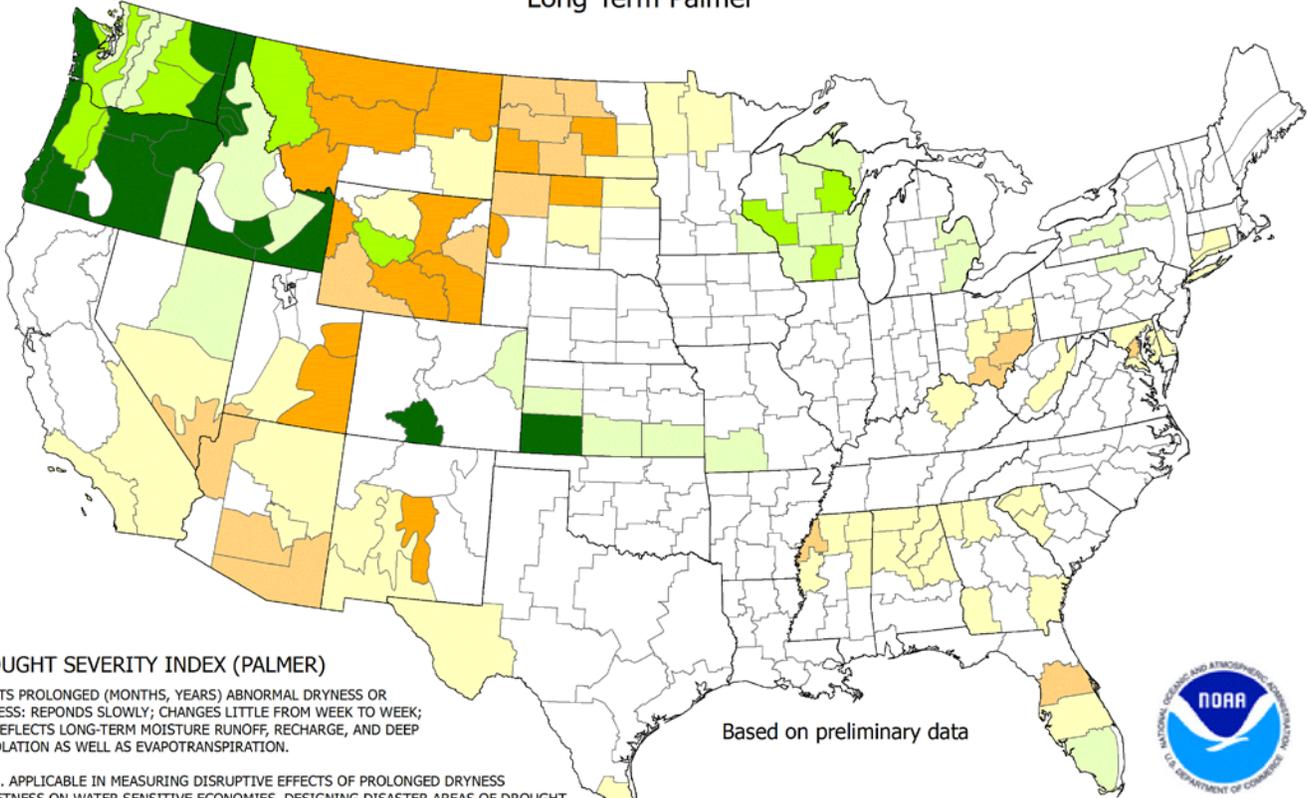
\*\*Estimated

Average % of median for all basins

234%

SUMMARY			
	Below 0.99 Flow?	Below 7Q10 Flow?	Below Record Flow?
FALSE =	8	27	15
TRUE =	0	0	0

Drought Severity Index by Division  
Weekly Value for Period Ending Jun 10, 2017  
Long Term Palmer



Based on preliminary data



**DROUGHT SEVERITY INDEX (PALMER)**

DEPICTS PROLONGED (MONTHS, YEARS) ABNORMAL DRYNESS OR WETNESS; RESPONDS SLOWLY; CHANGES LITTLE FROM WEEK TO WEEK; AND REFLECTS LONG-TERM MOISTURE RUNOFF, RECHARGE, AND DEEP PERCOLATION AS WELL AS EVAPOTRANSPIRATION.

USES... APPLICABLE IN MEASURING DISRUPTIVE EFFECTS OF PROLONGED DRYNESS OR WETNESS ON WATER SENSITIVE ECONOMIES, DESIGNING DISASTER AREAS OF DROUGHT OR WETNESS; AND REFLECTING THE GENERAL LONG-TERM STATUS OF WATER SUPPLIES IN AQUIFERS, RESERVOIRS AND STREAMS.

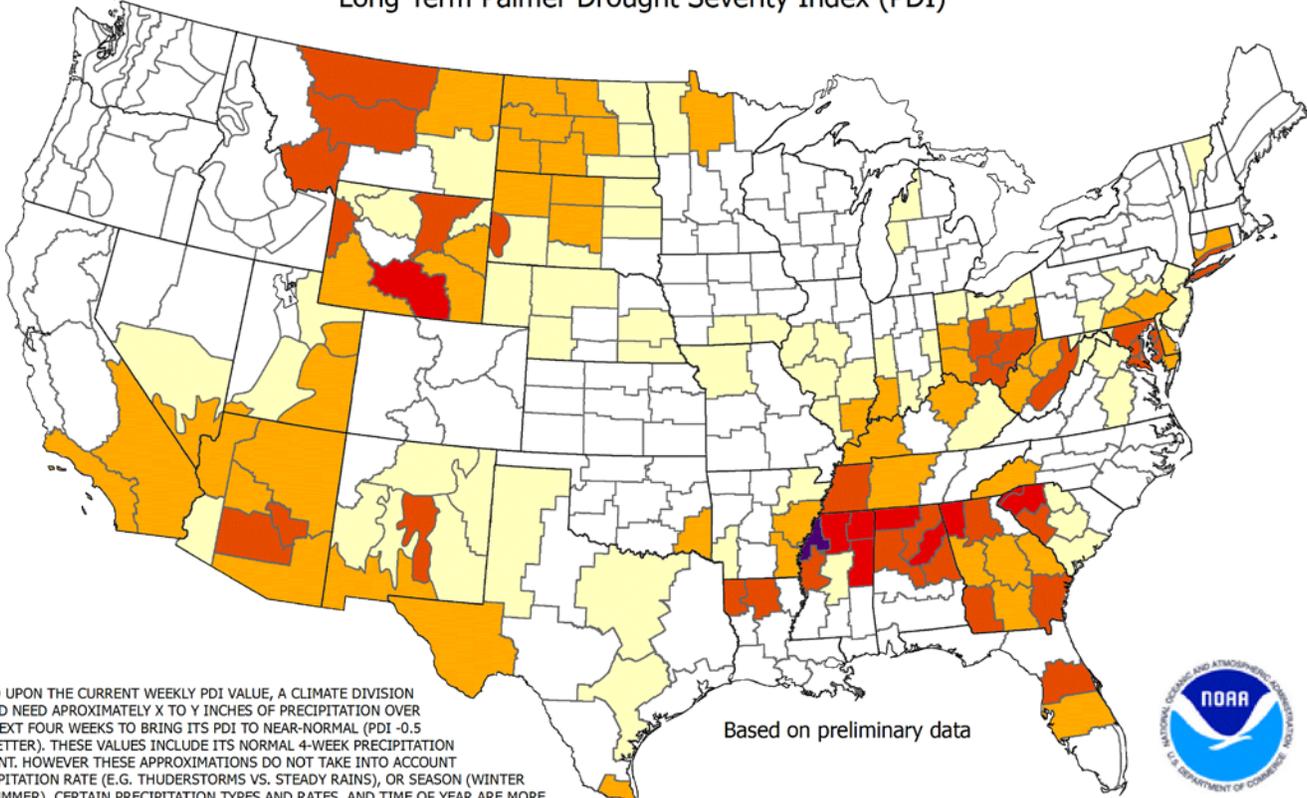
LIMITATIONS... IS NOT GENERALLY INDICATIVE OFFSHORT-TERM (FEW WEEKS) STATUS OF DROUGHT OR WETNESS SUCH AS FREQUENTLY AFFECTS CROPS AND FIELD OPERATIONS (THIS IS INDICATED BY THE CROP MOISTURE INDEX).

- 4.0 or less (Extreme Drought)
- 3.0 to -3.9 (Severe Drought)
- 2.0 to -2.9 (Moderate Drought)
- 1.9 to +1.9 (Near Normal)
- +2.0 to +2.9 (Unusual Moist Spell)
- +3.0 to +3.9 (Very Moist Spell)
- +4.0 and above (Extremely Moist)

**THE PALMER DROUGHT SEVERITY INDEX**

The Palmer Index uses temperature and rainfall information in a formula to determine dryness. The advantage of the Palmer Index is that it is standardized to local climate.

Additional Precip. Needed (In.) to bring PDI to -0.5  
 Weekly Value for Period Ending Jun 10, 2017  
 Long Term Palmer Drought Severity Index (PDI)



Based on preliminary data



BASED UPON THE CURRENT WEEKLY PDI VALUE, A CLIMATE DIVISION WOULD NEED APPROXIMATELY X TO Y INCHES OF PRECIPITATION OVER THE NEXT FOUR WEEKS TO BRING ITS PDI TO NEAR-NORMAL (PDI -0.5 OR WETTER). THESE VALUES INCLUDE ITS NORMAL 4-WEEK PRECIPITATION AMOUNT. HOWEVER THESE APPROXIMATIONS DO NOT TAKE INTO ACCOUNT PRECIPITATION RATE (E.G. THUNDERSTORMS VS. STEADY RAINS), OR SEASON (WINTER VS. SUMMER), CERTAIN PRECIPITATION TYPES AND RATES, AND TIME OF YEAR ARE MORE CONDUCTIVE FOR AMELIORATING DROUGHT WHILE OTHERS MAY PRODUCE LESS DROUGHT REDUCTION (E.G. RUNOFF OR FROZEN GROUND).

UNCOLORED CLIMATE DIVISIONS ARE CURRENTLY AT NEAR-NORMAL TO MOIST PDI CONDITIONS. (EXAMPLE - IF 4-WEEK NORMAL PRECIPITATION IS 3 INCHES AND PDI DEFICIT TO BRING TO -0.5 IS 4 INCHES, THE VALUE IS 7)

- Zero Inches
- Trace to 3 Inches
- 3 to 6 Inches
- 6 to 9 Inches
- 9 to 12 Inches
- 12 to 15 Inches
- Over 15 Inches

This is the amount of rainfall required in a week's time to bring the index back to zero inches required.