



**State of Rhode Island and Providence Plantations  
Water Resources Board**

Justice William E. Powers Building, Third Floor  
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Providence, RI 02908  
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Date: September 27, 2007

To: Robert Griffith, Ph.D., Chair, Water Resources Protection & Use Committee  
WRP&U Committee Members

Through: Juan Mariscal, P.E.  
General Manager

From: Beverly O'Keefe, M.A.  
Supervising Planner

Re: Drought Management Plan Program

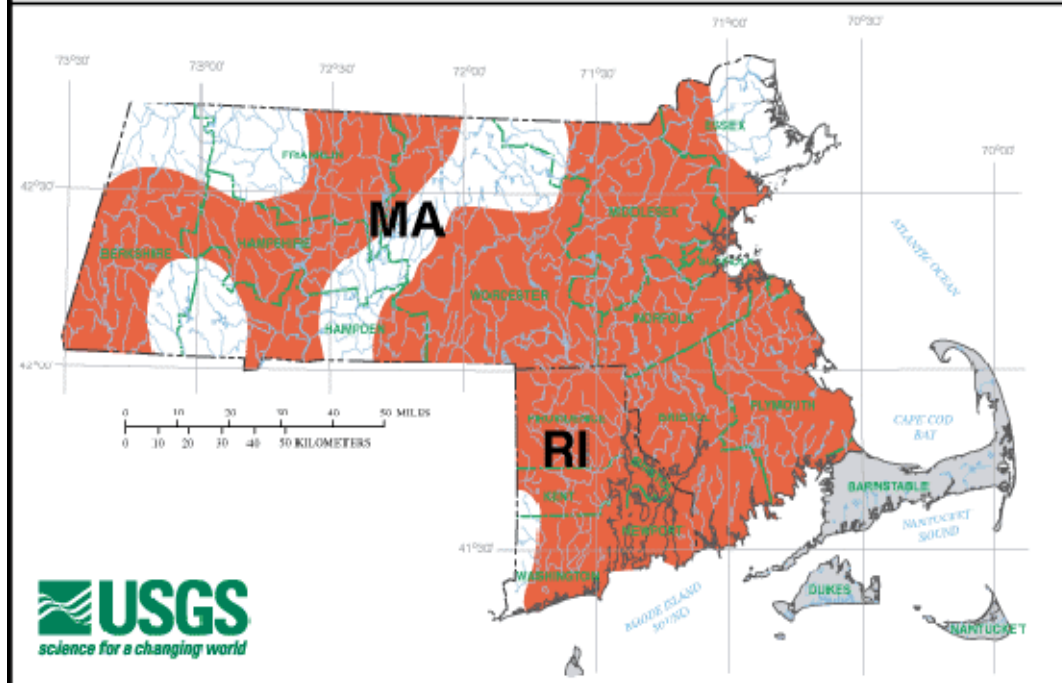
**BACKGROUND:** Pursuant to State Guide Plan Element 724: The Rhode Island Drought Management Plan, the Water Resources Board is required to assess water conditions monthly. Staff has assembled climate information from a variety of sources to monitor the potential for drought conditions in Rhode Island which is summarized below:

Data Source	Date	Report Summary
NOAA NWS Taunton MA Climate Report	Sep 27, 2007	2.49" received thru Sep 27 2007, T.F. Green Airport; - 0.12" below normal for September. -0.32" below normal since Jan. 1
USGS Surface Water Runoff Report	July 2007	Below normal, Normal southwestern RI
Scituate Reservoir	Aug 29, 2007	84.8% of Capacity
USGS Groundwater Level Summary	July 2007	Normal Range
USGS RI Groundwater Level Well Report	July 2007	New record low ground water level – Little Compton 142 well
NOAA NWS Drought Severity Index: Palmer	25 Aug 2007	Near Normal
NOAA NWS Crop Moisture Index	25 Aug 2007	Slightly Dry
NOAA NWS Northeast Drought Monitor Seasonal Assessment	21 Aug 2007	Abnormally Dry
NOAA Seasonal Drought Outlook (through November 2007)	16 Aug 2007	Near Normal
NOAA Standard Precipitation Index	August 2007	1 Month – Extremely Dry; 6-Month – Moderately Moist

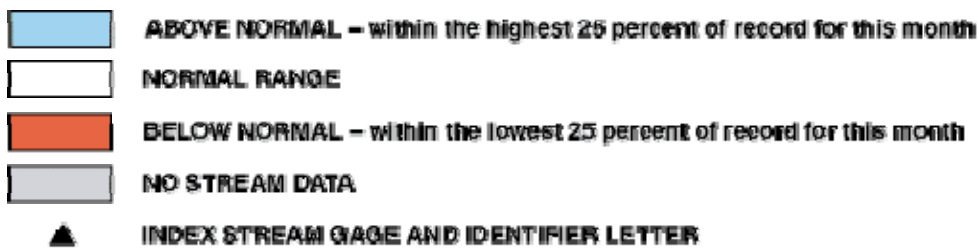
Rhode Island month to date rainfall through September 27, 2007 was slightly below normal.

The **USGS Water Conditions Statement** is summarized in three tables (Surface Water Runoff, Ground-water Level Conditions, and Summary of Rhode Island Ground-Water Levels) embedded in this memorandum. Surface-water flows at the end of August 2007 were generally normal (between highest and lowest 25 percent of flows for August) in river basins in southwestern Rhode Island. Flows in the remaining river basins in Rhode Island were generally below normal (lowest 25 percent of flows for August). Ground-water levels were generally normal (between highest and lowest 25 percent of levels for

# Surface-Water Runoff August 2007



## COMPARISON WITH MONTHLY NORMAL RANGE



**NOTE:** Additional sites from those shown are used to determine ranges

August) in Rhode Island. A new record-low ground-water level for the month of August was measured in the Little Compton 142 well in Rhode Island (lowest since August 1992). No other record-high or record-low ground-water levels were measured during the month of August.

Borden Brook/Cobble Mountain, Quabbin and Scituate Reservoirs were 81-, 93-, and 85-percent full, respectively, at the end of August. In comparison, Borden Brook/Cobble Mountain, Quabbin, and Scituate Reservoirs were 87-, 96- and 92-percent full, respectively, at the end of July.

Table 2: Ground Water-Level Conditions

MASSACHUSETTS AND RHODE ISLAND USGS GROUND- WATER-LEVEL CONDITIONS - AUGUST 2007

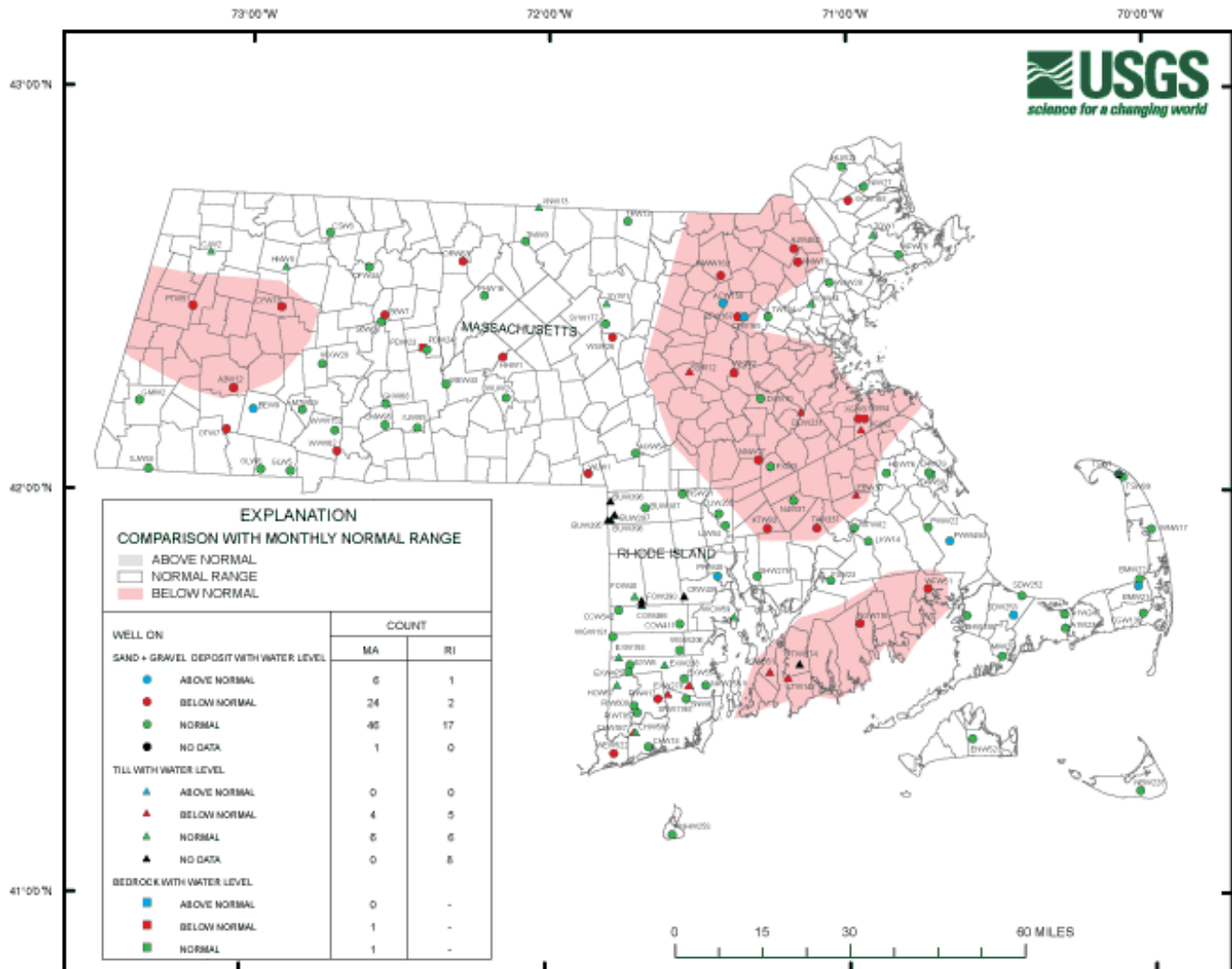


TABLE 3: SUMMARY OF GROUND-WATER LEVELS August 2007 PROVISIONAL

(NOTE: Wells with \* also available in real-time at top of Ground-Water Data page; OWC, monthly measured value used in high ground-water level estimation report, USGS Open-File Report 80-1205.)

WELL	L T I O T P H O O	START YEAR	NET CHANGE		DEPARTURE FROM MONTHLY MEDIAN	WATER LEVEL		
			IN MONTH (FEET)	IN ONE YEAR (FEET)		BELOW LAND- SURFACE DATUM (OWc) (FEET)	DAY	
RHODE ISLAND								
BURRILLVILLE 187	TS	1968	- 0.80	- 0.77	- 0.28	16.59	24	
BURRILLVILLE 395	UT	1992	-----	-----	-----	-----		
BURRILLVILLE 396	VT	1992	-----	-----	-----	-----		
BURRILLVILLE 397	HT	1992	-----	-----	-----	-----		
BURRILLVILLE 398	HT	1992	-----	-----	-----	-----		
CHARLESTOWN 18	FS	1946	- 1.04	- 2.02	- 0.46	19.51	28	
CHARLESTOWN 586	VT	1992	- 0.25	- 0.39	- 0.35	4.50	28	
CHARLESTOWN 587	ST	1992	- 0.43	- 0.86	- 0.89	11.96	28	
COVENTRY 342	VS	1991	- 0.77	- 0.79	- 0.52	11.24	24	
COVENTRY 411	SS	1961	- 0.40	- 0.59	+ 0.00	22.09	24	
COVENTRY 466	VT	1992	-----	-----	-----	-----		
CRANSTON CITY 439	ST	1992	-----	-----	-----	-----		
CUMBERLAND 265	SS	1946	- 0.85	- 0.73	+ 0.01	14.89	24	
EXETER 6	VS	1948	- 0.35	- 0.48	- 0.10	6.80	24	
EXETER 158	ST	1991	- 1.40	- 2.64	- 0.93	16.77	24	
EXETER 238	FT	1991	- 0.20	- 0.32	- 0.29	12.91	28	
EXETER 278	HT	1991	- 2.96	- 4.56	- 2.25	20.07	28	
EXETER 475	VS	1981	- 0.77	- 0.82	- 0.12	15.63	24	
EXETER 554	SS	1988	- 0.52	- 0.40	- 0.13	10.79	28	
FOSTER 40	HT	1991	- 2.00	- 1.10	- 1.28	10.01	24	
FOSTER 290	HT	1992	-----	-----	-----	-----		
HOPKINTON 67	ST	1991	- 1.13	- 1.25	- 0.21	19.51	24	
LINCOLN 84	VS	1946	- 0.33	- 1.11	- 0.27	6.12	24	
LITTLE COMPTON 142	ST	1992	- 1.11	- 2.22	- 2.25	19.06	< 28	
NEW SHOREHAM 258	UT	1991	- 0.39	- 1.22	- 0.40	12.74	24	
NORTH KINGSTOWN 255	VS	1954	- 0.70	- 1.06	- 0.42	9.69	28	
NORTH SMITHFIELD 21	TS	1947	- 0.75	- 0.90	- 0.05	9.83	24	
PORTSMOUTH 551	HT	1992	- 2.21	- 4.12	- 3.59	48.20	28	
PROVIDENCE 48	TS	1944	- 0.25	- 0.29	+ 2.42	4.37	28	
RICHMOND 417	VS	1976	- 0.34	- 0.69	- 0.40	7.78	28	
RICHMOND 600*	TS	1977	- 0.43	- 1.04	- 0.20	34.54	24	
RICHMOND 785	FS	1989	- 0.88	- 0.93	+ 0.49	23.64	24	
SOUTH KINGSTOWN 6	VS	1955	- 0.67	- 1.41	- 0.59	13.52	28	
SOUTH KINGSTOWN 1198	FS	1988	- 0.83	- 1.13	- 1.05	10.69	28	
TIVERTON 274	TT	1990	-----	-----	-----	-----		
WARWICK 59	ST	1991	- 2.88	- 3.35	- 2.25	13.88	28	
WESTERLY 522	FS	1969	- 0.67	- 0.90	- 0.54	14.00	28	
WEST GREENWICH 181	US	1969	- 0.29	- 0.46	+ 0.01	16.60	24	
WEST GREENWICH 206	ST	1991	- 0.64	- 0.93	- 0.74	6.02	28	

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 >> SET NEW HIGH OR EQUALED HIGHEST RECORDED WATER LEVEL FOR PERIOD OF RECORD  
 > SET NEW HIGH OR EQUALED HIGHEST RECORDED WATER LEVEL FOR END OF NOVEMBER  
 << SET NEW LOW OR EQUALED LOWEST RECORDED WATER LEVEL FOR PERIOD OF RECORD  
 < SET NEW LOW OR EQUALED LOWEST RECORDED WATER LEVEL FOR END OF NOVEMBER  
 ----- DATA NOT AVAILABLE

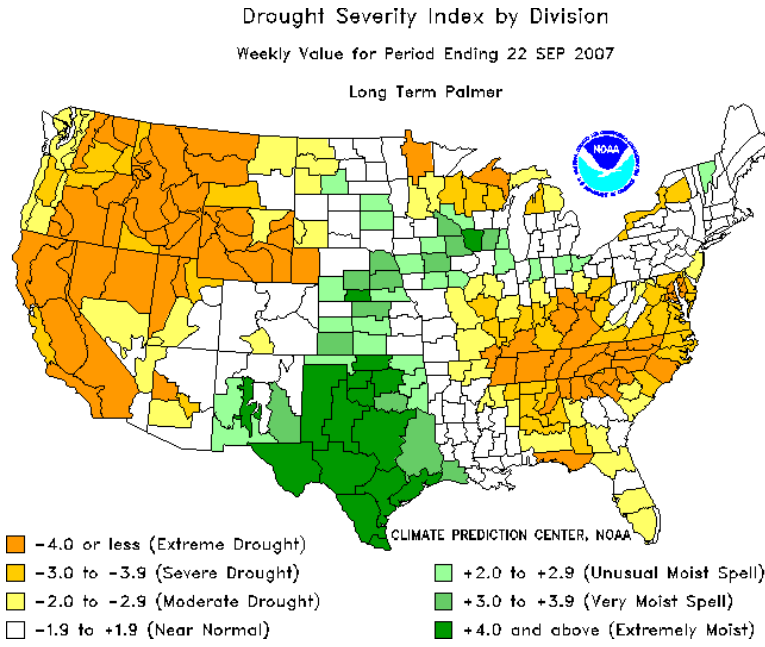
TOPOGRAPHIC (TOPO) SETTING: F=FLAT, G=FLOOD PLAIN, H=HILLTOP, S=HILLSIDE,  
 T=TERRACE, U=UNDULATING, V=VALLEY, W=UPLAND DRAW, LITHOLOGY (LITHO): G=GRAVEL, R=ROCK,  
 S=SAND, T=TILL

CONTENTS OF MAJOR RESERVOIRS (ESTIMATED END OF MONTH READINGS)  
 (MILLIONS OF CUBIC FEET)

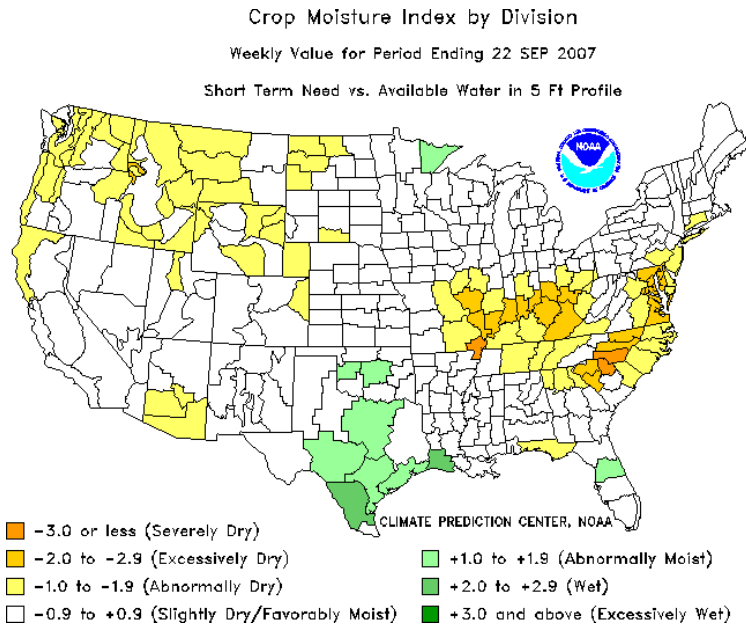
	MONTH-END CONTENTS	PERCENT OF AVERAGE	PERCENT FULL
SCITUATE RESERVOIR, RI	4168	102	85

The NOAA National Weather Service (NWS) Drought Severity Index for the period ending September 22, 2007 shows normal conditions for the region (Table 4). The Crop Moisture Index for the same time period shows normal conditions (Table 5).

**Table 4: Drought Severity Index**

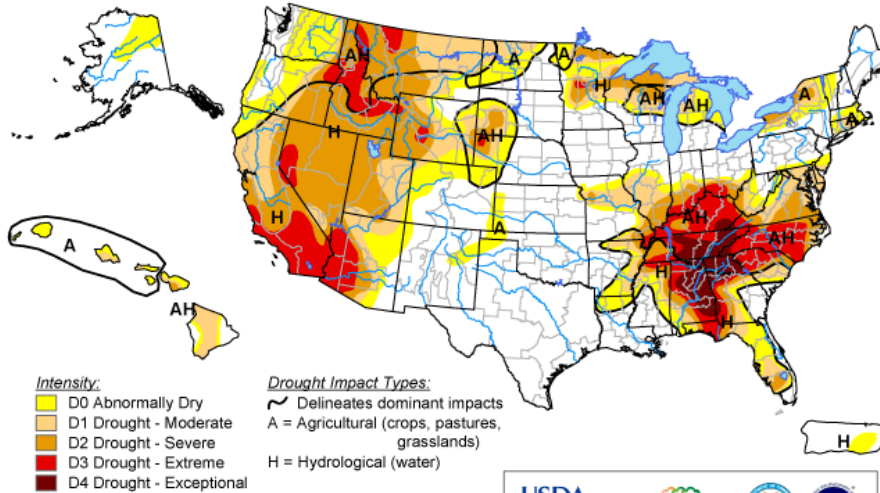


**Table 5: Crop Moisture Index**



**Table 6: US Drought Monitor**

# U.S. Drought Monitor September 25, 2007 Valid 8 a.m. EDT



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

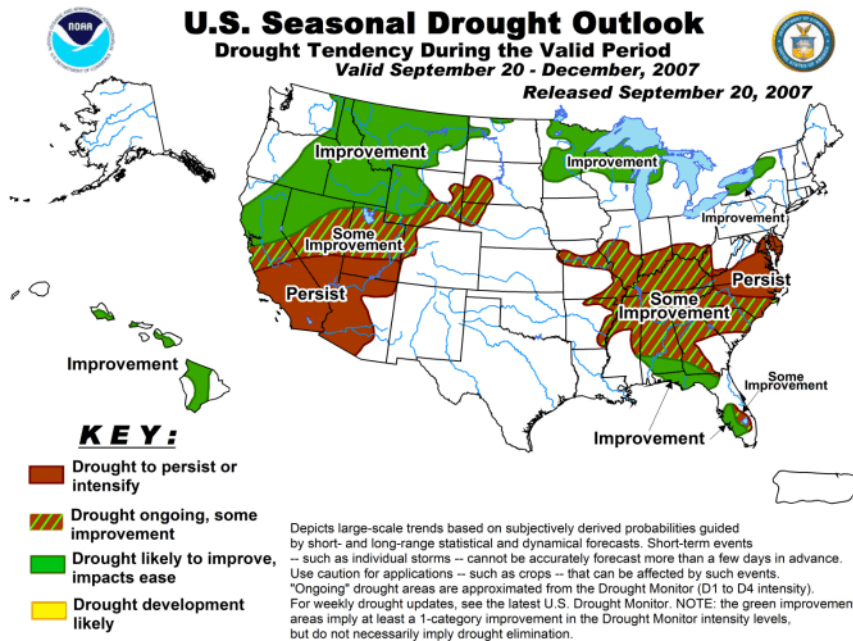
<http://drought.unl.edu/dm>



Released Thursday, September 27, 2007  
Author: David Miskus, JAWF/CPC/NOAA

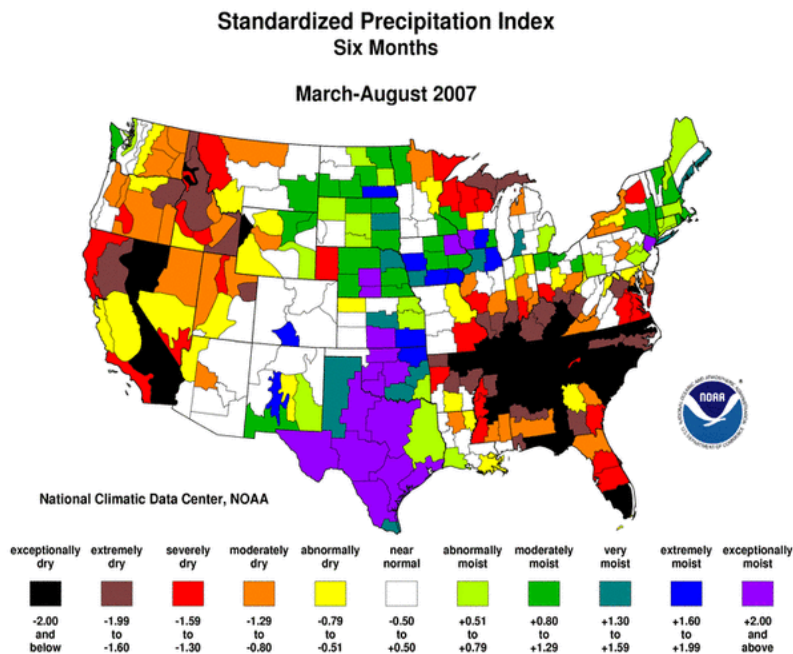
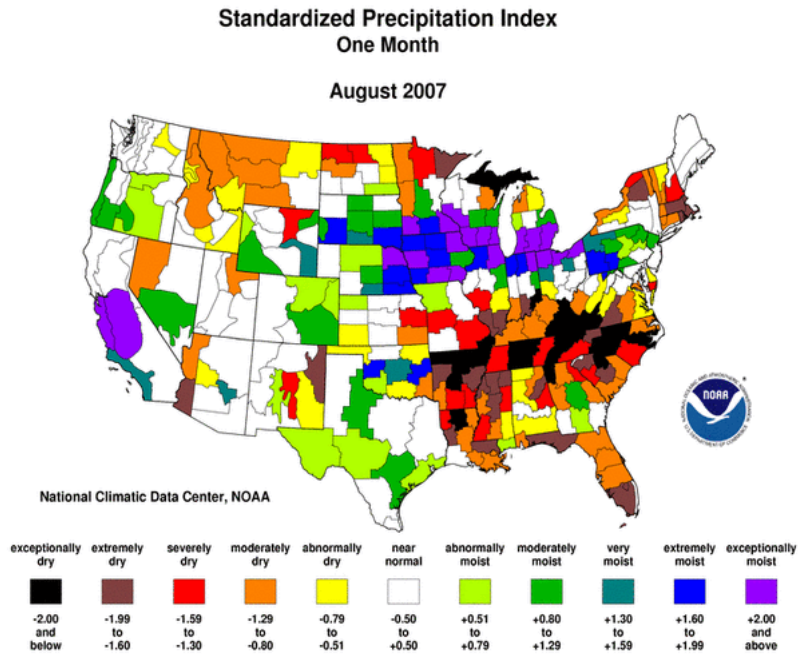
Tables 6 and 7 present national seasonal assessment and state rankings based on precipitation. The Northeast Drought Monitor (Table 6) focuses on regional conditions, and portrays Rhode Island experiencing a normal intensity through September 26, 2007. The NOAA Seasonal Drought Outlook through December, 2007 projects “normal” conditions for Rhode Island.

**Table 7: NOAA Seasonal Drought Outlook**



## Current Standardized Precipitation Index

The Standardized Precipitation Index (SPI) is a way of [measuring drought](#) that is different from the Palmer drought index (PDI). Like the PDI, this index is negative for drought, and positive for wet conditions. But the SPI is a probability index that considers only precipitation, while Palmer's indices are water balance indices that consider water supply (precipitation), demand (evapo-transpiration) and loss (runoff). On this map, the red shading denotes dry conditions while the green shading indicates wet conditions.



## DISCUSSION

Water conditions will continue to be closely monitored over the next month by the Water Resources Board staff.

**RECOMMENDATIONS :** Information only.

Additional Information on Water Conditions:

NOAA NWS Climate Report

<http://www.erh.noaa.gov/box/fcsts/BOSESFBOX.html>

NOAA Drought Severity Index by Division

[http://www.cpc.ncep.noaa.gov/products/analysis\\_monitoring/regional\\_monitoring/palmer.gif](http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/regional_monitoring/palmer.gif)

Crop Moisture Index by Division

[http://www.cpc.ncep.noaa.gov/products/analysis\\_monitoring/regional\\_monitoring/cmi.gif](http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/regional_monitoring/cmi.gif)

NOAA Drought Information Center

<http://www.drought.noaa.gov/>

U. S. Geological Survey – MA & RI

<http://ma.water.usgs.gov/>



**Rhode Island Precipitation**  
**National Weather Service Taunton, MA**  
Preliminary Precipitation Data (inches) by Drought Region  
Past 12 months ending September 2007

<b>RI 1 month Sep 2007</b>	Rainfall	Departure	Percent	Normal
Northwest	3.32	-0.67	83	3.99
Northeast	2.63	-1.42	65	4.05
Central West	2.54	-1.54	62	4.08
Central East	2.55	-1.15	69	3.70
Eastern	1.98	-1.95	50	3.93
Southern	1.90	-2.26	46	4.16
New Shoreham	1.90	-2.26	46	4.16

<b>RI 2 month Aug-Sep 07</b>	Rainfall	Departure	Percent	Normal
Northwest	4.95	-3.55	58	8.50
Northeast	3.47	-4.83	42	8.30
Central West	4.35	-4.19	51	8.54
Central East	3.63	-3.97	48	7.60
Eastern	3.52	-4.56	44	8.08
Southern	3.89	-4.52	46	8.41
New Shoreham	3.89	-4.52	46	8.41

<b>RI 3 month Jul-Sep 07</b>	Rainfall	Departure	Percent	Normal
Northwest	8.97	-3.37	73	12.34
Northeast	7.30	-4.62	61	11.92
Central West	7.83	-4.29	65	12.12
Central East	7.59	-3.18	70	10.77
Eastern	5.90	-5.42	52	11.32
Southern	6.82	-4.90	58	11.72
New Shoreham	6.82	-4.90	58	11.72

<b>RI 6 month Apr 07- Sep 07</b>	Rainfall	Departure	Percent	Normal
Northwest	25.02	0.15	101	24.87
Northeast	23.39	-0.29	99	23.68
Central West	22.84	-1.96	92	24.80
Central East	21.16	-0.81	96	21.97
Eastern	19.69	-3.65	84	23.34
Southern	20.77	-3.78	85	24.55
New Shoreham	20.77	-3.78	85	24.55

<b>RI 12 month Oct 06- Sep 07</b>	Rainfall	Departure	Percent	Normal
Northwest	53.23	0.32	101	52.91
Northeast	51.26	1.79	104	49.47
Central West	53.21	0.98	102	52.22
Central East	50.69	4.66	110	46.03
Eastern	48.29	-0.48	99	48.77
Southern	51.90	0.58	101	51.32
New Shoreham	51.90	0.58	101	51.32