



January 4, 2017

Portsmouth Water Supply Status Report

Overview

The following Portsmouth Water Supply Status Report provides the Portsmouth Water customers an assessment of the current water supply conditions. This report is distributed routinely via the City of Portsmouth's website at:

www.Cityofportsmouth.com/publicworks - water

Water Use Restrictions

Customer Water Restrictions
N/A
None
Voluntary Measures
Odd/Even Watering
Two-Days per Week Watering
No Lawn Watering

Due to current water supply conditions, the Mandatory Ban of Lawn Watering that began on September 8th remains in effect.

Recent precipitation events through the end of 2016 have helped to recharge the Bellamy Reservoir and increase stream flows; however, groundwater levels remain below average for this time of year. Minimal recharge to the water supply aquifers is expected over the coming months due to freezing temperatures. Water use restrictions may still be necessary if we have a warm and dry spring. Water operations staff will continue to assess the conditions and update monthly.

Additional updates and tips regarding water efficiency can be accessed at the cityofportsmouth.com website or by calling the water/snow ban hotline at: 603-766-7669.

Current Customer Water Demand

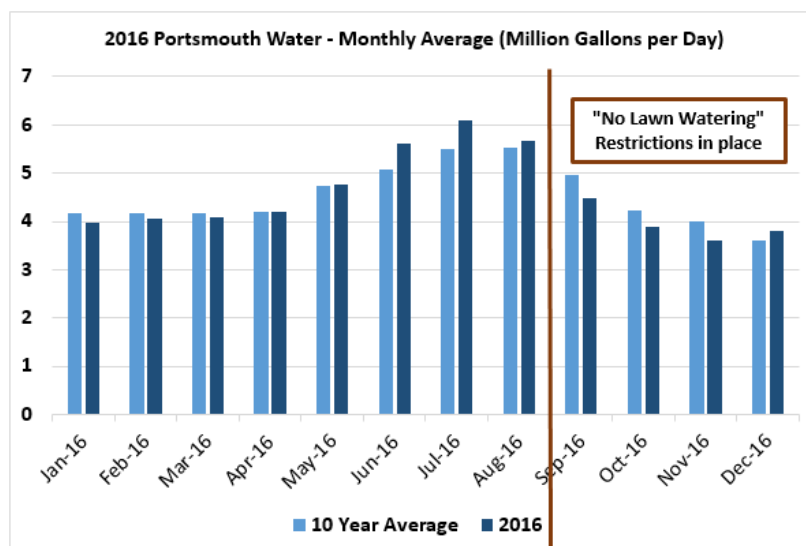
Current Water Demand
Below Normal
Normal
Above Normal
High
Very High
Historic High

Water demand is considered **Below Normal** at this time.

Customer's continued efforts to conserve water have helped to keep water demand below normal during the last months of 2016. Water Demand is a factor in the supply status assessment that is measured by the amount of water delivered through the water system. This factor reflects customer usage and variations caused by daily, weekly and seasonal changes in business, residential and irrigation demands.

Month	Current Demand (Million Gallons per Day (MGD))	Average Demand (ten-year average (MGD))
January 2016	3.97	4.16
February 2016	4.07	4.17
March 2016	4.09	4.18
April 2016	4.21	4.19
May 2016	4.77	4.73
June 2016	5.62	5.07
July 2016	6.09	5.49
August 2016	5.66	5.52
September 2016	4.47	4.96
October 2016	3.89	4.23
November 2016	3.59	4.01
December 2016	3.79	3.60

Average daily water demand was 3.79 million gallons per day (MGD) in December, which is near normal for this time of year. The following graphic provides more detail on how effective the water restrictions were. Prior to the "No Lawn Watering" restrictions in September the demands were above normal. They were below normal after the restrictions were implemented.



Precipitation Status

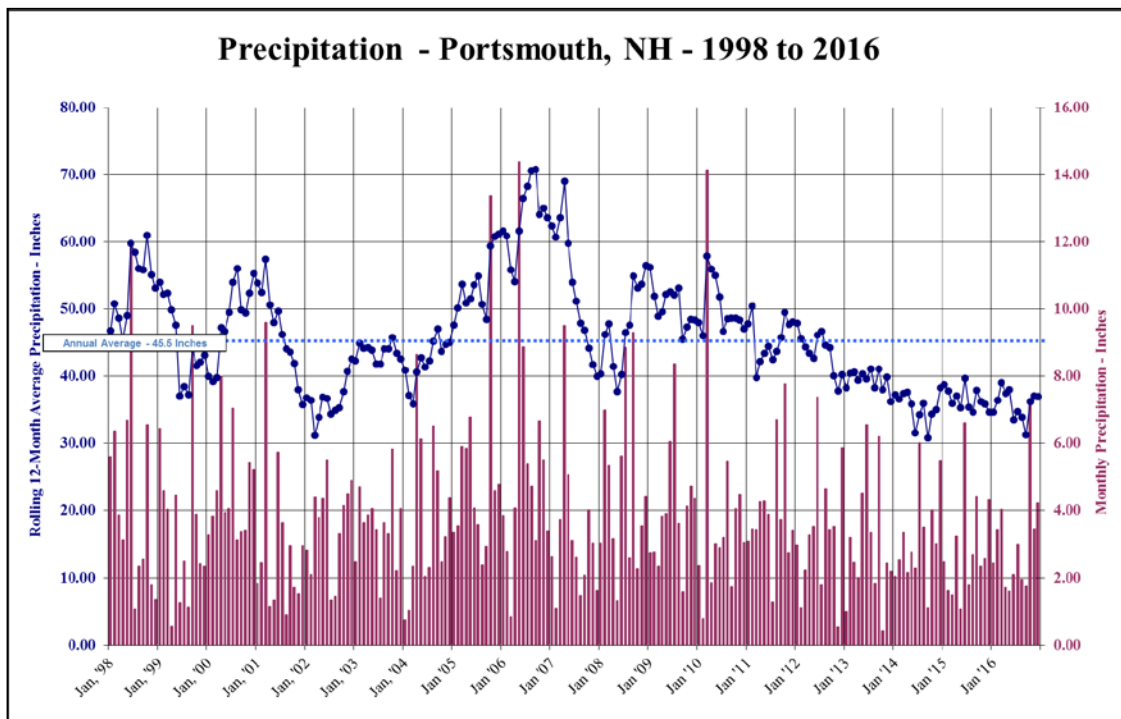
Precipitation
Above Average
Average
Below Average
Dry
Very Dry
Drought

Total December precipitation in Portsmouth was 4.22 inches. This is near normal for the month. Fortunately, Portsmouth received nearly 15 inches of precipitation during the last three months of 2016. Very good news because we had only received a total of 22 inches of precipitation during the previous nine months of the year.

In order to assess annual precipitation conditions, total precipitation over a rolling 12-month period is compared to the mean annual precipitation of 45.5 inches. Precipitation over the past 12-months equaled 37 inches which is below normal.

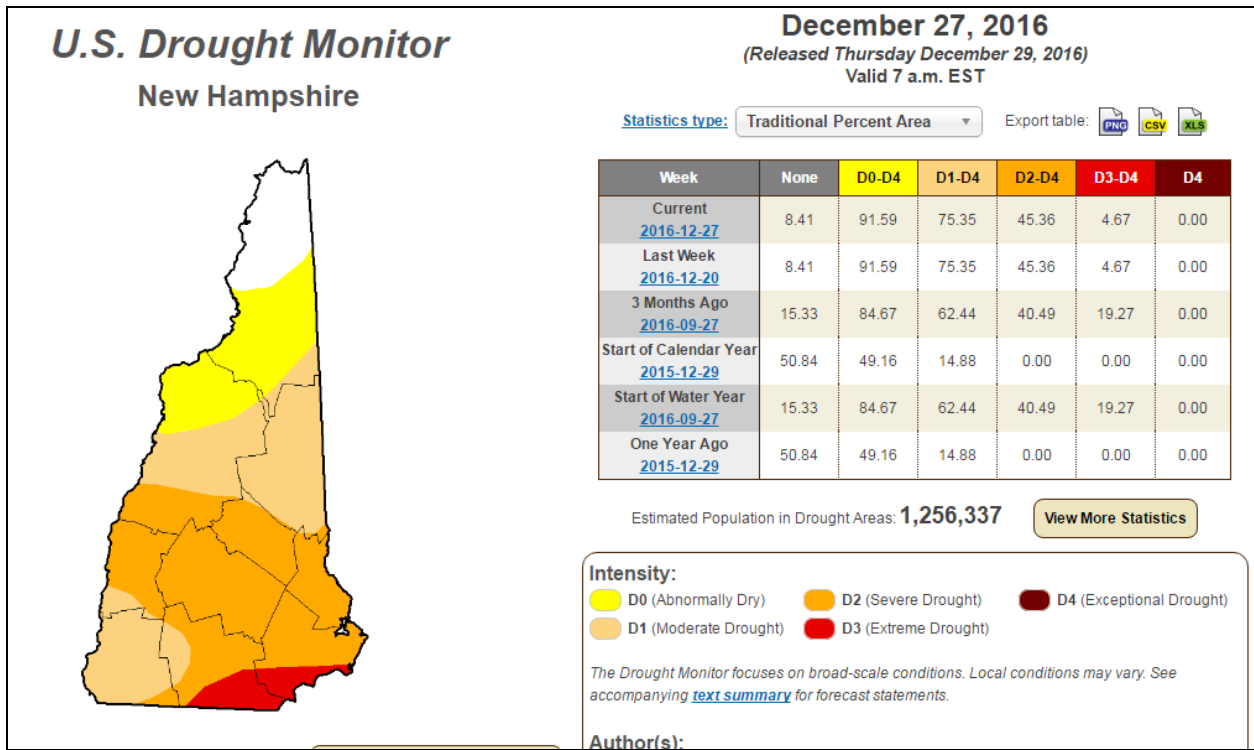
The precipitation status is currently considered as **Dry** conditions

As the following graphic shows, 2016 was the 4th year of below normal precipitation conditions.



New Hampshire Drought Monitor

The following graphic summarizes the drought conditions in New Hampshire:



The National Drought Summary for December 27, 2017 identifies the seacoast area along with much of New Hampshire is still in Severe Drought conditions. This is an improvement over the Extreme Drought conditions that occurred during the end of the summer of 2016.

To stay informed on the latest drought conditions and current drought related information go to the NHDES Drought Management Program webpage at:
<http://des.nh.gov/organization/divisions/water/dam/drought/index.htm>.

Groundwater Levels

Groundwater Levels
Above Average
Average
Below Average
Low
Very Low
Drought

Currently the groundwater levels are improving but are still considered **Below Average**. Groundwater levels in the Portsmouth, Pease and Madbury wells are lower than normal.

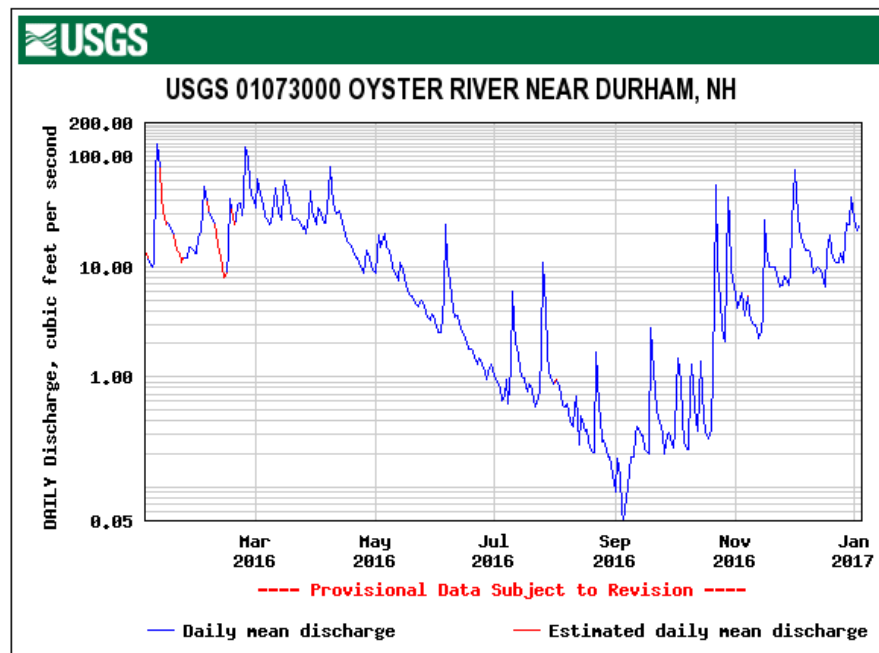
Overall conditions of aquifer water levels are assessed with respect to water levels that are continuously monitored in the Portsmouth Water Supply wells. Based on historic water-level data, average water levels have been identified for a representative well in each well-field area for each month of the year. Assessments of the aquifer levels are made relative to average levels, historic low levels, and available drawdown in the wells.

Groundwater from wells in Madbury, Portsmouth and Greenland typically provide between 34% and 45% of the water supply to Portsmouth customers with the remaining 55% to 66% from the Bellamy Reservoir. Over the summer approximately 37% of the supply came from the wells. In December 35% of the supply came from wells.

River Flow

River Flow
Above Average
Average
Below Average
Low
Very Low
Drought

The recent rainfall has improved the streamflows feeding our water supply reservoir. The graph below shows the very dry, low flow period this summer and uptick in river flows due to the rainfall in October. Current flow conditions are just average. It will take a number of months of above average flow to recover from the historic drought.



Reservoir Level

Reservoir Level
Above Average
Average
Below Average
Low
Very Low
Drought

The current stage of the reservoir is considered to be **Average** for this time of year. The above average amount of precipitation that occurred in October helped to refill the reservoir. Water is currently flowing over the spillway at a rate that is typical for this time of year.

As the surface water source for the Madbury Water Treatment Facility, the Bellamy Reservoir is monitored to assess and predict the overall amount of water available for the Treatment Facility. Reservoir water levels are compared to typical monthly levels to assess the reservoir conditions.

The Bellamy Reservoir reached a low level of 4.1 feet below the spillway on October 20th prior to the large precipitation event on the 21st and 22nd. Subsequent precipitation events in November recharged the reservoir to a level that was 0.55 feet above the spillway at the end of November. This equates to approximately 691 million gallons (MG) of water available above the lower intake. This is about 109% of the reservoir storage capacity of 637 MG at the spillway elevation.

Water Supply Capability

Water Supply Capability
Above Normal
Normal
Below Normal
Restrictions Necessary
Additional Restrictions Necessary
Emergency

Water Supply Capability is a measure used to identify any issues with the Portsmouth Water Supply System that would result in a limitation to the amount of water that could be supplied. These could be lack of supply, issues with source water quality, or mechanical failures of system components.

The loss of the Haven Well as a water source (which contributed approximately 10% of the water system's overall capability) has reduced the amount of water that can be provided to the system. Portsmouth #1 Well is currently out of service for maintenance and cleaning. This well supplies approximately 9% of the water supplied to the Portsmouth System. Due to these factors, the water supply capability is considered **Below Normal** at this time.

Further Updates and Information

This information will be distributed electronically on the City of Portsmouth's website in the Department of Public Work's "Water" section. If anyone needs additional information or has questions contact Brian Goetz, Deputy Director of Public Works at 766-1420 or Al Pratt, Water Resource Manager at 520-0622

