



## State of Rhode Island and Providence Plantations

### Water Resources Board

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To: Public Drinking Water Protection Committee  
Through: Juan Mariscal, P.E., General Manager  
From: Beverly O'Keefe, Supervising Planner  
Date: January 19, 2007  
Subject: Drought Update: Current Water Conditions

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**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	Dec. 2006	2.47" received TF Green Airport - 1.67" below normal for November
USGS Surface Water Runoff Report	Dec. 2006	Normal
Scituate Reservoir	Jan. 19, 2007	104.4% of Capacity
USGS Groundwater Level Summary	Dec. 2006	Normal –
USGS RI Groundwater Level Detail Well Report	Dec. 2006	One new high or equaled water level; One new low or equaled water level reported
NOAA NWS Drought Severity Index: Palmer	13 Jan. 2007	Extremely Moist
NOAA NWS Crop Moisture Index	13 Jan. 2007	Wet
NOAA NWS Drought Monitor Seasonal Assessment	16 Jan. 2007	Normal
NOAA Seasonal Drought Outlook (through November 2006)	16 Jan. 2007	Normal

Rhode Island month to date rainfall for December 2006 was around fifty percent (50%) of normal while the annual rainfall through December 2006 was between 4.5 to 8 inches above normal (National Weather Service, N. Belk). Rainfall through January 17, 2007 has been above normal. For example, Providence 3.13 inches (normal 2.46 inches).

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 December 2006 were generally normal (between highest and lowest 25 percent of flows for December) in Massachusetts and Rhode Island. Although there was some variability of ground-water levels throughout Massachusetts and Rhode Island, ground-water levels were generally normal (between highest and lowest 25 percent of levels for December) for the two-state region.

# Surface-Water Runoff December 2006

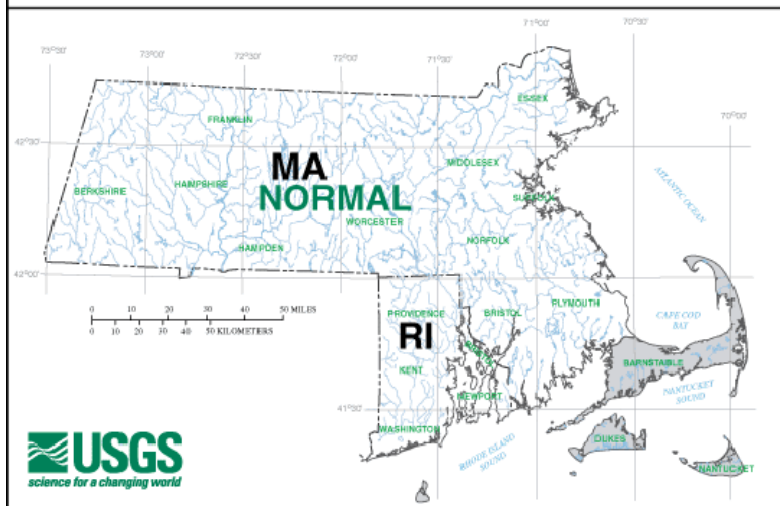


Table 1: Surface Water Runoff

## COMPARISON WITH MONTHLY NORMAL RANGE

- ABOVE NORMAL** – within the highest 25 percent of record for this month
- NORMAL RANGE**
- BELOW NORMAL** – within the lowest 25 percent of record for this month
- NO STREAM DATA**
- INDEX STREAM GAGE AND IDENTIFIER LETTER**

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

MASSACHUSETTS AND RHODE ISLAND USGS GROUND-WATER LEVEL CONDITIONS - DECEMBER 2006

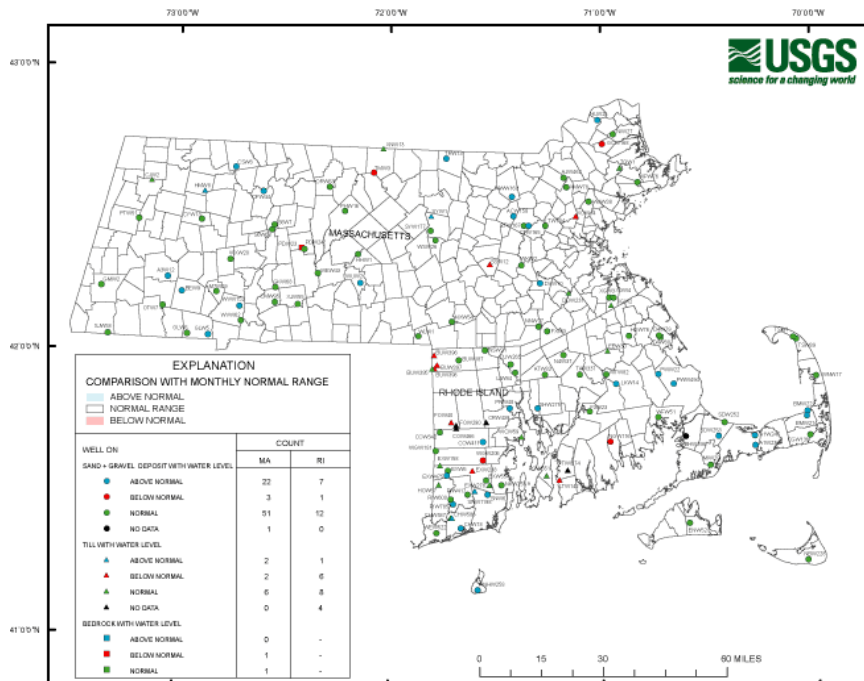


Table 2: Ground Water-Level Conditions

Borden Brook/Cobble Mountain, Quabbin and Scituate Reservoirs were 94-, 96-, and 107-percent full, respectively, at the end of December. In comparison, Borden Brook/Cobble Mountain, Quabbin, and Scituate Reservoirs were 93-, 95- and 103-percent full, respectively, at the end of November.

**TABLE 3: SUMMARY OF GROUND-WATER LEVELS**                      **December 2006**                      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.)

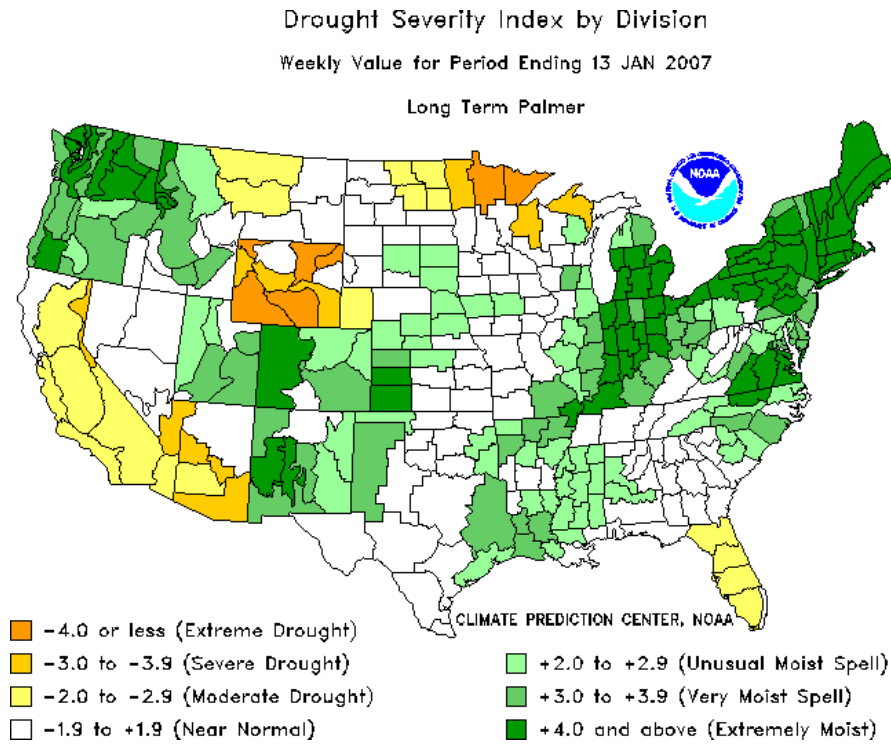
WELL	L T I O T P H O O	START YEAR OF RECORD	NET CHANGE		DEPARTURE FROM MONTHLY MEDIAN	WATER LEVEL BELOW LAND- SURFACE DATUM (OWc)	DAY
			IN MONTH (FEET)	IN ONE YEAR (FEET)			
RHODE ISLAND							
BURRILLVILLE 187	TS	1968	+ 0.08	- 0.35	+ 0.10	15.00	21
BURRILLVILLE 395	UT	1992	- 0.59	+ 3.87	- 1.00	7.15	27
BURRILLVILLE 396	VT	1992	- 1.17	- 0.94	- 1.24	6.02	< 27
BURRILLVILLE 397	HT	1992	- 0.96	- 4.79	- 6.73	21.20	27
BURRILLVILLE 398	HT	1992	- 0.96	- 0.80	- 1.58	8.01	27
CHARLESTOWN 18	FS	1946	- 0.79	- 2.17	+ 1.62	16.80	21
CHARLESTOWN 586	VT	1992	+ 1.13	-----	+ 1.17	2.42	> 27
CHARLESTOWN 587	ST	1992	- 1.19	-----	+ 0.03	6.08	27
COVENTRY 342	VS	1991	- 1.94	- 0.55	- 0.41	8.36	21
COVENTRY 411	SS	1961	- 1.11	- 0.24	+ 1.02	20.58	21
COVENTRY 466	VT	1992	-----	-----	-----	-----	
CRANSTON CITY 439	ST	1992	-----	-----	-----	-----	
CUMBERLAND 265	SS	1946	- 2.18	- 2.38	- 0.11	11.69	21
EXETER 6	VS	1948	- 0.89	- 0.50	+ 0.54	5.18	21
EXETER 158	ST	1991	- 2.25	- 1.77	- 0.42	6.85	21
EXETER 238	FT	1991	- 0.67	- 0.50	- 0.29	11.90	21
EXETER 278	HT	1991	- 2.93	- 4.15	+ 2.30	10.99	21
EXETER 475	VS	1981	+ 0.21	- 0.08	+ 1.25	13.59	21
EXETER 554	SS	1988	- 0.74	- 0.87	+ 0.19	9.62	21
FOSTER 40	HT	1991	- 1.71	- 1.39	- 1.19	4.65	21
FOSTER 290	HT	1992	-----	-----	-----	-----	
HOPKINTON 67	ST	1991	- 1.62	- 1.39	+ 1.53	14.86	21
LINCOLN 84	VS	1946	- 1.68	- 1.01	- 0.04	5.08	21
LITTLE COMPTON 142	ST	1992	- 5.37	- 2.68	- 3.27	13.18	28
NEW SHOREHAM 258	UT	1991	-----	- 1.10	+ 0.68	11.38	23
NORTH KINGSTOWN 255	VS	1954	- 1.28	- 1.42	+ 0.80	7.53	21
NORTH SMITHFIELD 21	TS	1947	- 2.02	- 0.81	+ 0.19	7.36	21
PORTSMOUTH 551	HT	1992	- 2.88	+ 1.08	+ 1.61	29.54	28
PROVIDENCE 48	TS	1944	- 0.31	- 0.52	+ 2.66	3.75	20
RICHMOND 417	VS	1976	- 0.53	- 0.67	+ 0.26	6.40	21
RICHMOND 600*	TS	1977	- 0.04	- 1.13	+ 0.90	33.34	21
RICHMOND 785	FS	1989	+ 0.26	- 0.14	+ 2.08	22.60	21
SOUTH KINGSTOWN 6	VS	1955	- 0.53	- 1.45	+ 1.25	11.25	21
SOUTH KINGSTOWN 1198	FS	1988	- 0.79	- 1.06	+ 0.78	7.50	21
TIVERTON 274	TT	1990	-----	-----	-----	-----	
WARWICK 59	ST	1991	- 0.55	- 0.56	- 0.09	4.99	20
WESTERLY 522	FS	1969	- 0.73	- 0.96	- 0.18	12.07	21
WEST GREENWICH 181	US	1969	- 2.05	- 0.59	- 0.19	15.31	21
WEST GREENWICH 206	ST	1991	- 0.32	- 0.33	- 0.14	4.12	21

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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

The NOAA National Weather Service (NWS) Drought Severity Index for the period ending January 13, 2007 shows extremely moist conditions for the region (Table 4). The Crop Moisture Index for the same time period shows wet conditions (Table 5).

**Table 4: Drought Severity Index**



**Table 5: Crop Moisture Index**

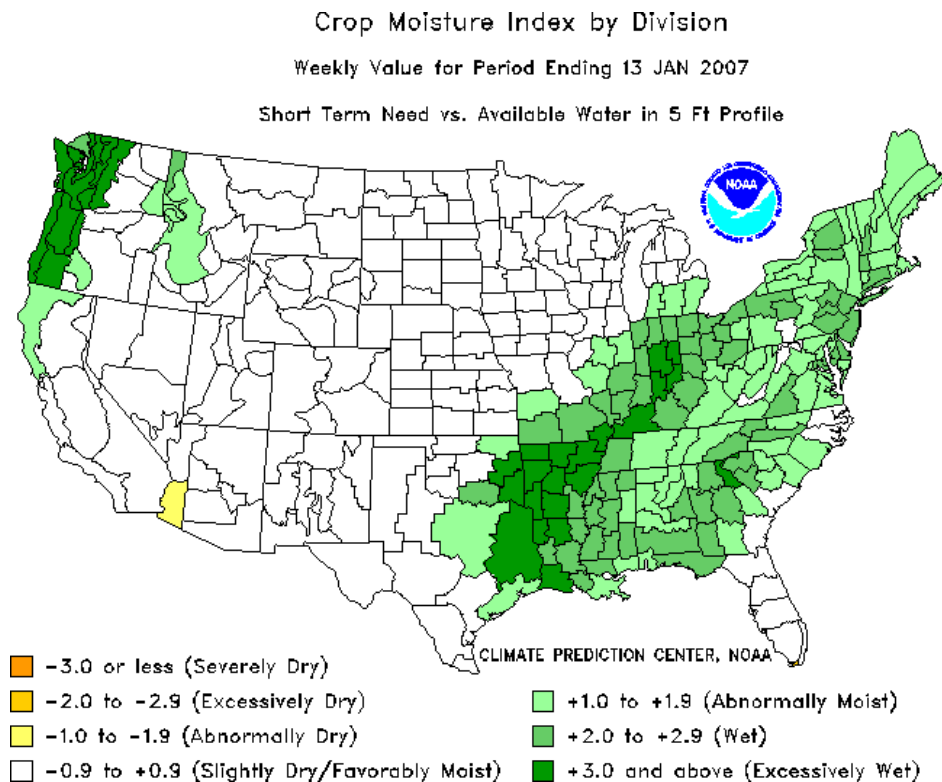
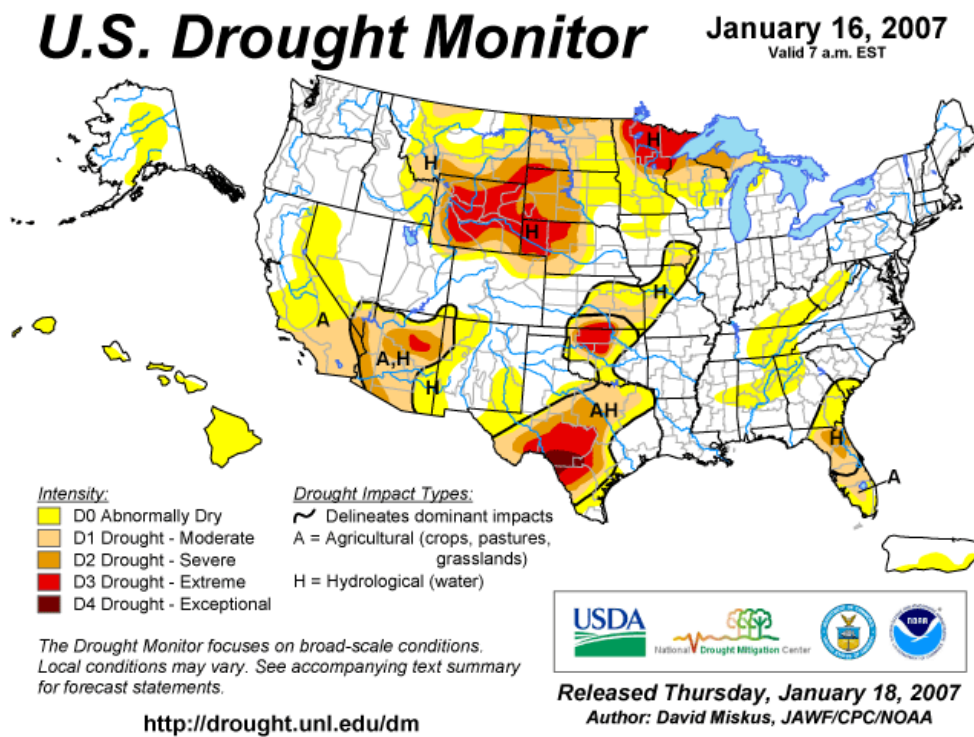
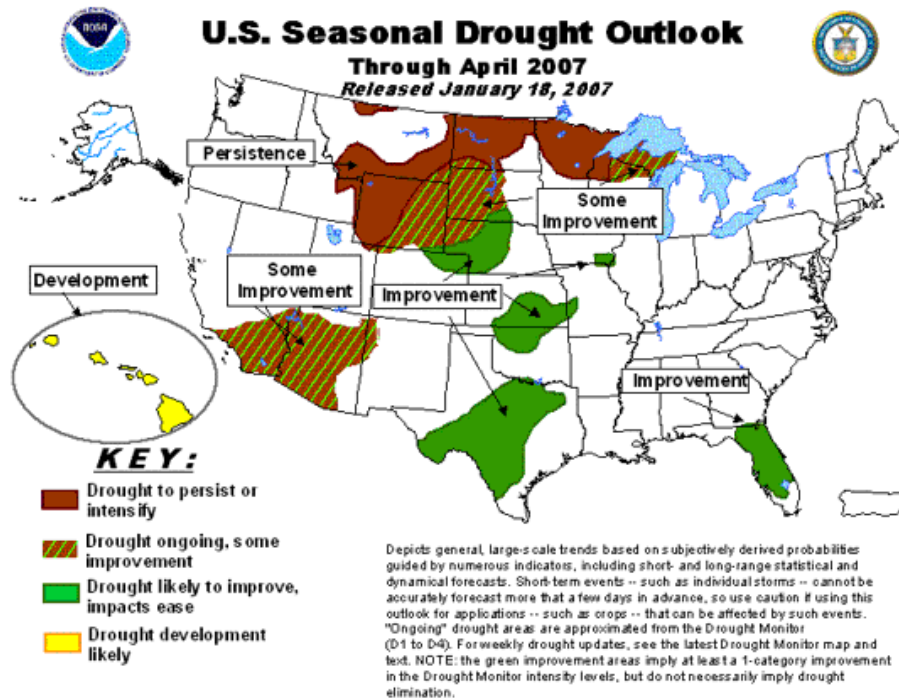


Table 6: US Drought Monitor



Tables 6 and 7 present national seasonal assessment and state rankings based on precipitation. The Drought Monitor (Table 6) focuses on broad scale conditions, and portrays Rhode Island experiencing a normal intensity through December 19, 2006. The NOAA Seasonal Drought Outlook through March 2007 projects “normal” conditions for Rhode Island.

Table 7: NOAA Seasonal Drought Outlook



DISCUSSION

Precipitation patterns for Rhode Island were below normal for December 2006 but above normal for the year. 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/>