



The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES



Robert R. Scott, Commissioner

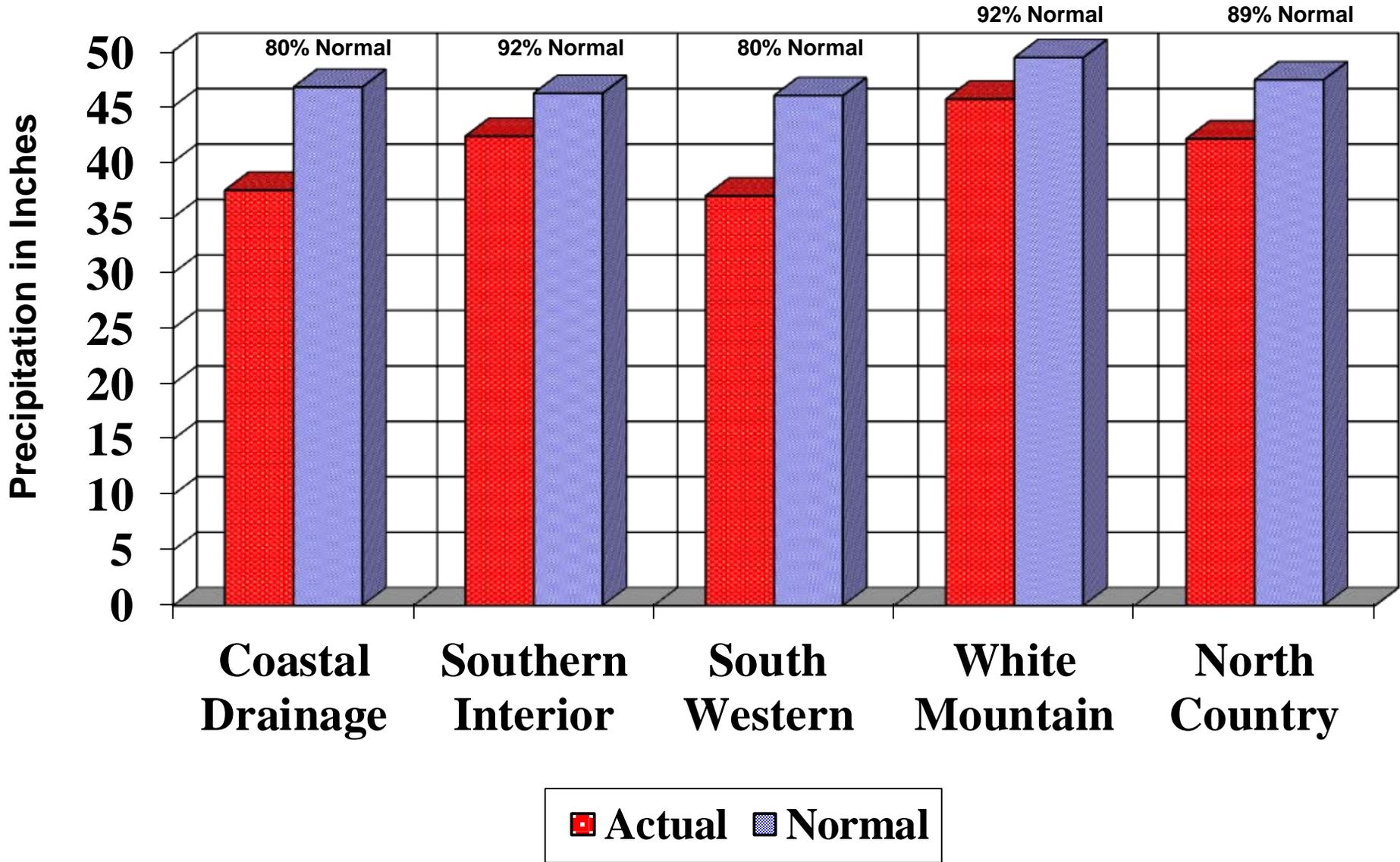
**AGGREGATED PRECIPITATION DATA for N.H.
 DROUGHT MANAGEMENT AREAS**

	Actual Rainfall (inches)	Normal Rainfall (inches)	Deviation from Normal (inches)	Percent of Normal
<u>Coastal Drainage:</u> Rockingham, Strafford counties				
four month	9.35	15.21	-1.79	61%
six month	14.87	23.51	-4.58	63%
nine month	24.86	34.23	-5.31	73%
twelve month	37.44	46.74	-5.24	80%
<u>Southern Interior:</u> Belknap, Hillsborough, Merrimack counties				
four month	14.82	15.81	-0.98	94%
six month	20.79	23.78	-2.98	87%
nine month	30.38	33.91	-3.53	90%
twelve month	42.30	46.18	-3.88	92%
<u>South Western:</u> Cheshire, Sullivan counties				
four month	15.77	16.42	-0.66	96%
six month	21.50	24.15	-2.66	89%
nine month	27.35	33.93	-3.80	81%
twelve month	36.92	45.98	-6.28	80%
<u>White Mountain:</u> Carroll, Grafton counties				
four month	16.33	17.57	-1.24	93%
six month	23.05	25.94	-2.90	89%
nine month	33.09	36.13	-3.04	92%
twelve month	45.65	49.41	-3.76	92%
<u>North Country:</u> Coos county				
four month	15.69	18.20	-2.51	86%
six month	22.12	26.03	-3.91	85%
nine month	31.10	35.05	-3.95	89%
twelve month	42.07	47.40	-5.33	89%

four month period : June 2017 - September 2017
 six month period : April 2017 - September 2017
 nine month period : January 2017 - September 2017
 twelve month period: October 2016 - September 2017

Source: Northeast River Forecast Center, NH Des Dam Bureau

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



MONTHLY PRECIPITATION DATA FOR N.H COUNTIES



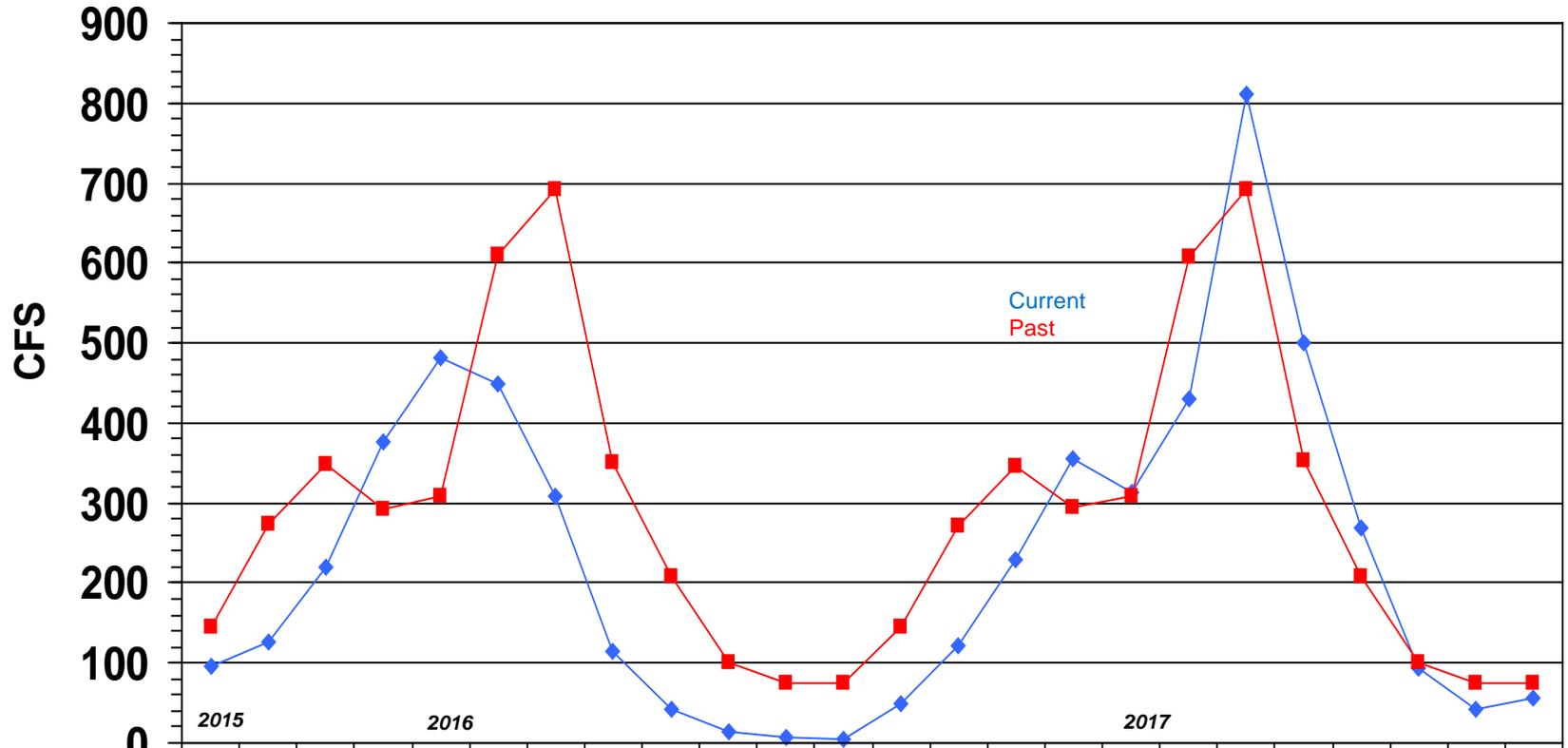
		2016			2017								
		OCT	NOV	DEC	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEPT
<u>Coastal drainage</u>													
STRAFFORD	actual	5.47	3.36	3.35	2.65	3.42	3.74	3.62	1.65	3.93	1.72	3.21	2.84
	normal	4.38	4.50	3.77	3.20	3.30	4.17	4.22	4.10	4.16	3.99	3.72	3.74
	deviation	1.09	-1.14	-0.42	-0.55	0.12	-0.43	-0.60	-2.45	-0.23	-2.27	-0.51	-0.90
ROCKINGHAM	actual	6.25	3.62	3.11	2.96	3.21	3.99	4.01	1.76	5.12	2.42	1.00	3.43
	normal	4.34	4.30	3.73	3.27	3.30	4.19	4.19	4.10	4.10	3.77	3.16	3.77
	deviation	1.91	-0.68	-0.62	-0.31	-0.09	-0.20	-0.18	-2.34	1.02	-1.35	1.00	-0.34
Average	actual	5.86	3.49	3.23	2.81	3.32	3.87	3.82	1.71	4.53	2.07	-0.38	3.14
	normal	4.36	4.40	3.75	3.24	3.30	4.18	4.21	4.10	4.13	3.88	3.44	3.76
	deviation	1.50	-0.91	-0.52	-0.43	0.02	-0.32	-0.39	-2.40	0.40	-1.81	0.25	-0.62
<u>Southern Interior</u>													
HILLSBOROUGH	actual	4.79	3.78	3.06	3.06	2.83	4.63	3.74	1.98	5.15	2.22	3.93	3.65
	normal	4.46	4.22	3.80	3.39	3.29	3.95	4.14	4.10	4.22	3.96	3.75	3.74
	deviation	0.33	-0.44	-0.74	-0.33	-0.46	0.68	-0.40	-2.12	0.93	-1.74	0.18	-0.09
MERRIMACK	actual	4.99	3.84	3.17	2.56	3.08	3.76	3.84	2.50	5.62	2.00	4.01	3.18
	normal	4.43	4.15	3.65	3.26	3.09	3.73	3.96	4.01	4.33	4.11	3.76	3.77
	deviation	0.56	-0.31	-0.48	-0.70	-0.01	0.03	-0.12	-1.51	1.29	-2.11	0.25	-0.59
BELKNAP	actual	4.81	4.07	3.25	2.43	3.21	3.20	3.53	2.32	5.24	2.50	3.86	3.11
	normal	4.49	4.03	3.58	3.08	3.03	3.58	3.75	3.95	4.25	4.08	3.79	3.66
	deviation	0.32	0.04	-0.33	-0.65	0.18	-0.38	-0.22	-1.63	0.99	-1.58	0.07	-0.55
Average	actual	4.86	3.90	3.16	2.68	3.04	3.86	3.70	2.27	5.34	2.24	3.93	3.31
	normal	4.46	4.13	3.68	3.24	3.14	3.75	3.95	4.02	4.27	4.05	3.77	3.72
	deviation	0.40	-0.24	-0.52	-0.56	-0.10	0.11	-0.25	-1.75	1.07	-1.81	0.17	-0.41
<u>South Western</u>													
CHESHIRE	actual	3.05	3.45	2.83	2.64	2.81	4.04	3.10	2.38	6.37	3.37	4.29	3.02
	normal	4.60	3.97	3.68	3.42	3.17	3.73	3.79	4.10	4.20	4.36	4.06	3.83
	deviation	-1.55	-0.52	-0.85	-0.78	-0.36	0.31	-0.69	-1.72	2.17	-0.99	0.23	-0.81
SULLIVAN	actual	3.65	3.40	2.75	2.18	2.73	3.23	3.48	2.50	5.22	3.35	3.18	2.73
	normal	4.51	3.85	3.49	2.72	3.00	3.51	3.66	3.91	4.17	4.36	4.06	3.80
	deviation	-0.86	-0.45	-0.74	-0.90	-0.27	-0.28	-0.18	-1.41	1.05	-1.01	-0.88	-1.07
Average	actual	3.35	3.43	2.79	-0.55	2.77	3.64	3.29	2.44	5.80	3.36	3.74	2.88
	normal	4.56	3.91	3.59	3.07	3.09	3.62	3.73	4.01	4.19	4.36	4.06	3.82
	deviation	-1.21	-0.49	-0.80	-0.84	-0.32	0.02	-0.44	-1.57	1.61	-1.00	-0.33	-0.94
<u>White Mountain</u>													
GRAFTON	actual	4.08	3.93	3.54	2.53	3.28	3.58	3.53	3.13	5.45	5.61	3.42	2.69
	normal	4.67	4.35	3.70	3.19	2.84	3.45	3.76	4.20	4.58	4.56	4.61	4.09
	deviation	-0.59	-0.42	-0.16	-0.66	0.44	0.13	-0.23	-1.07	0.87	1.05	-1.19	-1.40
CARROLL	actual	5.04	4.56	3.97	3.33	3.78	3.59	4.42	2.35	4.78	4.05	3.31	3.35
	normal	4.96	4.72	4.16	3.57	3.31	4.02	4.46	4.32	4.49	4.40	4.42	3.99
	deviation	0.08	-0.16	-0.19	-0.24	0.47	-0.43	-0.04	-1.97	0.29	-0.35	-1.11	-0.64
Average	actual	4.56	4.25	3.76	2.93	3.53	3.59	3.98	2.74	5.12	4.83	3.37	3.02
	normal	4.82	4.54	3.93	3.38	3.08	3.74	4.11	4.26	4.54	4.48	4.52	4.04
	deviation	-0.26	-0.29	-0.18	-0.45	0.46	-0.15	-0.14	-1.52	0.58	0.35	-1.15	-1.02
<u>North Country</u>													
COOS	actual	3.56	3.57	3.84	3.05	2.84	3.09	3.51	2.92	5.48	3.91	4.00	2.30
	normal	4.53	4.24	3.58	3.09	2.72	3.21	3.62	4.21	4.79	4.57	4.84	4.00
	deviation	-0.97	-0.67	0.26	-0.04	0.12	-0.12	-0.11	-1.29	0.69	-0.66	-0.84	-1.70

LAMPREY RIVER near NEWMARKET NH

Gage# 01073500



MONTHLY MEAN FLOW COMPARED TO MEAN OF MONTHLY FLOWS



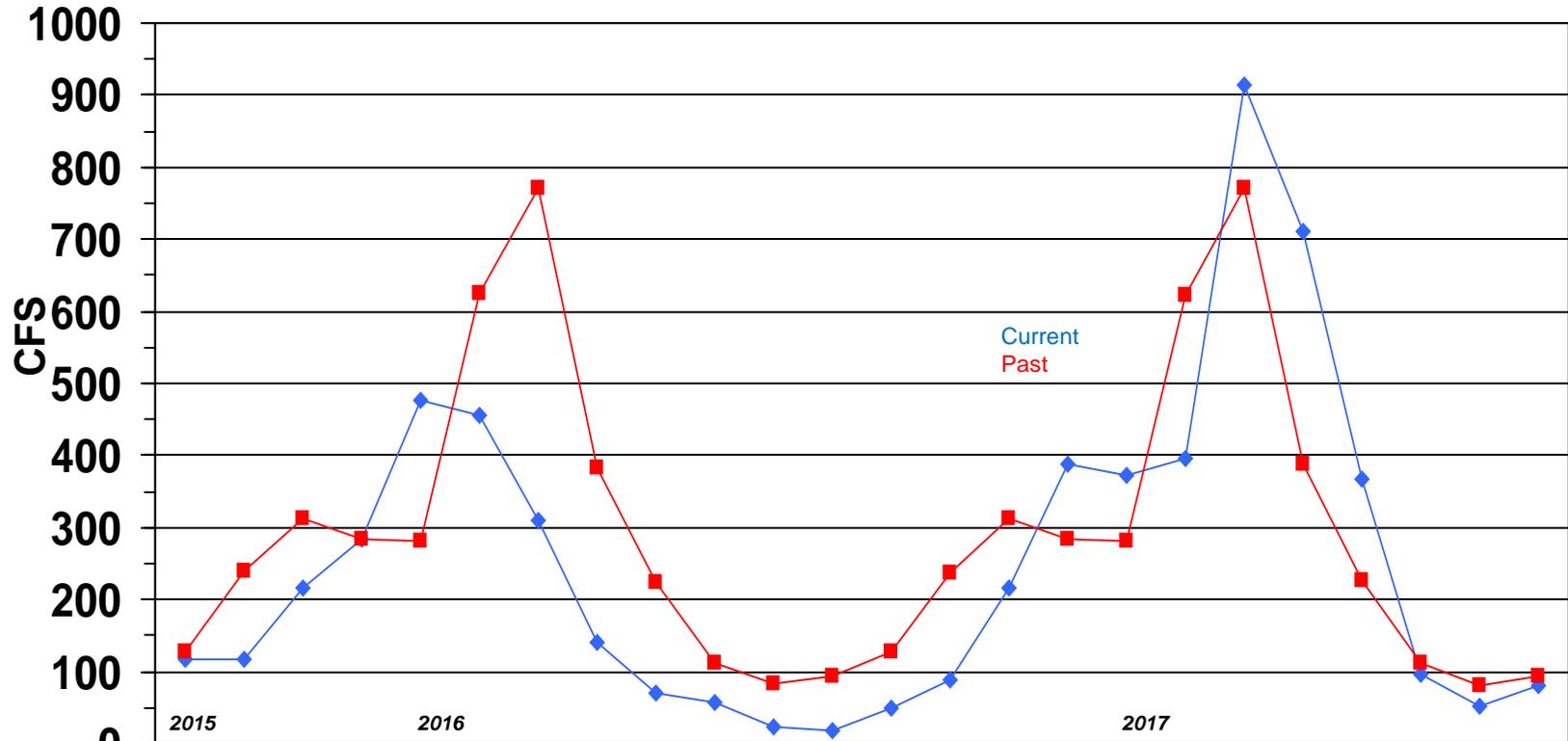
	2015	2016	2017																					
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept
◆ Monthly Mean Flow	95	127	219	376	481	450	308	115	43	14	7	5	50	121	230	355	314	429	811	500	269	93	41	57
■ Mean of Monthly Flows	146	273	349	293	309	609	691	350	207	100	75	74	145	271	347	294	309	607	692	352	207	100	75	74
% of Normal	65%	46%	63%	128%	156%	74%	45%	33%	21%	14%	9%	7%	34%	44%	66%	121%	102%	71%	117%	142%	130%	93%	55%	78%

SOUHEGAN RIVER at MERRIMACK NH

Gage# 01094000



MONTHLY MEAN FLOW COMPARED TO MEAN OF MONTHLY FLOWS

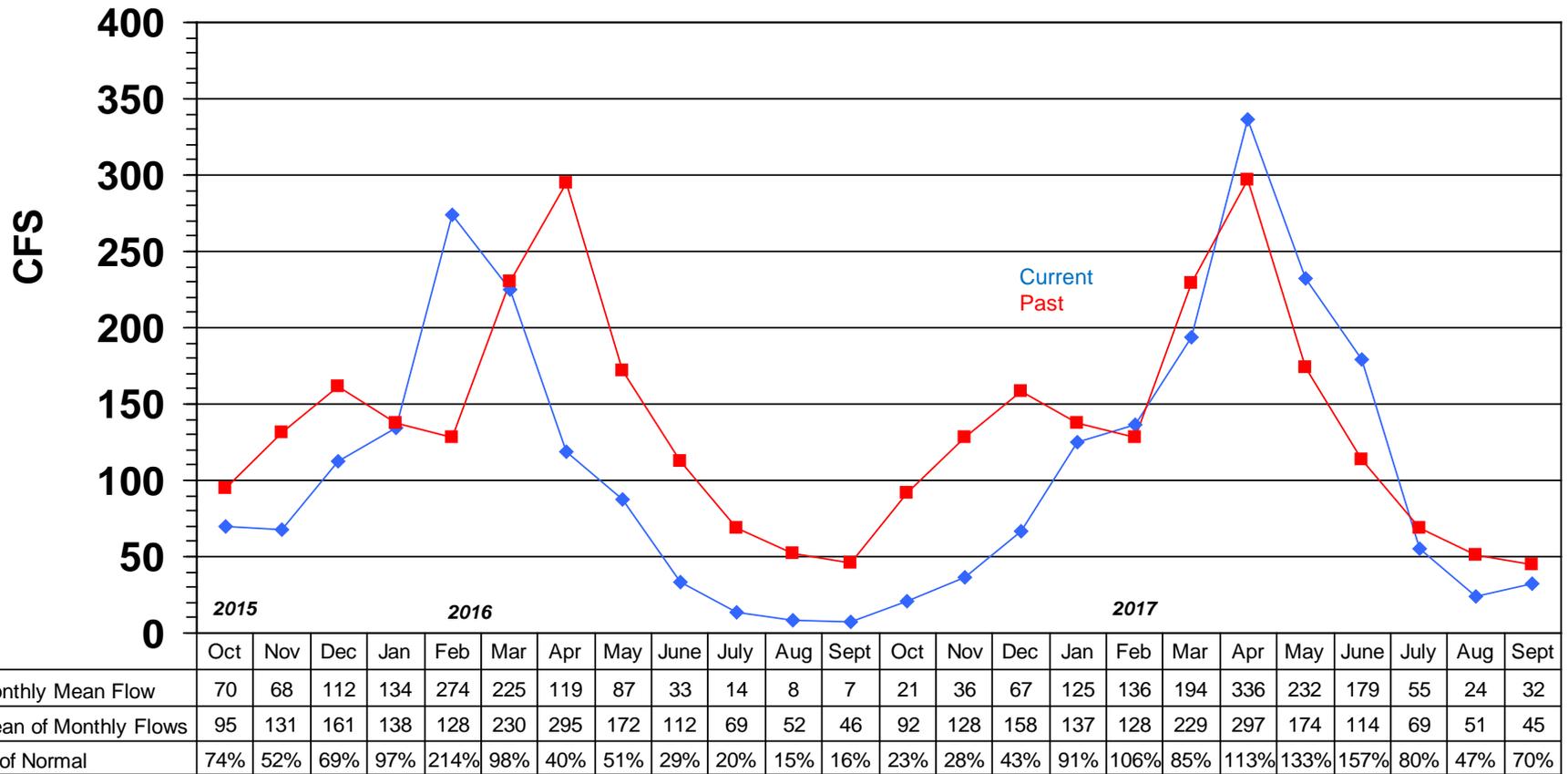


	2015	2016					2017																	
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept
◆ Monthly Mean Flow	116	118	216	285	476	457	309	141	71	58	23	17	50	89	217	388	373	395	914	710	367	96	51	80
■ Mean of Monthly Flows	128	239	313	283	281	626	770	384	225	111	83	93	127	237	312	284	282	623	772	388	227	111	82	93
% of Normal	91%	49%	69%	101%	169%	73%	40%	37%	52%	52%	28%	18%	39%	37%	70%	137%	132%	63%	118%	183%	162%	87%	62%	86%

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



MONTHLY MEAN FLOW COMPARED TO MEAN OF MONTHLY FLOWS

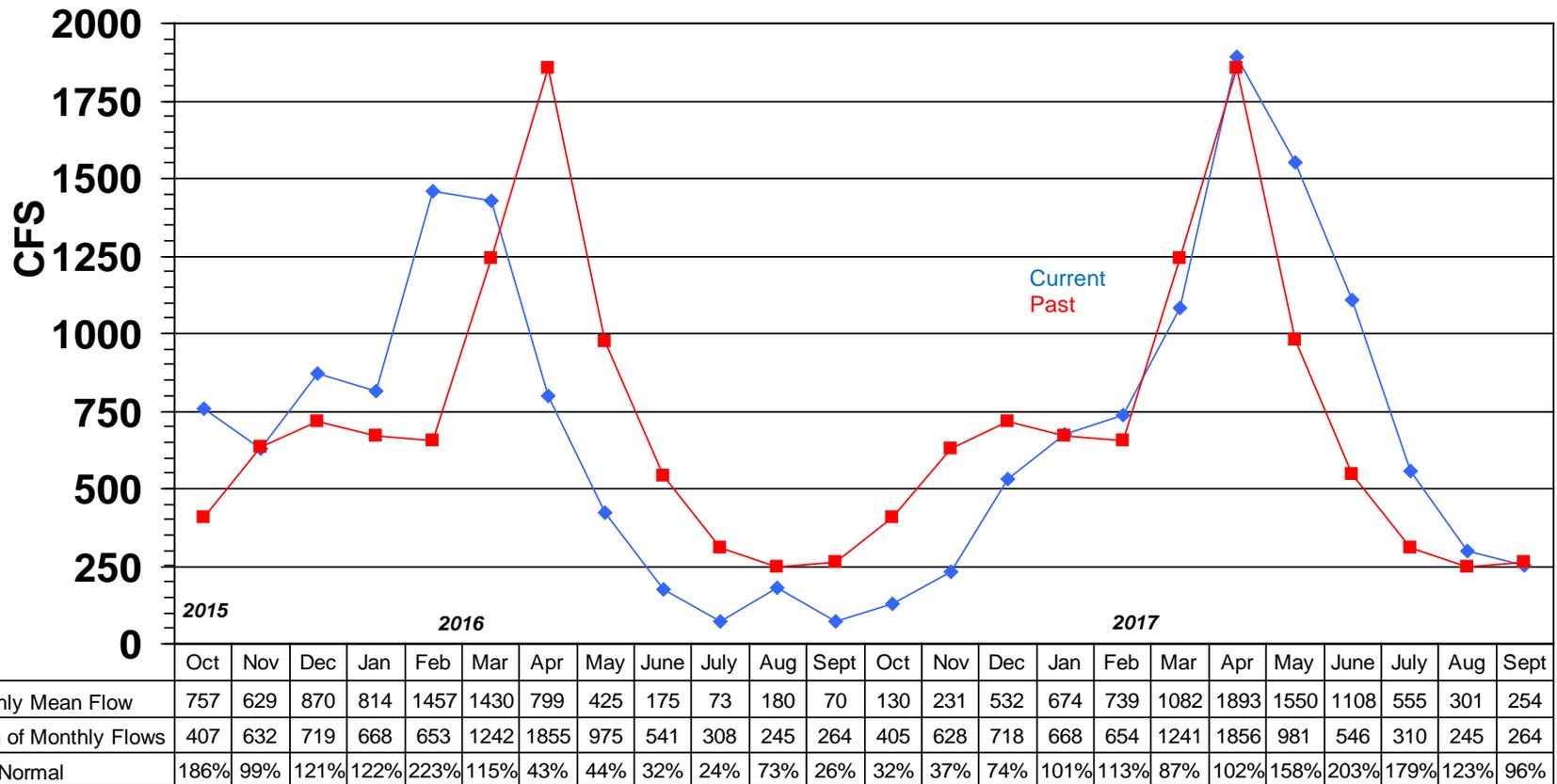


ASHUELOT RIVER at HINSDALE NH

Gage# 01161000



MONTHLY MEAN FLOW COMPARED TO MEAN OF MONTHLY FLOWS

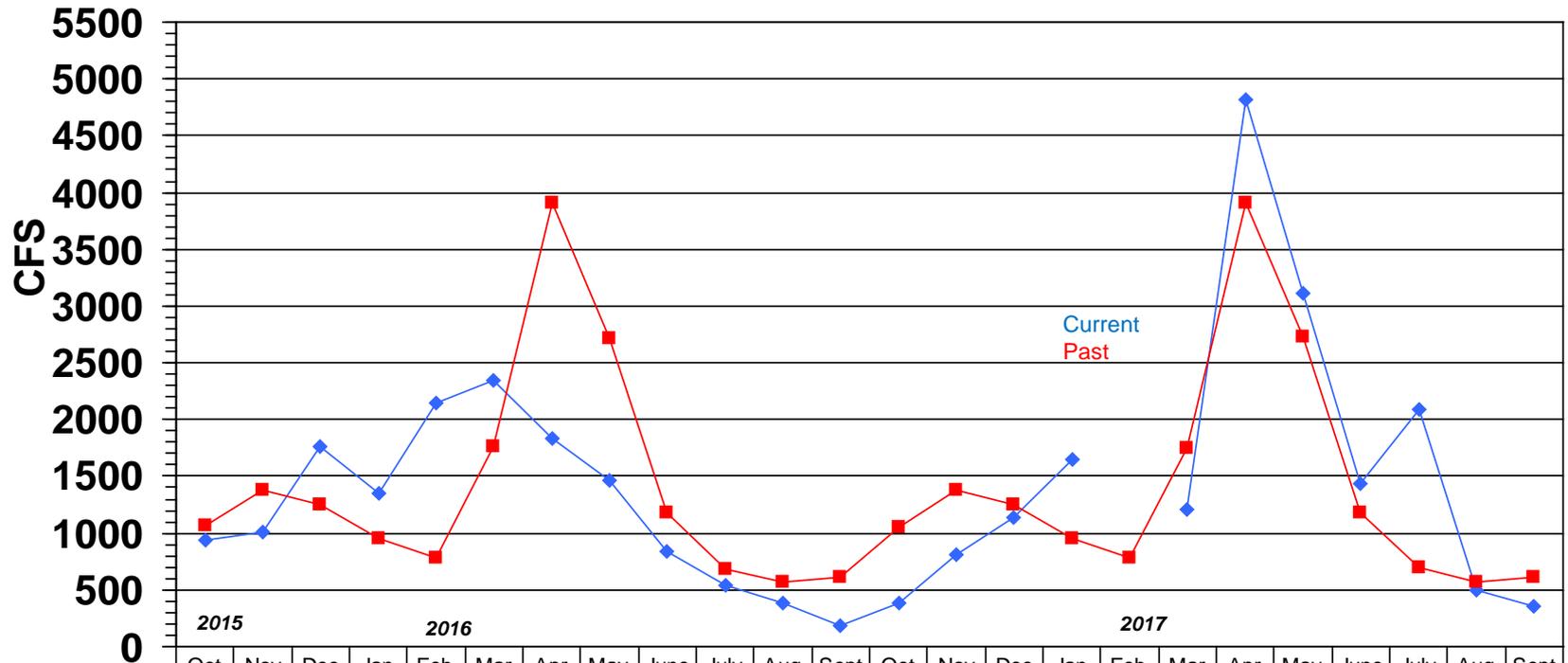


PEMIGEWASSET RIVER at PLYMOUTH NH

Gage# 01076500



MONTHLY MEAN FLOW COMPARED TO MEAN OF MONTHLY FLOWS



	2015	2016					2017																	
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept
◆ Monthly Mean Flow	943	1016	1759	1357	2142	2348	1830	1461	845	538	384	186	390	814	1139	1651	ice	1213	4813	3106	1433	2083	502	351
■ Mean of Monthly Flows	1062	1381	1247	949	778	1760	3903	2719	1175	681	565	609	1056	1376	1246	955	778	1755	3911	2722	1177	693	565	606
% of Normal	89%	74%	141%	143%	275%	133%	47%	54%	72%	79%	68%	30%	37%	59%	91%	173%		69%	123%	114%	122%	301%	89%	58%

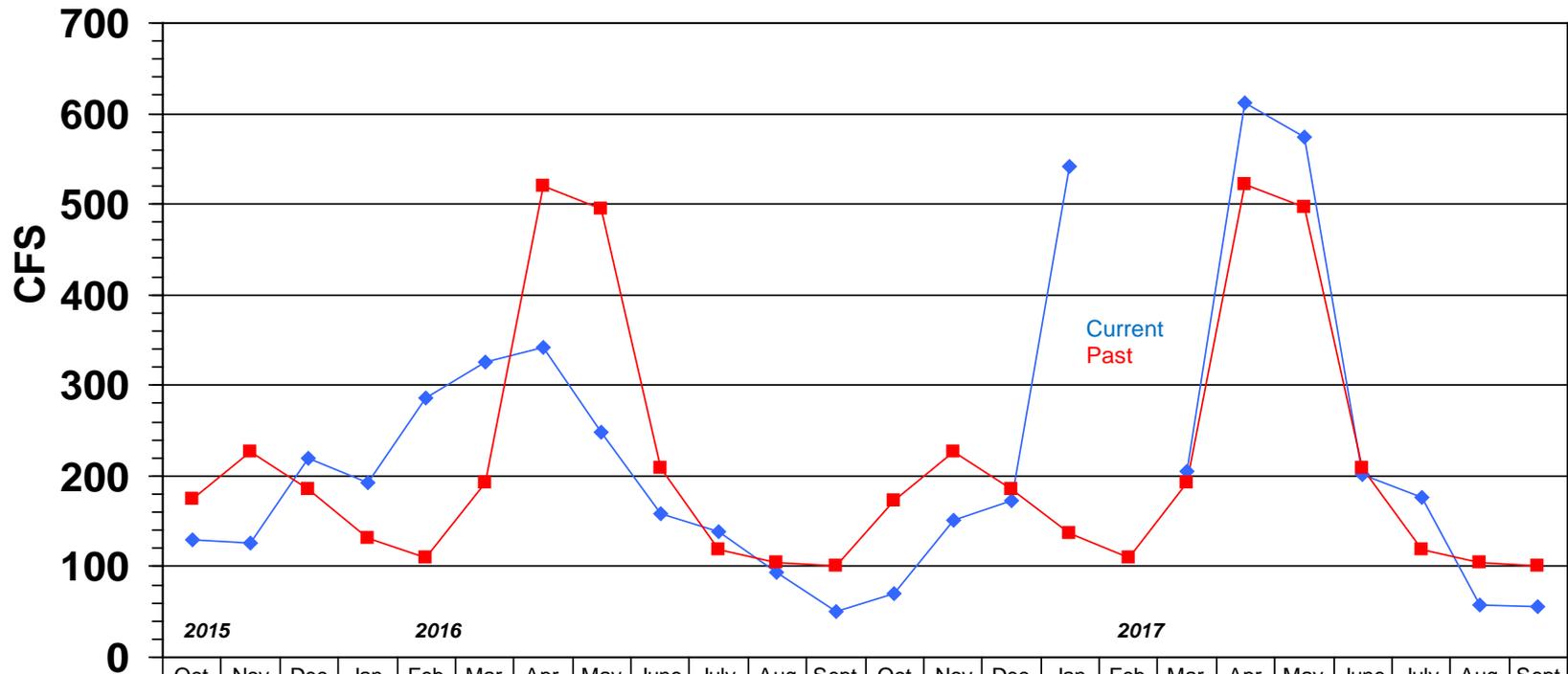
AMMONOOSUC RIVER at BETHLEHEM JUNCTION NH

Gage# 01137500



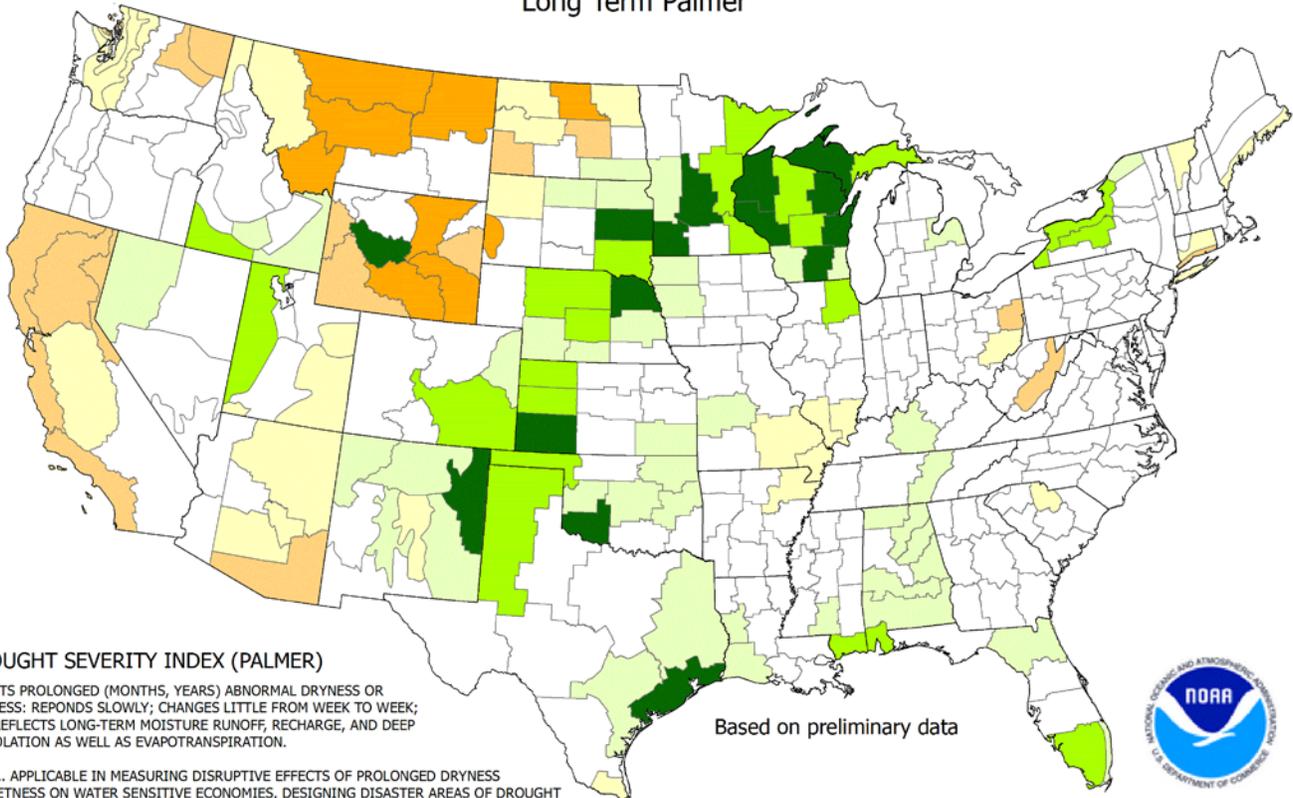
MONTHLY MEAN FLOW COMPARED TO MEAN OF MONTHLY FLOWS

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



	2015			2016									2017											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept
Monthly Mean Flow	129	126	219	193	287	325	342	249	158	138	94	50	71	152	172	541	ice	205	611	574	201	177	58	55
Mean of Monthly Flows	174	227	185	132	109	192	520	494	209	118	105	101	173	226	185	137	109	193	521	496	209	119	105	101
% of Normal	74%	55%	118%	146%	263%	169%	66%	50%	76%	117%	89%	50%	41%	67%	93%	395%		106%	117%	116%	96%	149%	55%	55%

Drought Severity Index by Division
 Weekly Value for Period Ending Oct 14, 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).

Based on preliminary data

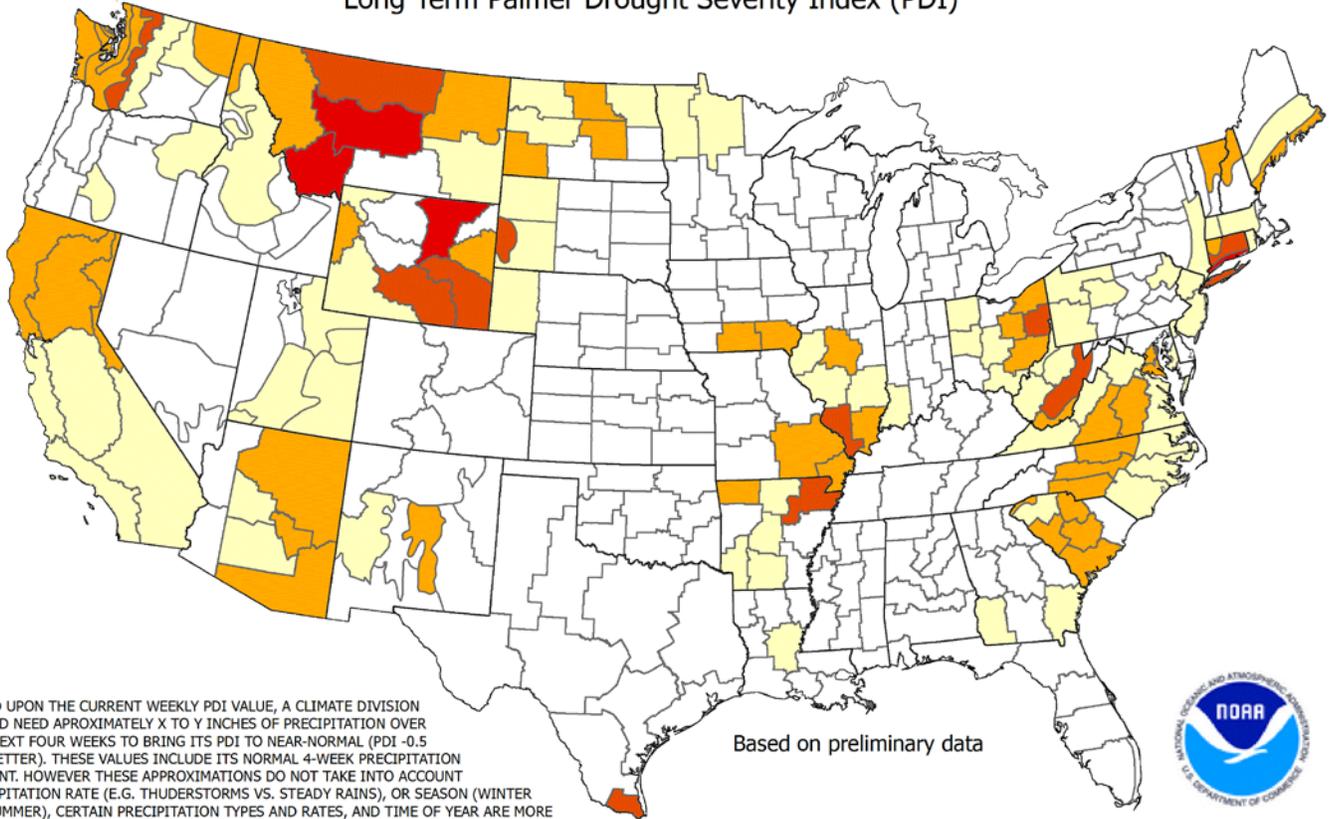


- 4.0 or less (Extreme Drought)
- 3.0 to -3.9 (Severe Drought)
- 2.0 to -2.9 (Moderate Drought)
- 1.9 to +1.9 (Near Normal)
- +2.0 to +2.9 (Unusual Moist Spell)
- +3.0 to +3.9 (Very Moist Spell)
- +4.0 and above (Extremely Moist)

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 Oct 14, 2017
 Long Term Palmer Drought Severity Index (PDI)



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)

Based on preliminary data



- 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.