



The State of New Hampshire
Department of Environmental Services



Clark B. Freise, Assistant Commissioner

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

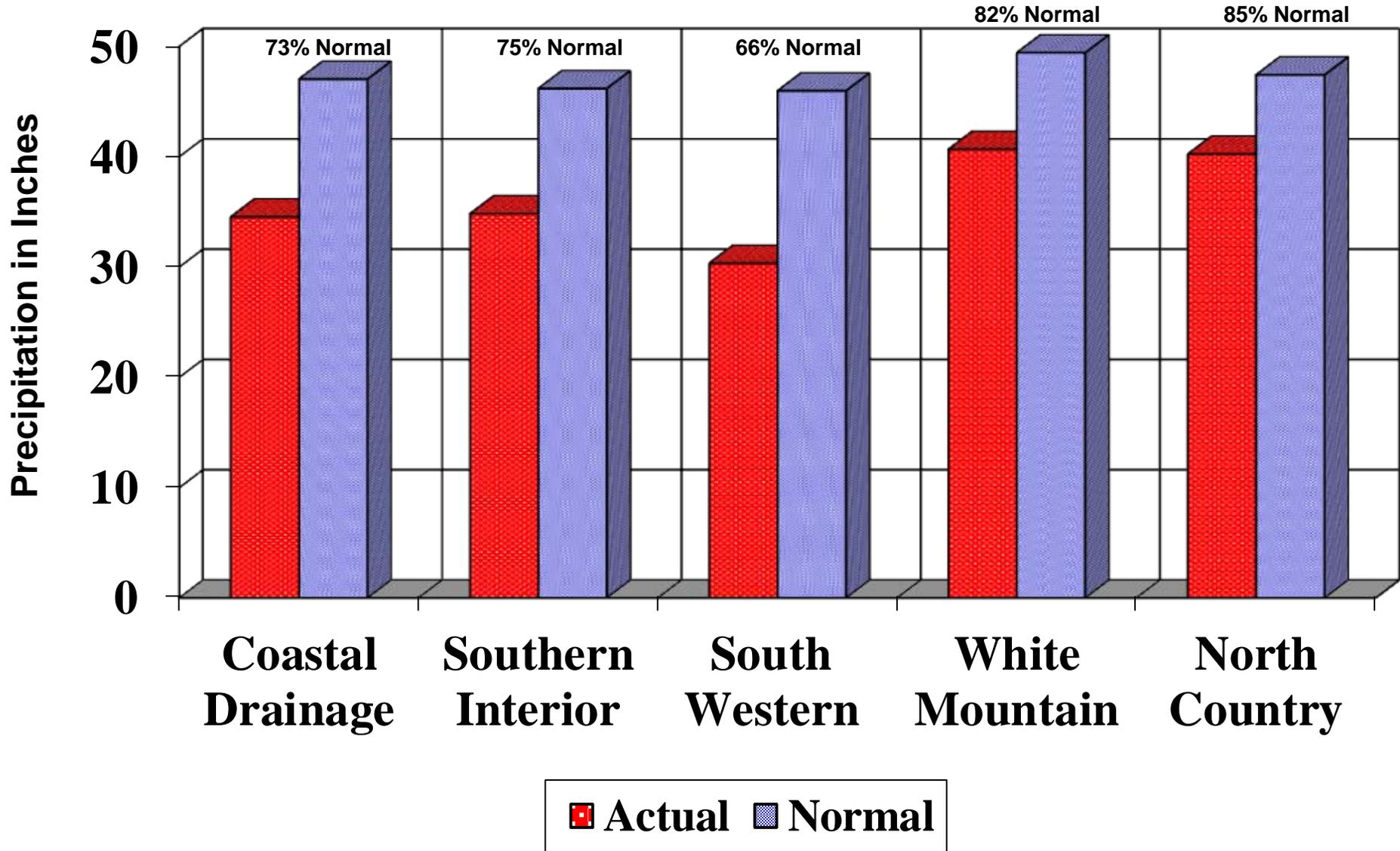
	Actual Rainfall (inches)	Normal Rainfall (inches)	Deviation from Normal (inches)	Percent of Normal
<u>Coastal Drainage:</u> Rockingham, Strafford counties				
four month	12.84	14.79	-1.95	87%
six month	20.98	22.90	-1.92	92%
nine month	28.16	34.54	-6.39	82%
twelve month	34.54	47.03	-12.49	73%
<u>Southern Interior:</u> Belknap, Hillsborough, Merrimack counties				
four month	12.78	14.19	-1.41	90%
six month	20.16	22.37	-2.21	90%
nine month	28.40	34.45	-6.05	82%
twelve month	34.82	46.17	-11.36	75%
<u>South Western:</u> Cheshire, Sullivan counties				
four month	8.44	13.65	-2.44	62%
six month	14.21	22.02	-5.04	65%
nine month	24.02	34.62	-7.82	69%
twelve month	30.34	45.97	-12.86	66%
<u>White Mountain:</u> Carroll, Grafton counties				
four month	14.46	14.92	-0.46	97%
six month	20.67	23.78	-3.11	87%
nine month	32.83	37.31	-4.48	88%
twelve month	40.67	49.42	-8.75	82%
<u>North Country:</u> Coos county				
four month	13.30	13.63	-0.33	98%
six month	18.93	22.16	-3.23	85%
nine month	32.16	36.37	-4.21	88%
twelve month	40.23	47.41	-7.18	85%

four month period : November 2016 - February 2017
 six month period : September 2016 - February 2017
 nine month period : June 2016 - February 2017
 twelve month period: March 2016 - February 2017

Source: Northeast River Forecast Center, NH Des Dam Bureau

www.des.nh.gov
 29 Hazen Drive • PO Box 95 • Concord, NH 03302-0095
 (603) 271-3503 • TDD Access: Relay NH 1-800-735-2964

TWELVE MONTH AGGREGATED PRECIPITATION DATA for N.H. DROUGHT MANAGEMENT AREAS from March 2016 through February 2017



MONTHLY PRECIPITATION DATA FOR N.H COUNTIES



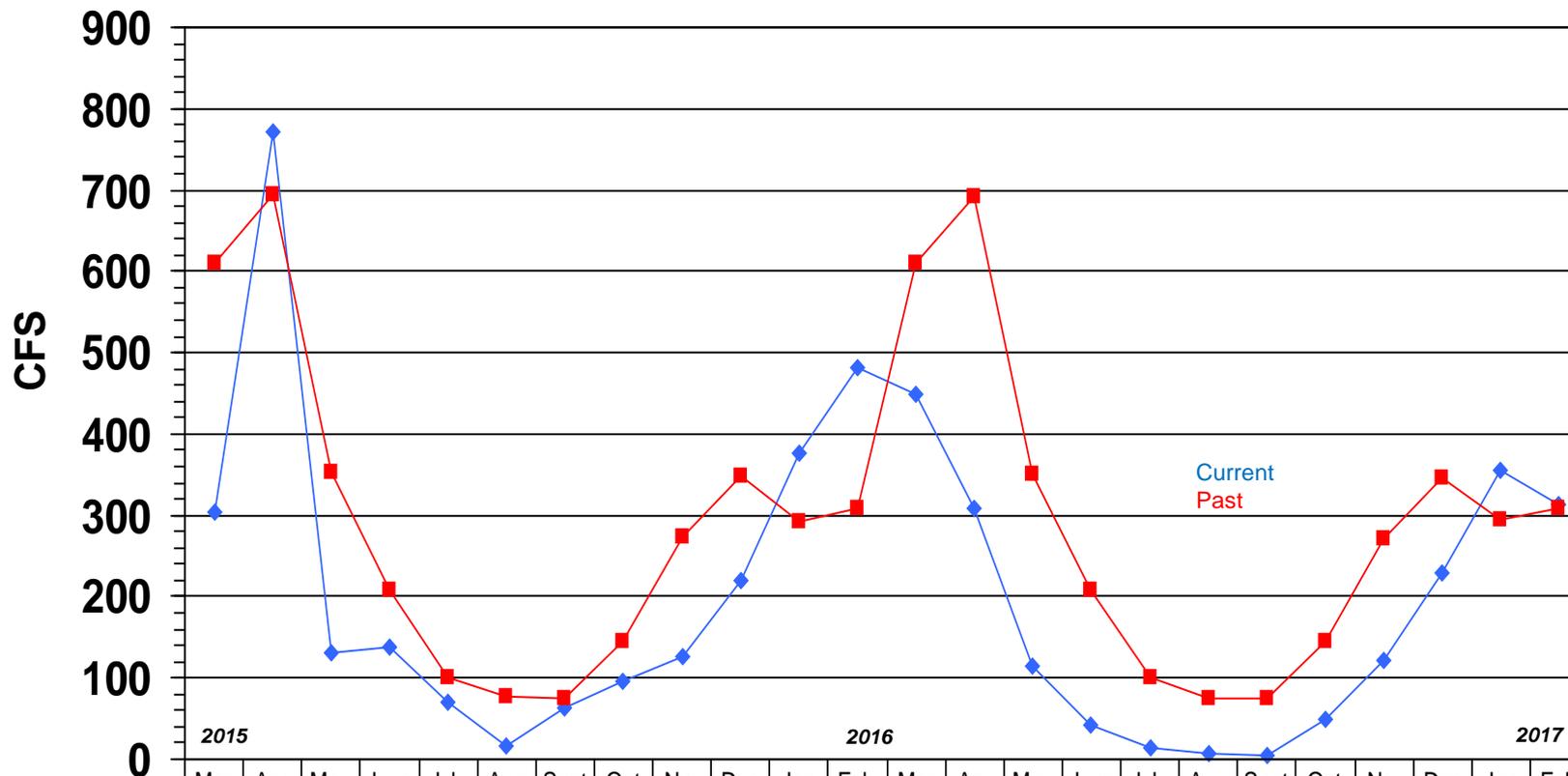
		2016										2017	
		MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB
Coastal drainage													
STRAFFORD	actual	2.72	2.09	1.65	2.58	3.06	2.04	1.92	5.47	3.36	3.35	2.65	3.42
	normal	4.16	4.22	4.10	4.16	3.99	3.73	3.74	4.38	4.50	3.77	3.20	3.30
	deviation	-1.44	-2.13	-2.45	-1.58	-0.93	-1.69	-1.82	1.09	-1.14	-0.42	-0.55	0.12
ROCKINGHAM	actual	2.45	2.10	1.76	1.94	2.38	2.36	2.63	6.25	3.62	3.11	2.96	3.21
	normal	4.19	4.20	4.10	4.10	3.77	3.54	3.76	4.34	4.30	3.73	3.27	3.30
	deviation	-1.74	-2.10	-2.34	-2.16	-1.39	-1.18	-1.13	1.91	-0.68	-0.62	-0.31	-0.09
Average	actual	2.59	2.10	1.71	2.26	2.72	2.20	2.28	5.86	3.49	3.23	2.81	3.32
	normal	4.18	4.21	4.10	4.13	3.88	3.64	3.75	4.36	4.40	3.75	3.24	3.30
	deviation	-1.59	-2.12	-2.40	-1.87	-1.16	-1.44	-1.48	1.50	-0.91	-0.52	-0.43	0.02
Southern Interior													
HILLSBOROUGH	actual	2.39	1.91	1.98	1.80	2.16	3.12	3.27	4.79	3.78	3.06	3.06	2.83
	normal	3.95	4.14	4.10	4.22	3.96	3.76	3.74	4.46	4.22	3.80	3.39	3.29
	deviation	-1.56	-2.23	-2.12	-2.42	-1.80	-0.64	-0.47	0.33	-0.44	-0.74	-0.33	-0.46
MERRIMACK	actual	2.31	1.78	2.50	2.42	3.29	2.57	2.51	4.99	3.84	3.17	2.56	3.08
	normal	3.73	3.95	4.01	4.34	4.11	3.75	3.77	4.43	4.15	3.65	3.26	3.09
	deviation	-1.42	-2.17	-1.51	-1.92	-0.82	-1.18	-1.26	0.56	-0.31	-0.48	-0.70	-0.01
BELKNAP	actual	2.25	1.81	2.32	2.95	3.47	2.93	1.78	4.81	4.07	3.25	2.43	3.21
	normal	3.58	3.75	3.95	4.25	4.08	3.78	3.65	4.49	4.03	3.58	3.08	3.03
	deviation	-1.33	-1.94	-1.63	-1.30	-0.61	-0.85	-1.87	0.32	0.04	-0.33	-0.65	0.18
Average	actual	2.32	1.83	2.27	2.39	2.97	2.87	2.52	4.86	3.90	3.16	2.68	3.04
	normal	3.75	3.95	4.02	4.27	4.05	3.76	3.72	4.46	4.13	3.68	3.24	3.14
	deviation	-1.44	-2.11	-1.75	-1.88	-1.08	-0.89	-1.20	0.40	-0.24	-0.52	-0.56	-0.10
South Western													
CHESHIRE	actual	2.21	1.83	2.38	2.06	2.69	5.07	2.81	3.05	3.45	2.83	2.64	2.81
	normal	3.73	3.78	4.10	4.20	4.36	4.05	3.83	4.60	3.97	3.68	3.42	3.17
	deviation	-1.52	-1.95	-1.72	-2.14	-1.67	1.02	-1.02	-1.55	-0.52	-0.85	-0.78	-0.36
SULLIVAN	actual	2.07	1.64	2.50	2.54	3.59	3.68	2.03	3.65	3.40	2.75	2.18	2.73
	normal	3.51	3.67	3.91	4.18	4.36	4.05	3.80	4.51	3.85	3.49	2.72	3.00
	deviation	-1.44	-2.03	-1.41	-1.64	-0.77	-0.37	-1.77	-0.86	-0.45	-0.74	-0.90	-0.27
Average	actual	2.14	1.74	2.44	2.30	3.14	4.38	2.42	3.35	3.43	2.79	-0.55	2.77
	normal	3.62	3.73	4.01	4.19	4.36	4.05	3.82	4.56	3.91	3.59	3.07	3.09
	deviation	-1.48	-1.99	-1.57	-1.89	-1.22	0.33	-1.40	-1.21	-0.49	-0.80	-0.84	-0.32
White Mountain													
GRAFTON	actual	2.45	2.34	3.13	3.85	4.39	4.52	1.86	4.08	3.93	3.54	2.53	3.28
	normal	3.45	3.76	4.20	4.58	4.56	4.61	4.10	4.67	4.35	3.70	3.19	2.84
	deviation	-1.00	-1.42	-1.07	-0.73	-0.17	-0.09	-2.24	-0.59	-0.42	-0.16	-0.66	0.44
CARROLL	actual	3.00	2.40	2.35	3.92	4.55	3.09	1.44	5.04	4.56	3.97	3.33	3.78
	normal	4.02	4.46	4.32	4.49	4.41	4.42	3.98	4.96	4.72	4.16	3.57	3.31
	deviation	-1.02	-2.06	-1.97	-0.57	0.14	-1.33	-2.54	0.08	-0.16	-0.19	-0.24	0.47
Average	actual	2.73	2.37	2.74	3.89	4.47	3.81	1.65	4.56	4.25	3.76	2.93	3.53
	normal	3.74	4.11	4.26	4.54	4.49	4.52	4.04	4.82	4.54	3.93	3.38	3.08
	deviation	-1.01	-1.74	-1.52	-0.65	-0.02	-0.71	-2.39	-0.26	-0.29	-0.18	-0.45	0.46
North Country													
COOS	actual	2.38	2.77	2.92	3.39	4.22	5.62	2.07	3.56	3.57	3.84	3.05	2.84
	normal	3.21	3.62	4.21	4.79	4.57	4.85	4.00	4.53	4.24	3.58	3.09	2.72
	deviation	-0.83	-0.85	-1.29	-1.40	-0.35	0.77	-1.93	-0.97	-0.67	0.26	-0.04	0.12

LAMPREY RIVER near NEWMARKET NH

Gage# 01073500



MONTHLY MEAN FLOW COMPARED TO MEAN OF MONTHLY FLOWS



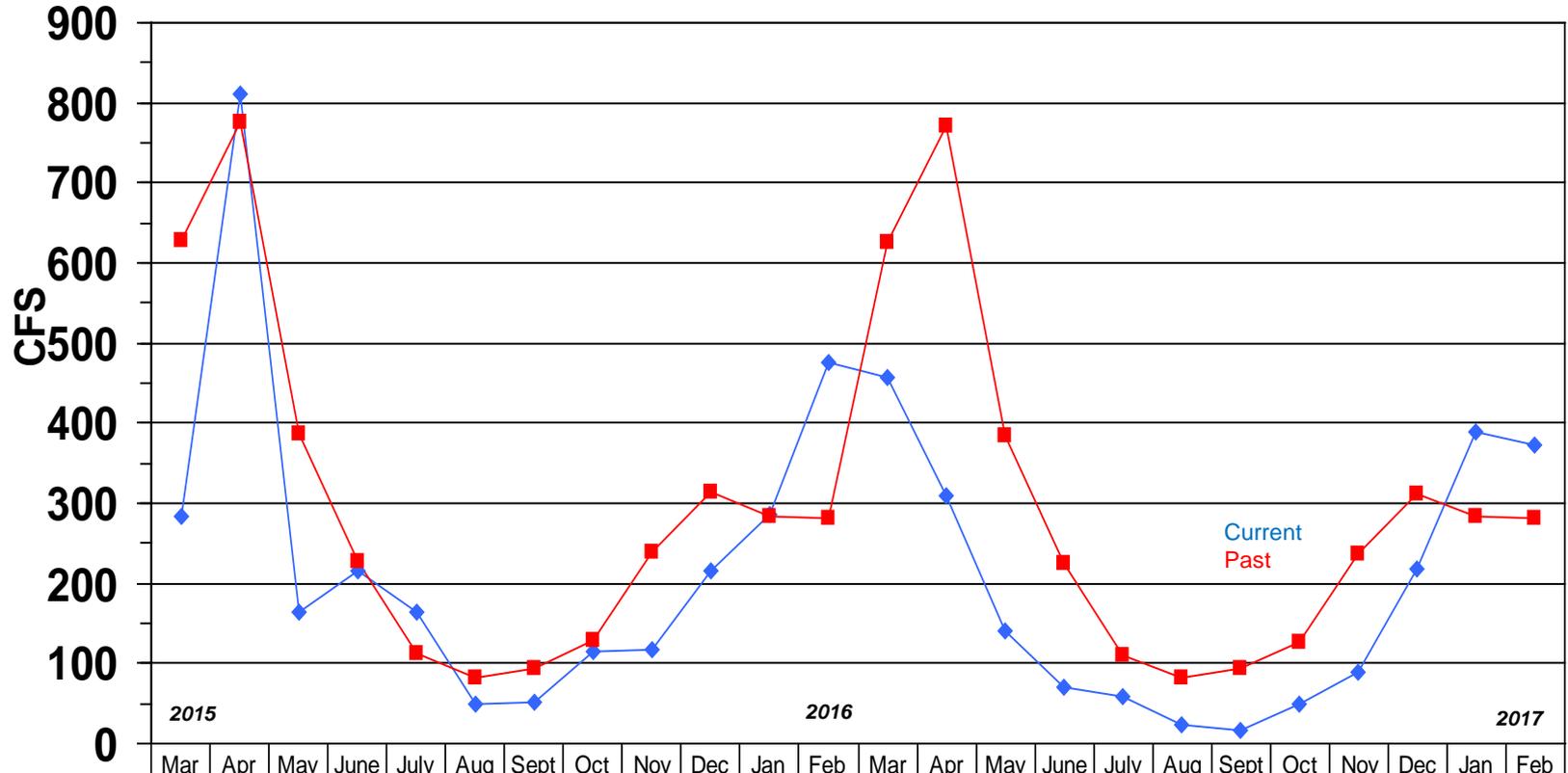
	2015	2016	2017																					
	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb
◆ Monthly Mean Flow	305	771	132	137	70	17	63	95	127	219	376	481	450	308	115	43	14	7	5	50	121	230	355	314
■ Mean of Monthly Flows	611	695	353	209	101	76	75	146	273	349	293	309	609	691	350	207	100	75	74	145	271	347	294	309
% of Normal	50%	111%	37%	66%	70%	23%	84%	65%	46%	63%	128%	156%	74%	45%	33%	21%	14%	9%	7%	34%	44%	66%	121%	102%

SOUHEGAN RIVER at MERRIMACK NH

Gage# 01094000



MONTHLY MEAN FLOW COMPARED TO MEAN OF MONTHLY FLOWS

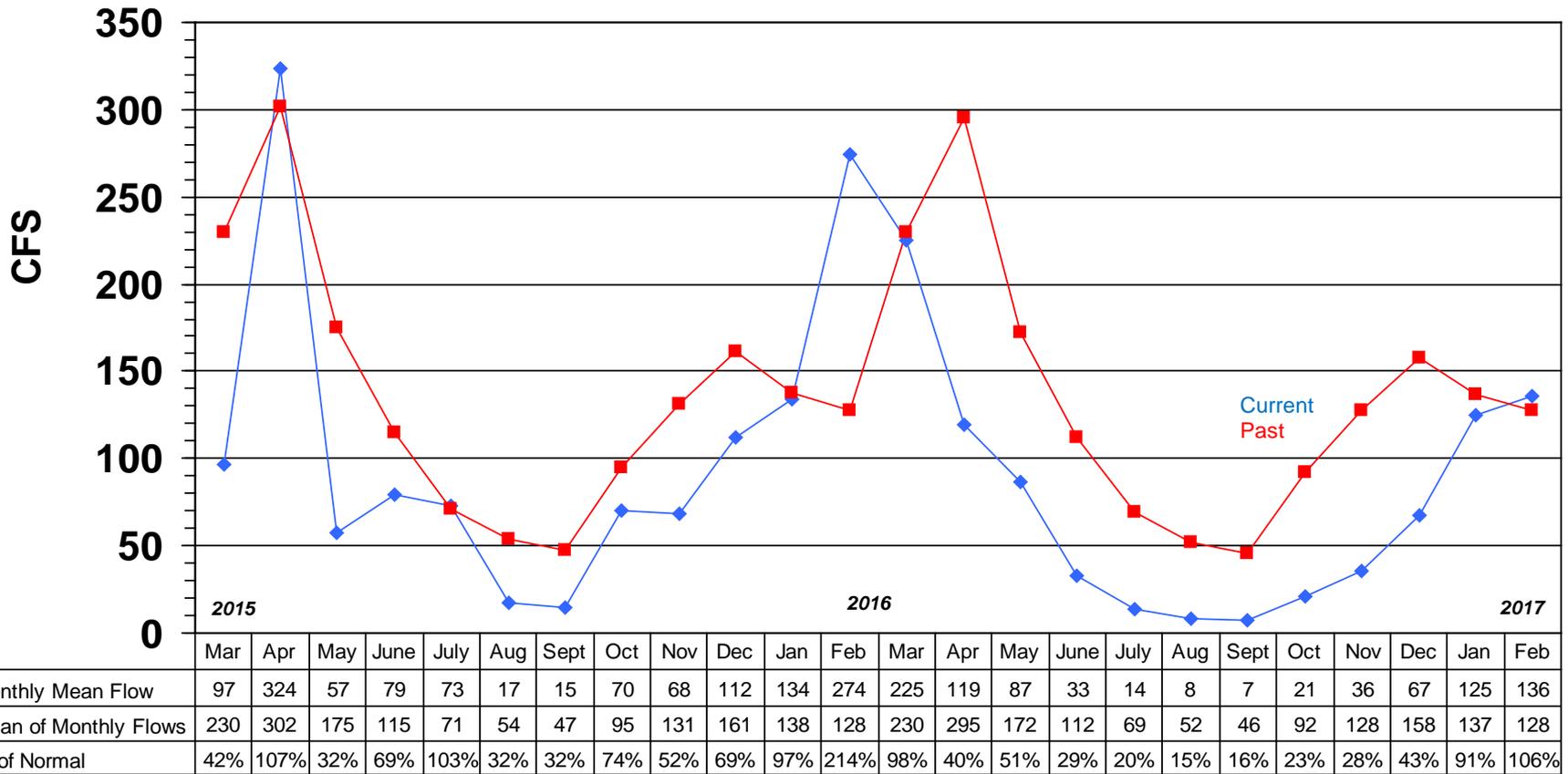


	2015	2016	2017																					
	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb
◆ Monthly Mean Flow	283	811	164	216	165	50	52	116	118	216	285	476	457	309	141	71	58	23	17	50	89	217	388	373
■ Mean of Monthly Flows	628	776	387	227	112	83	94	128	239	313	283	281	626	770	384	225	111	83	93	127	237	312	284	282
% of Normal	45%	104%	42%	95%	147%	61%	55%	91%	49%	69%	101%	169%	73%	40%	37%	52%	52%	28%	18%	39%	37%	70%	137%	132%

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



MONTHLY MEAN FLOW COMPARED TO MEAN OF MONTHLY FLOWS

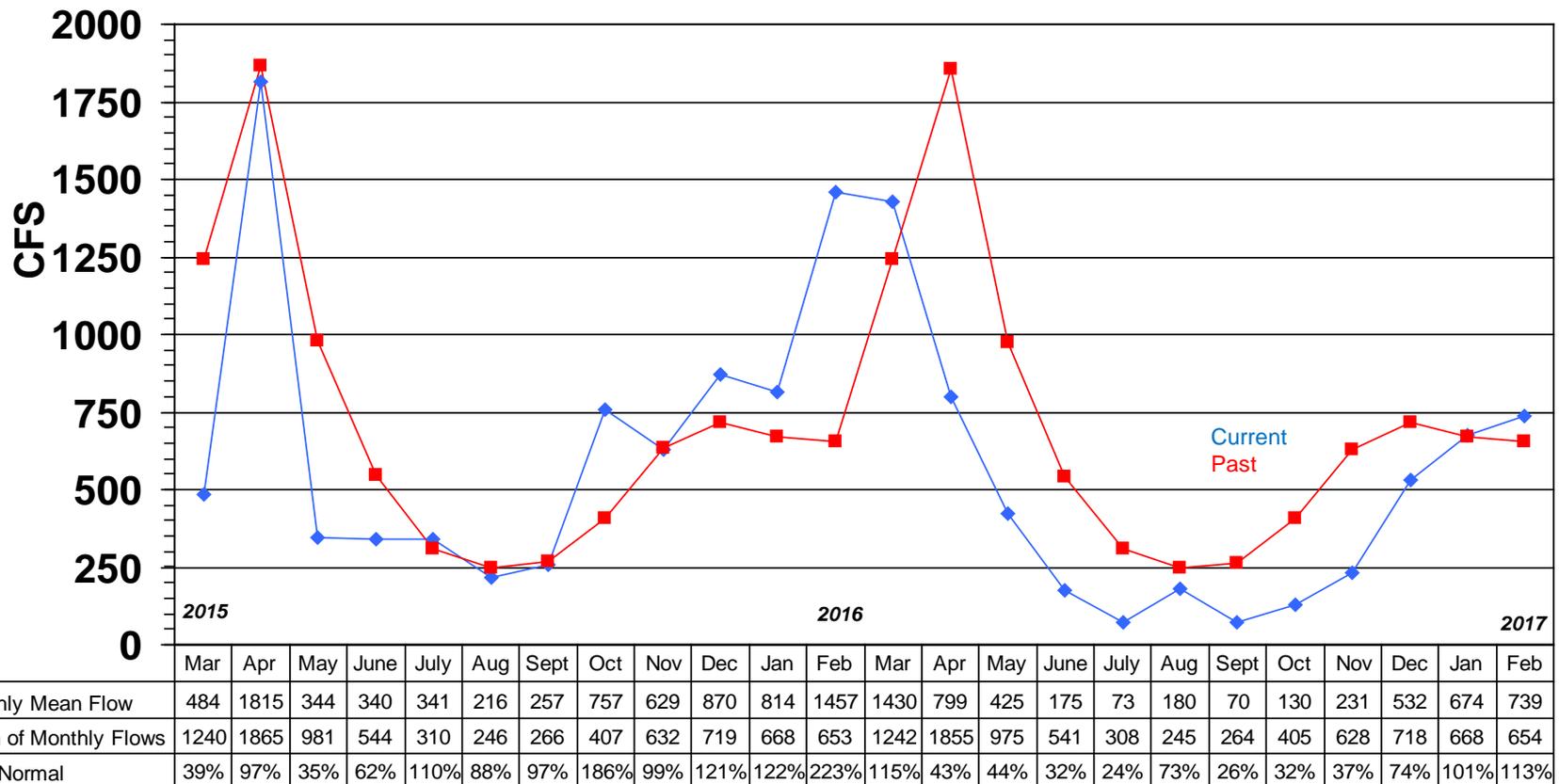


ASHUELOT RIVER at HINSDALE NH

Gage# 01161000



MONTHLY MEAN FLOW COMPARED TO MEAN OF MONTHLY FLOWS

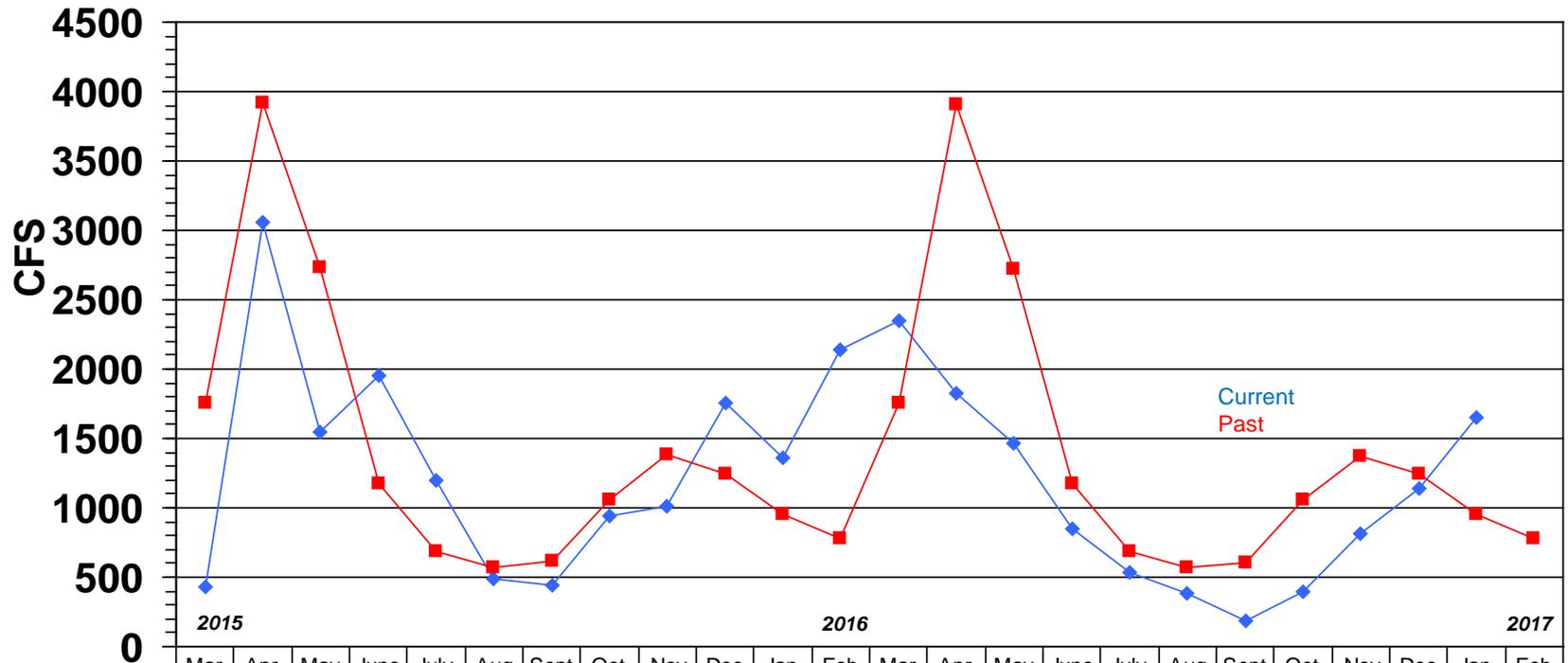


PEMIGEWASSET RIVER at PLYMOUTH NH

Gage# 01076500



MONTHLY MEAN FLOW COMPARED TO MEAN OF MONTHLY FLOWS



	2015	2016	2017																					
	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb
◆ Monthly Mean Flow	431	3059	1543	1952	1201	491	443	943	1016	1759	1357	2142	2348	1830	1461	845	538	384	186	390	814	1139	1651	ice
■ Mean of Monthly Flows	1755	3921	2730	1178	682	567	612	1062	1381	1247	949	778	1760	3903	2719	1175	681	565	609	1056	1376	1246	955	778
% of Normal	25%	78%	56%	166%	176%	87%	72%	89%	74%	141%	143%	275%	133%	47%	54%	72%	79%	68%	30%	37%	59%	91%	173%	

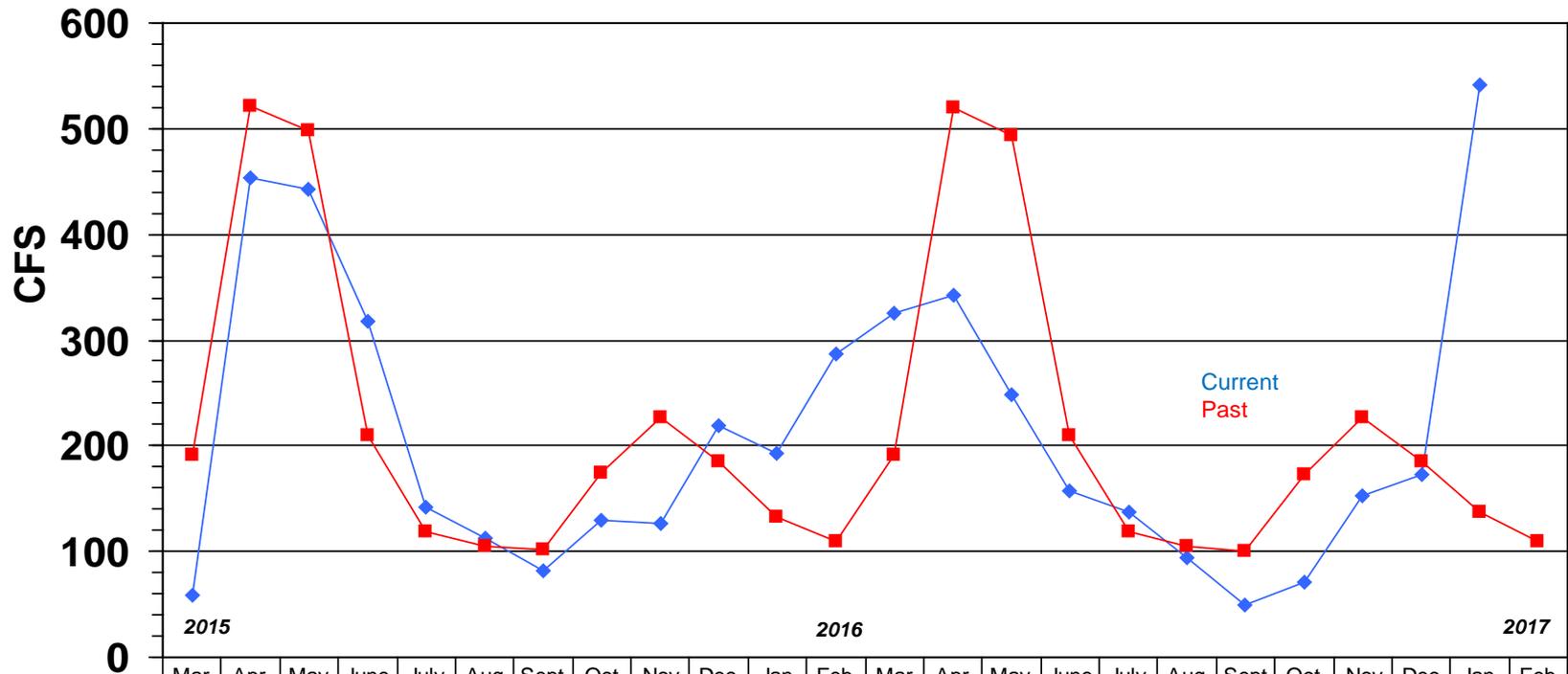
AMMONOOSUC RIVER at BETHLEHEM JUNCTION NH

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																					
	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb
Monthly Mean Flow	59	453	443	317	142	112	81	129	126	219	193	287	325	342	249	158	138	94	50	71	152	172	541	ice
Mean of Monthly Flows	191	522	498	210	118	105	102	174	227	185	132	109	192	520	494	209	118	105	101	173	226	185	137	109
% of Normal	31%	87%	89%	151%	120%	107%	79%	74%	55%	118%	146%	263%	169%	66%	50%	76%	117%	89%	50%	41%	67%	93%	395%	

Streamflow data for selected NH stations as of March 6, 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?
Androscoggin River Basin										
01052500	Diamond River near Wentworth Location, NH	Ice	89	22	16	6.8				
01053500	Androscoggin River at Errol, NH	3700	1910	500	451	0	194%	FALSE	FALSE	FALSE
01054000	Androscoggin River near Gorham, NH	4590	2270	1300	1310	795	202%	FALSE	FALSE	FALSE
Saco River Basin										
01064500	Saco River near Conway, NH	1150	370	105	97	66	311%	FALSE	FALSE	FALSE
01064801	BEARCAMP RIVER AT SOUTH TAMWORTH, NH	228	91	6	4.8	4.5	251%	FALSE	FALSE	FALSE
Piscataqua River Basin										
01072800	COCHECO RIVER NEAR ROCHESTER, NH	185	123	--	--	2.2	150%			FALSE
01073500	LAMPREY RIVER NEAR NEWMARKET, NH	536	342	7	5	--	157%	FALSE	FALSE	
Merrimack River Basin										
01074520	EAST BRANCH PEMIGEWASSET RIVER AT LINCOLN, NH	310	130		49	46	238%	FALSE	FALSE	FALSE
01075000	PEMIGEWASSET RIVER AT WOODSTOCK, NH	eqp	165		56	--		#VALUE!	#VALUE!	
01076000	BAKER RIVER NEAR RUMNEY, NH	373	115		15	--	324%	FALSE	FALSE	
01076500	PEMIGEWASSET RIVER AT PLYMOUTH, NH	Ice	590		118	45		#VALUE!	#VALUE!	#VALUE!
01078000	SMITH RIVER NEAR BRISTOL, NH	157	80		6.2	2.7	196%	FALSE	FALSE	FALSE
01081000	WINNIPESAUKEE RIVER AT TILTON, NH	1070	834		136	48	128%	FALSE	FALSE	FALSE
01081500	MERRIMACK RIVER AT FRANKLIN JUNCTION, NH	3950	1940		551	--	204%		FALSE	
01082000	CONTOOCOOK RIVER AT PETERBOROUGH, NH	182	99		6.3	--	184%	FALSE	FALSE	
01085000	CONTOOCOOK RIVER NEAR HENNIKER, NH	1130	560		37	--	202%	FALSE	FALSE	
01085500	CONTOOCOOK R BL HOPKINTON DAM AT W HOPKINTON, NH	1570	600		39	--	262%	FALSE	FALSE	
01086000	WARNER RIVER AT DAVISVILLE, NH	534	194		5.3	--	275%	FALSE	FALSE	
01092000	MERRIMACK R NR GOFFS FALLS, BELOW MANCHESTER, NH	7540	4470		644	98*	169%		FALSE	
01094000	SOUHEGAN RIVER AT MERRIMACK, NH	704	289		12.9	--	244%	FALSE	FALSE	
Connecticut River Basin										
01129200	CONNECTICUT R BELOW INDIAN STREAM NR PITTSBURG, NH	505	583		42	30	87%		FALSE	FALSE
01129500	CONNECTICUT RIVER AT NORTH STRATFORD, NH	Ice	1050		176	108			#VALUE!	#VALUE!
01131500	CONNECTICUT RIVER NEAR DALTON, NH	4520	1550		389	115	292%		FALSE	FALSE
01137500	AMMONOOSUC RIVER AT BETHLEHEM JUNCTION, NH	eqp	73		28	21		#VALUE!	#VALUE!	#VALUE!
01138500	CONNECTICUT RIVER AT WELLS RIVER, VT	8500	3650		690	152*	233%	FALSE	FALSE	
01144500	CONNECTICUT RIVER AT WEST LEBANON, NH	13100	4450	380*	902	82*	294%		FALSE	
01152500	SUGAR RIVER AT WEST CLAREMONT, NH	649	287	40	38	14	226%	FALSE	FALSE	FALSE
01154500	CONNECTICUT RIVER AT NORTH WALPOLE, NH	16400	6350	260*	1058	115*	258%		FALSE	
01158000	ASHUELOT RIVER BELOW SURRY MT DAM, NEAR KEENE, NH	699	123	4.5	2.7	0.4	568%	FALSE	FALSE	FALSE
01160350	ASHUELOT RIVER AT WEST SWANZEY, NH	1440	486	32	--	--	296%	FALSE		

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

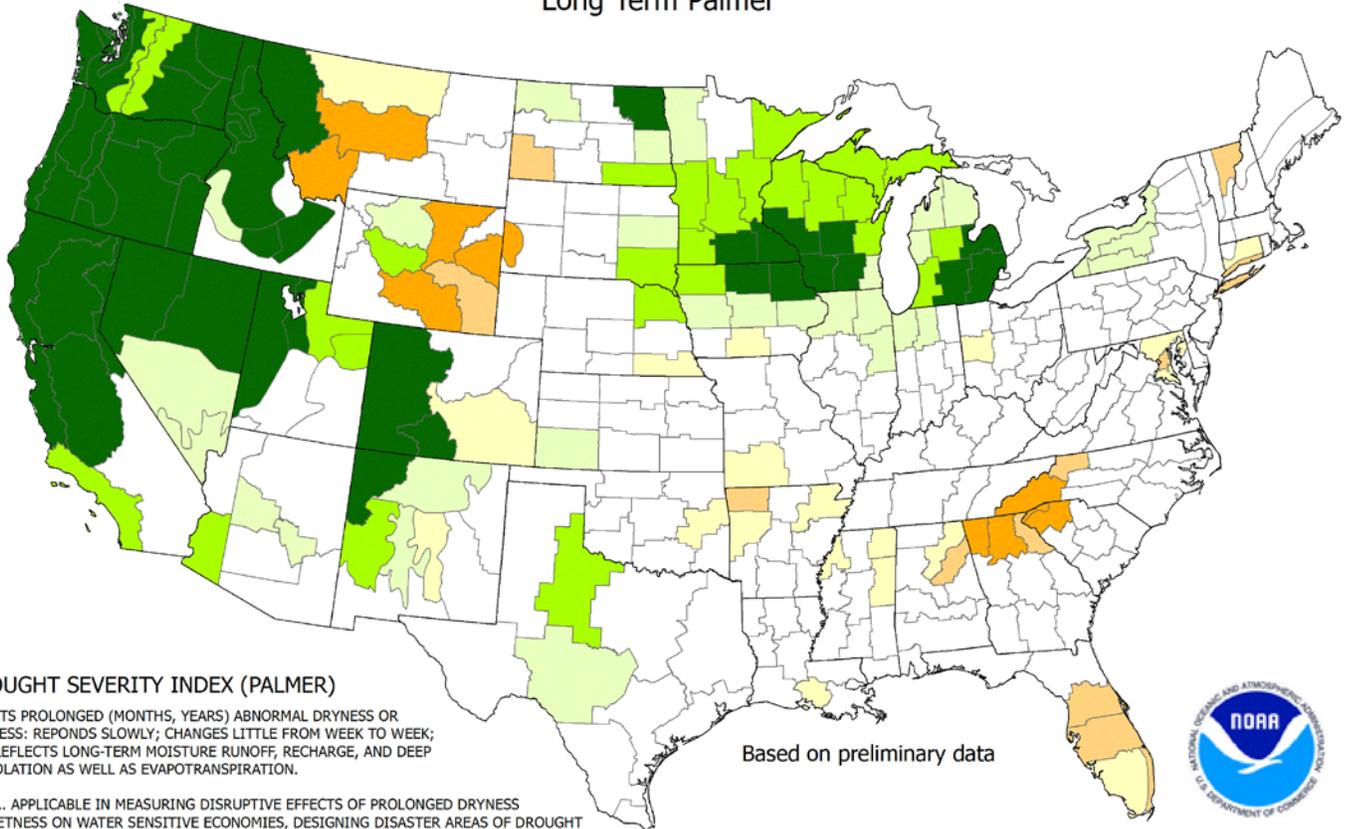
**Estimated

Average % of median for all basins

238%

SUMMARY			
	Below 0.99 Flow?	Below 7Q10 Flow?	Below Record Flow?
FALSE =	18	23	12
TRUE =	0	0	0

Drought Severity Index by Division
 Weekly Value for Period Ending Mar 04, 2017
 Long Term Palmer



DROUGHT SEVERITY INDEX (PALMER)

DEPICTS PROLONGED (MONTHS, YEARS) ABNORMAL DRYNESS OR WETNESS; REponds 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.

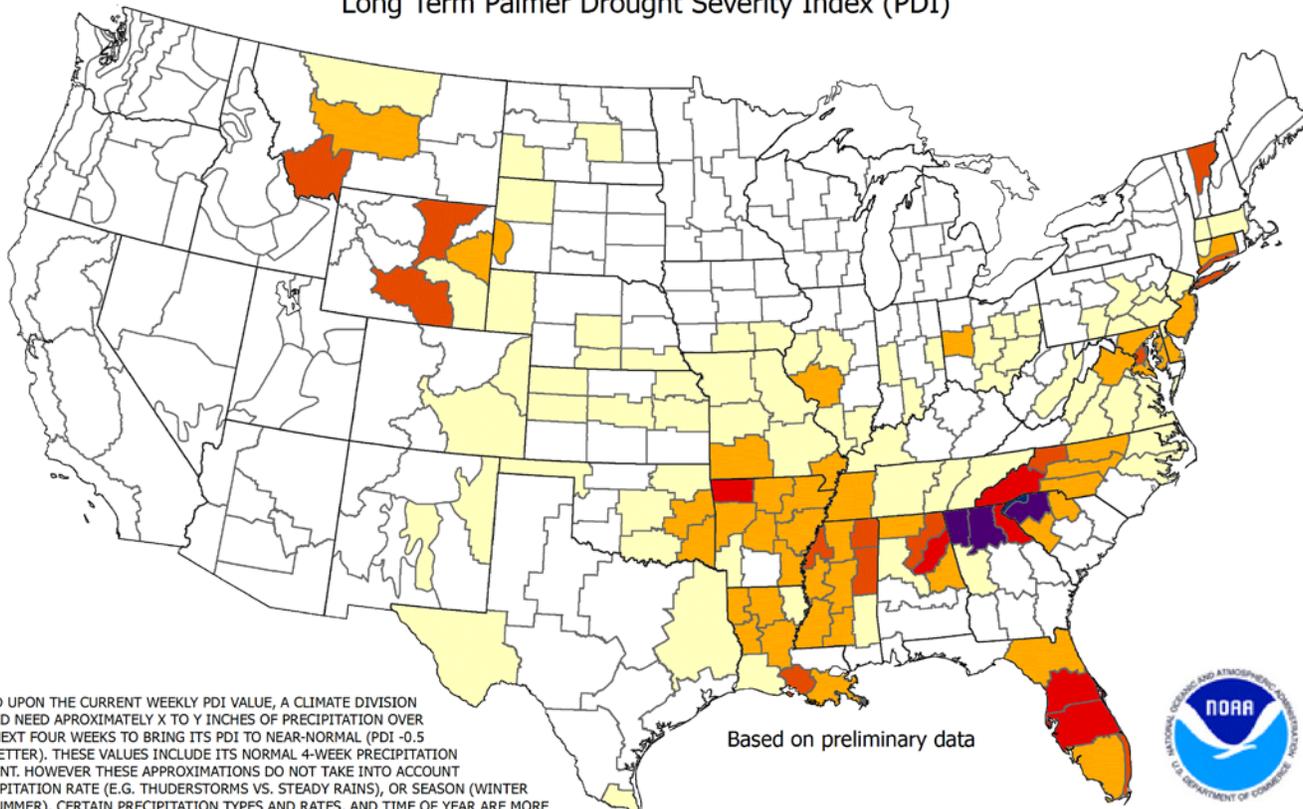
LIMITATIONS... IS NOT GENERALLY INDICATIVE OFFSHORT-TERM (FEW WEEKS) STATUS OF DROUGHT OR WETNESS SUCH AS FREQUENTLY AFFECTS CROPS AND FIELD OPERATIONS (THIS IS INDICATED BY THE CROP MOISTURE INDEX).

- -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)

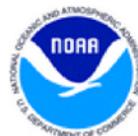
THE PALMER DROUGHT SEVERITY INDEX

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 Mar 04, 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.