City of Portsmouth

Department of Public Works

February 9, 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

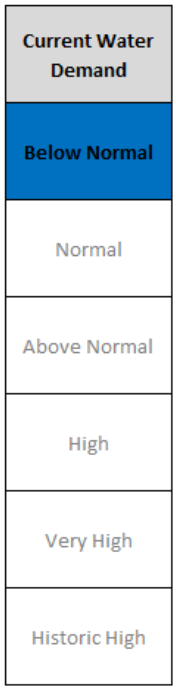
Customer Water Restrictions
N/A
None
Voluntary Measures
Odd/Even Watering
Two-Days per Week Watering
No Lawn Watering

The current water supply conditions are recovering from the drought that occurred in 2016. The mandatory "No Lawn Watering" water use restrictions are no longer in effect; however, "Voluntary Measures" are still necessary. Therefore, we are asking our water customers to please continue to use water wisely, minimize waste, and incorporate water efficient fixtures and appliances whenever possible. In an effort to support this goal, the City continues to offer all residential water customers rebates for the installation of low-flow toilets and high-efficiency washing machines. More details can be found in the Public Works Billing Information section of the City's website.

Recent precipitation events through the end of 2016 and in January 2017 have helped to recharge the Bellamy Reservoir and increase stream flows. Groundwater levels remain slightly 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 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**.

Current Customer Water Demand



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

Customer's continued efforts to conserve water have helped to keep water demand below normal in January. 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
January 2017	3.69	4.11

Average daily water demand was 3.69 million gallons per day (MGD) in January, which is 10% below normal for this time of year and slightly lower than demand in January 2016.

Precipitation Status

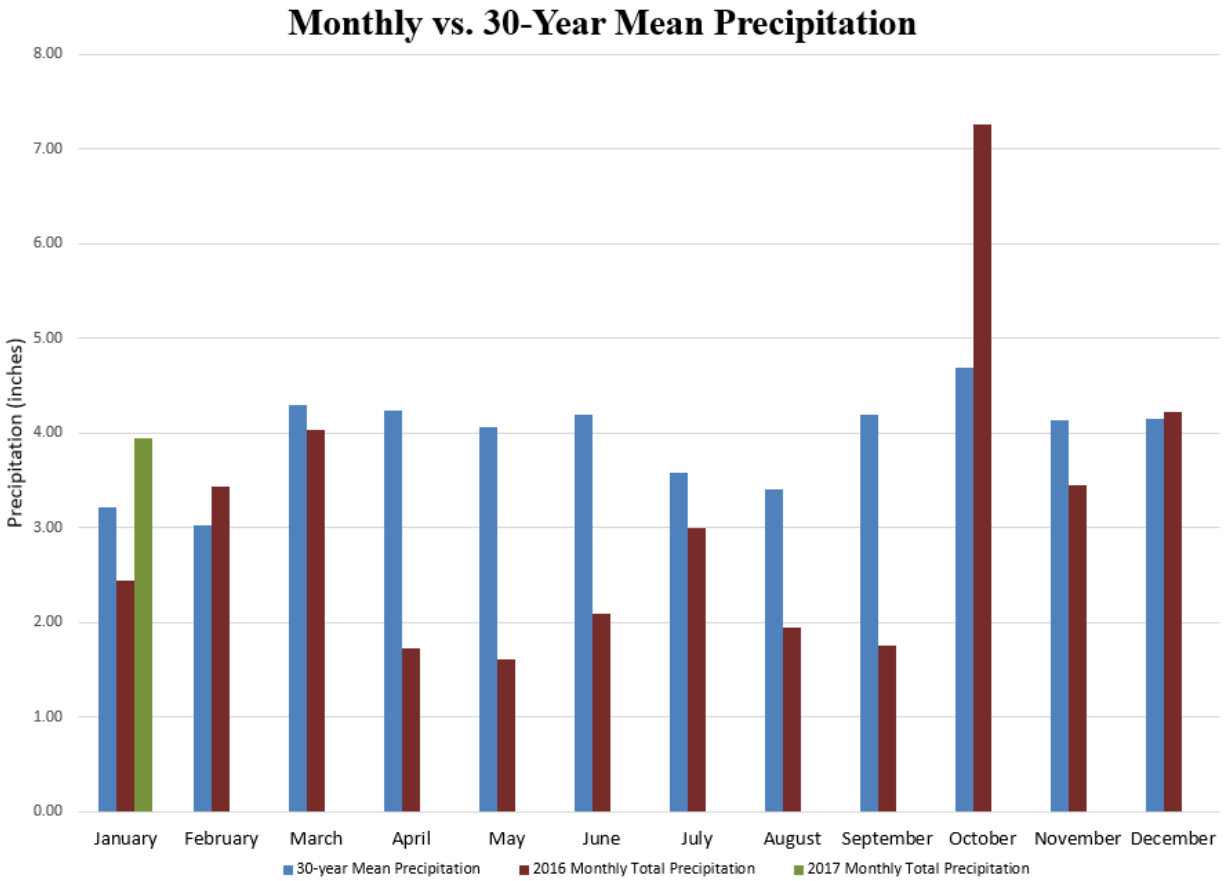
Precipitation
Above Average
Average
Below Average
Dry
Very Dry
Drought

Total January precipitation in Portsmouth was 3.94 inches. This is 0.72 inches greater than normal for the month. Over the past four months there has been 18.87 inches of precipitation which is 10.5% greater than the normal precipitation over this period. Even though the ground is frozen, this precipitation has helped to recharge the aquifer as we have seen some improvement in groundwater levels.

In order to assess annual precipitation conditions, total precipitation over a rolling 12-month period is compared to the mean annual precipitation of 47.20 inches. Precipitation over the past 12-months equaled 38.47 inches which is below normal.

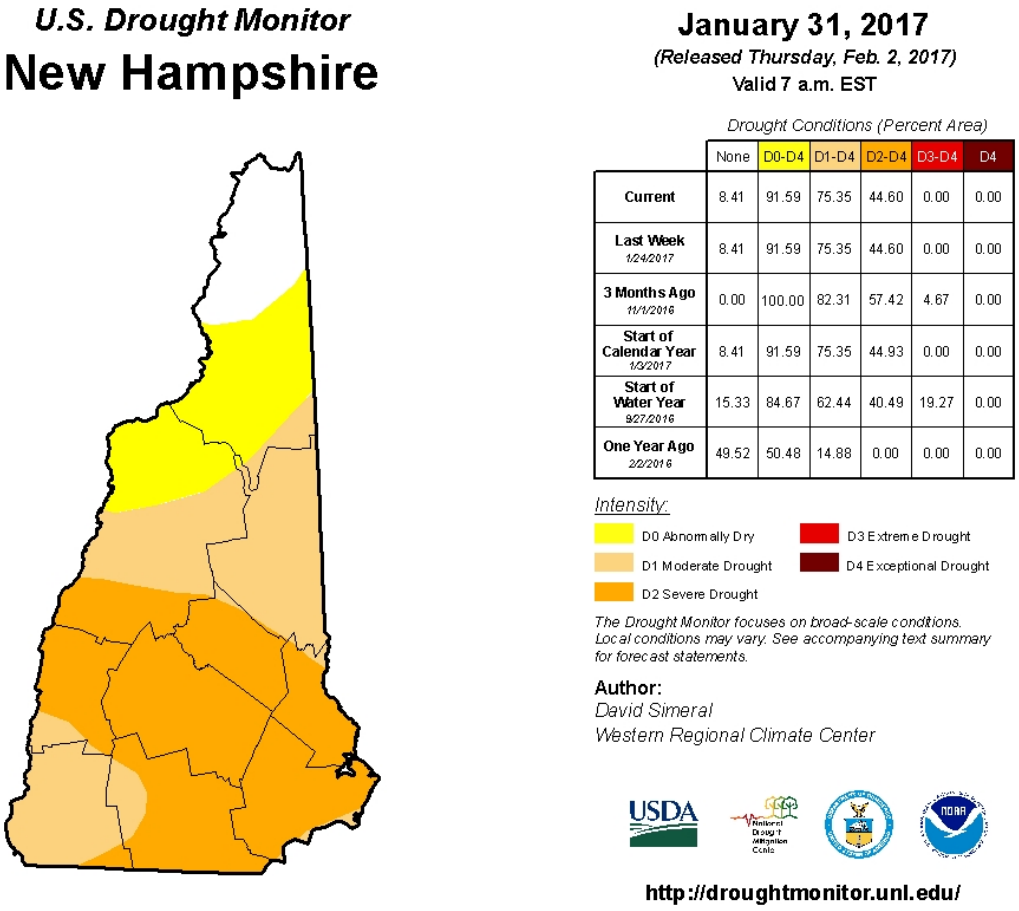
The precipitation status is currently considered as **Below Average** conditions

The following graphic illustrates the monthly deviations from average precipitation over 2016.



New Hampshire Drought Monitor

The following graphic summarizes the drought conditions in New Hampshire:



The National Drought Summary for January 31, 2017 identifies the seacoast area along with much of southern 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 and Madbury wells are slightly 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.

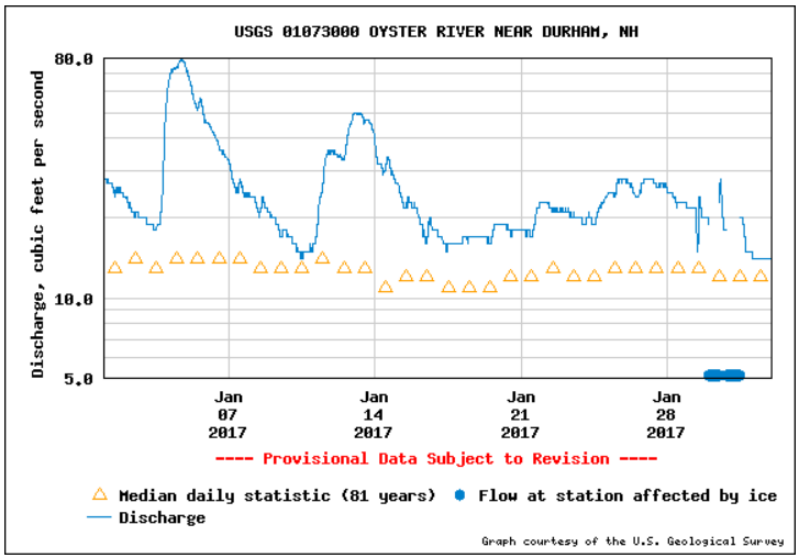
Groundwater from wells in Madbury, Portsmouth and Greenland typically provide between 34% and 45% of the water supply to Portsmouth customers, with the remaining 55% to 66% from the Bellamy Reservoir. In January 2017, 36% of the supply came from wells, 64% from the reservoir.

River Flow

River Flow
Above Average
Average
Below Average
Low
Very Low
Drought

Portsmouth Water System operators track the USGS stream flow gauges in the Oyster River and Lamprey River to assess flow conditions. These gauged watersheds are used to assess the relative recharge to the Bellamy Reservoir through its tributaries, the Bellamy River and Mallego Brook.

Storms in January caused considerable fluctuations in the Oyster River stream flow. Flow remained higher than the daily historic median flow.



The monthly mean stream flow in the Oyster River at the USGS gauge was 26.8 cfs in January. This is 8.25 cfs (44%) higher than the 30-year January median flow rate of 18.6 cfs.

The monthly mean January stream flow in the Lamprey River at the USGS gauge was 355 cfs, which is 51 cfs (16.6%) higher than the 30-year January median flow rate of 305 cfs.

At this time the current river flow rates are considered **Above Average**.

Reservoir Level

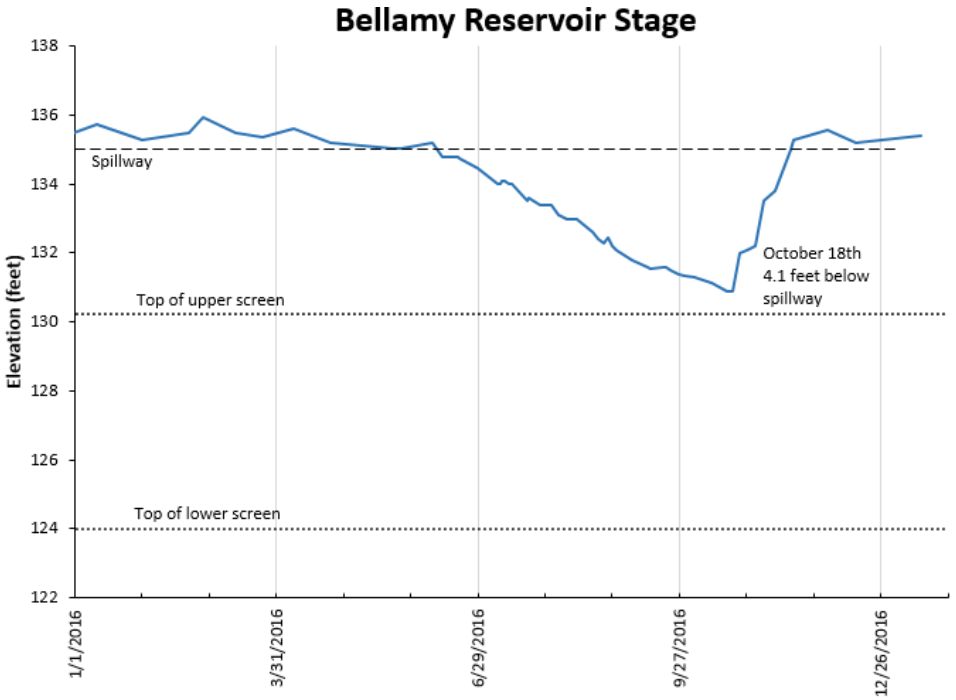
Reservoir Level
Above Average
Average
Below Average
Low
Very Low
Drought

The current stage of the reservoir is considered to be **Average** for this time of year. The above average amount of precipitation that has occurred over the past four months has caused the reservoir to recharge and remain at levels 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.

At this time the Bellamy Reservoir water level is 0.4 feet above the spillway and the reservoir has approximately 680 million gallons of water above the surface water intake.

The following graphic illustrates the reservoir level over 2016.



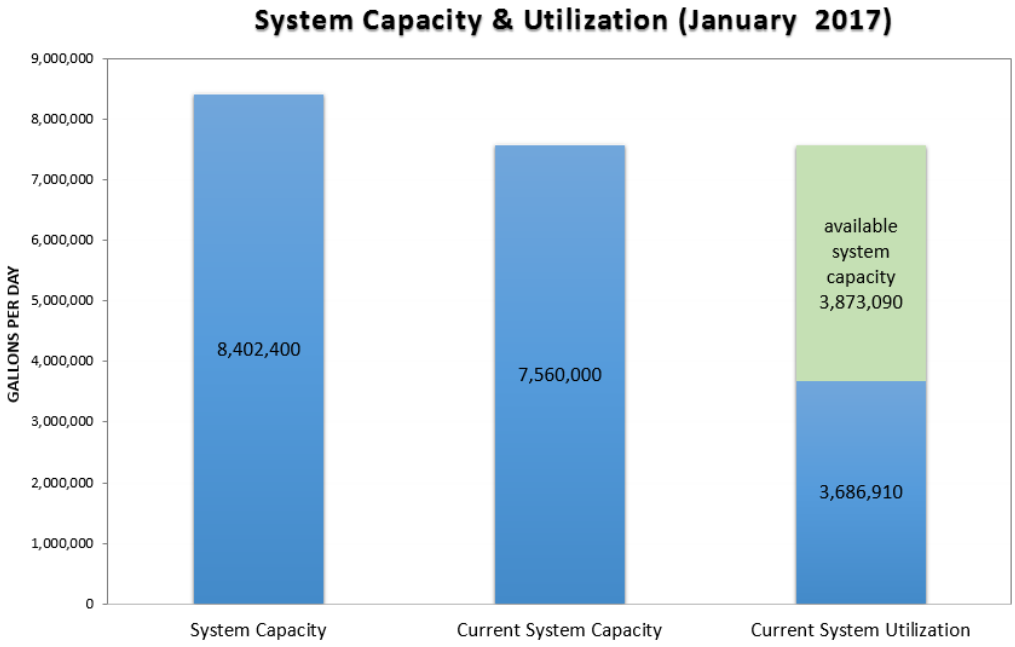
Water Supply Capability

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.
As a result of this reduced capacity, the water supply capability is considered **Below Normal** at this time.

All of the other wells and the treatment plant are in excellent operational conditions, thus the water demand is currently being met with conservative protections and redundancy in the system. Average daily demand is currently 49% of the current system capability.



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.